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1/68 1/73 1/79	Pressure transmitters for gauge pressure for the paper industry SITRANS P300 and DS III for gauge pressure with PMC connection Technical description Technical specifications, ordering data, dimensional drawings - SITRANS P DS III with PMC connection - SITRANS P300 with PMC connection	1/174 1/184 1/197 1/207 1/218 1/234 1/248 1/254 1/258	dimensional drawings - for gauge pressure - for gauge and absolute pressure with front-flush diaphragm - for absolute pressure (from gauge pressure series) - for absolute pressure (from differential pressure series) - for differential pressure and flow - for level Accessories/Spare parts Factory-mounting of valve manifolds on transmitters  SITRANS P410 Technical description Technical specifications, ordering data, dimensional drawings - for gauge pressure - for differential pressure and flow Accessories/Spare parts
		1/298 1/303 1/311 1/320 1/322	Pressure transmitters for applications with highest requirements (Premium)  SITRANS P500 Technical description Technical specifications, ordering data, dimensional drawings - for differential pressure and flow - for level Accessories/Spare parts Factory-mounting of valve manifolds on transmitters



# Remote seals for pressure transmitters

# SITRANS P320/420

Technical description

Diaphragm seals of sandwich design

- with flexible capillary

Diaphragm seals of flange design

- with flexible capillary

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- mounted directly on transmitter

- mounted directly and with capillary

Diaphragm seal, screwed design

- mounted directly or/and with capillary Quick-release diaphragm seals

Miniature diaphragm seals

Inline seals in sandwich design

Quick-release inline seals

Flushing rings for diaphragm seals

Measuring setups

- with remote seals

- without remote seals

#### SITRANS P300, P DS III, P410, P500

Technical description

Diaphragm seals of sandwich design

- with flexible capillary

Diaphragm seals of flange design

- with flexible capillary

- mounted directly on transmitter

- mounted directly and with capillary

Diaphragm seal, screwed design

- mounted directly or/and with capillary

Quick-release diaphragm seals

Miniature diaphragm seals

Inline seals in sandwich design

Quick-release inline seals

Flushing rings for diaphragm seals

Measuring setups

- with remote seals

- without remote seals

# **Fittings**

Technical description

Selection aid

Shut-off valves for gauge and absolute pressure transmitters

- Shut-off valves to DIN 16270,

DIN 16271 and DIN 16272

- Angle adapter

- Shut-off valves/Double shut-off valves

- Accessories for shut-off

valves/double shut-off valves

Shut-off valves for differential pressure transmitters

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

- Multiway cocks PN 100

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

- 3-way valve manifold DN 8

- Valve manifold combination DN 5/DN 8

- Valve manifold combination DN 8

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

for installing in protective boxes

- 3- and 5-spindle valve manifold for vertical angular diff. pressure lines

- Low-pressure multiway cock

Accessories

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

Product overview

# Overview

		- · · ·		
	Application	Description		Software for parameteriza- tion
SITRANS P Single-range trans	mitters for general applicat	tions		
	Two or three-wire transmitters for measuring gauge and absolute pressure	SITRANS P200  Single-range transmitters for gauge and absolute pressure  Ceramic measuring cell  For general applications	1/6	-
		• Single-range transmitters for gauge pressure • Stainless steal measuring cell • For low-pressure applications	1/12	-
A D		SITRANS P220  Single-range transmitters for gauge pressure  Stainless steel measuring cell, fully welded  For high-pressure applications and refrigeration technology	1/17	-
	Two-wire transmitter for measuring hydrostatic levels	SITRANS LH100  For measuring liquid levels in wells, tanks, channels, dams etc.  With ceramic diaphragm, Ø 23.4 mm	1/23	-
	Two-wire transmitter for measuring hydrostatic levels	SITRANS LH300  • For measuring liquid levels in wells, tanks, channels, dams etc.  • With ceramic diaphragm, Ø 30 mm  • Suitable for small measuring ranges	1/28	-
	Transmitters for gauge and absolute pressure for food, pharmaceuticals and biotechnology  CERTIFIED  TYPE EL  CLASS I  JANUARY 2019	SITRANS P Compact  Single-range transmitters in two-wire system  Hygiene-based design with various aseptic connections according to EHEDG, FDA and GMP recommendations.	1/34	-
SITRANS P · Transmitters for for	od, pharmaceuticals and biote	chnology		
	Two-wire transmitters for measuring gauge and absolute pressure  CERTIFIED  TYPE EL CLASS I JAMIN'S 2019	SITRANS P300  Hygiene-based design according to EHEDG, 3A, FDA and GMP  Parameterization using 3 buttons and communication over HART, PROFIBUS PA or FOUNDATION Fieldbus  Standard process connection G½", ½-NPT and front-flush process connections available  Range adjustment 100: 1	1/43	SIMATIC PDM
		Factory-mounting of valve manifolds on SITRANS P300 transmitters  • Simplified assembly  • With pressure test  • Stainless steel valve manifolds	1/66	-
SITRANS P · Transmitters for ga	uge pressure for the paper ind	lustry		
	Two-wire transmitters for measuring gauge pressure	SITRANS P300 and SITRANS P DS III with PMC connection for the paper industry  • Range adjustment 100 : 1  • Process connections for the paper industry  • Parameterization using 3 buttons and HART, PROFIBUS PA or FOUNDATION Fieldbus	1/68	SIMATIC PDM

Product overview

	Application	Description		Software for parameteriza- tion
SITRANS P Transmitters for a	pplications with advanced	requirements (Advanced)		
	Two-wire transmitters for measuring:  • Gauge pressure,  • Absolute pressure,  • Differential pressure and  • Flow or  • Level	SITRANS P320/P420  • Measuring accuracy: - SITRANS P320: 0.065 % - SITRANS P420 0.04 %  • Fast step response time of up to 105 ms • Developed according to IEC 61508, SIL2/3 applications  • SIL validation remotely • Diagnostics according to Namur NE107 • 4-key operation	1/86	SIMATIC PDM
	Two-wire transmitters for measuring:  • Gauge pressure,  • Absolute pressure,  • Differential pressure and  • Flow or  • Level	SITRANS P DS III  Measuring accuracy up to 0.065 %  Range adjustment: 100 : 1  Parameterization using:  3 buttons and HART for SITRANS P DS III HART  3 buttons and PROFIBUS PA for SITRANS P DS III PA series  3 buttons and FOUNDATION Fieldbus for SITRANS P DS III FF series  Available ex stock	1/167	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	1/254	_
	Two-wire transmitters for measuring:  • Gauge pressure,  • Differential pressure and  • Flow	SITRANS P410  Measuring accuracy up to 0.04 %  Range adjustment 100 : 1  Parameterization using:  3 buttons and HART for SITRANS P410 HART  3 buttons and PROFIBUS PA for SITRANS P410 PA  3 buttons and FOUNDATION Fieldbus for SITRANS P410 FF	1/258	SIMATIC PDM
		Factory mounting of valve manifolds on gauge, absolute or differential pressure transmitters SITRANS P410  • Factory valve block mounting for SITRANS P410 is possible. Depending on the available P410 variants, please see the configuration options for SITRANS P DS III (page 1/254).		-
SITRANS P - Transmitters for		equirements (Premium)		
	Two-wire transmitters for measuring:  • Differential pressure  • Volume flow  • Mass flow  • Level  • Volume  • Mass	SITRANS P500  Measuring accuracy up to 0.03 % Range adjustment: 200:1 High measuring accuracy Very fast response time Extremely good long-term stability Parameterization using 3 buttons or HART	1/298	SIMATIC PDM
		Factory-mounting of manifolds on differential pressure transmitters SITRANS P500  • Simplified assembly  • With pressure test  • Stainless steel valve manifolds	1/322	-

Product overview

	Application	Description		Software for parameteriza- tion
Remote seals for transmitters S	TRANS P			
	Remote seals for measuring viscous, corrosive or fibrous media (as well as media at extreme temperatures)	Remote seals for SITRANS P320/420 Remote seals for SITRANS P300, P DS III, P410, P500 • Remote seals in sandwich and flange designs • Quick-release remote seals for the food industry • Wide range of diaphragm materials and fill fluid available	1/325 1/402	-
Fittings				
	Shutting off the lines for the medium and differential pressure  Mounting of transmitter on valve manifold or shut-off fitting	Shut-off fittings and valve manifolds available in steel, brass or stainless steel Valve manifolds available for the various process connections of the SITRANS P transmitters	1/472	-
		As accessory for fittings are available:		
		<ul> <li>Oval flange</li> <li>Mounting collars</li> <li>Connection glands</li> <li>Connection parts G½</li> <li>Water traps</li> <li>Sealing rings to EN 837-1</li> <li>Pressure surge reducers</li> <li>Primary shut-off valves</li> <li>Compensation vessels</li> <li>Connection parts</li> </ul>	1/505 1/506 1/507 1/508 1/509 1/509 1/510 1/511 1/513 1/514	

# Supplied product documentation on DVD and safety instructions



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

This DVD contains the most important manuals and certificates for the Siemens process instrumentation and weighing technology portfolio. The delivery may also contain product-specific or order-specific printed materials. For additional information, refer to the Annex on page 10/3.

Pressure transmitters

Single-range transmitters for general applications

## 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 device plug M12 (IP67), a cable (IP67) or a Quickon cable quick screw connection (IP67) connected electrically. The output signal is between 4 and 20 mA or 0 and 10 V.

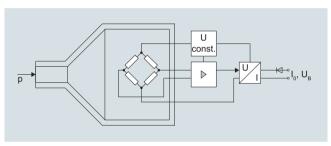
## Device structure with explosion protection

The pressure transmitter consists of a piezoresistive measuring cell with a diaphragm installed in a stainless steel enclosure. It can be used with a connector per EN 175301-803-A (IP65) or a device 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 thick-film resistance bridge to which the operating pressure p is transmitted through a ceramic diaphragm.

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

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

Pressure transmitters Single-range transmitters for general applications

# SITRANS P200 for gauge and absolute pressure

Application		Electromagnetic compatibility	• acc. IEC 61326-1/-2/-3
Gauge and absolute pressure measurement	Liquids, gases and vapors		<ul> <li>acc. NAMUR NE21, only for ATEX versions and with a ma measuring deviation ≤ 1 %</li> </ul>
Mode of operation		Design	eacag do Nation /c
Measuring principle	Piezo-resistive measuring cell (ceramic diaphragm)	Weight	Approx. 0.090 kg (0.198 lb)
Measured variable	Gauge and absolute pressure	Process connections	See dimension drawings
Inputs Measuring range • Gauge pressure		Electrical connections	Connector per EN 175301-803-A Form A wi cable inlet M16x1.5 or ½-14 N or Pg 11
<ul><li>Metric</li><li>US measuring range</li><li>Absolute pressure</li></ul>	1 60 bar (15 870 psi) 15 1000 psi		<ul> <li>Device plug M12</li> <li>2 or 3-wire (0.5 mm<sup>2</sup>) cable (Ø ± 5.4 mm)</li> </ul>
Metric     US measuring range	0.6 16 bar a (10 232 psi apsi a) 10 300 psi a		Quickon cable quick screw of nection
Output	·	Wetted parts materials	
Current signal	4 20 mA	Measuring cell	Al <sub>2</sub> O <sub>3</sub> - 96 %
• Load	(U <sub>B</sub> - 10 V)/0.02 A	Process connection	Stainless steel, mat. No. 1.440 (SST 316 L)
Auxiliary power U <sub>B</sub>	DC 7 33 V (10 30 V for Ex)	Gasket	• FPM (Standard)
Voltage signal	0 10 V DC		Neoprene
• Load	≥ 10 kΩ		Perbunan
<ul> <li>Auxiliary power U<sub>B</sub></li> </ul>	12 33 V DC		• EPDM
Power consumption	$< 7$ mA at 10 k $\Omega$	Non-wetted parts materials	
Ratiometric output	0 90 %	• Enclosure	Stainless steel, mat. No. 1.440
• Load	≥ 10 kΩ		(SST 316 L)
<ul> <li>Auxiliary power U<sub>B</sub></li> </ul>	5 V DC ± 10 %	• Rack	Plastic
Power consumption	$< 7$ mA at 10 k $\Omega$	• Cables	PVC
Characteristic curve	Linear rising	Certificates and approvals	
Measuring accuracy Error in measurement at limit setting incl. hysteresis and reproducibility	<ul> <li>Typical: 0.25 % of measuring span</li> <li>Maximum: 0.5 % of measuring span</li> </ul>	Classification according to pressure equipment directive (PED 2014/68/EU)	For gases of fluid group 1 and uids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineer practice)
Step response time T <sub>99</sub>	< 5 ms	Lloyd's Register of Shipping (LR) <sup>1)</sup>	12/20010
Long-term stability	V 0 1110	Germanischer Lloyd (GL)1)	GL19740 11 HH00
Lower range value and measuring span	0.25 % of measuring span/year	American Bureau of Shipping (ABS) <sup>1)</sup>	ABS_11_HG 789392_PDA
Influence of ambient temperature		Bureau Veritas (BV) <sup>1)</sup>	BV 271007A0 BV
Lower range value and measuring	0.25 %/10 K of measuring span	Det Norske Veritas (DNV)1)	A 12553
span	6.26 %, to it of modelling opan	Drinking water approval (ACS) <sup>1)</sup>	ACS 15 ACC NY 360
Influence of power supply  Conditions of use	0.005 %/V	EAC <sup>1)</sup>	№ TC RU C-DE.ГБ05.В.0073 ОС НАНИО «ЦСВЭ»
Process temperature with gasket		Underwriters Laboratories (UL) <sup>1)</sup>	00.1.1.1.0 "4050"
made of:		• for USA and Canada	UL 20110217 - E34453
• FPM (Standard)	-15 +125 °C (+5 +257 °F)	worldwide	IEC UL DK 21845
Neoprene	-35 +100 °C (-31 +212 °F)		ILO OL DIX 21043
• Perbunan	-20 +100 °C (-4 +212 °F)	Explosion protection	Ev. II 1/0 C Ev. :> II C T4 C - /OI-
• EPDM	-40 +125 °C (-40 +257 °F), usable for drinking water	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
Ambient temperature	-25 +85 °C (-13 +185 °F)	EC type-examination certificate	SEV 10 ATEX 0146
Storage temperature	-50 +100 °C (-58 +212 °F)	* *	
Degree of protection (to EN 60529)	<ul> <li>IP 65 with connector per EN 175301-803-A</li> <li>IP 67 with device plug M12</li> </ul>	Connection to certified intrinsically- safe resistive circuits with maxi- mum values:	$U_i \le 30 \text{ V DC}; I_i \le 100 \text{ mA}; P_i \le 0.75 \text{ W}$
	<ul> <li>IP 67 with cable</li> <li>IP 67 with cable</li> <li>IP 67 with cable quick screw</li> </ul>	Effective internal inductance and capacity for versions with plugs per EN 175301-803-A and M12	$L_i = 0 \text{ nH}; C_i = 0 \text{ nF}$

 $<sup>^{\</sup>rm 1)}\,$  For variants with output signal 0 ... 5 V and ratiometric output available soon.

Pressure transmitters

Single-range transmitters for general applications

# SITRANS P200 for gauge and absolute pressure

	nd ordering data		for process	- and -b-	aluta messa:	a fau «	l annliasticus	Article No. <b>7MF1565-</b>		Order co
	200 pressure trail c curve deviation			e and abso	oiute pressur	e for genera	applications	/MF1565-		
	materials: Ceram			sealing n	naterial					
•	parts materials: sta			0						
	he Article No. for t			in the PIA	. Life Cycle Po	nrtal				
			-		Clie Cycle i C					
Measuring r	ange		ad limit	Ì		Burst pres	sure			
		Min.		Max.						
or gauge p	ressure									
) 1 bar	(0 14.5 psi)	-1 bar	(-14.5 psi)	2.5 bar	(36.26 psi)	> 2.5 bar	(> 36.3 psi)	3	ВВА	
1.6 bar	(0 23.2 psi)	-1 bar	(-14.5 psi)	4 bar	(58.02 psi)	> 4 bar	(> 58.0 psi)	3	BB	
) 2.5 bar	(0 36.3 psi)	-1 bar	(-14.5 psi)	6.25 bar	(90.65 psi)	> 6.25 bar	(> 90.7 psi)	3	BD	
) 4 bar	(0 58.0 psi)	-1 bar	(-14.5 psi)	10 bar	(145 psi)	> 10 bar	(> 145 psi)	3	BE	
) 6 bar	(0 87.0 psi)	-1 bar	(-14.5 psi)	15 bar	(217 psi)	> 15 bar	(> 217 psi)		BG	
) 10 bar	(0 145 psi)	-1 bar	(-14.5 psi)	25 bar	(362 psi)	> 25 bar	(> 362 psi)	3	CA	
) 16 bar	(0 232 psi)	-1 bar	(-14.5 psi)	40 bar	(580 psi)	> 40 bar	(> 580 psi)		СВ	
0 25 bar	(0 363 psi)	-1 bar	(-14.5 psi)	62.5 bar	(906 psi)	> 62.5 bar	(> 906 psi)		CD	
) 40 bar	(0 580 psi)	-1 bar	(-14.5 psi)	100 bar	(1450 psi)	> 100 bar	(> 1450 psi)		CE	
) 60 bar	(0 870 psi)	-1 bar	(-14.5 psi)	150 bar	(2175 psi)	> 150 bar	(> 2175 psi)	3	CG	
Other version	n, add Order code	and plai	n text: Measu	ı ırina ranae	: up to ba	ar (psi)		g	AA	Н
or absolute		1		J : 9-	1	VI /				
	(0 8.7 psi a)	0 bar a	(0 psi a)	12.5 har a	(36.26 psi a)	I > 2.5 bar a	(> 36.3 psi a)		A G	
) 1 bar a	(0 14.5 psi a)	0 bar a	(0 psi a)		(36.26 psi a)	> 2.5 bar a	(> 36.3 psi a)		BA	
) 1.6 bar a	, , ,	0 bar a	(0 psi a)		(58.02 psi a)	> 4 bar a	(> 58.0 psi a)		BB	
) 2.5 bar a	, , ,	0 bar a	(0 psi a)		a (90.65 psi a)		(> 90.7 psi a)		BD	
) 4 bar a	(0 58.0 psi a)		(0 psi a)		(145 psi a)				BE	
0 4 bar a 0 6 bar a	(0 87.0 psi a)	0 bar a 0 bar a	(0 psi a) (0 psi a)		(145 psi a) (217 psi a)	> 10 bar a > 15 bar a	(> 145 psi a) (> 217 psi a)		BG	
0 10 bar a	(0 145 psi)	0 bar a	(0 psi a)		(362 psi a)	> 25 bar a	(> 362 psi a)		CA	
0 16 bar a	(0 140 psi)	0 bar a	(0 psi a)		(580 psi a)	> 40 bar a	(> 580 psi a)		C B	
		1	,	1	,	1	(> 000 pol u)		AA	H
	n, add Order code			illig range	: up to II	ivai a (psi a)			744	п.
vieasuring r	ranges for gauge 0 15 psi	pressure	• -14.5 psi	Ì	35 psi	İ	> 35 psi		вв	
	3 15 psi		-14.5 psi -14.5 psi		35 psi		> 35 psi		BC	
	0 20 psi		-14.5 psi		50 psi		> 50 psi		BD	
	0 30 psi		-14.5 psi		80 psi		> 80 psi		BE	
	0 60 psi		-14.5 psi		140 psi		> 140 psi		BF	
	0 100 psi		-14.5 psi		200 psi		> 200 psi		BG	
	0 150 psi		-14.5 psi		350 psi 550 psi		> 350 psi > 550 psi		ICA	
	0 200 psi		-14.5 psi		·				ICB	
	0 300 psi		-14.5 psi		800 psi		> 800 psi		CD	
	0 500 psi		-14.5 psi		1400 psi		> 1400 psi		ICE	
	0 750 psi		-14.5 psi		2000 psi		> 2000 psi		ICF	
	0 1000 psi		-14.5 psi		2000 psi		> 2000 psi		ICG	
Other version	n, add Order code	and plai	n text: Measu	ring range	: up to p	si		9	AA	H
Measuring r	anges for absolu	te pressi								
	0 10 psi a		0 psi a		35 psi a		> 35 psi a		AG	
	0 15 psi a		0 psi a		35 psi a		> 35 psi a		BA	
	0 20 psi a		0 psi a		50 psi a		> 50 psi a		ВВ	
	0 30 psi a		0 psi a		80 psi a		> 80 psi a		BD	
	0 60 psi a		0 psi a		140 psi a		> 140 psi a	(	BE	
	0 100 psi a		0 psi a		200 psi a		> 200 psi a		BG	
	0 150 psi a		0 psi a		350 psi a		> 350 psi a		CA	
	0 200 psi a		0 psi a		550 psi a		> 550 psi a		СВ	
	0 300 psi a		0 psi a		800 psi a		> 800 psi a	(	CC	
Other version	n, add Order code	and nlai	n text: Measi	irina range	. unto n	sia			AA	H:

Pressure transmitters

Single-range transmitters for general applications

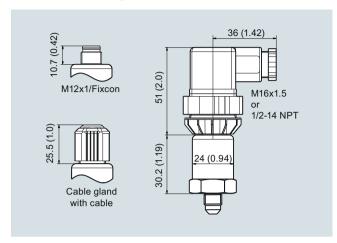
# SITRANS P200 for gauge and absolute pressure

Selection and ordering data	Article No.	Orde	r code
SITRANS P 200 pressure transmitters for pressure and absolute pressure for general applications Accuracy typ. 0.25 %	7MF1565-		
Wetted parts materials: Ceramic and stainless steel + sealing material			
Non-wetted parts materials: stainless steel			
Output signal			
4 20 mA; two-wire system; power supply 7 33 V DC (10 30 V DC for ATEX versions) 0 10 V; three-wire system; power supply 12 33 V DC 0 5 V; 3-wire system; auxiliary power 7 33 V DC Ratiometric 10 90 %; 3-wire system; auxiliary power 5 V DC ± 10 %	2	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
Explosion protection (only 4 20 mA)	_		
None		0	
With explosion protection Ex ia IIC T4		1	
Electrical connection			
Connector per DIN EN 175301-803-A, stuffing box thread M16 (with coupling) Device plug M12 per IEC 61076-2-101 Connection via fixed mounted cable, 2 m (not for type of protection "Intrinsic safety i") Quickon cable quick screw connection PG9 (not for type of protection "Intrinsic safety i") Connector per DIN EN 175301-803-A, stuffing box thread 1/2"-14 NPT (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Fixed mounted cable, length 5 m Special version		1 2 0 3 0 4 5 6	N 1
Process connection	-		
G%'' male per EN 837-1 (½" BSP male) (standard for metric pressure ranges mbar, bar) $G%''$ male thread and $G1/8"$ female thread $G%''$ male per EN 837-1 ( $%''$ BSP male) $7/16"$ -20 UNF male		A B C D	
1/4"-18 NPT male (standard for pressure ranges inH <sub>2</sub> O and psi) 1/4"-18 NPT female 1/2"-14 NPT male 1/2"-14 NPT female 1/2"-14 NPT female 7/16"-20 UNF female M20x1.5 male G1/4" to DIN 3852 Form E G1/2" to DIN 3852 Form E		E F G H J P Q R	
Special version		z	P 1 \
Sealing material between sensor and enclosure	-		
Viton (FPM, standard) Neoprene (CR) Perbunan (NBR) EPDM Special version		A B C D	Q1'
Version	-		
Standard version		1	
Further designs			
Supplement the Article No. with "-Z" and add Order code.			
Quality Inspection Certificate (5-point characteristic curve test) according to IEC 60770-2	C11		
Oxygen version, free of oil and degreased, max. operating pressure 60 bar, max. process temperature +85 °C (only in conjunction with the sealing material Viton between sensor and enclosure and not with explosion protection version)	E10		

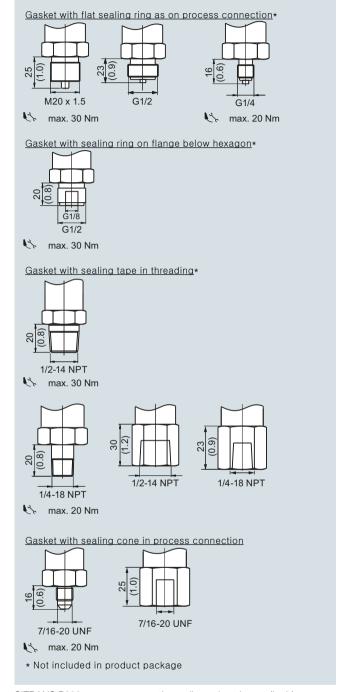
Pressure transmitters
Single-range transmitters for general applications

# SITRANS P200 for gauge and absolute pressure

# Dimensional drawings



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



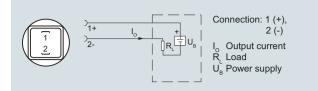
SITRANS P200, process connections, dimensions in mm (inch)

Pressure transmitters

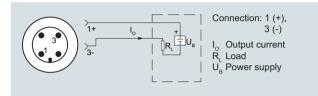
Single-range transmitters for general applications

# SITRANS P200 for gauge and absolute pressure

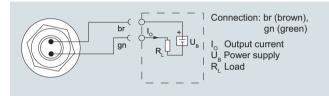
# Schematics



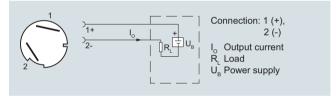
Connection with current output and connector per EN 175301



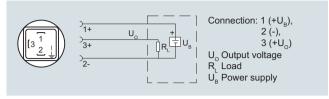
Connection with current output and device plug M12x1



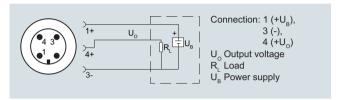
Connection with current output and cable



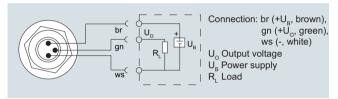
Connection with current output and Quickon cable quick screw connection



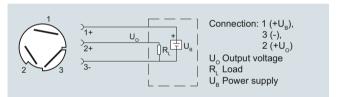
Connection with voltage output, ratiometric output and plug according to EN 175301



Connection with voltage output, ratiometric output and device plug M12x1



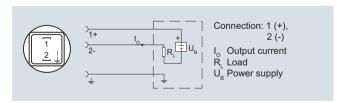
Connection with voltage output, ratiometric output and cable



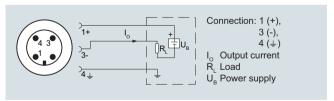
Connection with voltage output, ratiometric output and Quickon fast cable termination

## 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 current output and device plug M12x1 (Ex)

Pressure transmitters

Single-range transmitters for general applications

## 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 device plug M12 (IP67), a cable (IP67) or a Quickon cable quick screw connection (IP67) connected electrically. The output signal is between 4 and 20 mA or 0 and 10 V.

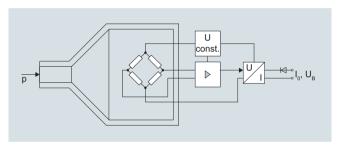
## Device structure with explosion protection

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

Single-range transmitters for general applications

# SITRANS P210 for gauge pressure

Application		Design	
Gauge measurement	Liquids, gases and vapors	Weight	Approx. 0.090 kg (0.198 lb)
Mode of operation		Process connections	See dimension drawings
Measuring principle  Measured variable	Piezoresistive measuring cell (stainless steel diaphragm)	Electrical connections	• Connector per EN 175301-803-A Form A wit cable inlet M16x1.5 or ½-14 N
	Gauge pressure		or Pg 11
Inputs			Device plug M12     Out (0.5 2)
Measuring range	100		• 2 or 3-wire (0.5 mm <sup>2</sup> ) cable (Ø ± 5.4 mm)
Gauge pressure	100 600 mbar (1.5 8.7 psi)		Quickon cable quick screw of nection
Output		Wetted parts materials	
Current signal	4 20 mA	Measuring cell	Stainless steel, matNo. 1.443
• Load	(U <sub>B</sub> - 10 V)/0.02 A	Process connection	Stainless steel, mat. No. 1.440
<ul> <li>Auxiliary power U<sub>B</sub></li> </ul>	DC 7 33 V (10 30 V for Ex)	- 1 Tocess connection	(SST 316 L)
Voltage signal	0 10 V DC	Gasket	• FPM (Standard)
• Load	≥ 10 kΩ		<ul> <li>Neoprene</li> </ul>
Auxiliary power U <sub>B</sub>	12 33 V DC		Perbunan
Power consumption	$< 7$ mA at 10 k $\Omega$		• EPDM
Ratiometric output	0 90 %	Non-wetted parts materials	
• Load	≥ 10 kΩ	• Enclosure	Stainless steel, mat. No. 1.440
Auxiliary power U <sub>B</sub>	5 V DC ± 10 %	- David	(SST 316 L)
Power consumption	$< 7$ mA at 10 k $\Omega$	• Rack	Plastic
Characteristic curve	Linear rising	• cables	PVC
Measuring accuracy	T	Certificates and approvals	
Error in measurement at limit setting incl. hysteresis and reproducibility	<ul><li>Typical: 0.25 % of measuring span</li><li>Maximum: 0.5 % of measuring span</li></ul>	Classification according to pressure equipment directive (PED 2014/68/EU)	For gases of fluid group 1 and uids of fluid group 1; meets requirements as per art 4, paragraph 3 (good engineer
Step response time T <sub>99</sub>	< 5 ms		practice)
Long-term stability		Lloyd's Register of Shipping (LR) <sup>1)</sup>	12/20010
<ul> <li>Lower range value and measuring span</li> </ul>	0.25 % of measuring span/year	Germanischer Lloyd (GL) <sup>1)</sup> American Bureau of Shipping (ABS) <sup>1)</sup>	GL19740 11 HH00 ABS_11_HG 789392_PDA
Influence of ambient temperature			DV 07400740 DV
<ul> <li>Lower range value and measuring span</li> </ul>	• 0.25 %/10 K of measuring span	Bureau Veritas (BV) <sup>1)</sup>	BV 271007A0 BV
Spair	<ul> <li>0.5 %/10K of measuring span for a measuring range</li> </ul>	Det Norske Veritas (DNV) <sup>1)</sup>	A 12553
	100 400 mbar	Drinking water approval (ACS) <sup>1)</sup>	ACS 15 ACC NY 360
<ul> <li>Influence of power supply</li> </ul>	0.005 %/V	EAC <sup>1)</sup>	№ TC RU C-DE.ГБ05.В.0073 ОС НАНИО «ЦСВЭ»
Conditions of use		Underwriters Laboratories (UL) <sup>1)</sup>	•
Process temperature with gasket made of:		• for USA and Canada	UL 20110217 - E34453
• FPM (Standard)	-15 +125 °C (+5 +257 °F)	<ul><li>worldwide</li></ul>	IEC UL DK 21845
Neoprene	-35 +100 °C (-31 +212 °F)	Explosion protection	
Perbunan	-20 +100 °C (-4 +212 °F)	Intrinsic safety "i"	Ex II 1/2 G Ex ia IIC T4 Ga/Gb
• EPDM	-40 +125 °C (-40 +257 °F), usable for drinking water	(only with current output)	Ex II 1/2 D Ex ia IIIC T125 °C Da/Db
Ambient temperature	-25 +85 °C (-13 +185 °F)	EC type-examination certificate	SEV 10 ATEX 0146
Storage temperature	-50 +100 °C (-58 +212 °F)	Connection to certified intrinsically-	$U_i \le 30 \text{ V DC}$ ; $I_i \le 100 \text{ mA}$ ;
Degree of protection (to EN 60529)	• IP 65 with connector per EN 175301-803-A	safe resistive circuits with maxi- mum values:	$P_i \le 0.75 \text{ W}$
	<ul><li>IP 67 with device plug M12</li><li>IP 67 with cable</li><li>IP 67 with cable quick screw</li></ul>	Effective internal inductance and capacity for versions with plugs per EN 175301-803-A and M12	$L_i = 0 \text{ nH}; C_i = 0 \text{ nF}$
Electromagnetic compatibility	connection  • acc. IEC 61326-1/-2/-3  • acc. NAMLIB NE21, only for	<ol> <li>For variants with output signal 0 5 soon.</li> </ol>	5 V and ratiometric output available

• acc. NAMUR NE21, only for ATEX versions and with a max. measuring deviation ≤ 1 %

upright

Mounting position

Pressure transmitters

Single-range transmitters for general applications

# SITRANS P210 for gauge pressure

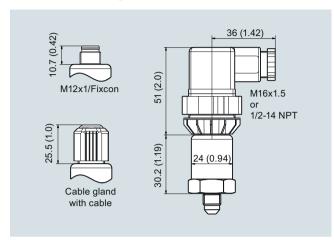
Selection and ordering dat	ta			Article No.	Orde	er code
SITRANS P 210 pressure to Accuracy typ. 0.25 % Wetted parts materials: Stair Non-wetted parts materials:	nless steel + sealing materi	·	pplications	7MF1566-		•••
✓ Click on the Article No. for the Articl		n the PIA Life Cycle Portal				
Measuring range	Overload limit	raio i in Elio Oyolo i ortal	Burst pressure			
	min.	max.	Janes process			
For gauge pressure				_		
0100 mbar (1.45 psi) 0160 mbar (2.32 psi) 0250 mbar (3.63 psi) 0400 mbar (5.8 psi) 0600 mbar (8.7 psi) Other version, add Order co	-400 mbar (-5.8 psi) -400 mbar (-5.8 psi) -800 mbar (-11.6 psi) -800 mbar (-11.6 psi) -1000 mbar (-14.5 psi) ode and plain text:	400 mbar (5.8 psi) 400 mbar (5.8 psi) 1000 mbar (14.5 psi) 1000 mbar (14.5 psi) 2000 mbar (29.0 psi)	1 bar (14.5 psi) 1 bar (14.5 psi) 2 bar (29.0 psi) 2 bar (29.0 psi) 3 bar (43.5 psi)	3 A A 3 A E 3 A C 3 A C 9 A A	3 C C C	H 1 Y
Measuring range: up to	. mbar (psi)			_		
Output signal						
4 20 mA; two-wire system 0 10 V; three-wire system; 0 5 V; 3-wire system; auxil Ratiometric 10 90 %; 3-wi	; power supply 12 33 V D liary power 7 33 V DC	OC`	(versions)		0 1 0 2 0 3 0	
Explosion protection (only	4 20 mA)					
None With explosion protection Ex	( ia IIC T4				0	
Electrical connection						
Connection via fixed mounted Quickon cable quick screw Connector per DIN EN 1753 Connector per DIN EN 1753 Fixed mounted cable, length Special version	connection PG9 (not for typ 801-803-A, stuffing box threa 801-803-A, stuffing box threa	ne of protection "Intrinsic s ad 1/2"-14 NPT (with coup	afety i")		0 3 0 4 5 6 0 7	N1Y
Process connection				_		
G½" male per EN 837-1 (½" G½" male thread and G1/8" G¼" male per EN 837-1 (¼" 7/16"-20 UNF male	female thread	etric pressure ranges mba	ar, bar)		A B C D	
1/4"-18 NPT male (standard for 1/4"-18 NPT female 1/2"-14 NPT male 1/2"-14 NPT female 1/16"-20 UNF female 1/20" to DIN 3852 Form E 1/1/2" to DIN 3852 Form E	or pressure ranges inH <sub>2</sub> O a	nd psi)			E F G H J P Q R	
Special version					z	P 1 Y
Sealing material between s	sensor and enclosure					
Viton (FPM, standard) Neoprene (CR) Perbunan (NBR) EPDM Special version					A B C D	Q1Y
Version						
Standard version					1	
Further designs						
Supplement the Article No. v						
Quality Inspection Certificate (	(5-point characteristic curve t	est) according to IEC 60770	0-2	C11		

1/14

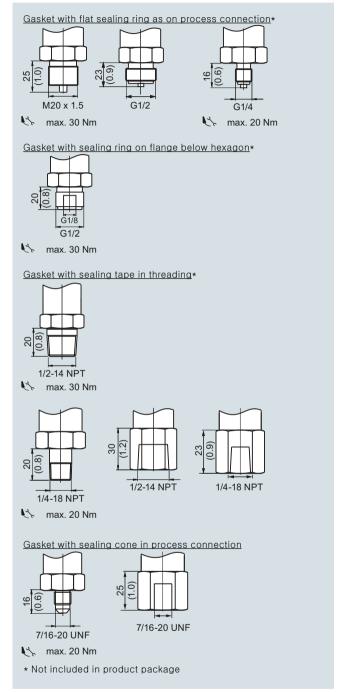
Pressure transmitters Single-range transmitters for general applications

SITRANS P210 for gauge pressure

# Dimensional drawings



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



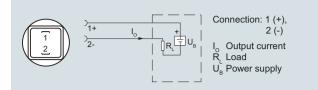
SITRANS P210, process connections, dimensions in mm (inch)

Pressure transmitters

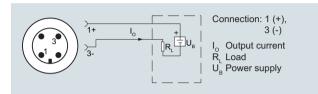
Single-range transmitters for general applications

# SITRANS P210 for gauge pressure

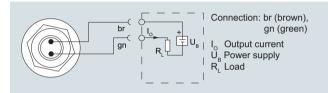
## Schematics



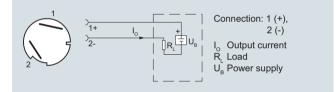
Connection with current output and connector per EN 175301



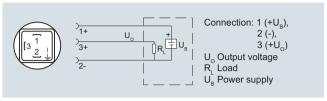
Connection with current output and device plug M12x1



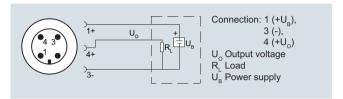
Connection with current output and cable



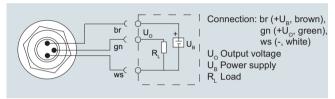
Connection with current output and Quickon cable quick screw connection



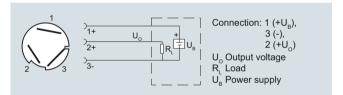
Connection with voltage output, ratiometric output and plug according to EN 175301



Connection with voltage output, ratiometric output and device plug M12x1



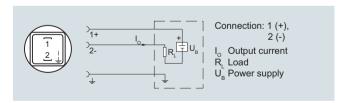
Connection with voltage output, ratiometric output and cable



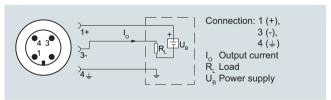
Connection with voltage output, ratiometric output and Quickon fast cable termination

# 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 current output and device plug M12x1 (Ex)

Pressure transmitters

Single-range transmitters for general applications

# 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 1000 bar (36.3 to 14500 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 device plug M12 (IP67), a cable (IP67) or a Quickon cable quick screw connection (IP67) connected electrically. The output signal is between 4 and 20 mA or 0 and 10 V.

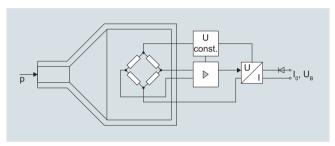
## Device structure with explosion protection

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

#### Function

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

#### Mode of operation



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

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

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

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

Pressure transmitters

Single-range transmitters for general applications

# SITRANS P220 for gauge pressure

Table to the transfer of the transfer of			
Technical specifications		Decima	
Application		<b>Design</b> Wordst	Approx 0.000 kg (0.100 lb)
Gauge pressure measurement	Liquids, gases and vapors	Weight Process connections	Approx. 0.090 kg (0.198 lb)
Mode of operation		Process connections Electrical connections	See dimension drawings  • Connector per
Measuring principle	Piezoresistive measuring cell (stainless steel diaphragm)	Electrical connections	EN 175301-803-A Form A with cable inlet M16x1.5 or ½-14 NP
Measured variable	Gauge pressure		or Pg 11 • Device plug M12
Inputs			• 2 or 3-wire (0.5 mm <sup>2</sup> )
Measuring range			cable ( $\varnothing \pm 5.4 \text{ mm}$ )
Gauge pressure			Quickon cable quick screw cor
- Metric	2.5 1000 bar (36 14500 psi)	Matta di parta matariala	nection
- US measuring range	30 14500 psi	Wetted parts materials  • Measuring cell	Stainless steel, matNo. 1.4016
Output		Process connection	Stainless steel, mat. No. 1.4404
Current signal	4 20 mA	Trocess connection	(SST 316 L)
• Load	(U <sub>B</sub> - 10 V)/0.02 A	Non-wetted parts materials	
	DC 7 33 V (10 30 V for Ex)	• Enclosure	Stainless steel, mat. No. 1.4404
Auxiliary power U <sub>B</sub>	, , , , , , , , , , , , , , , , , , ,		(SST 316 L)
Voltage signal	0 10 V DC	• Rack	Plastic
• Load	≥ 10 kΩ	• cables	PVC
<ul> <li>Auxiliary power U<sub>B</sub></li> </ul>	12 33 V DC	Certificates and approvals	- (a 4 III
<ul> <li>Power consumption</li> </ul>	$<$ 7 mA at 10 k $\Omega$	Classification according to pressure equipment directive	For gases of fluid group 1 and licuids of fluid group 1; complies
Ratiometric output	0 90 %	(PED 2014/68/EU)	with requirements of article 4,
• Load	≥ 10 kΩ		paragraph 3 (sound engineering practice)
<ul> <li>Auxiliary power U<sub>B</sub></li> </ul>	5 V DC ± 10 %	Lloyd's Register of Shipping (LR) <sup>1)</sup>	12/20010
<ul> <li>Power consumption</li> </ul>	$<$ 7 mA at 10 k $\Omega$	Germanischer Lloyd (GL) <sup>1)</sup>	GL19740 11 HH00
Characteristic curve	Linear rising	American Bureau of Shipping	ABS_11_HG 789392_PDA
Measuring accuracy		(ABS) <sup>1)</sup>	
Error in measurement at limit setting	• Typical: 0.25 % of measuring	Bureau Veritas (BV) <sup>1)</sup>	BV 271007A0 BV
incl. hysteresis and reproducibility	span	Det Norske Veritas (DNV) <sup>1)</sup>	A 12553
Q	Maximum: 0.5 % of measuring span	Drinking water approval (ACS) <sup>1)</sup> EAC <sup>1)</sup>	ACS 15 ACC NY 360 № TC RU C-DE.ГБ05.В.00732 ОС НАНИО «ЦСВЭ»
Step response time T <sub>99</sub>	< 5 ms	CRN <sup>2)</sup>	0F18659.5C
Long-term stability		Underwriters Laboratories (UL) <sup>1)</sup>	01 10000.00
<ul> <li>Lower range value and measuring span</li> </ul>	0.25 % of measuring span/year	• for USA and Canada	UL 20110217 - E34453
Influence of ambient temperature		• worldwide	IEC UL DK 21845
<ul> <li>Lower range value and measuring span</li> </ul>	0.25 %/10 K of measuring span	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
Influence of power supply	0.005 %/V	(only man dunone datput)	T125 °C Da/Db
Conditions of use		EC type-examination certificate	SEV 10 ATEX 0146
<ul> <li>Process temperature</li> </ul>	-40 +120 °C (-40 +248 °F)	Connection to certified intrinsically-	$U_i \le 30 \text{ V DC}; I_i \le 100 \text{ mA};$
<ul> <li>Ambient temperature</li> </ul>	-25 +85 °C (-13 +185 °F)	safe resistive circuits with maxi- mum values:	$P_i \le 0.75 \text{ W}$
Storage temperature	-50 +100 °C (-58 +212 °F)	Effective internal inductance and	$L_i = 0 \text{ nH}; C_i = 0 \text{ nF}$
Degree of protection (to EN 60529)	<ul> <li>IP 65 with connector per EN 175301-803-A</li> </ul>	capacity for versions with plugs per EN 175301-803-A and M12	1 2 721 2
	• IP 67 with device plug M12	CSA <sup>2)</sup>	70006348
	<ul><li>IP 67 with cable</li><li>IP 67 with cable quick screw connection</li></ul>		Class I, Division I, Groups A, B, C and D; Class II, Division 1,
Electromagnetic compatibility	• acc. IEC 61326-1/-2/-3		Groups E, F and G, Class III
Licetion agricus compatibility	• acc. NAMUR NE21, only for		Class I, Division 2,
	ATEX versions and with a max.		Groups A, B, C and D;
	measuring deviation ≤ 1 %		Class II, Division 2, Groups F and G,
			Class III
			A/Ex ia IIC T4 Ga/Gb
			A/Ex ia IIIC T125°C Da/Db

 $<sup>^{1)}\,\,</sup>$  For variants with output signal 0 ... 5 V and ratiometric output available soon.  $^{2)}\,\,$  See ordering data for available versions.

Pressure transmitters

Single-range transmitters for general applications

# SITRANS P220 for gauge pressure

	ordering data								Article No.	Order	CO
SITRANS P 22 applications.	20 pressure trans fully-welded versi	mitters f ion	or gauge pre	ssure, hig	h-pressure a	nd refriger	ation		7MF1567-	A	
Accuracy typ.	0.25 %										
Wetted parts r	naterials: stainless	steel									
Non-wetted pa	arts materials: stain	less stee	·								
	e Article No. for the	online c	onfiguration in	n the PIA L	ife Cycle Porta	al.					
Measuring ra	nge	Overlo	ad limit			Burst pre	essure				
		Mini-		Max.							
For gauge pre	ecura	mum							-		
0 2.5 bar	(0 36.3 psi)	-1 bar	(-14.5 psi)	6.25 bar	(90.7 psi)	25 bar	(363 psi)		3 B D		
0 4 bar	(0 58 psi)	-1 bar	(-14.5 psi)	10 bar	(145 psi)	40 bar	(870 psi)		3 B E		
0 6 bar	(0 87 psi)	-1 bar	(-14.5 psi)	15 bar	(217 psi)	60 bar	(522 psi)		3 B G		
0 10 bar	(0 145 psi)	-1 bar	(-14.5 psi)	25 bar	(362 psi)	60 bar	(870 psi)		3 C A		
0 16 bar	(0 232 psi)	-1 bar	(-14.5 psi)	40 bar	(580 psi)	96 bar	(1392 psi)		3 C B		
0 25 bar	(0 363 psi)	-1 bar	(-14.5 psi)	62.5 bar	(906 psi)	150 bar	(2176 psi)		3 C D		
0 40 bar	(0 580 psi)	-1 bar	(-14.5 psi)	100 bar	(1450 psi)	240 bar	(3481 psi)		3 C E		
0 60 bar	(0 870 psi)	-1 bar	(-14.5 psi)	150 bar	(2175 psi)	360 bar	(5221 psi)		3 C G		
0 100 bar	(0 1450 psi)	-1 bar	(-14.5 psi)	250 bar	(3625 psi)	600 bar	(8702 psi)		3 D A		
0 160 bar	(0 2320 psi)	-1 bar	(-14.5 psi)	400 bar	(5801 psi)	960 bar	(13924 psi)		3 D B		
0 250 bar	(0 3625 psi)	-1 bar	(-14.5 psi)	625 bar	(9064 psi)		(21756 psi)		3 D D		
0 400 bar 0 600 bar	(0 5801 psi)	-1 bar	(-14.5 psi)	1000 bar 1500 bar	· ' '		(34809 psi)		3 D E		
0 600 bar 0 1000 bar	(0 8702 psi) (0 14500 psi)	-1 bar -1 bar	(-14.5 psi) (-14.5 psi)	1500 bar	· ' '		(52200 psi) (72520 psi)		3 D G 3 E A		
				1000 Dai	(21,00 pai)	COOO Dal	(12020 poi)				н
	add Order code a ge: up to bar (		IEXI.						9 A A		
	nges for gauge pr										
	0 30 psi		-14.5 psi		75 psi		360 psi	*	4 B E		
	0 60 psi		-14.5 psi		150 psi		580 psi	*	4 B F		
	0 100 psi		-14.5 psi		250 psi		580 psi	*	4 B G		
	0 150 psi		-14.5 psi		375 psi		870 psi	*	4 C A		
	0 200 psi		-14.5 psi		500 psi		1390 psi	*	4 C B		
	0 300 psi		-14.5 psi		750 psi		2170 psi	*	4 C D		
	0 500 psi 0 750 psi		-14.5 psi -14.5 psi		1250 psi 1875 psi		3481 psi 5220 psi	*	4 C E 4 C F		
	0 750 psi		-14.5 psi -14.5 psi		2500 psi		5220 psi 5220 psi	*	4 C F		
	0 1500 psi		-14.5 psi -14.5 psi		3750 psi		8700 psi	*	4 D A		
	0 2000 psi		-14.5 psi		5000 psi		13920 psi	*	4 D B		
	0 3000 psi		-14.5 psi -14.5 psi		7500 psi		21750 psi	*	4 D D		
	0 5000 psi		-14.5 psi		12500 psi		34800 psi	*	4 D E		
	0 6000 psi		-14.5 psi		15000 psi		34800 psi	*	4 D F		
	0 8700 psi		-14.5 psi		21755 psi		52200 psi	*	4 D G		
	0 14500 psi		-14.5 psi		21755 psi		72520 psi		4 E A		
,	add Order code a	nd plain	text: Measurir	ng range: .	up to psi	•			9 A A		Н.
Output signal											
	o-wire system; pov				V DC for ATE	X versions)			0		
	e-wire system; pow			OC .					1 0		
,	e system; auxiliary			5 V DC : 1	IO 9/				20		
	90 %; 3-wire sy		Ailial y power	2 1 DC ± 1	10 /0				3 0		
•	nection (only 4	ZU INA)									
None With avalonian	protoction Fig. 1	C T 4							0		
•	protection Ex ia II	U 14							1		
Electrical con		00 4 1	Min or least 11	ad N440 /	ith against '			_			
	DIN EN 175301-8		TIING box thre	aa M16 (w	ith coupling)			*		1	
	I12 per IEC 61076- a fixed mounted ca		(not for type	of protection	n "Intrincia ca	fetv i")			0	3	
	a lixed mounted ca e quick screw conn								0	4	
	DIN EN 175301-8							*	U U	5	
	DIN EN 175301-8		•		•	. 0,		*		6	
	d cable, length 5 m		J	(	9)						
-ixed mounted	i cable, lengin 3 m								0	7	

ullet Order code E21 required for complete configuration with CRN and  $_{
m c}$ CSA $_{
m us}$  Ex approval.

Pressure transmitters

Single-range transmitters for general applications

ullet Order code E21 required for complete configuration with CRN and CSA as Ex approval..

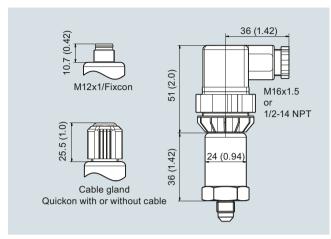
# SITRANS P220 for gauge pressure

Selection and ordering data		Article No.	Or	der code
SITRANS P 220 pressure transmitters for gauge pressure, high-pressure and refrigeration applications, fully-welded version Accuracy typ. 0.25 %		7MF1567-	A	
Wetted parts materials: stainless steel				
Non-wetted parts materials: stainless steel				
Process connection				
G½" male per EN 837-1 (½" BSP male) (standard for metric pressure ranges mbar, bar) $G$ ½" male thread and G1/8" female thread $G$ ¼" male per EN 837-1 (¼" BSP male) 7/16"-20 UNF male			A B C D	
$4$ "-18 NPT male (standard for pressure ranges inH $_2$ O and psi) $4$ "-18 NPT female $2$ "-14 NPT male $2$ "-14 NPT female (Only for measuring ranges ≤ 60 bar (870 psi)) 7/16"-20 UNF female M20x1.5 male G1/4" to DIN 3852 Form E G1/2" to DIN 3852 Form E	*		E F G H J P Q R	
Special version			Z	P 1 Y
Version Standard version	*			1
Further designs				
Supplement the Article No. with "-Z" and add Order code.				
Quality Inspection Certificate (5-point characteristic curve test) according to IEC 60770-2 (not possible for measuring ranges > 0 600 bar/0 8 702 psi)		C11		
Oxygen version, free of oil and degreased (not in conjunction with explosion protection version)		E10		
With CRN and $_{\rm c}{\rm CSA_{us}}$ Ex approval (only for measuring ranges 0 30 psi bis 0 8 700 psi)		E21		

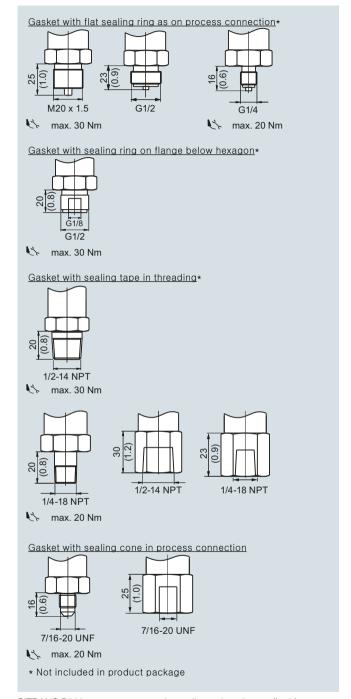
Pressure transmitters Single-range transmitters for general applications

SITRANS P220 for gauge pressure

# Dimensional drawings



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



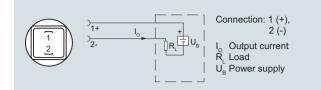
SITRANS P220, process connections, dimensions in mm (inch)

Pressure transmitters

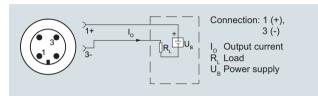
Single-range transmitters for general applications

# **SITRANS P220 for gauge pressure**

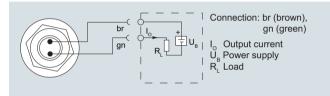
## Schematics



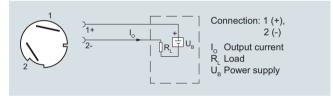
Connection with current output and connector per EN 175301



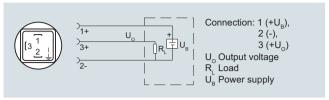
Connection with current output and device plug M12x1



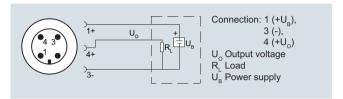
Connection with current output and cable



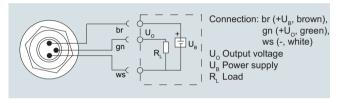
Connection with current output and cable quick screw connection Quick-on



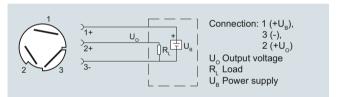
Connection with voltage output, ratiometric output and plug according to EN 175301



Connection with voltage output, ratiometric output and device plug M12x1



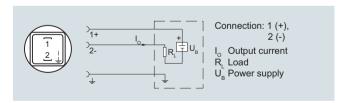
Connection with voltage output, ratiometric output and cable



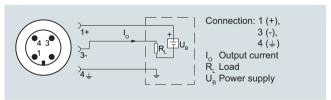
Connection with voltage output, ratiometric output and Quickon fast cable termination

# 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 current output and device plug M12x1 (Ex)

Pressure transmitters

Single-range transmitters for general applications

# SITRANS LH100 Transmitter for hydrostatic level

# Overview



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

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

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

#### Benefits

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

## Application

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

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

#### Design

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

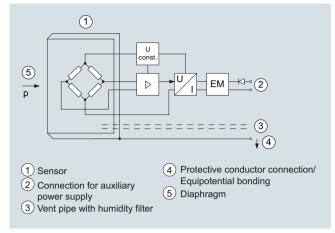
These pressure transmitters are equipped with an electronic circuit fitted together with the sensor in a stainless steel housing. In addition, the connecting cable contains a vent pipe which is equipped with a humidity filter to prevent the build-up of condensation

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

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

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

# Function



SITRANS LH100 pressure transmitter, mode of operation and connection diagram

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

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

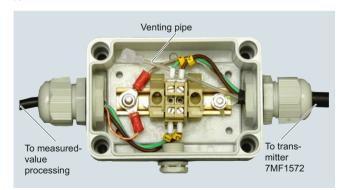
The output voltage of the sensor is applied to the electronic circuit where it is converted into an output current of 4 to 20 mA.

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

#### Integration

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

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



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

Pressure transmitters

Single-range transmitters for general applications

# SITRANS LH100 Transmitter for hydrostatic level



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

# Technical specifications

·	
Pressure transmitter SITRANS LH10	0 (submersible sensor)
Mode of operation	
Measuring principle	piezo-resistive
Input	
Measured variable	Hydrostatic level
Measuring range	Max. permissible operating pressure
• 0 3 mH <sub>2</sub> O (0 9 ftH <sub>2</sub> O)	• 1.5 bar (21.8 psi) (corresponds to 15 mH <sub>2</sub> O (45 ftH <sub>2</sub> O))
• 0 4 mH <sub>2</sub> O (0 12 ftH <sub>2</sub> O)	• 1.5 bar (21.8 psi) (corresponds to 15 mH <sub>2</sub> O (45 ftH <sub>2</sub> O))
• 0 5 mH <sub>2</sub> O (0 15 ftH <sub>2</sub> O)	<ul> <li>1.5 bar (21.8 psi) (corresponds to 15 mH<sub>2</sub>O (45 ftH<sub>2</sub>O))</li> </ul>
• 0 6 mH <sub>2</sub> O (0 18 ftH <sub>2</sub> O)	<ul> <li>1.5 bar (21.8 psi) (corresponds to 15 mH<sub>2</sub>O (45 ftH<sub>2</sub>O))</li> </ul>
• 0 10 mH <sub>2</sub> O (0 30 ftH <sub>2</sub> O)	<ul> <li>3.0 bar (43.5 psi) (corresponds to 30 mH2O (90 ftH<sub>2</sub>O))</li> </ul>
• 0 20 mH <sub>2</sub> O (0 60 ftH <sub>2</sub> O)	<ul> <li>5.0 bar (72.5 psi) (corresponds to 50 mH<sub>2</sub>O (150 ftH<sub>2</sub>O))</li> </ul>
• 0 0.3 bar	• 1.5 bar
0 0.4 bar	• 1.5 bar
• 0 0.5 bar	• 1.5 bar
• 0 0.6 bar	• 1.5 bar
• 0 1 bar • 0 2 bar	• 3.0 bar • 5.0 bar
	- 3.0 bai
Output	
Output signal	4 20 mA
Measuring accuracy	According to IEC 60770-1
Error in measurement at limit setting ncluding hysteresis and reproducibil- ty	0.3% of full-scale value (typical)
Measuring range	
0 3 mH <sub>2</sub> O (0 9 ftH <sub>2</sub> O bzw. 0 0.3 bar)	0.5 % of full-scale value (typical) 1.0% of full-scale value (maximum)
For all other measuring ranges	0.3 % of full-scale value (typical)
Tor all other measuring ranges	0.6% of full-scale value (maximum)
Influence of ambient temperature	
Measuring range	Zero and span
<ul> <li>3 mH<sub>2</sub>O (9 ftH<sub>2</sub>O or 0.3 bar)</li> </ul>	0.5 %/10 K of full-scale value
• 4 6 mH <sub>2</sub> O	0.45 %/10 K of full-scale value
(12 18 ftH <sub>2</sub> O or 0.40.6 bar)	
<ul> <li>&gt; 6 mH<sub>2</sub>O</li> <li>( &gt; 18 ftH<sub>2</sub>O or &gt; 0.6 bar)</li> </ul>	0.3 %/10 K of full-scale value
Long-term stability	7
Measuring range	Zero and span
• 3 mH <sub>2</sub> O (9 ftH <sub>2</sub> O or 0.3 bar)	0.4 % of full-scale value/year
<ul> <li>4 6 mH<sub>2</sub>O         (12 18 ftH<sub>2</sub>O or 0.40.6 bar)     </li> </ul>	0.25% of full-scale value/year
<ul> <li>&gt; 6 mH<sub>2</sub>O</li> </ul>	0.2 % of full-scale value/year
( > 18 ftH <sub>2</sub> O or > 0.6 bar)	
Rated conditions	
Ambient conditions	10 00 00 (14 170 07)
Process temperature     Stars as temperature	-10 +80 °C (14 176 °F)
Storage temperature	-40 +80 °C (-40 +176 °F)
Degree of protection according to IEC 60529	IP68
120 00020	

Pressure transmitters

# Single-range transmitters for general applications

# SITRANS LH100 Transmitter for hydrostatic level

-	
Design	
Weight	
<ul> <li>Pressure transmitter</li> </ul>	≈ 0.2 kg ( ≈ 0.44 lb)
Cable; maximum cable length 100 m (330 ft)	0.025 kg/m (≈ 0.015 lb/ft)
Electrical connection	Cable with 3 conductors, vent pipe and integrated humidity filter
Material	
<ul> <li>Seal diaphragm</li> </ul>	Al <sub>2</sub> O <sub>3</sub> ceramic, 96%
• Enclosure	Stainless steel, mat. no. 1.4404/316L
Gasket	FPM (standard)
O constitution and the	EPDM (optional)
Connecting cable	PE-HD (standard)
	PE-LD (in the case of versions with EPDM seal, suitable for drinking water)
Auxiliary power	
Terminal voltage on pressure transmit-	10 33 V DC
ter U <sub>B</sub>	10 30 V DC for transmitter with intrinsic safety explosion protection
Certificates and approvals	
Drinking water approval (ACS)	15 ACC NY 360
EAC	№ TC RU C-DE.ГБ05.В.00732 ОС НАНИО «ЦСВЭ»
Underwriters Laboratories (UL)	2014-11-17 - E344532
The transmitter is not subject to the pressure equipment directive (PED 2014/68/EU)	
Explosion protection	
Intrinsic safety "i"	IECEx SEV 14.0003
	SEV 14 ATEX 0109
- Marking	II 1 G Ex ia IIC T4 Ga
• EAC Ex	TC RU C-DE.AA87.B.00324

	•
Junction box	
Application	for connecting the transmitter cable
Design	
Weight	0.2 kg (0.44 lb)
Electrical connection	2 x 3-way (28 to 18 AWG)
Cable entry	2 x Pg 9
Enclosure material	polycarbonate
Vent pipe for atmospheric pressure	
Rated conditions	
Degree of protection according to IEC 60529	IP65
Cable hanger	
Application	for mounting the transmitter
Design	
Weight	0.16 kg (0.35 lb)
Material	Galvanized steel, polyamide

Pressure transmitters

Single-range transmitters for general applications

# SITRANS LH100 Transmitter for hydrostatic level

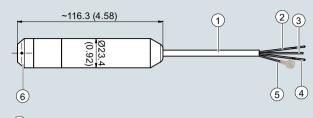
SITRANS LH100 Transmitter for	hydrostatic level			
Selection and ordering data	Article No. Orde	r code	Selection and ordering data	Article No. Order code
Pressure transmitter SITRANS LH100 (submersible sensor)	7MF1572-		Pressure transmitter SITRANS LH100 (submersible sensor)	7 M F 1 5 7 2 A A A A A A A A A A A A A A A A A
For measurement of the hydrostatic level through submersion, two-wire system, 420 mA, enclosure material mat. no. 1.4404 (316L), measuring cell Al <sub>2</sub> O <sub>3</sub> ceramic, with permanently mounted PE cable  7 Click on the Article No. for the online			For measurement of the hydrostatic level through submersion, two-wire system, 420 mA, enclosure material mat. no. 1.4404 (316L), measuring cell Al <sub>2</sub> O <sub>3</sub> ceramic, with permanently mounted PE cable  Sealing material between sensor and	
configuration in the PIA Life Cycle Portal.		Ш	enclosure • FPM (Standard)	1
Measuring range Cable length			<ul> <li>EPDM (for drinking water applica-</li> </ul>	2
0 3 mH <sub>2</sub> O <sup>1)</sup> 10 m 0 4 mH <sub>2</sub> O 10 m	1 C 1 D		tions) Explosion protection	_
0 5 mH <sub>2</sub> O 10 m	1 E		• without	0
0 6 mH <sub>2</sub> O 10 m	1 F		With ATEX II1 G Ex ia IIC T4 Ga and	1
0 10 mH <sub>2</sub> O 20 m	1 H		IECEx Ex ia IIC T4 Ga	
0 20 mH <sub>2</sub> O 30 m	1 K		Additional versions	Order code
0 9 ftH <sub>2</sub> O <sup>1)</sup> 33 ft 0 12 ftH <sub>2</sub> O 33 ft	2 C 2 D		Quality Inspection Certificate (5-point characteristic curve test) according to	C11
0 15 ftH <sub>2</sub> O 33 ft	2 E		IEC 60770-2, add "-Z" to article no. and	
0 18 ftH <sub>2</sub> O 33 ft	2 F		add order code.	
0 30 ftH <sub>2</sub> O 66 ft 0 60 ftH <sub>2</sub> O 98 ft	2 H 2 K		Indication of measuring range (only at special cable lengths) in	Y01
0 60 ftH <sub>2</sub> O 98 ft 0 0.3 bar <sup>1)</sup> 10 m	3 C		" to mH <sub>2</sub> O" or " to ftH <sub>2</sub> O"	
0 0.3 bar 10 m	3 D		or " to bar"	A 12 1 A1
0 0.5 bar 10 m	3 E		Accessories/spare parts	Article No.
0 0.6 bar 10 m	3 F		Junction box for connecting the transmitter cable	7MF1572-8AA
0 1 bar 20 m 0 2 bar 30 m	3 H 3 K		, and the second	
Special versions: Measuring ranges for special versions	on l	Ш	Cable hanger for securing the pressure transmitter	7MF1572-8AB
between 0 3 mH <sub>2</sub> O and 0 30 mH <sub>2</sub> O or		Ш	Protective caps as spare parts (10-pack)	7MF1572-8AD
0 9 ftH $_2$ O and 0 100 ftH $_2$ O or 0 0.3 bar and 0 3 bar possible.		Ш	Humidity filters as spare parts (10-pack)	7MF1572-8AE
Special cable lenght/Special measuring range Please add "-Z" to Article No. and specify Order code and plain text. Note: Indication of measuring range Y01 is always necessary.	9 A	H + Y 0 1	1) Approvals pending.	
For evaluation of the maximum possible cable length following data have to be regarded:				
The maximum permitted data of the transmitter's power supply have to be considered!		Ш		
3 m (10 ft) 5 m (16 ft) 7 m (23 ft) 10 m (33 ft) 15 m (49 ft) 20 m (66 ft) 25 m (82 ft) 30 m (98 ft) 40 m (131 ft) 50 m (164 ft) 60 m (198 ft) <sup>1)</sup> 70 m (231 ft) <sup>1)</sup> 80 m (264 ft) <sup>1)</sup>		H1A H1B H1C H1D H1E H1F H1G H1H H1J H1K H1L		
90 m (297 ft) <sup>1)</sup> 100 m (330 ft) <sup>1)</sup>		H1P H1Q		

Pressure transmitters

Single-range transmitters for general applications

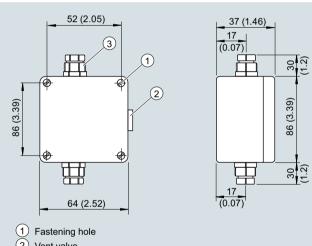
# SITRANS LH100 Transmitter for hydrostatic level

# Dimensional drawings



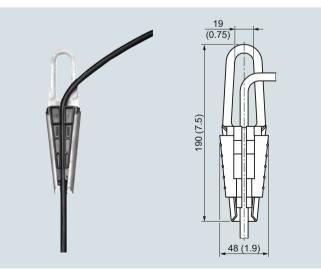
- 1) Cable, sheat Ø 4.8 (0.19) (black, PE)
- 2 (green)
- (3) + (brown)
- 4 Protective conductor connection/Equipotential bonding (white)
- (5) Vent pipe with humidity filter Ø 1 (0.04) (inner diameter)
- 6 Protective cap with 4 x Ø 2.5 (0.10) holes (black, PPE)

SITRANS LH100 pressure transmitter, dimensions in mm (inch)



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

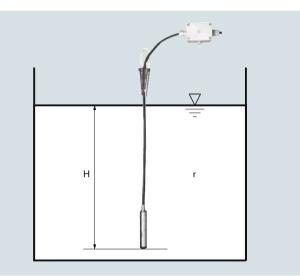
Junction box, dimensions in mm (inch)



Cable hanger, dimensions in mm (inch)

# More information

#### Establishing the measuring range for water as process medium



## Calculation of the measuring range:

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

#### with:

 $\rho$  = density of medium

g = local acceleration due to gravity

H = maximum level

### Example:

Medium: Water,  $\rho = 1000 \text{ kg/m}^3$ Acceleration due to gravity: 9.81 m/s<sup>2</sup>

Start-of-scale: 0 m Maximum level: 6.0 m Cable length: 10 m

## Calculation:

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

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

p = 589 mbar

## Transmitter to be ordered:

### 7MF1572-1FA10

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

Pressure transmitters

Single-range transmitters for general applications

## SITRANS LH300 Transmitter for hydrostatic level

#### Overview



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

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

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

#### Benefits

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

# Application

SITRANS LH300 pressure transmitters are used in the following branches, for example:

- Shipbuilding
- Water/waste water supply
- · Drinking water facilities
- For use in unpressurized/open vessels and wells
- Desalination plants

## Design

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

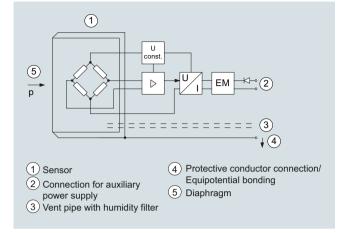
These pressure transmitters are equipped with an electronic circuit fitted together with the sensor in a stainless steel housing. In addition, the connecting cable contains a vent pipe which is equipped with a humidity filter to prevent the build-up of condensation.

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

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

The pressure transmitter is temperature-compensated for a wide temperature range.  $\label{eq:compensated} % \begin{center} \$ 

# Function



SITRANS LH300 pressure transmitter, mode of operation and connection diagram

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

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

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

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

#### Integration

It is generally recommended that the connecting cable of the SITRANS LH300 transmitter is connected to the junction box, which can be ordered separately, and secured with the cable hanger, also available separately. The junction box has to be installed near the measuring point, but outside the media.

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



Junction box 7MF1575-8AA, open, schematic diagram

Pressure transmitters

Single-range transmitters for general applications

# SITRANS LH300 Transmitter for hydrostatic level



Measuring point setup, generally with junction box 7MF1575-8AA and 7MF1575-8AB cable hanger  $\,$ 

# Technical specifications

Mode of operation	0 (submersible sensor)
•	Diago registive
Measuring principle	Piezo-resistive
Input	
Measured variable	Hydrostatic level
Measuring range	Max. permissible operating pressur
• 0 1 mH <sub>2</sub> O (0 3 ftH <sub>2</sub> O)	<ul> <li>1.5 bar (21.8 psi) (corresponds to 15 mH<sub>2</sub>O (45 ftH<sub>2</sub>O))</li> </ul>
• 0 2 mH <sub>2</sub> O (0 6 ftH <sub>2</sub> O)	<ul> <li>1.5 bar (21.8 psi) (corresponds to 15 mH<sub>2</sub>O (45 ftH<sub>2</sub>O))</li> </ul>
• 0 3 mH <sub>2</sub> O (0 9 ftH <sub>2</sub> O)	<ul> <li>1.5 bar (21.8 psi) (corresponds to 15 mH<sub>2</sub>O (45 ftH<sub>2</sub>O))</li> </ul>
• 0 4 mH <sub>2</sub> O (0 12 ftH <sub>2</sub> O)	<ul> <li>2 bar (29 psi) (corresponds to 20 mH<sub>2</sub>O (60 ftH<sub>2</sub>O))</li> </ul>
• 0 5 mH <sub>2</sub> O (0 15 ftH <sub>2</sub> O)	<ul> <li>2 bar (29 psi) (corresponds to 20 mH<sub>2</sub>O (60 ftH<sub>2</sub>O))</li> </ul>
• 0 6 mH <sub>2</sub> O (0 18 ftH <sub>2</sub> O)	• 2 bar (29 psi) (corresponds to 20 mH <sub>2</sub> O (60 ftH <sub>2</sub> O))
• 0 10 mH <sub>2</sub> O (0 30 ftH <sub>2</sub> O)	• 5 bar (72.5 psi) (corresponds to 50 mH2O (150 ftH <sub>2</sub> O))
• 0 20 mH <sub>2</sub> O (0 60 ftH <sub>2</sub> O)	• 10 bar (145 psi) (corresponds to 100 mH <sub>2</sub> O (300 ftH <sub>2</sub> O))
• 0 40 mH <sub>2</sub> O (0 120 ftH <sub>2</sub> O)	• 20 bar (290 psi) (corresponds to 200 mH <sub>2</sub> O (600 ftH <sub>2</sub> O))
Special measuring ranges	
<ul> <li>Up to 100 mH<sub>2</sub>O (300 ftH<sub>2</sub>O)</li> </ul>	<ul> <li>20 bar (290 psi) (corresponds to 200 mH<sub>2</sub>O (600 ftH<sub>2</sub>O))</li> </ul>
• Up to 160 mH <sub>2</sub> O (480 ftH <sub>2</sub> O)	• 24 bar (348 psi) (corresponds to 240 mH <sub>2</sub> O (720 ftH <sub>2</sub> O))
Measuring range	2 \ 2 //
• 0 0.1 bar	• 1.5 bar
• 0 0.2 bar	• 1.5 bar
• 0 0.3 bar	• 1.5 bar
• 0 0.4 bar	• 2 bar
• 0 0.5 bar	• 2 bar
• 0 0.6 bar	• 2 bar
• 0 1 bar	• 5 bar
<ul><li>0 2 bar</li><li>0 4 bar</li></ul>	<ul><li>10 bar</li><li>20 bar</li></ul>
Special measuring range	
Up to 10 bar	• 20 bar
Up to 16 bar	• 24 bar
Output	
Output signal	4 20 mA
Measuring accuracy	According to IEC 60770-1
Error in measurement at limit setting including hysteresis and reproducibility	≤ 0.15 % of full-scale value (typical ≤ 0.3 % of full-scale value (maximu
Influence of ambient temperature	≤ 0.05 %/10 K of full-scale value (zero and span)
Long-term stability	≤ 0.15 % of full-scale value/year (zero and span)
Rated conditions	
Ambient conditions	
	-10 +80 °C (14 176 °F)
<ul><li>Process temperature</li><li>Storage temperature</li></ul>	-20 +80 °C (-4 +176 °F)

Pressure transmitters

Single-range transmitters for general applications

# SITRANS LH300 Transmitter for hydrostatic level

Design	
Weight	
Pressure transmitter	$\approx 0.4 \text{ kg} \ (\approx 0.88 \text{ lb})$
Cable	0.08 kg/m (≈ 0.059 lb/ft)
Maximal freely suspended length	300 m (990 ft)
Electrical connection	Cable with 2 conductors, vent pipe and integrated humidity filters
Material	
Seal diaphragm     Enclosure	Al <sub>2</sub> O <sub>3</sub> ceramic, 99.6 % Stainless steel, mat. no. 1.4404/316L and 1.4539/904L (sea water applica- tions) respectively
Gasket	FPM (standard)
Connecting cable	EPDM (optional) PE (standard/drinking water applications)
• Cap	FEP (for aggressive media) Stainless steel, PPE or ETFE
Auxiliary power	· · · · · · · · · · · · · · · · · · ·
Terminal voltage on pressure transmitter $U_{\rm B}$	10 33 V DC for transmitter without explosion protection
<u> </u>	10 30 V DC for transmitter with intrinsic safety explosion protection
Certificates and approvals	
Drinking water approval (ACS)	17 ACC NY 055
EAC	TC N RU Д-DE.ГА02.В.05092
Underwriters Laboratories (UL)	ML File No. E344532, issued 2017-08-17
Shipbuilding approval (LR)	LR_18/20074
Shipbuilding approval (DNV/GL)	TAA00000CE
Shipbuilding approval (BV)	56926/A0 BV
Shipbuilding approval (ABS)	HG1881314_P
Shipbuilding approval (RINA)	ELE067319XG
Pressure equipment directive	The transmitter is not subject to the pressure equipment directive (PED 2014/68/EU)
Explosion protection  • ATEX  • IEC Ex  • EAC Ex  • Intrinsic safety "i"  - Marking	SEV 16 ATEX 0121 IEC Ex SEV 16.0003 TC RU C-DE.AA87.B.00324
- Iviai NII IY	II I G LA IA IIO 14 GA

Junction box		
Application	For connecting the transmitter cable	
Design		
Weight	0.2 kg (0.44 lb)	
Electrical connection	2 x 3-way (28 to 18 AWG)	
Cable entry	2 x PG 13.5	
Enclosure material	Polycarbonate	
Vent pipe for atmospheric pressure		
Rated conditions		
Degree of protection according to IEC 60529	IP65	
Cable hanger		
Application	For mounting the transmitter	
Design		
Weight	0.16 kg (0.35 lb)	
Material	Galvanized steel, polyamide	
Terminal area	For cable with a diameter of 5.5 9.5 mm	

Pressure transmitters

Single-range transmitters for general applications

# SITRANS LH300 Transmitter for hydrostatic level

Selection and orde	ring data	Article No.	Order code	Selection and ordering data	Article No.	Order code
Pressure transmitte SITRANS LH300 (su		7MF15		Pressure transmitter SITRANS LH300 (submersible sensor)	7MF157	
For hydrostatic level	measurement,					
	tter, two-wire connection, aterial see Order option,			PE cable for general purpose and drinking water applications		
measuring cell Al <sub>2</sub> O	3 ceramics fixed mounted cable, e cap at PE cable:			Special cable length Please add "-Z" to Article No. and specify Order code and plain text: Y01: Cable length 3 m (≈ 10 ft)	9 X	H + Y 0 1 H 1 A
,	nd cable hanger have to			5 m (≈ 16 ft) 7 m (≈ 23 ft)		H 1 B H 1 C
	le No. for the online con- PIA Life Cycle Portal.	Ш		10 m (≈ 33 ft) 15 m (≈ 50ft)		H1D H1E
Measuring range	Cable length			20 m (≈ 65 ft)		H1F
0 1 mH <sub>2</sub> O 0 2 mH <sub>2</sub> O 0 3 mH <sub>2</sub> O 0 4 mH <sub>2</sub> O 0 5 mH <sub>2</sub> O 0 10 mH <sub>2</sub> O 0 20 mH <sub>2</sub> O 0 40 mH <sub>2</sub> O 0 40 mH <sub>2</sub> O 0 6 ftH <sub>2</sub> O 0 9 ftH <sub>2</sub> O 0 15 ftH <sub>2</sub> O 0 15 ftH <sub>2</sub> O 0 18 ftH <sub>2</sub> O 0 30 ftH <sub>2</sub> O 0 30 ftH <sub>2</sub> O 0 120 ftH <sub>2</sub> O	(PE cable) 5 m 5 m 10 m 10 m 10 m 10 m 20 m 30 m 50 m 5 m (≈ 15 ft) 5 m (≈ 15 ft) 10 m (≈ 30 ft) 10 m (≈ 30 ft) 10 m (≈ 30 ft) 20 m (≈ 60 ft) 30 m (≈ 90 ft) 5 m (≈ 150 ft)	1 A 1 B 1 C 1 D 1 E 1 F 1 H 1 K 1 L 2 A 2 B 2 C 2 D 2 E 2 F 2 H 2 K 2 L 3 A 3 B		25 m ( $\approx$ 80 ft) 30 m ( $\approx$ 100 ft) 40 m ( $\approx$ 130 ft) 50 m ( $\approx$ 160 ft) 60 m ( $\approx$ 200 ft) 70 m ( $\approx$ 230 ft) 80 m ( $\approx$ 265 ft) 90 m ( $\approx$ 295 ft) 100 m ( $\approx$ 330 ft) 125 m ( $\approx$ 410 ft) 150 m ( $\approx$ 495 ft) 175 m ( $\approx$ 575 ft) 200 m ( $\approx$ 650 ft) 225 m ( $\approx$ 740 ft) 250 m ( $\approx$ 820 ft) 275 m ( $\approx$ 900 ft) 300 m ( $\approx$ 990 ft) 350 m ( $\approx$ 1150 ft) 400 m ( $\approx$ 1320 ft) 450 m ( $\approx$ 1480 ft) 500 m ( $\approx$ 1480 ft) 500 m ( $\approx$ 1650 ft)		H1G H1H H1J H1K H1L H1M H1P H1Q H1R H1S H1T H1U H1V H1W H1X H2A H2B H2C H2D H2E
0 0.3 bar 0 0.4 bar 0 0.5 bar	10 m 10 m 10 m	3 C 3 D 3 E		550 m (≈ 1815 ft) 600 m (≈ 1980 ft) 650 m (≈ 2145 ft)	Ш	H 2 F H 2 G H 2 H
0 0.6 bar 0 1 bar 0 2 bar 0 4 bar Special versions: Measuring ranges for	10 m 20 m 30 m 50 m	3 F 3 H 3 K 3 L		700 m (≈ 2310 ft) 750 m (≈ 2475 ft) 800 m (≈ 2640 ft) 850 m (≈ 2800 ft) 900 m (≈ 2970 ft) 950 m (≈ 3135 ft)		H 2 J H 2 K H 2 L H 2 M H 2 N
between 0 1 mH <sub>2</sub> O and 0 . 0 3 ftH <sub>2</sub> O and 0 . 0 0.1 bar and 0	160 mH <sub>2</sub> O or 530 ftH <sub>2</sub> O or			1000 m (≈ 3300 ft)  Other special cable length Please add "-Z" to Article No. and specify Order codes and plain text: H1Y: Cable length Y01: Measuring range	9 X	H 2 Q H 1 Y + Y 0 1

Pressure transmitters

Single-range transmitters for general applications

# SITRANS LH300 Transmitter for hydrostatic level

Selection and ordering data	Article No.	Order code
Pressure transmitter SITRANS LH300 (submersible sensor)	7MF1575-	
<u>·</u>		
FEP cable for aggressive media  Special cable length Please add "-Z" to Article No. and specify Order code and plain text: Y01: Cable length	9 X	H + Y 0 1
3 m (≈ 10 ft) 5 m (≈ 16 ft) 7 m (≈ 23 ft) 10 m (≈ 33 ft) 15 m (≈ 50ft)		H 5 A H 5 B H 5 C H 5 D H 5 E
20 m (≈ 65 ft) 25 m (≈ 80 ft) 30 m (≈ 100 ft) 40 m (≈ 130 ft) 50 m (≈ 160 ft)		H 5 F H 5 G H 5 H H 5 J H 5 K
60 m (≈ 200 ft) 70 m (≈ 230 ft) 80 m (≈ 265 ft) 90 m (≈ 295 ft) 100 m (≈ 330 ft)		H 5 L H 5 M H 5 N H 5 P H 5 Q
125 m (≈ 410 ft) 150 m (≈ 495 ft) 175 m (≈ 575 ft) 200 m (≈ 650 ft) 225 m (≈ 740 ft)		H 5 R H 5 S H 5 T H 5 U H 5 V
250 m (≈ 820 ft) 275 m (≈ 900 ft) 300 m (≈ 990 ft) 350 m (≈ 1150 ft) 400 m (≈ 1320 ft)		H 5 W H 5 X H 6 A H 6 B H 6 C
450 m (≈ 1480 ft) 500 m (≈ 1650 ft) 550 m (≈ 1815 ft) 600 m (≈ 1980 ft) 650 m (≈ 2145 ft)		H 6 D H 6 E H 6 F H 6 G H 6 H
700 m (≈ 2310 ft) 750 m (≈ 2475 ft) 800 m (≈ 2640 ft) 850 m (≈ 2800 ft) 900 m (≈ 2970 ft)		H 6 J H 6 K H 6 L H 6 M H 6 N
950 m (≈ 3135 ft) 1000 m (≈ 3300 ft)		H 6 P H 6 Q
Other special cable length Please add "-Z" to Article No. and specify Order codes and plain text: H1Y: Cable length Y01: Measuring range	9 X	H 5 Y + Y 0 1

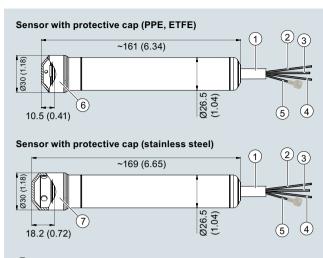
Selection and ordering data			le		Order code
Pressure transmitter SITRANS LH300 (sub	mersible sensor)	7 M F		75.	
Material of housing	Material of protective cap				
Stainless steel 316L (1.4404)	Protective capability made of PPE (recom- mended for PE cable)	A	١		
Stainless steel 316L (1.4404)	Protective cap made of ETFE (standard with FEP cable)	E	3		
Stainless steel 316L (1.4404)	Stainless steel 316L (1.4404)	C	:		
Stainless steel 904L (1.4539) for sea water applications	Protective cap PPE	C	)		
Stainless steel 904L (1.4539) for sea water applications	Protective cap ETFE	E			
Stainless steel 904L (1.4539) for seawater applications	Stainless steel 904L (1.4539) for seawater applications	F			
Sealing material bet housing	ween sensor and		П		
FPM (Standard) EPDM (for drinking wa	ater)		1 2		
Explosion protection	1				
without With ATEX II1 G Ex ia IECEx Ex ia IIC T4 Ga sible for cable length	and EAC Ex (only pos-		1		
Additional versions		Orde	er c	ode	
Quality Inspection Certificate (factory calibration) to IEC 60770-2 (6 points upward)					
Accessories/spare p	parts	Article No.			
Junction box				'5-8A	
Cable hanger				′5-8A	
Protective caps, PPE, as spare part (10-pack)				75-8A	
Protective caps, ETFE, as spare part (10-pack)		7MF	157	75-8A	Æ
Humidity filters as spare part (10-pack)		7MF	157	75-8A	F
Protective cap, stainless steel 316L (1.4404) for waste water applications		7MF	157	75-8A	G
Protective cap, stain (1.4539) for sea water		7MF	157	75-8A	Ή

Pressure transmitters

Single-range transmitters for general applications

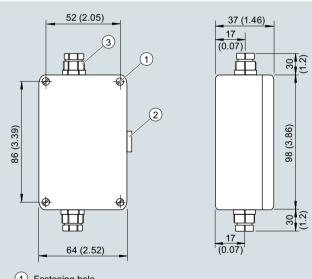
# SITRANS LH300 Transmitter for hydrostatic level

# Dimensional drawings



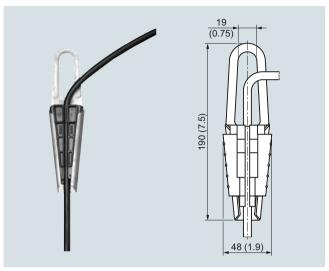
- 1) Cable, sheat Ø 8.3 (0.33)
- 2 (blue)
- (3) + (brown)
- 4) Protective conductor connection/Equipotential bonding (black)
- (5) Vent pipe with humidity filter Ø 1 (0.04) (inner diameter)
- 6 Protective cap (PPE or PTFE) with 4 x Ø 2.5 (0.10) holes
- (7) Protective cap (stainless steel) with 4 x Ø 5 (0.20) holes

SITRANS LH300 pressure transmitter, dimensions in mm (inch)



- 1) Fastening hole
- 2 Vent valve
- (3) Cable gland Pg 13.5, cable diameter 6 ... 12 (0.23 ... 0.47)

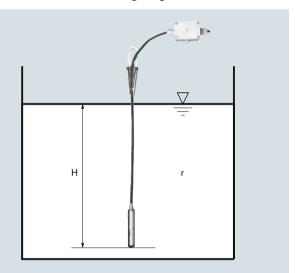
Junction box, dimensions in mm (inch)



Cable hanger, dimensions in mm (inch)

#### More information

### Determination of the measuring range for medium water



## Calculation of the measuring range:

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

# with:

 $\rho$  = density of medium

g = local acceleration due to gravity

H = maximum level

## Example:

Medium: Water,  $\rho = 1~000~kg/m^3$ Acceleration due to gravity: 9.81 m/s<sup>2</sup> Start-of-scale: 0 m Maximum level: 6.0 m Cable length: 10 m

# Calculation:

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

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

p = 589 mbar

## Transmitter to be ordered:

#### 7MF1575-1FA10

Plus, if required, junction box 7MF1575-8AA and cable hanger 7MF1575-8AB

Pressure transmitters

Single-range transmitters for general applications

## SITRANS P Compact for gauge and absolute pressure

#### Overview



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

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

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

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

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

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

### Benefits

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

# Application

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

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

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

### Design

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

#### Notes on operating the pressure transmitter

Compensation of internal atmospheric pressure

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

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

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

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

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

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

## CE marking

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

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

# Hazardous areas

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

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

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

Pressure transmitters

Single-range transmitters for general applications

# Function

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

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

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

# Technical specifications

Pressure transmitters for food, pha	armaceuticals and biotechnolog
Mode of operation	
Measuring principle	piezo-resistive
Input	
Measured variable	gauge or absolute pressure
Measuring range	0 160 mbar (0 2.32 psi)
	 0 40 bar (0 580 psi)
Output	
Output signal	
• 2-wire system	4 20 mA
• Three-wire system	0 20 mA
Measuring accuracy	Acc. to IEC 60770-1
Error in measurement at limit setting incl. hysteresis and reproducibility	≤ 0.2 % of full-scale value
Adjustment accuracy	$\leq$ ± 0.2 % of full-scale value
Step response time	< 20 ms
Influence of ambient temperature	
On the enclosure	
• Zero point	< 0.2 %/10 K of full-scale value
Measuring span	< 0.2 %/10 K of full-scale value
On the process connection (remote seals)	Zero error (depends on design)
Flange remote seal	
- DN 25 / 1"	4.8 mbar/10 K (0.069 psi/10 K)
- DN 32 / 11/4"	2.3 mbar/10 K (0.033 psi/10 K)
- DN 40 / 1½"	1.6 mbar/10 K (0.023 psi/10 K)
- DN 50 / 2"	0.6 mbar/10 K (0.009 psi/10 K)
Clamp-on seal	
- DN 25 / 1"	9.5 mbar/10 K (0.14 psi/10 K)
- DN 32 / 11/4"	4.1 mbar/10 K (0.06 psi/10 K)
- DN 40 / 1½"	3.9 mbar/10 K (0.05 psi/10 K)
- DN 50 / 2"	3.9 mbar/10 K (0.05 psi/10 K)

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

	Tor general applications
SITRANS P Compact for g	auge and absolute pressure
Rated conditions	
Installation conditions	
Mounting position	Any, vertical as standard
Ambient conditions	
Ambient temperature	-10 +70 °C (14 158 °F)
Storage temperature	-10 +90 °C (14 194 °F)
Process temperature	Max. 200 °C (392 °F), depending on design
Vacuum-resistant	0 mbar (0 psi) absolute at max. 50 °C. Higher process tempera- tures on request.
• Degree of protection (to EN 60529)	IP65, optional IP67
Electromagnetic Compatibility	
- Emitted interference	To EN 50081 Part 1, issue 1993 (residential and industrial areas). The unit has no own emissions.
- Noise immunity to	EN 50082 Part 2, issue March 1995 (industrial areas)
Design	
Weight (without remote seal)	
Field enclosure	≈ 460 G (≈ 1.01 (lb)
Enclosure with plug	≈ 200 g (≈ 0.44 lb)
Enclosure	
• Designs	Field housing IP65 or IP67, with screwed gland
	• Angled plug DIN 43650, IP65
	<ul><li>Cable connection, IP67</li><li>Device plug M12, IP65</li></ul>
Material	Stainless steel, mat.
Material of union nut	no. 1.4404/316L/1.4305
Material of union flut	Polyamide (with electrical con- nection using plug or cable)  Electronics unit potted with silicone
	Internal ventilation for measuring ranges < 16 bar (< 232 psi), through housing thread or connection cable depending on design
Process connection	
• Versions	See ordering data
Material of coupling	Stainless steel, mat. no. 1.4404/316L
Power supply	
Terminal voltage on transmitter	10 30 V DC
Rated voltage	24 V DC
Certificates and approvals	
Classification according to pressure equipment directive (PED 2014/68/EU)	
• For 7MF8010-1 (with diaphragm seal)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)
• For 7MF8010-2 (with clamp-on seal)	For gases of fluid group 1 and liquids of fluid group 1; complies with the requirements of article 4, paragraph 1 (appendix 1); assigned to category III, conformity evaluation module H by the TÜV Nord

Explosion protection · Intrinsic safety "i"

- Marking

TÜV 03 ATEX 2099 X

Ex II 2G Ex ib IIC T6

Pressure transmitters

Single-range transmitters for general applications

# SITRANS P Compact for gauge and absolute pressure

Selection and Ordering data SITRANS P Compact pressure transmitters for pressure and absolute pressure with diaphragm flush at front 2-wire system	Article No. 7 M F 8 0 1 0 -	Ord. code	Selection and Ordering data SITRANS P Compact pressure trans-	Article No.	Ord. code
mitters for pressure and absolute pressure with diaphragm flush at front	/WF8010-				
2-wire system			mitters for pressure and absolute pressure with diaphragm flush at front	7 W F 8 U 1 U -	
Process temperature up to 140 °C (284 °F) Accuracy: 0.2 % of full-scale value Output 4 20 mA	1===-		2-wire system Process temperature up to 140 °C (284 °F) Accuracy: 0.2 % of full-scale value Output 4 20 mA	1	"
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.			Diaphragm seal with aseptic connection Aseptic screwed gland to DIN 11864-1,		
Diaphragm seal			form A, with slotted union nut		
with quick-release clamp			• 1 inch • 1½ inch	PM PN	
Milk pipe union to DIN 11851 with slotted union nut			• 2 inch	PP	
• DN 25	A D		• 2½ inch	PQ	
• DN 32	AE		Aseptic screwed gland to		
• DN 40	A F		DIN 11864-1, form A		
• DN 50	A G		with threaded socket	014	
• DN 65	AH		• 1 inch • 1½ inch	QM QN	
Milk pipe union to DIN 11851 with threaded socket			• 2 inch	QP	
• DN 25	вр		• 2½ inch	QQ	
• DN 32	BE		Aseptic screwed NEUMO		
• DN 40	BF		with slotted union nut1)		
• DN 50	B G		• DN 25	RD	
• DN 65	вн		• DN 32	RE	
Clamp connection to DIN 32676			• DN 40 • DN 50	R F R G	
• DN 25	CD		Aseptic screwed NEUMO	n G	
• DN 40	CF		with threaded socket <sup>1)</sup>		
DN 50 Clamp connection to ISO 2852	CG		• DN 25	SD	
• 1 inch	DM		• DN 32	SE	
• 1½ inch	DN		• DN 40	SF	
• 2 inch	DP		• DN 50	SG	
• 2½ inch	DQ		Aseptic screwed NEUMO with clamp connection, form R <sup>1)</sup>		
IDF standard with slotted union nut			• DN 25	TD	
• 1 inch	EM		• DN 32	TE	
• 1½ inch • 2 inch	E N E P		• DN 40	TF	
IDF standard with threaded socket	EP		• DN 50	TG	
1 inch	FM		Aseptic screwed NEUMO		
• 1½ inch	F N		with clamp connection, form V <sup>1)</sup> • DN 25	UD	
• 2 inch	FP		• DN 32	UE	
SMS standard with slotted union nut			• DN 40	UF	
• 1 inch	GM		• DN 50	UG	
• 1½ inch	GN		Male thread DIN 3852 Form A		
• 2 inch	GP		• G½", min. meas. span 1.6 bar (23.2 psi)	XA	
SMS standard with threaded socket  1 inch	нм		• G <sup>3</sup> / <sub>4</sub> ", min. meas. span 1 bar (14.5 psi)	XB	
• 1½ inch	HN		<ul> <li>G1", min. meas. span 0.4 bar (5.8 psi)</li> <li>G1½", min. meas. span 0.25 bar</li> </ul>	X C X D	
• 2 inch	HP		(3.63 psi)	^5	
DRD flange, without welding-type flange • DN 50, PN 40	JH		• G2", min. meas. span 0.16 bar (2.32 psi)	ΧE	
Varivent connection (Tuchenhagen)			Special version	ZA	J 1 Y
• D = 50, for Varivent housing DN 25 and 1 inch	KF		(add Order code and plain text)  Filling liquid		
D = 68, for Varivent housing     DN 40    DN 125 and 116    6 inch	KL		Food oil, FDA-listed	3	
DN 40 DN 125 and 1½ 6 inch Special version	ZA	J 1 Y	Special version (add Order code and plain text)	9	L 1 Y
(add Order code and plain text)		<b>4</b> 1 1	<u> </u>		
Filling liquid Food oil, FDA-listed	3		<b>Output signal</b> 4 20 mA	1	
Special version	9	L 1 Y	Special version	9	M 1 Y
(add Order code and plain text)			(add Order code and plain text)		
Output signal 4 20 mA	1		<ol> <li>Please specify as well: Connections for pipes: R01, R02 or R03, se</li> </ol>	e table "Further	designs" on
Special version		M 1 V	next page		
(add Order code and plain text)	9	M 1 Y			

Pressure transmitters

Single-range transmitters for general applications

### SITRANS P Compact for gauge and absolute pressure

Selection and Ord	ering data	Article No.	Ord. code	Selection and Order	ing data	Article No.	Ord. cod
mitters for pressu	act pressure trans- re and absolute ohragm flush at front	7MF8010-		SITRANS P Compac mitters for pressure pressure with diaph	and absolute	7MF8010-	
2-wire system Process temperatur Accuracy: 0.2 % of Output 4 20 mA	e up to 140 °C (284 °F) full-scale value	1	Ш	2-wire system Process temperature u Accuracy: 0.2 % of fu Output 4 20 mA		1	
	stainless steel mat. electr. connection			Measured range	Overload pressure		
Housing with angle IP65	d plug to DIN 43650,	1		(continued)	00.1		
Housing with devic		2		-1 +9 bar (-14.5 +130.5 psi) -1 +15 bar	60 bar (870 psi) 60 bar		В
Housing with devic		3		(-14.5 +217.6 psi)	(870 psi)		
	housing (small) with	4		0 1 bar a (0 14.5 psi a) 0 1.6 bar a	3 bar a (43.5 psi a) 10 bar		В
<b>3</b>	housing (small) with	5		(0 23.2 psi a) 0 2.5 bar a	(145 psi) 10 bar a	н	С
	for measuring ranges i)			(0 36.3 psi a) 0 4 bar a	(145 psi a) 10 bar a	н	D
Measured range	Overload pressure			(0 58 psi a) 0 6 bar a	(145 psi a) 60 bar a	н	E
0 160 mbar (0 2.32 psi) 0 250 mbar	1 bar (14.5 psi) 1 bar	B B B C		(0 87 psi a) 0 10 bar a	(870 psi a) 60 bar a	J	A
(0 3.63 psi) 0 400 mbar	(14.5 psi) 3 bar	BD		(0 145 psi a) Special version	(870 psi a)	z	A P1Y
(0 5.8 psi) 0 600 mbar	(43.5 psi) 3 bar	ВЕ		(add Order code and Explosion protection	<u>'</u>	-	
(0 8.7 psi) 0 1 bar	(43.5 psi) 3 bar	CA		without with, to ATEX 100a, II			1 2
(0 14.5 psi) 0 1.6 bar	(43.5 psi) 10 bar	СВ		Further designs	2 G, EX 15 110 10	Order code	
(0 23.2 psi)	(145 psi)			Please add "-Z" to Arti Order code	icle No. and specify		
0 2.5 bar (0 36.3 psi)	10 bar (145 psi)	cc		Hygiene version		P01	
0 4 bar (0 58 psi)	20 bar (290 psi)	CD		Roughness of proces Foil $R_a < 0.8 \mu m$ (3.15 Welded seams $R_a < 0.8 \mu m$	s connection: 5·10 <sup>-8</sup> inch);		
0 6 bar (0 87 psi)	60 bar (870 psi)	CE		Welded seams R <sub>a</sub> < 1 (5.9·10 <sup>-8</sup> inch)	1.5 µm		
0 10 bar (0 145 psi)	60 bar (870 psi)	DA		Integral cooling eler Process temperature		K01	
0 16 bar (0 232 psi)	60 bar (870 psi)	DB		(392 °F) instead of 14	10 °C (284 °F)		
0 25 bar (0 363 psi)	60 bar (870 psi)	DC		Connections for pip Pipes to DIN 11850	e	R01	
0 40 bar (0 580 psi)	100 bar (1450 psi)	DD		ISO pipes to DIN 246 Pipes to O. D. Tubing		R02 R03	
-160 0 mbar (-2.32 0 psi)	1 bar (14.5 psi)	EB		Certificates Quality Inspection Ce		C11	
-250 0 bar (-3.73 0 psi)	1 bar (14.5 psi)	EC		characteristic curve to IEC 60770-2	est) according to		
-400 0 bar (-5.8 0 psi)	3 bar (43.5 psi)	E D		Inspection certificate Use of FDA-listed ren		C12 C17	
-600 0 bar (-8.7 0 psi)	3 bar (43.5 psi)	EE		liquids certified by tes EN 10204-2.2		317	
-1 0 bar (-14.5 0 psi)	3 bar (43.5 psi)	FA		Roughness depth me		C18	
-1 0.6 bar (-14.5 8.7 psi)	10 bar (145 psi)	FB		certified by test repor Certification to EHED		C19	
-1 1.5 bar (-14.5 21.8 psi)	10 bar (145 psi)	FC		seals with aseptic scr to DIN 11864			
-1 3 bar (-14.5 43.5 psi)	20 bar (290 psi)	F D					
-1 5 bar (-14.5 72.5 psi)	20 bar (290 psi)	FE					

Pressure transmitters

Single-range transmitters for general applications

### SITRANS P Compact for gauge and absolute pressure

5	Selection and Ordering data	Artio	cle N	lo.		0	rd	. (	CC	de
1	SITRANS P Compact pressure trans- mitters for pressure and absolute pressure with clamp-on remote seal	7 M	F 8 0	10	•					
F	2-wire system Process temperature up to 140 °C (284 °F) Accuracy: 0.2 % of full-scale value Dutput 4 20 mA	2 🔳	ï	-					Ī	
	Click on the Article No. for the online configuration in the PIA Life Cycle Portal.									
	Clamp-on remote seal (screwed gland at both ends) with quick-release clamps Wilk pipe union to DIN 11851 with hreaded socket DN 25 DN 32 DN 40 DN 50 DN 65 Clamp connection to DIN 32676 DN 32 DN 40 DN 50 DN 65 Clamp connection to DIN 32676 DN 65 Clamp connection to ISO 28521) 1 inch 11/2 inch 2 inch 2 //2 inch Special version add Order code and plain text)	AI AI AI CC CC CC CI	E F G H D E F G H N N P				J	1	Y	
F	Filling liquid Food oil, FDA-listed Special version add Order code and plain text)		3				L	1	Y	
2	Output signal 4 20 mA Special version add Order code and plain text)		1				M	1	Υ	
(	add Order Code and plain text)									

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

Selection and Ordering data	Article No.	Ord. code
SITRANS P Compact pressure trans-	7MF8010 -	0.0.0000
mitters for pressure and absolute pressure with clamp-on remote seal	7 WI 0 0 1 0 -	
2-wire system	2	
Process temperature up to 140 °C (284 °F) Accuracy: 0.2 % of full-scale value Output 4 20 mA	2	
Clamp-on seal with aseptic connection		
Aseptic screwed gland to		
DIN 11864-1, form A with threaded socket		
• 1 inch	QM	
• 1½ inch	QN	
• 2 inch	QP	
Aseptic screwed NEUMO with threaded socket <sup>1)</sup>		
• DN 25	SD	
• DN 32	SE	
• DN 40	SF	
• DN 50	SG	
• DN 65	SH	
Aseptic screwed NEUMO with clamp connection, form R <sup>1)</sup>		
• DN 25	TD	
• DN 32	TE	
• DN 40	TF	
• DN 50	TG	
Aseptic screwed gland SÜDMO with threaded socket W 501 1)		
• 1 inch	VM	
• 1½ inch	VN	
• 2 inch	V P	
Aseptic screwed gland SÜDMO with clamp connection W 601 1)		
• 1 inch	WM	
• 1½ inch	WN	
• 2 inch	WP	
Special version	ZA	J 1 Y
(add Order code and plain text)		
Filling liquid		
Food oil, FDA-listed	3	
Medicinal white oil	2	
Special version (add Order code and plain text)	9	L1Y
Output signal		
4 20 mA	1	
Special version	9	M 1 Y
(add Order code and plain text)	3	
, , ,		

<sup>1)</sup> Please specify as well: Connections for pipes: R01, R02 or R03, see table "Further designs" on next

Pressure transmitters

Single-range transmitters for general applications

### SITRANS P Compact for gauge and absolute pressure

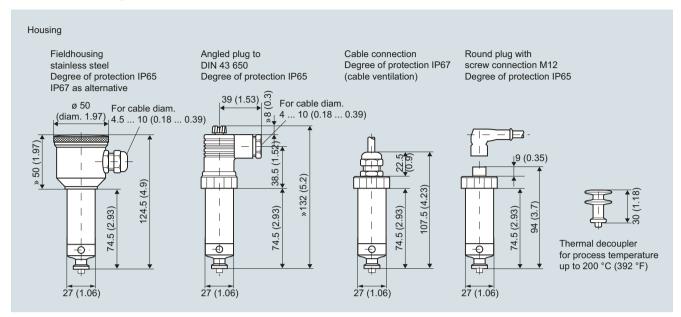
Selection and Ordering of		Article No.	Ord. code	Selection and Ord		Article No.	Ord. c
SITRANS P Compact pre mitters for pressure and pressure with clamp-on i	absolute	7 M F 8 0 1 0 -		mitters for pressu	act pressure trans- re and absolute np-on remote seal	7MF8010-	
2-wire system Process temperature up to Accuracy: 0.2 % of full-scal Output 4 20 mA		2	П	2-wire system Process temperature Accuracy: 0.2 % of 1 Output 4 20 mA	e up to 140 °C (284 °F) rull-scale value	2	
Housing design (stainles No. 1.4404/316L) / electr.				Measured range (continued)	Overload pressure		
Housing with angled plug IP65, union nut made of po		1		-1 9 bar (-14.5 130.5 psi)	60 bar (870 psi)	G A	
Housing with device plug union nut made of polyam		2		-1 15 bar (-14.5 217.6 psi)	60 bar	GB	
Housing with device plug union nut made of stainles		3		0 1 bar a	3 bar a	на	
Stainless steel field housin cable gland, IP65	g (small) with	4		(0 14.5 psi a) 0 1.6 bar a	(43.5 psi a) 10 bar (145 psi)	нв	
Stainless steel field housin cable gland, IP67	g (small) with	5		(0 23.2 psi a) 0 2.5 bar a	(145 psi) 10 bar a	нс	
Internal ventilation for mea < 16 bar (< 232 psi)	suring ranges			(0 36.3 psi a) 0 4 bar a	(145 psi a) 10 bar a	H D	
	oad pressure			(0 58 psi a) 0 6 bar a	(145 psi a) 60 bar a	HE	
0 160 mbar 1 bar	•	ВВ		(0 87 psi a)	(870 psi a)		
(0 2.32 psi) (14.5 0 250 mbar 1 bar	. ,	вс		0 10 bar a (0 145 psi a)	60 bar a (870 psi a)	J A	
(0 3.63 psi) (14.5 0 400 mbar 3 bar (0 5.8 psi) (43.5		BD		Special version (add Order code ar	nd plain text)	Z A	P 1 Y
0 600 mbar 3 bar (43.5) (43.5)		BE		Explosion protecti	on		1
0 1 bar 3 bar (0 14.5 psi) (43.5	psi)	CA		with, to ATEX 100a,  Further designs	II 2 G, Ex ib IIC T6	Order code	2
0 1.6 bar 10 ba (0 23.2 psi) (145 p	r	СВ		Please add "-Z" to A	article No. and specify	Order code	
0 2.5 bar 10 ba (0 36.3 psi) (145 p		cc		Order code  Hygiene version		P01	
0 4 bar 20 ba (0 58 psi) (290 p	r	CD		Roughness of proc Foil R <sub>a</sub> < 0.8 µm (3.			
0 6 bar 60 ba (0 87 psi) (870 psi)	r	CE		Welded seams R <sub>a</sub> (5.9·10 <sup>-8</sup> inch)	< 1.5 μm		
0 10 bar 60 ba (0 145 psi) (870 p		DA		Integral cooling el Process temperatur		K01	
0 16 bar 60 ba (0 232 psi) (870 p	r	DB		(392 °F) instead of Connections for p	140 °C (284 °F)		
0 25 bar 60 ba	r	DC		Pipes to DIN 11850	•	R01	
(0 363 psi) (870 ¡ 0 40 bar 100 b (0 580 psi) (1450	ar	D D		ISO pipes to ISO 24 Pipes to O. D. Tubir		R02 R03	
-160 0 mbar 1 bar		EB		Certificates			
(-2.32 0 psi) (14.5 -250 0 bar 1 bar		EC		Quality Inspection ( characteristic curve IEC 60770-2		C11	
(-3.73 0 psi) (14.5 -400 0 bar 3 bar (-5.8 0 psi) (43.5		ED		Inspection certificated respectively.		C12	
(-5.8 0 psi) (43.5 -600 0 bar 3 bar (-8.7 0 psi) (43.5		EE		liquids certified by to EN 10204-2.2		C17	
-1 0 bar 3 bar (-14.5 0 psi) (43.5	. ,	FA		Roughness depth r		C18	
-1 0.6 bar 10 ba (-14.5 8.7 psi) (145 p	r	FB		certified by test rep to EN 10204-3.1			
-1 1.5 bar 10 ba (-14.5 21.8 psi) (145 psi)	r	FC		Certification to EHE seals with aseptic s		C19	
-1 3 bar 20 ba (-14.5 43.5 psi) (290 p	r	FD		to DIN 11864			
-1 5 bar 20 ba		FE					

Pressure transmitters

Single-range transmitters for general applications

### SITRANS P Compact for gauge and absolute pressure

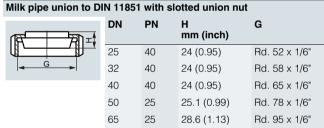
### Dimensional drawings



SITRANS P Compact, dimensions in mm (inch)

#### **Process connections**

Diaphragm seal with quick-release clamp



Milk pipe union to DIN 11851 with threaded socket									
	DN	PN	H mm (inch)	G					
	25	40	-	Rd. 52 x 1/6"					
G →	32	40	20 (0.79)	Rd. 58 x 1/6"					
	40	40	20 (0.79)	Rd. 65 x 1/6"					
	50	25	20 (0.79)	Rd. 78 x 1/6"					
	65	25	22 (0.87)	Rd. 95 x 1/6"					

Clamp connection to DIN 32676								
<u>+</u>	DN	PN	H mm (inch)	D mm (inch)				
<b>*</b>	25	16	14 (0.55)	50.5 (2)				
1. D 1	40	16	14 (0.55)	50.5 (2)				
	50	16	14 (0.55)	64 (2.52)				
Clamp connection to ISO 2852								

Clamp connection to ISO 2852							
	DN	PN	H mm (inch)	D mm (inch)			
<b>1</b>	1"	16	14 (0.55)	50.5 (2)			
' D '	11/2"	16	12 (0.47)	50.5 (2)			
	2"	16	14 (0.55)	64 (2.52)			
	21/2"	16	14 (0.55)	77.5 (3.05)			

IDF standard with slotted union nut								
T = 1	DN	PN	H mm (inch)	G inch (IDF thread)				
	1"	40	21 (0.83)	1"				
G	1½"	40	13.5 (0.53)	1½"				
	2"	25	15 (0.59)	2"				

IDF standard with threaded socket								
	DN	PN	H mm (inch)	G inch (IDF thread)				
	1"	40	21 (0.83)	1"				
G	1½"	40	13.5 (0.53)	1½"				
14 21	2"	25	15 (0.59)	2"				

SMS standard with slotted union nut								
	DN	PN	H mm (inch)	G				
	1"	40	16 (0.63)	Rd 40 x 1.6"				
G	11/2"	40	16 (0.63)	Rd 60 x 1.6"				
	2"	25	16 (0.63)	Rd 70 x 1.6"				

SMS standard with threaded socket							
8/////////////////////////////////////	DN	PN	H mm (inch)	G			
\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	1"	40	16 (0.63)	Rd 40 x 1.6"			
G →	1½"	40	20 (0.79)	Rd 60 x 1.6"			
	2"	25	20 (0.79)	Rd 70 x 1.6"			

DRD flange, without welding-type flange								
<u></u>	DN	PN	H mm (inch)	D mm (inch)				
D T	50	40	16.7 (0.66)	65.5 (2.58)				

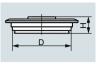
Pressure transmitters

SW

Single-range transmitters for general applications

### SITRANS P Compact for gauge and absolute pressure

### Varivent connection



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

### Diaphragm seal with aseptic connection

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



DN	PN	H mm (inch)	G
1"	40	20 (0.79)	Rd 52 x 1/6"
11/2"	40	20 (0.79)	Rd 58 x 1/6"
2"	25	20 (0.79)	Rd 65 x 1/6"
21/2"	25	20 (0.79)	Rd 78 x 1/6"

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



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

### Aseptic screwed NEUMO BioConnect with slotted union nut



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

### Aseptic screwed NEUMO BioConnect with threaded socket



	DN	PN	H mm (inch)	G
	25	16	20 (0.79)	M 42 x 2
	32	16	20 (0.79)	M 52 x 2
١	40	16	20 (0.79)	M 56 x 2
	50	16	20 (0.79)	M 68 x 2

## Aseptic screwed NEUMO BioConnect with clamp connection,



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

## Aseptic screwed NEUMO BioConnect with clamp connection,



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

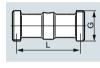
# $h_2$ SW dM G

Male thread DIN 3852, form A

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

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

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



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

### Clamp connection to DIN 32676



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

### Clamp connection to ISO 2852



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

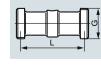
Clamp-on seal with aseptic connection

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



<u> </u>	DN	PN	L mm (inch)	G
1	1"	40	110 (4.33)	Rd 52 x 1/6"
	11/2"	40	110 (4.33)	Rd 65 x 1/6"
	2"	25	110 (4.33)	Rd 78 x 1/6"

### Aseptic screwed NEUMO BioConnect with threaded socket



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

Pressure transmitters

Single-range transmitters for general applications

### SITRANS P Compact for gauge and absolute pressure

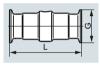
#### Aseptic screwed NEUMO BioConnect with clamp connection, form R DN mm (inch) mm (inch) 25 50.4 (2) 16 110 (4.33) 32 16 110 (4.33) 50.4 (2) 40 16 110 (4.33) 64 (2.52) 50 16 110 (4.33) 77.4 (3.05)

# Aseptic screwed gland SÜDMO with threaded socket W 501



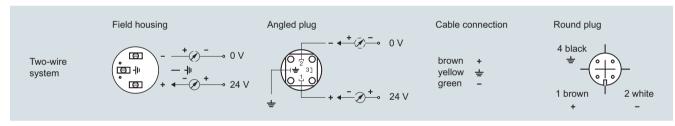
DN	PN	L mm (inch)	G
1"	25	110 (4.33)	Rd 44 x 1/6"
11/2"	25	110 (4.33)	Rd 58 x 1/6"
2"	20	110 (4.33)	Rd 78 x 1/6"

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



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

### Schematics



SITRANS P Compact, connection diagram

Pressure transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 for gauge and absolute pressure

### Overview



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

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

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

### Benefits

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

### Application

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

It can be used for the following measurement types:

- · Gauge pressure
- Absolute pressure

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

- Level
- Volume
- Mass

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

### Gauge pressure

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

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

#### Level

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

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

#### Absolute pressure

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

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

Pressure transmitters for food, pharmaceuticals and biotechnology

### SITRANS P300 for gauge and absolute pressure

#### Design

The device comprises:

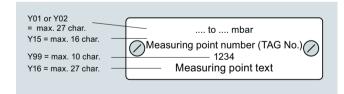
- Electronics
- Housing
- Measuring cell



#### Perspective view of SITRANS P300

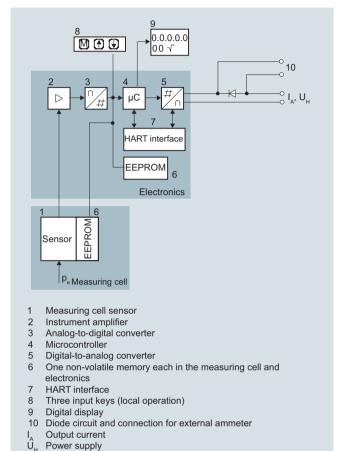
The housing has a screw-on lid (5) and, depending on the version, is with or without an inspection window. The electrical terminal housing, the buttons for operation of the device are located under this lid and, depending on the version, the display. The connections for the auxiliary power  $U_{\rm H}$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

### Example of attached measuring points sign



### Function

### Operation of electronics with HART communication



### Function diagram of electronics

Input variable

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

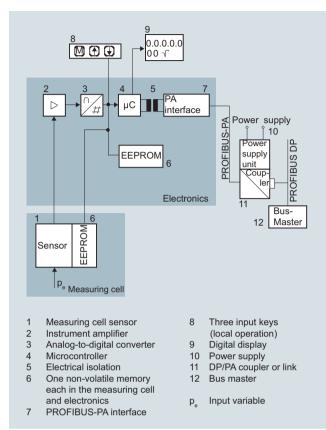
The buttons (8) can be used to call up individual functions, socalled modes. If you have a device with a display (9), you can use this to track mode settings and other messages. The basic mode settings can be changed with a computer via the HART modem (7).

Pressure transmitters

for food, pharmaceuticals and biotechnology

### SITRANS P300 for gauge and absolute pressure

#### Operation of electronics with PROFIBUS PA communication

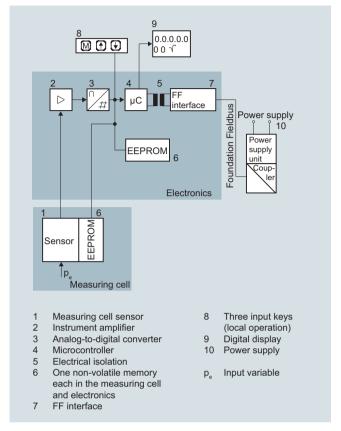


### Function diagram of electronics

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

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

#### Operation of electronics with FOUNDATION Fieldbus communication



### Function diagram of electronics

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

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

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

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

### Mode of operation of the measuring cells

The process connections available include the following:

• G1/2

Update April 2020

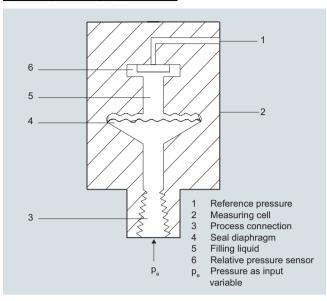
- ½-14 NPT
- Flush-mounted diaphragm:
  - Flanges to EN
  - Flanges to ASME
  - NuG and pharmaceutical connections

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Pressure transmitters for food, pharmaceuticals and biotechnology

### SITRANS P300 for gauge and absolute pressure

### Measuring cell for gauge pressure

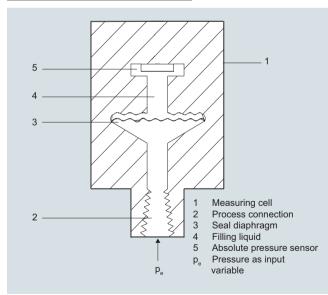


Measuring cell for gauge pressure, function diagram

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

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

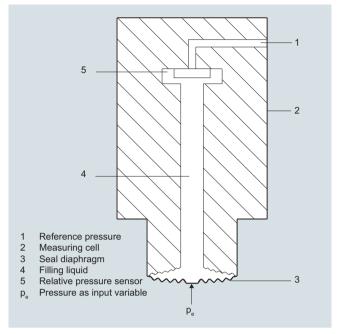
### Measuring cell for absolute pressure



Measuring cell for absolute pressure, function diagram

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

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

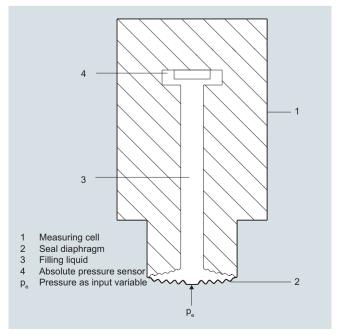


Measuring cell for gauge pressure, front-flush diaphragm, function diagram

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

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

Measuring cell for absolute pressure, front-flush diaphragm



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

Pressure transmitters for food, pharmaceuticals and biotechnology

### SITRANS P300 for gauge and absolute pressure

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

#### Parameterization

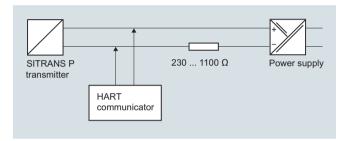
Depending on the version, there are a range of options for parameterizing the pressure transmitter and for setting or scanning the parameters.

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

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

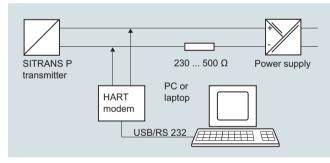
### Parameterization using HART communication

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



Communication between a HART communicator and a pressure transmitter

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



HART communication between a PC communicator and a pressure transmitter

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

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

# Adjustable parameters on SITRANS P300 with HART communication

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

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

# Diagnostic functions for SITRANS P300 with HART communication

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

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

Table style: Technical specifications 2

Physical variable	Physical dimensions
Pressure (setting can also be made in the factory)	Pa, MPa, kPa, bar, mbar, torr, atm, psi, g/cm², kg/cm², inH <sub>2</sub> O, inH <sub>2</sub> O (4 °C), mmH <sub>2</sub> O, ftH <sub>2</sub> O (20 °C), inHg, mmHg
Level (height data)	m, cm, mm, ft, in
Volume	m <sup>3</sup> , dm <sup>3</sup> , hl, yd <sup>3</sup> , ft <sup>3</sup> , in <sup>3</sup> , US gallon, lmp. gallon, bushel, barrel, barrel liquid
Mass	g, kg, t, lb, Ston, Lton, oz
Temperature	K, °C, °F, °R
Miscellaneous	%, mA

Pressure transmitters

for food, pharmaceuticals and biotechnology

### SITRANS P300 for gauge and absolute pressure

### Parameterization through PROFIBUS PA interface

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

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

#### Parameterization through FOUNDATION Fieldbus interface

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

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

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

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

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

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

#### Physical dimensions available for the display

Physical variable	Physical dimensions
Pressure (setting can also be made in the factory)	MPa, kPa, Pa, bar, mbar, torr, atm, psi, g/cm², kg/cm², mmH $_2$ O, mmH $_2$ O (4 °C), inH $_2$ O, inH $_2$ O (4 °C), ftH $_2$ O (20 °C), mmHg, inHg
Level (height data)	m, cm, mm, ft, in, yd
Mass	g, kg, t, lb, Ston, Lton, oz
Volume	m <sup>3</sup> , dm <sup>3</sup> , hI, yd <sup>3</sup> , ft <sup>3</sup> , in <sup>3</sup> , US gallon, Imp. gallon, bushel, barrel, barrel liquid
volume flow	m³/s, m³/min, m³/h, m³/d, l/s, l/min, l/h, l/ d, Ml/d, ft³/s, ft³/min, ft³/h, ft³/d, US gallon/s, US gallon/min, US gallon/h, US gallon/d, bbl/s, bbl/min, bbl/h, bbl/d
Mass flow	g/s, g/min, g/h, g/d, kg/s, kg/min, kg/h, kg/d, t/s, t/min, t/h, /t/d, lb/s, lb/min, lb/h, lb/d, STon/s, STon/min, STon/h, STon/d, LTon/s, LTon/min, LTon/h, LTon/d
Total mass flow	t, kg, g, lb, oz, LTon, STon
Temperature	K, °C, °F, °R
Miscellaneous	%

### Hygiene version

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

Pressure transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 for gauge and absolute pressure

### Technical specifications

#### SITRANS P300 for gauge and absolute pressure

### Gauge pressure input

Measured variable

Span (fully adjustable) or measuring range, max. operating pressure (in accordance with 2014/68/EU Pressure Equipment Directive) and max. test pressure (pursuant to DIN 16086)

(for oxygen measurement, max. 100 bar/10 MPa/1450 psi and 60 °C (140 °F) ambient temperature/process temperature)

HART	PROFIBUS PA/ FOUNDATION Fieldbus		
Span	Nominal measur- ing range	Max. operating pressure MAWP (PS)	Max. perm. test pressure
8.3 250 mbar	250 mbar	4 bar	6 bar
0.83 25 kPa	25 kPa	400 kPa	600 kPa
0.12 3.6 psi	3.6 psi	58 psi	87 psi
0.01 1 bar	1 bar	4 bar	6 bar
1 100 kPa	100 kPa	400 kPa	600 kPa
0.15 14.5 psi	14.5 psi	58 psi	87 psi
0.04 4 bar	4 bar	7 bar	10 bar
4 400 kPa	400 kPa	0.7 MPa	1 MPa
0.58 58 psi	58 psi	102 psi	145 psi
0.16 16 bar	16 bar	21 bar	32 bar
16 1600 kPa	1600 kPa	2.1 MPa	3.2 MPa
2.3 232 psi	232 psi	305 psi	464 psi
0.63 63 bar	63 bar	67 bar	100 bar
63 6300 kPa	6300 kPa	6.7 MPa	10 MPa
9.1 914 psi	914 psi	972 psi	1450 psi
1.6 160 bar	160 bar	167 bar	250 bar
0.16 16 MPa	16 MPa	16.7 MPa	2.5 MPa
23 2321 psi	2321 psi	2422 psi	3626 psi
4 400 bar	400 bar	400 bar	600 bar
0.4 40 kPa	40 kPa	40 MPa	60 MPa
58 5802 psi	5802 psi	5802 psi	8700 psi

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#### Lower measuring limit

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

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

Upper measuring limit

30 mbar a/3 kPa a/0.44 psi a

30 mbar a/3 kPa a/0.44 psi a

100 % of max. span

(for oxygen measurement max. 100 bar/10 MPa/1450 psi and 60 ° (140 °F) ambient temperature/process temperature)

### Absolute pressure input

Measured variable

Span (fully adjustable) or measuring range, max. operating pressure (in accordance with 2014/68/EU Pressure Equipment Directive) and max. test pressure (pursuant to DIN 16086)

Absolute pressure

A second process			
HART	PROFIBUS PA/ FOUNDATION Fieldbus		
Span	Nominal measur- ing range	Max. operating pressure MAWP (PS)	Max. perm. test pressure
8.34 250 mbar a 0.83 25 kPa a 3.35 100 inH <sub>2</sub> O a 0.13 3.63 psi a	250 mbar a 25 kPa a 100 inH <sub>2</sub> O a	1.5 bar a 150 kPa a 21.8 psi a	6 bar a 600 kPa a 87 psi a
43.34 1300 mbar a 4.33 130 kPa a 17.42 522.4 inH <sub>2</sub> O a 0.63 18.86 psi a	1300 mbar a 130 kPa a 525 inH <sub>2</sub> O	2.6 bar a 260 kPa a 37.7 psi a	10 bar a 1 MPa a 145 psi a
0.17 5 bar a 17 500 kPa a 2.43 72,5 psi a	5000 mbar a 500 kPa a 72.5 psi a	10 bar a 1 MPa a 145 psi a	30 bar a 3 MPa a 435 psi a
1 30 bar a 0.1 3 MPa a 14.6 435 psi a	30 bar a 3 MPa a 435 psi a	45 bar a 4.5 MPa a 653 psi a	100 bar a 10 MPa a 1450 psi a

Pressure transmitters

for food, pharmaceuticals and biotechnology

SITRANS P300 for gauge and absolute pressure				
SITRANS P300 for gauge and absolute pressure				
Lower measuring limit				
Measuring cell with silicone oil	0 mbar a/0 kPa a /0 ps	si a		
Measuring cell with inert filling liquid				
- for process temperature -20 °C < 9 $\leq$ +60 °C (-4 °F < 9 $\leq$ +140 °F)	30 mbar a/3 kPa a/0.4	4 psi a		
- for process temperature 60 °C < $9 \le +100$ °C (max. 85 °C for measuring cell 30 bar) (140 °F < $9 \le +212$ °F (max. 185 °F for meas. cell 435 psi))	30 mbar a + 20 mbar a 3 kPa a + 2 kPa a · (9 0.44 psi a + 0.29 psi a	- 60 °C)/°C		
Upper measuring limit	100 % of max. span (for oxygen measurem ambient temperature/p			60 °C (140 °F)
Start of scale value	Between the measurin	g limits (fully adjusta	ble)	
Input of gauge pressure, with front-flush diaphragm			<u> </u>	
Measured variable	Gauge pressure, front-	-flush		
Span (continuously adjustable) or measuring range, max. operating pressure and max. test pressure	HART	PROFIBUS PA/ FOUNDATION Fieldbus		
	Span	Nominal measur- ing range	Max. operating pressure MAWP (PS)	Max. perm. test pressure
	0.01 1 bar 1 100 kPa 0.15 14.5 psi	1 bar 100 kPa 14.5 psi	4 bar 400 kPa 58 psi	6 bar 600 kPa 87 psi)
	0.04 4 bar 4 400 kPa 0.58 58 psi	4 bar 400 kPa 58 psi	7 bar 0.7 MPa 102 psi	10 bar 1 MPa 145 psi
	0.16 16 bar 16 1600 kPa 2.3 232 psi	16 bar 1600 kPa 232 psi	21 bar 2.1 MPa 305 psi	32 bar 3.2 MPa 464 psi
	0.63 63 bar 63 6300 kPa 9.1 914 psi	63 bar 6300 kPa 914 psi	67 bar 6.7 MPa 972 psi	100 bar 10 MPa 1450 psi
Lower measuring limit				
<ul> <li>Measuring cell with silicone oil filling</li> </ul>	100 mbar a/10 kPa a/1	.45 psi a		
<ul> <li>Measuring cell with inert filling liquid</li> </ul>	100 mbar a/10 kPa a/1	.45 psi a		
<ul> <li>Measuring cell with Neobee</li> </ul>	100 mbar a/10 kPa a/1	.45 psi a		
Upper measuring limit	100% of max. span			
Input of absolute pressure, with front-flush diaphragm				
Measured variable	Absolute pressure, from	nt-flush		
Span (continuously adjustable) or measuring range, max. operating pressure and max. test pressure	HART	PROFIBUS PA/ FOUNDATION Fieldbus		
	Span	Nominal measur- ing range	Max. operating pressure MAWP (PS)	Max. perm. test pressure
	43 1300 mbar a 4.3 130 kPa a 17 525 inH <sub>2</sub> O a	1300 mbar a 130 kPa a 525 inH <sub>2</sub> O a	2.6 bar a 260 kPa a 37.7 psi a	10 bar a 1 MPa a 145 psi a
	160 5000 mbar a 16 500 kPa a 2.32 72.5 psi a	5000 mbar a 500 kPa a 72.5 psi a	10 bar a 1 MPa a 145 psi a	30 bar a 3 MPa a 435 psi a
	1 30 bar a 0.1 3 MPa a 14.5 435 psi a	30 bar a 3 MPa a 435 psi a	45 bar a 4.5 MPa a 653 psi a	100 bar a 10 MPa a 1450 psi a
	Depending on the pro-	cess connection, the	span may differ from	n these values
Lower measuring limit	0 mbar a/0 kPa a/0 ps	a		
Upper measuring limit	100 % of max. span			
Output	HART		PROFIBUS PA/ FO	OUNDATION Fieldbus
Output signal	4 20 mA		Fieldbus signal	PA or FOUNDATION
Physical bus	Protected against at all	et oirouit and a stant	IEC 61158-2	
Protection against polarity reversal  Electrical damping (step width 0.1 s)	Protected against short Each connection again Set to 2 s (0 100 s)			
Liberinear damping (step width 0.1 5)	JEL 10 2 S (U 100 S)			

Pressure transmitters for food, pharmaceuticals and biotechnology

### SITRANS P300 for gauge and absolute pressure

#### SITRANS P300 for gauge and absolute pressure

#### Measuring accuracy for gauge pressure

Reference conditions

Measuring span ratio r (spread, Turn-Down)

Error in measurement at limit setting incl. hysteresis and reproducibility

- Linear characteristic
- 250 mbar/25 kPa/3.6 psi

1 bar/100 kPa/14.5 psi
 4 bar/400 kPa/58 psi
 16 bar/1.6 MPa/232 psi
 63 bar/6.3 MPa/914 psi
 160 bar/16 MPa/2321 psi

- 400 bar/40 MPa/5802 psi

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

- 250 mbar/25 kPa/3.6 psi
- 1 bar/100 kPa/14.5 psi
   4 bar/400 kPa/58 psi
   16 bar/1.6 MPa/232 psi
   63 bar/6.3 MPa/914 psi
   160 bar/16 MPa/2321 psi
   400 bar/40 MPa/5802 psi

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

- 250 mbar/25 kPa/3.6 psi
- 1 bar/100 kPa/14.5 psi 4 bar/400 kPa/58 psi
- 16 bar/1.6 MPa/232 psi
   63 bar/6.3 MPa/914 psi
   160 bar/16 MPa/2321 psi
   400 bar/40 MPa/5802 psi

Effect of mounting position

Effect of auxiliary power supply (in percent per change in voltage)

Measuring value resolution for PROFIBUS PA and

FOUNDATION Fieldbus

According to IEC 60770-1

- Increasing characteristic
- Start-of-scale value 0 bar/kPa/psi
- Stainless steel seal diaphragm
- · Measuring cell with silicone oil
- Room temperature 25 °C (77 °F)

r = max. measuring span/set measuring span or nominal pressure range

 $r \le 1.25$ :  $\le 0.075$  %

 $1.25 < r \le 30$ :  $\le (0.008 \cdot r + 0.065)$  %

 $r \le 5$ :  $\le 0.075 \%$ 

 $5 < r \le 100$ :  $\le (0.005 \cdot r + 0.05)$  %

 $r \le 3$ :  $\le 0.075 \%$ 

 $3 < r \le 10$ :  $\le (0.0029 \cdot r + 0.071) \%$  $10 < r \le 100$ :  $\le (0.005 \cdot r + 0.05) \%$ 

 $\leq$  (0.16 · r + 0.1) %

 $\leq$  (0.07 · r + 0.08) %

≤ (0.25 · r) % per year

≤ (0.25 · r) % in 5 years

 $\leq$  (0.125 · r) % in 5 years

 $\leq$  0.05 mbar/0.005 kPa/0.000725 psi per 10 $^{\circ}$  inclination

(zero point correction is possible with position error compensation)

0.005 % per 1 V

 $3 \cdot 10^{-5}$  of the rated measuring range

Pressure transmitters

for food, pharmaceuticals and biotechnology

SITRANS P300 for gauge and absolute pressure		
Measuring accuracy for absolute pressure	According to IEC 60770-1	
Reference conditions	Increasing characteristic Start-of-scale value 0 bar/kPa/psi Stainless steel seal diaphragm Measuring cell with silicone oil Room temperature 25 °C (77 °F)	
Measuring span ratio r (spread, Turn-Down)	r = max. measuring span/set measuring span span span span span span span span	oan or nominal pressure range
Error in measurement at limit setting incl. hysteresis and reproducibility		
Linear characteristic		
- r ≤ 10	≤ 0.1 %	
- 10 < r ≤ 30	≤ 0.2 %	
Influence of ambient temperature (in percent per 28 °C (50 °F))		
• 250 mbar a/25 kPa a/3.6 psi a	$\leq$ (0.15 · r + 0.1) %	
<ul> <li>1300 mbar a/130 kPa a/18.8 psi a</li> <li>5 bar a/500 kPa a/72.5 psi a</li> <li>30 bar a/3000 kPa a/435 psi a</li> </ul>	≤ (0.08 · r + 0.16) %	
Long-term stability (temperature change ± 30 °C (± 54 °F))	≤ (0.25 · r) % in 5 years	
Effect of mounting position (in pressure per change in angle)	$\leq$ 0.05 mbar/0.005 kPa/0.000725 psi per 10 (zero point correction is possible with position of the correction of the c	
Effect of auxiliary power supply (in percent per change in voltage)	0.005 % per 1 V	
Measuring value resolution for PROFIBUS PA and FOUNDATION Fieldbus	3 · 10 <sup>-5</sup> of the rated measuring range	
Measuring accuracy for gauge and absolute pressure, with front-flush diaphragm	According to IEC 60770-1	
Reference conditions	<ul> <li>Increasing characteristic</li> <li>Start-of-scale value 0 bar/kPa/psi</li> <li>Stainless steel seal diaphragm</li> <li>Measuring cell with silicone oil</li> <li>Room temperature 25 °C (77 °F)</li> </ul>	
Measuring span ratio r (spread, Turn-Down)	r = max. measuring span/set measuring span span span span span span span span	oan or nom. pressure range
Error in measurement at limit setting incl. hysteresis and reproducibility		
Linear characteristic	Gauge pressure, with front-flush diaphragm	Absolute pressure, with front-flush diaphragm
- r ≤ 5	≤ 0.075 %	-
- 5 < r ≤ 100	$\leq$ (0.005 · r + 0.05) %	-
- r ≤ 10	-	≤ 0.2 %
- 10 < r ≤ 30	-	≤ 0.4 %
Influence of ambient temperature (as percentage per 28 °C (50 °F))	$\leq$ (0.08 · r + 0.16) %	$\leq$ (0.16 · r + 0.24) %
Effect of process temperature (in pressure per temperature change)		
<ul> <li>Temperature difference between process temperature and ambient temperature</li> </ul>	3 mbar/0.3 kPa/0.04 psi per 10 K	
Long-term stability (temperature change ± 30 °C (± 54 °F))	(0.25 · r) % in 5 years	
Effect of mounting position (in pressure per change in angle)	0.4 mbar/0.04 kPa/0.006 per 10° inclination (zero point correction is possible with posit	
Effect of auxiliary power supply (in percent per change in voltage)	0.005 % per 1 V	
Measuring value resolution for PROFIBUS PA and FOUNDATION Fieldbus	$3 \cdot 10^{-5}$ of the rated measuring range	

Pressure transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 for gauge and absolute pressure	
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)
<ul> <li>Measuring cell with Neobee oil (FDA-compliant, with flush- mounted diaphragm)</li> </ul>	-10 +85 °C (14 +185 °F)
Measuring cell with inert liquid	-40 +85 °C (-40 +185 °F)
Display readable	-30 +85 °C (-22 +185 °F)
Storage temperature	-50 +85 °C (-58 +185 °F) (for Neobee: -20 +85 °C (-4 +185 °F)) (for temperature oil: -10 + 85 °C (14 +165 °F))
Climatic class	
Condensation	Relative humidity 0 100 % Condensation permissible, suitable for use in the tropics
Degree of protection	
• according to EN 60529	IP65, IP68
• according to NEMA 250	IP65, IP68, Type 4X, enclosure cleaning, resistant to lyes, steam to 150 °C (302 °F)
Electromagnetic Compatibility	
• Emitted interference and interference immunity	Acc. to IEC 61326 and NAMUR NE 21
Medium conditions	
Temperature of medium  • Measuring cell with silicone oil	-40 +100 °C (-40 +212 °F)
Measuring cell with silicone oil (FDA-compliant, with flush-	-40 +150 °C (-40 +302 °F)
mounted diaphragm)  • Measuring cell with Neobee oil "Measuring cell with Neobee oil (FDA-compliant, with flush-mounted diaphragm)	-10 +150 °C (-14 +302 °F)
<ul> <li>Measuring cell with silicone oil, with temperature decoupler (only for gauge pressure version with flush-mounted dia- phragm)</li> </ul>	-40 +200 °C (-40 +392 °F)
<ul> <li>Measuring cell with Neobee oil, with temperature decoupler (only for gauge pressure version with flush-mounted diaphragm)</li> </ul>	-10 +200 °C (14 +392 °F)
Measuring cell with inert liquid	-20 +100 °C (-4 +212 °F)
Measuring cell with high-temperature oil (only for gauge pressure version with flush-mounted diaphragm)	
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	Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819
Oval flange	Stainless steel, mat. no. 1.4404/316L
Seal diaphragm	Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819
Measuring cell filling	<ul><li>Silicone oil</li><li>Inert filling liquid</li></ul>
Process connection	<ul> <li>G½B to EN 837-1</li> <li>Female thread ½-14 NPT</li> <li>Oval flange PN 160 (MAWP 2320 psi) with fastening thread:</li> <li>-<sup>7</sup>/<sub>16</sub> -20 UNF to IEC 61518/DIN EN 61518</li> <li>M10 as per DIN 19213</li> </ul>

Pressure transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 for gauge and absolute pressure					
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	<ul><li>Flanges as per EN and ASME</li><li>F&amp;B and pharmaceutical flanges</li></ul>				
Surface quality touched-by-media	$R_a$ -values $\leq 0.8 \ \mu m \ (32 \ \mu$ -inch)/welds $R_a$ )	≤ 1.6 µm (64 µ-inch)			
	(Process connections acc. to 3A; $R_a$ -values $\leq$ 0.8 $\mu$ m (32 $\mu$ -inch)/welds $R_a \leq$ 0.8 $\mu$ n (32 $\mu$ -inch)				
Power supply U <sub>H</sub>	HART	PROFIBUS PA/FOUNDATION Fieldbus			
Terminal voltage on transmitter	10.5 42 V DC for intrinsically safe operation: 10.5 30 V DC				
Terminal voltage on transmitter  Power supply	for intrinsically safe operation:	Supplied though bus			
Ç	for intrinsically safe operation:	Supplied though bus Not necessary			
Power supply	for intrinsically safe operation:				
Power supply Separate power supply	for intrinsically safe operation:				
Power supply Separate power supply Bus voltage	for intrinsically safe operation:	Not necessary			
Power supply Separate power supply Bus voltage  • Without Ex	for intrinsically safe operation:	Not necessary  9 32 V			
Power supply Separate power supply Bus voltage • Without Ex • With intrinsically-safe operation	for intrinsically safe operation:	Not necessary  9 32 V			
Power supply Separate power supply Bus voltage • Without Ex • With intrinsically-safe operation Current consumption	for intrinsically safe operation:	Not necessary 9 32 V 9 24 V			
Power supply Separate power supply Bus voltage • Without Ex • With intrinsically-safe operation Current consumption • Max. basic current	for intrinsically safe operation:	Not necessary 9 32 V 9 24 V 12.5 mA			

Pressure transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 for gauge and absolute pressure				
Certificates and approvals	HART	PROFIBUS PA/ FOUNDATION Fieldbus		
Classification according to PED 2014/68/EU	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of Article 4, paragraph 3 (sound engineering practice)			
Water, waste water	Pending			
Explosion protection				
Intrinsic safety "i"	PTB 05 ATEX 2048			
Marking	II1/2 G Ex ia IIC/IIB T4/T5/T6 Ga/Gb			
Permissible ambient temperature				
- Temperature class T4	-40 +85 °C (-40 +185 °F)			
- Temperature class T5	-40 +70 °C (-40 +158 °F)			
- Temperature class T6	-40 +60 °C (-40 +140 °F)			
• Connection	To certified intrinsically-safe circuits with peak values:	To certified intrinsically-safe circuits with peak values:		
	$\begin{array}{l} U_i = 30 \text{ V, } I_i = 100 \text{ mA,} \\ P_i = 750 \text{ mW, } R_i = 300 \Omega \end{array}$	FISCO supply unit: $U_i = 17.5 \text{ V}$ , $I_i = 380 \text{ mA}$ , $P_i = 5.32 \text{ W}$ Linear barrier:		
		$U_i = 24 \text{ V}, I_i = 250 \text{ mA}, P_i = 1.2 \text{ W}$		
Effective inner capacitance:	$C_i = 6 \text{ nF}$	$C_i = 1.1 \text{ nF}$		
Effective internal inductance:	$L_i = 0.4 \text{ mH}$	$L_i \le 7 \mu H$		
Explosion protection to FM for USA $\underline{\text{and}}$ Canada (cFMUS)				
• Identification (DIP) or (IS); (NI)	Certificate of Compliance 3025099 CL I, DIV 1, GP ABCD T4 T6; CL II, DIV T4 T6; CL I, DIV 2, GP ABCD T4 T6;	' 1, GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC 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 DIV 2, GP ABCD T4 T6; CL II, DIV 2, GP FG; CL III			
Dust explosion protection for zone 20/21/22	PTB 05 ATEX 2048			
• Marking	II 1 D Ex ia IIIC T120 °C Da II 1/2 D Ex ia IIIC T120 °C Da/Db II 2 D Ex ib IIIC T120 °C Db			
Permissible ambient temperature				
- Temperature class T4	-40 +85 °C (-40 +185 °F) (in the case of mineral glass windows only	-20 +85 °C (-4 +185 °F))		
- Temperature class T5	-40 +70 °C (-40 +158 °F) (in the case of mineral glass windows only-	20 +70 °C (-4 +158 °F))		
- Temperature class T6	-40 +60 °C (-40 +140 °F) (in the case of mineral glass windows only	-20 +60 °C (-4 +140 °F))		
Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}, \ I_i = 100 \text{ mA}, \ P_i = 750 \text{ mW}$	To certified intrinsically-safe circuits with peak values: $U_i = 24 \text{ V, } I_i = 380 \text{ mA, } P_i = 5.32 \text{ mW}$		
Effective inner capacitance:	$C_i = 6 \text{ nF}$	$C_i = 5 \text{ nF}$		
• Effective internal inductance:	$L_i = 0.4 \mu H$	$L_i = 10 \mu H$		
Type of protection Ex nA/nL/ic (Zone 2)	PTB 05 ATEX 2048			
Marking	II 2/3 G Ex ic IIC/IIB T4/T5/T6 Gb/Gc II 2/3 G Ex nA IIC T4/T5/T6 Gb/Gc			
Permissible ambient temperature				
- Temperature class T4	-40 +85 °C (-40 +185 °F) (in the case of mineral glass windows only	-20 +85 °C (-4 +185 °F))		
- Temperature class T5	-40 +70 °C (-40 +158 °F) (in the case of mineral glass windows only	-20 +70 °C (-4 +158 °F))		
- Temperature class T6	-40 +60 °C (-40 +140 °F) (in the case of mineral glass windows only	-20 +60 °C (-4 +140 °F))		
• Ex nA/nL connection	To certified intrinsically-safe circuits with peak values: $U_{m} = 45 \text{ V}$	To certified intrinsically-safe circuits with peak values: $U_{\rm m} = 32~{\rm V}$		
• Ex ic connection	To certified intrinsically-safe circuits with peak values: $U_{i}$ = 45 V	To certified intrinsically-safe circuits with peak values:U <sub>i</sub> = 32 V		
Effective inner capacitance:	$C_i = 6 \text{ nF}$	$C_i = 5 \text{ nF}$		
Effective internal inductance:	$L_i = 0.4 \text{ mH}$	L <sub>i</sub> = 20 μH		

Pressure transmitters for food, pharmaceuticals and biotechnology

### SITRANS P300 for gauge and absolute pressure

SITRANS P300 for gauge and	d absolute pressure		
HART Communication		FOUNDATION Fieldbus	
HART communication	230 1100 Ω	communication	
Protocol	HART Version 5.x	Function blocks	3 function blocks analog input, 1 function block PID
Software for computer	SIMATIC PDM	<ul> <li>Analog input</li> </ul>	
PROFIBUS PA communication		- Adaptation to customer-specif-	Yes, linearly rising or falling
Simultaneous communication with master class 2 (max.)	4	ic process variables	characteristic 0 100 s
The address can be set using	Configuration tool or	<ul> <li>Electrical damping, adjustable</li> <li>Simulation function</li> </ul>	
3	local operation	- Simulation function	Output/input (can be locked within the device with a bridge)
	(standard setting Address 126)	- Failure mode	parameterizable (last good
Cyclic data usage			value, substitute value, incorrect value)
Output byte	5 (one measured value) or	- Limit monitoring	Yes, one upper and lower warn-
	10 (two measured values)	- Limit monitoring	ing limit and one alarm limit
Input byte	0.1 or 2 (totalizer mode and reset function for dosing)		respectively
<ul> <li>Internal preprocessing</li> </ul>		<ul> <li>Square-rooted characteristic for flow measurement</li> </ul>	Yes
Device profile	PROFIBUS PA Profile for Pro-	• PID	Standard FOUNDATION Field-
	cess Control Devices Version 3.0. class B		bus function block
Function blocks	2	<ul> <li>Physical block</li> </ul>	1 resource block
Analog input	_	Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block
- Adaptation to customer-specif-	Yes, linearly rising or falling		LCD
ic process variables	characteristic	<ul> <li>Pressure transducer block</li> </ul>	
- Electrical damping adjustable			Yes
- Simulation function	Input /Output	two pressures	V
- Failure function	parameterizable (last good value, substitute value, incorrect	- Monitoring of sensor limits	Yes
	value)	<ul> <li>Simulation function: Measured pressure value, sensor tem-</li> </ul>	Constant value or over parameterizable ramp function
- Limit monitoring	Yes, one upper and lower warn-	perature and electronics tem- perature	·
	ing limit and one alarm limit respectively	perature	
Register (totalizer)	Can be reset, preset, optional		
Hogistor (totalizor)	direction of counting, simulation		
- Failure mode	function of register output		
- Fallure mode	parameterizable (summation with last good value, continuous		
	summation, summation with incorrect value)		
- Limit monitoring	One upper and lower warning		
Limemorning	limit and one alarm limit respec-		
	tively		

• Physical block

Transducer blocks

two pressures

Pressure transducer blockCan be calibrated by applying

- Monitoring of sensor limits

- Specification of a container

sured pressure value and sen-

characteristic with
- Simulation function for mea-

sor temperature

1

2

Yes

Yes

Max. 30 nodes

Constant value or over parame-

terizable ramp function

Pressure transmitters for food, pharmaceuticals and biotechnology

### SITRANS P300 for gauge and absolute pressure

Selection and Ordering		Article No.
tive and absolute pre	ure transmitters for rela- ssure, single-chamber mea-	
suring housing, rating	plate inscription in English	
4 20 mA/HART	7MF8023-	
PROFIBUS PA	7MF8024-	
FOUNDATION Fieldbu	7MF8025-	
	No. for the online configura-	7 W1 0 0 2 3 -
tion in the PIA Life C	Cycle Portal.	
<b>Measuring cell filling</b> Silicone oil	Measuring cell cleaning normal	1
Inert liquid	Cleanliness level 2 to DIN 25410	3
Measuring span (min	max.)	
8.3 250 mbar	(0.12 3.63 psi)	Α
0.01 1 bar	(0.145 14.5 psi)	В
0.04 4 bar	(0.58 58 psi)	С
0.1616 bar	(2.32 232 psi)	D
0.63 63 bar	(9.14 914 psi)	E
1.6 160 bar	(23.2 2320 psi)	F
4 400 bar	(58 5802 psi)	G
8.34 250 mbar a	(0.13 3.63 psi a)	Q
	' '	
43.34 1300 mbar a	(0.63 18.86 psi a)	S
0.17 5 bar a	(2.43 72.5 psi a)	T
1 30 bar a	(14.6 435 psi a)	U
Wetted parts material		
Seal diaphragm	Measuring cell	
Stainless steel	Stainless steel	Α
Hastelloy	Stainless steel	В
Hastelloy	Hastelloy	С
i ladionoy	· idotolio j	
Version for diaphragm	seals in conjunction with	Y
Version for diaphragm	seals in conjunction with	
Version for diaphragm process connector "fer (recommended version	seals in conjunction with	
•	seals in conjunction with male thread ½-14 NPT" on) 1) 2) 3) 4) 5)	
Version for diaphragm process connector "fer (recommended version Process connection • Connection shank G!	seals in conjunction with male thread ½-14 NPT" on) (1) 2) 3) 4) 5)	Y
Version for diaphragm process connector "fer (recommended versic Process connection  • Connection shank G:  • Female thread ½-14  • Stainless steel oval fl	seals in conjunction with male thread ½-14 NPT" on) (1) (2) (3) (4) (5) ½B to EN 837-1 NPT ange with process connec-	Y - 0
Version for diaphragm process connector "fer (recommended versic Process connection  • Connection shank G!  • Female thread ½-14  • Stainless steel oval fl tion (Oval flange has	seals in conjunction with male thread ½-14 NPT"  on) (1) (2) (3) (4) (5)  ½B to EN 837-1  NPT  ange with process connecno female thread) (6)	Y - 0
Version for diaphragm process connector "fer (recommended versic Process connection  • Connection shank G!  • Female thread ½-14  • Stainless steel oval fl tion (Oval flange has	seals in conjunction with male thread ½-14 NPT"  on) (1) (2) (3) (4) (5)  ½B to EN 837-1  NPT  ange with process connecno female thread) (6)	Y - 0
Version for diaphragm process connector "fer (recommended versic Process connection  • Connection shank G:  • Female thread ½-14  • Stainless steel oval fl	seals in conjunction with male thread ½-14 NPT"  on) (1) (2) (3) (4) (5)  ½B to EN 837-1  NPT  ange with process connecno female thread) (6)	Y - 0 1
Version for diaphragm process connector "fer (recommended versic Process connection  • Connection shank G!  • Female thread ½-14  • Stainless steel oval fl tion (Oval flange has	seals in conjunction with male thread ½-14 NPT"  on) (1) 2) 3) 4) 5)  ½B to EN 837-1  NPT  ange with process connecno female thread) 6)  16-20 UNF to 61518	Y - 0 1
Version for diaphragm process connector "fer (recommended version Process connection Connection shank G! Female thread ½-14 Stainless steel oval fl tion (Oval flange has - Mounting thread 7/1 IEC 61518/DIN EN	seals in conjunction with male thread ½-14 NPT"  on) (1) 2) 3) 4) 5)  ½B to EN 837-1  NPT  ange with process connecno female thread) 6)  16-20 UNF to 61518  10 to DIN 19213	Y - 0 1
Version for diaphragm process connector "fer (recommended versic Process connection • Connection shank G! • Female thread ½-14 • Stainless steel oval It tion (Oval flange has - Mounting thread 7/, IEC 61518/DIN EN - Mounting thread M - Mounting thread M	seals in conjunction with male thread ½-14 NPT"  on) (1) (2) (3) (4) (5)  ½B to EN 837-1  NPT  ange with process connecno female thread) (6)  (6-20 UNF to 61518  10 to DIN 19213  12 to DIN 19213	Y 0 1 2 3
Version for diaphragm process connector "fer (recommended versic Process connection • Connection shank G! • Female thread ½-14 • Stainless steel oval It tion (Oval flange has - Mounting thread 7/, IEC 61518/DIN EN - Mounting thread M - Mounting thread M	seals in conjunction with male thread ½-14 NPT"  20n) (1) (2) (3) (4) (5)  28 to EN 837-1  NPT  ange with process connecno female thread) (6)  61518  10 to DIN 19213  12 to DIN 19213  5	Y 0 1 2 2 3 4
Version for diaphragm process connector "fer (recommended version)  Process connection  Connection shank G!  Female thread ½-14  Stainless steel oval fl tion (Oval flange has  Mounting thread 7/  IEC 61518/DIN EN  Mounting thread M  Mounting thread M  Multing thread M  Male thread M20 x 1.	seals in conjunction with male thread ½-14 NPT"  on) (1) 2) 3) 4) 5)  ½B to EN 837-1  NPT  ange with process connecno female thread) 6)  16-20 UNF to 61518  10 to DIN 19213  12 to DIN 19213  5  PT	Y 0 1 1 2 2 3 4 5 5
Version for diaphragm process connector "fer (recommended versic Process connection • Connection shank Gi • Female thread ½-14 • Stainless steel oval It tion (Oval flange has - Mounting thread 7/, IEC 61518/DIN EN - Mounting thread Mi • Mounting thread Mi • Male thread M20 x 1. • Male thread ½ -14 NI Non-wetted parts mat	seals in conjunction with male thread ½-14 NPT"  on) (1) 2) 3) 4) 5)  ½B to EN 837-1  NPT  ange with process connecno female thread) 6)  16-20 UNF to 61518  10 to DIN 19213  12 to DIN 19213  5  PT	Y 0 1 1 2 2 3 4 5 5
Version for diaphragm process connector "fer (recommended versic Process connection • Connection shank G! • Female thread ½-14 • Stainless steel oval fl tion (Oval flange has - Mounting thread 7/, IEC 61518/DIN EN - Mounting thread M - Mounting thread M • Male thread M20 x 1. • Male thread ½ -14 NI Non-wetted parts mat • Stainless steel, deep polished	seals in conjunction with male thread ½-14 NPT"  on) (1) (2) (3) (4) (5)   ½B to EN 837-1  NPT  ange with process connecno female thread) (6)  16-20 UNF to 61518  10 to DIN 19213  12 to DIN 19213  5  PT  terials	Y 0 1 2 3 4 5 6 6 4
Version for diaphragm process connector "fer (recommended versic Process connection)  • Connection shank Gi • Female thread ½-14 • Stainless steel oval fit tion (Oval flange has - Mounting thread 7/, IEC 61518/DIN EN - Mounting thread M - Mounting thread M - Mounting thread M - Male thread M20 x 1. • Male thread ½-14 NI Non-wetted parts mate - Stainless steel, deep polished  Version • Standard versions	seals in conjunction with male thread ½-14 NPT"  on) (1) (2) (3) (4) (5)   ½B to EN 837-1  NPT  ange with process connecno female thread) (6)  16-20 UNF to 61518  10 to DIN 19213  12 to DIN 19213  5  PT  terials	Y 0 1 2 3 4 5 6
Version for diaphragm process connector "fer (recommended versic Process connection • Connection shank G! • Female thread ½-14 • Stainless steel oval fl tion (Oval flange has - Mounting thread 7/, IEC 61518/DIN EN - Mounting thread M - Mounting thread M • Male thread M20 x 1. • Male thread ½-14 NI Non-wetted parts mat • Stainless steel, deep polished Version • Standard versions Explosion protection	seals in conjunction with male thread ½-14 NPT"  on) (1) (2) (3) (4) (5)   ½B to EN 837-1  NPT  ange with process connecno female thread) (6)  16-20 UNF to 61518  10 to DIN 19213  12 to DIN 19213  5  PT  terials	Y 0 1 2 3 4 5 6
Version for diaphragm process connector "fer (recommended versic Process connection • Connection shank G! • Female thread ½-14 • Stainless steel oval fl tion (Oval flange has - Mounting thread 7/, IEC 61518/DIN EN - Mounting thread M - Mounting thread M • Male thread M20 x 1. • Male thread ½-14 NI Non-wetted parts mal • Stainless steel, deep polished Version • Standard versions Explosion protection • None	seals in conjunction with male thread ½-14 NPT"  2B to EN 837-1 NPT  ange with process connecno female thread) 6) 61518  10 to DIN 19213 12 to DIN 19213 5 PT  terials -drawn and electrolytically	Y 0 1 2 3 4 5 6 6 4
Version for diaphragm process connector "fer (recommended versic Process connection • Connection shank G! • Female thread ½-14 • Stainless steel oval fl tion (Oval flange has - Mounting thread 7/, IEC 61518/DIN EN • Mounting thread M • Mounting thread M • Male thread M20 x 1. • Male thread ½-14 NI Non-wetted parts mal • Stainless steel, deep polished Version • Standard versions Explosion protection • None • With ATEX, Type of p	seals in conjunction with male thread ½-14 NPT"  28 to EN 837-1  NPT  ange with process connecno female thread) 6)  61518  10 to DIN 19213  12 to DIN 19213  5  PT  terials  -drawn and electrolytically  rotection:	Y 0 1 2 3 4 5 6 4
Version for diaphragm process connector "fer (recommended versic Process connection • Connection shank G! • Female thread ½-14 • Stainless steel oval fl tion (Oval flange has - Mounting thread M: • Mounting thread M: • Mounting thread M: • Mounting thread M: • Male thread M20 x 1. • Male thread ½-14 NI Non-wetted parts mat • Stainless steel, deep polished  Version • Standard versions  Explosion protection • None • With ATEX, Type of p - "Intrinsic safety (Ex	seals in conjunction with male thread ½-14 NPT"  28 to EN 837-1  NPT  ange with process connecno female thread) 6)  61518  10 to DIN 19213  12 to DIN 19213  5  PT  terials  -drawn and electrolytically  rotection:	Y 0 1 2 3 4 5 6 4 - 1 A B
Version for diaphragm process connector "fer (recommended versic Process connection • Connection shank G! • Female thread ½-14 • Stainless steel oval fl tion (Oval flange has - Mounting thread M' - Mounting thread M' - Mounting thread M • Male thread M20 x 1. • Male thread ½-14 NI Non-wetted parts mat • Stainless steel, deep polished Version • Standard versions Explosion protection • None • With ATEX, Type of p - "Intrinsic safety (Ex 2000 2021/227)	seals in conjunction with male thread ½-14 NPT"  28 to EN 837-1  NPT  ange with process connecno female thread) 6)  61518  10 to DIN 19213  12 to DIN 19213  5  PT  terials  -drawn and electrolytically  rotection:	Y 0 1 2 3 4 5 6 4 1 A B C
Version for diaphragm process connector "fer (recommended versic Process connection • Connection shank G! • Female thread ½-14 • Stainless steel oval fl tion (Oval flange has - Mounting thread 7/1 IEC 61518/DIN EN - Mounting thread M: • Mounting thread M: • Mounting thread M: • Male thread M20 x 1. • Male thread ½-14 NI Non-wetted parts mal • Stainless steel, deep polished  Version • Standard versions  Explosion protection • None • With ATEX, Type of p - "Intrinsic safety (Ex Zone 20/21/22 <sup>7)</sup> • Ex nA/nL (Zone 2)8)	seals in conjunction with male thread ½-14 NPT"  28 to EN 837-1  NPT  ange with process connecno female thread) 6  16-20 UNF to 61518  10 to DIN 19213  12 to DIN 19213  5-PT  terials  -drawn and electrolytically  rotection: ia)"	Y 0 1 2 3 4 5 6 4 1 A B C E
Version for diaphragm process connector "fer (recommended versic Process connection • Connection shank G! • Female thread ½-14 • Stainless steel oval fl tion (Oval flange has - Mounting thread M' - Mounting thread M' - Mounting thread M' • Male thread M20 x 1. • Male thread M20 x 1. • Male thread ½-14 NI Non-wetted parts mal • Stainless steel, deep polished Version • Standard versions Explosion protection • None • With ATEX, Type of p - "Intrinsic safety (Ex Zone 20/21/227) • Ex nA/nL (Zone 2)8) • with FM "intrinsic safety	seals in conjunction with male thread ½-14 NPT"  28 to EN 837-1 NPT  ange with process connecno female thread) 6) 61518 10 to DIN 19213 12 to DIN 19213 5 PT  terials -drawn and electrolytically  rotection: ia)"	Y 0 1 2 3 4 5 6 4 1 A B C
Version for diaphragm process connector "fer (recommended versic Process connection)  • Connection shank G! • Female thread ½-14 • Stainless steel oval fl tion (Oval flange has - Mounting thread M: • Mounting thread M: • Mounting thread M: • Mounting thread M: • Male thread M20 x 1. • Male thread M20 x 1. • Male thread ½-14 NI  Non-wetted parts mat • Stainless steel, deep polished  Version • Standard versions  Explosion protection • None • With ATEX, Type of p - "Intrinsic safety (Ex Zone 20/21/22 <sup>7)</sup> • Ex nA/nL (Zone 2) <sup>8)</sup> • with FM "intrinsic safetellectrical connection	seals in conjunction with male thread ½-14 NPT"  28 to EN 837-1 NPT ange with process connecno female thread) 6) 16-20 UNF to 61518 10 to DIN 19213 12 to DIN 19213 5-PT  terials -drawn and electrolytically  rotection: ia)"  ety" (cFM <sub>US</sub> )  / cable entry	Y 0 1 2 3 4 5 6 6 4 4 5 6 E M
Version for diaphragm process connector "fer (recommended versic Process connection • Connection shank G! • Female thread ½-14 • Stainless steel oval fl tion (Oval flange has - Mounting thread M' - Mounting thread M' - Mounting thread M' • Male thread M20 x 1 • Male thread M20 x 1 • Male thread ½-14 NI Non-wetted parts mat • Stainless steel, deep polished  Version • Standard versions  Explosion protection • None • With ATEX, Type of p - "Intrinsic safety (Ex Zone 20/21/22 <sup>7)</sup> • Ex nA/nL (Zone 2) <sup>8)</sup> • with FM "intrinsic safet Electrical connection • Screwed gland M20x	seals in conjunction with male thread ½-14 NPT"  28 to EN 837-1 NPT ange with process connecno female thread) 6) 16-20 UNF to 61518 10 to DIN 19213 12 to DIN 19213 5-PT  terials -drawn and electrolytically  rotection: ia)"  ety" (cFMUS)  / cable entry	Y 0 1 2 3 4 5 6 6 4 4 B C E M
Version for diaphragm process connector "fer (recommended versic Process connection • Connection shank G! • Female thread ½-14 • Stainless steel oval fl tion (Oval flange has - Mounting thread 7/, IEC 61518/DIN EN - Mounting thread M • Male thread M20 x 1. • Male thread M20 x 1. • Male thread ½-14 NI Non-wetted parts mat • Stainless steel, deep polished  Version • Standard versions  Explosion protection • None • With ATEX, Type of p - "Intrinsic safety (Ex 2 Zone 20/21/227) • Ex nA/nL (Zone 2)8) • with FM "intrinsic safe Electrical connection • Screwed gland M20x • Scre	seals in conjunction with male thread ½-14 NPT"  28 to EN 837-1  NPT  ange with process connecno female thread) 6  16-20 UNF to 61518  10 to DIN 19213  12 to DIN 19213  5-PT  terials  -drawn and electrolytically  rotection: ia)"  / cable entry   (1.5 (polyamide) 9) (1.5 (metal)	Y 0 1 2 3 4 5 6 6 4 4 A B C E M
Version for diaphragm process connector "fer (recommended versic Process connection • Connection shank G! • Female thread ½-14 • Stainless steel oval fl tion (Oval flange has - Mounting thread M - Mounting thread M - Mounting thread M • Male thread M20 x 1 • Male thread M20 x 1 • Male thread M20 x 1 • Male thread ½-14 NI Non-wetted parts mat • Stainless steel, deep polished  Version • Standard versions  Explosion protection • None • With ATEX, Type of p - "Intrinsic safety (Ex Zone 20/21/22 <sup>7)</sup> • Ex nA/nL (Zone 2) <sup>8)</sup> • with FM "intrinsic safe Electrical connection • Screwed gland M20x • Sc	seals in conjunction with male thread ½-14 NPT"  28 to EN 837-1  NPT  ange with process connecno female thread) 6  16-20 UNF to 61518  10 to DIN 19213  12 to DIN 19213  5-PT  terials  -drawn and electrolytically  rotection: ia)"  // cable entry (1.5 (polyamide) 9) (1.5 (metal) (1.5 (stainless steel)	Y 0 1 2 3 4 5 6 6 4 4 A B C E M
Version for diaphragm process connector "fer (recommended versic Process connection • Connection shank Gi • Female thread ½-14 • Stainless steel oval II tion (Oval flange has • Mounting thread 7/, IEC 61518/DIN EN • Mounting thread Mi • Mounting thread Mi • Mounting thread Mi • Male thread M20 x 1. • Male thread ½-14 NI Non-wetted parts mat • Stainless steel, deep polished Version • Standard versions Explosion protection • None • With ATEX, Type of p - "Intrinsic safety (Ex Zone 20/21/227) • Ex nA/nL (Zone 2)8) • with FM "intrinsic safety (Ex Electrical connection • Screwed gland M20x • Screwed gland M20x • Screwed gland M20x • Device plug M12 (sta	seals in conjunction with male thread ½-14 NPT"  In) (1) (2) (3) (4) (5)  In) (2) (3) (4) (5)  In) (2) (3) (4) (5)  In) (3) (4) (5)  In) (4) (5) (6) (6)  In) (6) (7) (7) (7) (7)  In) (7) (8) (8) (8) (8) (9)  In) (8) (8) (8) (8) (8) (8) (8) (8) (8)  In) (8) (8) (8) (8) (8) (8) (8) (8) (8) (8	Y 0 1 2 3 4 5 6 6 4 4 A B C E M
Version for diaphragm process connector "fer (recommended versic Process connection • Connection shank G! • Female thread ½-14 • Stainless steel oval fl tion (Oval flange has - Mounting thread 7/, IEC 61518/DIN EN - Mounting thread M • Male thread M20 x 1 • Male thread M20 x 1 • Male thread M20 x 1 • Male thread ½-14 NI Non-wetted parts mat • Stainless steel, deep polished  Version • Standard versions  Explosion protection • None • With ATEX, Type of p - "Intrinsic safety (Ex 2 Zone 20/21/22 <sup>7)</sup> • Ex nA/nL (Zone 2) <sup>8)</sup> • with FM "intrinsic safe Electrical connection • Screwed gland M20x • S	seals in conjunction with male thread ½-14 NPT"  28 to EN 837-1 NPT ange with process connecno female thread) 6 1518 10 to DIN 19213 12 to DIN 19213 5 PT  terials -drawn and electrolytically  rotection: ia)"  rotection: ia)"  7 cable entry (1.5 (polyamide)9) (1.5 (stainless steel) ainless steel),	Y 0 1 2 3 4 5 6 6 4 4 A B C E M

Selection and Ordering data	Article No.
SITRANS P300 pressure transmitters for relative and absolute pressure, single-chamber measuring housing, rating plate inscription in English	
4 20 mA/HART	7 M F 8 0 2 3 -
PROFIBUS PA	7 M F 8 0 2 4 -
FOUNDATION Fieldbus (FF)	7 M F 8 0 2 5 -
Display  • Without display, with keys, closed lid  • With display and keys, closed lid <sup>11)</sup>	1 2
<ul> <li>With display and keys, lid with polycarbonate disc</li> <li>(setting on HART devices: mA, with PROFIBUS PA and FOUNDATION Fieldbus equipment: pressure units)<sup>11)</sup></li> </ul>	4
<ul> <li>With display and keys (setting acc. to specifications, Order code "Y21" or "Y22" required), lid with polycarbonate disc<sup>11)</sup></li> </ul>	5
<ul> <li>With display and keys, lid with glass pane (setting on HART devices: mA, with PROFIBUS and FOUNDATION Fieldbus equip- ment: pressure units)<sup>11)</sup></li> </ul>	6
<ul> <li>With display and keys (setting acc. to specifications, Order code "Y21" or "Y22" required), lid with glass pane<sup>11)</sup></li> </ul>	7

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

A quick-start guide is included in the scope of delivery of the device.

- 1) When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.
- 2) If the acceptance test certificate 3.1 is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.
- 3) The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF802.-.Y.-.... and 7MF4900-1...-.B
- 4) The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.
- $^{5)}$  Remote seal for direct mounting only available in combination with process connection  $1/\!\!\!/_2\text{--}14$  NPT.
- 6) M10 fastening thread: Max. span 160 bar (2320 psi) 7/16-20 UNF and M12 fastening thread: Max. span 400 bar (5802 psi)
- 7) Only available together with electrical connection option A
- 8) Only available together with electrical connection options B, C or G.
- 9) Only together with HART electronics.
- 10)Without cable gland.
- <sup>11)</sup>Display cannot be turned.

Pressure transmitters for food, pharmaceuticals and biotechnology

### SITRANS P300 for gauge and absolute pressure

Selection and Ordering	Article No.				
SITRANS P300 pressure and absolute pressure brane, single-chamber in plate inscription in English					
plate inscription in Englis	511	7.14			
4 20 mA/HART			IF 8 1		
PROFIBUS PA			IF 8 1		
FOUNDATION Fieldbus	s (FF)	7 M	IF 8 1	2 5	-
Click on the Article N tion in the PIA Life Cy	o. for the online configura- cle Portal.				
Measuring cell filling Silicone oil Inert liquid FDA compliant fill fluid	Measuring cell cleaning normal	1 3			
Neobee oil	normal	4			
Measuring span (min 0.01 1 bar 0.04 4 bar 0.16 16 bar 0.63 63 bar 43.34 1300 mbar a <sup>1)</sup> 0.17 5 bar a <sup>1)</sup>	(0.15 14.5 psi) (0.58 58 psi) (2.32 232 psi) (9.14 914 psi) (0.63 18.86 psi a) <sup>1)</sup> (2.43 72.5 psi a) <sup>1)</sup>	B C D E S T			
1 30 bar a <sup>1)</sup>	(14.6 435 psi a) <sup>1)</sup>	U			
Wetted parts materials	Managemina				
Seal diaphragm	Measuring cell				
Stainless steel Hastelloy <sup>2)</sup>	Stainless steel Stainless steel		A B		
• Flange version with Or (see "Further designs")		7			
•	Non-wetted parts materials  • Stainless steel, deep-drawn and electrolytically				
Version • Standard versions				1	
Explosion protection					
• None					Α
With ATEX, Type of pro					
<ul> <li>"Intrinsic safety (Ex is</li> <li>Zone 20/21/22<sup>3)</sup></li> </ul>	a)"				В
• Ex nA/nL (Zone 2) <sup>4)</sup>				C E	
• with FM "intrinsic safet				M	
Electrical connection /		-			н
<ul> <li>Screwed gland M20x1</li> </ul>	_;				Α
<ul> <li>Screwed gland M20x1</li> </ul>					В
• Screwed gland M20x1	.5 (stainless steel)				С
Device plug M12 (stair	nless steel),				G
without cable socket)  • Screwed gland ½-14 N	IPT motal throad 6)				ш
	NPT metal thread <sup>6)</sup>				J

Selection and Ordering data	Article 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	7 M F 8 1 2 3 -
PROFIBUS PA	7 M F 8 1 2 4 -
FOUNDATION Fieldbus (FF)	7 M F 8 1 2 5 -
<b>Display</b> • Without display, with keys, closed lid	1
<ul> <li>With display and keys, closed lid<sup>7)</sup></li> </ul>	2
With display and keys, lid with polycarbonate disc (setting on HART devices: mA, with PROFIBUS PA and FOUNDATION Fieldbus equipment: pressure units) <sup>7)</sup>	4
<ul> <li>With display and keys (setting acc. to specifications, Order code "Y21" or "Y22" required), lid with polycarbonate disc<sup>7)</sup></li> </ul>	5
<ul> <li>With display and keys, lid with glass pane (setting on HART devices: mA, with PROFIBUS PA and FOUNDATION Fieldbus equipment: pressure units)<sup>7)</sup></li> </ul>	6
<ul> <li>With display and keys (setting acc. to specifications, Order code "Y21" or "Y22" required), lid with glass pane<sup>7)</sup></li> </ul>	7

Power supply units see Chap. 7 "Supplementary Components"

A quick-start guide is included in the scope of delivery of the device.

- Not with temperature decoupler P00, not for process connections R01, R02, R04, R10 and R11, and can only be ordered in conjunction with silicone oil.
- $^{2)}\,$  Only available for flanges with options M.., N.. and Q..
- $^{\rm 3)}$  Only together with electrical connection option A.
- $^{\rm 4)}$  Only available together with electrical connection options B, C or G.
- <sup>5)</sup> Only together with HART electronics.
- 6) Without cable gland.
- 7) Display cannot be turned.

Pressure transmitters for food, pharmaceuticals and biotechnology

Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add "-Z" to Article No. and specify Order code.				
Pressure transmitter with mounting	A02	1	1	1
bracket (2 shackles, 4 nuts, 4 U-plates,	7102			
1 angle) made of:				
made completely of stainless steel, for wall or				
pipe mounting				
Cable socket for device plugs M12	4			
Stainless steel	A51	✓	✓	✓
Rating plate inscription				
(instead of English)				
• German	B10	✓ ,	<b>1</b>	1
• French	B12	1	<b>✓</b>	1
<ul><li>Spanish</li><li>Italian</li></ul>	B13 B14	<b>∀</b>	<b>v</b>	<b>∀</b>
English rating plate	B21	✓	✓	✓
Pressure units in inH <sub>2</sub> 0 and/or psi				
Quality Inspection Certificate (5-point char	C11	✓	✓	✓
acteristic curve test) according to IEC 60770-2 <sup>1)</sup>				
	040	,	,	,
Inspection certificate <sup>2)</sup>	C12	✓	✓	✓
Acc. to EN 10204-3.1				
Factory certificate	C14	✓	<b>√</b>	✓
Acc. to EN 10204-2.2				
Degree of protection IP65/IP68	D12	✓	✓	✓
(only for M20x1.5 and ½-14 NPT)				
Degree of protection IP6k9k	D46	✓	✓	✓
(only for M20x1.5)				
CRN approval Canada	E22	✓	✓	✓
(Canadian Registration Number)				
Export approval Korea	E11	✓	✓	✓
Ex-protection Ex ia according to EAC Ex	E80	✓	✓	✓
(Russia)				
Ex Approval Ex ia/ib NEPSI	E55	✓	✓	1
Only for SITRANS P300 with front-flush				
diaphragm (7MF81)				
Flange to EN 1092-1, Form B1				
• DN 25, PN 40 <sup>3)</sup>	M11	✓	✓	✓
• DN 40, PN 40	M13	✓	✓_	✓
• DN 40, PN 100	M23	<b>/</b>	<b>✓</b>	<b>✓</b>
• DN 50, PN 16	M04	<b>√</b>	1	1
• DN 50, PN 40	M14	1	1	1
• DN 80, PN 16	M06	<b>4</b>	1	1
• DN 80, PN 40	M16	•	•	•
Flanges to ASME B16.5				
• 1", class 150 <sup>4)</sup>	M40	1	1	1
• 1½", class 150	M41	<b>√</b>	1	1
• 2", class 150	M42	1	1	<b>√</b>
• 3", class 150 • 4", class 150	M43 M44	<b>✓</b>	<b>√</b>	1
• 4 , class 150 • 1", class 300 <sup>4)</sup>	M45	<b>✓</b>	<b>✓</b>	<b>✓</b>
• 1½", class 300	M46	1	<b>V</b>	<b>✓</b>
• 2", class 300	M47	1	1	<b>*</b>
• 3", class 300	M48	<b>✓</b>	1	1
• 4", class 300	M49	<b>√</b>	1	1
Threaded connector to DIN 3852-2, form A,				
thread to ISO 228				
• G ¾"-A, front-flush <sup>4)</sup>	R01	✓	✓	✓
• G 1"-A, front-flush <sup>4)</sup>	R02	1	✓	✓
• G 2"-A, front-flush	R04	✓	✓	✓
Tank connection <sup>5)</sup>				
Sealing is included in delivery				
• TG 52/50, PN 40	R10	✓	1	1
• TG 52/150, PN 40	R11	1	✓	1

Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add "-Z" to Article No. and				
specify Order code.				
Sanitary process connection according DIN 11851 (Dairy connection with slotted				
union nut)				
• DN 50, PN 25	N04	✓	✓	✓
• DN 80, PN 25	N06	✓	✓	✓
Tri-Clamp connection according				
<b>DIN 32676/ISO 2852</b> 3A compliant <sup>6)</sup>				
• DN 50/2", PN 16	N14	✓	✓	✓
• DN 65/2.5", PN 10	N15	✓	✓	✓
<ul> <li>Clamp 2" ISO 2852 PN 16</li> </ul>	N22	✓.	✓	✓.
• Clamp 3" ISO 2852 PN 16	N23	~	✓	✓
Varivent connection				
<ul> <li>3A and EHEDG compliant<sup>6)</sup></li> <li>Type N = 68 for Varivent housing</li> </ul>	N28	1	1	1
DN 40 125 and 1½" 6", PN 40	1420	ľ	•	•
Temperature decoupler up to 200 °C <sup>7)</sup>	P00	✓	✓	✓
for front-flush diaphragm version				
Sanitary process connection to DRD				
• DN 50, PN 40	M32	1	✓	✓
SMS threaded socket				
• 2"	M73	<b>V</b>	✓.	✓.
• 2½"	M74	1	1	1
• 3"	M75	<b>V</b>	<b>-</b>	•
Sanitary process connection to NEUMO Bio-Connect screw connection				
3A and EHEDG compliant <sup>6)</sup>				
• DN 50, PN 16	Q05	✓	✓	✓
• DN 65, PN 16	Q06	<b>V</b>	<b>V</b>	1
• DN 80, PN 16	Q07	<b>√</b>	1	1
<ul><li>DN 100, PN 16</li><li>DN 2", PN 16</li></ul>	Q08 Q13	<b>✓</b>	<b>∀</b>	<b>∀</b>
• DN 2½", PN 16	Q14	<b>*</b>	1	1
• DN 3", PN 16	Q15	1	1	1
• DN 4", PN 16	Q16	✓	✓	1
Sanitary process connection to NEUMO				
Bio-Connect S flange connection  • DN 2". PN 16	072	./	./	./
UNZ, FIN IO	Q72		•	•

Pressure transmitters for food, pharmaceuticals and biotechnology

### SITRANS P300 for gauge and absolute pressure

Selection and Ordering data	Order	code		
Further designs Add "-Z" to Article No. and specify Order code.		HART	PA	FF
Aseptic threaded socket to DIN 11864-1 Form A 3A compliant <sup>6)</sup> • DN 50, PN 25 • DN 65, PN 25 • DN 80, PN 25 • DN 100, PN 25	N33 N34 N35 N36	<b>* * * *</b>	<b>* * * *</b>	<b>* * * *</b>
Aseptic flange with notch to DIN 11864-2 Form A  3A compliant <sup>6)</sup> • DN 50, PN 16 • DN 65, PN 16 • DN 80, PN 16 • DN 100, PN 16	N43 N44 N45 N46	<b>* * * *</b>	<b>* * * *</b>	<b>*</b> * * *
Aseptic flange with groove to DIN 11864-2 Form A  3A compliant <sup>6)</sup>				
<ul><li>DN 50, PN 16</li><li>DN 65, PN 16</li></ul>	N43 + P11 N44 +	<b>√</b>	1	✓
• DN 80, PN 16	P11 N45 + P11		<b>✓</b>	
• DN 100, PN 16	N46 + P11	✓	✓	✓
Aseptic clamp with groove to DIN 11864-3 FormA  3A compliant <sup>6)</sup>				
<ul> <li>DN 50, PN 25</li> <li>DN 65, PN 25</li> <li>DN 80, PN 16</li> <li>DN 100, PN 16</li> </ul>	N53 N54 N55 N56	<b>* * * *</b>	<ul><li>✓</li><li>✓</li><li>✓</li></ul>	✓ ✓ ✓

Selection and Ordering data	Order	code		
Additional data Please add "-Z" to Article No. and specify Order code(s) and plain text.		HART	PA	FF
Measuring range to be set Specify in plain text (max. 5 characters): Y01: up to mbar, bar, kPa, MPa, psi	Y01	✓	<b>√</b> 8)	
Stainless steel tag plate and entry in device variable (measuring point description)  Max. 16 characters, specify in plain text:	Y15	✓	✓	✓
Measuring point text (entry in device variable)  Max. 27 characters, specify in plain text: Y16:	Y16	✓	✓	1
Entry of HART TAG Max. 8 characters, specify in plain text:	Y17	1		
Setting of the display in pressure units Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi, Note: The following pressure units can be selected: bar, mbar, mm H <sub>2</sub> O*, inH <sub>2</sub> O*), ftH <sub>2</sub> O*), mmHG, inHG, psi, Pa, kPa, MPa, g/cm², kg/cm², Torr, ATM or %	Y21	•	<b>✓</b>	•
kg/cm <sup>-</sup> , lorf, ATM or % *) ref. temperature 20 °C  Setting of the display in non- pressure units <sup>9</sup> )  Specify in plain text: Y22: up to I, m <sup>3</sup> , m, USg, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	Y22 + Y01	<b>√</b>		
Preset bus address (possible between 1 126) Specify in plain text: Y25:	Y25		✓	✓

Factory mounting of valve manifolds, see accessories.

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

✓ = available

### Ordering example

Item line: 7MF8023-1DB24-1AB7-Z

B line: A02 + Y01 + Y21

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

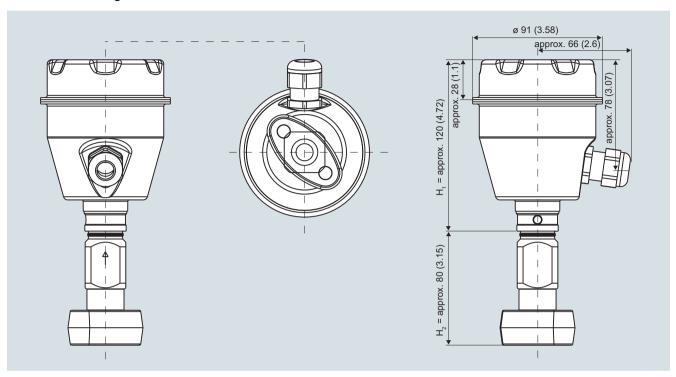
C line: Y21: bar (psi)

- 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.
- <sup>3)</sup> Special seal in Viton included in the scope of delivery (FKM; temperature range -20 ... +200 °C (-4 ... +392 °F))
- 4) Cannot be combined with Order code P00. Can only be ordered with silicone oil measuring cell filling.
- 5) The weldable socket can be ordered under accessories.
- 6) 3A compliance ensured only when 3A compliant sealing rings are used.
- <sup>7)</sup> Conformity according to 3A and EHEDG. The maximum permissible temperatures of the medium depend on the respective cell fillings (see medium conditions).
- 8) Measuring accuracies for PROFIBUS PA transmitters with Option Y01 are calculated in the same way as for HART devices.
- 9) Preset values can only be changed over SIMATIC PDM.

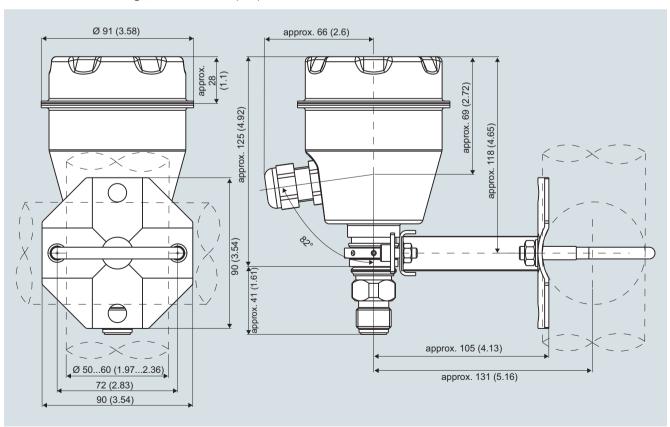
Pressure transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 for gauge and absolute pressure

### Dimensional drawings



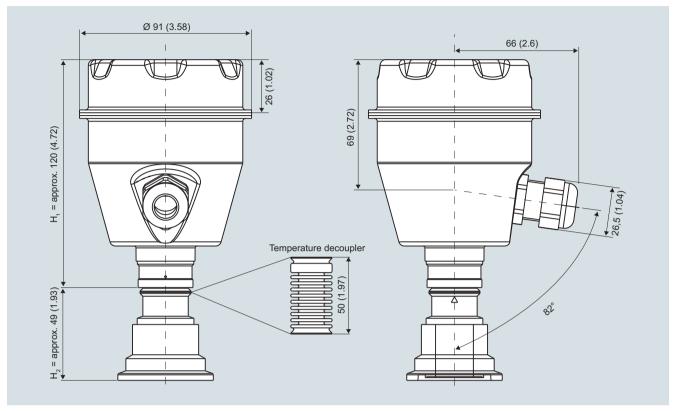
SITRANS P300, with oval flange, dimensions in mm (inch)



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

Pressure transmitters for food, pharmaceuticals and biotechnology

### SITRANS P300 for gauge and absolute pressure



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

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

 $H_1$  = 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.

Pressure transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 for gauge and absolute pressure

### Flanges according to EN and ASME

### Flange according to EN

#### EN 1092-1 Order DN PΝ $\emptyset D$ Hο code Approx. 52 mm (2") M11 25 40 115 mm (4.5") M13 40 40 150 mm (5.9") M23 40 100 170 mm (6.7") M04 50 165 mm (6.5") 16 M14 50 40 165 mm (6.5") M06 80 16 200 mm (7.9") M16 80 40 200 mm (7.9")

### Flanges according to ASME

### ASME B16.5

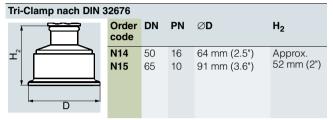


Order code	DN	PN	ØD	H <sub>2</sub>
M40	1"	150	110 mm (4.3")	Approx.
M41	11/2"	150	130 mm (5.1")	52 mm (2")
M42	2"	150	150 mm (5.9")	
M43	3"	150	190 mm (7.5")	
M44	4"	150	230 mm (9.1")	
M46	11/2"	300	155 mm (6.1")	
M47	2"	300	165 mm (6.5")	
M48	3"	300	210 mm (8.1")	
M49	4"	300	255 mm (10.0")	

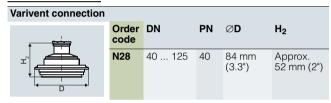
### NuG and pharmaceutical connections

#### Connections to DIN

DIN 11851 (milk pipe union with slotted union nut)						
<b>↑</b>	Order code	DN	PN	ØD	H <sub>2</sub>	
<b>1</b> D	N04 N06	50 80		92 mm (3.6") 127 mm (5.0")	Approx. 52 mm (2")	

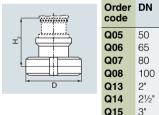


### Other connections



Sanitary process connection to DRD						
	Order code	DN	PN	ØD	H <sub>2</sub>	
T <sup>r</sup> D	M32	50	40	105 mm (4.1")	Approx. 52 mm (2")	

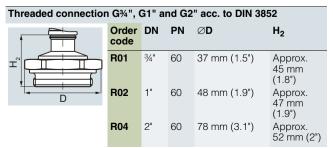
### Sanitary process screw connection to NEUMO Bio-Connect



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

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

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



Pressure transmitters

for food, pharmaceuticals and biotechnology

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

SMS threaded socket							
	Order code	DN	PN	ØD	H <sub>2</sub>		
I D	M73 M74 M75	2" 2½" 3"	25	70 x 1/6 mm 85 x 1/6 mm 98 x 1/6 mm	Approx. 52 mm (2")		

Aseptic threaded socket to DIN 11864-1 Form A						
()	Order code	DN	PN	ØD	H <sub>2</sub>	
I I	N33 N34 N35 N36	50 65 80 100	25 25 25 25	78 x 1/6" 95 x 1/6" 110 x ½" 130 x ½"	Approx. 52 mm (2")	
D						

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

Aseptic flange with groove to DIN 11864-2 Form A						
	Order code	DN	PN	ØD	H <sub>2</sub>	
Ŧ	N43 + P11	50	16	94	Approx. 52 mm (2")	
D D	N44 + P11	65	16	113		
	N45 + P11	80	16	133		
	N46 + P11	100	16	159		

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

Pressure transmitters for food, pharmaceuticals and biotechnology

### SITRANS P300 Accessories/Spare parts

Selection and Ordering data	Article No.
Spare parts / Accessories	
Mounting bracket and fastening parts kit made of stainless steel	7MF8997-1AA
Lid without window	-
gasket not included	7MF8997-1BA
Lid with glass window	
gasket not included	7MF8997-1BD
NBR enclosure sealing	7MF8997-1BG
Measuring point label	-
unlabeled	7MF8997-1CA
Cable gland	
• metal	7MF8997-1EA
plastic (blue)	7MF8997-1EB
Weldable sockets for PMC connection	714F 4007 0114
<ul> <li>PMC Style Standard: Thread 1½"</li> <li>PMC Style Minibolt: front-flush 1"</li> </ul>	7MF4997-2HA 7MF4997-2HB
·	/ WIF455/-2FID
Gaskets for PMC connection (packing unit = 5 units)	
PTFE seal for PMC Style Standard:	7MF4997-2HC
Thread 11/2"	
<ul> <li>Gasket made of Viton for PMC Style Minibolt: front-flush 1"</li> </ul>	7MF4997-2HD
Weldable socket for TG 52/50 and	-
TG 52/150 connection	
• TG 52/50 connection	7MF4997-2HE
• TG5 2/150 connection	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 FKM (Viton); temperature range: -20 +200 °C (-4 +392 °F), 10 units	
• DN 25, PN 40 (M11)	7MF4997-2HH
• 1", class 150 (M40)	7MF4997-2HK

Selection and Ordering data	Article No.
Documentation	
The entire documentation is available for download free-of-charge in various languages at: http://www.siemens.com/processinstrumentation/documentation	
Compact operating instructions • English, German, Spanish, French, Italian, Dutch	A5E03434657
Certificates (order only via SAP) instead of Internet download	-
<ul><li>hard copy (to order)</li></ul>	A5E03252406
• on DVD (to order)	A5E03252407
HART modem	
with USB interface	7MF4997-1DB

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

Pressure transmitters for food, pharmaceuticals and biotechnology

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

#### Overview

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

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

### Design

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

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

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

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

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

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

### Selection and Ordering data

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



Add <b>-Z</b> to the Article No. of the transmitter and add Order codes	Order code
SITRANS P300 7MF8021	T03
With process connection female thread ½-14 NPT in-sealed with PTFE sealing tape	
Delivery incl. high-pressure test certified by test report to EN 10204-2.2	
Further designs:	
Delivery includes mounting brackets and mounting clips made of stainless steel (instead of the mounting bracket supplied with the transmitter)	A02
Supplied acceptance test certificate to EN 10204- 3.1 for transmitters and mounted valve manifold	C12

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



Add -Z to the Article No. of the transmitter and add Order codes	Order code
SITRANS P300 7MF8020	T02
with process connection collar G½ A to EN 837-1 with gasket made of PTFE between valve manifold and transmitter	
Alternative sealing material:	
• Soft iron	A70
• Stainless steel, Mat. No. 14571	A71
• copper	A72
Delivery incl. high-pressure test certified by test report to EN 10204-2.2	
Further designs:	
Delivery includes mounting brackets and mounting clips made of stainless steel (instead of the mounting bracket supplied with the transmitter)	A02
Supplied acceptance test certificate to EN 10204- 3.1 for transmitters and mounted valve manifold	C12

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Pressure transmitters for food, pharmaceuticals and biotechnology

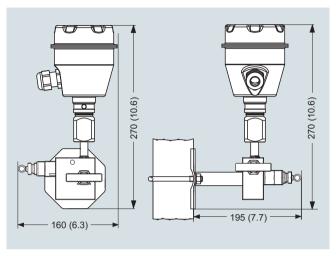
SITRANS P300 - Factory-mounting of valve manifolds on transmitters

### Dimensional drawings

### Valve manifolds mounted on SITRANS P300



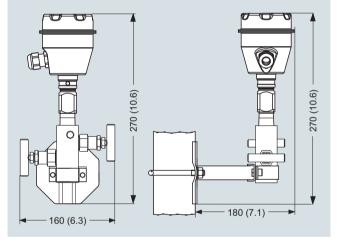
7MF9011-4EA valve manifold with mounted gauge pressure and absolute pressure transmitters



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



 $7MF9011\mbox{-}4FA$  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 transmitters for gauge pressure for the paper industry

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

#### Overview



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

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

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

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

Various versions of the pressure transmitters are available for measuring:

- · Gauge pressure
- Level
- Mass level
- · Volume level

#### Benefits

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

#### Application

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

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

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

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

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

#### SITRANS P, DS III series

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

Span (infinitely adjustable)

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

Nominal measuring range

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

#### SITRANS P300

Span (infinitely adjustable)

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

Nominal measuring range

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

Pressure transmitters for gauge pressure for the paper industry

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

### Design

#### SITRANS P DS III



Device front view, SITRANS P DS III

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

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

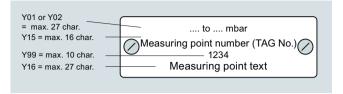
The approval label is located on the opposite side.

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

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

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

### Example for an attached measuring point label



#### SITRANS P300

The device comprises:

- Electronics
- Housing
- Measuring cell



Perspective view of the SITRANS P300

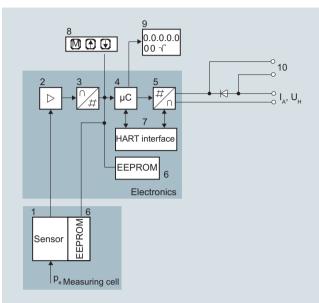
The housing has a screw-on lid (5) and, depending on the version, is with or without an inspection window. The electrical terminal housing, the buttons for operation of the device are located under this lid and, depending on the version, the display. The connections for the auxiliary power UH and the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

Pressure transmitters for gauge pressure for the paper industry

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

#### Function

### Operation of electronics with HART communication



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

### Function diagram of electronics

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

The diode circuit (10) protects against incorrect polarity.

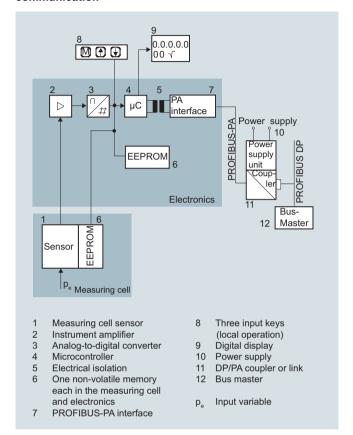
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The one memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced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

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

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

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

# Operation of electronics with PROFIBUS PA communication



Function diagram of electronics

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

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

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

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

Pressure transmitters for gauge pressure for the paper industry

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

# Operation of electronics with FOUNDATION Fieldbus communication

### 0.0.0.0.0 M A U 00√ Fieldbus Power supply Foundation EEPROM supply unit **Electronics** Sensor |p Measuring cell Measuring cell sensor Three input keys Instrument amplifier (local operation) 3 Analog-to-digital converter Digital display 10 Microcontroller Power supply 5 Electrical isolation 6 One non-volatile memory Input variable each in the measuring cell and electronics FF interface

### Function diagram of electronics

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

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

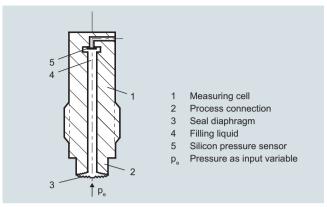
Using the three input buttons (8) you can parameterize the pressure transmitter directly at the measuring point. The input buttons can also be used to control the view of the results, the error messages and the operating modes on the display (9).

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

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

### Mode of operation of the measuring cell

Measuring cell for gauge pressure with front-flush diaphragm



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

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

#### **Parameterization**

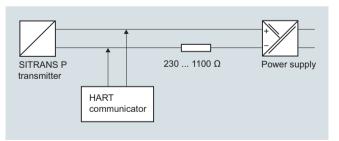
Depending on the version, there are a range of options for parameterizing the pressure transmitter and for setting or scanning the parameters.

Parameterization using the input buttons (local operation)

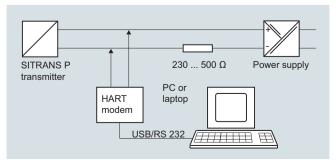
With the input buttons you can easily set the most important parameters without any additional equipment.

### Parameterization using HART

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



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



HART communication between a PC communicator and a pressure transmitter

Pressure transmitters

for gauge pressure for the paper industry

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

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

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

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

### Diagnostic functions for DS III with HART and P300 with HART

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

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

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

### Parameterization through PROFIBUS PA interface

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

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

### Parameterization through FOUNDATION Fieldbus interface

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

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

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

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

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

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

Physical dimensions available for the display

Physical variable	Physical dimensions
Pressure (setting can also be made in the factory)	MPa, hPa, kPa, Pa, bar, mbar, torr, atm, psi, g/cm², kg/cm², mm $H_2O$ , mm $H_2O$ (4 °C), in $H_2O$ , in $H_2O$ (4 °C), tt $H_2O$ , mm $H_3$ in $H_3$
Level (height data)	m, cm, mm, ft, in, yd
Mass	g, kg, t, lb, Ston, Lton, oz
Volume	m³, dm³, hl, yd³, ft³, in³, US gallon, lmp. gallon, bushel, barrel, barrel liquid
Temperature	K, °C, °F, °R
Miscellaneous	%

Pressure 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 conr	nection for the pape	er industry		
Input				
Measured variable	Gauge pressure	I	1	
Span (fully adjustable) or measuring range, max. operating pressure and max. test pressure	HART	PROFIBUS PA/ FOUNDATION Fieldbus		
	Span	Nominal measuring range	Max. operating pressure MAWP (PS)	Max. perm. test pressure
	0.01 1 bar 1 100 kPa 0.15 14.5 psi	1 bar 100 kPa 14.5 psi	4 bar 400 kPa 58 psi	6 bar 600 kPa 87 psi
	0.04 4 bar 4 400 kPa 0.58 58 psi	4 bar 400 kPa 58 psi	7 bar 0.7 MPa 102 psi	10 bar 1 MPa 145 psi
	0.16 16 bar 16 1600 kPa 2.3 232 psi	16 bar 1600 kPa 232 psi	21 bar 2.1 MPa 305 psi	32 bar 3.2 MPa 464 psi
Lower measuring limit (For PMC-Style Minibolt no span < 500 mbar adjustable)	100 mbar a/10 kPa	a/1.45 psi a	'	'
Upper measuring limit	100% of max. span			
Output	HART		PROFIBUS PA/ FOU	JNDATION Fieldbu
Output signal	4 20 mA		Digital PROFIBUS PA FOUNDATION Field	
Lower limit (infinitely adjustable)	3.55 mA, factory pr		-	
• Upper limit (infinitely adjustable)	23 mA, factory presoptionally set to 22.		-	
Load				
Without HART communication	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0$ $U_{\rm H}$ : Power supply in	n V	-	
With HART communication	$R_{\rm B} = 230 \dots 500 \Omega  (S_{\rm R} = 230 \dots 1100  \Omega)$	SIMATIC PDM) or (HART-Communicator)	-	
Physical bus	-		IEC 61158-2	
Protection against polarity reversal	other with max. sup	. ,	y reversal. Each conr	nection against the
Electrical damping (step width 0.1 s)	Set to 2 s (0 100	*		
Measuring accuracy	Acc. to IEC 60770-			
Reference conditions (All error data refer always refer to the set span)	<ul> <li>Increasing character</li> <li>Start-of-scale value</li> <li>Stainless steel sea</li> <li>Silicone oil filling</li> <li>Room temperature</li> </ul>	ue 0 bar/kPa/psi al diaphragm		
Measuring span ratio r (spread, Turn-Down)	r = max. measuring	g span/set measuring	span or nom. pressur	e range
Error in measurement at limit setting incl. nysteresis and reproducibility				
Linear characteristic				
- r ≤ 5	≤ 0.075 %			
- 5 < r ≤ 100	$\leq (0.005 \cdot r + 0.05)$	%		
nfluence of ambient temperature (in percent per 28 °C (50 °F))	$\leq$ (0.08 · r + 0.16) %	ó		
Long-term stability (temperature change ± 30 °C (± 54 °F))	$\leq$ (0.25 · r) % in 5 ye	ears		
Effect of mounting position		a/0.00145 psi per 10° l on is possible with pos		tion)
Effect of auxiliary power supply (in percent per change in voltage)	0.005 % per 1 V			
Measuring value resolution for PROFIBUS PA and FOUNDATION Fieldbus	3 · 10 <sup>-5</sup> of nominal r	neasuring range		

Pressure transmitters for gauge pressure for the paper industry

# SITRANS P DS III with PMC connection

SITRANS P, DS III series for gauge pressure with PMC	HART	PROFIBUS PA and FOUNDATION
		Fieldbus
Rated conditions		
Degree of protection		
• according to EN 60529	IP66 (optional IP66/IP68)	
• according to NEMA 250	Type 4X	
Temperature of medium	-40 +100 °C (-40 +212 °F)	
Ambient conditions		
Ambient temperature	-20 +85 °C (-4 +185 °F)	
- Transmitter	-40 +85 °C (-40 +185 °F)	
Storage temperature	-50 +85 °C (-58 +185 °F)	
Climatic class		
- Condensation	Relative humidity 0 100 % Condensation permissible, suitable for us	se in the tropics
Electromagnetic Compatibility		
- Emitted interference and interference immunity	Acc. to IEC 61326 and NAMUR NE 21	
Design		
Weight (without options)	≈ 1.5 kg (≈ 3.3 lb)	
Enclosure material	Low-copper die-cast aluminum, GD-AlSi1 no. 1.4408	2 or stainless steel precision casting, mat.
Wetted parts materials		
Gasket (standard)	PTFE flat gasket	
• O-ring (minibolt)	FPM (Viton) or optionally: FFPM or NBR	
Measuring cell filling	Silicone oil or inert filling liquid	
Process connection (standard)	Flush-mounted, 11/2", PMC Standard design	gn
Process connection (minibolt)	Flush-mounted, 1", minibolt design	
Power supply $\emph{\textbf{U}}_{H}$		
Terminal voltage on transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically-safe mode	-
Power supply	-	Supplied through bus
Separate 24 V power supply	-	Not necessary
Bus voltage		
• Not Ex	-	9 32 V
With intrinsically-safe operation	-	9 24 V
Current consumption		
Basic current (max.)	-	12.5 mA
• Start-up current ≤ basic current	-	Yes
Max. current in event of fault	-	15.5 mA
Fault disconnection electronics (FDE) available	-	Yes
Certificates and approvals		
Classification according to PED 2014/68/EU	For gases of fluid group 1 and liquids of flarticle 4, paragraph 3 (sound engineering	uid group 1; complies with requirements of g practice)

Pressure transmitters for gauge pressure for the paper industry

		SITRANS F	DS III with PMC connection
HART communication		FOUNDATION Fieldbus	
HART communication	230 1100 Ω	communication	
Protocol	HART Version 5.x	Function blocks	3 function blocks analog input, 1 function block PID
Software for computer	SIMATIC PDM	Analog input	
PROFIBUS PA communication Simultaneous communication with	4	<ul> <li>Adaptation to customer-specific process variables</li> </ul>	Yes, linearly rising or falling characteristic
master class 2 (max.)	·	<ul> <li>Electrical damping, adjustable</li> </ul>	0 100 s
The address can be set using	Configuration tool or local opera- tion (standard setting address 126)	- Simulation function	Output/input (can be locked within the device with a bridge)
Cyclic data usage	,	- Failure mode	parameterizable (last good value, substitute value, incorrect value)
Output byte	5 (one measured value) or 10 (two measured values)	- Limit monitoring	Yes, one upper and lower warn-
• Input byte	0, 1, or 2 (register operating mode and reset function for	- Limit monitoring	ing limit and one alarm limit respectively
Internal preprocessing	metering)	<ul> <li>Square-rooted characteristic for flow measurement</li> </ul>	Yes
Device profile	PROFIBUS PA Profile for Process Control Devices Version	• PID	Standard FOUNDATION Field- bus function block
	3.0, class B	<ul> <li>Physical block</li> </ul>	1 resource block
Function blocks	2	Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block
Analog input			LCD
<ul> <li>Adaptation to customer-specific process variables</li> </ul>	Yes, linearly rising or falling characteristic	<ul> <li>Pressure transducer block</li> </ul>	
- Electrical damping, adjustable	0 100 s	<ul> <li>Can be calibrated by applying two pressures</li> </ul>	Yes
- Simulation function	Input /Output	- Monitoring of sensor limits	Yes
- Failure mode	parameterizable (last good value, substitute value, incorrect value)	<ul> <li>Simulation function: Measured pressure value, sensor tem-</li> </ul>	Constant value or over parameterizable ramp function
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respectively	perature and electronics tem- perature	
Register (totalizer)	Can be reset, preset, optional direction of counting, simulation function of register output		
- Failure mode	parameterizable (summation with last good value, continuous summation, summation with incorrect value)		
- Limit monitoring	One upper and lower warning limit and one alarm limit respec- tively		
<ul> <li>Physical block</li> </ul>	1		

2

Yes

Yes

Max. 30 nodes

Parameterizable

Constant value or over parameterizable ramp function

Transducer blocks

• Pressure transducer block

- Can be calibrated by applying two pressures

- Monitoring of sensor limits

- Specification of a container

and implementation point of square-root extraction

- Simulation function for mea-sured pressure value and sen-sor temperature

characteristic with - Square-rooted characteristic for flow measurement - Gradual volume suppression

Pressure transmitters for gauge pressure for the paper industry

# SITRANS P DS III with PMC connection

Selection and Orderin	g data		rtic						
	ransmitters for gauge	7	M F	4	1 :	3 3	3 -		
pressure, with PMC co series DS III with HAR						-			ĺ
	No. for the online configu-								
ration in the PIA Life	Cycle Portal.								
Measuring cell filling	Measuring cell- cleaning								
Silicone oil	normal	1							
nert liquid	grease-free to cleanliness level 2	3							
Measuring span (min.	max.)								
0.01 1 bar <sup>1)</sup>	(0.15 14.5 psi) <sup>1)</sup>		В						
0.04 4 bar	(0.58 58 psi)		С						
0.1.6 16 bar	(2.32 232 psi)		D						
<b>Wetted parts materials</b> Seal diaphragm	Connection shank								
Hastelloy	Stainless steel		E						
	Glairii Goo olGGI		ľ						
Process connection • PMC Style Standard:	Throad 11%"			,					
	ont-flush 1" (not with mini-			3					
	(7.25 psi) - version "B")			ľ					
Non-wetted parts mate									
<ul> <li>Housing made of die-</li> </ul>	cast aluminium				0				
<ul> <li>Housing stainless stee</li> </ul>	el precision casting				3				
Version									
<ul> <li>Standard version, Ger</li> </ul>						ŀ	1		
setting for pressure ur									
setting for pressure ur							2		
<ul> <li>Chinese version, Engli setting for pressure un</li> </ul>	sh plate inscription,					3	3		
• .	D with compact operating								
nstructions in various E									
Explosion protection  None							A		
<ul> <li>None</li> <li>With ATEX, Type of pr</li> </ul>	otection:							,	
- "Intrinsic safety (Ex i							В	3	
- "Explosion-proof (Ex							D		
- "Ex nA/ic (Zone 2)"3							E		
FM + CSA intrinsic sa	fe (is) <sup>4)</sup>						F		
• With FM + CSA, Type	of protection:								
- "Intrinsic Safe and E	xplosion Proof (is $+ xp)^{(3)4}$						N	ıc	
Electrical connection	/ cable entry								
Female thread M20 x	1.5							В	
<ul> <li>Female thread ½-14 N</li> </ul>								С	
<ul> <li>Device plugs M12 (statement)</li> </ul>	ainless steel) <sup>5) 6)</sup>							F	
Display									١.
Without display	. (alianda), a a r								9
<ul> <li>Without visible display setting: mA)</li> </ul>	y (uispiay concealed,								ľ
<ul><li>With visible display (s</li></ul>	etting: mA)								ı
	c display (setting as spec-								ŀ
• Will Cusiomer-sneciii									

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

Included in delivery of the device:

- Quick-start guide
- Sealing ring
- 1) Only with "PMC Style Standard" process connection
- 2) Without cable gland, with blanking plug
- 3) Configurations with device plugs M12 are only available in Ex ic.
- 4) Explosion protection acc. to FM/CSA: suitable for installations according to NEC 500/505.
- 5) Only in connection with Ex approval A, B, E or F.
- 6) M12 delivered without cable socket

Selection and Orderi	<u> </u>	Ar	tic	le	Ν	Э.	
SITRANS P pressure pressure, with PMC	transmitter for gauge connection						
DS III with PROFIBU		71	ИF	4	1	3 4	١.
DS III with FOUNDAT	` '	71	ИF	4	1	3 5	; <b>-</b>
	Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		1		i	-	
Measuring cell filling	Meas. cell cleaning						П
Silicone oil	normal	1					
Inert liquid	grease-free to cleanliness level 2	3					
Nominal measuring		-					
1 bar <sup>1)</sup>	(14.5 psi) <sup>1)</sup>		3				
4 bar	(58 psi)		2				
16 bar	(232 psi)		)				
Wetted parts materia							
Seal diaphragm	Connection shank						
Hastelloy	Stainless steel		В				
Process connection		_	Ē				
PMC Style Standard				2			
	front-flush 1" (minimum			3			
span: 500 mbar (7.2	25 psi), not available with			ľ			
1-bar-measuring cel	I (Option B))						
Non-wetted parts ma	nterials						
<ul> <li>Housing made of die</li> </ul>	e-cast aluminium				0		
<ul> <li>Housing stainless st</li> </ul>	eel precision casting				3		
Version							
	erman plate inscription,					1	l
setting for pressure							
<ul> <li>International version</li> </ul>	, English plate inscription,					2	2
setting for pressure							
<ul> <li>Chinese version, Eng setting for pressure u</li> </ul>						3	5
• .	VD with compact operating						
instructions in various							
Explosion protection	1						П
<ul> <li>None</li> </ul>							Α
• With ATEX, Type of p							Ш
- "Intrinsic safety (Ex							В
- "Explosion-proof (E							D
- "Ex nA/ic (Zone 2)							E
• FM + CSA intrinsic s							F
• With FM + CSA, Typ							
- Intrinsic Safe and	Explosion Proof (is + xp)"3)5)						N
Electrical connection	•						
• Female thread M20							
• Female thread ½-14							1
Device plugs M12 (s	stainless steel) <sup>6) 7)</sup>						
Display							
Without display							
	ay (display concealed,						
<ul><li>setting: bar)</li><li>With visible display</li></ul>	(actting, bor)						
	(setting: par)						
	ific display (setting as spec-						

Included in delivery of the device:

- Quick-start guide
- Sealing ring
- 1) Only with "PMC Style Standard" process connection
- 2) Sealing is included in delivery.
- 3) Without cable gland, with blanking plug
- 4) Configurations with device plugs M12 are only available in Ex ic.
- 5) Explosion protection acc. to FM/CSA: suitable for installations according to NEC 500/505
- 6) Only in connection with Ex approval A, B, E or F.
- 7) M12 delivered without cable socket

Pressure transmitters for gauge pressure for the paper industry

# SITRANS P DS III with PMC connection

Selection and Ordering data	Order	code		
Further designs	0.00.	HART	PA	FF
Add "-Z" to Article No. and specify Order				•
code.				
Device plugs				
• Angled	A32	<b>√</b>		
Han 8D (metal, gray)	A33	✓ .		
M12 cable sockets (metal (CuZn))	A50	✓	✓	<b>✓</b>
Rating plate inscription (instead of German)				
• English	B11	1	1	1
• French	B12	1	1	1
• Spanish	B13	1	1	1
• Italian	B14	1	1	1
Cyrillic (russian)	B16	✓	✓	✓
English rating plate	B21	1	1	1
Pressure units in inH <sub>2</sub> 0 and/or psi				
Quality Inspection Certificate (5-point char-	C11	1	1	1
acteristic curve test) according to IEC 60770-2				
Inspection certificate	C12	✓	1	1
Acc. to EN 10204-3.1				
Factory certificate	C14	✓	1	1
Acc. to EN 10204-2.2				
"Functional safety (SIL2)" certificate acc. to IEC 61508	C20	✓		
"Functional safety (SIL2/3)" certificate acc. to IEC 61508	C23	✓		
PED for Russia with initial calibration mark	C99	✓	✓	✓
Setting of the upper saturation limit of the output signal to 22.0 mA	D05	1	✓	✓
<b>Degree of protection IP66/IP68</b> (only for M20 x 1.5 and ½-14 NPT)	D12	✓	✓	✓
Export approval Korea	E11	✓	<b>✓</b>	<b>✓</b>
Explosion-proof "Intrinsic safety" to	E55 <sup>1)</sup>	1	✓	✓
NEPSI (China) (only for transmitter 7MF4				
Explosion protection "Explosion-proof"	E56 <sup>1)</sup>	1	1	1
to NEPSI (China)				
(only for transmitter 7MF4D)				
Ex protection "Zone 2" to NEPSI (China)	E57 <sup>1)</sup>	✓	✓	✓
(only for transmitter 7MF4E)  Ex protection "Ex ia", "Ex d" and "Zone 2"	E58 <sup>1)</sup>	1	1	1
to NEPSI (China)				
(only for transmitter 7MF4R)				
Mounting	<b>D</b> 0.	,		
<ul> <li>Weldable sockets for standard 1½" threaded connection</li> </ul>	P01	<b>V</b>	<b>V</b>	<b>✓</b>
• Weldable socket for minibolt connection 1"	P02	✓	✓	✓
(incl. screw 5/16-18 UNC-2B and washer)				

When the additional ex option is selected, the ATEX marking on the device is omitted. Only the Ex option selected via the Z option is marked.

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

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

✓ = available

### ordering example

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

B line: C11 + Y01 + Y21

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

C line: Y21: bar (psi)

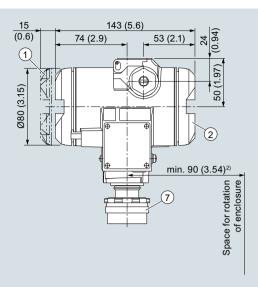
<sup>1)</sup> Measuring accuracies for PROFIBUS PA transmitters with Option Y01 are calculated in the same way as for HART devices.

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

Pressure transmitters for gauge pressure for the paper industry

### SITRANS P DS III with PMC connection

#### Dimensional drawings



29 (1.14) 84 (3.31) (5) (21.5) 061. xondqe = H

- 1 Electronics side, local display (longer overall length for cover with inspection window)<sup>1)</sup>
- (2) Connection side<sup>1)</sup>
- (3) Electrical connection:
  - M20 x 1,5 screw gland
  - 1/2-14 NPT screw gland
  - M12 device plug

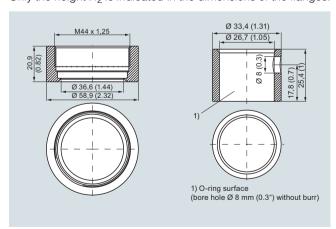
- 4 Cover over buttons
- 5 Blanking plug
- 6 Safety catch (only for "flameproof enclosure" type of protection; not shown in the drawing)
- 7 Process connection: PMC standard
- 1) In addition, allow approx. 20 mm (0.79 inch) for the thread length
- <sup>2)</sup> 92 mm (3.62 inch) minimum distance for rotating with indicator

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

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

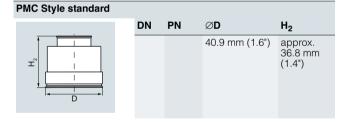
 $\ensuremath{\mathsf{H}}_1 = \ensuremath{\mathsf{Height}}$  of the SITRANS P DS III up to a defined cross-section

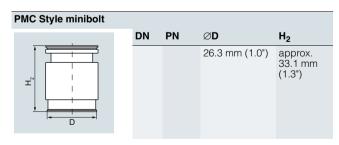
 $H_2$  = Height of the flange up to this defined cross-section Only the height  $H_2$  is indicated in the dimensions of the flanges.



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

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





Pressure transmitters for gauge pressure for the paper industry

# SITRANS P300 with PMC connection

# Technical specifications

lechnical specifications						
SITRANS P300 for gauge pressure with PMC connection fo	r the paper industry					
Input						
Measured variable	Gauge pressure (fro	nt-flush)				
Span (fully adjustable) or measuring range, max. operating pressure and max. test pressure	HART	PROFIBUS PA/ FOUNDATION Fieldbus				
	Span	Nominal measuring range	Max. operating pressure MAWP (PS)	Max. perm. test pressure		
	0.01 1 bar 1 100 kPa 0.15 14.5 psi	1 bar 100 kPa 14.5 psi	4 bar 400 kPa 58 psi	6 bar 600 kPa 87 psi		
	0.04 4 bar 4 400 kPa 0.58 58 psi	4 bar 400 kPa 58 psi	7 bar 0.7 MPa 102 psi	10 bar 1 MPa 145 psi		
	0.16 16 bar 16 1600 kPa 2.3 232 psi	16 bar 1600 kPa 232 psi	21 bar 2.1 MPa 305 psi	32 bar 3.2 MPa 464 psi		
Lower measuring limit (For PMC-Style Minibolt no span < 500 mbar adjustable)	100 mbar a/10 kPa	a/1.45 psi a	'			
Upper measuring limit	100 % of max. span					
Output	HART		PROFIBUS PA/ FOU	JNDATION Fieldbu		
Output signal	4 20 mA		Digital PROFIBUS PA FOUNDATION Fields			
Lower limit (infinitely adjustable)	3.55 mA, factory pre	eset to 3.84 mA	-			
Upper limit (infinitely adjustable)	23 mA, factory presoptionally set to 22.0		-			
Load						
Without HART communication	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0$ $U_{\rm H}$ : Power supply in	.023 A in Ω, V	-			
With HART communication	$R_{\rm B} = 230 \dots 500 \Omega$ ( $R_{\rm B} = 230 \dots 1100 \Omega$ tor)	SIMATIC PDM) or (HART Communica-	-			
Physical bus	-		IEC 61158-2			
Protection against polarity reversal	Protected against shother with max. supp	nort-circuit and polarit	y reversal. Each conr	ection against the		
Electrical damping (step width 0.1 s)	Set to 2 s (0 100 s	3)				
Measuring accuracy	Acc. to IEC 60770-1					
Reference conditions	<ul> <li>Increasing charac</li> <li>Start-of-scale valu</li> <li>Stainless steel sea</li> <li>Measuring cell wit</li> <li>Room temperature</li> </ul>	e 0 bar/kPa/psi Il diaphragm h silicone oil				
Measuring span ratio r (spread, Turn-Down)	r = max. measuring	span/set measuring	span or nom. pressur	e range		
Error in measurement at limit setting incl. hysteresis and reproducibility						
Linear characteristic						
- r ≤ 5	≤ 0.075 %					
- 5 < r ≤ 100	$\leq (0.005 \cdot r + 0.05)$	%				
Influence of ambient temperature (in percent per 28 °C (50 °F))	≤ (0.08 · r + 0.16) %					
Long-term stability (temperature change ± 30 °C (± 54 °F))	≤ (0.25 · r) % in 5 ye	ars				
Effect of mounting position	(zero point correction	n/0.00145 psi per 10° i n is possible with pos	nclination ition error compensat	ion)		
Effect of auxiliary power supply (in percent per change in voltage)	0.005 % per 1 V					
Measuring value resolution for PROFIBUS PA and FOUNDATION Fieldbus	3 · 10 <sup>-5</sup> of nominal m	neasuring range				

Pressure transmitters for gauge pressure for the paper industry

# SITRANS P300 with PMC connection

SITRANS P300 for gauge pressure with PMC connecti	ion for the paper industry	
Rated conditions		
Installation conditions		
Ambient temperature	Observe the temperature class in are	as subject to explosion hazard.
Measuring cell with silicone oil	-40 +85 °C (-40 +185 °F)	
Display readable	-30 +85 °C (-22 +185 °F)	
Storage temperature	-50 +85 °C (-58 +185 °F)	
Climatic class		
Condensation	Relative humidity 0 100 % Condensation permissible, suitable for	or use in the tropics
Degree of protection		
• according to EN 60529	IP65, IP68	
• according to NEMA 250	Type 4X, enclosure cleaning, resistar	nt to lyes, steam to 150 °C (302 °F)
Electromagnetic Compatibility		
• Emitted interference and interference immunity	Acc. to IEC 61326 and NAMUR NE 2	1
Medium conditions		
Temperature of medium		
Measuring cell with silicone oil	-40 +100 °C (-40 +212 °F)	
Design		
Weight (without options)	Approx. 1 kg (2.2 lb)	
Enclosure material	Stainless steel, mat. no. 1.4301/304	
Material of parts in contact with the medium		
Seal diaphragm	Hastelloy C276, mat. no. 2.4819	
Measuring cell filling	Silicone oil	
Surface quality touched-by-media	Ra-values $\leq$ 0.8 $\mu$ m (32 $\mu$ inch)/welds	Ra ≤ 1.6 μm (64 μ inch)
Power supply U <sub>H</sub>	HART	PROFIBUS PA/ FOUNDATION Fieldbus
Terminal voltage on transmitter	10.5 42 V DC for intrinsically safe operation: 10.5 30 V DC	
Power supply		Supplied through bus
Separate power supply	-	Not necessary
Bus voltage		
• Without Ex	-	9 32 V
With intrinsically-safe operation	-	9 24 V
Current consumption		
Max. basic current	-	12.5 mA
• Start-up current ≤ basic current	-	Yes
Max. fault current in the event of a fault	-	15.5 mA
Fault disconnection electronics (FDE) available	-	Yes

Pressure transmitters for gauge pressure for the paper industry

# SITRANS P300 with PMC connection

Certificates and approvals	HART	PROFIBUS PA/ FOUNDATION Fieldbus
Classification according to PED 2014/68/EU	For gases of fluid group 1 and liquids of fl Article 4, paragraph 3 (sound engineerin	luid group 1; complies with requirements of g practice)
Explosion protection		
Intrinsic safety "i"	PTB 05 ATEX 2048	
Marking	II 1/2 G Ex ia IIC/IIB T4/T5/T6 Ga/Gb	
Permissible ambient temperature		
• Temperature class T4	-40 +85 °C (-40 +185 °F)	
• Temperature class T5	-40 +70 °C (-40 +158 °F)	
• Temperature class T6	-40 +60 °C (-40 +140 °F)	
Connection	To certified intrinsically-safe circuits with peak values:	To certified intrinsically-safe circuits with peak values:
	$U_i = 30 \text{ V}, I_i = 100 \text{ mA},$ $P_i = 750 \text{ mW}, R_i = 300 \Omega$	FISCO supply unit: $U_i = 17.5 \text{ V, } I_i = 380 \text{ mA,}$ $P_i = 5.32 \text{ W}$
		Linear barrier: $\overline{U_i} = 24 \text{ V}, I_i = 250 \text{ mA}, P_i = 1.2 \text{ W}$
Effective inner capacitance:	$C_i = 6 \text{ nF}$	C <sub>i</sub> = 1.1 nF
Effective internal inductance:	$L_i = 0.4 \text{ mH}$	$L_i \le 7 \mu H$
Explosion protection to FM for USA and Canada (cFM <sub>US</sub> )		
<ul> <li>Identification (DIP) or (IS); (NI)</li> </ul>	Certificate of Compliance 3025099	
	CL I, DIV 1, GP ABCD T4 T6; CL II, DIV T4 T6; CL I, DIV 2, GP ABCD T4 T6;	/ 1, GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC 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 DIV 2, GP ABCD T4 T6; CL II, DIV 2, G	V 1, GP EFG; CL III; Ex ia IIC 4 T6; CL I, iP FG; CL III

Pressure transmitters for gauge pressure for the paper industry

# **SITRANS P300 with PMC connection**

SITHANS FOUL WILL FING COL	inection	
HART communication		FOUNDATION Field
HART	230 1100 Ω	Function blocks
Protocol	HART Version 5.x	Function blocks
Software for computer	SIMATIC PDM	<ul> <li>Analog input</li> </ul>
PROFIBUS PA communication Simultaneous communication with	4	<ul> <li>Adaptation to cu specific process</li> </ul>
master class 2 (max.)		- Electrical dampir
The address can be set using	Configuration tool Local operation	- Simulation function
	(standard setting Address 126)	- Failure mode
Cyclic data usage		
Output byte	One measured value: 5 bytes Two measured values: 10 bytes	- Limit monitoring
• Input byte	Register operating mode: 1 bytes	- Square-rooted cl
	Reset function due to metering. 1 bytes	for flow measure • PID
Device profile	PROFIBUS PA Profile for Process Control Devices Version 3.0, class B	<ul> <li>Physical block</li> </ul>
Function blocks	2	Transducer blocks
Analog input	_	
Adaptation to customer-specific process variables	Linearly rising or falling characteristic	Pressure transduction to the additional and th
- Electrical damping	0 100 s adjustable	<ul> <li>Can be calibrate two pressures</li> </ul>
- Simulation function	Input /Output	- Monitoring of ser
- Limit monitoring	One upper and lower warning limit and one alarm limit respectively	<ul> <li>Simulation function pressure value, seperature and elements</li> </ul>
Register (totalizer)	Can be reset and preset Optional direction of counting Simulation function of the register output	perature
- 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	
<ul> <li>Specification of a container characteristic with</li> </ul>	Max. 31 nodes	
- Characteristic curve	Linear	
- Simulation function	Available	
Transducer block "Electronic temperature"		

Available

# dbus

- ustomers variables
- oing, adjustable
- tion
- characteristic ement
- cer block
- ed by applying
- ensor limits
- tion: Measured sensor temectronics tem-

3 function blocks analog input, 1 function block PID

Yes, linearly rising or falling characteristic

0 ... 100 s

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

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

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

Yes

Standard FOUNDATION Fieldbus function block

1 resource block

1 transducer block Pressure with calibration, 1 transducer block LCD

Yes

Constant value or over parameterizable ramp function

temperature" Simulation function

Pressure transmitters for gauge pressure for the paper industry

# SITRANS P300 with PMC connection

Selection and Ordering	g data	Aı	rtic	le	No		
	re transmitters with PMC mber measuring housing, n English						
with 4 20 mA / HAR7	Г	7	3 -				
with PROFIBUS PA		7	M F	8	1 2	4 -	
with FOUNDATION Fieldbus (FF)		7	M F	8	1 2	5 -	
✓ Click on the Article Nation in the PIA Life Care	lo. for the online configura- ycle Portal.		1		-		۳
Measuring cell filling Silicone oil	Measuring cell cleaning normal	1					
Inert liquid	Cleanliness level 2 to DIN 25410	3					
Measuring span							
1 bar <sup>1)</sup> 4 bar	(14.5 psi)		B C				
4 bar 16 bar	(58 psi) (232 psi)		D				
Wetted parts materials	· · · · · · · · · · · · · · · · · · ·						
Seal diaphragm	Measuring cell						
Hastelloy	Stainless steel		E	3			
500 mbar (7.25 psi), r 1-bar-measuring cell (	Option B))			3			
Non-wetted parts mate  • Stainless steel, deep- polished	erials drawn and electrolytically				4		
Version • Standard versions		_				1	
Explosion protection						Ι.	
<ul><li>None</li><li>With ATEX, Type of pre</li></ul>	otection.					Α	,
- "Intrinsic safety (Ex i						В	3
<ul> <li>Zone 20/21/22<sup>2)</sup></li> </ul>						C	
• Ex nA/nL (Zone 2) <sup>3)</sup>						E	
<ul> <li>With FM + CSA, Type</li> <li>"Intrinsic Safe (is)" (g</li> </ul>						N	1
Electrical connection/	· · · · · · · · · · · · · · · · · · ·	-				Ë	
<ul> <li>Screwed gland M20 x</li> </ul>							Α
• Screwed gland M20 x							В
<ul> <li>Screwed gland M20 x</li> <li>Device plug M12 (stai</li> </ul>	. ,						C
without cable socket)	111000 01001),						ŭ
• ½-14 NPT metal threa	·						H
<ul> <li>½-14 NPT stainless st</li> </ul>	eei thread <sup>o</sup>						J

Selection and Ordering data	Article No.
SITRANS P300 pressure transmitters with PMC connection, single-chamber measuring housing, rating plate inscription in English	
with 4 20 mA / HART	7 M F 8 1 2 3 -
with PROFIBUS PA	7 M F 8 1 2 4 -
with FOUNDATION Fieldbus (FF)	7 M F 8 1 2 5 -
Display	
<ul> <li>Without display, with keys, closed lid</li> <li>With display and keys, closed lid <sup>7)</sup></li> </ul>	1 2
With display and keys, lid with polycarbonate disc (setting on HART devices: mA, with PROFIBUS PA and FOUNDATION Fieldbus equipment: pressure units) <sup>7)</sup>	4
<ul> <li>With display and keys (setting acc. to specifications, Order code "Y21" or "Y22" required), lid with polycarbonate disc <sup>7)</sup></li> </ul>	5
With display and keys, lid with glass pane (setting on HART devices: mA, with PROFIBUS PA and FOUNDATION Fieldbus equipment: pressure unit) <sup>7)</sup>	6
With display (setting acc. to specifications, Order code "Y21" or "Y22" required), lid with glass pan- el <sup>7)</sup>	7

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

Included in delivery of the device:
• Quick-start guide
• Sealing ring

- Only with "Standard" process connection"
   Not in conjunction with electrical connection option A.
- 3) Only available together with electrical connection options B, C or G.
  4) Explosion protection acc. to FM/CSA: suitable for installations according to NEC 500/505.
- 5) Only together with HART electronics.
- 6) Without cable gland.
- 7) Display cannot be turned.

Pressure 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 Article No. and specify Order code.				
Cable socket for device plugs M12 • Stainless steel	A51	<b>✓</b>	<b>✓</b>	<b>✓</b>
Rating plate inscription (instead of English)				
• German • French	B10 B12	<b>√</b>	<b>√</b>	<b>√</b>
<ul><li>Spanish</li><li>Italian</li></ul>	B13 B14	<b>∀ ∀</b>	√ √ √	1
English rating plate Pressure units in inH <sub>2</sub> 0 and/or psi	B21	1	<b>✓</b>	<b>✓</b>
Quality Inspection Certificate (5-point characteristic curve test) according to IEC 60770-2	C11	<b>√</b>	✓	✓
<b>Inspection certificate</b> Acc. to EN 10204-3.1	C12	✓	✓	✓
Factory certificate Acc. to EN 10204-2.2	C14	✓	✓	✓
Setting of the upper saturation limit of the output signal to 22.0 mA	D05	✓	✓	✓
<b>Degree of protection IP65/IP68</b> (only for M20x1.5 and ½-14 NPT)	D12	✓	✓	✓
Mounting     Weldable sockets for standard 1½"     threaded connection	P01	✓	<b>✓</b>	<b>✓</b>
Weldable socket for minibolt connection 1" (incl. screw 5/16-18 UNC-2B and washer)	P02	✓	✓	✓

Selection and Ordering data	Order	code		
Additional data		HART	PA	FF
Please add "-Z" to Article No. and specify Order code(s) and plain text.				
Measuring range to be set Specify in plain text (max. 5 characters): Y01: up to mbar, bar, kPa, MPa, psi	Y01	✓	<b>√</b> 1)	
Stainless steel tag plate and entry in device variable (measuring point description)  Max. 16 characters, specify in plain text: Y15:	Y15	✓	✓	✓
Measuring point text (entry in device variable)	Y16	✓	✓	✓
Max. 27 char., specify in plain text: Y16:				
Entry of HART address (TAG)	Y17	✓		
Max. 8 char., specify in plain text: Y17:				
Setting of pressure indication in pressure units Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi, Note: The following pressure units can be selected:	Y21	<b>✓</b>	✓	<b>✓</b>
bar, mbar, mm H <sub>2</sub> O <sup>*)</sup> , inH <sub>2</sub> O <sup>*)</sup> , ftH <sub>2</sub> O <sup>*)</sup> , mmHG, inHG, psi, Pa, kPa, MPa, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , Torr, ATM or % *) ref. temperature 20 °C				
Setting of pressure indication in non-pressure units <sup>2</sup> )  Specify in plain text: Y22: up to I, m³, m, USg, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	Y22 + Y01	<b>√</b>		
Preset bus address possible between 1 and 126 Specify in plain text: Y25:	Y25		✓	✓

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

<sup>✓ =</sup> available

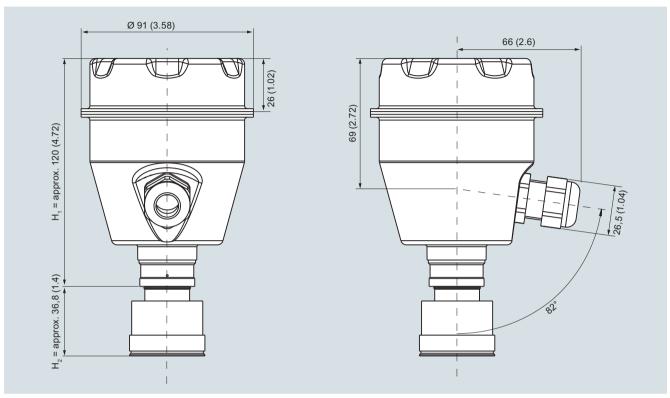
<sup>&</sup>lt;sup>1)</sup> Measuring accuracies for PROFIBUS PA transmitters with Option Y01 are calculated in the same way as for HART devices.

 $<sup>^{2)}\,</sup>$  Preset values can only be changed over SIMATIC PDM.

Pressure transmitters for gauge pressure for the paper industry

SITRANS P300 with PMC connection

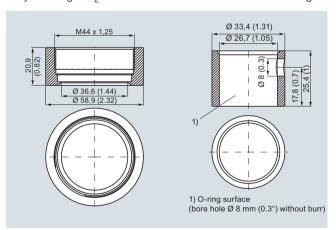
# Dimensional drawings



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

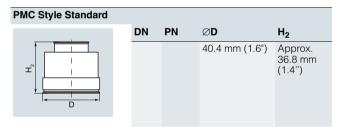
The diagram shows a SITRANS P300 with an example of a flange. In this drawing the height is subdivided into  $\rm H_1$  and  $\rm H_2$ .

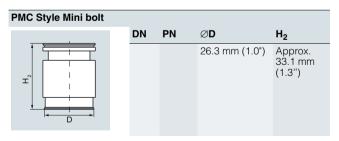
 $H_1$  = Height of the SITRANS P300 up to a defined cross-section  $H_2$  = Height of the flange up to this defined cross-section Only the height  $H_2$  is indicated in the dimensions of the flanges.



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

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





Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P320/P420

**Technical description** 

#### Overview



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

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

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

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

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

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

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

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

#### Benefits

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

#### Application

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

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

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

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

#### Pressure transmitter for gauge pressure

Measured variable:

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

Span (infinitely adjustable)

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

There are two series:

- · Gauge pressure series
- Differential pressure series

#### Pressure transmitters for absolute pressure

Measured variable:

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

Span (infinitely adjustable)

 For SITRANS P320/P420 with HART: 8.3 mbar a to 100 bar a (0.12 to 1450 psi a)

There are two series:

- · Gauge pressure series
- Differential pressure series

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

**Technical description** 

#### Pressure transmitters for differential pressure and flow

Measured variables:

- · Differential pressure
- Small positive or negative overpressure
- Flow q ~ √Δp (together with a primary differential pressure transducer (see section "Flow meters"))

Span (infinitely adjustable)

 For SITRANS P320/P420 with HART: 1 mbar to 30 bar (0.0145 to 435 psi)

#### Pressure transmitters for level

Measured variable:

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

Span (infinitely adjustable)

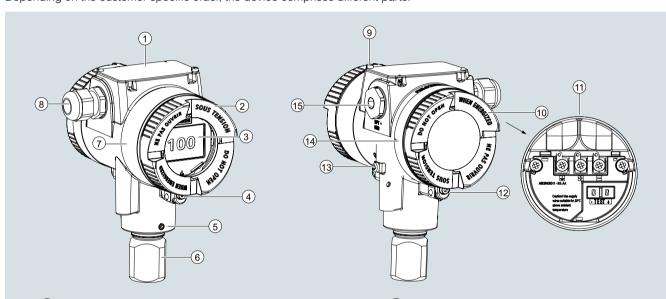
 For SITRANS P320/P420 with HART: 25 mbar to 5 bar (0.363 to 72.5 psi)

Type of the mounting flange:

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

#### Design

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



- (1) Cover over buttons and nameplate with general information
- Cover (front) with glass pane (optional)
- 3 Display (optional)
- Safety catch (front)
- 5 Locking screw for locking the enclosure
- 6 Process connection
- 7 Approval label with approval information
- 8 Cable inlet, optionally with cable gland

- 9 Locking screw for the cover over the buttons
- 10 Cover (rear) for electrical terminal compartment
- 11 Electrical terminal compartment
- 12 Safety catch (back)
- (13) Ground terminal
- (14) Nameplate with information on the remote seal
- 15 Blanking plug

#### Device front view

- The electronics enclosure is made of die cast aluminum or precision cast stainless steel.
- The housing has a removable circular cover at the front and the back.
- Depending on the device version, the front cover (2) may be designed as an inspection window.
- The cable inlet (8) to the electrical terminal compartment is at the side; either the left or right-hand one can be used. The unused opening is closed with a blanking plug (15).
- The ground terminal (13) is located on the side.

- The electrical terminal compartment (11) for the auxiliary power and shield is accessible when you remove the back cover (10).
- The measuring cell with process connection (6) is located in the bottom part of the enclosure.

  The measuring cell is prevented from rotating by a locking
- Thanks to the modular design of the pressure transmitter, the measuring cell and application electronics or terminal compartment can be replaced if required.
- The cover over buttons (1), under which there are 4 buttons, is located on the upper face of the enclosure. The nameplate with general information is located on the cover over the buttons.

Pressure transmitters

for applications with advanced requirements (Advanced)

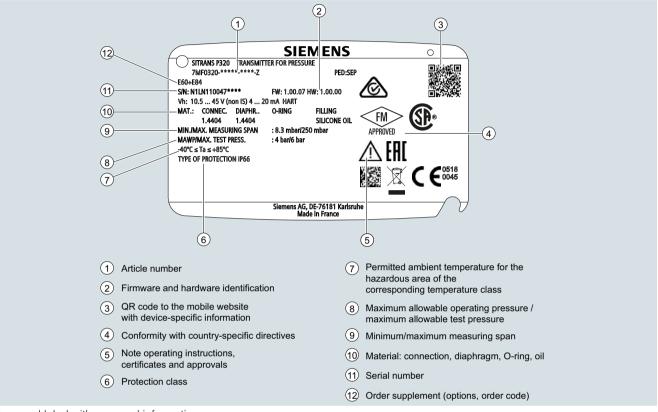
### SITRANS P320/P420

**Technical description** 

#### Nameplates

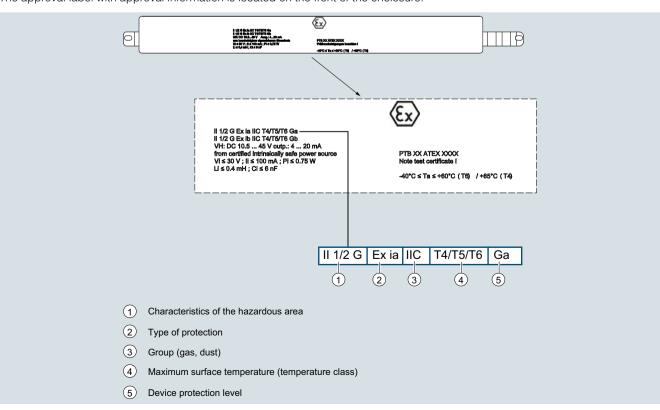
#### Nameplate

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



#### Approval label with approval information

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



Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

**Technical description** 

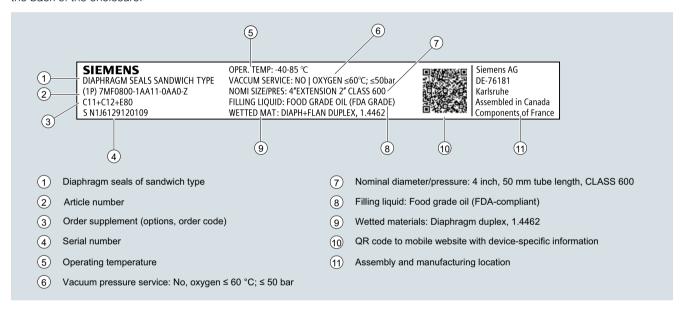
#### Measuring point label

The measuring point label is located under the front cover.



#### Nameplate with information on the remote seals

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



Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

**Technical description** 

### Function

# Adjustable parameters and diagnostics

SITRANS P320/P420 with HART communication

Parameters	Input buttons	SITRANS P320	SITRANS P420
Application, measurement type	Х	Х	Х
Adjusting start of scale value/full scale value	X	X	х
Setting start of scale value/full scale value	х	Х	Х
Electrical damping	x	x	x
Zero adjustment	x	x	x
Fault current	x	x	х
Saturation limits	x	x	x
Scaling of the display	x	x	x
Characteristic selection	х	Х	х
Temperature unit	×	х	х
Key lock	Х	х	х
Change user pin	×	х	х
Functional safety	×	х	х
Loop test	x	x	х
Start view	x	x	х
Pressure reference	Х	x	x
Reset	Х	x	x
Diagnostics and trend log			
Min/Max pointer		x	x
Limit monitoring		2	2
Event counter (over- flow/underflow)		2	2
Trend log			2, max. 1 500 values
Diagnostic log		х	х
Parameters change log			х
A : ! - ! - ! ! ! !		( OITDANIO	D000/D400

Available physical units of display for SITRANS P320/P420

Physical variable	Physical dimensions
Pressure (setting can also be made in the factory)	Pa, MPa, kPa, hPa, bar, mbar, psi, g/cm², kg/cm², kgf/cm². inH $_2$ O, inH $_2$ O (4 °C), ftH $_2$ O (4 °C), mmH
Level (height data)	m, cm, mm, ft, in
Volumes (fill level)	$m^3,l,hl,in^3,ft^3,yd^3,gal,gal$ (UK), bu, bbl, bbl (US), SCF, Nm³, NI
Volume (flow)	m³/sec, m³/h, m³/d, l/sec, l/min, l/h, Ml/d, ft³/sec, ft³/h, ft³/d, SCF/min, SCF/h, Nl/h, Nm³/hgal/sec, gal/min, gal/h, gal/d, Mgal/d, gal (UK))/sec, gal (UK)/min, gal (UK)/h, gal (UK)/d, bbl/sec, bbl/min, bbl/h, bbl/d,
Mass (flow)	Kg/sec, kg/min, kg/h, kg/d, g/sec, g/min, g/h, t/min, t/h, t/d, lb/sec, lb/min, lb/h, lb/d, ton/min, ton/h, ton/d, ton (UK)/h, ton (UK)/d
Temperature	°C, °F
Miscellaneous	%, mA, free text max. 12 characters

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

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

for gauge pressure (pressure series)

# Technical specifications

SITRANS P320 / SITRANS P420 for gauge pressur	e (pressure series)		
nput			
Measured variable	Gauge pressure		
Span (infinitely adjustable) or measuring range, max. permissible operating pressure (in accordance with	Span	Max. permissible operating pressure MAWP (PS)	Maximum permissible test pressure
ressure Equipment Directive 2014/68/EU) and max. est pressure (pursuant to DIN 16086)	8.3 250 mbar	4 bar	6 bar
or oxygen measurement, max. 100 bar/	0.83 25 kPa	0.4 MPa	0.6 MPa
MPa/1450 psi and 60 °C (140 °F) ambient temerature/process temperature)	0.12 3.6 psi	58 psi	87 psi
erature/process temperature/	0.01 1 bar	6 bar	9 bar
	1 100 kPa	0.6 MPa	0.9 MPa
	0.15 14.5 psi	87 psi	130 psi
	0.04 4 bar	20 bar	30 bar
	4 400 kPa	2 MPa	3 MPa
	0.58 58 psi	290 psi	435 psi
	0.16 16 bar	45 bar	70 bar
	0.016 1.6 MPa	4.5 MPa	7 MPa
	2.3 232 psi	652 psi	1015 psi
	0.63 63 bar	80 bar	120 bar
	0.063 6.3 MPa	8 MPa	12 MPa
	9.1 914 psi	1160 psi	1740 psi
	1.6 160 bar	240 bar	360 bar
	0.16 16 MPa	24 MPa	36 MPa
	23 2321 psi	3481 psi	5221 psi
	·	· ·	· ·
	4 400 bar	400 bar	600 bar
	0.4 40 MPa	40 MPa	60 MPa
	58 5802 psi	5802 psi	8702 psi
	7 700 bar	800 bar	800 bar
	0.7 70 MPa	80 MPa	80 MPa
	102 10153 psi	11603 psi	11603 psi
easuring limits Low measuring limit		easuring cells, the lower measuring lir n-resistant up to 30 mbar a/3 kPa a/0.	
Measuring cell with silicone oil filling     Measuring cell with inert oil     Measuring cell with FDA-compliant oil Upper measuring limit	a. The measuring cell is vacuum-resistant up to 30 mbar a/3 kPa a/0.44 psi a.  30 mbar a/3 kPa a/0.44 psi a  30 mbar a/3 kPa a/0.44 psi a  100 mbar a/10 kPa a/1.45 psi a  100 mbar a/10 kPa a/1.450 psi and 60 %		
Start of scale	100% of the max. measuring span (for oxygen measurement max. 100 bar/10 MPa/ 1450 psi and 60 °C (140 °F) ambient temperature/process temperature)  Between the measuring limits (infinitely adjustable)		
Output	HART		
Putput signal	4 20 mA		
Low saturation limit (infinitely adjustable) High saturation limit (infinitely adjustable) Ripple (without HART communication)	3.55 mA, factory preset to 3.8 mA 22.8 mA, factory-set to 20.5 mA or optionally 22.0 mA $I_{np} \le 0.5\%$ of max. output current		
djustable damping	0 100 s, continuously adjustable over remote operation		
Current transmitter Failure signal	0 100 s, in increments of 0.1 s, adjustable over display 3.55 22.8 mA 3.55 22.8 mA (factory preset to 3.55 mA)		
oad Without HART communication	Resistor R $[\Omega]$ R = $(U_H - 10.5 \text{ V})/22.8 \text{ mA}$ , $U_H$ : Power supply in V		
With HART communication	R = 230 1100 $\Omega$ (HART com R = 230 500 $\Omega$ (SIMATIC PD	, ,,	
	<ul> <li>Linearly increasing or linearly decreasing</li> <li>Linear increase or decrease or according to the square root (only for differential pressure and flow)</li> </ul>		
haracteristic curve			or differential pressure and flow)
haracteristic curve			or differential pressure and flow)

Siemens FI 01 · 2018

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P320/P420

# for gauge pressure (pressure series)

SITRANS P320 / SITRANS P420 for gauge pressur	e (bressure series)		
Measuring accuracy			
Reference conditions	<ul> <li>According to EN 60770-1</li> <li>Rising characteristic curve</li> <li>Start of scale value 0 bar/kPa/psi</li> <li>Seal diaphragm stainless steel</li> <li>Measuring cell with silicone oil filling</li> <li>Room temperature 25 °C (77 °F)</li> </ul>		
Conformity error at limit point setting, including hysteresis and repeatability			
Measuring span ratio r (spread, Turn-Down)  • Linear characteristic	r = max. measuring span/s	set measuring span and nominal measuring range	
<ul> <li>250 mbar/25 kPa/3.6 psi</li> </ul>	r ≤ 1.25:	≤ 0.075% (SITRANS P320)	
		≤ 0.065% (SITRANS P420)	
- 1 bar/100 kPa/14.5 psi 4 bar/400 kPa/58 psi	1.25 < r ≤ 30: r ≤ 5:	≤ (0.008 · r + 0.055)% ≤ 0.065% (SITRANS P320)	
16 bar/1.6 MPa/232 psi		≤ 0.04% (SITRANS P420)	
63 bar/6.3 MPa/914 psi 160 bar/16 MPa/2321 psi	5 < r ≤ 100:	≤ (0.004 · r + 0.045)%	
- 400 bar/40 MPa/5802 psi 700 bar/70 MPa/10152 psi	r ≤ 3: 3 < r ≤ 100:	≤ 0.075% (SITRANS P320) ≤ (0.005 · r + 0.05)% (SITRANS P320)	
	$r \le 5$ : $5 < r \le 100$ :	≤ 0.075% (SITRANS P420) ≤ (0.005 · r + 0.05)% (SITRANS P420)	
Influence of ambient temperature in % per 28 °C (50 °F)			
• 250 mbar/25 kPa/3.6 psi	$\leq (0.16 \cdot r + 0.1)\%$		
• 1 bar/100 kPa/14.5 psi	$\leq (0.05 \cdot r + 0.1)\%$		
<ul> <li>4 bar/400 kPa/58 psi</li> <li>16 bar/1.6 MPa/232 psi</li> <li>63 bar/6.3 MPa/914 psi</li> <li>160 bar/16 MPa/2321 psi</li> <li>160 bar/16 MPa/2321 psi</li> </ul>	≤ (0.025 · r + 0.125)%		
400 bar/40 MPa/5802 psi • 700 bar/70 MPa/10152 psi	≤ (0.08 · r + 0.16)%		
	≤ (0.00 1 + 0.10)/0		
Long-term stability at ±30 °C (±54 °F) • 250 mbar/25 kPa/3.6 psi	≤ (0.25 · r)% per year		
• 1 bar/100 kPa/14.5 psi	In 5 years $\leq$ (0.25 · r)%		
. sai, 100 iii a, 1 iio poi	In 10 years $\leq$ (0.35 · r)%		
• 4 bar/400 kPa/58 psi	In 5 years $\leq$ (0.125 · r)%		
16 bar/1.6 MPa/232 psi 63 bar/6.3 MPa/914 psi 160 bar/16 MPa/2321 psi 400 bar/40 MPa/5802 psi	In 10 years $\leq$ (0.15 · r)%		
• 700 bar/70 MPa/10152 psi	In 5 years $\leq$ (0.25 · r)% In 10 years $\leq$ (0.35 · r)%		
Step response time T <sub>63</sub> (without electrical damping)			
Effect of mounting position (in pressure per change		00725 psi per 10° incline	
Endot of modified boomon (in bioggard bei change	= 0.00 mbar/0.000 ki a/0.0	out zo por por to monito	

(zero point correction is possible with position error compensation)

0.005% per 1 V

1/92

Effect of auxiliary power (in % per voltage change)

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

for gauge pressure (pressure series)

SITRANS P320 / SITRANS P420 for gauge pressur	e (pressure series)
Rated conditions	
Temperature of medium	
Measuring cell with silicone oil filling	-40 +100 °C (-40 +212 °F)
Measuring cell with inert oil	40 1100 O ( 40 1212 T )
- 1 bar/100 kPa/14.5 psi	-40 +100 °C (-40 +212 °F)
4 bar/400 kPa/58 psi	
16 bar/1.6 MPa/232 psi 63 bar/6.3 MPa/914 psi	
- 160 bar/16 MPa/2321 psi	-20 +100 °C (-4 +212 °F)
400 bar/40 MPa/5802 psi	,
700 bar/70 MPa/10152 psi	10 100 00 (11 010 05)
Measuring cell with FDA-compliant oil	-10 +100 °C (14 +212 °F)
Ambient conditions	
Ambient temperature/enclosure	Observe the temperature class in areas subject to explosion hazard.
- Measuring cell with silicone oil filling	-40 +85 °C (-40 +185 °F)
<ul> <li>Measuring cell with inert oil for gauge pressure measuring cells:</li> </ul>	-40 +85 °C (-40 +185 °F)
1 bar/100 kPa/14.5 psi	
4 bar/400 kPa/58 psi 16 bar/1.6 MPa/232 psi	
63 bar/6.3 MPa/914 psi	
- Measuring cell with inert oil	-40 +85 °C (-40 +185 °F)
- Measuring cell with FDA-compliant oil	-10 +85°C (14 +185°F)
- Display	-20 +80 °C (-4 +176 °F)
Storage temperature	-50 +85 °C (-58 +185 °F) (with FDA-compliant oil: -20 + 85 °C (-4 +185 °F))
Climatic class in accordance with IEC 60721-3-4	4K4H
<ul> <li>Degree of protection</li> <li>According to IEC 60529</li> </ul>	IP66, IP68
- According to NEMA 250	Type 4X
Electromagnetic compatibility	турс чл
- Emitted interference and interference immunity	According to IEC 61326 and NAMUR NE 21
Design	
Weight	Approx. 2.3 kg (5.07 lb) with aluminum enclosure
Weight	Approx. 4.2 kg (9.25 lb) for stainless steel enclosure
M-4:-I	719000. 4.2 kg (0.20 lb) for starriess stock cholosure
Material     Wetted parts materials	
- Process connection	Stainless steel, material no. 1.4404/316L or Alloy C22, material no. 2.4602
- Oval flange	Stainless steel, mat. no. 1.4404/316L
- Seal diaphragm	Stainless steel, material no. 1.4404/316L or Alloy C276, material no. 2.4819
<ul> <li>Non-wetted parts materials</li> </ul>	
- Electronics housing	• Low-copper die-cast aluminum GD-AISi 12 or stainless steel precision casting, mat. no. 1.4409/ CF-3M
	<ul> <li>Standard: Powder coating with polyurethane</li> <li>Option: 2 coats: Coat 1: epoxy-based; coat 2: Polyurethane</li> </ul>
	• Stainless steel type plate (1.4404/316L)
- Mounting bracket	Electrogalvanized steel or stainless steel
Process connection	• Connection shank G1/2A according to DIN EN 837-1
	• Female thread ½-14 NPT
	<ul> <li>Male thread M20 x 1.5 and ½-14 NPT</li> <li>Oval flange (PN 160 (MWP 2320 psi g)) with fastening screw thread:</li> </ul>
	- 7/16-20 UNF according to EN 61518
	<ul> <li>M10 according to DIN 19213</li> <li>Oval flange (PN 420 (MWP 2320 psi g)) with fastening screw thread:</li> </ul>
	- 7/16-20 UNF according to EN 61518
	- M12 according to DIN 19213
	• Male thread M20 x 1.5 and ½-14 NPT
Electrical connection	Cable entry via the following screwed glands:
	• M20 x 1.5 • ½-14 NPT
	Device plug Han 7D/Han 8D <sup>1)</sup>
	Device plug M12
Displays and controls	
Keys	4 keys for operation directly on the device
Display	With or without integrated display (optional)
-1r - A	Cover with inspection window (optional)

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P320/P420

# for gauge pressure (pressure series)

SITRANS P320 / SITRANS P420 for gauge pressur	e (pressure series)
Auxiliary power U <sub>H</sub>	
Terminal voltage on pressure transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically safe mode
Ripple	$U_{SS} \le 0.2 \text{ V } (47 \dots 125 \text{ Hz})$
Noise	$U_{\text{eff}} \le 1.2 \text{ mV } (0.5 \dots 10 \text{ kHz})$
Auxiliary power	-
Separate supply voltage	-
Certificates and approvals	
Classification according to pressure equipment directive (PED 2014/68/EU)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)
Drinking water	
<ul><li>WRAS (England)</li><li>ACS (France)</li><li>NSF (USA)</li></ul>	No.: 1903094 (option E83) No.: 18 ACC LY 277 (option E85) No.: 20180920-MH61350 (option E84)
CRN (Canada)	No.: 0F9863.5C (option E60)
· · · · · ·	
Explosion protection acc. to NEPSI (China)  Explosion protection acc. to INMETRO (Brazil)	No.: GYJ19.1058X (option E27) No.: BRA-18-GE-0035X (option E25)
	No.: BHA-18-GE-0030X (Option E25)
Explosion protection • Intrinsic safety "i"	
- Marking	II 1/2 G Ex ia/ib IIC T4/T6 Ga/Gb
- Permissible ambient temperature	-40 +80 °C (-40 +176 °F) temperature class T4 -40 +55 °C (-40 +131 °F) temperature class T6
- Permissible temperature of measuring medium	-40 +100 °C (-40 +212 °F) temperature class T4 -40 +70 °C (-40 +158 °F) temperature class T6
- Connection	To certified intrinsically safe circuits with peak values:
	$U_i = 30 \text{ V}, I_i = 101 \text{ mA}, P_i = 760 \text{ mW}$ $U_i = 29 \text{ V}, I_i = 110 \text{ mA}, P_i = 800 \text{ mW}$
<ul> <li>Effective internal inductance/capacitance</li> <li>Flameproof enclosure "d"</li> </ul>	$L_i = 0.24 \ \mu H/C_i = 3.29 \ nF$
- Marking	Ex II 1/2 G Ex ia/db IIC T4/T6 Ga/Gb
- Permissible ambient temperature	-40 +80 °C (-40 +176 °F) temperature class T4 -40 +70 °C (-40 +158 °F) temperature class T6
- Permissible temperature of measuring medium	-40 +100 °C (-40 +212 °F) temperature class T4 -40 +70 °C (-40 +158 °F) temperature class T6
- Connection	To a circuit with the operating values:
Dust explosion protection for zones 21, 22	U <sub>n</sub> = 10.5 to 45 V, 4 20 mA
- Marking	Ex II 2D Ex tb IIIC T120 °C Db Ex II 3D Ex tc IIIC T120 °C Dc
- Permissible ambient temperature	-40 +80 °C (-40 +176 °F)
- Permissible temperature of measuring medium	-40 +100 °C (-40 +212 °F)
<ul> <li>Max. surface temperature</li> <li>Connection</li> </ul>	120 °C (248 °F) To a circuit with the operating values:
Commodition	$U_n = 10.5 \text{ to } 45 \text{ V}, 4 \dots 20 \text{ mA}$
• Dust explosion protection for zones 20, 21, 22	
- Marking	Ex II 1D Ex ia IIIC T120 °C Da Ex II 2D Ex ib IIIC T120 °C Db Ex II 3D Ex ic IIIC T120 °C Dc
- Permissible ambient temperature	-40 +80 °C (-40 +176 °F)
- Permissible temperature of measuring medium	-40 +100 °C (-40 +212 °F)
- Connection	To certified intrinsically safe circuits with the peak values:
- Effective internal inductance/capacitance	$U_i = 30 \text{ V}, I_i = 101 \text{ mA}, P_i = 760 \text{ mW}$ $U_i = 29 \text{ V}, I_i = 110 \text{ mA}, P_i = 800 \text{ mW}$ $L_i = 0.24  \mu\text{H/C}_i = 3.29  \text{nF}$
- Enective internal inductance/capacitatice	L <sub>1</sub> = 0.24 µ1 (10 <sub>1</sub> = 0.28 111

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

for gauge pressure (pressure series)

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

<ul> <li>Type</li> </ul>	of	protection	for	Zone	2
--------------------------	----	------------	-----	------	---

- Marking Ex II 3G Ex ec IIC T4/T6 Gc Ex II 3G Ex ic IIC T4/T6 Gc - Permissible ambient temperature "ec"

-40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +40 °C (-40 ... +104 °F) temperature class T6 -40 ... +80 °C (-40 ... +176 °F) temperature class T4 - Permissible ambient temperature "ic" -40 ... +80 °C (-40 ... +176 °F) temperature class T6

-40 ... +100 °C (-40 ... +212 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6 - Permissible temperature of measuring medium

To a circuit with the operating values: - "ec" connection  $U_n = 10.5 \text{ to } 30 \text{ V}, 4 \dots 20 \text{ mA}$ 

- "ic" connection To certified intrinsically safe circuits with the peak values:

 $\begin{array}{l} U_{i} = 30 \text{ V}, \ I_{i} = 101 \text{ mA}, \ P_{i} = 760 \text{ mW} \\ U_{i} = 29 \text{ V}, \ I_{i} = 110 \text{ mA}, \ P_{i} = 800 \text{ mW} \end{array}$ 

Effective internal inductance/capacitance:  $L_i = 0.24 \mu H/C_i = 3.29 nF$ 

· Explosion protection acc. to FM Available soon

CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4 ... T6: CL I, DIV 2, - Marking (XP/DIP) or IS; NI; S

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

• Explosion protection according to CSA Available soon

CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4 ... T6; CL I, DIV 2, GP ABCD T4 ... T6; CL II, DIV 2, GP FG; CL III - Marking (XP/DIP) or (IS)

NAMUR recommendations

• NE 06 Standardized Electrical Signals and Questions Relating to Engineering Technology • NE 21

Electromagnetic Compatibility (EMC) of Industrial Process and Laboratory Control Equipment

• NE 23 Extra Low Voltage Circuits with Safe Separation

• NE 43 Standardization of the Signal Level for the Failure Information of Digital Transmitters

• NE 53 Software and Hardware of Field Devices and Signal Processing Devices with Digital Electronics

• NE 80 The Application of the Pressure Equipment Directive to Process Control Devices • NF 105 Specifications for Integrating Fieldbus Devices in Engineering Tools for Field Devices

• NE 107 Self-Monitoring and Diagnosis of Field Devices

• NE 131 NAMUR Standard Device - Field Devices for Standard Applications

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

HART communication	
HART	230 1100 Ω
Protocol	HART 7
Software for computer	SIMATIC PDM

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

for gauge pressure (pressure series)

# Selection and ordering data

Selection and ordering data	Article No.
Pressure transmitters for gauge pressure (pressure series)	
SITRANS P320	7MF030
SITRANS P420	7MF040
✓ Click on the Article no. for the online configuration in the PIA Life Cycle Portal.	
Communication	
HART, 4 20 mA	0
Measuring cell filling	
Silicone oil	1
Inert liquid	3
Neobee oil	4
Maximum measuring span	
250 mbar (3.6 psi)	F
1000 mbar (14.5 psi)	J
4000 mbar (58 psi)	N
16 bar (232 psi)	Q
63 bar (914 psi)	Т
160 bar (2321 psi)	V
400 bar (5802 psi)	W
700 bar (10153 psi)	X
Process connection	
Male thread M20 x 1.5	В
Male thread G½ (DIN EN 837-1)	D
Female thread ½-14 NPT	E
Male thread ½-14 NPT	F
Oval flange, mounting thread: $^{7}/_{16}$ -20 UNF (IEC 61518)	G
Oval flange, mounting thread: M10 (DIN 19213)	Н
Oval flange, mounting thread: M12 (DIN 19213)	J
Version for diaphragm seal pressure	U
Wetted parts materials: Process connection, seal diaphragm	
Stainless steel 316L/1.4404, stainless steel 316L/1.4404	0
Stainless steel 316L/1.4404, alloy C276/2.4819	1
Alloy C22/2.4602, alloy C276/2.4819	2
Non-wetted parts materials	
Die-cast aluminum	1
Stainless steel precision casting CF3M/1.4409 similar to 316L	2
Enclosure	_
Dual chamber device	5
Type of protection	
Without Ex	A
Intrinsic safety	В
Flameproof enclosure	C
Flameproof enclosure, intrinsic safety	D
Dust protection by enclosure Zone 21/22 (DIP), increased safety Zone 2	L
Dust protection by enclosure Zone 20/21/22 (DIP), increased safety Zone 2	M
Combination of options B, C and M (zone model)	S
Combination of options B, C and M (zone model, Class DCable gland must be ordered separately as option (Axx)ivision)  Electrical connections/cable entries	
Thread for cable gland: Cable gland must be ordered separately as option (Axx)	
<ul> <li>2 x M20 x 1.5</li> <li>2 x ½-14 NPT</li> </ul>	F M
Local operation/display	
Without display (cover closed)	0
With display (cover closed)	1
With display (cover with glass pane)	2

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

for gauge pressure (pressure series)

# Selection and ordering data

Ontions	Order code	Ontions	Order ande
Options  Append " 7" to Article No. add order code and plain	Order code	Options  Append " 7" to Article No. add order code and plain	Order code
Append "-Z" to Article No., add order code and plain text or entry from drop-down list.		Append "-Z" to Article No., add order code and plain text or entry from drop-down list.	
Cable glands included		Device options	
Plastic	A00	PDF file with device settings	D10
Metal	A01	Double layer coating (epoxy resin and polyurethane) 120 µm of enclosure and cover	D20
Stainless steel	A02	FVMQ enclosure sealing	D21
Stainless steel 316L/1.4404	A03	IP66/IP68 degree of protection (not for device plugs	D30
CMP, for XP devices	A10	M12 and Han )	200
CAPRI ADE 4F, CuZn, cable inner diameter 7 12 mm, cable outer diameter 10 16 mm	A11	TAG label empty Without labeling of the measuring range on the TAG	D40 D41
CAPRI ADE 4F, stainless steel, cable inner diameter 7 12 mm, cable outer diameter 10 16 mm	A12	label Stainless steel Ex plate 1.4404/316L	D42
Device plug Han mounted left		Overvoltage protection up to 6 kV (external)	D71
Device plug Han 7D (plastic, straight)	A30	Adhesive labels on transport packaging (supplied by	D90
Device plug Han 7D (plastic, angled)	A31	customer)	200
Device plug Han 7D (metal, straight)	A32	General approval without Ex approval	
Device plug Han 7D (metal, angled)	A33	Worldwide (CE, RCM) except EAC, FM, CSA, KCC	E00
Device plug Han 8D (plastic, straight)	A34	Worldwide (CE, RCM, EAC, FM, CSA, KCC)	E01
Device plug Han 8D (plastic, angled)	A35	CSA (USA and Canada)	E06
Device plug Han 8D (metal, straight)	A36	EAC	E07
Device plug Han 8D (metal, angled)	A37	FM	E08
Cable socket included		KCC	E09
Plastic, for device plug Han 7D and Han 8D	A40	Export approval CPA (China)	E12
Metal, for device plug Han 7D and Han 8D	A41	Explosion protection approvals	
Device plug M12 mounted left	A71	ATEX (Europe)	E20
Stainless steel, without cable socket	A62	CSA (USA and Canada)	E21
Stainless steel, with cable socket	A63	FM (USA and Canada)	E22
	A03	IECEx (Worldwide)	E23
Cable entry/connector mounting 2x sealing plugs M20 x 1.5, IP66/68 installed on both	A90	EACEx (GOST-R, -K, -B)	E24
sides	A90	INMETRO (Brazil)	E25
2x sealing plugs ½-14 NPT, IP66/68 installed on both	A91	KCs (Korea)	E26
sides		NEPSI (China)	E27
Cable gland/connector mounted left	A97	PESO (India)	E28
Cable gland/connector mounted on right	A99	UKR Sepro (Ukraine)	E30
Nameplate labeling (standard labeling: English, unit bar)		ATEX (Europe) and IECEx (Worldwide)	E47
German (bar)	B11	CSA (Canada) and FM (USA)	E48
French (bar)		ATEX (Europe) and IECEx (Worldwide) + CSA (Canada) and FM (USA)	E49
Spanish (bar)	B12 B13	Marine approvals	
Italian (bar)	B14	DNV-GL (Det Norske Veritas/Germanischer Lloyd)	E50
		LR (Lloyds Register)	E51
Chinese (bar)	B15	BV (Bureau Veritas)	E52
Russian (bar)	B16	ABS (American Bureau of Shipping)	E53
English (psi)	B20	RMR (Russian Maritime Register)	E55
English (Pa)	B30	KR (Korean Register of Shipping)	E56
Chinese (Pa)	B35	RINA (Registro Italiano Navale)	E57
Certificates		CCS (China Classification Society)	E58
Quality test certificate, 5-point factory calibration (IEC 60770-2)	C11	Country-specific approvals	Eso
Acceptance certificate (EN 10204-3.1) - Material of pressurized and wetted parts	C12	CRN approval Canada (Canadian Registration Number)  Special approvals	E60
Test report - NACE (MR 0103-2012 and MR 0175-2009)	C13	Oxygen application (with inert liquid, max. 100 bar	E80
Test report (EN 10204-2.2) - Wetted parts	C14	(1 450 psi) at 60° C (140 °F))	F04
Acceptance certificate (EN 10204-3.1) - PMI test of pressurized and wetted parts	C15	Dual seal WRC / WRAS (drinking water);	E81 E83
Certificates for functional safety		only with pressure cap O-rings made of EPDM	
Functional safety (IEC 61508) - SIL2/3	C20	NSF61 (drinking water) ACS (drinking water)	E84 E85

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

# for gauge pressure (pressure series)

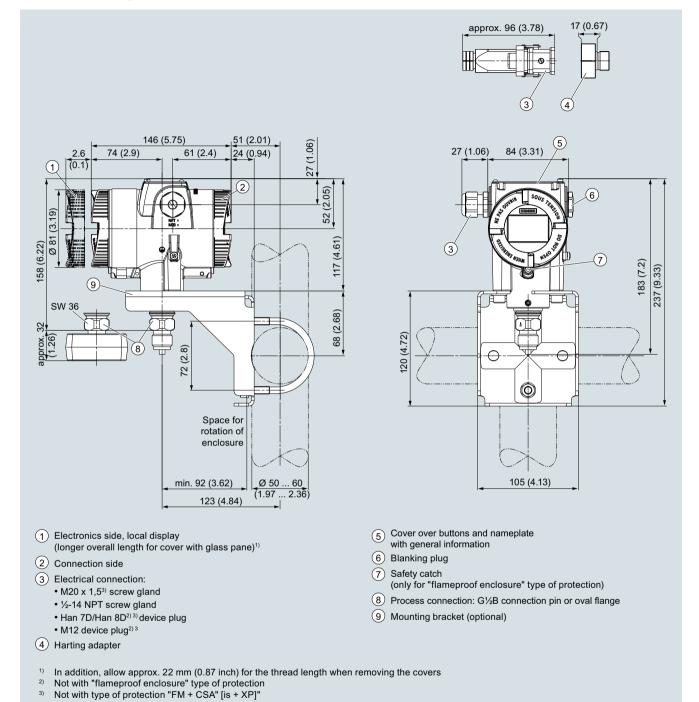
Options	Order code
Append "-Z" to Article No., add order code and plain text or entry from drop-down list.	
Mounting bracket	
Steel, galvanized	H01
Stainless steel 1.4301/304	H02
Stainless steel 1.4404/316L	H03
Flange connections with flange EN 1092-1	
With flange adapter G½ Form B1  • DN 25 PN 40, stainless steel 1.4571/316Ti  • DN 50 PN 40, stainless steel 1.4571/316Ti  • DN 80 PN 40, stainless steel 1.4571/316Ti	J80 J81 J82
With siphon G½ Form B1  ■ DN 25 PN 40, stainless steel 1.4571/316Ti  ■ DN 50 PN 40, stainless steel 1.4571/316Ti  ■ DN 80 PN 40, stainless steel 1.4571/316Ti  ■ DN 25 PN 100, stainless steel 1.4571/316Ti	J83 J84 J85 J86
Process flanges, gaskets (instead of standard gaskets FKM (FPM))	
Seal (EN 837-1) material Fe (soft iron)	K60
Seal (EN 837-1) material 1.4571	K61
Seal (EN 837-1) material Cu	K62
Process connection	
Process connection male thread $G1\!\!/_2,$ bore hole 11 mm	K80
Shut-off valves, valve manifolds  With mounted valve manifold 7MF9011-4EA, process connection at transmitter G½ shank, PTFE sealing ring and pressure test certified in test report (EN 10204-2.2)	Т02
With mounted valve manifold 7MF9011-4FA, process connection at transmitter female thread ½-14 NPT, sealing tape. With PTFE sealing ring and pressure test certified in test report (EN 10204-2.2)	Т03
With mounted valve manifold 7MF9411-5AA, process connection at transmitter oval flange with PTFE gasket, steel mounting screws, pressure test certified in test report (EN 10204-2.2)	T05
With mounted valve manifold 7MF9411-5AA, process connection at transmitter oval flange with PTFE gasket, stainless steel mounting screws, pressure test certified in test report (EN 10204-2.2)	Т06

Options	Order code
Append "-Z" to Article No., add order code and plain text or entry from drop-down list.	
Device settings	
Measuring span Start of scale value (max. 5 characters), full scale value (max. 5 characters), unit [mbar, bar, kPa, MPa, psi,], example: -0.5 10.5 psi	Y01
Input field 1 and input field 2: max. 5 characters and numbers only; decimal places as dot (comma is automatically converted to dot).	
Drop-down list: Pa, MPa, kPa, hPa, bar, mbar, psi, g/cm², kg/cm², kgf/cm², inH $_2$ O, inH $_2$ O (4°C), ftH $_2$ O, mmH $_2$ O, mmH $_2$ O (4°C), mH $_2$ O (4°C), mmHg, inHg, atm, torr	
TAG (on stainless steel plate and device parameters, max. 32 characters)	Y15
Input field: Free text, max. 32 characters	
Measuring point description (on stainless steel plate and device parameters, max. 32 characters)	Y16
Input field: Free text, max. 32 characters	
TAG short (device parameters, max. 8 characters)	Y17
Input field: Free text, max. 8 characters	
Local display [Pressure, Percent], reference [None, Absolute, Relative], example: Pressure gauge	Y21
Drop-down list: Percent, pressure unit, pressure unit abs., pressure unit gauge	
Local display Scaling with standard units [m³/s, l/s, m, inch,], example 1 5 m	Y22
Input field 1 and input field 2: max. 5 characters and numbers only; decimal places as dot (comma is automatically converted to dot).	
Drop-down list: m, cm, mm, in, ft, m <sup>3</sup> , I, hI, in <sup>3</sup> , ft <sup>3</sup> , yd <sup>3</sup> , gal, gal (UK), bu, bbl, bbl (US), SCF, Nm <sup>3</sup> , NI.	
Local display Scaling with user-specific units (max. 12 characters), example 1 5 m	Y23
Input field 1 and input field 2: max. 5 characters and numbers only; decimal places as dot (comma is automatically converted to dot).	
Input field 3: Free text, max. 8 characters	
Saturation limits instead of 3.8 20.5 mA, example: 3.8 22.0 mA	Y30
Drop-down list 1: 3.9, 4	
Drop-down list 2: 20.8, 22	
Fault current instead of 3.6 mA [22.5 mA, 22.8 mA]	Y31
Drop-down list: 3.75; 21.75; 22.5; 22.6	
Damping in seconds instead of 2 s (0.0 100.0 s)	Y32
Input field: max. 4 characters and numbers only; decimal places as dot (comma is automatically converted to dot); min. value = 0; max. value = 100.	
ID number of special version	Y99
Input field: max. 4 characters and only natural numbers from 0 9999	

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

for gauge pressure (pressure series)

# Dimensional drawings



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

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P320/P420

for gauge pressure (differential pressure series)

echnical specifications				
SITRANS P320 / SITRANS P420 for gauge pressur	e (differential pressure series)			
Input				
Measured variable	Gauge pressure			
Span (infinitely adjustable) and maximum operating pressure (pursuant to Pressure Equipment Directive	Span	Max. permissible operating pressure MAWP (PS)	Maximum permissible test pressure	
2014/68/EU)	1 20 mbar	160 bar	240 bar	
	0.1 2 kPa	16 MPa	24 MPa	
	0.4019 8.037 inH <sub>2</sub> O	2320 psi	3481 psi	
	1 60 mbar	160 bar	240 bar	
	0.1 6 kPa	16 MPa	24 MPa	
	0.4019 24.11 inH <sub>2</sub> O	2320 psi	3481 psi	
	2.5 250 mbar	160 bar	240 bar	
	0.2 25 kPa	16 MPa	24 MPa	
	1.005 100.5 inH <sub>2</sub> O	2320 psi	3481 psi	
	6 600 mbar	160 bar	240 bar	
	0.6 60 kPa	16 MPa	24 MPa	
	2.41 241.1 inH <sub>2</sub> O	2320 psi	3481 psi	
	16 1600 mbar	160 bar	240 bar	
	1.6 160 kPa	16 MPa	24 MPa	
	6.43 643 inH <sub>2</sub> O	2320 psi	3481 psi	
	50 5000 mbar	160 bar	240 bar	
	5 500 kPa	16 MPa	24 MPa	
	20.09 2009 inH <sub>2</sub> O	2320 psi	3481 psi	
	0.3 30 bar	160 bar	240 bar	
	0.03 3 MPa	16 MPa	24 MPa	
	4.35 435 psi	2320 psi	3481 psi	
	5 100 bar	160 bar	240 bar	
	0.5 10 MPa	16 MPa	24 MPa	
	76.9 1450 psi	2320 psi	3481 psi	
Measuring limits  Low measuring limit	20 1 (010 (044 )			
<ul> <li>Measuring cell with silicone oil filling</li> <li>Measuring cell with inert oil</li> <li>Measuring cell with FDA-compliant oil</li> </ul>	30 mbar a/3 kPa a/0.44 psi a 30 mbar a/3 kPa a/0.44 psi a 100 mbar a/10 kPa a/1.45 psi a			
Upper measuring limit     Start of scale	100% of the max. measuring spar (140 °F) ambient temperature/prod Between the measuring limits (infi		00 bar/10 MPa/ 1450 psi and 60 °C	
Output	HART			
Output signal	4 20 mA			
Low saturation limit (infinitely adjustable)     High saturation limit (infinitely adjustable)     Ripple (without HART communication)	3.55 mA, factory preset to 3.8 mA 22.8 mA, factory-set to 20.5 mA or $l_{np} \le 0.5\%$ of max. output current			
Adjustable damping	0 100 s, continuously adjustabl 0 100 s, in increments of 0.1 s,			
Current transmitter     Failure signal	3.55 22.8 mA	adjustable over display		
Load  Without HART communication	Resistor R [ $\Omega$ ] R = (U <sub>H</sub> - 10.5 V)/22.8 mA, U <sub>H</sub> : Power supply in V			
With HART communication	R = 230 1100 $\Omega$ (HART commu R = 230 500 $\Omega$ (SIMATIC PDM)			
Characteristic curve	<ul><li>Linearly increasing or linearly de</li><li>Linear increase or decrease or a</li></ul>	ecreasing according to the square root (only fo	or differential pressure and flow)	
D				

1/100

Physical bus Polarity-independent

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

# for gauge pressure (differential pressure series)

CITDANC DOOD / CITDANC DAOD for mount	o (differential pressure series)	ior gauge pressure (unrerential pressure series	
SITRANS P320 / SITRANS P420 for gauge pressur	e (differential pressure series)		
Measuring accuracy Reference conditions	According to EN 60770-1	Cool disphragm stainless steel	
nelelelice conditions	<ul> <li>Rising characteristic curve</li> </ul>	Seal diaphragm stainless steel     Measuring cell with silicone oil filling     Room temperature 25 °C (77 °F)	
Conformity error at limit point setting, including hysteresis and repeatability			
Measuring span ratio r (spread, Turn-Down)  Linear characteristic	r = max. measuring span/set measuring	suring span and nominal measuring range	
- 20 mbar/2 kPa/8.031 inH <sub>2</sub> O	r ≤ 5:	< 0.075%	
- 60 mbar/6 kPa/24.09 inH <sub>2</sub> O	5 < r ≤ 20: r ≤ 5: 5 < r ≤ 60:	$\leq (0.005 \cdot r + 0.05)\%$ $\leq 0.075\%$ $\leq (0.005 \cdot r + 0.05)\%$	
- 250 mbar/25 kPa/3.6 psi	r ≤ 5:	≤ 0.065% (SITRANS P320)	
600 mbar/60 kPa/240.9 inH <sub>2</sub> O 1600 mbar/160 kPa/642.4 inH <sub>2</sub> O 5000 mbar/500 kPa/2008 inH <sub>2</sub> O 30 bar/3 MPa/435 psi	5 < r ≤ 100:	≤ 0.04% (SITRANS P420) ≤ (0.004 · r + 0.045) %	
• 100 bar/10 MPa/1450 psi	r < 10: 10 < r < 30:	= 0.1% = 0.2%	
nfluence of ambient temperature as % per 28 °C (50 °F))		5.2.10	
• 20 mbar/2 kPa/8.031 inH <sub>2</sub> O	$\leq (0.15 \cdot r + 0.1)\%$		
• 60 mbar/6 kPa/24.09 inH <sub>2</sub> O	$\leq (0.075 \cdot r + 0.1)\%$		
<ul> <li>250 mbar/25 kPa/3.6 psi</li> <li>600 mbar/60 kPa/240.9 inH<sub>2</sub>O</li> <li>1600 mbar/160 kPa/642.4 inH<sub>2</sub>O</li> <li>5000 mbar/500 kPa/2008 inH<sub>2</sub>O</li> <li>30 bar/3 MPa/435 psi</li> </ul>	≤ (0.025 · r + 0.125)% (SITRANS F	2320)	
• 250 mbar/25 kPa/3.6 psi	$\leq$ (0.025 · r + 0.0625)% (SITRANS	P420)	
5000 mbar/500 kPa/2008 inH <sub>2</sub> O  • 600 mbar/60 kPa/240.9 inH <sub>2</sub> O  1600 mbar/160 kPa/642.4 inH <sub>2</sub> O	≤ (0.0125 · r + 0.0625)% (SITRANS	S P420)	
30 bar/3 MPa/435 psi  100 bar/10 MPa/1450 psi	0.08 · r + 0.16%		
ong-term stability at ±30 °C (±54 °F))			
20 mbar/2 kPa/8.031 inH <sub>2</sub> O	≤ (0.2 · r)% per year		
• 60 mbar/6 kPa/24.09 inH <sub>2</sub> O	In 5 years $\leq$ (0.25 · r)%		
<ul> <li>250 mbar/25 kPa/3.6 psi</li> <li>600 mbar/60 kPa/240.9 inH<sub>2</sub>O</li> <li>1600 mbar/160 kPa/642.4 inH<sub>2</sub>O</li> <li>5000 mbar/500 kPa/2008 inH<sub>5</sub>O</li> </ul>	In 5 years $\leq$ (0.125 · r)% In 10 years $\leq$ (0.15 · r)%		
• 30 bar/3 MPa/435 psi	In 5 years ≤ (0.25 · r)% In 10 years ≤ (0.35 · r)%		
100 bar/10 MPa/1450 psi	In 5 years ≤ (0.25 · r)%		
Step response time T <sub>63</sub> (without electrical damping)			
<ul> <li>20 mbar/2 kPa/8.031 inH<sub>2</sub>O</li> <li>60 mbar/6 kPa/24.09 inH<sub>2</sub>O</li> </ul>	Approx. 0.160 s Approx. 0.150 s		
<ul> <li>250 mbar/9 ki #24:33 lm #20</li> <li>250 mbar/25 kPa/3.6 psi</li> <li>600 mbar/60 kPa/240.9 inH<sub>2</sub>O</li> <li>1600 mbar/160 kPa/642.4 inH<sub>2</sub>O</li> <li>5000 mbar/500 kPa/2008 inH<sub>2</sub>O</li> <li>30 bar/3 MPa/435 psi</li> </ul>	Approx. 0.135 s		
• 100 bar/10 MPa/1450 psi	Approx. 0.145 s		
Effect of mounting position (in pressure per change of angle)	≤ 0.7 mbar/0.07 kPa/0.010 psi per (zero offset is possible with position		
Effect of auxiliary power (in % per voltage change)	0.005% per 1 V		
Rated conditions  Temperature of medium			
Measuring cell with silicone oil filling	-40 +100 °C (-40 +212 °F)		
- Measuring cell 30 bar (435 psi)	-20 +100 °C (-4 +212 °F)		
- Measuring cell 100 bar (1450 psi)	-20 +100 °C (-4 +212 °F)		
<ul> <li>Measuring cell with inert oil</li> <li>In conjunction with dust explosion protection</li> </ul>	-20 +100 °C (-4 +212 °F) -40 +85 °C (-4 +185 °F)		
Ambient conditions			
Ambient temperature/enclosure	·	areas subject to explosion hazard.	
- Measuring cell with silicone oil filling	-40 +85 °C (-40 +185 °F)		
<ul><li>Measuring cell with inert oil</li><li>Display</li></ul>	-40 +85 °C (-40 +185 °F) -20 +80 °C (-4 +176 °F)		
Storage temperature	-20 +80 °C (-4 +176 °F) -50 +85 °C (-58 +185 °F)		
Climatic class in accordance with IEC 60721-3-4     Degree of protection	4K4H		
- According to IEC 60529	IP66, IP68		
- According to NEMA 250	Type 4X		
<ul> <li>Electromagnetic compatibility</li> <li>Emitted interference and interference immunity</li> </ul>	According to IEC 61326 and NAM	UR NE 21	
and and and and antidition			

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P320/P420

# for gauge pressure (differential pressure series)

for gauge pressure (differential pressure series)				
SITRANS P320 / SITRANS P420 for gauge pressure (differential pressure series)				
Design				
Weight	Approx. 3.9 kg (8.5 lb) with aluminum enclosure			
	Approx. 5.8 kg (12.7 lb) with stainless steel enclosure			
Material				
Wetted parts materials     Seel displacem	Stainless steel met no. 1.4404/2161. Alley C276 met no. 2.4910. Manal met no. 2.4960 textalum or			
- Seal diaphragm	Stainless steel, mat. no. 1.4404/316L, Alloy C276, mat. no. 2.4819, Monel, mat. no. 2.4360, tantalum or gold			
- Process flanges and sealing plugs	Stainless steel, mat. no. 1.4408 to PN 160, mat. no. 1.4571/316Ti for PN 420, Alloy C22, 2.4602 or Monel, mat. no. 2.4360			
- O-ring	FPM (Viton) or optionally: PTFE, FEP, FEPM and NBR			
Non-wetted parts materials	A 4400/ OF OM			
- Electronics housing	<ul> <li>Low-copper die-cast aluminum GD-AlSi 12 or stainless steel precision casting, mat. no. 1.4409/ CF-3M</li> <li>Standard: Powder coating with polyurethane</li> </ul>			
	Option: 2 coats: Coat 1: epoxy-based; coat 2: Polyurethane • Stainless steel type plate (1.4404/316L)			
- Pressure flange screws	Stainless steel ISO 3506-1 A4-70			
- Mounting bracket	Steel, electrogalvanized steel, or stainless steel			
Process connection	1/4-18 NPT female thread and flat connection with 7/16-20 UNF fastening screw thread in accordance			
	with EN 61518 or M10 fastening screw thread in accordance with DIN 19213 (M12 for PN 420 (MWP 6092 psi))			
Electrical connection	Screw terminals			
	Cable entry via the following screwed glands:			
	• M20 x 1.5 • ½-14 NPT			
	Device plug Han 7D/Han 8D <sup>1)</sup> Parisa plus M10			
Displays and soutrals	Device plug M12			
Displays and controls	4 keys for operation directly on the device			
Keys				
Display	<ul><li>With or without integrated display (optional)</li><li>Cover with inspection window (optional)</li></ul>			
Auxiliary power U <sub>H</sub>				
Terminal voltage on pressure transmitter	10.5 45 V DC			
	10.5 30 V DC in intrinsically safe mode			
Ripple	$U_{SS} \le 0.2 \text{ V } (47 \dots 125 \text{ Hz})$			
Noise	$U_{\text{eff}} \le 1.2 \text{ mV } (0.5 \dots 10 \text{ kHz})$			
Auxiliary power	-			
Separate supply voltage	-			
Certificates and approvals				
Classification according to pressure equipment directive (PED 2014/68/EU)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)			
Drinking water	N 4000004/ 1' F00)			
<ul><li>WRAS (England)</li><li>ACS (France)</li></ul>	No.: 1903094 (option E83) No.: 18 ACC LY 277 (option E85)			
• NSF (USA)	No.: 20180920-MH61350 (option E84)			
CRN (Canada)	No.: 0F9863.5C (option E60)			
Explosion protection acc. to NEPSI (China)	No.: GYJ19.1058X (option E27)			
Explosion protection acc. to INMETRO (Brazil)	No.: BRA-18-GE-0035X (option E25)			
Explosion protection				
Intrinsic safety "i"				
- Marking	II 1/2 G Ex ia/ib IIC T4/T6 Ga/Gb			
- Permissible ambient temperature	-40 +80 °C (-40 +176 °F) temperature class T4 -40 +70 °C (-40 +158 °F) temperature class T6			
- Permissible temperature of measuring medium	-40 +100 °C (-40 +212 °F) temperature class T4 -40 +70 °C (-40 +158 °F) temperature class T6			
- Connection	To certified intrinsically safe circuits with the peak values:			
	$U_i = 30 \text{ V}, I_i = 101 \text{ mA}, P_i = 760 \text{ mW}$			
- Effective internal inductance/capacitance	$U_i = 29 \text{ V}, I_i = 110 \text{ mA}, P_i = 800 \text{ mW}$ $L_i = 0.24 \mu\text{H/C}_i = 3.29 \text{nF}$			
• Flameproof enclosure "d"	, , , , , , , , , , , , , , , , , , ,			
- Marking	Ex II 1/2 G Ex ia/db IIC T4/T6 Ga/Gb			
- Permissible ambient temperature	-40 +80 °C (-40 +176 °F) temperature class T4 -40 +70 °C (-40 +158 °F) temperature class T6			
- Permissible temperature of measuring medium	-40 +100 °C (-40 +122 °F) temperature class T4 -40 +70 °C (-40 +158 °F) temperature class T6			
- Connection	To a circuit with the operating values:			
	$U_n = 10.5 \text{ to } 45 \text{ V}, 4 \dots 20 \text{ mA}$			

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

for gauge pressure (differential pressure series)

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

•	Dust	exp	losion	prote	ction	for	zones	21,	22
---	------	-----	--------	-------	-------	-----	-------	-----	----

-	Marking	Ex II 2D Ex tb IIIC T120 °C Db
	-	Ex II 3D Ex to IIIC T120 °C Dc
-	Permissible ambient temperature	-40 +80 °C (-40 +176 °F)
-	Permissible temperature of measuring medium	-40 +100 °C (-40 +212 °F)
	May aurface temperature	100 °C (040 °E)

- Max. surface temperature 120 °C (248 °F) - Connection

• Dust explosion protection for zones 20, 21, 22

- Marking

- Permissible ambient temperature

- Permissible temperature of measuring medium

- Connection

- Effective internal inductance/capacitance

• Type of protection for Zone 2

- Marking

- Permissible ambient temperature "ec"

- Permissible ambient temperature "ic"

- Permissible temperature of measuring medium

- "ec" connection

- "ic" connection

Explosion protection acc. to FM

- Marking (XP/DIP) or IS; NI; S

Explosion protection according to CSA

- Marking (XP/DIP) or (IS)

NAMUR recommendations

 NF 06 • NE 21 • NE 23

• NE 43 • NE 53

• NE 80 • NE 105 • NE 107

• NE 131 1) Han 8D is identical to Han 8U. To a circuit with the operating values:  $U_n = 10.5 \text{ to } 45 \text{ V}, 4 \dots 20 \text{ mA}$ 

Ex II 1D Ex ia IIIC T120 °C Da Ex II 2D Ex ib IIIC T120 °C Db Ex II 3D Ex ic IIIC T120 °C Dc -40 ... +80 °C (-40 ... +176 °F) -40 ... +100 °C (-40 ... +212 °F)

To certified intrinsically safe circuits with the peak values:

 $U_i = 30 \text{ V}, I_i = 101 \text{ mA}, P_i = 760 \text{ mW}$   $U_i = 29 \text{ V}, I_i = 110 \text{ mA}, P_i = 800 \text{ mW}$  $L_i = 0.24 \mu H/C_i = 3.29 nF$ 

Ex II 3G Ex ec IIC T4/T6 Gc Ex II 3G Ex ic IIC T4/T6 Gc

-40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +40 °C (-40 ... +104 °F) temperature class T6 -40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +80 °C (-40 ... +176 °F) temperature class T6 -40 ... +100 °C (-40 ... +212 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6 To a circuit with the operating values:

 $U_p = 10.5 \text{ to } 30 \text{ V}, 4 \dots 20 \text{ mA}$ 

To certified intrinsically safe circuits with the peak values:

 $U_i = 30 \text{ V}, \ I_i = 101 \text{ mA}, \ P_i = 760 \text{ mW} \ U_i = 29 \text{ V}, \ I_i = 110 \text{ mA}, \ P_i = 800 \text{ mW}$ 

Effective internal inductance/capacitance:

 $L_i = 0.24 \mu H/C_i = 3.29 nF$ 

Available soon

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

Available soon

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

Standardized Electrical Signals and Questions Relating to Engineering Technology

Electromagnetic Compatibility (EMC) of Industrial Process and Laboratory Control Equipment

Extra Low Voltage Circuits with Safe Separation

Standardization of the Signal Level for the Failure Information of Digital Transmitters

Software and Hardware of Field Devices and Signal Processing Devices with Digital Electronics

The Application of the Pressure Equipment Directive to Process Control Devices Specifications for Integrating Fieldbus Devices in Engineering Tools for Field Devices

Self-Monitoring and Diagnosis of Field Devices

NAMUR Standard Device - Field Devices for Standard Applications

#### **HART** communication

HART 230 ... 1100 Ω Protocol HART 7 Software for computer SIMATIC PDM

Siemens FI 01 · 2018

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

# for gauge pressure (differential pressure series)

# Selection and ordering data

Pressure transmitters for gauge pressure (differential pressure series)	
SITRANS P320	7MF031
SITRANS P420	7MF041
7 Click on the Article no. for the online configuration in the PIA Life Cycle Portal.	
Communication	
HART, 4 20 mA	0
Measuring cell filling	
Silicone oil	1
Inert filling liquid	3
Maximum measuring span	
20 mbar (8.037 inH <sub>2</sub> O)	В
60 mbar (24.11 inH <sub>2</sub> O)	D
250 mbar (1005 inH <sub>2</sub> O)	G
600 mbar (241.1 inH <sub>2</sub> O)	н
1 600 mbar (643 inH <sub>2</sub> O)	М
5000 mbar (2009 inH <sub>2</sub> O)	P
30 bar (435 psi)	R
Process connection	
Oval flange, mounting thread: 7/16-20 UNF (IEC 61518)	L
Oval flange, mounting thread: M10 (PN 160), (DIN 19213)	M
Oval flange, mounting thread: 7/16-20 UNF (IEC 61518) with lateral ventilation	N
Oval flange, mounting thread: M10 (PN 160) (DIN 19213) with lateral ventilation	P
Wetted parts materials: Process connection, seal diaphragm	
Stainless steel 316L/1.4404, stainless steel 316L/1.4404, process flange stainless steel 316/1.4408	0
Stainless steel 316L/1.4404, alloy C276/2.4819, process flange stainless steel 316/1.4408	1
Alloy C22/2.4602, alloy C276/2.4819, process flange stainless steel 316/1.4408	2
Tantalum/tantalum, process flange stainless steel 316/1.4408 (not in combination with maximum measuring span 20 mbar (0.29 psi) and 60 mbar (0.87 psi))	4
Monel 00/2.4360, Monel 400/2.4360, process flange stainless steel 316/1.4408 (not in combination with maximum measuring span 20 mbar (0.29 psi) and 60 mbar (0.87 psi))	6
Stainless steel 316L/1.4404, gold-plated, process flange stainless steel 316/1.4408 (not in combination with maximum measuring span 20 mbar (0.29 psi) and 60 mbar (0.87 psi))	8
Non-wetted parts materials	
Die-cast aluminum	1
Stainless steel precision casting CF3M/1.4409 similar to 316L	2
Enclosure	
Dual chamber device	5
Type of protection	
Without Ex	Α
Intrinsic safety	В
Flameproof enclosure	С
Flameproof enclosure, intrinsic safety	D
Dust protection by enclosure Zone 21/22 (DIP), increased safety Zone 2	L
Dust protection by enclosure Zone 20/21/22 (DIP), increased safety Zone 2	М
Combination of options B, C and L (zone model)	s
Combination of options B, C and M (zone model, Class Division)	т
Electrical connections/cable entries	
Thread for cable gland: Cable gland must be ordered separately as option (Axx)	
• 2 x M20 x 1.5	F

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

# for gauge pressure (differential pressure series)

	Article No.
Pressure transmitters for gauge pressure (differential pressure series)	
SITRANS P320	7MF031
SITRANS P420	7MF041
Local operation/display	
Without display (cover closed)	0
With display (cover closed)	1
With display (cover with glass pane)	2

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

for gauge pressure (differential pressure series)

# Selection and ordering data

Selection and ordering data	
Options	Order code
Append "-Z" to Article No., add order code and plain text or entry from drop-down list.	
Cable glands included	
Plastic	A00
Metal	A01
Stainless steel	A02
Stainless steel 316L/1.4404	A03
CMP, for XP devices	A10
CAPRI ADE 4F, CuZn, cable inner diameter 7 12 mm, cable outer diameter 10 16 mm	A11
CAPRI ADE 4F, stainless steel, cable inner diameter 7 12 mm, cable outer diameter 10 16 mm	A12
Device plug Han mounted left	
Device plug Han 7D (plastic, straight)	A30
Device plug Han 7D (plastic, angled)	A31
Device plug Han 7D (metal, straight)	A32
Device plug Han 7D (metal, angled)	A33
Device plug Han 8D (plastic, straight)	A34
Device plug Han 8D (plastic, angled)	A35
Device plug Han 8D (metal, straight)	A36
Device plug Han 8D (metal, angled)	A37
Cable socket included	
Plastic, for device plug Han 7D and Han 8D	A40
Metal, for device plug Han 7D and Han 8D	A41
Device plug M12 mounted left	
Stainless steel, without cable socket	A62
Stainless steel, with cable socket	A63
Cable entry/connector mounting	
2x sealing plugs M20 x 1.5, IP66/68 installed on both sides	A90
$2x$ sealing plugs $\ensuremath{\rlap{1/2}}\xspace\ensuremath{^{2}}\xspace\ensuremath{^{2}}\xspace\ensuremath{^{1}}\xspace\ensuremath{^{1}}\xspace\ensuremath{^{2}}\xspace\ensure$	A91
Cable gland/connector mounted left	A97
Cable gland/connector mounted on right	A99
Nameplate labeling (standard labeling: English, unit bar)	
German (bar)	B11
French (bar)	B12
Spanish (bar)	B13
Italian (bar)	B14
Chinese (bar)	B15
Russian (bar)	B16
English (psi)	B20
English (Pa)	B30
Chinese (Pa)	B35
Certificates	
Quality test certificate, 5-point factory calibration (IEC 60770-2)	C11
Acceptance certificate (EN 10204-3.1) - Material of pressurized and wetted parts	C12
Test report - NACE (MR 0103-2012 and MR 0175-2009)	C13
Test report (EN 10204-2.2) - Wetted parts	C14
Acceptance certificate (EN 10204-3.1) - PMI test of pressurized and wetted parts	C15
Certificates for functional safety	
Functional safety (IEC 61508) - SIL2/3	C20

Ontions	Order anda
Options	Order code
Append "-Z" to Article No., add order code and plain text or entry from drop-down list.	
Device options	
PDF file with device settings	D10
Double layer coating (epoxy resin and polyurethane) 120 µm of enclosure and cover	D20
FVMQ enclosure sealing	D21
IP66/IP68 degree of protection (not for device plugs M12 and Han )	D30
TAG label empty	D40
Without labeling of the measuring range on the TAG label	D41
Stainless steel Ex plate 1.4404/316L	D42
Overvoltage protection up to 6 kV (external)	D71
Adhesive labels on transport packaging (supplied by customer)	D90
General approval without Ex approval	
Worldwide (CE, RCM) except EAC, FM, CSA, KCC	E00
Worldwide (CE, RCM, EAC, FM, CSA, KCC)	E01
CSA (USA and Canada)	E06
EAC	E07
FM	E08
KCC	E09
Export approval CPA (China)	E12
Explosion protection approvals	
ATEX (Europe)	E20
CSA (USA and Canada)	E21
FM (USA and Canada)	E22
IECEx (Worldwide)	E23
EACEx (GOST-R, -K, -B)	E24
INMETRO (Brazil)	E25
KCs (Korea)	E26
NEPSI (China)	E27
PESO (India)	E28
UKR Sepro (Ukraine)	E30
ATEX (Europe) and IECEx (Worldwide)	E47
CSA (Canada) and FM (USA)	E48
ATEX (Europe) and IECEx (Worldwide) + CSA (Canada) and FM (USA)	E49
Marine approvals	
DNV-GL (Det Norske Veritas/Germanischer Lloyd)	E50
LR (Lloyds Register)	E51
BV (Bureau Veritas)	E52
ABS (American Bureau of Shipping)	E53
RMR (Russian Maritime Register)	E55
KR (Korean Register of Shipping)	E56
RINA (Registro Italiano Navale)	E57
CCS (China Classification Society)	E58
Country-specific approvals	
CRN approval Canada (Canadian Registration Number)	E60

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

# for gauge pressure (differential pressure series)

Options	Order code
Append "-Z" to Article No., add order code and plain text or entry from drop-down list.	
Special approvals	
Oxygen application (with inert liquid, max. 100 bar (1 450 psi) at 60° C (140 °F))	E80
Dual seal	E81
WRC / WRAS (drinking water); only with pressure cap O-rings made of EPDM	E83
NSF61 (drinking water)	E84
ACS (drinking water)	E85
Mounting bracket	
Steel, galvanized	H01
Stainless steel 1.4301/304	H02
Stainless steel 1.4404/316L	H03
Process flanges; screw plug with vent valve	
Welded in on right	J08
Welded in on left	J09
Glued in on right	J10
Glued in on left	J11
Flange connections with flange EN 1092-1	
Form B1  DN 25 PN 40, stainless steel 1.4571/316Ti  DN 50 PN 40, stainless steel 1.4571/316Ti  DN 80 PN 40, stainless steel 1.4571/316Ti  DN 15 PN 40, stainless steel 1.4571/316Ti	J70 J71 J72 J78
Form C  DN 25 PN 40, stainless steel 1.4571/316Ti  DN 50 PN 40, stainless steel 1.4571/316Ti  DN 80 PN 40, stainless steel 1.4571/316Ti	J73 J74 J75
Flange connection options	
Flange connection and temperature extension	J76
Flange connection with epoxy resin coating	J77
Process flanges; special materials	
Reserved for 7MF7: without process flanges, without screws, without gaskets	K00
Process flange material alloy C22/2.4602	K01
Process flange material Monel 400/2.4360	K02
Process connection material PVDF, on the side ½- 14 NPT	K05
Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 25 PN 40, MAWP 4 bar	K06
Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 40 PN 40, MAWP 4 bar	K07
Process flanges; process connection option	
Process flange with process connection G½ welded on	K20
Process connection NAM (ASTAVA)	K21
Process flanges chambered with gaskets	
1x chambered, graphite	K40
1x chambered, PTFE	K41
2x chambered, PTFE	K42
Process flanges, gaskets (instead of standard gaskets FKM (FPM))	
O-ring, process flanges, PTFE	K50
O-ring, process flanges, FEP (with silicone core,	K51
approved for food)	K52
approved for food) O-ring, process flanges, FFKM (FFPM) O-ring, process flanges, NBR	K52 K53

·	
Options	Order code
Append "-Z" to Article No., add order code and plain text or entry from drop-down list.	
Process flange options	
Process flanges for vertical differential pressure lines (half process flange)	K81
Process flanges (+) - side front	K82
Process flange screws, process flange nuts, material Monel 400/2.4360	K83
Valve 1/4-18 NPT, material same as process flanges	K84
Valve mounted on the side, measured medium: Gas	K85
Oval flange enclosed, gasket PTFE + mounting screws	K86
Valve manifolds	
With mounted valve manifold (3-way) 7MF9411-5BA, PTFE sealing rings, chrome-plated steel screws and pressure test certified in test report (EN 10204-2.2)	U01
With mounted valve manifold (3-way) 7MF9411-5BA, PTFE sealing rings, stainless steel screws and pressure test certified in test report (EN 10204-2.2)	U02
With mounted valve manifold (5-way) 7MF9411-5CA, PTFE sealing rings, chrome-plated steel screws and pressure test certified in test report (EN 10204-2.2)	U03
With mounted valve manifold (5-way) 7MF9411-5CA, PTFE sealing rings, stainless steel screws and pressure test certified in test report (EN 10204-2.2)	U04

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P320/P420

# for gauge pressure (differential pressure series)

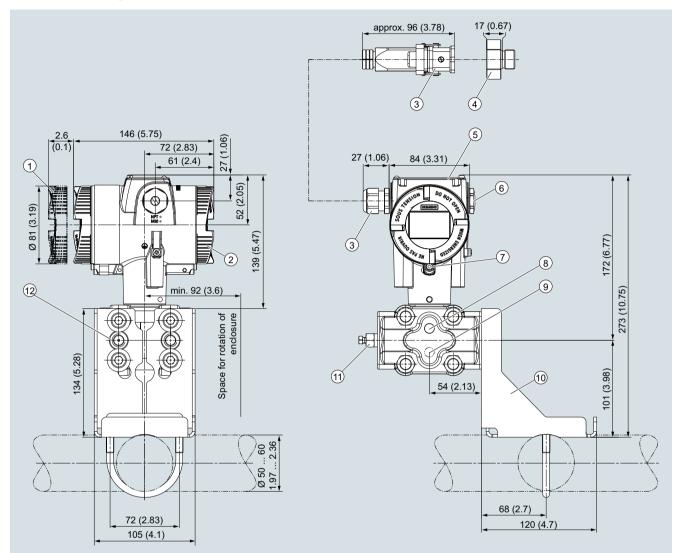
Options	Order code
Append "-Z" to Article No., add order code and plain text or entry from drop-down list.	
Device settings	
Measuring span Start of scale value (max. 5 characters), full scale value (max. 5 characters), unit [mbar, bar, kPa, MPa, psi,], example: -0.5 10.5 psi	Y01
Input field 1 and input field 2: max. 5 characters and numbers only; decimal places as dot (comma is automatically converted to dot).  Drop-down list: Pa, MPa, kPa, hPa, bar, mbar, psi, g/cm², kg/cm², kgf/cm², inH <sub>2</sub> O, inH <sub>2</sub> O (4°C), ftH <sub>2</sub> O, mmH <sub>2</sub> O, mmH <sub>2</sub> O (4°C), mHH <sub>2</sub> O, mmH <sub>2</sub>	
TAG (on stainless steel plate and device parameters, max. 32 characters) Input field: Free text, max. 32 characters	Y15
Measuring point description (on stainless steel plate and device parameters, max. 32 characters)	Y16
Input field: Free text, max. 32 characters  TAG short (device parameters, max. 8 characters)	Y17
Input field: Free text, max. 8 characters	
Local display [Pressure, Percent], reference [None, Absolute, Relative], example: Pressure gauge Drop-down list: Percent, pressure unit, pressure unit abs., pressure unit gauge	Y21
Local display Scaling with standard units [m³/s, l/s, m, inch,], example 1 5 m Input field 1 and input field 2: max. 5 characters and numbers only; decimal places as dot (comma is auto-	Y22
matically converted to dot).  Drop-down list: m, cm, mm, in, ft, m <sup>3</sup> , I, hI, in <sup>3</sup> , ft <sup>3</sup> , yd <sup>3</sup> , gal, gal (UK), bu, bbl, bbl (US), SCF, Nm <sup>3</sup> , NI.	
Local display Scaling with user-specific units (max. 12 characters), example 1 5 m Input field 1 and input field 2: max. 5 characters and	Y23
numbers only; decimal places as dot (comma is automatically converted to dot).  Input field 3: Free text, max. 8 characters	
Saturation limits instead of 3.8 20.5 mA, example: 3.8 22.0 mA	Y30
Drop-down list 1: 3.9, 4	
Drop-down list 2: 20.8, 22	
Fault current instead of 3.6 mA [22.5 mA, 22.8 mA] Drop-down list: 3.75; 21.75; 22.5; 22.6	Y31
Damping in seconds instead of 2 s (0.0 100.0 s) Input field: max. 4 characters and numbers only; decimal places as dot (comma is automatically converted to dot); min. value = 0; max. value = 100.	Y32
ID number of special version Input field: max. 4 characters and only natural numbers from 0 9999	Y99

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Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

for gauge pressure (differential pressure series)

# Dimensional drawings



- 1) Electronics side, local display (longer overall length for cover with glass pane)1)
- 2 Connection side
- 3 Electrical connection:
  - M20 x 1,53) screw gland
  - 1/2-14 NPT screw gland
  - Han 7D/Han 8D2)3) device plug
  - M12 device plug<sup>2) 3</sup>
- 4 Harting adapter
- 5 Cover over buttons and nameplate with general information

- 6 Blanking plug
- (7) Safety catch
- (only for "flameproof enclosure" type of protection)
- (8) Lateral ventilation for liquid measurement (Standard)
- (9) Lateral ventilation for gas measurement (order option K85)
- (10) Mounting bracket (optional)
- (11) Sealing plug with valve (optional)
- 12) Process connection: 1/4-18 NPT (IEC 61518)
- In addition, allow approx. 22 mm (0.87 inch) for the thread length when removing the covers
- Not with "flameproof enclosure" type of protection Not with type of protection "FM + CSA" [is + XP]"

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

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

for gauge and absolute pressure, flush-mounted diaphragm

## Technical specifications

Technical specifications					
SITRANS P320 / SITRANS P420 for gauge and abs	colute pressure, with flush-mount	ed diaphragm			
Input of gauge pressure, with flush-mounted dia- phragm					
Measured variable	Gauge pressure				
Span (infinitely adjustable) or measuring range, max. operating pressure and max. test pressure	Span	Max. permissible operating pressure MAWP (PS)  Maximum permissible test pressure			
	0.01 1 bar	Refer to the information on the nameplate of the pressure transmitter and the data on the mounting flange <sup>1)</sup>			
	1 100 kPa 0.15 14.5 psi	and the data on the mounting nange			
	0.04 4 bar				
	4 400 kPa				
	0.58 58 psi				
	0.16 16 bar 0.016 1.6 MPa				
	2.3 232 psi				
	0.6 63 bar				
	0.063 6.3 MPa				
Monauring limits	9.1 914 psi				
Measuring limits  • Low measuring limit					
<ul> <li>Measuring cell with silicone oil filling</li> <li>Measuring cell with inert oil</li> </ul>	100 mbar a/10 kPa a/1.45 psi a 100 mbar a/10 kPa a/1.45 psi a				
Measuring cell with FDA-compliant oil	100 mbar a/10 kPa a/1.45 psi a				
Upper measuring limit	100% of max. span				
Input of absolute pressure, with flush-mounted diaphragm					
Measured variable	Absolute pressure				
Span (infinitely adjustable) or measuring range, max. operating pressure and max. test pressure	Span	Max. permissible operating pressure MAWP (PS)  Maximum permissible test pressure			
	43 1300 mbar a 4.3 130 kPa a	Refer to the information on the nameplate of the pressure transmitter and the data on the mounting flange <sup>1)</sup>			
	17 525 inH <sub>2</sub> O a				
	166 5000 mbar a				
	16.6 500 kPa a				
	2.41 72.5 psi a 1 30 bar a				
	0.1 3 MPa a				
	14.5 435 psi a				
A4	Depending on the process conne	ction, the span may differ from these values.			
Measuring limits  • Low measuring limit					
- Measuring cell with silicone oil filling	0 bar a/0 kPa a/0 psi a				
Upper measuring limit  Start of scale	100% of max. span  Between the measuring limits (infi	nitaly adjustable)			
Output	HART	micry adjustable)			
Output signal	4 20 mA				
<ul><li>Low saturation limit (infinitely adjustable)</li><li>High saturation limit (infinitely adjustable)</li></ul>	3.55 mA, factory preset to 3.8 mA 22.8 mA, factory-set to 20.5 mA o				
Ripple (without HART communication)	$I_{pp} \le 0.5\%$ of max. output current	Optionally 22.0 MA			
Adjustable damping	0 100 s, continuously adjustable	le over remote operation			
Current transmitter	0 100 s, in increments of 0.1 s, 3.55 22.8 mA	adjustable over display			
• Failure signal	3.55 22.8 mA				
Load	Resistor R $[\Omega]$				
Without HART communication	$R = (U_H - 10.5 \text{ V})/22.8 \text{ mA},$ $U_H$ : Power supply in V				
With HART communication	R = 230 1100 $\Omega$ (HART communicator (handheld))				
Characteristic curve	R = 230 500 $\Omega$ (SIMATIC PDM)				
Characteristic curve	<ul> <li>Linearly increasing or linearly decreasing</li> <li>Linear increase or decrease or according to the square root (only for differential pressure and flow)</li> </ul>				
Physical bus	-				
Polarity-independent	-				

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

# for gauge and absolute pressure, flush-mounted diaphragm

for gauge and absolute pressure, flush-mounted diaphragm						
SITRANS P320 / SITRANS P420 for gauge and abs	solute pressure, with flush-moun	ted diaphragm				
Gauge pressure measuring accuracy, with flush-mounted diaphragm						
Reference conditions	According to EN 60770-1 Rising characteristic curve Start of scale value 0 bar/kPa/psi Seal diaphragm stainless steel Measuring cell with silicone oil filling Room temperature 25 °C (77 °F)					
Conformity error at limit point setting, including hysteresis and repeatability						
Measuring span ratio r (spread, Turn-Down)  • Linear characteristic	r = maximum measuring span/set	measuring span or nominal measuring range				
- 1 bar/100 kPa/14.5 psi	r≤5: ≤0.075%					
4 bar/400 kPa/58 psi 16 bar/1.6 MPa/232 psi 63 bar/6.3 MPa/914 psi	5 < r ≤ 100: ≤ (0.005 · r + 0.05)%					
Influence of ambient temperature in % per 28 °C (50 °F)  • 1 bar/100 kPa/14.5 psi 4 bar/400 kPa/58 psi 16 bar/1.6 MPa/232 psi 63 bar/6.3 MPa/914 psi	$\leq (0.08 \cdot r + 0.16)\%$					
Influence of the process temperature (in pressure per temperature unit)  Temperature difference between process temperature and ambient temperature	3 mbar/0.3 kPa/0.04 psi per 10 K					
Long-term stability at ±30 °C (±54 °F)  1 bar/100 kPa/14.5 psi bar/400 kPa/58 psi	In 5 years ≤ (0.25 · r)%					
• 16 bar/1.6 MPa/232 psi 63 bar/6.3 MPa/914 psi	In 5 years ≤ (0.125 · r)%					
Step response time $T_{63}$ (without electrical damping)	≤ 0.105 s					
Effect of mounting position (in pressure per change of angle)	0.4 mbar/0.04 kPa/0.006 per 10° incline (zero point correction is possible with position error compensation)					
Effect of auxiliary power (in % per voltage change)	0.005% per 1 V					
Absolute pressure measuring accuracy with flush diaphragm						
Reference conditions	According to EN 60770-1 Rising characteristic curve Start of scale value 0 bar/kPa/psi Seal diaphragm stainless steel Measuring cell with silicone oil filling Room temperature 25 °C (77 °F)					
Conformity error at limit point setting, including hysteresis and repeatability						
Measuring span ratio r (spread, Turn-Down)  • Linear characteristic	r = maximum measuring span/set measuring span or nominal measuring range					
- All measuring cells	r ≤ 10:	≤ 0.2%				
Influence of ambient temperature in % per 28 °C (50 °F)	10 < r ≤ 30: ≤ 0.4%					
All measuring cells	$\leq (0.16 \cdot r + 0.24)\%$					
Influence of the process temperature (in pressure per temperature unit)  • Temperature difference between process temperature and ambient temperature	3 mbar/0.3 kPa/0.04 psi per 10 K					
Long-term stability at ±30 °C (±54 °F) • All measuring cells	In 5 years ≤ (0.25 · r)%					
Step response time $T_{63}$ (without electrical damping)	≤ 0.105 s					
Effect of mounting position (in pressure per change of angle)	0.4 mbar/0.04 kPa/0.006 per 10° incline (zero point correction is possible with position error compensation)					
Effect of auxiliary power (in % per voltage change)	0.005% per 1 V					

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P320/P420

# for gauge and absolute pressure, flush-mounted diaphragm

SITRANS P320 / SITRANS P420 for gauge and abs	solute pressure, with flush-mounted diaphragm
Rated conditions	
Temperature of medium <sup>2)</sup>	
Measuring cell with silicone oil filling	-40 +150 °C (-40 +302 °F) -40 +200 °C (-40 +392 °F) with cooling extension
<ul><li>Measuring cell with inert oil</li><li>Measuring cell with FDA-compliant oil</li></ul>	-20 +100 °C (-4 +212 °F) -10 +150 °C (14 +302 °F)
Ambient conditions	
Ambient temperature/enclosure     Measuring cell with silicone oil filling     Measuring cell with inert oil	Observe the temperature class in areas subject to explosion hazard.  -40 +85 °C (-40 +185 °F)  1 bar/100 kPa/14.5 psi -40 +85 °C (-40 +185 °F)
(different pressure classes)	4 bar/400 kPa/58 psi 16 bar/1.6 MPa/232 psi 63 bar/6.3 MPa/914 ps
- Measuring cell with FDA-compliant oil	-10 +85°C (14 +185°F)
- Display	-20 +80 °C (-4 +176 °F)
<ul><li>Storage temperature</li><li>Climatic class in accordance with IEC 60721-3-4</li></ul>	-50 +85 °C (-58 +185 °F) (with FDA-compliant oil: -20 + 85 °C (-4 +185 °F)) 4K4H
Degree of protection	41/411
<ul><li>According to IEC 60529</li><li>According to NEMA 250</li></ul>	IP66, IP68 Type 4X
Electromagnetic compatibility     Emitted interference and interference immunity	According to IEC 61326 and NAMUR NE 21
Design	
Weight (pressure transmitter without mounting flange)	
Material	
Wetted parts materials      Dragge connection	Chairless steel meet no. 1.4404/01Cl
<ul><li>Process connection</li><li>Seal diaphragm</li></ul>	Stainless steel, mat. no. 1.4404/316L Stainless steel, material no. 1.4404/316L or Alloy C276, material no. 2.4819
Non-wetted parts materials	Statilloss stosi, material net 11170 yourse strainey out of material net 211070
- Electronics housing	<ul> <li>Low-copper die-cast aluminum GD-AlSi 12 or stainless steel precision casting, mat. no. 1.4409/ CF-3M</li> <li>Standard: Powder coating with polyurethane         Option: 2 coats: Coat 1: epoxy-based; coat 2: Polyurethane     </li> <li>Stainless steel type plate (1.4404/316L)</li> </ul>
- Mounting bracket	Steel, electrogalvanized steel, or stainless steel
Process connection	<ul> <li>Flanges according to EN and ASME</li> <li>F&amp;B and pharmaceutical flanges</li> <li>BioConnect/BioControl</li> <li>PMC style</li> </ul>
Electrical connection	Cable entry via the following screwed glands:  • M20 x 1.5
	• ½-14 NPT
	<ul> <li>Device plug Han 7D/Han 8D<sup>3)</sup></li> <li>Device plug M12</li> </ul>
Displays and controls	
Keys	4 keys for operation directly on the device
Display	<ul><li>With or without integrated display (optional)</li><li>Cover with inspection window (optional)</li></ul>
Auxiliary power U <sub>H</sub>	
Terminal voltage on pressure transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically safe mode
Ripple	$U_{ss} \le 0.2 \text{ V } (47 \dots 125 \text{ Hz})$
Noise	$U_{eff} \le 1.2 \text{ mV } (0.5 \dots 10 \text{ kHz})$
Auxiliary power	-
Separate supply voltage	

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Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

#### for gauge and absolute pressure, flush-mounted diaphragm

#### SITRANS P320 / SITRANS P420 for gauge and absolute pressure, with flush-mounted diaphragm

#### Certificates and approvals

Classification according to pressure equipment directive (PED 2014/68/EU)

Drinking water

WRAS (England)ACS (France)

• NSF (USA) CRN (Canada)

Explosion protection acc. to NEPSI (China)
Explosion protection acc. to INMETRO (Brazil)

Explosion protection

Intrinsic safety "i"

- Marking

- Permissible ambient temperature

- Permissible temperature of measuring medium

- Connection

- Effective internal inductance/capacitance

• Flameproof enclosure "d'

- Marking

- Permissible ambient temperature

- Permissible temperature of measuring medium

- Connection

• Dust explosion protection for zones 21, 22

- Marking

- Permissible ambient temperature

- Permissible temperature of measuring medium

- Max. surface temperature

- Connection

• Dust explosion protection for zones 20, 21, 22

Marking

- Permissible ambient temperature

- Permissible temperature of measuring medium

- Connection

- Effective internal inductance/capacitance

• Type of protection for Zone 2

- Marking

- Permissible ambient temperature "ec"

- Permissible ambient temperature "ic"

- Permissible temperature of measuring medium

- "ec" connection

- "ic" connection

For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)

No.: 1903094 (option E83) No.: 18 ACC LY 277 (option E85) No.: 20180920-MH61350 (option E84)

No.: 0F9863.5C (option E60) No.: GYJ19.1058X (option E27) No.: BRA-18-GE-0035X (option E25)

II 1/2 G Ex ia/ib IIC T4/T6 Ga/Gb

-40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6 -40 ... +100 °C (-40 ... +212 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6 To certified intrinsically safe circuits with peak values:

 $\begin{array}{l} U_{i} = 30 \text{ V, } I_{i} = 101 \text{ mA, } P_{i} = 760 \text{ mW} \\ U_{i} = 29 \text{ V, } I_{i} = 110 \text{ mA, } P_{i} = 800 \text{ mW} \\ L_{i} = 0.24 \text{ } \mu\text{H/C}_{i} = 3.29 \text{ nF} \end{array}$ 

Ex II 1/2 G Ex ia/db IIC T4/T6 Ga/Gb

-40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6 -40 ... +100 °C (-40 ... +212 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6 To a circuit with the operating values:

 $U_n = 10.5 \text{ to } 45 \text{ V}, 4 \dots 20 \text{ mA}$ 

Ex II 2D Ex tb IIIC T120 °C Db Ex II 3D Ex tc IIIC T120 °C Dc -40 ... +80 °C (-40 ... +176 °F) -40 ... +100 °C (-40 ... +212 °F)

120 °C (248 °F)

To a circuit with the operating values:

 $U_n$  = 10.5 to 45 V, 4 ... 20 mA

Ex II 1D Ex ia IIIC T120 °C Da EX II 2D Ex ib IIIC T120 °C Db EX II 3D Ex ic IIIC T120 °C Dc -40 ... +80 °C (-40 ... +176 °F) -40 ... +100 °C (-40 ... +212 °F)

To certified intrinsically safe circuits with the peak values:

 $\begin{array}{l} U_{i} = 30 \text{ V, } I_{i} = 101 \text{ mA, } P_{i} = 760 \text{ mW} \\ U_{i} = 29 \text{ V, } I_{i} = 110 \text{ mA, } P_{i} = 800 \text{ mW} \\ L_{i} = 0.24 \text{ } \mu\text{H/C}_{i} = 3.29 \text{ nF} \end{array}$ 

Ex II 3G Ex ec IIC T4/T6 Gc Ex II 3G Ex ic IIC T4/T6 Gc

-40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +40 °C (-40 ... +104 °F) temperature class T6 -40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +80 °C (-40 ... +212 °F) temperature class T6 -40 ... +170 °C (-40 ... +212 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6 To a circuit with the operating values:

U<sub>n</sub> = 10.5 to 30 V, 4 ... 20 mA

To certified intrinsically safe circuits with the peak values:

 $\begin{array}{l} U_{i}=30~\text{V},~l_{i}=101~\text{mA},~P_{i}=760~\text{mW} \\ U_{i}=29~\text{V},~l_{i}=110~\text{mA},~P_{i}=800~\text{mW} \end{array}$  Effective internal inductance/capacitance:

 $L_i = 0.24 \ \mu H/C_i = 3.29 \ nF$ 

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

#### for gauge and absolute pressure, flush-mounted diaphragm

#### SITRANS P320 / SITRANS P420 for gauge and absolute pressure, with flush-mounted diaphragm

Explosion protection acc. to FM
 Available soon

- Marking (XP/DIP) or IS; NI; S CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4 ... T6: CL I, DIV 2,

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

Explosion protection according to CSA

Available soon

- Marking (XP/DIP) or (IS)

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

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

NAMUR recommendations

NE 06 Standardized Electrical Signals and Questions Relating to Engineering Technology

NE 21
 Electromagnetic Compatibility (EMC) of Industrial Process and Laboratory Control Equipment

NE 23
 Extra Low Voltage Circuits with Safe Separation

Standardization of the Signal Level for the Failure Information of Digital Transmitters

• NE 53 Software and Hardware of Field Devices and Signal Processing Devices with Digital Electronics

NE 80 The Application of the Pressure Equipment Directive to Process Control Devices
 NE 105 Specifications for Integrating Fieldbus Devices in Engineering Tools for Field Devices

NE 107
 Self-Monitoring and Diagnosis of Field Devices

NE 131
 NAMUR Standard Device - Field Devices for Standard Applications

<sup>3)</sup> Han 8D is identical to Han 8U.

HART communication	
HART	230 1100 Ω
Protocol	HART 7
Software for computer	SIMATIC PDM

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<sup>1)</sup> The MAWP value of the pressure transmitter can be lower than the PN value of the mounting flange and vice versa. To determine the maximum permissible operating pressure and the maximum permissible test pressure, use the lowest value as reference.

<sup>2)</sup> Observe the temperature limits in the process connection standards (e.g. DIN 32676 and DIN 11851) for the maximum process temperature for flush-mounted process connections.

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

for gauge and absolute pressure, flush-mounted diaphragm

# Selection and ordering data

	Article No.
Pressure transmitter for gauge and absolute pressure, with flush-mounted diaphragm	and the second second
SITRANS P320 for gauge pressure	7MF030
SITRANS P420 for gauge pressure	7 M F 0 4 0
SITRANS P320 for absolute pressure	7 M F 0 3 2
SITRANS P420 for absolute pressure	7MF042
Communication	
HART, 4 20 mA	0
Measuring cell filling	
Silicone oil	1
Inert filling liquid	3
Neobee oil	4
Maximum measuring span	
1000 mbar (14.5 psi)	0 J
4000 mbar (58 psi)	0 N
16 bar (232 psi)	0 Q
63 bar (914 psi)	0 T
1 300 mbar a (18.9 psi a)	2 L
5000 mbar a (72.5 psi a)	2 P
30 bar a (435 psi a)	2 R
Process connection	
Flush-mounted diaphragm	κ
Wetted parts materials: Process connection, seal diaphragm	
Stainless steel 316L/1.4404, stainless steel 316L/1.4404	0
Stainless steel 316L/1.4404, alloy C276/2.4819	1
Alloy C22/2.4602, alloy C276/2.4819	2
Non-wetted parts materials	
Die-cast aluminum	1
Stainless steel precision casting CF3M/1.4409 similar to 316L	2
Enclosure	
Dual chamber device	5
Type of protection	
Without Ex	A
Intrinsic safety	В
Flameproof enclosure	c
Flameproof enclosure, intrinsic safety	D
Dust protection by enclosure Zone 21/22 (DIP), increased safety Zone 2	Ĺ
Dust protection by enclosure Zone 20/21/22 (DIP), increased safety Zone 2	– M
Combination of options B, C and L (zone model)	s s
Combination of options B, C and M (zone model, Class Division)	T
Electrical connections/cable entries	<u> </u>
Thread for cable gland: Cable gland must be ordered separately as option (Axx)	
• 2 x M20 x 1.5	F
• 2 x ½-14 NPT	M
Local operation/display	
Without display (cover closed)	
With display (cover closed)	
With display (cover with glass pane)	

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

# for gauge and absolute pressure, flush-mounted diaphragm

## Selection and ordering data

Selection and ordering data	
Options	Order code
Append ".Z" to Article No., add order code and plain text or entry from drop-down list.	
Cable glands included	
Plastic	A00
Metal	A01
Stainless steel	A02
Stainless steel 316L/1.4404	A03
CMP, for XP devices	A10
CAPRI ADE 4F, CuZn, cable inner diameter 7 12 mm, cable outer diameter 10 16 mm	A11
CAPRI ADE 4F, stainless steel, cable inner diameter 7 12 mm, cable outer diameter 10 16 mm	A12
Device plug Han mounted left	
Device plug Han 7D (plastic, straight)	A30
Device plug Han 7D (plastic, angled)	A31
Device plug Han 7D (metal, straight)	A32
Device plug Han 7D (metal, angled)	A33
Device plug Han 8D (plastic, straight)	A34
Device plug Han 8D (plastic, angled)	A35
Device plug Han 8D (metal, straight)	A36
Device plug Han 8D (metal, angled)	A37
Cable socket included	
Plastic, for device plug Han 7D and Han 8D	A40
Metal, for device plug Han 7D and Han 8D	A41
Device plug M12 mounted left	
Stainless steel, without cable socket	A62
Stainless steel, with cable socket	A63
Cable entry/connector mounting	A00
2x sealing plugs M20 x 1.5, IP66/68 installed on both sides	A90
2x sealing plugs ½-14 NPT, IP66/68 installed on both sides	A91
Cable gland/connector mounted left	A97
Cable gland/connector mounted on right	A99
Nameplate labeling (standard labeling: English, unit bar)	
German (bar)	B11
French (bar)	B12
Spanish (bar)	B13
Italian (bar)	B14
Chinese (bar)	B15
Russian (bar)	B16
English (psi)	B20
English (Pa)	B30
Chinese (Pa)	B35
Certificates	
Quality test certificate, 5-point factory calibration (IEC 60770-2)	C11
Acceptance certificate (EN 10204-3.1) - Material of pressurized and wetted parts	C12
Test report - NACE (MR 0103-2012 and MR 0175-2009)	C13
Test report (EN 10204-2.2) - Wetted parts	C14
Acceptance certificate (EN 10204-3.1) - PMI test of pressurized and wetted parts	C15
Certificates for functional safety	
Functional safety (IEC 61508) - SIL2/3	C20

Options	Order code
Append "-Z" to Article No., add order code and plain text or entry from drop-down list.	
Device options	
PDF file with device settings	D10
Double layer coating (epoxy resin and polyurethane) 120 µm of enclosure and cover	D20
FVMQ enclosure sealing	D21
IP66/IP68 degree of protection (not for device plugs M12 and Han )	D30
TAG label empty	D40
Without labeling of the measuring range on the TAG label	D41
Stainless steel Ex plate 1.4404/316L	D42
Overvoltage protection up to 6 kV (external)	D71
Adhesive labels on transport packaging (supplied by customer)	D90
General approval without Ex approval	
Worldwide (CE, RCM) except EAC, FM, CSA, KCC	E00
Worldwide (CE, RCM, EAC, FM, CSA, KCC)	E01
CSA (USA and Canada)	E06
EAC	E07
FM	E08
KCC	E09
Export approval CPA (China)	E12
Explosion protection approvals	
ATEX (Europe)	E20
CSA (USA and Canada)	E21
FM (USA and Canada)	E22
IECEx (Worldwide)	E23
EACEX (GOST-R, -K, -B)	E24
INMETRO (Brazil)	E25 E26
KCs (Korea)	E27
NEPSI (China) PESO (India)	E28
UKR Sepro (Ukraine)	E30
ATEX (Europe) and IECEx (Worldwide)	E47
CSA (Canada) and FM (USA)	E48
ATEX (Europe) and IECEx (Worldwide) + CSA (Canada)	E49
and FM (USA)  Marine approvals	
DNV-GL (Det Norske Veritas/Germanischer Lloyd)	E50
LR (Lloyds Register)	E51
BV (Bureau Veritas)	E52
ABS (American Bureau of Shipping)	E53
RMR (Russian Maritime Register)	E55
KR (Korean Register of Shipping)	E56
RINA (Registro Italiano Navale)	E57
CCS (China Classification Society)	E58
Country-specific approvals	
CRN approval Canada (Canadian Registration Number)	E60

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

# for gauge and absolute pressure, flush-mounted diaphragm

	f
Options	Order code
Append "-Z" to Article No., add order code and plain text or entry from drop-down list.	
Special approvals	
Oxygen application (with inert liquid, max. 100 bar (1 450 psi) at 60° C (140 °F))	E80
Dual seal	E81
WRC / WRAS (drinking water); only with pressure cap O-rings made of EPDM	E83
NSF61 (drinking water)	E84
ACS (drinking water)	E85
3A (hygiene)	E86
EHEDG (hygiene)	E87
Process flanges, gaskets (instead of standard gaskets FKM (FPM))	
Seal (EN 837-1) material Fe (soft iron)	K60
Seal (EN 837-1) material 1.4571	K61
Seal (EN 837-1) material Cu	K62
Process connection	
Process connection male thread G½, bore hole 11 mm	K80
Flanges according to DIN EN 1092-1 Form B1 and ASME standard B16.5	
EN 1092-1 Form B1	
<ul><li>DN 50 PN 16</li><li>DN 80 PN 16</li></ul>	M03 M05
• DN 25 PN 40	M10
• DN 40 PN 40	M12
<ul><li>DN 50 PN 40</li><li>DN 80 PN 40</li></ul>	M13 M15
• DN 40 PN 100	M22
ASME B16.5 • 1" Class 150 RF	M30
• 1 ½" Class 150 RF	M31
• 2" Class 150 RF • 3" Class 150 RF	M32 M33
• 4" Class 150 RF	M34
• 1" Class 300 RF	M35
• 1 ½" Class 300 RF • 2" Class 300 RF	M36 M37
• 3" Class 300 RF	M38
• 4" Class 300 RF	M39
Sanitary connections in accordance with the stan- dard	
Sanitary flange DIN 11851  with slotted union nut DN 50 PN 25	N03
• with slotted union nut DN 80 PN 25	N05
Tri-Clamp • DIN 32676 DN 50 PN 16	N14
• DIN 32676 DN 65 PN 10	N15
<ul> <li>ISO 2852 2" PN 40</li> <li>ISO 2852 3" PN 40</li> </ul>	N22 N23
Aseptic threaded socket	NZS
• DIN 11864-1 Form A DN 50 PN 25	N33
• DIN 11864-1 Form A DN 65 PN 25	N34
<ul><li>DIN 11864-1 Form A DN 80 PN 25</li><li>DIN 11864-1 Form A DN100 PN 25</li></ul>	N35 N36
Aseptic flange with notch	
• DIN 11864-2 Form A DN 50 PN 16	N43
<ul> <li>DIN 11864-2 Form A DN 65 PN 16</li> <li>DIN 11864-2 Form A DN 80 PN 16</li> </ul>	N44 N45
• DIN 11864-2 Form A DN100 PN 16	N46
Aseptic clamp with groove	NEO
<ul> <li>DIN 11864-3 Form A DN 50 PN 25</li> <li>DIN 11864-3 Form A DN 65 PN 25</li> </ul>	N53 N54
• DIN 11864-3 Form A DN 80 PN 16	N55
• DIN 11864-3 Form A DN100 PN 16	N56

Options	Order code
Append "-Z" to Article No., add order code and plain text or entry from drop-down list.	
Sanitary connections manufacturer-specific	
Varivent type N for pipes DN 40 DN 125 PN 40	P06
Sanitary connections special design	
Tank connection  • TG 52/50 PN 40 with seal  • TG 52/150 PN 40 with seal	Q00 Q01
DRD flange D = 65 mm DN 50 PN 40	Q15
SMS socket • with thread 2" PN 25 • with thread 2 ½" PN 25 • with thread 3" PN 25	Q28 Q29 Q30
Weldable sockets for tank connection	
Weldable piece for TG52/50	Q90
Weldable piece for TG52/150	Q91
Connections for the paper industry	
Process connection PMC Style Standard	R00
Process connection PMC Style Minibolt	R01
Weldable sockets for PMC Style Standard	R02
Weldable sockets for PMC Style Minibolt	R03
Threaded connection	
Male thread G¾-A DIN 3852	R11
Male thread G1-A DIN 3852	R12
Male thread G2-A DIN 3852	R14
Special options front-flush	
Temperature decoupler (media temperature up to 200 $^{\circ}\text{C})$	R85
Mating connector including seal	R90

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P320/P420

# for gauge and absolute pressure, flush-mounted diaphragm

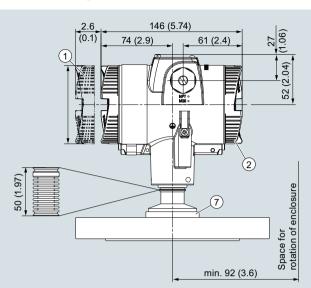
Options	Order code
Append "-Z" to Article No., add order code and plain text or entry from drop-down list.	
Device settings	
Measuring span Start of scale value (max. 5 characters), full scale value (max. 5 characters), unit [mbar, bar, kPa, MPa, psi,], example: -0.5 10.5 psi Input field 1 and input field 2: max. 5 characters and numbers only; decimal places as dot (comma is auto- matically converted to dot).  Drop-down list: Pa, MPa, kPa, hPa, bar, mbar, psi, g/cm², kg/cm², kg/cm², inH₂O, inH₂O (4°C), ftH₂O,	Y01
${\rm mmH_2O}$ , ${\rm mmH_2O}$ (4°C), ${\rm mH_2O}$ (4°C), ${\rm mmHg}$ , ${\rm inHg}$ , atm, torr	V4F
TAG (on stainless steel plate and device parameters, max. 32 characters) Input field: Free text, max. 32 characters	Y15
Measuring point description (on stainless steel plate and device parameters, max. 32 characters)	Y16
Input field: Free text, max. 32 characters TAG short	Y17
(device parameters, max. 8 characters)	117
Input field: Free text, max. 8 characters	
Local display [Pressure, Percent], reference [None, Absolute, Relative], example: Pressure gauge	Y21
Drop-down list: Percent, pressure unit, pressure unit abs., pressure unit gauge	
Local display Scaling with standard units [m³/s, l/s, m, inch,], example 1 5 m	Y22
Input field 1 and input field 2: max. 5 characters and numbers only; decimal places as dot (comma is automatically converted to dot).	
Drop-down list: m, cm, mm, in, ft, m <sup>3</sup> , I, hl, in <sup>3</sup> , ft <sup>3</sup> , yd <sup>3</sup> , gal, gal (UK), bu, bbl, bbl (US), SCF, Nm <sup>3</sup> , NI.	
Local display Scaling with user-specific units (max. 12 characters), example 1 5 m	Y23
Input field 1 and input field 2: max. 5 characters and numbers only; decimal places as dot (comma is automatically converted to dot).	
Input field 3: Free text, max. 8 characters	
Saturation limits instead of 3.8 20.5 mA, example: 3.8 22.0 mA	Y30
Drop-down list 1: 3.9, 4	
Drop-down list 2: 20.8, 22	
Fault current instead of 3.6 mA [22.5 mA, 22.8 mA]	Y31
Drop-down list: 3.75; 21.75; 22.5; 22.6	Maa
Damping in seconds instead of 2 s (0.0 100.0 s) Input field: max. 4 characters and numbers only; decimal places as dot (comma is automatically converted to dot); min. value = 0; max. value = 100.	Y32
ID number of special version	Y99
Input field: max. 4 characters and only natural numbers from 0 $\dots$ 9999	

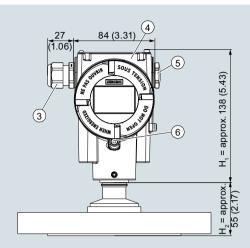
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Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

for gauge and absolute pressure, flush-mounted diaphragm

# Dimensional drawings





- Electronics side, local display
   (longer overall length for cover with glass pane)<sup>1)</sup>
- (2) Connection side
- (3) Electrical connection:
  - M20 x 1,5<sup>3)</sup> screw gland
  - 1/2-14 NPT screw gland
  - Han 7D/Han 8D<sup>2) 3)</sup> device plug
  - M12 device plug<sup>2) 3</sup>

- (4) Cover over buttons and nameplate with general information
- (5) Blanking plug
- Safety catch
   (only for "flameproof enclosure" type of protection)
- 7 Process connection
- 1) In addition, allow approx. 22 mm (0.87 inch) for the thread length when removing the covers
- 2) Not with "flameproof enclosure" type of protection
- 3) Not with type of protection "FM + CSA" [is + XP]"

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

This figure consists of a SITRANS P320/P420 with an example flange. In this figure, the height is divided into  $H_1$  and  $H_2$ .

 $H_1$  = Height of the SITRANS P320P420 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.

Pressure transmitters

for applications with advanced requirements (Advanced)

# SITRANS P320/P420

#### for gauge and absolute pressure, flush-mounted diaphragm

#### Flanges according to EN and ASME

Flange according to EN

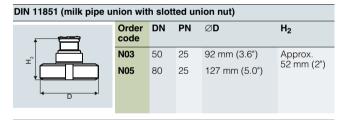
EN 1092-1							
+ <del>+ +</del>	Order code	DN	PN	ØD	H <sub>2</sub>		
	M03	50	16	165 mm (6.5")	Approx.		
D	M05	80	16	200 mm (7.9")	52 mm (2")		
	M10	25	40	115 mm (4.5")			
	M12	40	40	150 mm (5.9")			
	M13	50	40	165 mm (6.5")			
	M15	80	40	200 mm (7.9")			
	M22	40	100	170 mm (6.7")			

#### Flanges according to ASME

#### **ASME B16.5** Order DN Clas ØD code M30 150 110 mm (4.3") Approx. 52 mm (2") M31 11/2" 150 130 mm (5.1") M32 2" 150 150 mm (5.9") M33 3" 150 190 mm (7.5") M34 4" 150 230 mm (9.1") M35 300 125 mm (4.9") M36 11/2" 300 155 mm (6.1") M37 2" 300 165 mm (6.5") M38 3" 300 210 mm (8.1") M39 4" 300 255 mm (10.0")

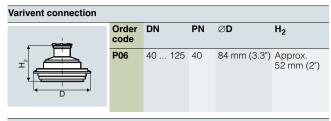
#### NuG and pharmaceutical connections

Connections to DIN

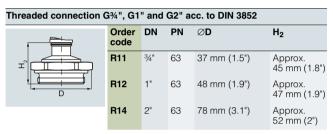


TriClamp according to DIN 32676						
	Order code	DN	PN	ØD	H <sub>2</sub>	
	N14	50	16	64 mm (2.5")	Approx.	
	N15	65	10	91 mm (3.6")	52 mm (2")	
· <del>-</del>	N22	2"	16	64 mm (2.5")	Approx.	
D	N23	3"	10	91 mm (3.6")	52 mm (2")	

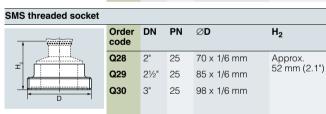
#### Other connections



Sanitary process connection according to DRD								
	Order code	DN	PN	ØD	H <sub>2</sub>			
T <sup>o</sup> D	Q15	65	40	105 mm (4.1")	Approx. 52 mm (2")			

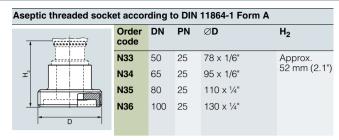


Tank connection TG 52/50 and TG52/150								
	Order code	DN	PN	ØD	H <sub>2</sub>			
IN THE STATE OF TH	Q00	25	40	63 mm (2.5")	Approx. 63 mm (2.5")			
	Q01	25	40	63 mm (2.5")	Approx. 170 mm (6.7")			



Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

for gauge and absolute pressure, flush-mounted diaphragm



Aseptic flange with notch to DIN 11864-2 Form A									
	Order code	DN	PN	ØD	H <sub>2</sub>				
<b>1</b>	N43	50	16	94 (3.7")	Approx.				
	N44	65	16	113 (4.4")	52 mm (2.1")				
D	N45	80	16	133 (5.2")					
	N46	100	16	159 (6.3")					

2
oprox.
2 mm (2.1")

Process connection PMC Style Standard							
1	Order code	DN	PN	ØD	H <sub>2</sub>		
	R00	-	-	40.9 mm (1.6")	Approx. 36.8 mm (1.4")		

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

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P320/P420

# for absolute pressure (pressure series)

Technical specifications						
SITRANS P320 / SITRANS P420 for absolute press	sure (pressure series)					
Input						
Measured variable	Absolute pressure					
Span (infinitely adjustable) or measuring range, max. permissible operating pressure (in accordance with	Span	Max. permissible operating pressure MAWP (PS)	Maximum permissible test pressure			
Pressure Equipment Directive 2014/68/EU) and max. test pressure (pursuant to DIN 16086)	8.3 250 mbar a	4 bar a	6 bar a			
(1000)	0.83 25 kPa a	0.4 MPa a	0.6 MPa a			
	3.3 100.5 inH <sub>2</sub> O a	58 psi a	87 psi a			
	43 1300 mbar a	6.6 bar a	10 bar a			
	4.3 130 kPa a	0.66 MPa a	1 MPa a			
	17.3 522 inH <sub>2</sub> O a	95 psi a	145 psi a			
	166 5000 mbar a	20 bar a	30 bar a			
	16.6 500 kPa a	2 MPa a	3 MPa a			
	2.41 72.5 psi a	290 psi a	435 psi a			
	1 30 bar a	65 bar a	100 bar a			
	0.1 3 MPa a	6.5 MPa a	10 MPa a			
	14.5 435 psi a	942 psi a	1450 psi a			
	5.3 160 bar a	240 bar	380 bar a			
	0.53 16 MPa a	24 MPa	38 MPa a			
	77 2321 psi a	3481 psi	5511 psi a			
	13.3 400 bar a	400 bar a	600 bar a			
	1.3 40 MPa a	40 MPa a	60 MPa a			
	192 5802 psi a	5802 psi a	8702 psi a			
	23.3 700 bar a	800 bar a	800 bar a			
	2.3 70 MPa a	80 MPa a	80 MPa a			
	337 10153 psi a	11603 psi a	11603 psi a			
Measuring limits  • Low measuring limit  - Measuring cell with silicone oil filling  - Measuring cell with inert oil	0 mbar a/kPa a/psi a For process temperature -20-°C < For process temperature 60 °C < suring cell 30 bar) (140 °F < $\vartheta$ ≤ + cell 435 psi))	,	30 mbar a/3 kPa a/0.44 psi a 30 mbar a + 20 mbar a · (\$\textit{\mathcal{\theta}}\) - 60 °C)/°C 3 kPa a + 2 kPa a · (\$\textit{\mathcal{\theta}}\) - 60 °C)/°C 0.44 psi a + 0.29 psi a · (\$\textit{\mathcal{\theta}}\) -			
Upper measuring limit		(for oxygen measurement max. 10	140 °F)/°F 0 bar/10 MPa/ 1450 psi and 60 °C			
Start of scale	(140 °F) ambient temperature/prod Between the measuring limits (infin					
Output	HART					
Output signal  • Low saturation limit (infinitely adjustable)  • High saturation limit (infinitely adjustable)  • Ripple (without HART communication)	4 20 mA 3.55 mA, factory preset to 3.8 mA 22.8 mA, factory-set to 20.5 mA or $l_{pp} \le 0.5\%$ of max. output current	optionally 22.0 mA				
Adjustable damping	0 100 s, continuously adjustabl 0 100 s, in increments of 0.1 s,					
<ul><li>Current transmitter</li><li>Failure signal</li></ul>	3.55 22.8 mA 3.55 22.8 mA (factory preset to					
Load • Without HART communication	Resistor R [ $\Omega$ ] R = (U <sub>H</sub> - 10.5 V)/22.8 mA,					
With HART communication	$U_H$ : Power supply in V R = 230 1100 $\Omega$ (HART commu R = 230 500 $\Omega$ (SIMATIC PDM)	nicator (handheld))				
Characteristic curve	Linearly increasing or linearly de     Linear increase or decrease or a	creasing according to the square root (only fo	r differential pressure and flow)			
Physical bus	-					
Polarity-independent	-					

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Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

for absolute pressure (pressure series)

SITRANS P320 / SITRANS P420 for absolute press	sure (pressure series)
Measuring accuracy	
Reference conditions	<ul> <li>According to EN 60770-1</li> <li>Rising characteristic curve</li> <li>Start of scale value 0 bar/kPa/psi</li> <li>Seal diaphragm stainless steel</li> <li>Measuring cell with silicone oil filling</li> <li>Room temperature 25 °C (77 °F)</li> </ul>
Conformity error at limit point setting, including hysteresis and repeatability	
Measuring span ratio r (spread, Turn-Down)  • Linear characteristic (all measuring cells)  - r ≤ 10	r = maximum measuring span/set measuring span or nominal measuring range ≤ 0.1%
- 10 < r ≤ 30	≤ 0.2%
Influence of ambient temperature (in % per 28 °C (50 °F)) • 250 mbar a/25 kPa a/3.6 psi a • 1300 mbar a/130 kPa a/18.8 psi a 5 bar a/500 kPa a/72.5 psi a 30 bar a/3000 kPa a/435 psi a 160 bar a/16 MPa a/2321 psi a 400 bar a/40 MPa a/5802 psi a 700 bar a/70 MPa a/10153 psi a	$\leq (0.15 \cdot r + 0.1)\%$ $\leq (0.08 \cdot r + 0.16)\%$
Long-term stability at ±30 °C (±54 °F)	In 5 years $\leq$ (0.25 · r)%
Step response time T <sub>63</sub> (without electrical damping)	Approx. 0.105 s
Effect of mounting position (in pressure per change of angle)	$\leq$ 0.05 mbar/0.005 kPa/0.000725 psi per 10 $^{\circ}$ incline (zero point correction is possible with position error compensation)
Effect of auxiliary power (in % per voltage change)	0.005% per 1 V
Rated conditions	
Temperature of medium  • Measuring cell with silicone oil filling  • Measuring cell with inert filling fluid	-40 +100 °C (-40 +212 °F) -20 +100 °C (-4 +212 °F)
Ambient conditions  • Ambient temperature/enclosure  - Measuring cell with silicone oil filling  - Measuring cell with inert filling fluid  - Display  • Storage temperature	Observe the temperature class in areas subject to explosion hazard.  -40 +85 °C (-40 +185 °F)  -40 +85 °C (-40 +185 °F)  -20 +80 °C (-4 +176 °F)  -50 +85 °C (-58 +185 °F) (with FDA-compliant oil: -20 +85 °C (-4 +185 °F))
<ul> <li>Climatic class in accordance with IEC 60721-3-4</li> <li>Degree of protection</li> <li>According to IEC 60529</li> </ul>	4K4H IP66, IP68
<ul> <li>According to NEMA 250</li> <li>Electromagnetic compatibility</li> <li>Emitted interference and interference immunity</li> </ul>	Type 4X  According to IEC 61326 and NAMUR NE 21

Siemens FI 01 · 2018

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P320/P420

# for absolute pressure (pressure series)

for absolute pressure (pressure series)					
SITRANS P320 / SITRANS P420 for absolute pres	sure (pressure series)				
Design					
Weight	Approx. 2.3 kg (5.07 lb) with aluminum enclosure				
	Approx. 4.2 kg (9.25 lb) for stainless steel enclosure				
Material					
Wetted parts materials  Process connection	Chairless attail material no. 1.4404/0101 or Alley COO material no. 0.4000				
<ul><li>Process connection</li><li>Oval flange</li></ul>	Stainless steel, material no. 1.4404/316L or Alloy C22, material no. 2.4602 Stainless steel, mat. no. 1.4404/316L				
- Seal diaphragm	Stainless steel, material no. 1.4404/316L or Alloy C276, material no. 2.4819				
Non-wetted parts materials					
- Electronics housing	<ul> <li>Low-copper die-cast aluminum GD-AlSi 12 or stainless steel precision casting, mat. no. 1.4409/ CF-3M</li> <li>Standard: Powder coating with polyurethane</li> </ul>				
	Option: 2 coats: Coat 1: epoxy-based; coat 2: Polyurethane				
- Mounting bracket	Stainless steel type plate (1.4404/316L)     Electrogalvanized steel or stainless steel				
Process connection	Connection shank G1/2A according to DIN EN 837-1				
riocess connection	• Female thread ½-14 NPT				
	<ul> <li>Male thread M20 x 1.5 and ½-14 NPT</li> <li>Oval flange (PN 160 (MWP 2320 psi g)) with fastening screw thread:</li> </ul>				
	- 7/16-20 UNF according to EN 61518				
	<ul> <li>M10 according to DIN 19213</li> <li>Oval flange (PN 420 (MWP 2320 psi g)) with fastening screw thread:</li> </ul>				
	- 7/16-20 UNF according to EN 61518				
	<ul> <li>M12 according to DIN 19213</li> <li>Male thread M20 x 1.5 and ½-14 NPT</li> </ul>				
Electrical connection	Cable entry via the following screwed glands:				
	• M20 x 1.5 • 1/2-14 NPT				
	Device plug Han 7D/Han 8D <sup>1)</sup>				
	Device plug M12				
Displays and controls					
Keys	4 keys for operation directly on the device				
Display	<ul><li>With or without integrated display (optional)</li><li>Cover with inspection window (optional)</li></ul>				
Auxiliary power U <sub>H</sub>					
Terminal voltage on pressure transmitter	10.5 45 V DC				
	10.5 30 V DC in intrinsically safe mode				
Ripple	$U_{SS} \le 0.2 \text{ V } (47 \dots 125 \text{ Hz})$				
Noise	$U_{eff} \le 1.2 \text{ mV } (0.5 \dots 10 \text{ kHz})$				
Auxiliary power	-				
Separate supply voltage	-				
Certificates and approvals					
Classification according to pressure equipment directive (PED 2014/68/EU)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)				
Drinking water	No. (1000004 (self-self00)				
<ul><li>WRAS (England)</li><li>ACS (France)</li></ul>	No.: 1903094 (option E83) No.: 18 ACC LY 277 (option E85)				
• NSF (USA)	No.: 20180920-MH61350 (option E84)				
CRN (Canada)	No.: 0F9863.5C (option E60)				
Explosion protection acc. to NEPSI (China)	No.: GYJ19.1058X (option E27)				
Explosion protection acc. to INMETRO (Brazil)	No.: BRA-18-GE-0035X (option E25)				
Explosion protection					
Intrinsic safety "i"	H 4/0 O F., :- %- HO T4/T0 O - /Ob				
<ul><li>Marking</li><li>Permissible ambient temperature</li></ul>	II 1/2 G Ex ia/ib IIC T4/T6 Ga/Gb -40 +80 °C (-40 +176 °F) temperature class T4				
· ·	-40 +70 °C (-40 +158 °F) temperature class T6				
- Permissible temperature of measuring medium	-40 +100 °C (-40 +212 °F) temperature class T4 -40 +70 °C (-40 +158 °F) temperature class T6				
- Connection	To certified intrinsically safe circuits with peak values:				
	$U_i = 30 \text{ V}, I_i = 101 \text{ mA}, P_i = 760 \text{ mW}$ $U_i = 29 \text{ V}, I_i = 110 \text{ mA}, P_i = 800 \text{ mW}$				
- Effective internal inductance/capacitance	$C_i = 29 \text{ v, } i_i = 110 \text{ m/s, } F_i = 600 \text{ m/v}$ $C_i = 0.24  \mu\text{H/C}_i = 3.29 \text{ nF}$				
Flameproof enclosure "d"					
- Marking	Ex II 1/2 G Ex ia/db IIC T4/T6 Ga/Gb				
- Permissible ambient temperature	-40 +80 °C (-40 +176 °F) temperature class T4 -40 +70 °C (-40 +158 °F) temperature class T6				
- Permissible temperature of measuring medium	-40 +100 °C (-40 +212 °F) temperature class T4				
- Connection	-40 +70 °C (-40 +158 °F) temperature class T6 To a circuit with the operating values:				
Connection	U <sub>n</sub> = 10.5 to 45 V, 4 20 mA				

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

for absolute pressure (pressure series)

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

•	Dust	explos	ion pro	tection	for	zones	21,	, 22
---	------	--------	---------	---------	-----	-------	-----	------

•	Dust explosion	protection for	201163	۷١,	~~
	- Marking				

- Permissible ambient temperature

- Permissible temperature of measuring medium

- Max surface temperature

- Connection

• Dust explosion protection for zones 20, 21, 22

- Marking

- Permissible ambient temperature

- Permissible temperature of measuring medium

- Connection

- Effective internal inductance/capacitance

• Type of protection for Zone 2

- Marking

- Permissible ambient temperature "ec"

- Permissible ambient temperature "ic"

- Permissible temperature of measuring medium

- "ec" connection

- "ic" connection

Explosion protection acc. to FM

- Marking (XP/DIP) or IS; NI; S

Explosion protection according to CSA

- Marking (XP/DIP) or (IS)

NAMUR recommendations

NF 06

• NE 21 • NE 23

• NE 43 • NE 53

• NE 80 • NE 105

• NE 107

• NE 131

Ex II 2D Ex tb IIIC T120 °C Db Ex II 3D Ex to IIIC T120 °C Dc -40 ... +80 °C (-40 ... +176 °F) -40 ... +100 °C (-40 ... +212 °F)

120 °C (248 °F)

To a circuit with the operating values:

 $U_n = 10.5 \text{ to } 45 \text{ V}, 4 \dots 20 \text{ mA}$ 

Ex II 1D Ex ia IIIC T120 °C Da Ex II 2D Ex ib IIIC T120 °C Db Ex II 3D Ex ic IIIC T120 °C Dc -40 ... +80 °C (-40 ... +176 °F) -40 ... +100 °C (-40 ... +212 °F)

To certified intrinsically safe circuits with the peak values:

 $U_i = 30 \text{ V}, I_i = 101 \text{ mA}, P_i = 760 \text{ mW}$   $U_i = 29 \text{ V}, I_i = 110 \text{ mA}, P_i = 800 \text{ mW}$ 

 $L_i = 0.24 \mu H/C_i = 3.29 nF$ 

Ex II 3G Ex ec IIC T4/T6 Gc Ex II 3G Ex ic IIC T4/T6 Gc

-40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +40 °C (-40 ... +104 °F) temperature class T6 -40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +80 °C (-40 ... +176 °F) temperature class T6 -40 ... +100 °C (-40 ... +212 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6 To a circuit with the operating values:

 $U_p = 10.5 \text{ to } 30 \text{ V}, 4 \dots 20 \text{ mA}$ 

To certified intrinsically safe circuits with the peak values:

 $U_i = 30 \text{ V}, \ I_i = 101 \text{ mA}, \ P_i = 760 \text{ mW} \ U_i = 29 \text{ V}, \ I_i = 110 \text{ mA}, \ P_i = 800 \text{ mW}$ 

Effective internal inductance/capacitance:

 $L_i = 0.24 \mu H/C_i = 3.29 nF$ 

Available soon

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

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

Available soon

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

Standardized Electrical Signals and Questions Relating to Engineering Technology

Electromagnetic Compatibility (EMC) of Industrial Process and Laboratory Control Equipment

Extra Low Voltage Circuits with Safe Separation

Standardization of the Signal Level for the Failure Information of Digital Transmitters

Software and Hardware of Field Devices and Signal Processing Devices with Digital Electronics

The Application of the Pressure Equipment Directive to Process Control Devices

Specifications for Integrating Fieldbus Devices in Engineering Tools for Field Devices

Self-Monitoring and Diagnosis of Field Devices

NAMUR Standard Device - Field Devices for Standard Applications

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

HART communication		
HART	230 1100 $\Omega$	
Protocol	HART 7	
Software for computer	SIMATIC PDM	

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

for absolute pressure (pressure series)

# Selection and ordering data

STRANS P420         7MF 0.4 2	- Colocion and Gracing data	Article No.
SITRANS P220         7 Clock on the whitcle no. for the orifine configuration in the PIA Life Cycle Pertal.         7 Clock on the whitcle no. for the orifine configuration in the PIA Life Cycle Pertal.         7 Clock on the whitcle no. for the orifine configuration in the PIA Life Cycle Pertal.         7 Pin Po 2 *** *** *** *** *** *** *** *** ***	Pressure transmitters for absolute pressure (pressure series)	
SITRANS P420         7MEN 42		7MF032
Communication   Chart   A. A. D. m.A.   Chart   Char		7MF 0 4 2
Mesuring cell filling   Silicone oil   Intert filling	✓ Click on the Article no. for the online configuration in the PIA Life Cycle Portal.	
Measuring cell filling	Communication	
Silicone   0	HART, 4 20 mA	0
Intent filling liquid   Maximum measuring span	Measuring cell filling	
Maximum measuring span	Silicone oil	1
1   200 mbar a (202 mH <sub>2</sub> O a)	Ilnert filling liquid	3
1 500 mbar a (522 inH <sub>2</sub> O a) 5000 mbar a (725 psi a) 5000 mbar a (725 psi a) 8	Maximum measuring span	
P	250 mbar a (100.5 inH <sub>2</sub> O a)	F
30 bar a (435 psi a)         R         V	1 300 mbar a (522 inH <sub>2</sub> O a)	L
160 bar a (2 321 psi a)	5000 mbar a (72.5 psi a)	P
400 bar a (5 802 psi a) 700 bar a (10153 psi a)  Process connection  Male thread M20 x 1.5  Male thread M20 x 1.5  Male thread M20 x 1.5  Male thread G½ (DIN EN 837-1)  Coul flange, mounting thread: ⁴1 kPT  Val flange, mounting thread: ⁴1 kPT  Oval flange, mounting thread: ⁴1 kP130  Val flange, mounting thread: ⁴1 (DIN 19213)  Val flange, mounting thread: M10 (DIN 19213)  Val flange, mounting thread: M10 (DIN 19213)  Val flange, mounting thread: M12 (DIN 19213)  Val flange, mo	30 bar a (435 psi a)	R
No bar a (10153 psi a)	160 bar a (2 321 psi a)	v
Process connection         B           Male thread M20 x 15         B           Male thread M20 x 15         D           Female thread 3½-14 NPT         E           Male thread ½-14 NPT         F           Oval flange, mounting thread: 7/16-20 UNF (IEC 61518)         G           Oval flange, mounting thread: M10 (DIN 19213)         J           Oval flange, mounting thread: M12 (DIN 19213)         J           Version for diaphragm seal pressure         U           Wetted parts materials: Process connection, seal diaphragm         U           Stainless steel 316U,1.440,4 slainless steel 316U,1.4404         0           Stainless steel 316U,1.440,4 slainless steel 316U,1.4404         2           Mlov C22Z,4602, alloy C276/2.4819         2           No-wetted parts materials         2           Die-cast aluminum         1           Stainless steel precision casting CF3M/1.4409 similar to 316L         2           Enclosure         2           Enclosure         2           Without Ex         4           Intrinsic safety         2           Flameproof enclosure         C           Flameproof enclosure zone 21/22 (DIP), increased safety Zone 2         L           Dust protection by enclosure Zone 21/122 (DIP), increased safety Zone 2	400 bar a (5 802 psi a)	w
Male thread M20 x 1.5         B         Image (Male thread % (DIN En 837+1))         D         Image (Male thread % (Male threa	700 bar a (10153 psi a)	X
Male thread G/s (DIN EN 837-1) Female thread ½-14 NPT Male thread ½-14 NPT Oval flange, mounting thread: ½1, pc 20 UNF (IEC 61518) Oval flange, mounting thread: M10 (DIN 19213) Oval flange, mounting thread: M12 (DIN 19213) Version for diaphragm seal pressure Wetted parts materials: Process connection, seal diaphragm Stainless steel 316L/1.4404, stainless steel 316L/1.4404 Stainless steel 316L/1.4404, alloy C276/2.4819 Alloy C22/2.4602, alloy C276/2.4819 Non-wetted parts materials Die-cast aluminum Stainless steel precision casting CF3M/1.4409 similar to 316L Enclosure Dual chamber device Type of protection Without EX Horizone Castelly Finance of enclosure Flameproof enclosure Flameproof enclosure, intrinsic safety Combination of options B, C and L (zone model, Class Division) Electrical connections/able entries Type and Cable gland: Cable gland must be ordered separately as option (Axx) **2 x ½-14 NPT Uccal operation/display Without display (cover closed)  Finance of cable gland: Cable gland must be ordered separately as option (Axx) **2 x ½-14 NPT Uccal operation/display Without display (cover closed)  Finance of cable gland: Cable gland must be ordered separately as option (Axx) **2 x ½-14 NPT Uccal operation/display Without display (cover closed)	Process connection	
Female thread ½-14 NPT	Male thread M20 x 1.5	В
Male thread ½-14 NPT	Male thread G½ (DIN EN 837-1)	D
Oval flange, mounting thread: **fis-20 UNF (IEC 61518)         G           Oval flange, mounting thread: M10 (DIN 19213)         H           Oval flange, mounting thread: M12 (DIN 19213)         U           Version for diaphragm seal pressure         U           Wetted parts materials: Process connection, seal diaphragm         0           Stainless steel 316L/1.4404, stainless steel 316L/1.4404         0           Stainless steel 316L/1.4404, alloy C276/2.4819         1           Alloy C22/2.4602, alloy C276/2.4819         2           Discast aluminum         1           Stainless steel precision casting CF3M/1.4409 similar to 316L         2           Enclosure         2           Dual chamber device         5           Type of protection         5           Without Ex         A           Intrinsic safety         B           Flameproof enclosure, intrinsic safety         C           Dust protection by enclosure Zone 21/22 (DIP), increased safety Zone 2         L           Combination of options B, C and L (zone model)         S           Combination of options B, C and L (zone model)         S           Combination of options B, C and M (zone model, Class Division)         T           Electrical connections/cable antries         T           Thread for cable gland: Ca	Female thread ½-14 NPT	E
Oval flange, mounting thread: M10 (DIN 19213)         H           Oval flange, mounting thread: M12 (DIN 19213)         J           Version for diaphragm seal pressure         U           Wetted parts materials: Process connection, seal diaphragm         0           Stainless steel 316L/1.4404, slainless steel 316L/1.4404         0           Stainless steel 316L/1.4404, alloy C276/2.4819         1           Alloy C22/2.4602, alloy C276/2.4819         2           Die-cast aluminum         1           Stainless steel precision casting CF3M/1.4409 similar to 316L         2           Enclosure         2           Dual chamber device         5           Type of protection         A           Without Ex         A           Intrinsic safety         C           Flameproof enclosure, intrinsic safety         C           Dust protection by enclosure Zone 21/22 (DIP), increased safety Zone 2         D           Dust protection by enclosure Zone 20/21/22 (DIP), increased safety Zone 2         M           Combination of options B, C and L (zone model)         S           Combination of options B, C and M (zone model, Class Division)         S           Electrical connections/cable entries         T           Thread for cable gland: Cable gland must be ordered separately as option (Axx)         2 × X/2 × 14	Male thread ½-14 NPT	F
Oval flange, mounting thread: M12 (DIN 19213) Version for diaphragm seal pressure  Wetted parts materials: Process connection, seal diaphragm Stainless steel 316L/1.4404, stainless steel 316L/1.4409 Stainless steel 316L/1.4404, alloy C276/2.4819 Alloy C22/2.4602, alloy C276/2.4819  Non-wetted parts materials Die-cast aluminum 1 stainless steel precision casting CF3M/1.4409 similar to 316L Enclosure Dual chamber device  Dual chamber device  Type of protection Without Ex Intrinsic safety Blameproof enclosure, intrinsic safety Dust protection by enclosure Zone 21/22 (DIP), increased safety Zone 2 Dust protection by enclosure Zone 20/21/22 (DIP), increased safety Zone 2 Combination of options B, C and M (zone model, Class Division)  Electrical connections/cable entries Thread for cable gland: Cable gland must be ordered separately as option (Axx) - 2 x M20 x 1.5 - 2 x 2x -14 NPT  Local operation/display Without display (cover closed)  Ution of the process	Oval flange, mounting thread: 7/16-20 UNF (IEC 61518)	G
Version for diaphragm seal pressure         U         Image: Composition of the process connection, seal diaphragm         I	Oval flange, mounting thread: M10 (DIN 19213)	н
Wetted parts materials: Process connection, seal diaphragm         0           Stainless steel 316L/1.4404, stainless steel 316L/1.4404         0           Stainless steel 316L/1.4404, alloy C276/2.4819         1           Alloy C22/2.4602, alloy C276/2.4819         2           Non-wetted parts materials         1           Die-cast aluminum         1           Stainless steel precision casting CF3M/1.4409 similar to 316L         2           Enclosure         2           Dual chamber device         5           Type of protection         4           Without Ex         A           Intrinsic safety         B           Flameproof enclosure         C           Flameproof enclosure, intrinsic safety         D           Dust protection by enclosure Zone 2/1/22 (DIP), increased safety Zone 2         L           Dust protection by enclosure Zone 20/21/22 (DIP), increased safety Zone 2         M           Combination of options B, C and L (zone model)         S           Combination of options B, C and M (zone model)         T           Electrical connections/cable entries         T           Thread for cable gland: Cable gland must be ordered separately as option (Axx)         2 x M/20 x 1.5           - 2 x M/20 x 1.5         - 2 x M/20 x 1.5           - 2 x M/20 x 1.5	Oval flange, mounting thread: M12 (DIN 19213)	J
Stainless steel 316L/1.4404, stainless steel 316L/1.4404   1	Version for diaphragm seal pressure	U
Stainless steel 316L/1.4404, alloy C276/2.4819	Wetted parts materials: Process connection, seal diaphragm	
Alloy C22/2.4602, alloy C276/2.4819  Non-wetted parts materials  Die-cast aluminum  Stainless steel precision casting CF3M/1.4409 similar to 316L  Enclosure  Dual chamber device  Type of protection  Without Ex  Intrinsic safety  Flameproof enclosure  Flameproof enclosure, intrinsic safety  Dust protection by enclosure Zone 21/22 (DIP), increased safety Zone 2  Dust protection by enclosure Zone 20/21/22 (DIP), increased safety Zone 2  Combination of options B, C and L (zone model)  Combination of options B, C and M (zone model, Class Division)  Electrical connections/cable entries  Thread for cable gland: Cable gland must be ordered separately as option (Axx)  • 2 x M2x 1.5  • 2 x ½-14 NPT  Local operation/display  Without display (cover closed)	Stainless steel 316L/1.4404, stainless steel 316L/1.4404	0
Non-wetted parts materials  Die-cast aluminum  Stainless steel precision casting CF3M/1.4409 similar to 316L  Enclosure  Dual chamber device  Type of protection  Without Ex  Intrinsic safety  Flameproof enclosure Flameproof enclosure, intrinsic safety  Dust protection by enclosure Zone 21/22 (DIP), increased safety Zone 2  Dust protection by enclosure Zone 20/21/22 (DIP), increased safety Zone 2  Combination of options B, C and L (zone model)  Combination of options B, C and M (zone model, Class Division)  Electrical connections/cable entries  Thread for cable gland: Cable gland must be ordered separately as option (Axx)  • 2 × M20 × 1.5  • 2 × ½-14 NPT  Local operation/display  Without display (cover closed)	Stainless steel 316L/1.4404, alloy C276/2.4819	1
Die-cast aluminum Stainless steel precision casting CF3M/1.4409 similar to 316L  Enclosure  Dual chamber device  Type of protection Without Ex Intrinsic safety Flameproof enclosure Flameproof enclosure, intrinsic safety Dust protection by enclosure Zone 21/22 (DIP), increased safety Zone 2 Dust protection by enclosure Zone 21/22 (DIP), increased safety Zone 2 Combination of options B, C and L (zone model) Combination of options B, C and M (zone model, Class Division)  Electrical connections/cable entries Thread for cable gland: Cable gland must be ordered separately as option (Axx)  • 2 x M20 x 1.5  • 2 x ½-14 NPT  Local operation/display Without display (cover closed)	Alloy C22/2.4602, alloy C276/2.4819	2
Stainless steel precision casting CF3M/1.4409 similar to 316L  Enclosure  Dual chamber device  Type of protection  Without Ex  Intrinsic safety  Flameproof enclosure Flameproof enclosure, intrinsic safety  Dust protection by enclosure Zone 21/22 (DIP), increased safety Zone 2  Dust protection by enclosure Zone 20/21/22 (DIP), increased safety Zone 2  Combination of options B, C and L (zone model)  Combination of options B, C and M (zone model, Class Division)  Electrical connections/cable entries  Thread for cable gland: Cable gland must be ordered separately as option (Axx)  • 2 x ½-14 NPT  Local operation/display  Without display (cover closed)	Non-wetted parts materials	
Enclosure  Dual chamber device  Type of protection  Without Ex  Intrinsic safety  Flameproof enclosure Flameproof enclosure, intrinsic safety  Dust protection by enclosure Zone 21/22 (DIP), increased safety Zone 2  Dust protection by enclosure Zone 20/21/22 (DIP), increased safety Zone 2  Combination of options B, C and L (zone model)  Combination of options B, C and M (zone model, Class Division)  Electrical connections/cable entries  Thread for cable gland: Cable gland must be ordered separately as option (Axx)  • 2 x M20 x 1.5  • 2 x ½-14 NPT  Local operation/display  Without display (cover closed)	Die-cast aluminum	1
Dual chamber device  Type of protection  Without Ex  Intrinsic safety  Flameproof enclosure Flameproof enclosure, intrinsic safety  Dust protection by enclosure Zone 21/22 (DIP), increased safety Zone 2  Dust protection by enclosure Zone 20/21/22 (DIP), increased safety Zone 2  Combination of options B, C and L (zone model)  Combination of options B, C and M (zone model, Class Division)  Electrical connections/cable entries  Thread for cable gland: Cable gland must be ordered separately as option (Axx)  • 2 x M20 x 1.5  • 2 x ½-14 NPT  Local operation/display  Without display (cover closed)	Stainless steel precision casting CF3M/1.4409 similar to 316L	2
Type of protection  Without Ex  Intrinsic safety  Flameproof enclosure Flameproof enclosure, intrinsic safety  Dust protection by enclosure Zone 21/22 (DIP), increased safety Zone 2  Dust protection by enclosure Zone 20/21/22 (DIP), increased safety Zone 2  Combination of options B, C and L (zone model)  Combination of options B, C and M (zone model, Class Division)  Electrical connections/cable entries  Thread for cable gland: Cable gland must be ordered separately as option (Axx)  • 2 x M20 x 1.5  • 2 x ½-14 NPT  Local operation/display  Without display (cover closed)	Enclosure	
Without Ex Intrinsic safety Flameproof enclosure Flameproof enclosure, intrinsic safety Dust protection by enclosure Zone 21/22 (DIP), increased safety Zone 2 Dust protection by enclosure Zone 20/21/22 (DIP), increased safety Zone 2 Combination of options B, C and L (zone model) Combination of options B, C and M (zone model, Class Division)  Electrical connections/cable entries Thread for cable gland: Cable gland must be ordered separately as option (Axx)  • 2 x ½-14 NPT  Local operation/display Without display (cover closed)	Dual chamber device	5
Intrinsic safety Flameproof enclosure Flameproof enclosure, intrinsic safety  Dust protection by enclosure Zone 21/22 (DIP), increased safety Zone 2  Dust protection by enclosure Zone 20/21/22 (DIP), increased safety Zone 2  Combination of options B, C and L (zone model)  Combination of options B, C and M (zone model, Class Division)  Flectrical connections/cable entries  Thread for cable gland: Cable gland must be ordered separately as option (Axx)  • 2 x ½-14 NPT  Local operation/display  Without display (cover closed)	Type of protection	
Flameproof enclosure Flameproof enclosure, intrinsic safety  Dust protection by enclosure Zone 21/22 (DIP), increased safety Zone 2  Dust protection by enclosure Zone 20/21/22 (DIP), increased safety Zone 2  Combination of options B, C and L (zone model)  Combination of options B, C and M (zone model, Class Division)  Electrical connections/cable entries  Thread for cable gland: Cable gland must be ordered separately as option (Axx)  • 2 x M20 x 1.5  • 2 x ½-14 NPT  Local operation/display  Without display (cover closed)	Without Ex	A
Flameproof enclosure, intrinsic safety  Dust protection by enclosure Zone 21/22 (DIP), increased safety Zone 2  Dust protection by enclosure Zone 20/21/22 (DIP), increased safety Zone 2  Combination of options B, C and L (zone model)  Combination of options B, C and M (zone model, Class Division)  Flectrical connections/cable entries  Thread for cable gland: Cable gland must be ordered separately as option (Axx)  • 2 x M20 x 1.5  • 2 x ½-14 NPT  Local operation/display  Without display (cover closed)	Intrinsic safety	В
Dust protection by enclosure Zone 21/22 (DIP), increased safety Zone 2  Dust protection by enclosure Zone 20/21/22 (DIP), increased safety Zone 2  Combination of options B, C and L (zone model)  Combination of options B, C and M (zone model, Class Division)  Electrical connections/cable entries  Thread for cable gland: Cable gland must be ordered separately as option (Axx)  • 2 x M20 x 1.5  • 2 x ½-14 NPT  Local operation/display  Without display (cover closed)	Flameproof enclosure	С
Dust protection by enclosure Zone 20/21/22 (DIP), increased safety Zone 2  Combination of options B, C and L (zone model)  Combination of options B, C and M (zone model, Class Division)  Electrical connections/cable entries  Thread for cable gland: Cable gland must be ordered separately as option (Axx)  • 2 x M20 x 1.5  • 2 x ½-14 NPT  Local operation/display  Without display (cover closed)	Flameproof enclosure, intrinsic safety	D
Combination of options B, C and L (zone model) Combination of options B, C and M (zone model, Class Division)  Electrical connections/cable entries Thread for cable gland: Cable gland must be ordered separately as option (Axx)  • 2 x M20 x 1.5  • 2 x ½-14 NPT  Local operation/display Without display (cover closed)		L
Combination of options B, C and M (zone model, Class Division)  Electrical connections/cable entries  Thread for cable gland: Cable gland must be ordered separately as option (Axx)  • 2 x M20 x 1.5  • 2 x ½-14 NPT  Local operation/display  Without display (cover closed)		M
Electrical connections/cable entries  Thread for cable gland: Cable gland must be ordered separately as option (Axx)  • 2 x M20 x 1.5  • 2 x ½-14 NPT  Local operation/display  Without display (cover closed)	Combination of options B, C and L (zone model)	S
Thread for cable gland: Cable gland must be ordered separately as option (Axx)  • 2 x M20 x 1.5  • 2 x ½-14 NPT  Local operation/display  Without display (cover closed)	Combination of options B, C and M (zone model, Class Division)	Т
• 2 x M20 x 1.5 • 2 x ½-14 NPT  Local operation/display  Without display (cover closed)		
Local operation/display Without display (cover closed)	• 2 x M20 x 1.5	F M
Without display (cover closed)		-
		0
		1
With display (cover with glass pane)		2

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

for absolute pressure (pressure series)

# Selection and ordering data

Options	Order code
Append "-Z" to Article No., add order code and plain	
text or entry from drop-down list.	
Cable glands included	
Plastic	A00
Metal	A01
Stainless steel	A02
Stainless steel 316L/1.4404	A03
CMP, for XP devices	A10
CAPRI ADE 4F, CuZn, cable inner diameter 7 12 mm, cable outer diameter 10 16 mm	A11
CAPRI ADE 4F, stainless steel, cable inner diameter 7 12 mm, cable outer diameter 10 16 mm	A12
Device plug Han mounted left	
Device plug Han 7D (plastic, straight)	A30
Device plug Han 7D (plastic, angled)	A31
Device plug Han 7D (metal, straight)	A32
Device plug Han 7D (metal, angled)	A33
Device plug Han 8D (plastic, straight)	A34
Device plug Han 8D (plastic, angled)	A35
Device plug Han 8D (metal, straight)	A36
Device plug Han 8D (metal, angled)	A37
Cable socket included	
Plastic, for device plug Han 7D and Han 8D	A40
Metal, for device plug Han 7D and Han 8D	A41
Device plug M12 mounted left	
Stainless steel, without cable socket	A62
Stainless steel, with cable socket	A63
Cable entry/connector mounting	
2x sealing plugs M20 x 1.5, IP66/68 installed on both sides	A90
2x sealing plugs ½-14 NPT, IP66/68 installed on both sides	A91
Cable gland/connector mounted left	A97
Cable gland/connector mounted on right	A99
Nameplate labeling (standard labeling: English, unit bar)	
German (bar)	B11
French (bar)	B12
Spanish (bar)	B13
Italian (bar)	B14
Chinese (bar)	B15
Russian (bar)	B16
English (psi)	B20
English (Pa)	B30
Chinese (Pa)	B35
Certificates	
Quality test certificate, 5-point factory calibration (IEC 60770-2)	C11
Acceptance certificate (EN 10204-3.1) - Material of pressurized and wetted parts	C12
Test report - NACE (MR 0103-2012 and MR 0175-2009)	C13
Test report (EN 10204-2.2) - Wetted parts	C14
Acceptance certificate (EN 10204-3.1) - PMI test of pressurized and wetted parts	C15
Certificates for functional safety	

	Order code
Append "-7" to Article No., add order code and plain text or entry from drop-down list.	
Device options	
PDF file with device settings	D10
Double layer coating (epoxy resin and polyurethane) 120 μm of enclosure and cover	D20
FVMQ enclosure sealing	D21
IP66/IP68 degree of protection (not for device plugs M12 and Han )	D30
TAG label empty	D40
Without labeling of the measuring range on the TAG label	D41
Stainless steel Ex plate 1.4404/316L	D42
Overvoltage protection up to 6 kV (external)	D71
Adhesive labels on transport packaging (supplied by customer)	D90
General approval without Ex approval	
Worldwide (CE, RCM) except EAC, FM, CSA, KCC	E00
Worldwide (CE, RCM, EAC, FM, CSA, KCC)	E01
CSA (USA and Canada)	E06
EAC	E07
FM	E08
KCC	E09
Export approval CPA (China)	E12
Explosion protection approvals	
ATEX (Europe)	E20
CSA (USA and Canada)	E21
FM (USA and Canada)	E22
IECEx (Worldwide)	E23
EACEx (GOST-R, -K, -B)	E24
INMETRO (Brazil)	E25
KCs (Korea)	E26
NEPSI (China)	E27
PESO (India)	E28
UKR Sepro (Ukraine)	E30
ATEX (Europe) and IECEx (Worldwide)	E47
CSA (Canada) and FM (USA)	E48
ATEX (Europe) and IECEx (Worldwide) + CSA (Canada) and FM (USA)	E49
Marine approvals	
DNV-GL (Det Norske Veritas/Germanischer Lloyd)	E50
LR (Lloyds Register)	E51
BV (Bureau Veritas)	E52
ABS (American Bureau of Shipping)	E53
RMR (Russian Maritime Register)	E55
KR (Korean Register of Shipping)	E56
RINA (Registro Italiano Navale)	E57
CCS (China Classification Society)	E58
Country-specific approvals	

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

# for absolute pressure (pressure series)

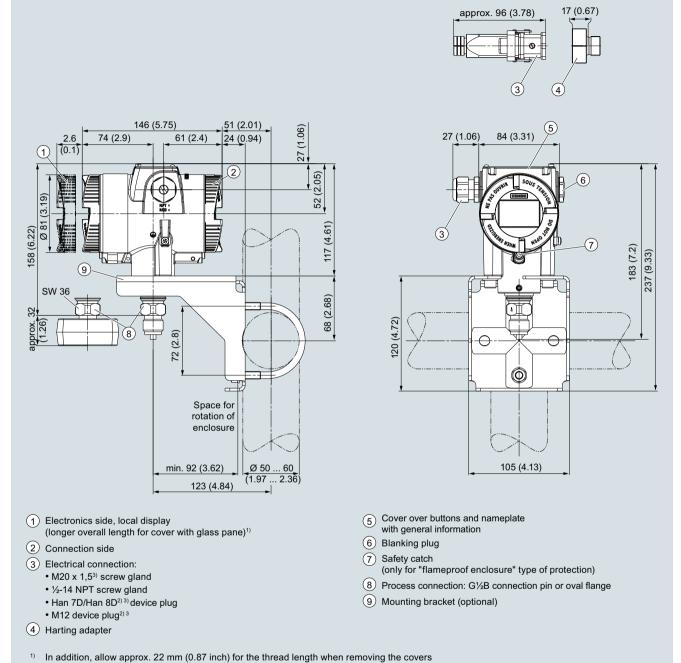
ioi absolute pressure (pressure series)	
Options	Order code
Append "-Z" to Article No., add order code and plain text or entry from drop-down list.	
Special approvals	
Oxygen application (with inert liquid, max. 100 bar (1 450 psi) at 60° C (140 °F))	E80
Dual seal	E81
WRC / WRAS (drinking water); only with pressure cap O-rings made of EPDM	E83
NSF61 (drinking water)	E84
ACS (drinking water)	E85
Mounting bracket	
Steel, galvanized	H01
Stainless steel 1.4301/304	H02
Stainless steel 1.4404/316L	H03
Flange connections with flange EN 1092-1	
With flange adapter G½ Form B1  • DN 25 PN 40, stainless steel 1.4571/316Ti  • DN 50 PN 40, stainless steel 1.4571/316Ti  • DN 80 PN 40, stainless steel 1.4571/316Ti	J80 J81 J82
With siphon G½ Form B1  • DN 25 PN 40, stainless steel 1.4571/316Ti  • DN 50 PN 40, stainless steel 1.4571/316Ti  • DN 80 PN 40, stainless steel 1.4571/316Ti  • DN 25 PN 100, stainless steel 1.4571/316Ti	J83 J84 J85 J86
Process flanges, gaskets (instead of standard gaskets FKM (FPM))	
Seal (EN 837-1) material Fe (soft iron)	K60
Seal (EN 837-1) material 1.4571	K61
Seal (EN 837-1) material Cu	K62
Process connection	
Process connection male thread G½, bore hole 11 mm	K80
Shut-off valves, valve manifolds	
With mounted valve manifold 7MF9011-4EA, process connection at transmitter G½ shank, PTFE sealing ring and pressure test certified in test report (EN 10204-2.2)	T02
With mounted valve manifold 7MF9011-4FA, process connection at transmitter female thread $\frac{1}{2}$ -14 NPT, sealing tape. With PTFE sealing ring and pressure test certified in test report (EN 10204-2.2)	Т03
With mounted valve manifold 7MF9411-5AA, process connection at transmitter oval flange with PTFE gasket, steel mounting screws, pressure test certified in test report (EN 10204-2.2)	T05
With mounted valve manifold 7MF9411-5AA, process connection at transmitter oval flange with PTFE gasket, stainless steel mounting screws, pressure test certified in test report (EN 10204-2.2)	T06

Options	Order code
Append "-Z" to Article No., add order code and plain text or entry from drop-down list.	
Device settings	
Measuring span Start of scale value (max. 5 characters), full scale value (max. 5 characters), unit [mbar, bar, kPa, MPa, psi,], example: -0.5 10.5 psi Input field 1 and input field 2: max. 5 characters and	Y01
numbers only; decimal places as dot (comma is automatically converted to dot).	
Drop-down list: Pa, MPa, kPa, hPa, bar, mbar, psi, g/cm², kg/cm², kgf/cm², inH $_2$ O, inH $_2$ O (4°C), ftH $_2$ O, mmH $_2$ O, mmH $_2$ O (4°C), mH $_2$ O (4°C), mmHg, inHg, atm, torr	
TAG (on stainless steel plate and device parameters, max. 32 characters) Input field: Free text, max. 32 characters	Y15
Measuring point description	Y16
(on stainless steel plate and device parameters, max. 32 characters)	110
Input field: Free text, max. 32 characters	
TAG short (device parameters, max. 8 characters)	Y17
Input field: Free text, max. 8 characters	
Local display [Pressure, Percent], reference [None, Absolute, Relative], example: Pressure gauge	Y21
Drop-down list: Percent, pressure unit, pressure unit abs., pressure unit gauge	
Local display Scaling with standard units [m³/s, l/s, m, inch,], example 1 5 m	Y22
Input field 1 and input field 2: max. 5 characters and numbers only; decimal places as dot (comma is automatically converted to dot).	
Drop-down list: m, cm, mm, in, ft, m <sup>3</sup> , I, hI, in <sup>3</sup> , ft <sup>3</sup> , yd <sup>3</sup> , gal, gal (UK), bu, bbl, bbl (US), SCF, Nm <sup>3</sup> , NI.	
Local display Scaling with user-specific units (max. 12 characters), example 1 5 m	Y23
Input field 1 and input field 2: max. 5 characters and numbers only; decimal places as dot (comma is automatically converted to dot).	
Input field 3: Free text, max. 8 characters	
Saturation limits instead of 3.8 20.5 mA, example: 3.8 22.0 mA	Y30
Drop-down list 1: 3.9, 4	
Drop-down list 2: 20.8, 22	
Fault current instead of 3.6 mA [22.5 mA, 22.8 mA] Drop-down list: 3.75; 21.75; 22.5; 22.6	Y31
Damping in seconds instead of 2 s (0.0 100.0 s)	Y32
Input field: max. 4 characters and numbers only; decimal places as dot (comma is automatically converted to dot); min. value = 0; max. value = 100.	
ID number of special version	Y99
Input field: max. 4 characters and only natural numbers from 0 9999	

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

for absolute pressure (pressure series)

# Dimensional drawings



Not with type of protection "FM + CSA" [is + XP]"

Not with "flameproof enclosure" type of protection

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

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P320/P420

for absolute pressure (differential pressure series)

# Technical specifications

SITRANS P320 / SITRANS P420 for absolute press	ure (dilierential pressure series)		
Input			
Measured variable	Absolute pressure		
Span (infinitely adjustable) and maximum operating pressure (pursuant to Pressure Equipment Directive	Span	Max. permissible operating pressure MAWP (PS)	Maximum permissible test pressure
2014/68/EU)	8.3 250 mbar a	160 bar a	240 bar a
	0.83 25 kPa a	16 MPa a	24 MPa a
	3.3 100.5 inH <sub>2</sub> O a	2320 psi a	3481 psi a
	43 1300 mbar a	160 bar a	240 bar a
	4.3 130 kPa a	16 MPa a	24 MPa a
	17.3 522 inH <sub>2</sub> O a	2320 psi a	3481 psi a
	166 5000 mbar a	160 bar a	240 bar a
	16.6 500 kPa a	16 MPa a	24 MPa a
	2.41 72.5 psi a	2320 psi a	3481 psi a
	1 30 bar a	160 bar a	240 bar a
	0.1 3 MPa a	16 MPa a	24 MPa a
	14.5 435 psi a	2320 psi a	3481 psi a
	5 100 bar a	160 bar a	240 bar a
	0.5 10 MPa a	16 MPa a	24 MPa a
	76.9 1450 psi a	2320 psi a	3481 psi a
Measuring limits			
Low measuring limit			
- Measuring cell with silicone oil filling	0 mbar a/kPa a/psi a		
- Measuring cell with inert liquid	For process temperature -20-°C <	$<\vartheta \le +60 ^{\circ}\text{C}  (-4 ^{\circ}\text{F} < \vartheta \le +140 ^{\circ}\text{F})$	30 mbar a/3 kPa a/0.44 psi a
	suring cell 30 bar) (140 °F < $\vartheta$ ≤ +212 °F (max. 185 °F for measuring 60 °C		30 mbar a + 20 mbar a · (3 - 60 °C)/°C
	cell 435 psi)) 3 kPa a + 2 kPa a · (\$ - 60 °C)/°C		
			0.44 psi a + 0.29 psi a · (θ - 140 °F)/°F
Upper measuring limit     Start of pools	(140 °F) ambient temperature/pro		0 bar/10 MPa/ 1450 psi and 60 °C
• Start of scale	Between the measuring limits (infi	initely adjustable)	
Output	HART		
Output signal  • Low saturation limit (infinitely adjustable)  • High saturation limit (infinitely adjustable)  • Ripple (without HART communication)	4 20 mA 3.55 mA, factory preset to 3.8 mA 22.8 mA, factory-set to 20.5 mA or optionally 22.0 mA $I_{\rm np} \le 0.5\%$ of max. output current		
Adjustable damping	0 100 s, continuously adjustab		
rajustable damping			
Current transmitter     Failure signal	0 100 s, in increments of 0.1 s, adjustable over display 3.55 22.8 mA 3.55 22.8 mA		
Load  Without HART communication	Resistor R [ $\Omega$ ] R = (U <sub>H</sub> - 10.5 V)/22.8 mA,		
With HART communication	$U_H$ : Power supply in V R = 230 1100 $\Omega$ (HART commu R = 230 500 $\Omega$ (SIMATIC PDM)	, ,,	
Characteristic curve	Linearly increasing or linearly defined by the second		or differential pressure and flow)
Physical bus	-		
Polarity-independent	-		
Measuring accuracy			
Reference conditions	According to EN 60770-1 Rising characteristic curve Start of scale value 0 bar/kPa/p Seal diaphragm stainless steel Measuring cell with silicone oil f Room temperature 25 °C (77 °F	illing	

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

# for absolute pressure (differential pressure series)

	ioi absolute pressure (uniterential pressure series)
SITRANS P320 / SITRANS P420 for absolute press	sure (differential pressure series)
Conformity error at limit point setting, including hysteresis and repeatability	
Measuring span ratio r (spread, Turn-Down)  • Linear characteristic (all measuring cells) - r < 10	r = maximum measuring span/set measuring span or nominal measuring range ≤ 0.1%
- 10 < r ≤ 30	≤ 0.2%
Influence of ambient temperature (in % per 28 °C (50 °F))	
<ul> <li>250 mbar a/25 kPa a/3.6 psi a</li> <li>1300 mbar a/130 kPa a/18.8 psi a</li> <li>5 bar a/500 kPa a/72.5 psi a</li> <li>30 bar a/3000 kPa a/435 psi a</li> <li>100 bar a/10 MPa a/1450 psi a</li> </ul>	$\leq (0.15 \cdot r + 0.1)\%$ $\leq (0.08 \cdot r + 0.16)\%$
Long-term stability at ±30 °C (±54 °F)	In 5 years $\leq$ (0.25 · r)%
Step response time T <sub>63</sub> (without electrical damping) • 250 mbar a/25 kPa a/3.6 psi a • 1300 mbar a/130 kPa a/18.8 psi a 5 bar a/500 kPa a/72.5 psi a 30 bar a/3000 kPa a/435 psi a 100 bar a/10 MPa a/1450 psi a	Approx. 0.195 s Approx. 0.145 s
Effect of mounting position (in pressure per change of angle)	$\leq$ 0.7 mbar/0.07 kPa/0.010 psi per 10° incline (zero offset is possible with position error compensation)
Effect of auxiliary power (in % per voltage change)	0.005% per 1 V
Rated conditions	
Temperature of medium  • Measuring cell with silicone oil filling  - Measuring cell 30 bar (435 psi)  - Measuring cell 100 bar (1450 psi)  • Measuring cell with inert oil  • In conjunction with dust explosion protection	-40 +100 °C (-40 +212 °F) -20 +100 °C (-4 +212 °F) -20 +100 °C (-4 +212 °F) -20 +100 °C (-4 +212 °F) -40 +85 °C (-4 +185 °F)
Ambient conditions  • Ambient temperature/enclosure  - Measuring cell with silicone oil filling  - Measuring cell with inert oil  - Display  • Storage temperature  • Climatic class in accordance with IEC 60721-3-4  • Degree of protection  - According to IEC 60529  - According to NEMA 250  • Electromagnetic compatibility  - Emitted interference and interference immunity	Observe the temperature class in areas subject to explosion hazard40 +85 °C (-40 +185 °F) -40 +85 °C (-40 +185 °F) -20 +80 °C (-4 +176 °F) -50 +85 °C (-58 +185 °F); with FDA-compliant oil: -20 + 85 °C (-4 +185 °F)) 4K4H  IP66, IP68 Type 4X  According to IEC 61326 and NAMUR NE 21
Design	
Weight	Approx. 3.9 kg (8.5 lb) with aluminum enclosure Approx. 5.8 kg (12.7 lb) with stainless steel enclosure
Material  • Wetted parts materials  - Seal diaphragm  - Process flanges and sealing plugs  - O-ring  • Non-wetted parts materials  - Electronics housing	Stainless steel, mat. no. 1.4404/316L, Alloy C276, mat. no. 2.4819, Monel, mat. no. 2.4360, tantalum or gold Stainless steel, mat. no. 1.4408 to PN 160, mat. no. 1.4571/316Ti for PN 420, Alloy C22, 2.4602 or Monel, mat. no. 2.4360 FPM (Viton) or optionally: PTFE, FEP, FEPM and NBR  • Low-copper die-cast aluminum GD-AlSi 12 or stainless steel precision casting, mat. no. 1.4409/ CF-3M • Standard: Powder coating with polyurethane
- Pressure flange screws - Mounting bracket Process connection	Option: 2 coats: Coat 1: epoxy-based; coat 2: Polyurethane  • Stainless steel type plate (1.4404/316L) Stainless steel ISO 3506-1 A4-70 Steel, electrogalvanized steel, or stainless steel  1/4-18 NPT female thread and flat connection with 7/16-20 UNF fastening screw thread in accordance with
TOOOS COMOCACIT	EN 61518 or M10 fastening screw thread in accordance with DIN 19213 (M12 for PN 420 (MWP 6092 psi))
Electrical connection	Screw terminals
	Cable entry via the following screwed glands:  • M20 x 1.5  • ½-14 NPT  • Device plug Han 7D/Han 8D <sup>1)</sup> • Device plug M12

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P320/P420

# for absolute pressure (differential pressure series)

SITRANS P320 / SITRANS P420 for absolute press	sure (differential pressure series)
Displays and controls	
Keys	4 keys for operation directly on the device
Display	<ul><li>With or without integrated display (optional)</li><li>Cover with inspection window (optional)</li></ul>
Auxiliary power U <sub>H</sub>	
Terminal voltage on pressure transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically safe mode
Ripple	$U_{SS} \le 0.2 \text{ V } (47 \dots 125 \text{ Hz})$
Noise	$U_{eff} \le 1.2 \text{ mV } (0.5 \dots 10 \text{ kHz})$
Auxiliary power	-
Separate supply voltage	-
Certificates and approvals	
Classification according to pressure equipment directive (PED 2014/68/EU)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)
Drinking water  • WRAS (England)  • ACS (France)  • NSF (USA)	No.: 1903094 (option E83) No.: 18 ACC LY 277 (option E85) No.: 20180920-MH61350 (option E84)
CRN (Canada)	No.: 0F9863.5C (option E60)
Explosion protection acc. to NEPSI (China)	No.: GYJ19.1058X (option E27)
Explosion protection acc. to INMETRO (Brazil)	No.: BRA-18-GE-0035X (option E25)
Explosion protection Intrinsic safety "i" Marking Permissible ambient temperature Permissible temperature of measuring medium Connection	II 1/2 G Ex ia/ib IIC T4/T6 Ga/Gb -40 +80 °C (-40 +176 °F) temperature class T4 -40 +70 °C (-40 +158 °F) temperature class T6 -40 +100 °C (-40 +212 °F) temperature class T4 -40 +70 °C (-40 +158 °F) temperature class T6 To certified intrinsically safe circuits with peak values: U <sub>i</sub> = 30 V, I <sub>i</sub> = 101 mA, P <sub>i</sub> = 760 mW
- Effective internal inductance/capacitance  • Flameproof enclosure "d"  - Marking  - Permissible ambient temperature	$\begin{aligned} & U_{l} = 29 \text{ V, } I_{l} = 110 \text{ mA, } P_{l} = 800 \text{ mW} \\ & L_{l} = 0.24  \mu\text{H/C}_{l} = 3.29 \text{ nF} \\ & \text{Ex II } 1/2 \text{ G Ex ia/db IIC T4/T6 Ga/Gb} \\ & -40 \dots +80 \text{ °C (-40 \dots +176 °F) temperature class T4} \\ & -40 \dots +70 \text{ °C (-40 \dots +158 °F) temperature class T6} \end{aligned}$
Permissible temperature of measuring medium     Connection	-40 +100 °C (-40 +212 °F) temperature class T4 -40 +70 °C (-40 +158 °F) temperature class T6 To a circuit with the operating values:
C.S. MOGROTI	U <sub>n</sub> = 10.5 to 45 V, 4 20 mA
<ul> <li>Dust explosion protection for zones 21, 22</li> <li>Marking</li> <li>Permissible ambient temperature</li> <li>Permissible temperature of measuring medium</li> <li>Max. surface temperature</li> <li>Connection</li> </ul>	Ex II 2D Ex tb IIIC T120 °C Db Ex II 3D Ex tc IIIC T120 °C Dc -40 +80 °C (-40 +176 °F) -40 +100 °C (-40 +212 °F) 120 °C (248 °F) To a circuit with the operating values:
<ul> <li>Dust explosion protection for zones 20, 21, 22</li> <li>Marking</li> <li>Permissible ambient temperature</li> <li>Permissible temperature of measuring medium</li> </ul>	U <sub>n</sub> = 10.5 to 45 V, 4 20 mA  Ex II 1D Ex ia IIIC T120 °C Da  Ex II 2D Ex ib IIIC T120 °C Db  Ex II 3D Ex ic IIIC T120 °C Dc  -40 +80 °C (-40 +176 °F)  -40 +100 °C (-40 +212 °F)
- Connection - Effective internal inductance/capacitance	To certified intrinsically safe circuits with the peak values: $ U_i = 30 \text{ V}, \ I_i = 101 \text{ mA}, \ P_i = 760 \text{ mW} $ $ U_i = 29 \text{ V}, \ I_i = 110 \text{ mA}, \ P_i = 800 \text{ mW} $ $ L_i = 0.24 \ \mu\text{H/C}_i = 3.29 \text{ nF} $

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Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

for absolute pressure (differential pressure series)

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

• Type of protection for Zone 2

- Marking Ex II 3G Ex ec IIC T4/T6 Gc Ex II 3G Ex ic IIC T4/T6 Gc

-40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +40 °C (-40 ... +104 °F) temperature class T6 - Permissible ambient temperature "ec" -40 ... +80 °C (-40 ... +176 °F) temperature class T4 - Permissible ambient temperature "ic" -40 ... +80 °C (-40 ... +176 °F) temperature class T6

-40 ... +100 °C (-40 ... +212 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6 - Permissible temperature of measuring medium

To a circuit with the operating values: - "ec" connection  $U_n = 10.5 \text{ to } 30 \text{ V}, 4 \dots 20 \text{ mA}$ 

- "ic" connection To certified intrinsically safe circuits with the peak values:

> $\begin{array}{l} U_{i} = 30 \text{ V}, \ I_{i} = 101 \text{ mA}, \ P_{i} = 760 \text{ mW} \\ U_{i} = 29 \text{ V}, \ I_{i} = 110 \text{ mA}, \ P_{i} = 800 \text{ mW} \end{array}$ Effective internal inductance/capacitance:

 $L_i = 0.24 \mu H/C_i = 3.29 nF$ 

· Explosion protection acc. to FM Available soon

CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4 ... T6: CL I, DIV 2, - Marking (XP/DIP) or IS; NI; S

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

• Explosion protection according to CSA Available soon

CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4 ... T6; CL I, DIV 2, GP ABCD T4 ... T6; CL II, DIV 2, GP FG; CL III - Marking (XP/DIP) or (IS)

NAMUR recommendations

• NE 06 Standardized Electrical Signals and Questions Relating to Engineering Technology

• NE 21 Electromagnetic Compatibility (EMC) of Industrial Process and Laboratory Control Equipment

• NE 23 Extra Low Voltage Circuits with Safe Separation

• NE 43 Standardization of the Signal Level for the Failure Information of Digital Transmitters

• NE 53 Software and Hardware of Field Devices and Signal Processing Devices with Digital Electronics

The Application of the Pressure Equipment Directive to Process Control Devices • NE 80 • NF 105 Specifications for Integrating Fieldbus Devices in Engineering Tools for Field Devices

• NE 107 Self-Monitoring and Diagnosis of Field Devices

• NE 131 NAMUR Standard Device - Field Devices for Standard Applications

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

HART communication		
HART	230 1100 Ω	
Protocol	HART 7	
Software for computer	SIMATIC PDM	

Siemens FI 01 · 2018

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

for absolute pressure (differential pressure series)

# Selection and ordering data

	Article No.
Pressure transmitters for absolute pressure (differential pressure series)	
SITRANS P320	7MF033
SITRANS P420	7MF043
✓ Click on the Article no. for the online configuration in the PIA Life Cycle Portal.	
Communication	
HART, 4 20 mA	O
Measuring cell filling	
Silicone oil	1
Inert filling liquid	3
Maximum measuring span	
250 mbar a (100.5 inH <sub>2</sub> O a)	G
1 300 mbar a (522 inH <sub>2</sub> O a)	L
5000 mbar a (72.5 psi a)	P
30 bar a (435 psi a)	R
100 bar a (1450 psi a)	U
Process connection	
Oval flange, mounting thread: 7/16-20 UNF (IEC 61518)	Q
Oval flange, mounting thread: M10 (DIN 19213)	R
Oval flange, mounting thread: 7/16-20 UNF (IEC 61518) with lateral ventilation	s
Oval flange, mounting thread: M10 (DIN 19213) with lateral ventilation	т
Version for diaphragm seal with mounting thread <sup>7</sup> / <sub>16</sub> -20 UNF (IEC 61518)	v
Version for diaphragm seal with mounting thread M10 (DIN 19213)	w
Wetted parts materials: Process connection, seal diaphragm	
Stainless steel 316L/1.4404, stainless steel 316L/1.4404, process flange stainless steel 316/1.4408	0
Stainless steel 316L/1.4404, alloy C276/2.4819, process flange stainless steel 316/1.4408	1
Alloy C22/2.4602, alloy C276/2.4819, process flange stainless steel 316/1.4408	2
Tantalum/tantalum, process flange stainless steel 316/1.4408	4
Monel 00/2.4360, Monel 400/2.4360, process flange stainless steel 316/1.4408	6
Stainless steel 316L/1.4404, gold-plated, process flange stainless steel 316/1.4408	8
Non-wetted parts materials	
Die-cast aluminum	1
Stainless steel precision casting CF3M/1.4409 similar to 316L	2
Enclosure	
Dual chamber device	5
Type of protection	_
Without Ex	A
Intrinsic safety	В
Flameproof enclosure	c
Flameproof enclosure, intrinsic safety	D
Dust protection by enclosure Zone 21/22 (DIP), increased safety Zone 2	L
Dust protection by enclosure Zone 20/21/22 (DIP), increased safety Zone 2	М
Combination of options B, C and L (zone model)	s
Combination of options B, C and M (zone model, Class Division)	т
Electrical connections/cable entries	
Thread for cable gland: Cable gland must be ordered separately as option (Axx)  • 2 x M20 x 1.5  • 2 x M20 x 1.5	Ę.
• 2 x ½-14 NPT	M
Local operation/display	
Without display (cover closed)	0
With display (cover closed)	1
With display (cover with glass pane)	2

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

# for absolute pressure (differential pressure series)

# Selection and ordering data

Options	0 1 :
	Order code
Append "-Z" to Article No., add order code and plain text or entry from drop-down list.	
Cable glands included	
Plastic	A00
Metal	A01
Stainless steel	A02
Stainless steel 316L/1.4404	A03
CMP, for XP devices	A10
CAPRI ADE 4F, CuZn, cable inner diameter 7 12 mm, cable outer diameter 10 16 mm	A11
CAPRI ADE 4F, stainless steel, cable inner diameter 7 12 mm, cable outer diameter 10 16 mm	A12
Device plug Han mounted left	
Device plug Han 7D (plastic, straight)	A30
Device plug Han 7D (plastic, angled)	A31
Device plug Han 7D (metal, straight)	A32
Device plug Han 7D (metal, angled)	A33
Device plug Han 8D (plastic, straight)	A34
Device plug Han 8D (plastic, angled)	A35
Device plug Han 8D (metal, straight)	A36
Device plug Han 8D (metal, angled)	A37
Cable socket included	
Plastic, for device plug Han 7D and Han 8D	A40
Metal, for device plug Han 7D and Han 8D	A41
Device plug M12 mounted left	
Stainless steel, without cable socket	A62
Stainless steel, with cable socket	A63
Cable entry/connector mounting	
2x sealing plugs M20 x 1.5, IP66/68 installed on both sides	A90
2x sealing plugs $\frac{1}{2}$ -14 NPT, IP66/68 installed on both sides	A91
Cable gland/connector mounted left	A97
Cable gland/connector mounted on right	A99
Nameplate labeling (standard labeling: English, unit bar)	
German (bar)	B11
, ,	B12
French (bar)	
	B13
Spanish (bar)	B13 B14
Spanish (bar) Italian (bar)	B14
Spanish (bar) Italian (bar) Chinese (bar)	B14 B15
Spanish (bar) Italian (bar) Chinese (bar) Russian (bar)	B14 B15 B16
Spanish (bar) Italian (bar) Chinese (bar) Russian (bar) English (psi)	B14 B15 B16 B20
Spanish (bar) Italian (bar) Chinese (bar) Russian (bar) English (psi) English (Pa)	B14 B15 B16 B20 B30
Spanish (bar) Italian (bar) Chinese (bar) Russian (bar) English (psi) English (Pa) Chinese (Pa)	B14 B15 B16 B20
Spanish (bar) Italian (bar) Chinese (bar) Russian (bar) English (psi) English (Pa) Chinese (Pa) Certificates Quality test certificate, 5-point factory calibration	B14 B15 B16 B20 B30
Spanish (bar) Italian (bar) Chinese (bar) Russian (bar) English (psi) English (Pa) Chinese (Pa) Certificates Quality test certificate, 5-point factory calibration (IEC 60770-2) Acceptance certificate (EN 10204-3.1) - Material of	B14 B15 B16 B20 B30 B35
Spanish (bar) Italian (bar) Chinese (bar) Russian (bar) English (psi) English (Pa) Chinese (Pa) Certificates Quality test certificate, 5-point factory calibration (IEC 60770-2) Acceptance certificate (EN 10204-3.1) - Material of pressurized and wetted parts	B14 B15 B16 B20 B30 B35 C11
Spanish (bar)  Italian (bar)  Chinese (bar)  Russian (bar)  English (psi)  English (Pa)  Chinese (Pa)  Certificates  Quality test certificate, 5-point factory calibration (IEC 60770-2)  Acceptance certificate (EN 10204-3.1) - Material of pressurized and wetted parts  Test report - NACE (MR 0103-2012 and MR 0175-2009)	B14 B15 B16 B20 B30 B35 C11 C12
Spanish (bar)  Italian (bar)  Chinese (bar)  Russian (bar)  English (psi)  English (Pa)  Chinese (Pa)  Certificates  Quality test certificate, 5-point factory calibration (IEC 60770-2)  Acceptance certificate (EN 10204-3.1) - Material of pressurized and wetted parts  Test report - NACE (MR 0103-2012 and MR 0175-2009)  Test report (EN 10204-2.2) - Wetted parts  Acceptance certificate (EN 10204-3.1) - PMI test of	B14 B15 B16 B20 B30 B35 C11
French (bar)  Spanish (bar)  Italian (bar)  Chinese (bar)  Russian (bar)  English (psi)  English (Pa)  Chinese (Pa)  Certificates  Quality test certificate, 5-point factory calibration (IEC 60770-2)  Acceptance certificate (EN 10204-3.1) - Material of pressurized and wetted parts  Test report - NACE (MR 0103-2012 and MR 0175-2009)  Test report (EN 10204-2.2) - Wetted parts  Acceptance certificate (EN 10204-3.1) - PMI test of pressurized and wetted parts  Certificates for functional safety	B14 B15 B16 B20 B30 B35 C11 C12 C13 C14

	Order code
Append "- <b>Z</b> " to Article No., add order code and plain text or entry from drop-down list.	
Device options	
PDF file with device settings	D10
Double layer coating (epoxy resin and polyurethane) 120 μm of enclosure and cover	D20
FVMQ enclosure sealing	D21
IP66/IP68 degree of protection (not for device plugs M12 and Han )	D30
TAG label empty	D40
Without labeling of the measuring range on the TAG label	D41
Stainless steel Ex plate 1.4404/316L	D42
Overvoltage protection up to 6 kV (external)	D71
Adhesive labels on transport packaging (supplied by customer)	D90
General approval without Ex approval	
Worldwide (CE, RCM) except EAC, FM, CSA, KCC	E00
Worldwide (CE, RCM, EAC, FM, CSA, KCC)	E01
CSA (USA and Canada)	E06
EAC	E07
FM	E08
KCC	E09
Export approval CPA (China)	E12
Explosion protection approvals	
ATEX (Europe)	E20
CSA (USA and Canada)	E21
FM (USA and Canada)	E22
IECEx (Worldwide)	E23
EACEx (GOST-R, -K, -B)	E24
INMETRO (Brazil)	E25
KCs (Korea)	E26
NEPSI (China)	E27
PESO (India)	E28
UKR Sepro (Ukraine)	E30
ATEX (Europe) and IECEx (Worldwide)	E47
CSA (Canada) and FM (USA)	E48
ATEX (Europe) and IECEx (Worldwide) + CSA (Canada) and FM (USA)	E49
Marine approvals	
DNV-GL (Det Norske Veritas/Germanischer Lloyd)	E50
LR (Lloyds Register)	E51
BV (Bureau Veritas)	E52
ABS (American Bureau of Shipping)	E53
RMR (Russian Maritime Register)	E55
KR (Korean Register of Shipping)	E56
RINA (Registro Italiano Navale)	E57
CCC (China Classification Cociety)	E58
CCS (China Classification Society)	

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

# for absolute pressure (differential pressure series)

for absolute pressure (differential pressure	s Series)
Options	Order code
Append "-Z" to Article No., add order code and plain text or entry from drop-down list.	
Special approvals	
Oxygen application (with inert liquid, max. 100 bar (1 450 psi) at 60° C (140 °F))	E80
Dual seal	E81
WRC / WRAS (drinking water); only with pressure cap O-rings made of EPDM	E83
NSF61 (drinking water)	E84
ACS (drinking water)	E85
Mounting bracket	
Steel, galvanized	H01
Stainless steel 1.4301/304	H02
Stainless steel 1.4404/316L	H03
Process flanges; screw plug with vent valve	
Welded in on right	J08
Welded in on left	J09
Glued in on right	J10
Glued in on left	J11
Flange connections with flange EN 1092-1	
Form B1  • DN 25 PN 40, stainless steel 1.4571/316Ti  • DN 50 PN 40, stainless steel 1.4571/316Ti  • DN 80 PN 40, stainless steel 1.4571/316Ti  • DN 15 PN 40, stainless steel 1.4571/316Ti	J70 J71 J72 J78
Form C  • DN 25 PN 40, stainless steel 1.4571/316Ti  • DN 50 PN 40, stainless steel 1.4571/316Ti  • DN 80 PN 40, stainless steel 1.4571/316Ti	J73 J74 J75
Flange connection options	
Flange connection and temperature extension	J76
Flange connection with epoxy resin coating	J77
Process flanges; special materials	
Reserved for 7MF7: without process flanges, without screws, without gaskets	K00
Process flange material alloy C22/2.4602	K01
Process flange material Monel 400/2.4360	K02
Process connection material PVDF, on the side $\ensuremath{\mathcal{V}}_2$ 14 NPT	K05
Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 25 PN 40, MAWP 4 bar	K06
Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 40 PN 40, MAWP 4 bar	K07
Process flanges; process connection option	
Process flange with process connection $G\frac{1}{2}$ welded on	K20
Process connection NAM (ASTAVA)	K21
Process flanges chambered with gaskets	
1x chambered, graphite	K40
1x chambered, PTFE	K41
2x chambered, PTFE	K42
Process flanges, gaskets (instead of standard gaskets FKM (FPM))	
O-ring, process flanges, PTFE	K50
3, 1,	
O-ring, process flanges, FEP (with silicone core, approved for food)	K51
O-ring, process flanges, FEP (with silicone core,	K51
O-ring, process flanges, FEP (with silicone core, approved for food)	

Options	Order code
Append "-Z" to Article No., add order code and plain text or entry from drop-down list.	
Process flange options	
Process flanges for vertical differential pressure lines (half process flange)	K81
Process flanges (+) - side front	K82
Process flange screws, process flange nuts, material Monel 400/2.4360	K83
Valve 1/4-18 NPT, material same as process flanges	K84
Valve mounted on the side, measured medium: Gas	K85
Oval flange enclosed, gasket PTFE + mounting screws	K86
Valve manifolds	
With mounted valve manifold (3-way) 7MF9411-5BA, PTFE sealing rings, chrome-plated steel screws and pressure test certified in test report (EN 10204-2.2)	U01
With mounted valve manifold (3-way) 7MF9411-5BA, PTFE sealing rings, stainless steel screws and pressure test certified in test report (EN 10204-2.2)	U02
With mounted valve manifold (5-way) 7MF9411-5CA, PTFE sealing rings, chrome-plated steel screws and pressure test certified in test report (EN 10204-2.2)	U03
With mounted valve manifold (5-way) 7MF9411-5CA, PTFE sealing rings, stainless steel screws and pressure test certified in test report (EN 10204-2.2)	U04

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

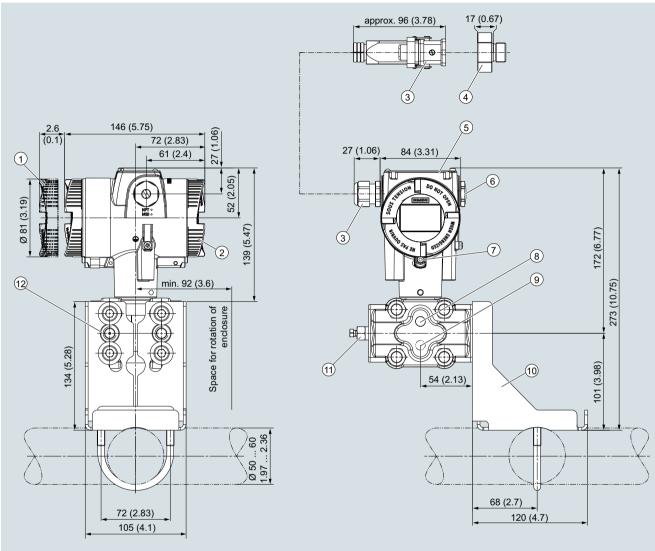
for absolute pressure (differential pressure series)

Options	Order code
Append "-Z" to Article No., add order code and plain text or entry from drop-down list.	
Device settings	
Measuring span Start of scale value (max. 5 characters), full scale value (max. 5 characters), unit [mbar, bar, kPa, MPa, psi,], example: -0.5 10.5 psi	Y01
Input field 1 and input field 2: max. 5 characters and numbers only; decimal places as dot (comma is automatically converted to dot).	
Drop-down list: Pa, MPa, kPa, hPa, bar, mbar, psi, g/cm², kg/cm², kgf/cm², inH $_2$ O, inH $_2$ O (4°C), ftH $_2$ O, mmH $_2$ O, mmH $_2$ O (4°C), mH $_2$ O (4°C), mmHg, inHg, atm, torr	
TAG (on stainless steel plate and device parameters, max. 32 characters)	Y15
Input field: Free text, max. 32 characters	
Measuring point description (on stainless steel plate and device parameters, max. 32 characters)	Y16
Input field: Free text, max. 32 characters	
TAG short (device parameters, max. 8 characters)	Y17
Input field: Free text, max. 8 characters	
Local display [Pressure, Percent], reference [None, Absolute, Relative], example: Pressure gauge	Y21
Drop-down list: Percent, pressure unit, pressure unit abs., pressure unit gauge	
Local display Scaling with standard units [m³/s, l/s, m, inch,], example 1 5 m	Y22
Input field 1 and input field 2: max. 5 characters and numbers only; decimal places as dot (comma is automatically converted to dot).	
Drop-down list: m, cm, mm, in, ft, m <sup>3</sup> , l, hl, in <sup>3</sup> , ft <sup>3</sup> , yd <sup>3</sup> , gal, gal (UK), bu, bbl, bbl (US), SCF, Nm <sup>3</sup> , NI.	
Local display Scaling with user-specific units (max. 12 characters), example 1 5 m	Y23
Input field 1 and input field 2: max. 5 characters and numbers only; decimal places as dot (comma is automatically converted to dot).	
Input field 3: Free text, max. 8 characters	
Saturation limits instead of 3.8 20.5 mA, example: 3.8 22.0 mA	Y30
Drop-down list 1: 3.9, 4	
Drop-down list 2: 20.8, 22	Vot
Fault current instead of 3.6 mA [22.5 mA, 22.8 mA] Drop-down list: 3.75; 21.75; 22.5; 22.6	Y31
Damping in seconds instead of 2 s (0.0 100.0 s) Input field: max. 4 characters and numbers only; deci- mal places as dot (comma is automatically converted to	Y32
dot); min. value = 0; max. value = 100.	
ID number of special version Input field: max. 4 characters and only natural numbers from 0 9999	Y99

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

for absolute pressure (differential pressure series)

#### Dimensional drawings



- 1) Electronics side, local display (longer overall length for cover with glass pane)1)
- 2 Connection side
- 3 Electrical connection:
  - M20 x 1,53) screw gland
  - 1/2-14 NPT screw gland
  - Han 7D/Han 8D2)3) device plug
  - M12 device plug<sup>2) 3</sup>
- 4 Harting adapter
- 5 Cover over buttons and nameplate with general information

- 6 Blanking plug
- (7) Safety catch
- (only for "flameproof enclosure" type of protection)
- (8) Lateral ventilation for liquid measurement (Standard)
- (9) Lateral ventilation for gas measurement (order option K85)
- (10) Mounting bracket (optional)
- (11) Sealing plug with valve (optional)
- 12) Process connection: 1/4-18 NPT (IEC 61518)
- In addition, allow approx. 22 mm (0.87 inch) for the thread length when removing the covers
- Not with "flameproof enclosure" type of protection Not with type of protection "FM + CSA" [is + XP]"

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

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

for differential pressure and flow

# Technical specifications

Technical specifications			
SITRANS P320 / SITRANS P420 for differential pre	ssure and flow		
Input			
Measured variable	Differential pressure and flow		
Span (infinitely adjustable) and maximum operating pressure (pursuant to Pressure Equipment Directive 2014/68/EU)	Span	Max. permissible operating pressure MAWP (PS)	Maximum permissible test pressure
2014/00/EU)	1 20 mbar	160 bar	240 bar
	0.1 2 kPa	16 MPa	24 MPa
	0.4019 8.037 inH <sub>2</sub> O	2320 psi	3481 psi
	1 60 mbar	160 bar	240 bar
	0.1 6 kPa	16 MPa	24 MPa
	0.4019 24.11 inH <sub>2</sub> O	2320 psi	3481 psi
	2.5 250 mbar	160 bar	240 bar
	0.2 25 kPa	16 MPa	24 MPa
	1.005 100.5 inH <sub>2</sub> O	2320 psi	3481 psi
	6 600 mbar	160 bar	240 bar
	0.6 60 kPa 2.41 241.1 inH <sub>2</sub> O	16 MPa 2320 psi	24 MPa 3481 psi
	16 1600 mbar	160 bar	240 bar
	1.6 160 kPa	16 MPa	24 MPa
	6.43 643 inH <sub>2</sub> O	2320 psi	3481 psi
	50 5000 mbar	160 bar	240 bar
	5 500 kPa	16 MPa	24 MPa
	20.09 2009 inH <sub>2</sub> O	2320 psi	3481 psi
	0.3 30 bar	160 bar	240 bar
	0.03 3 MPa	16 MPa	24 MPa
	4.35 435 psi	2320 psi	3481 psi
	2.5 250 mbar	420 bar	630 bar
	0.25 25 kPa	42 MPa	63 MPa
	1.005 100.5 inH <sub>2</sub> O	6092 psi	9137 psi
	6 600 mbar	420 bar	630 bar
	0.6 60 kPa	42 MPa	63 MPa
	2.41 241.1 inH <sub>2</sub> O	6092 psi	9137 psi
	16 1600 mbar 1.6 160 kPa	420 bar 42 MPa	630 bar 63 MPa
	6.43 643 inH <sub>2</sub> O	6092 psi	9137 psi
	50 5000 mbar	420 bar	630 bar
	5 500 kPa	42 MPa	63 MPa
	20.09 2009 inH <sub>2</sub> O	6092 psi	9137 psi
	0.3 30 bar	420 bar	630 bar
	0.03 3 MPa	42 MPa	63 MPa
	4.35 435 psi	6092 psi	9137 psi
Measuring limits			
Low measuring limit		,	
- Measuring cell with silicone oil filling	-100% of the maximum measuring 30 mbar a /3 kPa a /0.44 psi a	g span (-33% for measuring cell 30 l	bar/3 MPa/435 psi PN 420) or
- Measuring cell with inert liquid			
	For process temperature -20 °C <	9 < +60 °C (-4 °F < 9 < +140 °F)	-100% of maximum measuring
	To proceed to inperature 25 of the	0 = 100 0 ( 1 1 10 = 1110 1)	range or 30 mbar a /3 kPa a /0.44 psi a
	For process temperature 60 °C <	9 < +100 °C (max 85 °C for mea-	-100% of maximum measuring
		99 = 100 °F (max. 185 °F for $99$ ≤ +212 °F (max. 185 °F for	
	<b>V</b>		30 mbar a + 20 mbar a · (ϑ - 60 °C)/°C 3 kPa a + 2 kPa a · (ϑ - 60 °C)/°C0.44 psi a + 0.29 psi a · (ϑ - 140 °F)/°F
- Measuring cell with FDA-compliant oil	For process temperature -10 °C <	$\vartheta \le +100  ^{\circ}\text{C}  (-14  ^{\circ}\text{F} < \vartheta \le +212  ^{\circ}\text{F})$	-100% of maximum measuring range or 100 mbar a /10 kPa a /14.5 psi a
Upper measuring limit	100% of the max. measuring spar (140 °F) ambient temperature/pro-	n (for oxygen measurement max. 10 cess temperature)	
Start of scale	Between the measuring limits (infi	nitely adjustable)	

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P320/P420

# for differential pressure and flow

for differential pressure and flow		
SITRANS P320 / SITRANS P420 for differential pre	essure and flow	
Output	HART	
Output signal  Low saturation limit (infinitely adjustable)  High saturation limit (infinitely adjustable)	4 20 mA 3.55 mA, factory preset to 3.8 mA 22.8 mA, factory-set to 20.5 mA o	
Ripple (without HART communication)	$I_{pp} \le 0.5\%$ of max. output current	
Adjustable damping	<ul><li>0 100 s, continuously adjustable over remote operation</li><li>0 100 s, in increments of 0.1 s, adjustable over display</li></ul>	
Current transmitter     Failure signal	3.55 22.8 mA 3.55 22.8 mA	
<ul><li>Without HART communication</li></ul>	Resistor R [ $\Omega$ ] R = (U <sub>H</sub> - 10.5 V)/22.8 mA,	
With HART communication	$V_{H}$ : Power supply in V $V_{H}$ : Power supply in V	
Characteristic curve	<ul><li>Linearly increasing or linearly de</li><li>Linear increase or decrease or a</li></ul>	ecreasing according to the square root (only for differential pressure and flow)
Physical bus		
Polarity-independent	-	
Measuring accuracy		
Reference conditions	According to EN 60770-1     Rising characteristic curve     Start of scale value 0 bar/kPa/ps     Seal diaphragm stainless steel     Measuring cell with silicone oil f     Room temperature 25 °C (77 °F)	illing
Conformity error at limit point setting, including hysteresis and repeatability		
Measuring span ratio r (spread, Turn-Down)  • Linear characteristic  - 20 mbar/2 kPa/0.29 psi	r = maximum measuring span/set $r \le 5$ :	measuring span or nominal measuring range ≤ 0.075%
- 60 mbar/6 kPa/0.87 psi	5 < r ≤ 20: r ≤ 5: 5 < r ≤ 60:	$\leq$ (0.005 · r + 0.05)% $\leq$ 0.075% $\leq$ (0.005 · r + 0.05)%
<ul> <li>250 mbar/25 kPa/3.63 psi</li> <li>600 mbar/60 kPa/8.7 psi</li> <li>1600 mbar/160 kPa/23.21 psi</li> <li>5 bar/500 kPa/72.5 psi</li> <li>30 bar/3 MPa/435 psi</li> </ul>	r≤5: 5 < r≤ 100:	≤ 0.065% (SITRANS P320) ≤ (0.004 · r + 0.045)% (SITRANS P320)
<ul> <li>250 mbar/25 kPa/3.63 psi (PN 160)</li> <li>600 mbar/60 kPa/8.7 psi</li> <li>1600 mbar/160 kPa/23.21 psi</li> <li>5 bar/500 kPa/72.5 psi</li> <li>30 bar/3 MPa/435 psi</li> </ul>	r≤5: 5 < r≤100:	≤ 0.04% (SITRANS P420) ≤ (0.004 · r + 0.045)% (SITRANS P420)
<ul><li>250 mbar/25 kPa/3.63 psi (PN 420)</li><li>Square-rooted characteristic (flow &gt; 50%)</li></ul>	r ≤ 5:	≤ 0.065% (SITRANS P420)
- 20 mbar/2 kPa/0.29 psi	r ≤ 5: 5 < r ≤ 20:	≤ 0.075% ≤ (0.005 · r + 0.05)%
- 60 mbar/6 kPa/0.87 psi	r ≤ 5: 5 < r ≤ 60:	≤ 0.075% ≤ (0.005 · r + 0.05)%
- 250 mbar/25 kPa/3.63 psi 600 mbar/60 kPa/8.7 psi 1600 mbar/160 kPa/23.21 psi 5 bar/500 kPa/72.5 psi 30 bar/3 MPa/435 psi	r ≤ 5: 5 < r ≤ 100:	≤ 0.065% (SITRANS P320) ≤ 0.04% (SITRANS P420) ≤ (0.004 · r + 0.045)%
<ul> <li>Square-rooted characteristic (flow 25 50%)</li> <li>20 mbar/2 kPa/0.29 psi</li> </ul>	r ≤ 5: 5 < r ≤ 20:	≤ 0.15% ≤ (0.01 · r + 0.1)%
- 60 mbar/6 kPa/0.87 psi	r ≤ 5: 5 < r ≤ 60:	≤ 0.15% ≤ 0.01 · r + 0.1)% ≤ (0.01 · r + 0.1)%
- 250 mbar/25 kPa/3.63 psi 600 mbar/60 kPa/8.7 psi	r ≤ 5:	≤ 0.13% (SITRANS P320) ≤ 0.08% (SITRANS P420)
1600 mbar/160 kPa/23.21 psi 5 bar/500 kPa/72.5 psi 30 bar/3 MPa/435 psi	5 < r ≤ 100:	≤ (0.008 · r + 0.09)%

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

for differential pressure and flow

SITRANS P320 / SITRANS P420 for differential pre	essure and flow
Influence of ambient temperature (in % per 28 °C (50 °F))	
- 20 mbar/2 kPa/0.29 psi	$\leq (0.15 \cdot r + 0.1)\%$
- 60 mbar/6 kPa/0.87 psi	$\leq (0.075 \cdot r + 0.1)\%$
- 250 mbar/25 kPa/3.63 psi	≤ (0.025 · r + 0.125)% (SITRANS P320)
600 mbar/60 kPa/8.7 psi 1600 mbar/160 kPa/23.21 psi	
5 bar/500 kPa/72.5 psi	
30 bar/3 MPa/435 psi	
- 250 mbar/25 kPa/3.63 psi	≤ (0.025 · r + 0.0625)% (SITRANS P420)
5 bar/500 kPa/72.5 psi - 600 mbar/60 kPa/8.7 psi	≤ (0.0125 · r + 0.0625)% (SITRANS P420)
1600 mbar/160 kPa/23.21 psi	\$\(\(\frac{1}{2}\) \(\frac{1}{1}\) \(\frac{1}\) \(
30 bar/3 MPa/435 psi	
Effect of static pressure	
<ul> <li>on the start of scale</li> </ul>	Zero-point correction is possible with position error compensation
<ul> <li>20 mbar/2 kPa/0.29 psi</li> </ul>	≤ (0.3 · r)% per 70 bar (SITRANS P320)
CO	≤ (0.2 · r)% per 70 bar (SITRANS P420)
<ul> <li>60 mbar/6 kPa/0.87 psi</li> <li>250 mbar/25 kPa/3.63 psi</li> </ul>	≤ (0.1 · r)% per 70 bar
600 mbar/60 kPa/8.7 psi	
1600 mbar/160 kPa/23.21 psi	
30 bar/3 MPa/435 psi - 5 bar/500 kPa/72.5 psi	≤ (0.15 · r)% per 70 bar
• on the span	2 (0.10 1) // per 70 bai
- 20 mbar/2 kPa/0.29 psi	≤ 0.2% per 70 bar
- 60 mbar/6 kPa/0.87 psi	≤ 0.1% per 70 bar
250 mbar/25 kPa/3.63 psi	· ·
600 mbar/60 kPa/8.7 psi 1600 mbar/160 kPa/23.21 psi	
5 bar/500 kPa/72.5 psi	
30 bar/3 MPa/435 psi	
Long-term stability at ±30 °C (±54 °F)	Static pressure max. 70 bar/7 MPa/1015 psi
<ul> <li>20 mbar/2 kPa/0.29 psi</li> </ul>	$\leq$ (0.2 · r)% per year
• 60 mbar/6 kPa/0.87 psi	In 5 years ≤ (0.25 · r)%
<ul> <li>250 mbar/25 kPa/3.63 psi</li> <li>600 mbar/60 kPa/8.7 psi</li> </ul>	In 5 years ≤ (0.125 · r)%
1600 mbar/160 kPa/23.21 psi	In 10 years $\leq$ (0.15 · r)%
5 bar/500 kPa/72.5 psi	
• 30 bar/3 MPa/435 psi	In 5 years $\leq$ (0.25 · r)%
	In 10 years $\leq$ (0.35 · r)%
Step response time T <sub>63</sub> (without electrical damping	
for pressure rating PN 1600)	
• 20 mbar/2 kPa/0.29 psi	Approx. 0.160 s
<ul><li>60 mbar/6 kPa/0.87 psi</li><li>250 mbar/25 kPa/3.63 psi</li></ul>	Approx. 0.150 s Approx. 0.135 s
600 mbar/60 kPa/8.7 psi	Арргох. 0.155 \$
1600 mbar/160 kPa/23.21 psi	
5 bar/500 kPa/72.5 psi 30 bar/3 MPa/435 psi	
'	40.7 rehearlo 0.7 kDe/0.000 in LLO near 400 in alian (ne
Effect of mounting position (in pressure per change of angle)	≤ 0.7 mbar/0.07 kPa/0.028 inH <sub>2</sub> O per 10° incline (zero point correction is possible with position error compensation)
Effect of auxiliary power (in % per voltage change)	0.005% per 1 V

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P320/P420

# for differential pressure and flow

Tot differential pressure and now		
SITRANS P320 / SITRANS P420 for differential pre	ssure and flow	
Rated conditions		
Temperature of medium  • Measuring cell with silicone oil filling  - Measuring cell 30 bar (435 psi)  • Measuring cell with inert oil  • Measuring cell with FDA-compliant oil  • In conjunction with dust explosion protection	-40 +100 °C (-40 +212 °F) -20 +100 °C (-4 +212 °F) -20 +100 °C (-4 +212 °F) -10 +100 °C (14 +212 °F) -40 +85 °C (-4 +185 °F)	
Ambient conditions  • Ambient temperature/enclosure  - Measuring cell with silicone oil filling  - Measuring cell with inert oil  - Measuring cell with FDA-compliant oil  - Display  • Storage temperature  • Climatic class in accordance with IEC 60721-3-4  • Degree of protection  - According to IEC 60529	Observe the temperature class in areas subject to explosion hazard.  -40 +85 °C (-40 +185 °F)  -40 +85 °C (-40 +185 °F)  -10 +85 °C (14 +185 °F)  -20 +80 °C (-4 +176 °F)  -50 +85 °C (-58 +185 °F) (with FDA-compliant oil: -20 + 85 °C (-4 +185 °F))  4K4H  IP66, IP68	
- According to NEMA 250	Type 4X	
<ul> <li>Electromagnetic compatibility</li> <li>Emitted interference and interference immunity</li> </ul>	According to IEC 61326 and NAMUR NE 21	
Design	, tooliding to the original transfer the Ed	
Weight	Approx. 3.9 kg (8.5 lb) with aluminum enclosure Approx. 5.8 kg (12.7 lb) with stainless steel enclosure	
Material		
Wetted parts materials     Seal diaphragm	Stainless steel, mat. no. 1.4404/316L, Alloy C276, mat. no. 2.4819, Monel, mat. no. 2.4360, tantalum or gold	
- Process flanges and sealing plugs	Stainless steel, mat. no. 1.4408 to PN 160, mat. no. 1.4571/316Ti for PN 420, Alloy C22, 2.4602 or Monel, mat. no. 2.4360	
<ul><li>O-ring</li><li>Non-wetted parts materials</li><li>Electronics housing</li></ul>	FPM (Viton) or optionally: PTFE, FEP, FEPM and NBR  • Low-copper die-cast aluminum GD-AISi 12 or stainless steel precision casting, mat. no. 1.4409/ CF-3M  • Standard: Powder coating with polyurethane Option: 2 coats: Coat 1: epoxy-based; coat 2: Polyurethane  • Stainless steel type plate (1.4404/316L)	
<ul><li>Pressure flange screws</li><li>Mounting bracket</li></ul>	Stainless steel ISO 3506-1 A4-70 Steel, electrogalvanized steel, or stainless steel	
Process connection	1/4-18 NPT female thread and flat connection with 7/16-20 UNF fastening screw thread in accordance with EN 61518 or M10 fastening screw thread in accordance with DIN 19213 (M12 for PN 420 (MWP 6092 psi))	
Electrical connection	Screw terminals  Cable entry via the following screwed glands:  • M20 x 1.5  • ½-14 NPT  • Device plug Han 7D/Han 8D <sup>1)</sup> • Device plug M12	
Displays and controls		
Keys	4 keys for operation directly on the device	
Display	With or without integrated display (optional)     Cover with inspection window (optional)	
Auxiliary power U <sub>H</sub>		
Terminal voltage on pressure transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically safe mode	
Ripple	$U_{SS} \le 0.2 \text{ V } (47 \dots 125 \text{ Hz})$	
Noise	$U_{eff} \le 1.2 \text{ mV } (0.5 \dots 10 \text{ kHz})$	
Auxiliary power	-	
Separate supply voltage	_	

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Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

for differential pressure and flow

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

#### Certificates and approvals

Classification according to pressure equipment directive (PED 2014/68/EU)

For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)

#### For flow only

For gases of fluid group 1 and liquids of fluid group 1; fulfills the basic safety requirements as per article 3, paragraph 1 (appendix 1); classified as category III, module H conformity evaluation by TÜV Nord

#### Drinking water

- WRAS (England)
- ACS (France)
- NSF (USA)

CRN (Canada)

Explosion protection acc. to NEPSI (China)
Explosion protection acc. to INMETRO (Brazil)

Explosion protection

- Intrinsic safety "i"
- Marking
- Permissible ambient temperature
- Permissible temperature of measuring medium
- Connection
- Effective internal inductance/capacitance
- Flameproof enclosure "d'
- Marking
- Permissible ambient temperature
- Permissible temperature of measuring medium
- Connection
- Dust explosion protection for zones 21, 22
- Marking
- Permissible ambient temperature
- Permissible temperature of measuring medium
- Max. surface temperature
- Connection
- Dust explosion protection for zones 20, 21, 22
  - Marking
  - Permissible ambient temperature
  - Permissible temperature of measuring medium
  - Connection
- Effective internal inductance/capacitance
- Type of protection for Zone 2
- Marking
- Permissible ambient temperature "ec"
- Permissible ambient temperature "ic"
- Permissible temperature of measuring medium
- "ec" connection
- "ic" connection

No.: 1903094 (option E83) No.: 18 ACC LY 277 (option E85) No.: 20180920-MH61350 (option E84)

No.: 0F9863.5C (option E60) No.: GYJ19.1058X (option E27)

No.: BRA-18-GE-0035X (option E25)

II 1/2 G Ex ia/ib IIC T4/T6 Ga/Gb

-40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6 -40 ... +100 °C (-40 ... +212 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6 To certified intrinsically safe circuits with peak values:

 $U_i = 30 \text{ V}, I_i = 101 \text{ mA}, P_i = 760 \text{ mW}$  $U_i = 29 \text{ V}, I_i = 110 \text{ mA}, P_i = 800 \text{ mW}$ 

 $L_i = 0.24 \mu H/C_i = 3.29 nF$ 

Ex II 1/2 G Ex ia/db IIC T4/T6 Ga/Gb

 $\begin{array}{l} -40 \; ... \; +80 \; ^{\circ}\text{C} \; (-40 \; ... \; +176 \; ^{\circ}\text{F}) \; temperature \; class \; T4 \\ -40 \; ... \; +70 \; ^{\circ}\text{C} \; (-40 \; ... \; +158 \; ^{\circ}\text{F}) \; temperature \; class \; T6 \\ -40 \; ... \; +100 \; ^{\circ}\text{C} \; (-40 \; ... \; +212 \; ^{\circ}\text{F}) \; temperature \; class \; T4 \\ -40 \; ... \; +70 \; ^{\circ}\text{C} \; (-40 \; ... \; +158 \; ^{\circ}\text{F}) \; temperature \; class \; T6 \\ \end{array}$ 

To a circuit with the operating values:

 $U_n = 10.5 \text{ to } 45 \text{ V}, 4 \dots 20 \text{ mA}$ 

Ex II 2D Ex tb IIIC T120 °C Db Ex II 3D Ex tc IIIC T120 °C Dc -40 ... +80 °C (-40 ... +176 °F) -40 ... +100 °C (-40 ... +212 °F)

120 °C (248 °F)

To a circuit with the operating values:

U<sub>n</sub> = 10.5 to 45 V, 4 ... 20 mA

Ex II 1D Ex ia IIIC T120 °C Da Ex II 2D Ex ib IIIC T120 °C Db Ex II 3D Ex ic IIIC T120 °C Dc -40 ... +80 °C (-40 ... +176 °F) -40 ... +100 °C (-40 ... +212 °F)

To certified intrinsically safe circuits with the peak values:

 $U_{i} = 30 \text{ V}, \ I_{i} = 101 \text{ mA}, \ P_{i} = 760 \text{ mW} \ U_{i} = 29 \text{ V}, \ I_{i} = 110 \text{ mA}, \ P_{i} = 800 \text{ mW} \$ 

 $L_i = 0.24 \,\mu\text{H/C}_i = 3.29 \,\text{nF}$ 

Ex II 3G Ex ec IIC T4/T6 Gc Ex II 3G Ex ic IIC T4/T6 Gc

-40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +40 °C (-40 ... +104 °F) temperature class T6 -40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +80 °C (-40 ... +176 °F) temperature class T6

-40 ... +100 °C (-40 ... +176 °F) temperature class T6 -40 ... +100 °C (-40 ... +212 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6

To a circuit with the operating values:

U<sub>n</sub> = 10.5 to 30 V, 4 ... 20 mA

To certified intrinsically safe circuits with the peak values:

 $U_i = 30 \text{ V}, I_i = 101 \text{ mA}, P_i = 760 \text{ mW}$  $U_i = 29 \text{ V}, I_i = 110 \text{ mA}, P_i = 800 \text{ mW}$ 

Effective internal inductance/capacitance:

 $L_i = 0.24 \mu H/C_i = 3.29 nF$ 

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P320/P420

#### for differential pressure and flow

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

• Explosion protection acc. to FM Available so

- Marking (XP/DIP) or IS; NI; S CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4 ... T6: CL I, DIV 2,

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

Explosion protection according to CSA

Available soon

- Marking (XP/DIP) or (IS)

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

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

NAMUR recommendations

NE 06
 Standardized Electrical Signals and Questions Relating to Engineering Technology

NE 21
 Electromagnetic Compatibility (EMC) of Industrial Process and Laboratory Control Equipment

NE 23
 Extra Low Voltage Circuits with Safe Separation

• NE 43 Standardization of the Signal Level for the Failure Information of Digital Transmitters

NE 53
 Software and Hardware of Field Devices and Signal Processing Devices with Digital Electronics
 NE 80
 The Application of the Pressure Equipment Directive to Process Control Devices

The Application of the Pressure Equipment Directive to Process Control Devices Specifications for Integrating Fieldbus Devices in Engineering Tools for Field Devices

NE 105
 NE 107
 Specifications for Integrating Fieldbus Devices
 NE 107
 Self-Monitoring and Diagnosis of Field Devices

NE 131
 NAMUR Standard Device - Field Devices for Standard Applications

HART communication	
HART	230 1100 Ω
Protocol	HART 7
Software for computer	SIMATIC PDM

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Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

for differential pressure and flow

## Selection and ordering data

	Article No.
Pressure transmitters for differential pressure and flow, PN 160 (MAWP 2320 psi)	
SITRANS P320	7MF034
SITRANS P420	7MF044
→ Click on the Article no. for the online configuration in the PIA Life Cycle Portal.	
Communication	
HART, 4 20 mA	o
Measuring cell filling	
Silicone oil	1
Inert liquid	3
Neobee oil	4
Maximum measuring span	
20 mbar (8.037 inH <sub>2</sub> O)	В
60 mbar (24.11 inH <sub>2</sub> O)	D
250 mbar (100.5 inH <sub>2</sub> O)	G
600 mbar (241.1 inH <sub>2</sub> O)	н
1 600 mbar (643 inH <sub>2</sub> O)	м
5000 mbar (2009 inH <sub>2</sub> O)	P
30 bar (435 psi)	R
Process connection	
Oval flange, mounting thread: 7/16-20 UNF (IEC 61518)	L
Oval flange, mounting thread: M10 (PN 160) (DIN 19213)	M
Oval flange, mounting thread: 7/16-20 UNF (IEC 61518) with lateral ventilation	N
Oval flange, mounting thread: M10 (PN 160) (DIN 19213) with lateral ventilation	P
Version for diaphragm seal with mounting thread 7/16-20 UNF (IEC 61518)	V
Version for diaphragm seal with mounting thread M10 (DIN 19213)	w
Version for diaphragm seal (level and capillary) with mounting thread $^{7}/_{16}$ -20 UNF (IEC 61518)	x
Wetted parts materials: Process connection, seal diaphragm	
Stainless steel 316L/1.4404, stainless steel 316L/1.4404, process flange stainless steel 316/1.4408	0
Stainless steel 316L/1.4404, alloy C276/2.4819, process flange stainless steel 316/1.4408	1
Alloy C22/2.4602, alloy C276/2.4819, process flange stainless steel 316/1.4408	2
Tantalum/tantalum, process flange stainless steel 316/1.4408 (not in combination with maximum measuring span 20 mbar (0.29 psi) and 60 mbar (0.87 psi))	4
Monel 00/2.4360, Monel 400/2.4360, process flange stainless steel 316/1.4408 (not in combination with maximum measuring span 20 mbar (0.29 psi) and 60 mbar (0.87 psi))	6
Stainless steel 316L/1.4404, gold-plated, process flange stainless steel 316/1.4408 (not in combination with maximum measuring span 20 mbar (0.29 psi) and 60 mbar (0.87 psi))	8
Non-wetted parts materials	
Die-cast aluminum	1
Stainless steel precision casting CF3M/1.4409 similar to 316L	2
Enclosure	
Dual chamber device	5
Type of protection	
Without Ex	A
Intrinsic safety	В
Flameproof enclosure	С
Flameproof enclosure, intrinsic safety	D
Dust protection by enclosure Zone 21/22 (DIP), increased safety Zone 2	L
Dust protection by enclosure Zone 20/21/22 (DIP), increased safety Zone 2	M
Combination of options B, C and L (zone model)	S
Combination of options B, C and M (zone model, Class Division)	т
Electrical connections/cable entries  Thread for each a gland, Cable gland must be ordered congretally as antian (Avv)	
Thread for cable gland: Cable gland must be ordered separately as option (Axx) • 2 x M20 x 1.5	F
• 2 x ½-14 NPT	M

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

## for differential pressure and flow

	Article No.
Pressure transmitters for differential pressure and flow, PN 160 (MAWP 2320 psi)	
SITRANS P320	7MF034
SITRANS P420	7MF044
Local operation/display	
Without display (cover closed)	0
With display (cover closed)	1
With display (cover with glass pane)	2

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Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

## for differential pressure and flow

	Article No.
Pressure transmitters for differential pressure and flow, PN 420 (MAWP 6092 psi)	
SITRANS P320	7MF035
SITRANS P420	7MF045
→ Click on the Article no. for the online configuration in the PIA Life Cycle Portal.	
Communication	
HART, 4 20 mA	0
Measuring cell filling	
Silicone oil	1
Inert liquid	3
Neobee oil	4
Maximum measuring span	
250 mbar (100.5 inH <sub>2</sub> O)	G
600 mbar (241.1 inH <sub>2</sub> O)	Н
1 600 mbar (643 inH <sub>2</sub> O)	M
5000 mbar (2009 inH <sub>2</sub> O)	P
30 bar (435 psi)	R
Process connection	
Oval flange, mounting thread: 7/16-20 UNF (IEC 61518)	- L
Oval flange, mounting thread: M12 (PN 420) (DIN 19213)	M
Oval flange, mounting thread: <sup>7</sup> / <sub>16</sub> -20 UNF (IEC 61518) with lateral ventilation	N
Oval flange, mounting thread: M12 (PN 420) (DIN 19213) with lateral ventilation	P
Version for diaphragm seal with mounting thread <sup>7</sup> / <sub>16</sub> -20 UNF (IEC 61518)	V
Version for diaphragm seal with mounting thread M10 (DIN 19213)	W
Version for diaphragm seal (level and capillary) with mounting thread <sup>7</sup> / <sub>16</sub> -20 UNF (IEC 61518)	X
Wetted parts materials: Process connection, seal diaphragm	
Stainless steel 316L/1.4404, stainless steel 316L/1.4404, process flange stainless steel 316/1.4408	0
Stainless steel 316L/1.4404, alloy C276/2.4819, process flange stainless steel 316/1.4408	1
Stainless steel 316L/1.4404, gold-plated, process flange stainless steel 316/1.4408	8
Non-wetted parts materials	
Die-cast aluminum  Steinless steel presision seeting CE2M/1 4400 similar to 3161	1 2
Stainless steel precision casting CF3M/1.4409 similar to 316L  Enclosure	
Dual chamber device	5
Type of protection	-
Without Ex	A
Intrinsic safety	В
Flameproof enclosure	C
Flameproof enclosure, intrinsic safety	D
Dust protection by enclosure Zone 21/22 (DIP), increased safety Zone 2	
Dust protection by enclosure Zone 20/21/22 (DIP), increased safety Zone 2	M
Combination of options B, C and L (zone model)	s s
Combination of options B, C and M (zone model, Class Division)	T
Electrical connections/cable entries	· ·
Thread for cable gland: Cable gland must be ordered separately as option (Axx)	
• 2 x M20 x 1.5	F
• 2 x ½-14 NPT	M
Local operation/display	
Without display (cover closed)	0
With display (cover closed)	1
With display (cover with glass pane)	2

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

for differential pressure and flow

## Selection and ordering data

Selection and ordering data	
Options	Order code
Append "-Z" to Article No., add order code and plain text or entry from drop-down list.	
Cable glands included	
Plastic	A00
Metal	A01
Stainless steel	A02
Stainless steel 316L/1.4404	A03
CMP, for XP devices	A10
CAPRI ADE 4F, CuZn, cable inner diameter 7 12 mm, cable outer diameter 10 16 mm	A11
CAPRI ADE 4F, stainless steel, cable inner diameter 7 12 mm, cable outer diameter 10 16 mm	A12
Device plug Han mounted left	
Device plug Han 7D (plastic, straight)	A30
Device plug Han 7D (plastic, angled)	A31
Device plug Han 7D (metal, straight)	A32
Device plug Han 7D (metal, angled)	A33
Device plug Han 8D (plastic, straight)	A34
Device plug Han 8D (plastic, angled)	A35
Device plug Han 8D (metal, straight)	A36
Device plug Han 8D (metal, angled)	A37
Cable socket included	
Plastic, for device plug Han 7D and Han 8D	A40
Metal, for device plug Han 7D and Han 8D	A41
Device plug M12 mounted left	
Stainless steel, without cable socket	A62
Stainless steel, with cable socket	A63
Cable entry/connector mounting	
2x sealing plugs M20 x 1.5, IP66/68 installed on both sides	A90
$2x$ sealing plugs $\ensuremath{\ensuremath{\mathcal{V}}}\xspace\ensuremath{\text{2-14}}$ NPT, IP66/68 installed on both sides	A91
Cable gland/connector mounted left	A97
Cable gland/connector mounted on right	A99
Nameplate labeling (standard labeling: English, unit bar)	
German (bar)	B11
French (bar)	B12
Spanish (bar)	B13
Italian (bar)	B14
Chinese (bar)	B15
Russian (bar)	B16
English (psi)	B20
English (Pa)	B30
Chinese (Pa)	B35
Certificates	
Quality test certificate, 5-point factory calibration (IEC 60770-2)	C11
Acceptance certificate (EN 10204-3.1) - Material of pressurized and wetted parts	C12
Test report - NACE (MR 0103-2012 and MR 0175-2009)	C13
Test report (EN 10204-2.2) - Wetted parts	C14
Acceptance certificate (EN 10204-3.1) - PMI test of pressurized and wetted parts	C15
Certificates for functional safety	
Functional safety (IEC 61508) - SIL2/3	C20

Options	Order code
Append "-Z" to Article No., add order code and plain text or entry from drop-down list.	
Device options	
PDF file with device settings	D10
Double layer coating (epoxy resin and polyurethane) 120 µm of enclosure and cover	D20
FVMQ enclosure sealing	D21
IP66/IP68 degree of protection (not for device plugs M12 and Han )	D30
TAG label empty	D40
Without labeling of the measuring range on the TAG label	D41
Stainless steel Ex plate 1.4404/316L	D42
Increase of pressure stage from PN 420 to PN 500 (tested according to IEC 61010. Only permissible for process media of fluid group 2 acc. to DGRL. Not suitable for use with hazardous process media.))	D50
Overvoltage protection up to 6 kV (external)	D71
Adhesive labels on transport packaging (supplied by customer)	D90
General approval without Ex approval	
Worldwide (CE, RCM) except EAC, FM, CSA, KCC	E00
Worldwide (CE, RCM, EAC, FM, CSA, KCC)	E01
CSA (USA and Canada)	E06
EAC	E07
FM	E08
KCC	E09
Export approval CPA (China)	E12
Explosion protection approvals	
ATEX (Europe)	E20
CSA (USA and Canada)	E21
FM (USA and Canada)	E22
IECEx (Worldwide)	E23
EACEx (GOST-R, -K, -B)	E24
INMETRO (Brazil)	E25
KCs (Korea)	E26
NEPSI (China)	E27
PESO (India)	E28
UKR Sepro (Ukraine)	E30
ATEX (Europe) and IECEx (Worldwide)	E47
CSA (Canada) and FM (USA)	E48
ATEX (Europe) and IECEx (Worldwide) + CSA (Canada) and FM (USA)	E49
Marine approvals	
DNV-GL (Det Norske Veritas/Germanischer Lloyd)	E50
LR (Lloyds Register)	E51
BV (Bureau Veritas)	E52
ABS (American Bureau of Shipping)	E53
RMR (Russian Maritime Register)	E55
KR (Korean Register of Shipping)	E56
RINA (Registro Italiano Navale)	E57
CCS (China Classification Society)	E58
Country-specific approvals	
CRN approval Canada (Canadian Registration Number)	E60

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

## for differential pressure and flow

Oxygen application (with inert liquid, max. 100 bar (1 450 psi) at 60° C (140 °F))  Dual seal  WRC / WRAS (drinking water); only with pressure cap O-rings made of EPDM  NSF61 (drinking water)  B84  ACS (drinking water)  Mounting bracket  Steel, galvanized  H01  Stainless steel 1.4301/304  H02  Stainless steel 1.4404/316L  H03  Process flanges; screw plug with vent valve  Welded in on right  Welded in on left  J09  Glued in on left  J10  Glued in on left  J11  Flange connections with flange EN 1092-1  Form B1  • DN 25 PN 40, stainless steel 1.4571/316Ti  • DN 50 PN 40, stainless steel 1.4571/316Ti  • DN 80 PN 40, stainless steel 1.4571/316Ti  • DN 80 PN 40, stainless steel 1.4571/316Ti  • DN 80 PN 40, stainless steel 1.4571/316Ti  • DN 50 PN 40, stainless steel 1.4571/316Ti  • DN 80 PN 40, stainless steel 1.4571/316Ti  •		
text or entry from drop-down list.  Special approvals  Oxygen application (with inert liquid, max. 100 bar (1 450 ps) at 60° C (140°F))  Dual seal  WRC / WRAS (drinking water); only with pressure cap O-rings made of EPDM  NSF61 (drinking water)  ACS (drinking water)  Mounting bracket  Steel, galvanized  Steinless steel 1.4301/304  Steinless steel 1.4404/316L  H03  Process flanges; screw plug with vent valve  Welded in on right  Jule Glued in on right  Jule Glued in on left  Jule Glued in on right  Jule Glued in on right  Jule Glued in on left  Jule James Steel 1.4571/316Ti  DN 15 PN 40, stainless steel 1.4571/316Ti  DN 15 PN 40, stainless steel 1.4571/316Ti  DN 15 PN 40, stainless steel 1.4571/316Ti  JULE SPN 40, stainless steel 1.4571/316Ti  DN 15 PN 40, stainless steel 1.4571/316Ti  DN 15 PN 40, stainless steel 1.4571/316Ti  JULE SPN 40, stainless steel 1.4571/316Ti  DN 15 PN 40, stainless steel 1.4571/316Ti  DN 15 PN 40, stainless steel 1.4571/316Ti  JULE SPN 40, stainless steel 1.4571/316Ti  DN 15 PN 40, stainless steel 1.4571/316Ti  JULE SPN 40, stainle	Options	Order code
Oxygen application (with inert liquid, max. 100 bar (1 450 psi) at 60° C (140 °F))  Dual seal  WRC / WRAS (drinking water); only with pressure cap O-rings made of EPDM  NSF61 (drinking water)  E84  ACS (drinking water)  E85  Mounting bracket  Steel, galvanized  Stainless steel 1.4301/304  H02  Stainless steel 1.4400/316L  H03  Process flanges; screw plug with vent valve  Welded in on right  Welded in on left  Jupy  Glued in on left  Jupy  Glued in on left  I DN 25 PN 40, stainless steel 1.4571/316Ti  DN 50 PN 40, stainless steel 1.4571/316Ti  Treflange connection options  Flange connection and temperature extension  Flange connection with epoxy resin coating  Process flanges; special materials  Reserved for 7MFT: without process flanges, without screws, without gaskets  Process flange material alloy C22/2.4602  Process flange material Monel 400/2.4360  Process flange material Monel 400/2.4360  Process flange material Monel 400/2.4360  Process flange material PVDF, flange on the side EN 1092-1 Form B1 DN 25 PN 40, MAWP 4 bar  Process flanges; process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 25 PN 40, MAWP 4 bar  Process flanges; process connection option  Process flanges, gaskets (instead of standard gaskets fXM (FPM))  O-ring, process flanges, FFKM (FFPM)  O-ring, process flanges, FFKM (FFPM)  O-ring, proces		
(1 450 psi) at 60° C (140 °F))  Dual seal  WRC / WRAS (drinking water); only with pressure cap O-rings made of EPDM  NSF61 (drinking water)  Best  Mounting bracket  Steel, galvanized  Steel, galvanized  Ho1  Stainless steel 1.4301/304  Ho2  Stainless steel 1.4404/316L  Process flanges; screw plug with vent valve  Welded in on right  J08  Welded in on left  J09  Glued in on left  J10  Glued in on left  Flange connections with flange EN 1092-1  Form B1  • DN 25 PN 40, stainless steel 1.4571/316Ti  • DN 50 PN 40, stainless steel 1.4571/316Ti  • DN 15 PN 40, stainless steel 1.4571/316Ti  • DN 15 PN 40, stainless steel 1.4571/316Ti  • DN 50 PN 40,	Special approvals	
### C / WRAS (drinking water): only with pressure cap O-rings made of EPDM NSF61 (drinking water)  ### ACS (drinking water		E80
only with pressure cap O-rings made of EPDM  NSF61 (drinking water)  RS65  ACS (drinking water)  Mounting bracket  Steel, galvanized  Steel, galvanized  H01  Stainless steel 1.4301/304  H02  Stainless steel 1.4404/316L  Process flanges; screw plug with vent valve  Welded in on right  Welded in on left  Glued in on left  J09  Glued in on left  J10  Glued in on left  Flange connections with flange EN 1092-1  Form B1  • DN 25 PN 40, stainless steel 1.4571/316Ti  • DN 50 PN 40, stainless steel 1.4571/316Ti  • DN 80 PN 40, stainless steel 1.4571/316Ti  • DN 15 PN 40, stainless steel 1.4571/316Ti  • DN 25 PN 40, stainless steel 1.4571/316Ti  • DN 15 PN 40, stainless steel 1.4571/316Ti  • DN 15 PN 40, stainless steel 1.4571/316Ti  • DN 15 PN 40, stainless steel 1.4571/316Ti  • DN 80 PN 40, stainless steel 1.4571/316Ti  • DN 9D PN 40, stainless steel 1.4571/316Ti  • DN 50 PN 40, stainless steel 1.4571/316Ti  Flange connection and temperature extension  Flange connection with epoxy resin coating  Process flange material floy C22/2.4602  K01  Process flanges; special materials  Reserved for 7MFT: without process flanges, without screws, without gaskets  Process flange material Monel 400/2.4360  K02  Process flange material Monel 400/2.4360  K05  Process flange material Monel 400/2.4360  K07  Process flanges process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 40 PN 40, MAWP 4 bar  Process flanges; process connection option  Process flanges chambered with gaskets  1x chambered, graphite  1x chambered, PTFE  K41  X2x chambered, PTFE  Process flanges, gaskets (instead of standard gaskets FKM (FPM))  O-ring	Dual seal	E81
ACS (drinking water)  Mounting bracket  Steel, galvanized  Steinless steel 1.4301/304  H02  Stainless steel 1.4404/316L  Process flanges; screw plug with vent valve  Welded in on right  Welded in on left  Jung  Glued in on left  Jung	WRC / WRAS (drinking water); only with pressure cap O-rings made of EPDM	E83
Mounting bracket  Steel, galvanized  H01  Stainless steel 1.4301/304  H02  Stainless steel 1.4404/316L  Process flanges; screw plug with vent valve  Welded in on right  Welded in on left  Glued in on left  J10  Glued in on left  J11  Flange connections with flange EN 1092-1  Form B1  • DN 25 PN 40, stainless steel 1.4571/316Ti  • DN 50 PN 40, stainless steel 1.4571/316Ti  • DN 25 PN 40, stainless steel 1.4571/316Ti  • DN 50 PN 40, stainless steel 1.4571/316Ti  • DN 50 PN 40, stainless steel 1.4571/316Ti  • DN 80 PN 40, stainless steel 1.4571/316Ti  • DN 8	NSF61 (drinking water)	E84
Steel, galvanized Stainless steel 1.4301/304 H02 Stainless steel 1.4404/316L Process flanges; screw plug with vent valve Welded in on right Welded in on left Glued in on left J09 Glued in on left Flange connections with flange EN 1092-1 Form B1 • DN 25 PN 40, stainless steel 1.4571/316Ti • DN 50 PN 40, stainless steel 1.4571/316Ti • DN 50 PN 40, stainless steel 1.4571/316Ti • DN 15 PN 40, stainless steel 1.4571/316Ti • DN 15 PN 40, stainless steel 1.4571/316Ti • DN 50 PN 40, stainless steel 1.4571/316Ti • DN 80 PN 40, stainless steel 1.4571/316Ti • DN 80 PN 40, stainless steel 1.4571/316Ti • DN 50 PN 40, stainless teel 1.4571/316Ti • DN 50 PN 40, stainless teel 1.4571/316Ti	ACS (drinking water)	E85
Stainless steel 1.4301/304  Stainless steel 1.4404/316L  Process flanges; screw plug with vent valve  Welded in on right  Welded in on left  Jugo Glued in Jugo Glue Jugo Glue Jugo Glue Jugo Glue Jugo Glue J	Mounting bracket	
Stainless steel 1.4404/316L  Process flanges; screw plug with vent valve  Welded in on right  Welded in on left  Jugo Glued in on left  Jugo Jugo Jugo Jugo Jugo Jugo Jugo Jug	Steel, galvanized	H01
Process flanges; screw plug with vent valve Welded in on right Welded in on left J09 Glued in on left J10 Glued in on left J10 Glued in on left J11 Flange connections with flange EN 1092-1 Form B1 • DN 25 PN 40, stainless steel 1.4571/316Ti • DN 50 PN 40, stainless steel 1.4571/316Ti • DN 50 PN 40, stainless steel 1.4571/316Ti • DN 15 PN 40, stainless steel 1.4571/316Ti • DN 15 PN 40, stainless steel 1.4571/316Ti • DN 50 PN 40, stainless steel 1.4571/316Ti • DN 50 PN 40, stainless steel 1.4571/316Ti • DN 80 PN 40, stainless steel 3.4571/316Ti • DN 80 PN 40, stainless steel 3.4571/316Ti • DN 80 PN 40, stainless steel 4.4571/316Ti • DN 80 PN 40, stainless steel 4.4571/316Ti • DN 80 PN 40, stainless steel 5.4571/316Ti • DN 80 PN 40, stainless steel 6.4571/316Ti • DN 80 PN 40, stainless steel 7.4571/316Ti • DN 90 PN 40, stainless steel 7.4571/316Ti •	Stainless steel 1.4301/304	H02
Welded in on right Welded in on left Welded in on left Jugard Glued in on left Jugard Glued in on left Jugard Glued in on left Jugard Flange connections with flange EN 1092-1 Form B1 DN 25 PN 40, stainless steel 1.4571/316Ti DN 50 PN 40, stainless steel 1.4571/316Ti DN 50 PN 40, stainless steel 1.4571/316Ti DN 15 PN 40, stainless steel 1.4571/316Ti DN 15 PN 40, stainless steel 1.4571/316Ti DN 25 PN 40, stainless steel 1.4571/316Ti Jugard Form C DN 25 PN 40, stainless steel 1.4571/316Ti DN 30 PN 40, stainless steel 1.4571/316Ti Jugard DN 50 PN 40, stainless steel 1.4571/316Ti Jugard Du 50 PN 40, stainless steel 1.4571/316Ti Jugard Jugard Du 50 PN 40, stainless steel 1.4571/316Ti Jugard J	Stainless steel 1.4404/316L	H03
Welded in on left Glued in on right Glued in on right Glued in on left J10 Glued in on left J11 Flange connections with flange EN 1092-1 Form B1 • DN 25 PN 40, stainless steel 1.4571/316Ti • DN 50 PN 40, stainless steel 1.4571/316Ti • DN 50 PN 40, stainless steel 1.4571/316Ti • DN 15 PN 40, stainless steel 1.4571/316Ti • DN 15 PN 40, stainless steel 1.4571/316Ti • DN 50 PN 40, stainless steel 1.4571/316Ti • DN 50 PN 40, stainless steel 1.4571/316Ti • DN 50 PN 40, stainless steel 1.4571/316Ti • DN 80 PN 70, stainless steel 1.4571/316Ti • DN 80 PN 80, stainless steel 1.4571/316Ti • DN 80 PN 80, stainless steel 1.4571/316Ti • DN 80 PN 90, stainless steel 1.4571/316Ti • DN 90 P	Process flanges; screw plug with vent valve	
Glued in on right Glued in on left Flange connections with flange EN 1092-1 Form B1  • DN 25 PN 40, stainless steel 1.4571/316Ti • DN 50 PN 40, stainless steel 1.4571/316Ti • DN 80 PN 40, stainless steel 1.4571/316Ti • DN 15 PN 40, stainless steel 1.4571/316Ti • DN 15 PN 40, stainless steel 1.4571/316Ti • DN 15 PN 40, stainless steel 1.4571/316Ti • DN 50 PN 40, stainless steel 1.4571/316Ti • DN 80 PN 40, stainless steel 1.4571/316Ti  • DN 80 PN 40, stainless steel 1.4571/316Ti  • DN 80 PN 40, stainless steel 1.4571/316Ti  • DN 80 PN 40, stainless steel 1.4571/316Ti  • DN 80 PN 40, stainless steel 1.4571/316Ti  • DN 80 PN 40, stainless steel 1.4571/316Ti  • DN 80 PN 40, stainless steel 1.4571/316Ti  • DN 80 PN 40, stainless steel 1.4571/316Ti  • DN 80 PN 40, stainless steel 1.4571/316Ti  • DN 80 PN 40, stainless steel 1.4571/316Ti  • DN 80 PN 40, stainless steel 1.4571/316Ti  • DN 80 PN 40, stainless steel 1.4571/316Ti  • DN 80 PN 40, stainless steel 1.4571/316Ti  • DN 80 PN 40, stainless steel 1.4571/316Ti  • DN 80 PN 40, stainless steel 1.4571/316Ti  • DN 80 PN 40, stainless steel 1.4571/316Ti  • DN 80 PN 40, stainless steel 1.4571/316Ti  • DN 80 PN 40, stainless steel 1.4571/316Ti  • DN 80 PN 40, stainless steel 1.4571/316Ti  • DN 8	Welded in on right	J08
Glued in on left  Flange connections with flange EN 1092-1  Form B1  • DN 25 PN 40, stainless steel 1.4571/316Ti • DN 50 PN 40, stainless steel 1.4571/316Ti • DN 80 PN 40, stainless steel 1.4571/316Ti • DN 80 PN 40, stainless steel 1.4571/316Ti • DN 80 PN 40, stainless steel 1.4571/316Ti • DN 50 PN 40, stainless steel 1.4571/316Ti • DN 50 PN 40, stainless steel 1.4571/316Ti • DN 50 PN 40, stainless steel 1.4571/316Ti • DN 80 PN 40, stainless steel 1.4571/316Ti  J73  J74 • DN 80 PN 40, stainless steel 1.4571/316Ti  J73  J74 • DN 80 PN 40, stainless steel 1.4571/316Ti  J75  Flange connection options  Flange connection material PVDF, stainless steel 1.4571/316Ti  J75  Flange connection material PVDF, stainless steel 1.4571/316Ti  J75  Flange connection material PVDF, stainless steel 1.4571/316Ti  J75  Flange connection material PVDF, stainless steel 1.4571/316Ti  J76  Flange connection material PVDF, stainless steel 1.4571/316Ti  J77  Process flanges/process connection material PVDF, stainless steel 1.4571/316Ti  J76  K00  Flange on the side EN 1092-1 Form B1 DN 40 PN 40, MAWP 4 bar  Process flanges; process connection option  Frocess flanges; process connection option  Frocess flanges; process connection option  Frocess flanges with process connection option  K07  flange on the side EN 1092-1 Form B1 DN 40 PN 40, MAWP 40 P	Welded in on left	J09
Flange connections with flange EN 1092-1  Form B1  • DN 25 PN 40, stainless steel 1.4571/316Ti • DN 50 PN 40, stainless steel 1.4571/316Ti • DN 80 PN 40, stainless steel 1.4571/316Ti • DN 80 PN 40, stainless steel 1.4571/316Ti • DN 15 PN 40, stainless steel 1.4571/316Ti • DN 15 PN 40, stainless steel 1.4571/316Ti • DN 25 PN 40, stainless steel 1.4571/316Ti • DN 80 PN 40, stainless steel 1.4571/316Ti  J73 • DN 80 PN 40, stainless steel 1.4571/316Ti  J73 • DN 80 PN 40, stainless steel 1.4571/316Ti  J73 • DN 80 PN 40, stainless steel 1.4571/316Ti  J75  Flange connection spilon  Frocess flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 25 PN 40, MAWP 4 bar  Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 40 PN 40, MAWP 4 bar  Process flanges; process connection option  Frocess flanges; process connection G½ welded on Process flanges; process connection G½ welded on Process flanges chambered with gaskets  1x chambered, graphite  1x chambered, graphite  1x chambered, pTFE  X40  Process flanges, gaskets (instead of standard gaskets FKM (FPM))  O-ring, process flanges, FFE (with silicone core, approved for food)  O-ring, process flanges, FFKM (FFPM)  O-ring, process flanges, FFKM (FFPM)	Glued in on right	J10
Form B1  DN 25 PN 40, stainless steel 1.4571/316Ti DN 30 PN 40, stainless steel 1.4571/316Ti DN 80 PN 40, stainless steel 1.4571/316Ti DN 150 PN 40, stainless steel 1.4571/316Ti DN 15 PN 40, stainless steel 1.4571/316Ti J78  Form C  DN 25 PN 40, stainless steel 1.4571/316Ti J78  Form C  DN 25 PN 40, stainless steel 1.4571/316Ti J79 DN 30 PN 40, stainless steel 1.4571/316Ti J70 DN 80 PN 40, stainless steel 1.4571/316Ti J71 J75  Flange connection options  Flange connection and temperature extension Flange connection with epoxy resin coating  Frocess flanges; special materials  Reserved for 7MF7: without process flanges, without screws, without gaskets  Process flange material alloy C22/2.4602  Frocess flange material Monel 400/2.4360  Frocess flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 25 PN 40, MAWP 4 bar  Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 40 PN 40, MAWP 4 bar  Process flanges; process connection option  Process flanges with process connection option  Process flanges with process connection option  Process flanges chambered with gaskets  1x chambered, graphite 1x chambered, graphite 1x chambered, PTFE  Process flanges, gaskets (instead of standard gaskets FKM (FPM))  O-ring, process flanges, FFE (with silicone core, approved for food)  O-ring, process flanges, FFKM (FFPM)	Glued in on left	J11
• DN 25 PN 40, stainless steel 1.4571/316Ti • DN 50 PN 40, stainless steel 1.4571/316Ti • DN 80 PN 40, stainless steel 1.4571/316Ti • DN 80 PN 40, stainless steel 1.4571/316Ti • DN 15 PN 40, stainless steel 1.4571/316Ti • DN 25 PN 40, stainless steel 1.4571/316Ti • DN 25 PN 40, stainless steel 1.4571/316Ti • DN 50 PN 40, stainless steel 1.4571/316Ti • DN 80 PN 40, stainless steel 1.4571/316Ti      J73      J73      J74      J75  Flange connection options  Frocess flanges material alloy C22/2.4602      K01  Frocess flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 25 PN 40, MAWP 4 bar  Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 40 PN 40, MAWP 4 bar  Process flanges; process connection option  Process flanges in process connection option  Process flanges with process connection G½ welded on Process flanges process connection G½ welded on Process flanges stambered with gaskets  1x chambered, PTFE  Process flanges, gaskets (instead of standard gaskets FKM (FPM))  O-ring, process flanges, FFP (with silicone core, approved for food)  O-ring, process flanges, FFKM (FFPM)  O-ring, process flanges, FFKM (FFPM)  O-ring, process flanges, FFKM (FFPM)	Flange connections with flange EN 1092-1	
<ul> <li>DN 50 PN 40, stainless steel 1.4571/316Ti</li> <li>DN 80 PN 40, stainless steel 1.4571/316Ti</li> <li>DN 15 PN 40, stainless steel 1.4571/316Ti</li> <li>DN 15 PN 40, stainless steel 1.4571/316Ti</li> <li>J78</li> <li>Form C</li> <li>DN 25 PN 40, stainless steel 1.4571/316Ti</li> <li>DN 50 PN 40, stainless steel 1.4571/316Ti</li> <li>DN 50 PN 40, stainless steel 1.4571/316Ti</li> <li>J74</li> <li>DN 80 PN 40, stainless steel 1.4571/316Ti</li> <li>J75</li> <li>Flange connection options</li> <li>Flange connection and temperature extension</li> <li>Flange connection with epoxy resin coating</li> <li>Process flanges; special materials</li> <li>Reserved for 7MF7: without process flanges, without screws, without gaskets</li> <li>Process flange material alloy C22/2.4602</li> <li>K01</li> <li>Process flange material PVDF, on the side ½-14 NPT</li> <li>Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 25 PN 40, MAWP 4 bar</li> <li>Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 40 PN 40, MAWP 4 bar</li> <li>Process flanges; process connection option</li> <li>Process flange with process connection G½ welded on Process flange with process connection G½ welded on Process flanges chambered with gaskets</li> <li>1x chambered, graphite</li> <li>1x chambered, PTFE</li> <li>X40</li> <li>X41</li> <li>X42</li> <li>Process flanges, gaskets (instead of standard gaskets FKM (FPM))</li> <li>O-ring, process flanges, FFP (with silicone core, approved for food)</li> <li>O-ring, process flanges, FFKM (FFPM)</li> <li>O-ring, process flanges, FFKM (FFPM)</li> <li>O-ring, process flanges, PFKM (FFPM)</li> <li>O-ring, process flanges, NBR</li> </ul>		
<ul> <li>DN 80 PN 40, stainless steel 1.4571/316Ti</li> <li>DN 15 PN 40, stainless steel 1.4571/316Ti</li> <li>DN 25 PN 40, stainless steel 1.4571/316Ti</li> <li>DN 50 PN 40, stainless steel 1.4571/316Ti</li> <li>DN 80 PN 40, stainless steel 1.4571/316Ti</li> <li>DN 80 PN 40, stainless steel 1.4571/316Ti</li> <li>J73</li> <li>DN 80 PN 40, stainless steel 1.4571/316Ti</li> <li>J75</li> <li>Flange connection options</li> <li>Flange connection and temperature extension</li> <li>Flange connection with epoxy resin coating</li> <li>Process flanges; special materials</li> <li>Reserved for 7MF7: without process flanges, without screws, without gaskets</li> <li>Process flange material alloy C22/2.4602</li> <li>K01</li> <li>Process flange material Monel 400/2.4360</li> <li>K02</li> <li>Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 25 PN 40, MAWP 4 bar</li> <li>Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 40 PN 40, MAWP 4 bar</li> <li>Process flanges; process connection option</li> <li>Process flanges with process connection option</li> <li>Process flanges chambered with gaskets</li> <li>1x chambered, graphite</li> <li>1x chambered, PTFE</li> <li>X41</li> <li>2x chambered, PTFE</li> <li>X42</li> <li>Process flanges, gaskets (instead of standard gaskets FKM (FPM))</li> <li>O-ring, process flanges, FFP (with silicone core, approved for food)</li> <li>O-ring, process flanges, FFP (with silicone core, approved for food)</li> <li>O-ring, process flanges, FFP (with silicone core, approved for food)</li> <li>O-ring, process flanges, FFRM (FFPM)</li> <li>K52</li> <li>O-ring, process flanges, NBR</li> </ul>		
Form C  • DN 25 PN 40, stainless steel 1.4571/316Ti • DN 50 PN 40, stainless steel 1.4571/316Ti • DN 80 PN 40, stainless steel 1.4571/316Ti  • Tange connection options  Flange connection and temperature extension  Flange connection with epoxy resin coating  J76  Flange connection with epoxy resin coating  Process flanges; special materials  Reserved for 7MF7: without process flanges, without screws, without gaskets  Process flange material alloy C22/2.4602  Process flange material Monel 400/2.4360  Process connection material PVDF, on the side ½- 14 NPT  Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 25 PN 40, MAWP 4 bar  Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 40 PN 40, MAWP 4 bar  Process flanges; process connection option  Process flanges; process connection option  Process flange with process connection G½ welded on Process connection NAM (ASTAVA)  Process flanges chambered with gaskets  1x chambered, graphite  1x chambered, PTFE  X40  Process flanges, gaskets (instead of standard gaskets FKM (FPM))  O-ring, process flanges, FEP (with silicone core, approved for food)  O-ring, process flanges, FFKM (FFPM)  O-ring, process flanges, FFKM (FFPM)  O-ring, process flanges, FFKM (FFPM)  O-ring, process flanges, NBR		
<ul> <li>DN 25 PN 40, stainless steel 1.4571/316Ti</li> <li>DN 50 PN 40, stainless steel 1.4571/316Ti</li> <li>DN 80 PN 40, stainless steel 1.4571/316Ti</li> <li>J74</li> <li>J75</li> <li>Flange connection options</li> <li>Flange connection and temperature extension</li> <li>Flange connection with epoxy resin coating</li> <li>J77</li> <li>Process flanges; special materials</li> <li>Reserved for 7MF7: without process flanges, without screws, without gaskets</li> <li>Process flange material alloy C22/2.4602</li> <li>K01</li> <li>Process flange material Monel 400/2.4360</li> <li>K02</li> <li>Process connection material PVDF, on the side ½-14 NPT</li> <li>Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 25 PN 40, MAWP 4 bar</li> <li>Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 40 PN 40, MAWP 4 bar</li> <li>Process flanges; process connection option</li> <li>Process flanges with process connection option</li> <li>Process flanges with process connection G½ welded on Process connection NAM (ASTAVA)</li> <li>Process flanges chambered with gaskets</li> <li>1x chambered, graphite</li> <li>1x chambered, PTFE</li> <li>2x chambered, PTFE</li> <li>Yochambered, PTFE</li> <li>Process flanges, gaskets (instead of standard gaskets FKM (FPM))</li> <li>O-ring, process flanges, FFP (with silicone core, approved for food)</li> <li>O-ring, process flanges, FFKM (FFPM)</li> <li>O-ring, process flanges, FFKM (FFPM)</li> <li>K52</li> <li>O-ring, process flanges, NBR</li> </ul>	• DN 15 PN 40, stainless steel 1.4571/316Ti	J78
• DN 50 PN 40, stainless steel 1.4571/316Ti  • DN 80 PN 40, stainless steel 1.4571/316Ti  • DN 80 PN 40, stainless steel 1.4571/316Ti  Flange connection options  Flange connection and temperature extension  Flange connection with epoxy resin coating  Process flanges; special materials  Reserved for 7MF7: without process flanges, without screws, without gaskets  Process flange material alloy C22/2.4602  Process flange material Monel 400/2.4360  Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 25 PN 40, MAWP 4 bar  Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 40 PN 40, MAWP 4 bar  Process flanges; process connection option  Process flanges; process connection G½ welded on Process flanges chambered with gaskets  1x chambered, graphite  1x chambered, graphite  1x chambered, PTFE  2x chambered, PTFE  Process flanges, gaskets (instead of standard gaskets FKM (FPM))  O-ring, process flanges, FEP (with silicone core, approved for food)  O-ring, process flanges, NBR  K52  O-ring, process flanges, NBR		
• DN 80 PN 40, stainless steel 1.4571/316Ti  Flange connection options  Flange connection and temperature extension  Flange connection with epoxy resin coating  J77  Process flanges; special materials  Reserved for 7MF7: without process flanges, without screws, without gaskets  Process flange material alloy C22/2.4602  Rocess connection material PVDF, on the side ½- 14 NPT  Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 25 PN 40, MAWP 4 bar  Process flanges; process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 40 PN 40, MAWP 4 bar  Process flanges; process connection option  Process flanges; process connection option  Process flanges with process connection of ½ welded on Process flanges chambered with gaskets  1x chambered, graphite  1x chambered, graphite  1x chambered, PTFE  2x chambered, PTFE  Process flanges, gaskets (instead of standard gaskets FKM (FPM))  O-ring, process flanges, FEP (with silicone core, approved for food)  O-ring, process flanges, NBR  K50  O-ring, process flanges, NBR		
Flange connection and temperature extension Flange connection with epoxy resin coating  Process flanges; special materials  Reserved for 7MF7: without process flanges, without screws, without gaskets  Process flange material alloy C22/2.4602  Process flange material Monel 400/2.4360  Process connection material PVDF, on the side ½- 14 NPT  Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 25 PN 40, MAWP 4 bar  Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 40 PN 40, MAWP 4 bar  Process flanges; process connection option  Process flanges with process connection option  Process connection NAM (ASTAVA)  Process flanges chambered with gaskets  1x chambered, graphite  1x chambered, pTFE  2x chambered, PTFE  Process flanges, gaskets (instead of standard gaskets FKM (FPM))  O-ring, process flanges, FEP (with silicone core, approved for food)  O-ring, process flanges, NBR  K50  O-ring, process flanges, FFKM (FFPM)		
Flange connection with epoxy resin coating  Process flanges; special materials  Reserved for 7MF7: without process flanges, without screws, without gaskets  Process flange material alloy C22/2.4602  Process flange material Monel 400/2.4360  Process connection material PVDF, on the side ½- 14 NPT  Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 25 PN 40, MAWP 4 bar  Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 40 PN 40, MAWP 4 bar  Process flanges; process connection option  Process flanges with process connection G½ welded on Process connection NAM (ASTAVA)  Process flanges chambered with gaskets  1x chambered, graphite  1x chambered, pTFE  2x chambered, PTFE  Process flanges, gaskets (instead of standard gaskets FKM (FPM))  O-ring, process flanges, FEP (with silicone core, approved for food)  O-ring, process flanges, NBR  K50  O-ring, process flanges, FFKM (FFPM)  K52  O-ring, process flanges, NBR	Flange connection options	
Process flanges; special materials  Reserved for 7MF7: without process flanges, without screws, without gaskets  Process flange material alloy C22/2.4602  Process flange material Monel 400/2.4360  Process connection material PVDF, on the side ½- 14 NPT  Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 25 PN 40, MAWP 4 bar  Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 40 PN 40, MAWP 4 bar  Process flanges; process connection option  Process flanges with process connection G½ welded on Process flanges with process connection G½ welded on Process flanges chambered with gaskets  1x chambered, graphite 1x chambered, graphite 1x chambered, PTFE 2x chambered, PTFE 2x chambered, PTFE 441  Process flanges, gaskets (instead of standard gaskets FKM (FPM))  O-ring, process flanges, FEP (with silicone core, approved for food)  O-ring, process flanges, FFKM (FFPM)  K52  O-ring, process flanges, NBR	Flange connection and temperature extension	J76
Reserved for 7MF7: without process flanges, without screws, without gaskets  Process flange material alloy C22/2.4602  Process flange material Monel 400/2.4360  Process connection material PVDF, on the side ½- 14 NPT  Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 25 PN 40, MAWP 4 bar  Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 40 PN 40, MAWP 4 bar  Process flanges; process connection option  Process flanges with process connection G½ welded on Process flange with process connection G½ welded on Process flanges chambered with gaskets  1x chambered, graphite  1x chambered, PTFE  2x chambered, PTFE  Process flanges, gaskets (instead of standard gaskets FKM (FPM))  O-ring, process flanges, FEP (with silicone core, approved for food)  O-ring, process flanges, NBR  K00  K01  K05  K06  K06  K07  K07  K07  K07  K07  K07	Flange connection with epoxy resin coating	J77
screws, without gaskets  Process flange material alloy C22/2.4602  Process flange material Monel 400/2.4360  Process connection material PVDF, on the side ½- 14 NPT  Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 25 PN 40, MAWP 4 bar  Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 40 PN 40, MAWP 4 bar  Process flanges; process connection option  Process flanges; process connection G½ welded on Process connection NAM (ASTAVA)  Process flanges chambered with gaskets  1x chambered, graphite  1x chambered, pTFE  Process flanges, gaskets (instead of standard gaskets FKM (FPM))  O-ring, process flanges, FEP (with silicone core, approved for food)  O-ring, process flanges, NBR  K01  K05  K06  K07  K07  K07  K07  K07  K07  K07	Process flanges; special materials	
Process flange material Monel 400/2.4360  Process connection material PVDF, on the side ½- 14 NPT  Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 25 PN 40, MAWP 4 bar  Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 40 PN 40, MAWP 4 bar  Process flanges; process connection option  Process flanges with process connection G½ welded on Process flanges chambered with gaskets  1x chambered, graphite 1x chambered, PTFE 2x chambered, PTFE  Process flanges, gaskets (instead of standard gaskets FKM (FPM))  O-ring, process flanges, FEP (with silicone core, approved for food)  O-ring, process flanges, NBR  K02  K05  K06  K07  K07  K07  K07  K07  K07  K07		K00
Process connection material PVDF, on the side ½- 14 NPT  Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 25 PN 40, MAWP 4 bar  Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 40 PN 40, MAWP 4 bar  Process flanges; process connection option  Process flanges; process connection G½ welded on Process connection NAM (ASTAVA)  Process flanges chambered with gaskets  1x chambered, graphite 1x chambered, PTFE 2x chambered, PTFE  Process flanges, gaskets (instead of standard gaskets FKM (FPM))  O-ring, process flanges, FEP (with silicone core, approved for food)  O-ring, process flanges, FFKM (FFPM)  O-ring, process flanges, FFKM (FFPM)  K05  K06  K07  K07  K07  K07  K07  K07  K07	Process flange material alloy C22/2.4602	K01
14 NPT  Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 25 PN 40, MAWP 4 bar  Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 40 PN 40, MAWP 4 bar  Process flanges; process connection option  Process flange with process connection G½ welded on Process connection NAM (ASTAVA)  Process flanges chambered with gaskets  1x chambered, graphite  1x chambered, PTFE  2x chambered, PTFE  Process flanges, gaskets (instead of standard gaskets FKM (FPM))  O-ring, process flanges, FEP (with silicone core, approved for food)  O-ring, process flanges, FFKM (FFPM)  O-ring, process flanges, FFKM (FFPM)  K06  K07  K07  K07  K07  K07  K40  K20  K20  K21  Process flanges chambered with gaskets  1x chambered, graphite  K40  K41  X42  Process flanges, gaskets (instead of standard gaskets FKM (FPM))  O-ring, process flanges, FFFP (with silicone core, approved for food)  O-ring, process flanges, FFKM (FFPM)  K52  O-ring, process flanges, NBR	Process flange material Monel 400/2.4360	K02
flange on the side EN 1092-1 Form B1 DN 25 PN 40, MAWP 4 bar  Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 40 PN 40, MAWP 4 bar  Process flanges; process connection option  Process flange with process connection G½ welded on Process connection NAM (ASTAVA)  Process flanges chambered with gaskets  1x chambered, graphite  1x chambered, PTFE  2x chambered, PTFE  Process flanges, gaskets (instead of standard gaskets FKM (FPM))  O-ring, process flanges, FEP (with silicone core, approved for food)  O-ring, process flanges, FFKM (FFPM)  O-ring, process flanges, FFKM (FFPM)  K52  O-ring, process flanges, NBR		K05
flange on the side EN 1092-1 Form B1 DN 40 PN 40, MAWP 4 bar  Process flanges; process connection option  Process flange with process connection G½ welded on Process connection NAM (ASTAVA)  Process flanges chambered with gaskets  1x chambered, graphite 1x chambered, PTFE 2x chambered, PTFE 4x1  Process flanges, gaskets (instead of standard gaskets FKM (FPM))  O-ring, process flanges, FEP (with silicone core, approved for food)  O-ring, process flanges, FFKM (FFPM)  K52  O-ring, process flanges, NBR  K53	flange on the side EN 1092-1 Form B1 DN 25 PN 40,	K06
Process flange with process connection G½ welded on Process connection NAM (ASTAVA)  Process flanges chambered with gaskets  1x chambered, graphite 1x chambered, PTFE 2x chambered, PTFE 441  Process flanges, gaskets (instead of standard gaskets FKM (FPM))  O-ring, process flanges, PTFE  O-ring, process flanges, FEP (with silicone core, approved for food)  O-ring, process flanges, FFKM (FFPM)  K52  O-ring, process flanges, NBR	flange on the side EN 1092-1 Form B1 DN 40 PN 40,	K07
Process flange with process connection G½ welded on Process connection NAM (ASTAVA)  Process flanges chambered with gaskets  1x chambered, graphite 1x chambered, PTFE 2x chambered, PTFE 441  Process flanges, gaskets (instead of standard gaskets FKM (FPM))  O-ring, process flanges, PTFE  O-ring, process flanges, FEP (with silicone core, approved for food)  O-ring, process flanges, FFKM (FFPM)  K52  O-ring, process flanges, NBR	Process flanges; process connection option	
Process connection NAM (ASTAVA)  Process flanges chambered with gaskets  1x chambered, graphite  1x chambered, PTFE  2x chambered, PTFE  Process flanges, gaskets (instead of standard gaskets FKM (FPM))  O-ring, process flanges, PTFE  O-ring, process flanges, FEP (with silicone core, approved for food)  O-ring, process flanges, FFKM (FFPM)  K52  O-ring, process flanges, NBR	•	K20
1x chambered, graphite 1x chambered, PTFE 1x chambered, PTFE 2x chambered, PTFE 1x chambe	Process connection NAM (ASTAVA)	K21
1x chambered, PTFE 2x chambered, PTFE K42  Process flanges, gaskets (instead of standard gaskets FKM (FPM)) O-ring, process flanges, PTFE O-ring, process flanges, FEP (with silicone core, approved for food) O-ring, process flanges, FFKM (FFPM) K52 O-ring, process flanges, NBR K53	Process flanges chambered with gaskets	
2x chambered, PTFE  Process flanges, gaskets (instead of standard gaskets FKM (FPM))  O-ring, process flanges, PTFE  O-ring, process flanges, FEP (with silicone core, approved for food)  O-ring, process flanges, FFKM (FFPM)  K52  O-ring, process flanges, NBR  K53	1x chambered, graphite	K40
Process flanges, gaskets (instead of standard gaskets FKM (FPM))  O-ring, process flanges, PTFE  O-ring, process flanges, FEP (with silicone core, approved for food)  O-ring, process flanges, FFKM (FFPM)  K52  O-ring, process flanges, NBR	1x chambered, PTFE	K41
kets FKM (FPM))         O-ring, process flanges, PTFE       K50         O-ring, process flanges, FEP (with silicone core, approved for food)       K51         O-ring, process flanges, FFKM (FFPM)       K52         O-ring, process flanges, NBR       K53	2x chambered, PTFE	K42
O-ring, process flanges, FEP (with silicone core, approved for food)  O-ring, process flanges, FFKM (FFPM)  K52  O-ring, process flanges, NBR  K53		
approved for food) O-ring, process flanges, FFKM (FFPM)  W52 O-ring, process flanges, NBR  K53	O-ring, process flanges, PTFE	K50
O-ring, process flanges, NBR	O-ring, process flanges, FEP (with silicone core, approved for food)	K51
- ·····g, p·············g···, ··=··	O-ring, process flanges, FFKM (FFPM)	K52
O-ring, process flanges, EPDM K54	O-ring, process flanges, NBR	K53
	O-ring, process flanges, EPDM	K54

Options	Order code
Append "-Z" to Article No., add order code and plain text or entry from drop-down list.	
Process flange options	
Process flanges for vertical differential pressure lines (half process flange)	K81
Process flanges (+) - side front	K82
Process flange screws, process flange nuts, material Monel 400/2.4360	K83
Valve 1/4-18 NPT, material same as process flanges	K84
Valve mounted on the side, measured medium: Gas	K85
Oval flange enclosed, gasket PTFE + mounting screws	K86
Valve manifolds	
With mounted valve manifold (3-way) 7MF9411-5BA, PTFE sealing rings, chrome-plated steel screws and pressure test certified in test report (EN 10204-2.2)	U01
With mounted valve manifold (3-way) 7MF9411-5BA, PTFE sealing rings, stainless steel screws and pressure test certified in test report (EN 10204-2.2)	U02
With mounted valve manifold (5-way) 7MF9411-5CA, PTFE sealing rings, chrome-plated steel screws and pressure test certified in test report (EN 10204-2.2)	U03
With mounted valve manifold (5-way) 7MF9411-5CA, PTFE sealing rings, stainless steel screws and pressure test certified in test report (EN 10204-2.2)	U04

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P320/P420

## for differential pressure and flow

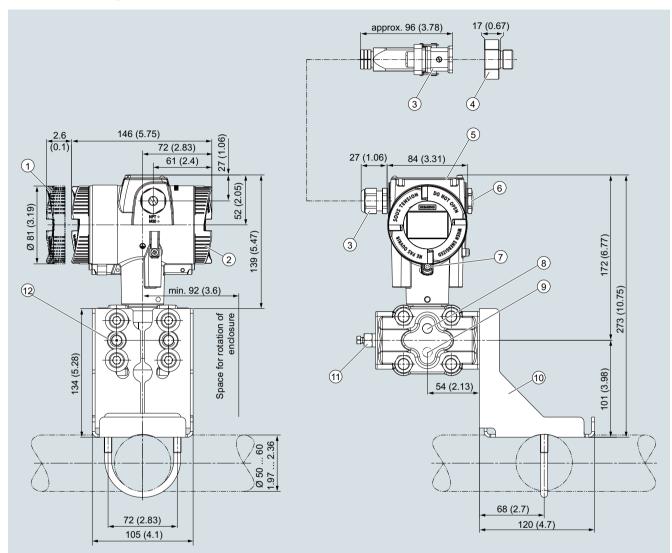
ior differential pressure and now	
Options	Order code
Append "-Z" to Article No., add order code and plain text or entry from drop-down list.	
Device settings	
Measuring span Start of scale value (max. 5 characters), full scale value (max. 5 characters), unit [mbar, bar, kPa, MPa, psi,], example: -0.5 10.5 psi Input field 1 and input field 2: max. 5 characters and numbers only; decimal places as dot (comma is auto- matically converted to dot).  Drop-down list: Pa, MPa, kPa, hPa, bar, mbar, psi, g/cm², kg/cm², kgf/cm², inH₂O, inH₂O (4°C), ftH₂O, mmH₂O, mmH₂O, d⁴°C), mH₂O (4°C), mmH₂O, inH₂O, atm,	Y01
Square-rooted characteristic [VSLN2, MSLN2],	Y02
example: VSLN2	102
Drop-down list: VSLN2, MSLN2	
TAG (on stainless steel plate and device parameters, max. 32 characters) Input field: Free text, max. 32 characters	Y15
Measuring point description (on stainless steel plate and device parameters, max. 32 characters)	Y16
Input field: Free text, max. 32 characters	
TAG short (device parameters, max. 8 characters)	Y17
Input field: Free text, max. 8 characters	
Local display [Pressure, Percent], reference [None, Absolute, Relative], example: Pressure gauge	Y21
Drop-down list: Percent, pressure unit, pressure unit abs., pressure unit gauge	
Local display Scaling with standard units [m³/s, l/s, m, inch,], example 1 5 m³/s	Y22
Input field 1 and input field 2: max. 5 characters and numbers only; decimal places as dot (comma is automatically converted to dot).	
Drop-down list: m, cm, mm, in, ft, m³, I, hI, in³, ft³, yd³, gal, gal (UK), bu, bbl, bbl (US), SCF, Nm³, NI, m³/sec, m³/h, m³/d, l/sec, l/min, l/h, Ml/d, ft³/sec, ft³/h, ft³/d, SCF/min, SCF/h, Nl/h, Nm³/h, gal/sec, gal/min, gal/h, gal/d, Mgal/d, gal (UK)/sec, gal (UK)/min, gal (UK)/h, gal (UK)/d, bbl/sec, bbl/min, bbl/h, bbl/d, kg/sec, kg/min, kg/h, kg/d, g/sec, g/min, g/h, t/min, t/h, t/d, lb/sec, lb/min, lb/h, lb/d, ton/min, ton/h, ton/d, ton (UK)/h, ton (UK)/d.	
Local display Scaling with user-specific units (max. 12 characters), example 1 5 m	Y23
Input field 1 and input field 2: max. 5 characters and numbers only; decimal places as dot (comma is automatically converted to dot).	
Input field 3: Free text, max. 8 characters	
Saturation limits instead of 3.8 20.5 mA, example: 3.8 22.0 mA	Y30
Drop-down list 1: 3.9, 4	
Drop-down list 2: 20.8, 22	
Fault current instead of 3.6 mA [22.5 mA, 22.8 mA]	Y31
Drop-down list: 3.75; 21.75; 22.5; 22.6	Voo
Damping in seconds instead of 2 s (0.0 100.0 s) Input field: max. 4 characters and numbers only; decimal places as dot (comma is automatically converted to dot); min. value = 0; max. value = 100.	Y32
ID number of special version Input field: max. 4 characters and only natural numbers from 0 9999	Y99

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Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

for differential pressure and flow

## Dimensional drawings



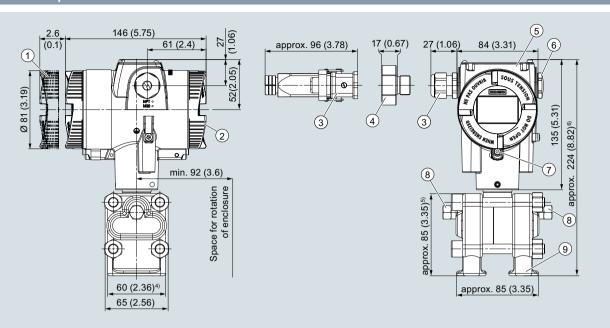
- 1) Electronics side, local display (longer overall length for cover with glass pane)1)
- 2 Connection side
- 3 Electrical connection:
  - M20 x 1,53) screw gland
  - 1/2-14 NPT screw gland
  - Han 7D/Han 8D2)3) device plug
  - M12 device plug<sup>2) 3</sup>
- 4 Harting adapter
- 5 Cover over buttons and nameplate with general information

- 6 Blanking plug
- (7) Safety catch
  - (only for "flameproof enclosure" type of protection)
- (8) Lateral ventilation for liquid measurement (Standard)
- (9) Lateral ventilation for gas measurement (order option K85)
- (10) Mounting bracket (optional)
- (11) Sealing plug with valve (optional)
- 12) Process connection: 1/4-18 NPT (IEC 61518)
- In addition, allow approx. 22 mm (0.87 inch) for the thread length when removing the covers
- Not with "flameproof enclosure" type of protection Not with type of protection "FM + CSA" [is + XP]"

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

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

#### for differential pressure and flow



- (longer overall length for cover with inspection window)<sup>1)</sup>
- (2) Connection side
- (3) Electrical connection:
  - M20 x 1,53) screw gland
  - 1/2-14 NPT screw gland
  - Han 7D/Han 8D<sup>2) 3)</sup> device plug
  - M12 device plug<sup>2) 3</sup>
- 4 Harting adapter

- 5 Cover over buttons and nameplate with general information
- 6 Blanking plug
- Safety catch
   (only for "flameproof enclosure" type of protection)
- 8 Sealing plug with valve (option)
- 9 Process connection: 1/4-18 NPT (IEC 61518)
- 1) In addition, allow approx. 22 mm (0.87 inch) for the thread length when removing the covers
- 2) Not with "flameproof enclosure" type of protection
- 3) Not with type of protection "FM + CSA" [is + XP]"
- <sup>4)</sup> 74 mm (2.9 inch) for PN  $\geq$  420 (MAWP  $\geq$  6092 psi)
- 5) 91 mm (3.6 inch) for PN ≥ 420 (MAWP ≥ 6092 psi)
- 6) 226 mm (8.9 inch) for PN ≥ 420 (MAWP ≥ 6092 psi)

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

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

for level

## Technical specifications

SITRANS P320 / SITRANS P420 for level			
Input			
Measured variable	Level		
Span (infinitely adjustable) and maximum operating pressure (pursuant to Pressure Equipment Directive	Span	Max. permissible operating pressure MAWP (PS)	Maximum permissible test pressure
2014/68/EU)	25 250 mbar	See "Mounting flange"	
	2.5 25 kPa		
	10 100.5 inH <sub>2</sub> O		
	25 600 mbar		
	2.5 60 kPa		
	10 241 inH <sub>2</sub> O		
	53 1600 mbar		
	5.3 160 kPa 21 643 inH <sub>2</sub> O		
	166 5000 mbar		
	16.6 500 kPa		
	2.41 72.5 psi		
Measuring limits	, and the second second		
Low measuring limit  Measuring cell with silicone oil filling  Measuring cell with inert oil  Measuring cell with FDA-compliant oil  Upper measuring limit  Start of scale	-100% of max. measuring range or 30 mbar a/3 kPa a/0.44 psi a depending on the mounting flange -100% of max. measuring range or 30 mbar a/3 kPa a/0.44 psi a depending on the mounting flange -100% of max. measuring range or 100 mbar a/10 kPa a/1.45 psi a 100% of max. span  Between the measuring limits (infinitely adjustable)		
Output	HART		
Output signal	4 20 mA		
<ul> <li>Low saturation limit (infinitely adjustable)</li> <li>High saturation limit (infinitely adjustable)</li> <li>Ripple (without HART communication)</li> </ul>	3.55 mA, factory preset to 3.8 mA 22.8 mA, factory-set to 20.5 mA or optionally 22.0 mA $I_{pp} \le 0.5\%$ of max. output current		
Adjustable damping	0 100 s, continuously adjustable over remote operation		
	0 100 s, in increments of 0.1 s, adjustable over display		
<ul><li>Current transmitter</li><li>Failure signal</li></ul>	3.55 22.8 mA 3.55 22.8 mA		
Load			
Without HART communication	Resistor R [ $\Omega$ ] R = (U <sub>H</sub> - 10.5 V)/22.8 mA, U <sub>H</sub> : Power supply in V		
With HART communication	$R$ = 230 1100 $\Omega$ (HART commu	nicator (handheld))	
	$R = 230 \dots 500 \Omega (SIMATIC PDM)$		
Characteristic curve	<ul> <li>Linearly increasing or linearly decreasing</li> <li>Linear increase or decrease or according to the square root (only for differential pressure and flow)</li> </ul>		
Physical bus	-		
Polarity-independent	-		
Measuring accuracy			
Reference conditions	<ul> <li>According to EN 60770-1</li> <li>Rising characteristic curve</li> <li>Start of scale value 0 bar/kPa/psi</li> <li>Seal diaphragm stainless steel</li> <li>Measuring cell with silicone oil filling</li> <li>Room temperature 25 °C (77 °F)</li> </ul>		
Conformity error at limit point setting, including hysteresis and repeatability			
Measuring span ratio r (spread, Turn-Down)  Linear characteristic	r = maximum measuring span/set measuring span or nominal measuring range		ıring range
<ul> <li>250 mbar/25 kPa/3.6 psi</li> <li>600 mbar/60 kPa/8.7 psi</li> </ul>	r ≤ 5:	≤ 0.125%	
- 1600 mbar/160 kPa/23.21 psi - 5 bar/500 kPa/72.5 psi	5 < r ≤ 10:	$\leq$ (0.007 · r + 0.09)%	

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P320/P420

SITRANS P320 / SITRANS P420 for level	
in % per 28 °C (50 °F)  • SITRANS P320 ≤ (0.025 · r + 0.125)%  - 250 mbar/25 kPa/3.6 psi - 600 mbar/60 kPa/23.21 psi - 5 bar/500 kPa/72.5 psi  • SITRANS P420 ≤ (0.025 · r + 0.0625)%  - 250 mbar/25 kPa/3.6 psi - 5 bar/500 kPa/72.5 psi	
SITRANS P420     250 mbar/25 kPa/3.6 psi     5 bar/500 kPa/72.5 psi     ≤ (0.025 · r + 0.0625)%     ≤ (0.025 · r + 0.0625)%	
- 1600 mbar/160 kPa/23.21 psi	
Effect of static pressure  • on the start of scale  - 250 mbar/25 kPa/3.63 psi ≤ (0.3 · r)% per nominal pressure  - 600 mbar/60 kPa/8.70 psi ≤ (0.15 · r)% per nominal pressure  1.6 bar/160 kPa/23.21 psi 5 bar/500 kPa/72.52 psi  • on the span ≤ (0.1 · r)% per nominal pressure	
Long-term stability at ±30 °C (±54 °F)	
• all measuring cells In 5 years ≤ (0.25 · r)% static pressure max. 70 bar/7 MPa/1015 psi	
Step response time T <sub>63</sub> (without electrical damping) Depending on the installed remote seal	
Influence of mounting position Depends on the fill fluid in the mounting flange	
Effect of auxiliary power (in % per voltage change) 0.005% per 1 V	
Rated conditions	
Temperature of medium  Magazing cell with dilicens oil filling.	
Measuring cell with silicone oil filling  • High-pressure side: See "Mounting flange"  • Low-pressure side: -40 +100 °C (-40 +212 °F)	
Ambient conditions  • Ambient temperature/enclosure  Always consider the assignment of max. permissible operating temperature to max. per	ermissible operat-
ing pressure of the respective flange connection.  - Measuring cell with silicone oil filling - Joisplay  - Storage temperature  - Climatic class in accordance with IEC 60721-3-4  ing pressure of the respective flange connection.  - 40 +85 °C (-40 +185 °F)  - 20 +80 °C (-4 +176 °F)  - 50 +85 °C (-58 +185 °F)  4K4H	ormidalo o operat
Degree of protection     According to IEC 60529     According to NEMA 250      Electromagnetic compatibility  IP66, IP68  Type 4X	
- Emitted interference and interference immunity According to IEC 61326 and NAMUR NE 21	
Vibration resistance  • Reference conditions  • General operating conditions  - Oscillations (sine) IEC 60068-2-6  10 58 Hz, 0.3 mm (0.01 inch)  58 500 Hz, 20 m/s² (65.62 ft/s²)  1 octave/min	
- Continuous shocks (half-sine) IEC 60068-2-27  5 cycles/axis 250 m/s² (820 ft/s²) 6 ms	
2000 shocks/axis  - Noise (digitally controlled) IEC 60068-2-64  10 200 Hz; 1 (m/s²)²/Hz (3.28 (ft/s²)²/Hz)  200 500 Hz; 0.3 (m/s²)²/Hz (0.98 (ft/s²)²/Hz)  4 hours/axle	
<ul> <li>Rated conditions for marine applications</li> <li>IEC 60068-2-6</li> <li>DNVGL-CG-0339, clause 6</li> <li>Lloyd's Register Test Specification Number 1, section 12.</li> <li>Bureau Veritas Pt C, Ch 3, Sec 6, Table 1, No 7</li> <li>2 25 Hz, 1.6 mm (0.06 inch)</li> <li>25 100 Hz, 40 m/s² (131.23 ft/s²)</li> <li>1 octave/min</li> </ul>	

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

SITRANS P320 / SITRANS P420 for level			
Design			
Weight  According to EN (pressure transmitter with mounting flange, without tube)  According to ASME (pressure transmitter with mounting flange, without tube)			
Material  • Wetted parts materials			
- High-pressure side	Seal diaphragm of mounting	Stainless steel, mat. no. 1.4404/316L, Monel 400, mat. no. 2.4360,	
- High-pressure side	flange	Alloy B2, mat. no. 2.4617, Alloy C276, mat. no. 2.4819, Alloy C22, mat. no. 2.4602, tantalum, PTFE, PFA, ECTFE	
	Sealing surface	Smooth according to EN 1092-1, form B1 or ASME B16.5 RF 125 250 AA for stainless steel 316L, EN 2092-1 form B2 or ASME B16.5 RFSF for the remaining materials	
- Sealing material in the process flanges	For standard applications	Viton	
	For underpressure applications on the mounting flange	Copper	
- Low-pressure side	Seal diaphragm	Stainless steel, mat. no. 1.4404/316L	
	Process flanges	Stainless steel, mat. no. 1.4408/316	
	Process flanges screw	Stainless steel ISO 3506-1 A4-70	
	O-ring	FPM (Viton)	
<ul> <li>Non-wetted parts materials</li> <li>Electronics housing</li> </ul>	<ul> <li>Low-copper die-cast aluminum GD-AlSi 12 or stainless steel precision casting, mat. no. 1.4409/ CF-3M</li> <li>Standard: Powder coating with polyurethane Option: 2 coats: Coat 1: epoxy-based; coat 2: Polyurethane</li> <li>Stainless steel type plate (1.4404/316L)</li> </ul>		
Pressure flange screws	Stainless steel ISO 3506-1 A4-70		
Measuring cell filling  • Mounting flange fill fluid	Silicone oil		
Process connection	Silicone oil or other material		
High-pressure side	Flange according to EN and ASME		
Low-pressure side	1/4-18 NPT female thread and flat connection with M10 fastening screw thread in accordance with DIN 19213 (M12 for PN 420 (MWP 6092 psi)) or 7/16-20 UNF in accordance with EN 61518		
Electrical connection	Screw terminals		
	Cable entry via the following screwed glands:  • M20 x 1.5  • ½-14 NPT  • Device plug Han 7D/Han 8D <sup>1)</sup> • Device plug M12		
Displays and controls			
Keys	4 keys for operation directly on the device		
Display	<ul><li>With or without integrated display (optional)</li><li>Cover with inspection window (optional)</li></ul>		
Auxiliary power U <sub>H</sub>			
Terminal voltage on pressure transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically safe mode		
Ripple	$U_{SS} \le 0.2 \text{ V } (47 \dots 125 \text{ Hz})$		
Noise	$U_{eff} \le 1.2 \text{ mV } (0.5 \dots 10 \text{ kHz})$		
Auxiliary power	-		
Separate supply voltage	-		

Pressure transmitters

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#### for level

#### SITRANS P320 / SITRANS P420 for level

#### Certificates and approvals

Classification according to pressure equipment directive (PED 2014/68/EU)

Drinking water

WRAS (England)

• ACS (France) • NSF (USA)

CRN (Canada)

Explosion protection acc. to NEPSI (China) Explosion protection acc. to INMETRO (Brazil)

Explosion protection

· Intrinsic safety "i"

- Marking

- Permissible ambient temperature

- Permissible temperature of measuring medium

- Connection

- Effective internal inductance/capacitance

• Flameproof enclosure "d"

- Marking

- Permissible ambient temperature

- Permissible temperature of measuring medium

- Connection

• Dust explosion protection for zones 20, 21, 22

Marking

- Permissible ambient temperature

- Permissible temperature of measuring medium

- Max. surface temperature

- Connection

• Dust explosion protection for zones 21, 22

- Marking

- Permissible ambient temperature

- Permissible temperature of measuring medium

- Connection

- Effective internal inductance/capacitance

• Type of protection for Zone 2

- Marking

- Permissible ambient temperature "ec"

- Permissible ambient temperature "ic"

- Permissible temperature of measuring medium

- "ec" connection

- "ic" connection

For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)

No.: 1903094 (option E83) No.: 18 ACC LY 277 (option E85) No.: 20180920-MH61350 (option E84)

No.: 0F9863.5C (option E60) No.: GYJ19.1058X (option E27)

No.: BRA-18-GE-0035X (option E25)

II 1/2 G Ex ia/ib IIC T4/T6 Ga/Gb

-40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6 -40 ... +100 °C (-40 ... +212 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6

To certified intrinsically safe circuits with peak values:

 $U_i = 30 \text{ V}, I_i = 101 \text{ mA}, P_i = 760 \text{ mW}$   $U_i = 29 \text{ V}, I_i = 110 \text{ mA}, P_i = 800 \text{ mW}$  $L_i = 0.24 \mu H/C_i = 3.29 nF$ 

Ex II 1/2 G Ex ia/db IIC T4/T6 Ga/Gb

-40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6 -40 ... +100 °C (-40 ... +212 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6

To a circuit with the operating values:

 $U_n = 10.5 \text{ to } 45 \text{ V}, 4 \dots 20 \text{ mA}$ 

Ex II 1D Ex tb IIIC T120 °C Da Ex II 2D Ex tb IIIC T120 °C Db Ex II 3D Ex tc IIIC T120 °C Dc -40 ... +80 °C (-40 ... +176 °F) -40 ... +100 °C (-40 ... +212 °F) 120 °C (248 °F)

To a circuit with the operating values:

 $U_n = 10.5 \text{ to } 45 \text{ V}, 4 \dots 20 \text{ mA}$ 

Ex II 2D Ex ib IIIC T120 °C Db Ex II 3D Ex ic IIIC T120 °C Dc -40 ... +80 °C (-40 ... +176 °F) -40 ... +100 °C (-40 ... +212 °F)

To certified intrinsically safe circuits with the peak values:

 $U_i = 30 \text{ V}, I_i = 101 \text{ mA}, P_i = 760 \text{ mW}$   $U_i = 29 \text{ V}, I_i = 110 \text{ mA}, P_i = 800 \text{ mW}$  $L_i = 0.24 \mu H/C_i = 3.29 nF$ 

Ex II 3G Ex ec IIC T4/T6 Gc Ex II 3G Ex ic IIC T4/T6 Gc

-40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +40 °C (-40 ... +104 °F) temperature class T6 -40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +80 °C (-40 ... +176 °F) temperature class T6 -40 ... +100 °C (-40 ... +212 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6 To a circuit with the operating values:

 $U_n = 10.5 \text{ to } 30 \text{ V}, 4 \dots 20 \text{ mA}$ 

To certified intrinsically safe circuits with the peak values:

 $U_i = 30 \text{ V}, I_i = 101 \text{ mA}, P_i = 760 \text{ mW}$   $U_i = 29 \text{ V}, I_i = 110 \text{ mA}, P_i = 800 \text{ mW}$ 

Effective internal inductance/capacitance:

 $L_i = 0.24 \mu H/C_i = 3.29 nF$ 

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

for level

#### SITRANS P320 / SITRANS P420 for level

• Explosion protection acc. to FM Available soon

- Marking (XP/DIP) or IS; NI; S CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4 ... T6: CL I, DIV 2,

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

Explosion protection according to CSA

Available soon

- Marking (XP/DIP) or (IS)

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

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

NAMUR recommendations

• NE 105

• NE 107

• NE 131

NE 06
 Standardized Electrical Signals and Questions Relating to Engineering Technology

• NE 21 Electromagnetic Compatibility (EMC) of Industrial Process and Laboratory Control Equipment

NE 23
 Extra Low Voltage Circuits with Safe Separation

• NE 43 Standardization of the Signal Level for the Failure Information of Digital Transmitters

NE 53
 Software and Hardware of Field Devices and Signal Processing Devices with Digital Electronics
 NE 80
 The Application of the Pressure Equipment Directive to Process Control Devices

The Application of the Pressure Equipment Directive to Process Control Devices Specifications for Integrating Fieldbus Devices in Engineering Tools for Field Devices

Self-Monitoring and Diagnosis of Field Devices

NAMUR Standard Device - Field Devices for Standard Applications

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

HART communication		
HART	230 1100 Ω	
Protocol	HART 7	
Software for computer	SIMATIC PDM	
Mounting flange		
Nominal diameter	Nominal pressure	
<ul> <li>Acc. to EN 1092-1</li> </ul>		
- DN 80	PN 40	
- DN100	PN 16, PN 40	
<ul> <li>According to ASME B16.5</li> </ul>		
- 3 inch	Class 150, class 300	
- 4 inch	Class 150, class 300	

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

Selection and ordering data	
	Article No.
Pressure transmitters for level	
SITRANS P320	7MF036
SITRANS P420	7MF046
✓ Click on the Article no. for the online configuration in the PIA Life Cycle Portal.	
Communication	
HART, 4 20 mA	0
Measuring cell filling	
Silicone oil	1
Maximum measuring span	
250 mbar (100.5 inH <sub>2</sub> O)	G
600 mbar (241 inH <sub>2</sub> O)	н
1 600 mbar (643 inH <sub>2</sub> O)	M
5000 mbar (72.5 psi)	P
Process connection	
Version for diaphragm seal with mounting thread $^{7}/_{16}$ -20 UNF (IEC 61518): Remote seal 7MF0814 must be ordered separately.	v
Wetted parts materials: Process connection, seal diaphragm	
Stainless steel 316L/1.4404, stainless steel 316L/1.4404, process flange stainless steel 316/1.4408	0
Non-wetted parts materials	
Die-cast aluminum	1
Stainless steel precision casting CF3M/1.4409 similar to 316L	2
Enclosure	
Dual chamber device	5
Type of protection	
Without Ex	A
Intrinsic safety	В
Flameproof enclosure	C
Flameproof enclosure, intrinsic safety	D
Dust protection by enclosure Zone 21/22 (DIP), increased safety Zone 2	L
Dust protection by enclosure Zone 20/21/22 (DIP), increased safety Zone 2	M
Combination of options B, C and L (zone model)	S
Combination of options B, C and M (zone model, Class Division)	Т
Electrical connections/cable entries	
Thread for cable gland: Cable gland must be ordered separately as option (Axx) • 2 x M20 x 1.5 • 2 x ½-14 NPT	F M
Local operation/display	
Without display (cover closed)	0
With display (cover closed)	1
With display (cover with glass pane)	2

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

for level

## Selection and ordering data

Options	Order code
Append " 7" to Article No. and and and an action in	
Append "-Z" to Article No., add order code and plain	
text or entry from drop-down list.	
Cable glands included	
Plastic	A00
Metal	A01
Stainless steel	A02
Stainless steel 316L/1.4404	A03
CMP, for XP devices	A10
CAPRI ADE 4F, CuZn, cable inner diameter 7 12 mm, cable outer diameter 10 16 mm	A11
CAPRI ADE 4F, stainless steel, cable inner diameter 7 12 mm, cable outer diameter 10 16 mm	A12
Device plug Han mounted left	
Device plug Han 7D (plastic, straight)	A30
Device plug Han 7D (plastic, angled)	A31
Device plug Han 7D (metal, straight)	A32
Device plug Han 7D (metal, angled)	A33
Device plug Han 8D (plastic, straight)	A34
Device plug Han 8D (plastic, angled)	A35
Device plug Han 8D (metal, straight)	A36
Device plug Han 8D (metal, angled)	A37
Cable socket included	
Plastic, for device plug Han 7D and Han 8D	A40
Metal, for device plug Han 7D and Han 8D	A41
Device plug M12 mounted left	
Stainless steel, without cable socket	A62
Stainless steel, with cable socket	A63
Cable entry/connector mounting	
2x sealing plugs M20 x 1.5, IP66/68 installed on both sides	A90
2x sealing plugs ½-14 NPT, IP66/68 installed on both sides	A91
Cable gland/connector mounted left	A97
Cable gland/connector mounted on right	A99
Nameplate labeling (standard labeling: English, unit bar)	
German (bar)	B11
French (bar)	B12
Spanish (bar)	B13
Italian (bar)	B14
Chinese (bar)	B15
Russian (bar)	B16
English (psi)	B20
English (Pa)	B30
Chinese (Pa)	B35
Certificates	
Quality test certificate, 5-point factory calibration (IEC 60770-2)	C11
Acceptance certificate (EN 10204-3.1) - Material of pressurized and wetted parts	C12
Test report - NACE (MR 0103-2012 and MR 0175-2009)	C13
Test report (EN 10204-2.2) - Wetted parts	C14
Acceptance certificate (EN 10204-3.1) - PMI test of pressurized and wetted parts	C15
Certificates for functional safety	
Functional safety (IEC 61508) - SIL2/3	C20

Options	Order code
Append "-Z" to Article No., add order code and plain text or entry from drop-down list.	
Device options	
PDF file with device settings	D10
Double layer coating (epoxy resin and polyurethane) 120 μm of enclosure and cover	D20
FVMQ enclosure sealing	D21
IP66/IP68 degree of protection (not for device plugs M12 and Han )	D30
TAG label empty	D40
Without labeling of the measuring range on the TAG label	D41
Stainless steel Ex plate 1.4404/316L	D42
Overvoltage protection up to 6 kV (external)	D71
Adhesive labels on transport packaging (supplied by customer)	D90
General approval without Ex approval	
Worldwide (CE, RCM) except EAC, FM, CSA, KCC	E00
Worldwide (CE, RCM, EAC, FM, CSA, KCC)	E01
CSA (USA and Canada)	E06
EAC	E07
FM	E08
KCC	E09
Export approval CPA (China)	E12
Explosion protection approvals	
ATEX (Europe)	E20
CSA (USA and Canada)	E21
FM (USA and Canada)	E22
IECEx (Worldwide)	E23
EACEx (GOST-R, -K, -B)	E24
INMETRO (Brazil)	E25
KCs (Korea)	E26
NEPSI (China)	E27
PESO (India)	E28
UKR Sepro (Ukraine)	E30
ATEX (Europe) and IECEx (Worldwide)	E47
CSA (Canada) and FM (USA)	E48
ATEX (Europe) and IECEx (Worldwide) + CSA (Canada) and FM (USA)	E49
Marine approvals	
DNV-GL (Det Norske Veritas/Germanischer Lloyd)	E50
LR (Lloyds Register)	E51
BV (Bureau Veritas)	E52
ABS (American Bureau of Shipping)	E53
RMR (Russian Maritime Register)	E55
KR (Korean Register of Shipping)	E56
RINA (Registro Italiano Navale)	E57
CCS (China Classification Society)	E58
Country-specific approvals	
CRN approval Canada (Canadian Registration Number)	E60

Pressure transmitters

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Options	Order code
Append "-Z" to Article No., add order code and plain text or entry from drop-down list.	
Special approvals	
Oxygen application (with inert liquid, max. 100 bar (1 450 psi) at 60° C (140 °F))	E80
Dual seal	E81
WRC / WRAS (drinking water); only with pressure cap O-rings made of EPDM	E83
NSF61 (drinking water)	E84
ACS (drinking water)	E85
Device settings	
- <del></del>	Y01
Measuring span Start of scale value (max. 5 characters), full scale value (max. 5 characters), unit [mbar, bar, kPa, MPa, psi,], example: -0.5 10.5 psi	101
Input field 1 and input field 2: max. 5 characters and numbers only; decimal places as dot (comma is automatically converted to dot).	
Drop-down list: Pa, MPa, kPa, hPa, bar, mbar, psi, g/cm², kg/cm², kgf/cm², inH $_2$ O, inH $_2$ O (4°C), ftH $_2$ O, mmH $_2$ O, mmH $_2$ O (4°C), mH $_2$ O (4°C), mmH $_2$ O, inH $_2$ O, mmH $_2$ O, mmH $_2$ O (4°C), mmH $_2$ O (4°C), mmH $_2$ O, mmH $_2$ O, mmH $_2$ O, mmH $_2$ O (4°C), mmH $_2$ O, mmH $_$	
TAG	Y15
(on stainless steel plate and device parameters, max. 32 characters)	
Input field: Free text, max. 32 characters	
Measuring point description	Y16
(on stainless steel plate and device parameters, max. 32 characters)	
Input field: Free text, max. 32 characters	
TAG short (device parameters, max. 8 characters)	Y17
Input field: Free text, max. 8 characters	
Local display	Y21
[Pressure, Percent], reference [None, Absolute, Relative], example: Pressure gauge	121
Drop-down list: Percent, pressure unit, pressure unit abs., pressure unit gauge	
Local display	Y22
Scaling with standard units [m <sup>3</sup> /s, l/s, m, inch,], example 1 5 m	
Input field 1 and input field 2: max. 5 characters and numbers only; decimal places as dot (comma is automatically converted to dot).	
Drop-down list: m, cm, mm, in, ft, m³, I, hI, in³, ft³, yd³, gal, gal (UK), bu, bbl, bbl (US), SCF, Nm³, NI.	
Local display	Y23
Scaling with user-specific units (max. 12 characters), example 1 5 m	
Input field 1 and input field 2: max. 5 characters and numbers only; decimal places as dot (comma is automatically converted to dot).	
Input field 3: Free text, max. 8 characters	
Saturation limits instead of 3.8 20.5 mA, example: 3.8 22.0 mA	Y30
Drop-down list 1: 3.9, 4	
Drop-down list 2: 20.8, 22	
Fault current instead of 3.6 mA [22.5 mA, 22.8 mA] Drop-down list: 3.75; 21.75; 22.5; 22.6	Y31
Damping in seconds instead of 2 s (0.0 100.0 s)	Y32
Input field: max. 4 characters and numbers only; deci-	132
mal places as dot (comma is automatically converted to dot); min. value = 0; max. value = 100.	
ID number of special version	Y99
Input field: max. 4 characters and only natural numbers from 0 9999	

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

Selection and Orde	ring data	Article No.	Order code
Diaphragm seal		7MF0814-	
Flange type design, SITRANS P transmitt 7MF03/7MF04 (or Scope of delivery: 1	03-0	1	
	e No. for the online con- IA Life Cycle Portal.		
Connecting standar Nominal diameter DN 40	rd EN 1092-1 Nominal pressure PN 10/16/25/40 PN 63/100 PN 160	0 D D 0 D F 0 D G	
DN 50	PN 10/16/25/40 PN 63/100 PN 160	0 E D 0 E E 0 E F	
DN 80	PN 10/16/25/40 PN 100	0 G D 0 G F	
DN 100	PN 10/16 PN 25/40	0 H B 0 H D	
DN 125	PN 16 PN 40	0 J B	
Connecting standar Nominal diameter	rd ASME B16.5 Nominal pressure		
1½ inch	class 150 class 300 class 400/600 class 900/1500	1 L A 1 L B 1 L D 1 L F	
2 inch	class 150 class 300 class 400/600 class 900/1500	1 M A 1 M B 1 M D 1 M F	
3 inch	class 150 class 300 class 600 class 1500	1 P A 1 P B 1 P D 1 P F	
4 inch	class 150 class 300 class 400 class 1500	1 Q A 1 Q B 1 Q D 1 Q F	
5 inch	class 150 class 300 class 400	1 R A 1 R B 1 R C	
Connecting standa			
<b>Nominal diameter</b> DN 50	Nominal pressure 10K 20k 50K	2 E S 2 E T 2 E U	
DN 80	10K 20k 50K	2 G S 2 G T 2 G U	
DN 100	10K 20k 50K	2 H S 2 H T 2 H U	
Other version Add Order code and	I plain toyt	9 A A	H 1 Y

Selection and Ordering data	Article No.	Order code
Diaphragm seal	7MF0814-	
Flange type design, direct connected to a SITRANS P transmitter for level 7MF03/7MF04 (order separately) Scope of delivery: 1 off	0 3 - 0	
Filling liquid Silicone oil M5 Silicone oil M50 High-temperature oil Halocarbon oil Food-grade oil (FDA listed) Other version, add Order code and plain text: Filling liquid:	A B C D E Z	P 1 Y
Wetted parts materials		
Stainless steel 316L  • Without coating  • With PFA coating  • With PFFE coating  • With ECTFFE coating  Monel 400, 2.4360  Hastelloy C276, 2.4819  Tantalum  Titanium, 3.7035  Nickel 201  Diaphragm Duplex, 1.4462  Diaphragm plus flange Duplex, 1.4462  Stainless steel 316L with gold coating  Hastelloy C4, 2.4610  Hastelloy C22, 2.4602  Other version	G J K L N G G S U V	) : 0 : : : : : ( : 0 10
Add Order code and plain text		
Extension length  • without  • 50 mm (2")  • 100 mm (4")  • 150 mm (6")  • 200 mm (8")  • 250 mm (10")  Other version	Z	0 1 2 3 4 5
Add Order code and plain text		

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

IOI IEVEI								
Selection and Orderi	Selection and Ordering data							
Diaphragm seal	Diaphragm seal							
Flange type design, d SITRANS P transmitter 7MF03/7MF04 (orde Scope of delivery: 1 or	0 3 - 0							
Customer-specific ex	tension length							
Wetted parts stainless								
Range	Standard length							
20 50 mm (0.79 1.97")	50 mm (1.97")	A	.1					
51 100 mm (2.01 3.94")	100 mm (3.94")		. 2					
101 150 mm (3.98 5.91")	150 mm (5.91")		. 3					
151 200 mm (5.94 7.87")	200 mm (7.87")		. 4					
201 250 mm (7.91 9.84")	250 mm (9.84")	A	. 5					
Wetted parts stainless coating	steel with ECTFE							
Range	Standard length							
20 50 mm (0.79 1.97")	50 mm (1.97")	F	1					
51 100 mm (2.01 3.94")	100 mm (3.94")	F	2					
101 150 mm (3.98 5.91")	150 mm (5.91")	F	3					
151 200 mm (5.94 7.87")	200 mm (7.87")	F	4					
201 250 mm (7.91 9.84")	250 mm (9.84")	F	5					
Wetted parts stainless								
Range								
20 50 mm (0.79 1.97")	50 mm (1.97")	D	1					
51 100 mm (2.01 3.94")	100 mm (3.94")	D	2					
101 150 mm (3.98 5.91")	150 mm (5.91")	D	3					
151 200 mm (5.94 7.87")	200 mm (7.87")	D	4					
201 250 mm (7.91 9.84")	250 mm (9.84")	D	5					
Wetted parts Monel 4	I 100							
Range	Standard length							
20 50 mm (0.79 1.97")	50 mm (1.97")	G	1					
51 100 mm (2.01 3.94")	100 mm (3.94")	G	i 2					
101 150 mm (3.98 5.91")	150 mm (5.91")	G	3					
151 200 mm (5.94 7.87")	200 mm (7.87")	G	i 4					
Wetted parts Hastello	l by C276							
Range	Standard length							
20 50 mm (0.79 1.97")	50 mm (1.97")	J	1					
51 100 mm (2.01 3.94")	100 mm (3.94")	J	2					
101 150 mm (3.98 5.91")	150 mm (5.91")	J	3					
151 200 mm (5.94 7.87")	200 mm (7.87")	J	4					
	T.							

Selection and Orderi	Article No.	Order code	
Diaphragm seal	7MF0814-		
Flange type design, d SITRANS P transmitte 7MF03/7MF04 (ord- Scope of delivery: 1 o	03-0	1	
Wetted parts Tantalu			
Range	Standard length		
20 50 mm (0.79 1.97")	50 mm (1.97")	H	(1
51 100 mm (2.01 3.94")	100 mm (3.94")	H	(2
101 150 mm (3.98 5.91")		(3	
151 200 mm (5.94 7.87")	200 mm (7.87")	,	(4

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

Selection and Ordering data	Order code
Further designs	
Add "-Z" to Article No. and specify Order code.	
Factory certificates	
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11
Inspection certificate to EN 10204-3.1 - material of body and wetted parts	C12
Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009) (only together with seal diaphragm made of Hastelloy and stainless steel)	C13
Inspection certificate (EN 10204-3.1) - PMI test of pressure containing and wetted parts	C15
Certificate of FDA-approved fill oil (to EN10204-2.2)	C17
Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511 (Includes SIL conformity declaration)	C20
Accessories Spark arrestor (for differential pressure and level transmitter)	D62
Low-temperature version (for Silicon Oil M50 only)	D67
Negative pressure services	
Certification acc. to NACE MR-0103	D83 D88
Includes acceptance test certificate 3.1 acc. to EN 10204 (only for wetted parts made of stainless steel 1.4404/316L and Hastelloy C276)	D00
General product approvals without explosion proof approvals	
Oil-and grease-free cleaned version (for O <sub>2</sub> -appl. including certificate EN10204-2.2 (only with fill fluid Halocarbon oil max. temperature 60 °C and max. pressure 50 bar)	E80
Oil-and grease-free cleaned version (not for ${\rm O_2}$ -appl. including certificate EN10204-2.2 (only with fill fluid Halocarbon oil)	E87
Sealing surface	
Sealing surface smooth, form B2/EN1092-1 resp. RFSF/ANSI B16.5 (wetted parts 316L only) Sealing surface groove to EN1092-1, form D (instead of sealing surface B1, wetted parts 316L only)	M50 M54
Sealing surface RJF (groove) to ASME B16.5 (instead of sealing surface RF 125250AA, wetted	M64
parts 316L only) Sealing surface with tongue to EN1092-1, form C	
(wetted parts 316L only)  • DN 40  • DN 50  • DN 80  • DN 100  • DN 125	M71 M72 M73 M74 M75
Sealing surface with spigot to EN1092-1, form E (wetted parts 316L only)  • DN 40  • DN 50  • DN 80  • DN 100  • DN 125	M77 M78 M79 M80 M81
Sealing surface with recess to EN1092-1, form F (wetted parts 316L only)  DN 50  DN 80  DN 100  DN 125	M84 M85 M86 M87

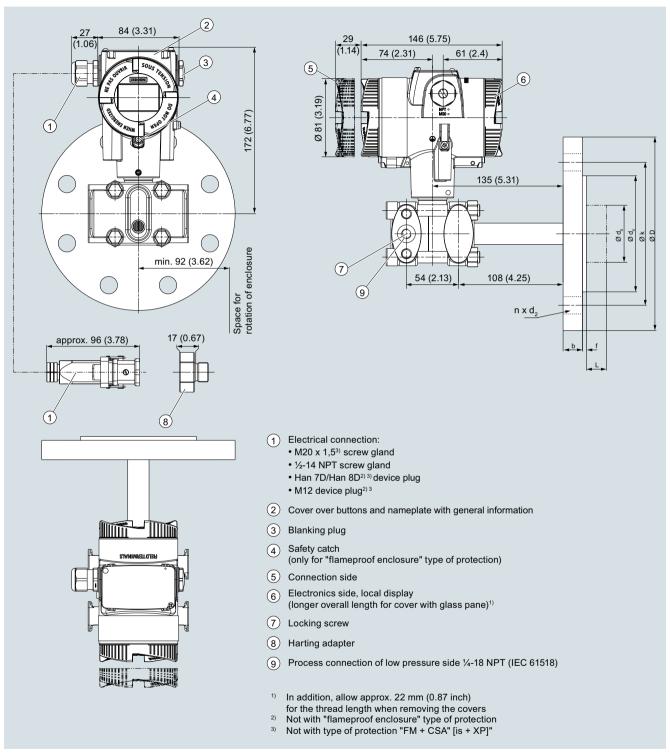
Selection and Ordering data	Order code
Further designs	
Add "-Z" to Article No. and specify Order code.	
Remote seal connection  Elongated pipe, 150 mm (5.9 inch) instead of 100 mm (3.9 inch)  Elongated pipe, 200 mm (7.9 inch) instead of 100 mm (3.9 inch)	S05 S06
Customer-specific tube length  Customer-specific tube length (specify in plain text)	Y44
Specification of process conditions <sup>1)</sup>	
Ambient temperature range	
• -10 +50 °C (14 +122 °F) preset • -40 +50 °C (-40 +122 °F) • -10 +85 °C (14 +185 °F) Process temperature min °C/(°F)/max °C/(°F)	D66 D67 D68 Y50

See also "Specification of process conditions for selection and ordering data", page 1/338.

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

for level

#### Dimensional drawings



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

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

for level

## Connection to EN 1092-1

Nominal diameter	Nominal pressure	b	D	d <sub>2</sub>	d <sub>4</sub>	<b>d</b> <sub>5</sub>	d <sub>M</sub> with tube	d <sub>M</sub> without tube	f	k	n	L
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
DN 40	PN 10/16/ 25/40	16	150	18	88	38	30	42	2	110	4	0, 50, 100, 150 or 200
	PN 63/100	24	170	22	88	38	30	42	2	125	4	
	PN 160	26	170	22	88	38	30	42	2	125	4	
DN 50	PN 10/16/ 25/40	18	165	18	102	48.3	40	51	2	125	4	=
	PN 63/100	26	195	26	102	48.3	40	51	2	145	4	
	PN 160	28	195	26	102	48.3	40	51	2	145	4	
DN 80	PN 10/16/ 25/40	22	200	18	138	76	65	85	2	160	8	-
	PN 100	30	230	26	138	76	65	85	2	180	8	
DN 100	PN 10/16	18	220	18	158	94	85	85	2	180	8	=
	PN 25/40	22	235	22	162	94	85	85	2	190	8	
DN 125	PN 16	20	250	18	188	127	85	116	2	210	8	
	PN 40	24	270	26	188	127	85	116	2	220	8	

## Connection according to ASME B16.5

Nominal diameter	Nominal pressure	b	D	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub> with tube	d <sub>M</sub> without tube	f	k	n	L	
	lb/sq.in.	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)		inch (mm)	
1½ inch	150	0.63 (15.9)	4.92 (125)	0.63 (15.9)	2.87 (73)	1.5 (38)	1.18 (30)	1.42 (36)	0.08 (2)	3.87 (98.4)			0, 2, 3.94,
	300	0.75 (19.1)	6.10 (155)	0.87 (22.2)	2.87 (73)	1.5 (38)	1.18 (30)	1.42 (36)	0.08 (2)	4.5 (114.3)	4	5.94 or 7.87 (0, 50,	
	400/600	0.88 (22.3)	6.10 (155)	0.87 (22.2)	2.87 (73)	1.5 (38)	1.18 (30)	1.42 (36)	0.28 (7)	4.5 (114.3)	4		
	900/1500	1.25 (31.8)	7.09 (180)	1.13 (28.6)	2.87 (73)	1.5 (38)	1.18 (30)	1.42 (36)	0.28 (7)	4.87 (123.8)	4	100, 150 o 200)	
2 inch	150	0.69 (17.5)	5.91 (150)	0.75 (19.1)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.08 (2)	4.75 (120.7)	4		
	300	0.81 (20.7)	6.5 (165)	0.75 (19.1)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.08 (2)	5 (127)	8		
	400/600	1.00 (25.4)	6.5 (165)	0.75 (19.1)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.28 (7)	5 (127)			
	900/1500	1.5 (38.1)	8.46 (215)	1.00 (25.4)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.28 (7)	6.5 (165.1)	8		
3 inch	150	0.88 (22.3)	7.48 (190)	0.75 (19.1)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.08 (2)	6 (152.4)	4	_	
	300	1.06 (27)	8.27 (210)	0.87 (22.2)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.08 (2)	6.63 (168.3)	8		
	600	1.23 (31.8)	8.27 (210)	0.87 (22.2)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.28 (7)	6.63 (168.3)	8	) 8	
	1500	1.88 (47.7)	10.43 (265)	1.25 (31.8)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.28 (7)	8 (203.2)	8		
4 inch	150	0.88 (22.3)	9.06 (230)	0.75 (19.1)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.08 (2)	7.5 (190.5)	8	_	
	300	1.19 (30.2)	10.04 (255)	0.87 (22.2)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.08 (2)	7.87 (200)			
	400	1.38 (35)	10.04 (255)	0.87 (22.2)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.28 (7)	7.87 (200)			
	1500	2.13 (54)	12.20 (310)	1.37 (34.9)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.28 (7)	9.5 (241.3)	8		
5 inch	150	0.88 (22.3)	10.04 (255)	0.87 (22.2)	7.31 (185.7)	5 (127)	4.57 (116)	4.57 (116)	0.08 (2)	8.5 (215.9)	8		
	300	1.31 (33.4)	11.02 (280)	0.87 (22.2)	7.31 (185.7)	5 (127)	4.57 (116)	4.57 (116)	0.08 (2)	9.25 (235)	8		
	400	1.50 (38.1)	11.02 (280)	0.87 (22.2)	7.31 (185.7)	5 (127)	4.57 (116)	4.57 (116)	0.28 (7)	9.25 (235)	8		

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

### for level

Process connection according to J.I.S

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

d: Internal diameter of seal according to DIN 2690

 $d_{M}$ : Effective diaphragm diameter

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P.DS III

Technical description

#### Overview



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

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

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

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

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

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

#### Benefits

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

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

#### Application

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

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

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

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

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

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Pressure transmitters

for applications with advanced requirements (Advanced) 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: 0.01 bar to 700 bar (0.15 psi to 10153 psi)

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

#### Pressure transmitters for absolute pressure

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

Span (infinitely adjustable)

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

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

There are two series:

- · Gauge pressure series
- Differential pressure series

#### Pressure transmitters for differential pressure and flow

Measured variables:

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

Span (infinitely adjustable)

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

Nominal measuring range

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

#### Pressure transmitters for level

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

Span (infinitely adjustable)

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

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

Nominal diameter of the mounting flange

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

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

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

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

#### Design



Front view

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

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

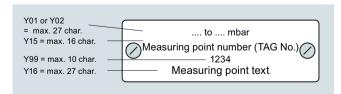
The approval label is located on the opposite side.

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

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

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

#### Example for an attached measuring point label

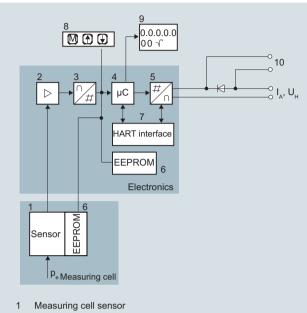


Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P.DS III

**Technical description** 

#### Function

#### Operation of electronics with HART communication



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

#### Function diagram of electronics

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

The diode circuit (10) protects against incorrect polarity.

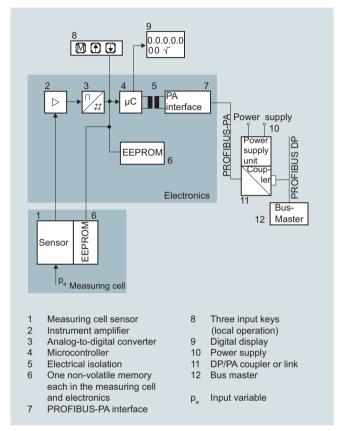
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The one memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced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

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

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

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

#### Operation of electronics with PROFIBUS PA communication



#### Function diagram of electronics

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

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

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

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

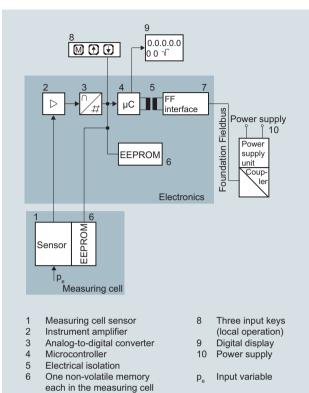
Pressure transmitters

for applications with advanced requirements (Advanced)

SITRANS P DS III

#### Technical description

## Operation of electronics with FOUNDATION Fieldbus communication



Function diagram of electronics

and electronics FF interface

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).

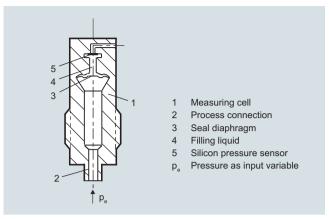
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Using the three input buttons (8) you can parameterize the pressure transmitter directly at the measuring point. The input buttons can also be used to control the view of the results, the error messages and the operating modes on the display (9).

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

#### Mode of operation of the measuring cells

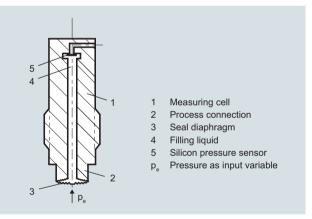
Measuring cell for gauge pressure



Measuring cell for gauge pressure, function diagram

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

Measuring cell for gauge pressure with front-flush diaphragm



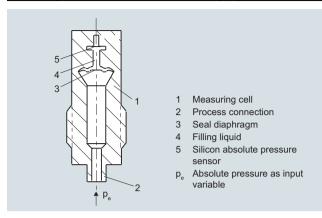
Measuring cell for gauge pressure, with front-flush diaphragm for paper industry, function diagram

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

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

**Technical description** 

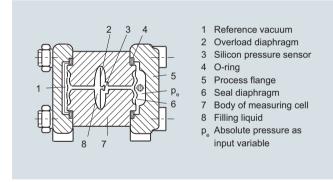
Measuring cell for absolute pressure from gauge pressure series



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



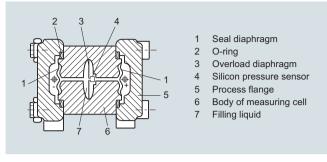
Measuring cell for absolute pressure from differential pressure series, function diagram

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  $p_e$  and the reference vacuum (1) on the low-pressure side of the measuring cell flexes the measuring diaphragm. This changes the resistance of the four piezo-resistors fitted in the diaphragm in a bridge circuit. This change in resistance results in a bridge output voltage proportional to the absolute pressure.

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

Measuring cell for differential pressure and flow



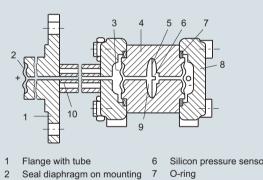
Measuring cell for differential pressure and flow, function diagram

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

The measuring diaphragm is flexed by the applied differential pressure. This changes the resistance of the four piezo-resistors fitted in the diaphragm in a bridge circuit. This change in resistance results in a bridge output voltage proportional to the differential pressure.

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

#### Measuring cell for level



- Seal diaphragm 3
- Body of measuring cell
- Overload diaphragm
- Silicon pressure sensor
- Process flange
- Filling liquid
- 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

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

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

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

Update April 2020

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P DS III

#### **Technical description**

#### Parameterization DS III

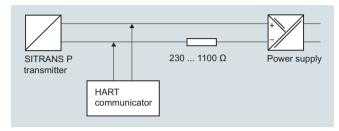
Depending on the version, there are a range of options for parameterizing the pressure transmitter and for setting or scanning the parameters.

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

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

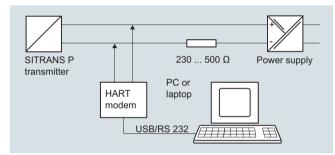
#### Parameterization using HART

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



Communication between a HART Communicator and a pressure transmitter

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



HART communication between a PC communicator and a pressure transmitter

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

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

#### Adjustable parameters, DS III with HART

Adjustable parameters, DS III wil	<u> </u>	
Parameters	Input keys (DS III HART)	HART communication
Start of scale	X	X
Full-scale value	X	X
Electrical damping	X	X
Start-of-scale value without application of a pressure ("Blind setting")	Х	Х
Full-scale value without application of a pressure ("Blind setting")	Х	X
Zero adjustment	X	X
current transmitter	X	X
Fault current	X	X
Disabling of buttons, write protection	Х	x <sup>1)</sup>
Type of dimension and actual dimension	Х	Х
Characteristic (linear / square-rooted)	x <sup>2)</sup>	x <sup>2)</sup>
Input of characteristic		X
Freely-programmable LCD		X
Diagnostic functions		X

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

2) Only differential pressure

#### Diagnostic functions for DS III with HART

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

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

Table style: Technical specifications 2

Physical variable	Physical dimensions
Pressure (setting can also be made in the factory)	Pa, MPa, kPa, bar, mbar, torr, atm, psi, g/cm², kg/cm², inH <sub>2</sub> O, inH <sub>2</sub> O (4 °C), mmH <sub>2</sub> O, ftH <sub>2</sub> O (20 °C), inHg, mmHg
Level (height data)	m, cm, mm, ft, in
Volume	m <sup>3</sup> , dm <sup>3</sup> , hl, yd <sup>3</sup> , ft <sup>3</sup> , in <sup>3</sup> , US gallon, lmp. gallon, bushel, barrel, barrel liquid
Mass	g, kg, t, lb, Ston, Lton, oz
volume flow	m³/d, m³/h, m³/s, l/min, l/s, ft³/d, ft³/min, ft³/s, US gallon/min, US gallon/s
Mass flow	t/d, t/h, t/min, kg/d, kg/h, kg/min, kg/s, g/d, g/h, g/min, g/s, lb/d, lb/h, lb/min, lb/s, LTon/d, LTon/h, STon/d, STon/h, STon/min
Temperature	K, °C, °F, °R
Miscellaneous	%, mA

#### Parameterization through PROFIBUS PA interface

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

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

#### Parameterization through FOUNDATION Fieldbus interface

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

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

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

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

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

**Technical description** 

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

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

Physical dimensions available for the display

MPa, kPa, Pa, bar, mbar, torr, atm, psi, g/cm², kg/cm², mmH <sub>2</sub> O, mmH <sub>2</sub> O (4 °C), inH <sub>2</sub> O, inH <sub>2</sub> O (4 °C), ftH <sub>2</sub> O (20 °C), mmH <sub>3</sub> , inH <sub>4</sub>
m, cm, mm, ft, in, yd
m <sup>3</sup> , dm <sup>3</sup> , hl, yd <sup>3</sup> , ft <sup>3</sup> , in <sup>3</sup> , US gallon, lmp. gallon, bushel, barrel, barrel liquid
m³/s, m³/min, m³/h, m³/d, l/s, l/min, l/h, l/d, Ml/d, ft³/s, ft³/min, ft³/h, ft³/d, US gallon/s, US gallon/min, US gallon/h, US gallon/d, bbl/s, bbl/min, bbl/h, bbl/d
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
t, kg, g, lb, oz, LTon, STon
K, °C, °F, °R
%

Pressure transmitters for applications with advanced requirement

for applications with advanced requirements (Advanced) SITRANS P DS III

## for gauge pressure

Technical specifications						
SITRANS P, DS III series for gauge pressure						
Input						
Measured variable	Gauge pressure					
Span (fully adjustable) or measuring range, max. operating pressure (in accordance with 2014/68/EU Pressure Equipment Directive) and max. test pressure (pursuant to DIN 16086)	HART PROFIBUS PA/ FOUNDATION Fieldbus					
(for oxygen measurement, max. 100 bar/10 MPa/1450 psi and 60 °C (140 °F) ambient temperature/process temperature)	Span	Nominal measuring range	Max. operating pressure MAWP (PS)	Max. perm. test pressure		
	8.3 250 mbar 0.83 25 kPa 0.12 3.6 psi	250 mbar 25 kPa 3.6 psi	4 bar 400 kPa 58 psi	6 bar 600 kPa 87 psi		
	0.01 1 bar 1 100 kPa 0.15 14.5 psi	1 bar 100 kPa 14.5 psi	4 bar 400 kPa 58 psi	6 bar 600 kPa 87 psi		
	0.04 4 bar 4 400 kPa 0.58 58 psi	4 bar 400 kPa 58 psi	7 bar 0.7 MPa 102 psi	10 bar 1 MPa 145 psi		
	0.16 16 bar 16 1600 kPa 2.3 232 psi	16 bar 1600 kPa 232 psi	21 bar 2.1 MPa 305 psi	32 bar 3.2 MPa 464 psi		
	0.63 63 bar 63 6300 kPa 9.1 914 psi	63 bar 6300 kPa 914 psi	67 bar 6.7 MPa 972 psi	100 bar 10 MPa 1450 psi		
	1.6 160 bar 0.16 16 MPa 23 2321 psi	160 bar 16 MPa 2321 psi	167 bar 16.7 MPa 2422 psi	250 bar 25 MPa 3626 psi		
	4 400 bar 0.4 40 MPa 58 5802 psi	400 bar 40 MPa 5802 psi	400 bar 40 MPa 5802 psi	600 bar 60 MPa 8702 psi		
	7 700 bar 0.7 70 MPa 102 10153 psi	700 bar 70 MPa 10153 psi	800 bar 80 MPa 11603 psi	800 bar 80 MPa 11603 psi		
Lower measuring limit (for 250mbar/25 kPa/3.6 psi measuring cells, the lower measuring limit is 750 mbar a/75 kPa a/10.8 psi a. The measuring cell is vacuum-resistant upt to 30 mbar a/3 kPa a/0.44 psi a.)			'	'		
Measuring cell with silicone oil filling	30 mbar a/3 kPa a/0	.44 psi a				
Measuring cell with inert filling liquid	30 mbar a/3 kPa a/0	.44 psi a				
Upper measuring limit		(max. 100 bar/10 MPa e/process temperature		measurement)		
Output	HART		PROFIBUS PA/FOU	NDATION Fieldbus		
Output signal	4 20 mA		Digital PROFIBUS PA and FOUNDATION Fieldbus signal			
• Lower limit (infinitely adjustable)	3.55 mA, factory pre	eset to 3.84 mA	=			
Upper limit (infinitely adjustable)	23 mA, factory prese optionally set to 22.0		-			

Output	HART	PROFIBUS PA/FOUNDATION Fieldbus		
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	$R_{\rm B} \leq (U_{\rm H}$ - 10.5 V)/0.023 A in $\Omega$ , $U_{\rm H}$ : Power supply in V			
• With HART	$R_{\rm B}$ = 230 500 $\Omega$ (SIMATIC PDM) bzw. $R_{\rm B}$ = 230 1100 $\Omega$ (HART-Communicator)	-		
Physical bus	-	IEC 61158-2		
Protection against polarity reversal	Protected against short-circuit and polarity reversal.  Each connection against the other with max. supply voltage.			
Electrical damping (step width 0.1 s)	Set to 2 s (0 100 s)			

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Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

for gauge pressure

#### SITRANS P, DS III series for gauge pressure

#### Measuring accuracy

Reference conditions

Measuring span ratio r (spread, Turn-Down)

Error in measurement at limit setting incl. hysteresis and reproducibility

- · Linear characteristic
- 250 mbar/25 kPa/3.6 psi

1 bar/100 kPa/14.5 psi
 4 bar/400 kPa/58 psi
 16 bar/1.6 MPa/232 psi
 63 bar/6.3 MPa/914 psi
 160 bar/16 MPa/2321 psi

 400 bar/40 MPa/5802 psi 700 bar/70 MPa/10152 psi

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

- 250 mbar/25 kPa/3.6 psi
- 1 bar/100 kPa/14.5 psi
- 4 bar/400 kPa/58 psi
   16 bar/1.6 MPa/232 psi
   63 bar/6.3 MPa/914 psi
   160 bar/16 MPa/2321 psi
   400 bar/40 MPa/5802 psi
- 700 bar/70 MPa/10152 psi

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

- 250 mbar/25 kPa/3.6 psi
- 1 bar/100 kPa/14.5 psi
   4 bar/400 kPa/58 psi
- 16 bar/1.6 MPa/232 psi
   63 bar/6.3 MPa/914 psi
   160 bar/16 MPa/2321 psi
   400 bar/40 MPa/5802 psi
- 700 bar/70 MPa/10152 psi

Effect of mounting position

Effect of auxiliary power supply (in percent per change in voltage)

Measuring value resolution for PROFIBUS PA and FOUNDATION Fieldbus

Acc. to IEC 60770-1

- Increasing characteristic
- Start-of-scale value 0 bar/kPa/psi
- Stainless steel seal diaphragm
- Silicone oil filling
- Room temperature 25 °C (77 °F)

r = max. measuring span/set measuring span or nom. pressure range

 $r \le 1.25$ :  $\le 0.065$  %

 $1.25 < r \le 30$ :  $\le (0.008 \cdot r + 0.055)$  %

 $r \le 5$ :  $\le 0.065 \%$ 

 $5 < r \le 100$ :  $\le (0.004 \cdot r + 0.045)$  %

 $r \le 3$ :  $\le 0.075$  %

 $3 < r \le 10$ :  $\le (0.0029 \cdot r + 0.071) \%$  $10 < r \le 100$ :  $\le (0.005 \cdot r + 0.05) \%$ 

 $\leq$  (0.16 · r + 0.1) %

 $\leq$  (0.05 · r + 0.1) %

 $\leq$  (0.025 · r + 0.125) %

 $\leq$  (0.08 · r + 0.16) %

≤ (0.25 · r) % per year

≤ (0.25 · r) % in 5 years

 $\leq$  (0.125 · r) % in 5 years

≤ (0.25 · r) % in 5 years

≤ 0.05 mbar/0.005 kPa/0.000725 psi per 10° inclination

(zero point correction is possible with position error compensation)

0.005 % per 1 V

3 · 10<sup>-5</sup> of nominal measuring range

Pressure transmitters

for applications with advanced requirements (Advanced)

SITRANS P DS III

## for gauge pressure

for gauge pressure					
SITRANS P, DS III series for gauge pressure	SITRANS P, DS III series for gauge pressure				
Rated conditions					
Degree of protection					
• according to EN 60529	IP66 (optional IP66/IP68)				
• according to NEMA 250	Type 4X				
Temperature of medium					
Measuring cell with silicone oil filling	-40 +100 °C (-40 +212 °F)				
Measuring cell with inert filling liquid					
- 1 bar/100 kPa/14.5 psi 4 bar/400 kPa/58 psi 16 bar/1.6 MPa/232 psi 63 bar/6.3 MPa/914 psi	-40 +85 °C (-40 +185 °F)				
- 160 bar/16 MPa/2321 psi 400 bar/40 MPa/5802 psi 700 bar/70 MPa/10152 psi	-20 +100 °C (-4 +212 °F)				
<ul> <li>Measuring cell with Neobee fill fluid (FDA-compliant)</li> </ul>	-10 +100 °C (+14 +212 °F)				
<ul> <li>In conjunction with dust explosion protection</li> </ul>	-20 +60 °C (-4 +140 °F)				
Ambient conditions					
<ul> <li>Ambient temperature (silicone oil and inert oil)</li> </ul>					
- Transmitter	-40 +85 °C (-40 +185 °F)				
- Display readable	-30 +85 °C (-22 +185 °F)				
<ul> <li>Ambient temperature (Neobee fill fluid)</li> </ul>					
- Transmitter	-10 +85 °C (+14 +185 °F)				
Storage temperature	-50 +85 °C (-58 +185 °F)				
Climatic class					
- Condensation	Relative humidity 0 100 %/Condensation	n permissible, suitable for use in the tropics			
<ul> <li>Electromagnetic Compatibility</li> </ul>					
- Emitted interference and interference immunity	Acc. to IEC 61326 and NAMUR NE 21				
Design					
Weight (without options)	Die-cast aluminum: $\approx$ 2.0 kg ( $\approx$ 4.4 lb) Stainless steel precision casting: $\approx$ 4.6 kg ( $\approx$ 10.1 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 H	astelloy C4, mat. no. 2.4602			
Oval flange	Stainless steel, mat. no. 1.4404/316L				
Seal diaphragm	Stainless steel, mat. no. 1.4404/316L or H	-			
Measuring cell filling	Silicone oil or inert filling liquid (maximum 100 bar (1450 psi) at 60 °C (140 °F))	value with oxygen measurement pressure			
Process connection	Connection shank G½B to DIN EN 837-1, (PN 160 (MAWP 2320 psi)) to DIN 19213 to IEC 61518/DIN EN 61518	female thread ½ -14 NPT or oval flange with mounting thread M10 or <sup>7</sup> / <sub>16</sub> -20 UNF			
Material of mounting bracket					
• Steel	Sheet-steel, Mat. No. 1.0330, chrome-plat	red			
• Stainless steel 304	Sheet stainless steel, mat. no. 1.4301 (SS	304)			
Stainless steel 316L	Sheet stainless steel, mat. no. 1.4404 (SS	316L)			
Power supply $ extstyle{m{U}}_{\!\! o}$	HART	PROFIBUS PA/FOUNDATION Fieldbus			
Terminal voltage on transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically-safe mode	-			
Power supply	-	Supplied through bus			
Separate 24 V power supply	- Not necessary				
Bus voltage					
• Not Ex	- 9 32 V				
With intrinsically-safe operation	-	9 24 V			
Current consumption					
Basic current (max.)	-	12.5 mA			
<ul> <li>Start-up current ≤ basic current</li> </ul>	-	Yes			
Max. current in event of fault	-	15.5 mA			
Fault disconnection electronics (FDE) available	-	Yes			

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

for gauge pressure

SITRANS P, DS III series for gauge pressure	HART	PROFIBUS PA/ FOUNDATION Fieldbus	
Certificates and approvals			
Classification according to PED 2014/68/EU	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)		
Explosion protection			
• Intrinsic safety "i"	PTB 13 ATEX 2007 X		
- Marking	Ex II 1/2 G Ex ia/ib IIC T4/T5/T6 Ga/Gb		
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperatu -40 +70 °C (-40 +158 °F) temperatu -40 +60 °C (-40 +140 °F) temperatu	ure class T5;	
- Connection	To certified intrinsically-safe circuits with peak values: $U_{\rm i}$ = 30 V, $I_{\rm i}$ = 100 mA, $P_{\rm i}$ = 750 mW; $R_{\rm i}$ = 300 $\Omega$	FISCO supply unit: $U_0$ = 17.5 V, $I_0$ = 380 mA, $P_0$ = 5.32 W Linear barrier: $U_0$ = 24 V, $I_0$ = 174 mA, $P_0$ = 1 W	
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4  {\rm mH},  C_{\rm i} = 6  {\rm nF}$	$L_{i} = 7 \mu H, C_{i} = 1.1 nF$	
• Explosion-proof "d"	PTB 99 ATEX 1160		
- Marking	Ex II 1/2 G Ex d IIC T4/T6 Gb		
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperatu -40 +60 °C (-40 +140 °F) temperatu		
- Connection	To circuits with values: $U_{\rm H} = 10.5 \dots 45 \text{ V DC}$	To circuits with values: $U_{\rm H}$ = 9 32 V DC	
<ul> <li>Dust explosion protection for zone 20</li> </ul>	PTB 01 ATEX 2055		
- Marking	Ex II 1 D Ex ta IIIC T120°C Da Ex II 1/2 D Ex ta/tb IIIC T120°C Da/Db		
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F)		
- Max. surface temperature	120 °C (248 °F)		
- Connection	To certified intrinsically-safe circuits with peak values: $U_{\rm i}$ = 30 V, $I_{\rm i}$ = 100 mA, $P_{\rm i}$ = 750 mW, $R_{\rm i}$ = 300 $\Omega$	FISCO supply unit: $U_0 = 17.5 \text{ V}$ , $I_0 = 380 \text{ mA}$ , $P_0 = 5.32 \text{ W}$ Linear barrier: $U_0 = 24 \text{ V}$ , $I_0 = 250 \text{ mA}$ , $P_0 = 1 \text{ W}$	
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4  {\rm mH},  C_{\rm i} = 6  {\rm nF}$	$L_{i} = 7 \mu H, C_{i} = 1.1 nF$	
<ul> <li>Dust explosion protection for zone 21/22</li> </ul>	PTB 01 ATEX 2055		
- Marking	Ex II 2 D Ex tb IIIC T120°C Db		
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC; $P_{\rm max}$ = 1.2 W	To circuits with values: $U_{H} = 9 32 \text{ V DC}; P_{max} = 1 \text{ W}$	
• Type of protection "n" (zone 2)	PTB 13 ATEX 2007 X		
- Marking	Ex II 2/3 G Ex nA IIC T4/T5/T6 Gb/Gc Ex II 2/3 G Ex ic IIC T4/T5/T6 Gb/Gc		
- Connection (Ex nA)	$U_{\rm m} = 45  {\rm V}$	$U_{\rm m} = 32 \text{ V}$	
- Connections (Ex ic)	To circuits with values: $U_i = 45 \text{ V}$	FISCO supply unit ic: $U_0 = 17.5 \text{ V}$ , $I_0 = 570 \text{ mA}$ Linear barrier: $U_0 = 32 \text{ V}$ , $I_0 = 132 \text{ mA}$ , $P_0 = 1 \text{ W}$	
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{i} = 7 \mu H, C_{i} = 1.1 nF$	
• Explosion protection acc. to FM	Certificate of Compliance 3008490		
- Identification (XP/DIP) or (IS); (NI)	CL I, DIV 1, GP ABCD T4T6; CL II, DIV 1, GP EFG; CL III; CL I, ZN 0/1 AEx ia T4T6; CL I, DIV 2, GP ABCD T4T6; CL II, DIV 2, GP FG; CL III		
Explosion protection to CSA	Certificate of Compliance 1153651		
- Identification (XP/DIP) or (IS)	CL I, DIV 1, GP ABCD T4T6; CL II, DIV DIV 2, GP ABCD T4T6; CL II, DIV 2, GF	' 1, GP EFG; CL III; Ex ia IIC T4T6; CL I, P FG; CL III	

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

for gauge 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	
PROFIBUS PA communication Simultaneous communication with	4	<ul> <li>Adaptation to customer-specific process variables</li> </ul>	Yes, linearly rising or falling characteristic
master class 2 (max.)		- Electrical damping, adjustable	0 100 s
The address can be set using	Configuration tool or local operation (standard setting address 126)	- Simulation function	Output/input (can be locked within the device with a bridge)
Cyclic data usage	,	- Failure mode	parameterizable (last good value, substitute value, incorrect value)
<ul><li>Output byte</li><li>Input byte</li></ul>	5 (one measured value) or 10 (two measured values)  0, 1, or 2 (register operating	- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit
• Input byte	mode and reset function for metering)	- Square-rooted characteristic	respectively Yes
Internal preprocessing		for flow measurement	
Device profile	PROFIBUS PA Profile for Process Control Devices Version	• PID	Standard FOUNDATION Fieldbus function block
Function blocks	3.0, class B	<ul> <li>Physical block</li> </ul>	1 resource block
Analog input	2	Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block
Adaptation to customer-specific process variables	Yes, linearly rising or falling characteristic	Pressure transducer block	LCD
- Electrical damping, adjustable	0 100 s	- Can be calibrated by applying	Yes
- Simulation function	Input /Output	two pressures	Vaa
- Failure mode	parameterizable (last good value, substitute value, incorrect value)	<ul> <li>Monitoring of sensor limits</li> <li>Simulation function: Measured pressure value, sensor tem-</li> </ul>	Yes  Constant value or over parameterizable ramp function
- Limit monitoring	Yes, one upper and lower warn- ing limit and one alarm limit respectively	perature and electronics tem- perature	
Register (totalizer)	Can be reset, preset, optional direction of counting, simulation function of register output		
- Failure mode	parameterizable (summation with last good value, continuous summation, summation with incorrect value)		
- Limit monitoring	One upper and lower warning limit and one alarm limit respec- tively		
<ul> <li>Physical block</li> </ul>	1		

Transducer blocks

• Pressure transducer block

- Can be calibrated by applying two pressures

- Monitoring of sensor limits

- Specification of a container

and implementation point of square-root extraction

- Simulation function for measured pressure value and sensor temperature

characteristic with - Square-rooted characteristic

for flow measurement - Gradual volume suppression 2

Yes

Yes

Yes

Max. 30 nodes

Parameterizable

Constant value or over parame-

terizable ramp function

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

for gauge pressure

Selection and Orderin	g data	Artic	le N	lo.			
Pressure transmitter f	or gauge pressure,	7 M I	7MF4033-				
SITRANS P DS III with	HART			-			
	lo. for the online configu- Cycle Portal.						
Measuring cell filling	Measuring cell clean-						
0	ing						
Silicone oil	normal	1					
Inert liquid 1)	grease-free to cleanliness level 2	3					
FDA compliant fill fluid <sup>2</sup>	)						
Neobee oil	normal	4					
Measuring span (min.	max.)						
8.3 250 mbar	(0.12 3.6 psi)	Α					
0.01 1 bar	(0.15 14.5 psi)	В					
0.04 4 bar	(0.58 58 psi)	С					
0.16 16 bar	(2.32 232 psi)	D					
0.63 63 bar	(9.14 914 psi)	E					
1.6 160 bar	(23.2 2320 psi)	F					
4.0 400 bar	(58.0 5802 psi)	G					
7.0 700 bar	(102.010153 psi)	J					
Wetted parts materials	3						
Seal diaphragm	Process connection						
Stainless steel	Stainless steel	1	١.				
Hastelloy	Stainless steel	E	3				
Hastelloy	Hastelloy						
process connector "ferr (recommended version Version for diaphragm s with process connector shank" 3) 4) 5) 6)	seals in conjunction		/ 1 / 0				
Process connection		_					
Connection shank G½	6B to FN 837-1		0				
<ul> <li>Female thread ½-14 N</li> </ul>			1				
<ul> <li>Stainless steel oval fla</li> </ul>							
nection (Oval flange h	nas no female thread)						
- Mounting thread 7/16	<sub>3</sub> -20 UNF to		2				
IEC 61518/DIN EN 6							
- Mounting thread M1			3				
- Mounting thread M1			4				
<ul> <li>Male thread M20 x 1.5</li> <li>Male thread ½ -14 NF</li> </ul>	-		5 6				
		_	0				
Non-wetted parts mate • Housing made of die-			_				
<ul> <li>Housing made of die-</li> <li>Housing stainless stee</li> </ul>			0 3				
	a precision casting /	_	3				
Version	rman plata incerieties						
<ul> <li>Standard version, Ger setting for pressure ur</li> </ul>				1			
	English plate inscription,			2	,		
setting for pressure ur							
<ul> <li>Chinese version, Engli</li> </ul>	sh plate inscription,			3	3		
setting for pressure un	it: Pascal						
	D with compact operat-						
ing instructions in vario	us EU languages.						

Selection and Ordering data	Article No.
Pressure transmitter for gauge pressure, SITRANS P DS III with HART	7 M F 4 0 3 3 -
Explosion protection	
• None	A
• With ATEX, Type of protection:	
- "Intrinsic safety (Ex ia)" - "Explosion-proof (Ex d)" <sup>8)</sup>	B D
- "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d)" <sup>9)</sup>	P
- "Ex nA/ic (Zone 2)"10)	E
<ul> <li>"Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia + Ex d + Zone 1D/2D)*9)11)</li> </ul>	R
FM + CSA intrinsic safe (is) <sup>12)</sup>	F
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX) + Zone 1D/2D <sup>9)11)12)</sup>	s
<ul><li>With FM + CSA, Type of protection:</li></ul>	
<ul> <li>"Intrinsic Safe and Explosion Proof (is + xp)"8)12)</li> </ul>	NC
Electrical connection / cable entry	
<ul> <li>Screwed gland M20 x1 .5</li> </ul>	В
Screwed gland ½-14 NPT	С
<ul> <li>Device plug Han 7D (plastic housing) incl. mating connector<sup>13)</sup></li> </ul>	D
• Device plugs M12 (stainless steel) <sup>13)14)</sup>	F
Display	
Without display	0
<ul> <li>Without visible display (display concealed, setting: mA)</li> </ul>	1
<ul> <li>With visible display (setting: mA)</li> </ul>	6
<ul> <li>with customer-specific display (setting as specified, Order code "Y21" or "Y22" required)</li> </ul>	7
Power supply units see Chan, 7 "Supplementary C	'omponente"

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

A quick-start guide is included in the scope of delivery of the device.

- 1) For oxygen application, add Order code E10.
- 2) Available for measuring ranges 1 ... 63 bar.
- 3) When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.
- 4) If the acceptance test certificate 3.1.is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.
- 5) The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF403.-.Y.-.... and 7MF4900-1...-.B
- 6) The standard measuring cell filling of configurations with remote seals (Y) is silicone oil.
- 7) Not in conjunction with Electrical connection "Device plug Han 7D".
- 8) Without cable gland, with blanking plug
- 9) With enclosed cable gland Ex ia and blanking plug
- <sup>10)</sup> Configurations with device plugs Han and M12 are only available in Ex ic.
- 11) Only in connection with IP66.
- 12) Explosion protection acc. to FM/CSA: suitable for installations according to NEC 500/505.
- 13) Only in connection with Ex approval A, B or E.
- <sup>14)</sup> M12 delivered without cable socket

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

#### for gauge pressure

Selection and Ordering data  Pressure transmitter for gauge pressure  SITRANS P DS III with PROFIBUS PA (PA)  SITRANS P DS III with PROFIBUS PA (PA)  Click on the Article No. for the online configuration in the PIA Life Cycle Portal.  Measuring cell filling  Measuring cell filling  Silicone oil normal  Inert liquid¹)  Inert liquid¹)  Process connection  Sale (3.6 psi)  A 1  A 2  Nominal measuring range  250 mbar (3.6 psi)  A 2  A 3  A 4  Nominal measuring range  250 mbar (3.6 psi)  A 5  A 6  B 6  B 7  A 7  Nominal measuring range  250 mbar (3.6 psi)  A 8  A 9  A 9  A 9  A 9  A 9  A 9  A 9										
SITRANS P DS III with PROFIBUS PA (PA)  SITRANS P DS III with FOUNDATION Fieldbus (FF)  Click on the Article No. for the online configuration in the PIA Life Cycle Portal.  Measuring cell filling  Measuring cell cleaning  Silicone oil normal  Inert liquid¹) grease-free to cleanliness level 2  FDA compliant fill fluid²)  Nominal measuring range  250 mbar (3.6 psi) A  1 bar (14.5 psi) B  4 bar (58 psi) C  16 bar (232 psi) C  30 bar (914 psi) E  160 bar (2320 psi) G  700 bar (10153 psi) J  Wetted parts materials  Seal diaphragm Process connection  Stainless steel Stainless steel Hastelloy Stainless steel Hastelloy Hastelloy C  Version for diaphragm seals in conjunction with process connector 'female thread ½-14 NPT'  (recommended version) 3) 4) 5) 6)  Process connection  • Cannection shank G½B to EN 837-1  • Female thread ½-14 NPT  • Stainless steel of lange with process connection (Oval flange has no female thread) 7)  • Mounting thread M10 to DIN 19213  • Mounting thread M10 to DIN 19213  • Male thread ½-14 NPT  Non-wetted parts materials  • Housing made of die-cast aluminium  • Housing stainless steel precision casting  Version  • Standard version, German label inscription, setting of pressure unit: bar  • International version, English label inscription, setting of pressure unit: bar  • International version, English label inscription, setting of pressure unit: bar  • International version, English label inscription, setting of pressure unit: kPa  All versions include DVD with compact operating	Selection and Ordering data			Article No.						
SITRANS P DS III with PROFIBUS PA (PA)  SITRANS P DS III with FOUNDATION Fieldbus (FF)  Click on the Article No. for the online configuration in the PIA Life Cycle Portal.  Measuring cell filling  Measuring cell cleaning  Silicone oil normal  Inert liquid¹) grease-free to cleanliness level 2  FDA compliant fill fluid²)  Nominal measuring range  250 mbar (3.6 psi) A  1 bar (14.5 psi) B  4 bar (58 psi) C  16 bar (232 psi) C  30 bar (914 psi) E  160 bar (2320 psi) G  700 bar (10153 psi) J  Wetted parts materials  Seal diaphragm Process connection  Stainless steel Stainless steel Hastelloy Stainless steel Hastelloy Hastelloy C  Version for diaphragm seals in conjunction with process connector 'female thread ½-14 NPT'  (recommended version) 3) 4) 5) 6)  Process connection  • Cannection shank G½B to EN 837-1  • Female thread ½-14 NPT  • Stainless steel of lange with process connection (Oval flange has no female thread) 7)  • Mounting thread M10 to DIN 19213  • Mounting thread M10 to DIN 19213  • Male thread ½-14 NPT  Non-wetted parts materials  • Housing made of die-cast aluminium  • Housing stainless steel precision casting  Version  • Standard version, German label inscription, setting of pressure unit: bar  • International version, English label inscription, setting of pressure unit: bar  • International version, English label inscription, setting of pressure unit: bar  • International version, English label inscription, setting of pressure unit: kPa  All versions include DVD with compact operating	Pressure transmitter f	or gauge pressure								
SITRANS P DS III with FOUNDATION Fieldbus (FF)  2 Click on the Article No. for the online configuration in the PIA Life Cycle Portal.  Measuring cell filling			7MF4034-							
### Acticle No. for the online configuration in the PIA Life Cycle Portal.    Measuring cell filling	, ,		-				•			
ration in the PIA Life Cycle Portal.  Measuring cell filling Silicone oil normal 1 Inert liquid¹) grease-free to cleanliness level 2 FDA compliant fill fluid²)  • Neobee oil normal 4  Nominal measuring range 250 mbar (3.6 psi) A 1 bar (14.5 psi) B 4 bar (58 psi) C 16 bar (232 psi) D 16 bar (2320 psi) B 160 bar (2320 psi) G 1700 bar (10153 psi) G 1700 bar (10153 psi) J  Wetted parts materials Seal diaphragm Process connection Stainless steel Stainless steel B Hastelloy Hastelloy C Version for diaphragm seals in conjunction with process connector "female thread ½-14 NPT" (recommended version) 3) 4) 5) 6)  Process connection  Process connection  • Connection shank G½B to EN 837-1 • Female thread ½-14 NPT • Stainless steel oval flange with process connection (Oval flange has no female thread) 7 - Mounting thread M10 to DIN 19213 • Mounting thread M12 to DIN 19213 • Male thread M20 x 1.5 • Male thread M20 x 1.		` '								
Silicone oil normal Inert liquid¹¹¹ grease-free to cleanliness level 2  FDA compliant fill fluid²²  • Neobee oil normal  Nominal measuring range 250 mbar (3.6 psi) 1 bar (14.5 psi) 8 bar (58 psi) 1 bar (232 psi) 6 bar (2320 psi) 160 bar (2320 psi) 160 bar (2320 psi) 160 bar (2320 psi) 160 bar (5802 psi) 160 bar (5802 psi) 160 bar (5802 psi) 160 bar (5802 psi) 1700 bar (10153 psi)  Wetted parts materials Seal diaphragm Process connection Stainless steel Stainless steel Hastelloy Hastelloy Version for diaphragm seals in conjunction with process connector "female thread ½-14 NPT" (recommended version) 3' 4) 5' 6)  Version for diaphragm seals in conjunction with process connector sonnector sonnection shank 3' 4) 5' 6)  Process connection • Connection shank 6½ B to EN 837-1 • Female thread ½-14 NPT • Stainless steel oval flange with process connection (Oval flange has no female thread) 7' - Mounting thread 7' 16"-20 UNF to IEC 61518/DIN EN 61518  • Mounting thread M10 to DIN 19213 • Male thread M20 x 1.5 • Male thread M30 x 1.5 • M30 x 1.5	Click on the Article N ration in the PIA Life	Click on the Article No. for the online configu- ration in the PIA Life Cycle Portal.			ľ				ľ	
Silicone oil Inert liquid¹) grease-free to cleanliness level 2  FDA compliant fill fluid²)  Neobee oil normal  Nominal measuring range 250 mbar (3.6 psi) A 1 bar (14.5 psi) B 4 bar (58 psi) C 16 bar (232 psi) D 63 bar (914 psi) E 160 bar (2320 psi) G 400 bar (5802 psi) G 700 bar (10153 psi) G Wetted parts materials Seal diaphragm Process connection Stainless steel Stainless steel Hastelloy Stainless steel B Hastelloy Hastelloy C Version for diaphragm seals in conjunction with process connector "female thread ½-14 NPT" (recommended version) 3/4 ½-16 psi) Version for diaphragm seals in conjunction with process connector "G'½B connection shank G½B to EN 837-1  Female thread ½-14 NPT  Stainless steel oval flange with process connection (Oval flange has no female thread) 7)  Mounting thread 7/16-20 UNF to IEC 61518/DIN EN 61518  Mounting thread M10 to DIN 19213  Male thread ½-14 NPT  Non-wetted parts materials  Housing made of die-cast aluminium  Non-wetted parts materials  Housing stainless steel precision casting  Version  Standard version, German label inscription, setting of pressure unit: bar  International version, English label inscription, setting of pressure unit: bar  International version, English label inscription, setting of pressure unit: bar  International version, English label inscription, setting of pressure unit: bar  International version, English label inscription, setting of pressure unit: bar  International version, English label inscription, setting of pressure unit: bar  International version, English label inscription, setting of pressure unit: bar  International version, English label inscription, setting of pressure unit: bar	Measuring cell filling									
Inert liquid¹) grease-free to cleanliness level 2  FDA compliant fill fluid²  Neobee oil normal  Nominal measuring range  250 mbar (3.6 psi) 1 bar (14.5 psi) 4 bar (58 psi) C 16 bar (232 psi) 63 bar (914 psi) E E 160 bar (2320 psi) 700 bar (5802 psi) 700 bar (10153 psi)  Wetted parts materials Seal diaphragm Process connection  Stainless steel Stainless steel Hastelloy Stainless steel Hastelloy Stainless steel Hastelloy Hastelloy Version for diaphragm seals in conjunction with process connector "female thread ½-14 NPT" (recommended version) 3/ 4/ 5/ 6)  Process connector "female thread ½-14 NPT" (recommended version) 3/ 4/ 5/ 6)  Process connection  • Connection shank G½-B to EN 837-1 • Female thread ½-14 NPT • Stainless steel oval flange with process connection (Oval flange has no female thread) 7/ - Mounting thread 7/ <sub>16</sub> -20 UNF to IEC 61518/DIN EN 61518  Mounting thread M10 to DIN 19213 • Male thread ½-14 NPT  Non-wetted parts materials • Housing made of die-cast aluminium • Housing made of pressure unit: bar • International version, English label inscription, setting of pressure unit: bar • International version, English label inscription, setting of pressure unit: bar • International version, English label inscription, setting of pressure unit: kPa All versions include DVD with compact operating	Silicone oil	•	1							
Cleanliness level 2  FDA compliant fill fluid <sup>2)</sup> Neobee oil normal  Nominal measuring range 250 mbar (3.6 psi) A 1 bar (14.5 psi) B 4 bar (58 psi) C 16 bar (232 psi) D 163 bar (914 psi) E 160 bar (2320 psi) F 160 bar (5802 psi) G 700 bar (10153 psi) J  Wetted parts materials Seal diaphragm Process connection  Stainless steel Stainless steel B Hastelloy Stainless steel B Hastelloy Hastelloy C Version for diaphragm seals in conjunction with process connector "female thread ½-14 NPT" (recommended version) 3) 4) 5) 6)  Process connector  G'½B connection shank G'½B to EN 837-1  Female thread ½-14 NPT  Stainless steel oval flange with process connection (Oval flange has no female thread) 7)  - Mounting thread 7/ 16.20 UNF to IEC 615 18/DIN EN 615 18  Mounting thread M10 to DIN 19213  - Mounting thread M12 to DIN 19213  - Male thread M2 - 14 NPT  Non-wetted parts materials  - Housing made of die-cast aluminium  - Housing made of die-cast aluminium  - Housing stainless steel precision casting  Version  - Standard version, German label inscription, setting of pressure unit: bsi  - International version, English label inscription, setting of pressure unit: kPa All versions include DVD with compact operating			-							
Nominal measuring range 250 mbar (3.6 psi) 1 bar (14.5 psi) 4 bar (58 psi) C 16 bar (232 psi) 63 bar (914 psi) E 160 bar (2320 psi) 400 bar (5802 psi) 700 bar (10153 psi)  Wetted parts materials Seal diaphragm Process connection Stainless steel Stainless steel Hastelloy Stainless steel Hastelloy Hastelloy Version for diaphragm seals in conjunction with process connector "female thread ½-14 NPT" (recommended version) 3) 4) 5) 6)  Version for diaphragm seals in conjunction with process connector "G½B connection shank" 3) 4) 5) 6)  Process connection • Connection shank G½B to EN 837-1 • Female thread ½-14 NPT • Stainless steel oval flange with process connection (Oval flange has no female thread) 7) - Mounting thread M10 to DIN 19213 - Mounting thread M10 to DIN 19213 - Mounting thread M10 to DIN 19213 • Male thread ½-14 NPT  Non-wetted parts materials • Housing made of die-cast aluminium • Housing stainless steel precision casting  Version • Standard version, German label inscription, setting of pressure unit: bar • International version, English label inscription, setting of pressure unit: psi • Chinese version, English label inscription, setting of pressure unit: kPa All versions include DVD with compact operating			ľ							
Nominal measuring range 250 mbar (3.6 psi) 1 bar (14.5 psi) 4 bar (58 psi) C 16 bar (232 psi) 63 bar (914 psi) E 160 bar (2320 psi) F 160 bar (5802 psi) G 700 bar (10153 psi)  Wetted parts materials Seal diaphragm Process connection Stainless steel Stainless steel Hastelloy Stainless steel Hastelloy Hastelloy C Version for diaphragm seals in conjunction with process connector 'female thread ½-14 NPT' (recommended version) 3/4/5) 6) Version for diaphragm seals in conjunction with process connector 'g'\(\frac{1}{2}\)\(\frac{1}{	FDA compliant fill fluid <sup>2</sup>	)								
250 mbar (3.6 psi) 1 bar (14.5 psi) 4 bar (58 psi) C (58 psi) C (63 bar (232 psi) G (34 psi) E (60 bar (2320 psi) F (400 bar (5802 psi) F (400 bar (5802 psi) F (5802 psi) G (5802 psi) G (700 bar (10153 psi)  Wetted parts materials Seal diaphragm Process connection Stainless steel Stainless steel Hastelloy Stainless steel Hastelloy Hastelloy Version for diaphragm seals in conjunction with process connector "female thread ½-14 NPT" (recommended version) 3) 4) 5) 6) Version for diaphragm seals in conjunction with process connector "female thread ½-14 NPT" (recommended version) 3) 4) 5) 6)  Process connection • Connection shank "3) 4) 5) 6)  Process connection • Connection shank G½B to EN 837-1 • Female thread ½-14 NPT • Stainless steel oval flange with process connection (Oval flange has no female thread) 7) - Mounting thread 7/16-20 UNF to IEC 61518/DIN EN 61518 - Mounting thread M10 to DIN 19213 - Mounting thread M10 to DIN 19213 • Male thread ½-14 NPT  Non-wetted parts materials • Housing made of die-cast aluminium • Housing stainless steel precision casting  Version • Standard version, German label inscription, setting of pressure unit: bar • International version, English label inscription, setting of pressure unit: bar • International version, English label inscription, setting of pressure unit: kPa All versions include DVD with compact operating	<ul> <li>Neobee oil</li> </ul>	normal	4							
250 mbar (3.6 psi) 1 bar (14.5 psi) 4 bar (58 psi) C (58 psi) C (63 bar (232 psi) G (34 psi) E (60 bar (2320 psi) F (400 bar (5802 psi) F (400 bar (5802 psi) F (5802 psi) G (5802 psi) G (700 bar (10153 psi)  Wetted parts materials Seal diaphragm Process connection Stainless steel Stainless steel Hastelloy Stainless steel Hastelloy Hastelloy Version for diaphragm seals in conjunction with process connector "female thread ½-14 NPT" (recommended version) 3) 4) 5) 6) Version for diaphragm seals in conjunction with process connector "female thread ½-14 NPT" (recommended version) 3) 4) 5) 6)  Process connection • Connection shank "3) 4) 5) 6)  Process connection • Connection shank G½B to EN 837-1 • Female thread ½-14 NPT • Stainless steel oval flange with process connection (Oval flange has no female thread) 7) - Mounting thread 7/16-20 UNF to IEC 61518/DIN EN 61518 - Mounting thread M10 to DIN 19213 - Mounting thread M10 to DIN 19213 • Male thread ½-14 NPT  Non-wetted parts materials • Housing made of die-cast aluminium • Housing stainless steel precision casting  Version • Standard version, German label inscription, setting of pressure unit: bar • International version, English label inscription, setting of pressure unit: bar • International version, English label inscription, setting of pressure unit: kPa All versions include DVD with compact operating	Nominal measuring ra	nae								
4 bar (58 psi) 16 bar (232 psi) 63 bar (914 psi) 160 bar (2320 psi) 160 bar (2320 psi) 160 bar (5802 psi) 1700 bar (5802 psi) 1700 bar (10153 psi)  Wetted parts materials Seal diaphragm Process connection  Stainless steel Stainless steel Hastelloy Stainless steel Hastelloy Stainless steel Hastelloy Hastelloy Version for diaphragm seals in conjunction with process connector "female thread ½-14 NPT" (recommended version) 3) 4) 5) 6)  Version for diaphragm seals in conjunction with process connector "G½B connection shank" 3) 4) 5) 6)  Process connection  • Connection shank G½B to EN 837-1 • Female thread ½-14 NPT • Stainless steel oval flange with process connection (Oval flange has no female thread) 7) - Mounting thread M10 to DIN 19213 - Mounting thread M10 to DIN 19213 - Mounting thread M10 to DIN 19213 - Mounting thread M12 to DIN 19213 - Male thread ½-14 NPT  Non-wetted parts materials • Housing made of die-cast aluminium • Housing stainless steel precision casting  Version • Standard version, German label inscription, setting of pressure unit: bar • International version, English label inscription, setting of pressure unit: kPa All versions include DVD with compact operating	•	•		Α						
4 bar (58 psi) 16 bar (232 psi) 63 bar (914 psi) 160 bar (2320 psi) 160 bar (2320 psi) 160 bar (5802 psi) 1700 bar (5802 psi) 1700 bar (10153 psi)  Wetted parts materials Seal diaphragm Process connection  Stainless steel Stainless steel Hastelloy Stainless steel Hastelloy Stainless steel Hastelloy Hastelloy Version for diaphragm seals in conjunction with process connector "female thread ½-14 NPT" (recommended version) 3) 4) 5) 6)  Version for diaphragm seals in conjunction with process connector "G½B connection shank" 3) 4) 5) 6)  Process connection  • Connection shank G½B to EN 837-1 • Female thread ½-14 NPT • Stainless steel oval flange with process connection (Oval flange has no female thread) 7) - Mounting thread M10 to DIN 19213 - Mounting thread M10 to DIN 19213 - Mounting thread M10 to DIN 19213 - Mounting thread M12 to DIN 19213 - Male thread ½-14 NPT  Non-wetted parts materials • Housing made of die-cast aluminium • Housing stainless steel precision casting  Version • Standard version, German label inscription, setting of pressure unit: bar • International version, English label inscription, setting of pressure unit: kPa All versions include DVD with compact operating	1 bar	(14.5 psi)		В						
16 bar (232 psi) 63 bar (914 psi) 160 bar (2320 psi) 400 bar (5802 psi) 400 bar (5802 psi) 700 bar (10153 psi)  Wetted parts materials Seal diaphragm Process connection Stainless steel Stainless steel Hastelloy Stainless steel Hastelloy Hastelloy Version for diaphragm seals in conjunction with process connector "female thread ½-14 NPT" (recommended version) 3) 4) 5) 6) Version for diaphragm seals in conjunction with process connector "female thread ½-14 NPT" (recommended version) 3) 4) 5) 6)  Process connection • Connection shank "" 3) 4) 5) 6)  Process connection • Connection shank G½ B to EN 837-1 • Female thread ½-14 NPT • Stainless steel oval flange with process connection (Oval flange has no female thread) 7) - Mounting thread 7/16-20 UNF to IEC 61518/DIN EN 61518 - Mounting thread M10 to DIN 19213 - Mounting thread M10 to DIN 19213 - Mounting thread M10 to DIN 19213 - Male thread ½-14 NPT  Non-wetted parts materials • Housing made of die-cast aluminium • Housing stainless steel precision casting  Version • Standard version, German label inscription, setting of pressure unit: bar • International version, English label inscription, setting of pressure unit: kPa All versions include DVD with compact operating	4 bar			С						
160 bar (2320 psi) 400 bar (5802 psi) (5802 psi) (10153 psi)  Wetted parts materials  Seal diaphragm Process connection  Stainless steel Stainless steel Hastelloy Stainless steel Hastelloy Stainless steel Hastelloy Hastelloy CC Version for diaphragm seals in conjunction with process connector "female thread ½-14 NPT" (recommended version) 3) 4) 5) 6)  Version for diaphragm seals in conjunction with process connector "female thread ½-14 NPT" (recommended version) 3) 4) 5) 6)  Process connection  • Connection shank"" 3) 4) 5) 6)  Process connection  • Connection shank G½B to EN 837-1  • Female thread ½-14 NPT  • Stainless steel oval flange with process connection (Oval flange has no female thread) 7)  - Mounting thread 7/ <sub>16</sub> -20 UNF to IEC 61518/DIN EN 61518  - Mounting thread M10 to DIN 19213  - Mounting thread M10 to DIN 19213  • Male thread ½-14 NPT  Non-wetted parts materials  • Housing made of die-cast aluminium  • Housing made of die-cast aluminium  • Housing stainless steel precision casting  Version  • Standard version, German label inscription, setting of pressure unit: bar  • International version, English label inscription, setting of pressure unit: kPa  All versions include DVD with compact operating	16 bar			D						
400 bar (5802 psi) 700 bar (10153 psi)  Wetted parts materials  Seal diaphragm Process connection  Stainless steel Stainless steel Hastelloy Stainless steel Hastelloy Hastelloy Version for diaphragm seals in conjunction with process connector 'female thread ½-14 NPT' (recommended version) 3) 4) 5) 6)  Version for diaphragm seals in conjunction with process connector 'female thread ½-14 NPT' (recommended version) 3) 4) 5) 6)  Process connection  • Connection shank G½B to EN 837-1 • Female thread ½-14 NPT • Stainless steel oval flange with process connection (Oval flange has no female thread) 7) • Mounting thread ½-14 NPT • Mounting thread M10 to DIN 19213 • Mounting thread M12 to DIN 19213 • Male thread ½-14 NPT  Non-wetted parts materials • Housing made of die-cast aluminium • Housing stainless steel precision casting  Version • Standard version, German label inscription, setting of pressure unit: bar • International version, English label inscription, setting of pressure unit: kPa All versions include DVD with compact operating	63 bar	(914 psi)		Ε						
Wetted parts materials  Seal diaphragm Process connection  Stainless steel Stainless steel Hastelloy Stainless steel Hastelloy Hastelloy  Version for diaphragm seals in conjunction with process connector "female thread ½-14 NPT"  (recommended version) 3) 4) 5) 6)  Version for diaphragm seals in conjunction with process connector "female thread ½-14 NPT"  (recommended version) 3) 4) 5) 6)  Process connection  • Connection shank G½B to EN 837-1  • Female thread ½-14 NPT  • Stainless steel oval flange with process connection (Oval flange has no female thread) 7)  - Mounting thread 7/ <sub>16</sub> -20 UNF to IEC 61518/DIN EN 61518  - Mounting thread M10 to DIN 19213  • Male thread M20 x 1.5  • Male thread ½-14 NPT  Non-wetted parts materials  • Housing made of die-cast aluminium  • Housing stainless steel precision casting  Version  • Standard version, German label inscription, setting of pressure unit: bar  • International version, English label inscription, setting of pressure unit: kPa  All versions include DVD with compact operating	160 bar	(2320 psi)		F						
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Seal diaphragm Process connection  Stainless steel Stainless steel Hastelloy Stainless steel Hastelloy Hastelloy  Version for diaphragm seals in conjunction with process connector "female thread ½-14 NPT"  (recommended version) 3) 4) 5) 6)  Version for diaphragm seals in conjunction with process connector "G½B connection shank" 3) 4) 5) 6)  Process connection  • Connection shank G½B to EN 837-1  • Female thread ½-14 NPT  • Stainless steel oval flange with process connection (Oval flange has no female thread) 7)  - Mounting thread 7/16-20 UNF to IEC 61518/DIN EN 61518  - Mounting thread M10 to DIN 19213  - Mounting thread M20 x 1.5  • Male thread ½-14 NPT  Non-wetted parts materials  • Housing made of die-cast aluminium  • Housing stainless steel precision casting  Version  • Standard version, German label inscription, setting of pressure unit: bar  • International version, English label inscription, setting of pressure unit: psi  • Chinese version, English label inscription, setting of pressure unit: kPa  All versions include DVD with compact operating	Wetted parts materials	<b>i</b>								
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- Mounting thread M10 to DIN 19213 - Mounting thread M12 to DIN 19213 • Male thread M20 x 1.5 • Male thread ½ -14 NPT  Non-wetted parts materials • Housing made of die-cast aluminium • Housing stainless steel precision casting  Version • Standard version, German label inscription, setting of pressure unit: bar • International version, English label inscription, setting of pressure unit: psi • Chinese version, English label inscription, setting of pressure unit: kPa All versions include DVD with compact operating					2					
<ul> <li>Mounting thread M12 to DIN 19213</li> <li>Male thread M20 x 1.5</li> <li>Male thread ½ -14 NPT</li> <li>Non-wetted parts materials</li> <li>Housing made of die-cast aluminium</li> <li>Housing stainless steel precision casting</li> <li>Version</li> <li>Standard version, German label inscription, setting of pressure unit: bar</li> <li>International version, English label inscription, setting of pressure unit: psi</li> <li>Chinese version, English label inscription, setting of pressure unit: kPa</li> <li>All versions include DVD with compact operating</li> </ul>	IEC 61518/DIN EN 8	š1518								
Male thread M20 x 1.5  Male thread ½ -14 NPT  Non-wetted parts materials Housing made of die-cast aluminium Housing stainless steel precision casting  Version Standard version, German label inscription, setting of pressure unit: bar International version, English label inscription, setting of pressure unit: psi Chinese version, English label inscription, setting of pressure unit: kPa All versions include DVD with compact operating	<ul> <li>Mounting thread M1</li> </ul>	0 to DIN 19213			3					
<ul> <li>Male thread ½ -14 NPT</li> <li>Non-wetted parts materials</li> <li>Housing made of die-cast aluminium</li> <li>Housing stainless steel precision casting</li> <li>Version</li> <li>Standard version, German label inscription, setting of pressure unit: bar</li> <li>International version, English label inscription, setting of pressure unit: psi</li> <li>Chinese version, English label inscription, setting of pressure unit: kPa</li> <li>All versions include DVD with compact operating</li> </ul>	<ul> <li>Mounting thread M1</li> </ul>	2 to DIN 19213			4					
Non-wetted parts materials  • Housing made of die-cast aluminium  • Housing stainless steel precision casting  Version  • Standard version, German label inscription, setting of pressure unit: bar  • International version, English label inscription, setting of pressure unit: psi  • Chinese version, English label inscription, setting of pressure unit: kPa  All versions include DVD with compact operating										
Housing made of die-cast aluminium     Housing stainless steel precision casting  Version     Standard version, German label inscription, setting of pressure unit: bar     International version, English label inscription, setting of pressure unit: psi     Chinese version, English label inscription, setting of pressure unit: kPa All versions include DVD with compact operating	<ul> <li>Male thread ½ -14 NP</li> </ul>	Т			6					
Housing stainless steel precision casting  Version      Standard version, German label inscription, setting of pressure unit: bar  International version, English label inscription, setting of pressure unit: psi  Chinese version, English label inscription, setting of pressure unit: kPa  All versions include DVD with compact operating	Non-wetted parts mate	erials								
Version     Standard version, German label inscription, setting of pressure unit: bar     International version, English label inscription, setting of pressure unit: psi     Chinese version, English label inscription, setting of pressure unit: kPa     All versions include DVD with compact operating						0				
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setting of pressure unit: psi  Chinese version, English label inscription, setting of pressure unit: kPa  All versions include DVD with compact operating										
Chinese version, English label inscription, setting of pressure unit: kPa     All versions include DVD with compact operating							2			
setting of pressure unit: kPa All versions include DVD with compact operating		•								
All versions include DVD with compact operating							3			

Selection and Ordering data	Article No.					
Pressure transmitter for gauge pressure						
SITRANS P DS III with PROFIBUS PA (PA)	7MF4034-					
SITRANS P DS III with FOUNDATION Fieldbus (FF)	7MF4035-					
explosion protection						
None	A					
With ATEX, Type of protection: - "Intrinsic safety (Ex ia)" - "Explosion-proof (Ex d)" <sup>8</sup> )	B D					
- "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d)"9)  - "Ex nA/ic (Zone 2)"10)  - "Intrinsic safety, explosion-proof enclosure and	P E R					
dust explosion protection (Ex ia + Ex d + Zone 1D/2D)*9) 11) • FM + CSA intrinsic safe (is)*12)	F					
► FM + CSA (is + ep) + Ex ia + Ex d (ATEX) + Zone 1D/2D <sup>9</sup> )11)12)	S					
<ul> <li>With FM + CSA, Type of protection:</li> <li>"Intrinsic Safe and Explosion Proof (is + xp)*<sup>8)12)</sup></li> </ul>	NC					
Electrical connection/cable entry						
<ul> <li>Screwed gland M20 x 1.5</li> <li>Screwed gland ½-14 NPT</li> <li>Device plugs M12 (stainless steel)<sup>13)14)</sup></li> </ul>	B C F					
Display						
<ul> <li>Without display</li> <li>Without visible display (display concealed, setting; bar)</li> </ul>	0					
With visible display (setting: bar) with customer-specific display (setting as specified, Order code "Y21" required)	6 7					
A social start socials is included in the second of deli-	an af the device					

A quick-start guide is included in the scope of delivery of the device.

- 1) For oxygen application, add Order code E10.
- 2) Available for measuring ranges 1 ... 63 bar.
- When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here
- 4) If the acceptance test certificate 3.1.is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.
- 5) The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF403.-..Y..-... and 7MF4900-1...-.B
- 6) The standard measuring cell filling of configurations with remote seals (Y) is silicone oil.
- 7) M10 fastening thread: Max. span 160 bar (2320 psi) 7/16-20 UNF and M12 fastening thread: Max. span 400 bar (5802 psi)
- 8) Without cable gland, with blanking plug.
- 9) With enclosed cable gland Ex ia and blanking plug.
- 10) Configurations with device plugs Han and M12 are only available in Ex ic.
- 11) Only in connection with IP66.
- 12) Explosion protection acc. to FM/CSA: suitable for installations according to NEC 500/505.
- 13) M12 delivered without cable socket.
- <sup>14)</sup> Only in connection with Ex approval A, B, E or F.

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

for gauge pressure

Selection and Ordering data	Order	code		
Further designs Add "-Z" to Article No. and specify Order code.		HART	PA	FF
Pressure transmitter with mounting bracket (1x fixing angle, 2 x nut, 2 x U-washer or 1 x bracket, 2 x nut, 2 x U-washer) made of:				
• Steel	A01	✓	1	✓
• Stainless steel 304	A02	✓	✓	✓
• Stainless steel 316L	A03	1	✓	<b>✓</b>
Device plugs <sup>1)</sup> • Han 7D (metal)	A30	1		
Han 8D (instead of Han 7D)	A31	✓		
• Angled	A32	1		
Han 8D (metal)  Cable application devices place M42	A33	1		.,
Cable sockets for device plugs M12 (metal (CuZn))	A50	_	•	•
Rating plate inscription				
(instead of German) • English	B11	1	1	1
• French	B12	✓	✓	✓
Spanish	B13	✓	✓.	✓.
<ul><li>Italian</li><li>Cyrillic (russian)</li></ul>	B14 B16	<b>√</b>	1	<b>√</b>
English rating plate	B21	1	· /	1
Pressure units in inH <sub>2</sub> 0 and/or psi	J	·	·	·
Quality Inspection Certificate (5-point characteristic curve test) according to IEC 60770-2 <sup>2)</sup>	C11	✓	✓	<b>✓</b>
Inspection certificate <sup>3)</sup> Acc. to EN 10204-3.1	C12	✓	✓	✓
Factory certificate Acc. to EN 10204-2.2	C14	✓	✓	✓
Acceptance certificate (EN 10204-3.1) PMI test of parts in contact with medium	C15	1	✓	✓
Functional safety (SIL2) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	C20	✓		
Functional safety (PROFIsafe) Certificate and PROFIsafe protocol	C21 <sup>4)</sup>		✓	
Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	C23	✓		
PED for Russia with initial calibration mark	C99	✓	✓	✓
Setting of the upper saturation limit of the output signal to 22.0 mA	D05	<b>√</b>		
Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009)	D07		<b>√</b>	
Degree of protection IP66/IP68 (only for M20x1.5 and ½-14 NPT)	D12	<b>√</b>	✓	<b>✓</b>
Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flange	D37	<b>√</b>	✓	✓
Capri cable gland 4F CrNi and clamping device (848699 + 810634) included	D59	✓	✓	✓
Use in or on zone 1D/2D <sup>5)</sup> (only together with type of protection "Intrinsic safety" (transmitter 7MF4B Ex ia)" and IP66)	E01	<b>√</b>	<b>√</b>	<b>√</b>
Oxygen application (In the case of oxygen measurement and inert liquid max. 100 bar (1450 psi) at 60°C (140 °F))	E10	<b>✓</b>	<b>✓</b>	<b>√</b>
Export approval Korea	E11	✓	1	✓

Selection and Ordering data	Order	code		
Further designs Add "-2" to Article No. and specify Order code.		HART	PA	FF
CRN approval Canada (Canadian Registration Number)	E22 <sup>6)</sup>	✓	✓	✓
Dual seal	E24	✓	✓	✓
Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil)	E25 <sup>7)</sup>	✓	✓	✓
(only for transmitter 7MF4B)	_,			
"Flameproof" explosion protection according to INMETRO (Brazil)	E26 <sup>7)</sup>	<b>√</b>	✓	<b>✓</b>
(only for transmitter 7MF4D)	<b>-007</b> )	1	,	
Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil)	E28 <sup>7)</sup>	•	•	
(only for transmitter 7MF4P) <b>Ex Approval IEC Ex (Ex ia)</b>	E45 <sup>7)</sup>	1	1	1
(only for transmitter 7MF4B)	L43 /	ľ	•	•
Ex Approval IEC Ex (Ex d)	E46 <sup>7)</sup>	✓	✓	1
(only for transmitter 7MF4)				
Explosion-proof "Intrinsic safety" to NEPSI (China)	E5 <sup>7)</sup>	✓	✓	✓
(only for transmitter 7MF4B)	>		_	
Explosion protection "Explosion-proof" to NEPSI (China)	E56 <sup>7)</sup>	<b>~</b>	✓	✓
(only for transmitter 7MF4D)	E57 <sup>7)</sup>		./	./
Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4	E37·/	•	•	•
Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China)	E58 <sup>7)</sup>	✓	✓	✓
(only for transmitter 7MF4R)				
"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea)	E70 <sup>7)</sup>	✓	✓	✓
(only for transmitter 7MF4[B, D]Z + E11)				
Ex-protection Ex ia according to EAC Ex (Russia)	E80	✓	✓	1
(only for transmitter 7MF4B)		,	_	_
Ex-protection Ex d according to EAC Ex (Russia) (only for transmitter 7MF4D)	E81	•	✓	<b>V</b>
Ex-protection Ex nA/ic (Zone 2) according to EAC Ex (Russia)	E82	✓	✓	✓
(only for transmitter 7MF4				
Ex-protection Ex ia + Ex d + Zone 1D/2D according to EAC Ex (Russia) (only for transmitter 7MF4R)	E83	✓	1	✓
Two coats of lacquer on casing and cover (PU on epoxy)	G10	✓	✓	✓
Transient protector 6 kV (lightning protection)	J01	✓	✓	✓
Process connection Astava	J06	✓	✓	1

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

### for gauge pressure

Selection and Ordering data	Order	code		
Further designs Add "-Z" to Article No. and specify Order code.		HART	PA	FF
Marine approvals				
<ul> <li>Det Norske Veritas Germanischer Lloyd (DNV-GL)</li> </ul>	S10	✓	✓	✓
• Lloyds Register (LR)	S11	✓	✓	✓
<ul> <li>French marine classification society Bureau Veritas (BV)</li> </ul>	S12	✓	✓	✓
American Bureau of Shipping (ABS)	S14	✓	✓	✓
Russian Maritime Register (RMR)	S16	✓	✓	✓
<ul> <li>Korean Register of Shipping (KR)</li> </ul>	S17	✓	✓	✓

- 1) Device plug Han IP65
- When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the <u>total</u> combination is certified here.
- 3) If the acceptance test certificate 3.1.is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.
- 4) Profisafe transmitters can only be operated with the S7 F Systems V6.1 configuration software in combination with S7-400H
- 5) Option does not contain gas explosion protection; only dust explosion protection: Use in or at Zone 1D/2D.
- 6) Cannot be ordered with remote seal.
- 7) When the additional ex option is selected, the ATEX marking on the device is omitted. Only the Ex option selected via the Z option is marked.

Selection and Ordering data	Order	code		
Additional data Please add "-Z" to Article No. and specify Order code(s) and plain text.		HART	PA	FF
Measuring range to be set Specify in plain text (max. 5 characters): Y01: up to mbar, bar, kPa, MPa, psi	Y01	✓	<b>√</b> 1)	
Stainless steel tag plate and entry in device variable (measuring point description)	Y15 <sup>2)</sup>	✓	✓	✓
Max. 16 characters, specify in plain text: Y15:				
Measuring point text (entry in device variable)	Y16	✓	✓	✓
Max. 27 characters, specify in plain text: Y16:				
Entry of HART address (TAG)	Y17	✓		
Max. 8 characters, specify in plain text: Y17:				
Setting of pressure indication in pressure units	Y21	✓	✓	✓
Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi, Note:				
The following pressure units can be selected:				
bar, mbar, mm $H_2O^*$ ), $inH_2O^*$ ), $ftH_2O^*$ ), mmHG, inHG, psi, Pa, kPa, MPa, g/cm², kg/cm², Torr, ATM or % *) ref. temperature 20 °C				
Setting of pressure indication in non-pressure units <sup>3)</sup>	Y22 +	✓		
Specify in plain text: Y22: up to I/min, m³/h, m, USgpm, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	101			
Preset bus address possible between 1 and 126 Specify in plain text: Y25:	Y25		✓	✓
Damping adjustment in seconds (0 100 s)	Y30	✓	✓	✓

Factory mounting of valve manifolds, see accessories.

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

✓ = available

### Ordering example

Item line: 7MF4033-1EA00-1AA7-Z

B line: A01 + Y01 + Y21

C line: Y01: 10 ... 20 bar (145 ... 290 psi)

C line: Y21: bar (psi)

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

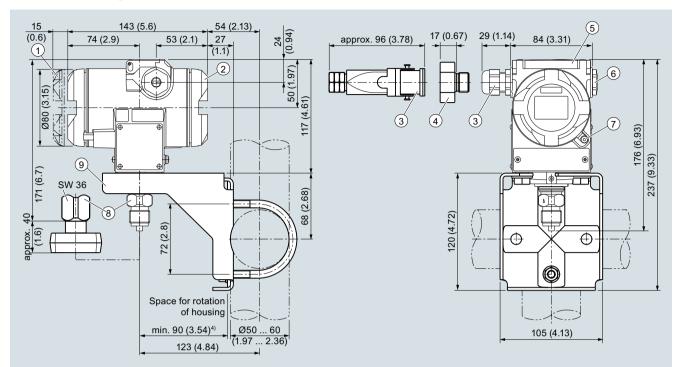
<sup>2)</sup> If you do not wish to have any text engraved for Y15, then do not make any further text entries as "Y15:".

<sup>3)</sup> Preset values can only be changed over SIMATIC PDM.

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

for gauge pressure

# Dimensional drawings



- 1 Electronic side, digital display (longer overall length for cover with window)1)
- Terminal side1)
- Electrical connection: Screwed gland M20 x 1,5 or Screwed gland ½-14 NPT or Han 7D/8D device plug<sup>2) 3)</sup>
- 4 Harting adapter
- Allow approx. 20 mm (0.79 inch) thread length to permit unscrewing
- Not with type of protection "Explosion-proof enclosure" Not with type of protection "FM + CSA" [IS + XP]"
- Minimum distance for rotating

5 Protective cover over keys

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

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

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P DS III

for gauge/absolute pressure, with front-flush diaphragm

### **Technical specifications**

### Input of gauge pressure, with front-flush diaphragm

Measured variable

Span (continuously adjustable) or measuring range, max. operating pressure and max. test pressure

Gauge pressure, front-flush

HART	PROFIBUS PA/ FOUNDATION Fieldbus		
Span	Nominal measur- ing range	Max. operating pressure MAWP (PS)	Max. perm. test pressure
0.01 1 bar	1 bar	4 bar	6 bar
1 100 kPa	100 kPa	400 kPa	600 kPa
0.15 14.5 psi	14.5 psi	58 psi	87 psi)
0.04 4 bar	4 bar	7 bar	10 bar
4 400 kPa	400 kPa	0.7 MPa	1 MPa
0.58 58 psi	58 psi	102 psi	145 psi
0.16 16 bar	16 bar	21 bar	32 bar
16 1600 kPa	1600 kPa	2.1 MPa	3.2 MPa
2.3 232 psi	232 psi	305 psi	464 psi
0.63 63 bar	63 bar	67 bar	100 bar
63 6300 kPa	6300 kPa	6.7MPa	10 MPa
9.1 914 psi	914 psi	972 psi	1450 psi

Lower measuring limit

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

Upper measuring limit

100 mbar a/10 kPa a/1.45 psi a

100 mbar a/10 kPa a/1.45 psi a

100 mbar a/10 kPa a/1.45 psi a

100 % of max. span

### Input of absolute pressure, with front-flush diaphragm

Measured variable

Span (continuously adjustable) or measuring range, max. operating pressure and max. test pressure

Absolute pressure, front-flush

HART	PROFIBUS PA/ FOUNDATION Fieldbus		
Span	Nominal measur- ing range	Max. operating pressure MAWP (PS)	Max. perm. test pressure
43.34 1300 mbar a	1300 mbar a	2.6 bar a	10 bar a
4.33 130 kPa a	130 kPa a	260 kPa a	1 MPa a
17 525 inH <sub>2</sub> O a	525 inH <sub>2</sub> O a	37.7 psi a	145 psi a
160 5000 mbar a	5000 mbar a	10 bar a	30 bar a
16 500 kPa a	500 kPa a	1 MPa a	3 MPa a
2.32 72.5 psi a	72.5 psi a	145 psi a	435 psi a
1 30 bar a	30 bar a	45 bar a	100 bar a
0.1 3 MPa a	3 MPa a	4.5 MPa a	10 MPa a
14.6 435 psi a	435 psi a	653 psi a	1450 psi a

Depending on the process connection, the span may differ from these values

0 mbar a/0 kPa a/0 psi a 100 % of max. span

Upper measuring limit	100 % of max. span	
Output	HART	PROFIBUS PA/FOUNDATION Fieldbus
Output signal	4 20 mA	Digital PROFIBUS PA and FOUNDA- TION Fieldbus signal
<ul> <li>Lower limit (infinitely adjustable)</li> </ul>	3.55 mA, factory preset to 3.84 mA	-
Upper limit (infinitely adjustable)	23 mA, factory preset to 20.5 mA or optionally set to 22.0 mA $$	-
Load		

Without HART

Lower measuring limit

With HART

Physical bus

Protection against polarity reversal

Electrical damping (step width 0.1 s)

 $R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.023 \text{ A in } \Omega,$ UH: Power supply in V  $R_{\rm B}$  = 230 ... 500  $\Omega$  (SIMATIC PDM) or

 $R_{\rm B} = 230 \dots 1100 \Omega$  (HART Communicator)

Protected against short-circuit and polarity reversal. Each connection against the other with max. supply voltage.

IEC 61158-2

Set to 2 s (0 ... 100 s)

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Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

# for gauge/absolute pressure, with front-flush diaphragm

	ioi gaagoraboolato proc	ssure, with home-nush diaphragm
SITRANS P DS III series for gauge and absolute pressure,	with front-flush diaphragm	
Measuring accuracy	Acc. to IEC 60770-1	
Reference conditions (All error data refer always refer to the set span)	<ul> <li>Increasing characteristic</li> <li>Start-of-scale value 0 bar/kPa/psi</li> <li>Stainless steel seal diaphragm</li> <li>Silicone oil filling</li> <li>Room temperature 25 °C (77 °F)</li> </ul>	
Measuring span ratio r (spread, Turn-Down)	r = max. measuring span/set measuring sp	oan or nom. pressure range
Error in measurement at limit setting incl. hysteresis and reproducibility		
Linear characteristic	Gauge pressure, front-flush	Absolute pressure, front-flush
- r ≤ 5	≤ 0.075 %	-
- 5 < r ≤ 100	$\leq$ (0.005 · r + 0.05) %	-
- r ≤ 10	-	≤ 0.2 %
- 10 < r ≤ 30	-	≤ 0.4 %
Influence of ambient temperature (in percent per 28 °C (50 °F))	$\leq$ (0.08 · r + 0.16) %	$\leq$ (0.16 · r + 0.24) %
Effect of ambient temperature (in pressure per temperature change)		
Temperature difference between medium temperature and ambient temperature	3 mbar/0.3 kPa/0.04 psi per 10 K	
Long-term stability (temperature change $\pm$ 30 °C ( $\pm$ 54 °F))	≤ (0.25 · r) % in 5 years	
Effect of mounting position (in pressure per change in angle)	0.4 mbar/0.04 kPa/0.006 per 10° inclination (zero point correction is possible with positi	
Effect of auxiliary power supply (in percent per change in voltage)	0.005 % per 1 V	
Measuring value resolution for PROFIBUS PA and FOUNDATION Fieldbus	3 ⋅ 10 <sup>-5</sup> of nominal measuring range	
Rated conditions		
Installation conditions		
Ambient temperature	Observe the temperature class in areas subject to explosion hazard.	
Measuring cell with silicone oil	-40 +85 °C (-40 +185 °F)	
Measuring cell with Neobee oil (with front-flush diaphragm)		
Measuring cell with inert liquid	-40 +85 °C (-40 +185 °F)	
Transmitter	-40 +85 °C (-40 +185 °F)	
Display readable	-30 +85 °C (-22 +185 °F)	
Storage temperature	-50 +85 °C (-58 +185 °F) (in the case of Neobee: -20 +85 °C (-4 +185/°F)) (for high temperature oil: -10 + 85 °C (14 185 °F))	
Climatic class		
• Condensation	Relative humidity 0 100 % Condensation permissible, suitable for use	in the tropics
Degree of protection		
• according to EN 60529	IP66 (optional IP66/IP68)	
according to NEMA 250	Type 4X	
Electromagnetic Compatibility		
Emitted interference and interference immunity	Acc. to IEC 61326 and NAMUR NE 21	
Medium conditions	The max. medium temperature of the front-finto account in accordance with the relevan DIN 11851 etc.).	
Temperature of medium		
Measuring cell with silicone oil	-40 +100 °C (-40 +212 °F)	
• Measuring cell with silicone oil (with front-flush diaphragm)	-40 +150 °C (-40 +302 °F)	
• Measuring cell with Neobee oil (with front-flush diaphragm)	-10 +150 °C (14 302 °F)	
Measuring cell with silicone oil, with temperature decoupler (only for gauge pressure version with front-flush diaphragm)		
Measuring cell with Neobee oil, with temp. decoupler (only for gauge pressure version with flush-mounted diaphragm)		
Measuring cell with inert filling liquid	-20 +100 °C (-4 +212 °F)	
<ul> <li>Measuring cell with high-temperature oil (only for gauge pressure version with front-flush diaphragm)</li> </ul>	-10 +250 °C (14 482 °F)	

Pressure transmitters

for applications with advanced requirements (Advanced)

SITRANS P DS III

# for gauge/absolute pressure, with front-flush diaphragm

SITRANS P DS III series for gauge and absolute pressure, with front-flush diaphragm			
Design			
Weight (without options)	≈ 1.5 kg (≈ 3.3 lb)		
Enclosure material	Low-copper die-cast aluminum, GD-AlSi12 or stainless steel precision casting, mat. no. 1.4408		
Wetted parts materials	Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819		
Measuring cell filling	Silicone oil or inert filling liquid		
Process connection	Flanges as per EN and ASME		
	F&B and pharmaceutical flanges		
Surface quality touched-by-media	$R_a$ -values $\leq 0.8$ μm (32 μ-inch)/welds $R_a) \leq 1.6$ μm (64 μ-inch) (Process connections acc. to 3A; $R_a$ -values $\leq 0.8$ μm (32 μ-inch)/welds $R_a) \leq 0.8$ μm (32 μ-inch)		

	(32 µ-Inch)	
Power supply $U_{H}$	HART	PROFIBUS PA/FOUNDATION Fieldbus
Terminal voltage on transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically-safe mode	-
Power supply	-	Supplied through bus
Separate 24 V power supply necessary	-	No
Bus voltage		
• Not Ex	-	9 32 V
With intrinsically-safe operation	-	9 24 V
Current consumption		
Basic current (max.)	-	12.5 mA
• Start-up current ≤ basic current	-	Yes
Max. current in event of fault	-	15.5 mA
Fault disconnection electronics (FDE) available	-	Yes

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

## for gauge/absolute pressure, with front-flush diaphragm

SITRANS P DS III series for gauge and absolute pressure, with front-flush diaphragm			
Certificates and approvals			
Classification according to PED 2014/68/EU		For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)	
Explosion protection			
• Intrinsic safety "i"	PTB 13 ATEX 2007 X	PTB 13 ATEX 2007 X	
- Marking	Ex II 1/2 G Ex ia/ib IIC T4/T5/T6 Ga/Gb		
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperatu -40 +70 °C (-40 +158 °F) temperatu -40 +60 °C (-40 +140 °F) temperatu	re class T5;	
- Connection	To certified intrinsically-safe circuits with peak values: $U_{\rm i}=30$ V, $I_{\rm i}=100$ mA, $P_{\rm i}=750$ mW; $P_{\rm i}=300$ $\Omega$	FISCO supply unit: $U_0 = 17.5 \text{ V}, I_0 = 380 \text{ mA}, P_0 = 5.32 \text{ W}$ Linear barrier: $U_0 = 24 \text{ V}, I_0 = 250 \text{ mA}, P_0 = 1.2 \text{ W}$	
- Effective internal inductance/capacitance	$L_{i} = 0.4 \text{ mH}, C_{i} = 6 \text{ nF}$	$L_{i} = 7 \mu H, C_{i} = 1.1 nF$	
• Explosion-proof "d"	PTB 99 ATEX 1160	'	
- Marking	Ex II 1/2 G Ex d IIC T4/T6 Gb		
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperatu -40 +60 °C (-40 +140 °F) temperatu		
- 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 Ex ta IIIC T120°C Da Ex II 1/2 D Ex ta/tb IIIC T120°C Da/Db		
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F)		
- Max. surface temperature	120 °C (248 °F)		
- Connection	To certified intrinsically-safe circuits with peak values: $U_{\rm i}=30$ V, $I_{\rm i}=100$ mA, $P_{\rm i}=750$ mW, $R_{\rm i}=300$ $\Omega$	FISCO supply unit: $U_0 = 17.5 \text{ V}, I_0 = 380 \text{ mA}, P_0 = 5.32 \text{ W}$ Linear barrier: $U_0 = 24 \text{ V}, I_0 = 250 \text{ mA}, P_0 = 1 \text{ W}$	
- Effective internal inductance/capacitance	$L_{i} = 0.4 \text{ mH}, C_{i} = 6 \text{ nF}$	$L_i = 7 \mu H, C_i = 1.1 nF$	
• Dust explosion protection for zone 21/22	Ex II 2 D Ex tb IIIC T120°C Db	•	
- Marking	Ex II 2 D IP65 T 120 °C		
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC; $P_{\rm max}$ = 1.2 W	To circuits with values: $U_{\rm H}$ = 9 32 V DC; $P_{\rm max}$ = 1 W	
• Type of protection "n" (zone 2)	PTB 13 ATEX 2007 X		
- Marking	Ex II 2/3 G Ex nA IIC T4/T5/T6 Gb/Gc Ex II 2/3 G Ex ic IIC T4/T5/T6 Gb/Gc		
- Connection (Ex nA)	$U_{\rm m}$ = 45 V	$U_{\rm m} = 32 \text{ V}$	
- Connections (Ex ic)	To circuits with values: $U_{\rm i} = 45 \text{ V}$	FISCO supply unit ic: $U_0 = 17.5 \text{ V}, I_0 = 570 \text{ mA}$ Linear barrier: $U_0 = 32 \text{ V}, I_0 = 132 \text{ mA}, P_0 = 1 \text{ W}$	
- Effective internal inductance/capacitance	$L_i = 0.4 \text{ mH}, C_i = 6 \text{ nF}$	$L_{i} = 7 \mu H, C_{i} = 1.1 nF$	
• Explosion protection acc. to FM	Certificate of Compliance 3008490		
- Identification (XP/DIP) or (IS); (NI)		CL I, DIV 1, GP ABCD T4T6; CL II, DIV 1, GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4T6; CL I, DIV 2, GP ABCD T4T6; CL II, DIV 2, GP FG; CL III	
• Explosion protection to CSA	Certificate of Compliance 1153651	Certificate of Compliance 1153651	
- Identification (XP/DIP) or (IS)	CL I, DIV 1, GP ABCD T4T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4T6; CL I, DIV 2, GP ABCD T4T6; CL II, DIV 2, GP FG; CL III		

### Hygiene version

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

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P DS III

# for gauge/absolute pressure, with front-flush diaphragm

ior gauge/absolute pressure,	with nont-hush diaphragin
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 operation (standard setting address 126)
Cyclic data usage	
Output byte	5 (one measured value) or 10 (two measured values)
Input byte	0, 1, or 2 (register operating mode and reset function for metering)
Internal preprocessing	
Device profile	PROFIBUS PA Profile for Process Control Devices Version 3.0, class B
Function blocks	2
Analog input	
<ul> <li>Adaptation to customer-specific process variables</li> </ul>	Yes, linearly rising or falling characteristic
- Electrical damping, adjustable	0 100 s
- Simulation function	Input /Output
- Failure mode	parameterizable (last good value, substitute value, incorrect value)
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respectively
Register (totalizer)	Can be reset, preset, optional direction of counting, simulation function of register output
- Failure mode	parameterizable (summation with last good value, continuous summation, summation with incorrect value)
- Limit monitoring	One upper and lower warning limit and one alarm limit respec- tively
Physical block	1
Transducer blocks	2
Pressure transducer block	
<ul> <li>Can be calibrated by applying two pressures</li> </ul>	Yes
- Monitoring of sensor limits	Yes
- Specification of a container characteristic with	Max. 30 nodes
- Square-rooted characteristic for flow measurement	Yes
<ul> <li>Gradual volume suppression and implementation point of square-root extraction</li> </ul>	Parameterizable
<ul> <li>Simulation function for mea- sured pressure value and sen- sor temperature</li> </ul>	Constant value or over parameterizable ramp function

# FOUNDATION Fieldbus communication

Function blocks

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

Transducer blocks

Pressure transducer block

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

3 function blocks analog input, 1 function block PID

Yes, linearly rising or falling characteristic

0 ... 100 s

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

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

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

Yes

Standard FOUNDATION Fieldbus function block

1 resource block

1 transducer block Pressure with calibration, 1 transducer block LCD

Yes

Yes

Constant value or over parameterizable ramp function

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P DS III

### for gauge/absolute pressure, with front-flush diaphragm

Selection and Ordering	g data	Α	rtic	le î	Vo.			
Pressure transmitter for gauge and absolute				7 M F 4 1 3 3 -				
pressure, front-flush d SITRANS P DS III HAR		Е						
	-							
ration in the PIA Life	•							
Measuring cell filling	Measuring cell cleaning	ı,						
Silicone oil	normal	1						
Inert liquid FDA compliant fill fluid		3						
Neobee oil	normal	4						
Measuring span (min.		-Ľ						
0.01 1 bar	(0.15 14.5 psi)		В					
0.04 4 bar	(0.58 58 psi)		C					
0.16 16 bar	(2.32 232 psi)		D					
0.63 63 bar	(9.14 914 psi)		E					
43.34 1300 mbar a <sup>1)</sup>			s					
45.54 1500 mbar a 7 0.17 5 bar a <sup>1)</sup>	(2.43 72.5 psi a) <sup>1)</sup>		э Т					
1 30 bar a <sup>1)</sup>	(4.35 435 psi a) <sup>1)</sup>		U					
		-	Ľ					
<b>Wetted parts materials</b> Seal diaphragm	Connection shank							
	Stainless steel							
Stainless steel Hastellov <sup>2)</sup>	Stainless steel Stainless steel		E					
ı iasi <del>c</del> ii0y=/	JIAII IIESS SIEEI		-	,				
Process connection	dor godo M. N. D. or O.			7				
<ul> <li>Flange version with Ord</li> </ul>	der code M, N, R or Q			7				
<ul> <li>Flange version with Ord</li> <li>Non-wetted parts mate</li> </ul>	erials	_		Н				
<ul> <li>Flange version with Ord</li> <li>Non-wetted parts mate</li> <li>Housing made of die-d</li> </ul>	erials cast aluminium	-		(	)			
<ul> <li>Flange version with Orc</li> <li>Non-wetted parts mate</li> <li>Housing made of die-</li> <li>Housing stainless stee</li> </ul>	erials cast aluminium			(				
<ul> <li>Flange version with Orc</li> <li>Non-wetted parts mate</li> <li>Housing made of die-</li> <li>Housing stainless stee</li> <li>Version</li> </ul>	erials cast aluminium el precision casting	-		(	3	1		
<ul> <li>Flange version with Orc</li> <li>Non-wetted parts mate</li> <li>Housing made of die-o</li> <li>Housing stainless stee</li> <li>Version</li> <li>Standard version, Ger setting for pressure ur</li> </ul>	erials cast aluminium bl precision casting man plate inscription, it: bar	-		(	3	1		
<ul> <li>Flange version with Ord</li> <li>Non-wetted parts mate</li> <li>Housing made of die-d</li> <li>Housing stainless stee</li> <li>Version</li> <li>Standard version, Ger setting for pressure ur</li> <li>International version, I</li> </ul>	erials cast aluminium el precision casting man plate inscription, nit: bar English plate inscription,	_		(	3	1 2		
<ul> <li>Flange version with Ord</li> <li>Non-wetted parts mate</li> <li>Housing made of die-die-die-die-die-die-die-die-die-die-</li></ul>	erials cast aluminium el precision casting man plate inscription, iit: bar English plate inscription, iit: bar			(	3	2		
<ul> <li>Flange version with Ord</li> <li>Non-wetted parts mate</li> <li>Housing made of die-die-die-die-die-die-die-die-die-die-</li></ul>	erials cast aluminium el precision casting man plate inscription, iit: bar English plate inscription, iit: bar			(	3			
<ul> <li>Flange version with Ord</li> <li>Non-wetted parts mate</li> <li>Housing made of die-die-die-die-die-die-die-die-die-die-</li></ul>	erials cast aluminium el precision casting man plate inscription, iit: bar English plate inscription, iit: bar			(	3	2		
<ul> <li>Flange version with Orc</li> <li>Non-wetted parts mate</li> <li>Housing made of die-delease</li> <li>Housing stainless stee</li> <li>Version</li> <li>Standard version, Ger setting for pressure ur</li> <li>International version, Esting for pressure ur</li> <li>Chinese version, Englissetting for pressure unition</li> <li>All versions include DVI</li> </ul>	erials cast aluminium el precision casting  man plate inscription, sit: bar English plate inscription, sit: bar sh plate inscription, t: Pascal D with compact operating			(	3	2		
Flange version with Orc Non-wetted parts mate Housing made of die-o Housing stainless stee Version Standard version, Ger setting for pressure ur International version, Englis setting for pressure uni Chinese version, Englis setting for pressure uni All versions include DVI instructions in various E	erials cast aluminium el precision casting  man plate inscription, sit: bar English plate inscription, sit: bar sh plate inscription, t: Pascal D with compact operating			(	3	2		
• Flange version with Orc Non-wetted parts mate • Housing made of die-o • Housing stainless stee Version • Standard version, Ger setting for pressure ur • International version, Englis setting for pressure uni All versions include DVI instructions in various E Explosion protection • None	prials cast aluminium el precision casting  man plate inscription, iit: bar English plate inscription, iit: bar sh plate inscription, t: Pascal D with compact operating U languages.			(	3	2		
Flange version with Orc Non-wetted parts mate Housing made of die- Housing stainless stee Version Standard version, Ger setting for pressure ur International version, E setting for pressure une Chinese version, Englis setting for pressure uni All versions include DVI instructions in various E Explosion protection None With ATEX, Type of pro	prials cast aluminium el precision casting  man plate inscription, nit: bar English plate inscription, nit: bar sh plate inscription, t: Pascal D with compact operating U languages.			(	3	2		
Flange version with Orc Non-wetted parts mate Housing made of die- Housing stainless stee Version Standard version, Ger setting for pressure ur International version, Englis setting for pressure un Chinese version, Englis setting for pressure un All versions include DVI instructions in various E Explosion protection None With ATEX, Type of pro "Intrinsic safety (Ex ia	prials cast aluminium el precision casting  man plate inscription, nit: bar English plate inscription, nit: bar sh plate inscription, t: Pascal D with compact operating U languages.			(	3	2 3 A B		
Flange version with Orc Non-wetted parts mate Housing made of die- Housing stainless stee Version Standard version, Ger setting for pressure ur International version, Englis setting for pressure un Chinese version, Englis setting for pressure un All versions include DVI instructions in various E Explosion protection None With ATEX, Type of pro "Intrinsic safety (Ex ia "Explosion-proof (Ex	prials cast aluminium el precision casting  man plate inscription, nit: bar English plate inscription, nit: bar sh plate inscription, t: Pascal D with compact operating U languages.  ptection: a)" d)" 3)			(	3	2 3 A B D		
Flange version with Orc Non-wetted parts mate Housing made of die- Housing stainless stee Version Standard version, Ger setting for pressure ur International version, Englis setting for pressure un Chinese version, Englis setting for pressure un All versions include DVI instructions in various E Explosion protection None With ATEX, Type of pro "Intrinsic safety (Ex is "Explosion-proof (Ex "Ex nA/ic (Zone 2)"4)	prials cast aluminium el precision casting  man plate inscription, nit: bar English plate inscription, sh plate inscription, t: Pascal D with compact operating U languages.  ptection: a)" d)" 3)			(	3	2 3 A B D E		
Flange version with Orc Non-wetted parts mate Housing made of die- Housing stainless stee Version Standard version, Ger setting for pressure ur International version, Englis setting for pressure un Chinese version, Englis setting for pressure un All versions include DVI instructions in various E Explosion protection None With ATEX, Type of pro "Intrinsic safety (Ex is "Explosion-proof (Ex "Explosion-proof (Ex "Ex nA/ic (Zone 2)"4) FM + CSA intrinsic saf	prials cast aluminium el precision casting  man plate inscription, nit: bar English plate inscription, nit: bar sh plate inscription, t: Pascal D with compact operating U languages.  ptection: a)" d)" 3)  fe (is) <sup>5)</sup>			(	3	22 33 A B D E F		
• Flange version with Ord  Non-wetted parts mate  • Housing made of die-of  • Housing stainless stee  • Version  • Standard version, Ger setting for pressure ur  • International version, Englis setting for pressure uri  • Chinese version, Englis setting for pressure uni  All versions include DVI instructions in various E  Explosion protection  • None  • With ATEX, Type of produce and the produce of the produ	prials cast aluminium el precision casting  man plate inscription, nit: bar English plate inscription, nit: bar sh plate inscription, t: Pascal D with compact operating U languages.  ptection: a)" d)" 3)  fe (is) <sup>5)</sup>			(	3	2 3 A B D E		
• Flange version with Ord  Non-wetted parts mate  • Housing made of die-of  • Housing stainless stee  • Version  • Standard version, Gerestting for pressure ur  • International version, Englises setting for pressure un  • Chinese version, Englises setting for pressure un  All versions include DVI instructions in various E  Explosion protection  • None  • With ATEX, Type of production of the companies of the com	prials cast aluminium el precision casting  man plate inscription, nit: bar English plate inscription, nit: bar sh plate inscription, t: Pascal D with compact operating U languages.  Detection: a)" d)" 3)  fe (is) <sup>5)</sup> Ex ia + Ex d (ATEX) +			(	3	22 33 A B D E F		
• Flange version with Ord  Non-wetted parts mate  • Housing made of die-of  • Housing stainless stee  • Version  • Standard version, Gersetting for pressure ur  • International version, Englissetting for pressure uri  • Chinese version, Englissetting for pressure uni  All versions include DVI  instructions in various E  Explosion protection  • None  • With ATEX, Type of programme safety (Exister)  - "Explosion-proof (Exist	prials cast aluminium el precision casting  man plate inscription, nit: bar English plate inscription, nit: bar sh plate inscription, t: Pascal D with compact operating U languages.  Detection: a)" d)" 3)  fe (is) <sup>5)</sup> Ex ia + Ex d (ATEX) + of protection:			(	3	2 3 A B D E F S		
Flange version with Orc Non-wetted parts mate Housing made of die- Housing stainless stee Version Standard version, Ger setting for pressure ur International version, Englis setting for pressure un Chinese version, Englis setting for pressure un All versions include DVI instructions in various E Explosion protection None With ATEX, Type of production in various E Explosion-proof (Ex in item in	prials cast aluminium el precision casting  man plate inscription, nit: bar English plate inscription, st: Pascal D with compact operating U languages.  ptection: (a)" (d)" 3)  fe (is) <sup>5)</sup> Ex ia + Ex d (ATEX) + of protection: (xplosion Proof (is + xp)" <sup>3)5)</sup>			(	3	22 33 A B D E F		
Flange version with Orc Non-wetted parts mate Housing made of die- Housing stainless stee Version Standard version, Ger setting for pressure ur International version, E setting for pressure ur Chinese version, Englis setting for pressure uni All versions include DVI instructions in various E Explosion protection None With ATEX, Type of pro- "Intrinsic safety (Ex is - "Explosion-proof (Ex - "Ex nA/ic (Zone 2)"4) FM + CSA intrinsic safe FM + CSA intrinsic safe FM + CSA, Type With FM + CSA, Type "Intrinsic Safe and ExElectrical connection/of	prials cast aluminium el precision casting  man plate inscription, nit: bar English plate inscription, st: Pascal D with compact operating U languages.  ptection: a)" d)" 3)  ie (is) <sup>5)</sup> Ex ia + Ex d (ATEX) + of protection: xplosion Proof (is + xp)"3)5)  cable entry			(	3	2 3 A B D E F S		
Flange version with Orc Non-wetted parts mate Housing made of die- Housing stainless stee Version Standard version, Ger setting for pressure ur International version, Englis setting for pressure un Chinese version, Englis setting for pressure un All versions include DVI instructions in various E Explosion protection None With ATEX, Type of pro "Intrinsic safety (Ex ia "Explosion-proof (Ex - "Ex nA/ic (Zone 2)"4) FM + CSA intrinsic safe FM + CSA (is + ep) + Zone 1D/2D5/6)7) With FM + CSA, Type "Intrinsic Safe and Ex Electrical connection/o	prials cast aluminium el precision casting  man plate inscription, nit: bar English plate inscription, st: Pascal D with compact operating U languages.  ptection: (a)" (d)" 3)  fe (is) <sup>5)</sup> Ex ia + Ex d (ATEX) + of protection: (xplosion Proof (is + xp)" <sup>3)5)</sup> cable entry			(	3	2 3 A B D E F S		
• Flange version with Orc  Non-wetted parts mate  • Housing made of die-c  • Housing stainless stee  Version  • Standard version, Gersetting for pressure ur  • International version, Englissetting for pressure un  • Chinese version, Englissetting for pressure un  All versions include DVI instructions in various E  Explosion protection  • None  • With ATEX, Type of production  • Intrinsic safety (Existance)  • "Explosion-proof (Existance)  • "Explosion-proof (Existance)  • FM + CSA intrinsic safe  • FM + CSA, Type  • "Intrinsic Safe and Existance)  • Inner thread M20 x 1.5  • Female thread ½-14 N	prials cast aluminium el precision casting  man plate inscription, nit: bar English plate inscription, nit: bar sh plate inscription, t: Pascal D with compact operating U languages.  ptection: (a)" (d)" 3)  fe (is) <sup>5)</sup> Ex ia + Ex d (ATEX) + of protection: (xplosion Proof (is + xp)"3)5)  cable entry figure (is) in the proof (is) in the			(	3	2 3 A B D E F S		
Flange version with Orc Non-wetted parts mate Housing made of die- Housing stainless stee Version Standard version, Ger setting for pressure ur International version, Englis setting for pressure un Chinese version, Englis setting for pressure un All versions include DVI instructions in various E Explosion protection None With ATEX, Type of pro "Intrinsic safety (Ex ia "Explosion-proof (Ex - "Ex nA/ic (Zone 2)"4) FM + CSA intrinsic safe FM + CSA (is + ep) + Zone 1D/2D5/6)7) With FM + CSA, Type "Intrinsic Safe and Ex Electrical connection/o	prials cast aluminium el precision casting  man plate inscription, nit: bar English plate inscription, nit: bar sh plate inscription, t: Pascal D with compact operating U languages.  ptection: (a)" (d)" 3)  fe (is) <sup>5)</sup> Ex ia + Ex d (ATEX) + of protection: (xplosion Proof (is + xp)"3)5)  cable entry figure (is) in the proof (is) in the			(	3	2 3 A B D E F S		

Selection and Ordering data	Article No.	
Pressure transmitter for gauge and absolute	7MF4133-	
pressure, front-flush diaphragm, SITRANS P DS III HART		
Display		
Without display	0	
Without visible display	1	
(display concealed, setting: mA)		
<ul> <li>With visible display (setting: mA)</li> </ul>	6	
<ul> <li>With customer-specific display (setting as specified, Order code "Y21" or "Y22" required)</li> </ul>	7	

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

A quick-start guide is included in the scope of delivery of the device.

- 1) Not with temperature decoupler P00, not for process connections R02, R04, R10 and R11, and can only be ordered in conjunction with silicone oil.
- 2) Only available for flanges with options M.., N.. and Q..
- 3) Without cable gland, with blanking plug
- 4) Configurations with device plugs Han and M12 are only available in Ex ic. 5) Explosion protection acc. to FM/CSA: suitable for installations according to
- 6) Only in connection with IP66.

NEC 500/505.

- 7) With enclosed cable gland Ex ia and blanking plug.
- 8) Only in connection with Ex approval A, B or E.
- 9) Only in connection with Ex approval A, B, E or F.
- 10) M12 delivered without cable socket

Pressure transmitters

for applications with advanced requirements (Advanced)

SITRANS P DS III

### for gauge/absolute pressure, with front-flush diaphragm

Selection and Ordering	-	Artic	e١	10.			
Pressure transmitter F pressure, front-flush o	for gauge and absolute liaphragm:						
SITRANS P DS III with P	7 M F	4 1	3	4 -			
SITRANS P DS III with F	OUNDATION Fieldbus (FF)	7 M F	4 1	3	5 -		
Click on the Article N ration in the PIA Life	lo. for the online configu- Cycle Portal.	-		-	ľ	ı	
Measuring cell filling	Measuring cell clean-						
Silicone oil	normal	1					
Inert liquid		3					
FDA compliant fill fluid							
Neobee oil	normal	4					
Nominal measuring ra	•						
1 bar	(14.5 psi)	В					
4 bar	(58 psi)	С					
16 bar	(232 psi)	D					
63 bar 1300 mbar a <sup>1)</sup>	(914 psi) (18.86 psi a) <sup>1)</sup>	E S					
5 bar a <sup>1)</sup>	(72.5 psi a) <sup>1)</sup>	T					
30 bar a <sup>1)</sup>	(435 psi a) <sup>1)</sup>	Ü					
	( 1 /	-					
Wetted parts materials Seal diaphragm	Connection shank						
Stainless steel Hastellov <sup>2)</sup>	Stainless steel Stainless steel	A B					
Process connection	Stairliess steel						
Flange version with O Q      Non-wetted parts mate     Housing made of die-			7				
Housing stainless stee			3				
Version							
<ul> <li>Standard version, Ger</li> </ul>	man plate inscription,				1		
setting for pressure ur							
<ul> <li>International version, l setting for pressure ur</li> </ul>	English plate inscription,				2		
Chinese version, English					3		
setting for pressure uni					•		
	O with compact operating						
instructions in various E	U languages.	_					
Explosion protection							
• None					,	١	
With ATEX, Type of pre-     "Intringia as fature (Fixed)					ı,	,	
<ul><li>- "Intrinsic safety (Ex i</li><li>- "Explosion-proof (Ex</li></ul>					E		
- "Ex nA/ic (Zone 2)"4					E		
• FM + CSA intrinsic sa	>				F		
• FM + CSA (is + ep) + Zone 1D/2D <sup>5)6)7)</sup>	1 /				S		
• With FM + CSA, Type	of protection:						
- "Intrinsic Safe and Ex (available soon)	xplosion Proof (is + xp)"3)5)				N	1 C	
Electrical connection/	cable entry						
<ul> <li>Screwed gland M20 x</li> </ul>	•					В	
<ul> <li>Screwed gland ½-14</li> </ul>						С	
<ul> <li>Device plugs M12 (sta</li> </ul>	ainless steel) <sup>8) 9)</sup>					F	

Selection and Ordering data	Article No.	
Pressure transmitter P for gauge and absolute pressure, front-flush diaphragm:		
SITRANS P DS III with PROFIBUS PA (PA)	7MF4134-	
SITRANS P DS III with FOUNDATION Fieldbus (FF)	7MF4135-	
Display		
Without display	0	
Without visible display     (display a display di	1	
(display concealed, setting: bar)		
With visible display (setting: bar)	6	
<ul> <li>With customer-specific display (setting as specified, Order code "Y21" required)</li> </ul>	7	

A quick-start guide is included in the scope of delivery of the device.

- 1) Not with temperature decoupler P00, not for process connections R01, R02, R04, R10 and R11, and can only be ordered in conjunction with silicone oil.
- $^{2)}\,$  Only available for flanges with options M.., N.. and Q.
- 3) Without cable gland, with blanking plug
- Configurations with device plugs Han and M12 are only available in Ex ic.
   Explosion protection acc. to FM/CSA: suitable for installations according to NEC 500/505.
- 6) Only in connection with IP66.
- 7) With enclosed cable gland Ex ia and blanking plug.
- 8) Only in connection with Ex approval A, B, E or F.
- 9) M12 delivered without cable socket

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P DS III

# for gauge/absolute pressure, with front-flush diaphragm

Selection and Ordering data	Order			
Further designs Add "-Z" to Article No. and specify Order code.		HART	PA	FF
Device plugs <sup>1)</sup>				
Han 7D (metal)	A30	<b>✓</b>		
Han 8D (instead of Han 7D)	A31	1		
<ul><li>Angled</li><li>Han 8D (metal)</li></ul>	A32 A33	1		
• ਜਗਾ ਰਹਾ (ਜਾਂਦਿਗ) Cable sockets for device plugs M12	A50	<b>v</b>	1	1
(metal (CuZn))	700	Í	·	Ť
Rating plate inscription (instead of German) • English	B11	1	1	1
• French	B12	1	1	1
• Spanish	B13	1	1	1
• Italian	B14	1	1	1
Cyrillic (russian)	B16	✓	✓	✓
English rating plate	B21	✓	✓	✓
Pressure units in inH <sub>2</sub> 0 and/or psi	011	./	./	./
Quality Inspection Certificate (5-point char- acteristic curve test) according to IEC 60770-2	CII	•	•	•
Inspection certificate	C12	1	1	1
Acc. to EN 10204-3.1	·			
Factory certificate	C14	✓	✓	✓
Acc. to EN 10204-2.2				
Functional safety (SIL2)	C20	✓		
Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL con-				
formity declaration				
Functional safety (PROFIsafe) Certificate and PROFIsafe protocol	C21 <sup>2)</sup>		✓	
Functional safety (SIL2/3)	C23	1		
Devices suitable for use according to	020			
IEC 61508 and IEC 61511. Includes SIL conformity declaration				
PED for Russia with initial calibration mark	C99	✓	✓	✓
Setting of the upper saturation limit of the output signal to 22.0 mA	D05	✓		
Degree of protection IP66/IP68 (only for M20x1.5 and ½-14 NPT)	D12	✓	✓	✓
Capri cable gland 4F CrNi and clamping device (848699 + 810634) included	D59	✓	✓	✓
Oxygen application	E10	1	1	1
(In the case of oxygen measurement and inert liquid max. 100 bar (1450 psi) at 60°C (140 °F))				
Export approval Korea	E11	✓	1	1
CRN approval Canada (Canadian Registration Number)	E22 <sup>3)</sup>	✓	✓	✓
Dual seal	E24	✓	1	1
Explosion-proof "Intrinsic safety" (Ex ia) to	E25 <sup>4)</sup>	1	1	1
INMETRO (Brazil) (only for transmitter 7MF4B)				
"Flameproof" explosion protection accord-	E26 <sup>4)</sup>	1	1	1
ing to INMETRO (Brazil) (only for transmitter 7MF4D)				
Explosion-proof "Intrinsic safety" (Ex ia +	E28 <sup>4)</sup>	1	1	
Ex d) to INMETRO (Brazil) (only for transmitter 7MF4P)				
	E4E4)	1	,	,
Ex Approval IEC Ex (Ex ia) (only for transmitter 7MF4B)	E45 <sup>4)</sup>	•	•	•
		,	1	./
Ex Approval IEC Ex (Ex d)	E46 <sup>4)</sup>	<b>V</b>	•	v

for gauge/absolute pressure, with it	Ont-II	usii ui	артп	ayııı
Selection and Ordering data	Order	code		
Further designs Add "-Z" to Article No. and specify Order code.		HART	PA	FF
Explosion-proof "Intrinsic safety" to NEPSI (China)	E55 <sup>4)</sup>	✓	✓	✓
(only for transmitter 7MF4B)				
Explosion protection "Explosion-proof" to NEPSI (China)	E56 <sup>4)</sup>	✓	✓	✓
(only for transmitter 7MF4D)				
Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)	E57 <sup>4)</sup>	✓	✓	<b>✓</b>
Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China) (only for transmitter 7MF4R)	E58 <sup>4)</sup>	✓	✓	✓
"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea)	E70 <sup>4)</sup>	✓	✓	✓
(only for transmitter 7MF4[B, D]Z + E11)				
Ex-protection Ex ia according to EAC Ex (Russia)	E80	✓	✓	✓
Ex-protection Ex d according to EAC Ex (Russia)	E81	✓	✓	✓
Ex-protection Ex nA/ic (Zone 2) according to EAC Ex (Russia)	E82	✓	✓	✓
Ex-protection Ex ia + Ex d + Zone 1D/2D according to EAC Ex (Russia)	E83	✓	✓	✓
Two coats of lacquer on casing and cover (PU on epoxy)	G10	✓	✓	✓
Transient protector 6 kV (lightning protection)	J01	✓	✓	✓
Flanges to EN 1092-1, Form B1				
• DN 25, PN 40 <sup>5)</sup>	M11	<b>√</b>	1	<b>V</b>
• DN 40, PN 40	M13 M23	1	1	<b>√</b>
<ul><li>DN 40, PN 100</li><li>DN 50, PN 16</li></ul>	M04	<b>V</b>	<b>*</b>	<b>*</b>
• DN 50, PN 40	M14	1	1	1
• DN 80, PN 16	M06	✓	✓	✓
• DN 80, PN 40	M16	✓	✓	✓
Flanges to ASME B16.5				
<ul> <li>Stainless steel flange 1" class 150<sup>5)</sup></li> </ul>	M40	✓	✓.	✓
• Stainless steel flange 1½" class 150	M41	<b>1</b>	1	<b>√</b>
<ul><li>Stainless steel flange 2" class 150</li><li>Stainless steel flange 3" class 150</li></ul>	M42 M43	<b>√</b>	1	1
• Stainless steel flange 4" class 150	M44	1	1	1
• Stainless steel flange 1½" class 300	M46	1	1	1
• Stainless steel flange 2" class 300	M47	✓	✓	✓
• Stainless steel flange 3" class 300	M48	✓.	✓.	✓.
Stainless steel flange 4" class 300	M49	✓	✓	<b>✓</b>
Threaded connector to DIN 3852-2, form A, thread to ISO 228				
• G 3/4"-A, front-flush <sup>6)</sup>	R01	1	1	1
• G 1"-A, front-flush <sup>6)</sup>	R02	✓	✓	✓
• G 2"-A, front-flush	R04	✓	✓	✓
Tank connection <sup>7)</sup>				
Sealing is included in delivery	D10	1	1	1
• TG 52/50, PN 40 • TG 52/150, PN 40	R10 R11	<b>✓</b>	1	<b>✓</b>

Pressure transmitters

for applications with advanced requirements (Advanced)

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 Article No. and specify Order code.				
Sanitary process connection according				
DIN 11851 (Dairy connection with slotted				
union nut)				
• DN 50, PN 25	N04	✓	✓	✓
• DN 80, PN 25	N06	✓	✓	✓
Tri Clamp connection according				
Tri-Clamp connection according DIN 32676/ISO 2852				
• DN 50/2", PN 16	N14	1	1	<b>✓</b>
• DN 65/2.5", PN 10	N15	1	1	· /
• Clamp 2" ISO 2852 PN 16	N22	1	1	<b>V</b>
• Clamp 3" ISO 2852 PN 16	N23	· /	1	•
• Clamp 3 130 2002 PN 10	NZ3	_ <b>v</b>	٧	•
Varivent connection				
EHEDG compliant				
<ul> <li>Type N = 68 for Varivent housing</li> </ul>	N28	✓	✓	✓
DN 40 125 and 11/2" 6", PN 40				
Temperature decoupler up to 200 °C <sup>8)</sup>	P00	✓	✓	✓
for version with front-flush diaphragm				
Sanitary process connection to DRD				
• DN 50, PN 40	M32	1	1	1
,	IVIJZ		•	•
SMS socket with union nut				
• 2"	M67	✓	✓	✓
• 2½"	M68	✓	✓	✓
• 3"	M69	✓	✓	✓
SMS threaded socket				
• 2"	M73	1	1	<b>✓</b>
• 21/2"	M74	1	1	<b>V</b>
• 3"	M75	1	· /	· /
	IVI / S		•	•
IDF socket with union nut ISO 2853				
• 2"	M82	✓	✓	✓
• 2½"	M83	✓	✓	✓
• 3"	M84	✓	✓	✓
IDF threaded socket ISO 2853				
• 2"	M92	1	1	<b>✓</b>
• 21/2"	M93	1	1	<b>*</b>
• 272 • 3"	M94	<b>V</b>	<b>*</b>	<b>V</b>
_ <del></del>	IVI94	<b>-</b>	•	_
Sanitary process connection to				
NEUMO Bio-Connect screw connection				
EHEDG compliant	00-	,	,	,
• DN 50, PN 16	Q05	٧,	<b>V</b>	<b>V</b>
• DN 65, PN 16	Q06	<b>1</b>	1	<b>1</b>
• DN 80, PN 16	Q07	✓.	<b>1</b>	✓
• DN 100, PN 16	Q08	✓.	✓.	✓.
• DN 2", PN 16	Q13	✓	✓	✓
• DN 21/2", PN 16	Q14	✓	✓	✓
• DN 3", PN 16	Q15	✓	✓	✓
• DN 4", PN 16	Q16	1	1	✓
,				
Sanitary process connection to NEUMO Bio-Connect flange connection				
EHEDG compliant				
• DN 50, PN 16	Q23	1	1	✓
• DN 65, PN 16	Q24	1	1	1
• DN 80, PN 16	Q25	1	1	1
• DN 100, PN 16	Q26	1	/	<b>*</b>
		1	1	<b>*</b>
• DN 2", PN 16	Q31			<b>✓</b>
• DN 2½", PN 16	Q32	1	1	
• DN 3", PN 16	Q33	<b>√</b>	1	1
• DN 4", PN 16	Q34	✓	✓	✓

Selection and Ordering data	Order	code		
Further designs Add "-Z" to Article No. and specify Order code.		HART	PA	FF
Sanitary process connection to NEUMO Bio-Connect clamp connection				
<ul><li>EHEDG compliant</li><li>DN 50, PN 16</li></ul>	Q39	1	1	1
• DN 65, PN 10	Q40	1	1	1
• DN 80, PN 10	Q41	1	1	1
• DN 100, PN 10	Q42	1	1	1
• DN 2½", PN 16	Q48	✓	✓	✓
• DN 3", PN 10	Q49	✓	✓	✓
• DN 4", PN 10	Q50	✓	✓	✓
Bio-Control sanitary process connection				
• DN 50, PN 16	Q53	✓	✓	✓
• DN 65, PN 16	Q54	✓	✓	✓
Sanitary process connection to				
NEUMO Bio-Connect S flange connection				
• DN 2", PN 16	Q72	✓	✓	✓
Aseptic threaded socket to DIN 11864-1 Form A				
• DN 50, PN 25	N33	✓	✓	✓
• DN 65, PN 25	N34	✓	✓	✓
• DN 80, PN 25	N35	✓	✓	✓
• DN 100, PN 25	N36	✓	✓	✓
Aseptic flange with notch to DIN 11864-2 Form A				
• DN 50, PN 16	N43	✓	✓	✓
• DN 65, PN 16	N44	✓	✓	✓
• DN 80, PN 16	N45	✓	✓	✓
• DN 100, PN 16	N46	✓	✓	✓
Aseptic flange with groove to DIN 11864-2 Form A				
• DN 50, PN 16	N43 + P11	✓	✓	✓
• 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 Form A				
• DN 50, PN 25	N53	✓	1	1
• DN 65, PN 25	N54	✓	✓	1
• DN 80, PN 16	N55	✓	✓	✓
• DN 100, PN 16	N56	✓	✓	✓

<sup>1)</sup> Device plug Han IP65

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

<sup>3)</sup> Cannot be ordered with remote seal.

<sup>4)</sup> When the additional ex option is selected, the ATEX marking on the device is omitted. Only the Ex option selected via the Z option is marked.

5) Special seal in Viton included in the scope of delivery. FKM; temperature range -20 ... +200 °C (-4 ... +392 °C).

<sup>6)</sup> Cannot be combined with Order code P00. Can only be ordered with silicone oil measuring cell filling.

The weldable socket can be ordered under accessories.

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

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

for gauge/absolute pressure, with front-flush diaphragm

Selection and Ordering data	Order code			
Additional data		HART	PA	FF
Please add "-Z" to Article No. and specify Order code(s) and plain text.				
Measuring range to be set	Y01	✓	<b>√</b> 1)	
Specify in plain text (max. 5 characters): Y01: up to mbar, bar, kPa, MPa, psi				
Stainless steel tag plate and entry in device variable (measuring point description)	Y15	1	✓	✓
Max. 16 characters, specify in plain text:				
Measuring point text (entry in device variable)	Y16	✓	✓	✓
Max. 27 characters, specify in plain text: Y16:				
Entry of HART address (TAG)	Y17	✓		
Max. 8 characters, specify in plain text: Y17:				
Setting of pressure indicator in pressure units	Y21	✓	✓	✓
Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi, Note:				
The following pressure units can be selected:				
bar, mbar, mm H <sub>2</sub> O <sup>*)</sup> , inH <sub>2</sub> O <sup>*)</sup> , ftH <sub>2</sub> O <sup>*)</sup> , mmHG, inHG, psi, Pa, kPa, MPa, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , Torr, ATM or %				
*) ref. temperature 20 °C				
Setting of pressure indication in non-pressure units <sup>2)</sup>	Y22 + Y01	<b>✓</b>		
Specify in plain text: Y22: up to I/min, m³/h, m, USgpm, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)				
Preset bus address	Y25		✓	✓
possible between 1 and 126 Specify in plain text: Y25:				
Damping adjustment in seconds (0 100 s)	Y30	1	1	✓

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

✓ = available

### ordering example

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

B line: A22 + Y01 + Y21

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

C line: Y21: bar (psi)

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

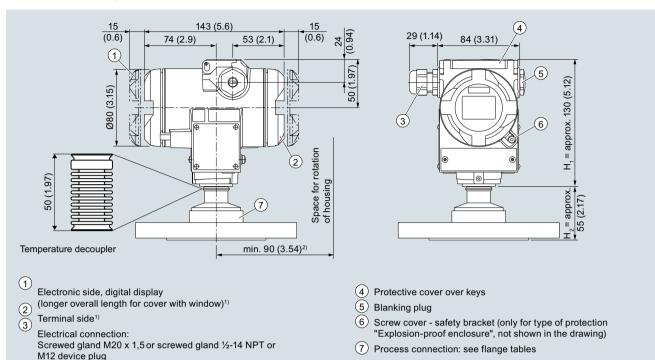
<sup>2)</sup> Preset values can only be changed over SIMATIC PDM.

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P DS III

for gauge/absolute pressure, with front-flush diaphragm

### Dimensional drawings



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

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

H<sub>1</sub> = Height of the SITRANS P300 up to a defined cross-section

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

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

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

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

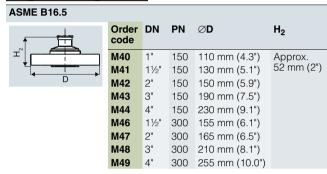
## for gauge/absolute pressure, with front-flush diaphragm

### Flanges according to EN and ASME

Flange according to EN

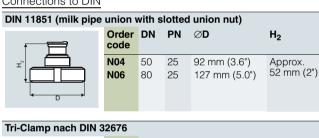
EN 1092-1					
	Order code	DN	PN	ØD	H <sub>2</sub>
±] ————————————————————————————————————	M11	25	40	115 mm (4.5")	Approx.
D	M13	40	40	150 mm (5.9")	52 mm (2")
Б	M23	40	100	170 mm (6.7")	
	M04	50	16	165 mm (6.5")	
	M14	50	40	165 mm (6.5")	
	M06	80	16	200 mm (7.9")	
	M16	80	40	200 mm (7.9")	

### Flanges according to ASME



### NuG and pharmaceutical connections

Connections to DIN



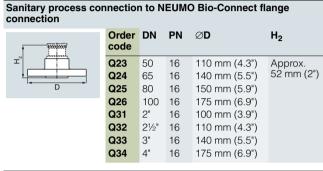
Tri-Clamp nach DIN 32676										
	Order code	DN	PN	ØD	H <sub>2</sub>					
T <sup>N</sup>	N14 N15	50 65	16 10	64 mm (2.5") 91 mm (3.6")	Approx. 52 mm (2")					
D										

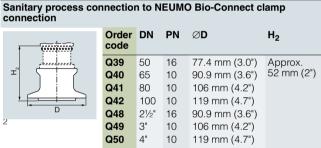
### Other connections

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

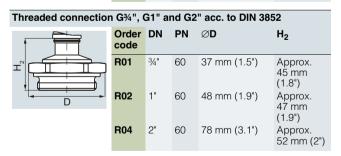
Sanitary process connection to DRD					
	Order code	DN	PN	ØD	H <sub>2</sub>
D	M32	50	40	105 mm (4.1")	Approx. 52 mm (2")

### Sanitary process screw connection to NEUMO Bio-Connect Order DN PΝ $\emptyset D$ $H_2$ Q05 82 mm (3.2") 50 16 Approx. Q06 65 105 mm (4.1") 52 mm (2") 16 Q07 80 16 115 mm (4.5") Q08 100 145 mm (5.7") 16 Q13 2" 82 mm (3.2") 16 Q14 21/2" 16 105 mm (4.1") Q15 3" 16 105 mm (4.1") Q16 4" 16 145 mm (5.7")





Sanitary process connection to NEUMO Bio-Connect S flange connection						
_~		Order code	DN	PN	ØD	H <sub>2</sub>
_	D	Q72	2"	16	125 mm (4.9")	Approx. 52 mm (2")



Pressure transmitters

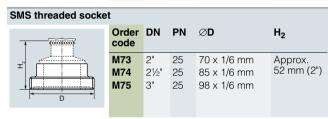
for applications with advanced requirements (Advanced)

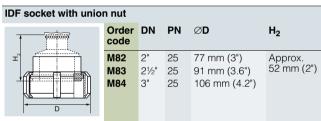
SITRANS P DS III

### for gauge/absolute pressure, with front-flush diaphragm

### Tank connection TG 52/50 and TG52/150 Order DN PΝ $H_2$ R10 25 40 63 mm (2.5") Approx. 63 mm (2.5") R11 25 40 63 mm (2.5") Approx. 170 mm (6.7")

SMS socket with union nut					
	Order code	DN	PN	ØD	H <sub>2</sub>
T D	M67 M68 M69	2" 2½" 3"	25 25 25	84 mm (3.3") 100 mm (3.9") 114 mm (4.5")	Approx. 52 mm (2")

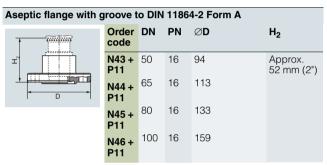


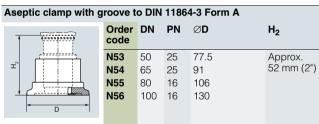


IDF threaded socket					
(1111111)	Order code	DN	PN	ØD	H <sub>2</sub>
T D	M92 M93 M94	2" 2½" 3"	25	64 mm (2.5") 77.5 mm (3.1") 91 mm (3.6")	Approx. 52 mm (2")

Aseptic threaded socket to DIN 11864-1 Form A					
<del></del>	Order code	DN	PN	ØD	H <sub>2</sub>
<b>T</b>	N33 N34 N35 N36	50 65 80 100	25 25 25 25 25	78 x 1/6" 95 x 1/6" 110 x ½" 130 x ½"	Approx. 52 mm (2")

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





Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

for absolute pressure (from gauge pressure series)

### Technical specifications

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

Span (fully adjustable) or measuring range, max. operating pressure (in accordance with 2014/68/EU Pressure Equipment Directive) and max. test pressure (pursuant to DIN 16086)

Absolute pressure

HART	PROFIBUS PA/ FOUNDATION Fieldbus		
Span	Nominal measur- ing range	Max. operating pressure MAWP (PS)	Max. perm. test pressure
8.34 250 mbar a	250 mbar a	1.5 bar a	6 bar a
0.83 25 kPa a	25 kPa a	150 kPa a	600 kPa a
3.35 100 inH <sub>2</sub> O a	100 inH <sub>2</sub> O a	21.8 psi a	87 psi a
43.34 1300 mbar a	1300 mbar a	2.6 bar a	10 bar a
4.33 130 kPa a	130 kPa a	260 kPa a	1 MPa a
17.42 522.4 inH <sub>2</sub> O a	525 inH <sub>2</sub> O a	37.7 psi a	145 psi a
170 5000 mbar a	5000 mbar a	10 bar a	30 bar a
17 500 kPa a	500 kPa a	1 MPa a	3 MPa a
2.43 72.5 psi a	72.5 psi a	145 psi a	435 psi a
1 30 bar a	30 bar a	45 bar a	100 bar a
0.1 3 MPa a	3 MPa a	4.5 MPa a	10 MPa a
14.6 435 psi a	435 psi a	653 psi a	1450 psi a
5,34 160 bar a	160 bar a	167 bar a	250 bar a
0.53 16 MPa a	16 MPa a	16,7 MPa a	25 MPa a
77.4 2321 psi a	2321 psi	2422 psi	3626 psi
13.34 400 bar a	400 bar a	400 bar a	600 bar a
1.3 40 MPa a	40 MPa a	40 MPa a	60 MPa a
193.4 5802 psi a	5802 psi a	5802 psi a	8702 psi a
23.34 700 bar a	700 bar a	800 bar a	800 bar a
2.33 70 MPa a	70 MPa a	80 MPa a	80 MPa a
338.43 10153 psi a	10153 psi a	11603 psi a	11603 psi a

### Lower measuring limit

- Measuring cell with silicone oil filling
- Measuring cell with inert filling liquid
- for process temperature -20 °C <  $9 \le$  +60 °C  $(-4 \, {}^{\circ}\text{F} < 9 \le +140 \, {}^{\circ}\text{F})$
- for process temperature  $60 \,^{\circ}\text{C} < 9 \le +100 \,^{\circ}\text{C} \text{ (max. 85 °C for measuring cell 30 bar)}$ (140 °F <  $9 \le +212$  °F (max. 185 °F for measuring cell 435 psi))

Upper measuring limit

0 mbar a/0 kPa a/0 psi a

30 mbar a/3 kPa a/0.44 psi a

30 mbar a + 20 mbar a  $\cdot$  (9 - 60 °C)/°C 3 kPa a + 2 kPa a  $\cdot$  (9 - 60 °C)/°C 0.44 psi a + 0.29 psi a · (9 - 140 °F)/°F

100 % of max. span

(for oxygen measurement max. 100 bar/10 MPa/1450 psi and 60 °C (140 °F)

ambient temperature/process temperature)

Start of scale value	Between the measuring limits (fully adjustate	Between the measuring limits (fully adjustable)		
Output	HART	PROFIBUS PA/FOUNDATION Fieldbus		
Output signal	4 20 mA	Digital PROFIBUS PA and FOUNDATION Fieldbus signal		
<ul> <li>Lower limit (infinitely adjustable)</li> </ul>	3.55 mA, factory preset to 3.84 mA	-		
Upper limit (infinitely adjustable)	23 mA, factory preset to 20.5 mA or optionally set to 22.0 mA $$	-		
Load				
• Without HART	$R_{\rm B} \leq (U_{\rm H}$ - 10.5 V)/0.023 A in $\Omega$ , $U_{\rm H}$ : Power supply in V	-		
With HART	$R_{\rm B}$ = 230 500 $\Omega$ (SIMATIC PDM) or $R_{\rm B}$ = 230 1100 $\Omega$ (HART Communicator)	-		
Physical bus	-	IEC 61158-2		
Protection against polarity reversal	Protected against short-circuit and polarity Each connection against the other with max			
Electrical damping (step width 0.1 s)	Set to 2 s (0 100 s)			

Pressure transmitters

for applications with advanced requirements (Advanced)

SITRANS P DS III

for absolute pressure (from gauge pressure series)

Measuring accuracy	Acc. to IEC 60770-1
Reference conditions (All error data refer always refer to the set span)	<ul> <li>Increasing characteristic</li> <li>Start-of-scale value 0 bar/kPa/psi</li> <li>Stainless steel seal diaphragm</li> <li>Silicone oil filling</li> <li>Room temperature 25 °C (77 °F)</li> </ul>
Measuring span ratio r (spread, Turn-Down)	r = max. measuring span/set measuring span or nom. pressure range
Error in measurement at limit setting incl. hysteresis and reproducibility	
Linear characteristic	
- r ≤ 10	≤ 0.1 %
- 10 < r ≤ 30	≤ 0.2 %
Influence of ambient temperature (in percent per 28 °C (50 °F))	
• 250 mbar a/25 kPa a/3.6 psi a	$\leq$ (0.15 · r + 0.1) %
• 1300 mbar a/130 kPa a/18.8 psi a 5 bar a/500 kPa a/72.5 psi a 30 bar a/3000 kPa a/435 psi a 100 bar a/10 MPa a/1450 psi a 160 bar a/16 MPa a/2321 psi a 400 bar a/40 MPa a/5802 psi a 700 bar a/50 MPa a/10152 psi a	$\leq$ (0.08 · r + 0.16) %
Long-term stability (temperature change ± 30 °C (± 54 °F))	≤ (0.25 · r) % in 5 years
Effect of mounting position (in pressure per change in angle)	≤ 0.05 mbar/0.005 kPa/0.000725 psi per 10° inclination (zero point correction is possible with position error compensation)
Effect of auxiliary power supply (in percent per change in voltage)	0.005 % per 1 V
Measuring value resolution for PROFIBUS PA and FOUNDATION Fieldbus	3 ⋅ 10 <sup>-5</sup> of nominal measuring range
Rated conditions	
Degree of protection	
according to EN 60529	IP66 (optional IP66/IP68)
according to NEMA 250	Type 4X
Temperature of medium	
Measuring cell with silicone oil filling	-40 +100 °C (-40 +212 °F) -20 +100 °C (-4 +212 °F) with 30 bar a measuring cell
Measuring cell with inert filling liquid	-20 +100 °C (-4 +212 °F)
<ul> <li>In conjunction with dust explosion protection</li> </ul>	-20 +60 °C (-4 +140 °F)
Ambient conditions	
Ambient temperature	
- Transmitter	-40 +85 °C (-40 +185 °F)
- Display readable	-30 +85 °C (-22 +185 °F)
Storage temperature	-50 +85 °C (-58 +185 °F)
Climatic class	
- Condensation	Relative humidity 0 100 % Condensation permissible, suitable for use in the tropics
Electromagnetic Compatibility	
- Emitted interference and interference immunity	Acc. to IEC 61326 and NAMUR NE 21

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

## for absolute pressure (from gauge pressure series)

12.5 mA

15.5 mA

Yes

Yes

SITRANS P DS III series for absolute pressure (	from the gauge pressure series)			
Design				
Weight (without options)	≈ 1.5 kg (≈ 3.3 lb)			
Enclosure material	Low-copper die-cast aluminum, GD-AlS no. 1.4408	i 12 or stainless steel precision casting, mat.		
Wetted parts materials				
Connection shank	Stainless steel, mat. no. 1.4404/316L or	Hastelloy C4, mat. no. 2.4602		
Oval flange	Stainless steel, mat. no. 1.4404/316L			
Seal diaphragm	Stainless steel, mat. no. 1.4404/316L or	Hastelloy C276, mat. no. 2.4819		
Measuring cell filling	Silicone oil or inert filling liquid (maximum value with oxygen measurem (140 °F))	(maximum value with oxygen measurement pressure 100 bar (1450 psi) at 60 °C		
Process connection		Connection shank G½B to EN 837-1, female thread ½ -14 NPT or oval flange (PN 160 (MAWP 2320 psi a)) to DIN 19213 with mounting thread M10 or $^7$ / $_{16}$ -20 UNF to IEC 61518/DIN EN 61518		
Material of mounting bracket				
• Steel	Sheet-steel, Mat. No. 1.0330, chrome-pl	ated		
• Stainless steel 304	Sheet stainless steel, mat. no. 1.4301 (S	S 304)		
Stainless steel 316L	Sheet stainless steel, mat. no. 1.4404 (S	S 316L)		
Power supply $U_{\mathbb{H}}$	HART	PROFIBUS PA/FOUNDATION Fieldbus		
Terminal voltage on transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically-safe mod	e		
Power supply		Supplied through bus		
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.)

• Start-up current ≤ basic current

Fault disconnection electronics (FDE) available

• Max. current in event of fault

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Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P DS III

## for absolute pressure (from gauge pressure series)

SITRANS P DS III series for absolute pressure (from the gauge pressure series)				
Certificates and approvals	HART	PROFIBUS PA/ FOUNDATION Fieldbus		
Classification according to PED 2014/68/EU	For gases of fluid group 1 and liquids of fluarticle 4, paragraph 3 (sound engineering	uid group 1; complies with requirements of practice)		
Explosion protection				
• Intrinsic safety "i"	PTB 13 ATEX 2007 X			
- Marking	Ex II 1/2 G Ex ia/ib IIC T4/T5/T6 Ga/Gb			
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperature -40 +70 °C (-40 +158 °F) temperature -40 +60 °C (-40 +140 °F) temperature	e class T5;		
- Connection	To certified intrinsically-safe circuits with peak values: $U_{\rm i}$ = 30 V, $I_{\rm i}$ = 100 mA, $P_{\rm i}$ = 750 mW; $R_{\rm i}$ = 300 $\Omega$	FISCO supply unit: $U_0 = 17.5 \text{ V}, \ I_0 = 380 \text{ mA}, \ P_0 = 5.32 \text{ W}$ Linear barrier: $U_0 = 24 \text{ V}, \ I_0 = 250 \text{ mA}, \ P_0 = 1.2 \text{ W}$		
- Effective internal inductance/capacitance	$L_{i} = 0.4 \text{ mH}, C_{i} = 6 \text{ nF}$	$L_{i} = 7 \mu H, C_{i} = 1.1 \text{ nF}$		
• Explosion-proof "d"	PTB 99 ATEX 1160			
- Marking	Ex II 1/2 G Ex d IIC T4/T6 Gb			
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperature -40 +60 °C (-40 +140 °F) temperature	e class T4; e class T6		
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC	To circuits with values: $U_{\rm H}$ = 9 32 V DC		
<ul> <li>Dust explosion protection for zone 20</li> </ul>	PTB 01 ATEX 2055			
- Marking	Ex II 1 D Ex ta IIIC T120°C Da Ex II 1/2 D Ex ta/tb IIIC T120°C Da/Db			
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F)			
- Max. surface temperature	120 °C (248 °F)			
- Connection	To certified intrinsically-safe circuits with peak values: $U_{\rm i}$ = 30 V, $I_{\rm i}$ = 100 mA, $P_{\rm i}$ = 750 mW, $P_{\rm i}$ = 300 $\Omega$	FISCO supply unit: $U_0 = 17.5 \text{ V}, I_0 = 380 \text{ mA}, P_0 = 5.32 \text{ W}$ Linear barrier: $U_0 = 24 \text{ V}, I_0 = 250 \text{ mA}, P_0 = 1.2 \text{ W}$		
- Effective internal inductance/capacitance	$L_{i} = 0.4 \text{ mH}, C_{i} = 6 \text{ nF}$	$L_{i} = 7 \mu H, C_{i} = 1.1 nF$		
Dust explosion protection for zone 21/22	PTB 01 ATEX 2055			
- Marking	Ex II 2 D Ex tb IIIC T120°C Db			
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC; $P_{\rm max}$ = 1.2 W	To circuits with values: $U_H = 9 32 \text{ V}$ DC; $P_{\text{max}} = 1 \text{ W}$		
Type of protection "n" (zone 2)	PTB 13 ATEX 2007 X	ax		
- Marking	Ex II 2/3 G Ex nA IIC T4/T5/T6 Gb/Gc Ex II 2/3 G Ex ic IIC T4/T5/T6 Gb/Gc			
- Connection (Ex nA)	$U_{\rm m} = 45  {\rm V}$	$U_{\rm m} = 32  {\rm V}$		
- Connection (Ex ic)	To circuits with values: $U_{\rm i} = 45 \text{ V}$	FISCO supply unit ic: $U_0 = 17.5 \text{ V}, I_0 = 570 \text{ mA}$ Linear barrier: $U_0 = 32 \text{ V}, I_0 = 132 \text{ mA}, P_0 = 1 \text{ W}$		
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4  \rm mH,  C_{\rm i} = 6  \rm nF$	$L_{\rm i} = 7  \mu \text{H},  C_{\rm i} = 1.1  \text{nF}$		
• Explosion protection acc. to FM	Certificate of Compliance 3008490			
- Identification (XP/DIP) or (IS); (NI)	CL I, DIV 1, GP ABCD T4T6; CL II, DIV 1 T4T6; CL I, DIV 2, GP ABCD T4T6; CL			
• Explosion protection to CSA	Certificate of Compliance 1153651			
- Identification (XP/DIP) or (IS)	CL I, DIV 1, GP ABCD T4T6; CL II, DIV 1, 2, GP ABCD T4T6; CL II, DIV 2, GP FG;	, GP EFG; CL III; Ex ia IIC T4T6; CL I, DIV CL III		

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

			01117(1001 20111
		for absolute pressure (	from gauge pressure series)
HART communication		FOUNDATION Fieldbus	
HART	230 1100 Ω	communication	
Protocol	HART Version 5.x	Function blocks	3 function blocks analog input, 1 function block PID
Software for computer	SIMATIC PDM	Analog input	
PROFIBUS PA communication		- Adaptation to customer-specif-	Yes, linearly rising or falling
Simultaneous communication with master class 2 (max.)	4	ic process variables	characteristic
The address can be set using	Configuration tool or local opera-	- Electrical damping, adjustable	0 100 s
me addition can be set doing	tion (standard setting address 126)	- Simulation function	Output/input (can be locked within the device with a bridge)
Cyclic data usage		- Failure mode	parameterizable (last good value, substitute value, incorrect
Output byte	5 (one measured value) or 10 (two measured values)		value)
• Input byte	0, 1, or 2 (register operating mode and reset function for	- Limit monitoring	Yes, one upper and lower warn- ing limit and one alarm limit respectively
Internal preprocessing	metering)	<ul> <li>Square-rooted characteristic for flow measurement</li> </ul>	Yes
Device profile	PROFIBUS PA Profile for Pro-	• PID	Standard FOUNDATION
Devide preme	cess Control Devices Version 3.0, class B	Physical block	Fieldbus function block  1 resource block
Function blocks	2	Transducer blocks	1 transducer block Pressure with
<ul> <li>Analog input</li> </ul>		Halladdeel blocks	calibration, 1 transducer block
- Adaptation to customer-specific process variables	Yes, linearly rising or falling characteristic	Pressure transducer block	LCD
- Electrical damping, adjustable	0 to 100 s	- Can be calibrated by applying	Yes
- Simulation function	Input /Output	two pressures	Von
- Failure mode	parameterizable (last good value, substitute value, incorrect value)	<ul> <li>Monitoring of sensor limits</li> <li>Simulation function: Measured pressure value, sensor tem-</li> </ul>	Yes  Constant value or over parameterizable ramp function
- Limit monitoring	Yes, one upper and lower warn- ing limit and one alarm limit respectively	perature and electronics tem- perature	
Register (totalizer)	Can be reset, preset, optional direction of counting, simulation function of register output		
- Failure mode	parameterizable (summation with last good value, continuous summation, summation with incorrect value)		
- Limit monitoring	One upper and lower warning limit and one alarm limit respec- tively		
<ul> <li>Physical block</li> </ul>	1		

2

Yes

Yes

Max. 30 nodes

Parameterizable

Constant value or over parame-

terizable ramp function

Transducer blocks

• Pressure transducer block

- Can be calibrated by applying two pressures

- Monitoring of sensor limits - Specification of a container

characteristic with - Square-rooted characteristic

for flow measurement - Gradual volume suppression

and implementation point of square-root extraction - Simulation function for mea-

sured pressure value and sensor temperature

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Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P DS III

for absolute pressure (from gauge pressure series)

for absolute press	ure (from gauge press	ure s	series)
Selection and Orderin	g data	Articl	le No.
Pressure transmitters t		7 M F	4233-
from gauge pressure s SITRANS P DS III with			-1-1-1-
Click on the Article N ration in the PIA Life	lo. for the online configu- Cycle Portal.		
Measuring cell filling	Measuring cell		
Silicone oil	<b>cleaning</b> normal	1	
Inert liquid <sup>1)</sup>	grease-free to	3	
Mossuring span (min	cleanliness level 2	-	
Measuring span (min. 8.34 250 mbar a	(0.13 3.63 psi a)	D	
43.34 1300 mbar a	(0.63 18.86 psi a)	F	
0.17 5 bar a	(2.43 72.5 psi a)	G	
1 30 bar a	(14.6 435 psi a)	H	
5.34 160 bar a <sup>2)</sup> 13.34 400 bar a <sup>2)</sup>	(77.4 2 321 psi a)	L M	
23.34 700 bar a <sup>2)</sup>	(193.4 5 802 psi a) (338.43 10 153 psi a)	N	
	, ,	- "	
Wetted parts materials Seal diaphragm	Process connection		
Stainless steel	Stainless steel	А	
Hastelloy	Stainless steel	В	
Hastelloy	Hastelloy	С	
Version for diaphragm	seals in conjunction with	Y	1
process connector "fem (recommended version)	nale thread ½-14 NPT" n) 3) 4) 5) 6) 7)		
Version for diaphragm s	seals in conjunction	Y	0
with process connector shank" 3) 4) 5) 6) 7)	"G1/2B connection		
Process connection			
• Connection shank G1/	½B to EN 837-1		0
• Female thread ½-14 N	NPT		1
Stainless steel oval flange with process con- nection (Oval flange has no female thread)			
nection (Oval flange h	nas no female thread)		
<ul> <li>Mounting thread <sup>7</sup>/<sub>1</sub>, IEC 61518/DIN EN 6</li> </ul>	<sub>6</sub> -20 ONF to 31518		2
- Mounting thread M1			3
<ul> <li>Mounting thread M1</li> </ul>			4
<ul> <li>Male thread M20 x 1.5</li> <li>Male thread ½ -14 NF</li> </ul>			5
Non-wetted parts mate		1	6
Housing made of die-			0
Housing stainless step	el precision casting <sup>8)</sup>		3
Version			
<ul> <li>Standard version, Ger setting for pressure un</li> </ul>			1
	English plate inscription,		2
setting for pressure u	nit: bar		
<ul> <li>Chinese version, Engli setting for pressure un</li> </ul>			3
0 1	D with compact operat-		
ing instructions in vario	us EU languages.	_	
<ul><li>Explosion protection</li><li>None</li></ul>			A
<ul><li>With ATEX, Type of pr</li></ul>	otection:		^
- "Intrinsic safety (Ex			В
- "Explosion-proof (Ex			D
- "Intrinsic safety and	flameproof enclosure"		Р
(Ex ia + Ex d)" <sup>10)</sup> - "Ex nA/ic (Zone 2)" <sup>1</sup>	1)		E
- "Intrinsic safety, exp	losion-proof enclosure		R
and dust explosion i	orotection (Ex ia+ Ex d +		
Zone 1D/2D)"10)12)	fo (io)13)		_
<ul> <li>FM + CSA intrinsic sa</li> <li>FM + CSA (is + ep) +</li> </ul>			F S
• FM + CSA (is + ep) + Zone 1D/2D <sup>10)12)13)</sup>			The state of the s
• With FM + CSA, Type			
<ul> <li>"Intrinsic Safe and E (is + xp)"<sup>9)13)</sup></li> </ul>	xpiosion Proof		NC
7 H= 1			

Selection and Ordering data	Article No.
Pressure transmitters for absolute pressure	7MF4233-
from gauge pressure series SITRANS P DS III with HART	
Electrical connection/cable entry	
<ul> <li>Screwed gland M20x1.5</li> </ul>	В
<ul> <li>Screwed gland ½-14 NPT</li> </ul>	C
<ul> <li>Device plug Han 7D (plastic housing) incl. mating connector<sup>14)</sup></li> </ul>	D
Device plugs M12 (stainless steel) 15) 16)	F
Display	
Without display	0
<ul> <li>Without visible display (display concealed, setting: mA)</li> </ul>	1
<ul> <li>With visible display (setting: mA)</li> </ul>	6
<ul> <li>with customer-specific display (setting as specified, Order code "Y21" or "Y22" required)</li> </ul>	7

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

A quick-start guide is included in the scope of delivery of the device.

- 1) For oxygen application, add Order code E10.
- 2) Available soon
- 3) Version 7MF4233-1DY... only up to max. span 200 mbar a (80 inH<sub>2</sub>O a).
- 4) When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here. 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) If the acceptance test certificate 3.1.is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.
- 6) The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF423.-.Y..-.... and 7MF4900-1...-.B
- The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.
- 8) Not in conjunction with Electrical connection "device plug Han 7D".
- 9) Without cable gland, with blanking plug.
- 10) With enclosed cable gland Ex ia and blanking plug.
- <sup>11)</sup> Configurations with device plugs Han and M12 are only available in Ex ic.
- 12) Only in connection with IP66.
- 13) Explosion protection acc. to FM/CSA: suitable for installations according to NEC 500/505.
- <sup>14)</sup> Only in connection with Ex apporval A, B or E.
- 15) Only in connection with Ex apporval A, B, E or F.
- 16) M12 delivered without cable socket

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

### for absolute pressure (from gauge pressure series)

Selection and Order	ing data	Art	icl	e l	Vc	).	
Pressure transmitte from gauge pressur	rs for absolute pressure e series						
SITRANS P DS III with		7 N	۱F	4 :	2 3	3 4	-
	FOUNDATION Fieldbus (FF)					3 5	
	e No. for the online configu-						
Measuring cell filling					Ī	П	
Silicone oil	<b>cleaning</b> normal	1					
Inert liquid <sup>1)</sup>	grease-free to	3					
	cleanliness level 2						
Nominal measuring	range						
250 mbar a	(3.63 psi a)		)				
1300 mbar a	(18.86 psi a)	F					
5 bar a	(72.5 psi a)	G					
30 bar a	(435 psi a)	H					
160 bar a <sup>2)</sup>	(2 321 psi a)	L					
400 bar a <sup>2)</sup>	(5 802 psi a)	N					
700 bar a <sup>2)</sup>	(10 153 psi a)	N					
<b>Wetted parts materi</b> Seal diaphragm	Process connection						
Stainless steel	Stainless steel	-	A				
Hastelloy	Stainless steel		В				
Hastelloy	Hastelloy		C				
process connector "fe (recommended vers	n seals in conjunction with emale thread ½-14 NPT* ion) <sup>3) 4) 5) 6) 7) n seals in conjunction for ank** <sup>3) 4) 5) 6) 7)</sup></sup>		Y	0			
Process connection		_					
<ul> <li>Connection shank (</li> <li>Female thread ½-14</li> </ul>				0			
	flange with process connec-			'			
tion (Oval flange ha	s no female thread)						
<ul> <li>Mounting thread <sup>7</sup> IEC 61518/DIN EN</li> </ul>	/ <sub>/16</sub> -20 UNF to			2			
- Mounting thread N				3			
- Mounting thread N				4			
Male thread M20 x	1.5			5			
<ul> <li>Male thread ½ -14 i</li> </ul>	NPT			6			
Non-wetted parts m							
<ul> <li>Housing made of d</li> </ul>					0		
	teel precision casting				3		
Version							
<ul> <li>Standard version, G setting for pressure</li> </ul>	German plate inscription,					1	
	n, English plate inscription,					2	
setting for pressure						Ĺ	
Chinese version, English	glish plate inscription,					3	
setting for pressure	unit: Pascal						
All versions include [	OVD with compact operating						
All versions include E instructions in various	OVD with compact operating sEU languages.						

Selection and Ordering data	Article No.
Pressure transmitters for absolute pressure from gauge pressure series	
SITRANS P DS III with PROFIBUS PA (PA)	7MF4234-
SITRANS P DS III with FOUNDATION Fieldbus (FF)	7MF4235-
Explosion protection	
• None	Α
With ATEX, Type of protection:	
- "Intrinsic safety (Ex ia)"	В
- "Explosion-proof (Ex d)"8)	D
<ul> <li>"Intrinsic safety and flameproof enclosure" (Ex ia + Ex d)"<sup>9)</sup></li> </ul>	P
- "Ex nA/ic (Zone 2)" 10)	Е
- "Intrinsic safety, explosion-proof enclosure and	R
dust explosion protection (Ex ia + Ex d + Zone 1D/2D)**9) 11)	
• FM + CSA intrinsic safe (is) <sup>12)</sup>	F
. ,	S
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX) + Zone 1D/2D <sup>9)11)12)</sup>	
<ul> <li>With FM + CSA, Type of protection:</li> </ul>	
- "Intrinsic Safe and Explosion Proof	NC
$(is + xp)^{*8}$ (is + xp)**	_
Electrical connection/cable entry     Screwed gland M20 x 1.5	В
Screwed gland ½-14 NPT	C
Device plugs M12 (stainless steel) <sup>13) 14)</sup>	F
Display	_
Without display	
Without visible display	
(display concealed, setting: bar)	
With visible display (setting: bar)	
<ul> <li>with customer-specific display (setting as specified, Order code "Y21" or "Y22"</li> </ul>	
required)	

A quick-start guide is included in the scope of delivery of the device.

- 1) For oxygen application, add Order code E10.
- 2) Available soon
- 3) Version 7MF4233-1DY... only up to max. span 200 mbar a (2.9 psi a).
- 4) When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the <u>total</u> combination is certified here.
- 5) If the acceptance test certificate 3.1.is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.
- 6) The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF423.-..Y..-.... and 7MF4900-1...-.B
- 7) The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.
- 8) Without cable gland, with blanking plug.
- 9) With enclosed cable gland Ex ia and blanking plug.
- 10) Configurations with device plugs Han and M12 are only available in Ex ic.
- <sup>11)</sup>Only in connection with IP66.
- 12) Explosion protection acc. to FM/CSA: suitable for installations according to NEC 500/505.
- 13) Only in connection with Ex approval A, B, E or F.
- <sup>14)</sup> M12 delivered without cable socket.

Pressure transmitters

for applications with advanced requirements (Advanced)

SITRANS P DS III

for absolute pressure (from gauge pressure series)

for absolute pressure (from gauge p	nessu	16 261	165)	
Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add "-Z" to Article No. and specify Order code.				
Pressure transmitter with mounting bracket (1x fixing angle, 2 x nut, 2 x U-washer or 1 x bracket, 2 x nut, 2 x U-				
washer) made of: • Steel	A01	1	1	1
• Stainless steel 304	A02	✓	✓	✓
Stainless steel 316L	A03	✓	✓	✓
Device plugs <sup>1)</sup>				
<ul><li>Han 7D (metal)</li><li>Han 8D (instead of Han 7D)</li></ul>	A30 A31	1		
Angled	A32	1		
• Han 8D (metal)	A33	✓		
Cable sockets for device plugs M12 (metal (CuZn))	A50	✓	✓	✓
Rating plate inscription (instead of Ger-				
man)				
• English	B11	✓	1	✓
• French	B12	1	<b>√</b>	<b>✓</b>
<ul><li>Spanish</li><li>Italian</li></ul>	B13 B14	<b>√</b>	<b>√</b>	<b>V</b>
Cyrillic (russian)	B16	1	1	1
English rating plate	B21	1	1	1
Pressure units in inH <sub>2</sub> 0 and/or psi				
Quality Inspection Certificate (5-point characteristic curve test) according to IEC 60770-2 <sup>2)</sup>	C11	✓	✓	✓
Inspection certificate <sup>3)</sup> Acc. to EN 10204-3.1	C12	✓	✓	✓
Factory certificate Acc. to EN 10204-2.2	C14	✓	✓	✓
Acceptance certificate (EN 10204-3.1) PMI test of parts in contact with medium	C15	✓	✓	✓
Functional safety (SIL2) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	C20	✓		
Functional safety (PROFIsafe) Certificate and PROFIsafe protocol	C21 <sup>4)</sup>		✓	
Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	C23	✓		
PED for Russia with initial calibration mark	C99	✓	✓	✓
Setting of the upper saturation limit of the output signal to 22.0 mA	D05	✓		
Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009)	D07	✓	✓	✓
<b>Degree of protection IP66/IP68</b> (only for M20 x 1.5 and ½-14 NPT)	D12	✓	✓	✓
Supplied with oval flange	D37	✓	1	✓
(1 item), PTFE packing and screws in thread of oval flange				
Capri cable gland 4F CrNi and clamping device (848699 + 810634) included	D59	✓	✓	✓
Use in or on zone 1D/2D <sup>5)</sup> (only together with type of protection "Intrinsic safety" (transmitter 7MF4B Ex ia) and IP65)	E01	<b>✓</b>	<b>✓</b>	✓
Oxygen application (In the case of oxygen measurement and inert liquid max. 100 bar (1450 psi) at 60°C (140 °F))	E10	✓	✓	✓
Export approval Korea	E11	✓	✓	✓

Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add "-Z" to Article No. and specify Order code.				
CRN approval Canada (Canadian Registration Number)	E22 <sup>6)</sup>	✓	✓	✓
Dual seal	E24	1	1	1
Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil) (only for transmitter 7MF4B)	E25 <sup>7)</sup>	✓	✓	✓
"Flameproof" explosion protection according to INMETRO (Brazil)	E26 <sup>7)</sup>	✓	✓	✓
(only for transmitter 7MF4)				
Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil) (only for transmitter 7MF4P)	E28 <sup>7)</sup>	✓	✓	
Ex Approval IEC Ex (Ex ia) (only for transmitter 7MF4	E45 <sup>7)</sup>	✓	✓	✓
Ex Approval IEC Ex (Ex d) (only for transmitter 7MF4	E46 <sup>7)</sup>	✓	✓	✓
Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)	E55 <sup>7)</sup>	✓	✓	✓
Explosion protection "Explosion-proof" to NEPSI (China)	E56 <sup>7)</sup>	✓	✓	✓
(only for transmitter 7MF4)				
Explosion-proof "Zone 2" to NEPSI (China) (only for transmitter 7MF4	E57 <sup>7)</sup>	✓	✓	✓
Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China)	E58 <sup>7)</sup>	✓	✓	✓
(only for transmitter 7MF4R)  "Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (only for transmitter 7MF4[B, D]Z + E11)	E70 <sup>7)</sup>	✓	✓	✓
Ex-protection Ex ia according to EAC Ex (Russia)	E80	✓	✓	✓
Ex-protection Ex d according to EAC Ex (Russia)	E81	✓	✓	1
Ex-protection Ex nA/ic (Zone 2) according to EAC Ex (Russia)	E82	✓	✓	✓
Ex-protection Ex ia + Ex d + Zone 1D/2D according to EAC Ex (Russia)	E83	✓	✓	✓
Two coats of lacquer on casing and cover (PU on epoxy)	G10	<b>√</b>	✓	<b>√</b>
Transient protector 6 kV (lightning protect.)	J01	<b>✓</b>	1	<b>√</b>
Oval flange NAM (ASTAVA)	J06	✓	✓	✓
Marine approvals  • Det Norske Veritas Germanischer Lloyd (DNV-GL)	S10	✓	✓	1
<ul> <li>Lloyds Register (LR)</li> </ul>	S11	✓	✓	✓
<ul> <li>French marine classification society Bureau Veritas (BV)</li> </ul>	S12	✓	✓	✓
American Bureau of Shipping (ABS)	S14	✓	1	1
Russian Maritime Register (RMR)	S16	✓	✓	✓
<ul> <li>Korean Register of Shipping (KR)</li> </ul>	S17	<b>√</b>	✓	✓

1) Device plug Han IP65

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

<sup>3)</sup> If the acceptance test certificate 3.1 is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.

<sup>4)</sup> Profisafe transmitters can only be operated with the S7 F Systems V6.1 configuration software in combination with S7-400H.

<sup>5)</sup> Option does not contain gas explosion protection; only dust explosion protection: Use in or at Zone 1D/2D.

<sup>6)</sup> Cannot be ordered with remote seal.

<sup>(7)</sup> When the additional ex option is selected, the ATEX marking on the device is omitted. Only the Ex option selected via the Z option is marked.

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

for absolute pressure (from gauge pressure series)

Selection and Ordering data	Order	code		
Additional data		HART	PA	FF
Please add "-Z" to Article No. and specify Order code(s) and plain text.				
Measuring range to be set Specify in plain text (max. 5 characters): Y01: up to mbar a, bar a, kPa <sub>abs</sub> , MPa <sub>abs</sub> , psi a <sup>2</sup> )	Y01	✓	<b>√</b> 1)	
Stainless steel tag plate and entry in device variable (measuring point description)  Max. 16 characters, specify in plain text: Y15:	Y15	<b>✓</b>	✓	✓
Measuring point text (entry in device variable)	Y16	✓	✓	✓
Max. 27 characters, specify in plain text: Y16:				
Entry of HART address (TAG)  Max. 8 characters, specify in plain text: Y17:	Y17	✓		
Setting of pressure indication in pressure units	Y21	✓	✓	✓
Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi,				
Note: The following pressure units can be selected:				
bar, mbar, mm H <sub>2</sub> O <sup>*)</sup> , inH <sub>2</sub> O <sup>*)</sup> , ftH <sub>2</sub> O <sup>*)</sup> , mmHG, inHG, psi, Pa, kPa, MPa, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , Torr, ATM or % *) ref. temperature 20 °C				
Setting of pressure indication in non-pressure units <sup>3</sup> )  Specify in plain text: Y22: up to //min, m³/h, m, USgpm, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	Y22 + Y01	<b>✓</b>		
Preset bus address possible between 1 and 126 Specify in plain text: Y25:	Y25		✓	✓
Damping adjustment in seconds (0 100 s)	Y30	✓	✓	✓

Factory mounting of valve manifolds, see accessories.

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

✓ = available

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

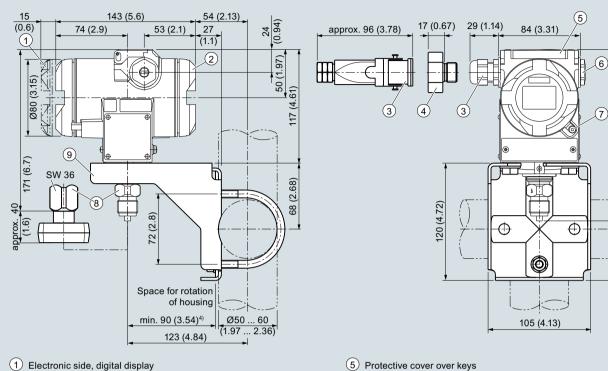
<sup>2)</sup> Only absolute pressure units selectable. Negative pressure values not permitted.

<sup>3)</sup> Preset values can only be changed over SIMATIC PDM.

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

for absolute pressure (from gauge pressure series)

### **Dimensional drawings**



6 Blanking plug

(9) Mounting bracket (option)

Screw cover - safety bracket (only for type of protection "Explosion-proof enclosure", not shown in the drawing)

Process connection: Connection shank G1/2B or Oval flange

176 (6.93)

237 (9.33)

- 1 Electronic side, digital display (longer overall length for cover with window)1)
- Terminal side1)
- Electrical connection: Screwed gland M20 x 1,5 or Screwed gland ½-14 NPT or Han 7D/8D device plug<sup>2) 3)</sup>
- 4 Harting adapter
- Allow approx. 20 mm (0.79 inch) thread length to permit unscrewing
- Not with type of protection "Explosion-proof enclosure" Not with type of protection "FM + CSA" [IS + XP]"
- Minimum distance for rotating

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

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

for absolute pressure (from differential pressure series)

# Technical specifications

SITRANS P, DS III for absolute pressure (from the differen	tial pressure series)				
Input					
Measured variable	Absolute pressure				
Span (fully adjustable) or measuring range, max. operating pressure (in accordance with 2014/68/EU Pressure Equipment Directive) and max. test pressure (pursuant to DIN	HART	PROFIBUS PA/ FOUNDATION Fieldbus			
16086)	Span	Nominal measur- ing range	Max. operating pressure MAWP (PS)		
	8.34 250 mbar a 0.834 25 kPa a 3 100 inH <sub>2</sub> O a	250 mbar a 25 kPa a 100 inH <sub>2</sub> O a	32 bar a 3.2 MPa a 464 psi a		
	43.34 1300 mbar a 4.33 130 kPa a 17 525 inH <sub>2</sub> O a	1300 mbar a 130 kPa a 525 inH <sub>2</sub> O a	32 bar a 3.2 MPa a 464 psi a		
	170 5000 mbar a 17 500 kPa a 2.43 72.5 psi a	5000 mbar a 500 kPa a 72.5 psi a	32 bar a 3.2 MPa a 464 psi a		
	1 30 bar a 0.1 3 MPa a 14.6 435 psi a	30 bar a 3 MPa a 435 psi a	160 bar a 16 MPa a 2320 psi a		
	5.3 100 bar a 0.5 10 MPa a 76.9 1450 psi a	100 bar a 10 MPa a 1450 psi a	160 bar a 16 MPa a 2320 psi a		
Lower measuring limit			'		
Measuring cell with silicone oil filling	0 mbar a/0 kPa a/0 psi a				
Measuring cell with inert filling liquid					
- for process temperature -20 °C < 9 $\leq$ +60 °C (-4 °F < 9 $\leq$ +140 °F)	30 mbar a/3 kPa a/0.44 psi a				
- for process temperature 60 °C < $9 \le +100$ °C (max. 85 °C for measuring cell 30 bar) (140 °F < $9 \le +212$ °F (max. 185 °F for measuring cell 435 psi))	30 mbar a + 20 mbar a · (9 - 60 °C)/°C  3 kPa a + 2 kPa a · (9 - 60 °C)/°C  0.44 psi a + 0.29 psi a · (9 - 140 °F)/°F				
Upper measuring limit	100 % of max. span (for oxygen measurement ambient temperature/p		MPa/1450 psi and 60 °C (140 °F)		
Start of scale value	Between the measuring	g limits (fully adjustat	ole)		
Output	HART		PROFIBUS PA/ FOUNDATION Fieldbus		
Output signal	4 20 mA		Digital PROFIBUS PA and FOUNDATION Fieldbus signal		
<ul> <li>Lower limit (infinitely adjustable)</li> </ul>	3.55 mA, factory prese	t to 3.84 mA	-		
Upper limit (infinitely adjustable)	23 mA, factory preset tally set to 22.0 mA	to 20.5 mA or option-	-		
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	$R_{\rm B} = 230 \dots 500 \Omega$ (SIN $R_{\rm B} = 230 \dots 1100 \Omega$ (H.	-			
Physical bus	-		IEC 61158-2		
Protection against polarity reversal	Protected against shor Each connection again				
Electrical damping (step width 0.1 s)	Set to 2 s (0 100 s)				

Pressure transmitters

for applications with advanced requirements (Advanced)

SITRANS P DS III

Measuring accuracy	Acc. to IEC 60770-1
Reference conditions (All error data refer always refer to the set span)	<ul> <li>Increasing characteristic</li> <li>Start-of-scale value 0 bar/kPa/psi</li> <li>Stainless steel seal diaphragm</li> <li>Silicone oil filling</li> <li>Room temperature 25 °C (77 °F)</li> </ul>
Measuring span ratio r (spread, Turn-Down)	r = max. measuring span/set measuring span or nom. pressure range
Error in measurement at limit setting incl. hysteresis and reproducibility	
Linear characteristic	
- r ≤ 10	≤ 0.1 %
- 10 < r ≤ 30	≤ 0.2 %
Influence of ambient temperature (in percent per 28 °C (50 °F))	
• 250 mbar a/25 kPa a/3.6 psi a	$\leq$ (0.15 · r + 0.1) %
• 1300 mbar a/130 kPa a/18.8 psi a 5 bar a/500 kPa a/72.5 psi a 30 bar a/3000 kPa a/435 psi a 100 bar a/10 MPa a/1450 psi a	$\leq$ (0.08 · r + 0.16) %
Long-term stability (temperature change ± 30 °C (± 54 °F))	$\leq$ (0.25 · r) % in 5 years
Effect of mounting position (in pressure per change in angle)	≤ 0.7 mbar/0.07 kPa/0.010 psi per 10° inclination (zero point correction is possible with position error compensation)
Effect of auxiliary power supply (in percent per change in voltage)	0.005 % per 1 V
Measuring value resolution for PROFIBUS PA and FOUNDATION Fieldbus	3 ⋅ 10 <sup>-5</sup> of nominal measuring range
Rated conditions	
Degree of protection	
according to EN 60529	IP66 (optional IP66/IP68)
according to NEMA 250	Type 4X
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)
<ul> <li>In conjunction with dust explosion protection</li> </ul>	-20 +60 °C (-4 +140 °F)
Ambient conditions	
Ambient temperature	
- Transmitter	-40 +85 °C (-40 +185 °F)
- Display readable	-30 +85 °C (-22 +185 °F)
Storage temperature	-50 +85 °C (-58 +185 °F)
Climatic class	
- Condensation	Relative humidity 0 100 % Condensation permissible, suitable for use in the tropics
Electromagnetic Compatibility	
- Emitted interference and interference immunity	Acc. to IEC 61326 and NAMUR NE 21

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

SITRANS P, DS III for absolute pressure (from	the differential pressure series)
Design	
Weight (without options)	≈ 4.5 kg (≈ 9.9 (lb)
Enclosure material	Low-copper die-cast aluminum, GD-AlSi12 or stainless steel precision casting, mat. no. 1.4408
Wetted parts materials	
Seal diaphragm	Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819, Monel, mat. no. 2.4360, tantalum or gold
Process flanges and sealing screw	Stainless steel, mat. no. 1.4408, Hastelloy C4, mat. no. 2.4602 or Monel, mat. no. 2.4360
• O-Ring	FPM (Viton) or optionally: PTFE, FEP, FEPM and NBR
Measuring cell filling	Silicone oil or inert filling liquid (maximum value with oxigen measurement pressure 100 bar (1450 psi) at 60 °C (140 °F))
Process connection	$^{1}\!\!4\text{-}18$ NPT and flange connection with mounting thread M10 to DIN 19213 or $^{7}\!\!/_{16}\text{-}20$ UNF to IEC 61518/DIN EN 61518
Material of mounting bracket	
• Steel	Sheet-steel, Mat. No. 1.0330, chrome-plated
• Stainless steel 304	Sheet stainless steel, mat. no. 1.4301 (SS 304)
Stainless steel 316L	Sheet stainless steel, mat. no. 1.4404 (SS 316L)
Power supply II.	HART PROFIBILS PA/FOLINDATION Fieldbus

		- /
Power supply <i>U</i> <sub>H</sub>	HART	PROFIBUS PA/FOUNDATION Fieldbus
Terminal voltage on transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically-safe mode	-
Power supply		Supplied through bus
Separate 24 V power supply necessary	-	No
Bus voltage		
• Not Ex	-	9 32 V
With intrinsically-safe operation	-	9 24 V
Current consumption		
Basic current (max.)	-	12.5 mA
• Start-up current ≤ basic current	-	Yes
Max. current in event of fault	-	15.5 mA
Fault disconnection electronics (FDE) available	-	Yes

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P DS III

SITRANS P, DS III for absolute pressure (from the	differential pressure series)	
Certificates and approvals	HART	PROFIBUS PA/ FOUNDATION Field-bus
Classification according to PED 2014/68/EU	For gases of fluid group 1 and liquids of fl article 4, paragraph 3 (sound engineering	uid group 1; complies with requirements of practice)
Explosion protection		
• Intrinsic safety "i"	PTB 13 ATEX 2007 X	
- Marking	Ex II 1/2 G Ex ia/ib IIC T4/T5/T6 Ga/Gb	
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperatur -40 +70 °C (-40 +158 °F) temperatur -40 +60 °C (-40 +140 °F) temperatur	e class T5;
- Connection	To certified intrinsically-safe circuits with peak values: $U_{\rm i}$ = 30 V, $I_{\rm i}$ = 100 mA, $P_{\rm i}$ = 750 mW; $R_{\rm i}$ = 300 $\Omega$	FISCO supply unit: $U_0 = 17.5 \text{ V}$ , $I_0 = 380 \text{ mA}$ , $P_0 = 5.32 \text{ W}$ Linear barrier: $U_0 = 24 \text{ V}$ , $I_0 = 250 \text{ mA}$ , $P_0 = 1.2 \text{ W}$
- Effective internal inductance/capacitance	$L_{i} = 0.4 \text{ mH}, C_{i} = 6 \text{ nF}$	$L_{i} = 7 \mu H, C_{i} = 1.1 nF$
• Explosion-proof "d"	PTB 99 ATEX 1160	
- Marking	Ex II 1/2 G Ex d IIC T4/T6 Gb	
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperature -40 +60 °C (-40 +140 °F) temperature	
- Connection	To circuits with values: 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 Ex ta IIIC T120°C Da Ex II 1/2 D Ex ta/tb IIIC T120°C Da/Db	
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F)	
- Max. surface temperature	120 °C (248 °F)	
- Connection	To certified intrinsically-safe circuits with peak values: $U_{\rm i}$ = 30 V, $I_{\rm i}$ = 100 mA, $P_{\rm i}$ = 750 mW, $P_{\rm i}$ = 300 $\Omega$	FISCO supply unit: $U_0 = 17.5 \text{ V}$ , $I_0 = 380 \text{ mA}$ , $P_0 = 5.32 \text{ W}$ Linear barrier: $U_0 = 24 \text{ V}$ , $I_0 = 250 \text{ mA}$ , $P_0 = 1.2 \text{ W}$
- Effective internal inductance/capacitance	$L_{i} = 0.4 \text{ mH}, C_{i} = 6 \text{ nF}$	$L_{\rm i} = 7  \mu \text{H},  C_{\rm i} = 1.1  \text{nF}$
• Dust explosion protection for zone 21/22	PTB 01 ATEX 2055	
- Marking	Ex II 2 D Ex tb IIIC T120°C Db	
- Connection	To circuits with values: $U_H = 10.5 \dots 45 \text{ V DC}$ ; $P_{\text{max}} = 1.2 \text{ W}$	To circuits with values: $U_{\rm H} = 9 \dots 32 \text{ V DC}; P_{\rm max} = 1 \text{ W}$
• Type of protection "n" (zone 2)	PTB 13 ATEX 2007 X	
- Marking	Ex II 2/3 G Ex nA IIC T4/T5/T6 Gb/Gc Ex II 2/3 G Ex ic IIC T4/T5/T6 Gb/Gc	
- Connection (Ex nA)	$U_{\rm m} = 45 \text{ V}$	$U_{\rm m} = 32 \text{ V}$
- Connection (Ex ic)	To circuits with values: $U_i = 45 \text{ V}$	FISCO supply unit ic: $U_0 = 17.5 \text{ V}, I_0 = 570 \text{ mA}$ Linear barrier:
		Linear barrier: $U_0 = 32 \text{ V}, I_0 = 132 \text{ mA}, P_0 = 1 \text{ W}$
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4  {\rm mH},  C_{\rm i} = 6  {\rm nF}$	$L_{\rm i} = 7  \mu \text{H},  C_{\rm i} = 1.1  \text{nF}$
• Explosion protection acc. to FM	Certificate of Compliance 3008490	
- Identification (XP/DIP) or (IS); (NI)	CL I, DIV 1, GP ABCD T4T6; CL II, DIV 1 T4T6; CL I, DIV 2, GP ABCD T4T6; CL	
• Explosion protection to CSA	Certificate of Compliance 1153651	
- Identification (XP/DIP) or (IS)	CL I, DIV 1, GP ABCD T4T6; CL II, DIV 1 2, GP ABCD T4T6; CL II, DIV 2, GP FG;	, GP EFG; CL III; Ex ia IIC T4T6; CL I, DIV CL III

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

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

2

Yes

Yes

Max. 30 nodes

Parameterizable

Constant value or over parame-

terizable ramp function

Transducer blocks

• Pressure transducer block

- Can be calibrated by applying two pressures

- Monitoring of sensor limits - Specification of a container

characteristic with - Square-rooted characteristic

for flow measurement - Gradual volume suppression

and implementation point of square-root extraction

- Simulation function for measured pressure value and sensor temperature

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P DS III

for absolute press	ure (from differential p	res	su	re	se	ries
Selection and Orderin	g data	Arti	icle	No	).	
Pressure transmitters		7 M	F 4	3 3	33-	
from differential press SITRANS P DS III with		F				
Click on the Article N ration in the PIA Life	lo. for the online configu- Cycle Portal.					
Measuring cell filling	Measuring cell cleaning					
Silicone oil	normal	1				
Inert liquid <sup>1)</sup>	grease-free to cleanliness level 2	3				
Measuring span (min.	•					
8.34 250 mbar a	(0.13 3.63 psi a)	D				
43.34 1300 mbar a	(0.63 18.86 psi a)	F				
0.17 5 bar a	(2.43 72.5 psi a)	G				
1 30 bar a	(14.6 435 psi a)	H				
5.3 100 bar a	(76.9 1450 psi a)		Ε			
Wetted parts materials Seal diaphragm	Parts of measuring cell					
Stainless steel Hastelloy	Stainless steel Stainless steel		A B			
Hastelloy	Hastelloy		C			
Tantalum	Tantalum		E			
Monel	Monel		Н			
Gold	Gold		L			
Version for diaphragm s	seal <sup>2) 3) 4) 5) 6)</sup>		Υ			
Process connection						
Female thread 1/4-18 NF	T with flange connection					
<ul> <li>Sealing screw opposit</li> </ul>	te process connection					
- Mounting thread <sup>7</sup> / <sub>10</sub> IEC 61518/DIN EN 6	<sub>3</sub> -20 UNF to		2			
			١.			
<ul> <li>Mounting thread M1 (only for replacement</li> </ul>	U to DIN 19213 at requirement)		0			
Vent on side of proces						
- Mounting thread <sup>7</sup> / <sub>1</sub> / <sub>1</sub>	-20 UNF to		6			
<ul> <li>Mounting thread <sup>7</sup>/<sub>16</sub></li> <li>IEC 61518/DIN EN 6</li> </ul>						
<ul> <li>Mounting thread M1</li> </ul>	0 to DIN 19213		4			
(only for replacement		_				
process flange screws						
Stainless steel	Die-cast aluminum			2		
Stainless steel	Stainless steel precision			3		
	casting <sup>8)</sup>					
Version						
<ul> <li>Standard version, Ger setting for pressure un</li> </ul>					1	
<ul> <li>International version,</li> </ul>	English plate inscription,				2	
<ul><li>Setting for pressure ur</li><li>Chinese version, Engli</li></ul>					3	
setting for pressure un					ŭ	
All versions include DVI instructions in various E	D with compact operating U languages.					
Explosion protection	o languagos.	-				
• None					A	١
With ATEX, Type of pr						
- "Intrinsic safety (Ex i	*				E	
- "Explosion-proof (Ex					- C	
(Ex ia + Ex d)" <sup>10)</sup>	flameproof enclosure"				ľ	
- "Ex nA/ic (Zone 2)"1	1)				E	
- "Intrinsic safety, expl	osion-proof enclosure and				F	₹
dust explosion prote Zone 1D/2D) <sup>*10)12)</sup>	ection (Ex ia+ Ex d +					
					F	
• FM + CSA intrinsic sa					9	
• FM + CSA (is + ep) + Zone 1D/2D <sup>10)12)13)</sup>	LA IA T LA A (AILA) T				,	
• With FM + CSA, Type						
- "Intrinsic Safe and E	·				N	١C
$(is + xp)^{(9)13}$						

Selection and Ordering data	Article No.				
Pressure transmitters for absolute pressure	7MF4333-				
from differential pressure series, SITRANS P DS III with HART					
Electrical connection/cable entry					
<ul> <li>Screwed gland M20 x 1.5</li> </ul>	В				
• Screwed gland 1/2-14 NPT	C				
Device plug Han 7D (plastic housing) incl. mating connector <sup>14)</sup>	D				
Device plugs M12 (stainless steel) 15) 16)	F				
Display					
Without display	0				
Without visible display (display concealed, setting: mA)	1				
<ul> <li>With visible display (setting: mA)</li> </ul>	6				
with customer-specific display (setting as specified, Order code "Y21" or "Y22" required)	7				

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

Included in delivery of the device:

- Quick-start guide
- Sealing plug(s) or sealing screw(s) for the process flanges(s)
- 1) For oxygen applications, add Order code E10.
- 2) Version 7MF4333-1DY... only up to max. span 200 mbar a (2.9 psi a).
- When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.
- 4) If the acceptance test certificate 3.1.is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.
- The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF433.-..Y.-.... and 7MF4900-1...-.B
- The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.
- Not for span "5.3 ... 100 bar a (76.9 ... 1450 psi a)". Position of the top vent valve in the process flange (see dimensional drawing).
- 8) Not in conjunction with Electrical connection "device plug Han 7D".
- 9) Without cable gland, with blanking plug
- 10) With enclosed cable gland Ex ia and blanking plug
- 11) Configurations with device plugs Han and M12 are only available in Ex ic.
- 12) Only in connection with IP66.
- 13) Explosion protection acc. to FM/CSA: suitable for installations according to NEC 500/505.
- <sup>14)</sup> Only in connection with Ex apporval A, B or E.
- 15) Only in connection with Ex approval A, B, E or F.
- 16) M12 delivered without cable socket.

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

### for absolute pressure (from differential pressure series)

Selection and Orderin	g data	Article No.
Pressure transmitter f		
from differential press		
SITRANS P DS III with P	PROFIBUS PA (PA)	7MF4334-
SITRANS P DS III with F	OUNDATION Fieldbus (FF)	7MF4335-
Click on the Article N ration in the PIA Life	No. for the online configu- Cycle Portal.	
Measuring cell filling		
Silicone oil	<b>cleaning</b> normal	1
Inert liquid <sup>1)</sup>	grease-free to	3
	cleanliness level 2	
Nominal measuring ra		
250 mbar a	(3.63 psi a)	D
1300 mbar a	(18.86 psi a)	F
5 bar a 30 bar a	(72.5 psi a) (435 psi a)	G H
100 bar a	(1450 psi a)	KE
Wetted parts materials	, , ,	
Seal diaphragm	Parts of measuring cell	
Stainless steel	Stainless steel	A
Hastelloy	Stainless steel	B
Hastelloy	Hastelloy	С
Tantalum	Tantalum	E
Monel	Monel	H
Gold Version as diaphragm s	Gold	L
	ocai =, =, ·, ·, ·, ·,	
Process connection Female thread 1/4-18 NE	PT with flange connection	
<ul> <li>Sealing screw opposi</li> </ul>		
- Mounting thread <sup>7</sup> / <sub>1</sub> , IEC 61518/DIN EN 6		2
- Mounting thread M1		0
<ul><li>(only for replacement</li><li>Vent on side of procest</li></ul>		
		6
<ul> <li>Mounting thread <sup>7</sup>/<sub>1</sub>, IEC 61518/DIN EN 6</li> </ul>	51518	, and a
- Mounting thread M1		4
(only for replacement	. ,	
process flange screws		
Stainless steel	Die-cast aluminum	2
Stainless steel	Stainless steel precision	3
., .	casting	_
<ul><li>Version</li><li>Standard version, Ger</li></ul>	rman plate inscription	1
setting for pressure un		
	English plate inscription,	2
setting for pressure up		
<ul> <li>Chinese version, Engli setting for pressure un</li> </ul>	sii piale iriscription, it: Pascal	3
0 1	D with compact operating	
instructions in various E		
Explosion protection		
• None		А
With ATEX, Type of pr     "Intrinsis as fature (Fixed)		
<ul><li>"Intrinsic safety (Ex i</li><li>"Explosion-proof (Ex</li></ul>		B D
	flameproof enclosure"	P
(Ex ia + Ex d)" 9)	namoproof endosule	
- "Ex nA/ic (Zone 2)"10	0)	E
- "Intrinsic safety, expl	losion-proof enclosure and	R
dust explosion prote Zone 1D/2D) <sup>(9)</sup> 11)	ection (Ex ia + Ex d +	
• FM + CSA intrinsic sa	fe (is) <sup>12)</sup>	F
		S
Zone 1D/2D <sup>9)11)12)</sup>	Ex ia + Ex d (ATEX) +	
	a contract of the contract of	
• With FM + CSA, Type	of protection: (plosion Proof (is + xp)" <sup>8)12)</sup>	

Selection and Ordering data	Article No.
Pressure transmitter for absolute pressure from differential pressure series	
SITRANS P DS III with PROFIBUS PA (PA)	7 M F 4 3 3 4 -
SITRANS P DS III with FOUNDATION Fieldbus (FF)	7 M F 4 3 3 5 -
Electrical connection/cable entry	
<ul> <li>Screwed gland M20 x 1.5</li> </ul>	В
• Screwed gland ½-14 NPT	C
<ul> <li>Device plugs M12 (stainless steel)<sup>13)14)</sup></li> </ul>	F
Display	
Without display	0
Without visible display	1
(display concealed, setting: bar)	
<ul> <li>With visible display (setting: bar)</li> </ul>	6
With customer-specific display (setting as	7
specified, Order code "Y21" required)	

Included in delivery of the device:

- Quick-start guide
- Sealing plug(s) or sealing screw(s) for the process flanges(s)
- $^{1)}\,$  For oxygen application, add Order code E10.  $^{2)}\,$  Version 7MF4334-1DY... only up to max. span 200 mbar a (80 inH<sub>2</sub>O a).
- When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.
- 4) If the acceptance test certificate 3.1.is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.
- The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF433.-..Y..-... and 7MF4900-1...-.B
- 6) The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.
- 7) Not for nominal measuring range 100 bar a (1450 psi a). Position of the top vent valve in the process flange (see dimensional drawing).
- 8) Without cable gland, with blanking plug
- 9) With enclosed cable gland Ex ia and blanking plug
- <sup>10)</sup> Configurations with device plugs Han and M12 are only available in Ex ic.
- <sup>11)</sup> Only in connection with IP66.
- 12) Explosion protection acc. to FM/CSA: suitable for installations according to NEC 500/505.
- 13) 11Only in connection with Ex approval A, B, E or F.
- 14) M12 delivered without cable socket

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

Selection and Ordering data	Order			
Further designs Add "-Z" to Article No. and specify Order code.		HART	PA	FF
Pressure transmitter with mounting bracket (1x fixing angle, 2 x nut, 2 x U-washer or 1 x bracket, 2 x nut, 2 x U-washer) made of:				
<ul><li>Steel</li><li>Stainless steel 304</li><li>Stainless steel 316L</li></ul>	A01 A02 A03	√ √ √	<b>√ √</b>	√ √ √
O-rings for process flanges (instead of FPM (Viton)) • PTFE (Teflon) • FEP (with silicone core, approved for food) • FFPM (Kalrez, for measured medium temperatures -15 100 °C (5 212 °F))	A20 A21 A22	<b>* * *</b>		
NBR (Buna N)	A23	✓	✓	✓
Device plugs <sup>1)</sup> • Han 7D (metal) • Han 8D (instead of Han 7D) • Angled • Han 8D (metal)	A30 A31 A32 A33	<b>* * * *</b>		
Sealing screw	A40	✓	✓	1
1/4-18 NPT, with valve in mat. of process flanges  Cable sockets for device plugs M12	A50	✓	✓	<b>✓</b>
(metal (CuZn))  Rating plate inscription (instead of German) • English	B11	1	<b>✓</b>	<b>✓</b>
• French	B12	1	1	<b>✓</b>
Spanish     Italian	B13 B14	<b>✓</b>	1	<b>√</b>
Cyrillic (russian)	B16	✓	✓	✓
<b>English rating plate</b> Pressure units in inH <sub>2</sub> 0 and/or psi	B21	✓	✓	✓
Quality Inspection Certificate (5-point characteristic curve test) according to IEC 60770-2 <sup>2)</sup>	C11	1	✓	✓
Inspection certificate <sup>3)</sup> Acc. to EN 10204-3.1	C12	1	✓	✓
Factory certificate Acc. to EN 10204-2.2	C14	✓	✓	✓
Acceptance certificate (EN 10204-3.1) PMI test of parts in contact with medium	C15	✓	✓	✓
Functional safety (SIL2) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	C20	✓		
Functional safety (PROFIsafe) Certificate and PROFIsafe protocol	C21 <sup>4)</sup>		✓	
Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	C23	✓		
PED for Russia with initial calibration mark	C99	✓	1	1

Selection and Ordering data	Order	code		
Further designs Add "-Z" to Article No. and specify Order code.		HART	PA	FF
Setting of the upper saturation limit of the output signal to 22.0 mA	D05	✓		
Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009)  (only together with seal diaphragm made of Hastelloy and stainless steel)	D07	✓	✓	✓
<b>Degree of protection IP66/IP68</b> (only for M20 x 1.5 and ½-14 NPT)	D12	✓	✓	✓
<b>Supplied with oval flange</b> (1 item), PTFE packing and screws in thread of process flange	D37	✓	✓	✓
Capri cable gland 4F CrNi and clamping device (848699 + 810634) included	D59	✓	✓	✓

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P DS III

	0 1			
Selection and Ordering data	Order		D4	
Further designs Add "-Z" to Article No. and specify Order code.		HART	PA	FF
Use in or on zone 1D/2D <sup>5)</sup> (only together with type of protection "Intrinsic safety" (transmitter 7MF4B Ex ia)" and IP66)	E01	✓	✓	✓
Oxygen application (In the case of oxygen measurement and inert liquid max. 100 bar (1450 psi) at 60°C (140 °F))	E10	✓	✓	✓
Export approval Korea	E11	✓	✓	✓
CRN approval Canada (Canadian Registration Number)	E22 <sup>6)</sup>	✓	✓	✓
Dual seal	E24	1	1	1
Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil) (only for transmitter 7MF4B)	E25 <sup>7)</sup>	✓	✓	✓
"Flameproof" explosion protection according to INMETRO (Brazil) (only for transmitter 7MF4D)	E26 <sup>7)</sup>	✓	✓	✓
Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil) (only for transmitter 7MF4P)	E28 <sup>7)</sup>	✓	✓	
Ex Approval IEC Ex (Ex ia) (only for transmitter 7MF4B)	E45 <sup>7)</sup>	✓	✓	✓
Ex Approval IEC Ex (Ex d) (only for transmitter 7MF4D)	E46 <sup>7)</sup>	✓	✓	✓
Explosion-proof "Intrinsic safety" to NEPSI (China)	E55 <sup>7)</sup>	✓	✓	✓
(only for transmitter 7MF4B)  Explosion protection "Explosion-proof" to	E56 <sup>7)</sup>	✓	✓	✓
NEPSI (China) (only for transmitter 7MF4D)				
Explosion-proof "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)	E57 <sup>7)</sup>	✓	✓	✓
Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China)	E58 <sup>7)</sup>	✓	✓	✓
(only for transmitter 7MF4R) "Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (only for transmitter	E70 <sup>7)</sup>	✓	✓	✓
7MF4[B, D]Z + E11) <b>Ex-protection Ex ia according to EAC Ex</b>	E80	1	✓	✓
(Russia) Ex-protection Ex d according to EAC Ex	E81	1	<b>✓</b>	✓
(Russia)  Ex-protection Ex nA/ic (Zone 2) according to	E82	✓	✓	✓
EAC Ex (Russia)  Ex-protection Ex ia + Ex d + Zone 1D/2D according to EAC Ex (Russia)	E83	1	✓	✓
Two coats of lacquer on casing and cover (PU on epoxy)	G10	✓	✓	✓
Interchanging of process connection side	H01	✓	✓	✓
Vent on side for gas measurements	H02	1	1	1
Stainless steel process flanges for vertical differential pressure lines (not together with K01, K02 and K04) <sup>8)</sup>	H03	✓	✓	✓
(s. togothor with tho 1, tho 2 and tho 1)				

Selection and Ordering data	Order	code		
Further designs Add "-Z" to Article No. and specify Order code.		HART	PA	FF
Transient protector 6 kV (lightning protection)	J01	✓	✓	1
Chambered graphite gasket for process flange	J02	✓	✓	✓
Chambered PTFE graphite gasket	J03	✓	✓	✓
EPDM O-rings for process flange with approval (WRC/WRAS)	J05	✓	✓	✓
Vent valve or blanking plug of process flange welded-in (orientation: on right when viewing the display) <sup>9)</sup>	J08	✓	✓	✓
Vent valve or blanking plug of process flange welded-in (orientation: on left when viewing the display) <sup>9)</sup>	J09	✓	✓	✓
Process flange  • Hastelloy  • Monel  • Stainless steel with PVDF insert max. PN 10 (MAWP 145 psi), max. temperature of medium 90 °C (194 °F) For ½-14 NPT inner process connection on the side in the middle of the process flange, vent valve not possible	K01 K02 K04	* * *	<b>* * *</b>	<b>✓ ✓</b>
Marine approvals  Det Norske Veritas Germanischer Lloyd (DNV-GL)  Lloyds Register (LR)  French marine classification society Bureau Veritas (BV)  American Bureau of Shipping (ABS)  Russian Maritime Register (RMR)  Korean Register of Shipping (KR)	S10 S11 S12 S14 S16 S17	* * * * * * *	4 4 4 4 4 4	* * * * * * * * * * * * * * * * * * *

- 1) Device plug Han IP65
- 2) When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.
- 3) If the acceptance test certificate 3.1.is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.
- 4) Profisafe transmitters can only be operated with the S7 F Systems V6.1 configuration software in combination with S7-400H
- <sup>5)</sup> Option does not contain gas explosion protection; only dust explosion protection: Use in or at Zone 1D/2D.
- <sup>6)</sup> Cannot be ordered with remote seal.
- $^{7)}\,$  When the additional ex option is selected, the ATEX marking on the device is omitted. Only the Ex option selected via the Z option is marked.
- 8) Not suitable for connection of remote seals.
- 9) Blanking plug is standard configuration. Order option A40 if a vent valve is required instead of a blanking plug.

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P DS III

for absolute pressure (from differential pressure series)

Selection and Ordering data	Order code			
Additional data		HART	PA	FF
Please add "-Z" to Article No. and specify Order code(s) and plain text.				
Measuring range to be set Specify in plain text (max. 5 characters): Y01: up to mbar a, bar a, kPa <sub>abs</sub> , MPa <sub>abs</sub> , psi a <sup>2</sup> )	Y01	<b>√</b>	<b>√</b> 1)	
Stainless steel tag plate and entry in device variable (measuring point description)  Max. 16 characters, specify in plain text:	Y15	✓	✓	✓
Y15:  Measuring point text (entry in device variable)	Y16	✓	✓	✓
Max. 27 characters, specify in plain text: Y16:				
Entry of HART address (TAG)  Max. 8 characters, specify in plain text: Y17:	Y17	✓		
Setting of pressure indication in pressure units	Y21	✓	1	✓
Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi, Note:				
The following pressure units can be selected: bar, mbar, mm $H_2O^{*)}$ , in $H_2O^{*)}$ , ft $H_2O^{*)}$ ,				
mmHG, inHG, psi, Pa, kPa, MPa, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , Torr, ATM or % *) ref. temperature 20 °C				
Setting of pressure indication in non-pressure units <sup>3)</sup>	Y22 + Y01	✓		
Specify in plain text: Y22: up to I/min, m³/h, m, USgpm, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)				
Preset bus address possible between 1 and 126 Specify in plain text:	Y25		✓	✓
Y25:				
Damping adjustment in seconds (0 100 s)	Y30	<b>√</b>	✓	✓

Factory mounting of valve manifolds, see accessories.

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

✓ = available

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

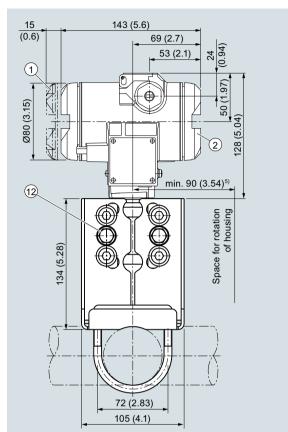
Only absolute pressure units selectable. Negative pressure values not permitted.

<sup>3)</sup> Preset values can only be changed over SIMATIC PDM.

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

for absolute pressure (from differential pressure series)

# Dimensional drawings



- Electronics side, local display
   (longer overall length for cover with inspection window)¹¹)
- 2 Connection side<sup>1)</sup>
- (3) Electrical connection:
  - Pg 13.5 screw gland (adapter)<sup>2) 3)</sup>
  - M20 x 1,5 screw gland
  - 1/2-14 NPT screw gland
  - Han 7D/Han 8D<sup>2) 3)</sup> device plug
- 4 Harting adapter
- (5) Cover over buttons
- 1) In addition, allow approx. 20 mm (0.79 inch) for the thread length
- 2) Not with "flameproof enclosure" type of protection
- Not for type of protection "FM + CSA" [is + XP]"
- For Pg 13.5 with adapter, approx. 45 mm (1.77 inch)
- 92 mm (3.62 inch) minimum distance for rotating with indicator

- 84 (3.31) (3) 166 (6.54) (8) (9) 262 ( **(** <del>B</del> -(10) (3.8)52 (2.05) 96 17 (0.67) approx. 96 (3.78) **(4)** 68 (2.7) 120 (4.7)
  - 6 Blanking plug
  - Safety catch (only for "flameproof enclosure" type of protection; not shown in the drawing)
  - 8 Lateral ventilation for liquid measurement (Standard)
  - (9) Lateral ventilation for gas measurement (order option H02)
  - 10 Mounting bracket (optional)
  - (1) Sealing plug with valve (optional)
  - 12 Process connection: 1/4-18 NPT (IEC 61518)

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

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

for differential pressure and flow

### Technical specifications

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

#### Input

Measured variable

Span (fully adjustable) or measuring range, max. operating pressure (in accordance with 2014/68/EU Pressure Equipment Directive) and max. test pressure (pursuant to DIN 16086)

Differential pressure and flow

Span         Nominal measuring range         Max. operating press           1 20 mbar         20 mbar         32 bar           0.1 2 kPa         2 kPa         3.2 MPa           0.4 8 inH <sub>2</sub> O         464 psi           1 60 mbar         60 mbar         160 bar           0.1 6 kPa         6 kPa         16 MPa           0.4 24 inH <sub>2</sub> O         24.1 inH <sub>2</sub> O         2320 psi           2.5 250 mbar         250 mbar	sure MAWP (PS)
0.1 2 kPa 0.4 8 inH <sub>2</sub> O 2 kPa 8 inH <sub>2</sub> O 464 psi 1 60 mbar 0.1 6 kPa 6 kPa 16 MPa 0.4 24 inH <sub>2</sub> O 24.1 inH <sub>2</sub> O 2320 psi	
0.1 24 inH <sub>2</sub> O 6 kPa 16 MPa 2320 psi	
2.5 250 mbar 250 mbar	
0.2 25 kPa 1 100 inH <sub>2</sub> O	
6 600 mbar 0.660 kPa 2.4 240 inH <sub>2</sub> O 600 kPa 240 inH <sub>2</sub> O	
16 1600 mbar 1.6160 kPa 160 kPa 6.4 642 inH <sub>2</sub> O 642 inH <sub>2</sub> O	
50 5000 mbar 5 500 kPa 20 2000 inH <sub>2</sub> O 5000 mbar 500 kPa 2000 inH <sub>2</sub> O	
0.3 30 bar 0.03 3 MPa 4.35 435 psi 435 psi	
2.5 250 mbar       250 mbar       420 bar         0.2 25 kPa       25 kPa       42 MPa         1 100 inH <sub>2</sub> O       100 inH <sub>2</sub> O       6091 psi	
6 600 mbar 0.660 kPa 2.4 240 inH <sub>2</sub> O	
16 1600 mbar 1.6 160 kPa 160 kPa 6.4 642 inH <sub>2</sub> O 642 inH <sub>2</sub> O	
50 5000 mbar 5 500 kPa 20 2000 inH <sub>2</sub> O 2000 inH <sub>2</sub> O	
0.3 30 bar 0.03 3 MPa 4.35 435 psi 435 psi	

Lower measuring limit

- Measuring cell with silicone oil filling
- Measuring cell with inert filling liquid
- for process temperature -20 °C < 9  $\leq$  +60 °C (-4 °F < 9  $\leq$  +140 °F)
- for process temperature 60 °C <  $9 \le +100$  °C (max. 85 °C for measuring cell 30 bar) (140 °F <  $9 \le +212$  °F (max. 185 °F for measuring cell 435 psi))

Upper measuring limit

Start of scale value

- -100 % of max. span (-33 % with measuring cell 30 bar/3 MPa/435 psi) or 30 mbar a/3 kPa a/0.44 psi a
- -100 % of max. span (-33 % with measuring cell 30 bar/3 MPa/435 psi) or 30 mbar a/3 kPa a/0.44 psi a

30 mbar a + 20 mbar a  $\cdot$  ( $\vartheta$  - 60 °C)/°C 3 kPa a + 2 kPa a  $\cdot$  ( $\vartheta$  - 60 °C)/°C 0.44 psi a + 0.29 psi a  $\cdot$  ( $\vartheta$  - 140 °F)/°F

100 % of max. span

(for oxygen measurement max. 100 bar/10 MPa/1450 psi and 60 °C (140 °F) ambient temperature/process temperature)

Between the measuring limits (fully adjustable)

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

SITRANS P, DS III for differential pressure and flow			·
Output	HART		PROFIBUS PA/FOUNDATION Fieldbus
Output signal	4 20 mA		Digital PROFIBUS PA and
Ουτροτ διχτιαι	4 ZU IIIA		FOUNDATION Fieldbus signal
Lower limit (infinitely adjustable)	3.55 mA, factory p	reset to 3.84 mA	-
Upper limit (infinitely adjustable)	23 mA, factory pre optionally set to 22 code D05)		-
Load			
Without HART	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/U_{\rm H}$ : Power supply	$^{\prime}$ 0.023 A in $\Omega$ , in V	-
With HART		(SIMATIC PDM) or Ω (HART Communica-	-
Physical bus	-		IEC 61158-2
Protection against polarity reversal	Protected against other with max. su		ty reversal. Each connection against the
Electrical damping (step width 0.1 s)	Set to 2 s (0 100	) s)	
Measuring accuracy	Acc. to IEC 60770	-1	
Reference conditions (All error data refer always refer to the set span)	<ul> <li>Increasing chara</li> <li>Start-of-scale val</li> <li>Stainless steel se</li> <li>Silicone oil filling</li> <li>Room temperatu</li> </ul>	lue 0 bar/kPa/psi eal diaphragm	
Measuring span ratio r (spread, Turn-Down)	r = max. measurir	ng span/set measuring	span or nom. pressure range
Error in measurement at limit setting incl. hysteresis and reproducibility			
Linear characteristic			
- 20 mbar/2 kPa/0.29 psi	r ≤ 5 : 5 < r ≤ 10 : 10 < r ≤ 20 :	≤ 0.075 % ≤ (0.0029 · r + 0.07 ≤ (0.0045 · r + 0.07)	
- 60 mbar/6 kPa/0.87 psi	$r \le 5$ : $5 < r \le 60$ :	≤ 0.075 % ≤ (0.005 · r + 0.05) °	%
<ul> <li>- 250 mbar/25 kPa/3.63 psi</li> <li>600 mbar/60 kPa/8.7 psi</li> <li>1600 mbar/160 kPa/23.21 psi</li> <li>5 bar/500 kPa/72.5 psi</li> <li>30 bar/3 MPa/435 psi</li> </ul>	r≤5: 5 < r≤100:	≤ 0.065 % ≤ (0.004 · r + 0.045)	%
• Square-rooted characteristic (flow > 50 %)			
- 20 mbar/2 kPa/0.29 psi	$r \le 5$ : 5 < $r \le 10$ : 10 < $r \le 20$ :	$\leq 0.075 \%$ $\leq (0.0029 \cdot r + 0.07)$ $\leq (0.0045 \cdot r + 0.07)$	
- 60 mbar/6 kPa/0.87 psi	r ≤ 5 : 5 < r ≤ 60 :	≤ 0.075 % ≤ (0.005 · r + 0.05)	%
<ul> <li>- 250 mbar/25 kPa/3.63 psi</li> <li>600 mbar/60 kPa/8.7 psi</li> <li>1600 mbar/160 kPa/23.21 psi</li> <li>5 bar/500 kPa/72.5 psi</li> <li>30 bar/3 MPa/435 psi</li> </ul>	r≤5: 5 <r≤100:< td=""><td>≤ 0.065 % ≤ (0.004 · r + 0.045)</td><td>%</td></r≤100:<>	≤ 0.065 % ≤ (0.004 · r + 0.045)	%
• Square-rooted characteristic (flow > 25 50 %)			
- 20 mbar/2 kPa/0.29 psi	$r \le 5$ : 5 < $r \le 10$ : 10 < $r \le 20$ :	≤ 0.15 % ≤ (0.0058 · r + 0.142 ≤ (0.009 · r + 0.142)	2) % %
- 60 mbar/6 kPa/0.87 psi	r ≤ 5 : 5 < r ≤ 60 :	≤ 0.015 % ≤ (0.01 · r + 0.1) %	
- 250 mbar/25 kPa/3.63 psi 600 mbar/60 kPa/8.7 psi 1600 mbar/160 kPa/23.21 psi 5 bar/500 kPa/72.5 psi 30 bar/3 MPa/435 psi	r≤5: 5 < r≤100:	≤ 0.13 % ≤ (0.008 · r + 0.09) °	%

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

SITRANS P, DS III for differential pressure and flow	
Measuring accuracy (continued)	Acc. IEC 60770-1
Influence of ambient temperature (in percent per 28 °C (50 °F))	
• 20 mbar/2 kPa/0.29 psi	$\leq$ (0.15 · r + 0.1) %
• 60 mbar/6 kPa/0.87 psi	$\leq$ (0.075 · r + 0.1) %
<ul> <li>250 mbar/25 kPa/3.63 psi</li> <li>600 mbar/60 kPa/8.7 psi</li> <li>1600 mbar/160 kPa/23.21 psi</li> <li>5 bar/500 kPa/72.5 psi</li> <li>30 bar/3 MPa/435 psi</li> </ul>	≤ (0.025 · r + 0.125) %
Influence of static pressure	
• on the zero point	
- 20 mbar/2 kPa/0.29 psi	$\leq$ (0.15 · r) % per 32 bar (zero offset is possible with position error adjustment)
- 60 mbar/6 kPa/0.87 psi 250 mbar/25 kPa/3.63 psi 600 mbar/60 kPa/8.7 psi 1600 mbar/160 kPa/23.21 psi	$\leq$ (0.1 · r) % per 70 bar (zero offset is possible with position error adjustment)
- 5 bar/500 kPa/72.5 psi 30 bar/3 MPa/435 psi	$\leq$ (0.2 · r) % per 70 bar (zero offset is possible with position error adjustment)
• on the span	
- 20 mbar/2 kPa/0.29 psi	≤ 0.2 % per 32 bar
- 60 mbar/6 kPa/0.87 psi 250 mbar/25 kPa/3.63 psi 600 mbar/60 kPa/8.7 psi 1600 mbar/160 kPa/23.21 psi 5 bar/500 kPa/72.5 psi 30 bar/3 MPa/435 psi	≤ 0.14 % per 70 bar
Long-term stability (temperature change ± 30 °C (± 54 °F))	Static pressure max. 70 bar/7 MPa/ 1015 psi
• 20 mbar/2 kPa/0.29 psi	$\leq$ (0.2 · r) % per year
60 mbar/6 kPa/0.87 psi     30 bar/3 MPa/435 psi	≤ (0.25 · r) % in 5 years
• 250 mbar/25 kPa/3.63 psi 600 mbar/60 kPa/8.7 psi 1600 mbar/160 kPa/23.21 psi 5 bar/500 kPa/72.5 psi	≤ (0.125 · r) % in 5 years
Effect of mounting position (in pressure per change in angle)	≤ 0.7 mbar/0.07 kPa/0.028 inH <sub>2</sub> O per 10° inclination (zero offset is possible with position error adjustment)
Effect of auxiliary power supply (in percent per change in voltage)	0.005 % per 1 V
Measuring value resolution for PROFIBUS PA and FOUNDATION Fieldbus	$3 \cdot 10^{-5}$ of nominal measuring range

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

		for differential pressure and flow			
SITRANS P, DS III for differential pressure and flow					
Rated conditions					
Degree of protection					
• according to EN 60529	IP66 (optional IP66/IP68)				
according to NEMA 250	Type 4X				
Temperature of medium	,				
Measuring cell with silicone oil filling	-40 +100 °C (-40 +212 °F) -20 +10 with 30 bar measuring cell	00 °C (-4 +212 °F)			
Measuring cell with inert filling liquid	-20 +100 °C (-4 +212 °F)				
Measuring cell with Neobee fill fluid (FDA-compliant)	-10 +100 °C (+14 +212 °F)				
• In conjunction with dust explosion protection	-20 +60 °C (-4 +140 °F)				
Ambient conditions	,				
Ambient temperature (silicone oil and inert oil)					
- Transmitter	-40 +85 °C (-40 +185 °F)				
nanomito	-20 +85 °C (-4 +185 °F) with 30 bar	measuring cell			
- Display readable	-30 +85 °C (-22 +185 °F)	3 11			
Ambient temperature (Neobee fill fluid)	30 m 130 0 ( <u>22</u> m 1130 1 )				
- Transmitter	-10 +85 °C (+14 +185 °F)				
Storage temperature					
Climatic class	-50 +85 °C (-58 +185 °F)				
	Polativo humidity 0 100 %				
- Condensation	Relative humidity 0 100 % Condensation permissible, suitable for use in the tropics				
Electromagnetic Compatibility					
- Emitted interference and interference immunity	Acc. to IEC 61326 and NAMUR NE 21				
Design					
Weight (without options)	Die-cast aluminum: $\approx 4.5 \text{ kg}$ ( $\approx 9.9 \text{ lb}$ ) Stainless steel precision casting: $\approx 7.1 \text{ kg}$ ( $\approx 15.6 \text{ lb}$ )				
Enclosure material	Low-copper die-cast aluminum, GD-AlSi1 no. 1.4408	2 or stainless steel precision casting, mat.			
Wetted parts materials					
Seal diaphragm	Stainless steel, mat. no. 1.4404/316L or Fmat. no. 2.4360, tantalum or gold	lastelloy C276, mat. no. 2.4819, Monel,			
Process flanges and sealing screw	Stainless steel, mat. no. 1.4408, Hastelloy mat. no. 2.4360	/ C4, mat. no. 2.4602 or Monel,			
• O-Ring	FPM (Viton) or optionally: PTFE, FEP, FEP	M and NBR			
Measuring cell filling	Silicone oil or inert filling liquid (maximum 100 bar (1450 psi) at 60 °C (140 °F))	value with oxygen measurement pressure			
Process connection	Female thread $^{1/4}$ -18 NPT and flange cond DIN 19213 or $^{7/}$ 16-20 UNF to IEC 61518/E	nection with mounting thread M10 to DIN EN 61518			
Material of mounting bracket					
• Steel	Sheet-steel, Mat. No. 1.0330, chrome-pla	ted			
• Stainless steel 304	Sheet stainless steel, mat. no. 1.4301 (SS	304)			
• Stainless steel 316L	Sheet stainless steel, mat. no. 1.4404 (SS	316L)			
Power supply $U_{H}$	HART	PROFIBUS PA/ FOUNDATION Fieldbus			
Terminal voltage on transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically-safe mode	-			
Power supply	-	Supplied through bus			
Separate 24 V power supply necessary	-	No			
Bus voltage					
• Not Ex	-	9 32 V			
With intrinsically-safe operation	9 24 V				
Current consumption					
Basic current (max.)	-	12.5 mA			
• Start-up current ≤ basic current	- Yes				
Max. current in event of fault	-	15.5 mA			
Fault disconnection electronics (FDE) available	-	Yes			
, ,					

Pressure transmitters

for applications with advanced requirements (Advanced)

### SITRANS P DS III

### for differential pressure and flow

SITRANS P, DS I	ii for differential	pressure and flow

#### Certificates and approvals

#### Classification according to PED 2014/68/EU

### Explosion protection

- · Intrinsic safety "i"
- Marking
- Permissible ambient temperature
- Connection
- Effective internal inductance/capacitance
- Explosion-proof "d"
- Marking
- Permissible ambient temperature
- Connection
- Dust explosion protection for zone 20
- Marking
- Permissible ambient temperature
- Max. surface temperature
- Connection
- Effective internal inductance/capacitance
- Dust explosion protection for zone 21/22
- Marking
- Connection
- Type of protection "n" (zone 2)
- Marking
- Connection (Ex nA)
- Connection (Ex ic)
- Effective internal inductance/capacitance
- · Explosion protection acc. to FM
- Identification (XP/DIP) or (IS); (NI)
- · Explosion protection to CSA
- Identification (XP/DIP) or (IS)

#### HART

#### **PROFIBUS PA/ FOUNDATION Fieldbus**

 $U_0 = 17.5 \text{ V}, I_0 = 380 \text{ mA}, P_0 = 5.32 \text{ W}$ 

 $U_0 = 17.5 \text{ V}, I_0 = 380 \text{ mA}, P_0 = 5.32 \text{ W}$ 

 $U_0 = 24 \text{ V}, I_0 = 250 \text{ mA}, P_0 = 1 \text{ W}$ 

 $U_{\rm o}$  = 24 V,  $I_{\rm o}$  = 250 mA,  $P_{\rm o}$  = 1.2 W

- PN 32/160 (MAWP 464/2320 psi) for gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering
- PN 420 (MAWP 6092) for gases of fluid group 1 and liquids of fluid group 1; complies with basic safety requirements of Article 4, paragraph 1 (appendix 1); assigned to category III, conformity evaluation module H by the TÜV Nord.

#### PTB 13 ATEX 2007 X

Ex II 1/2 G Ex ia/ib IIC T4/T5/T6 Ga/Gb

-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +70 °C (-40 ... +158 °F) temperature class T5; -40 ... +60 °C (-40 ... +140 °F) temperature class T6

To certified intrinsically-safe circuits with peak values:

 $U_i = 30 \text{ V}, I_i = 100 \text{ mA}, P_i = 750 \text{ mW};$  $R_{\rm i} = 300 \, \Omega$ 

 $L_i = 0.4 \text{ mH}, C_i = 6 \text{ nF}$ PTB 99 ATEX 1160

Ex II 1/2 G Ex d IIC T4/T6 Gb

-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +60 °C (-40 ... +140 °F) temperature class T6

To circuits with values:  $U_{\rm H} = 10.5 \dots 45 \text{ V DC}$ 

 $U_{\rm H} = 9 \dots 32 \, \rm V \, DC$ PTB 01 ATEX 2055 Ex II 1 D Ex ta IIIC T120°C Da

Ex II 1/2 D Ex ta/tb IIIC T120°C Da/Db -40 ... +85 °C (-40 ... +185 °F)

120 °C (248 °F)

To certified intrinsically-safe circuits with peak values:

 $U_{\rm i} = 30 \text{ V}, I_{\rm i} = 100 \text{ mA}, P_{\rm i} = 750 \text{ mW}, R_{\rm i} = 300 \Omega$ 

 $L_i = 0.4 \text{ mH}, C_i = 6 \text{ nF}$ 

PTB 01 ATEX 2055

Ex II 2 D Ex tb IIIC T120°C Db

To circuits with values:  $U_{\rm H}$  = 10.5 ... 45 V DC;  $P_{\text{max}} = 1.2 \text{ W}$ 

To circuits with values:  $U_{H} = 9 \dots 32 \text{ V}$ DC:  $P_{\text{max}} = 1 \text{ W}$ 

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

FISCO supply unit:

 $L_i = 7 \mu H$ ,  $C_i = 1.1 nF$ 

Linear barrier:

FISCO supply unit:

 $L_i = 7 \mu H$ ,  $C_i = 1.1 nF$ 

To circuits with values:

Linear barrier:

PTB 13 ATEX 2007 X

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

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

To circuits with values:

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

FISCO supply unit ic:  $U_0 = 17.5 \text{ V}, I_0 = 570 \text{ mA}$ Linear barrier:

 $U_0 = 32 \text{ V}, I_0 = 132 \text{ mA}, P_0 = 1 \text{ W}$  $L_i = 7 \mu H$ ,  $C_i = 1.1 nF$ 

 $L_i = 0.4 \text{ mH}, C_i = 6 \text{ nF}$ 

Certificate of Compliance 3008490

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

Certificate of Compliance 115365

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

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

			SITHANS F DS III
		for d	ifferential pressure and flow
HART communication		FOUNDATION Fieldbus	
HART	230 1100 Ω	communication	
Protocol	HART Version 5.x	Function blocks	3 function blocks analog input, 1 function block PID
Software for PC	SIMATIC PDM	Analog input	Transition block Tib
PROFIBUS PA communication		- Adaptation to customer-	Yes, linearly rising or falling
Simultaneous communication with master class 2 (max.)	4	specific process variables	characteristic
The address can be set using	Configuration tool or local opera-	- Electrical damping, adjustable	0 100 s
o add.ooo odi. oo oot doig	tion (standard setting address 126)	- Simulation function	Output/input (can be locked within the device with a bridge)
Cyclic data usage		- Failure mode	parameterizable (last good value, substitute value, incorrect
Output byte	5 (one measured value) or		value)
	10 (two measured values)	- Limit monitoring	Yes, one upper and lower warn-
• Input byte	0, 1, or 2 (register operating mode and reset function for		ing limit and one alarm limit respectively
Internal preprocessing	metering)	<ul> <li>Square-rooted characteristic for flow measurement</li> </ul>	Yes
Device profile	PROFIBUS PA Profile for Process Control Devices Version	• PID	Standard FOUNDATION Field- bus function block
	3.0, class B	<ul> <li>Physical block</li> </ul>	1 resource block
Function blocks	2	Transducer blocks	1 transducer block Pressure with
Analog input			calibration, 1 transducer block LCD
<ul> <li>Adaptation to customer-specific process variables</li> </ul>	Yes, linearly rising or falling characteristic	Pressure transducer block	
- Electrical damping, adjustable	0 100 s	<ul> <li>Can be calibrated by applying two pressures</li> </ul>	Yes
- Simulation function	Input /Output	- Monitoring of sensor limits	Yes
- Failure mode	parameterizable (last good value, substitute value, incorrect value)	- Simulation function: Measured pressure value, sensor tem-	Constant value or over parameterizable ramp function
- Limit monitoring	Yes, one upper and lower warn- ing limit and one alarm limit respectively	perature and electronics tem- perature	
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		
DI 1 111 1			

2

Yes

Yes

Max. 30 nodes

Parameterizable

Constant value or over parame-

terizable ramp function

• Physical block

Transducer blocks

• Pressure transducer block

- Can be calibrated by applying two pressures

Monitoring of sensor limitsSpecification of a container

characteristic with
- Square-rooted characteristic

for flow measurement
- Gradual volume suppression

and implementation point of square-root extractionSimulation function for mea-

sured pressure value and sensor temperature

Pressure transmitters

for applications with advanced requirements (Advanced)

SITRANS P DS III

### for differential pressure and flow

Selection and Orderi	ng data	Arti	cle No	).
	h HART pressure trans-		F 4 4 3	
mitters for differentia	l pressure and flow,			
PN 32/160 (MAWP 46	. ,			
ration in the PIA Lif	*			
Measuring cell filling	Measuring cell cleaning			
Silicone oil	normal	1		
nert liquid <sup>1)</sup>	grease-free to	3		
	cleanliness level 2			
FDA compliant fill fluid				
Neobee oil	normal	4		
Measuring span (mir	-			
PN 32 (MAWP 464 psi I 20 mbar <sup>3)</sup>	) (0.4 8 inH <sub>2</sub> O)	В		
	- ·	6		
PN 160 (MAWP 2320 )		_		
60 mbar 2.5 250 mbar	(0.4 24 inH <sub>2</sub> O) (1.004 100.4 inH <sub>2</sub> O)	C		
6 600 mbar	(2.4 240 inH <sub>2</sub> O)	E		
6 1600 mbar	(6.4 642 inH <sub>2</sub> O)	F		
50 5000 mbar	(20 2000 inH <sub>2</sub> O)	Ġ		
0.3 30 bar	(4.35 435 psi)	H		
Vetted parts materia				
(stainless steel proces				
Seal diaphragm	Parts of measuring cell			
Stainless steel	Stainless steel		A	
Hastelloy	Stainless steel		В	
Hastelloy	Hastelloy		С	
antalum <sup>4)</sup>	Tantalum		E	
Monel <sup>4)</sup>	Monel		Н	
Gold <sup>4)</sup>	Gold		L	
ersion for diaphragm	seal <sup>5) 6) 7) 8)</sup>		Y	
Process connection				
	PT with flange connection			
	site process connection			
<ul> <li>Mounting thread <sup>7</sup>/ IEC 61518/DIN EN</li> </ul>	16-20 UNF to 61518		2	
- Mounting thread M			0	
(only for replaceme	ent requirement)			
Vent on side of proc	ess flange <sup>3)</sup>			
<ul> <li>Mounting thread <sup>7</sup>/ IEC 61518/DIN EN</li> </ul>	16-20 UNF to		6	
- Mounting thread M			4	
(only for replacement				
Non-wetted parts ma				
process flange screws				
Stainless steel	Die-cast aluminum		2	
Stainless steel	Stainless steel precision casting <sup>9)</sup>		3	
/ersion				
Standard version, G setting for pressure	erman plate inscription, unit: bar			1
• .	, English plate inscription,			2
Chinese version, Eng	lish plate inscription,			3
setting for pressure u	nit: Pascai VD with compact operat-			
ng instructions in vari				

Selection and Ordering data	Article No.
SITRANS P DS III with HART pressure trans-	7MF4433-
mitters for differential pressure and flow, PN 32/160 (MAWP 464/2320 psi)	
Explosion protection	
None	A
<ul><li>With ATEX, Type of protection:</li></ul>	
- "Intrinsic safety (Ex ia)"	В
- "Explosion-proof (Ex d)" <sup>10)</sup>	D
<ul> <li>"Intrinsic safety and flameproof enclosure" (Ex ia + Ex d)"<sup>11)</sup></li> </ul>	Р
- "Ex nA/ic (Zone 2)" <sup>12)</sup>	E
<ul> <li>"Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia+ Ex d + Zone 1D/2D)"11)13)</li> </ul>	R
FM + CSA intrinsic safe (is) <sup>14)</sup>	F
PFM + CSA (is + ep) + Ex ia + Ex d (ATEX) + Zone 1D/2D11)13)14)	s
<ul><li>With FM + CSA, Type of protection:</li></ul>	
- "Intrinsic Safe and Explosion Proof (is + xp)" <sup>10)14)</sup>	NC
Electrical connection/cable entry	
Screwed gland M20 x 1.5	В
<ul> <li>Screwed gland ½-14 NPT</li> </ul>	C
<ul> <li>Device plug Han 7D (plastic housing) incl. mating connector<sup>15)16)</sup></li> </ul>	D
<ul> <li>Device plugs M12 (stainless steel)<sup>17)18)</sup></li> </ul>	F
Display	
Without display	0
Without visible display	1
(display concealed, setting: mA)	
• With visible display (setting: mA)	6
<ul> <li>with customer-specific display (setting as specified, Order code "Y21" or "Y22" required)</li> </ul>	7
Dower augusty units and Chan 7 "Cumplementery Co	ompopopto"

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

Included in delivery of the device:

- Quick-start guide
- Sealing plug(s) or sealing screw(s) for the process flanges(s)
- 1) For oxygen application, add Order code E10.
- 2) Available for measuring ranges 250 mbar ... 5 bar.
- 3) Not suitable for connection of remote seal. Position of the top vent valve in the process flange (see dimensional drawing).
- $^{4)}$  Not in conjunction with max. span 20 and 60 mbar (8.03 and 24.09 inH $_2$ O))
- 5) 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.
- 6) 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.
- 7) The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF443.-.Y.-.... and 7MF4900-1...-.B
- 8) The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.
- 9) Not in conjunction with Electrical connection "device plug Han 7D".
- <sup>10)</sup>Without cable gland, with blanking plug
- <sup>11)</sup>With enclosed cable gland Ex ia and blanking plug
- <sup>12)</sup>Configurations with device plugs Han and M12 are only available in Ex ic.
- 13)Only in connection with IP66.
- 14) Explosion protection acc. to FM/CSA: suitable for installations according to NEC 500/505.
- <sup>15)</sup> Only in connection with Ex apporval A, B or E.
- <sup>16)</sup> Permissible only for crimp-contact of conductor cross-section 1 mm<sup>2</sup>
- <sup>17)</sup> Only in connection with Ex approval A, B, E or F.
- 18) M12 delivered without cable socket.

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

### for differential pressure and flow

Selection and Ordering		Α	rtic	le	No		
	for differential pressure						
and flow PN 32/160 (M	• ,	_	N# -		4.0	1	
SITRANS P DS III with P	` ,					4 -	
	OUNDATION Fieldbus (FF)					5 -	
ration in the PIA Life	lo. for the online configu- Cycle Portal.	ľ	ı		i		
Measuring cell filling	Measuring cell cleaning						
Silicone oil	normal	1					
Inert liquid <sup>1)</sup>	grease-free to	3					
	cleanliness level 2						
FDA compliant fill fluid <sup>2</sup> • Neobee oil	²) normal	4					
Nominal measuring ra PN 32 (MAWP 464 psi)	nge						
20 mbar <sup>3)</sup>	(8.03 inH <sub>2</sub> O)		В				
PN 160 (MAWP 2320 ps	· = ·						
60 mbar	(24 inH <sub>2</sub> O)		С				
250 mbar	(100 inH <sub>2</sub> O)		D				
600 mbar	(240 inH <sub>2</sub> O)		E				
1600 mbar	(642 inH <sub>2</sub> O)		F				
5 bar	(2000 inH <sub>2</sub> O)		G				
30 bar	(435 psi)		Н				
Wetted parts materials							
(stainless steel process Seal diaphragm	flanges) Parts of measuring cell						
Stainless steel	Stainless steel		A				
Hastelloy Hastelloy	Stainless steel		B C				
Hastelloy Tantalum <sup>4)</sup>	Hastelloy Tantalum		E				
Monel <sup>4)</sup>	Monel		Н	1 1			
Gold <sup>4)</sup>	Gold		L				
Version as diaphragm s			Υ				
Process connection				П			
Female thread 1/4-18 NP	T with flange connection						
<ul> <li>Sealing screw opposit</li> </ul>							
<ul> <li>Mounting thread <sup>7</sup>/<sub>16</sub></li> <li>IEC 61518/DIN EN 6</li> </ul>	<sub>3</sub> -20 UNF to			2			
IEC 61518/DIN EN 6 - Mounting thread M1				0			
- Mounting thread M1 (only for replacemer				U			
<ul> <li>Venting on side of pro</li> </ul>	cess flanges <sup>3)</sup>						
- Mounting thread 7/16	<sub>3</sub> -20 UNF to			6			
IEC 61518/DIN EN 6	31518						
<ul> <li>Mounting thread M1 (only for replacement</li> </ul>				4			
Non-wetted parts mate	· · · · · · · · · · · · · · · · · · ·						
process flange screws	Electronics housing						
Stainless steel	Die-cast aluminum				2		
Stainless steel	Stainless steel precision casting				3		
Version	-						
<ul> <li>Standard versions</li> </ul>						1	
	English label inscriptions,					2	
documentation in 5 la (no Order code select							
Version	,						
Standard version, Ger						1	
setting for pressure ur							
<ul> <li>International version, I setting for pressure ur</li> </ul>	English plate inscription,					2	
<ul> <li>Chinese version, English</li> </ul>						3	
setting for pressure uni							
	D with compact operating						

instructions in various EU languages.

Selection and Ordering data	Article No.
<b>_</b>	ALLICIE NO.
Pressure transmitters for differential pressure and flow PN 32/160 (MAWP 464/2320 psi)	
SITRANS P DS III with PROFIBUS PA (PA)	7MF4434-
SITRANS P DS III with FOUNDATION Fieldbus (FF)	7MF4435-
,	
Explosion protection	
• None	Α
<ul> <li>With ATEX, Type of protection:</li> </ul>	
- "Intrinsic safety (Ex ia)"	В
- "Explosion-proof (Ex d)" <sup>9)</sup>	D
- "Intrinsic safety and flameproof enclosure"	P
$(Ex ia + Ex d)^{(10)}$	_
- "Ex nA/ic (Zone 2)" 11)	E
<ul> <li>"Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia + Ex d +</li> </ul>	R
Zone 1D/2D)" <sup>10)12)</sup>	
• FM + CSA intrinsic safe (is) <sup>13)</sup>	F
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX)+ Zone 1D/2D <sup>10</sup> )12)13)	S
• With FM + CSA, Type of protection:	
- "Intrinsic Safe and Explosion Proof	NC
$(is + xp)^{ig}$	
Electrical connection/cable entry	
<ul> <li>Screwed gland M20 x 1.5</li> </ul>	В
• Screwed gland ½-14 NPT	С
<ul> <li>Device plugs M12 (stainless steel)<sup>14) 15)</sup></li> </ul>	F
Display	
Without display	
Without visible display	
(display concealed, setting: bar)	
With visible display (setting: bar)	
<ul> <li>With customer-specific display (setting as specified, Order code "Y21" required)</li> </ul>	
(setting as specified, Order Code 121 Tequiled)	

Included in delivery of the device:

- Quick-start guide
- Sealing plug(s) or sealing screw(s) for the process flanges(s)
- 1) For oxygen application, add Order code E10.
- 2) Available for measuring ranges 250 mbar ... 5 bar.
- 3) Not suitable for connection of remote seal. Position of the top vent valve in the process flange (see dimensional drawing).
- $^{4)}$  Not in conjunction with max. span 20 and 60 mbar (8.03 and 24.09 inH $_2$ O))
- 5) 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.
- 6) 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.
- 7) The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF443.-..Y..-.... and 7MF4900-1...-.B
- 8) The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.
- 9) Without cable gland, with blanking plug.
- 10) With enclosed cable gland Ex ia and blanking plug.
- 11) Configurations with device plugs Han and M12 are only available in Ex ic.
- 12) Only in connection with IP66.
- 13) Explosion protection acc. to FM/CSA: suitable for installations according to NEC 500/505.
- <sup>14)</sup> Only in connection with Ex approval A, B, E or F.
- 15) M12 delivered without cable socket

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

Onlanding and Onlands and date	0				
Selection and Ordering data	Oraer	Order code  HART PA			
Further designs Add "-Z" to Article No. and specify Order code.		накт	PA	FF	
Pressure transmitter with mounting bracket (1x fixing angle, 2 x nut, 2 x U-washer or 1 x bracket, 2 x nut, 2 x U-washer) made of:					
<ul><li>Steel</li><li>Stainless steel 304</li><li>Stainless steel 316L</li></ul>	A01 A02 A03	<b>√ √</b>	<ul><li>✓</li><li>✓</li></ul>	<b>√ √</b>	
O-rings for process flanges (instead of FPM (Viton))  • PTFE (Teflon)  • FEP (with silicone core, approved for food)  • FFPM (Kalrez, for measured medium temperatures -15 100 °C (5 212 °F))  • NBR (Buna N)	A20 A21 A22 A23	* * * * * * * * * * * * * * * * * * *		\ \ \ \ \	
Device plugs <sup>1)</sup> • Han 7D (metal) • Han 8D (instead of Han 7D) • Angled • Han 8D (metal)	A30 A31 A32 A33	* * * * * *			
<b>Sealing screws (2 units)</b> 1/4-18 NPT, with valve in mat. of process flanges	A40	✓	✓	✓	
Cable sockets for device plugs M12 (metal (CuZn))	A50	✓	✓	✓	
Rating plate inscription (instead of German)  • English  • French  • Spanish  • Italian  • Cyrillic (russian)  English rating plate Pressure units in inH <sub>2</sub> O and/or psi	B11 B12 B13 B14 B16 B21	****	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	
Quality Inspection Certificate (5-point characteristic curve test) according to IEC 60770-2 <sup>2)</sup>	C11	✓	✓	✓	
Inspection certificate <sup>3)</sup> to EN 10204-3.1	C12	✓	✓	✓	
Factory certificate to EN 10204-2.2  Acceptance certificate (EN 10204-3.1)  PMI test of parts in contact with medium	C14 C15	<b>√</b>	<b>√</b>	<b>√</b>	
Functional safety (SIL2) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	C20	✓			
Functional safety (PROFIsafe) Certificate and PROFIsafe protocol	C21 <sup>4)</sup>		✓		
Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	C23	✓			
PED for Russia with initial calibration mark	C99	✓	✓	✓	

Selection and Ordering data	Order	code		
Further designs Add "-Z" to Article No. and specify Order code.		HART	PA	FF
Setting of the upper saturation limit of the output signal to 22.0 mA	D05	1		
Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009)	D07	✓	✓	✓
(only together with seal diaphragm made of Hastelloy and stainless steel)				
<b>Degree of protection IP66/IP68</b> (only for M20 x 1.5 and ½-14 NPT)	D12	✓	✓	✓
Process flange screws made of Monel (max. nominal pressure PN20)	D34	✓	✓	✓
Supplied with oval flange set (2 items), PTFE packings and screws in thread of process flanges	D37	✓	✓	✓
Capri cable gland 4F CrNi and clamping device (848699 + 810634) included	D59	✓	✓	✓
Use in or on zone 1D/2D <sup>5)</sup>	E01	✓	✓	✓
(only together with type of protection "Intrinsic safety" (transmitter 7MF4B Ex ia)"and IP66)				
Overfilling safety device for flammable and non-flammable liquids	E08	✓		
(max. PN 32 (MAWP 464 psi), basic device with type of protection "Intrinsic safety (Ex ia)", to WHG and VbF, not together with measuring cell filling "inert liquid")				
Oxygen application	E10	1	✓	✓
(In the case of oxygen measurement and inert liquid max. 100 bar (1450 psi) at 60°C (140 °F))				
Export approval Korea	E11	✓	✓	✓
CRN approval Canada (Canadian Registration Number)	E22 <sup>6)</sup>	✓	✓	✓
Dual seal	E24	✓	✓	✓
Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil)	E25 <sup>7)</sup>	✓	✓	✓
(only for transmitter 7MF4B)	_,			
"Flameproof" explosion protection according to INMETRO (Brazil) (only for transmitter 7MF4D)	E26 <sup>7)</sup>	<b>√</b>	✓	✓
Explosion-proof "Intrinsic safety" (Ex ia	E28 <sup>7)</sup>	./	./	
+ Ex d) to INMETRO (Brazil)  (only for transmitter 7MF4P)	L20 /	·	•	
Ex Approval IEC Ex (Ex ia) (only for transmitter 7MF4	E45 <sup>7)</sup>	✓	✓	✓
Ex Approval IEC Ex (Ex d) (only for transmitter 7MF4D)	E46 <sup>7)</sup>	✓	✓	✓
Explosion-proof "Intrinsic safety" to NEPSI (China)	E55 <sup>7)</sup>	✓	✓	✓
(only for transmitter 7MF4B)  Explosion protection "Explosion-proof"	E56 <sup>7)</sup>	1	✓	✓
to NEPSI (China) (only for transmitter 7MF4D)	_,			
Explosion-proof "Zone 2" to NEPSI (China)	E57 <sup>7)</sup>	<b>√</b>	✓	✓
(only for transmitter 7MF4				
Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China)	E58 <sup>7)</sup>	<b>√</b>	✓	<b>√</b>
(only for transmitter 7MF4R)	7\			
"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (only for transmitter	E70 <sup>7)</sup>	<b>V</b>	<b>√</b>	<b>√</b>
7MF4[B, D]Z + E11)				

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

for differential pressure and flow

Selection and Ordering data	Order	code		
Further designs Add "-Z" to Article No. and specify Order code.	Order	HART	PA	FF
Ex-protection Ex ia according to EAC Ex (Russia)	E80	✓	✓	✓
Ex-protection Ex d according to EAC Ex (Russia)	E81	✓	✓	✓
Ex-protection Ex nA/ic (Zone 2) according to EAC Ex (Russia)	E82	✓	✓	✓
Ex-protection Ex ia + Ex d + Zone 1D/2D according to EAC Ex (Russia)	E83	✓	✓	✓
(Russia)  Ex-protection Ex nA/ic (Zone 2) according to EAC Ex (Russia)  Ex-protection Ex ia + Ex d + Zone 1D/2D according to EAC Ex (Russia)  Two coats of lacquer on casing and cover (PU on epoxy)  Interchanging of process connection side Vent on side for gas measurements  H02 ✓  Stainless steel process flanges for		✓	✓	1
Interchanging of process connection side	H01	✓	✓	✓
Vent on side for gas measurements	H02	✓	✓	✓
Stainless steel process flanges for vertical differential pressure lines (not together with K01, K02 and K048)	H03	✓	✓	✓
Transient protector 6 kV (lightning protection)	J01	✓	✓	✓
Chambered graphite gasket for process flange	J02	✓	✓	✓
Chambered PTFE graphite gasket	J03	✓	✓	1
EPDM O-rings for process flange with approval (WRC/WRAS)	J05	✓	✓	✓
Vent valve or blanking plug of process flange welded-in (orientation: on right when viewing the display <sup>9)</sup>	J08	✓	✓	✓
Vent valve or blanking plug of process flange welded-in (orientation: on left when viewing the display) <sup>9)</sup>	J09	✓	✓	✓
Process flange				
Hastelloy	K01	✓	✓	✓
• Monel	K02	<b>√</b>	<b>1</b>	1
Stainless steel with PVDF insert  May PN 10 (MANUP 145 pg)	K04	✓	✓	✓
max. PN 10 (MAWP 145 psi), max. temperature of medium 90 °C				
(194 °F), for ½-14 NPT inner process con-				
nection on the side in the middle of the process flange, vent valve not possible				
Marine approvals				
Det Norske Veritas	S10	✓	1	✓
Germanischer Lloyd (DNV-GL)	S11	1	1	./
<ul><li>Lloyds Register (LR)</li><li>French marine classification society</li></ul>	S12	1	1	1
Bureau Veritas (BV)				
American Bureau of Shipping (ABS)	S14	<b>√</b>	1	1
Russian Maritime Register (RMR)     Kersen Register of Shipping (KR)	S16 S17	1	1	1
<ul> <li>Korean Register of Shipping (KR)</li> </ul>	517	•	<b>V</b>	•

Factory mounting of valve manifolds, see accessories.

- ✓ = available
- 1) Device plug Han IP65
- When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.
- 3) If the acceptance test certificate 3.1.is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.
- 4) Profisafe transmitters can only be operated with the S7 F Systems V6.1 configuration software in combination with S7-400H
- 5) Option does not contain gas explosion protection; only dust explosion protection: Use in or at Zone 1D/2D.
- 6) Cannot be ordered with remote seal.
- 7) When the additional ex option is selected, the ATEX marking on the device is omitted. Only the Ex option selected via the Z option is marked.
- 8) Not suitable for connection of remote seal.
- 9) Blanking plug is standard configuration. Order option A40 if a vent valve is required instead of a blanking plug.

Selection and Ordering data	Order	code		
Additional data Please add "-Z" to Article No. and specify Order code(s) and plain text.		HART	PA	FF
Measuring range to be set Specify in plain text:				
<ul> <li>in the case of linear characteristic curve (max. 5 characters):</li> <li>Y01: up to mbar, bar, kPa, MPa, psi</li> </ul>	Y01	<b>√</b>	<b>√</b> 1)	
• in the case of square rooted characteristic (max. 5 characters): Y02: up to mbar, bar, kPa, MPa, psi	Y02	✓		
Stainless steel tag plate and entry in device variable (measuring point description)	Y15	✓	✓	✓
Max. 16 characters, specify in plain text: Y15:				
Measuring point text (entry in device variable)	Y16	✓	✓	✓
Max. 27 char., specify in plain text: Y16:				
Entry of HART address (TAG)	Y17	1		
Max. 8 char., specify in plain text: Y17:				
Setting of pressure indicator in pressure units	Y21	✓	✓	✓
Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi,				
Note: The following pressure units can be selected:				
bar, mbar, mm H <sub>2</sub> O <sup>*)</sup> , inH <sub>2</sub> O <sup>*)</sup> , ftH <sub>2</sub> O <sup>*)</sup> , mmHG, inHG, psi, Pa, kPa, MPa, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , Torr, ATM or % *) ref. temperature 20 °C				
Setting of pressure indicator in non-	Y22 <sup>3)</sup>	✓		
pressure units <sup>2</sup> ) Specify in plain text: Y22: up to I/min, m³/h, m, USgpm, (specification of measuring range in pressure units "Y01" or "Y02" is essential, unit with max. 5 characters)	+ Y01 Of Y02			
Preset bus address	Y25		✓	✓
possible between 1 and 126 Specify in plain text: Y25:				
Damping adjustment in seconds (0 100 s)	Y30	✓	✓	✓

Factory mounting of valve manifolds, see accessories.

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

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

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P DS III

for differential pressure and flow

for differential pres	ssure and flow	
Selection and Ordering	g data	Article No.
SITRANS P DS III with		7 M F 4 5 3 3 -
mitters for differential PN 420 (MAWP 6092 p		
∠ Click on the Article New ration in the PIA Life	lo. for the online configu- Cycle Portal.	
Measuring cell filling	Measuring cell cleaning	
Silicone oil	normal	1
Inert liquid <sup>1)</sup>	grease-free to cleanliness level 2	3
Measuring span (min.	•	
2.5 250 mbar 6 600 mbar	(1.004 100 inH <sub>2</sub> O) (2.4 240 inH <sub>2</sub> O)	D E
16 1600 mbar	(6.4 642 inH <sub>2</sub> O)	F
50 5000 mbar	(20 2000 inH <sub>2</sub> O)	G
0.3 30 bar	(4.35 435 psi)	Н
Wetted parts materials		
(stainless steel process		
Seal diaphragm	Parts of measuring cell	
Stainless steel	Stainless steel	A B
Hastelloy Gold <sup>2)</sup>	Stainless steel Gold	L
Version for diaphragm s		Y
Process connection		
Female thread 1/4-18 NP	T with flange connection	
<ul> <li>Sealing screw opposit</li> <li>Mounting thread <sup>7</sup>/<sub>16</sub></li> </ul>	<sub>5</sub> -20 UNF to	3
IEC 61518/DIN EN 6 - Mounting thread M1 (only for replacement	2 to DIN 19213	1
• Venting on side of pro	cess flanges, location of ocess flanges (see dimen-	
<ul> <li>Mounting thread <sup>7</sup>/<sub>16</sub></li> <li>IEC 61518/DIN EN 6</li> </ul>	3-20 UNF to	7
- Mounting thread M1 (only for replacemen	2 to DIN 19213	5
Non-wetted parts mate		
process flange screws		
Stainless steel Stainless steel	Die-cast aluminum Stainless steel precision casting <sup>7)</sup>	2 3
Version		
<ul> <li>Standard version, Ger setting for pressure ur</li> </ul>		1
• .	English plate inscription,	2
setting for pressure ur		
<ul> <li>Chinese version, English setting for pressure unit</li> </ul>		3
	O with compact operating	
Explosion protection		1
None     With ATEY Type of pre-	atantian:	A
<ul> <li>With ATEX, Type of pre-</li> <li>"Intrinsic safety (Ex i</li> </ul>		В
- "Explosion-proof (Ex		D
- "Intrinsic safety and (Ex ia + Ex d)"9)	flameproof enclosure"	P
<ul> <li>"Ex nA/ic (Zone 2)"10</li> </ul>		E
<ul> <li>"Intrinsic safety, explosion prote Zone 1D/2D)"<sup>9)11)</sup></li> </ul>	osion-proof enclosure and ection (Ex ia+ Ex d +	R
• FM + CSA intrinsic sa	fe (is) <sup>12)</sup>	F
• FM + CSA (is + ep) + Zone 1D/2D <sup>9)11)12)</sup> • With FM + CSA, Type		S
- "Intrinsic safety and (is + xp)" <sup>8)12)</sup> , max	explosion-proof	NC

Selection and Ordering data	Article No.
SITRANS P DS III with HART pressure trans-	7MF4533-
mitters for differential pressure and flow, PN 420 (MAWP 6092 psi)	
Electrical connection/cable entry	
<ul> <li>Screwed gland M20x1.5</li> </ul>	В
<ul> <li>Screwed gland ½-14 NPT</li> </ul>	C
<ul> <li>Device plug Han 7D (plastic housing) incl. mating connector<sup>13)14)</sup></li> </ul>	D
<ul> <li>Device plugs M12 (stainless steel)<sup>15)</sup></li> </ul>	F
Display	
Without display	0
<ul> <li>Without visible display (display concealed, setting: mA)</li> </ul>	1
<ul> <li>With visible display (setting: mA)</li> </ul>	6
<ul> <li>with customer-specific display (setting as specified, Order code "Y21" or "Y22" required)</li> </ul>	7

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

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

- 1) For oxygen application, add Order code E10.
- 2) Not in conjunction with max. span 600 mbar (240.9 inH<sub>2</sub>O)
- 3) When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.
- 4) If the acceptance test certificate 3.1.is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.
- 5) The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF453.-.Y.-.... and 7MF4900-1....-.B
- 6) The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.
- 7) Not in conjunction with Electrical connection "device plug Han 7D".
- 8) Without cable gland, with blanking plug
- 9) With enclosed cable gland Ex ia and blanking plug
- $^{10)}$  Configurations with device plugs Han and M12 are only available in Ex ic.
- 11) Only in connection with IP66.
- 12) Explosion protection acc. to FM/CSA: suitable for installations according to NEC 500/505.
- <sup>13)</sup> Only in connection with Ex approval A, B or E.
- <sup>14)</sup> Permissible only for crimp-contact of conductor cross-section 1 mm<sup>2</sup>
- 15) Only in connection with Ex approval A, B, E or F.
- <sup>16)</sup> M12 delivered without cable socket.

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

### for differential pressure and flow

Selection and Ord	ering data	Arti	cle No	).	
Pressure transmit and flow, PN 420 (	ters for differential pressure MAWP 6092 psi)				
SITRANS P DS III w	ith PROFIBUS PA (PA)	7 M	F453	3 4 -	
SITRANS P DS III w	ith FOUNDATION Fieldbus (FF)	7 M	F 4 5 3	3 5 -	
	cle No. for the online configu- Life Cycle Portal.		•		ľ
Measuring cell fill	ng Measuring cell cleaning				
Silicone oil	normal	1			
Inert liquid <sup>1)</sup>	grease-free to cleanliness level 2	3			
Nominal measurin	g range				
250 mbar	(100 inH <sub>2</sub> O)	D			
600 mbar	(240 inH <sub>2</sub> O)	E			
1600 mbar	(642 inH <sub>2</sub> O)	F			
5 bar 30 bar	(2000 inH <sub>2</sub> O) (435 psi)	G H			
		- "			
Wetted parts mate					
(stainless steel prod Seal diaphragm	Parts of measuring cell				
Stainless steel Hastellov	Stainless steel Stainless steel		A B		
Gold <sup>2)</sup>	Gold		L		
Version for diaphra			Y		
Process connection		_			
	B NPT with flange connection				
	posite process connection				
- Mounting thread			3		
IEC 61518/DIN	EN 61518				
(only for replace	M12 to DIN 19213 ement requirement)		1		
	f process flanges, location of f process flanges (see dimen-				
- Mounting thread IEC 61518/DIN	1 <sup>7</sup> / <sub>16</sub> -20 UNF to FN 61518		7		
- Mounting thread	M12 to DIN 19213 ement requirement)		5		
Non-wetted parts	materials	_			
	ews Electronics housing				
Stainless steel	Die-cast aluminum		2		
Stainless steel	Stainless steel precision casting		3		
Version					
setting for pressu				1	
setting for pressu				2	
setting for pressur	inglish plate inscription, e unit: Pascal DVD with compact operating			3	

instructions in various EU languages.

Selection and Ordering data	Article No.
Pressure transmitters for differential pressure and flow, PN 420 (MAWP 6092 psi)	
SITRANS P DS III with PROFIBUS PA (PA)	7MF4534-
SITRANS P DS III with FOUNDATION Fieldbus (FF)	7MF4535-
, ,	
Explosion protection	
• None	Α
With ATEX, Type of protection:	
- "Intrinsic safety (Ex ia)"	В
- "Explosion-proof (Ex d)" <sup>7)</sup>	D
<ul> <li>"Intrinsic safety and flameproof enclosure" (Ex ia + Ex d)"<sup>(3)</sup></li> </ul>	Р
- "Ex nA/ic (Zone 2)" <sup>9)</sup>	E
<ul> <li>"Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia + Ex d + Zone 1D/2D)"<sup>8) 10)</sup></li> </ul>	R
• FM + CSA intrinsic safe (is) <sup>11)</sup>	F
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX)+ Zone 1D/2D <sup>9</sup> )10)11)	S
• With FM + CSA, Type of protection:	
<ul> <li>"Intrinsic safety and explosion-proof (is + xp)"<sup>7)11)</sup>, max PN 360</li> </ul>	NC
Electrical connection/cable entry	
<ul> <li>Screwed gland M20 x 1.5</li> </ul>	В
• Screwed gland ½-14 NPT	C
Device plugs M12 (stainless steel) 12) 13)	F
Display	
<ul> <li>Without (display hidden)</li> </ul>	
Without visible display	
(display concealed, setting: bar)	
With visible display (setting: bar)	
<ul> <li>With customer-specific display (setting as specified, Order code "Y21" required)</li> </ul>	
specified, Order code 121 required)	

Included in delivery of the device:

- Quick-start guide
- Sealing plug(s) or sealing screw(s) for the process flanges(s)
- 1) For oxygen application, add Order code E10.
- 2) Not in conjunction with max. span 600 mbar (240.9 inH<sub>2</sub>O)
- 3) When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.
- 4) If the acceptance test certificate 3.1.is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.
- The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF453.-..Y..-.... and 7MF4900-1....-.B
- 6) The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.
- 7) Without cable gland, with blanking plug.
- 8) With enclosed cable gland Ex ia and blanking plug.
- $^{9)}\,$  Configurations with device plugs Han and M12 are only available in Ex ic. 10) Only in connection with IP66.
- 11) Explosion protection acc. to FM/CSA: suitable for installations according to NEC 500/505.
- 12) Only in connection with Ex approval A, B, E or F.
- 13) M12 delivered without cable socket

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P DS III

for differential pressure and flow

Selection and Ordering data	Order	r code		
Further designs	0.00.	HART	PA	FF
Add "-Z" to Article No. and specify Order code.				
Pressure transmitter with mounting bracket (1x fixing angle, 2 x nut, 2 x U-washer or 1 x bracket, 2 x nut, 2 x U-washer) made of:				
• Steel	A01	✓	✓.	✓
• Stainless steel 304	A02	<b>V</b>	1	<b>1</b>
Stainless steel 316L	A03	<b>V</b>	✓	✓
O-rings for process flanges (instead of FPM (Viton)) • PTFE (Teflon)	A20	<b>√</b>	<b>√</b>	<b>√</b>
<ul> <li>FEP (with silicone core, approved for food)</li> </ul>	A21	✓	1	✓
<ul> <li>FFPM (Kalrez, for measured medium temperatures -15 100 °C (5 212 °F))</li> <li>NBR (Buna N)</li> </ul>	A22 A23	<b>4</b>	<b>✓</b>	1
,	AZS	_ •	•	•
Device plugs <sup>1)</sup> • Han 7D (metal)	A30	1		
Han 8D (instead of Han 7D)	A31	1		
• Angled	A32	1		
Han 8D (metal)	A33	✓		
Sealing screws (2 units)	A40	1	1	✓
1/4-18 NPT, with valve in mat. of process flanges				
Cable sockets for device plugs M12 (metal (CuZn))	A50	✓	✓	✓
Rating plate inscription (instead of German)				
• English	B11	✓	✓	✓
• French	B12	✓	1	<b>V</b>
• Spanish	B13	<b>√</b>	1	<b>√</b>
<ul><li>Italian</li><li>Cyrillic (russian)</li></ul>	B14 B16	<b>✓</b>	1	<b>V</b>
,	B21	1	· /	•
English rating plate Pressure units in inH <sub>2</sub> O and/or psi	DZI	_ •	٧	•
Quality Inspection Certificate (5-point characteristic curve test) according to IEC 60770-2	C11	✓	✓	✓
Inspection certificate Acc. to EN 10204-3.1	C12	✓	✓	✓
Factory certificate Acc. to EN 10204-2.2	C14	✓	✓	✓
Acceptance certificate (EN 10204-3.1) PMI test of parts in contact with medium	C15	✓	✓	✓
Functional safety (SIL2) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	C20	<b>✓</b>		
Functional safety (PROFIsafe) Certificate and PROFIsafe protocol	C21 <sup>2)</sup>		✓	
Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	C23	✓		
PED for Russia with initial calibration mark	C99	✓	✓	✓

Selection and Ordering data	Order	code		
Setting of the upper saturation limit of the	D05	✓		
output signal to 22.0\ mA				
Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009)	D07	✓	✓	1
(only together with seal diaphragm made of Hastelloy and stainless steel)				
Degree of protection IP66/IP68 (only for M20 x 1.5 and ½-14 NPT)	D12	✓	✓	✓
Nom. press. rating PN 500 (MAWP 7250 psi) (Only for measuring cell 600 mbar 30 bar $(240 \text{ inH}_2\text{O} \dots 435 \text{ psi})$ , SIL- and Ex-options not possible)) <sup>3)</sup>	D56	✓		
Capri cable gland 4F CrNi and clamping device (848699 + 810634) included	D59	✓	✓	✓
Use in or on zone 1D/2D <sup>4)</sup>	E01	✓	✓	✓
(only together with type of protection "Intrinsic safety" (transmitter 7MF4B Ex ia)"and IP66)				
Export approval Korea	E11	✓	✓	✓
CRN approval Canada (Canadian Registration Number)	E22 <sup>5)</sup>	✓	✓	✓
Dual seal	E24	✓	1	1
Explosion-proof "Intrinsic safety" (Ex ia) to	E25 <sup>6</sup> )	1	1	1
INMETRO (Brazil) (only for transmitter 7MF4B)				
"Flameproof" explosion protection according to INMETRO (Brazil)	E26 <sup>6)</sup>	✓	✓	✓
(only for transmitter 7MF4D)				
Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil)	E28 <sup>6)</sup>	✓	✓	
(only for transmitter 7MF4P)	E456)	,		
Ex Approval IEC Ex (Ex ia) (only for transmitter 7MF4B)	E45 <sup>6)</sup>	•	•	•
Ex Approval IEC Ex (Ex d)	E46 <sup>6)</sup>	✓	✓	✓
(only for transmitter 7MF4D) <b>Explosion-proof "Intrinsic safety"</b>	E55 <sup>6)</sup>	1	✓	✓
to NEPSI (China) (only for transmitter 7MF4				
Ex prot. "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)	E56 <sup>6)</sup>	✓	✓	✓
Explosion-proof "Zone 2" to NEPSI (China)	E57 <sup>6)</sup>	1	1	1
(only for transmitter 7MF4)				
Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China)	E58 <sup>6)</sup>	✓	✓	✓
(only for transmitter 7MF4R)	6)		,	
"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea)	E70 <sup>6)</sup>	✓	✓	<b>✓</b>
(only for transmitter 7MF4[B, D]Z + E11)				
Ex-protection Ex ia acc. to EAC Ex (Russia)	E80	1	✓	1
Ex-protection Ex d acc. to EAC Ex (Russia)	E81	✓	✓	✓
Ex-protection Ex nA/ic (Zone 2) according to EAC Ex (Russia)	E82	✓	✓	✓
Ex-protection Ex ia + Ex d + Zone 1D/2D according to EAC Ex (Russia)	E83	1	✓	✓

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Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

# for differential pressure and flow

Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add "-Z" to Article 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	✓	✓	✓
Transient protector 6 kV (lightning protection)	J01	✓	✓	1
Chambered graphite gasket for process flange	J02	✓	✓	✓
EPDM O-rings for process flange with approval (WRC/WRAS)	J05	✓	✓	✓
Vent valve or blanking plug of process flange welded-in (orientation: on right when viewing the display) <sup>7)</sup>	J08	✓	✓	✓
Vent valve or blanking plug of process flange welded-in (orientation: on left when viewing the display) <sup>7)</sup>	J09	✓	✓	✓
Marine approvals				
<ul> <li>Det Norske Veritas Germanischer Lloyd (DNV-GL)</li> </ul>	S10	✓	✓	✓
<ul> <li>Lloyds Register (LR)</li> </ul>	S11	✓	1	1
<ul> <li>French marine classification society Bureau Veritas (BV)</li> </ul>	S12	<b>✓</b>	✓	✓
American Bureau of Shipping (ABS)	S14	✓	✓	1
Russian Maritime Register (RMR)	S16	✓	✓	1
<ul> <li>Korean Register of Shipping (KR)</li> </ul>	S17	✓	1	✓

- 1) Device plug Han IP65
- 2) Profisafe transmitters can only be operated with the S7 F Systems V6.1 configuration software in combination with S7-400H
- 3) Tested according to IEC 61010. Only for measuring materials of the group of fluids 2 in accordance with PED permissible. Not for use with dangerous media suitable.
- Option does not contain gas explosion protection; only dust explosion protection: Use in or at Zone 1D/2D.
- 5) Cannot be ordered with remote seal.
- 6) When the additional ex option is selected, the ATEX marking on the device is omitted. Only the Ex option selected via the Z option is marked.
- 7) Blanking plug is standard configuration. Order option A40 if a vent valve is required instead of a blanking plug.

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

Factory mounting of valve manifolds, see accessories.

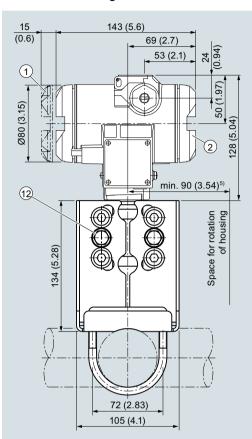
Only Y01, Y15, Y16, Y17, Y21, Y22, Y25 and D05 can be factory preset.

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

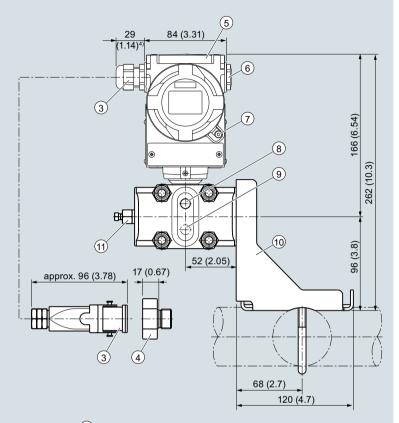
Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P.DS III

for differential pressure and flow

### **Dimensional drawings**



- (1) Electronics side, local display (longer overall length for cover with inspection window)<sup>1)</sup>
- (2) Connection side<sup>1)</sup>
- (3) Electrical connection:
  - Pg 13.5 screw gland (adapter)2)3)
  - M20 x 1,5 screw gland
  - 1/2-14 NPT screw gland
  - Han 7D/Han 8D<sup>2) 3)</sup> device plug
- 4 Harting adapter
- (5) Cover over buttons
  - , ----
- In addition, allow approx. 20 mm (0.79 inch) for the thread length
   Not with "flameproof enclosure" type of protection
- 3) Not for type of protection "FM + CSA" [is + XP]"
- 4) For Pg 13.5 with adapter, approx. 45 mm (1.77 inch)
- 92 mm (3.62 inch) minimum distance for rotating with indicator



- 6 Blanking plug
- Safety catch (only for "flameproof enclosure" type of protection; not shown in the drawing)
- 8 Lateral ventilation for liquid measurement (Standard)
- (9) Lateral ventilation for gas measurement (order option H02)
- 10 Mounting bracket (optional)
- (1) Sealing plug with valve (optional)
- 12 Process connection: 1/4-18 NPT (IEC 61518)

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

approx. 96 (3.78)

### **Pressure Measurement**

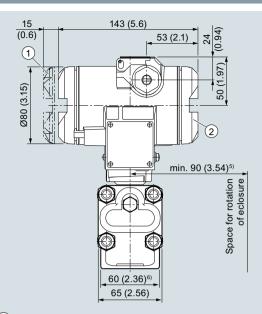
Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

29 (1.14)4)

17 (0.67)

### for differential pressure and flow

84 (3.31)



- abbrox. 87 (3.43)
- Electronics side, local display
   (longer overall length for cover with inspection window)¹¹)
- (2) Connection side<sup>1)</sup>
- (3) Electrical connection:
  - Pg 13.5 screw gland (adapter)<sup>2) 3)</sup>
  - M20 x 1,5 screw gland
  - 1/2-14 NPT screw gland
  - Han 7D/Han 8D<sup>2) 3)</sup> device plug
- 4 Harting adapter
- 1) In addition, allow approx. 20 mm (0.79 inch) for the thread length
- 2) Not with "flameproof enclosure" type of protection
- 3) Not for type of protection "FM + CSA" [is + XP]"
- For Pg 13.5 with adapter, approx. 45 mm (1.77 inch)
- <sup>5)</sup> 92 mm (3.62 inch) minimum distance for rotating with indicator
- 6) 74 mm (2.9 inch) for PN ≥ 420 (MAWP ≥ 6092 psi)
- 7) 91 mm (3.6 inch) for PN ≥ 420 (MAWP ≥ 6092 psi)
- 8) 219 mm (8.6 inch) for PN ≥ 420 (MAWP ≥ 6092 psi)

- (5) Cover over buttons
- (6) Blanking plug
- Safety catch (only for "flameproof enclosure" type of protection; not shown in the drawing)
- 8 Sealing plug with valve (optional)
- 9 Process connection: 1/4-18 NPT (IEC 61518)

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 transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

# for level

# Technical specifications

l lechnical specifications			
SITRANS P DS III for level			
Input			
Measured variable	Level		
Span (fully adjustable) or measuring range, max. operating pressure (in accordance with 2014/68/EU Pressure Equipment Directive) and max. test pressure (pursuant to DIN 16086)	HART	PROFIBUS PA/ FOUNDATION Fieldbus	
	Span	Nominal measuring range	Max. operating pressure MAWP (PS)
	25 250 mbar 2.5 25 kPa 10 100 inH <sub>2</sub> O	250 mbar 25 kPa 100 inH <sub>2</sub> O	See "Mounting flange"
	25 600 mbar 2.560 kPa 10 240 inH <sub>2</sub> O	600 mbar 60 kPa 240 inH <sub>2</sub> O	
	53 1600 mbar 5.3160 kPa 21 640 inH <sub>2</sub> O	1600 mbar 160 kPa 642 inH <sub>2</sub> O	
	160 5000 mbar 16500 kPa 2.32 72.5 psi	5000 mbar 500 kPa 72.5 psi	
Lower measuring limit			1
Measuring cell with silicone oil filling	-100 % of max. spar depending on mour	n or 30 mbar a/3 kPa anting flange	a/0.44 psi a
Measuring cell with inert filling liquid	-100 % of max. spar depending on mour	n or 30 mbar a/3 kPa anting flange	a/0.44 psi a
Upper measuring limit	100 % of max. span	1	
Start of scale value	Between the measu	ring limits (fully adjust	table)
Output	HART		PROFIBUS PA/FOUNDATION Fieldbus
Output signal	4 20 mA		Digital PROFIBUS PA and FOUNDATION Fieldbus signal
<ul> <li>Lower limit (infinitely adjustable)</li> </ul>	3.55 mA, factory pre	eset to 3.84 mA	-
Upper limit (infinitely adjustable)	23 mA, factory pres optionally set to 22.		-
Load			
• Without HART	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0$ $U_{\rm H}$ : Power supply in	1.023 A in $\Omega$ ,	-
• With HART	$R_{\rm B} = 230 \dots 500 \Omega$ ( $R_{\rm B} = 230 \dots 1100 \Omega$ tor)	SIMATIC PDM) or (HART Communica-	-
Physical bus	-		IEC 61158-2
Protection against polarity reversal		hort-circuit and polarit gainst the other with m	
Electrical damping (step width 0.1 s)	Set to 2 s (0 100	s)	

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Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P.DS III

for level

SITRANS P DS III for level

#### Measuring accuracy

Reference conditions

Measuring span ratio r (spread, Turn-Down)

Error in measurement at limit setting incl. hysteresis and reproducibility

• Linear characteristic

- 250 mbar/25 kPa/3.6 psi

- 600 mbar/60 kPa/8.7 psi

1600 mbar/160 kPa/23.21 psi
 5 bar/500 kPa/72.5 psi

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

• 250 mbar/25 kPa/3.6 psi

• 600 mbar/60 kPa/8.7 psi

• 1600 mbar/160 kPa/23.21 psi 5 bar/500 kPa/72.5 psi

Influence of static pressure

on the zero point

250 mbar/25 kPa/3.6 psi600 mbar/60 kPa/8.7 psi

- 1600 mbar/160 kPa/23.21 psi 5 bar/500 kPa/72.5 psi

on the span

Long-term stability

(temperature change ± 30 °C (± 54 °F))

Effect of mounting position

Effect of auxiliary power supply

Effect of auxiliary power supply (in percent per change in voltage)

Measuring value resolution for PROFIBUS PA and FOUNDATION Fieldbus

### Acc. to IEC 60770-1

- Increasing characteristic
- Start-of-scale value 0 bar/kPa/psi
- Stainless steel seal diaphragm
- Silicone oil filling
- Room temperature 25 °C (77 °F)

r = max. measuring span/set measuring span or nom. pressure range

 $r \le 5$ :  $\le 0.125 \%$ 

 $5 < r \le 10$ :  $\le (0.007 \cdot r + 0.09) \%$ 

 $r \le 5$ :  $\le 0.125 \%$ 

 $5 < r \le 25$ :  $\le (0.007 \cdot r + 0.09)$  %

 $r \le 5$ :  $\le 0.125 \%$ 

 $5 < r \le 30$ :  $\le (0.007 \cdot r + 0.09) \%$ 

 $\leq$  (0.4 · r + 0.16) %

 $\leq$  (0.24 · r + 0.16) %

 $\leq$  (0.2 · r + 0.16) %

 $\leq$  (0.3 · r) % per nominal pressure

 $\leq (0.15 \cdot r)$  % per nominal pressure

 $\leq (0.1 \cdot r)$  % per nominal pressure

 $\leq$  (0.1 · r) % per nominal pressure

 $\leq$  (0.25 · r)% in 5 years

static pressure max. 70 bar/7 MPa/1015 psi Depending on filling liquid of mounting flange

0.005 % per 1 V

3 · 10<sup>-5</sup> of nominal measuring range

#### Rated conditions

Degree of protection

- according to EN 60529
- according to NEMA 250

Temperature of medium

- · Measuring cell with silicone oil filling
- High-pressure side
- Low-pressure side

#### Ambient conditions

- Ambient temperature
- Transmitter
- - Display readable
- Storage temperature
- Climatic class
- Condensation
- Electromagnetic Compatibility
   Emitted interference and interference immunity

IP66 (optional IP66/IP68)

Type 4X

**Note:** Always take into account assignment of max. permissible operating temperature to max. permissible operating pressure of the respective flange connection!

-40 ... +100<sup>1)</sup> °C (-40 ... +212<sup>1)</sup> °F)

 $p_{abs} \ge 1 \text{ bar: -40 ... +175 °C (-40 ... +347 °F)}$  $p_{abs} < 1 \text{ bar: -40 ... +80 °C (-40 ... +176 °F)}$ 

-40 ... +100 °C (-40 ... +212 °F)

-20 ... +60 °C (-4 ... +140 °F) in conjunction with dust explosion protection

-40 ... +85 °C (-40 ... +185 °F)

-30 ... +85 °C (-22 ... +185 °F)

-50 ... +85 °C (-58 ... +185 °F)

Relative humidity 0 ... 100 %, condensation permissible, suitable for use in the trop-

ics

Acc. to IEC 61326 and NAMUR NE 21

Pressure transmitters

for applications with advanced requirements (Advanced)

SITRANS P DS III

# for level

SITRANS P DS III for level		
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 mat. no. 1.4408	stainless steel precision casting,
Wetted parts materials		
High-pressure side		
Seal diaphragm of mounting flange	• Stainless steel, WNr. 1.4404/316L - coated with PFA - coated with PTFE - coated with ECTFE - gold plated • Monel 400, mat. no. 2.4360 • Hastelloy C276, mat. no 2.4619 • Hastelloy C4, mat. no. 2.4602 • Hastelloy C22, mat. no. 2.4602 • Tantalum • Titanium, mat. no. 3.7035 • Nickel 201 • Duplex 2205, mat. no. 1.4462	
Measuring cell filling	Silicone oil	
Process connection		
• High-pressure side	Flange to EN and ASME	
• Low-pressure side	Female thread $1\!/\!_{4}\text{-}18$ NPT and flange connection DIN 19213 or $^7\!/_{16}\text{-}20$ UNF to IEC 61518/DIN EN	n with mounting thread M10 to I 61518
Power supply U <sub>H</sub>	HART PRO	FIBUS PA/FOUNDATION Fieldbus

Power supply $U_{H}$	HART	PROFIBUS PA/FOUNDATION Fieldbus
Terminal voltage on transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically-safe mode	-
Power supply		Supplied through bus
Separate 24 V power supply necessary	-	No
Bus voltage		
• Not Ex	-	9 32 V
With intrinsically-safe operation	-	9 24 V
Current consumption		
Basic current (max.)	-	12.5 mA
• Start-up current ≤ basic current	-	Yes
Max. current in event of fault	-	15.5 mA
Fault disconnection electronics (FDE) available	-	Yes

Pressure transmitters

for applications with advanced requirements (Advanced)
SITRANS P DS III

for level

SITRANS P DS III for level				
Certificates and approvals	HART	PROFIBUS PA/ FOUNDATION Fieldbus		
Classification according to PED 2014/68/EU	For gases of fluid group 1 and liquids of fluarticle 4, paragraph 3 (sound engineering	uid group 1; complies with requirements of g practice)		
Explosion protection				
• Intrinsic safety "i"	PTB 13 ATEX 2007 X			
- Marking	Ex II 1/2 G Ex ia/ib IIC T4/T5/T6 Ga/Gb			
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperatur -40 +70 °C (-40 +158 °F) temperatur -40 +60 °C (-40 +140 °F) temperatur	re class T5;		
- Connection	To certified intrinsically-safe circuits with peak values: $U_{\rm i}=30~{\rm V},~l_{\rm i}=100~{\rm mA},~P_{\rm i}=750~{\rm mW};~P_{\rm i}=300~\Omega$	FISCO supply unit: $U_0 = 17.5 \text{ V}, I_0 = 380 \text{ mA}, P_0 = 5.32 \text{ W}$ Linear barrier: $U_0 = 24 \text{ V}, I_0 = 250 \text{ mA}, P_0 = 1.2 \text{ W}$		
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4  {\rm mH},  C_{\rm i} = 6  {\rm nF}$	$L_{i} = 7 \mu H, C_{i} = 1.1 nF$		
• Explosion-proof "d"	PTB 99 ATEX 1160			
- Marking	Ex II 1/2 G Ex d IIC T4/T6 Gb			
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperatur -40 +60 °C (-40 +140 °F) temperatur	re class T4; re class T6		
- Connection	To circuits with values: U <sub>H</sub> = 10.5 45 V DC	To circuits with values: <i>U</i> <sub>H</sub> = 9 32 V DC		
<ul> <li>Dust explosion protection for zone 20</li> </ul>	PTB 01 ATEX 2055			
- Marking	Ex II 1 D Ex ta IIIC T120°C Da Ex II 1/2 D Ex ta/tb IIIC T120°C Da/Db			
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F)			
- Max. surface temperature	120 °C (248 °F)			
- Connection	To certified intrinsically-safe circuits with peak values: $U_{\rm i}=$ 30 V, $I_{\rm i}=$ 100 mA, $P_{\rm i}=$ 750 mW, $P_{\rm i}=$ 300 $\Omega$	FISCO supply unit: $U_0 = 17.5 \text{ V}, I_0 = 380 \text{ mA}, P_0 = 5.32 \text{ W}$ Linear barrier: $U_0 = 24 \text{ V}, I_0 = 250 \text{ mA}, P_0 = 1.2 \text{ W}$		
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4  {\rm mH},  C_{\rm i} = 6  {\rm nF}$	$L_{i} = 7 \mu H, C_{i} = 1.1 nF$		
<ul> <li>Dust explosion protection for zone 21/22</li> </ul>	PTB 01 ATEX 2055			
- Marking	Ex II 2 D Ex tb IIIC T120°C Db			
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC; $P_{\rm max}$ = 1.2 W	To circuits with values: $U_{\rm H}$ = 9 32 V DC; $P_{\rm max}$ = 1 W		
• Type of protection "n" (zone 2)	PTB 13 ATEX 2007 X			
- Marking	Ex II 2/3 G Ex nA IIC T4/T5/T6 Gb/Gc Ex II 2/3 G Ex ic IIC T4/T5/T6 Gb/Gc			
- Connection (Ex nA)	$U_{\rm m} = 45 \text{ V}$	$U_{\rm m} = 32 \text{ V}$		
- Connection (Ex ic)	To circuits with values: $U_i = 45 \text{ V}$	FISCO supply unit ic: $U_0 = 17.5 \text{ V}$ , $I_0 = 570 \text{ mA}$ Linear barrier: $U_0 = 32 \text{ V}$ , $I_0 = 132 \text{ mA}$ , $P_0 = 1 \text{ W}$		
- Effective internal inductance/capacitance	$L_{i} = 0.4 \text{ mH}, C_{i} = 6 \text{ nF}$	$L_{\rm i} = 7  \mu {\rm H},  C_{\rm i} = 1.1  {\rm nF}$		
• Explosion protection acc. to FM	Certificate of Compliance 3008490			
- Identification (XP/DIP) or (IS); (NI)	CL I, DIV 1, GP ABCD T4T6; CL II, DIV T4T6; CL I, DIV 2, GP ABCD T4T6; CL			
Explosion protection to CSA	Certificate of Compliance 1153651			
- Identification (XP/DIP) or (IS)	CL I, DIV 1, GP ABCD T4T6; CL II, DIV DIV 2, GP ABCD T4T6; CL II, DIV 2, GP			

<sup>1)</sup> This value may be increased if the process connection is sufficiently insulated.

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

#### for level

for level			
HART communication		FOUNDATION Fieldbus communication	
HART	230 1100 Ω	Function blocks	3 function blocks analog input,
Protocol	HART Version 5.x	Turiction blocks	1 function block PID
Software for computer	SIMATIC PDM	Analog input	
PROFIBUS PA communication		- Adaptation to customer-specif-	Yes, linearly rising or falling
Simultaneous communication with master class 2 (max.)	4	ic process variables	characteristic
The address can be set using	Configuration tool or local	- Electrical damping, adjustable	0 100 s
The address can be set using	operation (standard setting address 126)	- Simulation function	Output/input (can be locked within the device with a bridge)
Cyclic data usage		- Failure mode	parameterizable (last good value, substitute value, incorrect
Output byte	5 (one measured value) or 10 (two measured values)	- Limit monitoring	value) Yes, one upper and lower warn-
• Input byte	0, 1, or 2 (register operating mode and reset function for		ing limit and one alarm limit respectively
Internal preprocessing	metering)	<ul> <li>Square-rooted characteristic for flow measurement</li> </ul>	Yes
Device profile	PROFIBUS PA Profile for Process Control Devices Version	• PID	Standard FOUNDATION Field- bus function block
	3.0, class B	<ul> <li>Physical block</li> </ul>	1 resource block
Function blocks	2	Transducer blocks	1 transducer block Pressure with
Analog input			calibration, 1 transducer block LCD
<ul> <li>Adaptation to customer-specific process variables</li> </ul>	Yes, linearly rising or falling characteristic	Pressure transducer block	
- Electrical damping, adjustable	0 100 s	<ul> <li>Can be calibrated by applying two pressures</li> </ul>	Yes
- Simulation function	Input/Output	- Monitoring of sensor limits	Yes
- Failure mode	parameterizable (last good value, substitute value, incorrect value)	- Simulation function: Measured pressure value, sensor tem-	Constant value or over parameterizable ramp function
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit	perature and electronics tem- perature  Mounting flange	
- Denistan (tatalisan)	respectively	Nominal diameter	Nominal pressure
Register (totalizer)	Can be reset, preset, optional direction of counting, simulation	• Acc. to EN 1092-1	Norminal pressure
	function of register output	- DN 80	PN 40
- Failure mode	parameterizable (summation	- DN100	PN16, PN40
	with last good value, continuous summation, summation with	• To ASME B16.5	FIN 16, FIN40
	incorrect value)	- 3 inch	class 150, class 300
- Limit monitoring	One upper and lower warning limit and one alarm limit respec- tively	- 4 inch	class 150, class 300
Physical block	1		
Transducer blocks	2		
Pressure transducer block			
- Can be calibrated by applying two pressures	Yes		
- Monitoring of sensor limits	Yes		
- Specification of a container	Max. 30 nodes		

characteristic with
- Square-rooted characteristic

for flow measurement
- Gradual volume suppression

and implementation point of square-root extractionSimulation function for mea-

sured pressure value and sensor temperature

Yes

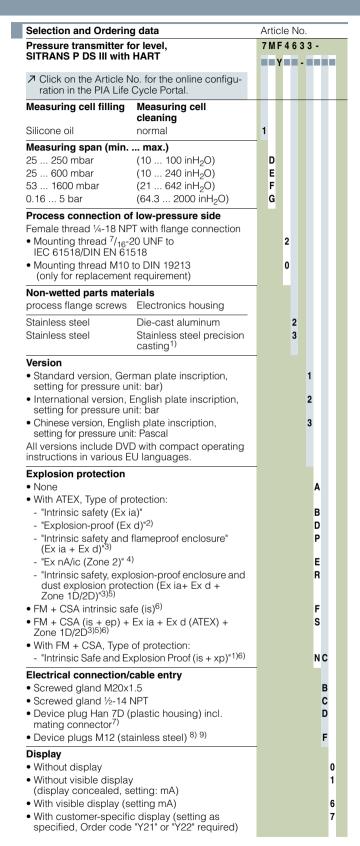
Parameterizable

Constant value or over parame-

terizable ramp function

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P.DS III

for level



### Ordering information

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

#### ordering example

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

B line: Y01

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

Item line 2: 7MF4912-3GE01

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

Included in delivery of the device:

- Quick-start guide
- Sealing plug(s) or sealing screw(s) for the process flanges(s)
- 1) Not in conjunction with Electrical connection "device plug Han 7D".
- Without cable gland, with blanking plug.
- 3) With enclosed cable gland Ex ia and blanking plug.
- 4) Configurations with device plugs Han and M12 are only available in Ex ic.
- Only in connection with IP66.
- Explosion protection acc. to FM/CSA: suitable for installations according to NEC 500/505.
- 7) Only in connection with Ex approval A, B or E.
- 8) M12 delivered without cable socket
- 9) Only in connection with Ex approval A, B, E or F.

Pressure transmitters

for applications with advanced requirements (Advanced)

SITRANS P DS III

### for level

Selection and Ordering	g data	Articl	e No	Э.		
Pressure transmitters	for level					
SITRANS P DS III with P	ROFIBUS PA (PA)	7 M F	46	3 4	-	
SITRANS P DS III with F	7 M F	46	3 5	-		
	lo. for the online configu- Cycle Portal.	1 <b>■</b> Y		-	1	-
Nominal measuring ra	nge					
250 mbar	(100 inH <sub>2</sub> O)	D				
600 mbar	(240 inH <sub>2</sub> O)	E F				
1600 mbar 5 bar	(642 inH <sub>2</sub> O) (2000 inH <sub>2</sub> O)	G				
	· 2 /	_ ~				
Process connection of Female thread 1/4-18 NP	T with flange connection					
<ul> <li>Mounting thread <sup>7</sup>/<sub>16</sub>-<sup>2</sup></li> </ul>	O .		2			
IEC 61518/DIN EN 61	518					
Mounting thread M10			0			
(only for replacement		-	_			
Non-wetted parts mate process flange screws	erials Electronics housing					
·						
Stainless steel Stainless steel	Die-cast aluminum Stainless steel precision		2			
Stairliess steel	casting		٦			
Version		-				
<ul> <li>Standard version, Ger</li> </ul>	man plate inscription,			1		
setting for pressure ur						
<ul> <li>International version, I setting for pressure ur</li> </ul>	English plate inscription,			2		
<ul> <li>Chinese version, English</li> </ul>				3		
setting for pressure uni						
All versions include DVI instructions in various E	O with compact operating					
	O languages.	-		L		
Explosion protection  None					Α	
<ul> <li>With ATEX, Type of pre</li> </ul>	otection:				``	
- "Intrinsic safety (Ex i					В	
- "Explosion-proof (Ex	•				D	
- "Intrinsic safety and (Ex ia + Ex d)" <sup>2)</sup>	flameproof enclosure"				Р	
- "Ex nA/ic (Zone 2)" <sup>3</sup>	)				Е	
- "Intrinsic safety, expl	osion-proof enclosure and				R	
dust explosion prote	ction (Ex ia + Ex d +					
Zone 1D/2D) <sup>(2)4)</sup> • FM + CSA intrinsic sa	fo (io)5)				F	
• FM + CSA intrinsic sa • FM + CSA (is + ep) +					г S	
Zone 1D/2D <sup>2)4)5)</sup>	EXIA I EX a (MEX) I				٥	
<ul> <li>With FM + CSA, Type</li> </ul>	of protection:					
- "Intrinsic Safe and Ex	xplosion Proof (is + xp)"1)5)				NC	
Electrical connection/	cable entry					
<ul> <li>Screwed gland M20 x</li> </ul>					В	
<ul> <li>Screwed gland ½-14 I</li> </ul>					С	
Device plugs M12 (sta	anness steer)"/ "				F	
Display  • Without display						0
<ul><li>Without display</li><li>Without visible display</li></ul>	,					0
(display concealed, se						
With visible display (s						6
With customer-specific	c display (setting as					7
specified, Order code	r∠ı requirea)					

#### **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:

- Quick-start guide
- Sealing plug(s) or sealing screw(s) for the process flanges(s)
- 1) Without cable gland, with blanking plug.
- 2) With enclosed cable gland Ex ia and blanking plug.
- 3) Configurations with device plugs Han and M12 are only available in Ex ic.
- 4) Only in connection with IP66.
   5) Explosion protection acc. to FM/CSA: suitable for installations according to NEC 500/505.
- 6) M12 delivered without cable socket
- 7) Only in connection with Ex approval A, B, E or F.

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Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

for level

Selection and Ordering data	Order	Order code		
Further designs		HART	PA	FF
Add "-Z" to Article No. and specify Order code.				
O-rings for process flanges on				
low-pressure side				
(instead of FPM (Viton))	• • • •			,
<ul><li>PTFE (Teflon)</li><li>FEP (with silicone core, approved for food)</li></ul>	A20 A21	<b>√</b>	<b>✓</b>	1
FFPM (Kalrez, for measured medium tem-	A21	<b>V</b>	<b>*</b>	· /
peratures -15 100 °C (5 212 °F))	~		·	Ť
NBR (Buna N)	A23	✓	✓	✓
Device plugs <sup>1)</sup>				
Han 7D (metal)	A30	✓		
<ul> <li>Han 8D (instead of Han 7D)</li> </ul>	A31	✓		
• Angled	A32	1		
Han 8D (metal)	A33	<b>V</b>		
Sealing screw	A 40			,
1/4-18 NPT, with valve in mat. of process flanges		<b>✓</b>	<b>√</b>	٧.
Cable sockets for device plugs M12 (metal (CuZn))	A50	✓	✓	✓
· · · · · · · · · · · · · · · · · · ·				
Rating plate inscription (instead of German)				
• English	B11	1	1	1
• French	B12	1	✓	1
Spanish	B13	✓	✓	✓
• Italian	B14	✓	✓	✓
Cyrillic (russian)	B16	✓	✓	✓
English rating plate	B21	✓	✓	✓
Pressure units in inH <sub>2</sub> 0 and/or psi				
Quality Inspection Certificate (5-point characteristic curve test) according to IEC 60770-2	C11	<b>✓</b>	✓	✓
Inspection certificate Acc. to EN 10204-3.1	C12	✓	✓	✓
	C14	1	./	./
Factory certificate Acc. to EN 10204-2.2	C14	v	•	•
Acceptance certificate (EN 10204-3.1)	C15	1	1	1
PMI test of parts in contact with medium	0.0			
Functional safety (SIL2) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	C20	✓		
Functional safety (PROFIsafe) Certificate and PROFIsafe protocol	C21 <sup>2)</sup>		✓	
Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	C23	✓		
PED for Russia with initial calibration mark	C99	1	1	1
Setting of the upper saturation limit of the	D05	1		
output signal to 22.0 mA		,	,	
<b>Degree of protection IP66/IP68</b> (only for M20x1.5 and ½-14 NPT)	D12	<b>V</b>	<b>✓</b>	<b>✓</b>
Supplied with oval flange (1 item), PTFE packing and screws in thread of process flange	D37	<b>✓</b>	✓	✓

0.1 10.1	0 1			
Selection and Ordering data	Order			
Further designs		HART	PA	FF
Add "-Z" to Article No. and specify Order code.				
Use on zone 1D / 2D <sup>3</sup> ) (only together with type of protection "Intrinsic safety" (transmitter 7MF4B Ex ia)"and IP66)	E01	<b>~</b>	•	<b>√</b>
Overfilling safety device for flammable and non-flammable liquids (max. PN 32 (MAWP 464 psi), basic device with type of protection "Intrinsic safety (Ex ia)", to WHG and VbF, not together with measuring cell filling "inert liquid")	E08	<b>✓</b>		
Export approval Korea	E11	1	1	1
Dual seal	E24	1	1	1
Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil)		<b>✓</b>	✓	✓
(only for transmitter 7MF4B)				
"Flameproof" explosion protection according to INMETRO (Brazil) (only for transmitter 7MF4D)	E26 <sup>4)</sup>	✓	✓	✓
Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil)	E28 <sup>4)</sup>	✓	✓	
(only for transmitter 7MF4P)	0	_		
Ex Approval IEC Ex (Ex ia) (only for transmitter 7MF4	E45 <sup>4)</sup>	<b>~</b>	<b>✓</b>	<b>√</b>
Ex Approval IEC Ex (Ex d) (only for transmitter 7MF4D)	E46 <sup>4)</sup>	✓	✓	✓
Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)	E55 <sup>4)</sup>	✓	1	✓
Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)	E56 <sup>4)</sup>	✓	✓	✓
Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)	E57 <sup>4)</sup>	✓	✓	✓
Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China) (only for transmitter 7MF4R)	E58 <sup>4)</sup>	✓	✓	✓
"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (only for transmitter 7MF4[B, D]Z + E11)	E70 <sup>4)</sup>	✓	✓	✓
Ex-protection Ex ia according to EAC Ex (Russia)	E80	✓	✓	✓
Ex-protection Ex d according to EAC Ex (Russia)	E81	✓	✓	✓
Ex-protection Ex nA/ic (Zone 2) according to EAC Ex (Russia)	E82	✓	✓	✓
Ex-protection Ex ia + Ex d + Zone 1D/2D according to EAC Ex (Russia)	E83	✓	✓	✓
Two coats of lacquer on casing and cover (PU on epoxy)	G10	<b>√</b>	<b>✓</b>	<b>√</b>
Replacement of process connection side	H01	<b>√</b>	1	<b>√</b>

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

### for level

Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add "- $\mathbf{Z}$ " to Article No. and specify Order code.				
Transient protector 6 kV (lightning protection)	J01	✓	✓	4
Vent valve or blanking plug of process flange welded-in (orientation: on right when viewing the display) <sup>5)</sup>	J08	✓	✓	✓
Vent valve or blanking plug of process flange welded-in (orientation: on left when viewing the display) $^{5)}$	J09	✓	✓	✓

- 1) Device plug Han IP65
- Profisafe transmitters can only be operated with the S7 F Systems V6.1 configuration software in combination with S7-400H
- 3) Option does not contain gas explosion protection; only dust explosion protection: Use in or at Zone 1D/2D.
- 4) When the additional ex option is selected, the ATEX marking on the device is omitted. Only the Ex option selected via the Z option is marked.
- 5) Blanking plug is standard configuration. Order option A40 if a vent valve is required instead of a blanking plug.

Selection and Ordering data	Order	codo		
	Order			
Additional data		HART	PA	FF
Please add "-Z" to Article No. and specify Order code(s) and plain text.				
Measuring range to be set	Y01	✓	<b>√</b> 1)	
Specify in plain text (max. 5 characters): Y01: up to mbar, bar, kPa, MPa, psi				
Stainless steel tag plate and entry in device variable (measuring point description)	Y15	✓	✓	✓
Max. 16 characters, specify in plain text: Y15:				
Measuring point text (entry in device variable)	Y16	✓	✓	✓
Max. 27 characters, specify in plain text: Y16:				
Entry of HART address (TAG)	Y17	1		
Max. 8 characters, specify in plain text:				
Y17:				
Setting of pressure indicator in pressure units	Y21	✓	✓	✓
Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi,				
Note:				
The following pressure units can be selected:				
bar, mbar, mm H <sub>2</sub> O <sup>*)</sup> , inH <sub>2</sub> O <sup>*)</sup> , ftH <sub>2</sub> O <sup>*)</sup> , mmHG, inHG, psi, Pa, kPa, MPa, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , Torr, ATM or %				
ref. temperature 20 °C				
Setting of pressure indicator in non-pressure units <sup>2)</sup>	Y22 <sup>3)</sup> + Y01	✓		
Specify in plain text: Y22: up to I/min, m³/h, m, USgpm, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)				
Preset bus address	Y25		✓	✓
possible between 1 and 126				
Specify in plain text:				
Y25:				
Damping adjustment in seconds (0 100 s)	Y30	<b>√</b>	✓	✓

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

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

<sup>3)</sup> Not in conjunction with over-filling safety device for flammable and non-flammable liquids (Order code "E08")

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

for level

Selection and Ord	ering data	Article No	o. Order code	Selection and Ordering data		Article No	. Order code
Mounting flange		7MF49	1 2	Mounting flange		7MF491	
	n the SITRANS P pressure er part) for level, for DS III	3	П	Directly mounted on the SITRAI transmitter (converter part) for series		3	Ш
	cle No. for the online configu- Life Cycle Portal.			Customer-specific tubus leng Specify customer-specific leng			
Connection to EN	1092-1			Order Code			
Nominal diameter	Nominal pressure			<ul> <li>Wetted parts materials: Stainle</li> </ul>			
DN 25	PN 10/16/25/40	Z	JOA	Range	Standard length		
	PN 63/100/160	Z	JOB	20 50 mm (0.79 1.97")	50 mm (1.97")	A 1	
DN 40	PN 10/16/25/40	Z	JOC	51 100 mm (2.01 3.94")	100 mm (3.94")	A 2	
	PN 63/100	Z	JOD	101 150 mm (3.98 5.91")	150 mm (5.91")	A 3	
DN 50	PN 160	Z	J 0 E	151 200 mm (5.94 7.87")	200 mm (7.87")	A 4	
DN 50	PN 10/16/25/40	A		201 250 mm (7.91 9.84")	250 mm (9.84")	A 5	
	PN 100	В		Wetted parts materials: Stainle	ss steel coated		
DN 80	PN 10/16/25/40	D		with ECTFE			
DN 100	PN 10/16	G		Range	Standard length		
	PN 25/40	Н		20 50 mm (0.79 1.97")	50 mm (1.97")	F 1	
Connection to ASI				51 100 mm (2.01 3.94")	100 mm (3.94")	F 2	
Connection to ASI Nominal diameter				101 150 mm (3.98 5.91")	150 mm (5.91")	F 3	
nominal diameter  1 inch	Nominal pressure class 150	z	J 6 A	151 200 mm (5.94 7.87")	200 mm (7.87")	F 4	
TITICIT	class 300	Z	J 6 B	201 250 mm (7.91 9.84")	250 mm (9.84")	F 5	
	class 400/600	Z	J 6 C	· ·	, ,		
	class 900/1500	Z	J 6 D	<ul> <li>Wetted parts materials: Stainles PFA</li> </ul>	ss steel coated with		
1½ inch	class 150	Z	J 6 E	Range	I Standard longth		
172 ITICH	class 300	Z	J 6 F		Standard length		
	class 400/600	Z	J 6 G	20 50 mm (0.79 1.97")	50 mm (1.97")	D 1	
	class 900/1500	Z	J 6 H	51 100 mm (2.01 3.94")	100 mm (3.94")	D 2	
2 inch	class 900/1500	L	3 оп	101 150 mm (3.98 5.91")	150 mm (5.91")	D 3	
Z IIICH	class 300	M		151 200 mm (5.94 7.87")	200 mm (7.87")	D 4	
	class 400/600	N		201 250 mm (7.91 9.84")	250 mm (9.84")	D 5	
	class 900/1500	P		<ul> <li>Wetted parts materials: Monel</li> </ul>	400		
3 inch	class 150	Q		Range	Standard length		
3 IIICH	class 300	R		20 50 mm (0.79 1.97")	50 mm (1.97")	G 1	
4 inch	class 150	T		51 100 mm (2.01 3.94")	100 mm (3.94")	G 2	
4 111011	class 300	Ů		101 150 mm (3.98 5.91")	150 mm (5.91")	G 3	
	01833 000	9		151 200 mm (5.94 7.87")	200 mm (7.87")	G 4	
Flange acc. to JIS				,	1		
Nominal diameter	Nominal pressure	_		Wetted parts materials: Hastel	•		
JIS DN 50	10 K 316L	Z	J 7 A	Range	Standard length		
110 DN 00	20 K 316L	Z	J 7 B	20 50 mm (0.79 1.97")	50 mm (1.97")	J 1	
JIS DN 80	10 K 316L	Z	J 7 C	51 100 mm (2.01 3.94")	100 mm (3.94")	J 2	
Otla	20 K 316L	Z	J 7 D	101 150 mm (3.98 5.91")	150 mm (5.91")	J 3	
	Order code and plain text:; Nominal press.:	Z	J 1 Y	151 200 mm (5.94 7.87")	200 mm (7.87")	J 4	
	<u> </u>	_		<ul> <li>Wetted parts materials: Tantalu</li> </ul>	im		
Wetted parts mate				Range	Standard length		
Stainless steel 31		A		20 50 mm (0.79 1.97")	50 mm (1.97")	K 1	
- Coated with PFA		D		51 100 mm (2.01 3.94")	100 mm (3.94")	K 2	
- Coated with PTF		E 0		101 150 mm (3.98 5.91")	150 mm (5.91")	K 3	
- Coated with EC		F		151 200 mm (5.94 7.87")	200 mm (7.87")	K 4	
<ul> <li>Monel 400, mat. n</li> </ul>	10. 2.4360	G			200 11111 (7.07 )	- 1	
<ul> <li>Hastelloy C276, m</li> </ul>		J		Filling liquid			
<ul> <li>Hastelloy C4, mat</li> </ul>		U		• Silicone oil M5		1	
<ul> <li>Hastelloy C22, ma</li> </ul>	at. no. 2.4602	V 0		• Silicone oil M50		2	
<ul> <li>Tantalum</li> </ul>		K		High-temperature oil     Halaparhan oil (for O massu	romont)2)	3	
	3.7035 (max. 150 °C (302 °F))			<ul> <li>Halocarbon oil (for O<sub>2</sub>-measu</li> </ul>	rement)=/	4 7	
<ul> <li>Nickel 201 (max.)</li> </ul>	* "	M 0		• Food oil (FDA-listed)			
<ul> <li>Duplex 2205, mat</li> </ul>		Q		Other version, add		9	M 1 Y
	. no. 1.4462, incl. main body	R		Order code and plain text: filling liquid:			
Stainless steel 31     thickness approve		S 0		ming ilquid			
thickness approx.	20 μπ			1) For vacuum on request			
Tube length				2) Oil and grease-free cleaning a			
<ul> <li>without tube</li> </ul>		0		and packaging included in sc	ope of delivery. Refer	to "Further	designs"
Other version, add	Order code and plain text:	Z 8	K 1 Y	C10 and E10.			
	contact with medium:,						

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P DS III

# for level

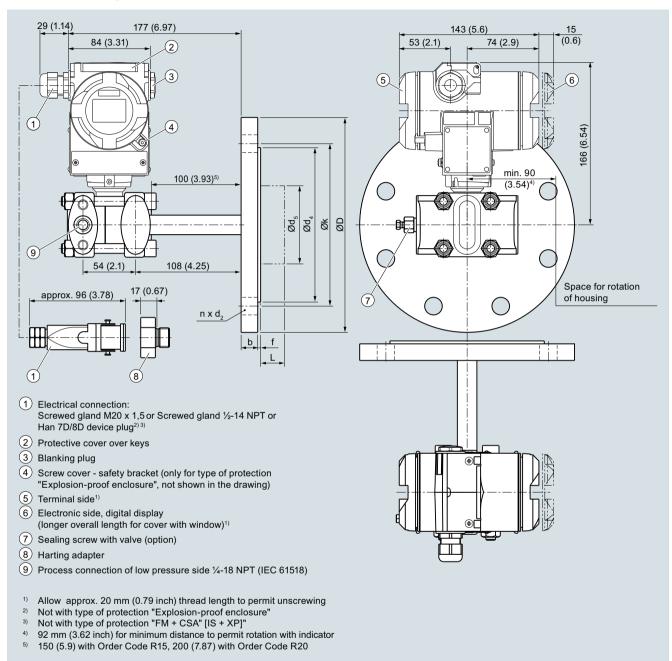
Selection and Ordering data	Order	code		
Further designs	0.00.	HART	PA	FF
Add "-Z" to Article No. and specify Order code.				
Customer-specific tubus length	Y44	1	<b>✓</b>	<b>√</b>
Select range, enter desired length in plain text (No entry = standard length)				
Spark arrester For mounting on zone 0 (incl. documentation)	A01	✓	✓	✓
Remote seal nameplate attached out of stainless steel, contains Arti- cle No. and order number of the remote seal supplier	B20	✓	<b>*</b>	✓
Oil- and grease-free cleaned version	C10	✓	✓	✓
Oil- and grease-free cleaned and packed version, not for oxygen application, only in conjunction with halocarbon oil fill fluid, certified by certificate acc. to EN 10204-2.2				
Quality Inspection Certificate (5-point characteristic curve test) according to IEC 60770-2	C11	✓	✓	✓
Inspection certificate Acc. to EN 10204-3.1	C12	✓	✓	✓
2.2 Certificate of FDA approval of fill oil	C17	1	1	1
Only in conjunction with filling liquid "Food oil" (FDA listed)"				
"Functional safety (SIL2)" certificate to IEC 61508	C20	✓	✓	
(only for conjunction with the Order code "C20" in the case of SITRANS P DS III transmitter)				
"Functional safety (SIL2/3)" certificate to IEC 61508	C23	✓	✓	
(only for conjunction with the Order code "C23" in the case of SITRANS P DS III transmitter)				
Certification acc. to NACE MR-0175 Includes acceptance test certificate 3.1 acc. to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276)	D07	<b>*</b>	✓	✓
Certification acc. to NACE MR-0103	D08	1	1	1
Includes acceptance test certificate 3.1 acc. to EN 10204 (only for wetted parts made of stainless steel 1.4404/316L and Hastelloy C276)				
Oil- and grease-free cleaned version	E10	1	✓	✓
Oil- and grease-free cleaned and packed version, only for oxygen application, only inert fill fluid may be used. Max. temperature: 60 °C (140 °F), max. pressure 50 bar (725 psi), only in connection with halocarbon oil, certified by certificate acc. to EN 10204-2.2				
Epoxy painting	E15	✓	✓	✓
Not possible with negative pressure service				
Color: transparent, coverage: front and rear of the remote seal, capillary(ies) or connecting tube, process connection of the transmitter. With transmitters 7MF40 and 7MF42, only possible with process connection G½B according to EN 837-1.				
according to Liviour 1.				

Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add "-Z" to Article No. and specify Order code.				
One sided-mounting, sealing surface below	H20			
Sealing surface smooth, form B2 or RFSF (Stainless steel diaphragm) previously DIN 2501, form E	J11	✓	✓	✓
Sealing surface groove, EN 1092-1, form D	J14	✓	1	1
instead of sealing surface B1 (only for wetted parts made of stainless steel 316L)				
Sealing surface with spring according to EN 1092-1, form F, (previously DIN 2512, form F) in stainless steel 316L				
DN 25 DN 40	J30 J31	1	<b>√</b>	1
DN 50	J32	<b>V</b>	1	1
DN 80	J33	✓	✓	✓
DN 100	J34	<b>V</b>	1	1
DN 125	J35	✓	✓	<b>✓</b>
Sealing surface with male face according to EN 1092-1, form E (previously DIN 2512, form V13) in stainless steel 316L				
DN 25	J40	<b>V</b>	1	1
DN 40 DN 50	J41 J42	<b>√</b>	<b>✓</b>	<b>√</b>
DN 80	J43	1	1	1
DN 100	J44	✓	✓	✓
DN 125	J45	✓	1	1
Sealing surface with female face according to EN 1092-1, form F (previously DIN 2512, form R13) in stainless steel 316L				
DN 25	J50	✓	✓	✓
DN 40	J51	<b>√</b>	1	1
DN 50 DN 80	J52 J53	<b>√</b>	<b>✓</b>	1
DN 100	J54	1	1	1
DN 125	J55	✓	✓	✓
Sealing surface B1 or ASME B16.5 RF 125 250 AA instead of sealing surface B2 or RFSF (only for wetted parts made of Hastelloy C276 (2.4819), tantalum and Duplex 2205 (1.4462) and for nominal sizes 2", 3", DN 50 and DN 80)	J12	•	✓	✓
Sealing surface RJF (groove, previously RTJ) ASME B16.5 instead of sealing surface ASME B16.5 RF 125 250 AA (only for wetted parts made of stainless steel 316L)	J24	✓	✓	✓
Elongated pipe, 150 mm instead of 100 mm,	R15	✓	✓	✓
max. medium temperature 250 °C, observe the maximum permissible media temperature of the filling liquid.				
Elongated pipe, 200 mm instead of 100 mm, max. medium temperature 300 °C, observe the maximum permissible media temperature of the filling liquid.	R20	✓	✓	✓
<b>Negative pressure service</b> for use in the low-pressure measuring range for transmitter for level	V04	✓	✓	✓
Note: suffix "Y01" required with pressure transmitter				
Extended negative pressure service	V54	/	1	1
for use in the low-pressure measuring range for transmitter for level  Note: suffix "Y01" required with pressure transmitter	V 34	•		•
✓ = available				

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

for level

# Dimensional drawings



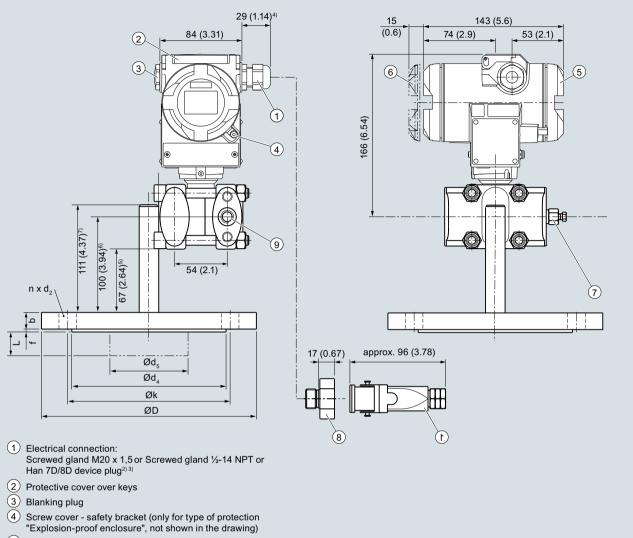
SITRANS P DS III with HART pressure transmitters for level, including mounting flange, dimensions in mm (inch)

Pressure transmitters

for applications with advanced requirements (Advanced)

SITRANS P DS III

for level



- 5 Terminal side<sup>1)</sup>
- 6 Electronic side, digital display (longer overall length for cover with window)<sup>1)</sup>
- 7 Sealing screw with valve (option)
- 8 Harting adapter
- 9 Process connection of low pressure side 1/4-18 NPT (IEC 61518)
- 1) Allow approx. 20 mm (0.79 inch) thread length to permit unscrewing
- 2) Not with type of protection "Explosion-proof enclosure"
- 3) Not with type of protection "FM + CSA" [IS + XP]"
- For Pg 13,5 with adapter approx. 45 mm (1.77 inch)
- 5) 117 (4.61) with Order Code R15, 167 (6.57) with Order Code R20
- <sup>5)</sup> 150 (5.19) with Order Code R15, 200 (7.87) with Order Code R20
- 7) 161 (6.34) with Order Code R15, 211 (8.31) with Order Code R20

SITRANS P DS III with HART pressure transmitters for level, including mounting flange, one sided-mounting, sealing surface below (order code H20), dimensions in mm (inch)

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

for level

# Connection to EN 1092-1

Nominal diameter	Nominal pressure	b	D	d	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub>	f	k	n	L
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
DN 50	PN 10/16/ 25/40	20	165	90	18	102	48.3	45 <sup>1)</sup>	2	125	4	0, 50, 100, 150 or 200
	PN 100	28	195	90	26	102	48.3	45 <sup>1)</sup>	2	145	8	
DN 80	PN 10/16/ 25/40	24	200	90	18	138	76	72 <sup>2)</sup>	2	160	8	
	PN 100	32	230	90	26	138	76	72 <sup>2)</sup>	2	180	8	
DN 100	PN 10/16	20	220	115	18	158	94	89	2	180	8	
	PN 25/40	24	235	115	22	162	94	89	2	190	8	

# Connection to ASME B16.5

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

d: Internal diameter of gasket to DIN 2690

 $d_M$ : Effective diaphragm diameter

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

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

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

# Accessories/Spare Parts

Selection and Orde	ering data	Articl	e No.
Replacement meas for SITRANS P DS  7 Click on the Artic tion in the PIA Lit		4990- 0-0DB0	
<b>Measuring cell filli</b> Silicone oil Inert liquid	ng Measuring cell cleaning Normal grease-free to cleanliness level 2	1 3	
Measured span (m 8.3 250 mbar 0.01 1 bar 0.04 4 bar 0.16 16 bar 0.63 63 bar 1.6 160 bar 4.0 400 bar	(0.12 3.6 psi) (0.15 14.5 psi) (0.6 58 psi) (2.32 232 psi) (9.14 914 psi) (23.2 2 320 psi) (58.0 5 802 psi) (102.0 10 153 psi)	A B C D E F G J	
Wetted parts mate Seal diaphragm Stainless steel Hastelloy	rials Process connection Stainless steel Stainless steel	A B	
Process connection Connection shank Female thread ½- Oval flange made max. span 160 ba Mounting thread IEC 61518/DIN E Mounting thread	G½B to EN 837-1 14 NPT of stainless steel, r (2320 psi)	_	0 1 2 3
Further designs	Orde	r code	
Order code.	rticle No. and specify	040	
Inspection certification to EN 10204-3.1	ате	C12	

Selection and Orde	Art	Article No.		
Replacement meas pressure for SITRA pressure series)  7 Click on the Articl tion in the PIA Life			992 - 0 - 0 DB 0	
	g Measuring cell cleaning			
Silicone oil Inert liquid	Normal grease-free to cleanliness level 2	1		
Measured span (mi 8.3 250 mbar a 43 1300 mbar a 0.16 5 bar a 1 30 bar a	n max.) (0.12 3.63 psi a) (0.62 18.86 psi a) (2.32 72.5 psi a) (14.5 435 psi a)	D F G	i	
Wetted parts materi				
Seal diaphragm Stainless steel Hastelloy Hastelloy	Process connection  Stainless steel Stainless steel Hastelloy		A B C	
Process connection Connection shank Female thread ½-1 Oval flange made of max. span 160 bar Mounting thread IEC 61518/DIN E		0 1 2		
- Mounting thread	M10 to DIN 19213		3	
Further designs  Please add "-Z" to Ar Order code.	ticle No. and specify	Ord	der	code
Inspection certifica to EN 10204-3.1	te	C1	2	

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Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

Accessories/Spare Parts

		Accessor	ies/Spare Parts		
Selection and Ordering data	Article No.	Selection and Ordering data	Article No.		
Replacement measuring cell for absolute pressure (from the differential pressure series) for SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus series	7 M F 4 9 9 3 -	Replacement measuring cell for differential pressure and PN 32/160 (MAWP 464/2320 psi) for SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus series	7 M F 4 9 9 4 -		
Measuring cell filling Measuring cell cleaning Silicone oil Normal Inert liquid grease-free to cleanliness level 2  Measured span (min max.) 8.3 250 mbar a (0.12 3.63 psi a) 43 1300 mbar a (0.62 18.86 psi a)	1 3 D F	Measuring cell filling Measuring cell cleaning Silicone oil Normal Inert liquid grease-free to cleanliness level 2  Measured span (min max.) PN 32 (MAWP 464 psi) 1 20 mbar <sup>1)</sup> (0.4 8 inH <sub>2</sub> O)	1 3 -		
0.16 5 bar a (2.32 72.5 psi a) 1 30 bar a (14.5 435 psi a) 5.3 100 bar a (76.9 1450 psi a)	G H KE	PN 160 (MAWP 2320 psi)  1 60 mbar (0.4 24 inH <sub>2</sub> O)  2.5 250 mbar (1 100 inH <sub>2</sub> O)  6 600 mbar (2.4 240 inH <sub>2</sub> O)	C D E		
Wetted parts materials  Seal diaphragm Parts of measuring cell  Stainless steel Stainless steel  Hastelloy Stainless steel  Hastelloy Hastelloy  Tantalum Tantalum  Monel Monel	A B C E	16 1600 mbar (6.4 642 inH <sub>2</sub> O) 50 5000 mbar (20 2000 inH <sub>2</sub> O) 0.3 30 bar (4.35 435 psi)  Wetted parts materials (stainless steel process flanges)  Seal diaphragm Parts of measuring cell	F G H		
Gold Gold  Process connection  Female thread ½-18 NPT with flange connection  • Sealing screw opposite process connection  • Mounting thread M10 to DIN 19213  - Mounting thread <sup>7</sup> / <sub>16</sub> -20 UNF to IEC 61518/DIN EN 61518  • Vent on side of process flange¹)  - Mounting thread M10 to DIN 19213  - Mounting thread <sup>7</sup> / <sub>16</sub> -20 UNF to IEC 61518/DIN EN 61518	0 2 4 6	Stainless steel Hastelloy Hastelloy Tantalum <sup>2)</sup> Monel Gold <sup>2)</sup> Process connection  Female thread <sup>1</sup> / <sub>4</sub> -18 NPT with flange connection  • Sealing screw opposite process connection  - Mounting thread <sup>4</sup> / <sub>16</sub> -20 UNF to IEC 61518/DIN EN 61518  • Vent on side of process flange	A B C E H L		
Non-wetted parts materials • Stainless steel process flange screws  Further designs Please add "-Z" to Article No. and specify Order code.	- Mounting thread M10 to DIN 19213 - Mounting thread <sup>7</sup> / <sub>16</sub> -20 UNF to IEC 61518/DIN EN 61518  Non-wetted parts materials Stainless steel process flange screws		4 6 2		
O-rings for process flanges (instead of FPM (Viton))  • PTFE (Teflon)  • FEP (with silicone core, approved for food)  • FFPM (Kalrez, for measured medium temperatures -15 100 °C (5 212 °F))  • NBR (Buna N)	A20 A21 A22 A23	Further designs Please add "-Z" to Article No. and specify Order code.  O-rings for process flanges (instead of FPM (Viton))  • PTFE (Teflon)  • FEP (with silicone core, approved for food)  • FFPM (Kalrez, for measured medium temperatures -15 100 °C (5 212 °F))	A20 A21 A22		
Inspection certificate to EN 10204-3.1	C12	NBR (Buna N)  Inspection certificate to EN 10204-3.1	A23 C12		
Process connection G½B  Remote seal flanges (not together with K01, K02 and K04)	D16 D20	Remote seal flanges (not together with K01, K02 and K04)	D20		
Vent on side for gas measurements Process flanges	H02	Vent on side for gas measurements Stainless steel process flanges for vertical differential pressure lines (not together with K01, K02 and K04)	H02 H03		
without  with process flange made of 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  Not for span 5.3 100 bar (76.9 1450 psi)	K01 K02 K04	Process flanges  without  with process flange made of  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	K00 K01 K02 K04		

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

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P DS III

# Accessories/Spare Parts

Replacement measuring cell for differential pressure and PN 420 (MAWP 6092 psi) for SITRANNS PD SI III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus series   Click on the Article No. for the online configuration in the PIA Life Cycle Portal.  Measuring cell filling Measuring cell cleaning Normal  Measured span (min max.)  2.5 250 mbar (1 100 inH₂0)	Selection and Ordering data Article No.						
SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus series   Z Click on the Article No, for the online configuration in the PIA Life Cycle Portal.  Measuring cell filling Normal  Measured span (min max.)  2.5 250 mbar (1 100 inH₂0)  6 600 mbar (2.4 240 inH₂0)  6 600 mbar (2.4 240 inH₂0)  50 5000 mbar (20 2000 inH₂0)  70 .3 30 bar (4.35 435 psi)  Wetted parts materials  Stainless steel process flanges)  Seal diaphragm Parts of measuring cell  Stainless steel Stainless steel  Hastelloy Stainless steel  Hastelloy Stainless steel  Hastelloy Stainless steel  Foold¹¹ Gold  Process connection  Female thread ¹¼-18 NPT with flange connection  - Mounting thread № 12 to DIN 19213  - Mounting thread M12 to	Replacement measuring		7MF4995-				
PA and DS III with FOUNDATION Fieldbus series  Click on the Article No. for the online configuration in the PIA Life Cycle Portal.  Measuring cell filling Measuring cell cleaning Normal  Measured span (min max.)  2.5 250 mbar (1 100 inH <sub>2</sub> O)	pressure and PN 420 ( SITRANS P DS III with H		- 0 D C 0				
tion in the PIA Life Cycle Portal.  Measuring cell filling Silicone oil Normal  Measured span (min max.) 2.5 250 mbar (1 100 inH <sub>2</sub> O)							
Silicone oil   Normal   1   1   1   1   2.5 250 mbar   (1 100 inH <sub>2</sub> O)   6 600 mbar   (2.4 240 inH <sub>2</sub> O)   6 600 mbar   (2.4 240 inH <sub>2</sub> O)   50 5000 mbar   (20 2000 inH <sub>2</sub> O)   G   G   O.3 30 bar   (4.35 435 psi)   H   Wetted parts materials   (stainless steel process flanges)   Seal diaphragm   Parts of measuring cell   Stainless steel   Stainless steel   A   B   Gold   Go							
Measured span (min max.) 2.5 250 mbar (1 100 inH <sub>2</sub> O) 6 600 mbar (2.4 240 inH <sub>2</sub> O) 50 5000 mbar (20 2000 inH <sub>2</sub> O) 6 600 mbar (2.4 642 inH <sub>2</sub> O) 50 5000 mbar (20 2000 inH <sub>2</sub> O) 6 30 bar (20 2000 inH <sub>2</sub> O) 6 30 bar (20 2000 inH <sub>2</sub> O) 6 4.35 435 psi)  Wetted parts materials (stainless steel process flanges)  Seal diaphragm Parts of measuring cell  Stainless steel Stainless steel Hastelloy Stainless steel Hastelloy Stainless steel Gold Gold  Process connection Female thread 1/4-18 NPT with flange connection - Mounting thread M12 to DIN 19213 - Mounting thread M12 to DIN 19213 - Mounting thread 7/16-20 UNF to IEC 61518/DIN EN 61518  • Vent on side of process flange - Mounting thread 7/16-20 UNF to IEC 61518/DIN EN 61518  Non-wetted parts materials • Stainless steel process flange screws  2  Further designs  Please add "-Z" to Article No. and specify Order code.  O-rings for process flanges (instead of FPM (Viton)) • PTFE (Teflon) • FEP (with silicone core, approved for food) • FFPM (Kalrez, for measured medium temperatures -15 100 °C (5 212 °F)) • NBR (Buna N)  Inspection certificate to EN 10204-3.1  Stainless steel process flanges for vertical differential pressure lines							
2.5 250 mbar (1 100 inH <sub>2</sub> O) 6 600 mbar (2.4 240 inH <sub>2</sub> O) 5 500 mbar (2.4 240 inH <sub>2</sub> O) 6 600 mbar (2.4 240 inH <sub>2</sub> O) 5 5000 mbar (20 2000 inH <sub>2</sub> O) 6 5000 mbar (20 240 inH <sub>2</sub> O) 6 600 mbar (2			1				
6 600 mbar (2.4 240 inH <sub>2</sub> O) 16 1600 mbar (6.4 642 inH <sub>2</sub> O) 50 5000 mbar (20 2000 inH <sub>2</sub> O) 0.3 30 bar (4.35 435 psi)  Wetted parts materials (stainless steel process flanges)  Seal diaphragm Parts of measuring cell Stainless steel Stainless steel Hastelloy Stainless steel Hastelloy Stainless steel Gold 1)  Process connection Female thread ¼-18 NPT with flange connection  • Sealing screw opposite process connection  - Mounting thread M12 to DIN 19213  - Mounting thread 7/ <sub>16</sub> -20 UNF to IEC 61518/DIN EN 61518  Vent on side of process flange  - Mounting thread 7/ <sub>16</sub> -20 UNF to IEC 61518/DIN EN 61518  Non-wetted parts materials  • Stainless steel process flange screws  2  Further designs  Please add "-Z" to Article No. and specify Order code.  O-rings for process flanges (instead of FPM (Viton))  • PTFE (Teflon)  • FEP (with silicone core, approved for food)  • FFPM (Kalrez, for measured medium temperatures -15 100 °C (5 212 °F))  • NBR (Buna N)  Inspection certificate to EN 10204-3.1  Stainless steel process flanges for vertical differential pressure lines		-					
16 1600 mbar (6.4 642 inH <sub>2</sub> O) 50 5000 mbar (20 2000 inH <sub>2</sub> O) 0.3 30 bar (4.35 435 psi)  Wetted parts materials (stainless steel process flanges)  Seal diaphragm Parts of measuring cell Stainless steel Stainless steel Hastelloy Stainless steel Hastelloy Stainless steel Gold 1)  Process connection Female thread ½-18 NPT with flange connection  • Sealing screw opposite process connection  - Mounting thread M12 to DIN 19213  - Mounting thread 7/ <sub>16</sub> -20 UNF to IEC 61518/DIN EN 61518  Non-wetted parts materials  • Stainless steel process flange screws  2  Further designs  Please add "-Z" to Article No. and specify Order code.  O-rings for process flanges (instead of FPM (Viton))  • PTFE (Teflon)  • FEP (with silicone core, approved for food)  • FFPM (Kalrez, for measured medium temperatures -15 100 °C (5 212 °F))  • NBR (Buna N)  Inspection certificate to EN 10204-3.1  Stainless steel process flanges for vertical differential pressure lines							
50 5000 mbar (20 2000 inH <sub>2</sub> O) 0.3 30 bar (4.35 435 psi)  Wetted parts materials (stainless steel process flanges)  Seal diaphragm Parts of measuring cell Stainless steel Stainless steel Hastelloy Stainless steel Hastelloy Stainless steel Hastelloy Stainless steel Hastelloy Gold  Process connection Female thread ¼-18 NPT with flange connection - Mounting thread M12 to DIN 19213 - Mounting thread 7/ <sub>16</sub> -20 UNF to IEC 61518/DIN EN 61518  Non-wetted parts materials • Stainless steel process flange screws  2  Further designs  Please add "-Z" to Article No. and specify Order code.  O-rings for process flanges (instead of FPM (Viton)) • PTFE (Teflon) • FEP (with silicone core, approved for food) • NBR (Buna N)  Inspection certificate to EN 10204-3.1  Stainless steel process flanges for vertical differential pressure lines							
0.3 30 bar (4.35 435 psi)  Wetted parts materials (stainless steel process flanges)  Seal diaphragm Parts of measuring cell Stainless steel Stainless steel Hastelloy Stainless steel Hastelloy Stainless steel Gold¹) Gold  Process connection Female thread ¹⁄-18 NPT with flange connection - Mounting thread M12 to DIN 19213 - Mounting thread f¹/ <sub>16</sub> -20 UNF to IEC 61518/DIN EN 61518  Non-wetted parts materials • Stainless steel process flange screws  2  Further designs  Please add "-Z" to Article No. and specify Order code.  O-rings for process flanges (instead of FPM (Viton)) • PTFE (Teflon) - FEP (with silicone core, approved for food) - FFPM (Kalrez, for measured medium temperatures -15 100 °C (5 212 °F)) • NBR (Buna N)  Inspection certificate to EN 10204-3.1  Stainless steel process flanges for vertical differential pressure lines		` /	-				
(stainless steel process flanges)  Seal diaphragm Parts of measuring cell  Stainless steel Stainless steel Hastelloy Stainless steel Gold¹) Gold  Process connection Female thread ¼-18 NPT with flange connection  • Sealing screw opposite process connection  • Mounting thread M12 to DIN 19213  • Mounting thread 7/ <sub>16</sub> -20 UNF to IEC 61518/DIN EN 61518  • Vent on side of process flange  • Mounting thread M12 to DIN 19213  • Mounting thread M12 to DIN 19213  • Mounting thread M12 to DIN 19213  • Mounting thread flange  • Order code    Drings for process flange screws  2  Further designs  Order code  Order code   Order code   PEP (with silicone core, approved for food)  • FEP (with silicone core,	0.3 30 bar		Н				
Seal diaphragm Parts of measuring cell  Stainless steel Stainless steel Hastelloy Stainless steel Gold¹) Gold  Process connection Female thread ¼-18 NPT with flange connection  • Sealing screw opposite process connection  • Mounting thread M12 to DIN 19213  • Mounting thread M12 to DIN 19213  • Mounting thread f/ <sub>16</sub> -20 UNF to IEC 61518/DIN EN 61518  • Vent on side of process flange  • Mounting thread M12 to DIN 19213  • Mounting thread M12 to DIN 19213  • Mounting thread M12 to DIN 19213  • Mounting thread f/ <sub>16</sub> -20 UNF to IEC 61518/DIN EN 61518  Non-wetted parts materials  • Stainless steel process flange screws  Please add "-Z" to Article No. and specify Order code.  O-rings for process flanges (instead of FPM (Viton))  • PTFE (Teflon)  • FEP (with silicone core, approved for food)  • FFPM (Kalrez, for measured medium temperatures -15 100 °C (5 212 °F))  • NBR (Buna N)  Inspection certificate to EN 10204-3.1  Stainless steel process flanges for vertical differential pressure lines	Wetted parts materials	<b>1</b>					
Stainless steel Stainless steel Hastelloy Stainless steel Gold¹) Gold  Process connection Female thread ¼-18 NPT with flange connection  • Sealing screw opposite process connection  - Mounting thread M12 to DIN 19213  - Mounting thread M12 to DIN 19213  - Mounting thread N12 to DIN 19213  - Mounting thread M12 to DIN 19213  - Mounting thread Flace Ouns to IEC 61518/DIN EN 61518  Non-wetted parts materials  • Stainless steel process flange screws  Please add "-Z" to Article No. and specify Order code.  O-rings for process flanges (instead of FPM (Viton))  • PTFE (Teflon)  • FEP (with silicone core, approved for food)  • FFPM (Kalrez, for measured medium temperatures -15 100 °C (5 212 °F))  • NBR (Buna N)  Inspection certificate to EN 10204-3.1  Stainless steel process flanges for vertical differential pressure lines							
Hastelloy Gold  Process connection Female thread 1/4-18 NPT with flange connection  • Sealing screw opposite process connection  • Mounting thread M12 to DIN 19213  • Mounting thread 7/16-20 UNF to IEC 61518/DIN EN 61518  • Vent on side of process flange  • Mounting thread M12 to DIN 19213  • Mounting thread Flas-20 UNF to IEC 61518/DIN EN 61518  Non-wetted parts materials  • Stainless steel process flange screws  Please add "-Z" to Article 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)  • FFPM (Kalrez, for measured medium temperatures -15 100 °C (5 212 °F))  • NBR (Buna N)  Inspection certificate to EN 10204-3.1  Stainless steel process flanges for vertical differential pressure lines	Seal diaphragm	Parts of measuring cell					
Gold  Process connection  Female thread ½-18 NPT with flange connection  • Sealing screw opposite process connection  - Mounting thread M12 to DIN 19213  - Mounting thread 7/16-20 UNF to IEC 61518/DIN EN 61518  • Vent on side of process flange  - Mounting thread 7/16-20 UNF to IEC 61518/DIN EN 61518  Non-wetted parts materials  • Stainless steel process flange screws  Please add "-Z" to Article 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)  • FEP (Buna N)  Inspection certificate to EN 10204-3.1  Stainless steel process flanges for vertical differential pressure lines	Stainless steel	Stainless steel	A				
Process connection Female thread ½-18 NPT with flange connection Sealing screw opposite process connection Mounting thread M12 to DIN 19213 Mounting thread 7/ <sub>16</sub> -20 UNF to IEC 61518/DIN EN 61518 Vent on side of process flange Mounting thread M12 to DIN 19213 Mounting thread M12 to DIN 19213 Mounting thread 7/ <sub>16</sub> -20 UNF to IEC 61518/DIN EN 61518  Non-wetted parts materials Stainless steel process flange screws  Further designs Please add "-Z" to Article No. and specify Order code.  O-rings for process flanges (instead of FPM (Viton)) PTFE (Teflon) FEP (with silicone core, approved for food) FFPM (Kalrez, for measured medium temperatures -15 100 °C (5 212 °F)) NBR (Buna N)  Inspection certificate to EN 10204-3.1  Stainless steel process flanges for vertical differential pressure lines	., ,	Stainless steel	В				
Female thread 1/4-18 NPT with flange connection  Sealing screw opposite process connection  Mounting thread M12 to DIN 19213  Mounting thread 7/16-20 UNF to IEC 61518/DIN EN 61518  Vent on side of process flange  Mounting thread M12 to DIN 19213  Mounting thread M12 to DIN 19213  Mounting thread M12 to DIN 19213  Mon-wetted parts materials  Stainless steel process flange screws  Further designs  Please add "-Z" to Article No. and specify Order code.  O-rings for process flanges (instead of FPM (Viton))  FFEP (with silicone core, approved for food)  FFPM (Kalrez, for measured medium temperatures -15 100 °C (5 212 °F))  NBR (Buna N)  Inspection certificate to EN 10204-3.1  Stainless steel process flanges for vertical differential pressure lines	Gold <sup>1)</sup>	Gold	L				
connection  Sealing screw opposite process connection  Mounting thread M12 to DIN 19213  Mounting thread <sup>7</sup> / <sub>16</sub> -20 UNF to IEC 61518/DIN EN 61518  Vent on side of process flange  Mounting thread M12 to DIN 19213  Mounting thread M12 to DIN 19213  Mounting thread M12 to DIN 19213  Mounting thread <sup>7</sup> / <sub>16</sub> -20 UNF to IEC 61518/DIN EN 61518  Non-wetted parts materials  Stainless steel process flange screws  Further designs  Please add "-Z" to Article No. and specify Order code.  O-rings for process flanges (instead of FPM (Viton))  FEP (with silicone core, approved for food)  FFPM (Kalrez, for measured medium temperatures -15 100 °C (5 212 °F))  NBR (Buna N)  Inspection certificate to EN 10204-3.1  Stainless steel process flanges for vertical differential pressure lines							
Sealing screw opposite process connection  Mounting thread M12 to DIN 19213  Mounting thread <sup>7</sup> / <sub>16</sub> -20 UNF to IEC 61518/DIN EN 61518  Vent on side of process flange  Mounting thread M12 to DIN 19213  Mounting thread <sup>7</sup> / <sub>16</sub> -20 UNF to IEC 61518/DIN EN 61518  Non-wetted parts materials  Stainless steel process flange screws  Please add "-Z" to Article No. and specify Order code.  Orings for process flanges (instead of FPM (Viton))  PTFE (Teflon)  FEP (with silicone core, approved for food)  FFPM (Kalrez, for measured medium temperatures -15 100 °C (5 212 °F))  NBR (Buna N)  Inspection certificate to EN 10204-3.1  Stainless steel process flanges for vertical differential pressure lines		T with flange					
- Mounting thread M12 to DIN 19213 - Mounting thread <sup>7</sup> / <sub>16</sub> -20 UNF to IEC 61518/DIN EN 61518 • Vent on side of process flange - Mounting thread M12 to DIN 19213 - Mounting thread <sup>7</sup> / <sub>16</sub> -20 UNF to IEC 61518/DIN EN 61518  Non-wetted parts materials • Stainless steel process flange screws  Please add "-Z" to Article 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) • FFPM (Kalrez, for measured medium temperatures -15 100 °C (5 212 °F)) • NBR (Buna N)  Inspection certificate to EN 10204-3.1  Stainless steel process flanges for vertical differential pressure lines		e process connection					
- Mounting thread 7/16-20 UNF to IEC 61518/DIN EN 61518  • Vent on side of process flange - Mounting thread M12 to DIN 19213 - Mounting thread 7/16-20 UNF to IEC 61518/DIN EN 61518  Non-wetted parts materials • Stainless steel process flange screws  2  Further designs Please add "-Z" to Article No. and specify Order code.  O-rings for process flanges (instead of FPM (Viton)) • PTFE (Teflon) • FEP (with silicone core, approved for food) • FEPM (Kalrez, for measured medium temperatures -15 100 °C (5 212 °F)) • NBR (Buna N)  Inspection certificate to EN 10204-3.1  Stainless steel process flanges for vertical differential pressure lines			1				
IEC 61518/DIN EN 61518  • Vent on side of process flange - Mounting thread M12 to DIN 19213 - Mounting thread <sup>7</sup> / <sub>16</sub> -20 UNF to IEC 61518/DIN EN 61518  Non-wetted parts materials • Stainless steel process flange screws  2  Further designs Please add "-Z" to Article No. and specify Order code.  O-rings for process flanges (instead of FPM (Viton)) • PTFE (Teflon) • FEP (with silicone core, approved for food) • FFPM (Kalrez, for measured medium temperatures -15 100 °C (5 212 °F)) • NBR (Buna N)  Inspection certificate to EN 10204-3.1  Stainless steel process flanges for vertical differential pressure lines	_		3				
- Mounting thread M12 to DIN 19213 - Mounting thread <sup>7</sup> / <sub>16</sub> -20 UNF to IEC 61518/DIN EN 61518  Non-wetted parts materials • Stainless steel process flange screws  Please add "-Z" to Article 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) • FFPM (Kalrez, for measured medium temperatures -15 100 °C (5 212 °F)) • NBR (Buna N)  Inspection certificate to EN 10204-3.1  Stainless steel process flanges for vertical differential pressure lines	IEC 61518/DIN EN 6						
- Mounting thread 7/ <sub>16</sub> -20 UNF to IEC 61518/DIN EN 61518  Non-wetted parts materials • Stainless steel process flange screws  Please add "-Z" to Article 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) • FFPM (Kalrez, for measured medium temperatures -15 100 °C (5 212 °F)) • NBR (Buna N)  Inspection certificate to EN 10204-3.1  Stainless steel process flanges for vertical differential pressure lines			_				
Non-wetted parts materials  • Stainless steel process flange screws  Please add "-Z" to Article No. and specify Order code.  O-rings for process flanges (instead of FPM (Viton))  • PTFE (Teflon)  • FEP (with silicone core, approved for food)  • FEPM (Kalrez, for measured medium temperatures -15 100 °C (5 212 °F))  • NBR (Buna N)  Inspection certificate to EN 10204-3.1  Stainless steel process flanges for vertical differential pressure lines	_						
Non-wetted parts materials  Stainless steel process flange screws  Further designs  Please add "-Z" to Article No. and specify Order code.  Orings for process flanges (instead of FPM (Viton))  PTFE (Teflon)  FEP (with silicone core, approved for food)  FFPM (Kalrez, for measured medium temperatures -15 100 °C (5 212 °F))  NBR (Buna N)  Inspection certificate to EN 10204-3.1  Stainless steel process flanges for vertical differential pressure lines			<b>,</b>				
• Stainless steel process flange screws  Please add "-Z" to Article No. and specify Order code  O-rings for process flanges (instead of FPM (Viton))  • PTFE (Teflon)  • FEP (with silicone core, approved for food)  • FFPM (Kalrez, for measured medium temperatures -15 100 °C (5 212 °F))  • NBR (Buna N)  Inspection certificate to EN 10204-3.1  Stainless steel process flanges for vertical differential pressure lines							
Please add "-Z" to Article No. and specify Order code.  O-rings for process flanges (instead of FPM (Viton))  • PTFE (Teflon)  • FEP (with silicone core, approved for food)  • FFPM (Kalrez, for measured medium temperatures -15 100 °C (5 212 °F))  • NBR (Buna N)  Inspection certificate to EN 10204-3.1  Stainless steel process flanges for vertical differential pressure lines	•			2			
code.  O-rings for process flanges (instead of FPM (Viton))  • PTFE (Teflon)  • FEP (with silicone core, approved for food)  • FFPM (Kalrez, for measured medium temperatures -15 100 °C (5 212 °F))  • NBR (Buna N)  Inspection certificate to EN 10204-3.1  Stainless steel process flanges for vertical differential pressure lines	Further designs	Order	code				
(instead of FPM (Viton))  • PTFE (Teflon)  • FEP (with silicone core, approved for food)  • FFPM (Kalrez, for measured medium temperatures -15 100 °C (5 212 °F))  • NBR (Buna N)  Inspection certificate to EN 10204-3.1  Stainless steel process flanges for vertical differential pressure lines							
PTFE (Teflon)     FEP (with silicone core, approved for food)     FFPM (Kalrez, for measured medium temperatures -15 100 °C (5 212 °F))     NBR (Buna N)     Inspection certificate to EN 10204-3.1  Stainless steel process flanges for vertical differential pressure lines  A20  A21  A22  C12  C12	O-rings for process fla	nges					
FEP (with silicone core, approved for food)     FFPM (Kalrez, for measured medium temperatures -15 100 °C (5 212 °F))     NBR (Buna N)     Inspection certificate to EN 10204-3.1  Stainless steel process flanges for vertical differential pressure lines  A21  A22  C12  C12	. ,,,						
FFPM (Kalrez, for measured medium temperatures -15 100 °C (5 212 °F))     NBR (Buna N)     Inspection certificate to EN 10204-3.1  Stainless steel process flanges for vertical differential pressure lines  A22  C12  C12							
-15 100 °C (5 212 °F))  • NBR (Buna N)  Inspection certificate to EN 10204-3.1  Stainless steel process flanges for vertical differential pressure lines							
NBR (Buna N)     A23  Inspection certificate to EN 10204-3.1  Stainless steel process flanges for vertical differential pressure lines  H03			AZZ				
to EN 10204-3.1  Stainless steel process flanges for vertical differential pressure lines  H03	•	• NBR (Buna N)					
Stainless steel process flanges for vertical differential pressure lines	Inspection certificate	C12					
differential pressure lines	to EN 10204-3.1						
without process flanges K00			H03				
mandat process nanges	without process flange	es	K00				

 $<sup>^{1)}</sup>$  Not together with max. span 600 mbar (240 inH $_2$ O)

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Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

**Accessories/Spare Parts** 

Selection and Ordering data	Article No.	Selection and Ordering data	Article No.
Spare parts/Accessories		Digital indicator	7MF4997-1BR
Nounting bracket and fastening parts		<ul> <li>Including mounting material for SITRANS P</li> <li>DS III with HART, DS III with PROFIBUS PA and</li> </ul>	
or pressure transmitters		DS III with FOUNDATION Fieldbus	
SITRANS P DS III with HART, DS III with		Measuring point label	_
PROFIBUS PA and DS III with FOUNDATION		without inscription (5 units)	7MF4997-1CA
Fieldbus (7MF403C.) For absolute pressure transmitters		• Printed (1 unit)	7MF4997-1CB-2
SITRANS P DS III with HART, DS III with		Data according to Y01 or Y02, Y15, Y16 and	Y:
PROFIBUS PA and DS III with FOUNDATION		Y99 (see "Pressure transmitters")	
Fieldbus (7MF423C.)	7MF4007 4 A D	Mounting screws	
made of steel made of stainless steel 304/1.4301	7MF4997-1AB 7MF4997-1AH	For measuring point label, grounding and con-	7MF4997-1CD
made of stainless steel 316L/1.4404	7MF4997-1AP	nection terminals or for display	
	71111 1007 1741	(50 units)	_
Mounting bracket and fastening parts or pressure transmitters		Sealing screws	
SITRANS P DS III with HART, DS III with		(1 set = 2 units) for process flange	7ME4007 1CG
PROFIBUS PA and DS III with FOUNDATION		made of stainless steel     made of Hastelloy	7MF4997-1CG 7MF4997-1CH
Fieldbus (7MF403A.,B.,D. andF.) For absolute pressure transmitters			. IIII 4537-1011
or 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	7MF4997-1CP
Fieldbus 7MF423A.,B.,D. andF.)		made of stallness steel     made of Hastelloy	7MF4997-1CQ
made of steel	7MF4997-1AC	Application electronics	-
made of stainless steel 304/1.4301 made of stainless steel 316L/1.4404	7MF4997-1AJ 7MF4997-1AQ	• for SITRANS P DS III with HART	7MF4997-1DK
	/WF499/-TAQ	• for SITRANS P DS III with PROFIBUS PA	7MF4997-1DL
Mounting and fastening brackets		<ul> <li>for SITRANS P DS III with FOUNDATION</li> </ul>	7MF4997-1DM
For differential pressure transmitters with lange thread M10		Fieldbus	
SITRANS P DS III with HART, DS III with		Connection board	
PROFIBUS PA and DS III with FOUNDATION		• for SITRANS P DS III	7MF4997-1DN
Fieldbus (7MF433 and 7MF443)	7MF4007 4 A D	• for SITRANS P DS III PROFIBUS PA and	7MF4997-1DP
<ul><li>made of steel</li><li>made of stainless steel 304/1.4301</li></ul>	7MF4997-1AD 7MF4997-1AK	FOUNDATION Fieldbus	
• made of stainless steel 316L/1.4404	7MF4997-1AR 7MF4997-1AR	O-rings for process flanges made of:	
·	7 MI 4007 TAIT	• FPM (Viton)	7MF4997-2DA
Mounting and fastening brackets For differential pressure transmitters with		• PTFE (Teflon)	7MF4997-2DB
lange thread M12		• FEP (with silicone core, approved for food)	7MF4997-2DC
SITRANS P DS III with HART, DS III with		FFPM (Kalrez)  NBR (Buna N)	7MF4997-2DD 7MF4997-2DE
PROFIBUS PA and DS III with FOUNDATION			_
Fieldbus (7MF453)	7MF4997-1AE	Sealing ring for process connection	see "Fittings"
• made of stainless steel 304/1.4301	7MF4997-1AL	Weldable sockets for PMC connection	
• made of stainless steel 316L/1.4404	7MF4997-1AS	PMC Style Standard: Thread 1½"      PMC Style Minibalt front float 4111	7MF4997-2HA
Mounting and fastening brackets		PMC Style Minibolt: front-flush 1"	7MF4997-2HB
For differential and absolute pressure transmit-		Gaskets for PMC connection	
ers with flange thread 7/16 -20 UNF		<ul><li>(packing unit = 5 units)</li><li>PTFE seal for PMC Style Standard:</li></ul>	7MF4997-2HC
SITRANS P DS III with HART, DS III with		Thread 1½"	7 IVII 4337-21 IC
PROFIBUS PA and DS III with FOUNDATION Fieldbus		Gasket made of Viton for PMC Style Minibolt:	7MF4997-2HD
7MF433, 7MF443 and 7MF453)		front-flush 1"	
made of steel	7MF4997-1AF	Weldable socket for TG52/50 and TG52/150	
made of stainless steel 304/1.4301	7MF4997-1AM	connection	
made of stainless steel 316L/1.4404	7MF4997-1AT	• TG52/50 connection	7MF4997-2HE
Cover		TG52/150 connection	7MF4997-2HF
Made of die-cast aluminum, including gasket,		Seals for TG 52/50 and TG 52/150 made of	7MF4997-2HG
for SITRANS P DS III with HART, DS III with		silicone (FDA compliant)	_
PROFIBUS PA and DS III with FOUNDATION Fieldbus.		Seals for flange connection with front-flush	
Compatible for Ex and non-Ex transmitters		diaphragm M;aterial FKM (Viton); temperature range:	
• without window	7MF4997-1BB	-20 +200 °C (-4 +392 °F), 10 units	
with window	7MF4997-1BE	• DN 25, PN 40 (M11)	7MF4997-2HH
Cover		• 1", class 150 (M40)	7MF4997-2HK
Made of stainless steel, including gasket,			
for SITRANS P DS III with HART, DS III with			
PROFIBUS PA and DS III with FOUNDATION			

7MF4997-1BC

7MF4997-1BF

• without window

• with window

Compatible for Ex and non-Ex transmitters

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

# Accessories/Spare Parts

Selection and Ordering data	Article No.
Documentation	
The entire documentation is available for download free-of-charge in various languages at: http://www.siemens.com/processinstrumentation/documentation	
Compact operating instructions SITRANS P DS III/P410 • English, German, Spanish, French, Italian, Dutch	A5E03434626
Certificates (order only via SAP) instead of Internet download	
<ul><li>hard copy (to order)</li></ul>	A5E03252406
• on DVD (to order)	A5E03252407
HART modem	
with USB interface	7MF4997-1DB

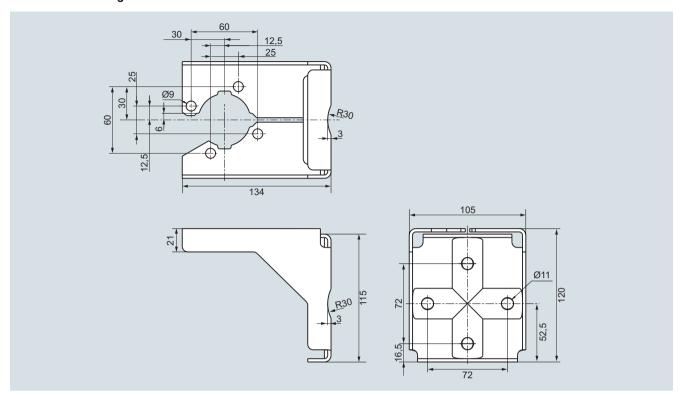
Power supply units see Chap. 7 "Supplementary Components".

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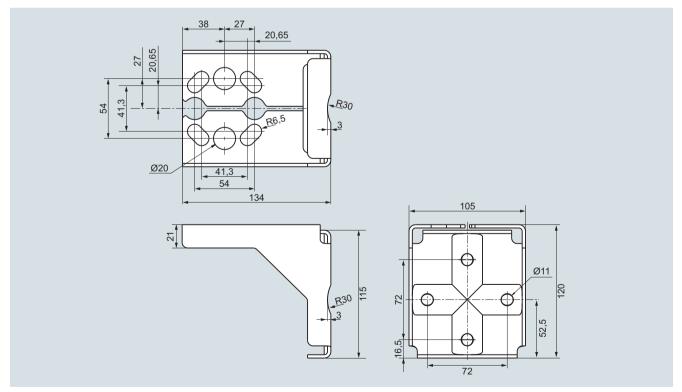
Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

**Accessories/Spare Parts** 

## Dimensional drawings



Mounting bracket for SITRANS P DS III, SITRANS P410 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 and SITRANS P410 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 transmitters

for applications with advanced requirements (Advanced) SITRANS P DS III

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

#### Overview

SITRANS P transmitters

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

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

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

#### Design

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

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

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

Once installed, the complete unit is checked under pressure for leaks (compressed air 6 bar (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

# 7MF9411-5AA valve manifold for relative and absolute pressure transmitters



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

# 7MF9411-5AA valve manifold for relative and absolute pressure transmitters



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

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Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

## Factory-mounting of valve manifolds on transmitters

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



$\operatorname{Add} \textbf{-Z}$ to the Article No. of the transmitter and add Order codes	Order code
SITRANS P DSIII 7MF4031, 7MF4231	T03
With process connection female thread ½-14 NPT in-sealed with PTFE sealing tape	
Delivery incl. high-pressure test certified by test report to EN 10204-2.2	
Further designs:	
Delivery includes mounting brackets and mounting clips made of stainless steel (instead of the mounting bracket supplied with the transmitter)	A02
Supplied acceptance test certificate to EN 10204- 3.1 for transmitters and mounted valve manifold	C12
With manufacturer declaration according to NACE, MR-0175	D07

## 7MF9011-4EA

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



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

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



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

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



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

<sup>1)</sup> For 7MF453.-... transmitters, you require a 7/10-20 UNF connection thread in the process flange

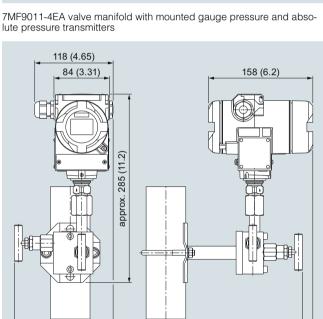
Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

Factory-mounting of valve manifolds on transmitters

## Dimensional drawings

## Valve manifolds mounted on SITRANS P DS III





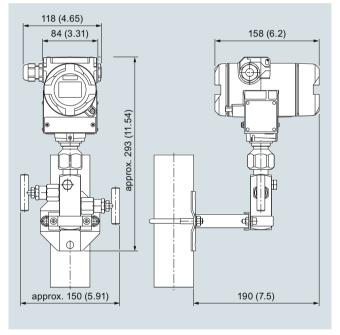
7MF9011-4EA valve manifold with mounted gauge pressure and absolute pressure transmitters, dimensions in mm (inch)

176 (6.93)

192 (7.56)



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)

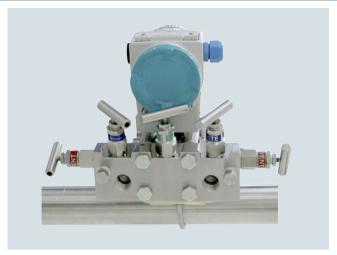
149 (5.87)

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

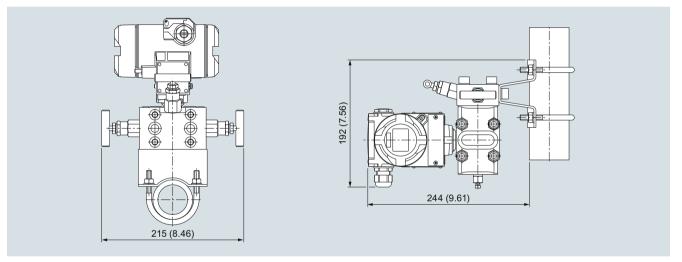
## Factory-mounting of valve manifolds on transmitters



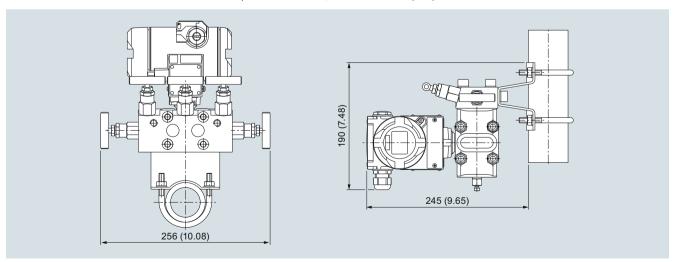
 $7\mbox{MF9411-5BA}$  valve manifold with mounted differential pressure transmitter



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)

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P410

Technical description

#### Overview



SITRANS P410 pressure transmitters are digital pressure transmitters with a high level of operating convenience. Technically, they are based on the SITRANS P DS III but offer an increased measuring accuracy of 0.04%. This means the SITRANS P 410 is perfectly suited for measuring tasks with increased accuracy requirements. The parameterization is performed using input buttons or via HART or via PROFIBUS PA or FOUNDATION Fieldbus interface.

The comprehensive functionality makes for precise adjustment of the pressure transmitter to the requirements of the plant. Operation is very simple, despite the variety of setting options.

Pressure transmitters with type of protection "Intrinsic safety" and "Explosion-proof" may be installed in hazardous areas (zone 1) or in zone 0. The transmitters are provided with an EC type examination certificate and comply with the respective 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.

SITRANS P410 pressure transmitters are available in various versions for measuring:

- · Gauge pressure
- · Differential pressure
- Volume flow
- Mass flow

#### Benefits

- · High quality and service life
- For aggressive and non-aggressive gases, vapors and liquids
- Extensive diagnostics and simulation functions
- Minimal conformity error
- Good long-term stability
- Wetted parts made of high-grade materials (e.g., stainless steel, Hastelloy)
- Infinitely adjustable spans from 0.01 bar to 160 bar (0.15 psi to 2321 psi) for P410 with HART interface
- Nominal measuring ranges from 1 bar to 160 bar (14.5 psi to 2321 psi) for P410 with PROFIBUS PA and FOUNDATION Fieldbus interface
- High measuring accuracy
- Parameterization over input buttons and HART, PROFIBUS PA or FOUNDATION Fieldbus interface.

## Application

SITRANS P410 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 the P410 suitable for locations with high electromagnetic emissions.

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

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

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

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

#### Pressure transmitter for gauge pressure

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

Span (infinitely adjustable)

for P410 with HART: 0.01 bar to 160 bar (0.15 psi to 2321 psi)

Nominal measuring range

for P410 with PROFIBUS PA and FOUNDATION Fieldbus: 1 bar to 160 bar (14.5 psi to 2321 psi)

#### 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 P410 with HART: 1 mbar ... 30 bar (0.0145 ... 435 psi)

Nominal measuring range

for P410 with PROFIBUS PA and FOUNDATION Fieldbus: 20 mbar ... 30 bar (0.29 ... 435 psi)

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Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P410

Technical description

## Design



#### Front view

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

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

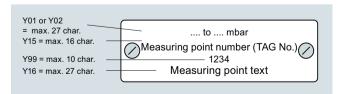
The approval label is located on the opposite side.

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

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

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

#### Example for an attached measuring point label

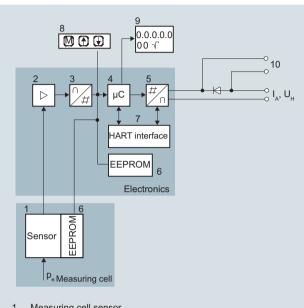


Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P410

## Technical description

#### Function

#### Operation of electronics with HART communication



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

### Function diagram of electronics

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

The diode circuit (10) protects against incorrect polarity.

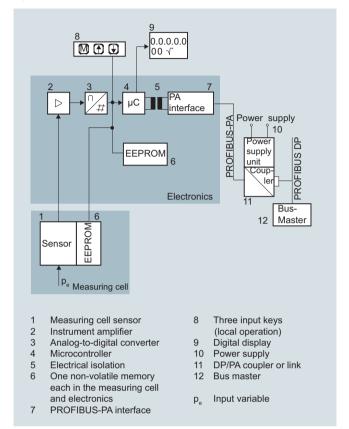
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The one memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced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

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

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

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

## Operation of electronics with PROFIBUS PA communication



Function diagram of electronics

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

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

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

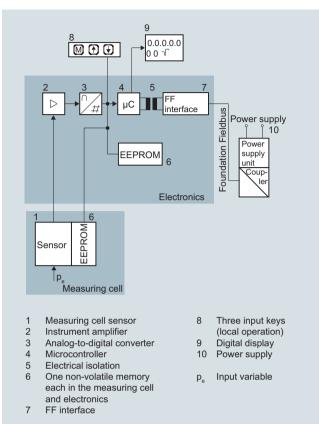
The results with status values and diagnostic values are transferred by cyclic data transmission on the PROFIBUS PA. Parameterization data and error messages are transferred by acyclic data transmission. Special software such as SIMATIC PDM is required for this.

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P410

**Technical description** 

#### Operation of electronics with FOUNDATION Fieldbus communication



## Function diagram of electronics

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

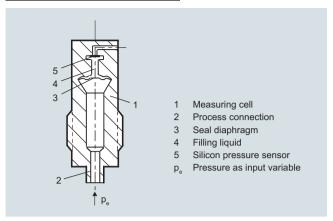
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The one memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced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

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

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

#### Mode of operation of the measuring cells

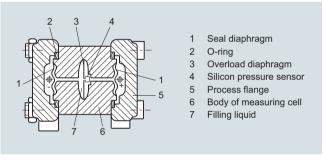
Measuring cell for gauge pressure



Measuring cell for gauge pressure, function diagram

The pressure pe 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 differential pressure.

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 differential pressure.

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

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P410

#### **Technical description**

#### Parameterization SITRANS P410

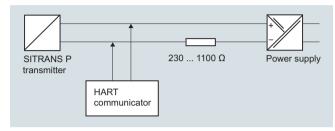
Depending on the version, there are a range of options for parameterizing the pressure transmitter and for setting or scanning the parameters.

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

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

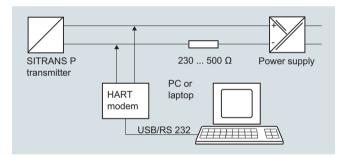
#### Parameterization using HART

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



Communication between a HART Communicator and a pressure transmitter

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



HART communication between a PC communicator and a pressure transmitter

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

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

#### Adjustable parameters, SITRANS P410 with HART

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

- 1) Cancel apart from write protection
- 2) Only differential pressure

## Diagnostic functions for SITRANS P410 with HART

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

Available physical units of display for SITRANS P410 with HART

rvanasie prijelear arme er	Wallable physical drills of display for off the five 1 4 to with 1 // th			
Physical variable	Physical dimensions			
Pressure (setting can also be made in the factory)	Pa, MPa, kPa, bar, mbar, torr, atm, psi, $g/cm^2$ , $kg/cm^2$ , $inH_2O$ , $inH_2O$ (4 °C), $mmH_2O$ , $ftH_2O$ (20 °C), $inHg$ , $mmHg$			
Level (height data)	m, cm, mm, ft, in			
Volume	m <sup>3</sup> , dm <sup>3</sup> , hl, yd <sup>3</sup> , ft <sup>3</sup> , in <sup>3</sup> , US gallon, lmp. gallon, bushel, barrel, barrel liquid			
Mass	g, kg, t, lb, Ston, Lton, oz			
volume flow	$\rm m^3/d,m^3/h,m^3/s,l/min,l/s,ft^3/d,ft^3/min,ft^3/s,US$ gallon/min, US gallon/s			
Mass flow	t/d, t/h, t/min, kg/d, kg/h, kg/min, kg/s, g/d, g/h, g/min, g/s, lb/d, lb/h, lb/min, lb/s, LTon/d, LTon/h, STon/d, STon/h, STon/min			
Temperature	K, °C, °F, °R			
Miscellaneous	%, mA			

## Parameterization through PROFIBUS PA interface

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

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

#### Parameterization through FOUNDATION Fieldbus interface

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

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

# Adjustable parameters for SITRANS P410 with PROFIBUS PA and FOUNDATION Fieldbus

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

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P410

**Technical description** 

# Diagnostic functions for SITRANS P410 with PROFIBUS PA and FOUNDATION Fieldbus

- Event counter
- Slave pointer
- Maintenance timer
- Simulation functions
- 51. . . . . . .
- Display of zero correction
- Limit transmitter
- Saturation alarm

Physical dimensions available for the display

Physical variable	Physical dimensions
Pressure (setting can also be made in the factory)	MPa, kPa, Pa, bar, mbar, torr, atm, psi, g/cm², kg/cm², mm $\rm H_2O$ , mm $\rm H_2O$ (4 °C), in $\rm H_2O$ , in $\rm H_2O$ (10°C), mm $\rm H_2O$ , in $\rm H_2O$ (10°C), mm $\rm H_2O$ , in $\rm H_2O$
Level (height data)	m, cm, mm, ft, in, yd
Volume	m <sup>3</sup> , dm <sup>3</sup> , hl, yd <sup>3</sup> , ft <sup>3</sup> , in <sup>3</sup> , US gallon, Imp. gallon, bushel, barrel, barrel liquid
volume flow	m³/s, m³/min, m³/h, m³/d, l/s, l/min, l/h, l/d, Ml/d, ft³/s, ft³/min, ft³/h, ft³/d, US gallon/s, US gallon/min, US gallon/h, US gallon/d, bbl/s, bbl/min, bbl/h, bbl/d
Mass flow	g/s, g/min, g/h, g/d, kg/s, kg/min, kg/h, kg/d, t/s, t/min, t/h, /t/d, lb/s, lb/min, lb/h, lb/d, STon/s, STon/min, STon/h, STon/d, LTon/s, LTon/min, LTon/h, LTon/d
Total mass flow	t, kg, g, lb, oz, LTon, STon
Temperature	K, °C, °F, °R
Miscellaneous	%

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P410

## for gauge pressure

## Technical specifications

recnnical specifications				
SITRANS P410 for gauge pressure				
Input				
Measured variable	Gauge pressure			
Span (fully adjustable) or measuring range, max. operating pressure (in accordance with 2014/68/EU Pressure Equipment Directive) and max. test pressure (pursuant to DIN 16086)	HART	PROFIBUS PA/ FOUNDATION Fieldbus		
	Span	Nominal measuring range	Max. operating pressure MAWP (PS)	Max. perm. test pressure
	0.01 1 bar 1 100 kPa 0.15 14.5 psi	1 bar 100 kPa 14.5 psi	4 bar 400 kPa 58 psi	6 bar 600 kPa 87 psi
	0.04 4 bar 4 400 kPa 0.58 58 psi	4 bar 400 kPa 58 psi	7 bar 0.7 MPa 102 psi	10 bar 1 MPa 145 psi
	0.16 16 bar 16 1600 kPa 2.3 232 psi	16 bar 1600 kPa 232 psi	21 bar 2.1 MPa 305 psi	32 bar 3.2 MPa 464 psi
	0.63 63 bar 63 6300 kPa 9.1 914 psi	63 bar 6300 kPa 914 psi	67 bar 6.7MPa 972 psi	100 bar 10 MPa 1450 psi
	1.6 160 bar 0.16 16 MPa 23 2321 psi	160 bar 16 MPa 2321 psi	167 bar 16.7 MPa 2422 psi	250 bar 2.5 MPa 3626 psi
Lower measuring limit		1	1	ı
Measuring cell with silicone oil filling	30 mbar a/3 kPa a/0	.44 psi a		
Upper measuring limit	100 % of max. span			
Output	HART		PROFIBUS PA/FOU	NDATION Fieldbus
Output signal	4 20 mA		Digital PROFIBUS Pr Fieldbus signal	A and FOUNDATION
• Lower limit (infinitely adjustable)	3.55 mA, factory pre	set to 3.84 mA	-	
Upper limit (infinitely adjustable)	23 mA, factory prese optionally set to 22.0		-	
Load				
• Without HART	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.$ $U_{\rm H}$ : Power supply in		-	
• With HART	$R_{\rm B} = 230 \dots 500 \Omega$ (\$ $R_{\rm B} = 230 \dots 1100 \Omega$ tor)	SIMATIC PDM) or (HART Communica-	-	
Physical bus	-		IEC 61158-2	
Protection against polarity reversal	Protected against shother with max. supp	nort-circuit and polarit	y reversal. Each conr	nection against the
Electrical damping (step width 0.1 s)	Set to 2 s (0 100 s	8)		

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Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P410

## for gauge pressure

#### SITRANS P410 for gauge pressure

#### Measuring accuracy

Reference conditions

Measuring span ratio r (spread, Turn-Down)

Error in measurement at limit setting incl. hysteresis and reproducibility

- Linear characteristic
- 1 bar/100 kPa/14.5 psi 4 bar/400 kPa/58 psi 16 bar/1.6 MPa/232 psi 63 bar/6.3 MPa/914 psi 160 bar/16 MPa/2321 psi

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

- 1 bar/100 kPa/14.5 psi
- 4 bar/400 kPa/58 psi 16 bar/1.6 MPa/232 psi 63 bar/6.3 MPa/914 psi 160 bar/16 MPa/2321 psi

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

- 1 bar/100 kPa/14.5 psi 4 bar/400 kPa/58 psi
- 16 bar/1.6 MPa/232 psi 63 bar/6.3 MPa/914 psi 160 bar/16 MPa/2321 psi

Effect of mounting position

Effect of auxiliary power supply (in percent per change in voltage)

Measuring value resolution for PROFIBUS PA and FOUNDATION Fieldbus

Acc. to IEC 60770-1

- Increasing characteristic
- Start-of-scale value 0 bar/kPa/psi
- Stainless steel seal diaphragm
- Silicone oil filling
- Room temperature 25 °C (77 °F)

r = max. measuring span/set measuring span or nom. pressure range

r ≤ 5 : ≤ 0.04 %

5 < r ≤ 100 :  $\leq (0.004 \cdot r + 0.045) \%$ 

 $\leq$  (0.05 · r + 0.1) %

 $\leq$  (0.025 · r + 0.125) %

≤ (0.25 · r) % in 5 years

 $\leq$  (0.125 · r) % in 5 years

≤ 0.05 mbar/0.005 kPa/0.000725 psi per 10° inclination

(zero point correction is possible with position error compensation)

0.005 % per 1 V

 $3 \cdot 10^{-5}$  of nominal measuring range

Pressure transmitters

for applications with advanced requirements (Advanced)

## SITRANS P410

## for gauge pressure

SITRANS P410 for gauge pressure				
Rated conditions				
Degree of protection				
• according to EN 60529	IP66 (optional IP66/IP68)			
• according to NEMA 250	Type 4X	Type 4X		
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)			
• In conjunction with dust explosion protection	-20 +60 °C (-4 +140 °F)			
Ambient conditions				
Ambient temperature				
- Transmitter	-40 +85 °C (-40 +185 °F)			
- Display readable	-30 +85 °C (-22 +185 °F)			
Storage temperature	-50 +85 °C (-58 +185 °F)			
Climatic class				
- Condensation	Relative humidity 0 100 % Condensation permissible, suitable for use in the tropics			
Electromagnetic Compatibility				
- Emitted interference and interference immunity	Acc. to IEC 61326 and NAMUR NE 21			
Design				
Weight (without options)	Die-cast aluminum: $\approx$ 2.0 kg ( $\approx$ 4.4 lb) Stainless steel precision casting: $\approx$ 4.6 kg ( $\approx$ 10.1 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. 2.4602			
Oval flange	Stainless steel, mat. no. 1.4404/316L			
Seal diaphragm	Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819			
Measuring cell filling	Silicone oil or inert filling liquid (maximum value with oxygen measurement pressure 100 bar (1450 psi) at 60 (140 °F))	Silicone oil or inert filling liquid (maximum value with oxygen measurement pressure 100 bar (1450 psi) at 60 °C		
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/DIN EN 61518			
Material of mounting bracket				
• Steel	Sheet-steel, Mat. No. 1.0330, chrome-plated	Sheet-steel, Mat. No. 1.0330, chrome-plated		
• Stainless steel 304	Sheet stainless steel, mat. no. 1.4301 (SS 304)	Sheet stainless steel, mat. no. 1.4301 (SS 304)		
Stainless steel 316L	Sheet stainless steel, mat. no. 1.4404 (SS 316L)			
Power supply $\emph{\textbf{U}}_{H}$	HART PROFIBUS PA/ FOUNDATION Fie	dbus		

- Starriess steer 5 for	511cet statiliess steet, that. 110. 1.4404 (55 510L)		
Power supply $U_{H}$	HART	PROFIBUS PA/ FOUNDATION Fieldbus	
Terminal voltage on transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically-safe mo	de -	
Power supply		Supplied through bus	
Separate 24 V power supply necessary	-	No	
Bus voltage			
• Not Ex	-	9 32 V	
With intrinsically-safe operation	-	9 24 V	
Current consumption			
Basic current (max.)	-	12.5 mA	
• Start-up current ≤ basic current	-	Yes	
Max. current in event of fault	-	15.5 mA	
Fault disconnection electronics (FDE) available		Yes	

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P410

## for gauge pressure

SITRANS P410 for gauge pressure				
Certificates and approvals				
Classification according to PED 2014/68/EU	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)			
Explosion protection				
• Intrinsic safety "i"	PTB 13 ATEX 2007 X	PTB 13 ATEX 2007 X		
- Marking	Ex II 1/2 G Ex ia/ib IIC T4/T5/T6 Ga/Gb			
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperatu -40 +70 °C (-40 +158 °F) temperatu -40 +60 °C (-40 +140 °F) temperatu	re class T5;		
- Connection	To certified intrinsically-safe circuits with peak values: $U_{\rm l}=30$ V, $I_{\rm l}=100$ mA, $P_{\rm l}=750$ mW; $P_{\rm l}=300$ $\Omega$	FISCO supply unit: $U_0$ = 17.5 V, $I_0$ = 380 mA, $P_0$ = 5.32 W Linear barrier: $U_0$ = 24 V, $I_0$ = 174 mA, $P_0$ = 1 W		
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 \ {\rm mH}, \ C_{\rm i} = 6 \ {\rm nF}$	$L_{i} = 7 \mu H, C_{i} = 1.1 nF$		
• Explosion-proof "d"	PTB 99 ATEX 1160			
- Marking	Ex II 1/2 G Ex d IIC T4/T6 Ga/Gb			
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperatur -40 +60 °C (-40 +140 °F) temperatur			
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC	To circuits with values: $U_{\rm H}$ = 9 32 V DC		
<ul> <li>Dust explosion protection for zone 20 (pending)</li> </ul>	PTB 01 ATEX 2055			
- Marking	Ex II 1 D Ex ta IIIC T120°C Da Ex II 1/2 D Ex ta/tb IIIC T120°C Da/Db			
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F)			
- Max. surface temperature	120 °C (248 °F)			
- Connection	To certified intrinsically-safe circuits with peak values: $U_{\rm i}$ = 30 V, $I_{\rm i}$ = 100 mA, $P_{\rm i}$ = 750 mW, $R_{\rm i}$ = 300 $\Omega$	FISCO supply unit: $U_0 = 17.5 \text{ V}, I_0 = 380 \text{ mA}, P_0 = 5.32 \text{ W}$ Linear barrier: $U_0 = 24 \text{ V}, I_0 = 250 \text{ mA}, P_0 = 1 \text{ W}$		
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4  {\rm mH},  C_{\rm i} = 6  {\rm nF}$	$L_i = 7 \mu H, C_i = 1.1 nF$		
<ul> <li>Dust explosion protection for zone 21/22 (pending)</li> </ul>	PTB 01 ATEX 2055			
- Marking	Ex II 2 D Ex tb IIIC T120°C Db			
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC; $P_{\rm max}$ = 1.2 W	To circuits with values: $U_{H} = 9 \dots 32 \text{ V DC}$ ; $P_{max} = 1 \text{ W}$		
<ul><li>Type of protection "n" (zone 2)</li></ul>	PTB 13 ATEX 2007 X			
- Marking	Ex II 2/3 G Ex nA IIC T4/T5/T6 Gb/Gc Ex II 2/3 G Ex ic IIC T4/T5/T6 Gb/Gc			
- Connection (Ex nA)	$U_{\rm m} = 45 \text{ V}$	$U_{\rm m} = 32  {\rm V}$		
- Connections (Ex ic)	To circuits with values: $U_i = 45 \text{ V}$	FISCO supply unit ic: $U_0 = 17.5 \text{ V}$ , $I_0 = 570 \text{ mA}$ Linear barrier: $U_0 = 32 \text{ V}$ , $I_0 = 132 \text{ mA}$ , $P_0 = 1 \text{ W}$		
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4  {\rm mH},  C_{\rm i} = 6  {\rm nF}$	$L_{i} = 7 \mu H, C_{i} = 1.1 nF$		
• Explosion protection acc. to FM (pending)	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 (pending)	Certificate of Compliance 1153651			
- Identification (XP/DIP) or (IS)	CL I, DIV 1, GP ABCD T4T6; CL II, DIV DIV 2, GP ABCD T4T6; CL II, DIV 2, GP	1, GP EFG; CL III; Ex ia IIC T4T6; CL I, PFG; CL III		

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P410

311 ANS F410			
for gauge pressure			
HART communication	230 1100 Ω	FOUNDATION Fieldbus communication	
Protocol	HART Version 5.x	Function blocks	3 function blocks analog input,
Software for computer	SIMATIC PDM	Analog input	1 function block PID
PROFIBUS PA communication		<b>.</b>	Voc linearly riging or falling
Simultaneous communication with master class 2 (max.)	4	<ul> <li>Adaptation to customer-specific process variables</li> </ul>	Yes, linearly rising or falling characteristic
, ,	Configuration tool or local arrays	- Electrical damping, adjustable	0 100 s
The address can be set using	Configuration tool or local operation (standard setting address 126)	- Simulation function	Output/input (can be locked within the device with a bridge)
Cyclic data usage		- Failure mode	parameterizable (last good value, substitute value, incorrect
Output byte	5 (one measured value) or 10 (two measured values)		value)
• Input byte	0, 1, or 2 (register operating mode and reset function for	- Limit monitoring	Yes, one upper and lower warn- ing limit and one alarm limit respectively
Internal preprocessing	metering)	<ul> <li>Square-rooted characteristic for flow measurement</li> </ul>	Yes
Device profile	PROFIBUS PA Profile for Process Control Devices Version	• PID	Standard FOUNDATION Fieldbus function block
	3.0, class B	Physical block	1 resource block
Function blocks	2	Transducer blocks	1 transducer block Pressure with
Analog input			calibration, 1 transducer block LCD
<ul> <li>Adaptation to customer-specific process variables</li> </ul>	Yes, linearly rising or falling characteristic	Pressure transducer block	
- Electrical damping, adjustable	0 100 s	<ul> <li>Can be calibrated by applying two pressures</li> </ul>	Yes
- Simulation function	Input /Output	- Monitoring of sensor limits	Yes
- Failure mode	parameterizable (last good value, substitute value, incorrect value)	- Simulation function: Measured pressure value, sensor temperature and electronics tem-	Constant value or over parameterizable ramp function
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respectively	perature	
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		
DI 1 111 1			

• Physical block

Transducer blocks

• Pressure transducer block

- Can be calibrated by applying two pressures

- Monitoring of sensor limits - Specification of a container

characteristic with - Square-rooted characteristic

for flow measurement - Gradual volume suppression

and implementation point of square-root extraction

- Simulation function for measured pressure value and sensor temperature 2

Yes

Yes

Max. 30 nodes

Parameterizable

Constant value or over parame-

terizable ramp function

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P410

for gauge pressure

Selection and Ordering data	Article No. Order coc
Pressure transmitter for gauge pressure, SITRANS P410 with HART	7MF4033 C41
Measuring cell filling Measuring cell cleaning Silicone oil normal	1
Measuring span (min max.)  0.01 1 bar (0.15 14.5 psi)  0.04 4 bar (0.58 58 psi)  0.16 16 bar (2.32 232 psi)  0.63 63 bar (9.14 914 psi)  1.6 160 bar (23.2 2320 psi)	B C D E F
Wetted parts materials	-
Seal diaphragm Process connection	
Stainless steel  Hastelloy  Stainless steel  Hastelloy  Hastelloy  Version for diaphragm seals in conjunction with process connector "female thread ½-14 NPT"  (recommended version) 1) 2) 3) 4)  Version for diaphragm seals in conjunction with process connector "G½B connection shank" 1) 2) 3) 4)	A B C Y 1
Process connection	-
<ul> <li>Connection shank G½B to EN 837-1</li> <li>Female thread ½-14 NPT</li> <li>Stainless steel oval flange with process connection (Oval flange has no female thread) <ul> <li>Mounting thread <sup>7</sup>/<sub>16</sub>-20 UNF to IEC 61518/DIN EN 61518</li> <li>Mounting thread M10 to DIN 19213</li> <li>Mounting thread M12 to DIN 19213</li> </ul> </li> <li>Male thread M20 x 1.5</li> <li>Male thread ½ -14 NPT</li> </ul>	0 1 2 3 4 5 6
Non-wetted parts materials  • Housing made of die-cast aluminium  • Housing stainless steel precision casting <sup>5)</sup>	0 3
Version  Standard version, German plate inscription, setting for pressure unit: bar International version, English plate inscription, setting for pressure unit: bar Chinese version, English plate inscription, setting for pressure unit: Pascal All versions include DVD with compact operating instructions in various EU languages.	1 2 3
Explosion protection	
<ul> <li>None</li> <li>With ATEX, Type of protection:  - "Intrinsic safety (Ex ia)"  - "Explosion-proof (Ex d)"6)</li> - "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d)"7) - "Ex nA/ic (Zone 2)"8) - "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia + Ex d + Zone 1D/2D)"7)9) <li>FM + CSA intrinsic safe (is) (pending)<sup>10)</sup></li> <li>FM + CSA (is + ep) + Ex ia + Ex d (ATEX) + Zone 1D/2D<sup>7)9)10)</sup></li> <li>With FM + CSA, Type of protection:</li> </ul>	B D P E R
- "Intrinsic Safe and Explosion Proof (is + xp)" <sup>6)10)</sup>	NC
Electrical connection / cable entry  • Screwed gland M20 x1 .5  • Screwed gland ½-14 NPT  • Device plug Han 7D (plastic housing) incl. mating connector <sup>11)</sup> • Device plugs M12 (stainless steel) <sup>11)12)</sup>	B C D

Pressure transmitters

for applications with advanced requirements (Advanced)

#### SITRANS P410

#### for gauge pressure

Selection and Ordering data	Article No.	Order code
Pressure transmitter for gauge pressure, SITRANS P410 with HART	7MF4033-	-Z C41
Display		
Without display	0	
Without visible display (display concealed, setting: mA)	1	
With visible display (setting: mA)	6	
• with customer-specific display (setting as specified, Order code "Y21" or "Y22" required)	7	

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

A quick-start guide is included in the scope of delivery of the device.

- When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.
- 2) If the acceptance test certificate 3.1 is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.
- The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF403.-..Y..-... and 7MF4900-1...-.B
- 4) The standard measuring cell filling of configurations with remote seals (Y) is silicone oil.
- 5) Not in conjunction with Electrical connection "device plug Han 7D".
- 6) Without cable gland, with blanking plug
- 7) With enclosed cable gland Ex ia and blanking plug
- 8) Configurations with device plugs Han and M12 are only available in Ex ic.
- 9) Only in connection with IP66.
- 10) Explosion protection acc. to FM/CSA: suitable for installations according to NEC 500/505.
- 11) Only in connection with Ex approval A, B or E.
- 12) M12 delivered without cable socket

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P410

## for gauge pressure

Selection and Ordering data	Article No.	Order code
Pressure transmitter for gauge pressure		
SITRANS P410 with PROFIBUS PA (PA)	7MF4034-	-Z C41
SITRANS P410 with FOUNDATION Fieldbus (FF)	7MF4035-	-Z C41
${\cal N}$ Click on the Article No. for the online configuration in the PIA Life Cyc	ele Portal.	
Measuring cell filling Silicone oil Measuring cell cleaning normal	1	
Nominal measuring range		
1 bar (14.5 psi)	В	
4 bar (58 psi)	C D	
16 bar (232 psi) 63 bar (914 psi)	E	
160 bar (2320 psi)	F	
Wetted parts materials		
Seal diaphragm Process connection		
Stainless steel Stainless steel	Α	
Hastelloy Stainless steel	В	
Hastelloy Hastelloy	C C	
Version for diaphragm seals in conjunction with process connector "fema (recommended version) 1) 2) 3) 4)	ale thread ½-14 NPT" Y1	
Version for diaphragm seals in conjunction with process connector "G1/2E	3 connection shank" 1) 2) 3) 4) Y 0	
Process connection		
• Connection shank G½B to EN 837-1	0	
• Female thread ½-14 NPT	1	
<ul> <li>Stainless steel oval flange with process connection (Oval flange has no - Mounting thread <sup>7</sup>/<sub>16</sub>-20 UNF to IEC 61518/DIN EN 61518</li> </ul>	temale thread) <sup>97</sup>	
- Mounting thread M10 to DIN 19213	3	
- Mounting thread M12 to DIN 19213	4	
• Male thread M20 x 1.5	5	
Male thread ½ -14 NPT	6	
Non-wetted parts materials		
<ul><li>Housing made of die-cast aluminium</li><li>Housing stainless steel precision casting</li></ul>	0 3	
Version		
<ul> <li>Standard version, German label inscription, setting of pressure unit: ba</li> </ul>	ar 1	
• International version, English label inscription, setting of pressure unit:	psi 2	
Chinese version, English label inscription, setting of pressure unit: kPa	3	
All versions include DVD with compact operating instructions in various I	EU languages.	
Explosion protection	A	
• None	Î	
With ATEX, Type of protection:		
- "Intrinsic safety (Ex ia)" - "Explosion-proof (Ex d)" <sup>6)</sup>	B D	
- "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d)" <sup>7)</sup>	P	
- "Ex nA/ic (Zone 2)"8)	E	
<ul> <li>"Intrinsic safety, explosion-proof enclosure and dust explosion protec (Ex ia + Ex d + Zone 1D/2D)*7) 9)</li> </ul>	rtion R	
• FM + CSA intrinsic safe (is) <sup>10)</sup>	F	
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX) + Zone 1D/2D <sup>7)9)10)</sup>	s	
• With FM + CSA, Type of protection:		
- "Intrinsic Safe and Explosion Proof (is + xp)" <sup>6)10)</sup>	NC	
Electrical connection/cable entry		
• Screwed gland M20 x 1.5	В	
<ul> <li>Screwed gland ½-14 NPT</li> <li>Device plugs M12 (stainless steel)<sup>11) 12)</sup></li> </ul>	C F	
Donoo piago witz (otalilioso stool)		

Pressure transmitters

for applications with advanced requirements (Advanced)

#### SITRANS P410

for gauge pressure

Selection and Ordering data	Article No.	Order code
Pressure transmitter for gauge pressure		
SITRANS P410 with PROFIBUS PA (PA)	7MF4034-	-Z C41
SITRANS P410 with FOUNDATION Fieldbus (FF)	7MF4035-	-Z C41
Display		
Without display		0
<ul> <li>Without visible display (display concealed, setting: bar)</li> </ul>		1
With visible display (setting: bar)		6
• with customer-specific display (setting as specified, Order code "Y21" required)		7

A quick-start guide is included in the scope of delivery of the device.

- 1) When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.
- 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.
- The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF403.-..Y..-... and 7MF4900-1...-.B
- 4) The standard measuring cell filling of configurations with remote seals (Y) is silicone oil.
  5) M10 fastening thread: Max. span 160 bar (2320 psi)
  7/16-20 UNF and M12 fastening thread: Max. span 400 bar (5802 psi)

- 6) Without cable gland, with blanking plug.
- 7) With enclosed cable gland Ex ia and blanking plug.
- 8) Configurations with device plugs Han and M12 are only available in Ex ic.
- 9) Only in connection with IP66.
- <sup>10)</sup> Explosion protection acc. to FM/CSA: suitable for installations according to NEC 500/505.
- 11) M12 delivered without cable socket.
- <sup>12)</sup> Only in connection with Ex approval A, B, E or F.

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P410

for gauge pressure

	0 :			
Selection and Ordering data	Order		D.	
Further designs Add *-Z* to Article No. and specify Order code.		HART	PA	FF
Pressure transmitter with mounting bracket (1x fixing angle, 2 x nut, 2 x U-washer or 1 x bracket, 2 x nut, 2 x U-washer) made of:				
• Steel	A01	1	1	1
• Stainless steel 304	A02	✓	✓	✓
• Stainless steel 316L	A03	✓	✓	✓
Device plugs <sup>1)</sup> • Han 7D (metal)	A30	1		
Han 8D (instead of Han 7D)	A31	<b>✓</b>		
• Angled	A32	✓		
Han 8D (metal)	A33	✓		
Cable sockets for device plugs M12 (metal (CuZn))	A50	✓	✓	✓
Rating plate inscription (instead of German)				
• English	B11	1	1	1
• French	B12	✓	✓	✓
• Spanish	B13	<b>√</b>	1	<b>V</b>
• Italian	B14	1	1	<b>V</b>
English rating plate Pressure units in inH <sub>2</sub> 0 and/or psi	B21	<b>V</b>	✓	✓
Quality Inspection Certificate (5-point characteristic curve test) according to IEC 60770-2 <sup>2)</sup>	C11	✓	✓	✓
Inspection certificate <sup>3)</sup> Acc. to EN 10204-3.1	C12	✓	✓	✓
Factory certificate Acc. to EN 10204-2.2	C14	✓	✓	✓
Acceptance certificate (EN 10204-3.1)	C15	1	✓	✓
PMI test of parts in contact with medium  Functional safety (SIL2) (pending)  Devices suitable for use according to  IEC 61508 and IEC 61511. Includes SIL  conformity declaration	C20	✓		
Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	C23	✓		
Increased measuring accuracy (mandatory specification for SITRANS P410)	C41	✓	✓	✓
PED for Russia with initial calibration mark	C99	✓	✓	✓
Setting of the upper saturation limit of the output signal to 22.0 mA	D05	✓		
Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009)	D07	✓	✓	✓
<b>Degree of protection IP66/IP68</b> (only for M20x1.5 and ½-14 NPT)	D12	✓	✓	✓
Supplied with oval flange	D37	✓	1	✓
(1 item), PTFE packing and screws in thread of oval flange				
Capri cable gland 4F CrNi and clamping device (848699 + 810634) included	D59	<b>√</b>	✓	<b>√</b>
TAG plate empty (no inscription)	D61	1	✓	1

Selection and Ordering data	Order	code		
Further designs Add "-Z" to Article No. and specify Order code.		HART	PA	FF
Use in or on zone 1D/2D <sup>4)</sup> (only together with type of protection "Intrinsic safety" (transmitter 7MF4B Ex ia)" and IP66)	E01	<b>√</b>	✓	✓
<b>CRN approval Canada</b> (Canadian Registration Number)	E22 <sup>5)</sup>	✓	✓	✓
Dual seal	E24	✓	✓	1
Explosion-proof "Intrinsic safety" to NEPSI (China)	E55 <sup>6)</sup>	✓	✓	✓
(only for transmitter 7MF4B)  Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)	E56 <sup>6)</sup>	<b>√</b>	✓	1
Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)	E57 <sup>6)</sup>	✓	✓	✓
Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China)  (only for transmitter 7MF4R)	E58 <sup>6)</sup>	✓	✓	✓
"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (pending) (only for transmitter 7MF4[B, D]Z + E11)	E70 <sup>6)</sup>	✓	✓	•
Ex-protection Ex ia according to EAC Ex (Russia)	E80	✓	✓	✓
Ex-protection Ex d according to EAC Ex (Russia)	E81	✓	✓	✓
Ex-protection Ex nA/ic (Zone 2) according to EAC Ex (Russia)	E82	✓	✓	✓
Ex-protection Ex ia + Ex d + Zone 1D/2D according to EAC Ex (Russia)	E83	✓	✓	✓
Two coats of lacquer on casing and cover (PU on epoxy)	G10	✓	✓	✓
Transient protector 6 kV (lightning protection)	J01	✓	✓	✓
Oval flange NAM (ASTAVA)	J06	✓	✓	✓
Marine approvals  • Det Norske Veritas Germanischer Lloyd (DNV-GL)	S10	<b>✓</b>	<b>√</b>	<b>4</b>
<ul> <li>Lloyds Register (LR)</li> <li>French marine classification society Bureau Veritas (BV)</li> </ul>	S11 S12	<b>✓</b>	1	1
<ul><li>American Bureau of Shipping (ABS)</li><li>Russian Maritime Register (RMR)</li><li>Korean Register of Shipping (KR)</li></ul>	S14 S16 S17	<b>∀ ∀ ∀</b>	√ √ √	√ √ √

Factor valve block mounting for SITRANS P410 is possible. Depending on the available P410 variants, please see the configuration options for SITRANS P DS III (page 1/254).

<sup>1)</sup> Device plug Han IP65

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

 $<sup>^{3)}</sup>$  If the acceptance test certificate 3.1.is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.

<sup>4)</sup> Option does not contain gas explosion protection; only dust explosion protection: Use in or at Zone 1D/2D.

<sup>5)</sup> Cannot be ordered with remote seal.

 $<sup>^{6)}</sup>$  When the additional ex option is selected, the ATEX marking on the device is omitted. Only the Ex option selected via the Z option is marked.

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P410

## for gauge pressure

Selection and Ordering data	Order	code		
Additional data Please add "-Z" to Article No. and specify Order code(s) and plain text.		HART	PA	FF
Measuring range to be set Specify in plain text (max. 5 characters): Y01: up to mbar, bar, kPa, MPa, psi	Y01	1	<b>√</b> 1)	
Stainless steel tag plate and entry in device variable (measuring point description)  Max. 16 characters, specify in plain text: Y15:	Y15	✓	✓	✓
Measuring point text (entry in device variable)	Y16	✓	✓	1
Max. 27 characters, specify in plain text: Y16:	Y17			
Entry of HART address (TAG)	¥17	<b>.</b>		
Max. 8 characters, specify in plain text: Y17:				
Setting of pressure indication in pressure units	Y21	✓	✓	✓
Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi, Note:				
The following pressure units can be selected:				
bar, mbar, mm $\rm H_2O^*$ ), in $\rm H_2O^*$ ), ft $\rm H_2O^*$ ), mmHG, inHG, psi, Pa, kPa, MPa, g/cm², kg/cm², Torr, ATM or % *) ref. temperature 20 °C				
Setting of pressure indication in non-pressure units <sup>2</sup> ) Specify in plain text: Y22: up to I/min, m <sup>3</sup> /h, m, USgpm, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	Y22 + Y01	<b>√</b>		

✓ = available

## Ordering example

Item line: 7MF4033-1EA00-1AA7-Z C41

B line: A01 + Y01 + Y21

C line: Y01: 10 ... 20 bar (145 ... 290 psi)

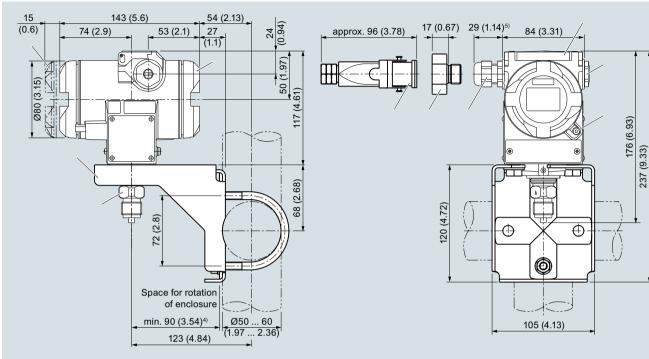
C line: Y21: bar (psi)

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

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P410

for gauge pressure

## Dimensional drawings



- (1) Electronics side, local display (longer overall length for cover with inspection window)<sup>1)</sup>
- (2) Connection side<sup>1)</sup>
- (3) Electrical connection:
  - Pg 13.5 screw gland (adapter)<sup>2) 3)</sup>
  - M20 x 1,53) screw gland
  - 1/2-14 NPT screw gland
  - Han 7D/Han 8D2)3) device plug
- 4 Harting adapter
- 1) In addition, allow approx. 20 mm (0.79 inch) for the thread length
- Not with "flameproof enclosure" type of protection
- 3) Not for type of protection "FM + CSA" [is + XP]"
- 4) Minimum distance for rotating
- 5) For Pg 13.5 with adapter, approx. 45 mm (1.77 inch)

- (5) Cover over buttons
- 6 Blanking plug
- 7 Safety catch (only for "flameproof enclosure" type of protection; not shown in the drawing)
- (8) Process connection: G1/2B connection pin or oval flange
- Mounting bracket (optional)

SITRANS P410 pressure transmitters for gauge pressure, dimensions in mm (inch)

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P410

## for differential pressure and flow

## Technical specifications

reclifical specifications			
SITRANS P410 for differential pressure and flow			
Input			
Measured variable	Differential pressure	and flow	
Span (fully adjustable) or measuring range, max. operating pressure (in accordance with 2014/68/EU Pressure Equipment Directive)	HART	PROFIBUS PA/ FOUNDATION Fieldbus	
	Span	Nominal measuring range	Max. operating pressure MAWP (PS)
	2.5 250 mbar 0.2 25 kPa 1 100 inH <sub>2</sub> O	250 mbar 25 kPa 100 inH <sub>2</sub> O	160 bar 16 MPa 2320 psi
	6 600 mbar 0.6 60 kPa 2.4 240 inH <sub>2</sub> O	600 mbar 60 kPa 240 inH <sub>2</sub> O	
	16 1600 mbar 1.6160 kPa 6.4 642 inH <sub>2</sub> O	1600 mbar 160 kPa 642 inH <sub>2</sub> O	
	50 5000 mbar 5 500 kPa 20 2000 inH <sub>2</sub> O	5000 mbar 500 kPa 2000 inH <sub>2</sub> O	
	0.3 30 bar 0.03 3 MPa 4.35 435 psi	30 bar 3 MPa 435 psi	
	6 600 mbar 0.6 60 kPa 2.4 240 inH <sub>2</sub> O	600 mbar 60 kPa 240 inH <sub>2</sub> O	420 bar 42 MPa 6091 psi
	16 1600 mbar 1.6160 kPa 6.4 642 inH <sub>2</sub> O	1600 mbar 160 kPa 642 inH <sub>2</sub> O	
	50 5000 mbar 5 500 kPa 20 2000 inH <sub>2</sub> O	5000 mbar 500 kPa 2000 inH <sub>2</sub> O	
	0.3 30 bar 0.03 3 MPa 4.35 435 psi	30 bar 3 MPa 435 psi	
Lower measuring limit			'
Measuring cell with silicone oil filling	-100 % of max. spar or 30 mbar a/3 kPa		ng cell 30 bar/3 MPa/435 psi)
Upper measuring limit	100 % of max. span		
Start of scale value	Between the measu	ring limits (fully adjust	able)
Output	HART		PROFIBUS PA/ FOUNDATION Fieldbus
Output signal	4 20 mA		Digital PROFIBUS PA and FOUNDATION Fieldbus signal
<ul> <li>Lower limit (infinitely adjustable)</li> </ul>	3.55 mA, factory pre	eset 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 V)/0.023 A in Ω, $U_{\rm H}$ : Power supply in V		-
• With HART	$R_{\rm B}$ = 230 500 $\Omega$ (SIMATIC PDM) or $R_{\rm B}$ = 230 1100 $\Omega$ (HART Communicator)		-
Physical bus	- IEC 61158-2		
Protection against polarity reversal	Protected against short-circuit and polarity reversal.  Each connection against the other with max. supply voltage.		
Electrical damping (step width 0.1 s)	Set to 2 s (0 100 s)		

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Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P410

		for differential pressure and flow
SITRANS P410 for differential pressure and flow		
Measuring accuracy	Acc. to IEC 60770-	1
Reference conditions	<ul> <li>Increasing chara</li> <li>Start-of-scale val</li> <li>Stainless steel se</li> <li>Silicone oil filling</li> <li>Room temperatur</li> </ul>	ue 0 bar/kPa/psi eal diaphragm
Measuring span ratio r (spread, Turn-Down)	r = max. measurin	g span/set measuring span or nom. pressure range
Error in measurement at limit setting incl. hysteresis and reproducibility		
Linear characteristic		
<ul> <li>- 250 mbar/25 kPa/3.63 psi</li> <li>600 mbar/60 kPa/8.7 psi</li> <li>1600 mbar/160 kPa/23.21 psi</li> <li>5 bar/500 kPa/72.5 psi</li> <li>30 bar/3 MPa/435 psi</li> </ul>	r ≤ 5 : 5 < r ≤ 100 :	≤ 0.04 % ≤ (0.004 · r + 0.045) %
• Square-rooted characteristic (flow > 50 %)		
<ul> <li>250 mbar/25 kPa/3.63 psi</li> <li>600 mbar/60 kPa/8.7 psi</li> <li>1600 mbar/160 kPa/23.21 psi</li> <li>5 bar/500 kPa/72.5 psi</li> <li>30 bar/3 MPa/435 psi</li> </ul>	r≤5: 5 < r≤100:	≤ 0.04 % ≤ (0.004 · r + 0.045) %
• Square-rooted characteristic (flow > 25 50 %)		
<ul> <li>- 250 mbar/25 kPa/3.63 psi</li> <li>600 mbar/60 kPa/8.7 psi</li> <li>1600 mbar/160 kPa/23.21 psi</li> <li>5 bar/500 kPa/72.5 psi</li> <li>30 bar/3 MPa/435 psi</li> </ul>	r≤5: 5 < r≤100:	≤ 0.08 % ≤ (0.008 · r + 0.09) %
Influence of ambient temperature (in percent per 28 °C (50 °F))		
<ul> <li>250 mbar/25 kPa/3.63 psi</li> <li>600 mbar/60 kPa/8.7 psi</li> <li>1600 mbar/160 kPa/23.21 psi</li> <li>5 bar/500 kPa/72.5 psi</li> <li>30 bar/3 MPa/435 psi</li> </ul>	≤ (0.025 · r + 0.125	5) %
Influence of static pressure		
• on the zero point (PKN)		
- 250 mbar/25 kPa/3.63 psi 600 mbar/60 kPa/8.7 psi 1600 mbar/160 kPa/23.21 psi	≤ (0.1 · r) % per 70 (zero offset is poss	bar ible with position error adjustment)
- 5 bar/500 kPa/72.5 psi 30 bar/3 MPa/435 psi	$\leq$ (0.2 · r) % per 70 (zero offset is poss	bar ible with position error adjustment)
• on the span (PKS)		
<ul> <li>- 250 mbar/25 kPa/3.63 psi</li> <li>600 mbar/60 kPa/8.7 psi</li> <li>1600 mbar/160 kPa/23.21 psi</li> <li>5 bar/500 kPa/72.5 psi</li> <li>30 bar/3 MPa/435 psi</li> </ul>	≤ 0.14 % per 70 ba	ar
Long-term stability (temperature change ± 30 °C (± 54 °F))	Static pressure ma	x. 70 bar/7 MPa/1015 psi
<ul> <li>250 mbar/25 kPa/3.63 psi</li> <li>600 mbar/60 kPa/8.7 psi</li> <li>1600 mbar/160 kPa/23.21 psi</li> <li>5 bar/500 kPa/72.5 psi</li> </ul>	$\leq$ (0.125 · r) % in 5	years
• 30 bar/3 MPa/435 psi	$\leq$ (0.25 · r) % in 5 y	ears
Effect of mounting position (in pressure per change in angle)	≤ 0.7 mbar/0.07 kP (zero offset is poss	a/0.028 inH <sub>2</sub> O per 10° inclination ible with position error adjustment)
Effect of auxiliary power supply (in percent per change in voltage)	0.005 % per 1 V	
Measuring value resolution for PROFIBUS PA and FOUNDATION Fieldbus	3 · 10 <sup>-5</sup> of nominal	measuring range

Pressure transmitters

for applications with advanced requirements (Advanced)

## SITRANS P410

## for differential pressure and flow

for differential pressure and flow					
SITRANS P410 for differential pressure and flow					
Rated conditions					
Degree of protection					
• according to EN 60529	IP66 (optional IP66/IP68)				
• according to NEMA 250	Type 4X				
Temperature of medium					
Measuring cell with silicone oil filling	-40 +100 °C (-40 +212 °F) -20 +100 °C (-4 +212 °F) with 30 ba	-40 +100 °C (-40 +212 °F) -20 +100 °C (-4 +212 °F) with 30 bar measuring cell			
• In conjunction with dust explosion protection	-20 +60 °C (-4 +140 °F)				
Ambient conditions					
Ambient temperature					
- Transmitter	-40 +85 °C (-40 +185 °F)				
- Display readable	-30 +85 °C (-22 +185 °F)				
Storage temperature	-50 +85 °C (-58 +185 °F)				
Climatic class					
- Condensation	Relative humidity 0 100 % Condensation permissible, suitable for us	Relative humidity 0 100 % Condensation permissible, suitable for use in the tropics			
Electromagnetic Compatibility					
- Emitted interference and interference immunity	Acc. to IEC 61326 and NAMUR NE 21				
Design					
Weight (without options)	Die-cast aluminum: $\approx 4.5 \text{ kg}$ ( $\approx 9.9 \text{ lb}$ ) Stainless steel precision casting: $\approx 7.1 \text{ kg}$	Die-cast aluminum: $\approx 4.5$ kg ( $\approx 9.9$ lb) Stainless steel precision casting: $\approx 7.1$ kg ( $\approx 15.6$ lb)			
Enclosure material	Low-copper die-cast aluminum, GD-AlSino. 1.4408	12 or stainless steel precision casting, mat.			
Wetted parts materials					
Seal diaphragm	Stainless steel, mat. no. 1.4404/316L or H	Hastelloy C276, mat. no. 2.4819			
<ul> <li>Process flanges and sealing screw</li> </ul>	Stainless steel, mat. no. 1.4408, Hastello	y C4, mat. no. 2.4602			
• O-Ring	FPM (Viton) or optionally: PTFE, FEP, FEP	M and NBR			
Measuring cell filling	Silicone oil or inert filling liquid (maximum value with oxygen measureme (140 °F))	ent pressure 100 bar (1450 psi) at 60 °C			
Process connection	Female thread $\frac{1}{4}$ -18 NPT and flange con DIN 19213 or $\frac{7}{16}$ -20 UNF to IEC 61518/I				
Material of mounting bracket					
• Steel	Sheet-steel, Mat. No. 1.0330, chrome-pla	ated			
• Stainless steel 304	Sheet stainless steel, mat. no. 1.4301 (SS	6 304)			
Stainless steel 316L	Sheet stainless steel, mat. no. 1.4404 (SS	316L)			
Power supply $U_{H}$	HART	PROFIBUS PA/ FOUNDATION Fieldbus			
Terminal voltage on transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically-safe mode	-			
Power supply		Supplied through bus			
Separate 24 V power supply necessary	-	No			
Bus voltage					
• Not Ex	-	9 32 V			
With intrinsically-safe operation	-	9 24 V			
Current consumption					
Basic current (max.)	-	12.5 mA			
• Start-up current ≤ basic current	-	Yes			
Max. current in event of fault	-	15.5 mA			

Fault disconnection electronics (FDE) available

Yes

Pressure transmitters

for applications with advanced requirements (Advanced)

SITRANS P410

## for differential pressure and flow

SITRANS P410 for differential pressure and flow		
Certificates and approvals	HART	PROFIBUS PA/ FOUNDATION Fieldbus
Classification according to PED 2014/68/EU	For gases of fluid group 1 and liquids of fluarticle 4, paragraph 3 (sound engineering	
Explosion protection		
• Intrinsic safety "i"	PTB 13 ATEX 2007 X	
- Marking	Ex II 1/2 G Ex ia/ib IIC T4/T5/T6 Ga/Gb	
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperatur -40 +70 °C (-40 +158 °F) temperatur -40 +60 °C (-40 +140 °F) temperatur	e class T5;
- Connection	To certified intrinsically-safe circuits with peak values: $U_{\rm i}=30$ V, $I_{\rm i}=100$ mA, $P_{\rm i}=750$ mW; $R_{\rm i}=300$ $\Omega$	FISCO supply unit: $U_0 = 17.5 \text{ V}, I_0 = 380 \text{ mA}, P_0 = 5.32 \text{ W}$ Linear barrier: $U_0 = 24 \text{ V}, I_0 = 250 \text{ mA}, P_0 = 1.2 \text{ W}$
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4  {\rm mH},  C_{\rm i} = 6  {\rm nF}$	$L_{\rm i} = 7  \mu \text{H},  C_{\rm i} = 1.1  \text{nF}$
• Explosion-proof "d"	PTB 99 ATEX 1160	
- Marking	Ex II 1/2 G Ex d IIC T4/T6 Ga/Gb	
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperatur -40 +60 °C (-40 +140 °F) temperatur	e class T6
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC	To circuits with values: $U_{H} = 9 \dots 32 \text{ V DC}$
Dust explosion protection for zone 20 (pending)	PTB 01 ATEX 2055	
- Marking	Ex II 1 D Ex ta IIIC T120°C Da Ex II 1/2 D Ex ta/tb IIIC T120°C Da/Db	
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F)	
- Max. surface temperature	120 °C (248 °F)	
- Connection	To certified intrinsically-safe circuits with peak values: $ U_i = 30 \text{ V}, \; I_i = 100 \text{ mA}, \\ P_i = 750 \text{ mW}, \; R_i = 300 \; \Omega $	FISCO supply unit: $U_0 = 17.5 \text{ V}, I_0 = 380 \text{ mA}, P_0 = 5.32 \text{ W}$ Linear barrier: $U_0 = 24 \text{ V}, I_0 = 250 \text{ mA}, P_0 = 1 \text{ W}$
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4  {\rm mH},  C_{\rm i} = 6  {\rm nF}$	$L_{\rm i} = 7  \mu \text{H},  C_{\rm i} = 1.1  \text{nF}$
Dust explosion protection for zone 21/22 (pending)	PTB 01 ATEX 2055	
- Marking	Ex II 2 D Ex tb IIIC T120°C Db	
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC; $P_{\rm max}$ = 1.2 W	To circuits with values: $U_{\rm H}$ = 9 32 V DC; $P_{\rm max}$ = 1 W
• Type of protection "n" (zone 2)	PTB 13 ATEX 2007 X	
- Marking	Ex II 2/3 G Ex nA IIC T4/T5/T6 Gb/Gc Ex II 2/3 G Ex ic IIC T4/T5/T6 Gb/Gc	
- Connection (Ex nA)	$U_{\rm m} = 45  {\rm V}$	$U_{\rm m} = 32 \text{ V}$
- Connection (Ex ic)	To circuits with values: $U_{\rm i} = 45~{\rm V}$	FISCO supply unit ic: $U_0 = 17.5 \text{ V}$ , $I_0 = 570 \text{ mA}$ Linear barrier: $U_0 = 32 \text{ V}$ , $I_0 = 132 \text{ mA}$ , $P_0 = 1 \text{ W}$
- Effective internal inductance/capacitance	$L_{\rm i}$ = 0.4 mH, $C_{\rm i}$ = 6 nF	$L_{\rm i} = 7 \ \mu {\rm H}, \ C_{\rm i} = 1.1 \ {\rm nF}$
• Explosion protection acc. to FM (pending)	Certificate of Compliance 3008490	
- Identification (XP/DIP) or (IS); (NI)	CL I, DIV 1, GP ABCD T4T6; CL II, DIV T4T6; CL I, DIV 2, GP ABCD T4T6; CL	
• Explosion protection to CSA (pending)	Certificate of Compliance 1153651	
- Identification (XP/DIP) or (IS)	CL I, DIV 1, GP ABCD T4T6; CL II, DIV DIV 2, GP ABCD T4T6; CL II, DIV 2, GP $\frac{1}{2}$	

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P410

## for differential pressure and flow

· ·	
HART communication	
HART	230 1100 Ω
Protocol	HART Version 5.x
Software for PC	SIMATIC PDM
PROFIBUS PA communication	
Simultaneous communication with master class 2 (max.)	4
The address can be set using	Configuration tool or local opera- tion (standard setting address 126)
Cyclic data usage	
Output byte	5 (one measured value) or 10 (two measured values)
• Input byte	0, 1, or 2 (register operating mode and reset function for metering)
Internal preprocessing	
Device profile	PROFIBUS PA Profile for Process Control Devices Version 3.0, class B
Function blocks	2
Analog input	
<ul> <li>Adaptation to customer-specific process variables</li> </ul>	Yes, linearly rising or falling characteristic
- Electrical damping, adjustable	0 100 s
- Simulation function	Input /Output
- Failure mode	parameterizable (last good value, substitute value, incorrect value)
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respectively
Register (totalizer)	Can be reset, preset, optional direction of counting, simulation function of register output
- Failure mode	parameterizable (summation with last good value, continuous summation, summation with incorrect value)
- Limit monitoring	One upper and lower warning limit and one alarm limit respec- tively
Physical block	1
Transducer blocks	2
Pressure transducer block	
<ul> <li>Can be calibrated by applying two pressures</li> </ul>	Yes
- Monitoring of sensor limits	Yes
<ul> <li>Specification of a container characteristic with</li> </ul>	Max. 30 nodes
<ul> <li>Square-rooted characteristic for flow measurement</li> </ul>	Yes
<ul> <li>Gradual volume suppression and implementation point of square-root extraction</li> </ul>	Parameterizable
Simulation function for mea- sured pressure value and sen- sor temperature	Constant value or over parameterizable 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 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

1/280

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P410

## for differential pressure and flow

Selection and Ordering	g data	Article No.	Order Code
SITRANS P410 with HAPN 160 (MAWP 2320 ps	ART pressure transmitters for differential pressure and flow, si)	7MF4433-	■ -Z C41
•	o. for the online configuration in the PIA Life Cycle Portal.		
Measuring cell filling Silicone oil	Measuring cell cleaning normal	1	
Measuring span (min	may \	_	
2.5 250 mbar	(1.004 100.4 inH <sub>2</sub> O)	D	
6 600 mbar	(2.409 240.9 inH <sub>2</sub> O)	E	
16 1600 mbar	(6.424 642.4 inH <sub>2</sub> O)	F	
50 5000 mbar	(20.08 2008 inH <sub>2</sub> O)	G	
0.3 30 bar	(4.35 435 psi)	н	
Wetted parts materials			
(stainless steel process			
Seal diaphragm	Parts of measuring cell		
Stainless steel	Stainless steel	A	
Hastelloy	Stainless steel	B	
Hastelloy	Hastelloy	c	
Version for diaphragm s		Y	
Process connection			
	T with flange connection		
<ul> <li>Sealing screw opposit</li> </ul>	9		
	-20 UNF to IEC 61518/DIN EN 61518	2	
	O to DIN 19213 (only for replacement requirement)	0	
<ul> <li>Vent on side of proces</li> </ul>			
	-20 UNF to IEC 61518/DIN EN 61518	6	
	to DIN 19213 (only for replacement requirement)	4	
Non-wetted parts mate	rials		
process flange screws	Electronics housing		
Stainless steel	Die-cast aluminum	2	
Stainless steel	Stainless steel precision casting <sup>6)</sup>	3	
Version			
<ul> <li>Standard version, Ger</li> </ul>	man plate inscription, setting for pressure unit: bar	1	
<ul> <li>International version, E</li> </ul>	English plate inscription, setting for pressure unit: bar	2	
<ul> <li>Chinese version, Englis</li> </ul>	sh plate inscription, setting for pressure unit: Pascal	3	
All versions include DVD	in plate inscription, setting for pressure unit. I ascar		
Explosion protection	with compact operating instructions in various EU languages.		
• None			
<ul> <li>With ATEX, Type of pro</li> </ul>			
	with compact operating instructions in various EU languages.	A	
- "Intrinsic safety (Ex ia	with compact operating instructions in various EU languages.	А В	
	with compact operating instructions in various EU languages.  otection:		
<ul><li> "Intrinsic safety (Ex is</li><li> "Explosion-proof (Ex</li><li> "Intrinsic safety and f</li></ul>	with compact operating instructions in various EU languages.  otection:	В	
- "Intrinsic safety (Ex ia - "Explosion-proof (Ex	with compact operating instructions in various EU languages.  obtection:  a)"  d)"7)	B D	
<ul> <li>"Intrinsic safety (Ex ia</li> <li>"Explosion-proof (Ex</li> <li>"Intrinsic safety and f</li> <li>"Ex nA/ic (Zone 2)"9)</li> </ul>	o with compact operating instructions in various EU languages.  otection:  a)" d)"7) clameproof enclosure" (Ex ia + Ex d)*8) osion-proof enclosure and dust explosion protection	B D P	
<ul> <li>"Intrinsic safety (Ex ia</li> <li>"Explosion-proof (Ex</li> <li>"Intrinsic safety and f</li> <li>"Ex nA/ic (Zone 2)"9</li> <li>"Intrinsic safety, exploration (Ex ia+ Ex d + Zone</li> </ul>	o with compact operating instructions in various EU languages.  otection:  a)" d)"7) clameproof enclosure" (Ex ia + Ex d)*8) osion-proof enclosure and dust explosion protection 1D/2D)*8)10)	B D P E	
<ul> <li>"Intrinsic safety (Ex ia "Explosion-proof (Ex "Intrinsic safety and for "Ex nA/ic (Zone 2)"9)</li> <li>"Intrinsic safety, explorate (Ex ia+ Ex d + Zone)</li> <li>FM + CSA intrinsic safety</li> </ul>	o with compact operating instructions in various EU languages.  otection:  a)" d)"7)  clameproof enclosure" (Ex ia + Ex d)*8)  osion-proof enclosure and dust explosion protection 1D/2D)*8)10)  e (is) (pending)*11)	B D P E R	
<ul> <li>"Intrinsic safety (Ex ia "Explosion-proof (Ex "Intrinsic safety and for "Ex nA/ic (Zone 2)"9)</li> <li>"Intrinsic safety, explorate (Ex ia+ Ex d + Zone)</li> <li>FM + CSA intrinsic safety</li> </ul>	o with compact operating instructions in various EU languages.  obtection:  a)" d)"7) clameproof enclosure" (Ex ia + Ex d)"8)  osion-proof enclosure and dust explosion protection 1D/2D)"8)10) e (is) (pending) <sup>11)</sup> Ex ia + Ex d (ATEX) + Zone 1D/2D <sup>8)10)11)</sup>	B D P E R	

Pressure transmitters

for applications with advanced requirements (Advanced)

#### SITRANS P410

#### for differential pressure and flow

Selection and Ordering data	Article No.	Order Code
SITRANS P410 with HART pressure transmitters for differential pressure and flow, PN 160 (MAWP 2320 psi)	7MF4433-	-Z C41
Electrical connection/cable entry		
• Screwed gland M20 x 1.5		В
• Screwed gland ½-14 NPT		C
<ul> <li>Device plug Han 7D (plastic housing) incl. mating connector<sup>12)13)</sup></li> </ul>		D
• Device plugs M12 (stainless steel) <sup>14)15)</sup>		F
Display		
Without display		0
Without visible display (display concealed, setting: mA)		1
With visible display (setting: mA)		6
• with customer-specific display (setting as specified, Order code "Y21" or "Y22" required)		7

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

Included in delivery of the device:

- Quick-start guide
- Sealing plug(s) or sealing screw(s) for the process flanges(s)
- 1) When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.
- 2) If the acceptance test certificate 3.1.is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.
- 3) The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF443.-..Y..-.... and 7MF4900-1...-.B
- 4) The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.
- 5) Not suitable for connection of remote seal. Position of the top vent valve in the process flange (see dimensional drawing).
- 6) Not in conjunction with Electrical connection "device plug Han 7D".
- 7) Without cable gland, with blanking plug
- 8) With enclosed cable gland Ex ia and blanking plug
- 9) Configurations with device plugs Han and M12 are only available in Ex ic.
- <sup>10)</sup>Only in connection with IP66.
- 11) Explosion protection acc. to FM/CSA: suitable for installations according to NEC 500/505.
- 12) Only in connection with Ex approval A, B or E.
- <sup>13)</sup>Permissible only for crimp-contact of conductor cross-section 1 mm<sup>2</sup>
- <sup>14)</sup>Only in connection with Ex approval A, B, E or F.
- 15)M12 delivered without cable socket.

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P410

## for differential pressure and flow

Selection and Orderin	ng data	Article No.	Order cod
Pressure transmitters	s for differential pressure and flow PN 160 (MAWP 2320 psi)		
SITRANS P410 with PR	OFIBUS PA (PA)	7MF4434-	-Z C41
	UNDATION Fieldbus (FF)	7MF4435-	-Z C41
	No. for the online configuration in the PIA Life Cycle Portal.		
Measuring cell filling	Measuring cell		
noucuring con mining	cleaning		
Silicone oil	normal	1	
Nominal measuring ra			
250 mbar (100.4 in	5 1	D	
600 mbar (240.9 inH 1600 mbar (642.4 inH	<i>L</i> /	E F	
1600 mbar (642.4 inH 5 bar (2008 inH	£ ,	G	
30 bar (435 psi)	20)	H	
Wetted parts material	s		
stainless steel process			
Seal diaphragm	Parts of measuring cell		
Stainless steel	Stainless steel	A	
Hastelloy	Stainless steel	В	
Hastelloy	Hastelloy	C	
Version as diaphragm	seal 1) 2) 3) 4)	Υ	
Process connection			
	PT with flange connection		
	ite process connection		
	<sub>16</sub> -20 UNF to IEC 61518/DIN EN 61518 10 to DIN 19213 (only for replacement requirement)	2	
<ul> <li>Venting on side of present</li> </ul>		٥	
	6-20 UNF to IEC 61518/DIN EN 61518	6	
	10 to DIN 19213 (only for replacement requirement)	4	
Non-wetted parts mat	rerials		
orocess flange screws	Electronics housing		
Stainless steel	Die-cast aluminum	2	
Stainless steel	Stainless steel precision casting	3	
Version			
	erman plate inscription, setting for pressure unit: bar		1
	English plate inscription, setting for pressure unit: bar		2
	ish plate inscription, setting for pressure unit: Pascal		3
	(D with compact operating instructions in various EU languages.		
Explosion protection			
None			A
<ul> <li>With ATEX, Type of p</li> <li>Intrinsic safety (Ex</li> </ul>			ь
- "Explosion-proof (Ex			B D
1 1 1	I flameproof enclosure" (Ex ia + Ex d)" <sup>7)</sup>		P
- "Ex nA/ic (Zone 2)"			E
	olosion-proof enclosure and dust explosion protection e 1D/2D) <sup>r7) 9)</sup> (not for DS III FF)		R
FM + CSA intrinsic sa			F
	- Ex ia + Ex d (ATEX) + Zone 1D/2D <sup>7)9)10)</sup>		S
• With FM + CSA, Type	e of protection: Explosion Proof (is + xp) <sup>(8)10)</sup>		
			NC
Electrical connection			1
	x 1.5		B C

Pressure transmitters

for applications with advanced requirements (Advanced)

SITRANS P410

## for differential pressure and flow

Selection and Ordering data	Article No.	Order code
	Article No.	Order code
Pressure transmitters for differential pressure and flow PN 160 (MAWP 2320 psi)		
SITRANS P410 with PROFIBUS PA (PA)	7MF4434-	-Z C41
SITRANS P410 with FOUNDATION Fieldbus (FF)	7MF4435-	-Z C41
Display		
Without display	0	
Without visible display (display concealed, setting: bar)	1	
With visible display (setting: bar)	6	
<ul> <li>With customer-specific display (setting as specified, Order code "Y21" required)</li> </ul>	7	

Included in delivery of the device:

- Quick-start guide
- Sealing plug(s) or sealing screw(s) for the process flanges(s)
- When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.
- 2) If the acceptance test certificate 3.1.is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.
- 3) The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF443.-..... and 7MF4900-1...-.B
- 4) The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.
- 5) Not suitable for connection of remote seal. Position of the top vent valve in the process flange (see dimensional drawing).
- 6) Without cable gland, with blanking plug.
- 7) With enclosed cable gland Ex ia and blanking plug.
- 8) Configurations with device plugs Han and M12 are only available in Ex ic.
- 9) Only in connection with IP66.
- 10) Explosion protection acc. to FM/CSA: suitable for installations according to NEC 500/505.
- <sup>11)</sup> Only in connection with Ex approval A, B, E or F.
- 12) M12 delivered without cable socket

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P410

for differential pressure and flow

Selection and Ordering data	Order	code			Selection and Ordering data
Further designs Add "-Z" to Article No. and specify Order code.		HART	PA	FF	Further designs Add "-Z" to Article No. and specify Ord code.
Pressure transmitter with mounting bracket (1x fixing angle, 2 x nut,					Setting of the upper saturation limithe output signal to 22.0 mA
2 x U-washer or 1 x bracket, 2 x nut, 2 x U-washer) made of:					Manufacturer's declaration acc. to
• Steel	A01	✓	✓	✓	(MR 0103-2012 and MR 0175-2009) (only together with seal diaphragm m
<ul><li>Stainless steel 304</li><li>Stainless steel 316L</li></ul>	A02 A03	1	1	1	Hastelloy and stainless steel)
O-rings for process flanges	AUS	Ĭ	•	•	<b>Degree of protection IP66/IP68</b> (only for M20 x 1.5 and ½-14 NPT)
(instead of FPM (Viton))					Supplied with oval flange set
PTFE (Teflon)	A20	✓	1	✓	(2 items), PTFE packings and screws
• FEP (with silicone core, approved for food)	A21	1	1	1	thread of process flanges
<ul> <li>FFPM (Kalrez, for measured medium tem- peratures -15 100 °C (5 212 °F))</li> </ul>	A22	•	•	<b>✓</b>	Capri cable gland 4F CrNi and clan
• NBR (Buna N)	A23	✓	✓	✓	device (848699 + 810634) included
Device plugs <sup>1)</sup>					TAG plate empty (no inscription)
Han 7D (metal)  Han 7D (metal)	A30	1			Use in or on zone 1D/2D <sup>4)</sup> (only together with type of protection
<ul><li>Han 8D (instead of Han 7D)</li><li>Angled</li></ul>	A31 A32	<b>✓</b>			"Intrinsic safety" (transmitter
• Han 8D (metal)	A33	1			7MF4B Ex ia)"and IP66)
Sealing screws (2 units)	A40	1	1	1	Dual seal
1/4-18 NPT, with valve in mat. of process flanges					Explosion-proof "Intrinsic safety" t NEPSI (China)
Cable sockets for device plugs M12	A50	✓	✓	✓	(only for transmitter 7MF4B)
(metal (CuZn))					Explosion protection "Explosion-p to NEPSI (China)
Rating plate inscription (instead of German)					(only for transmitter 7MF4D)
• English	B11	1	1	1	Explosion-proof "Zone 2" to NEPS
• French	B12	✓	✓	✓	(China)
• Spanish	B13	✓.	<b>1</b>	<b>V</b>	(only for transmitter 7MF4E)
• Italian	B14	<b>✓</b>	✓.	<b>✓</b>	Ex protection "Ex ia", "Ex d" and " 2" to NEPSI (China)
English rating plate Pressure units in inH <sub>2</sub> O and/or psi	B21	✓	✓	✓	(only for transmitter 7MF4R)
Quality Inspection Certificate (5-point	C11	1	<b>-</b>	<b>✓</b>	"Intrinsic safety" and "Explosion-pro
characteristic curve test) according to	• • • • • • • • • • • • • • • • • • • •				explosion protection acc. to Kosha (l (pending)
IEC 60770-2 <sup>2)</sup>					(only for transmitter
Inspection certificate <sup>3)</sup> to EN 10204-3.1	C12	<b>✓</b>	<b>√</b>	<b>*</b>	7MF4[B, D]Z + E11)
Factory certificate to EN 10204-2.2	C14	<b>1</b>	1	1	Ex-protection Ex ia according to EA( (Russia)
Acceptance certificate (EN 10204-3.1) PMI test of parts in contact with medium	C15	,	✓	~	Ex-protection Ex d according to EAC (Russia)
Functional safety (SIL2) (pending) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL	C20	•			Ex-protection Ex nA/ic (Zone 2) according to EAC Ex (Russia)
conformity declaration  Functional safety (SIL2/3)  Devices suitable for use according to	C23	✓			Ex-protection Ex ia + Ex d + Zone 1D according to EAC Ex (Russia)
IEC 61508 and IEC 61511. Includes SIL conformity declaration					Two coats of lacquer on casing and cover (PU on epoxy)
Increased measuring accuracy (mandatory specification for	C41	1	✓	✓	Interchanging of process connectionside
SITRANS P410)  PED for Russia with initial calibration	000		1	1	Vent on side for gas measurements
mark	C99	•	•	•	Stainless steel process flanges for cal differential pressure lines
					/

Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add "-Z" to Article No. and specify Order				
code.				
Setting of the upper saturation limit of the output signal to 22.0 mA	D05	<b>~</b>		
Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009)	D07	✓	✓	✓
(only together with seal diaphragm made of Hastelloy and stainless steel)				
<b>Degree of protection IP66/IP68</b> (only for M20 x 1.5 and ½-14 NPT)	D12	✓	✓	✓
Supplied with oval flange set	D37	1	✓	1
(2 items), PTFE packings and screws in thread of process flanges				
Capri cable gland 4F CrNi and clamping device (848699 + 810634) included	D59	✓	✓	✓
TAG plate empty (no inscription)	D61	✓	✓	✓
Use in or on zone 1D/2D <sup>4)</sup>	E01	✓	✓	✓
(only together with type of protection "Intrinsic safety" (transmitter 7MF4B Ex ia)"and IP66)				
Dual seal	E24	1	1	1
Explosion-proof "Intrinsic safety" to	E55 <sup>5)</sup>	/	1	1
NEPSI (China)	L33 /	Ť	•	·
(only for transmitter 7MF4B)			,	,
<b>Explosion protection "Explosion-proof" to NEPSI (China)</b> (only for transmitter 7MF4D)	E56 <sup>5)</sup>	•	✓	<b>V</b>
Explosion-proof "Zone 2" to NEPSI	E57 <sup>5)</sup>	./	./	./
(China)	E37-7	Ť	•	v
(only for transmitter 7MF4E)				,
Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China)  (only for transmitter 7MF4R)	E58 <sup>5)</sup>	•	✓	•
	E70 <sup>5)</sup>		,	,
"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (pending)	E/0°/	•	•	•
(only for transmitter 7MF4[B, D]Z + E11)				
Ex-protection Ex ia according to EAC Ex (Russia)	E80	✓	✓	✓
Ex-protection Ex d according to EAC Ex (Russia)	E81	✓	✓	✓
Ex-protection Ex nA/ic (Zone 2) according to EAC Ex (Russia)	E82	✓	✓	✓
Ex-protection Ex ia + Ex d + Zone 1D/2D according to EAC Ex (Russia)	E83	✓	✓	✓
Two coats of lacquer on casing and cover (PU on epoxy)	G10	✓	✓	✓
Interchanging of process connection side	H01	✓	✓	✓
Vent on side for gas measurements	H02	1	1	1
Stainless steel process flanges for verti-	H03	1	1	1
cal differential pressure lines (not together with K01, K02 and K04) <sup>6)</sup>				

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P410

## for differential pressure and flow

Selection and Ordering data	Order	code		
Further designs Add "-Z" to Article No. and specify Order code.		HART	PA	FF
Transient protector 6 kV (lightning protection)	J01	✓	✓	✓
Chambered graphite gasket for process flange	J02	✓	✓	✓
Chambered PTFE graphite gasket	J03	✓	✓	1
EPDM O-rings for process flange with approval (WRC/WRAS)	J05	✓	✓	✓
Vent valve or blanking plug of process flange welded-in (orientation: on right when viewing the display) <sup>7)</sup>	J08	✓	✓	✓
Vent valve or blanking plug of process flange welded-in (orientation: on left when viewing the display) <sup>7)</sup>	J09	✓	✓	✓
Marine approvals				
Det Norske Veritas     Germanischer Lloyd (DNV-GL)	S10	✓	✓	✓
<ul> <li>Lloyds Register (LR)</li> </ul>	S11	✓	✓	✓
<ul> <li>French marine classification society Bureau Veritas (BV)</li> </ul>	S12	✓	✓	✓
American Bureau of Shipping (ABS)	S14	✓	1	1
Russian Maritime Register (RMR)	S16	1	1	1
<ul> <li>Korean Register of Shipping (KR)</li> </ul>	S17	✓	✓	✓

Factor valve block mounting for SITRANS P410 is possible. Depending on the available P410 variants, please see the configuration options for SITRANS P DS III (page 1/254).

#### ✓ = available

- 1) Device plug Han IP65
- When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.
- 3) If the acceptance test certificate 3.1.is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.
- 4) Option does not contain gas explosion protection; only dust explosion protection: Use in or at Zone 1D/2D
- 5) When the additional ex option is selected, the ATEX marking on the device is omitted. Only the Ex option selected via the Z option is marked.
- 6) Not suitable for connection of remote seal.
- 7) Blanking plug is standard configuration. Order option A40 if a vent valve is required instead of a blanking plug.

Selection and Ordering data	Order	code		
Additional data Please add "-Z" to Article No. and specify Order code(s) and plain text.		HART	PA	FF
Measuring range to be set Specify in plain text:			.41	
<ul> <li>in the case of linear characteristic curve (max. 5 characters):</li> <li>Y01: up to mbar, bar, kPa, MPa, psi</li> </ul>	Y01	<b>~</b>	<b>√</b> 1)	
in the case of square rooted characteristic (max. 5 characters): Y02: up to mbar, bar, kPa, MPa, psi	Y02	✓		
Stainless steel tag plate and entry in device variable (measuring point description)  Max. 16 characters, specify in plain text: Y15:	Y15	✓	✓	✓
Measuring point text (entry in device variable)	Y16	✓	✓	✓
Max. 27 char., specify in plain text: Y16:				
Entry of HART address (TAG) Max. 8 char., specify in plain text: Y17:	Y17	✓		
Setting of pressure indicator in pressure units	Y21	✓	✓	✓
Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi, Note: The following pressure units can be selected:				
bar, mbar, mm H <sub>2</sub> O <sup>*)</sup> , inH <sub>2</sub> O <sup>*)</sup> , ftH <sub>2</sub> O <sup>*)</sup> , mmHG, inHG, psi, Pa, kPa, MPa, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , Torr, ATM or % *) ref. temperature 20 °C				
Setting of pressure indicator in non- pressure units <sup>2)</sup>	Y22 <sup>3)</sup>	✓		
Specify in plain text: Y22: up to I/min, m³/h, m, USgpm, (specification of measuring range in pressure units "Y01" or "Y02" is essential, unit with max. 5 characters)	Y01 OF Y02	•		
Preset bus address possible between 1 and 126 Specify in plain text: Y25:	Y25		✓	✓
Damping adjustment in seconds (0 100 s)	Y30	✓	✓	1

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

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

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P410

## for differential pressure and flow

Selection and Orderin	g data	Article No.	Order c
SITRANS P DS III with PN 420 (MAWP 6092 p	HART pressure transmitters for differential pressure and flow, si)	7MF4533-	- Z C41
	No. for the online configuration in the PIA Life Cycle Portal.		
<b>Measuring cell filling</b> Silicone oil	Measuring cell cleaning normal	1	
Measuring span (min.	max.)		
6 600 mbar	(2.4 240 inH <sub>2</sub> O)	E	
16 1600 mbar	(6.4 642 inH <sub>2</sub> O)	F	
50 5000 mbar	(20 2000 inH <sub>2</sub> O)	G	
0.3 30 bar	(4.35 435 psi)	Н	
Wetted parts material	S		
stainless steel process	s flanges)		
Seal diaphragm	Parts of measuring cell		
Stainless steel	Stainless steel	Α	
Hastelloy	Stainless steel	В	
Version for diaphragm	seal 1) 2) 3) 4)	Y	
Process connection			
	PT with flange connection		
	ite process connection		
	6-20 UNF to IEC 61518/DIN EN 61518	3	
	2 to DIN 19213 (only for replacement requirement)	1	
<ul> <li>Venting on side of pro</li> </ul>	ocess flanges, location of vent valve at top of process flanges		
(see dimensional dra	wing)		
- Mounting thread 7/1	<sub>6</sub> -20 UNF to IEC 61518/DIN EN 61518	7	
<ul> <li>Mounting thread M<sup>2</sup></li> </ul>	2 to DIN 19213 (only for replacement requirement)	5	
Non-wetted parts mat			
orocess flange screws	Electronics housing		
Stainless steel	Die-cast aluminum	2	
Stainless steel	Stainless steel precision casting <sup>5)</sup>	3	
Version			
<ul> <li>Standard version, Ge</li> </ul>	rman plate inscription, setting for pressure unit: bar		1
<ul> <li>International version,</li> </ul>	English plate inscription, setting for pressure unit: bar		2
<ul> <li>Chinese version, Engli</li> </ul>	sh plate inscription, setting for pressure unit: Pascal		3
All versions include DV	D with compact operating instructions in various EU languages.		
Explosion protection			
• None			Α
<ul> <li>With ATEX, Type of presented in the present the control of the</li></ul>	rotection:		
- "Intrinsic safety (Ex	ia)"		В
- "Explosion-proof (Ex	( d)" <sup>6)</sup>		D
- "Intrinsic safety and	flameproof enclosure" (Ex ia + Ex d)"7)		P
- "Ex nA/ic (Zone 2)"8			E
	losion-proof enclosure and dust explosion protection		R
(Ex ia+ Ex d + Zone	± 1D/2D) <sup>±7)9)</sup>		
• FM + CSA intrinsic sa	ife (is) (pending) <sup>10)</sup>		F
	Ex ia + Ex d (ATEX) + Zone 1D/2D <sup>7)9)10)</sup>		S
	Exta 1 Ex a (11Ext) 1 Zono 1D/ED		
<ul> <li>FM + CSA (is + ep) +</li> <li>With FM + CSA, Type</li> </ul>	of protection:		
FM + CSA (is + ep) + With FM + CSA, Type			N C
<ul><li>FM + CSA (is + ep) +</li><li>With FM + CSA, Type</li><li>"Intrinsic safety and</li></ul>	of protection: explosion-proof (is + xp)" <sup>6)10)</sup> , max PN 360		NC
<ul> <li>FM + CSA (is + ep) +</li> <li>With FM + CSA, Type</li> <li>"Intrinsic safety and</li> </ul> Electrical connection.	of protection: explosion-proof (is + xp)" <sup>6)10)</sup> , max PN 360  (cable entry		
<ul> <li>FM + CSA (is + ep) +</li> <li>With FM + CSA, Type</li> <li>"Intrinsic safety and</li> <li>Electrical connection/</li> <li>Screwed gland M20x</li> </ul>	of protection: explosion-proof (is + xp)" <sup>6)10)</sup> , max PN 360  (cable entry 1.5		В
<ul> <li>FM + CSA (is + ep) +</li> <li>With FM + CSA, Type</li> <li>"Intrinsic safety and</li> <li>Electrical connection/</li> <li>Screwed gland M20x</li> <li>Screwed gland ½-14</li> </ul>	of protection: explosion-proof (is + xp)" <sup>6)10)</sup> , max PN 360  (cable entry 1.5		

Pressure transmitters

for applications with advanced requirements (Advanced)

#### SITRANS P410

## for differential pressure and flow

Selection and Ordering data	Article No.	Order code
SITRANS P DS III with HART pressure transmitters for differential pressure and flow, PN 420 (MAWP 6092 psi)	7MF4533-	-Z C41
Display		
Without display	0	
<ul> <li>Without visible display (display concealed, setting: mA)</li> </ul>	1	
With visible display (setting: mA)	6	
<ul> <li>with customer-specific display (setting as specified, Order code "Y21" or "Y22" required)</li> </ul>	7	

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

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

- 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
- 3) The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF453.-..Y..-... and 7MF4900-1....-.B
   4) The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.
- 5) Not in conjunction with Electrical connection "device plug Han 7D".
- 6) Without cable gland, with blanking plug
- 7) With enclosed cable gland Ex ia and blanking plug
- 8) Configurations with device plugs Han and M12 are only available in Ex ic.
- 9) Only in connection with IP66.
- <sup>10)</sup> Explosion protection acc. to FM/CSA: suitable for installations according to NEC 500/505.
- 11) Only in connection with Ex approval A, B or E.
- 12) Permissible only for crimp-contact of conductor cross-section 1 mm<sup>2</sup>
- 13) Only in connection with Ex approval A, B, E or F.
- <sup>14)</sup> M12 delivered without cable socket.

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P410

Selection and Orderin	g data	Article No.	Order Code
Pressure transmitters	for differential pressure and flow, PN 420 (MAWP 6092 psi)		
SITRANS P410 with PR	OFIBUS PA (PA)	7MF4534-	-Z C41
	JNDATION Fieldbus (FF)	7MF4535-	-Z C41
	lo. for the online configuration in the PIA Life Cycle Portal.		
Measuring cell filling	Measuring cell cleaning		
Silicone oil	normal	1	
Nominal measuring ra	nge		
600 mbar	(240 inH <sub>2</sub> O)	E	
1600 mbar	(642 inH <sub>2</sub> O)	F	
5 bar	(2000 inH <sub>2</sub> O)	G	
30 bar	(435 psi)	н	
Wetted parts materials			
(stainless steel process	flanges)		
Seal diaphragm	Parts of measuring cell		
Stainless steel	Stainless steel	Α	
Hastelloy	Stainless steel	В	
Version for diaphragm s	seal 1) 2) 3) 4)	Y	
Process connection			
Female thread 1/4-18 NF	T with flange connection		
<ul> <li>Sealing screw opposi</li> </ul>			
	<sub>5</sub> -20 UNF to IEC 61518/DIN EN 61518	3	
	2 to DIN 19213 (only for replacement requirement)	1	
	cess flanges, location of vent valve at top of process flanges		
(see dimensional drav	ving). <sub>5</sub> -20 UNF to IEC 61518/DIN EN 61518	7	
	2 to DIN 19213 (only for replacement requirement)	5	
Non-wetted parts mate Process flange screws	Electronics housing		
	<del>-</del>		
Stainless steel Stainless steel	Die-cast aluminum Stainless steel precision casting	2 3	
Version	Claiming Control of Co		
	man plate inscription, setting for pressure unit: bar		1
	English plate inscription, setting for pressure unit: bar		2
	sh plate inscription, setting for pressure unit: Pascal		3
-	D with compact operating instructions in various EU languages.		
Explosion protection			
• None			A
• With ATEX, Type of pr	otection:		
- "Intrinsic safety (Ex i	a)"		В
- "Explosion-proof (Ex			D
	flameproof enclosure" (Ex ia + Ex d)" <sup>6)</sup>		P
- "Ex nA/ic (Zone 2)" 7	)		E
- "Intrincic cafaty avn			R
(Ev ia + Ev d + Zon	osion-proof enclosure and dust explosion protection		
(Ex ia + Ex d + Zone	osion-proof enclosure and dust explosion protection the 1D/2D)*6)8)		F
<ul><li>(Ex ia + Ex d + Zone</li><li>FM + CSA intrinsic sa</li></ul>	osion-proof enclosure and dust explosion protection • 1D/2D)* <sup>6)8)</sup> fe (is) (pending) <sup>9)</sup>		F S
<ul><li>(Ex ia + Ex d + Zone</li><li>FM + CSA intrinsic sa</li><li>FM + CSA (is + ep) +</li></ul>	osion-proof enclosure and dust explosion protection 1D/2D)* <sup>6)8)</sup> fe (is) (pending) <sup>9)</sup> Ex ia + Ex d (ATEX) + Zone 1D/2D <sup>6)7)9)</sup>		F S
<ul> <li>(Ex ia + Ex d + Zone</li> <li>FM + CSA intrinsic sa</li> <li>FM + CSA (is + ep) +</li> <li>With FM + CSA, Type</li> </ul>	osion-proof enclosure and dust explosion protection 1D/2D)* <sup>6)8)</sup> fe (is) (pending) <sup>9)</sup> Ex ia + Ex d (ATEX) + Zone 1D/2D <sup>6)7)9)</sup>		
(Ex ia + Ex d + Zone • FM + CSA intrinsic sa • FM + CSA (is + ep) + • With FM + CSA, Type - "Intrinsic safety and	osion-proof enclosure and dust explosion protection 1D/2D)* <sup>6)8)</sup> fe (is) (pending) <sup>9)</sup> Ex ia + Ex d (ATEX) + Zone 1D/2D <sup>6)7)9)</sup> of protection: explosion-proof (is + xp)* <sup>6)9)</sup> , max PN 360		S
(Ex ia + Ex d + Zone • FM + CSA intrinsic sa • FM + CSA (is + ep) + • With FM + CSA, Type - "Intrinsic safety and Electrical connection/	osion-proof enclosure and dust explosion protection (a 1D/2D)*6)8) fe (is) (pending)9) Ex ia + Ex d (ATEX) + Zone 1D/2D6)7)9) of protection: explosion-proof (is + xp)*6)9), max PN 360  cable entry		S
<ul> <li>(Ex ia + Ex d + Zone</li> <li>FM + CSA intrinsic sa</li> <li>FM + CSA (is + ep) +</li> <li>With FM + CSA, Type</li> </ul>	osion-proof enclosure and dust explosion protection (a 1D/2D)*6)8) fe (is) (pending)9) Ex ia + Ex d (ATEX) + Zone 1D/2D6)7)9) of protection: explosion-proof (is + xp)*6)9), max PN 360  cable entry 1.5		S NC

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P410

### for differential pressure and flow

Selection and Ordering data	Article No.	Order Code
Pressure transmitters for differential pressure and flow, PN 420 (MAWP 6092 psi)		
SITRANS P410 with PROFIBUS PA (PA)	7MF4534-	-Z C41
SITRANS P410 with FOUNDATION Fieldbus (FF)	7MF4535-	-Z C41
Display		
Without (display hidden)		)
Without visible display (display concealed, setting: bar)	1	
With visible display (setting: bar)	(	6
<ul> <li>With customer-specific display (setting as specified, Order code "Y21" required)</li> </ul>	7	7

Included in delivery of the device:

- Quick-start guide
- Sealing plug(s) or sealing screw(s) for the process flanges(s)
- When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.
- 2) If the acceptance test certificate 3.1.is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.
- 3) The diaphragm seal is to be specified with a separate order number and must be included with the tranmitter order number, for example 7MF453,-..Y..-.... and 7MF4900-1....-.B
- 4) The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.
- 5) Without cable gland, with blanking plug.
- 6) With enclosed cable gland Ex ia and blanking plug.
- 7) Configurations with device plugs Han and M12 are only available in Ex ic.
- 8) Only in connection with IP66.
- 9) Explosion protection acc. to FM/CSA: suitable for installations according to NEC 500/505.
- <sup>10)</sup> Only in connection with Ex approval A, B, E or F.
- 11) M12 delivered without cable socket

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P410

### for differential pressure and flow

Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add "-Z" to Article No. and specify Order code.				
Pressure transmitter with mounting bracket (1x fixing angle, 2 x nut, 2 x U-washer or 1 x bracket, 2 x nut, 2 x U-				
washer) made of: • Steel	A01	1	1	1
• Stainless steel 304	A02	1	1	1
Stainless steel 316L	A03	✓	✓	✓
O-rings for process flanges (instead of FPM (Viton)) • PTFE (Teflon)	A20	<b>√</b>	<b>√</b>	<b>√</b>
• FEP (with silicone core, approved for food)	A21	1	✓	✓
• FFPM (Kalrez, for measured medium temperatures -15 100 °C (5 212 °F))	A22	<b>*</b>	✓	1
NBR (Buna N)  Paris a stress 1)	A23	_ •	•	•
• Han 7D (metal)	A30	1		
Han 8D (instead of Han 7D)	A31	1		
• Angled	A32	1		
Han 8D (metal)	A33	✓		
Sealing screws (2 units) 1/4-18 NPT, with valve in mat. of process flanges	A40	✓	✓	✓
Cable sockets for device plugs M12 (metal (CuZn))	A50	✓	✓	1
Rating plate inscription (instead of German)				
• English	B11	1	✓	✓
• French	B12	✓	✓	✓
• Spanish	B13	<b>V</b>	✓.	<b>✓</b>
• Italian	B14	✓	✓	1
<b>English rating plate</b> Pressure units in inH <sub>2</sub> O and/or psi	B21	✓	✓	✓
Quality Inspection Certificate (5-point characteristic curve test) according to IEC 60770-2	C11	✓	✓	1
Inspection certificate Acc. to EN 10204-3.1	C12	✓	✓	✓
Factory certificate Acc. to EN 10204-2.2	C14	✓	✓	✓
<b>Functional safety (SIL2)</b> (pending) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	C20	✓		
<b>Functional safety (SIL2/3)</b> Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	C23	✓		
Increased measuring accuracy (mandatory specification for SITRANS P410)	C41	✓	✓	✓
PED for Russia with initial calibration mark	C99	✓	✓	✓
Setting of the upper saturation limit of the output signal to 22.0 mA	D05	✓		
Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009) (only together with seal diaphragm made of Hastelloy and stainless steel)	D07	1	✓	✓
· · · · · · · · · · · · · · · · · · ·	D12	✓	✓	1
<b>Degree of protection IP66/IP68</b> (only for M20 x 1.5 and ½-14 NPT)				
	D59	✓	✓	✓

ior differenti	iai pi e	Soule	anu	HOW
Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add "-Z" to Article No. and specify Order code.				
Use in or on zone 1D/2D <sup>2)</sup>	E01	✓	✓	✓
(only together with type of protection "Intrinsic safety" (transmitter 7MF4B Ex ia)"and IP66)				
Dual seal	E24	✓	✓	✓
Explosion-proof "Intrinsic safety" to NEPSI (China)	E55 <sup>3)</sup>	✓	✓	✓
(only for transmitter 7MF4B)				
<b>Ex prot.</b> "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)	E56 <sup>3)</sup>	✓	✓	✓
Explosion-proof "Zone 2" to NEPSI (China) (only for transmitter 7MF4	E57 <sup>3)</sup>	✓	✓	✓
Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China)	E58 <sup>3)</sup>	✓	✓	✓
(only for transmitter 7MF4R)	٥١			
"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (pending) (only for transmitter	E70 <sup>3)</sup>	•	✓	✓
7MF4[B, D]Z + E11)				
Ex-protection Ex ia according to EAC Ex (Russia)	E80	✓	✓	✓
Ex-protection Ex d according to EAC Ex (Russia)	E81	✓	✓	✓
Ex-protection Ex nA/ic (Zone 2) according to EAC Ex (Russia)	E82	✓	✓	✓
Ex-protection Ex ia + Ex d + Zone 1D/2D according to EAC Ex (Russia)	E83	✓	✓	✓
Two coats of lacquer on casing and cover (PU on epoxy)	G10	✓	✓	✓
Interchanging of process connection side	H01	✓	✓	✓
Vent on side for gas measurements	H02	✓	✓	✓
Stainless steel process flanges for vertical differential pressure lines	H03	✓	✓	✓
Transient protector 6 kV (lightning protection)	J01	✓	✓	✓
Chambered graphite gasket for process flange	J02	✓	✓	✓
Chambered PTFE graphite gasket	J03	✓	1	1
EPDM O-rings for process flange with approval (WRC/WRAS)	J05	✓	✓	✓
Vent valve or blanking plug of process flange welded-in (orientation: on right when viewing the display) <sup>4)</sup>	J08	✓	✓	✓
Vent valve or blanking plug of process flange welded-in (orientation: on left when viewing the display) <sup>4)</sup>	J09	✓	✓	✓
Marine approvals	S10			
<ul> <li>Det Norske Veritas Germanischer Lloyd (DNV-GL)</li> </ul>	310		•	•
• Lloyds Register (LR)	S11	✓.	✓	✓
<ul> <li>French marine classification society Bureau Veritas (BV)</li> </ul>	S12	<b>V</b>	✓	✓
American Bureau of Shipping (ABS)	S14	<b>√</b>	1	1
<ul><li>Russian Maritime Register (RMR)</li><li>Korean Register of Shipping (KR)</li></ul>	S16 S17	1	1	1
- Norean negister of shipping (NT)	317		•	•

Factor valve block mounting for SITRANS P410 is possible. Depending on the available P410 variants, please see the configuration options for SITRANS P DS III (page 1/254).

<sup>1)</sup> Device plug Han IP65

Option does not contain gas explosion protection; only dust explosion protection: Use in or at Zone 1D/2D.

<sup>3)</sup> When the additional ex option is selected, the ATEX marking on the device is omitted. Only the Ex option selected via the Z option is marked.

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

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P410

### for differential pressure and flow

Selection and Ordering data	Order code			
Additional data		HART	PA	FF
Please add "-Z" to Article No. and specify Order code(s) and plain text.				
Measuring range to be set				
Specify in plain text:				
<ul> <li>in the case of linear characteristic curve (max. 5 characters):</li> </ul>	Y01	✓	<b>√</b> 1)	
Y01: up to mbar, bar, kPa, MPa, psi				
• in the case of square rooted characteristic	Y02	✓		
(max. 5 characters): Y02: up to mbar, bar, kPa, MPa, psi				
	Y15	./	./	./
Stainless steel tag plate and entry in device variable (measuring point descrip-	110	<b>,</b>	•	•
tion)				
Max. 16 characters, specify in plain text:				
Y15:				
Measuring point text (entry in device variable)	Y16	✓	✓	✓
Max. 27 char., specify in plain text: Y16:				
Entry of HART address (TAG)	Y17	1		
Max. 8 char., specify in plain text: Y17:				
Setting of pressure indication in pressure	Y21	✓	✓	1
units				
Specify in plain text (standard setting: bar):				
Y21: mbar, bar, kPa, MPa, psi, Note:				
The following pressure units can be selected:				
bar, mbar, mm $H_2O^*$ ), in $H_2O^*$ ), ft $H_2O^*$ ),				
mmHG, inHG, psi, Pa, kPa, MPa, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , Torr, ATM or %				
*) ref. temperature 20 °C				
Setting of pressure indication in	Y22 +	✓		
non-pressure units <sup>2)</sup>	<b>Y01</b> or <b>Y02</b>			
Specify in plain text: Y22: up to I/min, m <sup>3</sup> /h, m, USgpm,	102			
(specification of measuring range in pressure				
units "Y01" or "Y02" is essential, unit with max. 5 characters)				
Preset bus address	Y25		1	,
possible between 1 and 126	120		•	<b>V</b>
Specify in plain text: Y25:				
Damping adjustment in seconds	Y30	1	1	1
(0 100 s)	130		•	•
•				

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

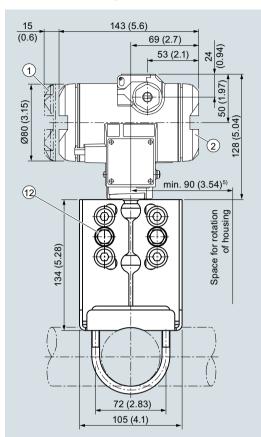
<sup>✓ =</sup> available

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

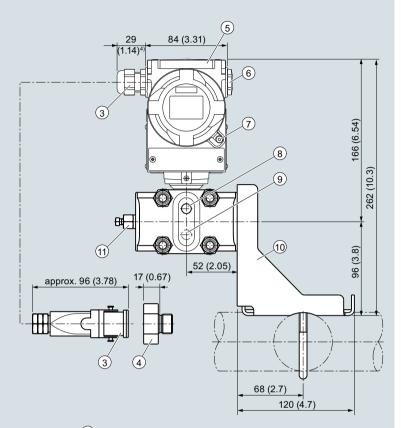
Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P410

for differential pressure and flow

### Dimensional drawings



- (1) Electronics side, local display (longer overall length for cover with inspection window)<sup>1)</sup>
- (2) Connection side<sup>1)</sup>
- (3) Electrical connection:
  - Pg 13.5 screw gland (adapter)2)3)
  - M20 x 1,5 screw gland
  - 1/2-14 NPT screw gland
  - Han 7D/Han 8D<sup>2) 3)</sup> device plug
- 4 Harting adapter
- 5 Cover over buttons
- In addition, allow approx. 20 mm (0.79 inch) for the thread length
   Not with "flameproof enclosure" type of protection
- 3) Not for type of protection "FM + CSA" [is + XP]"
- <sup>4)</sup> For Pg 13.5 with adapter, approx. 45 mm (1.77 inch)
- 92 mm (3.62 inch) minimum distance for rotating with indicator



- 6 Blanking plug
- Safety catch (only for "flameproof enclosure" type of protection; not shown in the drawing)
- 8 Lateral ventilation for liquid measurement (Standard)
- (9) Lateral ventilation for gas measurement (order option H02)
- 10 Mounting bracket (optional)
- (1) Sealing plug with valve (optional)
- 12 Process connection: 1/4-18 NPT (IEC 61518)

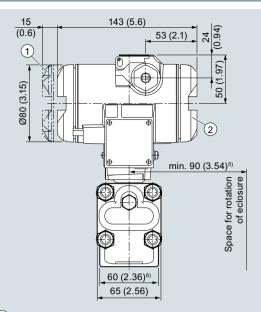
SITRANS P410 pressure transmitters for differential pressure and flow, dimensions in mm (inch)

Pressure transmitters

for applications with advanced requirements (Advanced)

#### SITRANS P410

#### for differential pressure and flow



- 29 (1.14)4) 17 (0.67) approx. 96 (3.78) (6) 128 (5.04) (3) 217 (8) (8) approx. 85 (3.35)7) approx. 87 (3.43)
- 1) Electronics side, local display (longer overall length for cover with inspection window)1)
- (2) Connection side<sup>1)</sup>
- (3) Electrical connection:
  - Pg 13.5 screw gland (adapter)<sup>2) 3)</sup>
  - M20 x 1,5 screw gland
  - 1/2-14 NPT screw gland
  - Han 7D/Han 8D2)3) device plug
- 4 Harting adapter
- 8 Sealing plug with valve (optional)
  - 9 Process connection: 1/4-18 NPT (IEC 61518)

not shown in the drawing)

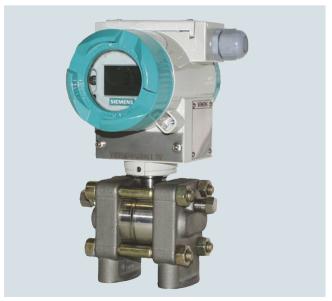
Safety catch (only for "flameproof enclosure" type of protection;

(5) Cover over buttons

6 Blanking plug

- 1) In addition, allow approx. 20 mm (0.79 inch) for the thread length
- 2) Not with "flameproof enclosure" type of protection
- 3) Not for type of protection "FM + CSA" [is + XP]"
- 4) For Pg 13.5 with adapter, approx. 45 mm (1.77 inch)
- <sup>5)</sup> 92 mm (3.62 inch) minimum distance for rotating with indicator
- <sup>6)</sup> 74 mm (2.9 inch) for PN  $\geq$  420 (MAWP  $\geq$  6092 psi)
- 91 mm (3.6 inch) for PN ≥ 420 (MAWP ≥ 6092 psi) 219 mm (8.6 inch) for PN ≥ 420 (MAWP ≥ 6092 psi)

SITRANS P410 pressure transmitters for differential pressure and flow, with process covers for vertical differential pressure lines, optional "H03", dimensional drawing, dimensions in mm (inch)



SITRANS P410 pressure transmitters for differential pressure and flow, with process covers for vertical differential pressure lines

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P410

### Accessories/Spare parts

Selection and Ordering data	Article No.
Accessories/Spare parts	Article No.
Mounting bracket and fastening parts	
for pressure transmitters SITRANS P410 with HART, P410 with PROFIBUS PA and P410 with FOUNDATION Fieldbus (7MF403C.)	
<ul> <li>made of steel</li> <li>made of stainless steel 304/1.4301</li> <li>made of stainless steel 316L/1.4404</li> </ul>	7MF4997-1AB 7MF4997-1AH 7MF4997-1AP
Mounting bracket and fastening parts for pressure transmitters SITRANS P410 with HART, P410 with PROFIBUS PA and P10with FOUNDATION Fieldbus (7MF403A.,B.,D. andF.)  • made of steel	7MF4997-1AC
made of stainless steel 304/1.4301     made of stainless steel 316L/1.4404  Mounting and factoring brooksts	7MF4997-1AJ 7MF4997-1AQ
Mounting and fastening brackets For differential pressure transmitters with flange thread M10 SITRANS P410 with HART, P410 with PROFIBUS PA and P410 with FOUNDATION Fieldbus (7MF443)  • made of steel • made of stainless steel 304/1.4301 • made of stainless steel 316L/1.4404	7MF4997-1AD 7MF4997-1AK 7MF4997-1AR
Mounting and fastening brackets For differential pressure transmitters with flange thread M12 SITRANS P410 with HART, P410 with PROFIBUS PA and P410 with FOUNDATION Fieldbus (7MF453)  • made of steel • made of stainless steel 304/1.4301 • made of stainless steel 316L/1.4404	7MF4997-1AE 7MF4997-1AL 7MF4997-1AS
Mounting and fastening brackets	
For differential pressure transmitters with flange thread 7/16 -20 UNF SITRANS P410 with HART, P410 with PROFIBUS PA and P410 with FOUNDATION Fieldbus (7MF443 and 7MF453)  • made of steel  • made of stainless steel 304/1.4301  • made of stainless steel 316L/1.4404	7MF4997-1AF 7MF4997-1AM 7MF4997-1AT
Cover  Made of die-cast aluminum, including gasket, for SITRANS P410 with HART, P410 with PROFIBUS PA and P410 with FOUNDATION	
Fieldbus. Compatible for Ex and non-Ex transmitters  • without window  • with window	7MF4997-1BB 7MF4997-1BE
Cover Made of stainless steel, including gasket, or SITRANS P410 with HART, P410 with PROFIBUS PA and P410 with FOUNDATION Fieldbus. Compatible for Ex and non-Ex transmitters  • without window  • with window	7MF4997-1BC 7MF4997-1BF
Digital indicator Including mounting material, for SITRANS P410 with HART, P410 with PROFIBUS PA and P410 with FOUNDATION Fieldbus	7MF4997-1BR
Measuring point label • without inscription (5 units) • Printed (1 unit) Data according to Y01 or Y02, Y15, Y16 and Y99 (see "Pressure transmitters")	7MF4997-1CA 7MF4997-1CB-Z Y:

Selection and Ordering data	Article No.
<b>Mounting screws</b> For measuring point label, grounding and connection terminals or for display (50 units)	7MF4997-1CD
Sealing screws (1 set = 2 units) for process flange • made of stainless steel • made of Hastelloy	7MF4997-1CG 7MF4997-1CH
Sealing screws with vent valve Complete (1 set = 2 units)  • made of stainless steel  • made of Hastelloy	7MF4997-1CP 7MF4997-1CQ
Connection board • for SITRANS P410 • for SITRANS P410 with PROFIBUS PA and P410 with FOUNDATION Fieldbus	7MF4997-1DN 7MF4997-1DP
O-rings for process flanges made of:  • FPM (Viton)  • PTFE (Teflon)  • FEP (with silicone core, approved for food)  • FFPM (Kalrez)  • NBR (Buna N)	7MF4997-2DA 7MF4997-2DB 7MF4997-2DC 7MF4997-2DD 7MF4997-2DE
Sealing ring for process connection	see "Fittings"

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P410

### **Accessories/Spare parts**

Calaction and Ordering data	Article No.
Selection and Ordering data	Article No.
Documentation	
The entire documentation is available for download free-of-charge in various languages at: http://www.siemens.com/processinstrumentation/documentation	
Compact operating instructions SITRANS P DS III/P410 • English, German, Spanish, French, Italian, Dutch	A5E03434626
Certificates (order only via SAP) instead of Internet download	
<ul><li>hard copy (to order)</li></ul>	A5E03252406
• on DVD (to order)	A5E03252407
HART modem	
	7ME4007 4DD
with USB interface	7MF4997-1DB

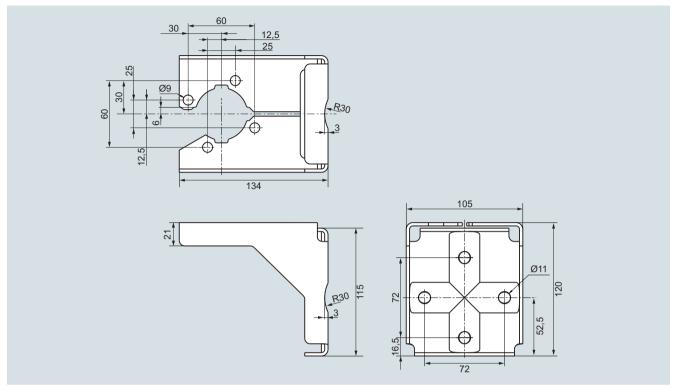
Power supply units see Chap. 7 "Supplementary Components".

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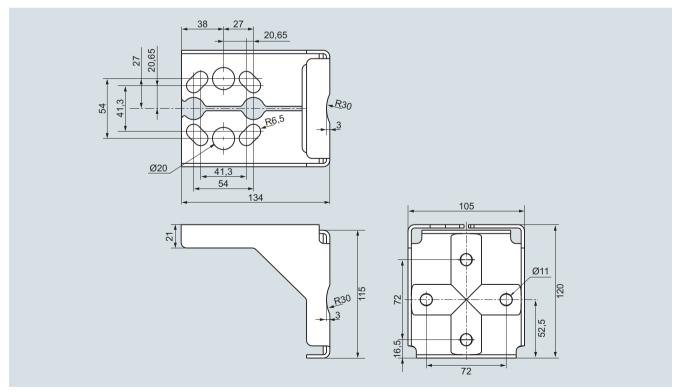
Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P410

**Accessories/Spare parts** 

## Dimensional drawings



Mounting bracket for SITRANS P410 gauge 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 P410 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 transmitters for applications with highest requirements (Premium) SITRANS P500

Technical description

#### Overview





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

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

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

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

The SITRANS P500 pressure transmitters can be configured to measure:

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

#### Benefits

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

- Infinitely adjustable spans of 1 mbar to 32 bar (0.0145 to 465 psi; 0.4 to 12860 inH<sub>2</sub>O)
- 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.

Pressure transmitters for applications with highest requirements (Premium) 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: 1 mbar to 32 bar (0.0145 to 465 psi; 0.4 to 12860 inH<sub>2</sub>O)

#### Pressure transmitters for level

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

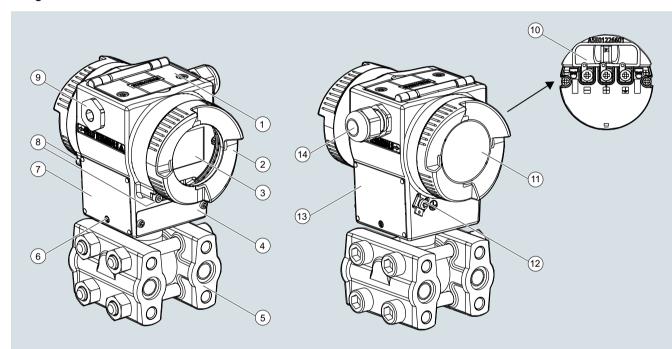
- · Nominal diameter of the mounting flange
  - DN 50 / PN 40
  - DN 80 / PN 40
  - DN 100/ PN 16, PN 40
  - 2 inch/class 150, class 300
  - 3 inch/class 150, class 300
  - 4 inch/ class 150, class 300
- customized special version

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

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

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

#### Design



- (1) Cover over buttons
- (2) Cover, optionally with inspection window
- 3 Local display (optional)
- (4) Tag plate
- (5) Process flange with process connection
- (6) Retaining screws (on two sides) for the measuring cell
- Approval label

- (8) Safety catch
- 9 Blanking plug
- (10) Electrical terminal compartment
- (11) Cover for electrical terminal compartment
- (12) Protective conductor connector
- 13 Nameplate
- (14) Cable inlet, optionally with cable gland or plug-in connection

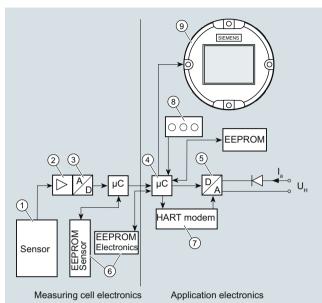
- The electronics housing is made of coated die-cast aluminum.
- The casing has round screwed covers front and back.
- Depending on the design the front cover is fitted with an inspection window. You can read off the measured value directly from the optional display through the window.
- The inlet to 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.

Pressure transmitters for applications with highest requirements (Premium) SITRANS P500

Technical description

#### Function

### Operation of electronics with HART communication



- Sensor of the measuring cell
- 2 Measuring amplifier
- 3 Analog-to-digital converter
- 4 Microcontroller
- 5 Digital-to-analog converter
- 6 One EEPROM each in the measuring cell and in the electronics
- ' HART modem
- 8 Keys (local operation)
- 9 Digital display
- I Output current
- **Û**<sub>H</sub> Auxiliary power

#### Function diagram of electronics

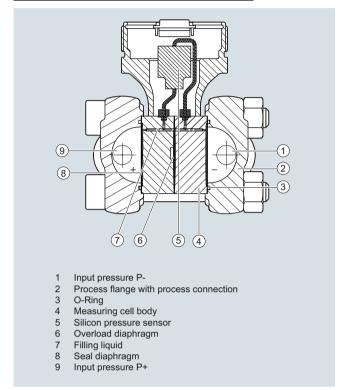
- The input pressure is converted into an electrical signal by the sensor.
- This signal is amplified by the measuring amplifier and digitalized in an analog-to-digital converter.
- The digital signal is analyzed in a microcontroller and corrected according to linearity and thermal characteristics.
-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

#### Operation

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

#### Mode of operation of the measuring cells

Measuring cell for differential pressure and flow



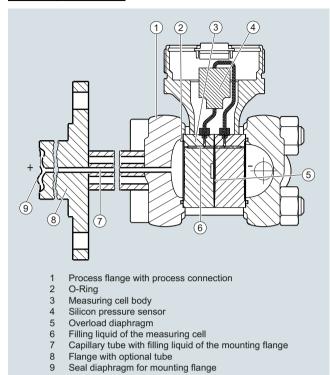
Measuring cell for differential pressure and flow, function diagram

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

Pressure transmitters for applications with highest requirements (Premium) SITRANS P500

Technical description

#### Measuring cell for level



Measuring cell for level, function diagram

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

#### Configuration of SITRANS P500 HART

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

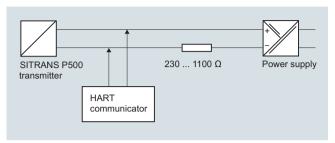
### Configuration using the pushbuttons (local operation)

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

It is possible to retrofit a display. See accessories.

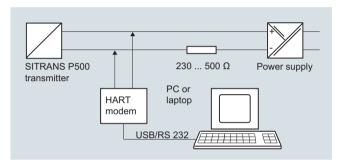
#### Configuration using HART

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



Communication between a HART Communicator and a pressure transmitter

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



HART communication between a PC communicator and a pressure transmitter

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

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

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

#### SITRANS P500 configuration options

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

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

#### SITRANS P500 diagnostic functions

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

Pressure transmitters for applications with highest requirements (Premium) SITRANS P500

### Technical description

Physical dimensions available for the SITRANS P500 HART display

alopiay	
Physical variable	Physical dimensions
Pressure (setting can also be made in the factory)	Pa, MPa, kPa, bar, mbar, torr, atm, psi, g/cm², kg/cm², mmH $_2$ O (4 °C), inH $_2$ O (20 °C), mmH $_2$ O, mmH $_2$ O (4 °C), ftH $_2$ O (20 °C), inH $_2$ O (mmH $_2$ O, mmH $_3$ O, mmH $_4$ O, hPA
Level	m, cm, mm, ft, in
Volume	m <sup>3</sup> , dm <sup>3</sup> , hI, yd <sup>3</sup> , ft <sup>3</sup> , in <sup>3</sup> , gallon, Imp. gallon, bushel, barrel, barrel liquid, I; Norm (standard) I; Norm (standard) m <sup>3</sup> , Norm (standard) feet <sup>3</sup>
Mass	g, kg, t (metric), lb, Ston, Lton, oz
Volume flow	m³/d, m³/h, m³/s, l/min, l/s, ft³/d, ft³/min, ft³/s, US gallon/min, gallon/s, l/h, milL/d, gallon/d, gallon/h, milgallon/d, lmp.gallon/s, lmp.gallon/m, lmp.gallon/h, lmp.gallon/d, Norm (standard) m³/h, Norm (standard) l/h, Norm (standard) ft³/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

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Pressure transmitters for applications with highest requirements (Premium) SITRANS P500

Tankasiaal	
iecnnicai	specifications

lecnnical specifications			No a service se a		
Input	Differential	l fl	Measuring accuracy	- District	
Measured variable	Differential pressure and flow Span (min max.)   Maximum		Reference conditions (in accordance with IEC 60770-1)	Reference conditions (in accordance with IEC 60770-1)  • Rising characteristic estart of scale 0 bar	
Span (infinitely adjustable)	Span (min max.)	operating	All error information always	• Stainless steel se	
		pressure (static	refers to the set span.	• Measuring cell w	vith silicone oil filling
		pressure)		Room temperatu	re (25 °C (77 °F))
	1.00 50 mbar (0.4 20 inH <sub>2</sub> O)		Error in measurement at limit setting incl. hysteresis and		
	1.25 250 mbar (0.5 100 inH <sub>2</sub> O)		reproducibility r: Span ratio		
	6.25 1250 mbar (2.5 502 inH <sub>2</sub> O)	160 bar (2320 psi)	(r: Span ratio (r = max. span / set span))		1
	31.25 6250 mbar		Linear characteristic	r ≤ 10	r ≥ 10
	(12.54 2509 inH <sub>2</sub> O)		• 50 mbar (20 inH <sub>2</sub> O)	≤ 0.06 %	≤ (0.006 · r) %
Lauran was and Barth	0.16 32 bar (2.33 465 psi)		<ul> <li>250 mbar (100 inH<sub>2</sub>O)</li> <li>1250 mbar (502 inH<sub>2</sub>O)</li> <li>6250 mbar (2509 inH<sub>2</sub>O)</li> </ul>	≤ 0.03 %	≤ (0.003 · r) %
Lower range limit	100.0/	1/	32 bar (465 psi)		
<ul> <li>Measuring cell with silicone oil filling</li> </ul>	30 mbar a (0.44 psi a)	ina/or	Square-rooted characteristic		1
Upper range limit	100 % of max. span		• Flow > 50 %	r ≤ 10	r ≥ 10
Start of scale	Between measuring lin	nits (freely	- 50 mbar (20 inH <sub>2</sub> O)	≤ 0.06 %	≤ (0.006· r) %
-	adjustable)		<ul> <li>250 mbar (100 inH<sub>2</sub>O)</li> <li>1250 mbar (502 inH<sub>2</sub>O)</li> </ul>	≤ 0.03 %	≤ (0.003 · r) %
Output			6250 mbar (2509 inH̄ <sub>2</sub> Ó) 32 bar (465 psi)		
Output current signal	4 20 mA		• Flow 25 % 50 %	r ≤ 10	r ≥ 10
<ul> <li>Lower current limit (freely adjustable)</li> </ul>	3.55 mA, factory setting	g 3.8 mA	- 50 mbar (20 inH <sub>2</sub> O)	≤ 0.12 %	≤ (0.012 · r) %
<ul> <li>Upper current limit (freely adjustable)</li> </ul>	23 mA, factory setting	20.5 mA	- 250 mbar (100 inH <sub>2</sub> O) 1250 mbar (502 inH <sub>2</sub> O)	≤ 0.06 %	≤ (0.006 · r) %
<ul> <li>Ripple (without HART communication)</li> </ul>	$I_{pp} \le 0.4 \%$ of max. out	tput current	6250 mbar (2509 inH <sub>2</sub> O) 32 bar (465 psi)		
adjustable damping	0 100 s in steps of 0 factory-seting: 2 s	.1 s,	Influence of ambient tempera- ture per 28 °C (50 °F)		
• current transmitter	3.55 23 mA		• 50 mbar (20 inH <sub>2</sub> O)	$\leq$ (0.04 · r + 0.05) %	
<ul> <li>Failure signal</li> </ul>	adjustable within limits	:::	• 250 mbar (100 inH <sub>2</sub> O)	≤ (0.025 · r + 0.014	•
	Bottom: 3.55 3.7 r (default value: 3.6 m.		<ul> <li>1250 mbar (502 inH<sub>2</sub>O)</li> <li>6250 mbar (2509 inH<sub>2</sub>O)</li> <li>32 bar (465 psi)</li> </ul>	$\leq (0.006 \cdot r + 0.03)$	1 %
	<ul> <li>Top: 21.0 23 mA (default value: 22.8 r</li> </ul>	nA)	Influence of static pressure		
Load			At the start of scale value (PKN)		
Without HART communication     With HART communication	$U_{H}$ : Power supply in V	23 A III <b>C2</b> ,	- 50 mbar (20 inH <sub>2</sub> O)	$\leq$ (0.1 · r) % per 70 rection via zero po	bar (1015 psi) cor- int correction
<ul> <li>With HART communication</li> <li>HART Communicator</li> </ul>	P = 220 1100 C		- 250 mbar (100 inH <sub>2</sub> O)	≤ (0.035 · r) % per	70 bar (1015 psi)
	$R_{\rm B} = 230 \dots 1100 \Omega$			correction via zero	•
- HART modem  Characteristic curve	$R_{\rm B} = 230 \dots 500 \Omega$ Linearly rising, linearly	falling equare	<ul> <li>1250 mbar (502 inH<sub>2</sub>O)</li> <li>6250 mbar (2509 inH<sub>2</sub>O)</li> </ul>	≤ (0.007 · r) % per correction via zero	
Characteristic curve	rooted characteristic ri	sing, bidirec-	32 bar (465 psi)	CONCOLION VIA 2010	point correction
	and user-specific	.araotoriotio	• On the span (PKS)	< 0.40.0/ 70.1	or (1015 ms.)
			- 50 mbar (20 inH <sub>2</sub> O)	≤ 0.13 % per 70 ba	, , ,
			<ul> <li>250 mbar (100 inH<sub>2</sub>O)</li> <li>1250 mbar (502 inH<sub>2</sub>O)</li> </ul>	≤ 0.03 % per 70 ba	ar (1015 psi)
			- 6250 mbar (2509 inH <sub>2</sub> O)	≤ 0.09 % per 70 ba	
			- 32 bar (465 psi)	≤ 0.05 % per 70 ba	ar (1015 psi)

Pressure transmitters for applications with highest requirements (Premium) SITRANS P500

#### for differential pressure and flow

for differential pressure a	nd flow			
Total Performance <sup>1)</sup>			Design	
Linear characteristic	r ≤ 5	5 < r ≤ 10	Weight (without options)	Approx. 3.3 kg (7.3 lb)
- 50 mbar (20 inH <sub>2</sub> O)	≤ 0.27 %	≤ 0.46 %	Material of parts in contact with	
- 250 mbar (100 inH <sub>2</sub> O)	≤ 0.14 %	≤ 0.27 %	the medium	
<ul> <li>1250 mbar (502 inH<sub>2</sub>O)</li> <li>6250 mbar (2509 inH<sub>2</sub>O)</li> <li>32 bar (465 psi)</li> </ul>	≤ 0.09 %	≤ 0.14 %	<ul><li>Seal diaphragm</li><li>Process connection and seal-</li></ul>	Stainless steel, mat. no. 1.4404/316L, Hastelloy C276, Monel 400 PN 160: stainless steel, matNo.
Square rooted characteristic		I	ing screw	1.4404/316L
• Flow > 50 %	r ≤ 5	5 < r ≤ 10	<ul> <li>Sealing material in the process connections</li> </ul>	
- 50 mbar (20 inH <sub>2</sub> O)	≤ 0.27 %	≤ 0.46 %	- O-Ring	• Standard:
- 250 mbar (100 inH <sub>2</sub> O)	≤ 0.14 %	≤ 0.27 %	3 1 1119	Viton (FKM (FPM))
- 1250 mbar (502 in ${\rm H}_2{\rm O}$ ) 6250 mbar (2509 in ${\rm H}_2{\rm O}$ ) 32 bar (465 psi)	≤ 0.09 %	≤ 0.14 %		Optional:     NBR     PTFE (virginal)     PTFE (glass fiber-reinforced)
• Flow 25 % 50 %	$r \leq 5$	5 < r ≤ 10		FFPM (Kalrez) <sup>2)</sup>
- 50 mbar (20 inH <sub>2</sub> O)	≤ 0.54 %	≤ 0.92 %	Material of parts not in contact	Graphite
- 250 mbar (100 inH <sub>2</sub> O)	≤ 0.28 %	≤ 0.54 %	with media	
<ul> <li>1250 mbar (502 inH<sub>2</sub>O)</li> <li>6250 mbar (2509 inH<sub>2</sub>O)</li> <li>32 bar (465 psi)</li> </ul>	≤ 0.18 %	≤ 0.28 %	Die-cast aluminum housing	Low copper die-cast aluminum AC-AlSi12 (Fe) or AC-AlSi 10 Mg (Fe) to DIN EN 1706
Step response time T <sub>63</sub> without electrical damping				<ul> <li>Lacquer on polyurethane base, optional epoxy-based primer</li> </ul>
• 50 mbar (20 inH <sub>2</sub> O)	≤ 140 ms, contains ≤ 45 ms	s a dead time of		<ul> <li>Stainless steel name plates (mat. no. 1.4404/316L)</li> </ul>
<ul> <li>250 mbar (100 inH<sub>2</sub>O)</li> <li>1250 mbar (502 inH<sub>2</sub>O)</li> <li>6250 mbar (2509 inH<sub>2</sub>O)</li> </ul>	$\leq$ 88 ms, contains a dead time of $\leq$ 45 ms		Stainless steel precision cast housing	Stainless steel, mat. no. 1.4404/316L
32 bar (465 psi)			Process connection screws	Stainless steel, mat. no. 1.4404/316L
Long-term stability	≤ (0.05 · r) % per 5 years ≤ (0.08 · r) % per 10 years		Mounting bracket	Steel or stainless steel mat. no. 1.4301
Influence of power supply	≤ 0.005 %/1 V		Measuring cell filling	Silicone oil
Rated conditions	,		Process connection	1/4-18 NPT female thread and flange connection with M10 to DIN 19213 or 7/16-20 UNF mounting thread to
Mounting position	Any			IEC 61518/DIN EN 61518
Ambient conditions			Electrical connection	Screw terminals
Ambient temperature     (Note: Observe the temperature class in areas subject to explosion hazard.)     Total device     Readable display	-40 +85 °C (-40 -20 +85 °C (-4 .			<ul> <li>Cable entry via the following screwed glands:</li> <li>M20 x 1.5</li> <li>½-14 NPT</li> <li>Device plug Han 7D/Han 8D</li> <li>Device plug M12</li> </ul>
- Storage temperature	-50 +90 °C (-58		Displays and controls	
Climatic class	·	•	Pushbuttons	3 for local programming directly on
<ul> <li>Condensation</li> </ul>	Relative humidity (condensation per		Display	transmitter  • With or without integrated display
Degree of protection (to IEC 60529)		MA 4X (with corre-		Cover with or without window
Electromagnetic Compatibility	3 0		Auxiliary power supply  Terminal voltage on transmitter	• DC 10.6 44 V
Emitted interference and inter- ference immunity	Acc. to IEC 61326	and NAMUR NE 21	iomina voitage on transmitter	With intrinsically-safe operation DC 10.6 30 V
Permissible pressures	According to 2014 equipment directive			
Temperature of medium				

Pressure transmitters for applications with highest requirements (Premium) SITRANS P500

		I C	or differential pressure and flow
Certificates and approvals		Explosion protection for USA	
Classification according to PED		(to FM)	
2014/68/EU		Certificate of Compliance	No. 3033013
• PN 160 (MAWP 2320 psi)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)	• Identification (XP/DIP) or (IS)	XP CL I, DIV 1, GP ABCDEFG T4 / T6 DIP CL II, III, DIV1, GP EFG T4/T6 IS CL I, II, III, DIV1, GP ABCDEFG T4 CL I, Zone 0, AEx ia IIC T4
Explosion protection			CL I, Zone 1, AEx ib IIC T4
Explosion protection for Europe (to ATEX)		<ul> <li>Permissible Ambient Temperature</li> </ul>	T <sub>a</sub> = T4: -40 +85 °C (-40 +185 °F) T <sub>a</sub> = T6: -40 +60 °C
<ul><li>Intrinsic safety "i"</li><li>Marking</li></ul>	PTB 09 ATEX 2004 X Ex II 1/2 G Ex ia/ib IIC T4		(-40 +140 °F)
Permissible ambient temperature	-40 +85 °C (-40 +185 °F)	- Entity parameters	According to "control drawing": A5E02189134N
- Connection	To certified intrinsically-safe circuits with peak values:		$U_{m} = 30 \text{ V}, I_{m} = 100 \text{ mA},$ $P_{i} = 750 \text{ mW}, L_{i} = 400 \mu\text{H}, Ci = 6 \text{ nF}$
- Effective internal inductance:	$U_{\rm i} = 30 \text{ V}, \ I_{\rm i} = 100 \text{ mA}, \ P_{\rm i} = 750 \text{ mW}; \ R_{\rm i} = 300 \ \Omega \ L_{\rm i} = 400 \ \mu H$	<ul> <li>Marking (NI/NO)</li> </ul>	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
- Effective inner capacitance:	BVS 09 ATEX E 027		NI CLII, III, DIV 2, GP FG T4/T6, NIFW
<ul> <li>Explosion-proof "d"</li> <li>Marking</li> <li>Permissible ambient temperature</li> </ul>	Ex II 1/2 G Ex db ia IIC T4/T6 Ga/Gb -40 +85 °C (-40 +185 °F) temperature class T4;	- Permissible Ambient Temperature	$\begin{array}{l} T_a = 74: -40 \dots +85 \ ^{\circ}C \\ (-40 \dots +185 \ ^{\circ}F) \\ T_a = 76: -40 \dots +60 \ ^{\circ}C \\ (-40 \dots +140 \ ^{\circ}F) \end{array}$
Compostion	-40 +60 °C (-40 +140 °F) temperature class T6 To circuits with values:	- (NI/S) parameters	According to "control drawing": A5E02189134N
- Connection	$U_{\rm m} = DC \ 10.5 \dots 45 \ V$		$U_{\rm m} = 45 \text{ V}, L_{\rm i} = 400 \ \mu\text{H}, C_{\rm i} = 6 \text{ nF},$
<ul> <li>Dust explosion protection for zone 20</li> </ul>	BVS 09 ATEX E 027	Explosion protection for Canada (to <sub>C</sub> CSA <sub>US</sub> )	
- Marking	Ex II 1 D Ex ta ia IIIC T120°C Da	Certificate of Compliance	No. 2280963
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F)	Marking (XP/DIP)	CL I, DIV 1, GP ABCD T4 /T6; CL II, DIV 1, GP EFG T4/T6
<ul><li>Max. surface temperature</li><li>Connection</li></ul>	120 °C (248 °F) To certified intrinsically-safe circuits with peak values:	<ul> <li>Permissible ambient tem- perature</li> </ul>	$T_a = T4: -40 +85 °C (-40 +185 °F)$ $T_a = T6: -40 +60 °C (-40 +140 °F)$
Effective internal indus	$U_{\rm i} = 30 \text{ V}, I_{\rm i} = 100 \text{ mA},$ $P_{\rm i} = 750 \text{ mW}, R_{\rm i} = 300 \Omega$	- Entity parameters	According to "control drawing": A5E02189134N U <sub>m</sub> = 45 V
<ul> <li>Effective internal inductance:</li> </ul>	$L_i = 400  \mu H$	Marking (ia/ib)	CL I, Ex ia/Ex ib IIC, T4
<ul><li>Effective inner capacitance:</li><li>Dust explosion protection for</li></ul>	·		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
zone 21/22 - Marking	Ex II 2D Ex tb ia IIIC T120°C Db	- Permissible ambient tem-	T <sub>a</sub> = T4: -40 +85 °C (-40 +185 °F)
- Connection	To circuits with values: $U_{\rm m} = 10.5 \dots 45 \text{ V DC}$ ; $P_{\rm max} = 1.2 \text{ W}$	perature - Entity parameters	$U_i = 30 \text{ V}, I_i = 100 \text{ mA}, P_i = 750 \text{ mW},$
<ul> <li>Type of protection "n" (zone 2)</li> <li>Marking</li> </ul>		Marking (NI/n)	R <sub>i</sub> = 300 Ω, L <sub>i</sub> = 400 μH, C <sub>i</sub> = 6 nF CL I, DIV 2, GP ABCD T4/T6 CL II, III, DIV 2, GP FG T4/T6
- "nA" connection	Ex II 2/3 G Ex ib/nL IIC T4/T6 Ex II 2/3 G Ex ib/ic IIC T4/T6 U <sub>m</sub> = 45 V DC		Ex nA IIC T4/T6 AEx nA IIC T4/T6
- "nL, ic" connection	$U_i = 45 \text{ V}$		Ex nL IIC T4/T6 AEx nL IIC T4/T6
- Effective internal inductance:	$L_{i} = 400 \mu\text{H}$	<ul> <li>Permissible ambient tem- perature</li> </ul>	T <sub>a</sub> = T4: -40 +85 °C (-40 +185 °F) T <sub>a</sub> = T6: -40 +60 °C (-40 +140 °F)
- Effective inner capacitance:	C <sub>i</sub> = 0 IIF	- NI/nA parameters	According to "control drawing": A5E02189134N U <sub>m</sub> = 45 V
		- nL parameters	According to "control drawing": A5E02189134N $U_i=45~V,~I_i=100~mA,~L_i=400~\mu H,~C_i=6~nF$

Pressure transmitters

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### for differential pressure and flow

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:

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

Effective internal inductance L<sub>i</sub> = 400 mH
 Effective inner capacitance C<sub>i</sub> = 6 nF
 Explosion-proof "d" GYJ111112
 Marking Ex dia IIC T4/T6

- Marking Ex dia IIC T4/T6 - Permissible ambient tem-40 ... +85 °C (-40 ... +185 °F)

perature

temperature class T4; -40 ... +60 °C (-40 ... +140 °F) temperature class T6

• Dust explosion protection for

zone 21/22

GYJ111112

- Marking DIP A21 TA,T120 °C IP68 D21 - Connection To circuits with values:  $U_m = DC 10.5 \dots 45 V$ 

Type of protection "n" (zone 2) GYJ111111X
 Marking Ex nL IIB/IIC T4/T6

Ex nA II T4/T6

- Connection  $U_i = 45 \text{ V DC}$ - Effective internal inductance  $L_i = 400 \text{ mH}$ - Effective inner capacitance  $C_i = 6 \text{ nF}$ 

<sup>2)</sup> Not in combination wiht span "G".

Load with connection of

• HART communicator  $R_{\rm B} = 230 \dots 1100 \ \Omega$ • HART modem  $R_{\rm B} = 230 \dots 500 \ \Omega$  Cable  $2 \ \text{wire shielded:} \le 3.0 \ \text{km}$   $(1.86 \ \text{miles}),$ 

multiwire shielded: ≤ 1.5 km

(0.93 miles)

Protocol HART Version 6.0

PC/laptop requirements IBM compatible, RAM > 32 MByte, hard disk > 70 MByte, depending

on modem type: RS 232-interface

or USB connection, VGA graphics

Software for computer SIMATIC PDM 6.0

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<sup>1)</sup> The total performance includes the errors caused by temperature effects, static pressure effects and conformity error, including hysteresis and repeatability.

Pressure transmitters for applications with highest requirements (Premium) SITRANS P500

Selection and Ordering data			Article No.
Pressure transmitters for dif SITRANS P500 HART, PN 16			7 M F 5 4 0
	the online configuration in the P	IA Life Cvcle Portal.	
Enclosure		Thread for cable gland <sup>1)</sup>	
Die-cast aluminum, dual comp	partment	M20x1.5	0
Die-cast aluminum, dual comp	partment	½-14 NPT	1
Stainless steel precision casting, two-chamber housing		M20x1.5	2
Stainless steel precision castin	ng, two-chamber housing	½-14 NPT	3
Output 4 20 mA, HART			3
Measuring cell filling	Measuring cell cleaning		
Silicone oil	normal		1
Measuring span		_	
1.00 50 mbar	(0.4 20 inH <sub>2</sub> O)		С
1.25 250 mbar	(0.5 100.4 inH <sub>2</sub> O)		D
6.25 1250 mbar	(2.5 502 inH <sub>2</sub> O)		E
31.25 6250 mbar	(12.54 2509 inH <sub>2</sub> O)		F
0.16 32 bar	(2.33 465 psi)		G
Wetted parts materials			
Seal diaphragm	Process flange		
Stainless steel 1.4404/316L	Stainless steel 1.4404/316L	_	A
Hastelloy C276 <sup>2)</sup>	Stainless steel 1.4404/316L		В
Monel 400 <sup>2)</sup>	Stainless steel 1.4404/316L		C
Hastelloy	Hastelloy		R
Process connection			
Female thread 1/4-18 NPT			
<ul> <li>Sealing screw opposite proc</li> <li>Mounting thread 7/16 - 20</li> <li>Mounting thread M10 to Di</li> </ul>	UNF according to IEC 61518/DI	N EN 61518	0 1
<ul> <li>Vent on side of process flang</li> <li>Mounting thread 7/16 - 20</li> <li>Mounting thread M10 to D</li> </ul>	UNF according to IEC 61518/DI	N EN 61518	4 5

<sup>1)</sup> Cable glands must be ordered separately from "Further designs" (add "-Z" to Article No. and specify order code).

<sup>2)</sup> Not together with Measuring span "C".

<sup>&</sup>lt;sup>2)</sup> Not in conjunction with remote seals (option V00).

Pressure transmitters for applications with highest requirements (Premium) SITRANS P500

for differential pressure and flow		
Selection and Ordering data	Order code	9
Further designs Add "-Z" to Article No. and specify Order code.		J.
Attachments		[
Mounting bracket made of steel	A01	E
Mounting bracket made of stainless steel 304	A02	E
Mounting bracket made of stainless steel 316L	A03	E
<b>Display</b> (Standard: no display, cover closed)		
With display and blanking cover	A10	E
With display and glass cover	A11	E
Special casing / cover version		
Two coats of lacquer on casing, cover (PU on epoxy)	A20	ı
Electrical connection and cable entry (Standard: no cable gland, only dust protection caps)		
Cable gland made of plastic (IP66/68) <sup>4)</sup>	A50	- 2
Cable glands made of metal (IP66/68)	A51	ı
Cable glands made of stainless steel (IP66/68)	A52	l
Device plug M12 without cable socket (IP66/67) <sup>4)</sup>	A60	Į
Device plug M12 complete with cable socket (IP66/67) <sup>4)</sup>	A61	l
Device plug Han 7D, plastic, straight (with cable socket) (IP65) <sup>4)</sup>	A71	] 
Device plug Han 7D, plastic, angled (with cable socket) (IP65) <sup>4)</sup>	A72	l I
Device plug Han 7D, metal enclosure, straight (with cable socket) (IP65) <sup>4)</sup>	A73	•
Device plug Han 7D, metal enclosure, angled (with cable socket) (IP65) <sup>4)</sup>	A74	[
Device plug Han 8D, plastic, straight (with cable socket) (IP65) <sup>4)7)</sup>	A75	[ -
Device plug Han 8D, plastic, angled (with cable socket) (IP65) <sup>4)7)</sup>	A76	3
Device plug Han 8D, metal enclosure, straight (with cable socket) (IP65) <sup>4)7)</sup>	A77	ı
Device plug Han 8D, metal enclosure, angled (with cable socket) (IP65) <sup>4)7)</sup>	A78	
PG 13.5 adapters <sup>4)</sup>	A82	Ì
Language for labels, quick-start guide, menu language default <sup>9)</sup> (instead of English as standard)		
German	B10	ı
French	B12	
Spanish	B13	
Italian	B14	
Chinese	B15	
Russian	B16 B17	:
Japanese English with units psi/inH <sub>2</sub> O/°F	B17	
Special version: Supplementary menu languages	D21	
(Standard: English, German, French, Spanish, Italian)	Doo	
Asia language package (in addition: Chinese, Japanese, Russian)	B80	
Certificates (available online for downloading) <sup>1)</sup>		
Quality Inspection Certificate (5-point characteristic curve test) according to IEC 60770-2 <sup>2)</sup>	C11	;
Acceptance test certificate according to EN 10204-3.1 <sup>3)</sup>	C12	
Acceptance certificate (EN 10204-3.1); PMI test of parts in contact with medium	C15	
Functional Safety (SIL2) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	C20	

Selection and Ordering data	Order code
Further designs Add "-Z" to Article 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 (CCSA <sub>IIS</sub> ) (T4)	E02
Ex ia/ib protection (NEPSI) (T4)	E06
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 ( <sub>C</sub> CSA <sub>US</sub> )(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 ( <sub>C</sub> CSA <sub>US</sub> ) (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) Ex tb	E60
Use in Zone 20/21/22 (Ex iaD) (ATEX) Ex ta	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 (CCSAUS)	E72
IS protection and XP and DIP (FM/ <sub>C</sub> CSA <sub>US</sub> )	E73
Supplementary approvals/degree of protection	
Ex-protection Ex ia according to EAC Ex (Russia) Ex-protection Ex d according to EAC Ex (Russia)	E80 E81
Dual Seal approval <sup>5)</sup>	E85
Export approval Korea	E86
Special process connection versions (diff. pressure)	
Side vents for gas measurements <sup>9)</sup>	L32
Swap process connection: high-pressure side at front	L33
Mosquito protection	200
4 pcs. for ¼-18 NPT thread	L36
Process flanges, O-rings, special material	
Standard: Viton (FKM (FPM)  Process connection sealing rings made of FFPM (Kalrez) <sup>10</sup>	1.62
	L63
Process connection sealing rings made of NBR	L64
Process connection sealing rings made of graphite	L04
Drain/Vent valve (1 set = 2 units)	
2 ventilation valves ¼- 18 NPT, in material of process flanges)	L80
Remote seals  Transmitters with connection of remote seal <sup>6)</sup> (For premounted valve manifolds see page 1/322)	V00

- Enclosed in print or as DVD: see page 1/320.
- 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 10204-3.1 for transmitters with mounted diaphragm seals: Order this certificate as well in addition to the respective remote seals.
- Not together with types of protection "Explosion-proof", "Ex nA" and "Intrinsic safety and explosion-proof"
- Only in conjunction with FM and/or CCSAUS
- 5) Please select a remote seal separately. Also refer to the information under footnote 2). Remote seals see page 1/402.
- The device plug Han 8D is identical with the former Han 8U version.
- B) For option B15, B16 and B17 the menu language default is english. Otherwise the Option B80 (Asia language package) is necessary.
- 9) Only in conjunction with process connection "Vent on side".

<sup>&</sup>lt;sup>10)</sup>Not together with Measuring span "G".

Pressure transmitters for applications with highest requirements (Premium) SITRANS P500

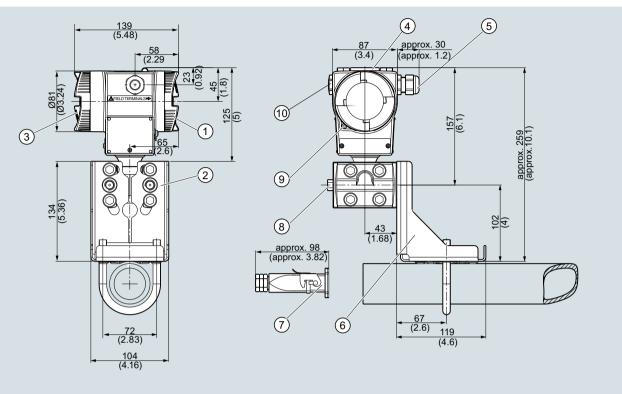
Selection and Ordering data	Order code
Additional data Please add "-Z" to Article No. and specify Order code(s) and plain text.	
Measuring range to be set	
Specify in plain text:	
<ul> <li>In the case of linear characteristic curve (max. 5 characters):</li> <li>Y01: up to mbar, bar, kPa, MPa, psi</li> </ul>	Y01
<ul> <li>In the case of square rooted characteristic (max. 5 characters):</li> <li>Y02: up to mbar, bar, kPa, MPa, psi</li> </ul>	Y02
Measuring point number and measuring point 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 $\rm H_2O^*$ ), in $\rm H_2O^*$ ), ft $\rm H_2O^*$ ), mmHG, inHG, psi, Pa, kPa, MPa, g/cm², kg/cm², Torr, ATM, % or mA	
*) Reference temperature 20 °C	
Setting of pressure indication in non-pressure units <sup>1)</sup>	Y22 +
Specify in plain text:	Y01 or Y02
Y22: up to I/min, m <sup>3</sup> /h, m, USgpm, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	
Customer-specific settings	
Damping setting (range: 0 100 s) (Standard setting: 2 s)	Y30

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

Pressure transmitters for applications with highest requirements (Premium) SITRANS P500

for differential pressure and flow

#### Dimensional drawings



- 1 Connection side<sup>1)</sup>
- 2 Process connection: 1/4-18 NPT (IEC 61518)
- (3) Electronics side, local display<sup>1)</sup>
- (4) Cover over buttons
- (5) Electrical connection:
  - M20 x 1,5 <u>or</u> ½-14 NPT screw gland
  - Han 7D/Han 8D<sup>2) 3)</sup> or M12<sup>3)</sup> device plug
- 6 Mounting bracket (optional)

- (7) Electrical connection:
  - Han 7D/Han 8D device plug<sup>2) 3)</sup>
- 8 Process connection, with valve (optional) or screwed joint (optional)
- 9 Screw lid safety bracket
- 10 Screw-type blank cap
- In addition, allow approx. 20 mm (0.79 inch) for the thread length Not with "flameproof enclosure" type of protection Not with type of protection "FM + CSA" [is + XP]"

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

Pressure transmitters for applications with highest requirements (Premium) SITRANS P500

for level

Technical specifications				
Input				
Measured variable	Level			
Span (infinitely adjustable)	Span (mir			
	1.05 05			

in. ... max.) Maximum operating pressure 1.25 ... 250 mbar (0.5 ... 100 inH<sub>2</sub>O) 6.25 ... 1250 mbar See "Mounting (2.5 ... 500 inH<sub>2</sub>O) flange" 31.25 ... 6250 mbar (12.54 2509 inH<sub>2</sub>O)

Lower range limit

• Measuring cell with silicone oil -100 % of max. span or 500 mbar a (7.25 psi a) vacuum resistance Also available as vacuum-resistant

Upper range limit Start of scale

remote seal: 30 mbar a (0.44 psi a) 100% of max. span Between measuring limits (freely

adjustable) Output

Output current signal • Lower current limit

4 ... 20 mA

(freely adjustable)

3.55 mA, factory setting 3.8 mA

 Upper current limit (freely adjustable)

23 mA, factory setting 20.5 mA

nication)

Ripple (without HART commu-Ipp ≤ 0.4 of max. output current

· adjustable damping

0... 100 s in steps of 0.1 s, factory setting 2 s

current transmitter

3.55 ... 23 mA

· Failure signal

Adjustable within limits: Lower: 3.55 ... 3.7 mA (factory setting 3.6 mA)

 Upper: 21.0 ... 23 mA (factory setting 22.8 mA)

Load

Without HART communication

 $R_{\rm B} \leq$  ( $U_{\rm H}$  - 10.5 V)/0.023 A in  $\Omega$ ,  $U_{\rm H}$  : Power supply in V

• With HART communication

- HART Communicator - HART modem

 $R_{\rm B}=230~...~1100~\Omega$  $R_{\rm B} = 230 \dots 500 \, \Omega$ 

Characteristic curve

Linearly rising or linearly falling and user-specific

• Rising characteristic curve

• Stainless steel seal diaphragm

• Measuring cell with silicone oil filling

Room temperature (25 °C (77 °F))

· Start of scale 0 bar

#### Measuring accuracy

Reference conditions (in accordance with IEC 60770-1)

All error information always refers to the set span.

Error in measurement at limit setting incl. hysteresis and

reproducibility r: Span ratio

(r = max. span / set span)

Linear characteristic

 250 mbar (100 inH<sub>2</sub>O) 1250 mbar (502 inH2O) 6250 mbar (2509 inĤ<sub>2</sub>Ó)

$r \leq 10$	r ≥ 10
≤ 0.03 %	≤ (0.003 · r) %

Rated conditions	
Influence of power supply	≤ 0.005 %/1 V
- 6250 mbar (2509 inH <sub>2</sub> O)	≤ 0.09 % je 70 bar (1015 psi)
<ul> <li>250 mbar (100 inH<sub>2</sub>O)</li> <li>1250 mbar (502 inH<sub>2</sub>O)</li> </ul>	≤ 0.03 % je 70 bar (1015 psi)
• On the span (PKS) <sup>1)</sup>	
<ul> <li>1250 mbar (502 inH<sub>2</sub>O)</li> <li>6250 mbar (2509 inH<sub>2</sub>O)</li> </ul>	$\leq$ (0.007 · r) % je 70 bar (1015 psi) correction via zero point correction
- 250 mbar (100 inH <sub>2</sub> O)	$\leq$ (0.035 · r) % je 70 bar (1015 psi) correction via zero point correction
<ul> <li>At the start of scale value (PKN)<sup>1) 2)</sup></li> </ul>	
Influence of static pressure	
<ul> <li>1250 mbar (502 inH<sub>2</sub>O)</li> <li>6250 mbar (2509 inH<sub>2</sub>O)</li> </ul>	≤ (0.006 · r + 0.03) %
• 250 mbar (100 inH <sub>2</sub> O)	$\leq$ (0.025 · r + 0.014) %
Influence of ambient temperature per 28 °C (50 °F) <sup>1)</sup>	
	≤ (0.08 · r) % per 10 years
Long-term stability	≤ (0.05 · r) % per 5 years

Defined by flange

Mounting position

Ambient conditions

• Ambient temperature (Note: Observe the temperature class in areas subject to explosion hazard.) - total device

- Readable display - Storage temperature

Climatic class Condensation

Degree of protection

to IEC 60529 Electromagnetic Compatibility

• Emitted interference and inter- Acc. to IEC 61326 and NAMUR NE 21 ference immunity

Permissible pressures

pressure side • Measuring cell with silicone oil filling

Medium temperature of high-

- p<sub>abs</sub> ≥ 1 bar - p<sub>abs</sub> < 1 bar According to 2014/68/EU pressure equipment directive

IP66/IP68 and NEMA 4X (with corre-

-40 ... +85 °C (-40 ... +185 °F)

-20 ... +85 °C (-4 ... +185 °F)

-50 ... +90 °C (-58 ... +194 °F)

Relative humidity 0 ... 100 %

(condensation permissible)

sponding cable gland)

-40 ... +1753) °C (-40 ... +3473) °F) -40 ... +80 °C (-40 ... +176 °F)

#### Design

Weight

• To EN (pressure transmitter with mounting flange, without tube)

 To ASME (pressure transmitter approx. 9.8 ... 16.8 kg with mounting flange, without (21.6 ... 37.0 lb) tube)

approx. 9.8 ... 11.8 kg (21.6... 26.0 (lb)

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Pressure transmitters for applications with highest requirements (Premium) SITRANS P500

### for level

ioi ievei			
Material of wetted parts at the high-pressure side		Auxiliary power supply	
Seal diaphragm of mounting	Stainless steel 1.4404/316L,	Terminal voltage on transmitter	
flange	Hastelloy C276, mat. no. 2.4819, Monel 400, mat. no. 2.4360, Tantal,		<ul> <li>With intrinsically-safe operation DC 10.6 30 V</li> </ul>
	PFA auf Edelstahl 1.4404/316L,	Certificates and approvals	
Sealing surface	PTFE auf Edelstahl 1.4404/316L Smooth to EN 1092-1, Form B1 and/or ASME B16.5 RF 125 250 AA for	Classification according to PED 2014/68/EU	
	stainless steel316L, EN 1092-1 Form B2 and/or ASME B16.5 RFSF in the case of other materials	• PN 160 (MAWP 2320 psi)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)
<ul> <li>Sealing material in the process connection</li> </ul>		Explosion protection	(count originating practice)
- O-Ring	• Standard: Viton (FKM (FPM))	Explosion protection for Europe (to ATEX)	
	Optional:	Intrinsic safety "i"	PTB 09 ATEX 2004 X
	NBR PTFE (virginal)	- Marking	Ex II 1/2 G Ex ia/ib IIC T4
	PTFE (glas fiber-reinforced) FFPM (Kalrez)	<ul> <li>Permissible ambient temperature</li> </ul>	-40 +85 °C (-40 +185 °F)
- For vacuum application of mounting flange	Graphite Copper	- Connection	To certified intrinsically-safe circuits with peak values:
Material of wetted parts at the low-pressure side			$U_{\rm i} = 30 \text{ V}, \ I_{\rm i} = 100 \text{ mA}, \ P_{\rm i} = 750 \text{ mW}; \ P_{\rm i} = 300 \ \Omega$
Seal diaphragm	Stainless steel, mat. no. 1.4404/316L, Hastelloy C276, Monel 400	<ul> <li>Effective internal inductance:</li> </ul>	$L_i = 400 \ \mu H$
Process connection and seal-	• Stainless steel, mat. no. 1.4404/316L	- Effective inner capacitance:	·
ing screw		Explosion-proof "d"	BVS 09 ATEX E 027
<ul> <li>Sealing material in the process connection</li> </ul>		- Marking	Ex II 1/2 G Ex db ia IIC T4/T6 Ga/Gb
- O-Ring	• Standard: Viton (FKM (FPM)) • Optional:	<ul> <li>Permissible ambient tem- perature</li> </ul>	-40 +85 °C (-40 +185 °F) temperature class T4; -40 +60 °C (-40 +140 °F) temperature class T6
	NBR PTFE (virginal)	- Connection	To circuits with values: $U_{\rm m}$ = DC 10.5 45 V
	PTFE (glas fiber-reinforced) FFPM (Kalrez) Graphite	<ul> <li>Dust explosion protection for zone 20</li> </ul>	BVS 09 ATEX E 027
Material of parts not in contact	Graprino	- Marking	Ex II 1 D Ex ta ia IIIC T120°C Da
with media  Die-cast aluminum housing	Low copper die-cast aluminum	<ul> <li>Permissible ambient tem- perature</li> </ul>	-40 +85 °C (-40 +185 °F)
9	AC-AlSi12 (Fe) or AC-AlSi10 Mg (Fe) to DIN EN 1706	- Max. surface temperature	120 °C (248 °F)
	Lacquer on polyurethane base, optional epoxy-based primer     Stainless steel serial plate	- Connection	To certified intrinsically-safe circuits with peak values: $U_{\rm i} = 30 \text{ V}, I_{\rm i} = 100 \text{ mA}, P_{\rm i} = 750 \text{ mW}, R_{\rm i} = 300 \Omega$
Stainless steel precision cast housing	Stainless steel, mat. no. 1.4404/316L	- Effective internal inductance:	L <sub>i</sub> = 400 μH
Process connection screws	Stainless steel	- Effective inner capacitance:	$C_i = 6 \text{ nF}$
Measuring cell filling	Silicone oil		BVS 09 ATEX E 027
<ul> <li>Liquid mounting flange</li> </ul>	Silicone oil or other material	zone 21/22	F     0 D F
Process connection		- Marking	Ex II 2 D Ex tb ia IIIC T120°C Db
<ul> <li>High-pressure side</li> </ul>	Flange to EN and ASME	- Connection	To circuits with values: $U_{\rm H} = 10.5 \dots 45 \text{ V DC}; P_{\rm max} = 1.2 \text{ W}$
• Low-pressure side	1/4-18 NPT female thread and flange connection with M10 to DIN 19213 or 7/16-20 UNF mounting thread to	<ul><li>Type of protection "n" (zone 2)</li></ul>	PTB 09 ATEX 2004 X
Electrical connection	• Screw terminals	- Marking	Ex II 3 G Ex nA II T4/T6 Ex II 2/3 G Ex ib/nL IIC T4/T6
	Cable entry via the following	"nA" connection	Ex II 2/3 G Ex ib/ic IIC T4/T6
	screwed glands: - M20 x 1.5	<ul><li>- "nA" connection</li><li>- "nL, ic" connection</li></ul>	$U_{m} = 45 \text{ V DC}$ $U_{i} = 45 \text{ V}$
	- ½-14 NPT	- Fifective internal inductance	,
	<ul><li>Device plug Han 7D/Han 8D</li><li>Device plug M12</li></ul>	- Effective inner capacitance	· ·
Displays and controls		Encouve miler capacitation	O <sub>I</sub> = O III
Push buttons	3; for operation directly on the device		

Display

With or without integrated displayCover with or without window

Pressure transmitters for applications with highest requirements (Premium) SITRANS P500

Explosion protection for USA (to FM)		Explosion protection for China (acc. to NEPSI)			
Certificate of Compliance	No. 3033013	• Intrinsic safety "i"	GYJ111111X		
<ul> <li>Identification (XP/DIP) or (IS)</li> </ul>	XP CL I, DIV 1, GP ABCDEFG T4 / T6	- Marking	Ex ia/ib IIB/IIC T4		
, , , , , , , , , , , , , , , , , , , ,	DIP CL II, III, DIV1, GP EFG T4/T6 IS CL I, II, III, DIV1, GP ABCDEFG T4	<ul> <li>Permissible ambient tem- perature</li> </ul>	40 +85 °C (-40 +185 °F)		
	CL I, Zone 0, AEx ia IIC T4 CL I, Zone 1, AEX ib IIC T4	- Connection	To certified intrinsically-safe circuits with maximum values:		
<ul> <li>Permissible Ambient Tem- perature</li> </ul>	T <sub>a</sub> = T4: -40 +85 °C (-40 +185 °F)		$U_i = 30 \text{ V I}_i = 100 \text{ mA}, P_i = 750 \text{ mW}$		
perature	T <sub>a</sub> = T6: -40 +60 °C	- Effective internal inductance	$L_i = 400 \text{ mH}$		
	(-40 +140 °F)	- Effective inner capacitance	$C_i = 6 \text{ nF}$		
- Entity parameters	According to "control drawing": A5E02189134N	<ul><li>Explosion-proof "d"</li></ul>	GYJ111112		
	$U_{\rm m} = 30 \text{ V}, I_{\rm m} = 100 \text{ mA},$	- Marking	Ex dia IIC T4/T6		
	$P_i = 750 \text{ mW}, L_i = 400 \mu\text{H}, C_i = 6 \text{ nF}$	<ul> <li>Permissible ambient tem- perature</li> </ul>	-40 +85 °C (-40 +185 °F) temperature class T4;		
Marking (NI/NO)	NI CL I, DIV 2, GP ABCD T4/T6 NI CL I, Zone 2, GP IIC T4/T6 S CL II, III, GPFG T4/T6	perature	-40 +60 °C (-40 +140 °F) temperature class T6		
	NI CL Í, DÍV 2, GP ABCD T4/T6, NIFW NI CL I, Zone 2, GP IIC T4/T6, NIFW NI CLII, III, DIV 2, GP FG T4/T6, NIFW	- Connection	To circuits with values: $U_m = DC 10.5 \dots 45 V$		
- Permissible Ambient Temperature	T <sub>a</sub> = T4: -40 +85 °C (-40 +185 °F)	<ul> <li>Dust explosion protection for zone 21/22</li> </ul>	GYJ111112		
perature	$T_a = T6: -40 +60 °C$	- Marking	DIP A21 TA,T120 °C IP68 D21		
- (NI/S) parameters	(-40 +140 °F) According to "control drawing":	- Connection	To circuits with values: U <sub>m</sub> = DC 10.5 45 V		
	A5E02189134N $U_{\rm m} = 45 \text{ V, L}_{\rm i} = 400  \mu\text{H, Ci} = 6  \text{nF}$	<ul><li>Type of protection "n" (zone 2)</li></ul>			
Explosion protection for Canada	σ <sub>m</sub> = 10 <b>v</b> , ε <sub>l</sub> = 100 μπ, στ = στπ	- Marking	Ex nL IIB/IIC T4/T6 Ex nA II T4/T6		
(to <sub>C</sub> CSA <sub>US</sub> )		- Connection	$U_i = 45 \text{ V DC}$		
Certificate of Compliance	No. 2280963	- Effective internal inductance	$L_i = 400 \text{ mH}$		
Marking (XP/DIP)	CL I, DIV 1, GP ABCD T4 /T6;	- Effective inner capacitance C <sub>i</sub> = 6 nF			
,	CL II, DIV 1, GP EFG T4/T6	remote seal must calculated sep			
Permissible Ambient Tem- perature	$T_a = 74: -40 \dots +85 ^{\circ}C$ $(-40 \dots +185 ^{\circ}F)$ $T_a = 76: -40 \dots +60 ^{\circ}C$ $(-40 \dots +140 ^{\circ}F)$	<ol> <li>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.</li> <li>This value may be increased if the process connection is sufficiently insulated.</li> </ol>			
- Entity parameters	According to "control drawing": A5E02189134N, U <sub>m</sub> = 45 V				
Marking (ia/ib)	CL I, Ex ia/Ex ib IIC, T4	HART communication			
<i>5</i>	CL II, III, Ex ia/Ex ib, GP EFG, T4	Load with connection of			
	CL I, AEx ia/AEx ib IIC, T4 CL II, III, AEx ia/ AEx ib, GP EFG, T4	<ul> <li>HART Communicator</li> </ul>	$R_{\rm B} = 230 \dots 1100  \Omega$		
- Permissible Ambient Tem-	T <sub>a</sub> = T4: -40 +85 °C	<ul> <li>HART modem</li> </ul>	$R_{\rm B}=230~~500~\Omega$		
perature	(-40 +185 °F)	Cable	2 wire shielded:		
- Entity parameters	$\begin{array}{l} U_i = 30 \text{ V, } I_i = 100 \text{ mA, } P_i = 750 \text{ mW,} \\ R_i = 300 \ \Omega \text{ , } L_i = 400 \ \mu\text{H, } C_i = 6 \text{ nF} \end{array}$		≤ 3.0 km (1.86 miles), multiwire shielded: ≤ 1.5 km (0.93 miles)		
<ul><li>Marking (NI/n)</li></ul>	CL I, DIV2, GP ABCD T4/T6 CL II, III, DIV2, GP FG T4/T6	Protocol	HART Version 6.0		
	Ex nA IIC T4/T6  AEx nA IIC T4/T6  Ex nL IIC T4/T6  AEx nL IIC T4/T6  AEx nL IIC T4/T6	PC/laptop requirements	IBM compatible, RAM > 32 MByte, hard disk > 70 MByte, depending on modem type: RS 232-interface or		
- Permissible Ambient Tem-	$T_a = T4: -40 \dots +85 ^{\circ}\text{C}$ (-40 \dots +185 ^{\text{F}})		USB connection, VGA graphics		
perature	T <sub>a</sub> = T6: -40 +60 °C (-40 +140 °F)	Software for computer	SIMATIC PDM 6.0		
- NI/nA parameters	According to "control drawing": A5E02189134N, U <sub>m</sub> = 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				

Pressure transmitters

for applications with highest requirements (Premium)

SITRANS P500

Selection and Ordering dat			Article No.		Ord	der code
Pressure transmitters for le			7 M F 5 6	0 -		
✓ Click on the Article No. for	r the online configuration in the	*				
Enclosure		Thread for cable gland <sup>9)</sup>				
Die-cast aluminum, dual com Die-cast aluminum, dual com	•	M20x1.5 ½-14 NPT	0			
Stainless steel precision cast	•	M20x1.5	2			
Stainless steel precision cast	<u> </u>	½-14 NPT	3			
Output	ing, two onambor neutring	72 11141				
4 20 mA, HART			3			
Measuring cell filling	Measuring cell cleaning					
Silicone oil  Measuring span (min ma	normal		1			
1.25 250 mbar	(0.5 100 inH <sub>2</sub> O)		D			
6.25 1250 mbar	(2.5 500 inH <sub>2</sub> O)		E			
31.25 6250 mbar	(12.54 2509 inH <sub>2</sub> O)		F			
Wetted parts of the low-pre						
(stainless steel process flang	jes)					
Seal diaphragm	Process connection					
Stainless steel 1.4404/316L	Stainless steel 1.4404/31			A		
Hastelloy C276	Stainless steel 1.4404/31			В		
Monel 400 Process connection of low-	Stainless steel 1.4404/31	6L		С		
	Piessule side					
Female thread 1/4-18 NPT	anna anna atis :-					
Sealing screw opposite pro     Mounting through 7/16 200		VIDINI ENI 61E10		_		
- Mounting thread M10 to E		MIN EN 01518		0 1		
<ul> <li>Vent on side of process flar</li> <li>Mounting thread 7/16, 20</li> </ul>	nge ) UNF according to IEC 61518	UDIN EN 61518		4		
- Mounting thread M10 to E		INDIN EN 01316		5		
Wetted parts materials (hig	h-pressure side)					
Stainless steel 1.4404/316L	,,				0	
Hastelloy C276 mat. no. 2.48	19				1	
Monel 400 mat. no. 2.4360					2	
Tantalum					3	
PFA coated on stainless stee	I			4	4	
	04/316L (not in combination wi	th an extension)			6 A	
Other version				9	9 Y	N 1 Y
Add Order code and plain te Material:; Extension length						
	h-pressure side: Extension I	ength				
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 materials"				ш	
•	h-pressure side: Nominal di	ameter/Nominal pressure				
DN 50, PN 40 <sup>6)</sup>					В	
DN 80, PN 40					D	
DN 100, PN 16					G	
DN 100, PN 40					H	
2", class 150 <sup>6)</sup>					L	
2", class 300 <sup>6)</sup>					M	
3", class 150					Q	
3", class 300 4", class 150					R T	
4", class 150					U	
4. Clace 300					U	
						0 1 V
4", class 300 Other version, add Order code and plain text:					Z	Q 1 Y

Pressure transmitters for applications with highest requirements (Premium) SITRANS P500

Selection and Ordering data	Article No.	Orde	er code
Pressure transmitters for level, SITRANS P500 HART	7 M F 5 6 0 - 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	
Other version, add		9	R 1 Y
Order code and plain text: Filling liquid:			

### **Pressure Measurement**

Pressure transmitters for applications with highest requirements (Premium) SITRANS P500

Selection and Ordering data	Order code	Selection and Ordering data	Order code
Further designs Add "-Z" to Article No. and specify Order code.		Further designs Add "-Z" to Article No. and specify Order code.	
<b>Display</b> (Standard: no display, cover closed)		Degree of protection approvals: Ex d (flameproof)	
With display and blanking cover	A10	Ex d explosion-proof (ATEX)(T4/T6)	E20
With display and glass cover	A11	Ex XP explosion-proof and DIP (FM)(T4/T6)	E21
Special version: cover/casing	AII	Ex XP explosion-proof and DIP ( <sub>C</sub> CSA <sub>US</sub> )(T4/T6)	E22
Two coats of lacquer on casing, cover (PU on epoxy)	A20	Ex d explosion-proof (NEPSI)(T4/T6)	E26
Electrical connection and cable entry	ALU	Degree of protection approvals: n/NI	
(Standard: no cable gland, only dust protection caps)		Zone 2 (nA, nL, ic) (ATEX) (T4/T6) Div2 NI, Div2 NI-field wiring (FM) (T4/T6)	E40 E41
Cable gland made of plastic (IP66/68) <sup>4)</sup>	A50	Zone 2 (nA, nL), Div2 NI (CCSA <sub>US</sub> ) (T4/T6)	E42
Cable glands made of metal (IP66/68)	A51	Zone 2 (nA, nL) (NEPSI) (T4/T6)	E46
Cable glands made of stainless steel (IP66/68)	A52	Degree of protection approvals: Zone 20/21/22	
Device plug M12 without cable socket (IP66/67) <sup>4)</sup>	A60	Use in Zone 21/22 (Ex tD) (ATEX) Ex tb	E60
Device plug M12, cable socket (IP66/67) <sup>4)</sup>	A61	Use in Zone 20/21/22 (Ex iaD) (ATEX) Ex ta	E61
Device plug Han 7D, plastic, straight	A71	Use in Zone (Ex DIP) (ATEX) (NEPSI)	E66
(with cable socket) (IP65) <sup>4)</sup>		Degree of protection approvals: Combinations	
Device plug Han 7D, plastic, angled (with cable socket) (IP65) <sup>4)</sup>	A72	IS protection and XP and DIP (FM)	E71
Device plug Han 7D, metal enclosure, straight	A73	IS protection and XP and DIP (CCSA <sub>US</sub> )	E72
(with cable socket) (IP65) <sup>4)</sup>	AIS	IS protection and XP and DIP (FM/ <sub>C</sub> CSA <sub>US</sub> )	E73
Device plug Han 7D, metal enclosure, angled (with cable socket) (IP65) <sup>4)</sup>	A74	Supplementary approvals / degree of protection	
Device plug Han 8D, plastic, straight (with cable socket) (IP65) <sup>4)7)</sup>	A75	Ex-protection Ex ia according to EAC Ex (Russia) Ex-protection Ex d according to EAC Ex (Russia)	E80 E81
Device plug Han 8D, plastic, angled	A76	Dual Seal approval <sup>5)</sup>	E85
(with cable socket) (IP65) <sup>4)7)</sup>		Export approval Korea	E86
Device plug Han 8D, metal enclosure, straight (with cable socket) (IP65) <sup>4)7)</sup>	A77	Special process connection versions (diff. pressure)  Swap process connection: high-pressure side at front	L33
Device plug Han 8D, metal enclosure, angled (with cable socket) (IP65) <sup>4)7)</sup>	A78	Mosquito protection	1.00
PG 13.5 adapters <sup>4)</sup>	A82	4 pcs. for ¼-18 NPT thread  Process flanges, O-rings, special material	L36
Language for labels, quick-start guide and menu language default <sup>8)</sup>		Standard: Viton (FKM (FPM)	
(instead of English as standard)		Process connection sealing rings made of FFPM (Kalrez)	L62
German	B10	Process connection sealing rings made of NBR	L63
French	B12	Process connection sealing rings made of graphite	L64
Spanish	B13	<b>Drain/Vent valve</b> (1 set = 2 units)	
Italian	B14	2 ventilation valves 1/4- 18 NPT, in material of process	L80
Chinese	B15	flange) Vacuum-proof design	
Russian	B16	Vacuum service	V04
Japanese	B17	Spark arrester	V04 V05
English with units: psi/inH <sub>2</sub> O	B21	For mounting on zone 0 (including documentation)	• • • • • • • • • • • • • • • • • • • •
Special version: Supplementary menu languages (Standard: English, German, French, Spanish, Italian)		1) Enclosed in print or as DVD: see page 1/320.	
Asia language package (in addition: Chinese, Japanese,	B80	When also ordering the quality inspection certificate (factory according to IEC 60770-2 for transmitters with mounted diap	hragm seals:
Russian)  Certificates (available online for downloading) <sup>1)</sup>		Order this certificate only together with the remote seals. The accuracy of the total combination is certified here.	measuring
Quality Inspection Certificate (5-point characteristic curve	C11	3) When also ordering the acceptance test certificate according EN 10204-3.1 for transmitters with mounted diaphragm seals	
test) according to IEC 60770-2 <sup>2)</sup> Acceptance test certificate according to EN 10204-3.1 <sup>3)</sup>	C12	certificate as well in addition to the respective remote seals.  4) Not together with types of protection "Explosion-proof", "Ex n.	A" and
Acceptance certificate (EN 10204-3.1); PMI test of parts in contact with medium	C15	"Intrinsic safety and explosion-proof"  5) Only in conjunction with FM and/or <sub>C</sub> CSA <sub>US</sub>	
Functional Safety (SIL2) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	C20	<ul> <li>Not recommended for Measuring span "D"</li> <li>The device plug Han 8D is identical with the former Han 8U on the span of /li></ul>	English.
Degree of protection approvals: Ex ia/ib (intrinsic safety)		9) Cable glands must be ordered separately from "Further desig	
Ex ia/ib protection (ATEX) (T4)	E00	(add "-Z" to Article No. and specify order code).	
Ex IS protection (FM) (T4)	E01		
Ex IS protection ( <sub>C</sub> CSA <sub>US</sub> ) (T4)	E02		
Ex ia/ib protection (NEPSI) (T4)	E06		

Pressure transmitters for applications with highest requirements (Premium) SITRANS P500

for level

Selection and ordering data	Order code
Additional data Please add "-Z" to Article No. and specify Order code(s) and plain text.	
Measuring range to be set	
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/cm², kg/cm², Torr, ATM, % or mA	
*) Reference temperature 20 °C	
Setting of pressure indication in non-pressure units <sup>1)</sup> Specify in plain text:	Y22 + Y01
Y22: up to I/min, m <sup>3</sup> /h, m, USgpm, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	
Customer-specific settings	
Damping setting (range: 0 100 s) (Standard setting: 2 s)	Y30

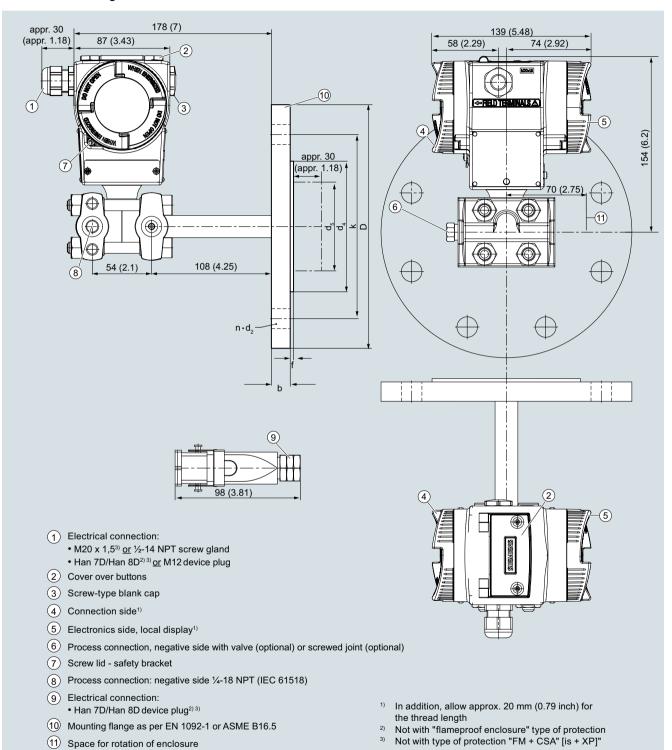
 $<sup>^{\</sup>rm 1)}$  Preset values can only be changed over SIMATIC PDM.

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Pressure transmitters for applications with highest requirements (Premium) SITRANS P500

for level

#### Dimensional drawings



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

Pressure transmitters for applications with highest requirements (Premium) SITRANS P500

for level

### Connection to EN 1092-1

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

### Connection to ASME B16.5

Nominal diameter	Nominal pressure	b	D	d <sub>2</sub>	d <sub>4</sub>	<b>d</b> <sub>5</sub>	d <sub>M</sub>	f	k	n	L
	lb/sq.in.	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)		inch (mm)
2 inch	class 150	0.77 (19.5)	5.91 (150)	0.75 (19.0)	3.62 (92)	1.9 (48.3)	1.77 (45) <sup>1)</sup>	0.079 (2.0)	4.75 (120.7)	4	0, 2, 3.94,
	class 300	0.89 (22.7)	6.49 (165)	0.75 (19.0)	3.62 (92)	1.9 (48.3)	1.77 (45) <sup>1)</sup>	0.079 (2.0)	5.0 (127)	8	5.94 or 7.87
3 inch	class 150	0.96 (24.3)	7.5 (190.5)	0.75 (19.0)	5 (127)	3.0 (76)	2.83 (72) <sup>2)</sup>	0.079 (2.0)	6 (152.4)	4	(0, 50,
	class 300	1.14 (29.0)	8.27 (210)	0.87 (22.2)	5 (127)	3.0 (76)	2.83 (72) <sup>2)</sup>	0.079 (2.0)	6.69 (168.3)	8	100, 150 or 200)
4 inch	class 150	0.96 (24.3)	9.06 (230)	0.75 (19.0)	6.19 (157.2)	3.69 (94)	3.5 (89)	0.079 (2.0)	7.5 (190.5)	8	-
	class 300	1.27 (32.2)	10.04 (255)	0.87 (22.2)	6.19 (157.2)	3.69 (94)	3.5 (89)	0.079 (2.0)	7.88 (200)	8	

#### Explanations of tables:

d: Internal diameter of gasket to DIN 2690

 $d_M$ : Effective diaphragm diameter

d<sub>5</sub>: Diameter of extension

f: Milling edge

L: Extension length

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

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

Pressure transmitters for applications with highest requirements (Premium) SITRANS P500

**Accessories/Spare parts** 

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

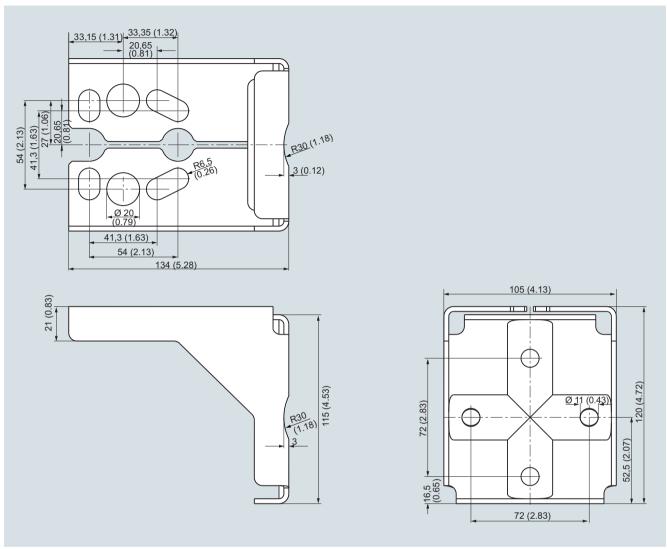
	Article No.
Documentation	
The entire documentation is available for download free-of-charge in various languages at: http://www.siemens.com/processinstrumentation/documentation	
Compact operating instructions	
• German, Spanish, French, Italian, Dutch	A5E02344532
• Estonian, Latviaan, Lithuanian, Polish, Romanian	A5E02307339
Bulgarian, Czech, Finnish, Slovakian, Slovenian	A5E02307340
<ul> <li>Danish, Greek, Portuguese, Swedish, Hungarian</li> </ul>	A5E02307341
Russian	A5E02307338
HART modem	
With USB interface	7MF4997-1DB
Certificates (order only via SAP) additional to internet download	
Hard copy (to order)	A5E03252406
• On DVD (to order)	A5E03252407

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

Pressure transmitters for applications with highest requirements (Premium) 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)

Pressure transmitters for applications with highest requirements (Premium) SITRANS P500

### Factory-mounting of valve manifolds on transmitters

#### Overview

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

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

### Design

The 7MF9411-5BA and 7MF9411-5CA 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 (2411 in $H_2O$ )) 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 manifold respectively.

#### Selection and ordering Data

# Valve manifold 7MF9411-5BA on SITRANS P pressure transmitter P500 for differential pressure and flow



Add -Z to the Article No. of the transmitter and add Order codes	Order code
SITRANS P500 7MF54	
mounted with gaskets made of PTFE and screws made of	
Chromized steel	U01
• Stainless steel	U02
Delivery incl. high-pressure test certified by factory certificate to EN 10204-2.2	
Further designs:	
Delivery includes mounting bracket and mounting clips made of	
• Steel	A01
• Stainless steel	A02
(instead of the mounting bracket supplied with the transmitter)	
Supplied acceptance test certificate to EN 10204-3.1 for transmitters and mounted valve manifold	C12

# Valve manifold 7MF9411-5CA on SITRANS P500 pressure transmitter for differential pressure and flow



и.	pressure and now	
	Add -Z to the Article No. of the transmitter and add Order codes	Order code
	SITRANS P500 7MF54	
	mounted with gaskets made of PTFE and screws made of	
	Chromized steel	U03
	• Stainless steel	U04
	Delivery incl. high-pressure test certified by factory certificate to EN 10204-2.2	
	Further designs:	
	Delivery includes mounting bracket and mounting clips made of	
	• Steel	A01
	• Stainless steel	A02
	(instead of the mounting bracket supplied with the transmitter)	
	Supplied acceptance test certificate to EN 10204-3.1 for transmitters and mounted valve manifold	C12

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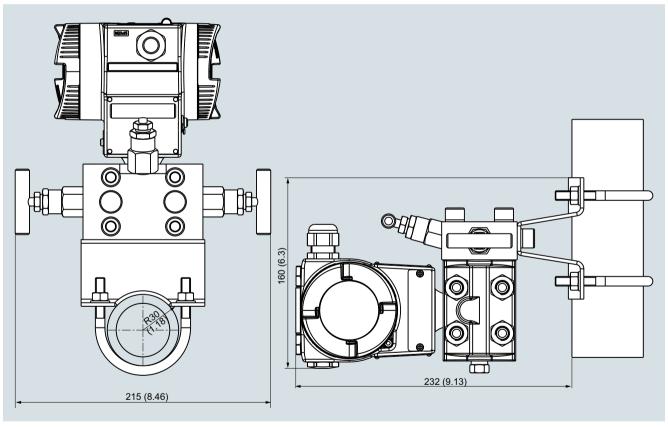
Pressure transmitters for applications with highest requirements (Premium) SITRANS P500

Factory-mounting of valve manifolds on transmitters

## Dimensional drawings



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



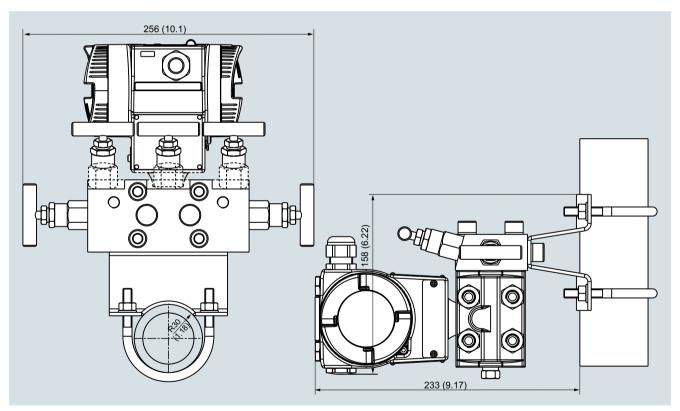
Valve manifold 7MF9411-5BA with attached SITRANS P500 pressure transmitter for differential pressure and flow, measurements in mm (inch)

Pressure transmitters for applications with highest requirements (Premium) SITRANS P500

### Factory-mounting of valve manifolds on transmitters



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



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

Remote seals for pressure transmitters SITRANS P320/P420

### **Technical description**

### Overview

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

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

- Pressure
- Absolute pressure
- · Differential pressure and flow

#### Note

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

### Benefits

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

### Application

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

Examples of such cases:

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

### Design

A remote seal system consists of the following components.

- Pressure transmitter
- One or two remote seals
- · Filling liquid
- Connection between pressure transmitter and remote seal (direct mounting or by means of capillary)

The volume in contact with the measured medium is terminated by a flat elastic diaphragm lying in a bed. Between the diaphragm and the pressure transmitter is the filling liquid.

In many cases, a capillary has to be connected between the remote seal and the pressure transmitter in order e.g. to minimize temperature effects on the latter when hot media are involved.

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

The remote seal can be optionally equipped with a projecting diaphragm (tube).

Remote seals of sandwich design are fitted with a dummy flange.

### Designs

### Diaphragm seal

With diaphragm seals, the pressure is measured by means of a flat diaphragm which rests in a bed.

The following types of diaphragm seals exist:



Diaphragm seal of sandwich design without (left) and with a projecting diaphragm (tube)

- · Sandwich design
- Sandwich design with projecting diaphragm (tube) to DIN or ASME which are secured using a dummy flange.



Diaphragm seal of flange design without (left) and with a projecting diaphragm (tube)

- Flange design
- Flange design with projecting diaphragm (tube) to DIN or ASME, secured using holes in the flange.



Quick-release diaphragm seal

Remote seals for pressure transmitters SITRANS P320/P420

### **Technical description**

- Quick-release remote seals, e.g. to DIN 11851, SMS standard, IDF standard, APV RJF standard, clamp connection, etc.
- Miniature diaphragm seal with male thread for screwing into tapped holes
- Remote seals with customer-specific process connections



Miniature diaphragm seal with diaphragm flush with front

• Miniature diaphragm seals

The quick-release remote seals are used above all in the food industry. Their design means that the measured medium cannot accumulate in dead volumes. The quick-release clamp present on the remote seal means that quick dismounting is possible for cleaning.

### Clamp-on seal



Clamp-on seal with quick-release design (left) and for flange mounting

With clamp-on seals, the pressure is first measured using a cylindrical diaphragm positioned in a pipe, and then transmitted to the pressure transmitter by means of the filling liquid.

The clamp-on seal is a special design for flowing media. It consists of a cylindrical pipe in which a cylindrical diaphragm is embedded. Since it is completely integrated in the process pipe, no turbulences, dead volumes or other obstructions to the flow occur. Furthermore, the clamp-on seal can be cleaned by a pig.

The following types of clamp-on seals exist:

- Quick-release clamp-on seals, e.g. to DIN 11851, SMS standard, IDF standard, APV/RJF standard, clamp connection etc.
  The quick-release facility attached to the remote seal enables the seal to be removed quickly for cleaning purposes.
- Clamp-on seals for flanging to EN or ASME.
- Clamp-on seals with customer-specific process connections.

#### Note

The pressure data on the transmitter and the remote seal must be observed with regard to pressure/temperature behavior.

### Function

The measured pressure is transferred from the diaphragm to the filling liquid and passes through the capillary to the measuring chamber of the pressure transmitter. The interior of the diaphragm seal and of the capillary, as well as the measuring chamber of the transmitter, are filled gas-free by the filling liquid.

### Transmission response

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

- Temperature error
- Adjustment time

#### Temperature error

Temperature errors are caused by the change of volume of the filling liquid due to temperature variations. To select the right remote seal you must calculate the temperature error.

Below you will find an overview of the factors which influence the size of the temperature error, as well as information on how to calculate the temperature error.

The temperature error is dependent on the following variables:

- Rigidity of the diaphragm used
- · Filling liquid used
- Influence of the filling liquid underneath the process flanges or in the connection shank of the pressure transmitter
- Internal diameter of the capillary: The bigger the internal diameter, the bigger the temperature error
- Length of the capillary: The longer the capillary, the bigger the temperature error

### Diaphragm rigidity

The rigidity of the diaphragm is of decisive importance. The bigger the diameter of the diaphragm, the softer the diaphragm and the more sensitively it reacts to temperature-induced changes in volume of the filling liquid.

The result is that small measuring ranges are only possible with large diaphragm diameters.

Other factors apart from diaphragm rigidity which also play a role:

- Diaphragm thickness
- Diaphragm material
- · Coatings if present

### Filling liquid

Every filling liquid reacts to temperature variations with a change of volume. Temperature errors can be minimized by selecting a suitable filling liquid, but the filling liquid must also be appropriate for the temperature limits and operating pressure. Furthermore, the filling liquid must also be physiologically harmless.

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

### Note

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

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

Remote seals for pressure transmitters SITRANS P320/P420

**Technical description** 

### Response time

The response time is dependent on the following factors:

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

### Recommendations

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

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

#### Note

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

Other versions can be:

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

Please contact your local Siemens office for further information.

### Negative pressure service

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

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

The higher the temperature and the lower the associated process pressure in the liquid, the more difficult it gets to guarantee the desired transmission properties of the fill fluid and therefore the measuring arrangement.

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

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

This means you have to pay special attention to the physical properties of fill fluids with applications in the negative pressure range

There are three stages for the negative pressure resistance:

- Standard design of the remote seal without additional protective measures, suitable for the overpressure range and low negative pressure range. This design is identified with (1) in the diagrams below in section 3.
- Negative pressure service with suitable seals and treated fill fluid, identified with (2) in the diagrams below in section 3.
   Here you select the order codes D81 or D83, depending on the mounting type.
- Extended negative pressure service with more extended treatment of the fill fluid and the remote seals, identified in the diagrams below. Here you select the order codes D85 or D88, depending on the mounting type.

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

Remote seals for pressure transmitters SITRANS P320/P420

### **Technical description**

Technical specifications of the remote seal filling liquids

Filling liquid	Num- ber in the Arti- cle No.	Density at 20°C [kg/dm <sup>3</sup> ]	Viscos- ity at 20°C [mm²/s]	Suitable for nega- tive pres- sure service	Suitable for extended negative pressure service
Silicone oil M5	1	0.914	4	Х	-
Silicone oil M50	2	0.966	50	Х	х
High-tempera- ture oil	3	1.070	57	Х	Х
Halocarbon oil	4	1.968	14	Х	-
Food oil (FDA-listed)	7	0.920	10	Х	х

The suitable negative pressure service is specified with the pressure/temperature curves of the respective liquids described below.

**Note:** For reasons of operational safety, the transmitter must not exceed the height of the remote seal - with differential pressure applications, the height of the bottom remote seal - for measurements in the negative pressure range. The associated installation types B, C1, C2 or H are described at the end of this section under the topic "Measuring arrangements".

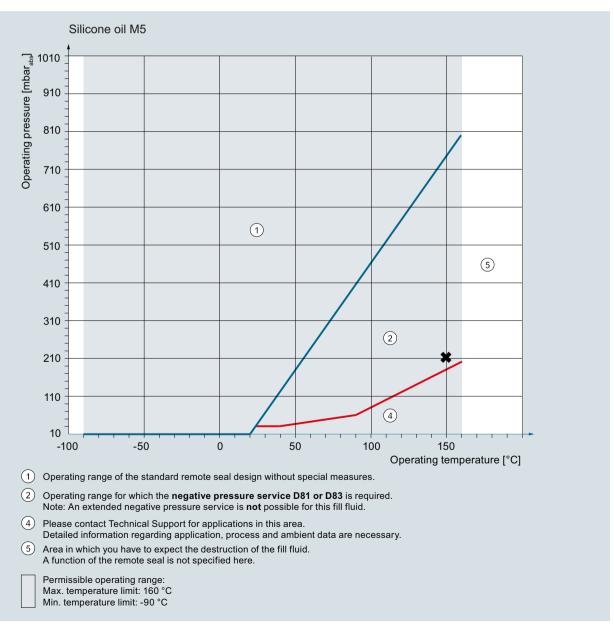
#### Selection of the required negative pressure service

The procedure for determining the required negative pressure service is described below using the silicone oil M5 as fill fluid. The minimum existing process pressure of a fictitious process is 200 mbar<sub>abs</sub> (2.9 psi) (at a maximum process temperature of 150 °C (302 °F)). This intersection is identified by an "**\***" in the diagram below. This means the negative pressure service D81 or D83 (depending on the application) is sufficient in this example

The suitable negative pressure resistance is determined this way for all other fill fluids.

#### Note:

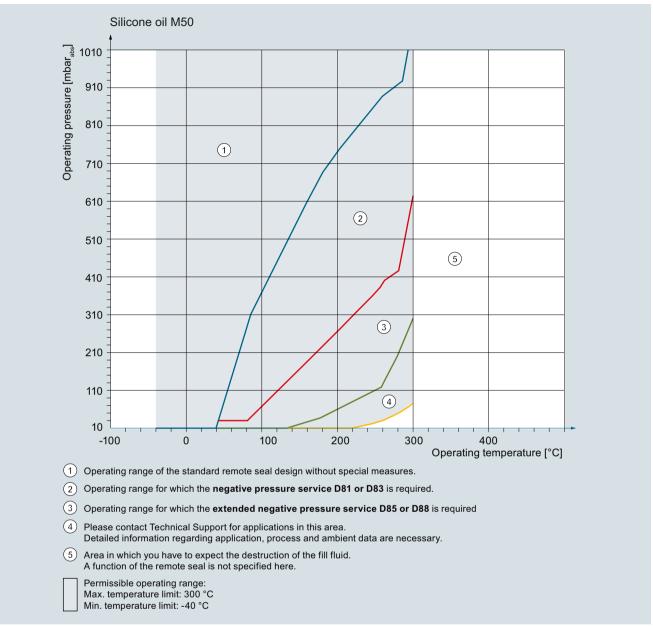
Note the response times according to the table on page 1/337.



Negative pressure applications with silicone oil M5

Remote seals for pressure transmitters SITRANS P320/P420

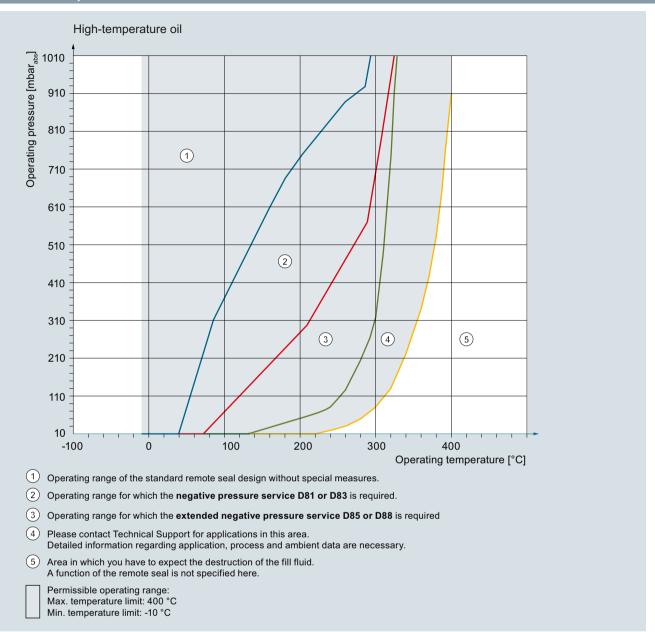
**Technical description** 



Negative pressure applications with silicone oil M50

Remote seals for pressure transmitters SITRANS P320/P420

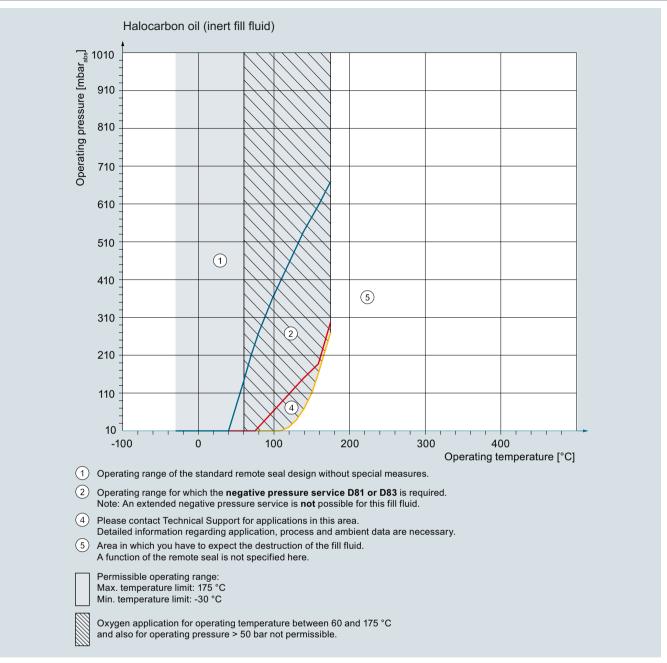
## **Technical description**



Negative pressure applications with high-temperature oil

Remote seals for pressure transmitters SITRANS P320/P420

**Technical description** 

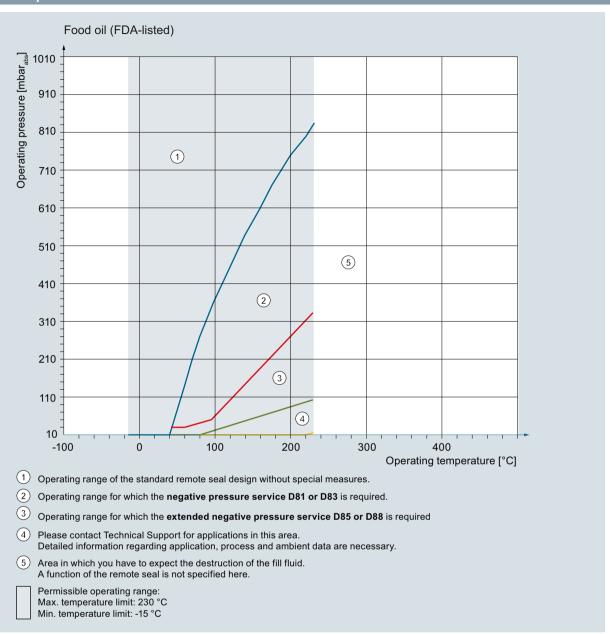


Negative pressure applications with halocarbon oil (inert filling liquid)

A BAM approval for process temperatures up to  $60 \, ^{\circ}\text{C}$  (140  $^{\circ}\text{F}$ ) and system pressures up to 50 bar (725 psi) is available for the oxygen application.

Remote seals for pressure transmitters SITRANS P320/P420

## **Technical description**



Negative pressure applications with food oil (FDA listed)

Remote seals for pressure transmitters SITRANS P320/P420

**Technical description** 

# Technical specifications Temperature error Diaphragm seals

Temperature errors of diaphragm seals when connected to pressure transmitters for pressure, absolute pressure, differential pressure (single-sided) and level

	Nominal diameter/ design		Diaphragm diameter		rature of remote	Temperature c capillary f <sub>Cap</sub>	Temperature error of capillary f <sub>Cap</sub>		rature f process /connec- pigot f <sub>PF</sub>	Recomm min. spa ance valu observe error)	ns (guid- ues,
		mm	(inch)	mbar/ 10 K	(psi/ 10 K)	mbar/ (10 K · m <sub>Cap</sub> )	(psi/ (10 K · m <sub>Cap)</sub> ))	mbar/ 10 K	(psi/ 10 K)	mbar	(psi)
Sandwich	DN 50 without tube	59	(2.32)	1.5	(0.022)	2	(0.029)	2	(0.029)	200	(2.90)
design or with flange to	DN 50 with tube	45	(1.89)	5	(0.073)	10	(0.145)	10	(0.145)	500	(7.25)
EN 1092-1	DN 80 without tube	89	(3.50)	0.2	(0.003)	0.2	(0.003)	0.2	(0.003)	100	(1.45)
	DN 80 with tube	72	(2.83)	1	(0.015)	1	(1.015)	1	(1.015)	250	(3.63)
	DN 100 without tube	89	(3.50)	0.2	(0.003)	0.4	(0.006)	0.4	(0.006)	100	(1.45)
	DN 100 with tube	89	(3.50)	0.4	(0.006)	0.4	(0.006)	0.4	(0.006)	100	(1.45)
	DN 125 without tube	124	(4.88)		(0.003)	0.1	(0.002)	0.1	(0.002)	20	(0.29)
	DN 125 with tube	124	(4.88)		(0.003)	0.1	(0.002)	0.1	(0.002)	20	(0.29)
Sandwich	2 inch without tube	59	(2.32)	1.5	(0.022)	2	(0.029)	2	(0.029)	200	(2.90)
design or with	2 inch with tube	45	(1.89)	5	(0.073)	10	(0.145)	10	(0.145)	500	(7.25)
lange to ASME B16.5	3 inch without tube	89	(3.50)	0.2	(0.003)	0.2	(0.003)	0.2	(0.003)	100	(1.45)
	3 inch with tube	72	(2.83)	1	(0.015)	1	(1.015)	1	(1.015)	250	(3.63)
	4 inch without tube	89	(3.50)	0.2	(0.003)	0.4	(0.006)	0.4	(0.006)	100	(1.45)
	4 inch with tube	89	(3.50)	0.4	(0.006)	0.4	(0.006)	0.4	(0.006)	100	(1.45)
	5 inch without tube	124	(4.88)	0.2	(0.003)	0.1	(0.002)	0.1	(0.002)	20	(0.29)
	5 inch with tube	124	(4.88)	0.2	(0.003)	0.1	(0.002)	0.1	(0.002)	20	(0.29)
Remote seal	DN 25	25	(0.98)	20	(0.290)	60	(0.870)	60	(0.870)	6000	(87)
with union nut to DIN 11851	DN 32	32	(1.26)	8	(0.116)	25	(0.363)	25	(0.363)	4000	(58)
	DN 40	40	(1.57)	4	(0.058)	10	(0.145)	10	(0.145)	2000	(29)
	DN 50	52	(2.05)	4	(0.058)	5	(0.073)	5	(0.073)	500	(7.25)
	DN 65	59	(2.32)	3	(0.044)	4	(0.058)	4	(0.058)	500	(7.25)
	DN 80	72	(2.83)		(0.015)	1	(0.015)	1	(0.015)	250	(3.63)
Remote seal, screwed gland design	DN 50	52	(2.05)	4	(0.058)	5	(0.073)	5	(0.073)	500	(7.25)
Remote seal	DN 25	25	(0.98)	20	(0.290)	60	(0.870)	60	(0.870)	6000	(87)
with threaded socket to	DN 32	32	(1.26)	8	(0.116)	25	(0.363)	25	(0.363)	4000	(58)
DIN 11851	DN 40	40	(1.57)	4	(0.058)	10	(0.145)	10	(0.145)	2000	(29)
	DN 50	52	(2.05)		(0.058)	5	(0.073)	5	(0.073)	500	(7.25)
	DN 65	59	(2.32)	3	(0.044)	4	(0.058)	4	(0.058)	500	(7.25)
	DN 80	72	(2.83)	1	(0.015)	1	(0.015)	1	(0.015)	250	(3.63)
Clamp connection	1½ inch	32	(1.26)		(0.116)	25	(0.363)	25	(0.363)	4000	(58)
.IOI I	2 inch	40	(1.57)		(0.058)	10	(0.145)	10	(0.145)	2000	(29)
	2½ inch	59	(2.32)		(0.044)	5	(0.073)	5	(0.073)	500	(7.25)
	3 inch	72	(2.83)	1	(0.015)	1	(0.015)	1	(0.015)	250	(3.63)
Miniature dia- ohragm seal	G1B	25	, ,	20	(0.290)	60	(0.870)	60	(0.870)	6000	(87)
omagin seai	G1½B	40	, ,	4	(0.058)	10	(0.145)	10	(0.145)	2000	(29)
	G2B	52	(2.05)	4	(0.058)	5	(0.073)	5	(0.073)	500	(7.25)

## Remarks:

- Values apply for the filling liquids silicone oil M5, silicone oil M50, high-temperature oil, halocarbon oil and food oil (FDA listed).
- Values apply to stainless steel as the diaphragm material.

Remote seals for pressure transmitters SITRANS P320/P420

## **Technical description**

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

	Nominal diameter/ design	Diaphra diamete		of remote seal f <sub>RS</sub>		Temperature error of capillary f <sub>Cap</sub>		Temperature error of process flange/connec- tion spigot f <sub>PF</sub>		Recommended min. spans (guidance val- ues, observe temperature error)	
		mm	(inch)	mbar/ 10 K	(psi/ 10 K)	mbar/ (10 K · m <sub>Cap</sub> )	(psi/ (10 K · m <sub>Cap</sub> ))	mbar/ 10 K	(psi/ 10 K)	mbar	(psi)
Sandwich	DN 50 without tube	59	(2.32)	0.3	(0.0043)	0.3	(0.0045)	0.3	(0.0045)	250	(3.626)
design or with flange to	DN 50 with tube	45	(1.89)	1.26	(0.018)	1.7	(0.025)	1.7	(0.025)	250	(3.626)
EN 1092-1	DN 80 without tube	89	(3.50)	0.05	(0.001)	0.05	(0.001)	0.05	(0.0007)	50	(0.725)
	DN 80 with tube	72	(2.83)	0.24	(0.004)	0.17	(0.003)	0.17	(0.003)	100	(1.45)
	DN 100 without tube	89	(3.50)	0.05	(0.001)	0.07	(0.001)	0.07	(0.001)	50	(0.725)
	DN 100 with tube	89	(3.50)	0.1	(0.002)	0.07	(0.001)	0.07	(0.001)	50	(0.725)
	DN 125 without tube	124	(4.88)	0.05	(0.001)	0.03	(0.0004)	0.03	(0.0004)	20	(0.29)
	DN 125 with tube	124	(4.88)	0.05	(0.001)	0.03	(0.0004)	0.03	(0.0004)	20	(0.29)
Sandwich	2 inch without tube	59	(2.32)	0.3	(0.0043)	0.3	(0.0043)	0.3	(0.0045)	250	(3.626)
design with flange to	2 inch with tube	45	(1.89)	1.26	(0.018)	1.7	(0.025)	1.7	(0.025)	250	(3.626)
ASME B16.5	3 inch without tube	89	(3.50)	0.05	(0.001)	0.05	(0.0007)	0.05	(0.0007)	50	(0.725)
	3 inch with tube	72	(2.83)	0.24	(0.004)	0.17	(0.003)	0.17	(0.003)	100	(1.45)
	4 inch without tube	89	(3.50)	0.05	(0.001)	0.07	(0.001)	0.07	(0.001)	50	(0.725)
	4 inch with tube	89	(3.50)	0.1	(0.002)	0.07	(0.001)	0.07	(0.001)	50	(0.725)
	5 inch without tube	124	(4.88)	0.05	(0.001)	0.03	(0.0004)	0.03	(0.0004)	20	(0.29)
	5 inch with tube	124	(4.88)	0.05	(0.001)	0.03	(0.0004)	0.03	(0.0004)	20	(0.29)
Remote seal, screwed gland design	DN 50	52	(2.05)	1	(0.015)	0.83	(0.012)	0.83	(0.012)	250	(3.626)
Remote seal	DN 50	52	(2.05)	1	(0.015)	0.83	(0.012)	0.83	(0.012)	250	(3.626)
with union nut to DIN 11851	DN 65	59	(2.32)	0.7	(0.010)	0.67	(0.010)	0.67	(0.010)	250	(3.626)
	DN 80	72	(2.83)	0.24	(0.004)	0.17	(0.003)	0.17	(0.003)	100	(1.450)
Remote seal	DN 50	52	(2.05)	1	(0.015)	0.83	(0.012)	0.83	(0.012)	250	(3.626)
with threaded socket to	DN 65	59	(2.32)	0.7	(0.010)	0.67	(0.010)	0.67	(0.010)	250	(3.626)
DIN 11851	DN 80	72	(2.83)	0.24	(0.004)	0.17	(0.003)	0.17	(0.003)	100	(1.450)
Clamp connec-	2 inch	40	(1.57)	1	(0.015)	2.5	(0.036)	2.5	(0.036)	2000	(29.01)
tion	2½ inch	59	(2.32)	0.7	(0.010)	0.67	(0.010)	0.67	(0.010)	250	(3.626)
	3 inch	72	(2.83)	0.24	(0.004)	0.17	(0.003)	0.17	(0.003)	100	(1.450)

### Remarks:

- Values apply for the filling liquids silicone oil M5, silicone oil M50, high-temperature oil, halocarbon oil and food oil (FDA listed).
- Values apply to stainless steel as the diaphragm material.

Remote seals for pressure transmitters SITRANS P320/P420

Technical description

### Temperature error Clamp-on seals

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

Nominal diameter/ design	Temperature error of remote seal f <sub>RS</sub>				Temperature error of process flange/connection spigot f <sub>PF</sub>		Recommended min. spans (guidance values, observe temperature error)	
	mbar/10 K	(psi/10 K)	mbar/10 K	(psi/10 K)	mbar/10 K	(psi/10 K)	mbar	(psi)
DN 25 (1 inch)	6.0	(0.0870)	8.5	(0.123)	8.5	(0.123)	1000	(14.5)
DN 40 (1½ inch)	4.5	(0.065)	4.5	(0.065)	4.5	(0.065)	250	(3.63)
DN 50 (2 inch)	4.0	(0.058)	3.0	(0.044)	3.0	(0.044)	100	(1.45)
DN 80 (3 inch)	9.5	(0.138)	5.0	(0.073)	5.0	(0.073)	100	(1.45)
DN 100 (4 inch)	8.0	(0.012)	3.0	(0.044)	3.0	(0.044)	100	(1.45)

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

Nominal diameter/ design	Temperature error of remote seal f <sub>RS</sub>		Temperature e capillary f <sub>Cap</sub>	capillary f <sub>Cap</sub>		Temperature error of process flange/connection spigot f <sub>PF</sub>		Recommended min. spans (guidance values, observe temperature error)	
	mbar/10 K	(psi/10 K)	mbar/10 K	(psi/10 K)	mbar/10 K	(psi/10 K)	mbar	(psi)	
DN 25 (1 inch)	2.3	(0.033)	1.8	(0.026)	1.8	(0.026)	1000	(14.5)	
DN 40 (1½ inch)	0.8	(0.012)	0.3	(0.004)	0.3	(0.004)	250	(3.63)	
DN 50 (2 inch)	0.3	(0.004)	0.1	(0.002)	0.1	(0.002)	100	(1.45)	
DN 80 (3 inch)	3.0	(0.044)	0.5	(0.007)	0.5	(0.007)	100	(1.45)	
DN 100 (4 inch)	1.0	(0.015)	0.1	(0.002)	0.1	(0.002)	100	(1.45)	

### Remarks:

- Values apply for the filling liquids silicone oil M5, silicone oil M50, high-temperature oil, halocarbon oil and food oil (FDA listed).
- Half the values apply to glycerin/water mixture as the filling liquid.
- Values apply to stainless steel as the diaphragm material.
- Diaphragm thickness 0.05 mm (0.002 inch) for DN 25/DN 40/DN 50 and 0.1 mm (0.004 inch) for DN 80/DN 100

Remote seals for pressure transmitters SITRANS P320/P420

### **Technical description**

### Calculation of the temperature error

The following equation is used to calculate the temperature error:

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

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

### Example of temperature error calculation

#### **Existing conditions:**

Existing conditions.	
SITRANS P pressure transmitter for differential pressure, 250 mbar, set to 0 100 mbar, with DN 100 remote seal diaphragms without tube, diaphragm made of stainless steel, mat. No. 1.4404/316L	f <sub>RS</sub> = 0.05 mbar/10 K (0.039 inH <sub>2</sub> O/10 K)
Capillary length	$I_{Cap} = 6 \text{ m (19.7 ft)}$
Capillaries fitted on both sides	$f_{Cap} = 0.07 \text{ mbar/}(10 \text{ K} \cdot \text{m}_{Cap})$ (0.028 inH <sub>2</sub> O/(10 K · m <sub>Cap</sub> ))
Filling liquid silicone oil M5	f <sub>PF</sub> = 0.07 mbar/10 K (0.028 inH <sub>2</sub> O/10 K)
Process temperature	θ <sub>RS</sub> = 100 °C (212 °F)
Temperature on the capillaries	θ <sub>Cap</sub> = 50 °C (122 °F)
Temperature on pressure transmitter	θ <sub>TR</sub> = 50 °C (122 °F)
Calibration temperature	9 <sub>Cal</sub> = 20 °C (68 °F)

#### Required:

Additional temperature error of remote seals: dp

### Calculation:

in	m	bar

 $dp = (100 \,^{\circ}\text{C} - 20 \,^{\circ}\text{C}) \cdot 0.05 \,\, \text{mbar} / 10 \,\, \text{K} + (50 \,^{\circ}\text{C} - 20 \,^{\circ}\text{C}) \cdot 6 \,\, \text{m} \cdot 0.07 \,\, \text{mbar} / (10 \,\, \text{K} \cdot \text{m}) + (50 \,^{\circ}\text{C} - 20 \,^{\circ}\text{C}) \cdot 0.07 \,\, \text{mbar} / 10 \,\, \text{K}$   $dp = 0.4 \,\, \text{mbar} + 1.26 \,\, \text{mbar} + 0.21 \,\, \text{mbar}$ 

### in inH<sub>2</sub>O

 $dp = (212 \text{ °F} - 68 \text{ °F}) \cdot 0.039 \text{ inH}_2\text{O}/10 \text{ K} + (112 \text{ °F} - 68 \text{ °F}) \cdot 19.7 \text{ ft} \cdot 0.028 \text{ inH}_2\text{O}/(10 \text{ K} \cdot 3.28 \text{ ft}) + (112 \text{ °F} - 68 \text{ °F}) \cdot (0.028 \text{ inH}_2\text{O}/10 \text{ K})$   $dp = 0.16 \text{ inH}_2\text{O} + 0.51 \text{ inH}_2\text{O} + 0.08 \text{ inH}_2\text{O}$ 

#### Result:

### $dp = 1.87 \text{ mbar } (0.75 \text{ inH}_2\text{O})$

(corresponds to 2.27% of set span)

#### Note

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

The transmission response of the respective transmitter is  $\underline{\mathsf{not}}$  included in this consideration.

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

### Dependence of temperature error on diaphragm material

The temperature errors listed in the previous table are based on the use of stainless steel as the diaphragm material. If other diaphragm materials are used, the temperature errors change as follows:

Diaphragm material	Change in temperature error of remote seal
	Increase in values by
Stainless steel, Duplex,	See previous tables
Hastelloy C4, mat. No. 2.4602	50 %
Hastelloy C276, mat. No. 2.4819	50 %
Monel 400, mat. No. 2.4360	60 %
Tantalum	50 %
Titanium	50 %
PTFE coating on stainless steel diaphragm	80 %
ECTFE coating or PFA coating on stainless steel diaphragm	100 %
Gold coating on stainless steel diaphragm	40 %
Inconel	50 %
Incoloy	50 %

#### Maximum temperature of medium

#### Note:

When taking into account the maximum medium temperature, the application limits of the fill fluids and gaskets used as well as the pressure/temperature limits of the respective process connections must also be taken into consideration.

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

pending on the material of the wetted parts.								
Material	Max. temperature of medium	Min./max. pressure						
Stainless steel, 316L	400 °C (752 °F)	No restriction						
PTFE coating	200 °C (392 °F)	< 0 bar (0 psi); gauge pressure						
	260 °C (500 °F)	0 bar (0 psi) 25 bar (363 psi); gauge pressure						
	150 °C (302 °F)	25 bar (363 psi) 40 bar (580 psi); gauge pressure						
	50 °C (302 °F)	40 bar (580 psi) 60 bar (870 psi); gauge pressure						
ECTFE coating	150 °C (302 °F)	For pressures < 1 bar (14.5 psi) on request						
PFA coating	200 °C (392 °F)	< 0 bar (0 psi); gauge pressure						
	260 °C (500 °F)	25 bar (363 psi)/40 bar (580 psi); gauge pressure						
	150 °C (302 °F)	40 bar (580 psi)/60 bar (870 psi); gauge pressure						
	50 °C (302 °F)	For pressures < 1 bar (14.5 psi) on request						
Hastelloy C4, mat. No. 2.4602	400 °C (752 °F)	No restriction						
Hastelloy C276, mat. No. 2.4819	400 °C (752 °F)	No restriction						
Hastelloy C22, mat. No. 2.4602	400 °C (752 °F)	No restriction						
Monel 400, mat. No. 2.4360	400 °C (752 °F)	No restriction						
Tantalum	300 °C (572 °F)	No restriction						
Duplex, mat. No. 1.4462	250 °C (482 °F)	No restriction						
Titanium	150 °C (302 °F)	No restriction						
Inconel	400 °C (752 °F)	No restriction						
Incoloy	400 °C (752 °F)	No restriction						
Gold coating	400 °C (752 °F)	No restriction						

Remote seals for pressure transmitters SITRANS P320/P420

**Technical description** 

# Maximum capillary length for diaphragm seals (guidance values)

(5								
Nom. diar	n.	Max. length of capillary						
		Diaphragi	n seal	Clamp-on seal				
		m	(ft)	m	(ft)			
DN 25	(1 inch)	2.5	(8.2)	2.5	(8.2)			
DN 32	(11/4 inch)	2.5	(8.2)	2.5	(8.2)			
DN 40	(1½ inch)	4	(13.1)	6	(19.7)			
DN 50	(2 inch)	6	(19.7)	10	(32.8)			
DN 65	(2½ inch)	8	(26.2)	10	(32.8)			
DN 80	(3 inch)	15	(49.1)	10	(32.8)			
DN 100	(4 inch)	15	(49.1)	10	(32.8)			
DN 125	(5 inch)	15	(49.1)	-	-			

### Response times

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

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

The response times are independent of the set span within the range of the respective transmitter. The response times are of insignificant importance for spans above 10 bar (145 psi). The response times of the pressure transmitters are not considered in the table.

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

Permissible data of filling liquids for pressure and temperature see diagrams on page 1/328 ff.

Remote seals for pressure transmitters SITRANS P320/P420

### **Technical description**

### More information

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

#### Ambient temperature range

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

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

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

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

### Process temperature

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

Filling liquid	Code	Optimized temperature range as standard
Silicone M50	В	-10 +200 °C (14 +392 °F)
High-temperature oil	С	-10 +300 °C (14 +572 °F)
Silicone oil M5	Α	-40 +140 °C (-40 +284 °F)
Food-grade oil (FDA grade)	E	-10 +140 °C (14 +284 °F)
Halocarbon oil	D	-20 +60 °C (-4 +140 °F)

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

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

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

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Remote seals for pressure transmitters SITRANS P320/P420

## Diaphragm seals of sandwich design with flexible capillary

## Overview



Sheath

Diaphragm seals of sandwich des	ign		
Technical specifications			
Diaphragm seals of sandwich de	esign	Sealing material in the process	
Nominal diameter	Nominal pressure	flanges	
Connecting standard EN 1092-1		<ul> <li>For pressure transmitters, absolute pressure transmitters and</li> </ul>	Copper
• DN 25, DN 40, DN 50, DN 65, DN 80, DN 100, DN 125	PN 16 PN 400	low-pressure applications	
Connecting standard ASME B16.5		For other applications	Viton
• 1 inch, 1½ inch, 2 inch, 2½ inch, 3 inch, 4 inch, 5 inch	Class 150 class 2500	Maximum pressure	See above and the technical data of the pressure transmitters
Connecting standard J.I.S.		Tube length	Without tube as standard (tube available on request)
• DN 25, DN 40, DN 50, DN 65,	10K 63K	Capillary	available of request,
DN 80, DN 100, DN 125		• Length	Max. 10 m (32.8 ft), longer lengths
Sealing surface		3	on request
<ul> <li>For stainless steel, mat. No. 1.4404/316L</li> </ul>	To EN 1092-1, form B1 or ASME B16.5 RF 125 250 AA	<ul> <li>Internal diameter</li> </ul>	max. 2 mm (0.079 inch)
• For the other materials	To EN 1092-1, form B2 or	<ul> <li>Minimum bending radius</li> </ul>	150 mm (5.9 inch)
To the other materials	ASME B16.5 RFSF	Filling liquid	Silicone oil M5
Materials			Silicone oil M50
Main body	Stainless steel mat. no. 1.4404/316L		High-temperature oil
<ul> <li>Wetted parts</li> </ul>	Stainless steel mat. no. 1.4404/316L		Halocarbon oil (for measuring O <sub>2</sub> )
	Without coating		Food grade oil (FDA listed)
	<ul><li>PTFE coating</li><li>ECTFE coating (for vacuum on request)</li></ul>	Permissible ambient temperature	Dependent on the pressure trans- mitter and the filling liquid of the remote seal
	PFA coating     Monel 400, mat. No. 2.4360     Hastelloy C276, mat. No. 2.4819     Hastelloy C4, mat. No. 2.4602		More information can be found in the technical data of the pressure transmitters and in the section "Technical data of filling liquid" in the Technical description to the remote seals
	Hastelloy C22, mat. no. 2.4602	Weight	Approx. 4 kg (8.82 lb)
	Tantalum Titanium, mat. no. 3.7035 Nickel 201 Duplex 2205, mat. no. 1.4462 Stainless steel 316L, gold plated, thickness approx. 25 µm	Certificate and approvals  Classification according to pressure equipment directive (DGRL 2014/68/EU)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)
• Capillary	Stainless steel, mat. No. 1.4571/316Ti		
01 11			

Spiral protective tube made of stainless steel, mat. No. 1.4404/316L

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Remote seals for pressure transmitters SITRANS P320/P420

## Diaphragm seals of sandwich design with flexible capillary

Selection and Ordering data	Article No.	Order code	Selection and Ordering data	Article No.	Order code
Diaphragm seal			Diaphragm seal		
Sandwich type design, with flexible capillary tube, connected with flexible capillary tube to a			Sandwich type design, with flexible capillary tube, connected with flexible capillary tube to a		
<ul> <li>SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only together with negative pressure ser- vice), 7MF03/7MF04 order separately Scope of delivery: 1 off</li> </ul>	7 M F 0 8 0 0 -		<ul> <li>SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only together with negative pressure ser- vice), 7MF03/7MF04 order separately Scope of delivery: 1 off</li> </ul>	7MF0800-	
<ul> <li>SITRANS P320/P420 transmitter for absolute pressure, 7MF03/7MF04 order separately, Scope of delivery: 1 off</li> </ul>	7MF0801-		<ul> <li>SITRANS P320/P420 transmitter for absolute pressure, 7MF03/7MF04 order separately, Scope of delivery: 1 off</li> </ul>	7MF0801-	
<ul> <li>SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03/7MF04</li> <li>order separately, Scope of delivery: 2 off</li> </ul>	7MF0802-		<ul> <li>SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03/7MF04</li> <li>order separately, Scope of delivery: 2 off</li> </ul>	7MF0802-	
	- 0			- 0	
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.			11 m (only for 7MF0802) 12 m (only for 7MF0802)	2 3 2 4	
Nominal diameter Nominal pressure			13 m (only for 7MF0802)	2 5	
Connecting standard EN 1092-1			14 m (only for 7MF0802)	2 6 2 7	
(DN 25, DN 40 and DN 50 recommended			15 m (only for 7MF0802)		
only for pressure transmitters) DN 25 PN 16 400	0.00		Other version Add Order code and plain text	9 8	L 1 Y
DN 25 PN 16 400 DN 40 PN 16 400	0 B Q 0 D Q		Filling liquid		
DN 50 PN 16 400	0 E Q		Silicone oil M5	А	
DN 65 PN 16 400	0 F Q		Silicone oil M50	В	
DN 80 PN 16 400	0 G Q		High-temperature oil	C	
DN 100 PN 16 400 DN 125 PN 16 400	0 H Q		Halocarbon oil	D E	
	0.00		Food-grade oil (FDA listed) Other version	Z	P 1 Y
Connecting standard ASME B16.5 (1 inch, 1½ inch and 2 inch recommended			Add Order code and plain text		
only for pressure transmitters)			Wetted parts materials		
1 inch class 150 2500	1 K X		Stainless steel 316L		
1½ inch class 150 2500 2 inch class 150 2500	1 L X 1 M X		Without coating	A	
2½ inch class 150 2500	1 N X		<ul> <li>With PFA coating</li> </ul>	D	
3 inch class 150 2500	1 P X		With PTFE coating	E	0
4 inch class 150 2500	1 Q X		<ul> <li>With ECTFE coating</li> <li>Monel 400, 2.4360</li> </ul>	F G	
5 inch class 150 2500	1 R X		Hastelloy C276, 2.4819	J	
Connecting standard J.I.S.			Tantalum	K	
(DN 25, DN 40 and DN 50 recommended			Titanium, 3.7035	L	
only for pressure transmitters) DN 25 10K 63K	2 BW		Nickel 201	M	-
DN 40 10K 63K	2 DW		Diaphragm Duplex, 1.4462 Diaphragm plus flange Duplex, 1.4462	Q R	
DN 50 10K 63K	2 EW		Stainless steel 316L with gold coating	s	
DN 65 10K 63K	2 FW		Hastelloy C4, 2.4610	U	0
DN 80 10K 63K DN 100 10K 63K	2 GW 2 HW		Hastelloy C22, 2.4602	V	0
DN 125 10K 63K	2 J W		Other version	z	8 Q1Y
Other version Add Order code and plain text	9 A A	H 1 Y	Add Order code and plain text  Extension length	-	ш
Length of capillary			• without		0
1 m	1 0		• 50 mm (2")		1 2
1,6 m	11		• 100 mm (4") • 150 mm (6")		3
2 m	1 2		• 200 mm (8")		4
2,5 m	13		• 250 mm (10")		5
3 m 4 m	1 4 1 5		Other version	Z	8 Q1Y
5 m	16		Add Order code and plain text		
6 m	17				
7 m	1 8				
8 m	2 0				
9 m	2 1				
10 m	2 2				

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Remote seals for pressure transmitters SITRANS P320/P420

## Diaphragm seals of sandwich design with flexible capillary

				ı
Selection and Orderin	ng data	Article No.	Order code	Ī
Diaphragm seal				
Sandwich type design tube, connected with f to a				
<ul> <li>SITRANS P320/P420 pressure or absolute (only together with n- vice), 7MF03/7MF0 Scope of delivery: 1</li> </ul>	7MF0800-			
<ul> <li>SITRANS P320/P420 lute pressure, 7MF03 rately, Scope of deliv</li> </ul>	3/7MF04 order sepa-	7MF0801-		
<ul> <li>SITRANS P320/P420 ential pressure and f order separately, Sco</li> </ul>	low, 7MF03/7MF04	7MF0802-		
O	Annatan Innath	- 0		
Customer-specific ex	•			
Range	ss steel without coating   Standard length			
20 50 mm (0.79 1.97")	50 mm (1.97")		A 1	
51 100 mm	100 mm (3.94")		A 2	
(2.01 3.94") 101 150 mm (3.98 5.91")	150 mm (5.91")		A 3	
151 200 mm (5.94 7.87")	200 mm (7.87")		A 4	
201 250 mm (7.91 9.84")	250 mm (9.84")		A 5	
<ul> <li>Wetted parts stainles coating</li> </ul>	ss steel with ECTFE			
Range	Standard length			
20 50 mm	50 mm (1.97")		F 1	
(0.79 1.97") 51 100 mm (2.01 3.94")	100 mm (3.94")		F 2	
101 150 mm (3.98 5.91")	150 mm (5.91")		F 3	
151 200 mm (5.94 7.87")	200 mm (7.87")		F 4	
201 250 mm (7.91 9.84")	250 mm (9.84")		F 5	
<ul> <li>Wetted parts stainles ing</li> </ul>	ss steel with PFA coat-			
Range	Standard length			
20 50 mm (0.79 1.97")	50 mm (1.97")		D 1	
51 100 mm (2.01 3.94")	100 mm (3.94")		D 2	
101 150 mm (3.98 5.91")	150 mm (5.91")		D 3	
151 200 mm (5.94 7.87")	200 mm (7.87")		D 4	
201 250 mm (7.91 9.84")	250 mm (9.84")		D 5	
<ul> <li>Wetted parts Monel</li> <li>Range</li> </ul>	400   Standard length			
20 50 mm (0.79 1.97")	50 mm (1.97")		G 1	
51 100 mm (2.01 3.94")	100 mm (3.94")		G 2	
101 150 mm (3.98 5.91")	150 mm (5.91")		G 3	
(5.94 200 mm (5.94 7.87")	200 mm (7.87")		G 4	

Selection and Orderi	Selection and Ordering data					
Diaphragm seal						
Sandwich type desigr tube, connected with to a						
<ul> <li>SITRANS P320/P420 pressure or absolute (only together with n vice), 7MF03/7MF0 Scope of delivery: 1</li> </ul>	7MF0800-					
<ul> <li>SITRANS P320/P420 lute pressure, 7MF00 rately, Scope of deliv</li> </ul>	7MF0801-					
<ul> <li>SITRANS P320/P420 ential pressure and order separately, Sc</li> </ul>	7MF0802-					
	- 0					
Wetted parts Hastell						
Range	Standard length					
20 50 mm (0.79 1.97")	50 mm (1.97")	J	1			
51 100 mm (2.01 3.94")	100 mm (3.94")	J	2			
101 150 mm (3.98 5.91")	150 mm (5.91")	J	3			
151 200 mm (5.94 7.87")	200 mm (7.87")	J	4			
Wetted parts Tantalu	ım					
Range	Standard length					
20 50 mm (0.79 1.97")	50 mm (1.97")	K	1			
51 100 mm (2.01 3.94")	K	2				
101 150 mm (3.98 5.91")	150 mm (5.91")	K	3			
151 200 mm (5.94 7.87")	200 mm (7.87")	K	4			

Remote seals for pressure transmitters SITRANS P320/P420

## Diaphragm seals of sandwich design with flexible capillary

Diapinagin Seais of Sandwich design with t	ioxibio capina
Selection and Ordering data	Order code
Further designs	
Add "-Z" to Article No. and specify Order code.	
Factory certificates	
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11
Inspection certificate to EN 10204-3.1 - material of body and wetted parts	C12
Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009) (only together with seal diaphragm made of Hastelloy and stainless steel)	C13
Inspection certificate (EN 10204-3.1) - PMI test of pressure containing and wetted parts	C15
Certificate of FDA-approved fill oil (to EN10204-2.2)	C17
Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511 (Includes SIL conformity declaration)	C20
Accessories  Spark arrestor (for gauge and absolute pressure transmitters)	D61
mitters) Spark arrestor (for differential pressure and level transmitters)	D62
Low-temperature version (for Silicon Oil M50 only)	D67
Negative pressure services	
Negative pressure service (for gauge and absolute pressure transmitters)	D81
Negative pressure service (for differential pressure transmitters)	D83
Extended negative pressure service (for gauge and	D85
absolute pressure transmitters) (only 7MF0800)  Extended negative pressure service (for differential pressure transmitters)	D88
General product approvals without explosion proof	
approvals	
Oil-and grease-free cleaned version (for O <sub>2</sub> -appl. including certificate EN10204-2.2 (only with fill fluid Halocarbon oil max. temperature	E80
60 °C and max. pressure 50 bar) Oil-and grease-free cleaned version (not for O <sub>2</sub> -appl.	E87
including certificate EN10204-2.2 (only with fill fluid Halocarbon oil)	207
Sealing surface	
Sealing surface smooth, form B2/EN1092-1 resp.	M50
RFSF/ANSI B16.5 (wetted parts 316L only) Sealing surface groove to EN1092-1, form D	M54
(instead of sealing surface B1, wetted parts 316L only) Sealing surface RJF (groove) to ASME B16.5	M64
(instead of sealing surface RF 125250AA, wetted parts 316L only)	WOT
Sealing surface with tongue to EN1092-1, form C (wetted parts 316L only)	
• DN 25	M70
• DN 40	M71
<ul><li>DN 50</li><li>DN 80</li></ul>	M72 M73
• DN 100	M74
• DN 125	M75
Sealing surface with spigot to EN1092-1, form E (wetted parts 316L only)	
• DN 25	M76
<ul><li>DN 40</li><li>DN 50</li></ul>	M77 M78
• DN 80	M79
• DN 100	M80
• DN 125	M81

Selection and Ordering data	Order code
Further designs	
Add "-Z" to Article No. and specify Order code.	
Sealing surface with recess to EN1092-1, form F (wetted parts 316L only)  • DN 25  • DN 40  • DN 50  • DN 80  • DN 100  • DN 125	M82 M83 M84 M85 M86 M87
Capillary connection (only for 7MF0800)	
Single-side mounted at differential pressure transmitters at high-side Single-side mounted at differential pressure transmitters at low-side	S03 S04
Capillary coating	
PE protective tube  1 m  1,6 m  2,5 m  3 m  4 m  5 m  6 m  7 m  8 m  9 m  10 m  11 m (only for 7MF0802)  12 m (only for 7MF0802)  13 m (only for 7MF0802)  15 m (only for 7MF0802)  PTFE protective tube  1 m  1,6 m  2 m  2,5 m  3 m  4 m  5 m  6 m  7 m  8 m  9 m  10 m  11 m (only for 7MF0802)	\$10 \$11 \$12 \$13 \$14 \$15 \$16 \$17 \$18 \$19 \$20 \$21 \$22 \$23 \$24 \$25 \$26 \$26 \$40 \$41 \$42 \$43 \$44 \$45 \$46 \$47 \$48 \$49 \$50 \$51 \$52 \$53 \$54 \$55 \$55 \$55 \$55 \$55 \$55 \$55 \$55 \$55

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Remote seals for pressure transmitters SITRANS P320/P420

## Diaphragm seals of sandwich design with flexible capillary

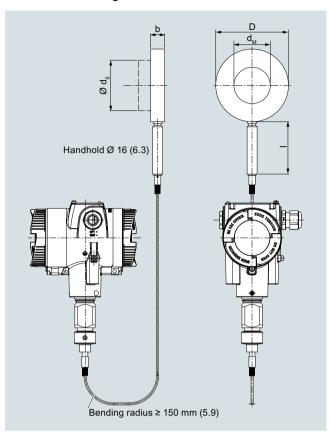
Selection and Ordering data	Order code
Further designs	
Add "-Z" to Article No. and specify Order code.	
PVC protective tube	
1 m	S70
1,6 m	S71
2 m	S72
2,5 m	S73
3 m	S74
4 m	S75
5 m	S76
6 m	S77
7 m	S78
8 m	S79
9 m	S80
10 m	S81
11 m (only for 7MF0802)	S82
12 m (only for 7MF0802)	S83
13 m (only for 7MF0802)	S84
14 m (only for 7MF0802)	S85
15 m (only for 7MF0802)	S86
Customer-specific tube length	
Customer-specific tube length (specify in plain text)	Y44
Specification of process conditions <sup>1)</sup>	
Ambient temperature range	
• -10 +50 °C (14 +122 °F) preset	D66
• -40 +50 °C (-40 +122 °F)	D67
• -10 +85 °C (14 +185 °F)	D68
Process temperature min °C/(°F)/max °C/(°F)	Y50

See also "Specification of process conditions for selection and ordering data", page 1/338.

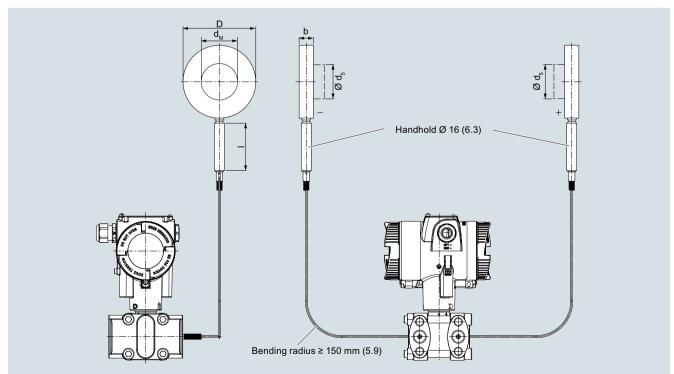
Remote seals for pressure transmitters SITRANS P320/P420

## Diaphragm seals of sandwich design with flexible capillary

## Dimensional drawings



Diaphragm seals of sandwich design with flexible capillary for connection to SITRANS P320/420 pressure transmitters for pressure, dimensions in mm (inch)



Diaphragm seals of sandwich design (without flange) with flexible capillary for connection to SITRANS P320/420 pressure transmitters for absolute pressure or differential pressure and flow, dimensions in mm (inch)

Remote seals for pressure transmitters SITRANS P320/P420

Diaphragm seals of sandwich design with flexible capillary

### Connection to EN 1092-1

Nom. diameter	Nom. pres- sure	b	D	d <sub>5</sub>	d <sub>M</sub> with tube	d <sub>M</sub> w/o tube	I
		mm	mm	mm	mm	mm	mm
DN 25	PN 16	20	68	24,5	22.6	27	100
DN 40	PN 400	20	88	38	30	40	100
DN 50		20	102	48.3	40	51	100
DN 65		20	122	48,3	40	65	100
DN 80		20	138	76	65	85	100
DN 100		20	158	94	85	85	100
DN 125		22	188	125	16	116	100

### Connection to ASME B16.5

Nom. diameter	Nom. pres- sure	b	D	d <sub>5</sub>	d <sub>M</sub> with tube	d <sub>M</sub> w/o tube	I
	lb/sq.in.	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)
1 inch	150 2500	20 (0.79)	51 (2.01)	24.5 (0,96)	22.6 (0.89)	30 (1.18)	100 (3.94)
1½ inch	-	20 (0.79)	73 ()	38 (1.5)	30 (1.18)	40 (1.57)	100 (3.94)
2 inch	-	20 (0.79)	100 (3.94)	48.3 (1.9)	40 (1.57)	51 (2.01)	100 (3.94)
2½ inch	-	20 (0.79)	105 (4.13)	48.3 (1.9)	40 (1.57)	65 (2.56)	100 (3.94)
3 inch		20 (0.79)	134 (5.28)	72 (3)	65 (2.56)	85 (3.35)	100 (3.94)
4 inch		20 (0.79)	158 (6.22)	94 (3.69)	85 (3.35)	85 (3.35)	100 (3.94)
5 inch		22 (0.87)	186 (7.32)	125 (4.92)	116 (4.57)	116 (4.57)	100 (3.94)

### Connection to J.I.S.

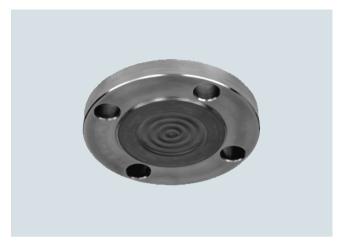
Nom. diame- ter	Nom. pres- sure	b	D 10K, 20K	D 30K 63K	d <sub>5</sub>	d <sub>M</sub> with tube	d <sub>M</sub> w/o tube	I
		mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)
DN 25	10K 63K	20 (0.79)	67 (2.64)	70 (2.76)	24.5 (0.96)	22.6 (0.89)	30 (1.18)	100 (3.94)
DN 40		20 (0.79)	81 (3.19)	90 (3.54)	38 (1.5)	30 (1.18)	36 (1.42)	100 (3.94)
DN 50		20 (0.79)	96 (3.78)	105 (4.13)	48.3 (1.9)	40 (1.57)	51 (2.01)	100 (3.94)
DN 65		20 (0.79)	116 (4.57)	130 (5.12)	48.3 (1.9)	40 (1.57)	65 (2.56)	100 (3.94)
DN 80		20 (0.79)	132 (5.2)	140 (5.51)	76 (2.99)	65 (2.56)	85 (3.35)	100 (3.94)
DN 100		20 (0.79)	160 (6.3)	160 (6.3)	94 (3.69)	85 (3.35)	85 (3.35)	100 (3.94)
DN 125		20 (0.79)	195 (7.68)	195 (7.68)	125 (4.92)	116 (4.57)	116 (4.57)	100 (3.94)

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

Remote seals for pressure transmitters SITRANS P320/P420

### Diaphragm seals of flange design with flexible capillary

### Overview



Diaphragm seals of flange design

### Technical specifications

Diaphragm seals of flange design with flexible capillary								
Nominal diameter	Nominal pressure							
Connecting standard EN 1092-1								
• DN 25	PN 10/16/25/40/63/100/160/250							
• DN 40	PN 10/16/25/40/63/100/160							
• DN 50	PN 10/16/25/40/63/100							
• DN 80	PN 10/16/25/40/100							
• DN 100	PN 10/16/25/40							
• DN 125	PN 16/40							

Connecting standard ASME B16.5

Connecting standard ASME B
• 1 inch
• 1½ inch
• 2 inch
• 3 inch
• 4 inch
• 5 inch
Connecting standard J.I.S.
• DN 50

• DN 100 Sealing surface

• DN 80

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

• For the other materials

Class 150/300/600/1500 Class 150/300/400/600/900/1500 Class 150/300/400/600/900/1500 Class 150/300/600/1500 Class 150/300/400/1500 Class 150/300/400

10K 20K 40K

To EN 1092-1, form B1 or ASMR B16.5 RF 125 ... 250 AA

To EN 1092-1, form B2 or ASME B16.5 RFSF

Materials

Main body

• Wetted parts

Stainless steel mat. no. 1.4404/316L Stainless steel mat. no. 1.4404/316L

Without coating

PTFE coating

• ECTFE coating (for vacuum on request)

PFA coating

Monel 400, mat. No. 2.4360

Hastelloy C276, mat. No. 2.4819 Hastelloy C4, mat. No. 2.4602 Hastelloy C22, W.-Nr. 2.4602

Tantalum

Titanium, W.-Nr. 3.7035

Nickel 201

Duplex 2205, mat. no. 1.4462

Stainless steel 316L, gold plated, thickness approx. 25 µm

Stainless steel, mat. No. 1.4571/316Ti

Spiral protective tube made of stainless steel, mat no. 1.4404/316L

Sealing material in the process flanges

• For pressure transmitters, absolute pressure transmitters and lowpressure applications

 For other applications Maximum pressure

Tube length

Capillary

Sheath

Capillary Length

• Internal diameter

· Minimum bending radius

Filling liquid

(for remote seals of sandwich and flange design)

Copper Viton

See above and the technical data of the pressure transmitter

Without tube as standard (tube available on request)

Max. 10 m (32.8 ft), longer lengths on request

2 mm (0.079 inch) 150 mm (5.9 inch)

Silicone oil M5

Silicone oil M50 High-temperature oil

Halocarbon oil (for measuring O<sub>2</sub>)

Food oil (FDA listed)

Permissible ambient temperature

Dependent on the pressure transmitter and the filling liquid of the remote seal

More information can be found in the technical data of the pressure transmitters and in the section "Technical data of filling liquid" in the Technical description to the remote seals

Weight Approx. 4 kg (8.82 lb)

### Certificate and approvals

Classification according to pressure equipment directive (DGRL 2014/68/EU)

For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)

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Remote seals for pressure transmitters SITRANS P320/P420

## Diaphragm seals of flange design with flexible capillary

Selection and C	Ordering data	Article No.	Order code	Selection and Ordering data	Article No.		Order code
Diaphragm sea	I			Diaphragm seal			
	gn, with flexible capillary tube, lexible capillary tube to a			Flange type design, with flexible capillary tube, connected with flexible capillary tube to a			
pressure or ab (only together	O/P420 transmitter for gauge osolute pressure with negative pressure ser-/7MF04 order separately very: 1 off	7MF0810-		<ul> <li>SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only together with negative pressure service), 7MF03/7MF04 order separately Scope of delivery: 1 off</li> </ul>	7MF081	0 -	
lute pressure f	D/P420 transmitter for abso- from differential pressure, 14 order separately, Scope of	7MF0811-		<ul> <li>SITRANS P320/P420 transmitter for absolute pressure from differential pressure, 7MF03/7MF04 order separately, Scope of delivery: 1 off</li> </ul>	7MF081	1 -	
ential pressure	0/P420 transmitter for different and flow, 7MF03/7MF04 ely, Scope of delivery: 2 off	7MF0812-		<ul> <li>SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03/7MF04 order separately, Scope of delivery: 2 off</li> </ul>	7MF081	2 -	
		- 0			-	0	
	Article No. for the online con- the PIA Life Cycle Portal.			Connecting standard J.I.S. (DN 50 recommended only for pressure			
Nominal diame	ter Nominal pressure			transmitters)			
Connecting star	ndard EN 1092-1			DN 50 10 K	2 E S		
	and DN 50 recommended			20 K 40 K	2 E T 2 E U		
only for pressure	e transmitters)			DN 80 10 K	2 G S		
DN 25	PN 10/16/25/40	0 B D		20 K	2 G T		
	PN 63/100	0 B F		40 K	2 G U		
	PN 160	0 B G		DN 100 10 K	2 H S		
DN 40	PN 250 PN 10/16/25/40	0 B H 0 D D		20 K	2 H T		
DN 40	PN 63/100	0 D F		40 K	2 H U		
	PN 160	0 D G		Other version	9 A A		H 1 Y
DN 50	PN 10/16/25/40	0 E D		Add Order code and plain text			
200	PN 63	OEE		Transmitter connection			
	PN 100	0 E F		Connection via capillary tube			
DN 80	PN 10/16/25/40	0 G D		Length of capillary 1 m	1 0		
	PN 100	0 G F		1.6 m	11		
DN 100	PN 10/16	0 H B		2 m	1 2		
	PN 25/40	0 H D		2,5 m	13		
DN 125	PN 16	0 J B		3 m	1 4		
	PN 40	0 J D		4 m	1 5		
Connecting star	ndard ASME B16.5			5 m	1 6		
, , , ,	and 2 inch recommended			6 m	1 7		
only for pressure	· ·	1 1/ 1		7 m	1 8		
1 inch	class 150 class 300	1 K L 1 K M		8 m	2 0		
	class 600	1 KN		9 m	2 1 2 2		
	class 1500	1 KP		10 m 11 m (only for 7MF0812)	2 2 2 3		
1½ inch	class 150	1 L A		12 m (only for 7MF0812)	2 4		
	class 300	1 L B		13 m (only for 7MF0812)	2 5		
	class 400/600	1 L D		14 m (only for 7MF0812)	2 6		
	class 900/1500	1 L F		15 m (only for 7MF0812)	2 7		
2 inch	class 150	1 M A		Other version	9 8		L 1 Y
	class 300 class 400/600	1 M B 1 M D		Add Order code and plain text			
	class 900/1500	1 M F		Filling liquid			
3 inch	class 150	1 P A		Silicone oil M5		A	
	class 300	1 P B		Silicone oil M50 High-temperature oil		B C	
	class 600	1 P D		Halocarbon oil		D	
	class 1500	1 P F		Food-grade oil (FDA grade)		E	
4 inch	class 150	1 Q A		Other version		z	P 1 Y
	class 300	1 Q B		Add Order code and plain text			
	class 400	1 Q C					
C in ala	class 1500	1 Q F					
5 inch	class 150	1 R A					
	class 300 class 400	1 R B 1 R C					
	01000 400	1110					

Remote seals for pressure transmitters SITRANS P320/P420

## Diaphragm seals of flange design with flexible capillary

Selection and Order	ing data		Order code	Selection and Orde	ering data	Article No.	Order code	
Diaphragm seal			Diaphragm seal					
Flange type design, w connected with flexible			Flange type design, connected with flexib					
SITRANS P320/P42 pressure or absolut (only together with vice), 7MF03/7MF Scope of delivery:	7MF0810-		pressure or absolution (only together with vice), 7MF03/7M	SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only together with negative pressure ser- vice), 7MF03/7MF04 order separately Scope of delivery: 1 off				
lute pressure from o	O transmitter for abso- differential pressure, der separately, Scope of	7MF0811-		lute pressure from	20 transmitter for abso- differential pressure, order separately, Scope of	7MF0811-		
ential pressure and	0 transmitter for differ- flow, 7MF03/7MF04 cope of delivery: 2 off	7MF0812-		ential pressure an	20 transmitter for differd flow, 7MF03/7MF04 Scope of delivery: 2 off	7 M F 0 8 1 2 -		
		- 0				- 0		
Wetted parts materi	als				ess steel with ECTFE			
Stainless steel 316L				coating Range	Standard length			
<ul><li>Without coating</li><li>With PFA coating</li></ul>		A D		20 50 mm (0.79 1.97")	50 mm (1.97")	F	1	
<ul><li>With PTFE coating</li><li>With ECTFE coating</li></ul>	9	E 0		51 100 mm (2.01 3.94")	100 mm (3.94")	F	2	
Monel 400, 2.4360 Hastelloy C276, 2.48	19	G J		101 150 mm (3.98 5.91")	150 mm (5.91")	F	3	
Tantalum Titanium, 3.7035		K L 0		151 200 mm (5.94 7.87")	200 mm (7.87")		4	
Nickel 201 Diaphragm Duplex, 1		M O Q		201 250 mm (7.91 9.84")	250 mm (9.84")	F	5	
Diaphragm plus flang Stainless steel 316L		R S 0			ess steel with PFA coating			
Hastelloy C4, 2.4610	mar gord oodanig	UO		Range	Standard length	_		
Hastelloy C22, 2.460. Other version	2	V 0 Z 8		20 50 mm (0.79 1.97")	50 mm (1.97")		01	
Add Order code and	plain text		QII	51 100 mm (2.01 3.94")	100 mm (3.94")		02	
Extension length • without		0		101 150 mm (3.98 5.91")	150 mm (5.91")		3	
• 50 mm (2") • 100 mm (4")		1 2		151 200 mm (5.94 7.87")	200 mm (7.87")		0 4	
• 150 mm (6") • 200 mm (8")		3		201 250 mm (7.91 9.84")	250 mm (9.84")	L	5	
• 250 mm (10")		5		Wetted parts Mone				
Other version Add Order code and	nlain text	Z 8	Q1Y	Range 20 50 mm	Standard length 50 mm (1.97")	G	11	
Customer-specific e		-		(0.79 1.97") 51 100 mm	100 mm (3.94")	G	i 2	
<ul> <li>Wetted parts stainle Range</li> </ul>	ess steel without coating   Standard length			(2.01 3.94") 101 150 mm	150 mm (5.91")		i 3	
20 50 mm (0.79 1.97")	50 mm (1.97")	A 1		(3.98 5.91") 151 200 mm	200 mm (7.87")	G	i 4	
51 100 mm (2.01 3.94")	100 mm (3.94")	A 2		(5.94 7.87")  • Wetted parts Haste	elloy C276	-		
101 150 mm (3.98 5.91")	150 mm (5.91")	A 3		Range	Standard length			
(5.96 3.91 ) 151 200 mm (5.94 7.87")	200 mm (7.87")	A 4		20 50 mm (0.79 1.97")	50 mm (1.97")		1	
201 250 mm (7.91 9.84")	250 mm (9.84")	A 5		51 100 mm (2.01 3.94") 101 150 mm	100 mm (3.94") 150 mm (5.91")		3	
·	1			(3.98 5.91") 151 200 mm	200 mm (7.87")		14	
				(5.94 7.87")	200 11111 (7.07)			

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Remote seals for pressure transmitters SITRANS P320/P420

## Diaphragm seals of flange design with flexible capillary

Selection and Order	Article No.	Order code				
Diaphragm seal						
Flange type design, wi connected with flexible	th flexible capillary tube, e capillary tube to a					
<ul> <li>SITRANS P320/P420 pressure or absolute (only together with r vice), 7MF03/7MF0 Scope of delivery: 1</li> </ul>	7MF0810-					
<ul> <li>SITRANS P320/P420 lute pressure from d 7MF03/7MF04 ord delivery: 1 off</li> </ul>		7MF0811-				
	O transmitter for differ- flow, 7MF03/7MF04 ope of delivery: 2 off	7MF0812-				
Wetted parts Tantalu	m					
Range	Standard length					
20 50 mm (0.79 1.97")	50 mm (1.97")	H	(1			
51 100 mm (2.01 3.94")	51 100 mm (3.94")					
101 150 mm (3.98 5.91")	101 150 mm   150 mm (5.91")					
151 200 mm (5.94 7.87")	200 mm (7.87")	P. Company	(4			

Diaphragm seals of flange design with flex	cible capillary
Selection and Ordering data	Order code
Further designs	
Add "-Z" to Article No. and specify Order code.	
Factory certificates	
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11
Inspection certificate to EN 10204-3.1 - material of body and wetted parts	C12
Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009) (only together with seal diaphragm made of Hastelloy and stainless steel)	C13
Inspection certificate (EN 10204-3.1) - PMI test of pressure containing and wetted parts	C15
Certificate of FDA-approved fill oil (to EN10204-2.2)	C17
Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511 (Includes SIL conformity declaration)	C20
Accessories Spark arrestor (for gauge and absolute pressure transmitters)	D61
Spark arrestor (for differential pressure and flow transmitters)	D62
Low-temperature version (for Silicon Oil M50 only)	D67
Negative pressure services  Negative pressure service (for gauge and absolute	D81
pressure transmitters) (only for 7MF0810)	
Negative pressure service (for differential pressure transmitters)	D83
Extended negative pressure service (for gauge and absolute pressure transmitters) (only for 7MF0810)	D85
Extended negative pressure service (for differential pressure transmitters)	D88
General product approvals without explosion proof approvals	
Oil-and grease-free cleaned version (for O <sub>2</sub> -appl. including certificate EN10204-2.2 (only with fill fluid Halocarbon oil max. temperature 60 °C and max. pressure 50 bar) Oil-and grease-free cleaned version (not for O <sub>2</sub> -appl. including certificate EN10204-2.2 (only with fill fluid Halocarbon oil)	E87
Sealing surface	
Sealing surface smooth, form B2/EN1092-1 resp. RFSF/ANSI B16.5 (wetted parts 316L only)	M50
Sealing surface groove to EN1092-1, form D (instead of sealing surface B1, wetted parts 316L only)	M54
Sealing surface RJF (groove) to ASME B16.5 (instead of sealing surface RF 125250AA, wetted parts 316L only)	M64
Sealing surface with tongue to EN1092-1, form C (wetted parts 316L only)	
<ul><li>DN 25</li><li>DN 40</li><li>DN 50</li></ul>	M70 M71 M72
• DN 80 • DN 100	M73 M74
DN 125  Sealing surface with spigot to EN1092-1, form E (wetted parts 316L only)	M75
• DN 25	M76
• DN 40 • DN 50	M77 M78
• DN 80	M79
<ul><li>DN 100</li><li>DN 125</li></ul>	M80 M81
525	

Remote seals for pressure transmitters SITRANS P320/P420

## Diaphragm seals of flange design with flexible capillary

Selection and Ordering data	Order code
Further designs	
Add "-Z" to Article No. and specify Order code.	
Sealing surface with recess to EN1092-1, form F (wetted parts 316L only)  • DN 25	M82
• DN 40	M83
• DN 50	M84
• DN 80	M85
• DN 100	M86
• DN 125	M87
Capillary connection	
For 7MF0810	
Radial capillary pipe outlet (for single-side mounting and capillary connection only)	S01
Single-side mounted at differential pressure transmitters at high-side	S03
Single-side mounted at differential pressure transmitters at low-side	S04
For 7MF0811	
Radial capillary pipe outlet (for single-side mounting and capillary connection only)	S01
For 7MF0812	
Radial capillary pipe outlet (for double-side mounting)	S02
Capillary coating	
PE protective tube	
1 m	S10
1,6 m	S11
2 m 2,5 m	S12 S13
3 m	S14
4 m	S15
5 m	S16
6 m	S17
7 m	S18
8 m	S19
9 m 10 m	S20 S21
11 m (only for 7MF0802)	S22
12 m (only for 7MF0802)	S23
13 m (only for 7MF0802)	S24
14 m (only for 7MF0802)	S25
15 m (only for 7MF0802)	S26
PTFE protective tube 1 m	S40
1,6 m	S41
2 m	S42
2,5 m 3 m	S43 S44
4 m	S45
5 m	S46
6 m	S47
7 m	S48
8 m	S49
9 m	S50
10 m 11 m (only for 7MF0802)	S51 S52
12 m (only for 7MF0802)	S53
13 m (only for 7MF0802)	S54
14 m (only for 7MF0802)	S55
15 m (only for 7MF0802)	S56

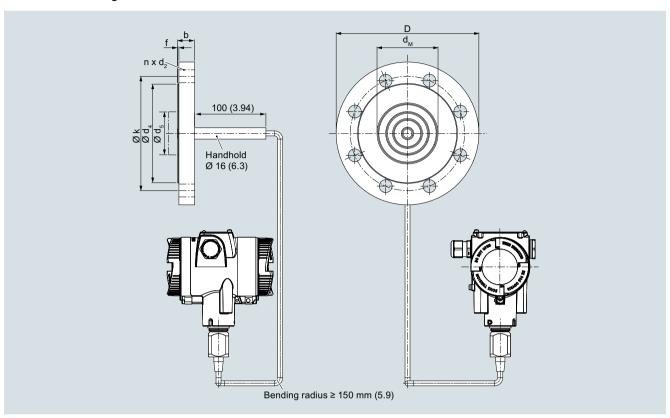
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Selection and Ordering data	Order code
Further designs	
Add "-Z" to Article No. and specify Order code.	
PVC protective tube	
1 m	S70
1,6 m	S71
2 m	S72
2,5 m	S73
3 m	S74
4 m	S75
5 m	S76
6 m	S77
7 m	S78
8 m	S79
9 m	S80
10 m	S81
11 m (only for 7MF0802)	S82
12 m (only for 7MF0802)	S83
13 m (only for 7MF0802)	S84
14 m (only for 7MF0802)	S85
15 m (only for 7MF0802)	S86
Customer-specific tube length	
Customer-specific tube length (specify in plain text)	Y44
Specification of process conditions <sup>1)</sup>	
Ambient temperature range	
• -10 +50 °C (14 +122 °F) preset	D66
• -40 +50 °C (-40 +122 °F)	D67
• -10 +85 °C (14 +185 °F)	D68
Process temperature min °C/(°F)/max °C/(°F)	Y50
1 100000 tomporature min 0/( 1 //max 0/( 1 /	100

See also "Specification of process conditions for selection and ordering data", page 1/338.

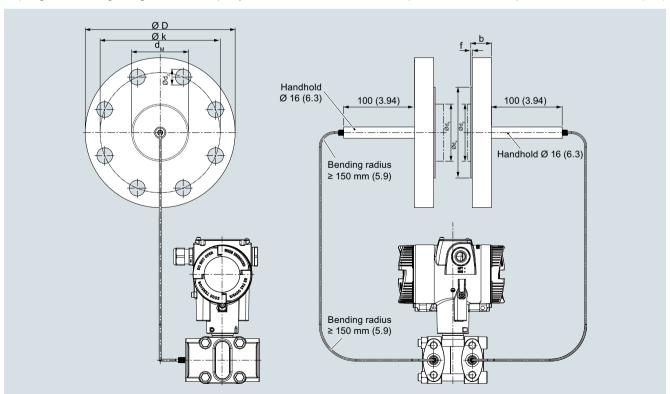
Remote seals for pressure transmitters SITRANS P320/P420

Diaphragm seals of flange design with flexible capillary

## Dimensional drawings



Diaphragm seals of flange design with flexible capillary for connection to SITRANS P320/420 pressure transmitters for pressure, dimensions in mm (inch)



Diaphragm seals of flange design with flexible capillary for connection to SITRANS P320/420 pressure transmitters for absolute pressure or for differential pressure and flow, dimensions in mm (inch)

Remote seals for pressure transmitters SITRANS P320/P420

## Diaphragm seals of flange design with flexible capillary

## Connection to EN 1092-1

Nominal diameter	Nominal pressure	b	D	d <sub>2</sub>	d <sub>4</sub>	<b>d</b> <sub>5</sub>	d <sub>M</sub> with exten- sion	d <sub>M</sub> without exten- sion	f	k	n	L
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
DN 25	PN 10/16/ 25/40	18	115	14	68	24.5	22.6	27	2	85	4	0, 50, 100, 150 oder
	PN 63/100	24	140	18	68	24.5	22.6	27	2	100	4	200
	PN 160	24	140	18	68	24.5	22.6	27	2	100	4	0, 50, 100, 150 oder
	PN 250	28	150	22	68	24.5	22.6	27	2	105	4	200
DN 40	PN 10/16/ 25/40	16	150	18	88	38	30	42	2	110	4	
	PN 63/100	24	170	22	88	38	30	42	2	125	4	
	PN 160	26	170	22	88	38	30	42	2	125	4	
DN 50	PN 10/16/ 25/40	18	165	18	102	48.3	40	51	2	125	4	
	PN 63/100	26	195	26	102	48.3	40	51	2	145	4	
	PN 160	28	195	26	102	48.3	40	51	2	145	4	
DN 80	PN 10/16/ 25/40	22	200	18	138	76	65	85	2	160	8	
	PN 100	30	230	26	138	76	65	85	2	180	8	
DN 100	PN 10/16	18	220	18	158	94	85	85	2	180	8	
	PN 25/40	22	235	22	162	94	85	85	2	190	8	
DN 125	PN 16	20	250	18	188	127	85	116	2	210	8	
	PN 40	24	270	26	188	127	85	116	2	220	8	

### Connection to ASME B16.5

Nominal diameter	Nominal pressure	b	D	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub> with exten- sion	d <sub>M</sub> without exten- sion	f	k	n	L
	lb./sq.in	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)		inch (mm
1 inch	150	0.71 (18)	4.33 (110)	0.61 (15.6)	2 (50.8)	0.96 (24.5)	0.89 (22.6)	1.18 (30)	0.08 (2)	3.13 (79.4)	4	0, 2,
	300	0.77 (19.5)	4.92 (125)	0.75 (19.1)	2 (50.8)	0.96 (24.5)	0.89 (22.6)	1.18 (30)	0.08 (2)	3.5 (88.9)	4	3.94, 5.94
	600	0.96 (24.5)	4.92 (125)	0.75 (19.1)	2 (50.8)	0.96 (24.5)	0.89 (22.6)	1.18 (30)	0.28 (7)	3.5 (88.9)	4	oder
	1500	1.4 (35.6)	5.91 (150)	1 (25.4)	2 (50.8)	0.96 (24.5)	0.89 (22.6)	1.18 (30)	0.28 (7)	4 (101.6)	4	7.87 (0,
1½ inch	150	0.63 (15.9)	4.92 (125)	0.63 (15.9)	2.87 (73)	1.5 (38)	1.18 (30)	1.42 (36)	0.08 (2)	3.87 (98.4)	4	50, 100,
	300	0.75 (19.1)	6.10 (155)	0.87 (22.2)	2.87 (73)	1.5 (38)	1.18 (30)	1.42 (36)	0.08 (2)	4.5 (114.3)	4	150
	400/600	0.88 (22.3)	6.10 (155)	0.87 (22.2)	2.87 (73)	1.5 (38)	1.18 (30)	1.42 (36)	0.28 (7)	4.5 (114.3)	4	oder 200)
	900/1500	1.25 (31.8)	7.09 (180)	1.13 (28.6)	2.87 (73)	1.5 (38)	1.18 (30)	1.42 (36)	0.28 (7)	4.87 (123.8)	4	200)
2 inch	150	0.69 (17.5)	5.91 (150)	0.75 (19.1)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.08 (2)	4.75 (120.7)	4	
	300	0.81 (20.7)	6.5 (165)	0.75 (19.1)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.08 (2)	5 (127)	8	
	400/600	1.00 (25.4)	6.5 (165)	0.75 (19.1)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.28 (7)	5 (127)	8	
	900/1500	1.5 (38.1)	8.46 (215)	1.00 (25.4)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.28 (7)	6.5 (165.1)	8	
3 inch	150	0.88 (22.3)	7.48 (190)	0.75 (19.1)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.08 (2)	6 (152.4)	4	
	300	1.06 (27)	8.27 (210)	0.87 (22.2)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.08 (2)	6.63 (168.3)	8	
	600	1.23 (31.8)	8.27 (210)	0.87 (22.2)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.28 (7)	6.63 (168.3)	8	
	1500	1.88 (47.7)	10.43 (265)	1.25 (31.8)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.28 (7)	8 (203.2)	8	
4 inch	150	0.88 (22.3)	9.06 (230)	0.75 (19.1)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.08 (2)	7.5 (190.5)	8	
	300	1.19 (30.2)	10.04 (255)	0.87 (22.2)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.08 (2)	7.87 (200)	8	
	400	1.38 (35)	10.04 (255)	0.87 (22.2)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.28 (7)	7.87 (200)	8	
	1500	2.13 (54)	12.20 (310)	1.37 (34.9)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.28 (7)	9.5 (241.3)	8	
5 inch	150	0.88 (22.3)	10.04 (255)	0.87 (22.2)	7.31 (185.7)	5 (127)	4.57 (116)	4.57 (116)	0.08 (2)	8.5 (215.9)	8	
	300	1.31 (33.4)	11.02 (280)	0.87 (22.2)	7.31 (185.7)	5 (127)	4.57 (116)	4.57 (116)	0.08 (2)	9.25 (235)	8	
	400	1.50 (38.1)	11.02 (280)	0.87 (22.2)	7.31 (185.7)	5 (127)	4.57 (116)	4.57 (116)	0.28 (7)	9.25 (235)	8	

Remote seals for pressure transmitters SITRANS P320/P420

## Diaphragm seals of flange design with flexible capillary

### Connection to J.I.S

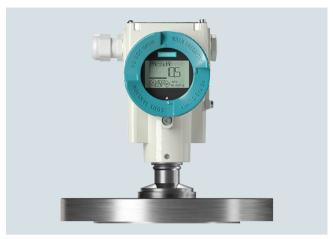
Nominal diameter	Nominal pressure	b	D	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub> with exten- sion	d <sub>M</sub> without exten- sion	f	k	n	L
		mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)		mm (inch)
DN 50	10K	14 (0.55)	155 (6.10)	19 (0.75)	96 (3.78)	48.3 (1.9)	40 (1.57)	51 (2.01)	2	120 (4.72)	4	0, 50,
	20K	16 (0,63)	165 (6.50)	19 (0.75)	96 (3.78)	48.3 (1.9)	40 (1.57)	51 (2.01)	2	120 (4.72)	8	100, 150
	40K	26 (1.02)	165 (6.50)	19 (0.75)	105 (4.13)	48.3 (1.9)	40 (1.57)	51 (2.01)	2	130 (5.12)	8	oder
DN 80	10K	16 (0.63)	185 (7.28)	19 (0.75)	126 (4.96)	76 (2.99)	65 (2.56)	85 (3.35)	2	150 (5.91)	8	- 200 (0, 2,
	20K	20 (0.79)	200 (7.87)	23 (0.91)	132 (5.20)	76 (2.99)	65 (2.56)	85 (3.35)	2	160 (6.30)	8	3.94,
	40K	32 (1.26)	210 (8.27)	23 (0.91)	140 (5.51)	76 (2.99)	65 (2.56)	85 (3.35)	2	170 (6.30)	8	5.94 oder
DN 100	10K	16 (0.63)	210 (8.27)	19 (0.75)	151 (5.94)	94 (3.7)	85 (3.35)	85 (3.35)	2	175 (6.89)	8	7.87)
	20K	22 (0.87)	225 (8.86)	23 (0.91)	160 (6.30)	94 (3.7)	85 (3.35)	85 (3.35)	2	185 (7.28)	8	
	40K	36 (1.42)	250 (9.84)	25 (0.98)	165 (6.50)	94 (3.7)	85 (3.35)	85 (3.35)	2	205 (8.07)	8	

d: Internal diameter of gasket to DIN 2690  $\rm d_{\rm M}$ : Effective diaphragm diameter

Remote seals for pressure transmitters SITRANS P320/P420

### Diaphragm seals of flange design mounted directly on transmitter

### Overview



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

### Technical specifications

Diaphragm seals (flange design) f sure, directly fitted on a transmitted	
Nominal diameter	Nominal pressure
Connecting standard EN 1092-1	
<ul><li>DN 25</li><li>DN 40</li><li>DN 50</li><li>DN 80</li><li>DN 100</li><li>DN 125</li></ul>	PN 10/16/25/40/63/100/160/250 PN 10/16/25/40/63/100/160 PN 10/16/25/40/63/100 PN 10/16/25/40/100 PN 10/16/25/40 PN 16/40
Connecting standard ASME B16.5	
<ul> <li>1 inch</li> <li>1½ inch</li> <li>2 inch</li> <li>3 inch</li> <li>4 inch</li> <li>5 inch</li> </ul>	Class 150/300/600/1500 Class 150/300/400/600/900/1500 Class 150/300/400/600/900/1500 Class 150/300/600/1500 Class 150/300/400/1500 Class 150/300/400
Connecting standard J.I.S.	
<ul><li>DN 50</li><li>DN 80</li><li>DN 100</li></ul>	10K 20K 40K
Sealing surface	
<ul> <li>For stainless steel, mat. No. 1.4404/316L</li> </ul>	To EN 1092-1, form B1 or ASME B16.5 RF 125 250 AA
• For the other materials	Smooth to EN 1092-1, form B2 or ASME B16.5 RFSF

#### Materials

- Main body
- Wetted parts

Stainless steel, 1.4404/316L

Stainless steel, 1.4404/316L

- Without coating
- PTFE coating
- ECTFE coating (for vacuum on request)
- PFA coating

Monel 400, mat. No. 2.4360 Hastelloy C276, mat. No. 2.4819 Hastelloy C4, mat. No. 2.4602 Hastelloy C22, mat No. 2.4602 Tantalum

Titanium, mat. No. 3.7035 Nickel 201

Duplex 2205, mat. no. 1.4462

Stainless steel 316L, gold plated, thickness approx. 25  $\mu m$ 

Stainless steel, 1.4404/316L

Copper

See above and the technical data of the transmitter

- Without tube
- 50 mm (1.97 inch)
- 100 mm (3.94 inch)
- 150 mm (5.91 inch)
- 200 mm (7.87 inch)

### Capillary

Capillary

connection

Tube length

Maximum pressure

· Sealing material at the transmitter

- Length
- Internal diameter
- Minimum bending radius

Filling liquid

Max. 10 m (32.8 ft), longer lengths on request

2 mm (0.079 inch)

150 mm (5.9 inch)

- Silicone oil M5
- Silicone oil M50
- High-temperature oil
- Halocarbon oil (for measuring  $O_2$
- Food oil (FDA listed)

Approx. 4 kg (8.82 lb)

170 °C (338 °F)

Max. recommended process temperature

Permissible ambient temperature

Dependent on the pressure transmitter and the filling liquid of the remote seal.

More information can be found in the technical data of the pressure transmitters and in the section "Technical data of filling liquid" in the Technical description to the remote seals

Weight

### Certificate and approvals

Classification according to pressure equipment directive (DGRL 2014/68/EU)

For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)

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Remote seals for pressure transmitters SITRANS P320/P420

## Diaphragm seals of flange design mounted directly on transmitter

			Diaph
Selection and O	dering data	Article No.	Order code
Diaphragm seal			
Flange type desig	n, directly mounted to a		
pressure or abs	vith negative pressure ser- 'MF04 order separately	7MF0810-	
	rticle No. for the online con-	- 0	-
Nominal diamete	er Nominal pressure		
	•		
Connecting stand DN 25		0 B D	
DIN 25	PN 10/16/25/40 PN 63/100	0 B F	
	PN 160	0 B G	
	PN 250	0 B H	
DN 40	PN 10/16/25/40	0 D D	
DIV 40	PN 63/100	0 D F	
	PN 160	0 D G	
DN 50	PN 10/16/25/40	0 E D	
	PN 63	0 E E	
	PN 100	0 E F	
DN 80	PN 10/16/25/40	0 G D	
	PN 100	0 G F	
DN 100	PN 10/16	0 H B	
DN 405	PN 25/40	0 H D	
DN 125	PN 16 PN 40	0 J B 0 J D	
		030	
Connecting stand  1 inch	class 150	1 K L	
I Inch	class 300	1 KM	
	class 600	1 KM	
	class 1500	1 K P	
1½ inch	class 150	1 L A	
	class 300	1 L B	
	class 400/600	1 L D	
	class 900/1500	1 L F	
2 inch	class 150	1 M A	
	class 300	1 M B	
	class 400/600	1 M D	
2 inch	class 900/1500	1 M F	
3 inch	class 150 class 300	1 P A 1 P B	
	class 600	1 P D	
	class 1500	1 P F	
4 inch	class 150	1 Q A	
	class 300	1 Q B	
	class 400	1 Q C	
	class 1500	1 Q F	
5 inch	class 150	1 R A	
	class 300	1 R B	
_	class 400	1 R C	
Connecting stand		0.50	
DN 50	10K	2 E S	
	20K 40K	2 E T 2 E U	
DN 80	40K 10K	2 G S	
DIN OU	20K	2 G T	
	40K	2 G U	
DN 100	10K	2 H S	
- <del>-</del>	20K	2 H T	
	40K	2 H U	
Other version	40K	9 A A	H 1 Y

Selection and Ordering data	Article No.	Order code
Diaphragm seal		
Flange type design, directly mounted to a		
SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only together with negative pressure service), 7MF03/7MF04 order separately Scope of delivery: 1 off	7MF0810-	
	- 0	
Transmitter connection Without capillary tube, direct mount straight connection (for gauge pressure) Without capillary tube, direct mount connection via 90°-bow (for gauge pressure)	0 0 0 1	
Filling liquid Silicone oil M5 Silicone oil M50 High-temperature oil Halocarbon oil Food-grade oil (FDA listed) Other version Add Order code and plain text	A B C D E Z	P1Y
Wetted parts materials		
Stainless steel 316L  • Without coating  • With PFA coating  • With PFFE coating  • With ECTFE coating  Monel 400, 2.4360  Hastelloy C276, 2.4819  Tantalum  Titanium, 3.7035  Nickel 201  Diaphragm Duplex, 1.4462  Diaphragm plus flange Duplex, 1.4462  Stainless steel 316L with gold coating  Hastelloy C4, 2.4610  Hastelloy C22, 2.4602  Other version	F G J K L N G G S S	0 : 0 : : :
Add Order code and plain text	2	. 6 Q I I
Extension length  • without  • 50 mm (2")  • 100 mm (4")  • 150 mm (6")  • 200 mm (8")  • 250 mm (10")  Other version Add Order code and plain text	Z	0 1 2 3 4 5

Remote seals for pressure transmitters SITRANS P320/P420

## Diaphragm seals of flange design mounted directly on transmitter

Selection and Orderi	Article No. Order code								
Diaphragm seal	Diaphragm seal								
Flange type design, dir									
SITRANS P320/P420 pressure or absolute (only together with n- vice), 7MF03/7MF0 Scope of delivery: 1	7MF0810-								
Customer-specific ex	- 0								
-									
Wetted parts stainles     Range	ss steel without coating Standard length								
20 50 mm (0.79 1.97")	50 mm (1.97")	A	1						
51 100 mm (2.01 3.94")	100 mm (3.94")	A	2						
101 150 mm (3.98 5.91")	150 mm (5.91")		3						
151 200 mm (5.94 7.87")	200 mm (7.87")		4						
201 250 mm (7.91 9.84")	250 mm (9.84")	A	5						
<ul> <li>Wetted parts stainles coating</li> </ul>									
Range									
20 50 mm (0.79 1.97")	50 mm (1.97")	F	1						
51 100 mm (2.01 3.94")	100 mm (3.94")	F	2						
101 150 mm (3.98 5.91")	150 mm (5.91")	F	3						
151 200 mm (5.94 7.87")	200 mm (7.87")	F	· 4						
201 250 mm (7.91 9.84")	250 mm (9.84")	F	5						
Wetted parts stainless Range	s steel with PFA coating   Standard length								
20 50 mm	50 mm (1.97")		1						
(0.79 1.97") 51 100 mm	100 mm (3.94")		02						
(2.01 3.94") 101 150 mm	150 mm (5.91")		3						
(3.98 5.91") 151 200 mm	200 mm (7.87")		) 4						
(5.94 7.87") 201 250 mm	250 mm (9.84")		5						
(7.91 9.84")	100								
Wetted parts Monel 4     Range	Standard length								
20 50 mm (0.79 1.97")	50 mm (1.97")	G	1						
51 100 mm (2.01 3.94")	100 mm (3.94")	G	2						
101 150 mm (3.98 5.91")	150 mm (5.91")	G	3						
151 200 mm (5.94 7.87")	200 mm (7.87")	G	i 4						

Selection and Order	Selection and Ordering data								
Diaphragm seal									
Flange type design, di									
SITRANS P320/P42i pressure or absolute (only together with r vice), 7MF03/7MF0 Scope of delivery: 1	7MF0810-								
		- 0							
Wetted parts Hastell									
Range	Standard length								
20 50 mm (0.79 1.97")	50 mm (1.97")	J	1						
51 100 mm (2.01 3.94")	100 mm (3.94")	J	2						
101 150 mm (3.98 5.91")	150 mm (5.91")	J	3						
151 200 mm (5.94 7.87")	200 mm (7.87")	J	4						
Wetted parts Tantalu	m								
Range	Standard length								
20 50 mm (0.79 1.97")	50 mm (1.97")	K	1						
51 100 mm (2.01 3.94")	100 mm (3.94")	K	2						
101 150 mm (3.98 5.91")	150 mm (5.91")	K	3						
151 200 mm (5.94 7.87")	200 mm (7.87")	K	4						

Remote seals for pressure transmitters SITRANS P320/P420

## Diaphragm seals of flange design mounted directly on transmitter

Selection and Ordering data	Order code
Further designs	
Add "-Z" to Article No. and specify Order code.	
Factory certificates	
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11
Inspection certificate to EN 10204-3.1 - material of body and wetted parts	C12
Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009) (only together with seal diaphragm made of Hastelloy and stainless steel)	C13
Inspection certificate (EN 10204-3.1) - PMI test of pressure containing and wetted parts	C15
Certificate of FDA-approved fill oil (to EN10204-2.2)	C17
Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511 (Includes SIL conformity declaration)	C20
Accessories	
Spark arrestor (for gauge and absolute pressure transmit ters)	
Low-temperature version (for Silicon Oil M50 only)	D67
Negative pressure services	
Negative pressure service (for gauge and absolute pressure transmitters)	D81
Extended negative pressure service (for gauge and absolute pressure transmitters) (only for 7MF0810)	D85
General product approvals without explosion proof approvals	
Oil-and grease-free cleaned version (for O <sub>2</sub> -appl. including certificate EN10204-2.2 (only with fill fluid Halocarbon oil max. temperature 60 °C and max. pressure 50 bar)	E80
Oil-and grease-free cleaned version (not for O <sub>2</sub> -appl. including certificate EN10204-2.2 (only with fill fluid Halocarbon oil)	E87
Sealing surface	
Sealing surface smooth, form B2/EN1092-1 resp.	M50
RFSF/ANSI B16.5 (wetted parts 316L only) Sealing surface groove to EN1092-1, form D (instead of sealing surface B1, wetted parts 316L only)	M54
Sealing surface RJF (groove) to ASME B16.5	M64
(instead of sealing surface RF 125250AA, wetted parts 316L only)	
Sealing surface with tongue to EN1092-1, form C (wetted parts 316L only)  • DN 25	M70
• DN 40	M71
• DN 50	M72
• DN 80	M73
• DN 100	M74
DN 125  Sealing surface with spigot to EN1092-1, form E	M75
(wetted parts 316L only)	
• DN 25	M76
• DN 40	M77
	M78
• DN 50	MZO
<ul><li>DN 50</li><li>DN 80</li><li>DN 100</li></ul>	M79 M80

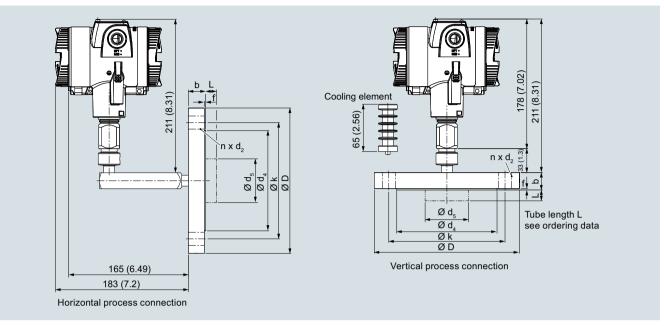
Selection and Ordering data	Order code
Further designs	
Add "-Z" to Article No. and specify Order code.	
Sealing surface with recess to EN1092-1, form F (wetted parts 316L only)  • DN 25	M82
• DN 40 • DN 50	M83 M84
• DN 80	M85
• DN 100	M86
• DN 125	M87
Capillary connection	
Elongated pipe,	S05
150 mm instead of 100 mm, max. medium temperature 300 °C (572 °F), observe the max. permissible media temperature of the fill liquid. Elongated pipe, 200 mm instead of 100 mm, max. medium temperature 300 °C (572 °F), observe the max. permissible media temperature of the fill liquid. Elongated pipe elbow, 200 mm instead of 130 mm, max. medium temperature 300 °C (572 °F), observe the	S06 S07
max. permissible media temperature of the fill liquid.  Cooling element, max. medium temperature 300 °C (572 °F), observe the max. permissible media temperature of the fill liquid.	S08
Customer-specific tube length	
Customer-specific tube length (specify in plain text)	Y44
Specification of process conditions <sup>1)</sup>	
Ambient temperature range	
• -10 +50 °C (14 +122 °F) preset	D66
• -40 +50 °C (-40 +122 °F)	D67
• -10 +85 °C (14 +185 °F)	D68
Process temperature min °C/(°F)/max °C/(°F)	Y50
1) See also "Specification of process conditions for selection	an and ordering

<sup>1)</sup> See also "Specification of process conditions for selection and ordering data", page 1/338.

Remote seals for pressure transmitters SITRANS P320/P420

## Diaphragm seals of flange design mounted directly on transmitter

## Dimensional drawings



Diaphragm seals of flange design, direct connection to a SITRANS P320/420 pressure transmitter (process connection vertical (top) and horizontal (bottom)), dimensions in mm (inch)

Remote seals for pressure transmitters SITRANS P320/P420

## Diaphragm seals of flange design mounted directly on transmitter

## Connection to EN 1092-1

Nominal diameter	Nominal pressure	b	D	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub> with exten- sion	d <sub>M</sub> without exten- sion	f	k	n	L
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
DN 25	PN 10/16/ 25/40	18	115	14	68	24.5	22.6	27	2	85	4	0, 50, 100, 150 oder
	PN 63/100	24	140	18	68	24.5	22.6	27	2	100	4	200
	PN 160	24	140	18	68	24.5	22.6	27	2	100	4	
	PN 250	28	150	22	68	24.5	22.6	27	2	105	4	
DN 40	PN 10/16/ 25/40	16	150	18	88	38	30	42	2	110	4	
	PN 63/100	24	170	22	88	38	30	42	2	125	4	
	PN 160	26	170	22	88	38	30	42	2	125	4	
DN 50	PN 10/16/ 25/40	18	165	18	102	48.3	40	51	2	125	4	
	PN 63/100	26	195	26	102	48.3	40	51	2	145	4	
	PN 160	28	195	26	102	48.3	40	51	2	145	4	
DN 80	PN 10/16/ 25/40	22	200	18	138	76	65	85	2	160	8	
	PN 100	30	230	26	138	76	65	85	2	180	8	
DN 100	PN 10/16	18	220	18	158	94	85	85	2	180	8	
	PN 25/40	22	235	22	162	94	85	85	2	190	8	
DN 125	PN 16	20	250	18	188	127	85	116	2	210	8	
	PN 40	24	270	26	188	127	85	116	2	220	8	

### Connection to ASME B16.5

Nominal diameter	Nominal pressure	b	D	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub> with exten- sion	d <sub>M</sub> without exten- sion	f	k	n	L
	lb./sq.in	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)		inch (mm)
1 inch	150	0.71 (18)	4.33 (110)	0.61 (15.6)	2 (50.8)	0.96 (24.5)	0.89 (22.6)	1.18 (30)	0.08 (2)	3.13 (79.4)	4	0, 2,
	300	0.77 (19.5)	4.92 (125)	0.75 (19.1)	2 (50.8)	0.96 (24.5)	0.89 (22.6)	1.18 (30)	0.08 (2)	3.5 (88.9)	4	3.94, 5.94
	600	0.96 (24.5)	4.92 (125)	0.75 (19.1)	2 (50.8)	0.96 (24.5)	0.89 (22.6)	1.18 (30)	0.28 (7)	3.5 (88.9)	4	oder 7.87
	1500	1.4 (35.6)	5.91 (150)	1 (25.4)	2 (50.8)	0.96 (24.5)	0.89 (22.6)	1.18 (30)	0.28 (7)	4 (101.6)	4	(0,
1½ inch	150	0.63 (15.9)	4.92 (125)	0.63 (15.9)	2.87 (73)	1.5 (38)	1.18 (30)	1.42 (36)	0.08 (2)	3.87 (98.4)	4	50, 100,
	300	0.75 (19.1)	6.10 (155)	0.87 (22.2)	2.87 (73)	1.5 (38)	1.18 (30)	1.42 (36)	0.08 (2)	4.5 (114.3)	4	150
	400/600	0.88 (22.3)	6.10 (155)	0.87 (22.2)	2.87 (73)	1.5 (38)	1.18 (30)	1.42 (36)	0.28 (7)	4.5 (114.3)	4	oder 200)
	900/1500	1.25 (31.8)	7.09 (180)	1.13 (28.6)	2.87 (73)	1.5 (38)	1.18 (30)	1.42 (36)	0.28 (7)	4.87 (123.8)	4	200)
2 inch	150	0.69 (17.5)	5.91 (150)	0.75 (19.1)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.08 (2)	4.75 (120.7)	4	
	300	0.81 (20.7)	6.5 (165)	0.75 (19.1)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.08 (2)	5 (127)	8	
	400/600	1.00 (25.4)	6.5 (165)	0.75 (19.1)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.28 (7)	5 (127)	8	
	900/1500	1.5 (38.1)	8.46 (215)	1.00 (25.4)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.28 (7)	6.5 (165.1)	8	
3 inch	150	0.88 (22.3)	7.48 (190)	0.75 (19.1)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.08 (2)	6 (152.4)	4	
	300	1.06 (27)	8.27 (210)	0.87 (22.2)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.08 (2)	6.63 (168.3)	8	
	600	1.23 (31.8)	8.27 (210)	0.87 (22.2)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.28 (7)	6.63 (168.3)	8	
	1500	1.88 (47.7)	10.43 (265)	1.25 (31.8)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.28 (7)	8 (203.2)	8	
4 inch	150	0.88 (22.3)	9.06 (230)	0.75 (19.1)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.08 (2)	7.5 (190.5)	8	
	300	1.19 (30.2)	10.04 (255)	0.87 (22.2)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.08 (2)	7.87 (200)	8	
	400	1.38 (35)	10.04 (255)	0.87 (22.2)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.28 (7)	7.87 (200)	8	
	1500	2.13 (54)	12.20 (310)	1.37 (34.9)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.28 (7)	9.5 (241.3)	8	
5 inch	150	0.88 (22.3)	10.04 (255)	0.87 (22.2)	7.31 (185.7)	5 (127)	4.57 (116)	4.57 (116)	0.08 (2)	8.5 (215.9)	8	
	300	1.31 (33.4)	11.02 (280)	0.87 (22.2)	7.31 (185.7)	5 (127)	4.57 (116)	4.57 (116)	0.08 (2)	9.25 (235)	8	
	400	1.50 (38.1)	11.02 (280)	0.87 (22.2)	7.31 (185.7)	5 (127)	4.57 (116)	4.57 (116)	0.28 (7)	9.25 (235)	8	

Remote seals for pressure transmitters SITRANS P320/P420

## Diaphragm seals of flange design mounted directly on transmitter

## Connection to J.I.S

Nominal diameter	Nominal pressure	b	D	d <sub>2</sub>	d <sub>4</sub>	<b>d</b> <sub>5</sub>	d <sub>M</sub> with exten- sion	d <sub>M</sub> without exten- sion	f	k	n	L
		mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)		mm (inch)
DN 50	10K	14 (0.55)	155 (6.10)	19 (0.75)	96 (3.78)	48.3 (1.9)	40 (1.57)	51 (2.01)	2	120 (4.72)	4	0, 50,
	20K	16 (0,63)	165 (6.50)	19 (0.75)	96 (3.78)	48.3 (1.9)	40 (1.57)	51 (2.01)	2	120 (4.72)	8	100, 150
	40K	26 (1.02)	165 (6.50)	19 (0.75)	105 (4.13)	48.3 (1.9)	40 (1.57)	51 (2.01)	2	130 (5.12)	8	oder
DN 80	10K	16 (0.63)	185 (7.28)	19 (0.75)	126 (4.96)	76 (2.99)	65 (2.56)	85 (3.35)	2	150 (5.91)	8	- 200 (0, 2,
	20K	20 (0.79)	200 (7.87)	23 (0.91)	132 (5.20)	76 (2.99)	65 (2.56)	85 (3.35)	2	160 (6.30)	8	3.94,
	40K	32 (1.26)	210 (8.27)	23 (0.91)	140 (5.51)	76 (2.99)	65 (2.56)	85 (3.35)	2	170 (6.30)	8	5.94 oder
DN 100	10K	16 (0.63)	210 (8.27)	19 (0.75)	151 (5.94)	94 (3.7)	85 (3.35)	85 (3.35)	2	175 (6.89)	8	7.87)
	20K	22 (0.87)	225 (8.86)	23 (0.91)	160 (6.30)	94 (3.7)	85 (3.35)	85 (3.35)	2	185 (7.28)	8	
	40K	36 (1.42)	250 (9.84)	25 (0.98)	165 (6.50)	94 (3.7)	85 (3.35)	85 (3.35)	2	205 (8.07)	8	

d: Internal diameter of gasket to DIN 2690  $\rm d_{\rm M}$ : Effective diaphragm diameter

Remote seals for pressure transmitters SITRANS P320/P420

### Diaphragm seals of flange design mounted directly and with capillary

### Overview



Diaphragm seal of flange design for pressure transmitters for differential pressure, fixed connection and with flexible capillary

### Technical specifications

reclinical specifications								
Diaphragm seals of screwed design for pressure transmitters for differential pressure, fixed connection and with flexible capillary								
Nominal diameter	Nominal pressure							
Connecting standard EN 1092-1  • DN 40  • DN 50  • DN 80  • DN 100  • DN 125	PN 10/16/25/40/63/100/160 PN 10/16/25/40/63/100 PN 10/16/25/40/100 PN 10/16/25/40 PN 16/40							
Connecting standard ASME B16.5								
<ul> <li>1½ inch</li> <li>2 inch</li> <li>3 inch</li> <li>4 inch</li> <li>5 inch</li> </ul>	Class 150/300/400/600/900/1500 Class 150/300/400/600/900/1500 Class 150/300/600/1500 Class 150/300/400/1500 Class 150/300/400							
Connecting standard J.I.S.								
• DN 50 • DN 80 • DN 100	10K 20K 40K							
Sealing surface • For stainless steel, mat. No. 1.4404/316L • For the other materials	To EN 1092-1, form B1 or ASME B16.5 RF 125 250 AA To EN 1092-1, form B2 or							

ASME B16.5 RFSF

### Materials

- Main body
- Wetted parts

Stainless steel, 1.4404/316L Stainless steel, 1.4404/316L

- Without coating
- PTFE coating
- ECTFE coating (for vacuum on request)
- PFA coating

Monel 400, mat. No. 2.4360 Hastelloy C276, mat. No. 2.4819 Hastellov C4, mat. No. 2,4602 Hastelloy C22, W.-Nr. 2.4602 Tantalum

Titanium, W.-Nr. 3.7035

Nickel 201

Duplex 2205, mat. no. 1.4462 Stainless steel 316L, gold plated, thickness approx. 25 µm

Stainless steel, mat. No. 1.4571/316Ti

Spiral protective tube made of stainless steel, mat. No. 1.4404/316L

Sealing material in the process flanges

- For pressure transmitters, absolute pressure transmitters and lowpressure applications
- For other applications Maximum pressure

Tube length

Capillary

Sheath

Copper

See above and the technical data of the pressure transmitter

Without tube 50 mm (1.97 inch) 100 mm (3.94 inch) 150 mm (5.91 inch) 200 mm (7.87 inch)

Capillary

- Length
- Internal diameter

Minimum bending radius

Filling liquid

Max. 10 m (32.8 ft), longer lengths on request

2 mm (0.079 inch) 150 mm (5.9 inch) Silicone oil M5

Silicone oil M50 High-temperature oil

Halocarbon oil (for measuring O<sub>2</sub>)

Food oil (FDA listed) 170 °C (338 °F)

Max. recommended process temperature

Permissible ambient temperature

Dependent on the pressure transmitter and the filling liquid of the remote seal

More information can be found in the technical data of the pressure transmitters and in the section "Technical data of filling liquid" in the Technical description to the remote seals

Weight Approx. 4 kg (8.82 lb)

### Certificate and approvals

Classification according to pressure equipment directive (DGRL 2014/68/EU)

For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)

Remote seals for pressure transmitters SITRANS P320/P420

# Diaphragm seals of flange design mounted directly and with capillary

	or nange design in						
Selection and Orde	Article No.	Order code					
Diaphragm seal							
Flange type design, high-side and with fle low-side to							
<ul> <li>SITRANS P320/P42 ential pressure and 7MF03/7MF04 of Scope of delivery:</li> </ul>	rder separately	7MF0813-					
ocope of delivery.	2 011	- 0					
	e No. for the online con- IA Life Cycle Portal.						
Nominal diameter	Nominal pressure						
Connecting standard	EN 1092-1						
DN 40	PN 10/16/25/40	0 D D					
	PN 63/100	0 D F					
DN 50	PN 160 PN 10/16/25/40	0 D G 0 E D					
2.4 00	PN 63	OEE					
	PN 100	0 E F					
DN 80	PN 10/16/25/40	0 G D					
DN 400	PN 100	0 G F					
DN 100	PN 10/16 PN 25/40	0 H B 0 H D					
DN 125	PN 16	0 J B					
	PN 40	0 J D					
Connecting standard	ASME B16.5						
1½ inch	class 150	1 L A					
	class 300	1 L B					
	class 400/600	1 L D 1 L F					
2 inch	class 900/1500 class 150	1 M A					
2 111011	class 300	1 M B					
	class 400/600	1 M D					
	class 900/1500	1 M F					
3 inch	class 150	1 P A 1 P B					
	class 300 class 600	1 P D					
	class 1500	1 P F					
4 inch	class 150	1 Q A					
	class 300	1 Q B					
	class 400 class 1500	1 Q C 1 Q F					
5 inch	class 1500	1RA					
SG.	class 300	1 R B					
	class 400	1 R C					
Connecting standard	<u> J.I.S.</u>						
DN 50	10K	2 E S					
	20K 40K	2 E T 2 E U					
DN 80	40K 10K	2 G S					
	20K	2 G T					
	40K	2 G U					
DN 100	10K	2 H S					
	20K 40K	2 H T 2 H U					
Other version	TUIN		U 4 V				
Other version  Add Order code and	l plain text	9 A A	H 1 Y				

Selection and Ordering data	Article No.		Order code		
Diaphragm seal					
Flange type design, direct connected at high-side and with flexible capillary tube at low-side to					
<ul> <li>SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03/7MF04 order separately Scope of delivery: 2 off</li> </ul>	7 M F 0 8 1 3 -				
		0	-		
Length of capillary tube at low-side					
1 m	1 0				
1,6 m	11				
2 m	1 2				
2,5 m	1 3				
3 m	1 4				
4 m	1 5				
5 m 6 m	1 6 1 7				
7 m	1 8				
8 m	2 0				
9 m	2 1				
10 m	2 2				
Other version	9 8		L 1 Y		
Add Order code and plain text					
Filling liquid					
Silicone oil M5		Α			
Silicone oil M50		В			
High-temperature oil		С			
Halocarbon oil		D			
Food-grade oil (FDA listed)		E	<b>D</b> 4 11		
Other version Add Order code and plain text		Z	P 1 Y		
7.dd 07ddi 00dd arid piairi toxt					

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Remote seals for pressure transmitters SITRANS P320/P420

# Diaphragm seals of flange design mounted directly and with capillary

Selection and Orde	Article No.		Order code		
Diaphragm seal					
	, direct connected at lexible capillary tube at				
SITRANS P320/P4 ential pressure an 7MF03/7MF04 Scope of delivery:	order separately	7 M F 0 8 1 3			
Wetted parts mate	rials	- 0			
Stainless steel 316L  Without coating  With PFA coating  With PFE coating  With ECTFFE coat Monel 400, 2.4360 Hastelloy C276, 2.4 Tantalum Titanium, 3.7035 Nickel 201 Diaphragm Duplex, Diaphragm plus flar Stainless steel 316L Hastelloy C4, 2.461 Hastelloy C22, 2.46 Other version	1.4462 nge Duplex, 1.4462 with gold coating 0		A D E 0 F G J K L 0 M 0 Q R S 0 U 0 V 0 Z 8	Q1Y	
Add Order code an Extension length	d plain text	_			
<ul> <li>without</li> <li>50 mm (2")</li> <li>100 mm (4")</li> <li>150 mm (6")</li> <li>200 mm (8")</li> <li>250 mm (10")</li> <li>Other version</li> </ul>			0 1 2 3 4 5 Z 8	Q1Y	
Add Order code an		_			
Wetted parts stain	extension length				
Range	Standard length				
20 50 mm (0.79 1.97")	50 mm (1.97")		A 1		
51 100 mm	100 mm (3.94")		A 2		
(2.01 3.94") 101 150 mm (3.98 5.91")	150 mm (5.91")		A 3		
151 200 mm (5.94 7.87")	200 mm (7.87")		A 4		
201 250 mm (7.91 9.84")	250 mm (9.84")		A 5		
	less steel with ECTFE				
coating Range	Standard length				
20 50 mm	50 mm (1.97")		F 1		
(0.79 1.97") 51 100 mm (2.01 3.94")	100 mm (3.94")		F 2		
101 150 mm (3.98 5.91")	150 mm (5.91")		F 3		
151 200 mm (5.94 7.87")	200 mm (7.87")		F 4		
201 250 mm	250 mm (9.84")		F 5		

Diaphragm seal         Flange type design, direct connected at high-side and with flexible capillary tube at low-side to       7 MF 0 8 1 3 -         • SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03/7MF04 order separately Scope of delivery: 2 off       7 MF 0 8 1 3 -         • Wetted parts stainless steel with PFA coating Range       Standard length         20 50 mm (0.79 1.97")       50 mm (1.97")       D1         (0.79 1.97")       100 mm (3.94")       D2         (2.01 3.94")       150 mm (5.91")       D3         (3.98 5.91")       151 200 mm (7.87")       D4         (5.94 7.87")       250 mm (9.84")       D5         • Wetted parts Monel 400       Range       Standard length         20 50 mm (0.79 1.97")       50 mm (1.97")       G1         (0.79 1.97")       50 mm (1.97")       G2         (2.01 3.94")       100 mm (3.94")       G2         (2.01 3.94")       150 mm (5.91")       G3         (3.98 5.91")       200 mm (7.87")       G4         (5.94 7.87")       4         • Wetted parts Hastelloy C276       Range       Standard length
high-side and with flexible capillary tube at low-side to  • SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03/7MF04 order separately Scope of delivery: 2 off  • Wetted parts stainless steel with PFA coating Range Standard length  20 50 mm (0.79 1.97")  51 100 mm (1.97")  101 150 mm (1.90 mm
ential pressure and flow, 7MF03/7MF04 order separately Scope of delivery: 2 off   • Wetted parts stainless steel with PFA coating Range Standard length  20 50 mm (50 mm (1.97")  51 100 mm (3.94")  101 150 mm (5.91")  151 200 mm (5.94")  151 200 mm (5.94")  201 250 mm (201 mm (200 mm (7.87"))  • Wetted parts Monel 400  Range Standard length  20 50 mm (0.79 1.97")  • Wetted parts Monel 400  Range Standard length  20 50 mm (0.79 1.97")  51 100 mm (3.94")  (2.01 3.94")  101 150 mm (3.94")  (3.98 5.91")  151 200 mm (5.91")  61  (3.98 5.91")  • Wetted parts Hastelloy C276  Range Standard length
• Wetted parts stainless steel with PFA coating Range Standard length  20 50 mm (0.79 1.97")  51 100 mm (100 mm (3.94")  101 150 mm (5.91")  151 200 mm (5.91")  151 200 mm (5.94 7.87")  201 250 mm (250 mm (9.84")  • Wetted parts Monel 400  Range Standard length  20 50 mm (0.79 1.97")  51 100 mm (1.97")  61 (0.79 1.97")  51 100 mm (3.94")  (2.01 3.94")  101 150 mm (3.94")  (2.01 3.94")  101 150 mm (5.91")  62 (33 (3.98 5.91")  151 200 mm (5.91")  63 (34 (3.94 7.87")  • Wetted parts Hastelloy C276  Range Standard length
• Wetted parts stainless steel with PFA coating Range         Standard length           20 50 mm (0.79 1.97")         50 mm (1.97")         D1 (0.79 1.97")           51 100 mm (2.01 3.94")         100 mm (3.94")         D2 (2.01 3.94")           101 150 mm (3.98 5.91")         150 mm (5.91")         D3 (3.98 5.91")           151 200 mm (5.94 7.87")         200 mm (7.87")         D4 (5.94 7.87")           201 250 mm (2.91 9.84")         250 mm (9.84")         D5 (7.91 9.84")           • Wetted parts Monel 400 Range         Standard length           20 50 mm (0.79 1.97")         50 mm (1.97")         G1 (0.79 1.97")           51 100 mm (2.01 3.94")         100 mm (3.94")         G2 (2.01 3.94")           101 150 mm (3.98 5.91")         150 mm (5.91")         G3 (3.98 5.91")           151 200 mm (5.94 7.87")         200 mm (7.87")         G4 (5.94 7.87")           • Wetted parts Hastelloy C276 Range         Standard length
Range   Standard length   20 50 mm   50 mm (1.97")   D1   (0.79 1.97")   51 100 mm   100 mm (3.94")   D2   (2.01 3.94")   101 150 mm   150 mm (5.91")   D3   (3.98 5.91")   151 200 mm   200 mm (7.87")   D4   (5.94 7.87")   201 250 mm   250 mm (9.84")   D5   (7.91 9.84")   • Wetted parts Monel 400   Range   Standard length   20 50 mm   (0.79 1.97")   S1 100 mm   100 mm (3.94")   G2   (2.01 3.94")   101 150 mm   150 mm (5.91")   G3   (3.98 5.91")   151 200 mm   200 mm (7.87")   G4   (5.94 7.87")   • Wetted parts Hastelloy C276   Range   Standard length
(0.79 1.97") 51 100 mm (2.01 3,94") 101 150 mm (3.98 5,91") 151 200 mm (5.94 7.87") 201 250 mm (7.91 9.84")  • Wetted parts Monel 400 Range Standard length 20 50 mm (0.79 1,97") 51 100 mm (2.01 3,94") 101 150 mm (3.98 5,91") 51 200 mm (2.01 3,94") 101 150 mm (3.98 5,91") 151 200 mm (5.94 7.87")  • Wetted parts Hastelloy C276 Range Standard length  Standard length  G4  G5  G4  G5  G4  G5  G5  G6  G7  G7  G7  G7  G7  G7  G7  G7  G7
51 100 mm (2.94") (2.01 3.94") 101 150 mm (5.91") 151 200 mm (5.94") 201 250 mm (5.94")  • Wetted parts Monel 400 Range  Standard length 20 50 mm (0.79 1.97") 51 100 mm (3.94") (2.01 3.94")  100 mm (3.94")  G1 (3.98 5.91") 51 100 mm (3.94") (2.01 3.94") 101 150 mm (5.91") (3.98 5.91") 151 200 mm (5.94") (5.94 7.87")  • Wetted parts Hastelloy C276 Range  Standard length
(3.98 5.91") 151 200 mm (5.94 7.87") 201 250 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (0.79 1.97") 51 100 mm (2.01 3.94") 101 150 mm (3.98 5.91") 151 200 mm (5.94 7.87")  • Wetted parts Hastelloy C276 Range  Standard length  G1  G2  G3  G4
(5.94 7.87") 201 250 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (0.79 1.97") 51 100 mm (2.01 3.94") 101 150 mm (3.98 5.91") 151 200 mm (5.94 7.87")  • Wetted parts Hastelloy C276 Range  Standard length  250 mm (9.84")  61  61  62  63  63  64  65  64
(7.91 9.84")  • Wetted parts Monel 400  Range Standard length  20 50 mm 50 mm (1.97")  51 100 mm 100 mm (3.94")  (2.01 3.94")  101 150 mm 150 mm (5.91")  (3.98 5.91")  151 200 mm (5.94 7.87")  • Wetted parts Hastelloy C276  Range Standard length
Range       Standard length         20 50 mm (0.79 1.97")       50 mm (1.97")       G1         51 100 mm (2.01 3.94")       100 mm (3.94")       G2         101 150 mm (3.98 5.91")       150 mm (5.91")       G3         151 200 mm (5.94 7.87")       200 mm (7.87")       G4         Wetted parts Hastelloy C276 Range       Standard length
20 50 mm (0.79 1.97") 51 100 mm (1.97") 101 150 mm (1.97") 151 200 mm (5.91") 151 200 mm (5.91") 154 7.87")  • Wetted parts Hastelloy C276 Range Standard length
(0.79 1.97") 51 100 mm (2.01 3.94") 101 150 mm (3.98 5.91") 151 200 mm (5.94 7.87")  • Wetted parts Hastelloy C276 Range  Standard length
(2.01 3.94") 101 150 mm (3.98 5.91") 151 200 mm (5.94 7.87")  • Wetted parts Hastelloy C276 Range  Standard length
(3.98 5.91") 151 200 mm (5.94 7.87")  • Wetted parts Hastelloy C276 Range Standard length
(5.94 7.87")      Wetted parts Hastelloy C276 Range Standard length
Range Standard length
20 50 mm (1.97") <b>J 1</b> (0.79 1.97")
51 100 mm (3.94") <b>J 2</b> (2.01 3.94")
101 150 mm (3.98 5.91")
151 200 mm (7.87") <b>J 4</b> (5.94 7.87")
Wetted parts Tantalum
Range Standard length
20 50 mm (1.97") <b>K1</b> (0.79 1.97")
51 100 mm (3.94") <b>K 2</b> (2.01 3.94")
101 150 mm (3.98 5.91") K 3
151 200 mm (5.94 7.87") <b>K 4</b>

Remote seals for pressure transmitters SITRANS P320/P420

# Diaphragm seals of flange design mounted directly and with capillary

Diaphragm seals of flange design mounted	directly and v
Selection and Ordering data	Order code
Further designs	
Add "-Z" to Article No. and specify Order code.	
Factory certificates	
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11
Inspection certificate to EN 10204-3.1 - material of body and wetted parts	C12
Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009) (only together with seal diaphragm made of Hastelloy and stainless steel)	C13
Inspection certificate (EN 10204-3.1) - PMI test of pressure containing and wetted parts	C15
Certificate of FDA-approved fill oil (to EN10204-2.2)	C17
Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511 (Includes SIL conformity declaration)	C20
Accessories  Spark arrestor (for differential pressure and level transmitters)	
Low-temperature version (for Silicon Oil M50 only)	D67
Negative pressure services  Negative pressure service (for differential pressure transmitters)	D83
Extended negative pressure service (for differential pressure transmitters)	D88
General product approvals without explosion proof	
approvals  Oil-and grease-free cleaned version (for O <sub>2</sub> -appl. including certificate EN10204-2.2 (only with fill fluid Halocarbon oil max. temperature 60 °C and max. pressure 50 bar)	E80
Oil-and grease-free cleaned version (not for O <sub>2</sub> -appl. including certificate EN10204-2.2 (only with fill fluid Halocarbon oil)	E87
Sealing surface	
Sealing surface smooth, form B2/EN1092-1 resp. RFSF/ANSI B16.5 (wetted parts 316L only) Sealing surface groove to EN1092-1, form D	M50 M54
(instead of sealing surface B1, wetted parts 316L only)	
Sealing surface RJF (groove) to ASME B16.5 (instead of sealing surface RF 125250AA, wetted parts 316L only)	M64
Sealing surface with tongue to EN1092-1, form C (wetted parts 316L only)	
• DN 25	M70
• DN 40	M71
<ul><li>DN 50</li><li>DN 80</li></ul>	M72 M73
• DN 100	M74
• DN 125	M75
Sealing surface with spigot to EN1092-1, form E (wetted parts 316L only)	
• DN 25 • DN 40	M76
• DN 50	M77 M78
• DN 80	M79
• DN 100	M80
• DN 125	M81
Sealing surface with recess to EN1092-1, form F (wetted parts 316L only)  • DN 25	M82
• DN 40	M83
• DN 50	M84
• DN 80	M85
• DN 100	M86
• DN 125	M87

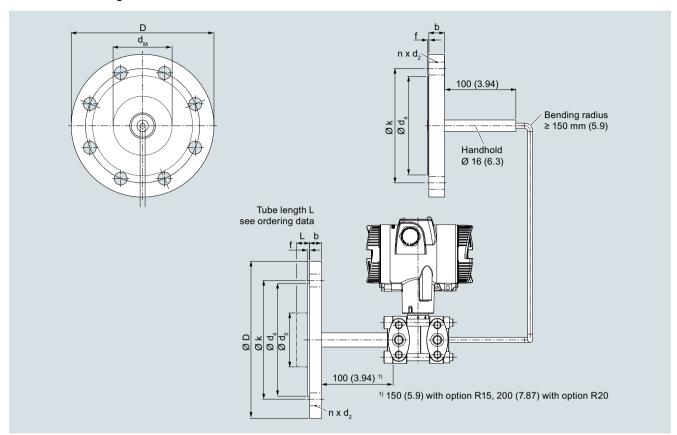
an outside y	
Selection and Ordering data	Order code
Further designs	
Add "-Z" to Article No. and specify Order code.	
Capillary coating	
PE protective tube	
1 m	S10
1,6 m	S11
2 m	S12
2,5 m	S13 S14
3 m 4 m	S14 S15
5 m	S16
6 m	S17
7 m	S18
8 m	S19
9 m	S20
10 m	S21
PTFE protective tube	-
1 m	S40
1,6 m	S41
2 m	S42
2,5 m 3 m	S43 S44
4 m	S45
5 m	S46
6 m	S47
7 m	S48
8 m	S49
9 m	S50
10 m	S51
PVC protective tube	
1 m	S70
1,6 m	S71
2 m	S72
2,5 m 3 m	S73 S74
4 m	S75
5 m	S76
6 m	S77
7 m	S78
8 m	S79
9 m	S80
10 m	S81
Customer-specific tube length	
Customer-specific tube length (specify in plain text)	Y44
Specification of process conditions <sup>1)</sup>	
Ambient temperature range	
• -10 +50 °C (14 +122 °F) preset	D66
• -40 +50 °C (-40 +122 °F)	D67
• -10 +85 °C (14 +185 °F)	D68
Process temperature min °C/(°F)/max °C/(°F)	Y50
See also "Specification of process conditions for selections	an and ardaring

See also "Specification of process conditions for selection and ordering data", page 1/338.

Remote seals for pressure transmitters SITRANS P320/P420

Diaphragm seals of flange design mounted directly and with capillary

# Dimensional drawings



Diaphragm seals of screwed design with flexible capillary, fixed connection, for connection to a SITRANS P320/420 pressure transmitter for differential pressure, dimensions in mm (inch)

Remote seals for pressure transmitters SITRANS P320/P420

# Diaphragm seals of flange design mounted directly and with capillary

# Connection to EN 1092-1

Nominal diameter	Nominal pressure	b	D	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub> with exten- sion	d <sub>M</sub> without exten- sion	f	k	n	L
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
DN 40	PN 10/16/ 25/40	16	150	18	88	38	30	42	2	110	4	0, 50, 100, 150 oder
	PN 63/100	24	170	22	88	38	30	42	2	125	4	200
	PN 160	26	170	22	88	38	30	42	2	125	4	
DN 50	PN 10/16/ 25/40	18	165	18	102	48.3	40	51	2	125	4	
	PN 63/100	26	195	26	102	48.3	40	51	2	145	4	
	PN 160	28	195	26	102	48.3	40	51	2	145	4	
DN 80	PN 10/16/ 25/40	22	200	18	138	76	65	85	2	160	8	
	PN 100	30	230	26	138	76	65	85	2	180	8	
DN 100	PN 10/16	18	220	18	158	94	85	85	2	180	8	_
	PN 25/40	22	235	22	162	94	85	85	2	190	8	
DN 125	PN 16	20	250	18	188	127	85	116	2	210	8	
	PN 40	24	270	26	188	127	85	116	2	220	8	

# Connection to ASME B16.5

Nominal diameter	Nominal pressure	b	D	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub> with exten- sion	d <sub>M</sub> without exten- sion	f	k	n	L
	lb./sq.in	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)		inch (mm)
1½ inch	150	0.63 (15.9)	4.92 (125)	0.63 (15.9)	2.87 (73)	1.5 (38)	1.18 (30)	1.42 (36)	0.08 (2)	3.87 (98.4)	4	0, 2,
	300	0.75 (19.1)	6.10 (155)	0.87 (22.2)	2.87 (73)	1.5 (38)	1.18 (30)	1.42 (36)	0.08 (2)	4.5 (114.3)	4	3.94, 5.94
	400/600	0.88 (22.3)	6.10 (155)	0.87 (22.2)	2.87 (73)	1.5 (38)	1.18 (30)	1.42 (36)	0.28 (7)	4.5 (114.3)	4	oder 7.87
	900/1500	1.25 (31.8)	7.09 (180)	1.13 (28.6)	2.87 (73)	1.5 (38)	1.18 (30)	1.42 (36)	0.28 (7)	4.87 (123.8)	4	(0, 50,
2 inch	150	0.69 (17.5)	5.91 (150)	0.75 (19.1)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.08 (2)	4.75 (120.7)	4	100, 150
	300	0.81 (20.7)	6.5 (165)	0.75 (19.1)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.08 (2)	5 (127)	8	oder
	400/600	1.00 (25.4)	6.5 (165)	0.75 (19.1)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.28 (7)	5 (127)	8	200)
	900/1500	1.5 (38.1)	8.46 (215)	1.00 (25.4)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.28 (7)	6.5 (165.1)	8	
3 inch	150	0.88 (22.3)	7.48 (190)	0.75 (19.1)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.08 (2)	6 (152.4)	4	
	300	1.06 (27)	8.27 (210)	0.87 (22.2)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.08 (2)	6.63 (168.3)	8	
	600	1.23 (31.8)	8.27 (210)	0.87 (22.2)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.28 (7)	6.63 (168.3)	8	
	1500	1.88 (47.7)	10.43 (265)	1.25 (31.8)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.28 (7)	8 (203.2)	8	
4 inch	150	0.88 (22.3)	9.06 (230)	0.75 (19.1)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.08 (2)	7.5 (190.5)	8	_
	300	1.19 (30.2)	10.04 (255)	0.87 (22.2)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.08 (2)	7.87 (200)	8	
	400	1.38 (35)	10.04 (255)	0.87 (22.2)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.28 (7)	7.87 (200)	8	
	1500	2.13 (54)	12.20 (310)	1.37 (34.9)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.28 (7)	9.5 (241.3)	8	
5 inch	150	0.88 (22.3)	10.04 (255)	0.87 (22.2)	7.31 (185.7)	5 (127)	4.57 (116)	4.57 (116)	0.08 (2)	8.5 (215.9)	8	
	300	1.31 (33.4)	11.02 (280)	0.87 (22.2)	7.31 (185.7)	5 (127)	4.57 (116)	4.57 (116)	0.08 (2)	9.25 (235)	8	
	400	1.50 (38.1)	11.02 (280)	0.87 (22.2)	7.31 (185.7)	5 (127)	4.57 (116)	4.57 (116)	0.28 (7)	9.25 (235)	8	

Remote seals for pressure transmitters SITRANS P320/P420

# Diaphragm seals of flange design mounted directly and with capillary

### Connection to J.I.S

Nominal diameter	Nominal pressure	b	D	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub> with exten- sion	d <sub>M</sub> without exten- sion	f	k	n	L
		mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)		mm (inch)
DN 50	10K	14 (0.55)	155 (6.10)	19 (0.75)	96 (3.78)	48.3 (1.9)	40 (1.57)	51 (2.01)	2	120 (4.72)	4	0, 50,
	20K	16 (0,63)	165 (6.50)	19 (0.75)	96 (3.78)	48.3 (1.9)	40 (1.57)	51 (2.01)	2	120 (4.72)	8	100, 150
	40K	26 (1.02)	165 (6.50)	19 (0.75)	105 (4.13)	48.3 (1.9)	40 (1.57)	51 (2.01)	2	130 (5.12)	8	oder - 200
DN 80	10K	16 (0.63)	185 (7.28)	19 (0.75)	126 (4.96)	76 (2.99)	65 (2.56)	85 (3.35)	2	150 (5.91)	8	(0, 2,
	20K	20 (0.79)	200 (7.87)	23 (0.91)	132 (5.20)	76 (2.99)	65 (2.56)	85 (3.35)	2	160 (6.30)	8	3.94,
	40K	32 (1.26)	210 (8.27)	23 (0.91)	140 (5.51)	76 (2.99)	65 (2.56)	85 (3.35)	2	170 (6.30)	8	5.94 oder
DN 100	10K	16 (0.63)	210 (8.27)	19 (0.75)	151 (5.94)	94 (3.7)	85 (3.35)	85 (3.35)	2	175 (6.89)	8	7.87)
	20K	22 (0.87)	225 (8.86)	23 (0.91)	160 (6.30)	94 (3.7)	85 (3.35)	85 (3.35)	2	185 (7.28)	8	
	40K	36 (1.42)	250 (9.84)	25 (0.98)	165 (6.50)	94 (3.7)	85 (3.35)	85 (3.35)	2	205 (8.07)	8	

d: Internal diameter of gasket to DIN 2690  $\rm d_{\rm M}$ : Effective diaphragm diameter

Remote seals for pressure transmitters **SITRANS P320/P420** 

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

### Overview



Diaphragm seal, screwed gland design with inside diaphragm for gauge, absolute and differential pressure for direct mounting



Process connection, open measuring flange

### Technical specifications

Technical specifications								
Diaphragm seal, screwed gland with inside diaphragm								
Process connection	Nominal pressure							
Open flange EN1092-1								
- DN 15 - DN 20 - DN 25	PN 10/16/25/40/63/100/160/250 PN 10/16/25/40 PN 10/16/25/40/63/100/160/250							
Open flange ASME B16.5								
- ½ inch, ¾ inch, 1 inch	Class 150/300/600/1500							
• Thread to EN 837-1								
- G¼"B, G½"B, G¾"B, G1"B	PN 100/250							
• Thread ASME B1.20.1								
- ¼" NPT-M, ¼" NPT-F - ½" NPT-M, ½" NPT-F - ¾" NPT-M, ¾" NPT-F - 1" NPT-M, 1" NPT-F	Class 1500/3675 Class 1500/3675 Class 1500/3675 Class 1500/3675							
Sealing surface for open measurement flange								
• For stainless steel, mat. no. 1.4404/316L	To EN 1092-1, form B1 or ASME B16.5 RF 125 250 AA							
Materials								
• Lower section (in the case of process connection thread)	Stainless steel, Mat. no. 1.4404/316L							
Diaphragm	Stainless steel, Mat. no. 1.4404/316L							

 With PTFE coating Monel 400, mat. no. 2.4360 Hastelloy C276, mat. no. 2.4819 Hastelloy C4, mat. no. 2.4602 Stainless steel 316L, gold plated, thickness approx. 25  $\mu m$ • Top section (process connection in the case of an open measure-Stainless steel, mat. no. 1.4404/316L Stainless steel 1.4404/316L

No coating

Frocess connection, open measuning	y nange
<ul> <li>Sealing material on the process connection</li> </ul>	Viton or copper (in the case of vacuum-free version)
Sealing material between top and bottom section	Viton (FKM) (standard) Teflon (PTFE) metal spring ring (silver-coated)
Capillary	
• Length	Max. 10 m (32.8 ft)
<ul> <li>Internal diameter</li> </ul>	2 mm (0.079 inch)
<ul> <li>Minimum bending radius</li> </ul>	150 mm (5.9 inch)
Sheath	Stainless steel protective tube, mat. No. 1.4301/304
Filling liquid	• Silicone oil M5
	Silicone oil M50
	High-temperature oil
	<ul> <li>Halocarbon oil (for measuring O<sub>2</sub>)</li> </ul>
	<ul> <li>Food oil (FDA listed)</li> </ul>
Max. recommended process tem- perature	170 °C (338 °F)
Permissible ambient temperature	Dependent on the pressure transmitter and the filling liquid of the remote seal
	More information can be found in the technical specifications of the pressure transmitters and in the section "Technical data of filling liquid" in the introduction to the

remote seals

practice)

Approx. 1.5 kg (3.3 lb)

For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4,

paragraph 3 (sound engineering

ment flange) Capillary

Weight

**Certificates and approvals** 

Classification according to

pressure equipment directive (PED 2014/68/EU)

Remote seals for pressure transmitters SITRANS P320/P420

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

Selection and C	Ordering data	Article No.	Order code	Selection and Ordering data	Article No	).	Order code
Diaphragm sea	I threaded design			Diaphragm seal threaded design			
	nragm, directly connected or exible capillary tube to a			With inside diaphragm, directly connected or connected via flexible capillary tube to a			
pressure or ab er with negativ	0/P420 transmitter for gauge solute pressure (only togeth- e pressure service), 4 order separately ery: 1 off	7MF0840-		<ul> <li>SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only togeth- er with negative pressure service), 7MF03/7MF04 order separately Scope of delivery: 1 off</li> </ul>	7MF084	۱٥-	
ential pressure	4 order separately,	7 M F 0 8 4 2 -		<ul> <li>SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03/7MF04 order separately, Scope of delivery: 2 off</li> </ul>	7 M F 0 8 4		0
	Article No. for the online con-			Transmitter connection		0	0
	he PIA Life Cycle Portal.			Without capillary tube, direct mount straight connection (for gauge pressure)	0 0		
Open flange cor	ter Nominal pressure nnecting standard EN 1092-1			Connection via capillary tube			
DN 15	PN 10/16/25/40	0 A D		Length of capillary	4.5		
	PN 63/100	0 A F		1 m 1.6 m	10		
	PN 160	0 A G		2 m	1 2		
	PN 250	0 A H		2,5 m	13		
DN 20	PN 10/16/25/40	0 A M		3 m	1 4		
DN 25	PN 10/16/25/40 PN 63/100	0 B D 0 B F		4 m	1 5		
	PN 160	0 B G		5 m	1 6		
	PN 250	0 B H		6 m	17		
	nnecting standard			7 m 8 m	1 8 2 0		
ASME B16.5	450			9 m	2 1		
½ inch	class 150 class 300	1 K A 1 K B		10 m	2 2		
	class 300	1 K C		Other version	9 8		L 1 Y
	class 1500	1 KD		Add Order code and plain text			
¾ inch	class 150	1 K F		Filling liquid			
	class 300	1 KG		Silicone oil M5		Α	
	class 600	1 KH		Silicone oil M50		В	
4 * 1	class 1500	1 K J		High-temperature oil Halocarbon oil		C D	
1 inch	class 150 class 300	1 K L 1 K M		Food-grade oil (FDA listed)		E	
	class 500	1 KN		Other version		z	P 1 Y
	class 1500	1 KP		Add Order code and plain text			
Process connec	tion thread EN 837-1			Wetted parts materials	_		
G1/4"B	PN 100	3 S B		Stainless steel 316L without coating		Α	
G1/4"B	PN 250	3 S C		Stainless steel 316L with PTFE-coating		E	
G½"B	PN 100	3 S F		Monel 400, 2.4360		G	
G½"B G¾"B	PN 250 PN 100	3 S G 3 S K		Hastelloy C276, 2.4819		J	
G¾"B	PN 250	3 S L		Tantalum Stainless steel 316L with gold coating		K S	
G1"B	PN 100	3 S P		Hastelloy C4, 2.4610		U	
G1"B	PN 250	3 S Q		, ,			011
	tion thread ASME B1.20.1			Other version Add Order code and plain text		Z	Q 1 Y
1/4"-NPT-M	Class 1500	5 T A					
1/4"-NPT-M 1/4"-NPT-F	Class 3675 Class 1500	5 T B 5 T C					
1/4"-NPT-F	Class 3675	5 T D					
½"-NPT-M	Class 1500	5 T E					
½"-NPT-M	Class 3675	5 T F					
1/2"-NPT-F	Class 1500	5 T G					
½"-NPT-F	Class 3675	5 T H					
34"-NPT-M 34"-NPT-M	Class 1500 Class 3675	5 T J 5 T K					
34"-NPT-F	Class 3675 Class 1500	5 T L					
34"-NPT-F	Class 3675	5 T M					
1"-NPT-M	Class 1500	5 T N					
1"-NPT-M	Class 3675	5 T P					
AL NIDT E	Class 1500	5 T Q					
1"-NPT-F							
1"-NPT-F Other version	Class 3675	5 T R 9 A A	H 1 Y				

Remote seals for pressure transmitters SITRANS P320/P420

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

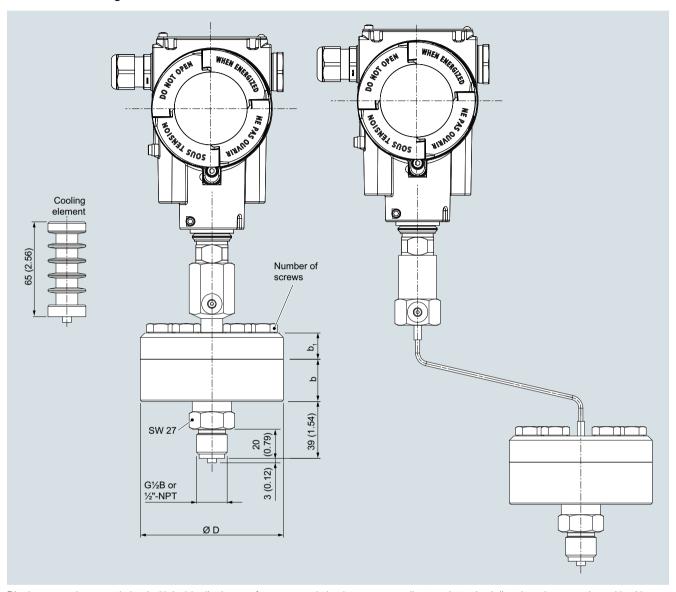
Selection and Ordering data	Order code	Selection and Ordering data	Order code
Further designs	Order code	Further designs	Order code
Add "-Z" to Article No. and specify Order code.		Add "-Z" to Article No. and specify Order code.	
Factory certificates		Capillary coating	
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11	PE protective tube	040
Inspection certificate to EN 10204-3.1 - material of	C12	1 m 1.6 m	S10 S11
body and wetted parts	CIZ	2 m	S12
Manufacturer's declaration acc. to NACE	C13	2,5 m	S13
(MR 0103-2012 and MR 0175-2009)		3 m	S14
(only together with seal diaphragm made of Hastelloy and stainless steel)		4 m 5 m	S15 S16
Inspection certificate (EN 10204-3.1) - PMI test of	C15	6 m	S17
pressure containing and wetted parts		7 m	S18
Certificate of FDA-approved fill oil (to EN10204-2.2)	C17	8 m	S19
Functional safety (SIL2/3) Devices suitable for use	C20	9 m 10 m	S20 S21
according to IEC 61508 and IEC 61511 (Includes SIL conformity declaration)		PTFE protective tube	321
Accessories		1 m	S40
	D67	1,6 m	S41
Low-temperature version (for Silicon Oil M50 only)		2 m	S42
Flushing port 1/4"-18 NPT unsealed	D70	2,5 m	S43
Flushing port 1/4"-18 NPT sealed with stainless steel plug	D71	3 m 4 m	S44 S45
Sealing material between upper and lower housing PTFE (instead of FKM viton)	D75	5 m	S46
Sealing material between upper and lower housing metal	D76	6 m	S47
C-circlip (instead of FKM viton)	2.0	7 m 8 m	S48 S49
PTFE coating for lower housing (only for G½B PN 100,	D77	9 m	S50
DN 25 PN 10 40, 1 inch Class 150/300)		10 m	S51
Negative pressure services		PVC protective tube	
Negative pressure service (for gauge and absolute	D81	1 m	S70
pressure transmitters)  Negative pressure service (for differential pressure	D83	1,6 m	S71
transmitters)		2 m 2,5 m	S72 S73
Extended negative pressure service (for gauge and absolute pressure transmitters)	D85	3 m	S74
Extended negative pressure service (for differential	D88	4 m	S75
pressure transmitters)		5 m	S76
General product approvals without explosion proof		6 m 7 m	S77 S78
approvals		8 m	S79
Oil-and grease-free cleaned version (for O <sub>2</sub> -appl. including certificate EN10204-2.2	E80	9 m	S80
(only with fill fluid Halocarbon oil max. temperature		10 m	S81
60 °C and max. pressure 50 bar) Oil-and grease-free cleaned version (not for O <sub>2</sub> -appl.	E87	Customer-specific tube length	
including certificate EN10204-2.2	E01	Customer-specific tube length (specify in plain text)	Y44
(only with fill fluid Halocarbon oil)		Specification of process conditions <sup>1)</sup>	
Capillary connection (only for 7MF0840)		Ambient temperature range	
Single-side mounted at differential pressure transmit-	S03	• -10 +50 °C (14 +122 °F) preset	D66
ters at high-side Single-side mounted at differential pressure transmit-	S04	• -40 +50 °C (-40 +122 °F)	D67
ters at low-side		• -10 +85 °C (14 +185 °F)	D68
Cooling element	S08	Process temperature min °C/(°F)/max °C/(°F)	Y50

See also "Specification of process conditions for selection and ordering data", page 1/338.

Remote seals for pressure transmitters SITRANS P320/P420

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

# Dimensional drawings

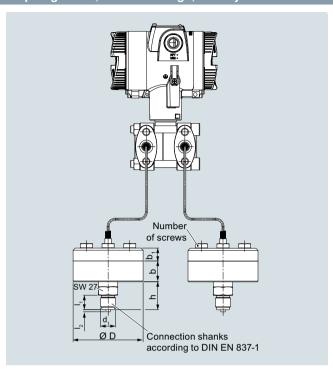


Diaphragm seal, screwed gland with inside diaphragm, for gauge and absolute pressure, direct and attached directly to the transmitter with with capillaries, dimensions in mm (inch)

Range	D mm	b mm	b <sub>1</sub>	Number of screws
up to 100 bar		14	16	6
up to 250 bar	98	14	20	12

Remote seals for pressure transmitters SITRANS P320/P420

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



Diaphragm seal, screwed gland with inside diaphragm, for differential pressure, direct and attached directly to the transmitter with with capillaries, dimensions in mm (inch)

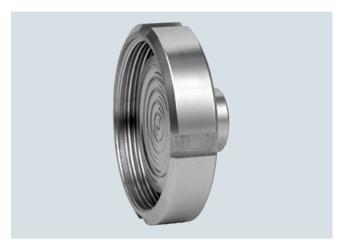
Nomi- nal diam- eter	Nominal pressure	D mm	d <sub>4</sub> mm	k mm	M	Number of holes	b mm	b <sub>1</sub> mm	f mm
DN 25	PN 10/16/ 25/40	115	68	85	M12	4	26	12	2
1 inch	150 lb/sq.in	110	50.8	79.4	M12	4	32	12	2
1 inch	300 lb/sq.in	125	50.8	88.9	M16	4	32	12	2

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Remote seals for pressure transmitters SITRANS P320/P420

# Quick-release diaphragm seals

### Overview



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



Quick-release diaphragm seals, with clamp connection

Quick-release diaphragm seals are available for the following SITRANS P pressure transmitter series:

- For pressure: P300, DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus
- For differential pressure and flow: P500, DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus
- The quick-release remote seals are common designs in the food industry. Their design means that the measured medium cannot accumulate in dead volumes. The quick-release clamp present on the remote seal means that quick dismounting is possible for cleaning.

### Technical specifications

Quick-release diaphragm seal					
Connection, nominal diameter	Nominal pressure				
<ul> <li>Standard to DIN 11851 with nut</li> <li>DN 25/32/40</li> <li>DN 50/65/80</li> </ul>	PN 40 PN 25				
<ul> <li>Standard to DIN 11851 with thread</li> <li>DN 25/32/40</li> <li>DN 50/65/80</li> </ul>	PN 40 PN 25				
<ul> <li>Standard clamp ISO 2852</li> <li>DN 25/38/51</li> <li>DN 63.5/76.1</li> </ul>	PN 16 PN 10				

Standard clamp DIN 32676, row C Tri-clamp					
- 1 inch, 11/2 inch					
- 2 inch, 21/2 inch					

Standard clamp DIN 32676, row A metric
DN 25/32/40

- DN 25/32/ - DN 50 - DN 65

- 3 inch

VariventDN 25/32/40/50

DRD-flangeDN 50

Sealing surface

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

• For the other materials

Materials

Main bodyWetted partsCapillary

Sheath

Maximum pressure

Tube length
Capillary
• Length

Internal diameterMinimum bending radius

Sheath

Filling liquid
Permissible ambient temperature

PN 25 PN 16

PN 10

PN 25 PN 16 PN 10

PN 25

PN 40

To EN 1092-1, form B1 or ASME B 16.5RF 125 ... 250 AA

To EN 1092-1, form B2 or ASME B16.5 RFSF

Stainless steel 316L Stainless steel 316L

Stainless steel, mat. No. 1.4571/316Ti

Spiral protective tube made of stainless steel, mat. No. 1.4301/316

See above and the technical data of the pressure transmitter

Without tube

Max. 10 m (32.8 ft), longer lengths on request

2 mm (0.079 inch) 150 mm (5.9 inch)

Spiral protective tube made of stainless steel, mat. No. 1.4404/316L

Food oil (FDA listed)

Dependent on the pressure transmitter and the filling liquid of the remote seal

More information can be found in the technical data of the pressure transmitters and in the section "Technical data of filling liquid" in the Technical description to the remote seals

Approx. 4 kg (8.82 lb)

### Certificates and approvals

Classification according to pressure equipment directive (DGRL 2014/68/EU)

**EHEDG** 

Weight

For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)

Complies with EHEDG recommendations

Remote seals for pressure transmitters SITRANS P320/P420

# Quick-release diaphragm seals

Guick-release u	apag coa.c			
Selection and Orde	Article No.	Order code		
Quick release diapl	Quick release diaphragm seal			
	Flange type design, with flexible capillary tube or directly connected to a			
pressure or absolu er with negative pr 7MF03/7MF04 o	SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only together with negative pressure service), 7MF03/7MF04 order separately Scope of delivery: 1 off			
<ul> <li>SITRANS P320/P4: ential pressure and 7MF03/7MF04 o Scope of delivery:</li> </ul>	rder separately	7 M F 0 8 3 2 -		
		- 0 = A	0	
	le No. for the online con- IA Life Cycle Portal.			
Nominal diameter	Nominal pressure			
Connection standard				
DN 25	PN 40	0 B M		
DN 32	PN 40	0 C D		
DN 40	PN 40	0 D M 0 E K		
DN 50 DN 65	PN 25 PN 25	0 F L		
DN 80	PN 25	0 G K		
		UGK		
	DIN 11851 with thread			
DN 25	PN 40	1 B M		
DN 32	PN 40	1 C D		
DN 40	PN 40	1 DM		
DN 50	PN 25	1 E K		
DN 65	PN 25	1 F L		
DN 80	PN 25	1 G K		
Connection standard				
DN 25	PN 16	2 B K		
DN 38	PN 16	2 C Q		
DN 51	PN 16	2 F H		
DN 63.5	PN 10	2 F J		
DN 76.1	PN 10	2 G J		
Connection standard row C Tri-clamp	Clamp DIN 32676,			
DN 1"	PN 25	3 K V		
DN 11/2"	PN 25	3 L V		
DN 2"	PN 16	3 M V		
DN 21/2"	PN 16	3 N V		
DN 3"	PN 10	3 P V		
Connection standard row A metric	Clamp DIN 32676,			
DN 25	PN 25	4 B L		
DN 32	PN 25	4 C C		
DN 40	PN 25	4 D L		
DN 50	PN 16	4 E J		
DN 65	PN 10	4 F K		
Varivent				
DN 25/32	PN 25	5 C L		
DN 40/50	PN 25	5 D K		
		35.1		
DRD-flange	DN 40			
DN 50	PN 40	6 E M		
Other version Add Order code and	d plain text	9 A A	H 1 Y	

Selection and Ordering data	Articl	e N	lo.			rd od		
Quick release diaphragm seal								
Flange type design, with flexible capillary tube or directly connected to a								
<ul> <li>SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only togeth- er with negative pressure service), 7MF03/7MF04 order separately Scope of delivery: 1 off</li> </ul>	7 M F	0 8	3 0	-				
<ul> <li>SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03/7MF04 order separately Scope of delivery: 1 off</li> </ul>	7 M F	8 0	3 2	-				
			- 0		A 0			
Transmitter connection								
Without capillary tube, direct mount straight connection (for gauge pressure) Connection via capillary tube Length of capillary		0 0						
1 m		1 0						
1,6 m		1 1						
2 m		1 2						
2,5 m		13						
3 m 4 m		1 4 1 5						
5 m		16						
6 m		17						
7 m		1 8						
8 m		2 0						
9 m		2 1						
10 m		2 2						
Other version Add Order code and plain text		9 8				L	1	Y
Filling liquid Food-grade oil (FDA listed)				E				
Other version Add Order code and plain text				z		P	1	Y

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Remote seals for pressure transmitters SITRANS P320/P420

# Quick-release diaphragm seals

Selection and Ordering data	Order code
Further designs	0.40. 0040
Add "-Z" to Article No. and specify Order code.	
Factory certificates	
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11
Inspection certificate to EN 10204-3.1 - material of body and wetted parts	C12
Inspection certificate (EN 10204-3.1) - PMI test of pressure containing and wetted parts	C15
Certificate of FDA-approved fill oil (to EN10204-2.2)	C17
Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511 (Includes SIL conformity declaration)	C20
Negative pressure services	
Negative pressure service (for gauge and absolute pressure transmitters) Negative pressure service (for differential pressure	D81 D83
transmitters)  Extended negative pressure service (for gauge and absolute pressure transmitters)	D85
Extended negative pressure service (for differential pressure transmitters)	D88
Capillary connection (only for 7MF0830)	
Single-side mounted at differential pressure transmitters at high-side Single-side mounted at differential pressure transmitters at low-side Cooling element	S03 S04 S08
Capillary coating	
PE protective tube 1 m	S10
1,6 m	S11
2 m 2,5 m	S12 S13
3 m	S14
4 m	S15
5 m	S16
6 m	S17
7 m	S18
8 m 9 m	S19 S20
10 m	S21
-	
PTFE protective tube 1 m	S40
1,6 m	S41
2 m	S42
2,5 m	S43
3 m	S44
4 m	S45
5 m	S46 S47
6 m 7 m	S47
8 m	S49
9 m	S50
10 m	S51

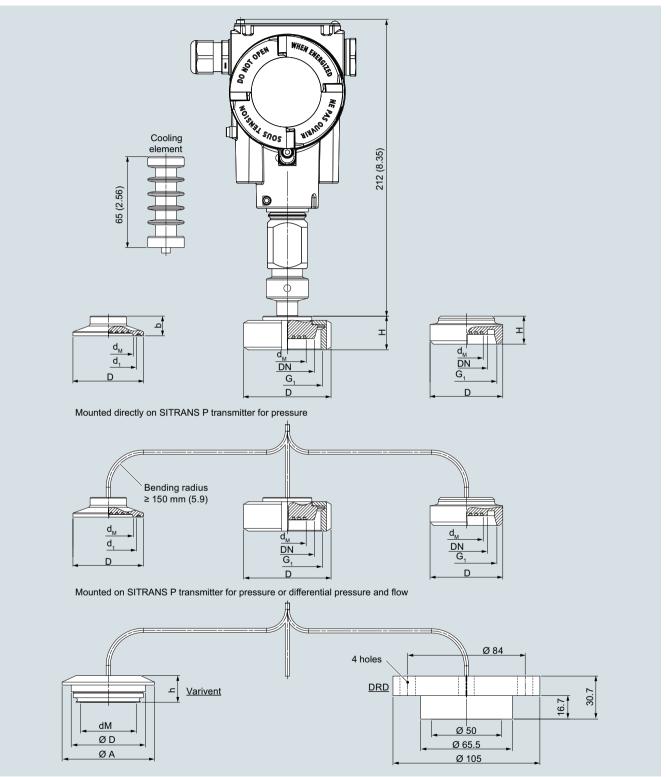
Selection and Ordering data	Order code
Further designs	
Add "-Z" to Article No. and specify Order code.	
PVC protective tube	-
1 m	S70
1,6 m	S71
2 m	S72
2,5 m	S73
3 m	S74
4 m	S75
5 m	S76
6 m	S77
7 m	S78
8 m	S79
9 m	S80
10 m	S81
Customer-specific tube length	
Customer-specific tube length (specify in plain text)	Y44
Specification of process conditions <sup>1)</sup>	
Ambient temperature range	
• -10 +50 °C (14 +122 °F) preset	D66
• -40 +50 °C (-40 +122 °F)	D67
• -10 +85 °C (14 +185 °F)	D68
Process temperature min °C/(°F)/max °C/(°F)	Y50
1) Consider the Microsoft and the consideration of	

See also "Specification of process conditions for selection and ordering data", page 1/338.

Remote seals for pressure transmitters SITRANS P320/P420

# Quick-release diaphragm seals

# Dimensional drawings



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

Remote seals for pressure transmitters SITRANS P320/P420

Quick-release diaphragm seals

### Connection to DIN 11851 with slotted union nut

Nominal	Ø d <sub>M</sub>	Ø D	Н	G <sub>1</sub>
diameter	mm	mm	mm	mm
DN 25	25	63	36	Rd 52x1/6
DN 32	32	70	36	Rd 52x1/6
DN 40	40	78	36	Rd 65x1/6
DN 50	52	112	36	Rd 78x1/6
DN 65	65	112	36	Rd 95x1/6
DN 80	72	127	36	Rd 110x1/6

# Connection to DIN 11851 with threaded socket

Nominal	Ø d <sub>M</sub>	Н	G <sub>1</sub>
diameter	mm	mm	mm
DN 25	25	36	Rd 52x1/6
DN 32	32	36	Rd 52x1/6
DN 40	40	36	Rd 65x1/6
DN 50	52	36	Rd 78x1/6
DN 65	65	36	Rd 95x1/6
DN 80	72	36	Rd 110x1/6

### Clamp connection to ISO 2852 for pipes to ISO 2037

Nominal			d <sub>1</sub>	b	D
diameter	pressure	mm	mm	mm	mm
DN 25	PN 16	22.6	43.5	14	50.5
DN 38	PN 16	34	43.5	12	50.5
DN 51	PN 16	46	56.5	14	64
DN 63.5	PN 10	51	70.5	14	77.5
DN 76.1	PN 10	65	83.5	14	91

# Clamp connection to DIN 32676 row C (Tri-Clamp) for pipes to ASME BPE

Nominal	Nominal	d <sub>M</sub>	d <sub>1</sub>	b	D
diameter	pressure	mm (inch)	mm (inch)	mm (inch)	mm (inch)
1"	PN 25	22.6 (0.89)	43.5 (1.71)	14 (0.55)	50.5 (1.99)
11/2"	PN 25	34 (1.34)	43.5 (1.71)	12 (0.47)	50.5 (1.99)
2"	PN 16	46 (1.81)	56.5 (2.22)	14 (0.55)	64 (2.52)
21/2"	PN 16	51 (2.01)	70.5 (2.78)	14 (0.55)	77.5 (3.05)
3"	PN 16	65 (2.56)	83.5 (3.29)	14 (0.55)	91 (3.58)

# Clamp connection to DIN 32676 row A (metric) for pipes to EN 10357 (DIN 11850)

Nominal	Nominal	Ø d <sub>M</sub>	d <sub>1</sub>	b	D
diameter	pressure	mm	mm	mm	mm
DN 25	PN 25	22.6	43.5	14	50.5
DN 32	PN 25	27	43.5	12	50.5
DN 40	PN 25	34	43.5	12	50.5
DN 50	PN 16	46	56.5	14	64
DN 65	PN 16	65	83.5	14	91

### Varivent

Nominal diameter	d <sub>M</sub>	Α	D	h
	mm	mm	mm	mm
	(inch)	(inch)	(inch)	(inch)
DN 25, DN 32, 1", 11/4"	40	66	50	19
	(1.57)	(2.6)	(1.97)	(0.75)
DN 40 125, 1 ½" 6"	58	84	68	19
	(2.28)	(3.331)	(2.68)	(0.75)

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

Remote seals for pressure transmitters SITRANS P320/P420

### Miniature diaphragm seals

### Overview



Miniature diaphragm seals

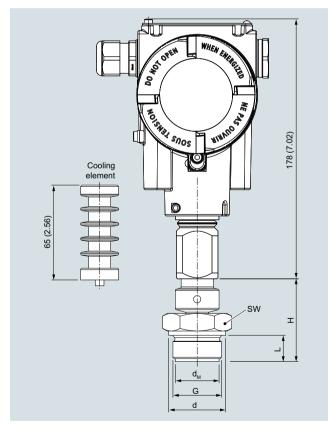
The miniature diaphragm seals are available for the SITRANS P320/420 pressure transmitter series.

Suitable for high pressures, contaminated, fibrous and viscous media in the chemical, paper, food and drink industries.

### Design

- · Flush-mounted diaphragm
- No dead spaces
- · Fixed threaded stems

### Dimensional drawings



Miniature diaphragm seal, dimensions in mm (inch)

G	Ø	d <sub>M</sub>	5	SW	Ç	ðd		L		Н
	mm	(inch)	mm	(inch)	mm	(inch)	mm	(inch)	mm	(inch)
G1B	25	(0.98)	41	(1.61)	39	(1.53)	28	(1.1)	56	(2.21)
G11/2B	40	(1.57)	55	(2.17)	60	(2.36)	30	(1.18)	50	(1.97)
G2B	50	(1.97)	60	(2.36)	70	(2.76)	30	(1.18)	63	(2.48)

G	Ç	Ø d <sub>M</sub>	d <sub>M</sub> SW		L		Н	
	mm	(inch)	mm	(inch)	mm	(inch)	mm	(inch)
1"-NPT	27	(1.06)	41	(1.61)	25	(0.98)	40	(1.57)
11/2"-NPT	34	(1.34)	55	(2.17)	26	(1.02)	45	(1.77)
2"-NPT	46	(1.81)	65	(2.56)	26	(1.02)	45	(1.77)

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

### Technical specifications

### Miniature diaphragm seals

Span with

- G1B and 1"-NPT
- G11/2B and 11/2"-NPT
- G2B and 2"-NPT
- Filling liquid
- Material
- · Main body
- Diaphragm
- Maximum pressure

Temperature of use

Temperature range of medium

Max. recommended process temperature

Weight

- G1B and 1"-NPT
- G11/2B and 11/2"-NPT
- G2B and 2"-NPT

# Certificate and approvals

Classification according to pressure equipment directive (DGRL 2014/68/EU)

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

Silicone oil M5 or food oil (FDA listed)

Stainl. steel mat No. 1.4404/316L or Hastelloy C276, mat No. 2.4819 Stainl. steel mat No. 1.4404 / 316L or Hastelloy C276, mat. No. 2.4819

100% of nominal pressure of pressure transmitter, up to maximum of PN 400 (5802 psi) (depending on the seal used)

Same as pressure transmitter Same as pressure transmitter 150 °C (302 °F)

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

For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)

Remote seals for pressure transmitters SITRANS P320/P420

# Miniature diaphragm seals

Selection and C	ordering data	Article No.	Order code
Miniature diaph	ragm seal		
directly connecte	ed to a		
• SITRANS P320 pressure or ab er with negativ 7MF03/7MF0. Scope of deliver	7 M F 0 8 5 0		
	Article No. for the online con- ne PIA Life Cycle Portal.	0 0 - 0	0
Process connec	ction		
Connection stand			
G ½"	PN 400	4 S T	
G ¾"	PN 400	4 S U	
G 1"	PN 400	4 S V	
G 1½"	PN 400	4 SW	
G 2"	PN 400	4 S X	
Connection stand	dard ASME B1.20.1		
½"-NPT-M	class 5800	5 T S	
3/4"-NPT-M	class 5800	5 T T	
1"-NPT-M	class 5800	5 T U	
1½"-NPT-M	class 5800	5 T V	
2"-NPT-M	class 5800	5 T W	
Other version Add Order code	and plain text	9 A A	H 1 Y
Filling liquid			
Silicone oil M5			A
Food-grade oil (	FDA listed)		E
Other version Add Order code		Z P 1 Y	
Wetted parts m Stainless steel 3	aterial 16L without coating		A
Hastelloy C276,	2.4819		J

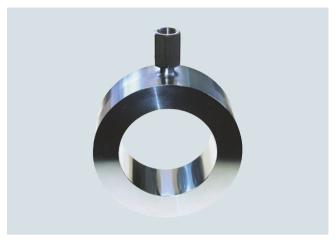
Selection and Ordering data	Order code
Further designs	
Add "-Z" to Article No. and specify Order code.	
Factory certificates	
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11
Inspection certificate to EN 10204-3.1 - material of body and wetted parts	C12
Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009) (only together with seal diaphragm made of Hastelloy and stainless steel)	C13
Inspection certificate (EN 10204-3.1) - PMI test of pressure containing and wetted parts	C15
Certificate of FDA-approved fill oil (to EN10204-2.2)	C17
Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511 (Includes SIL conformity declaration)	C20
Negative pressure services	
Negative pressure service Extended negative pressure service (for gauge and absolute pressure transmitters)	D81 D85
Capillary connection	
Cooling element between transmitter and remote seal	S08
Customer-specific tube length	
Customer-specific tube length (specify in plain text)	Y44
Specification of process conditions <sup>1)</sup>	
Ambient temperature range	
• -10 +50 °C (14 +122 °F) preset • -40 +50 °C (-40 +122 °F) • -10 +85 °C (14 +185 °F)	D66 D67 D68
Process temperature min °C/(°F)/max °C/(°F)	Y50

See also "Specification of process conditions for selection and ordering data", page 1/338.

Remote seals for pressure transmitters SITRANS P320/P420

### Inline seals in sandwich design

### Overview



Inline seals for flange-mounting

The inline seal is completely integrated in the process line. It is particularly suitable for flowing and highly viscous media.

The inline remote seal consists of a cylindrical jacket into which a thin-walled pipe is welded. It is clamped directly between two flanges in the pipeline.

### Design

- Inline seals for flange-mounting (flange design) to EN/ASME for SITRANS P pressure transmitters
  - For pressure: P300, DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus
  - For differential pressure and flow: DS III with HART, DS III with PROFIBUS PA, DS III with FOUNDATION Fieldbus and P500
- Sealing surface to EN 1092-1 or ASME B16.5
- Connection to the transmitter directly or by means of a flexible capillary (max. 10 m long)
- · See Technical data for details of materials used for the wetted
- Material used for the capillary, the guard sleeve, the seal's main body and the measuring cell: Stainless steel, mat.-No. 1.4571
- Filling liquid: Silicone oil, high-temperature oil, halocarbon oil, food oil (FDA listed) or glycerin/water (not suitable for uses in low-pressure range)

### Function

The measured pressure is transferred from the diaphragm to the filling liquid and passes either directly or through the capillary to the measuring chamber of the pressure transmitter. The interior of the diaphragm seal and of the capillary, as well as the measuring chamber of the pressure transmitter, are filled gas-free by the filling liquid.

### Note:

When operating in the low-pressure range, also during commissioning, it is recommended to use a vacuum-proof remote seal (see Selection and Ordering data).

### Technical specifications

### Inline seals for flange-mounting

Nominal diameter

Connecting standard EN 1092-1

• DN 25/40/50/65/80/100/125

Connecting standard ASME B16.5

• 1, 11/2, 2, 21/2, 3, 4, 5 inch Process connection

Sealing surface

Nominal pressure

PN 6 ... PN 100

Class 150 ... class 2500

Flange to EN 1092-1 or **ASME B 16.5** 

- for stainless steel mat, no. 1.4404/316L according to EN 1092-1, form B1 or ASME B16.5 RF 125 ... 250 AA
- · for all other materials according to EN 1092-1, form B2 or ASME B16.5 RFSF

Materials

- Main body
- Diaphragm
- Wetted parts

Stainless steel 1.4404/316L

Stainless steel 1.4404/316L

Stainless steel 1.4404/316L

- Without coating
- ECTFE coating (for vacuum on request)
- PFA coating

Monel 400, mat. No. 2.4360

Hastelloy C276, mat. No. 2.4819

Hastelloy C4, mat. No. 2.4602

Tantalum

Stainless steel, mat. No. 1.4404/316L

Spiral protective tube made of stainless steel, mat. No.

1.4301/316

Capillary

Capillary

Sheath

- Length
- Internal diameter
- Minimum bending radius

Filling liquid

Max. 10 m (32.8 ft)

2 mm (0.079 inch)

150 mm (5.9 inch)

Silicone oil M5

Silicone oil M50

High-temperature oil Halocarbon oil

Food oil (FDA listed)

See pressure transmitters, see filling liquid

Approx. 4 kg (8.82 lb)

Weight

### Certificates and approvals

Classification according to pressure equipment directive

Permissible ambient temperature

For gases of fluid group 1 and liquids of fluid group 1; complies with the requirements of article 4, paragraph 1 (appendix 1); assigned to category III, conformity evaluation module H by the TÜV Nord

(DGRL 2014/68/EU)

Remote seals for pressure transmitters SITRANS P320/P420

# Inline seals in sandwich design

Selection and (	Ordering data	Artic	le	No.		Order code
Inline-diaphrag	m seal					
Sandwich type d	lesign, directly connected or lexible capillary tube to a					
• SITRANS P320 pressure or ab (only together	D/P420 transmitter for gauge osolute pressure with negative pressure ser-/7MF04 order separately	7 M F	<del>-</del> 0	900	) -	
ential pressure	D/P420 transmitter for difference and flow, 7MF03/7MF04 ely, Scope of delivery: 2 off	7 M F	= 0	902	? -	
	Article No. for the online conhe PIA Life Cycle Portal.		ľ	- 0	0	m
Nominal diame	ter Nominal pressure					
Connecting star	ndard EN 1092-1					
DN 25	PN 6 100	0 B F	•			
DN 40	PN 6 100	0 D F	•			
DN 50	PN 6 100	0 E F	•			
DN 65	PN 6 100	0 F F	•			
DN 80	PN 6 100	0 G F	•			
DN 100	PN 6 100	0 H F	•			
DN 125	PN 6 100	0 J F	•			
Connecting star	ndard ASME B16.5					
1 inch	class 150 2500	1 K )	(			
1½ inch	class 150 2500	1 L )	(			
2 inch	class 150 2500	1 M )	(			
2½ inch	class 150 2500	1 N )	(			
3 inch	class 150 2500	1 P )	(			
4 inch	class 150 2500	1 Q )	(			
5 inch	class 150 2500	1 R )	(			
Other version	and plain tout	9 A A	١.			H 1 Y
Add Order code						
Transmitter co	nnection y tube, direct mount straight			,		
connection (for	gauge pressure)		0			
	y tube, direct mount connec- y (for gauge pressure)		0	'		
Length of capilla						
1 m	•		1	0		
1,6 m			1	1		
2 m			1	2		
2,5 m			1	3		
3 m			1	4		
4 m			1	5		
5 m			1	6		
6 m			1	7		
7 m			1	8		
8 m			2	0		
_			2	1		
9 m			2	2		
9 m 10 m						
	MF0900)		2	3		
10 m			2			
10 m 11 m (only for 7l	MF0900)			4		
10 m 11 m (only for 7l 12 m (only for 7l	MF0900) MF0900)		2	4 5		
10 m 11 m (only for 7l 12 m (only for 7l 13 m (only for 7l	MF0900) MF0900) MF0900)		2	4 5 6		
10 m 11 m (only for 7l 12 m (only for 7l 13 m (only for 7l 14 m (only for 7l	MF0900) MF0900) MF0900) MF0900)		2 2 2	4 5 6 7		L 1 Y

Selection and Ordering data	Article No.	Order code
Inline-diaphragm seal  Sandwich type design, directly connected or connected with flexible capillary tube to a  • SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only together with negative pressure service), 7MF03/7MF04 order separately Scope of delivery: 1 off  • SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03/7MF04	7 M F 0 9 0 0 -	
order separately, Scope of delivery: 2 off	- 0	0
Filling liquid Silicone oil M5 Silicone oil M50 High-temperature oil Halocarbon oil Food-grade oil (FDA listed) Other version Add Order code and plain text	A B C D E Z	P 1 Y
Wetted parts materials		
Stainless steel 316L  • Without coating  • With PFA coating  • With ECTFFE coating Monel 400, 2.4360 Hastelloy C276, 2.4819 Tantalum Hastelloy C4, 2.4610 Other version Add Order code and plain text	A D F G J K U	

Remote seals for pressure transmitters SITRANS P320/P420

# Inline seals in sandwich design

Selection and Ordering data	Order code
Further designs	
Add "-Z" to Article No. and specify Order code.	
Factory certificates	
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11
Inspection certificate to EN 10204-3.1 - material of body and wetted parts	C12
Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009) (only together with seal diaphragm made of Hastelloy and stainless steel)	C13
Inspection certificate (EN 10204-3.1) - PMI test of pressure containing and wetted parts	C15
Certificate of FDA-approved fill oil (to EN10204-2.2)	C17
Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511 (Includes SIL conformity declaration)	C20
Accessories  Spark arrestor (for gauge and absolute pressure transmitters)	D61
ters)  Spark arrestor (for differential pressure and level transmitters)	D62
Low-temperature version (for Silicon Oil M50 only)	D67
Negative pressure services	
Negative pressure service (for gauge and absolute	D81
pressure transmitters)  Negative pressure service (for differential pressure transmitters)	D83
Extended negative pressure service (for gauge and absolute pressure transmitters)	D85
Extended negative pressure service (for differential pressure transmitters)	D88
General product approvals without explosion proof approvals	
Oil-and grease-free cleaned version (for O <sub>2</sub> -appl.	E80
including certificate EN10204-2.2 (only with fill fluid Halocarbon oil max. temperature 60 °C and max. pressure 50 bar)	
Oil-and grease-free cleaned version (not for O <sub>2</sub> -appl. including certificate EN10204-2.2	E87
(only with fill fluid Halocarbon oil)	
Sealing surface	
Sealing surface smooth, form B2/EN1092-1 resp. RFSF/ANSI B16.5 (wetted parts 316L only)	M50
Sealing surface groove to EN1092-1, form D (instead of sealing surface B1, wetted parts 316L only)	M54
Sealing surface RJF (groove) to ASME B16.5 (instead of sealing surface RF 125250AA, wetted	M64
parts 316L only)  Sealing surface with tongue to EN1092-1, form C (wetted parts 316L only)	
DN 25	M70
• DN 40	M71
• DN 50	M72
• DN 80	M73
<ul><li>DN 100</li><li>DN 125</li></ul>	M74 M75
Sealing surface with spigot to EN1092-1, form E (wetted parts 316L only)	
• DN 25	M76
• DN 40	M77
• DN 50	M78
• DN 80	M79
<ul><li>DN 100</li><li>DN 125</li></ul>	M80 M81
5.1.120	

Selection and Ordering data	Order code
Further designs	01401 0040
Add "-Z" to Article No. and specify Order code.	
Sealing surface with recess to EN1092-1, form F (wetted parts 316L only)	
• DN 25	M82
• DN 40	M83
<ul><li>DN 50</li><li>DN 80</li></ul>	M84 M85
• DN 100	M86
• DN 125	M87
Capillary connection	
For 7MF0900	600
Single-side mounted at differential pressure transmitters at high-side	S03
Single-side mounted at differential pressure transmitters at low-side	S04
cooling element	S08
Capillary coating	
PE protective tube	
1 m	S10
1,6 m	S11
2 m	S12
2,5 m	S13 S14
3 m 4 m	S14 S15
5 m	S16
6 m	S17
7 m	S18
8 m	S19
9 m	S20
10 m	S21
11 m (only for 7MF0902)	S22
12 m (only for 7MF0902)	S23
13 m (only for 7MF0902)	S24 S25
14 m (only for 7MF0902) 15 m (only for 7MF0902)	S25 S26
PTFE protective tube	320
1 m	S40
1,6 m	S41
2 m	S42
2,5 m	S43
3 m	S44
4 m	S45
5 m	S46
6 m	S47 S48
7 m 8 m	S49
9 m	S50
10 m	S51
11 m (only for 7MF0902)	S52
12 m (only for 7MF0902)	S53
13 m (only for 7MF0902)	S54
14 m (only for 7MF0902)	S55
15 m (only for 7MF0902)	S56

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Remote seals for pressure transmitters SITRANS P320/P420

Inline seals in sandwich design

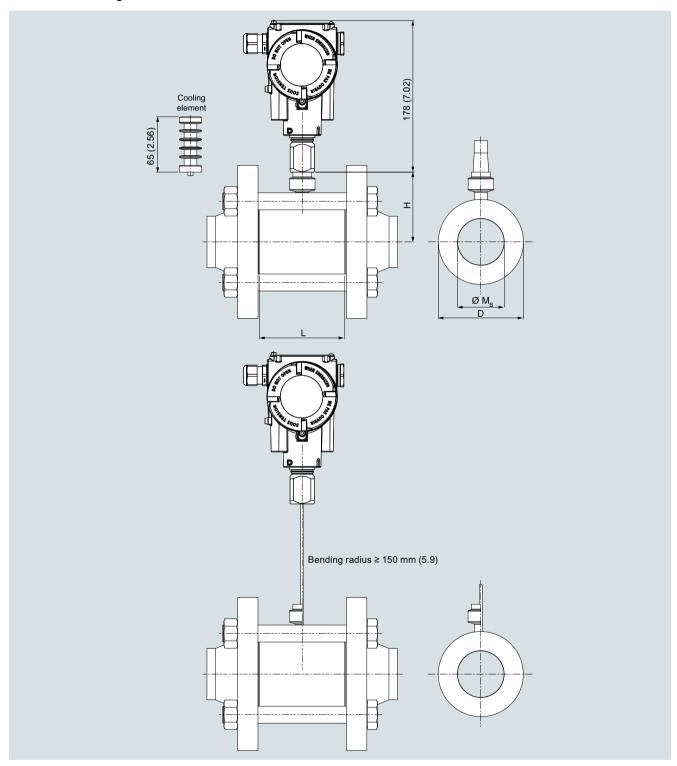
Selection and Ordering data	Order code
Further designs	
Add "-Z" to Article No. and specify Order code.	
PVC protective tube	
1 m	S70
1,6 m	S71
2 m	S72
2,5 m	S73
3 m	S74
4 m	S75
5 m	S76
6 m	S77
7 m	S78
8 m	S79
9 m	S80
10 m	S81
11 m (only for 7MF0902)	S82
12 m (only for 7MF0902)	S83
13 m (only for 7MF0902)	S84
14 m (only for 7MF0902)	S85
15 m (only for 7MF0902)	S86
Customer-specific tube length	
Customer-specific tube length (specify in plain text)	Y44
Specification of process conditions <sup>1)</sup>	
Ambient temperature range	
• -10 +50 °C (14 +122 °F) preset	D66
• -40 +50 °C (-40 +122 °F)	D67
• -10 +85 °C (14 +185 °F)	D68
Process temperature min °C/(°F)/max °C/(°F)	Y50

See also "Specification of process conditions for selection and ordering data", page 1/338.

Remote seals for pressure transmitters SITRANS P320/P420

# Inline seals in sandwich design

# Dimensional drawings



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

Remote seals for pressure transmitters SITRANS P320/P420

Inline seals in sandwich design

# Connection to EN 1092-1

DN	PN	D	Mb	L	Н
mm	bar	mm	mm	mm	mm
25	6 100	68	28.5	60	81
40		88	43.1	60	91
50		100	54.5	60	93
65		120	70.3	60	107
80		138	82.5	60	116
100		160	107.1	60	127
125		188	127	60	141

# Connection to ASME B16.5

DN	Class	D	Mb	L	Н
(inch)		mm (inch)	mm (inch)	mm (inch)	mm (inch)
1	150 2500	50 (1.97)	28.5 (1.12)	60 (2.36)	72 (2.83)
1½	150 2500	73.5 (2.89)	43.1 (1.70)	60 (2.36)	84 (3.31)
2	150 2500	91.9 (3.62)	54.5 (2.15)	60 (2.36)	93 (3.66)
21/2	150 2500	104.6 (4.12)	70.3 (2.77)	60 (2.36)	99 (3.9)
3	150 2500	127 (5)	82.5 (3.25)	60 (2.36)	110 (4.33)
4	150 2500	157.2 (6.19)	107.1 (4.22)	60 (2.36)	125 (4.92)
5	150 2500	188 (7.4)	127 (5)	60 (2.36)	141 (5.55)

Remote seals for pressure transmitters SITRANS P320/P420

### Quick-release inline seals

### Overview



Quick-release inline seals, to DIN 11851 with threaded socket



Quick-release inline seals, with clamp connection

Quick-release inline seals for pressure are available for the following SITRANS P pressure transmitter series:

- P300
- DS III with HART
- DS III with PROFIBUS PA
- DS III with FOUNDATION Fieldbus

### Application

The quick-release inline seal is a special design for flowing media and high-viscosity media. Since it is completely integrated in the process pipe, no turbulences, dead volumes or other obstructions to the flow occur. The measured medium flows unhindered through the inline seal and results in self-cleaning of the measuring chamber. Furthermore, the inline seal can be cleaned by a pig.

### Design

The quick-release clamp is available in two versions:

- DIN 11851 with threaded socket
- Clamp connection

The inline seal is connected to the pressure transmitter either directly or by way of a capillary.

### Function

The measured pressure is transferred from the diaphragm, mounted on the inner circumference of the inline seal, to the filling liquid and then passes through the capillary to the measuring chamber of the pressure transmitter. The interior of the inline seal and of the capillary, as well as the measuring chamber of the pressure transmitter, are filled gas-free by the filling liquid.

### Note:

When operating in the low-pressure range, also during commissioning, it is recommended to use a vacuum-proof pressure transmitter (see Selection and Ordering data).

### Technical specifications

recnnical specifications		
Inline seals of quick-release des	ign for pressure	
Connection	Nominal diameter	Nominal pressure
Standard to DIN 11851 with	DN 25/32/40	PN 40
thread	DN 50/65/80	PN 25
<ul> <li>Standard Clamp ISO 2852</li> </ul>	DN 25/38/51	PN 16
	DN 63.5/76.1	PN 10
• Standard Clamp DIN 32676,	1, 1½ inch	Nominal pressure  0 PN 40  0 PN 25  1 PN 16  1 PN 10  PN 25  PN 16  PN 10  0 PN 25  PN 16  PN 10  0 PN 25  PN 16  PN 10  1 PN 10  1 PN 25  PN 16  PN 10  2 PN 25  PN 16  PN 10  1 PN 10  2 PN 25  PN 16  PN 10  2 PN 25  PN 16  PN 10  3 PN 25  PN 16  PN 10  4 PN 10  4 PN 10  5 PN 10  6
row C Tri-clamp	2, 21/2 inch	PN 16
	3 inch	PN 10
• Standard Clamp DIN 32676,	DN 25/32/40	PN 25
row A metric	DN 50	PN 16
	DN 65	PN 10
Material		
Main body	Stainless steel 1.	4404/316L
<ul> <li>Diaphragm</li> </ul>	Nominal diameter pressure	
Capillary		
• Length	Max. 10 m (32.8	ft)
Internal diameter	2 mm (0.079 incl	า)
<ul> <li>Minimum bending radius</li> </ul>	Nominal diameter pressure  851 with DN 25/32/40 PN 40  DN 50/65/80 PN 25  O 2852 DN 25/38/51 PN 16  DN 63.5/76.1 PN 10  IN 32676, PN 16  3 inch PN 10  IN 32676, DN 25/32/40 PN 25  DN 50 PN 16  DN 65 PN 10  Stainless steel 1.4404/316L  Stainless steel 1.4404/316L  Stainless steel 1.4404/316L  Max. 10 m (32.8 ft) 2 mm (0.079 inch)  150 mm (5.9 inch)  Spiral protective tube made of stainless steel, mat. No. 1.4404/316L  • Food oil (FDA listed)  Dependent on the pressure transmitter and the filling liquid of the remote seal  More information can be found in the technical data of the pressure transmitters and in the section "Technical data of filling liquid" in the Technical description to the remote seals  Approx. 4 kg (approx. 8.82 lb)	
• Sheath	Nominal diameter pressure  Nominal pressure  Nom	
Filling liquid	• Food oil (FDA I	isted)
Permissible ambient temperature	mitter and the fill remote seal More information the technical dat transmitters and "Technical data of the Technical de	ing liquid of the can be found in a of the pressure in the section of filling liquid" in
Weight	Approx. 4 kg (ap	prox. 8.82 lb)
Certificate and approvals		
Classification according to pressure equipment directive	uids of fluid grou	p 1; complies with

# EHEDG

(DGRL 2014/68/EU)

mity evaluation module H by the TÜV Nord

Complies with EHEDG recommendations

the requirements of article 4, paragraph 1 (appendix 1); assigned to category III, confor-

Remote seals for pressure transmitters SITRANS P320/P420

# Quick-release inline seals

Selection and	Ordering data	Article No.	Order code
Quick release	inline-seal		
Flange type des or directly conn	sign, with flexible capillary tube ected to a		
pressure or a (only togethe	20/P420 transmitter for gauge bsolute pressure r with negative pressure ser- /7MF04 order separately very: 1 off	7MF0930-	
		- 0 - A	0 ===
	Article No. for the online conthe PIA Life Cycle Portal.		
Nominal diam	p		
	indard DIN 11851 with thread		
DN 25	PN 40	1 BM	
DN 32	PN 40	1 C D	
DN 40	PN 40	1 DM	
DN 50	PN 25	1 E K	
DN 65 DN 80	PN 25 PN 25	1 F L 1 G K	
		IGK	
	ndard Clamp ISO 2852		
DN 25	PN 16	2 B K	
DN 38	PN 16	2 C Q	
DN 51	PN 16	2 F H	
DN 63,5	PN 10	2 F J	
DN 76,1	PN 10	2 G J	
	ndard Clamp DIN 32676,		
row C Tri-clamp	! PN 25	3 K V	
DN 1½"	PN 25	3 L V	
DN 172 DN 2"	PN 16	3 M V	
DN 2½"	PN 16	3 N V	
DN 3"	PN 10	3 P V	
row A metric	ndard Clamp DIN 32676,		
DN 25	PN 25	4 B L	
DN 32	PN 25	4 C C	
DN 40	PN 25	4 D L	
DN 50	PN 16	4 E J	
DN 65	PN 10	4 F K	
Other version		9 A A	H 1 Y
	le and plain text		

Selection and Ordering data	Article No.	Order code
Quick release inline-seal		
Flange type design, with flexible capillary tube or directly connected to a		
<ul> <li>SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only together with negative pressure ser- vice), 7MF03/7MF04 order separately Scope of delivery: 1 off</li> </ul>	7MF0930-	
	- 0	A 0
Transmitter connection		
Without capillary tube, direct mount straight connection (for gauge pressure)	0 0	
Connection via capillary tube		
Length of capillary	4.0	
1 m	10	
1,6 m 2 m	1 1 1 2	
2,5 m	13	
2,5 III 3 m	1 4	
4 m	1.5	
5 m	16	
6 m	17	
7 m	1.8	
8 m	2 0	
9 m	2 1	
10 m	2 2	
Other version	9 8	L 1 Y
Add Order code and plain text	3.6	
Filling liquid		
Food-grade oil (FDA listed)	E	
Other version Add Order code and plain text	Z	P 1 Y

Remote seals for pressure transmitters SITRANS P320/P420

# Quick-release inline seals

	0 1 1
Selection and Ordering data	Order code
Further designs	
Add "-Z" to Article No. and specify Order code.	
Factory certificates	
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11
Inspection certificate to EN 10204-3.1 - material of body and wetted parts	C12
Inspection certificate (EN 10204-3.1) - PMI test of pressure containing and wetted parts	C15
Certificate of FDA-approved fill oil (to EN10204-2.2)	C17
Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511 (Includes SIL conformity declaration)	C20
Negative pressure services	
Negative pressure service (for gauge and absolute pressure transmitters)	D81
Extended negative pressure service (for gauge and absolute pressure transmitters)	D85
Capillary connection	
Single-side mounted at differential pressure transmitters at high-side	S03
Single-side mounted at differential pressure transmitters at low-side	S04
cooling element	S08
Capillary coating	
PE protective tube	
1 m	S10
1,6 m	S11
2 m	S12
2,5 m	S13
3 m	S14
4 m	S15
5 m	S16 S17
6 m 7 m	S17
8 m	S19
9 m	S20
10 m	S21
PTFE protective tube	•
1 m	S40
1,6 m	S41
2 m	S42
2,5 m	S43
3 m	S44
4 m	S45
5 m	S46
6 m	S47
7 m	S48
8 m 9 m	S49 S50
9 m 10 m	S51

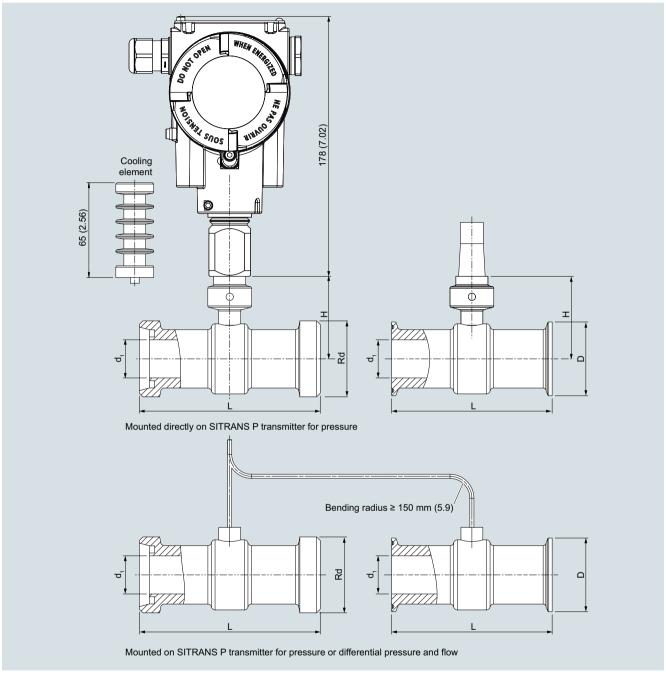
Selection and Ordering data	Order code
Further designs	
Add "-Z" to Article No. and specify Order code.	
PVC protective tube	
1 m	S70
1,6 m	S71
2 m	S72
2,5 m	S73
3 m	S74
4 m	S75
5 m	S76
6 m	S77
7 m	S78
8 m	S79
9 m	S80
10 m	S81
Customer-specific tube length	
Customer-specific tube length (specify in plain text)	Y44
Specification of process conditions <sup>1)</sup>	
Ambient temperature range	
• -10 +50 °C (14 +122 °F) preset	D66
• -40 +50 °C (-40 +122 °F)	D67
• -10 +85 °C (14 +185 °F)	D68
Process temperature min °C/(°F)/max °C/(°F)	Y50

See also "Specification of process conditions for selection and ordering data", page 1/338.

Remote seals for pressure transmitters SITRANS P320/P420

Quick-release inline seals

# Dimensional drawings



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

Remote seals for pressure transmitters SITRANS P320/P420

# Quick-release inline seals

Clamp-on seals for pipes to EN 10357 (DIN 11851)

				Food connecti	ons		
				DIN 11851		DIN 32676	
	Length	Inner diameter	Connection height	Nominal pressure	Round thread connection to DIN 11851	Nominal pressure	Clamp connection to DIN 32676
Nominal diameter	L (mm)	di (mm)	h (mm)		Thread Rd		D (mm)
DN 10	96	10	27.5	PN 40	28 x 1/8"	PN 16	34
DN 15	150	16	12	PN 40	34 x 1/8"	PN 16	34
DN 25	110	26	21	PN 40	52 x 1/6"	PN 16	50.5
DN 32	110	32	26	PN 40	58 x 1/6"	PN 16	50.5
DN 40	110	38	28.5	PN 40	65 x 1/6"	PN 16	50.5
DN 50	110	50	34	PN 25	78 x 1/6"	PN 16	64
DN 65	110	66	42	PN 25	95 x 1/6"	PN 10	91
DN 80	60	81	47.5	PN 25	110 x 1/4"	PN 10	106
DN 100	60	100	60	PN 25	130 x 1/4"	PN 10	119

### Clamp-on seals for pipes to BS 4825 Part 3 and O.D. Tube (suited for pipes to ASME-BPE)

					Food connect	tion		
					IDF to ISO 28	53	Clamp conne	ction to ISO 2852
		Length	Inner diameter	Connection height	Nominal pressure	IDF-Thread to ISO 2853	Nominal pressure	Clamp connection to ISO 2852
Nominal	diameter	L (mm)	di (mm)	h (mm)		IDF-thread (Tr)		D (mm)
1 inch	25.4 mm	110	22.2	21	PN 40	37 x 3.175	PN 16	50.5
1½ inch	38 mm	110	34.8	28.5	PN 40	50 x 3.175	PN 16	50.5
2 inch	51 mm	110	47.8	34	PN 25	64 x 3.175	PN 16	64
1½ inch	63.5 mm	110	60.3	38	PN 25	77.5 x 3.175	PN 16	77.5
3 inch	76.1 mm	60	72.9	44.5	PN 25	91 x 3.175	PN 10	91
4 inch	101.6 mm	60	97.6	59.5	PN 25	118 x 3175	PN 10	119

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Remote seals for pressure transmitters **SITRANS P320/P420** 

Flushing rings for diaphragm seals

# Overview



### Flushing ring

Flushing rings are required for flange-mounted and sandwichtype remote seals (Article No. 7MF0800 ... 7MF0814) if the danger exists that the process conditions and the geometry of the connection could cause the medium to form deposits or blockages.

The flushing ring is clamped between the process flange and the remote seal.

Deposits can be flushed away from the diaphragm through the holes in the side, or the pressure volume can be vented. Different nominal diameters and forms permit adaptation to the respective process flange.

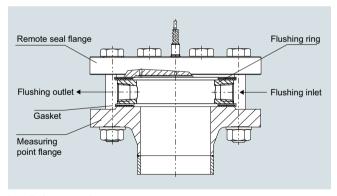
### Process connection

For flanges to EN and ASME: DN 50, 80, 100, 125; PN 16 ... 100 or DN 2 inch, 3 inch, 4 inch, 5 inch; Class 150 ... 600

### Standard design

Material: CrNi-Stahl, mat. No. 1.4404/316L Sealing faces and flushing holes: See Selection and Ordering data

### Design



Installation example

# Technical specifications

Nominal diameter	Nominal pressure
• DN 50	PN 16 PN 100
• DN 80	PN 16 PN 100
• DN 100	PN 16 PN 100
• DN 125	PN 16 PN 100
• 2 inch	Class 150 class 600
• 3 inch	Class 150 class 600
• 4 inch	Class 150 class 600
• 5 inch	Class 150 class 600
Sealing surface	
• To EN 1092-1	Form B1
	Form B2
	Form D/Form D
	Form C/Form C
	Form C/Form C
	Form E
	Form F
• To ASME B16.5	RF 125 250 AA
	RFSF
	RJF ring groove
Flushing holes (2 off), female	• G1/4
thread	• G½
	• 1/4-18 NPT
	• ½-14 NPT
	- /2-1 <del>-1</del> INI I

Material

Stainless steel 1.4404/316L

Remote seals for pressure transmitters SITRANS P320/P420

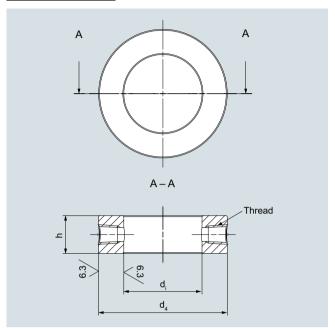
# Flushing rings for diaphragm seals

Selection and Orderin	g data	Artic	cle	No.Ord	. с	0	de
Flushing ring	<u> </u>	7 M F	F 4	925-			
for remote seals 7MF08	00 to 7MF0814	1					
7 Click on the Article New ration in the PIA Life	lo. for the online configu- Cycle Portal.						
Nom. diam.  • DN 50  • DN 80  • DN 100  • DN 125  • 2 inch  • 3 inch  • 4 inch  • 5 inch  Only for RJF ring groov.  • 2 inch  • 3 inch  • 4 inch	Class 150 Class 150 Class 150	A B C D G H J K	₹ ₹				
<ul> <li>5 inch</li> <li>2 inch</li> <li>3 inch</li> <li>4 inch</li> <li>5 inch</li> <li>Other version</li> <li>Add Order code and pl</li> <li>Nominal diameter:; N</li> </ul>	Class 150  Class 300 600  Class 300 600  Class 300 600  Class 300 600	R F V F W F X F	? ? ?		J	1	Y
Sealing surface • EN 1092-1 - Form B1 - Form B2 - Form C/Form C - Form D/Form C - Form D/Form D		( [ [	A C C E F				
- Form F  • ASME B16.5 - RF 125 250 AA - RFSF - RJF ring groove Other version Add Order code and pl Sealing surface:	ain text:	N C	H Q R Z		K	1	Υ
Flushing holes (2 off) Female thread G¼ Female thread G½ Female thread ¼-18 N Female thread ½-14 N	** *		1 2 3 4				
Material • Stainless steel 316L Other version Add Order code and pl Material:	ain text:			0 9	M	1	Y
Further designs Please add "-Z" to Articl code.	e No. and specify Order	Orde	er	code			
<b>Inspection certificate</b> to EN 10204, section 3.	1	C12					

# Dimensional drawings

# Connection according to EN 1092-1

Form B1 and form B2



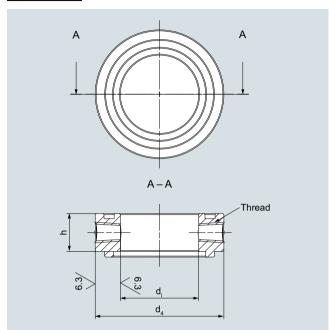
Flushing ring; sealing surface (EN 1092-1), form B1 and form B2

DN	PN	Thread	$d_4$	d <sub>i</sub>	h	Weight
mm	bar		Ø in mm (inch)	Ø in mm (inch)	Ø in mm (inch)	kg (lb)
50	16 100	1/4 NPT	102 (4.02)	62 (2.44)	30 (1.18)	1.24 (2.73)
80	16 100	1/4 NPT	138 (5.43)	92 (3.62)	30 (1.18)	1.99 (4.39)
100	16 100	1/4 NPT	162 (6.38)	92 (3.62)	30 (1.18)	3.35 (7.39)
125	16 100	1/4 NPT	188 (7.40)	132 (5.2)	30 (1.18)	3.38 (7.45)
50	16 100	½ NPT	102 (4.02)	62 (2.44)	30 (1.18)	1.24 (2.73)
80	16 100	½ NPT	138 (5.43)	92 (3.62)	30 (1.18)	1.99 (4.39)
100	16 100	½ NPT	162 (6.38)	92 (3.62)	30 (1.18)	3.35 (7.39)
125	16 100	½ NPT	188 (7.40)	132 (5.2)	30 (1.18)	3.38 (7.45)

Remote seals for pressure transmitters SITRANS P320/P420

Flushing rings for diaphragm seals

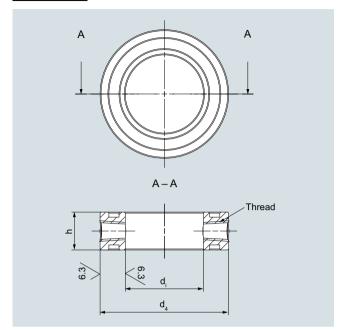
# Form D/form C



Flushing ring; sealing surface (EN 1092-1), form D/form C

DN	PN	Thread	d <sub>4</sub>	d <sub>i</sub>	h	Weight
mm	bar		Ø in mm (inch)	Ø in mm (inch)	Ø in mm (inch)	kg (lb)
50	16 100	1/4 NPT	102 (4.02)	62 (2.44)	35.5 (1.40)	1.46 (3.22)
80	16 100	1/4 NPT	138 (5.43)	92 (3.62)	35.5 (1.40)	2.36 (5.2)
100	16 100	1/4 NPT	162 (6.38)	92 (3.62)	35.5 (1.40)	3.96 (8.73)
125	16 100	1/4 NPT	188 (7.40)	132 (5.2)	35.5 (1.40)	4.00 (8.82)
50	16 100	½ NPT	102 (4.02)	62 (2.44)	40.5 (1.595)	1.67 (3.68)
80	16 100	½ NPT	138 (5.43)	92 (3.62)	40.5 (1.595)	2.69 (5.93)
100	16 100	½ NPT	162 (6.38)	92 (3.62)	40.5 (1.595)	4.52 (9.97)
125	16 100	½ NPT	188 (7.40)	132 (5.2)	40.5 (1.595)	4.56 (10.05)

# Form D/form D



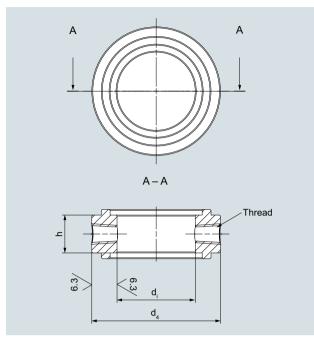
Flushing ring; sealing surface (EN 1092-1), form D/form D

DN	PN	Thread	d <sub>4</sub>	d <sub>i</sub>	h	Weight
mm	bar		Ø in mm (inch)	Ø in mm (inch)	Ø in mm (inch)	kg lb)
50	16 100	1/4 NPT	102 (4.02)	62 (2.44)	40 (1.58)	1.65 (3.64)
80	16 100	1/4 NPT	138 (5.43)	92 (3.62)	40 (1.58)	2.66 (5.86)
100	16 100	1/4 NPT	162 (6.38)	92 (3.62)	40 (1.58)	4.47 (9.86)
125	16 100	1/4 NPT	188 (7.40)	132 (5.2)	40 (1.58)	4.50 (9.92)
50	16 100	½ NPT	102 (4.02)	62 (2.44)	40 (1.58)	1.65 (3.64)
80	16 100	½ NPT	138 (5.43)	92 (3.62)	40 (1.58)	2.66 (5.86)
100	16 100	½ NPT	162 (6.38)	92 (3.62)	40 (1.58)	4.47 (9.86)
125	16 100	½ NPT	188 (7.40)	132 (5.2)	40 (1.58)	4.50 (9.92)

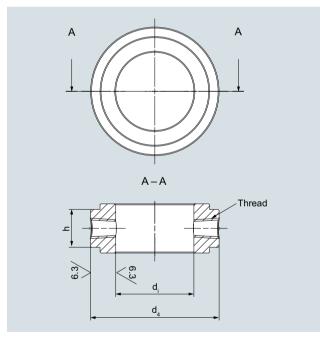
Remote seals for pressure transmitters SITRANS P320/P420

# Flushing rings for diaphragm seals

# Form C/form C and form E



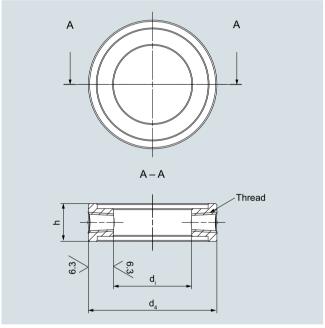
Flushing ring; sealing surface (EN 1092-1), form C/form C



Flushing ring; sealing surface (EN 1092-1), form E

DN	PN	Thread	d <sub>4</sub>	d <sub>i</sub>	h	X	f3	Weight
mm	bar		Ø in mm (inch)	kg (lb)				
50	16 100	1/4 NPT	102 (4.02)	62 (2.44)	31 (1.22)	87 (3.43)	4.5 (0.18)	1.49 (3.28)
80	16 100	1/4 NPT	138 (5.43)	92 (3.62)	31 (1.22)	120 (4.72)	4.5 (0.18)	2.40 (5.29)
100	16 100	1/4 NPT	162 (6.38)	92 (3.62)	30 (1.18)	149 (5.87)	5 (0.2)	4.21 (9.28)
125	16 100	1/4 NPT	188 (7.40)	132 (5.2)	30 (1.18)	175 (6.89)	5 (0.2)	4.21 (9.28)
50	16 100	½ NPT	102 (4.02)	62 (2.44)	31 (1.22)	87 (3.43)	4.5 (0.18)	1.49 (3.28)
80	16 100	½ NPT	138 (5.43)	92 (3.62)	31 (1.22)	120 (4.72)	4.5 (0.18)	2.40 (5.29)
100	16 100	½ NPT	162 (6.38)	92 (3.62)	30 (1.18)	149 (5.87)	5 (0.2)	4.21 (9.28)
125	16 100	½ NPT	188 (7.40)	132 (5.2)	30 (1.18)	175 (6.89)	5 (0.2)	3.38 (7.45)

# Form F



Flushing ring; sealing surface (EN 1092-1), form F

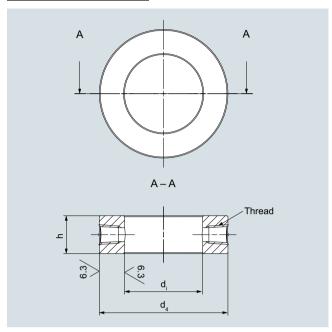
			•					
DN	PN	Thread	d <sub>4</sub>	d <sub>i</sub>	h	X	f3	Weight
mm	bar		Ø in mm (inch)	kg lb)				
50	16 100	1/4 NPT	102 (4.02)	62 (2.44)	35 (1.38)	88 (3.46)	4 (0.16)	1.25 (2.76)
80	16 100	1/4 NPT	138 (5.43)	92 (3.62)	35 (1.38)	121 (4.76)	4 (0.16)	2.02 (4.45)
100	16 100	1/4 NPT	162 (6.38)	92 (3.62)	35 (1.38)	150 (5.91)	4.5 (0.18)	3.11 (6.86)
125	16 100	1/4 NPT	188 (7.40)	132 (5.2)	35 (1.38)	175 (6.89)	4.5 (0.18)	3.19 (7.03)
50	16 100	½ NPT	102 (4.02)	62 (2.44)	40 (1.58)	88 (3.46)	4 (0.16)	1.45 (3.2)
80	16 100	½ NPT	138 (5.43)	92 (3.62)	40 (1.58)	121 (4.76)	4 (0.16)	2.35 (5.18)
100	16 100	½ NPT	162 (6.38)	92 (3.62)	40 (1.58)	150 (5.91)	4.5 (0.18)	3.67 (8.09)
125	16 100	½ NPT	188 (7.40)	132 (5.2)	40 (1.58)	175 (6.89)	4.5 (0.18)	3.76 (8.29)

Remote seals for pressure transmitters SITRANS P320/P420

Flushing rings for diaphragm seals

# Connection according to ASME B 16.5

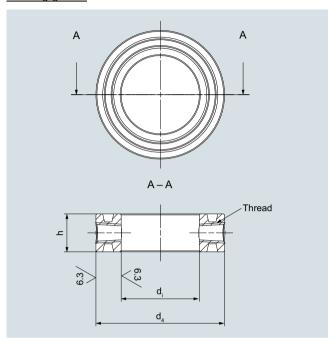
RFSF and RF 125 ... 250 AA



Flushing ring; sealing surface (ASME B 16.5), RFSF and RF 125 to 250  $\mbox{AA}$ 

DN	Class	Thread	d <sub>4</sub>	d <sub>i</sub>	h	Weight
inch			Ø in mm (inch)	Ø in mm (inch)	Ø in mm (inch)	kg lb)
2	150 600	1/4 NPT	92 (3.62)	62 (2.44)	30 (1.18)	0.87 (1.92)
3	150 600	1/4 NPT	127 (5)	92 (3.62)	30 (1.18)	1.44 (3.17)
4	150 600	1/4 NPT	157 (6.18)	92 (3.62)	30 (1.18)	3.05 (6.72)
5	150 600	1/4 NPT	186 (7.32)	141 (5.55)	30 (1.18)	2.77 (6.11)
2	150 600	½ NPT	92 (3.62)	62 (2.44)	30 (1.18)	0.87 (1.92)
3	150 600	½ NPT	127 (5)	92 (3.62)	30 (1.18)	1.44 (3.17)
4	150 600	½ NPT	157 (6.18)	92 (3.62)	30 (1.18)	3.05 (6.72)
5	150 600	½ NPT	186 (7.32)	141 (5.55)	30 (1.18)	2.77 (6.11)

### RJF ring groove



Flushing ring; sealing surface (ASME B 16.5), RJF ring groove

DN	Class	Thread	d <sub>4</sub>	d <sub>i</sub>	h	Weight
inch			Ø in mm (inch)	Ø in mm (inch)	Ø in mm (inch)	kg lb)
2	150	1/4 NPT	102 (4.02)	62 (2.44)	40 (1.58)	1.65 (3.64)
3	150	1/4 NPT	133 (5.24)	92 (3.62)	40 (1.58)	2.32 (5.12)
4	150	1/4 NPT	171 (6.73)	92 (3.62)	40 (1.58)	5.22 (11.51)
5	150	1/4 NPT	194 (7.64)	141 (5.55)	40 (1.58)	4.46 (9.83)
2	150	½ NPT	102 (4.02)	62 (2.44)	46 (1.81)	1.90 (4.19)
3	150	½ NPT	133 (5.24)	92 (3.62)	46 (1.81)	2.66 (5.86)
4	150	½ NPT	171 (6.73)	92 (3.62)	46 (1.81)	6.00 (13.23)
5	150	½ NPT	194 (7.64)	141 (5.55)	46 (1.81)	5.13 (11.31)
2	300 600	1/4 NPT	108 (4.25)	62 (2.44)	40 (1.58)	1.96 (4.32)
3	300 600	1/4 NPT	146 (5.75)	92 (3.62)	40 (1.58)	3.23 (7.12)
4	300 600	1/4 NPT	175 (6.89)	92 (3.62)	40 (1.58)	5.57 (12.28)
5	300 600	1/4 NPT	210 (8.27)	141 (5.55)	40 (1.58)	6.08 (13.4)
2	300 600	½ NPT	108 (4.25)	62 (2.44)	46 (1.81)	2.26 (4.98)
3	300 600	½ NPT	146 (5.75)	92 (3.62)	46 (1.81)	3.71 (8.18)
4	300 600	½ NPT	175 (6.89)	92 (3.62)	46 (1.81)	6.4 (14.11)
5	300 600	½ NPT	210 (8.27)	141 (5.55)	46 (1.81)	7 (15.43)

Remote seals for pressure transmitters SITRANS P320/P420

### Measuring setups

### Overview

This section shows examples of typical measuring setups for using SITRANS P pressure transmitters with and without remote seals.

Equations for calculating start of scale and full scale are provided for each example.

Questionnaires are included to help you select the right combination of remote seal and pressure transmitter.

### Installation

Remote seals of sandwich design are fitted between the connection flange of the measuring point and a dummy flange. Remote seals of flange design are fitted directly on the connection flange of the measuring point. The respective pressure rating of the dummy flange or the flanged remote seal must be observed.

The pressure transmitter should be installed below the connection flange (and below the lower connection flange in the case of differential pressure transmitters). This arrangement <u>must</u> be used in the low-pressure range.

When measuring at pressures above atmospheric, the pressure transmitter can also be installed above the connection flange.

The capillaries between the remote seal and the pressure transmitter should be as short as possible to obtain a good transmission response.

### Offset of measuring range

If there is a difference in height between the two connection flanges when measuring with two remote seals, an additional differential pressure will result from the oil filling of the remote seal capillaries. This results in a measuring range offset which has to be taken into account when you set the pressure transmitter.

An offset in the measuring range also occurs when combining a remote seal with a transmitter if the remote seal is not installed at the same height as the transmitter.

### Pressure transmitter output

If the level, separation layer or density increase in closed vessels, the differential pressure and hence the output signal of the pressure transmitter also increase.

For an inverted relationship between the differential pressure and the output signal, the start-of-scale and full-scale values of the SITRANS P must be interchanged.

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

### Influence of ambient temperature

Temperature differences between the individual capillaries and between the individual remote seals should be avoided.

Temperature variations in the area of the measuring setup cause a change in volume of the filling liquid and hence measuring errors.

### Notes

- For the separation layer measurement, the separation layer has to be positioned between the two spigots. Also you must make sure that the level in the container is always above the top spigot.
- When measuring density, make sure that the level of the medium remains constant. The level should be above the top spigot.

# Possible combinations of pressure transmitters and remote seals

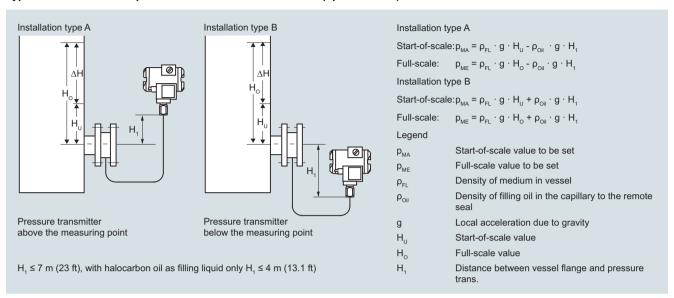
Type of installation	Pressure trans- mitters	Remote seals
A/B	7MF030 7MF031 7MF040 7MF041	7MF0800 7MF0810
C <sub>1</sub> and C <sub>2</sub>	7MF032 7MF042	7MF0800 7MF0810 (negative pressure service in each case)
	7MF033 7MF043	7MF0801 7MF0811
D	7MF034 7MF035 7MF044 7MF045	7MF0802 7MF0812
E	7MF034 7MF035 7MF044 7MF045	7MF0813
G, H and J	7MF034 7MF035 7MF044 7MF045	7MF0802 7MF0812

Remote seals for pressure transmitters SITRANS P320/P420

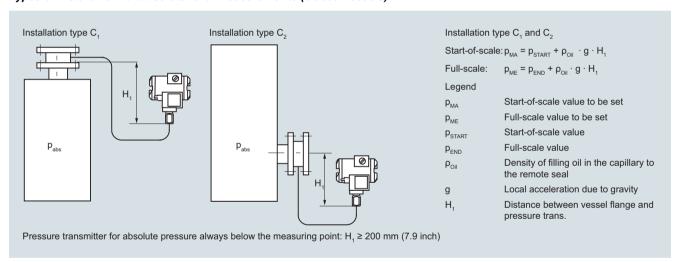
Measuring setups with remote seals

# Dimensional drawings

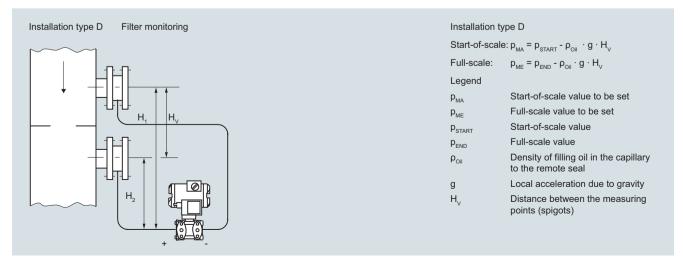
#### Types of installation for pressure and level measurements (open vessels)



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



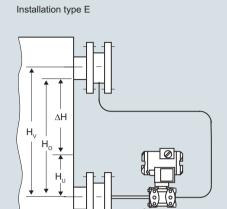
## Type of installation for differential pressure and flow measurements



Remote seals for pressure transmitters **SITRANS P320/P420** 

#### Measuring setups with remote seals

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



Installation type E

Start-of-scale:  $p_{MA} = \rho_{FL} \cdot g \cdot H_{U} - \rho_{Oil} \cdot g \cdot H_{V}$  $\rho_{\text{ME}} = \rho_{\text{FL}} \cdot g \cdot H_{\text{O}} - \rho_{\text{Oil}} \cdot g \cdot H_{\text{V}}$ 

Legend

 $\boldsymbol{p}_{\text{MA}}$ Full-scale value to be set  $p_{ME}$  $\rho_{\text{FL}}$ Density of medium in vessel Density of filling oil in the capillary to

Start-of-scale value to be set

 $\rho_{\text{Oil}}$ the remote seal

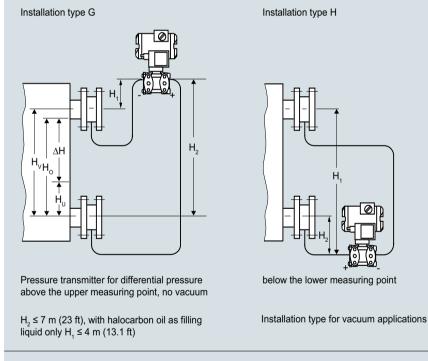
g Local acceleration due to gravity

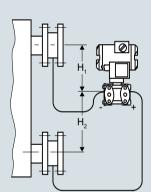
Start-of-scale value  $H_{ii}$  $H_{\rm o}$ Full-scale value

Installation type J

Distance between the measuring  $H_{v}$ 

points (spigots)





between the measuring points, no vacuum

 $H_2 \le 7$  m (23 ft), with halocarbon oil as filling liquid only  $H_2 \le 4 \text{ m} (13.1 \text{ ft})$ 

Installation type G, H and J

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

Full-scale:  $p_{ME} = \rho_{FL} \cdot g \cdot H_{O} - \rho_{Oil} \cdot g \cdot H_{V}$  Legend

 $\rho_{\text{FL}}$ 

 $\rho_{\text{Oil}}$ 

Start-of-scale value to be set  $p_{MA}$ Full-scale value to be set  $\boldsymbol{p}_{\text{ME}}$ 

> Density of medium in vessel Density of filling oil in the capillary to

the remote seal

Local acceleration due to gravity g

H<sub>II</sub> Start-of-scale value Но Full-scale value

 $H_{v}$ Distance between the measuring

points (spigots)

Remote seals for pressure transmitters SITRANS P320/P420

#### Measuring setups without remote seals

## Overview

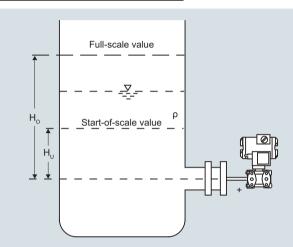
#### Notes

- For the separation layer measurement, the separation layer has to be positioned between the two spigots.
- Also you must make sure that the level in the container is always above the top spigot.
- When measuring density, make sure that the level of the medium remains constant. The level should be above the top spigot

#### Dimensional drawings

#### Pressure transmitters for differential pressure, for flanging

Measuring setups for open containers



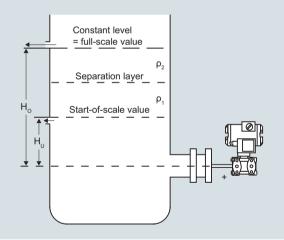
#### Level measurement

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

Legend

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

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



# Separation layer measurement

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

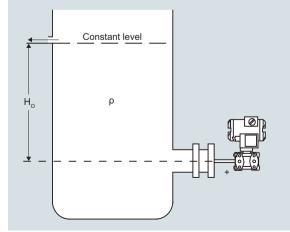
Full-scale:  $p_{ME} = \rho_1 \cdot g \cdot H_0$ 

Legend

 $\begin{array}{ll} {\rm p_{MA}} & {\rm Start}\text{-of-scale value to be set} \\ {\rm p_{ME}} & {\rm Full\text{-scale value to be set}} \\ {\rm \rho_1} & {\rm Density \ of \ heavier \ liquid} \\ {\rm \rho_2} & {\rm Density \ of \ lighter \ liquid} \end{array}$ 

g Local acceleration due to gravity

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



#### Density measurement

Start-of-scale:  $p_{MA} = p_{MIN} \cdot g \cdot H_{O}$ 

Full-scale:  $p_{ME} = p_{MAX} \cdot g \cdot H_{O}$ 

Legende

 $\begin{array}{ll} {\rm p_{MA}} & {\rm Start}\mbox{-of-scale value to be set} \\ {\rm p_{ME}} & {\rm Full-scale \ value \ to \ be \ set} \end{array}$ 

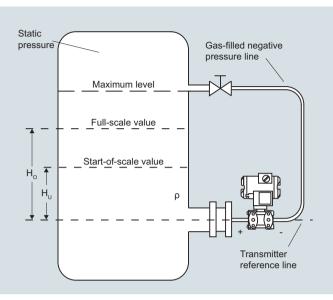
 $\begin{array}{ll} \rho_{\text{MIN}} & \text{Minimum density of medium in vessel} \\ \\ \rho_{\text{MAX}} & \text{Maximum density of medium in vessel} \\ \\ g & \text{Local acceleration due to gravity} \end{array}$ 

H<sub>o</sub> Full-scale value in m

Remote seals for pressure transmitters SITRANS P320/P420

## Measuring setups without remote seals

## Measuring setups for closed containers



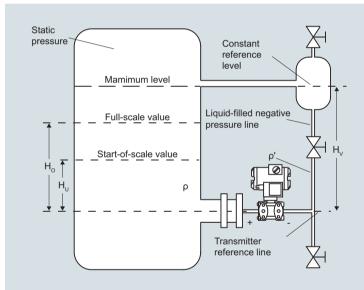
Level measurement, Version 1 Start-of-scale:  $\Delta p_{MA} = \rho \cdot g \cdot H_{U}$ 

Full-scale:  $\Delta pME = \rho \cdot g \cdot H_o$ 

Legend

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

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



Level measurement, Version 2

Start-of-scale:  $\Delta p_{MA} = g \cdot (H_U \cdot \rho - H_V \cdot \rho')$ 

Full-scale:  $\Delta p_{ME} = g \cdot (H_O \cdot \rho - H_V \cdot \rho')$ 

Legend

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

 $\rho'$  Density of liquid in the negative pressure

line (corresponding to the temperature

existing there)

g Local acceleration due to gravity

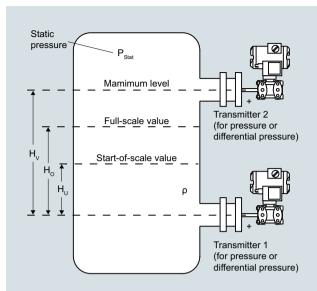
 ${
m H_{U}}$  Start-of-scale value  ${
m H_{O}}$  Full-scale value

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

(spigots)

Remote seals for pressure transmitters SITRANS P320/P420

#### Measuring setups without remote seals



Level measurement, Version 3

Start-of-scale:  $\Delta p_{MA} = \underbrace{P_{Stat} + \rho \cdot g \cdot H_{U}}_{Transmitter 1} - \underbrace{P_{Stat}}_{Transmitter 2}$ 

Full-scale:  $\Delta p_{ME} = P_{Stat} + \rho \cdot g \cdot H_{O} - P_{Stat}$ 

Transmitter 1 Transmitter 2

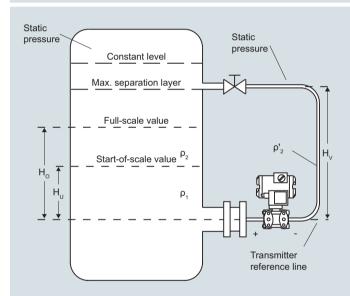
Legend

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

H<sub>U</sub> Start-of-scale valueH<sub>O</sub> Full-scale value

H<sub>v</sub> Distance between the measuring points (spigots)

The pressure measuring range (≜ level) will be calculated by subtraction of measuring range of transmitter 1 minus measuring range of transmitter 2 in the process control system.



Separation layer measurement

Start-of-scale:  $\Delta p_{MA} = g \cdot (H_{U} \cdot \rho_{1} + (H_{Q} - H_{U}) \cdot \rho_{2} - H_{V} \cdot \rho'_{2})$ 

Full-scale:  $\Delta p_{ME} = g \cdot (H_O \cdot \rho_1 - H_V \cdot \rho_2')$ 

Legend

 $\begin{array}{ll} \Delta p_{\text{MA}} & \text{Start-of-scale value to be set} \\ \Delta p_{\text{MF}} & \text{Full-scale value to be set} \end{array}$ 

 $\rho_{\scriptscriptstyle 1}$  Density of heavier liquid with separation layer

in vessel

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

(corresponding to the temperature existing

there)

g Local acceleration due to gravity

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

 ${\rm H}_{\rm V}$  Distance between the measuring points

(spigots)

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

#### **Technical description**

#### Overview

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

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

- Gauge pressure
  - P300 with HART, PROFIBUS PA, FOUNDATION Fieldbus
  - DS III with HART, PROFIBUS PA, FOUNDATION Fieldbus
  - P410 with HART, PROFIBUS PA, FOUNDATION Fieldbus
- Absolute pressure
  - P300, DS III with HART
  - DS III with PROFIBUS PA
  - DS III with FOUNDATION Fieldbus
- · Differential pressure and flow
  - DS III with HART, PROFIBUS PA, FOUNDATION Fieldbus
  - P410 with HART, PROFIBUS PA, FOUNDATION Fieldbus
  - P500 with HART

#### Note

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

#### Benefits

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

#### Application

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

Examples of such cases:

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

#### Design

A remote seal system consists of the following components.

- · Pressure transmitter
- · One or two remote seals
- Filling liquid
- Connection between pressure transmitter and remote seal (direct mounting or by means of capillary)

The volume in contact with the measured medium is terminated by a flat elastic diaphragm lying in a bed. Between the diaphragm and the pressure transmitter is the filling liquid. In many cases, a capillary has to be connected between the remote seal and the pressure transmitter in order e.g. to minimize temperature effects on the latter when hot media are involved.

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

The remote seal can be optionally equipped with a projecting diaphragm (tube).

Remote seals of sandwich design are fitted with a dummy flange.

#### Designs

#### Diaphragm seal

With diaphragm seals, the pressure is measured by means of a flat diaphragm which rests in a bed.

The following types of diaphragm seals exist:



Diaphragm seal of sandwich design without (left) and with a projecting diaphragm (tube)

- · Sandwich design
- Sandwich design with projecting diaphragm (tube) to DIN or ASME which are secured using a dummy flange.



Diaphragm seal of flange design without (left) and with a projecting diaphragm (tube)

- · Flange design
- Flange design with projecting diaphragm (tube) to DIN or ASME, secured using holes in the flange.



Quick-release diaphragm seal

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

**Technical description** 

- Quick-release remote seals, e.g. to DIN 11851, SMS standard, IDF standard, APV RJF standard, clamp connection, etc.
- Miniature diaphragm seal with male thread for screwing into tapped holes
- Remote seals with customer-specific process connections



Miniature diaphragm seal with diaphragm flush with front

• Miniature diaphragm seals

The quick-release remote seals are used above all in the food industry. Their design means that the measured medium cannot accumulate in dead volumes. The quick-release clamp present on the remote seal means that quick dismounting is possible for cleaning.

#### Clamp-on seal



Clamp-on seal with quick-release design (left) and for flange mounting

With clamp-on seals, the pressure is first measured using a cylindrical diaphragm positioned in a pipe, and then transmitted to the pressure transmitter by means of the filling liquid.

The clamp-on seal is a special design for flowing media. It consists of a cylindrical pipe in which a cylindrical diaphragm is embedded. Since it is completely integrated in the process pipe, no turbulences, dead volumes or other obstructions to the flow occur. Furthermore, the clamp-on seal can be cleaned by a pig.

The following types of clamp-on seals exist:

- Quick-release clamp-on seals, e.g. to DIN 11851, SMS standard, IDF standard, APV/RJF standard, clamp connection etc.
  The quick-release facility attached to the remote seal enables the seal to be removed quickly for cleaning purposes.
- Clamp-on seals for flanging to EN or ASME.
- Clamp-on seals with customer-specific process connections.

#### Note

The pressure data on the transmitter and the remote seal must be observed with regard to pressure/temperature behavior.

#### Function

The measured pressure is transferred from the diaphragm to the filling liquid and passes through the capillary to the measuring chamber of the pressure transmitter. The interior of the diaphragm seal and of the capillary, as well as the measuring chamber of the transmitter, are filled gas-free by the filling liquid.

#### Transmission response

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

- Temperature error
- Adjustment time

#### Temperature error

Temperature errors are caused by the change of volume of the filling liquid due to temperature variations. To select the right remote seal you must calculate the temperature error.

Below you will find an overview of the factors which influence the size of the temperature error, as well as information on how to calculate the temperature error.

The temperature error is dependent on the following variables:

- Rigidity of the diaphragm used
- · Filling liquid used
- Influence of the filling liquid underneath the process flanges or in the connection shank of the pressure transmitter
- Internal diameter of the capillary: The bigger the internal diameter, the bigger the temperature error
- Length of the capillary: The longer the capillary, the bigger the temperature error

## Diaphragm rigidity

The rigidity of the diaphragm is of decisive importance. The bigger the diameter of the diaphragm, the softer the diaphragm and the more sensitively it reacts to temperature-induced changes in volume of the filling liquid.

The result is that small measuring ranges are only possible with large diaphragm diameters.

Other factors apart from diaphragm rigidity which also play a role:

- Diaphragm thickness
- Diaphragm material
- · Coatings if present

#### Filling liquid

Every filling liquid reacts to temperature variations with a change of volume. Temperature errors can be minimized by selecting a suitable filling liquid, but the filling liquid must also be appropriate for the temperature limits and operating pressure. Furthermore, the filling liquid must also be physiologically harmless.

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

#### Note:

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

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

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

#### **Technical description**

#### Response time

The response time is dependent on the following factors:

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

#### Recommendations

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

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

#### Note

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

Other versions can be:

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

Please contact your local Siemens office for further information.

#### Negative pressure service

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

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

The higher the temperature and the lower the associated process pressure in the liquid, the more difficult it gets to guarantee the desired transmission properties of the fill fluid and therefore the measuring arrangement.

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

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

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

There are three stages for the negative pressure resistance:

- Standard design of the remote seal without additional protective measures, suitable for the overpressure range and low negative pressure range. This design is identified with (1) in the diagrams below in section 3.
- Negative pressure service with suitable seals and treated fill fluid, identified with (2) in the diagrams below in section 3.
   Here you select the order codes V01, V03 or V04, depending on the mounting type.
- Extended negative pressure service with more extended treatment of the fill fluid and the remote seals, identified in the diagrams below. Here you select the order codes V51, V53 or V54, depending on the mounting type.

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

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

#### **Technical description**

Technical specifications of the remote seal filling liquids

Filling liquid	Num- ber in the Article No.	Density at 20°C [kg/dm <sup>3</sup> ]	Visco- sity at 20°C [mm <sup>2</sup> /s]	Suitable for nega- tive pres- sure service	Suitable for exten- ded nega- tive pressure service
Silicone oil M5	1	0,914	4	Х	-
Silicone oil M50	2	0,966	50	Х	Х
High-tempera- ture oil	3	1,070	57	Х	Х
Halocarbon oil	4	1,968	14	Х	-
Food oil (FDA-listed)	7	0,920	10	X	Х

The suitable negative pressure service is specified with the pressure/temperature curves of the respective liquids described below.

**Note:** For reasons of operational safety, the transmitter must not exceed the height of the remote seal - with differential pressure applications, the height of the bottom remote seal - for measurements in the negative pressure range. The associated installation types B, C1, C2 or H are described at the end of this section under the topic "Measuring arrangements".

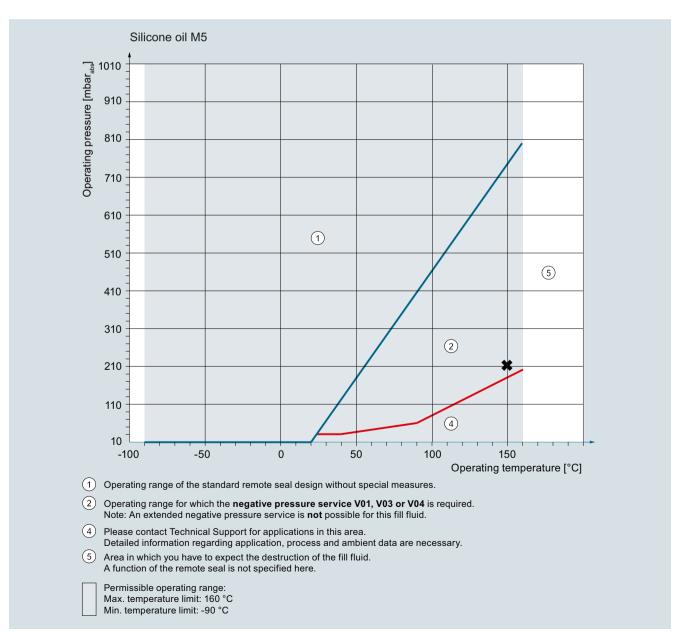
#### Selection of the required negative pressure service

The procedure for determining the required negative pressure service is described below using the silicone oil M5 as fill fluid. The minimum existing process pressure of a fictitious process is 200 mbar<sub>abs</sub> (2.9 psi) (at a maximum process temperature of 150 °C (302 °F)). This intersection is identified by an "**\***" in the diagram below. This means the negative pressure service V01, V03 or V04 (depending on the application) is sufficient in this example

The suitable negative pressure resistance is determined this way for all other fill fluids.

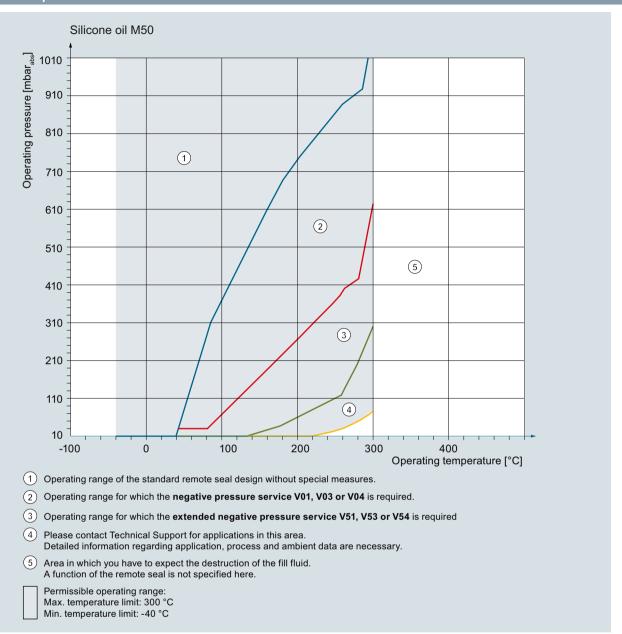
#### Note:

Note the response times according to the table on page 1/415.



Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

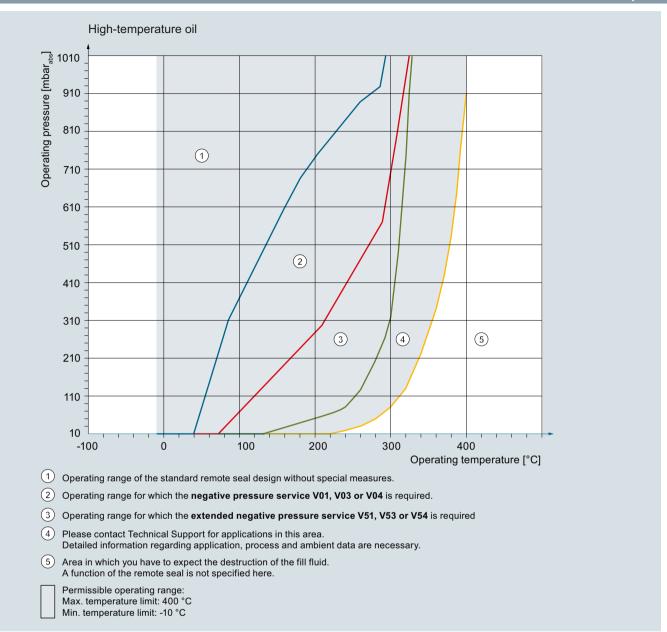
# **Technical description**



Negative pressure applications with silicone oil M50

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

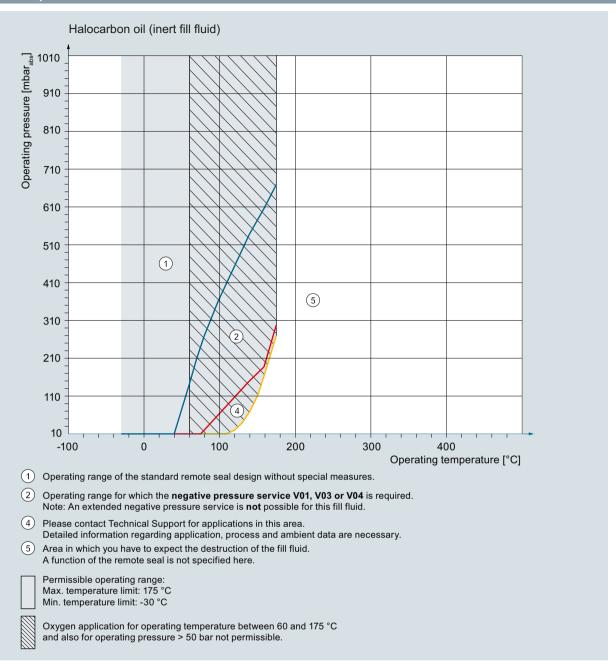
**Technical description** 



Negative pressure applications with high-temperature oil

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

#### Technical description

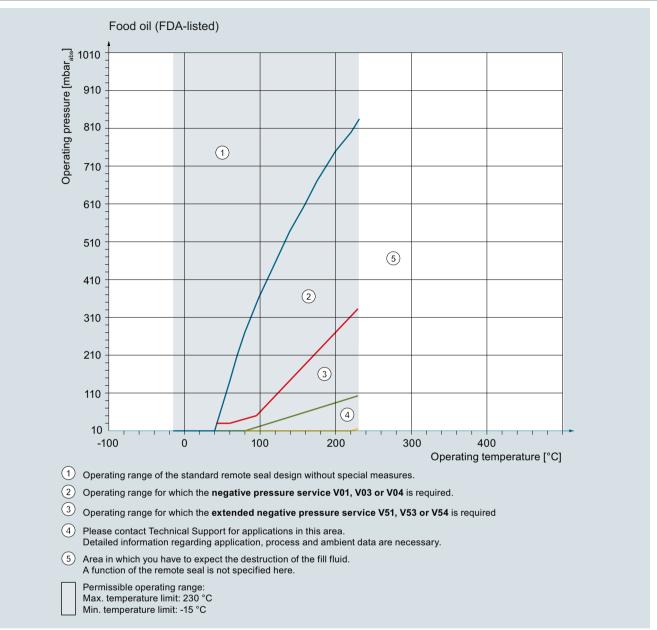


Negative pressure applications with halocarbon oil (inert filling liquid)

A BAM approval for process temperatures up to  $60 \, ^{\circ}\text{C}$  (140  $^{\circ}\text{F}$ ) and system pressures up to 50 bar (725 psi) is available for the oxygen application.

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

**Technical description** 



Negative pressure applications with food oil (FDA listed)

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

# **Technical description**

# Technical specifications Temperature error Diaphragm seals

Temperature errors of diaphragm seals when connected to pressure transmitters for pressure, absolute pressure, differential pressure (single-sided) and level

	Nominal diameter/ design		diameter		Diaphragm Temperature diameter error of remote seal f <sub>RS</sub>		Temperature e capillary f <sub>Cap</sub>	Temperature error of capillary f <sub>Cap</sub>		rature f process /connec- pigot f <sub>PF</sub>	Recommended min. spans (guid- ance values, observe temp. error)	
		mm	(inch)	mbar/ 10 K	(psi/ 10 K)	mbar/ (10 K · m <sub>Cap</sub> )	(psi/ (10 K · m <sub>Cap)</sub> ))	mbar/ 10 K	(psi/ 10 K)	mbar	(psi)	
Sandwich	DN 50 without tube	59	(2.32)	1.5	(0.022)	2	(0.029)	2	(0.029)	200	(2.90)	
design or with flange to	DN 50 with tube	45	(1.89)	5	(0.073)	10	(0.145)	10	(0.145)	500	(7.25)	
EN 1092-1	DN 80 without tube	89	(3.50)	0.2	(0.003)	0.2	(0.003)	0.2	(0.003)	100	(1.45)	
	DN 80 with tube	72	(2.83)	1	(0.015)	1	(1.015)	1	(1.015)	250	(3.63)	
	DN 100 without tube	89	(3.50)	0.2	(0.003)	0.4	(0.006)	0.4	(0.006)	100	(1.45)	
	DN 100 with tube	89	(3.50)	0.4	(0.006)	0.4	(0.006)	0.4	(0.006)	100	(1.45)	
	DN 125 without tube	124	(4.88)	0.2	(0.003)	0.1	(0.002)	0.1	(0.002)	20	(0.29)	
	DN 125 with tube	124	(4.88)	0.2	(0.003)	0.1	(0.002)	0.1	(0.002)	20	(0.29)	
Sandwich	2 inch without tube	59	(2.32)	1.5	(0.022)	2	(0.029)	2	(0.029)	200	(2.90)	
design or with flange to	2 inch with tube	45	(1.89)	5	(0.073)	10	(0.145)	10	(0.145)	500	(7.25)	
ASME B16.5	3 inch without tube	89	(3.50)	0.2	(0.003)	0.2	(0.003)	0.2	(0.003)	100	(1.45)	
	3 inch with tube	72	(2.83)	1	(0.015)	1	(1.015)	1	(1.015)	250	(3.63)	
	4 inch without tube	89	(3.50)	0.2	(0.003)	0.4	(0.006)	0.4	(0.006)	100	(1.45)	
	4 inch with tube	89	(3.50)	0.4	(0.006)	0.4	(0.006)	0.4	(0.006)	100	(1.45)	
	5 inch without tube	124	(4.88)	0.2	(0.003)	0.1	(0.002)	0.1	(0.002)	20	(0.29)	
	5 inch with tube	124	(/		(0.003)	0.1	(0.002)	0.1	(0.002)	20	(0.29)	
Remote seal with union nut to	DN 25	25	, ,		(0.290)	60	(0.870)	60	(0.870)	6000	(87)	
DIN 11851	DN 32	32	(1.26)		(0.116)	25	(0.363)	25	(0.363)	4000	(58)	
	DN 40	40	(1.57)		(0.058)	10	(0.145)	10	(0.145)	2000	(29)	
	DN 50	52	(2.05)		(0.058)	5	(0.073)	5	(0.073)	500	(7.25)	
	DN 65	59	(2.32)		(0.044)	4	(0.058)	4	(0.058)	500	(7.25)	
Danista and	DN 80	72	(2.83)		(0.015)	1	(0.015)	5	(0.015)	250	(3.63)	
Remote seal, screwed gland design	DN 50	52	(2.05)	4	(0.058)	5	(0.073)	5	(0.073)	500	(7.25)	
Remote seal	DN 25	25	(0.98)	20	(0.290)	60	(0.870)	60	(0.870)	6000	(87)	
with threaded socket to	DN 32	32	(1.26)	8	(0.116)	25	(0.363)	25	(0.363)	4000	(58)	
DIN 11851	DN 40	40	(1.57)	4	(0.058)	10	(0.145)	10	(0.145)	2000	(29)	
	DN 50	52	(2.05)	4	(0.058)	5	(0.073)	5	(0.073)	500	(7.25)	
	DN 65	59	(2.32)	3	(0.044)	4	(0.058)	4	(0.058)	500	(7.25)	
	DN 80	72	, ,	1	(0.015)	1	(0.015)	1	(0.015)	250	(3.63)	
Clamp connection	1½ inch	32	(1.26)	8	(0.116)	25	(0.363)	25	(0.363)	4000	(58)	
uon	2 inch	40	(1.57)		(0.058)	10	(0.145)	10	(0.145)	2000	(29)	
	2½ inch	59	(2.32)		(0.044)	5	(0.073)	5	(0.073)	500	(7.25)	
	3 inch	72	(2.83)		(0.015)	1	(0.015)	1	(0.015)	250	(3.63)	
Miniature dia- phragm seal	G1B	25	(0.98)		(0.290)	60	(0.870)	60	(0.870)	6000	(87)	
p ag ooa	G1½B	40	(1.57)		(0.058)	10	(0.145)	10	(0.145)	2000	(29)	
	G2B	52	(2.05)	4	(0.058)	5	(0.073)	5	(0.073)	500	(7.25)	

# Remarks:

- Values apply for the filling liquids silicone oil M5, silicone oil M50, high-temperature oil, halocarbon oil and food oil (FDA listed).
- Values apply to stainless steel as the diaphragm material.

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

**Technical description** 

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

	Nominal diameter/ design	Diaphragm diameter		Temperature error of remote seal f <sub>RS</sub>		Temperature error of capillary f <sub>Cap</sub>		Temperature error of process flange/connec- tion spigot f <sub>PF</sub>		Recommended min. spans (guidance val- ues, observe temperature error)	
		mm	(inch)	mbar/ 10 K	(psi/ 10 K)	mbar/ (10 K · m <sub>Cap</sub> )	(psi/ (10 K · m <sub>Cap</sub> ))	mbar/ 10 K	(psi/ 10 K)	mbar	(psi)
Sandwich	DN 50 without tube	59	(2.32)	0.3	(0.0043)	0.3	(0.0045)	0.3	(0.0045)	250	(3.626)
design or with flange to	DN 50 with tube	45	(1.89)	1.26	(0.018)	1.7	(0.025)	1.7	(0.025)	250	(3.626)
EN 1092-1	DN 80 without tube	89	(3.50)	0.05	(0.001)	0.05	(0.001)	0.05	(0.0007)	50	(0.725)
	DN 80 with tube	72	(2.83)	0.24	(0.004)	0.17	(0.003)	0.17	(0.003)	100	(1.45)
	DN 100 without tube	89	(3.50)	0.05	(0.001)	0.07	(0.001)	0.07	(0.001)	50	(0.725)
	DN 100 with tube	89	(3.50)	0.1	(0.002)	0.07	(0.001)	0.07	(0.001)	50	(0.725)
	DN 125 without tube	124	(4.88)	0.05	(0.001)	0.03	(0.0004)	0.03	(0.0004)	20	(0.29)
	DN 125 with tube	124	(4.88)	0.05	(0.001)	0.03	(0.0004)	0.03	(0.0004)	20	(0.29)
Sandwich	2 inch without tube	59	(2.32)	0.3	(0.0043)	0.3	(0.0043)	0.3	(0.0045)	250	(3.626)
design with flange to	2 inch with tube	45	(1.89)	1.26	(0.018)	1.7	(0.025)	1.7	(0.025)	250	(3.626)
ASME B16.5	3 inch without tube	89	(3.50)	0.05	(0.001)	0.05	(0.0007)	0.05	(0.0007)	50	(0.725)
	3 inch with tube	72	(2.83)	0.24	(0.004)	0.17	(0.003)	0.17	(0.003)	100	(1.45)
	4 inch without tube	89	(3.50)	0.05	(0.001)	0.07	(0.001)	0.07	(0.001)	50	(0.725)
	4 inch with tube	89	(3.50)	0.1	(0.002)	0.07	(0.001)	0.07	(0.001)	50	(0.725)
	5 inch without tube	124	(4.88)	0.05	(0.001)	0.03	(0.0004)	0.03	(0.0004)	20	(0.29)
	5 inch with tube	124	(4.88)	0.05	(0.001)	0.03	(0.0004)	0.03	(0.0004)	20	(0.29)
Remote seal, screwed gland design	DN 50	52	(2.05)	1	(0.015)	0.83	(0.012)	0.83	(0.012)	250	(3.626)
Remote seal	DN 50	52	(2.05)	1	(0.015)	0.83	(0.012)	0.83	(0.012)	250	(3.626)
with union nut to DIN 11851	DN 65	59	(2.32)	0.7	(0.010)	0.67	(0.010)	0.67	(0.010)	250	(3.626)
	DN 80	72	(2.83)	0.24	(0.004)	0.17	(0.003)	0.17	(0.003)	100	(1.450)
Remote seal	DN 50	52	(2.05)	1	(0.015)	0.83	(0.012)	0.83	(0.012)	250	(3.626)
with threaded socket to	DN 65	59	(2.32)	0.7	(0.010)	0.67	(0.010)	0.67	(0.010)	250	(3.626)
DIN 11851	DN 80	72	(2.83)	0.24	(0.004)	0.17	(0.003)	0.17	(0.003)	100	(1.450)
Clamp connec-	2 inch	40	(1.57)	1	(0.015)	2.5	(0.036)	2.5	(0.036)	2000	(29.01)
tion	2½ inch	59	(2.32)	0.7	(0.010)	0.67	(0.010)	0.67	(0.010)	250	(3.626)
	3 inch	72	(2.83)	0.24	(0.004)	0.17	(0.003)	0.17	(0.003)	100	(1.450)

## Remarks:

- Values apply for the filling liquids silicone oil M5, silicone oil M50, high-temperature oil, halocarbon oil and food oil (FDA listed).
- Values apply to stainless steel as the diaphragm material.

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

## **Technical description**

## Temperature error Clamp-on seals

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

Nominal diameter/ design	Temperature error of remote seal f <sub>RS</sub>		capillary f <sub>Cap</sub>		Temperature error of process flange/connection spigot fpF		Recommended min. spans (guidance values, observe temperature error)	
	mbar/10 K	(psi/10 K)	mbar/10 K	(psi/10 K)	mbar/10 K	(psi/10 K)	mbar	(psi)
DN 25 (1 inch)	6.0	(0.0870)	8.5	(0.123)	8.5	(0.123)	1000	(14.5)
DN 40 (1½ inch)	4.5	(0.065)	4.5	(0.065)	4.5	(0.065)	250	(3.63)
DN 50 (2 inch)	4.0	(0.058)	3.0	(0.044)	3.0	(0.044)	100	(1.45)
DN 80 (3 inch)	9.5	(0.138)	5.0	(0.073)	5.0	(0.073)	100	(1.45)
DN 100 (4 inch)	8.0	(0.012)	3.0	(0.044)	3.0	(0.044)	100	(1.45)

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

Nominal diameter/ design	Temperature error of remote seal f <sub>RS</sub>		capillary f <sub>Cap</sub>		Temperature error of process flange/connection spigot f <sub>PF</sub>		Recommended min. spans (guidance values, observe temperature error)	
	mbar/10 K (psi/10 K)		mbar/10 K	(psi/10 K)	mbar/10 K	(psi/10 K)	mbar	(psi)
DN 25 (1 inch)	2.3	(0.033)	1.8	(0.026)	1.8	(0.026)	1000	(14.5)
DN 40 (1½ inch)	0.8	(0.012)	0.3	(0.004)	0.3	(0.004)	250	(3.63)
DN 50 (2 inch)	0.3	(0.004)	0.1	(0.002)	0.1	(0.002)	100	(1.45)
DN 80 (3 inch)	3.0	(0.044)	0.5	(0.007)	0.5	(0.007)	100	(1.45)
DN 100 (4 inch)	1.0	(0.015)	0.1	(0.002)	0.1	(0.002)	100	(1.45)

#### Remarks:

- Values apply for the filling liquids silicone oil M5, silicone oil M50, high-temperature oil, halocarbon oil and food oil (FDA listed).
- Half the values apply to glycerin/water mixture as the filling liquid.
- Values apply to stainless steel as the diaphragm material.
- Diaphragm thickness 0.05 mm (0.002 inch) for DN 25/DN 40/DN 50 and 0.1 mm (0.004 inch) for DN 80/DN 100

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Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

**Technical description** 

#### Calculation of the temperature error

The following equation is used to calculate the temperature error:

$dp = (9_{RS} - 9_{Cal})$	$\cdot$ f <sub>RS</sub> + ( $\theta$ <sub>Cap</sub> - $\theta$ <sub>Cal</sub> ) $\cdot$ I <sub>Cap</sub> $\cdot$ f <sub>Cap</sub> + ( $\theta$ <sub>TR</sub> - $\theta$ <sub>Cal</sub> ) $\cdot$ f <sub>PF</sub>
	A 1 122
dp	Additional temperature error (mbar)
$9_{RS}$	Temperature on remote seal diaphragm (generally corresponds to temperature of medium)
9 <sub>Cal</sub>	Calibration (reference) temperature (20 °C (68 °F))
$f_{RS}$	Temperature error of remote seal
9 <sub>Cap</sub>	Ambient temperature on the capillaries
I <sub>Cap</sub>	Capillary length
f <sub>Cap</sub>	Temperature error of capillaries
$9_{TR}$	Ambient temperature on pressure transmitter
f <sub>PF</sub>	Temperature error of the oil filling in the process flanges of the pressure transmitter

## Example of temperature error calculation

#### **Existing conditions:**

Existing conditions.	
SITRANS P pressure transmitter for differential pressure, 250 mbar, set to 0 100 mbar, with DN 100 remote seal diaphragms without tube, diaphragm made of stainless steel, mat. No. 1.4404/316L	f <sub>RS</sub> = 0.05 mbar/10 K (0.039 inH <sub>2</sub> O/10 K)
Capillary length	$I_{Cap} = 6 \text{ m (19.7 ft)}$
Capillaries fitted on both sides	$f_{Cap} = 0.07 \text{ mbar/(10 K} \cdot m_{Cap})$ (0.028 inH <sub>2</sub> O/(10 K · m <sub>Cap</sub> ))
Filling liquid silicone oil M5	$f_{PF} = 0.07 \text{ mbar/10 K}$ (0.028 inH <sub>2</sub> O/10 K)
Process temperature	θ <sub>RS</sub> = 100 °C (212 °F)
Temperature on the capillaries	θ <sub>Cap</sub> = 50 °C (122 °F)
Temperature on pressure transmitter	θ <sub>TR</sub> = 50 °C (122 °F)
Calibration temperature	9 <sub>Cal</sub> = 20 °C (68 °F)

#### Required:

Additional temperature error of remote seals: dp

#### Calculation:

mbar

 $dp = (100 \,^{\circ}\text{C} - 20 \,^{\circ}\text{C}) \cdot 0.05 \,\text{mbar}/10 \,\text{K} + (50 \,^{\circ}\text{C} - 20 \,^{\circ}\text{C}) \cdot 6 \,\text{m} \cdot 0.07 \,\text{mbar}/(10 \,\text{K} \cdot \text{m}) + (50 \,^{\circ}\text{C} - 20 \,^{\circ}\text{C}) \cdot 0.07 \,\text{mbar}/10 \,\text{K}$   $dp = 0.4 \,\text{mbar} + 1.26 \,\text{mbar} + 0.21 \,\text{mbar}$ 

#### in inH<sub>2</sub>O

 $dp = (212 \text{ °F} - 68 \text{ °F}) \cdot 0.039 \text{ inH}_2\text{O}/10 \text{ K} + (112 \text{ °F} - 68 \text{ °F}) \cdot 19.7 \text{ ft} \cdot 0.028 \text{ inH}_2\text{O}/(10 \text{ K} \cdot 3.28 \text{ ft}) + (112 \text{ °F} - 68 \text{ °F}) \cdot (0.028 \text{ inH}_2\text{O}/10 \text{ K})$   $dp = 0.16 \text{ inH}_2\text{O} + 0.51 \text{ inH}_2\text{O} + 0.08 \text{ inH}_2\text{O}$ 

#### Result:

## $dp = 1.87 \text{ mbar } (0.75 \text{ inH}_2\text{O})$

(corresponds to 2.27% of set span)

#### Note

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

The transmission response of the respective transmitter is  $\underline{\text{not}}$  included in this consideration.

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

#### Dependence of temperature error on diaphragm material

The temperature errors listed in the previous table are based on the use of stainless steel as the diaphragm material. If other diaphragm materials are used, the temperature errors change as follows:

Diaphragm material	Change in temperature error of remote seal
	Increase in values by
Stainless steel, Duplex,	See previous tables
Hastelloy C4, mat. No. 2.4602	50 %
Hastelloy C276, mat. No. 2.4819	50 %
Monel 400, mat. No. 2.4360	60 %
Tantalum	50 %
Titanium	50 %
PTFE coating on stainless steel diaphragm	80 %
ECTFE coating or PFA coating on stainless steel diaphragm	100 %
Gold coating on stainless steel dia- phragm	- 40 %
Inconel	50 %
Incoloy	50 %

#### Maximum temperature of medium

#### Note

When taking into account the maximum medium temperature, the application limits of the fill fluids and gaskets used as well as the pressure/temperature limits of the respective process connections must also be taken into consideration.

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

Material	Max. medium	Min./max. Pressure
	temperature	
Stainless steel, mat. no. 1.4404/31L	400 °C (752 °F)	No restrictions
PTFE coating	200 °C (392 °F)	< 0 bar (0 psi); gauge pressure
	260 °C (500 °F)	0 bar (0 psi) 25 bar (363 psi); gauge pressure
	150 °C (302 °F)	25 bar (363 psi) 40 bar (580 psi); gauge pressure
	50 °C (302 °F)	40 bar (580 psi) 60 bar (870 psi); gauge pressure
ECTFE coating	150 °C (302 °F)	For pressures < 1 bar (14.5 psi) on request
PFA coating	200 °C (392 °F)	< 0 bar (0 psi); gauge pressure
	260 °C (500 °F)	25 bar (363 psi)/40 bar (580 psi); gauge pressure
	150 °C (302 °F)	40 bar (580 psi)/60 bar (870 psi); gauge pressure
	50 °C (302 °F)	For pressures < 1 bar (14.5 psi) on request
Hastelloy C4, mat. no. 2.4610	400 °C (752 °F)	No restrictions
Hastelloy C276, mat. no. 2.4819	400 °C (752 °F)	No restrictions
Hastelloy C22, mat. no. 2.4602	400 °C (752 °F)	No restrictions
Monel 400, mat. no. 2.4360	400 °C (752 °F)	No restrictions
Tantalum	300 °C (572 °F)	No restrictions
Duplex, mat. no. 1.4462	250 °C (482 °F)	No restrictions
Titanium	150 °C (302 °F)	No restrictions
Inconel	400 °C (752 °F)	No restrictions
Incoloy	400 °C (752 °F)	No restrictions
Gold coating	400 °C (752 °F)	No restrictions

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

# **Technical description**

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

# Maximum capillary length for diaphragm seals (guidance values)

Nom. diam		Max. leng	th of capill	lary		
		Diaphragi	m seal	Clamp-on seal		
		m	(ft)	m	(ft)	
DN 25	(1 inch)	2.5	(8.2)	2.5	(8.2)	
DN 32	(11/4 inch)	2.5	(8.2)	2.5	(8.2)	
DN 40	(1½ inch)	4	(13.1)	6	(19.7)	
DN 50	(2 inch)	6	(19.7)	10	(32.8)	
DN 65	(2½ inch)	8	(26.2)	10	(32.8)	
DN 80	(3 inch)	15	(49.1)	10	(32.8)	
DN 100	(4 inch)	15	(49.1)	10	(32.8)	
DN 125	(5 inch)	15	(49.1)	-	-	

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

**Technical description** 

## Response times

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

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

The response times are independent of the set span within the range of the respective transmitter. The response times are of insignificant importance for spans above 10 bar (145 psi). The response times of the pressure transmitters are not considered in the table.

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

Permissible data of filling liquids for pressure and temperature see diagrams on page 1/405 ff.

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

# Diaphragm seals of sandwich design with flexible capillary

# Overview



Diaphragm seals of sandwich de	sign		
Technical specifications			
Diaphragm seals of sandwich d	lesign	Sealing material in the process	
Nominal diameter	Nominal pressure	flanges	
• DN 50	PN 16 PN 400	<ul> <li>For pressure transmitters, absolute pressure transmitters and</li> </ul>	Copper
• DN 80	PN 16 PN 400	low-pressure applications	
• DN 100	PN 16 PN 400	<ul> <li>For other applications</li> </ul>	Viton
• DN 125	PN 16 PN 400		
• 2 inch	Class 150 class 2500	Maximum pressure	See above and the technical data of the pressure transmitters
• 3 inch	Class 150 class 2500	Tube length	Without tube as standard (tube
• 4 inch	Class 150 class 2500	Tube length	available on request)
• 5 inch	Class 150 class 2500	Capillary	
Sealing surface		• Length	Max. 10 m (32.8 ft), longer lengths
• For stainless steel, mat. No.	To EN 1092-1, form B1 or		on request
1.4404/316L	ASME B16.5 RF 125 250 AA	<ul> <li>Internal diameter</li> </ul>	max. 2 mm (0.079 inch)
<ul> <li>For the other materials</li> </ul>	To EN 1092-1, form B2 or ASME B16.5 RFSF	<ul> <li>Minimum bending radius</li> </ul>	150 mm (5.9 inch)
Materials	ASIME D10.3 Til Si	Filling liquid	Silicone oil M5
Main body	Stainless steel mat. no. 1.4404/316L		Silicone oil M50
Wetted parts	Stainless steel mat. no. 1.4404/316L		High-temperature oil
• Welled parts	Without coating		Halocarbon oil (for measuring $O_2$ )
	PTFE coating		Food oil (FDA listed)
	ECTFE coating (for vacuum on request)	Permissible ambient temperature	Dependent on the pressure trans- mitter and the filling liquid of the remote seal
	<ul> <li>PFA coating</li> </ul>		More information can be found in
	Monel 400, mat. No. 2.4360		the technical data of the pressure transmitters and in the section
	Hastelloy C276, mat. No. 2.4819		"Technical data of filling liquid" in the
	Hastelloy C4, mat. No. 2.4602		Technical description to the remote seals
	Hastelloy C22, mat. no. 2.4602	Weight	Approx. 4 kg (8.82 lb)
	Tantalum Titanium mat no 3,7035	Certificate and approvals	7 Approx. 1 Ng (6.62 lb)
	Titanium, mat. no. 3.7035 Nickel 201	Classification according to pres-	For gases of fluid group 1 and liq-
	Duplex 2205, mat. no. 1.4462	sure equipment directive	uids of fluid group 1; complies with
	Stainless steel 316L, gold plated, thickness approx. 25 µm	(DGRL 2014/68/EU)	requirements of article 4, paragraph 3 (sound engineering practice)
<ul><li>Capillary</li></ul>	Stainless steel, mat. No.		

1/416

• Sheath

1.4571/316Ti

Spiral protective tube made of stainless steel, mat. No. 1.4404/316L

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

# Diaphragm seals of sandwich design with flexible capillary

Diaphragm seal   Sandwich-type design, with flexible capillary connected to a SITRANS P transmitter (order separately):   For pressure YMF2033; 7MF403 and 7MF423 together with Order code 'V01' (Negative pressure rowice) and 7MF802			Diaphragm seals of sa
Sandwich-type design, with flexible capillary connected to a SITRANS P transmitter (order separately):  for pressure 7MF2033, 7MF403, and 7MF402); (Negative pressure service) and 7MF802); (Segoed of delivery (1 off) for absolute pressure service) and 7MF802); (Segoed of delivery (1 off) for differential pressure and flow 7MF403, 3cope of delivery (2 off) for differential pressure and flow 7MF403, 3cope of delivery (2 off) for differential pressure and flow 7MF403, 3cope of delivery 2 off 7MF403, 3cope of deli	Selection and Ordering data	Article No. Ord.code	Selection and Ordering of
connected to a SITRANS P transmitter (order separately):  for pressure 7MF2033; 7MF403 and 7MF420	Diaphragm seal		Diaphragm seal
TMF423 together with Order code "V01" (Negative pressure process) and 7MF802); Scope of delivery (1 off)	connected to a SITRANS P transmitter		connected to a SITRANS
Scope of delivery (1 off)	7MF423 together with Order code "V01" (Negative pressure service) and 7MF802 <sup>1)</sup> ;	7 M F 4 9 0 0 -	7MF423 together with (Negative pressure service)
TMF243;TMF443 and 7MF54; scope of delivery 2 off   P Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		7 M F 4 9 0 1 -	
Customer-specific tubus   Specify customer-specific tubus   Specify customer-specific tubus   Specify customer-specific tubus   Specify customer-specific cubus   Specify customer-specific	7MF243;7MF443 and 7MF54;	7 M F 4 9 0 3 -	7MF243;7MF443 aı
Nominal diameter and nominal pressure   DN 25   DN 40   DN 50   DN 16 400   A   DN 50   Creormended only for pressure transmitters for pressure   DN 80   PN 16 400   B   DN 100   PN 16 400   D   DN 125   PN 16 400   DN 16 40		1===B	Customer-specific tubus
<ul> <li>• DN 25</li> <li>• DN 40</li> <li>• DN 40</li> <li>• DN 50</li> <li>• DN 50</li> <li>• DN 50</li> <li>• DN 50</li> <li>• PN 16 400</li> <li>• DN 80</li> <li>• DN 16 400</li> <li>• DN 102</li> <li>• DN 102</li> <li>• PN 16 400</li> <li>• DN 125</li> <li>• PN 16 400</li> <li>• 2 inch</li> <li>• Class 150 2500</li> <li>• 4 inch</li> <li>• Class 150 2500</li> <li>• 5 inch</li> <li>• Class 150 2500</li> <li>• 5 inch</li> <li>• Class 150 2500</li> <li>• Tinch</li> <li>• Stainless B16.5 RF 125 250 AA</li> <li>Other version</li> <li>Add Order code and plain text:</li> <li>Nominal diameter:; Nominal pressure: Sealing surface: see "Technical data"</li> <li>Wetted parts materials: Swith PFA</li> <li>Range</li> <li>20 50 mm (0.79 1.97</li> <li>51 100 mm (2.01 3.9</li> <li>101 150 mm (3.98 5.151 200 mm (5.94 7.201 250 mm (7.91 9.201 250 mm (0.79 1.97 51 100 mm (2.01 3.9.301 100 mm (2.01 3.9.</li></ul>	Nominal diameter and nominal pressure		•
No. 10	• DN 25	Z JOA	
(recommended only for pressure transmitters for pressure)  • NN 80 PN 16 400 B • DN 100 PN 16 400 C • DN 125 PN 16 400 D • 2 inch Class 150 2500 E (recommended only for pressure transmitters for pressure)  • 3 inch Class 150 2500 L • 4 inch Class 150 2500 L • 5 inch Class 150 2500 L • 6 inch Class 150 2500 L • 6 inch Class 150 2500 L • 7 inch Class 150 2			• Wetted parts materials: S
for pressure)         • DN 80         PN 16 400         B         51 100 mm (2.01 3.9         1 3.9           • DN 100         PN 16 400         C         101 150 mm (3.98 5.         1 150 mm (2.01 3.9           • 2 inch         Class 150 2500         E         151 200 mm (5.94 7.         201 250 mm (7.91 9.           • 2 inch         Class 150 2500         H         4 inch         Class 150 2500         L         5 inch         Class 150 2500         N         N         5 inch         Class 150 2500         N         Somoth sealing surface to EN 1092-1, form B1 or to ASME B16.5 RF 125 250 AA         N         51 100 mm (2.01 3.9         101 150 mm (3.98 5.         151 200 mm (6.94 7.         201 250 mm (0.79 1.97         1 100 mm (2.01 3.9         101 150 mm (3.98 5.         151 200 mm (5.94 7.         201 250 mm (7.91 9.         • Wetted parts materials: Swith PCA         20 50 mm (0.79 1.97         1 100 mm (2.01 3.9         101 150 mm (3.98 5.         151 200 mm (5.94 7.         201 250 mm (7.91 9.         • Wetted parts materials: Swith PCA         Range           • Vetted parts materials         • Stainless steel 316L         • Wetted parts materials: Swith PCA         151 200 mm (5.94 7.         151 100 mm (2.01 3.9         151 100 mm (2.01 3.9		A	Range
• DN 80			20 50 mm (0.79 1.97
• DN 125 PN 16 400 • 2 inch Class 150 2500 (recommended only for pressure transmitters for pressure) • 3 inch Class 150 2500 • 4 inch Class 150 2500 • 5 inch Class 150 2500 • 5 inch Class 150 2500 N Smooth sealing surface to EN 1092-1, form B1 or to ASME B16.5 RF 125 250 AA Other version Add Order code and plain text: Nominal diameter:; Nominal pressure: Sealing surface: see "Technical data"  Wetted parts materials • Stainless steel 316L - with PFA coating 2) 3) 4) - with PFA coating 2) 3) 4) • with PFA coating 2) 4) • Monel 400, mat. No. 2.4819 • Hastelloy C276, mat. No. 2.4819 • Hastelloy C22, mat. No. 2.4602 • Hastelloy C22, mat. No. 2.4602 • Tantalum • Titanium, mat. No. 3.7035 (max. 150 °C (302 °F)) • Nickel 201 (max. 260 °C (500 °F)) • Nickel 201 (max. 260 °C (500 °F)) • Nickel 201 (max. 260 °C (500 °F)) • Nulthout tube Other version: Add Order code and plain text: Wetted parts materials:, Tube length • without tube Other version: Add Order code and plain text: Wetted parts materials:, Tube length:	. ,	В	51 100 mm (2.01 3.9
• 2 inch Class 150 2500 (recommended only for pressure transmitters for pressure) • 3 inch Class 150 2500 H • 4 inch Class 150 2500 L • 5 inch Class 150 2500 N • 6 inch Class 150 2500 N • 6 inch Class 150 2500 N • 6 inch Class 150 250 mm (0.79 1.97 • Wetted parts materials: N • With PFA coating 2) 4) • Wetted parts materials: N • Vetted parts materials: P • Wetted parts materials: P • No inckel 201 (max. 260 °C (500 °F)) • Nickel 201 (max. 260 °C (50	• DN 100 PN 16 400	С	•
• 2 nch Class 150 2500 (recommended only for pressure transmitters for pressure) • 3 inch Class 150 2500 L • 4 inch Class 150 2500 L • 5 inch Class 150 2500 N Smooth sealing surface to EN 1092-1, form B1 or to ASME B16.5 RF 125 250 AA Other version Add Order code and plain text: Nominal diameter:, Nominal pressure: Sealing surface: see "Technical data"  Wetted parts materials • Stainless steel 316L • with PTFE coating 2) • with PTFE coating 2) • with ECTFE coating 2) • with PTFE coating 2) • Monel 400, mat. No. 2.4360 • Hastelloy C276, mat. No. 2.4819 • Hastelloy C29, mat. No. 2.4602 • Tantalum • Titanium, mat. No. 3.7035 (max. 150 °C (302 °F)) • Nickel 201 (max. 260 °C (500 °F)) • Duplex 2205, mat. no. 1.4462 • Duplex 2205, mat. no. 1.4462 • Duplex 2205, mat. no. 1.4462 • Wetted parts materials:, Tube length • Wetted parts materials:, Tube length:  * Wetted parts materials:, Tube length:  * Wetted parts materials: Swith PTFA Range  * Wetted parts materials: Swith PFA Range  * Wetted parts materials: Swith PFA Range  * Wetted parts materials: Nange * Part No. 2.4602 * Vood 151 100 mm (2.01 3.9 101 150 mm (0.79 1.97 101 1	• DN 125 PN 16 400	D	,
with ECTFE   Range   Range   20 50 mm (0.79 1.97	• 2 inch Class 150 2500	E	•
Sinch   Class 150 2500   H   Range     • 4 inch   Class 150 2500   L     • 5 inch   Class 150 2500   L     • 5 inch   Class 150 2500   N     • 5 inch   Class 150 2500   N     Smooth sealing surface to EN 1092-1, form B1 or to ASME B16.5 RF 125 250 AA Other version   Add Order code and plain text:     Nominal diameter:; Nominal pressure: Sealing surface: see Technical data     Wetted parts materials     • Stainless steel 316L			
• 4 inch	· · · · · · · · · · · · · · · · · · ·		
• 5 inch Class 150 2500 Smooth sealing surface to EN 1092-1, form B1 or to ASME B16.5 RF 125 250 AA Other version Add Order code and plain text: Nominal diameter:; Nominal pressure: Sealing surface: see "Technical data"  Wetted parts materials • Stainless steel 316L - without coating - with PTFE coating <sup>2</sup> ) - with PTFE coating <sup>2</sup> ) • Whith ECTFE coating <sup>2</sup> ) • Whith ECTFE coating <sup>2</sup> ) • Monel 400, mat. No. 2.4360 • Hastelloy C276, mat. No. 2.4602 • Hastelloy C22, mat. No. 2.4602 • Tantalum • Titanium, mat. No. 3.7035 (max. 150 °C (302 °F)) • Nickel 201 (max. 260 °C (500 °F)) • Duplex 2205, mat. no. 1.4462, incl. main body • Stainless steel 316L, gold plated, thickness approx. 25 μm  Tube length • without tube Other version: Add Order code and plain text: Wetted parts materials:, Tube length:  No			
Smooth sealing surface to EN 1092-1, form B1 or to ASME B16.5 RF 125 250 AA Other version Add Order code and plain text: Nominal diameter:; Nominal pressure: Sealing surface: see "Technical data"  Wetted parts materials  • Stainless steel 316L  - without coating  - with PTFE coating <sup>2</sup> )  - with PFA coating <sup>2</sup> )  • Monel 400, mat. No. 2.4360  • Hastelloy C276, mat. No. 2.4460  • Hastelloy C22, mat. No. 2.4602  • Tantalum  • Titanium, mat. No. 3.7035 (max. 150 °C (302 °F))  • Nickel 201 (max. 260 °C (500 °F))  • Duplex 2205, mat. no. 1.4462, incl. main body  • Stainless steel 316L, gold plated, thickness approx. 25 μm  Tube length  • without tube Other version: Add Order code and plain text: Wetted parts materials:, Tube length:  101 150 mm (3.98 5. 151 200 mm (5.94 7. 201 250 mm (0.79 1.97 6 1 1.97 6 1.		N	•
Tube length   Cother version   Add Order code and plain text:   Nominal diameter:;   Nominal pressure:   Sealing surface: see "Technical data"   Wetted parts materials   • Stainless steel 316L   - without coating   A			*
Add Order code and plain text: Nominal diameter:; Nominal pressure: Sealing surface: see "Technical data"  Wetted parts materials  • Stainless steel 316L  - without coating - with PTFE coating 2) - with PFA Coating 2 - unu 1.90 mm (3.98 5 vith PFA Cannel (3.98 5 vith PFA - sange - vith PFA Cannel (3.98 5 vith PFA - sange - vith PFA - v		7 147	·
Nominal diameter:; Nominal pressure: Sealing surface: see "Technical data"         • Wetted parts materials: Swith PFA           Wetted parts materials         • Stainless steel 316L         - without coating         A         51 100 mm (0.79 1.97 51 100 mm (2.01 3.9 101 150 mm (3.98 5.151 200 mm (5.94 7.201 250 mm (7.91 9.201 250 mm (0.79 1.97 51 100 mm (2.01 3.99 101 150 mm (3.98 5.151 200 mm (5.94 7.201		Z JIY	201 250 mm (7.91 9.
• Stainless steel 316L - without coating - with PTFE coating <sup>2</sup> ) - with ECTFE coating <sup>2</sup> ) - with PFA coating <sup>2</sup> ) - with PFA coating <sup>2</sup> ) • Monel 400, mat. No. 2.4360 • Hastelloy C276, mat. No. 2.4602 • Hastelloy C22, mat. No. 2.4602 • Tantalum • Titanium, mat. No. 3.7035 (max. 150 °C (302 °F)) • Nickel 201 (max. 260 °C (500 °F)) • Duplex 2205, mat. no. 1.4462 • Duplex 2205, mat. no. 1.4462, incl. main body • Stainless steel 316L, gold plated, thickness approx. 25 μm  Tube length • without tube Other version: Add Order code and plain text: Wetted parts materials:, Tube length:  **Titon mm (0.79 1.97 51 100 mm (0.79 1.97	Nominal diameter:; Nominal pressure:		
• Stainless steel 316L - without coating - with PTFE coating <sup>2)</sup> - with ECTFE coating <sup>2)</sup> • Monel 400, mat. No. 2.4360 • Hastelloy C276, mat. No. 2.4602 • Tantalum • Titanium, mat. No. 3.7035 (max. 150 °C (302 °F)) • Nickel 201 (max. 260 °C (500 °F)) • Duplex 2205, mat. no. 1.4462 • Duplex 2205, mat. no. 1.4462, incl. main body • Stainless steel 316L, gold plated, thickness approx. 25 μm  Tube length • without tube Other version: Add Order code and plain text: Wetted parts materials:, Tube length:  Tube length:  A	Wetted parts materials		Range
- with PTFE coating <sup>2</sup> ) - with PFFE coating <sup>2</sup> ) 3 4) - with PFA coating <sup>2) 3) 4) - with PFA coating <sup>2) 4)</sup> • Monel 400, mat. No. 2.4860 • Hastelloy C276, mat. No. 2.4602 • Hastelloy C22, mat. No. 2.4602 • Tantalum • Titanium, mat. No. 3.7035 (max. 150 °C (302 °F)) • Nickel 201 (max. 260 °C (500 °F)) • Duplex 2205, mat. no. 1.4462 • Duplex 2205, mat. no. 1.4462, incl. main body • Stainless steel 316L, gold plated, thickness approx. 25 μm  Tube length • without tube Other version: Add Order code and plain text: Wetted parts materials:, Tube length:  Tube length:  Tube length:  Tube length:  Tube length:  Tithe length:  To with PFE coating <sup>2) 3) 4</sup>  E 0  101 150 mm (3.98 5.  151 200 mm (0.79 1.97  151 200 mm (5.94 7.  Wetted parts materials: Hange  101 150 mm (3.98 5.  151 200 mm (5.94 7.  Wetted parts materials: Hange  20 50 mm (0.79 1.97  51 100 mm (2.01 3.9  101 150 mm (0.79 1.97  51 100 mm (2.01 3.9  101 150 mm (0.79 1.97  51 100 mm (2.01 3.9  101 150 mm (3.98 5.</sup>	Stainless steel 316L		,
- with ECTFE coating <sup>2) 3) 4) - with PFA coating <sup>2) 3) 4) • Monel 400, mat. No. 2.4360 • Hastelloy C276, mat. No. 2.4819 • Hastelloy C22, mat. No. 2.4602 • Tantalum • Titanium, mat. No. 3.7035 (max. 150 °C (302 °F)) • Nickel 201 (max. 260 °C (500 °F)) • Duplex 2205, mat. no. 1.4462 • Duplex 2205, mat. no. 1.4462, incl. main body • Stainless steel 316L, gold plated, thickness approx. 25 μm  Tube length • without tube Other version: Add Order code and plain text: Wetted parts materials: Tange  151 200 mm (5.94 7. 201 250 mm (0.79 1.97 1.97 1.97 1.97 1.97 1.97 1.</sup></sup>	S .		,
- with PFA coating <sup>2) 4)</sup> • Monel 400, mat. No. 2.4360 • Hastelloy C276, mat. No. 2.4819 • Hastelloy C22, mat. No. 2.4602 • Hastelloy C22, mat. No. 2.4602 • Tantalum • Titanium, mat. No. 3.7035 (max. 150 °C (302 °F)) • Nickel 201 (max. 260 °C (500 °F)) • Duplex 2205, mat. no. 1.4462 • Duplex 2205, mat. no. 1.4462, incl. main body • Stainless steel 316L, gold plated, thickness approx. 25 μm  Tube length • without tube Other version: Add Order code and plain text: Wetted parts materials: Tange  201 250 mm (7.91 9. • Wetted parts materials: Nange  101 150 mm (3.98 5. 151 200 mm (5.94 7. • Wetted parts materials: Hange  20 50 mm (0.79 1.97. • Wetted parts materials: Hange  20 50 mm (0.79 1.97. • Wetted parts materials: Tange  20 50 mm (0.79 1.97. • Wetted parts materials: Tange  20 50 mm (0.79 1.97. • Wetted parts materials: Tange  20 50 mm (0.79 1.97. • Wetted parts materials: Tange  20 50 mm (0.79 1.97. • Wetted parts materials: Tange  101 150 mm (3.98 5.  101 150 mm (0.79 1.97. • Wetted parts materials: Tange  101 150 mm (0.79 1.97. • Wetted parts materials: Tange  101 150 mm (0.79 1.97. • Wetted parts materials: Tange  102 50 mm (0.79 1.97. • Wetted parts materials: Tange  103 100 mm (2.01 3.9. • Wetted parts materials: Tange  104 150 mm (0.79 1.97. • Wetted parts materials: Tange		E 0	•
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<ul> <li>Hastelloy C276, mat. No. 2.4819</li> <li>Hastelloy C4, mat. No. 2.4602</li> <li>Hastelloy C22, mat. No. 2.4602</li> <li>Tantalum</li> <li>Titanium, mat. No. 3.7035 (max. 150 °C (302 °F))</li> <li>Nickel 201 (max. 260 °C (500 °F))</li> <li>Duplex 2205, mat. no. 1.4462</li> <li>Duplex 2205, mat. no. 1.4462, incl. main body</li> <li>Stainless steel 316L, gold plated, thickness approx. 25 μm</li> <li>Tube length</li> <li>without tube</li> <li>Other version: Add Order code and plain text: Wetted parts materials:, Tube length:</li> <li>Value 100 mm (0.79 1.97 (5.94 7.95)</li> <li>Wetted parts materials: Tange</li> <li>Range</li> <li>20 50 mm (0.79 1.97 (5.94 7.97)</li> <li>Wetted parts materials: Tange</li> <li>101 150 mm (0.79 1.97 (5.94 7.95)</li> <li>Wetted parts materials: Tange</li> /ul>			,
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<ul> <li>Hastelloy C22, mat. No. 2.4602</li> <li>Tantalum</li> <li>Titanium, mat. No. 3.7035 (max. 150 °C (302 °F))</li> <li>Nickel 201 (max. 260 °C (500 °F))</li> <li>Duplex 2205, mat. no. 1.4462</li> <li>Duplex 2205, mat. no. 1.4462, incl. main body</li> <li>Stainless steel 316L, gold plated, thickness approx. 25 μm</li> <li>Tube length</li> <li>without tube</li> <li>Other version:</li> <li>Add Order code and plain text: Wetted parts materials: Incl. materials: The length:</li> <li>Wetted parts materials: The long mm (0.79 1.97 51 100 mm (3.98 5. 151 200 mm (5.94 7. 151 200 mm (5.</li></ul>			
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Diaphragm seal         Sandwich-type design, with flexible capillary connected to a STFANS P transmitter (order separately):         7MF 49 00 -	Selection and Ordering data	Art	icle No. Ord.code	
connected to a SITRÂNS P transmitter (order separately):  for pressure 7MF2033; 7MF403 and 7MF423 together with Order code "V01" (Negative pressure service) and 7MF8021); Scope of delivery (1 off)  for absolute pressure 7MF433; Scope of delivery (1 off)  for differential pressure and flow 7MF243; 7MF443 and 7MF54; scope of delivery 2 off  Customer-specific tubus length Specify customer-specific length with Y44, see Order Code	Diaphragm seal			
TMF423 together with Order code "Vol" (Negative pressure service) and TMF8021; Scope of delivery (1 off)	connected to a SITRANS P transmitter			
Scope of delivery (1 off)   For differential pressure and flow   7MF243;   7MF443   and 7MF54;   scope of delivery 2 off	7MF423 together with Orde (Negative pressure service) ar	r code "V01"	7 M	IF 4 9 0 0 -
Customer-specific tubus length Specify customer-specific length with Y44, see Order Code  • Wetted parts materials: Stainless steel without foil Range    Standard length   Standard length		3;	7 M	IF 4 9 0 1 -
Customer-specific tubus length Specify customer-specific length with Y44, see Order Code  • Wetted parts materials: Stainless steel without foil Range    Standard length   St	7MF243;7MF443 and 7M		7 M	IF 4 9 0 3 -
Specify customer-specific length with Y44, see Order Code  • Wetted parts materials: Stainless steel without foil Range   Standard length    50 50 mm (0.79 1.97")   50 mm (1.97")   A1    101 150 mm (3.98 5.91")   150 mm (5.91")   A3    151 200 mm (5.94 7.87")   220 mm (7.87")   A4    201 250 mm (7.91 9.84")   250 mm (9.84")   A5    • Wetted parts materials: Stainless steel coated with ECTFE    Range   Standard length    20 50 mm (0.79 1.97")   50 mm (1.97")   F1    151 100 mm (3.98 5.91")   150 mm (5.91")   F3    151 200 mm (5.94 7.87")   200 mm (7.87")   F4    201 250 mm (7.91 9.84")   250 mm (9.84")   F5    • Wetted parts materials: Stainless steel coated with PFA    Range   Standard length    20 50 mm (0.79 1.97")   50 mm (1.97")   F3    151 200 mm (5.94 7.87")   200 mm (7.87")   D1    151 100 mm (2.01 3.94")   150 mm (3.94")   D2    101 150 mm (3.98 5.91")   150 mm (5.91")   D3    151 200 mm (5.94 7.87")   200 mm (7.87")   D4    201 250 mm (7.91 9.84")   250 mm (9.84")   D5    • Wetted parts materials: Monel 400    Range   Standard length    20 50 mm (0.79 1.97")   50 mm (1.97")   G1    151 100 mm (2.01 3.94")   100 mm (3.94")   G2    151 200 mm (5.94 7.87")   200 mm (7.87")   G4    • Wetted parts materials: Hastelloy C276    Range   Standard length    20 50 mm (0.79 1.97")   50 mm (1.97")   G3    151 200 mm (5.94 7.87")   50 mm (1.97")   G1    151 200 mm (5.94 7.87")   200 mm (7.87")   J1    151 200 mm (5.94 7.87")   50 mm (5.91")   J3    151 200 mm (5.94 7.87")   50 mm (1.97")   J1    151 200 mm (3.98 5.91")   100 mm (3.94")   J2    101 150 mm (0.79 1.97")   50 mm (1.97")   51 100 mm (3.98")   J2    101 150 mm (3.98 5.91")   100 mm (3.94")   J2    101 150 mm (0.79 1.97")   50 mm (5.91")   J3    151 200 mm (5.94 7.87")   200 mm (7.87")   J4    • Wetted parts materials: Tantalum    Range   S			1	- В
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51 100 mm (2.01 3.94") 100 mm (3.94") F2 101 150 mm (3.98 5.91") 150 mm (5.91") F3 151 200 mm (5.94 7.87") 200 mm (7.87") F4 201 250 mm (7.91 9.84") 250 mm (9.84") F5  • Wetted parts materials: Stainless steel coated with PFA Range Standard length  20 50 mm (0.79 1.97") 50 mm (1.97") D1 51 100 mm (3.98 5.91") 150 mm (5.91") D3 151 200 mm (5.94 7.87") 200 mm (7.87") D4 201 250 mm (7.91 9.84") 250 mm (9.84") D5  • Wetted parts materials: Monel 400 Range Standard length  20 50 mm (0.79 1.97") 50 mm (1.97") G1 51 100 mm (2.01 3.94") 100 mm (3.94") G2 101 150 mm (3.98 5.91") 150 mm (5.91") G3 151 200 mm (5.94 7.87") 200 mm (7.87") G4  • Wetted parts materials: Hastelloy C276 Range Standard length  20 50 mm (0.79 1.97") 50 mm (1.97") G1 51 100 mm (2.01 3.94") 100 mm (3.94") G2 101 150 mm (3.98 5.91") 150 mm (5.91") J3 151 200 mm (5.94 7.87") 200 mm (7.87") J1 51 100 mm (2.01 3.94") 100 mm (3.94") J2 101 150 mm (3.98 5.91") 150 mm (5.91") J3 151 200 mm (5.94 7.87") 200 mm (7.87") J4  • Wetted parts materials: Tantalum Range Standard length  20 50 mm (0.79 1.97") 50 mm (1.97") K1 51 100 mm (2.01 3.94") 100 mm (3.94") J2 101 150 mm (2.01 3.94") 100 mm (3.94") J2 101 150 mm (2.01 3.94") 100 mm (3.94") J2 101 150 mm (2.01 3.94") 100 mm (3.94") J2 101 150 mm (2.01 3.94") 100 mm (3.94") K2 1 100 mm (2.01 3.94") 100 mm (3.94") K2 1 100 mm (2.01 3.94") 100 mm (3.94") K2 1 100 mm (3.98 5.91") 150 mm (5.91") K3	Range	Standard length		
with PFÁ         Range       Standard length         20 50 mm (0.79 1.97")       50 mm (1.97")       D1         51 100 mm (2.01 3.94")       100 mm (3.94")       D2         101 150 mm (3.98 5.91")       150 mm (5.91")       D3         151 200 mm (5.94 7.87")       200 mm (7.87")       D4         201 250 mm (7.91 9.84")       250 mm (9.84")       D5         • Wetted parts materials: Monel 400       Range       Standard length         20 50 mm (0.79 1.97")       50 mm (1.97")       G1         51 100 mm (2.01 3.94")       100 mm (3.94")       G2         101 150 mm (5.94 7.87")       200 mm (7.87")       G4         • Wetted parts materials: Hastelloy C276       Range       Standard length         20 50 mm (0.79 1.97")       50 mm (1.97")       J1         51 100 mm (2.01 3.94")       100 mm (3.94")       J2         101 150 mm (3.98 5.91")       150 mm (5.91")       J3         151 200 mm (5.94 7.87")       200 mm (7.87")       J4         • Wetted parts materials: Tantalum         Range       Standard length         20 50 mm (0.79 1.97")       50 mm (1.97")       K1         51 100 mm (2.01 3.94") <td>51 100 mm (2.01 3.94") 101 150 mm (3.98 5.91") 151 200 mm (5.94 7.87")</td> <td colspan="2">51 100 mm (2.01 3.94") 101 150 mm (3.98 5.91") 151 200 mm (5.94 7.87") 100 mm (3.94") 150 mm (5.91") 200 mm (7.87")</td> <td>F 2 F 3 F 4</td>	51 100 mm (2.01 3.94") 101 150 mm (3.98 5.91") 151 200 mm (5.94 7.87")	51 100 mm (2.01 3.94") 101 150 mm (3.98 5.91") 151 200 mm (5.94 7.87") 100 mm (3.94") 150 mm (5.91") 200 mm (7.87")		F 2 F 3 F 4
20 50 mm (0.79 1.97") 50 mm (1.97") D1 51 100 mm (2.01 3.94") 100 mm (3.94") D2 101 150 mm (3.98 5.91") 150 mm (5.91") D3 151 200 mm (5.94 7.87") 200 mm (7.87") D4 201 250 mm (7.91 9.84") 250 mm (9.84") D5  • Wetted parts materials: Monel 400 Range Standard length 20 50 mm (0.79 1.97") 50 mm (1.97") G1 51 100 mm (2.01 3.94") 100 mm (3.94") G2 101 150 mm (5.94 7.87") 200 mm (7.87") G3 151 200 mm (5.94 7.87") 200 mm (7.87") G4  • Wetted parts materials: Hastelloy C276 Range Standard length 20 50 mm (0.79 1.97") 50 mm (1.97") J1 51 100 mm (2.01 3.94") 100 mm (3.94") J2 101 150 mm (3.98 5.91") 150 mm (5.91") J3 151 200 mm (5.94 7.87") 200 mm (7.87") J4  • Wetted parts materials: Tantalum Range Standard length 20 50 mm (0.79 1.97") 50 mm (1.97") J4  • Wetted parts materials: Tantalum Range Standard length 20 50 mm (0.79 1.97") 50 mm (1.97") J3 151 200 mm (5.94 7.87") 200 mm (7.87") J4  • Wetted parts materials: Tantalum Range Standard length 20 50 mm (0.79 1.97") 50 mm (1.97") K1 51 100 mm (2.01 3.94") 100 mm (3.94") K2 101 150 mm (3.98 5.91") 150 mm (5.91") K3	with PFA			
Range       Standard length         20 50 mm (0.79 1.97")       50 mm (1.97")       G1         51 100 mm (2.01 3.94")       100 mm (3.94")       G2         101 150 mm (3.98 5.91")       150 mm (5.91")       G3         151 200 mm (5.94 7.87")       200 mm (7.87")       G4         • Wetted parts materials: Hastelloy C276       Range       Standard length         20 50 mm (0.79 1.97")       50 mm (1.97")       J 1         51 100 mm (2.01 3.94")       100 mm (3.94")       J 2         101 150 mm (3.98 5.91")       150 mm (5.91")       J 3         151 200 mm (5.94 7.87")       200 mm (7.87")       J 4         • Wetted parts materials: Tantalum       Range       Standard length         20 50 mm (0.79 1.97")       50 mm (1.97")       K 1         51 100 mm (2.01 3.94")       100 mm (3.94")       K 2         101 150 mm (3.98 5.91")       150 mm (5.91")       K 3	20 50 mm (0.79 1.97") 51 100 mm (2.01 3.94") 101 150 mm (3.98 5.91") 151 200 mm (5.94 7.87")	20 50 mm (0.79 1.97") 50 mm (1.97") 51 100 mm (2.01 3.94") 100 mm (3.94") 101 150 mm (3.98 5.91") 150 mm (5.91") 151 200 mm (5.94 7.87") 200 mm (7.87")		
51 100 mm (2.01 3.94") 100 mm (3.94") G 2 101 150 mm (3.98 5.91") 150 mm (5.91") G 3 151 200 mm (5.94 7.87") 200 mm (7.87") G 4  • Wetted parts materials: Hastelloy C276 Range Standard length  20 50 mm (0.79 1.97") 50 mm (1.97") J 1 51 100 mm (3.98 5.91") 150 mm (5.91") J 3 151 200 mm (5.94 7.87") 200 mm (7.87") J 4  • Wetted parts materials: Tantalum Range Standard length  20 50 mm (0.79 1.97") 50 mm (1.97") J 4  • Wetted parts materials: Tantalum Range Standard length  20 50 mm (0.79 1.97") 50 mm (1.97") K 1 51 100 mm (2.01 3.94") 100 mm (3.94") K 2 101 150 mm (3.98 5.91") 150 mm (5.91") K 3				
Range Standard length  20 50 mm (0.79 1.97") 50 mm (1.97") J1  51 100 mm (2.01 3.94") 100 mm (3.94") J2  101 150 mm (5.94 7.87") 200 mm (7.87") J3  151 200 mm (5.94 7.87") 200 mm (7.87") J4  • Wetted parts materials: Tantalum  Range Standard length  20 50 mm (0.79 1.97") 50 mm (1.97") K1  51 100 mm (2.01 3.94") 100 mm (3.94") K2  101 150 mm (3.98 5.91") 150 mm (5.91") K3	51 100 mm (2.01 3.94") 100 mm (3.94") 150 mm (5.91")			G 2 G 3
51 100 mm (2.01 3.94")				
Range       Standard length         20 50 mm (0.79 1.97")       50 mm (1.97")       K 1         51 100 mm (2.01 3.94")       100 mm (3.94")       K 2         101 150 mm (3.98 5.91")       150 mm (5.91")       K 3	51 100 mm (2.01 3.94") 101 150 mm (3.98 5.91")	51 100 mm (2.01 3.94") 100 mm (3.94") 101 150 mm (3.98 5.91") 150 mm (5.91")		
20 50 mm (0.79 1.97") 50 mm (1.97") K 1 51 100 mm (2.01 3.94") 100 mm (3.94") K 2 101 150 mm (3.98 5.91") 150 mm (5.91") K 3				
51 100 mm (2.01 3.94") 100 mm (3.94") <b>K 2</b> 101 150 mm (3.98 5.91") 150 mm (5.91") <b>K 3</b>				
101 150 mm (3.98 5.91") 150 mm (5.91") <b>K 3</b>		` '		

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

# Diaphragm seals of sandwich design with flexible capillary

Selection and Ordering data	Article No. Ord.code
Diaphragm seal	
Sandwich-type design, with flexible capillary connected to a SITRANS P transmitter (order separately):	
for pressure 7MF2033; 7MF403 and 7MF423 together with Order code "V01" (Negative pressure service) and 7MF802 <sup>1)</sup> ; Scope of delivery (1 off)	7MF4900-
for absolute pressure 7MF433; Scope of delivery (1 off)	7MF4901-
for differential pressure and flow 7MF243;7MF443 and 7MF54; scope of delivery 2 off	7MF4903-
	1 - B - B
Filling liquid  Silicone oil M5  Silicone oil M50  High-temperature oil Halocarbon oil (for measuring O <sub>2</sub> ) <sup>5)</sup> Food oil (FDA listed)I  Other version Add Order code and plain text: Filling liquid:	1 2 3 4 7 9 M1Y
Length of capillary <sup>6)</sup>	
<ul> <li>1.0 m (3.28 ft)</li> <li>1.6 m (5.25 ft)</li> <li>2.5 m (8.20 ft)</li> <li>4.0 m (13.1 ft)</li> <li>6.0 m (19.7 ft)</li> <li>8.0 m (26.25 ft)</li> <li>10.0 m (32.8 ft)</li> </ul>	2 3 4 5 6 7 8
Special lengths for capillaries	
• 2.0 m (6.56 ft) • 3.0 m (9.84 ft) • 5.0 m (16.40 ft) • 7.0 m (23.97 ft) • 9.0 m (29.53 ft)	9 N1C 9 N1E 9 N1G 9 N1J 9 N1L
only for 7MF4903	
• 11.0 m (36.09 ft) • 12.0 m (39.37 ft) • 13.0 m (42.65 ft) • 14.0 m (45.93 ft) • 15.0 m (49.21 ft)	9 N1N 9 N1P 9 N1Q 9 N1R 9 N1S

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

у	
Selection and Ordering data	Order code
Further designs	
Please add "-Z" to Article No. and specify Order code.	
Customer-specific tubus length	Y44
Select range, enter desired length in plain text (No entry = standard length)	
Spark arrestor With spark arrestor for mounting on zone 0 (including documentation)	
<ul> <li>Pressure and absolute pressure</li> </ul>	A01
<ul> <li>for differential pressure transmitters</li> </ul>	A02
Remote seal nameplate  Attached out of stainless steel, contains Article  No. and order number of the remote seal supplier	B20
Oil- and grease-free cleaned version Oil- and grease-free cleaned and packed version, not for oxygen application, only in conjunction with halocarbon oil fill fluid, certified by certificate acc. to EN 10204-2.2	C10
Quality Inspection Certificate (5-point characteristic curve test) according to IEC 60770-2	C11
Inspection certificate to EN 10204, section 3.1	C12
2.2 Certificate of FDA approval of fill oil Only in conjunction with "Food-grade oil" fill liquid (FDA listed)"	C17
Functional safety certificate ("SIL 2") to IEC 61508  (Only in conjunction with the Order code "C20" in the case of SITRANS P DSIII transmitter)	C20
Functional safety certificate ("SIL 2/3") to IEC 61508	C23
(Only in conjunction with the Order code "C23" in the case of SITRANS P DSIII transmitter)	
Certification acc. to NACE MR-0175 Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stainless steel 1.4404/316L and Hastelloy C276)	D07
Certification acc. to NACE MR-0103 Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stainless steel 1.4404/316L and Hastelloy C276)	D08
Oil- and grease-free cleaned version	E10
Oil- and grease-free cleaned and packed version, only for oxygen application, only inert fill fluid may be used. Max. temperature: 60 °C (140 °F), max. pressure 50 bar (725 psi), only in connection with halocarbon oil, certified by certificate acc. to EN 10204-2.2	
<b>Epoxy painting</b> (not possible with vacuum-proof design and not for 7MF4901)	E15
Color: transparent, coverage: front and rear of the remote seal, capillary(ies) or connecting tube, process connection of the transmitter. With transmitters 7MF40 and 7MF42 only possible with process connection G½B according to EN 837-1	
One-sided mounting on differential pressure transmitters	
(only for 7MF4900)	
on high-pressure side on low-pressure side	H10 H11

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<sup>2)</sup> Only possible up to max. PN 100.

<sup>3)</sup> For vacuum on request

Only for use in non-hazardous atmospheres.
 Oil- and grease- free cleaning to DIN 25410, level 2 and packaging included in the scope of delivery. Refer to "Further designs" C10 and E10.
 Max. capillary length, see section "Technical description".

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

# Diaphragm seals of sandwich design with flexible capillary

Selection and Ordering data	Order code	Selection and Ordering data	Order code
Further designs		Further designs	
Please add "-Z" to Article No. and specify Order code.		Please add "-Z" to Article No. and specify Order code.	
Sealing surface smooth, form B2 or RFSF (Stainless steel diaphragm) previously DIN 2501, form E	J11	PE protective tube over the spiral protective tube of the capillaries (color: white)	
Sealing surface B1 or ASME B16.5 RF 125 250 AA instead of sealing surface B2 or RFSF (only for wetted parts made of Hastelloy C276 (2.4819), tantalum and Duplex 2205 (1.4462) and for nominal sizes 2", 3", DN 50 and DN 80)	J12	1.0 m (3.28 ft) 1.6 m (5.25 ft) 2.0 m (6.56 ft) 2.5 m (8.20 ft) 3.0 m (9.84 ft)	N20 N21 N22 N23 N24
Sealing surface groove, EN 1092-1, form D instead of sealing surface B1 (only for wetted parts made of stainless steel 316L)	J14	4.0 m (13.12 ft) 5.0 m (16.40 ft) 6.0 m (19.69 ft)	N25 N26 N27
Sealing surface RJF (groove, previously RTJ) ASME B16.5 instead of sealing surface ASME B16.5 RF 125 250 AA (only for wetted parts made of stainless steel 316L)	J24	7.0 m (22.97 ft) 8.0 m (26.25 ft) 9.0 m (29.53 ft) 10.0 m (32.81 ft) only for 7MF4903	N28 N29 N30 N31
Sealing surface with spring according to EN 1092-1, form C, (previously DIN 2512, form F) in stainless steel 316L  DN 25  DN 40  DN 50  DN 80  DN 100	J30 J31 J32 J33 J34	11.0 m (36.09 ft) 12.0 m (39.37 ft) 13.0 m (42.65 ft) 14.0 m (45.93 ft) 15.0 m (49.21 ft)  PTFE protective tube over the spiral protective tube of the capillaries	N32 N33 N34 N35 N36
DN 125  Sealing surface with male face according to EN 1092-1, form E (previously DIN 2512, form V13) in stainless steel 316L  DN 25  DN 40  DN 50  DN 80  DN 100  DN 125	J40 J41 J42 J43 J44 J45	(color: transparent)  1.0 m (3.28 ft)  1.6 m (5.25 ft)  2.0 m (6.56 ft)  2.5 m (8.20 ft)  3.0 m (9.84 ft)  4.0 m (13.12 ft)  5.0 m (16.40 ft)  6.0 m (19.69 ft)	N40 N41 N42 N43 N44 N45 N46 N47
Sealing surface with female face according to EN 1092-1, form F (previously DIN 2512, form R13) in stainless steel 316L DN 25 DN 40 DN 50 DN 80 DN 100 DN 125	J50 J51 J52 J53 J54 J55	7.0 m (22.97 ft) 8.0 m (26.25 ft) 9.0 m (29.53 ft) 10.0 m (32.81 ft) only for 7MF4903 11.0 m (36.09 ft) 12.0 m (39.37 ft) 13.0 m (42.65 ft)	N48 N49 N50 N51 N52 N53 N54
		14.0 m (45.93 ft) 15.0 m (49.21 ft)	N55 N56

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

# Diaphragm seals of sandwich design with flexible capillary

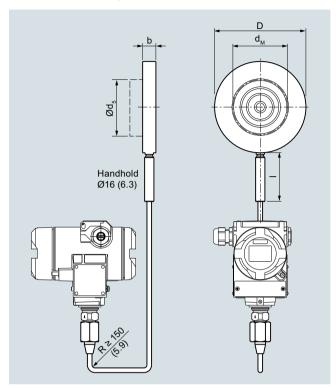
Selection and Ordering data	Order code
Further designs	
Please add "-Z" to Article No. and specify Order code.	
PVC protective tube	
over the spiral protective tube of the capillaries (color: black)	
1.0 m (3.28 ft)	N60
1.6 m (5.25 ft)	N61
2.0 m (6.56 ft)	N62
2.5 m (8.20 ft)	N63
3.0 m (9.84 ft)	N64
4.0 m (13.12 ft)	N65
5.0 m (16.40 ft)	N66
6.0 m (19.69 ft)	N67
7.0 m (22.97 ft)	N68
8.0 m (26.25 ft)	N69
9.0 m (29.53 ft)	N70
10.0 m (32.81 ft)	N71
only for 7MF4903	
11.0 m (36.09 ft)	N72
12.0 m (39.37 ft)	N73
13.0 m (42.65 ft)	N74
14.0 m (45.93 ft)	N75
15.0 m (49.21 ft)	N76
Negative pressure service	
for use in low-pressure range for transmitters for	
<ul> <li>gauge and absolute pressure from the pressure series</li> </ul>	V01
differential pressure	V03
Extended negative pressure service	
for use in low-pressure range for transmitters for	
<ul> <li>gauge and absolute pressure from the pressure series</li> </ul>	V51
differential pressure	V53

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Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

Diaphragm seals of sandwich design with flexible capillary

# Dimensional drawings



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

#### Connection to EN 1092-1

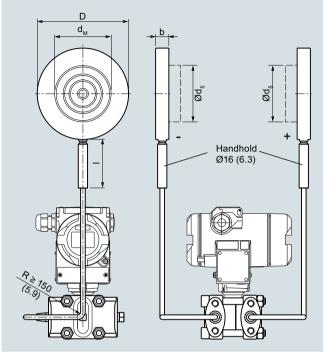
Nom. diam.	Nom. press.	b	D	d <sub>5</sub>	d <sub>M</sub>	I
		mm	mm	mm	mm	mm
DN 50	PN 16 PN 400	20	102	48.3	45 <sup>1)</sup>	100
DN 80		20	138	76	72 <sup>2)</sup>	100
DN 100		20	158	94	89	100
DN 125	-	22	188	125	124	100

# Connection to ASME B16.5

Nom. diam.	Nom. press.	b	D	<b>d</b> <sub>5</sub>	d <sub>M</sub>	1
	lb/sq.in.	mm	mm	mm	mm	mm
		(inch)	(inch)	(inch)	(inch)	(inch)
2 inch	150 2500	20	100	48.3	45 <sup>1)</sup>	100
		(0.79)	(3.94)	(1.9)	(1.77)	(3.94)
3 inch		20	134	72	72 <sup>2)</sup>	100
		(0.79)	(5.28)	3	(2.83)	(3.94)
4 inch		20	158	94	89	100
		(0.79)	(6.22)	(3.69)	(2.32)	(3.94)
5 inch		22	186	125	124	100
		(0.87)	(7.32)	(4.92)	(4.88)	(3.94)

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

 $d_{M}$ : Effective diaphragm diameter



Diaphragm seals of sandwich design (without flange) with flexible capillary for connection to SITRANS P pressure transmitters for absolute pressure or differential pressure and flow, dimensions in mm (inch)

#### Connection to EN 1092-1

Nom. diam.	Nom. press.	b	D	<b>d</b> <sub>5</sub>	d <sub>M</sub>	I
		mm	mm	mm	mm	mm
DN 50	PN 16 PN 400	20	102	48.3	45 <sup>1)</sup>	100
DN 80	_	20	138	76	72 <sup>2)</sup>	100
DN 100	-	20	158	94	89	100
DN 125	-	22	188	125	124	100

## Connection to ASME B16.5

Nom. diam.	Nom. press.	b	D	d <sub>5</sub>	d <sub>M</sub>	I
	lb/sq.in.	mm	mm	mm	mm	mm
		(inch)	(inch)	(inch)	(inch)	(inch)
2 inch	150 2500	20	100	48.3	45 <sup>1)</sup>	100
		(0.79)	(3.94)	(1.9)	(1.77)	(3.94)
3 inch		20	134	72	72 <sup>2)</sup>	100
		(0.79)	(5.28)	3	(2.83)	(3.94)
4 inch		20	158	94	89	100
		(0.79)	(6.22)	(3.69)	(2.32)	(3.94)
5 inch		22	186	125	124	100
		(0.87)	(7.32)	(4.92)	(4.88)	(3.94)

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

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

Update April 2020

 $<sup>^{1)}</sup>$  59 mm = 2.32 inch with tube length L = 0

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

 $<sup>^{1)}</sup>$  59 mm = 2.32 inch with tube length L = 0

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

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

# Diaphragm seals of flange design with flexible capillary

# Overview



Diaphragm seals of flange design

Technical specifications				
Diaphragm seals of flange design	with flexible capillary	• Sheath	Spiral protective tube made of	
Nominal diameter	Nominal pressure		stainless steel, mat. no. 1.4301/304	
<ul> <li>DN 50 (recommendable only for pressure transmitters for pressure)</li> </ul>	PN 10/16/25/40, PN 100	Sealing material in the process flanges		
• DN 80	PN 10/16/25/40, PN 100	<ul> <li>For pressure transmitters, absolute pressure transmitters and low-</li> </ul>	Copper	
• DN 100	PN 10/16, PN 25/40	pressure applications		
• DN 125	PN 16, PN 40	<ul> <li>For other applications</li> </ul>	Viton	
<ul> <li>2 inch (recommendable only for pressure transmitters for pressure)</li> </ul>	Class 150, class 300, class 400/600, class 900/1500	Maximum pressure	See above and the technical data of the pressure transmitter	
• 3 inch	Class 150, class 300, class 600	Tube length	Without tube as standard (tube	
• 4 inch	Class 150, class 300, class 400	Capillary	available on request)	
• 5 inch	Class 150, class 300, class 400	Capillary	May 10 m (20 0 ft) languar	
Sealing surface		• Length	Max. 10 m (32.8 ft), longer lengths on request	
• For stainless steel, mat.	To EN 1092-1, form B1 or	Internal diameter	2 mm (0.079 inch)	
No. 1.4404/316L	ASMR B16.5 RF 125 250 AA	Minimum bending radius	150 mm (5.9 inch)	
For the other materials	other materials  To EN 1092-1, form B2 or  ASME B16.5 RFSF  Filling liquid			
Materials	Obsistant	(for remote seals of sandwich and flange design)	Silicone oil M5	
Main body	Stainless steel mat. no. 1.4404/316L		Silicone oil M50	
Wetted parts	Stainless steel		High-temperature oil	
	mat. no. 1.4404/316L		Halocarbon oil (for measuring O2)	
	Without coating		Food oil (FDA listed)	
	<ul><li>PTFE coating</li><li>ECTFE coating (for vacuum on request)</li></ul>	Permissible ambient temperature	Dependent on the pressure trans- mitter and the filling liquid of the remote seal	
	PFA coating		More information can be found in	
	Monel 400, mat. No. 2.4360		the technical data of the pressure transmitters and in the section	
	Hastelloy C276, mat. No. 2.4819		"Technical data of filling liquid" in the Technical description to the	
	Hastelloy C4, mat. No. 2.4602		remote seals	
	Hastelloy C22, WNr. 2.4602	Weight	Approx. 4 kg (8.82 lb)	
	Tantalum	Certificate and approvals		
	Titanium, WNr. 3.7035	Classification according to pressure	For gases of fluid group 1 and liq	
	Nickel 201	equipment directive (DGRL 2014/68/EU)	uids of fluid group 1; complies with requirements of article 4,	
	Duplex 2205, mat. no. 1.4462	( : :,;)	paragraph 3 (sound engineering	
	Stainless steel 316L, gold plated, thickness approx. 25 μm		practice)	

Capillary

Stainless steel, mat. No. 1.4404/316L

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

# Diaphragm seals of flange design with flexible capillary

Selection and O	rdoring data	Artiolo	No. Orc	Loodo	Selection and Ordering data	Artiala N	lo. Ord. co
Diaphragm seal	idening data	Article	NO. OIC	i. code	Diaphragm seal	Article	10. Oru. co
					Flange design, with flexible capillary, connected to a pressure transmitter SITRANS P (order separately):		
7MF423 (abso series) together w	2033; 7MF403 and lute pressure (gauge pressure ith Order code "V01" (Negative and 7MF802 <sup>1)</sup> ; 1 off	7 M F 4	920-		for pressure 7MF2033; 7MF403 and 7MF423 (absolute pressure (gauge pressure series) together with Order code "V01" (Negative pressure service) and 7MF8021); scope of delivery: 1 off	7 M F 4 9	20-
	ssure (differential pressure; scope of delivery: 1 off	7 M F 4	921-		for absolute pressure (differential pressure series 7MF433; scope of delivery: 1 off	7 M F 4 9	21-
	ressure and flow 443 and 7MF54; r: 2 off	7 M F 4	923-		for differential pressure and flow 7MF243; 7MF443 and 7MF54; scope of delivery: 2 off	7 M F 4 9	23-
	rticle No. for the online configu- IA Life Cycle Portal.	1	■ - ■B	ш	Wetted parts materials • Stainless steel 316L		
Nominal diameter	er and nominal pressure				- without coating	Α	
• DN 25	PN 10/16/25/40	Z		J 0 A	- with PTFE coating	E 0	
	PN 63/100/160	Z		J 0 B	<ul> <li>with ECTFE coating<sup>2) 3)</sup></li> </ul>	F	
• DN 40	PN 10/16/25/40	Z		J O C	- with PFA coating 3)	D	
	PN 63/100	Z		J 0 D	<ul> <li>Monel 400, mat. No. 2.4360</li> </ul>	G	
	PN 160	Z		J 0 E	<ul> <li>Hastelloy C276, mat. No. 2.4819</li> </ul>	J	
• DN 50	PN 10/16/25/40	Α			<ul><li>Hastelloy C4, mat. No. 2.4602</li></ul>	U	
	PN 100	В			<ul> <li>Hastelloy C22, mat. No. 2.4602</li> </ul>	V 0	
	nded only for pressure				Tantalum	K 0	
transmitters for p	•				• Titanium, mat. No. 3.7035 (max. 150 °C	L	
• DN 80	PN 10/16/25/40	D			(302 °F))	MO	
	PN 100	E			• Nickel 201 (max. 260 °C (500 °F))	M 0	
• DN 100	PN 10/16	G			• Duplex 2205, mat. no. 1.4462	Q 0	
• DN 125	PN 25/40	Н			<ul> <li>Duplex 2205, mat. no. 1.4462, incl. main body</li> <li>Stainless steel 316L, gold plated,</li> </ul>	R S 0	
- DIV 120	PN 10/16	J			thickness approx. 25 μm	30	
	PN 25/40	K			μποιπισσό αρρισκί 20 μπι		
• 1 inch	Class 150	Z		J 6 A			
	Class 300	Z		J 6 B			
	Class 400/600	Z		J 6 C			
	Class 900/1500	Z		J 6 D			
• 11/2 inch	Class 150	Z		J 6 E			
	Class 300	Z		J 6 F			
	Class 400/600	Z		J 6 G			
	Class 900/1500	Z		J 6 H			
• 2 inch	Class 150	L					
	Class 300	M					
	Class 400/600	N					
	Class 900/1500	P					
	nded only for pressure						
transmitters for p	,						
• 3 inch	Class 150	Q					
	Class 300	R					
	Class 600	S					
<ul><li>4 inch</li></ul>	Class 150	Т					
	Class 300	U					
	Class 400	V					
• 5 inch	Class 150	W					
	Class 300	Х					
	Class 400	Y					
• JIS DN 50	10 K 316L	z		J 7 A			
5.5 5.100	20 K 316L	Z		J 7 B			
• 116 DVI 00							
• JIS DN 80	10 K 316L	Z		J7C J7D			
Smooth sealing s or to ASME B16.5	20 K 316L surface to EN 1092-1, form B1 5 RF 125 250 AA			JID			
Other version Add Order code	and plain text: r:; Nominal pressure:	z		J 1 Y			

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Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

# Diaphragm seals of flange design with flexible capillary

Octobring and Octobring Actor	go accign with		<u> </u>	Octobring and Outpring date	Auticle No. Oucl. co.d.
Selection and Ordering data  Diaphragm seal		Article N	lo. Ord. code	Selection and Ordering data  Diaphragm seal	Article No. Ord. code
Flange design, with flexible cap to a pressure transmitter SITRANS P (order separately):	oillary, connected			Flange design, with flexible capillary, connected to a pressure transmitter SITRANS P (order separately):	
for pressure 7MF2033; 7MF47MF423 (absolute pressure (series) together with Order code pressure service) and 7MF802. scope of delivery: 1 off	gauge pressure "V01" (Negative	7 M F 4 9	920-	for pressure 7MF2033; 7MF403 and 7MF423 (absolute pressure (gauge pressure series) together with Order code "V01" (Negative pressure service) and 7MF8021); scope of delivery: 1 off	7 M F 4 9 2 0 -
for absolute pressure (difference series 7MF433; scope of decented the series 7MF433;		7MF49	21-	for absolute pressure (differential pressure series 7MF433; scope of delivery: 1 off	7 M F 4 9 2 1 -
for differential pressure and to 7MF243; 7MF443 and 7 scope of delivery: 2 off		7MF49	923-	for differential pressure and flow 7MF243; 7MF443 and 7MF54; scope of delivery: 2 off	7 M F 4 9 2 3 -
Tube length • without tube Other version: Add Order code and plain text Wetted parts materials:, Tube length:  Customer-specific tubus leng Specify customer-specific leng	gth	0 Z 8	K1Y	Filling liquid  • Silicone oil M5  • Silicone oil M50  • High-temperature oil  • Halocarbon oil (for measuring O <sub>2</sub> ) <sup>4)</sup> • Food oil (FDA listed) Other version Add Order code and plain text:	1 2 3 4 7 9 M1Y
Order Code  • Wetted parts materials: Stainle	ss steel without foil			Filling liquid:  Length of capillary <sup>5)</sup> • 1.0 m (3.28 ft)	2
Range 20 50 mm (0.79 1.97") 51 100 mm (2.01 3.94") 101 150 mm (3.98 5.91") 151 200 mm (5.94 7.87") 201 250 mm (7.91 9.84")	50 mm (1.97") 100 mm (3.94") 150 mm (5.91") 200 mm (7.87") 250 mm (9.84")	A 1 A 2 A 3 A 4 A 5		<ul> <li>1.6 m (5.25 ft)</li> <li>2.5 m (8.20 ft)</li> <li>4.0 m (13.1 ft)</li> <li>6.0 m (19.7 ft)</li> <li>8.0 m (26.25 ft)</li> <li>10.0 m (32.8 ft)</li> </ul> Special lengths for capillaries	3 4 5 6 7 8
Wetted parts materials: Stainle with ECTFE				• 2.0 m (6.56 ft) • 3.0 m (9.84 ft)	9 N1C 9 N1E
Range 20 50 mm (0.79 1.97") 51 100 mm (2.01 3.94") 101 150 mm (3.98 5.91") 151 200 mm (5.94 7.87") 201 250 mm (7.91 9.84")	50 mm (1.97") 100 mm (3.94") 150 mm (5.91") 200 mm (7.87") 250 mm (9.84")	F 1 F 2 F 3 F 4 F 5			9 N1G 9 N1J 9 N1L
Wetted parts materials: Stainle with PFA Range	ss steel coated   Standard length			• 12.0 m (39.37 ft) • 13.0 m (42.65 ft) • 14.0 m (45.93 ft)	9 N 1 P 9 N 1 Q 9 N 1 R
20 50 mm (0.79 1.97") 51 100 mm (2.01 3.94") 101 150 mm (3.98 5.91") 151 200 mm (5.94 7.87") 201 250 mm (7.91 9.84") • Wetted parts materials: Monel Range	Standard length	D 1 D 2 D 3 D 4 D 5		<ul> <li>15.0 m (49.21 ft)</li> <li>With 7MF802 and the measuring cells Q, S, T a negative pressure service.</li> <li>For vacuum on request.</li> <li>Only for use in non-hazardous atmospheres.</li> <li>Oil- and grease- free cleaning to DIN 25410, level included in the scope of delivery. Refer to "Further Max. capillary length, see section "Technical descriptions".</li> </ul>	2 and packaging designs" C10 and E10.
20 50 mm (0.79 1.97") 51 100 mm (2.01 3.94") 101 150 mm (3.98 5.91") 151 200 mm (5.94 7.87")	50 mm (1.97") 100 mm (3.94") 150 mm (5.91") 200 mm (7.87")	G 1 G 2 G 3 G 4			
Wetted parts materials: Hastel Range     20 50 mm (0.79 1.97")     51 100 mm (2.01 3.94")     101 150 mm (3.98 5.91")     151 200 mm (5.94 7.87")	Standard length 50 mm (1.97") 100 mm (3.94") 150 mm (5.91") 200 mm (7.87")	J 1 J 2 J 3 J 4			
• Wetted parts materials: Tantal Range 20 50 mm (0.79 1.97") 51 100 mm (2.01 3.94")	Standard length 50 mm (1.97") 100 mm (3.94")	K 1			
100 mm (2.01 3.94 ) 101 150 mm (3.98 5.91") 151 200 mm (5.94 7.87")	150 mm (3.94 ) 150 mm (5.91") 200 mm (7.87")	K 2 K 3 K 4			

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

# Diaphragm seals of flange design with flexible capillary

Selection and Ordering data	Order code
Further designs Please add "-Z" to Article No. and specify Order code.	
Customer-specific tubus length	Y44
Select range, enter desired length in plain text (No entry = standard length)	
Spark arrestor With spark arrestor for mounting on zone 0 (including documentation) for transmitters for	
<ul> <li>pressure and absolute pressure</li> </ul>	A01
differential pressure	A02
Remote seal nameplate Attached out of stainless steel, contains MLFB and order number of the remote seal	B20
Oil- and grease-free cleaned version	C10
Oil- and grease-free cleaned and packed version, not for oxygen application, only in conjunction with halocarbon oil fill fluid, certified by certificate acc. to EN 10204-2.2	
Quality Inspection Certificate (5-point characteristic curve test) according to IEC 60770-2	C11
Inspection certificate to EN 10204, section 3.1	C12
2.2 Certificate of FDA approval of fill oil Only in conjunction with "Food-grade oil" fill liquid (FDA listed)"	C17
Functional safety certificate ("SIL 2") to IEC 61508	C20
(Only in conjunction with the Order code "C20" in the case of SITRANS P DSIII transmitter)	
Functional safety certificate ("SIL 2/3") to IEC 61508	C23
(Only in conjunction with the Order code "C23" in the case of SITRANS P DSIII transmitter)	
Certification acc. to NACE MR-0175	D07
Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stainless steel 1.4404/316L and Hastelloy C276)	
Certification acc. to NACE MR-0103	D08
Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stainless steel 1.4404/316L and Hastelloy C276)	
Oil- and grease-free cleaned version	E10
Oil- and grease-free cleaned and packed version, only for oxygen application, only inert fill fluid may be used. Max. temperature: 60 °C (140 °F), max. pressure 50 bar (725 psi), only in connection with halocarbon oil, certified by certificate acc. to EN 10204-2.2	
<b>Epoxy painting</b> (not possible with negative pressure service and not for 7MF4921)	E15
Color: transparent, coverage: front and rear of the remote seal, capillary(ies) or connecting tube, process connection of the transmitter. With transmitters 7MF40 and 7MF42, only possible with process connection G½B according to EN 837-1.	
One-sided mounting on differential pressure	
transmitters (only for 7MF4920)	
on high-pressure side on low-pressure side	H10 H11

Selection and Ordering data	Order code
Further designs Please add "-Z" to Article No. and specify Order code.	
Sealing surface smooth, form B2 or RFSF (Stainless steel diaphragm) previously DIN 2501, form E	J11
Sealing surface groove, EN 1092-1, form D	J14
instead of sealing surface B1 (only for wetted parts made of stainless steel 316L)	
Sealing surface with spring according to EN 1092-1, form C, (previously DIN 2512, form F) in stainless steel 316L	
DN 25	J30
DN 40	J31
DN 50	J32
DN 80	J33
DN 100	J34
DN 125	J35
Sealing surface with male face according to EN 1092-1, form E (previously DIN 2512, form V13) in stainless steel 316L	
DN 25	J40
DN 40	J41
DN 50	J42
DN 80	J43
DN 100	J44
DN 125	J45
Sealing surface with female face according to EN 1092-1, form F (previously DIN 2512, form R13) in stainless steel 316L	
DN 25	J50
DN 40	J51
DN 50	J52
DN 80	J53
DN 100 DN 125	J54 J55
Sealing surface B1 or ASME B16.5 RF 125 250 AA	J12
instead of sealing surface B2 or RFSF (only for wetted parts made of Hastelloy C276 (2.4819), tantalum and Duplex 2205 (1.4462) and for nominal sizes 2", 3", DN 50 and DN 80)	
Sealing surface RJF (groove, previously RTJ) ASME B16.5	J24
instead of sealing surface	
ASME B16.5 RF 125 250 AA (only for wetted parts made of stainless steel 316L)	

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

# Diaphragm seals of flange design with flexible capillary

Selection and Ordering data	Order code
Further designs Please add "-Z" to Article No. and specify Order code.	
Radial capillary pipe outlet	
for one-sided mounting for two-sided mounting	K01 K03
PE protective tube	RUU
over the spiral protective tube of the capillaries (color: white)	
1.0 m (3.28 ft)	N20
1.6 m (5.25 ft)	N21
2.0 m (6.56 ft)	N22
2.5 m (8.20 ft) 3.0 m (9.84 ft)	N23 N24
4.0 m (13.12 ft)	N25
5.0 m (16.40 ft)	N26
6.0 m (19.69 ft)	N27
7.0 m (22.97 ft)	N28
8.0 m (26.25 ft)	N29
9.0 m (29.53 ft)	N30
10.0 m (32.81 ft)	N31
only for 7MF4923	Naa
11.0 m (36.09 ft) 12.0 m (39.37 ft)	N32 N33
13.0 m (42.65 ft)	N34
14.0 m (45.93 ft)	N35
15.0 m (49.21 ft)	N36
PTFE protective tube	
over the spiral protective tube of the capillaries (color: transparent)	
1.0 m (3.28 ft)	N40
1.6 m (5.25 ft) 2.0 m (6.56 ft)	N41 N42
2.5 m (8.20 ft)	N43
3.0 m (9.84 ft)	N44
4.0 m (13.12 ft)	N45
5.0 m (16.40 ft)	N46
6.0 m (19.69 ft)	N47
7.0 m (22.97 ft)	N48
8.0 m (26.25 ft) 9.0 m (29.53 ft)	N49 N50
9.0 m (29.53 ft) 10.0 m (32.81 ft)	N51
only for 7MF4923	
11.0 m (36.09 ft)	N52
12.0 m (39.37 ft)	N53
13.0 m (42.65 ft)	N54
14.0 m (45.93 ft)	N55
15.0 m (49.21 ft)	N56

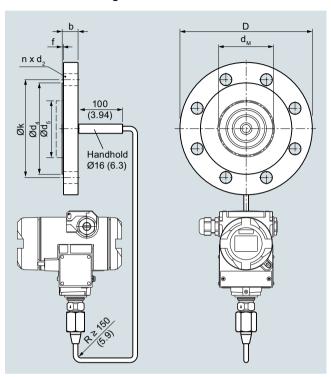
Selection and Ordering data	Order code
PVC protective tube	
over the spiral protective tube of the capillaries (color: black)	
1.0 m (3.28 ft)	N60
1.6 m (5.25 ft)	N61
2.0 m (6.56 ft)	N62
2.5 m (8.20 ft)	N63
3.0 m (9.84 ft)	N64
4.0 m (13.12 ft)	N65
5.0 m (16.40 ft)	N66
6.0 m (19.69 ft)	N67
7.0 m (22.97 ft)	N68
8.0 m (26.25 ft)	N69
9.0 m (29.53 ft) 10.0 m (32.81 ft)	N70 N71
,	N/ 1
only for 7MF4923	
11.0 m (36.09 ft)	N72
12.0 m (39.37 ft)	N73 N74
13.0 m (42.65 ft)	
14.0 m (45.93 ft)	N75
15.0 m (49.21 ft)	N76
<b>Negative pressure service</b> for use in low-pressure range for transmitters for	
qauge and absolute pressure from the pressu-	V01
re series	•••
differential pressure	V03
Extended negative pressure service	
for use in low-pressure range for transmitters for	
<ul> <li>gauge and absolute pressure from the pressure series</li> </ul>	V51
differential pressure	V53

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Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

# Diaphragm seals of flange design with flexible capillary

# Dimensional drawings



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

#### Connection to EN 1092-1

Nom. diam.	Nom. press.	b mm	D mm	d <sub>2</sub> mm	d <sub>4</sub> mm	d <sub>5</sub> mm	d <sub>M</sub> mm	f mm	k mm	n
DN 50	PN 10/1 6/ 25/40	20	165	18	102	48.3	45 <sup>1)</sup>	2	125	4
	PN 100	28	195	26	102	48.3	45 <sup>1)</sup>	2	145	4
DN 80	PN 10/1	24	200	18	138	76	72 <sup>2)</sup>	2	160	8
	PN 100	32	230	26	138	76	72 <sup>2)</sup>	2	180	8
DN 100	PN 10/1	20	220	18	158	94	89	2	180	8
100	PN 25/4	24	235	22	162	94	89	2	190	8
DN	PN 16	22	250	18	188	125	124	2	210	8
125	PN 40	26	270	26	188	125	124	2	220	8

## Connection to ASME B16.5

Nom. press.	b	D	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub>	f	k	n
lb/	mm	mm	mm	mm	mm	mm	mm	mm	
sq.in.	(inch	(inch)	(inch	(inch	(inch	(inch	(inch	(inch	
150	19.5	150	20	92	48.3	45 <sup>1)</sup>	2	120.5	4
	(0.77)	(5.80)	(0.79)	(3.62)	(1.9)	(1.77)	(0.08)	(4.74)	
300	22.7	165	20	92	48.3	45 <sup>1)</sup>	2	127	8
	(0.89)	(6.50)	(0.79)	(3.62)	(1.9)	(1.77)	(0.08)	(5)	
400/	32.4	165	20	92	48.3	45 <sup>1)</sup>	2	127	8
600	(1.28)	(6.50)	(0.79)	(3.62)	(1.9)	(1.77)	(80.0)	(5)	
900/	45.1	215	26	92	48.3	45 <sup>1)</sup>	7	165	8
1500	(1.78)	(8.46)	(1.02)	(3.62)	(1.9)	(1.77)	(0.28)	(6.5)	
150	24.3	190	20	127	76	72 <sup>2)</sup>	2	152.5	4
	(0.96)	(7.48)	(0.79)	(5)	(3)	(2.83)	(0.08)	(6)	
300	29	210	22	127	76	72 <sup>2)</sup>	2	168.5	8
	(1.14)	(8.27)	(0.87)	(5)	(3)	(2.83)	(0.08)	(6.63)	
600	38.8	210	22	127	76	72 <sup>2)</sup>	7	168.5	8
	(1.53)	(8.27)	(0.87)	(5)	(3)	(2.83)	(0.28)	(6.63)	
150	24.3	230	20	158	94	89	2	190.5	8
	(0.96)	(9.06)	(0.79)	(6.22)	(3.69)	(3.50)	(0.08)	(7.5)	
300	32.2	255	22	158	94	89	2	200	8
	(1.27)	(10.04	(0.87)	(6.22)	(3.69)	(3.50)	(0.08)	(7.87)	
400	42	255	26	158	94	89	7	200	8
	(1.65)	(10.04	(1.02)	(6.22)	(3.69)	(3.50)	(0.28)	(7.87)	
150	24.3	255	22	186	125	124	2	216	8
	(0.96)	(10.04	(0.87)	(7.32)	(4.92)	(4.88)	(0.08)	(8.50)	
300	35.8	280	22	186	125	124	2	235	8
	(1.41)	(11.02	(0.87)	(7.32)	(4.92)	(4.88)	(0.08)	(9.25)	
400	45.1	280	26	186	125	124	7	235	8
	(1.79)	(11.02	(1.02)	(7.32)	(4.92)	(4.88)	(0.28)	(9.25)	
	press. Ib/ sq.in.  150  300  400/ 600  900/ 1500  150  300  400  150  300  400  150  300  300	press.         mm (inch (inc	by sq.in.         mm (inch (inch)         mm (inch)           150         19.5         150 (0.77)         (5.80)           300         22.7         165 (0.89)         (6.50)           400/ 600         32.4         165 (0.50)           400/ 1500         45.1         215 (0.46)           1500         24.3         190 (0.96)           150         24.3         190 (0.96)           300         29         210 (1.14)           (1.14)         (8.27)         150 (0.96)           38.8         210 (1.53)         (8.27)           150         24.3         230 (0.96)           300         32.2         255 (1.27)           4400         42         255 (1.09)           (1.65)         (10.04)           150         24.3         255 (0.96)           (1.65)         (10.04)           300         35.8         280 (1.04)           300         35.8         280 (1.41)	Press.   Press   Pre				press.         mm         mm <th< td=""><td>  Name</td></th<>	Name

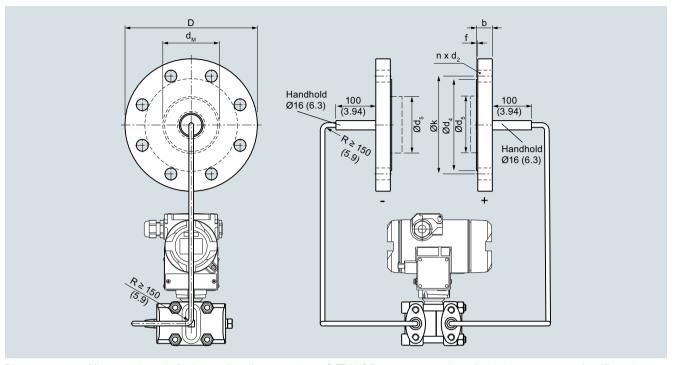
d: Inside diameter of gasket according to EN 1092-1 / ASME B16.5  $\rm d_{\rm M}$ : Effective diaphragm diameter

 $<sup>^{1)}</sup>$  59 mm = 2.32 inch with tube length L = 0

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

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

# Diaphragm seals of flange design with flexible capillary



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

#### Connection to EN 1092-1

Nom. diam.	Nom. press.	b mm	D mm	d <sub>2</sub> mm	d <sub>4</sub> mm	d <sub>5</sub> mm	d <sub>M</sub> mm	f mm	k mm	n
DN 80	PN 10/16	24	200	18	138	76	72 <sup>1)</sup>	2	160	8
	PN 100	32	230	26	138	76	72 <sup>1)</sup>	2	180	8
DN 100	PN 10/16	20	220	18	158	94	89	2	180	8
	PN 25/40	24	235	22	162	94	89	2	190	8
DN 125	PN 16	22	250	18	188	125	124	2	210	8
	PN 40	26	270	26	188	125	124	2	220	8

#### Connection to ASME B16.5

Nom. diam.	Nom. press.	b	D	d <sub>2</sub>	d <sub>4</sub>	<b>d</b> <sub>5</sub>	d <sub>M</sub>	f	k	n
	lb/	mm	mm	mm	mm	mm	mm	mm	mm	
	sq.in.	(inch	(inch)	(inch	(inch	(inch	(inch	(inch	(inch	
3 inch	150	24.3	190	20	127	76	72 <sup>1)</sup>	2	152.5	4
	150	(0.96)	(7.48)	(0.79)	(5)	(3)	(2.83)	(0.08)	(6)	
	300	29	210	22	127	76	72 <sup>1)</sup>	2	168.5	8
	300	(1.14)	(8.27)	(0.87)	(5)	(3)	(2.83)	(0.08)	(6.63)	
	600	38.8	210	22	127	76	72 <sup>1)</sup>	7	168.5	8
	000	(1.52)	(8.27)	(0.87)	(5)	(3)	(2.83)	(0.28)	(6.63)	
4 inch	150	24.3	230	20	158	94	89	2	190.5	8
	150	(0.96)	(9.06)	(0.79)	(6.22)	(3.69)	(3.50)	(0.08)	(7.5)	
	300	32.2	255	22	158	94	89	2	200	8
	300	(1.27)	(10.04)	(0.87)	(6.22)	(3.69)	(3.50)	(0.08)	(7.87)	
	400	42	255	26	158	94	89	7	200	8
	400	(1.65)	(10.04)	(1.02)	(6.22)	(3.69)	(3.50)	(0.28)	(7.87)	
5 inch	150	24.3	255	22	186	125	124	2	216	8
	100	(0.96)	(10.04)	(0.87)	(7.32)	(4.92)	(4.88)	(0.08)	(8.50)	
	200	35.8	280	22	186	125	124	2	235	8
	300	(1.41)	(11.02)	(0.87)	(7.32)	(4.92)	(4.88)	(80.0)	(9.25)	
	400	45.1	280	26	186	125	124	7	235	8
	400	(1.79)	(11.02)	(1.02)	(7.32)	(4.92)	(4.88)	(0.28)	(9.25)	

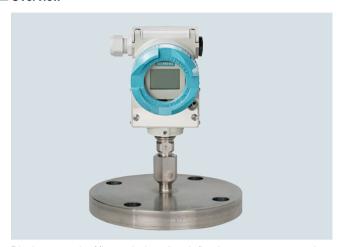
d: Inside diameter of gasket according to EN 1092-1 / ASME B16.5  $\rm d_{\rm M}$ : Effective diaphragm diameter

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

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

#### Diaphragm seals of flange design mounted directly on transmitter

## Overview



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

## Technical specifications

#### Diaphragm seals (flange design) for pressure and absolute pressure, directly fitted on a transmitter

Nominal	diameter	

- DN 50
- DN 80
- DN 100
- 2 inch
- 3 inch
- 4 inch
- Sealing surface
- For stainless steel, mat. No. 1.4404/316L
- For the other materials

#### Materials

- Main body
- Wetted parts

Nominal pressure

PN 10/16/25/40, PN 100

PN 10/16/25/40. PN 100

PN 10/16, PN 25/40

Class 150, class 300, class 400/600, class 900/1500

Class 150, class 300, class 600

Class 150, class 300, class 400

To EN 1092-1, form B1 or ASME B16.5 RF 125 ... 250 AA

Smooth to EN 1092-1, form B2 or ASME B16.5 RFSF

Stainless steel mat. no. 1.4404/316L

Stainless steel mat. no. 1.4404/316L

- Without coating
- PTFE coating
- ECTFE coating (for vacuum on request)
- PFA coating

Monel 400, mat. No. 2.4360 Hastelloy C276, mat. No. 2.4819

Hastelloy C4, mat. No. 2.4602 Hastelloy C22, mat No. 2.4602

Tantalum

Titanium, mat. No. 3.7035

Nickel 201

Duplex 2205, mat. no. 1.4462 Stainless steel 316L, gold plated, thickness approx. 25 µm

Stainless steel, mat. No. 1.4404/316L

· Sealing material at the transmitter Copper

connection

Capillary

Maximum pressure

Tube length

Capillary

- Length
- Internal diameter
- Minimum bending radius

Max. recommended process

Filling liquid

temperature

Weight

• 200 mm (7.87 inch)

• 100 mm (3.94 inch)

• 150 mm (5.91 inch)

of the transmitter

 Without tube • 50 mm (1.97 inch)

See above and the technical data

Max. 10 m (32.8 ft), longer lengths on request

2 mm (0.079 inch)

- 150 mm (5.9 inch)
- Silicone oil M5
- Silicone oil M50
- High-temperature oil
- · Halocarbon oil (for measuring  $O_2$
- Food oil (FDA listed)

170 °C (338 °F)

Permissible ambient temperature Dependent on the pressure transmitter and the filling liquid of the

remote seal More information can be found in the technical data of the pressure transmitters and in the section

"Technical data of filling liquid" in the Technical description to the remote seals.

Approx. 4 kg (8.82 lb)

Siemens FI 01 · 2018

#### Certificate and approvals

Classification according to pressure equipment directive (DGRL 2014/68/EU)

For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

# Diaphragm seals of flange design mounted directly on transmitter

Selection and	Ordering data	Article No	o. Ord. cod			
Diaphragm sea	al	7 M F 4 9 1 0 -				
SITRANS P for 7MF403 and	o a pressure transmitter pressure 7MF2033; d 7MF423 together with Order gative pressure service) and nust be ordered separately					
Click on the ration in the	Article No. for the online configu- PIA Life Cycle Portal.					
Process conne						
<ul><li>Vertical (press</li><li>Horizontal</li></ul>	sure transmitter upright)	0 2				
Nominal diame	eter and nominal pressure					
DN 25	PN 10/16/25/40	Z	J 0 A			
DN 40	PN 63/100/160	Z	JOB			
DN 40	PN 10/16/25/40 PN 63/100	Z	JOC			
	PN 160	z	JOE			
• DN 50	PN 10/16/25/40	A	111			
	PN 100	В				
• DN 80	PN 10/16/25/40	D				
	PN 100	E				
• DN 100	PN 10/16	G				
	PN 25/40	Н				
1 inch	class 150	Z	J 6 A			
	class 300 class 400/600	Z	J 6 B			
	class 400/600 class 900/1500	Z Z	J 6 C			
1½ inch	class 150	z	J 6 E			
	class 300	Z	J 6 F			
	class 400/600	Z	J 6 G			
	class 900/1500	Z	J 6 H			
• 2 inch	Class 150	L				
	Class 300	M				
	Class 400/600	N P				
	Class 900/1500					
• 3 inch	Class 150 Class 300	Q R				
	Class 500 Class 600	S				
• 4 inch	Class 150	T				
- <del>-</del> IIIOI1	Class 150 Class 300	Ů				
	Class 400	v				
JIS DN 50	10 K 316L	Z	J 7 A			
	20 K 316L	Z	J 7 B			
JIS DN 80	10 K 316L	Z	J 7 C			
Smooth cooling	20 K 316L surface to DIN 1092-01, form B1	Z	J 7 D			
	ME B16.5 125 250 AA or RFSF					
Other version		z	J 1 Y			
Add Order cod	e and plain text:		٠, ١			
Nominal diame	ter:; Nominal pressure:					

Selection and Ordering data	Article No. Ord. code
Diaphragm seal	7MF4910-
Directly fitted to a pressure transmitter SITRANS P for pressure 7MF2033; 7MF403 and 7MF423 together with Order code "V01" (Negative pressure service) and 7MF802 1); must be ordered separately	
Wetted parts materials	
• Stainless steel 316L	
- without coating	A
- with PTFE coating	E 0
- with ECTFE coating <sup>2) 3)</sup>	F
- with PFA coating <sup>3)</sup> • Monel 400, mat. No. 2.4360	D G
• Hastelloy C276, mat. No. 2.4819	J
• Hastelloy C4, mat. No. 2.4602	Ü
• Hastelloy C22, mat. No. 2.4602	v o
• Tantalum	K
<ul> <li>Titanium, mat. No. (max. 150 °C (302 °F))</li> </ul>	L 0
<ul> <li>Nickel 201 (max. 260 °C (500 °F))</li> </ul>	M 0
<ul> <li>Duplex 2205, WNr. 1.4462</li> </ul>	Q
<ul> <li>Stainless steel 316L, gold plated, thickness approx. 25 μm</li> </ul>	S 0
Tube length  • Without tube	0
Thin out table	
Other version: Add Order code and plain text: Wetted parts materials:, Tube length:	Z 8 K 1 Y

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

# Diaphragm seals of flange design mounted directly on transmitter

Selection and Ordering data		Article	No. Ord.	code
Diaphragm seal		7 M F 4	910-	
Directly fitted to a pressure transITRANS P for pressure 7MF207MF403 and 7MF423 to code "V01" (Negative pressure 7MF802 1); must be ordered	033; gether with Order			Ï
Customer-specific tubus leng Specify customer-specific leng Order Code	•			
• Wetted parts materials: Stainle Range 20 50 mm (0.79 1.97")	Standard length 50 mm (1.97")	<b>A</b> 1		
51 100 mm (2.01 3.94") 101 150 mm (3.98 5.91") 151 200 mm (5.94 7.87") 201 250 mm (7.91 9.84")	100 mm (3.94") 150 mm (5.91") 200 mm (7.87") 250 mm (9.84")	A 2 A 3 A 4 A 5		
Wetted parts materials: Stainle with ECTFE				
Range  20 50 mm (0.79 1.97") 51 100 mm (2.01 3.94") 101 150 mm (3.98 5.91") 151 200 mm (5.94 7.87") 201 250 mm (7.91 9.84")  • Wetted parts materials: Stainle	50 mm (1.97") 100 mm (3.94") 150 mm (5.91") 200 mm (7.87") 250 mm (9.84")	F 1 F 2 F 3 F 4		
PFA Range	Standard length			
20 50 mm (0.79 1.97") 51 100 mm (2.01 3.94") 101 150 mm (3.98 5.91") 151 200 mm (5.94 7.87") 201 250 mm (7.91 9.84")	50 mm (1.97") 100 mm (3.94") 150 mm (5.91") 200 mm (7.87") 250 mm (9.84")	D 1 D 2 D 3 D 4 D 5		
• Wetted parts materials: Monel Range	400   Standard length			
20 50 mm (0.79 1.97") 51 100 mm (2.01 3.94") 101 150 mm (3.98 5.91") 151 200 mm (5.94 7.87")	50 mm (1.97") 100 mm (3.94") 150 mm (5.91") 200 mm (7.87")	G 1 G 2 G 3 G 4	2	
• Wetted parts materials: Hastel Range	loy C276   Standard length			
20 50 mm (0.79 1.97") 51 100 mm (2.01 3.94") 101 150 mm (3.98 5.91") 151 200 mm (5.94 7.87")	50 mm (1.97") 100 mm (3.94") 150 mm (5.91") 200 mm (7.87")	J 1 J 2 J 3 J 4		
• Wetted parts materials: Tantale Range	um   Standard length			
20 50 mm (0.79 1.97") 51 100 mm (2.01 3.94") 101 150 mm (3.98 5.91") 151 200 mm (5.94 7.87")	50 mm (1.97") 100 mm (3.94") 150 mm (5.91") 200 mm (7.87")	K 1 K 2 K 3 K 4	2	
Filling liquid  • Silicone oil M5  • Silicone oil M50  • High-temperature oil  • Halocarbon oil (for measuring  • Food oil (FDA listed)	3 O <sub>2</sub> ) <sup>4)</sup>		1 2 3 4 7	44 V
Other version Add Order code and plain text Filling liquid:	:		9 1	И1 Ү

	dd Order code and plain text: ling liquid:				
1)	1) With 7MF802 and the measuring cells Q, S, T and U also order negative				
2)	pressure service.				

ag	m seals of flange design mounted direc	tly on transmitte
	Selection and Ordering data	Order code
Т	Further designs	
	Please add "-Z" to Article No. and specify Order code.	
	Customer-specific tubus length	Y44
	Select range, enter desired length in plain text (No entry = standard length)	
	Spark arrestor With spark arrestor for mounting on zone 0 (including documentation) for transmitters for gauge pressure and absolute pressure	A01
	Remote seal nameplate Attached out of stainless steel, contains MLFB and order number of the remote seal	B20
	Oil- and grease-free cleaned version	C10
	Oil- and grease-free cleaned and packed version, not for oxygen application, only in conjunction with halocarbon oil fill fluid, certified by certificate acc. to EN 10204-2.2	
	Quality Inspection Certificate (5-point characteristic curve test) according to IEC 60770-2	C11
	Inspection certificate to EN 10204, section 3.1	C12
	2.2 Certificate of FDA approval of fill oil Only in conjunction with "Food-grade oil" fill liquid (FDA listed)"	C17
	Functional safety certificate ("SIL 2") to IEC 61508	C20
	(Only in conjunction with the Order code "C20" in the case of SITRANS P DSIII transmitter)	
	Functional safety certificate ("SIL 2/3") to IEC 61508	C23
	(Only in conjunction with the Order code "C23" in the case of SITRANS P DSIII transmitter)	
	Certification acc. to NACE MR-0175 Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stainless steel 1.4404/316L and Hastelloy C276)	D07
	Certification acc. to NACE MR-0103 Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stainless steel 1.4404/316L and Hastelloy C276)	D08
	Oil- and grease-free cleaned version	E10
	Oil- and grease-free cleaned and packed version, only for oxygen application, only inert fill fluid may be used. Max. temperature: 60 °C (140 °F), max. pressure 50 bar (725 psi), only in connection with halocarbon oil, certified by certificate acc. to EN 10204-2.2	
	<b>Epoxy painting</b> Not possible with negative pressure service	E15
	Color: transparent, coverage: front and rear of the remote seal, capillary(ies) or connecting tube, process connection of the transmitter. With transmitters 7MF40 and 7MF42, only possible with process connection G½B according to EN 837-1.	

Por vacuum on request.
 Only for use in non-hazardous atmospheres.
 Oil- and grease- free cleaning to DIN 25410, level 2 and packaging included in the scope of delivery. Refer to "Further designs" C10 and E10.

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

# Diaphragm seals of flange design mounted directly on transmitter

Selection and Ordering data	Order code
Further designs	Order code
Please add "-Z" to Article No. and specify Order code.	
Sealing surface smooth, form B2 or RFSF (Stainless steel diaphragm) previously DIN 2501, form E	J11
Sealing surface groove, EN 1092-1, form D instead of sealing surface B1 (only for wetted parts made of stainless steel 316L)	J14
Sealing surface with spring according to EN 1092-1, form C, (previously DIN 2512, form F) in stainless steel 316L	
DN 25	J30
DN 40	J31
DN 50 DN 80	J32 J33
DN 100	J34
DN 125	J35
Sealing surface with male face according to EN 1092-1, form E (previously DIN 2512, form V13) in stainless steel 316L	
DN 25	J40
DN 40	J41
DN 50 DN 80	J42 J43
DN 100	J43 J44
DN 125	J45
Sealing surface with female face according to EN 1092-1, form F (previously DIN 2512, form R13) in stainless steel 316L	
DN 25	J50
DN 40	J51
DN 50	J52
DN 80 DN 100	J53 J54
DN 125	J55
Sealing surface B1 or	J12
ASME B16.5 RF 125 250 AA	012
Instead of sealing surface B2 and RFSF (Only for wetted parts in Hastelloy C276 (2.4819), Tantal and Duplex 2205 (1.4462) and for sizes 2", 3", DN 50 and DN 80)	
Sealing surface RJF (groove, previously RTJ) ASME B16.5	J24
instead of sealing surface ASME B16.5 RF 125 250 AA (only for wetted parts made of stainless steel 316L)	

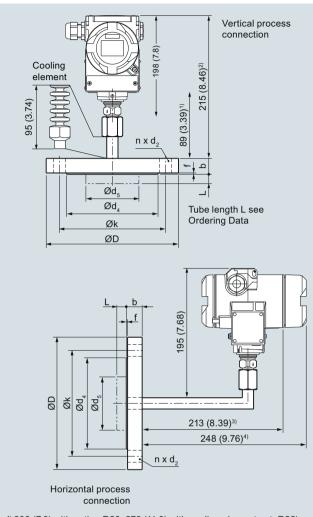
Selection and Ordering data	Order code
Further designs	
Please add "-Z" to Article No. and specify Order code.	
Elongated pipe 200 mm instead of 89 mm, max. medium temperature 300 °C, observe the maximum permissible media temperature of the filling liquid.	R20
Elongated pipe elbow 200 mm instead of 130 mm, max. medium temperature 300 °C, observe the maximum permissible media temperature of the filling liquid.	R21
<b>Cooling element</b> max. medium temperature 300 °C, observe the maximum permissible media temperature of the filling liquid.	R22
Negative pressure service	
for use in low-pressure range for transmitters for • gauge and absolute pressure from the pressure series	V01
Extended negative pressure service	
for use in low-pressure range for transmitters for • gauge and absolute pressure from the pressure series	V51

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Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

### Diaphragm seals of flange design mounted directly on transmitter

## Dimensional drawings



- <sup>1)</sup> 200 (7.9) with option R20, 278 (11.0) with cooling element opt. R22)
- <sup>2)</sup> 324 (12.8) with option R20, 326 (12.9) with cooling element opt. R22) <sup>3)</sup> 283 (11.14) with option R21
- <sup>4)</sup> 318 (12.52) with option R21

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

#### Connection to EN 1092-1

Nom. diam.	Nom. press.	b	D	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub>	f	k	n
		mm	mm	mm	mm	mm	mm	mm	mm	
DN 50	PN 10/16/ 25/40	20	165	18	102	48.3	45 <sup>1)</sup>	2	125	4
	PN 100	28	195	26	102	48.3	45 <sup>1)</sup>	2	145	4
DN 80	PN 10/16/ 25/40	24	200	18	138	76	72 <sup>1)</sup>	2	160	8
	PN 100	32	230	26	138	76	72 <sup>1)</sup>	2	180	8
DN 100	PN 10/16	20	220	18	158	94	89-2	2	180	8
	PN 25/40	24	235	22	162	94	89	2	190	8

#### Connection to ASME B16.5

Nom. diam.	Nom. press.	b	D	d <sub>2</sub>	d <sub>4</sub>	<b>d</b> <sub>5</sub>	d <sub>M</sub>	f	k	n
	lb/	mm	mm	mm	mm	mm	mm	mm	mm	
	sq.in.	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	
2 inch	150	19.5	150	20	92	48.3	45 <sup>1)</sup>	2	120.5	4
		(0.77)	(5.91)	(0.79)	(3.62)	(1.9)	$(1.77)^{1)}$	(80.0)	(4.74)	
	300	22.7	165	20	92	48.3	45 <sup>1)</sup>	2	127	8
		(0.89)	(6.5)	(0.79)	(3.62)	(1.9)	$(1.77)^{1)}$	(80.0)	(5)	
	400/	32.4	165	20	92	48.3	45 <sup>1)</sup>	7	127	8
	600	(1.28)	(6.5)	(0.79)	(3.62)	(1.9)	$(1.77)^{1)}$	(0.28)	(5)	
	900/	45.1	215	26	92	48.3	45 <sup>1)</sup>	7	165	8
	1500	(1.78)	(8.46)	(1.02)	(3.62)	(1.9)	$(1.77)^{1)}$	(0.28)	(6.5)	
3 inch	150	24.3	190	20	127	76	72 <sup>2)</sup>	2	152.5	4
		(0.96)	(7.48)	(0.79)	(5)	(3)	$(2.83)^{2)}$	(80.0)	(6)	
	300	29	210	22	127	76	72 <sup>2)</sup>	2	168.5	8
		(1.14)	(8.27)	(0.87)	(5)	(3)	$(2.83)^{2)}$	(80.0)	(6.63)	
	600	38.8	210	22	127	76	72 <sup>2)</sup>	7	168.5	8
		(1.53)	(8.27)	(0.87)	(5)	(3)	$(2.83)^{2)}$	(0.28)	(6.63)	
4 inch	150	24.3	230	20	158	94	89	2	190.5	8
		(0.96)	(9.06)	(0.79)	(6.22)	(3.69)	(3.50)	(80.0)	(7.5)	
	300	32.2	255	22	158	94	89	2	200	8
		(1.27)	(10.04)	(0.79)	(6.22)	(3.69)	(3.50)	(80.0)	(7.87)	
	400	42	255	26	158	94	89	7	200	8
		(1.65)	(10.04)	(1.02)	(6.22)	(3.69)	(3.50)	(0.28)	(7.87)	
4 inch	300	24.3 (0.96) 32.2 (1.27) 42	230 (9.06) 255 (10.04) 255	20 (0.79) 22 (0.79) 26	158 (6.22) 158 (6.22) 158	94 (3.69) 94 (3.69) 94	89 (3.50) 89 (3.50) 89	2 (0.08) 2 (0.08) 7	190.5 (7.5) 200 (7.87) 200	)

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

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

- $^{1)}$  59 mm = 2.32 inch with tube length L = 0
- 2) 89 mm =  $3\frac{1}{2}$  inch with tube length L = 0

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

### Diaphragm seals of flange design mounted directly and with capillary

#### Overview



Diaphragm seals of screwed design for pressure transmitters for differential pressure, fixed connection and with flexible capillary

#### Technical specifications

#### Diaphragm seals of screwed design for pressure transmitters for differential pressure, fixed connection and with flexible capillary

Nominal	diameter

- DN 50
- DN 80
- DN 100
- 2 inch
- 3 inch
- 4 inch

#### Sealing surface

- For stainless steel, mat. No. 1.4404/316L
- For the other materials

#### Materials

- Main body
- Wetted parts

Nominal pressure

PN 10/16/25/40. PN 100

PN 10/16/25/40

PN 10/16, PN 25/40

Class 150, class 300, class 400/600, class 900/1500

Class 150, class 300

Class 150, class 300

To EN 1092-1, form B1 or ASME B16.5 RF 125 ... 250 AA

To EN 1092-1, form B2 or ASME B16.5 RFSF

Stainless steel mat. no. 1.4404/316L

Stainless steel mat. no. 1.4404/316L

- Without coating
- PTFE coating
- ECTFE coating (for vacuum on request)
- PFA coating

Monel 400, mat. No. 2.4360 Hastelloy C276, mat. No. 2.4819

Hastelloy C4, mat. No. 2.4602

Hastelloy C22, W.-Nr. 2.4602

Tantalum

Titanium, W.-Nr. 3.7035

Nickel 201

Duplex 2205, mat. no. 1.4462

Stainless steel 316L, gold plated, thickness approx. 25 µm

Stainless steel, mat. No. 1.4571/316Ti

Spiral protective tube made of stainless steel, mat.

No. 1.4404/316L

Sealing material in the process

• For pressure transmitters, absolute pressure transmitters and low-

For other applications

Maximum pressure

Tube length

Capillary

• Length

• Minimum bending radius

Filling liquid

temperature

Weight

• Internal diameter

Max. recommended process

Permissible ambient temperature

Copper

pressure applications

See above and the technical data

of the pressure transmitter Without tube

50 mm (1.97 inch) 100 mm (3.94 inch) 150 mm (5.91 inch) 200 mm (7.87 inch)

Max. 10 m (32.8 ft), longer

lengths on request 2 mm (0.079 inch)

150 mm (5.9 inch) Silicone oil M5 Silicone oil M50 High-temperature oil

Halocarbon oil (for measuring O2)

Food oil (FDA listed) 170 °C (338 °F)

Dependent on the pressure transmitter and the filling liquid of the remote seal

More information can be found in the technical data of the pressure transmitters and in the section "Technical data of filling liquid" in

the Technical description to the

Approx. 4 kg (8.82 lb)

#### **Certificate and approvals**

Classification according to pressure equipment directive (DGRL 2014/68/EU)

For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)

Capillary

Sheath

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

# Diaphragm seals of flange design mounted directly and with capillary

Selection and C	ordering data	Article No. Ord. code
Diaphragm seal		7MF4913-
direct mounting the flanged remote means of capilla SITRANS P for d	e (with tube as option) for to high-pressure side and seal without tube, fitted by ry to low-pressure side of ifferential pressure; I series and P410 (7MF443) 500 (7MF54)	1 B
	rticle No. for the online configu- IA Life Cycle Portal.	
Flange, connec	tion to EN 1092-1	
	er and nominal pressure	
• DN 25	PN 10/16/25/40	Z J 0 A
• DN 40	PN 63/100/160 PN 10/16/25/40 PN 63/100 PN 160	Z J O B Z J O D Z J O D
• DN 50	PN 10/16/25/40 PN 100	A B
• DN 80	PN 10/16/25/40	D
• DN 100	PN 10/16 PN 25/40	G H
Flange, connec	tion to ASME B16.5	
	er and nominal pressure	
<ul><li>1 inch</li><li>1½ inch</li></ul>	Class 150 Class 300 Class 400/600 Class 900/1500 Class 150	Z J 6 A Z J 6 B Z J 6 C Z J 6 C
	Class 300 Class 400/600 Class 900/1500	Z J 6 F Z J 6 G Z J 6 H
• 2 inch	Class 150 Class 300 Class 400/600 Class 900/1500	L M N P
• 3 inch	Class 150 Class 300	Q R
• 4 inch	Class 150 Class 300	T U
Flange acc. to J Nominal diamet	IIS er and nominal pressure	
• JIS DN 50	10 K 316L 20 K 316L	Z J 7 A Z J 7 B
• JIS DN 80	10 K 316L 20 K 316L	Z J 7 C
Other version Add Order code Flange:, Nomi pressure:		Z J 1 Y

Selection and Ordering data	Article No. Ord. code
Diaphragm seal	7MF4913-
Mounting flange (with tube as option) for direct mounting to high-pressure side and flanged remote seal without tube, fitted by means of capillary to low-pressure side of SITRANS P for differential pressure; SITRANS P DS III series and P410 (7MF443) and SITRANS P500 (7MF54)	1===-B
Wetted parts materials  Smooth sealing surface to EN 1092-1, form B1 or B2, or to ASME B16.5 RF 125 250 AA or RFSF  • Stainless steel 316L  - without coating  - with PTFE coating  - with PFA coating <sup>2)</sup> • Monel 400, mat. No. 2.4360  • Hastelloy C276, mat. No. 2.4819  • Hastelloy C27, mat. No. 2.4602  • Hastelloy C22, mat. No. 2.4602  • Tantalum  • Titanium, mat. No. 3.7035 (max. 150 °C (302 °F))  • Nickel 201 (max. 260 °C (500 °F))  • Duplex, mat. no. 1.4462  • Duplex, mat. no. 1.4462, incl. main body  • Stainless steel 316L, gold plated, thickness approx. 25 μm	A E O F D G J V O K L O M O Q R S O

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

## Diaphragm seals of flange design mounted directly and with capillary

Diaphragm seals of flange design mounted directly and v										
Selection and Ordering data		Arti	cle	٩N	Ю.	C	)rd	. С	0	de
Diaphragm seal		7 M	F	4 9	1	3	-			
Mounting flange (with tube as direct mounting to high-pressu flanged remote seal without to means of capillary to low-press SITRANS P for differential press SITRANS P DS III series and Pand SITRANS P500 (7MF54	1=			-		В				
Without tube     Other version:	Tube length (for mounting flange on high-pressure side)  • Without tube Other version: Add Order code and plain text: Wetted parts materials:,							K	1	Y
Customer-specific tubus leng Specify customer-specific leng Order Code										
• Wetted parts materials: Stainles Range 20 50 mm (0.79 1.97") 51 100 mm (2.01 3.94") 101 150 mm (3.98 5.91") 151 200 mm (5.94 7.87") 201 250 mm (7.91 9.84")	ss steel without foil Standard length 50 mm (1.97") 100 mm (3.94") 150 mm (5.91") 200 mm (7.87") 250 mm (9.84")		A A A A	2 3 4						
Wetted parts materials: Stainle with ECTFE Range	ess steel coated   Standard length									
20 50 mm (0.79 1.97") 51 100 mm (2.01 3.94") 101 150 mm (3.98 5.91") 151 200 mm (5.94 7.87") 201 250 mm (7.91 9.84")	50 mm (1.97") 100 mm (3.94") 150 mm (5.91") 200 mm (7.87") 250 mm (9.84")		F F F F	2 3 4						
Wetted parts materials: Stainle with PFA	ess steel coated									
Range 20 50 mm (0.79 1.97") 51 100 mm (2.01 3.94") 101 150 mm (3.98 5.91") 151 200 mm (5.94 7.87") 201 250 mm (7.91 9.84")	50 mm (1.97") 100 mm (3.94") 150 mm (5.91") 200 mm (7.87") 250 mm (9.84")		D D D D D	2 3 4						
Wetted parts materials: Monel Range	400 Standard length									
20 50 mm (0.79 1.97") 51 100 mm (2.01 3.94") 101 150 mm (3.98 5.91") 151 200 mm (5.94 7.87")	50 mm (1.97") 100 mm (3.94") 150 mm (5.91") 200 mm (7.87")		G G G	2						
Wetted parts materials: Hastel Range	loy C276 Standard length									
20 50 mm (0.79 1.97") 51 100 mm (2.01 3.94") 101 150 mm (3.98 5.91") 151 200 mm (5.94 7.87")	50 mm (1.97") 100 mm (3.94") 150 mm (5.91") 200 mm (7.87")		J	2						
Wetted parts materials: Tantali Range	I um   Standard length									
20 50 mm (0.79 1.97") 51 100 mm (2.01 3.94") 101 150 mm (3.98 5.91") 151 200 mm (5.94 7.87")	50 mm (1.97") 100 mm (3.94") 150 mm (5.91") 200 mm (7.87")		K K K	2						

Selection and Ordering data	Article No. Ord. code
Diaphragm seal	7MF4913-
Mounting flange (with tube as option) for direct mounting to high-pressure side and flanged remote seal without tube, fitted by means of capillary to low-pressure side of SITRANS P for differential pressure; SITRANS P DS III series and P410 (7MF443) and SITRANS P500 (7MF54)	1===B
Filling liquid  Silicone oil M5  Silicone oil M50  High-temperature oil Halocarbon oil (for measuring O <sub>2</sub> ) <sup>3)</sup> Food oil (FDA listed) Other version Add Order code and plain text: Filling liquid:  Length of capillary <sup>4</sup> )  1.0 m (3.28 ft) 1.6 m (5.25 ft) 2.5 m (8.20 ft) 4.0 m (13.1 ft) 6.0 m (19.7 ft)	1 2 3 4 7 9 M1Y
• 10.0 m (32.8 ft)	8
Special lengths for capillaries	
• 2.0 m (6.56 ft) • 3.0 m (9.84 ft) • 5.0 m (16.40 ft) • 7.0 m (23.97 ft) • 9.0 m (29.53 ft)	9 N1C 9 N1E 9 N1G 9 N1J 9 N1L

<sup>1)</sup> For vacuum on request.

<sup>2)</sup> Only for use in non-hazardous atmospheres.

Oil- and grease- free cleaning to DIN 25410, level 2 and packaging included in the scope of delivery. Refer to "Further designs" C10 and E10.

<sup>4)</sup> Max. capillary length, see section "Technical description".

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

## Diaphragm seals of flange design mounted directly and with capillary

		m come of mange accign meanion ancomy	<u> </u>
Selection and Ordering data	Order code	Selection and Ordering data	Order code
Further designs		Further designs	
Please add "-Z" to Article No. and specify Order code.		Please add " <b>-Z</b> " to Article No. and specify Order code.	
Customer-specific tubus length	Y44	Sealing surface smooth, form B2 or RFSF	J11
Select range, enter desired length in plain text (No entry = standard length)		(Stainless steel diaphragm) previously DIN 2501, form E Sealing surface groove, EN 1092-1, form D	J14
Spark arrestor With spark arrestor for mounting on zone 0 (including documentation)	A02	instead of sealing surface B1 (only for wetted parts made of stainless steel 316L)	
Remote seal nameplate	B20	Sealing surface with spring according to EN 1092-1, form C, (previously DIN 2512,	
Attached out of stainless steel, contains MLFB and order number of the remote seal		form F) in stainless steel 316L DN 25	J30
Oil- and grease-free cleaned version	C10	DN 40	J31
Oil- and grease-free cleaned and packed ver-		DN 50	J32
sion, not for oxygen application, only in conjunc-		DN 80 DN 100	J33 J34
tion with halocarbon oil fill fluid, certified by certificate acc. to EN 10204-2.2		DN 100 DN 125	J35
Quality Inspection Certificate (5-point charac-	C11		000
teristic curve test) according to IEC 60770-2		Sealing surface with male face according to EN 1092-1, form E (previously DIN 2512, form V13) in stainless steel 316L	
Inspection certificate	C12	DN 25	J40
to EN 10204, section 3.1		DN 40	J41
2.2 Certificate of FDA approval of fill oil	C17	DN 50	J42
Only in conjunction with "Food-grade oil" fill liquid (FDA listed)"		DN 80	J43
· · · · · · · · · · · · · · · · · · ·	C20	DN 100	J44
Functional safety certificate ("SIL 2") to IEC 61508	C20	DN 125  Sealing surface with female face according to	J45
(Only in conjunction with the Order code "C20" in the case of SITRANS P DSIII transmitter)		EN 1092-1, form F (previously DIN 2512, form R13) in stainless steel 316L	
Functional safety certificate ("SIL 2/3") to IEC 61508	C23	DN 25 DN 40	J50 J51
(Only in conjunction with the Order code "C23"		DN 50	J52
in the case of SITRANS P DSIII transmitter)		DN 80	J53
Certification acc. to NACE MR-0175	D07	DN 100	J54
Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stainless steel 1.4404/316L and Hastelloy C276)		DN 125 Sealing surface B1 or	J55 J12
• • •	Doo	ASME B16.5 RF 125 250 AA	V
Certification acc. to NACE MR-0103 Includes acceptance test certificate 3.1 accor-	D08	Instead of sealing surface B2 and RFSF (Only for wetted parts in Hastelloy C276	
ding to EN 10204 (only for wetted parts made of stainless steel 1.4404/316L and Hastelloy C276)		(2.4819), Tantal and Duplex 2205 (1.4462) and for sizes 2", 3", DN 50 and DN 80)	
Oil- and grease-free cleaned version	E10	Sealing surface RJF (groove, previously RTJ)	J24
Oil- and grease-free cleaned and packed version, only for oxygen application, only inert fill fluid may be used. Max. temperature: 60 °C (140 °F), max. pressure 50 bar (725 psi), only in connection with halocarbon oil, certified by certificate acc. to EN 10204-2.2		ASME B16.5 instead of sealing surface ASME B16.5 RF 125 250 AA (only for wetted parts made of stainless steel 316L)	
Epoxy painting	E15		

Not possible with negative pressure service. Color: transparent, coverage: front and rear of

the remote seal, capillary(ies) or connecting tube, process connection of the transmitter. With transmitters 7MF40... and 7MF42..., only possible with process connection G½B according to EN 837-1.

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

## Diaphragm seals of flange design mounted directly and with capillary

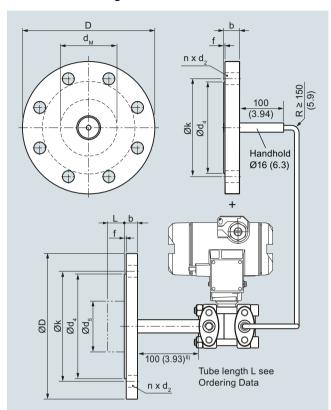
Selection and Ordering data	Order code	Selection and Ordering data	Order code
Further designs		Further designs	
Please add "-Z" to Article No. and specify Order code.		Please add "-Z" to Article No. and specify Order code.	
Radial capillary pipe outlet for one-sided mounting	K01	PVC protective tube over the spiral protective tube of the capillaries	
PE protective tube over the spiral protective tube of the capillaries (color: white)  1.0 m (3.28 ft) 1.6 m (5.25 ft) 2.0 m (6.56 ft) 2.5 m (8.20 ft) 3.0 m (9.84 ft) 4.0 m (13.12 ft) 5.0 m (16.40 ft) 6.0 m (19.69 ft) 7.0 m (22.97 ft)	N20 N21 N22 N23 N24 N25 N26 N27	(color: black)  1.0 m (3.28 ft)  1.6 m (5.25 ft)  2.0 m (6.56 ft)  2.5 m (8.20 ft)  3.0 m (9.84 ft)  4.0 m (13.12 ft)  5.0 m (16.40 ft)  6.0 m (19.69 ft)  7.0 m (22.97 ft)  8.0 m (26.25 ft)  9.0 m (32.81 ft)	N60 N61 N62 N63 N64 N65 N66 N67 N68 N69 N70
8.0 m (26.25 ft) 9.0 m (29.53 ft) 10.0 m (32.81 ft) PTFE protective tube over the spiral protective tube of the capillaries (color: transparent) 1.0 m (3.28 ft)	N29 N30 N31	Elongated pipe, distance from transmitter process flange to flange is 150 mm instead of 100 mm, max. medium temperature 250 °C, observe the maximum permissible media temperature of the filling liquid.  Elongated pipe, distance from transmitter	R15
1.6 m (5.25 ft) 2.0 m (6.56 ft) 2.5 m (8.20 ft) 3.0 m (9.84 ft)	N41 N42 N43 N44	process flange to flange is 100 mm instead of 100 mm, max. medium temperature 300 °C, observe the maximum permissible media temperature of the filling liquid.	
4.0 m (13.12 ft) 5.0 m (16.40 ft) 6.0 m (19.69 ft) 7.0 m (22.97 ft) 8.0 m (26.25 ft)	N45 N46 N47 N48 N49	Negative pressure service for use in low-pressure range for transmitters for     differential pressure  Extended negative pressure service for use in low-pressure range for transmitters for     differential pressure	V03
9.0 m (29.53 ft) 10.0 m (32.81 ft)	N50 N51	- unicionilai pressure	100

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Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

### Diaphragm seals of flange design mounted directly and with capillary

## Dimensional drawings



Diaphragm seals of screwed design with flexible capillary, fixed connection, for connection to a SITRANS P pressure transmitter for differential pressure, dimensions in mm (inch)

#### Connection to EN 1092-1

Nom. diam.	Nom. press.	b	D	d <sub>2</sub>	d <sub>4</sub>	<b>d</b> <sub>5</sub>	d <sub>M</sub>	f	k	n
		mm	mm	mm	mm	mm	mm	mm	mm	
DN 50	PN 10/16/ 25/40	20	165	18	102	48.3	45 <sup>1)</sup>	2	125	4
	PN 100	28	195	26	102	48.3	45 <sup>1)</sup>	2	145	4
DN 80	PN 10/16/ 25/40	24	200	18	138	76	72 <sup>2)</sup>	2	160	8
	PN 100	32	230	26	138	76	72 <sup>2)</sup>	2	180	8
DN 100	PN 10/16	20	220	18	158	94	89	2	180	8
	PN 25/40	24	235	22	162	94	89	2	190	8

#### Connection to ASME B16.5

Nom. diam.	Nom. press.	b	D	d <sub>2</sub>	d <sub>4</sub>	<b>d</b> <sub>5</sub>	d <sub>M</sub>	f	k	n
	lb/	mm	mm	mm	mm	mm	mm	mm	mm	
	sq.in.	(inch)	(inch)	(inch) (inch)		(inch) (inch)		(inch)	(inch)	
2 inch	150	19.5	150	20	92	48.3	45 <sup>1)</sup>	2	120.5	4
		(0.77)	(5.91)	(0.79)	(3.62)	(1.9)	$(1.77)^{1)}$	(0.08)	(4.74)	
	300	22.7	165	20	92	48.3	45 <sup>1)</sup>	2	127	8
		(0.89)	(6.5)	(0.79)	(3.62)	(1.9)	$(1.77)^{1)}$	(0.08)	(5)	
	400/	32.4	165	20	92	48.3	45 <sup>1)</sup>	7	127	8
	600	(1.28)	(6.5)	(0.79)	(3.62)	(1.9)	$(1.77)^{1)}$	(0.28)	(5)	
	900/	45.1	215	26	92	48.3	45 <sup>1)</sup>	7	165	8
	1500	(1.78)	(8.46)	(1.02)	(3.62)	(1.9)	$(1.77)^{1)}$	(0.28)	(6.5)	
3 inch	150	24.3	190	20	127	76	72 <sup>2)</sup>	2	152.5	4
		(0.96)	(7.48)	(0.79)	(5)	(3)	$(2.83)^{2)}$	(0.08)	(6)	
	300	29	210	22	127	76	72 <sup>2)</sup>	2	168.5	8
		(1.14)	(8.27)	(0.87)	(5)	(3)	$(2.83)^{2)}$	(0.08)	(6.63)	
4 inch	150	24.3	230	20	158	94	89	2	190.5	8
		(0.96)	(9.06)	(0.79)	(6.22)	(3.69)	(3.50)	(0.08)	(7.5)	
	300	32.2	255	22	158	94	89	2	200	8
		(1.27)	(10.04)	(0.79)	(6.22)	(3.69)	(3.50)	(80.0)	(7.87)	

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

 $d_{M}$ : Effective diaphragm diameter

 $<sup>^{1)}</sup>$  59 mm = 2.32 inch with tube length L = 0

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

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

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

#### Overview



Diaphragm seal, screwed gland design with inside diaphragm for gauge, absolute and differential pressure for direct mounting



Process connection: open measurement flange

### Technical specifications

### Diaphragm seal, screwed gland with inside diaphragm

Process connection

- Male thread G½B to EN 837-1
- External thread ½-14" NPT-M
- . .
- open measurement flange
- DN 25
- 1 inch

Sealing surface for open measurement flange

 For stainless steel, mat. no. 1.4404/316L

#### Materials

- Lower section (in the case of process connection thread)
- Diaphragm

Nominal pressure

PN 100, PN 250

PN 100, PN 250

PN 10 ... PN 40

Class 150, class 300

To EN 1092-1, form B1 or ASME B16.5 RF 125 ... 250 AA

Stainless steel, Mat. no. 1.4404/316L

Stainless steel, Mat. no. 1.4404/316L

- No coating
- With PTFE coating

Monel 400, mat. no. 2.4360

Hastelloy C276, mat. no. 2.4819

Hastelloy C4, mat. no. 2.4602

Tantal

Stainless steel 316L, gold plated, thickness approx. 25 µm

 Top section (process connection in the case of an open measurement flange)
 Stainless 
- Capillary
- Sealing material on the process connection
- Sealing material between top and bottom section

Stainless steel, mat. no. 1.4404/316L

Stainless steel, mat. no.1.4404/316L

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

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

#### Capillary

- Length
- Internal diameter
- Minimum bending radius
- Sheath

Filling liquid

Max. recommended process temperature

Permissible ambient temperature

Max. 10 m (32.8 ft)

2 mm (0.079 inch)

150 mm (5.9 inch)

Stainless steel protective tube, mat. No. 1.4301/304

- Silicone oil M5
- Silicone oil M50
- High-temperature oil
- Halocarbon oil (for measuring O<sub>2</sub>)
- Food oil (FDA listed)

170 °C (338 °F)

Dependent on the pressure transmitter and the filling liquid of the remote seal

More information can be found in the technical specifications of the pressure transmitters and in the section "Technical data of filling liquid" in the introduction to the remote seals

Approx. 1.5 kg (3.3 lb)

### Weight

#### **Certificates and approvals**

Classification according to pressure equipment directive (PED 2014/68/EU)

For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)

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Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

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

Selection and	Ordering data			o. Ord. Code	Selection and Ordering data	Article No		
Remote seal,	screwed gland	with inside	7 11 11 11 11	5. G.a. Gaa	Remote seal, screwed gland with inside	7 11 11 01 0 1 1		. 0040
diaphragm Mounted on S for	ITRANS P pres	sure transmitter	7MF49	30-	diaphragm  Mounted on SITRANS P pressure transmitter for	7 M F 4 9	30-	
gauge pressure     7MF2033; 7MF403 and SITRANS P300,     7MF802     absolute pressure     7MF423 and SITRANS P300, 7MF802 In conjunction with Order code "V01" (vacuum-proof design)				• gauge pressure 7MF2033; 7MF403 and SITRANS P300, 7MF802 • absolute pressure 7MF423 and SITRANS P300, 7MF802 In conjunction with Order code "V01" (vacuum-proof design)				
Mounted on either side of SITRANS P pressure transmitter for		7 M F 4 9	3 3 -	Mounted on either side of SITRANS P pressure transmitter for	7 M F 4 9 3 3 -			
<ul> <li>differential p and 7MF54</li> </ul>		3; 7MF443			<ul> <li>differential pressure 7MF243; 7MF443 and 7MF54</li> </ul>			
	Article No. for the PIA Life Cycle F	ne online configu- Portal.		-=B ===	Sealing material between top and bottom		- ■ B	
	ole hole 1x 1/8 NPT connection 316		1 2		FKM (standard with diaphragm and 316L process connection)  PTFE (standard with custom material with max.	1 2		
Other version, Order code an Version:	d plain text:		9	H 1 Y	260 °C (500 °F))  Metal C- circlip, silver coated for > 260 °C (500 °F)) incl. high temperature-resistant screwed gland	3		
Process conn Lower flange material	ection version Process connection	Nominal diam- eter and pres- sure level		Ш	Filling liquid • Silicone oil M5 • Silicone oil M50	1 2		
316L/1.4404 316L/1.4404 316L/1.4404	Thread Thread Thread	G½B/PN100 G½B/PN250 ½NPT-M/PN100	B C E	Ш	<ul> <li>High-temperature oil</li> <li>Halocarbon oil (for measuring O<sub>2</sub>)<sup>2)</sup></li> <li>Food oil (FDA-listed)</li> </ul>	3 4 7		
316L/1.4404 316L/1.4404 316L/1.4404	Thread Thread Thread	½NPT-M/PN250 ½NPT-F/PN100 ½NPT-F/PN250	F H J		Other version, add Order code and plain text: filling liquid:	9		M 1 Y
316L/1.4404 316L/1.4404	open measure ment flange open measure ment flange	PN 10 40	N P		<ul> <li>Capillary length<sup>3)</sup></li> <li>none, direct mounting</li> <li>none, direct mounting with cooling element (not in conjunction with transmitter for differen-</li> </ul>		0	
316L/1.4404 PTFE <sup>1)</sup>	open measure ment flange Thread	- 1"/Class 300 G½B/PN100	Q T		tial pressure)  1.0 m (3.28 ft)  1.6 m (5.25 ft)		2	
PTFE <sup>1)</sup>	open measure ment flange open measure	- DN 25/ PN 10 40	ů v		• 2.5 m (8.20 ft) • 4.0 m (13.1 ft) • 6.0 m (19.7 ft)		4 5 6	
PTFE <sup>1)</sup>	ment flange open measure ment flange		w		<ul> <li>8.0 m (26.25 ft)</li> <li>10.0 m (32.8 ft)</li> <li>Special lengths for capillaries</li> </ul>		7 8	
-	d plain text: material:; ection:; eter/pressure lev	əl:	Z	J 1 Y	• 2.0 m (6.56 ft) • 3.0 m (9.84 ft) • 5.0 m (16.40 ft) • 7.0 m (23.97 ft) • 9.0 m (29.53 ft)		9 9 9 9	N 1 C N 1 E N 1 G N 1 J N 1 L
Monel 400 Hastelloy C276 Hastelloy C4 Tantalum	316L steel with PTFE		A E G J U K S		<ol> <li>Not in combination with flushing holes. Not together with the options for negative pres V03) and extended negative pressure service</li> <li>Oil- and grease- free cleaning to DIN 25410, leve included in the scope of delivery. Refer to "Furthe</li> <li>Max. capillary length, see section "Technical descriptions"</li> </ol>	(V51 and V I 2 and pack r designs" C	e (V0 /53). kaging	)1 and

Other version, add Order code and plain text: Diaphragm material: ...

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

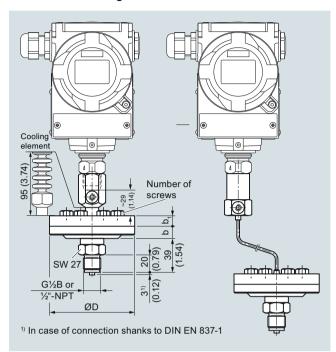
## Diaphragm seal, screwed design, mounted directly or/and with capillary

Diaphragm seal, screwed design, mou	Order code		Order code
Further designs	Order code	Selection and Ordering data  Further designs	Order code
Add "-Z" to Article No. and specify Order code.		Add "-Z" to Article No. and specify Order code.	
Remote seal nameplate	B20	PE protective tube	
Attached out of stainless steel, contains MLFB and order number of the remote seal	B20	over the spiral protective tube of the capillaries (color: white)	
Oil- and grease-free cleaned version	C10	1.0 m (3.28 ft)	N20
Oil- and grease-free cleaned and packed version, not for oxygen application, only in conjunction with halocarbon oil fill fluid, certified by certificate acc. to EN 10204-2.2		1.6 m (5.25 ft) 2.0 m (6.56 ft) 2.5 m (8.20 ft)	N21 N22 N23
Quality Inspection Certificate (5-point characteristic curve test) according to IEC 60770-2	C11	3.0 m (9.84 ft) 4.0 m (13.12 ft)	N24 N25
Inspection certificate to EN 10204, section 3.1	C12	5.0 m (16.40 ft) 6.0 m (19.69 ft)	N26 N27
2.2 Certificate of FDA approval of fill oil Only in conjunction with "Food-grade oil" fill liquid (FDA listed)"	C17	7.0 m (22.97 ft) 8.0 m (26.25 ft) 9.0 m (29.53 ft)	N28 N29 N30
Functional safety certificate ("SIL 2") to IEC 61508  (Only in conjunction with the Order code "C20"	C20	10.0 m (32.81 ft)  PTFE protective tube	N31
in the case of SITRANS P DSIII transmitter)	Coo	over the spiral protective tube of the capillaries (color: transparent)	NAO
Functional safety certificate ("SIL 2/3") to IEC 61508	C23	1.0 m (3.28 ft) 1.6 m (5.25 ft)	N40 N41
(Only in conjunction with the Order code "C23" in the case of SITRANS P DSIII transmitter)		2.0 m (6.56 ft)	N42
Certification acc. to NACE MR-0175	D07	2.5 m (8.20 ft) 3.0 m (9.84 ft)	N43 N44
Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stainless steel 1.4404/316L and Hastelloy C276)		4.0 m (13.12 ft) 5.0 m (16.40 ft)	N45 N46
Certification acc. to NACE MR-0103	D08	6.0 m (19.69 ft)	N47
Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of		7.0 m (22.97 ft)	N48
stainless steel 1.4404/316L and Hastelloy C276)		8.0 m (26.25 ft) 9.0 m (29.53 ft)	N49 N50
Oil- and grease-free cleaned version	E10	10.0 m (32.81 ft)	N51
Oil- and grease-free cleaned and packed version, only for oxygen application, only inert fill fluid may be used. Max. temperature: 60 °C (140 °F), max. pressure 50 bar (725 psi), only in connection with halocarbon oil, certified by certificate acc. to EN 10204-2.2		PVC protective tube over the spiral protective tube of the capillaries (color: black)  1.0 m (3.28 ft) 1.6 m (5.25 ft)	N60 N61
<b>Epoxy painting</b> Not possible with negative pressure service.	E15	2.0 m (6.56 ft)	N62
Color: transparent, coverage: front and rear of		2.5 m (8.20 ft) 3.0 m (9.84 ft)	N63 N64
the remote seal, capillary(ies) or connecting tube, process connection of the transmitter.		4.0 m (13.12 ft)	N65
With transmitters 7MF40 and 7MF42, only possible with process connection G½B according to EN 837-1.		5.0 m (16.40 ft) 6.0 m (19.69 ft) 7.0 m (22.97 ft)	N66 N67 N68
One-sided mounting on differential pressure		_ 7.0 m (22.97 ft) 8.0 m (26.25 ft)	N69
transmitters (only for 7MF4930)		9.0 m (29.53 ft)	N70
on high-pressure side	H10	10.0 m (32.81 ft)	N71
on low-pressure side	H11	Negative pressure service for use in low-pressure range for transmitters for	
Sealing surface groove, EN 1092-1, form D instead of sealing surface B1 (only for wetted parts made of stainless steel 316L)	J14	gauge and absolute pressure from the pressure series	V01
Sealing surface RJF (groove, previously RTJ) ASME B16.5	J24	differential pressure     Extended negative pressure service	V03
instead of sealing surface ASME B16.5 RF 125 250 AA (only for wetted		for use in low-pressure range for transmitters for • gauge and absolute pressure from the pressu-	V51
parts made of stainless steel 316L)		re series  • differential pressure	V53
Sealing surface with spring according to EN 1092-1, form C, (previously DIN 2512, form F) in stainless steel 316L			
DN 25 DN 40	J30 J31		

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

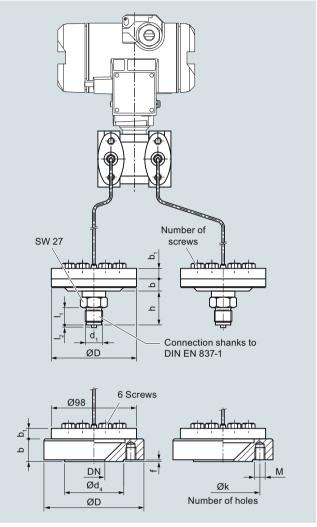
Diaphragm seal, screwed design, mounted directly or/and with capillary

## Dimensional drawings



Diaphragm seal, screwed gland with inside diaphragm, for gauge and absolute pressure, direct and attached directly to the transmitter with with capillaries, dimensions in mm (inch)

Range	D mm	b mm	b <sub>1</sub> mm	Number of screws
up to 100 bar	98	14	16	6
up to 250 bar	98	14	20	12



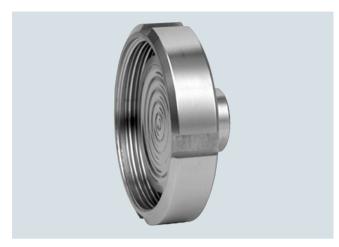
Diaphragm seal, screwed gland with inside diaphragm, for differential pressure, direct and attached directly to the transmitter with with capillaries, dimensions in mm (inch)

Nomi- nal diam- eter	Nominal pressure	D mm	d <sub>4</sub> mm	k mm	M	Number of holes	b mm	b <sub>1</sub> mm	f mm
DN 25	PN 10/16/ 25/40	115	68	85	M12	4	26	12	2
1 inch	150 lb/sq.in	108	50.8	79.2	M12	4	22	12	1.6
1 inch	300 lb/sq.in	124	50.8	88.9	M16	4	22	12	1.6

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

### Quick-release diaphragm seals

### Overview



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



Quick-release diaphragm seals, with clamp connection

Quick-release diaphragm seals are available for the following SITRANS P pressure transmitter series:

- For pressure: P300, DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus
- For differential pressure and flow: P500, DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus
- The quick-release remote seals are common designs in the food industry. Their design means that the measured medium cannot accumulate in dead volumes. The quick-release clamp present on the remote seal means that quick dismounting is possible for cleaning.

### Technical specifications

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

Clamp connection	
- 1½ inch	PN 16
- 2 inch	PN 16
- 2½ inch	PN 16
- 3 inch	PN 10
For differential pressure and flow	
• To DIN 11851 with slotted union nut	
- DN 50	PN 25
- DN 65	PN 25
- DN 80	PN 25
• To DIN 11851 with threaded socket	
- DN 50	PN 25
- DN 65	PN 25
- DN 80	PN 25
Clamp connection	
- 2 inch	PN 16
- 2½ inch	PN 16
- 3 inch	PN 10
Sealing surface	
• For stainless steel, mat. No. 1.4404/316L	To EN 1092-1, form B1 or ASME B 16.5RF 125 250 AA
• For the other materials	To EN 1092-1, form B2 or
	ASME B16.5 RFSF
Materials	Ctainlana ataal 2161
Main body     Wetted rearts	Stainless steel 316L
Wetted parts     Capillary	Stainless steel 316L
Capillary	Stainless steel, mat. No. 1.4571/316Ti
Sheath	Spiral protective tube made of stainless steel, mat. no.1.4404/316L
Maximum pressure	See above and the technical data of the pressure transmitter
Tube length	Without tube
Capillary	
• Length	Max. 10 m (32.8 ft), longer lengths on request
Internal diameter	2 mm (0.079 inch)
Minimum bending radius	150 mm (5.9 inch)
Sheath	Spiral protective tube made of stainless steel, mat. No. 1.4301/316
Filling liquid	Food oil (FDA listed)
Permissible ambient temperature	Dependent on the pressure transmitter and the filling liquid of the remote seal
	More information can be found in the technical data of the pressure transmitters and in the section "Technical data of filling liquid" in the Technical description to the remote seals
Weight	Approx. 4 kg (8.82 lb)
Certificates and approvals	
Classification according to pressure equipment directive (DGRL 2014/68/EU)	For gases of fluid group 1 and liq- uids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)
EHEDG	Complies with EHEDG recommendations

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

## Quick-release diaphragm seals

Selection and Ordering data	Article No. Ord.	code	Selection and Ordering data	Ord. code
Quick-release diaphragm seal	7MF4940-		Further designs	
for SITRANS P pressure transmitters for pressure 7MF2033; 7MF403 and 7MF423 together with Order code "V01"	■■ A 0 ■ - ■ B	П	Please add "-Z" to Article No. and specify Order code.	
(Negative pressure service) and 7MF802 <sup>1)</sup> ; must be ordered separately Filling liquid: Food oil (FDA listed) Material: Stainless steel, mat. No. 1.4435			Remote seal nameplate Attached out of stainless steel, contains MLFB and order number of the remote seal	B20
✓ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.			Quality Inspection Certificate (5-point characteristic curve test) according to IEC 60770-2	C11
Nom. diam. Nom. press.			Inspection certificate to EN 10204, section 3.1	C12
Connection to DIN 11851 with slotted union nut				C17
- DN 25 PN 40	1 B		2.2 Certificate of FDA approval of fill oil Only in conjunction with "Food-grade oil" fill lig-	CII
- DN 32 PN 40	1 C		uid (FDA listed)"	
- DN 40 PN 40	1 D		Functional safety certificate ("SIL 2") to	C20
- DN 50 PN 25	1 E		IEC 61508	020
- DN 65 PN 25	1 F		(Only in conjunction with the Order code "C20"	
- DN 80 PN 25 • Connection to DIN 11851 with screw necks	1 G		in the case of SITRANS P DSIII transmitter)	
- DN 25 PN 40	2 B		Functional safety certificate ("SIL 2/3") to	C23
- DN 32 PN 40	2 C		IEC 61508  (Only in conjunction with the Order code "C23"	
- DN 40 PN 40	2 D		in the case of SITRANS P DSIII transmitter)	
- DN 50 PN 25	2 E		One-sided mounting on differential pressure	
- DN 65 PN 25	2 F		transmitters	
- DN 80 PN 25	2 G		(only for 7MF4940)	
Tri-Clamp connection to DIN 32676/ISO 2852     DN 40/41/ in although DN 40/41/	4.		on high-pressure side	H10
- DN 40/1½ inch PN 16 - DN 50/2 inch PN 16	4 L 4 M		on low-pressure side	H11
- DN 65/2½ inch PN 16	4 N		PE protective tube	
- DN 80/3 inch PN 10	4 P		over the spiral protective tube of the capillaries (color: white)	
Other version				NOO
Add Order codes and plain text:			1.0 m (3.28 ft) 1.6 m (5.25 ft)	N20 N21
Process connection:, Nominal diameter:;	9 A I	H 1 Y	2.0 m (6.56 ft)	N22
Nominal pressure:			2.5 m (8.20 ft)	N23
Filling liquid			3.0 m (9.84 ft)	N24
Food oil (FDA listed)	7		4.0 m (13.12 ft)	N25
Other version Add Order code and plain text:	9 1	M 1 Y	5.0 m (16.40 ft)	N26
Filling liquid:			6.0 m (19.69 ft)	N27
Connection to pressure transmitter			7.0 m (22.97 ft)	N28
• direct	0		8.0 m (26.25 ft)	N29
through capillary, length: <sup>2)</sup>			9.0 m (29.53 ft)	N30
• 1.0 m (3.28 ft)	2		10.0 m (32.81 ft)	N31
• 1.6 m (5.25 ft)	3		PTFE protective tube	
• 2.5 m (8.20 ft)	4		over the spiral protective tube of the capillaries	
• 4.0 m (13.1 ft)	5		(color: transparent)	
• 6.0 m (19.7 ft)	6		1.0 m (3.28 ft)	N40
• 8.0 m (26.25 ft) • 10.0 m (32.8 ft)	7 8		1.6 m (5.25 ft)	N41
			2.0 m (6.56 ft)	N42
Special lengths for capillaries			2.5 m (8.20 ft)	N43
• 2.0 m (6.56 ft)		N 1 C	3.0 m (9.84 ft)	N44
• 3.0 m (9.84 ft) • 5.0 m (16.40 ft)		N1E N1G	4.0 m (13.12 ft)	N45
• 7.0 m (23.97 ft)		N 1 J	5.0 m (16.40 ft)	N46
• 9.0 m (29.53 ft)		N 1 L	6.0 m (19.69 ft)	N47
, ,			7.0 m (22.97 ft)	N48
<ol> <li>With 7MF802 and the measuring cells Q, S, T a vacuum-tight version.</li> </ol>	and U also order th	e	8.0 m (26.25 ft)	N49
2) Max. capillary length, see section "Technical desc	ription"		9.0 m (29.53 ft) 10.0 m (32.81 ft)	N50 N51
· · -			10.0111 (32.0111)	1131

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

## Quick-release diaphragm seals

Selection and Ordering data	Ord. code				
Further designs					
Please add "-Z" to Article No. and specify Order code.					
PVC protective tube					
over the spiral protective tube of the capillaries (color: black)					
1.0 m (3.28 ft)	N60				
1.6 m (5.25 ft)	N61				
2.0 m (6.56 ft)	N62				
2.5 m (8.20 ft)	N63				
3.0 m (9.84 ft)	N64				
4.0 m (13.12 ft)	N65				
5.0 m (16.40 ft)	N66				
6.0 m (19.69 ft)	N67				
7.0 m (22.97 ft)	N68				
8.0 m (26.25 ft)	N69				
9.0 m (29.53 ft)	N70				
10.0 m (32.81 ft)	N71				
Cooling element	R22				
max. medium temperature 300 °C, observe the					
maximum permissible media temperature of the filling liquid.					
Negative pressure service					
for use in low-pressure range for transmitters for					
<ul> <li>gauge and absolute pressure from the pressu-</li> </ul>	V01				
re series					
Extended negative pressure service					
for use in low-pressure range for transmitters for					
<ul> <li>gauge and absolute pressure from the pressure series</li> </ul>	V51				
10 001100					

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Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

## Quick-release diaphragm seals

Selection and Ordering data	Article No. O	rd. code	Selection and Ordering data	Order code
Quick-release diaphragm seal	7 M F 4 9 4 3		Further designs	
for SITRANS P pressure transmitters for pressure for differential pressure and flow, type 7MF243; 7MF443 and 7MF54;	== A 0 = - = E	3	Please add "-2" to Article No. and specify Order code.	
order separately Filling liquid: Food oil (FDA listed) Material: Stainless steel, mat. No. 1.4435	ш	Ш	Remote seal nameplate Attached out of stainless steel, contains MLFB and order number of the remote seal	B20
Delivery unit: 2 off  Click on the Article No. for the online configu-			Quality Inspection Certificate (5-point characteristic curve test) according to IEC 60770-2	C11
ration in the PIA Life Cycle Portal.			Inspection certificate	C12
Nom. diam. Nom. press.			to EN 10204, section 3.1	
Connection to DIN 11851 with slotted union nut	1		2.2 Certificate of FDA approval of fill oil	C17
- DN 50 PN 25	1 E		Only in conjunction with "Food-grade oil" fill liq-	
- DN 65 PN 25	1 F		uid (FDA listed)"	
<ul> <li>DN 80 PN 25</li> <li>Connection to DIN 11851 with threaded socket</li> </ul>	1 G		Functional safety certificate ("SIL 2") to IEC 61508	C20
- DN 50 PN 25	2 E		(Only in conjunction with the Order code "C20"	
- DN 65 PN 25	2 F		in the case of SITRANS P DSIII transmitter)	
- DN 80 PN 25	2 G		Functional safety certificate ("SIL 2/3") to	C23
• Tri-Clamp connection to DIN 32676/ ISO 2852			IEC 61508	
- DN 50/2 inch PN 16	4 M		(Only in conjunction with the Order code "C23" in the case of SITRANS P DSIII transmitter)	
- DN 65/21/2 inch PN 16	4 N			
- DN 80/3 inch PN 10	4 P		<b>PE protective tube</b> over the spiral protective tube of the capillaries	
Other version Add Order codes and plain text:			(color: white)	
Process connection:, Nominal diameter:;	9 A	H 1 Y	1.0 m (3.28 ft)	N20
Nominal pressure:			1.6 m (5.25 ft)	N21
Filling liquid			2.0 m (6.56 ft)	N22
• Food oil (FDA listed)	7		2.5 m (8.20 ft)	N23
Other version	9	M 1 Y	3.0 m (9.84 ft)	N24
Add Order code and plain text:			4.0 m (13.12 ft)	N25
Filling liquid:			5.0 m (16.40 ft)	N26
Connection to transmitter			6.0 m (19.69 ft)	N27
through capillary, Length: 1)			7.0 m (22.97 ft)	N28
• 1.0 m (3.28 ft)	2		8.0 m (26.25 ft)	N29
• 1.6 m (5.25 ft)	3		9.0 m (29.53 ft)	N30
• 2.5 m (8.20 ft)	4		10.0 m (32.81 ft)	N31
• 4.0 m (13.1 ft)	5		PTFE protective tube	
• 6.0 m (19.7 ft)	6		over the spiral protective tube of the capillaries	
• 8.0 m (26.25 ft)	7		(color: transparent)	
• 10.0 m (32.8 ft)	8		1.0 m (3.28 ft)	N40
Special lengths for capillaries			1.6 m (5.25 ft)	N41
• 2.0 m (6.56 ft)	9	N1C	2.0 m (6.56 ft)	N42
• 3.0 m (9.84 ft)	9	N1E	2.5 m (8.20 ft)	N43
• 5.0 m (16.40 ft)	9	N 1 G	3.0 m (9.84 ft)	N44
• 7.0 m (23.97 ft)	9	N 1 J	4.0 m (13.12 ft)	N45
• 9.0 m (29.53 ft)	9	N1L		N46
, ,			5.0 m (16.40 ft) 6.0 m (19.69 ft)	N46 N47
1) Max. capillary length, see section "Technical desc	ription"		7.0 m (22.97 ft)	N48
			, ,	
			8.0 m (26.25 ft)	N49

9.0 m (29.53 ft) 10.0 m (32.81 ft) N50 N51

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

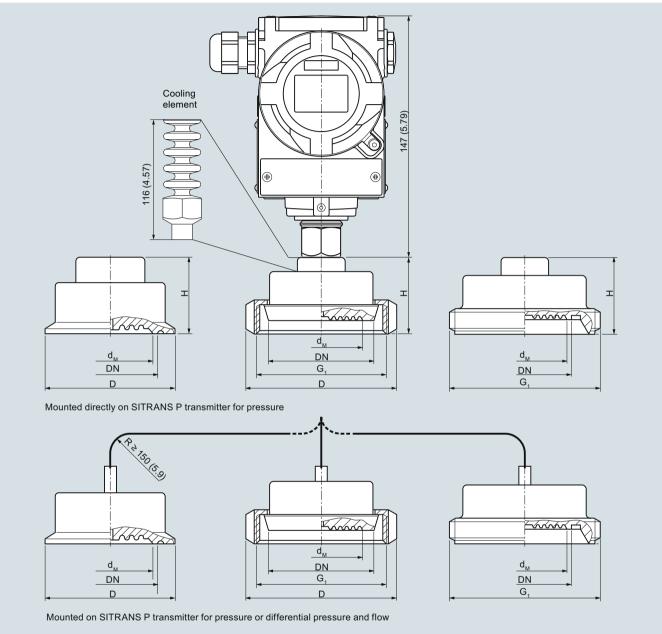
## Quick-release diaphragm seals

Selection and Ordering data	Order code
Further designs	
Please add "-Z" to Article No. and specify Order code.	
PVC protective tube over the spiral protective tube of the capillaries (color: black)	
1.0 m (3.28 ft) 1.6 m (5.25 ft) 2.0 m (6.56 ft)	N60 N61 N62
2.5 m (8.20 ft) 3.0 m (9.84 ft) 4.0 m (13.12 ft)	N63 N64 N65
5.0 m (16.40 ft) 6.0 m (19.69 ft) 7.0 m (22.97 ft)	N66 N67 N68
8.0 m (26.25 ft) 9.0 m (29.53 ft) 10.0 m (32.81 ft)	N69 N70 N71
Negative pressure service for use in low-pressure range for transmitters for • differential pressure	V03
Extended negative pressure service for use in low-pressure range for transmitters for • differential pressure	V53

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

Quick-release diaphragm seals

## Dimensional drawings



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

Clamp connection (left)								
DN	Ød	м	ØΒ		н			
40 (1½ inch)	32	(1.26)	50.5	(2)	35	(1.38)		
50 (2 inch)	40	(1.57)	64	(2.52)	35	(1.38)		
65 (2½ inch)	52	(2.05)	77.5	(3.05)	35	(1.38)		
80 (3 inch)	72	(2.83)	91	(3.58)	35	(1.38)		

Connection to DIN 11851 with slotted union nut (center)								
DN	$Ø d_M$	ØD	Н	G <sub>1</sub>				
25	25	63	36	Rd 52x1/6				
32	32	70	36	Rd 52x1/6				
40	40	78	36	Rd 65x1/6				
50	52	112	36	Rd 78x1/6				
65	65	112	36	Rd 95x1/6				
80	72	127	36	Rd 110x1/6				
25	25	63	36	Rd 52x1/6				

Connection to DIN 11851 with threaded socket (right)						
DN	Ø d <sub>M</sub>	Н	G <sub>1</sub>			
25	25	36	Rd 52x1/6			
32	32	36	Rd 52x1/6			
40	40	36	Rd 65x1/6			
50	52	36	Rd 78x1/6			
65	65	36	Rd 95x1/6			
80	72	36	Rd 110x1/6			

 $d_{\mbox{\scriptsize M}}$  Effective diaphragm diameter

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

#### Miniature diaphragm seals

#### Overview



Miniature diaphragm seals

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

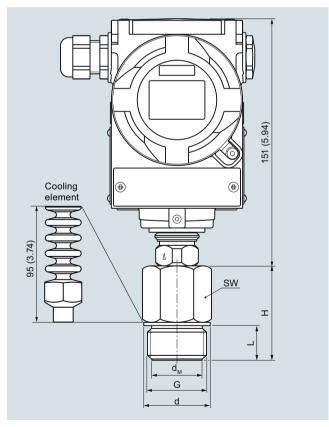
• P300, DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus

Suitable for high pressures, contaminated, fibrous and viscous media in the chemical, paper, food and drink industries.

#### Design

- · Flush-mounted diaphragm
- No dead spaces
- Fixed threaded stems

#### Dimensional drawings



Miniature diaphragm seal, dimensions in mm (inch)

G	Ø	d <sub>M</sub>	5	SW	Ç	ðd		L		Н
	mm	(inch)	mm	(inch)	mm	(inch)	mm	(inch)	mm	(inch)
G1B	25	(0.98)	41	(1.61)	39	(1.53)	28	(1.1)	56	(2.21)
G11/2B	40	(1.57)	55	(2.17)	60	(2.36)	30	(1.18)	50	(1.97)
G2B	50	(1.97)	60	(2.36)	70	(2.76)	30	(1.18)	63	(2.48)

G	Q	ð d <sub>M</sub>		SW		L		Н
	mm	(inch)	mm	(inch)	mm	(inch)	mm	(inch)
1"-NPT	27	(1.06)	41	(1.61)	25	(0.98)	40	(1.57)
11/2"-NPT	34	(1.34)	55	(2.17)	26	(1.02)	45	(1.77)
2"-NPT	46	(1.81)	65	(2.56)	26	(1.02)	45	(1.77)

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

#### Technical specifications

#### Miniature diaphragm seals

Span with

- G1B and 1"-NPT
- G11/2B and 11/2"-NPT
- G2B and 2"-NPT

Filling liquid

- Material
- · Main body
- Diaphragm

Maximum pressure

Temperature of use

Temperature range of medium

Max. recommended process temperature

Weight

- G1B and 1"-NPT
- G11/2B and 11/2"-NPT
- G2B and 2"-NPT

### Certificate and approvals

Classification according to pressure equipment directive (DGRL 2014/68/EU)

- > 6 bar (> 87 psi) > 2 bar (> 29 psi)

150 °C (302 °F)

> 600 mbar (> 8.7 psi)

Silicone oil M5 or food oil (FDA listed)

Stainl. steel mat No. 1.4404/316L or Hastelloy C276, mat No. 2.4819 Stainl. steel mat No. 1.4404 / 316L or Hastelloy C276, mat. No. 2.4819

100% of nominal pressure of pressure transmitter, up to maximum of PN 400 (5802 psi) (depending on the seal used)

Same as pressure transmitter Same as pressure transmitter

Approx. 0.3 kg (approx. 0.66 lb)

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

For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

## Miniature diaphragm seals

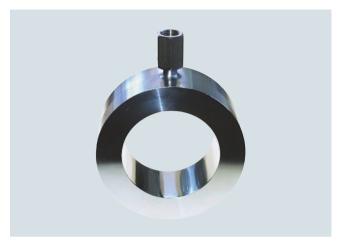
Selection and Orderin	ng data	Article No. Or	d. code	Selection and Ordering data	Order code
Miniature diaphragm directly fitted to SITRAI for pressure: type 7MF	seals  NS P pressure transmitters F2033; 7MF403 and	7MF4960-		Further designs Please add '-Z' to Article No. and specify Order code.	
7MF423 together w (vacuum-proof design) ordered separately	ith Order code "V01" and 7MF802 <sup>1)</sup> ; must be		Ш	Remote seal nameplate Attached out of stainless steel, contains MLFB and order number of the remote seal	B20
Nominal pressure, see	"Pressure transmitters"			Quality Inspection Certificate (5-point characteristic curve test) according to IEC 60770-2	C11
Click on the Article I ration in the PIA Life	No. for the online configue Cycle Portal.			Inspection certificate to EN 10204, section 3.1	C12
Process connection • G1B • G1½B • G2B		C D	Ш	2.2 Certificate of FDA approval of fill oil Only in conjunction with "Food-grade oil" fill liquid (FDA listed)"	C17
• 1" - NPT • 1½" - NPT • 2" - NPT	ler code and plain text:	K L M	J 1 Y	Functional safety certificate ("SIL 2") to IEC 61508 (Only in conjunction with the Order code "C20" in the case of SITRANS P DSIII transmitter)	C20
Process connection:			J 1 1	Functional safety certificate ("SIL 2/3") to IEC 61508	C23
Material Remote seal enclosure	Wetted parts materials			(Only in conjunction with the Order code "C23" in the case of SITRANS P DSIII transmitter)	
Stainless steel mat. No. 1.4404/316L	Stainless steel mat. No. 1.4404/316L	A		Certification acc. to NACE MR-0175 Includes acceptance test certificate 3.1 accor-	D07
Hastelloy C276	Hastelloy C276	J		ding to EN 10204 (only for wetted parts made of stainless steel 1.4404/316L and Hastelloy C276)	
Stainless steel mat. No. 1.4404/316L	Other version Add Order code and plain text: Wetted parts materials	Z	K 1 Y	Certification acc. to NACE MR-0103 Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stainless steel 1.4404/316L and Hastelloy C276)	D08
Wetted parts material • Stainless steel 316L Other version, add Ord Wetted parts materials	der code and plain text:	A Z	K 1 Y	Cooling element max. medium temperature 300 °C, observe the maximum permissible media temperature of the filling liquid.	R22
	der code and plain text:	1 7 9	M 1 Y	Negative pressure service for use in low-pressure range for transmitters for • gauge and absolute pressure from the pressure series	V01
Filling liquid:  1) With 7MF802 and	the measuring cells Q, S, T a	and U also order	the	Extended negative pressure service for use in low-pressure range for transmitters for	

vacuum-tight version.

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

#### Inline seals in sandwich design

#### Overview



Inline seals for flange-mounting

The inline seal is completely integrated in the process line. It is particularly suitable for flowing and highly viscous media.

The inline remote seal consists of a cylindrical jacket into which a thin-walled pipe is welded. It is clamped directly between two flanges in the pipeline.

#### Design

- Inline seals for flange-mounting (flange design) to EN/ASME for SITRANS P pressure transmitters
  - For pressure: P300, DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus
  - For differential pressure and flow: DS III with HART, DS III with PROFIBUS PA, DS III with FOUNDATION Fieldbus and P500
- Sealing surface to EN 1092-1 or ASME B16.5
- Connection to the transmitter directly or by means of a flexible capillary (max. 10 m long)
- See Technical data for details of materials used for the wetted parts
- Material used for the capillary, the guard sleeve, the seal's main body and the measuring cell: Stainless steel, mat.-No. 1.4571
- Filling liquid: Silicone oil, high-temperature oil, halocarbon oil, food oil (FDA listed) or glycerin/water (not suitable for uses in low-pressure range)

### Function

The measured pressure is transferred from the diaphragm to the filling liquid and passes either directly or through the capillary to the measuring chamber of the pressure transmitter. The interior of the diaphragm seal and of the capillary, as well as the measuring chamber of the pressure transmitter, are filled gas-free by the filling liquid.

#### Note:

When operating in the low-pressure range, also during commissioning, it is recommended to use a vacuum-proof remote seal (see Selection and Ordering data).

### Technical specifications

Inline seals for flange-mounting			
Nominal diameter	Nominal pressure		
• DN 25	PN 6 PN 100		
• DN 40	PN 6 PN 100		
• DN 50	PN 6 PN 100		
• DN 80	PN 6 PN 100		
• DN 100	PN 6 PN 100		
• 1 inch	Class 150 class 2500		
• 1½ inch	Class 150 class 2500		
• 2 inch	Class 150 class 2500		
• 3 inch	Class 150 class 2500		
• 4 inch	Class 150 class 2500		
Process connection	Flange to EN 1092-1 or ASME B 16.5		
Sealing surface	<ul> <li>for stainless steel mat. no.</li> <li>1.4404/316L according to</li> <li>EN 1092-1, form B1 or</li> <li>ASME B16.5 RF 125 250 AA</li> </ul>		
	• for all other materials according to EN 1092-1, form B2 or ASME B16.5 RFSF		
Materials			
Main body	Stainless steel 1.4404/316L		
Diaphragm	Stainless steel 1.4404/316L		
<ul> <li>Wetted parts</li> </ul>	Stainless steel 1.4404/316L		
	<ul> <li>Without coating</li> </ul>		
	<ul> <li>ECTFE coating (for vacuum on request)</li> </ul>		
	<ul> <li>PFA coating</li> </ul>		
	Monel 400, mat. No. 2.4360		
	Hastelloy C276, mat. No. 2.4819		
	Hastelloy C4, mat. No. 2.4602		
	Tantalum		
Capillary	Stainless steel, mat. No. 1.4571/316Ti		
• Sheath	Spiral protective tube made of stainless steel, mat. No. 1.4404/316L		
Capillary			
• Length	Max. 10 m (32.8 ft)		
<ul> <li>Internal diameter</li> </ul>	2 mm (0.079 inch)		
<ul> <li>Minimum bending radius</li> </ul>	150 mm (5.9 inch)		
Filling liquid	Silicone oil M5		
	Silicone oil M50		
	High-temperature oil		
	Halocarbon oil		
	Food oil (FDA listed)		
Permissible ambient temperature	See pressure transmitters, see filling liquid		

#### Certificates and approvals

Weiaht

Classification according to pressure equipment directive (DGRL 2014/68/EU)

For gases of fluid group 1 and liquids of fluid group 1; complies with the requirements of article 4, paragraph 1 (appendix 1); assigned to category III, conformity evaluation module H by the TÜV Nord

Approx. 4 kg (8.82 lb)

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

## Inline seals in sandwich design

0-1	- da - daka	Λ		N.I	- 0	a al a		-1 -
Selection and Ord Inline seal for flan	<del>-</del>	Art	icie	N	0.0	rd. c	COC	ae
SITRANS P pressu								
for gauge pressure 7MF2033; 7MF403 and 7MF423 together with Order code "V01" (Negative pressure service) and 7MF802 <sup>1)</sup> ; must be ordered separately, scope of delivery: 1 off			7MF4980-					
for differential pressure and flow 7MF243; 7MF4433 or 7MF54; order separately, scope of delivery: 1 pair (set); Material: Completely of stainless steel, mat. No. 1.4404/316L; Process connection to EN 1092-1 or ASME B16.5; sealing surface to EN 1092-1, form B1, or to ASME B16.5 RF 125 250 AA			IF4	9	83	-		
	cle No. for the online configu- Life Cycle Portal.	1	0	I		В		
<ul> <li>DN 25</li> <li>DN 40</li> <li>DN 50</li> <li>DN 80</li> <li>DN 100</li> <li>1 inch</li> <li>1½ inch</li> <li>2 inch</li> <li>3 inch</li> <li>4 inch</li> <li>Other version</li> <li>Add Order code an</li> </ul>	and nominal pressure PN 6 100 Class 150 2500 Class 150 2500 Class 150 2500 Class 150 2500 d plain text:; Nominal pressure:	E G G H L N N P G				J	1	Y
Wetted parts mate  Stainless steel 31  Without coating  With PFA coatin  With ECTFE coa  Monel 400, mat. N  Hastelloy C276, n  Hastelloy C4, mat  Tantalum  Other version  Add Order code ar  Wetted parts mater	6L g <sup>2)</sup> tting <sup>2) 3)</sup> No. 2.4360 nat. No. 2.4819 . No. 2.4602 d plain text:		A D F G J U K Z			K	(1	Y
Filling liquid Silicone oil M5 Silicone oil M50 High-temperature Halocarbon oil (fo Food oil (FDA liste Other version Add Order code ar Filling liquid:	or measuring $O_2$ ) <sup>4)</sup> ed)			1 2 3 4 7 9		N	11	Y

Selection and Ordering data	Article No.Ord. code
Inline seal for flange-mounting for SITRANS P pressure transmitters	
for gauge pressure 7MF2033; 7MF403 and 7MF423 together with Order code "V01" (Negative pressure service) and 7MF802 <sup>1</sup> ); must be ordered separately, scope of delivery: 1 off	7 M F 4 9 8 0 -
for differential pressure and flow 7MF243; 7MF4433 or 7MF54; order separately, scope of delivery: 1 pair (set Material: Completely of stainless steel, mat. No. 1.4404/316L; Process connection to EN 1092-1 or ASME B16.5; sealing surface to EN 1092-1, form B1, or to ASME B16.5 RF 125 250 AA	
	1 = 0 = - B
Connection to transmitter  • direct (only for 7MF4980) through capillary, length: <sup>5)</sup> • 1.0 m (3.28 ft)  • 1.6 m (5.25 ft)  • 2.5 m (8.20 ft)  • 4.0 m (13.1 ft)  • 6.0 m (19.7 ft)  • 8.0 m (26.25 ft)  • 10.0 m (32.8 ft)  Special lengths for capillaries  • 2.0 m (6.56 ft)  • 3.0 m (9.84 ft)  • 5.0 m (16.40 ft)  • 7.0 m (23.97 ft)	0 2 3 4 5 6 7 8 9 N1C 9 N1E 9 N1G
• 9.0 m (29.53 ft)	9 N1L
only for 7MF4983	
• 11.0 m (36.09 ft) • 12.0 m (39.37 ft) • 13.0 m (42.65 ft) • 14.0 m (45.93 ft) • 15.0 m (49.21 ft)	9 N1N 9 N1P 9 N1Q 9 N1R 9 N1S

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

- vacuum-tignt version.

  2) Only for use in non-hazardous atmospheres.

  3) For vacuum on request.

  4) Oil- and grease- free cleaning to DIN 25410, level 2 and packaging included in the scope of delivery. Refer to "Further designs" C10 and E10.

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

Update April 2020

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

## Inline seals in sandwich design

Selection and Ordering data	Order code	Selection and Ordering data	Order cod
urther designs		Further designs	
lease add "-Z" to Article No. and specify Order ode.		Please add "-Z" to Article No. and specify Order code.	
park arrestor /ith spark arrestor for mounting on zone 0 ncluding documentation)		PE protective tube over the spiral protective tube of the capillaries (color: white)	
Pressure and absolute pressure for differential pressure transmitters	A01 A02	1.0 m (3.28 ft) 1.6 m (5.25 ft)	N20 N21
Remote seal nameplate Attached out of stainless steel, contains MLFB and order number of the remote seal	B20	2.0 m (6.56 ft) 2.5 m (8.20 ft) 3.0 m (9.84 ft)	N22 N23 N24
Dil- and grease-free cleaned version Dil- and grease-free cleaned and packed verion, not for oxygen application, only in conjunction with halocarbon oil fill fluid, certified by vertificate acc. to EN 10204-2.2	C10	4.0 m (13.12 ft) 5.0 m (16.40 ft) 6.0 m (19.69 ft) 7.0 m (22.97 ft)	N25 N26 N27 N28
Quality Inspection Certificate (5-point charac- eristic curve test) according to IEC 60770-2	C11	8.0 m (26.25 ft) 9.0 m (29.53 ft)	N29 N30
nspection certificate DEN 10204, section 3.1	C12	10.0 m (32.81 ft) only for 7MF4983	N31
2.2 Certificate of FDA approval of fill oil Only in conjunction with "Food-grade oil" fill liquid FDA listed)"	C17	11.0 m (36.09 ft) 12.0 m (39.37 ft) 13.0 m (42.65 ft)	N32 N33 N34
Functional safety certificate ("SIL 2") to EC 61508 Only in conjunction with the Order code "C20"	C20	14.0 m (45.93 ft) 15.0 m (49.21 ft)	N35 N36
n the case of SITRANS P DSIII transmitter) Functional safety certificate ("SIL 2/3") to EC 61508	C23	over the spiral protective tube of the capillaries (color: transparent)	
certification acc. to NACE MR-0175 includes acceptance test certificate 3.1 according b EN 10204 (only for wetted parts made of stain- ess steel 1.4404/316L and Hastelloy C276)	D07	1.0 m (3.28 ft) 1.6 m (5.25 ft) 2.0 m (6.56 ft) 2.5 m (8.20 ft)	N40 N41 N42 N43
Certification acc. to NACE MR-0103 Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stainless steel 1.4404/316L and Hastelloy C276)	D08	3.0 m (9.84 ft) 4.0 m (13.12 ft) 5.0 m (16.40 ft) 6.0 m (19.69 ft)	N44 N45 N46 N47
Dil- and grease-free cleaned version	E10	7.0 m (22.97 ft)	N48
il- and grease-free cleaned and packed veron, only for oxygen application, only inert fill id may be used. Max. temperature: 60 °C 40 °F), max. pressure 50 bar (725 psi), only in onnection with halocarbon oil, certified by certi-		8.0 m (26.25 ft) 9.0 m (29.53 ft) 10.0 m (32.81 ft)	N49 N50 N51
cate acc. to EN 10204-2.2		only for 7MF4983	
ne-sided mounting on differential pressure ansmitters only for 7MF4980)		11.0 m (36.09 ft) 12.0 m (39.37 ft) 13.0 m (42.65 ft)	N52 N53 N54
on high-pressure side on low-pressure side	H10 H11	14.0 m (45.93 ft) 15.0 m (49.21 ft)	N55 N56

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

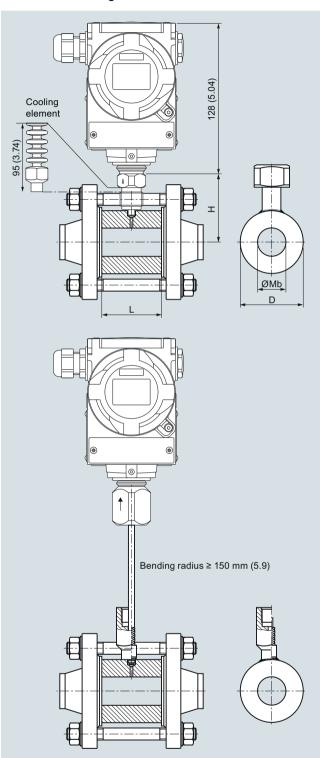
Inline seals in sandwich design

Selection and Ordering data	Order code
Further designs	
Please add "-Z" to Article No. and specify Order code.	
PVC protective tube	
over the spiral protective tube of the capillaries (color: black)	
1.0 m (3.28 ft)	N60
1.6 m (5.25 ft)	N61
2.0 m (6.56 ft)	N62
2.5 m (8.20 ft)	N63
3.0 m (9.84 ft)	N64
4.0 m (13.12 ft)	N65
5.0 m (16.40 ft)	N66
6.0 m (19.69 ft)	N67
7.0 m (22.97 ft)	N68
8.0 m (26.25 ft)	N69
9.0 m (29.53 ft)	N70
10.0 m (32.81 ft)	N71
only for 7MF4983	
11.0 m (36.09 ft)	N72
12.0 m (39.37 ft)	N73
13.0 m (42.65 ft)	N74
14.0 m (45.93 ft)	N75
15.0 m (49.21 ft)	N76
Cooling element	R22
max. medium temperature 300 °C, observe the maximum permissible media temperature of the	
filling liquid.	
Negative pressure service	
for use in low-pressure range for transmitters for	
<ul> <li>gauge and absolute pressure from the pressure series</li> </ul>	V01
differential pressure	V03
Note:	
Suffix "Y01" required with pressure transmitter	
Extended negative pressure service	
for use in low-pressure range for transmitters for	
<ul> <li>gauge and absolute pressure from the pressure series</li> </ul>	V51
differential pressure	V53
Note:	
Suffix "Y01" required with pressure transmitter	

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

### Inline seals in sandwich design

### Dimensional drawings



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

#### Connection to EN 1092-1

DN	PN	D	Mb	L	Н
mm	bar	mm	mm	mm	mm
25	6 100	63	28.5	60	78.5
40	6 100	85	43	60	89.5
50	6 100	95	54.5	60	92.5
80	6 100	130	82.5	60	112
100	6 100	150	107	60	122

#### Connection to ASME B16.5

DN	Class	D	Mb	L	Н
(inch)		mm	mm	mm	mm
		(inch)	(inch)	(inch)	(inch)
1	150 2500	63	28.5	60	78.5
		(2.48)	(1.12)	(2.36)	(3.1)
1½	150 2500	85	43	60	86
		(3.35)	(1.69)	(2.36)	(3.4)
2	150 2500	95	54.5	60	94.5
		(3.74)	(2.15)	(2.36)	(3.72)
3	150 2500	130	82.5	60	112
		(5.12)	(3.25)	(2.36)	(4.4)
4	150 2500	150	107	60	122
		(5.9)	(4.21)	(2.36)	(4.8)

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

Quick-release inline seals

### Overview



Quick-release inline seals, to DIN 11851 with threaded socket



Quick-release inline seals, with clamp connection

Quick-release inline seals for pressure are available for the following SITRANS P pressure transmitter series:

- DS III with HART
- DS III with PROFIBUS PA
- DS III with FOUNDATION Fieldbus

### Application

The quick-release inline seal is a special design for flowing media and high-viscosity media. Since it is completely integrated in the process pipe, no turbulences, dead volumes or other obstructions to the flow occur. The measured medium flows unhindered through the inline seal and results in self-cleaning of the measuring chamber. Furthermore, the inline seal can be cleaned by a pig.

#### Design

The quick-release clamp is available in two versions:

- DIN 11851 with threaded socket
- Clamp connection

The inline seal is connected to the pressure transmitter either directly or by way of a capillary.

### Function

The measured pressure is transferred from the diaphragm. mounted on the inner circumference of the inline seal, to the filling liquid and then passes through the capillary to the measuring chamber of the pressure transmitter. The interior of the inline seal and of the capillary, as well as the measuring chamber of the pressure transmitter, are filled gas-free by the filling liquid.

#### Note:

When operating in the low-pressure range, also during commissioning, it is recommended to use a vacuum-proof pressure transmitter (see Selection and Ordering data).

#### Technical specifications

Inline seals of quick-release desi	sign for pressure			
Connection	Nominal diameter	Nominal pressure		
• To DIN 11851 with threaded	DN 25	PN 40		
socket	DN 40	PN 40		
	DN 50	PN 25		
	DN 65	PN 25		
	DN 80	PN 25		
	DN 100	PN 25		
<ul> <li>Clamp connection</li> </ul>	1½ inch	PN 40		
	2 inch	PN 40		
	2½ inch	PN 40		
	3 inch	PN 40		
Material				
Main body	Stainless steel 1.4	4404/316L		
Diaphragm	Stainless steel 1.4404/316L			
Capillary				
• Length	Max. 10 m (32.8 f	ft)		
<ul> <li>Internal diameter</li> </ul>	2 mm (0.079 inch	n)		
<ul> <li>Minimum bending radius</li> </ul>	150 mm (5.9 inch	n)		
• Sheath	Spiral protective tube made of stainless steel, mat. No. 1.4404/316L			
Filling liquid	• Food oil (FDA li	sted)		
Permissible ambient temperature	nperature Dependent on the pressure tran mitter and the filling liquid of the remote seal  More information can be found i the technical data of the pressu transmitters and in the section  "Technical data of filling liquid" in the Technical description to the remote seals			
Weight	Approx. 4 kg (ap	prox. 8.82 lb)		
Certificate and approvals				
Classification according to pressure equipment directive (DGRL 2014/68/EU)	For gases of fluid uids of fluid group the requirements	o 1; complies with of article 4,		

paragraph 1 (appendix 1); assigned to category III, conformity evaluation module H by the TÜV Nord

**EHEDG** 

Complies with EHEDG recommendations

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

### **Quick-release inline seals**

Selection and Ordering data	Article No. Ord. code
Quick-release inline seal	7MF 4 9 5 0 -
for SITRANS P pressure transmitters for pressure 7MF2033; 7MF403 and 7MF423 together with Order code "V01" (Negative pressure service) and 7MF8021); must be ordered separately Filling liquid: Food oil (FDA listed) Material: Stainless steel 316L	A 0 - B
∠ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
Nominal diameter Nominal pressure	
<ul> <li>Connection to DIN 11851 with screw necks</li> <li>DN 25 PN 40</li> <li>DN 40 PN 40</li> <li>DN 50 PN 25</li> <li>DN 65 PN 25</li> <li>DN 80 PN 25</li> <li>DN 100 PN 25</li> <li>Clamp connection</li> <li>1½ inch PN 16</li> <li>2 inch PN 16</li> <li>2½ inch PN 16</li> </ul>	2 B 2 D 2 E 2 F 2 G 2 H 4 L 4 M 4 N
- 3 inch PN 10  Other version Add Order codes and plain text: Process connection:, Nominal diameter:; Nominal pressure:	4 P 9 Z H 1 Y
Filling liquid	
Food oil (FDA listed)     Other version     Add Order code and plain text:     Filling liquid:	7 9 M1Y
Connection to transmitter	
• Direct	0
Through capillary, length: <sup>2)</sup> • 1.0 m (3.28 ft) • 1.6 m (5.25 ft) • 2.5 m (8.20 ft)	2 3 4 5
• 4.0 m (13.1 ft) • 6.0 m (19.7 ft) • 8.0 m (26.25 ft) • 10.0 m (32.8 ft)	6 7 8
• 6.0 m (19.7 ft) • 8.0 m (26.25 ft)	7
• 6.0 m (19.7 ft) • 8.0 m (26.25 ft) • 10.0 m (32.8 ft)	7

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

Selection and Ordering data	Order code
Further designs	Order code
Please add "-Z" to Article No. and specify Order code.	
Remote seal nameplate	B20
Attached out of stainless steel, contains MLFB and order number of the remote seal	
Quality Inspection Certificate (5-point characteristic curve test) according to IEC 60770-2	C11
Inspection certificate to EN 10204, section 3.1	C12
2.2 Certificate of FDA approval of fill oil Only in conjunction with "Food-grade oil" fill liquid (FDA listed)"	C17
Functional safety certificate ("SIL 2") to IEC 61508	C20
(Only in conjunction with the Order code "C20" in the case of SITRANS P DSIII transmitter)	
Functional safety certificate ("SIL 2/3") to	C23
IEC 61508 (Only in conjunction with the Order code "C23" in the case of SITRANS P DSIII transmitter)	
One-sided mounting on differential pressure transmitters	
on high-pressure side	H10
on low-pressure side	H11
<b>PE protective tube</b> over the spiral protective tube of the capillaries (color: white)	
1.0 m (3.28 ft)	N20
1.6 m (5.25 ft) 2.0 m (6.56 ft)	N21 N22
2.5 m (8.20 ft)	N23
3.0 m (9.84 ft)	N24 N25
4.0 m (13.12 ft) 5.0 m (16.40 ft)	N26
6.0 m (19.69 ft)	N27
7.0 m (22.97 ft)	N28
8.0 m (26.25 ft) 9.0 m (29.53 ft)	N29 N30
10.0 m (32.81 ft)	N31
PTFE protective tube	
over the spiral protective tube of the capillaries (color: transparent)	
1.0 m (3.28 ft) 1.6 m (5.25 ft)	N40 N41
2.0 m (6.56 ft)	N42
2.5 m (8.20 ft)	N43
3.0 m (9.84 ft) 4.0 m (13.12 ft)	N44 N45
5.0 m (16.40 ft)	N46
6.0 m (19.69 ft)	N47
7.0 m (22.97 ft)	N48
8.0 m (26.25 ft) 9.0 m (29.53 ft) 10.0 m (32.81 ft)	N49 N50 N51

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<sup>2)</sup> Max. capillary length, see section "Technical description"

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

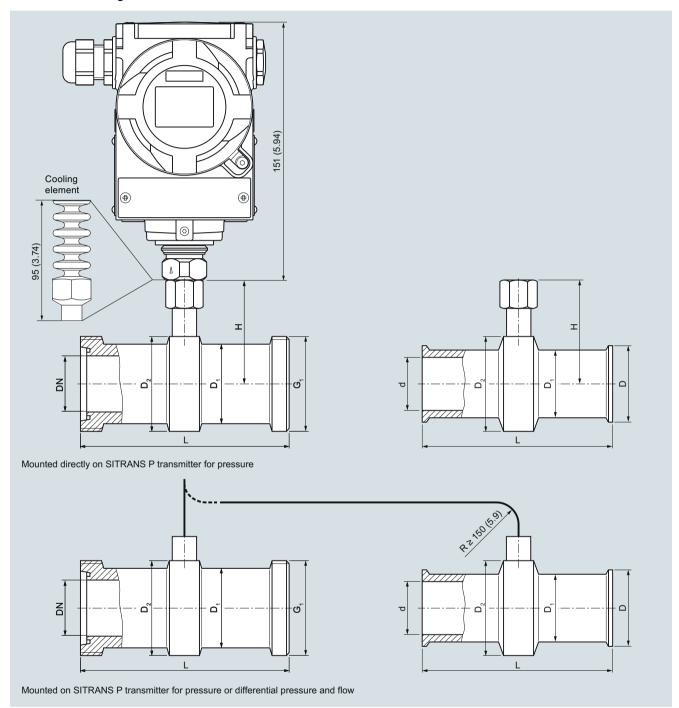
Quick-release inline seals

Selection and Ordering data	Order code
Further designs	Cradi coac
Please add "-Z" to Article No. and specify Order code.	
PVC protective tube over the spiral protective tube of the capillaries (color: black)	
1.0 m (3.28 ft) 1.6 m (5.25 ft) 2.0 m (6.56 ft)	N60 N61 N62
2.5 m (8.20 ft) 3.0 m (9.84 ft) 4.0 m (13.12 ft)	N63 N64 N65
5.0 m (16.40 ft) 6.0 m (19.69 ft) 7.0 m (22.97 ft)	N66 N67 N68
8.0 m (26.25 ft) 9.0 m (29.53 ft) 10.0 m (32.81 ft)	N69 N70 N71
Cooling element max. medium temperature 300 °C, observe the maximum permissible media temperature of the filling liquid.	R22
Negative pressure services for use in low-pressure range for transmitters for • gauge and absolute pressure from the pressure series	V01
Extended negative pressure service for use in low-pressure range for transmitters for egauge and absolute pressure from the pressure series	V51

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

### **Quick-release inline seals**

### Dimensional drawings



Conne	Connection to DIN 11851 with screw necks										
DN	$Ø$ $D_1$	$Ø$ $D_2$	Н	L	G <sub>1</sub>						
25	38	52	68	128	Rd 52x1/6						
40	55	65	74.5	160	Rd 65x1/6						
50	68	78	81	170	Rd 78x1/6						
65	85	95	89.5	182	Rd 95x1/6						
80	110	110	97	182	Rd 110x1/4						
100	130	130	107	182	Rd 110x1/4						

Quick-release	inline seal	dimensions	in mm	(inch)

Clamp connection for pipes to BS 4825/3 and o.D. tubes											
d		$ \emptyset D_1 $		$Ø$ $D_2$		н		L		D	
mm	(inch)	mm	(inch)	mm	(inch)	mm	(inch)	mm	(inch)	mm	(inch)
22.2	(1)	38	(1.5)	50	(1.97)	67	(2.64)	114	(4.49)	50.5	(1.98)
34.9	(1½)	43	(1.69)	65	(2.56)	74.5	(2.93)	146	(5.75)	50.5	(1.98)
47.6	(2)	56	(2.2)	75	(2.95)	79.5	(3.13)	156	(6.14)	64	(2.52)
60.3	(2½)	68	(2.68)	77	(3.03)	80.5	(3.17)	156	(6.14)	77.5	(3.05)
73.0	(3)	82	(3.23)	91	(3.58)	87.5	(3.44)	156	(6.14)	91	(3.58)

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Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

Flushing rings for diaphragm seals

## Overview



#### Flushing ring

Flushing rings are required for flange-mounted and sandwichtype remote seals (Article No. 7MF4900 ... 7MF4923) if the danger exists that the process conditions and the geometry of the connection could cause the medium to form deposits or blockages.

The flushing ring is clamped between the process flange and the remote seal.

Deposits can be flushed away from the diaphragm through the holes in the side, or the pressure volume can be vented. Different nominal diameters and forms permit adaptation to the respective process flange.

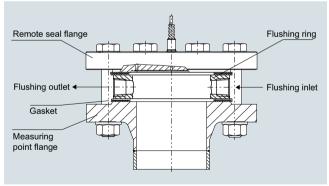
#### Process connection

For flanges to EN and ASME: DN 50, 80, 100, 125; PN 16 ... 100 or DN 2 inch, 3 inch, 4 inch, 5 inch; Class 150 ... 600

### Standard design

Material: CrNi-Stahl, mat. No. 1.4404/316L Sealing faces and flushing holes: See Selection and Ordering data

### Design



Installation example

## Technical specifications

Flushing ring for remote seals of	of sandwich and flange design
Nominal diameter	Nominal pressure
• DN 50	PN 16 PN 100
• DN 80	PN 16 PN 100
• DN 100	PN 16 PN 100
• DN 125	PN 16 PN 100
• 2 inch	Class 150 class 600
• 3 inch	Class 150 class 600
• 4 inch	Class 150 class 600
• 5 inch	Class 150 class 600
Sealing surface	
• To EN 1092-1	Form B1
	Form B2
	Form D/Form D
	Form C/Form C
	Form C/Form C
	Form F
	Form F
To ASME B16.5	BE 125 250 AA
- 10 AGINE D10.5	RESE
	5.
The driver below (O off) formale	RJF ring groove
Flushing holes (2 off), female thread	• G1/4
	• G½
	• 1⁄4-18 NPT

• ½-14 NPT

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

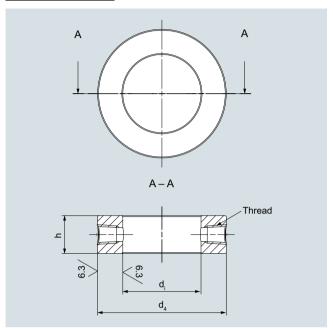
## Flushing rings for diaphragm seals

Selection and Orderin	g data	Artic	cle	Ν	o.Ord.	C	00	de
Flushing ring		7 M F	F 4	9	25-			
for remote seals 7MF49	00 to 7MF4923	1						
Click on the Article N ration in the PIA Life	lo. for the online configu- Cycle Portal.							
Nom. diam.  • DN 50  • DN 80  • DN 100  • DN 125  • 2 inch	Nom. press. PN 16 PN 100 Class 150 600	A B C D						
<ul><li>3 inch</li><li>4 inch</li><li>5 inch</li></ul>	Class 150 600 Class 150 600 Class 150 600	H J K						
Only for RJF ring groov	e, 7MF4925-1*R:							
<ul><li>2 inch</li><li>3 inch</li><li>4 inch</li><li>5 inch</li></ul>	Class 150 Class 150 Class 150 Class 150	N F P F Q F R F	₹ ₹					
<ul><li>2 inch</li><li>3 inch</li><li>4 inch</li><li>5 inch</li></ul>	Class 300 600 Class 300 600 Class 300 600 Class 300 600	V F WF X F	₹ ₹					
Other version Add Order code and pl Nominal diameter:; N		Z				J	1	Y
Sealing surface • EN 1092-1 - Form B1 - Form B2 - Form C/Form C - Form D/Form C		( [	A C C E F					
- Form E - Form F - ASME B16.5 - RF 125 250 AA - RFSF - RJF ring groove Other version Add Order code and pl Sealing surface:	ain text:	I N C	G H M Q R			ĸ	1	Y
Flushing holes (2 off) Female thread G¼ Female thread G½ Female thread ¼-18 N Female thread ½-14 N			1 2 3 4					
Material • Stainless steel 316L Other version Add Order code and pl Material:	ain text:			0 9		M	1	Y
Further designs Please add "-Z" to Articl code.	e No. and specify Order	Orde	er (	CC	ode			
Inspection certificate to EN 10204, section 3.	1	C12						

# Dimensional drawings

## Connection according to EN 1092-1

Form B1 and form B2



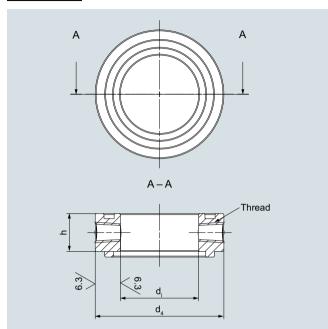
Flushing ring; sealing surface (EN 1092-1), form B1 and form B2

DN	PN	Thread	d <sub>4</sub>	d <sub>i</sub>	h	Weight
mm	bar		Ø in mm (inch)	Ø in mm (inch)	Ø in mm (inch)	kg (lb)
50	16 100	1/4 NPT	102 (4.02)	62 (2.44)	30 (1.18)	1.24 (2.73)
80	16 100	1/4 NPT	138 (5.43)	92 (3.62)	30 (1.18)	1.99 (4.39)
100	16 100	1/4 NPT	162 (6.38)	92 (3.62)	30 (1.18)	3.35 (7.39)
125	16 100	1/4 NPT	188 (7.40)	132 (5.2)	30 (1.18)	3.38 (7.45)
50	16 100	½ NPT	102 (4.02)	62 (2.44)	30 (1.18)	1.24 (2.73)
80	16 100	½ NPT	138 (5.43)	92 (3.62)	30 (1.18)	1.99 (4.39)
100	16 100	½ NPT	162 (6.38)	92 (3.62)	30 (1.18)	3.35 (7.39)
125	16 100	½ NPT	188 (7.40)	132 (5.2)	30 (1.18)	3.38 (7.45)

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

Flushing rings for diaphragm seals

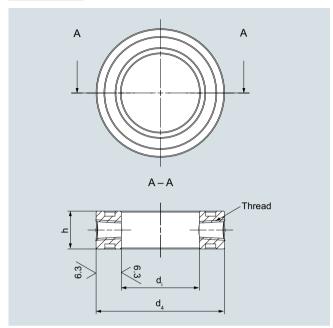
### Form D/form C



Flushing ring; sealing surface (EN 1092-1), form D/form C

DN	PN	Thread	d <sub>4</sub>	d <sub>i</sub>	h	Weight
mm	bar		Ø in mm (inch)	Ø in mm (inch)	Ø in mm (inch)	kg (lb)
50	16 100	1/4 NPT	102 (4.02)	62 (2.44)	35.5 (1.40)	1.46 (3.22)
80	16 100	1/4 NPT	138 (5.43)	92 (3.62)	35.5 (1.40)	2.36 (5.2)
100	16 100	1/4 NPT	162 (6.38)	92 (3.62)	35.5 (1.40)	3.96 (8.73)
125	16 100	1/4 NPT	188 (7.40)	132 (5.2)	35.5 (1.40)	4.00 (8.82)
50	16 100	½ NPT	102 (4.02)	62 (2.44)	40.5 (1.595)	1.67 (3.68)
80	16 100	½ NPT	138 (5.43)	92 (3.62)	40.5 (1.595)	2.69 (5.93)
100	16 100	½ NPT	162 (6.38)	92 (3.62)	40.5 (1.595)	4.52 (9.97)
125	16 100	½ NPT	188 (7.40)	132 (5.2)	40.5 (1.595)	4.56 (10.05)

### Form D/form D



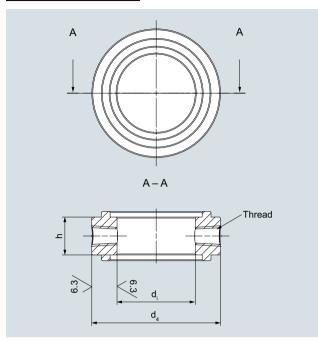
Flushing ring; sealing surface (EN 1092-1), form D/form D

DN	PN	Thread	d <sub>4</sub>	d <sub>i</sub>	h	Weight
mm	bar		Ø in mm (inch)	Ø in mm (inch)	Ø in mm (inch)	kg lb)
50	16 100	1/4 NPT	102 (4.02)	62 (2.44)	40 (1.58)	1.65 (3.64)
80	16 100	1/4 NPT	138 (5.43)	92 (3.62)	40 (1.58)	2.66 (5.86)
100	16 100	1/4 NPT	162 (6.38)	92 (3.62)	40 (1.58)	4.47 (9.86)
125	16 100	1/4 NPT	188 (7.40)	132 (5.2)	40 (1.58)	4.50 (9.92)
50	16 100	½ NPT	102 (4.02)	62 (2.44)	40 (1.58)	1.65 (3.64)
80	16 100	½ NPT	138 (5.43)	92 (3.62)	40 (1.58)	2.66 (5.86)
100	16 100	½ NPT	162 (6.38)	92 (3.62)	40 (1.58)	4.47 (9.86)
125	16 100	½ NPT	188 (7.40)	132 (5.2)	40 (1.58)	4.50 (9.92)

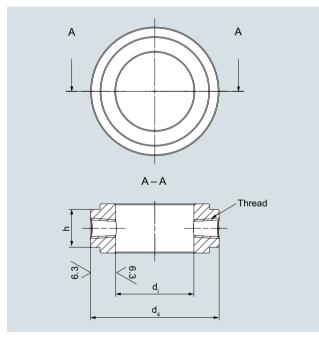
Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

## Flushing rings for diaphragm seals

### Form C/form C and form E



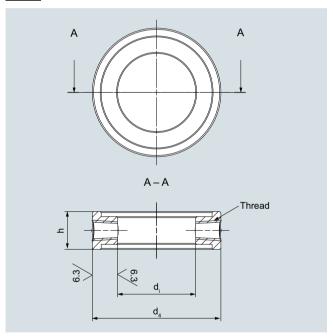
Flushing ring; sealing surface (EN 1092-1), form C/form C



Flushing ring; sealing surface (EN 1092-1), form E

DN	PN	Thread	d <sub>4</sub>	d <sub>i</sub>	h	X	f3	Weight
mm	bar		Ø in mm (inch)	kg (lb)				
50	16 100	1/4 NPT	102 (4.02)	62 (2.44)	31 (1.22)	87 (3.43)	4.5 (0.18)	1.49 (3.28)
80	16 100	1/4 NPT	138 (5.43)	92 (3.62)	31 (1.22)	120 (4.72)	4.5 (0.18)	2.40 (5.29)
100	16 100	1/4 NPT	162 (6.38)	92 (3.62)	30 (1.18)	149 (5.87)	5 (0.2)	4.21 (9.28)
125	16 100	1/4 NPT	188 (7.40)	132 (5.2)	30 (1.18)	175 (6.89)	5 (0.2)	4.21 (9.28)
50	16 100	½ NPT	102 (4.02)	62 (2.44)	31 (1.22)	87 (3.43)	4.5 (0.18)	1.49 (3.28)
80	16 100	½ NPT	138 (5.43)	92 (3.62)	31 (1.22)	120 (4.72)	4.5 (0.18)	2.40 (5.29)
100	16 100	½ NPT	162 (6.38)	92 (3.62)	30 (1.18)	149 (5.87)	5 (0.2)	4.21 (9.28)
125	16 100	½ NPT	188 (7.40)	132 (5.2)	30 (1.18)	175 (6.89)	5 (0.2)	3.38 (7.45)

### Form F



Flushing ring; sealing surface (EN 1092-1), form F

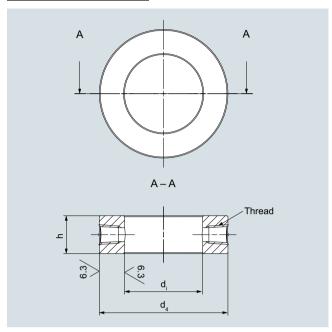
DN	PN	Thread	d <sub>4</sub>	d <sub>i</sub>	h	х	f3	Weight
mm	bar		Ø in mm (inch)	kg lb)				
50	16 100	1/4 NPT	102 (4.02)	62 (2.44)	35 (1.38)	88 (3.46)	4 (0.16)	1.25 (2.76)
80	16 100	1/4 NPT	138 (5.43)	92 (3.62)	35 (1.38)	121 (4.76)	4 (0.16)	2.02 (4.45)
100	16 100	1/4 NPT	162 (6.38)	92 (3.62)	35 (1.38)	150 (5.91)	4.5 (0.18)	3.11 (6.86)
125	16 100	1/4 NPT	188 (7.40)	132 (5.2)	35 (1.38)	175 (6.89)	4.5 (0.18)	3.19 (7.03)
50	16 100	½ NPT	102 (4.02)	62 (2.44)	40 (1.58)	88 (3.46)	4 (0.16)	1.45 (3.2)
80	16 100	½ NPT	138 (5.43)	92 (3.62)	40 (1.58)	121 (4.76)	4 (0.16)	2.35 (5.18)
100	16 100	½ NPT	162 (6.38)	92 (3.62)	40 (1.58)	150 (5.91)	4.5 (0.18)	3.67 (8.09)
125	16 100	½ NPT	188 (7.40)	132 (5.2)	40 (1.58)	175 (6.89)	4.5 (0.18)	3.76 (8.29)

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

Flushing rings for diaphragm seals

### Connection according to ASME B 16.5

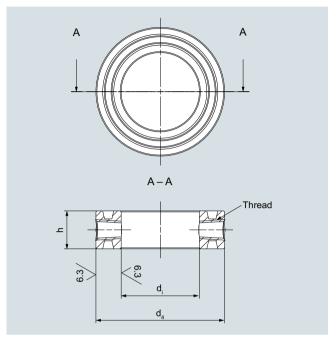
RFSF and RF 125 ... 250 AA



Flushing ring; sealing surface (ASME B 16.5), RFSF and RF 125 to 250  $\mbox{AA}$ 

DN	Class	Thread	d <sub>4</sub>	d <sub>i</sub>	h	Weight
inch			Ø in mm (inch)	Ø in mm (inch)	Ø in mm (inch)	kg lb)
2	150 600	1/4 NPT	92 (3.62)	62 (2.44)	30 (1.18)	0.87 (1.92)
3	150 600	1/4 NPT	127 (5)	92 (3.62)	30 (1.18)	1.44 (3.17)
4	150 600	1/4 NPT	157 (6.18)	92 (3.62)	30 (1.18)	3.05 (6.72)
5	150 600	1/4 NPT	186 (7.32)	141 (5.55)	30 (1.18)	2.77 (6.11)
2	150 600	½ NPT	92 (3.62)	62 (2.44)	30 (1.18)	0.87 (1.92)
3	150 600	½ NPT	127 (5)	92 (3.62)	30 (1.18)	1.44 (3.17)
4	150 600	½ NPT	157 (6.18)	92 (3.62)	30 (1.18)	3.05 (6.72)
5	150 600	½ NPT	186 (7.32)	141 (5.55)	30 (1.18)	2.77 (6.11)

### RJF ring groove



Flushing ring; sealing surface (ASME B 16.5), RJF ring groove

DN	Class	Thread	d <sub>4</sub>	d <sub>i</sub>	h	Weight
inch			Ø in mm (inch)	Ø in mm (inch)	Ø in mm (inch)	kg lb)
2	150	1/4 NPT	102 (4.02)	62 (2.44)	40 (1.58)	1.65 (3.64)
3	150	1/4 NPT	133 (5.24)	92 (3.62)	40 (1.58)	2.32 (5.12)
4	150	1/4 NPT	171 (6.73)	92 (3.62)	40 (1.58)	5.22 (11.51)
5	150	1/4 NPT	194 (7.64)	141 (5.55)	40 (1.58)	4.46 (9.83)
2	150	½ NPT	102 (4.02)	62 (2.44)	46 (1.81)	1.90 (4.19)
3	150	½ NPT	133 (5.24)	92 (3.62)	46 (1.81)	2.66 (5.86)
4	150	½ NPT	171 (6.73)	92 (3.62)	46 (1.81)	6.00 (13.23)
5	150	½ NPT	194 (7.64)	141 (5.55)	46 (1.81)	5.13 (11.31)
2	300 600	1/4 NPT	108 (4.25)	62 (2.44)	40 (1.58)	1.96 (4.32)
3	300 600	1/4 NPT	146 (5.75)	92 (3.62)	40 (1.58)	3.23 (7.12)
4	300 600	1/4 NPT	175 (6.89)	92 (3.62)	40 (1.58)	5.57 (12.28)
5	300 600	1/4 NPT	210 (8.27)	141 (5.55)	40 (1.58)	6.08 (13.4)
2	300 600	½ NPT	108 (4.25)	62 (2.44)	46 (1.81)	2.26 (4.98)
3	300 600	½ NPT	146 (5.75)	92 (3.62)	46 (1.81)	3.71 (8.18)
4	300 600	½ NPT	175 (6.89)	92 (3.62)	46 (1.81)	6.4 (14.11)
5	300 600	½ NPT	210 (8.27)	141 (5.55)	46 (1.81)	7 (15.43)

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

#### Measuring setups

#### Overview

This section shows examples of typical measuring setups for using SITRANS P pressure transmitters with and without remote seals.

Equations for calculating start of scale and full scale are provided for each example.

Questionnaires are included to help you select the right combination of remote seal and pressure transmitter.

#### Installation

Remote seals of sandwich design are fitted between the connection flange of the measuring point and a dummy flange. Remote seals of flange design are fitted directly on the connection flange of the measuring point. The respective pressure rating of the dummy flange or the flanged remote seal must be observed.

The pressure transmitter should be installed below the connection flange (and below the lower connection flange in the case of differential pressure transmitters). This arrangement <u>must</u> be used in the low-pressure range.

When measuring at pressures above atmospheric, the pressure transmitter can also be installed above the connection flange.

The capillaries between the remote seal and the pressure transmitter should be as short as possible to obtain a good transmission response.

#### Offset of measuring range

If there is a difference in height between the two connection flanges when measuring with two remote seals, an additional differential pressure will result from the oil filling of the remote seal capillaries. This results in a measuring range offset which has to be taken into account when you set the pressure transmitter.

An offset in the measuring range also occurs when combining a remote seal with a transmitter if the remote seal is not installed at the same height as the transmitter.

#### Pressure transmitter output

If the level, separation layer or density increase in closed vessels, the differential pressure and hence the output signal of the pressure transmitter also increase.

For an inverted relationship between the differential pressure and the output signal, the start-of-scale and full-scale values of the SITRANS P must be interchanged.

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

#### Influence of ambient temperature

Temperature differences between the individual capillaries and between the individual remote seals should be avoided.

Temperature variations in the area of the measuring setup cause a change in volume of the filling liquid and hence measuring errors.

#### Notes

- For the separation layer measurement, the separation layer has to be positioned between the two spigots. Also you must make sure that the level in the container is always above the top spigot.
- When measuring density, make sure that the level of the medium remains constant. The level should be above the top spigot.

# Possible combinations of pressure transmitters and remote seals

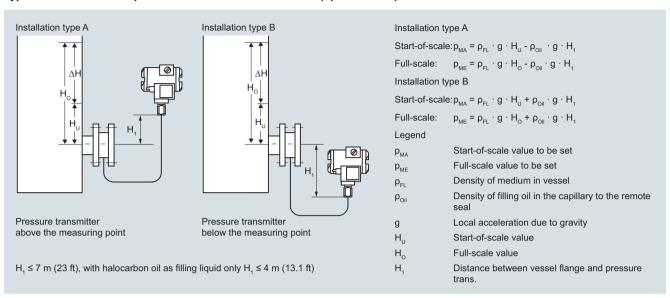
Type of installation	Pressure trans- mitters	Remote seals
A/B	7MF2033 7MF4033 7MF4034 7MF4035 7MF8023 7MF8024 7MF8025	7MF4900 7MF4910 7MF4920
C <sub>1</sub> and C <sub>2</sub>	7MF4233 7MF4234 7MF4235	7MF4900 7MF4910 7MF4920 (negative pressure service in each case)
	7MF4333 7MF4334 7MF4335	7MF4901 7MF4921
D	7MF2433 7MF2434 7MF2435 7MF4433 7MF4434 7MF4435 7MF4533 7MF4534 7MF4535 7MF5403 7MF5413	7MF4903 7MF4923
E	7MF2433 7MF2434 7MF2435 7MF4433 7MF4434 7MF4435 7MF4533 7MF4534 7MF4535 7MF5403 7MF5413	7MF4913
G, H and J	7MF2433 7MF2434 7MF2435 7MF4433 7MF4434 7MF4535 7MF4533 7MF4534 7MF4535 7MF5403 7MF5413	7MF4903 7MF4923

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

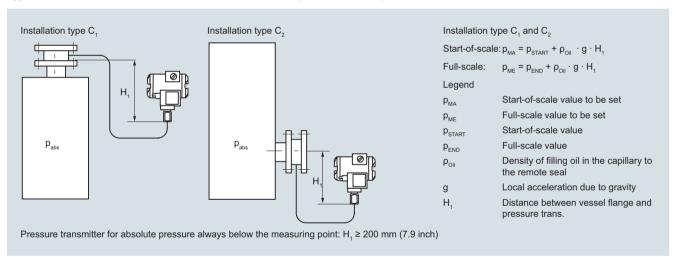
Measuring setups with remote seals

### Dimensional drawings

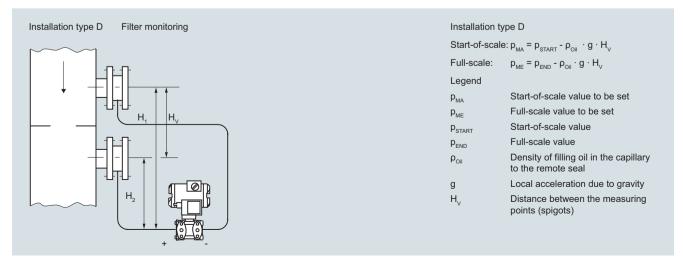
#### Types of installation for pressure and level measurements (open vessels)



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



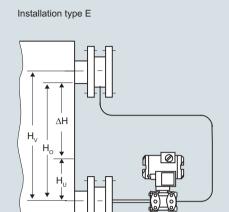
### Type of installation for differential pressure and flow measurements



Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

### Measuring setups with remote seals

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



#### Installation type E

Start-of-scale:  $p_{MA} = \rho_{FL} \cdot g \cdot H_{U} - \rho_{Oil} \cdot g \cdot H_{V}$  $\rho_{\text{ME}} = \rho_{\text{FL}} \cdot g \cdot H_{\text{O}} - \rho_{\text{Oil}} \cdot g \cdot H_{\text{V}}$ 

Legend

 $\boldsymbol{p}_{\text{MA}}$ Full-scale value to be set  $p_{ME}$  $\rho_{\text{FL}}$ Density of medium in vessel Density of filling oil in the capillary to  $\rho_{\text{Oil}}$ 

Start-of-scale value to be set

the remote seal

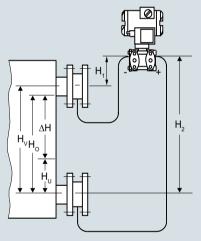
g Local acceleration due to gravity

Start-of-scale value  $H_{ii}$  $H_{o}$ Full-scale value

Distance between the measuring  $H_{v}$ 

points (spigots)

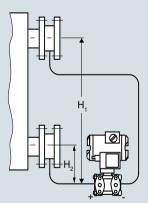




Pressure transmitter for differential pressure above the upper measuring point, no vacuum

 $H_2 \le 7$  m (23 ft), with halocarbon oil as filling liquid only  $H_1 \le 4 \text{ m } (13.1 \text{ ft})$ 

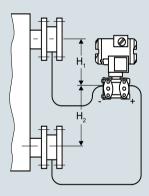
#### Installation type H



below the lower measuring point

Installation type for vacuum applications

#### Installation type J



between the measuring points, no vacuum

 $H_2 \le 7$  m (23 ft), with halocarbon oil as filling liquid only  $H_2 \le 4 \text{ m} (13.1 \text{ ft})$ 

Installation type G, H and J

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

Full-scale:  $p_{ME} = \rho_{FL} \cdot g \cdot H_{O} - \rho_{Oil} \cdot g \cdot H_{V}$  Legend

Start-of-scale value to be set  $p_{MA}$ Full-scale value to be set  $\boldsymbol{p}_{\text{ME}}$ Density of medium in vessel  $\rho_{\text{FL}}$ Density of filling oil in the capillary to  $\rho_{\text{Oil}}$ the remote seal

Local acceleration due to gravity g

H<sub>II</sub> Start-of-scale value Но Full-scale value

 $H_{v}$ Distance between the measuring

points (spigots)

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

# Measuring setups without remote seals

# Overview

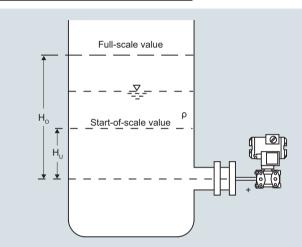
#### Notes

- For the separation layer measurement, the separation layer has to be positioned between the two spigots.
- Also you must make sure that the level in the container is always above the top spigot.
- When measuring density, make sure that the level of the medium remains constant. The level should be above the top spigot

#### Dimensional drawings

#### Pressure transmitters for differential pressure, for flanging

Measuring setups for open containers



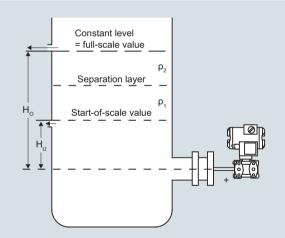
#### Level measurement

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

Legend

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

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



# Separation layer measurement

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

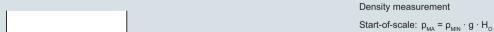
Full-scale:  $p_{ME} = \rho_1 \cdot g \cdot H_0$ 

Legend

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

g Local acceleration due to gravity

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

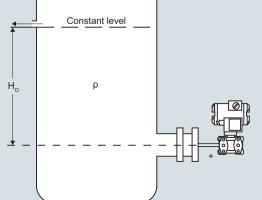


Full-scale:  $\mathbf{p}_{\mathrm{ME}} = \mathbf{p}_{\mathrm{MAX}} \cdot \mathbf{g} \cdot \mathbf{H}_{\mathrm{O}}$  Legende

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

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

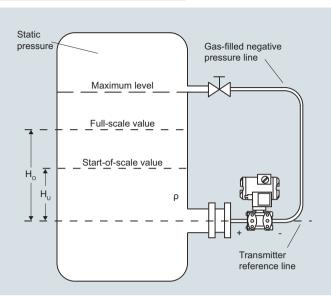
H<sub>o</sub> Full-scale value in m



Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

#### Measuring setups without remote seals

#### Measuring setups for closed containers



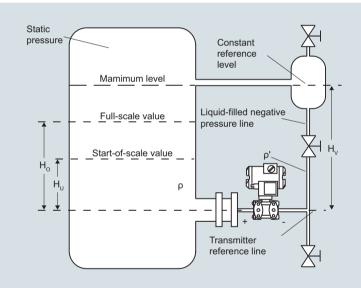
Level measurement, Version 1 Start-of-scale:  $\Delta p_{MA} = \rho \cdot g \cdot H_{II}$ 

Full-scale:  $\Delta pME = \rho \cdot g \cdot H_0$ 

Legend

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

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



Level measurement, Version 2

Start-of-scale:  $\Delta p_{MA} = g \cdot (H_{U} \cdot \rho - H_{V} \cdot \rho')$ 

Full-scale:  $\Delta p_{ME} = g \cdot (H_O \cdot \rho - H_V \cdot \rho')$ 

Legend

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

 $\rho^{\mbox{\tiny I}}$  Density of liquid in the negative pressure

line (corresponding to the temperature

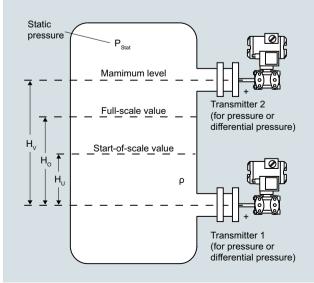
existing there)

g Local acceleration due to gravity

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

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

(spigots)



Level measurement, Version 3

Start-of-scale:  $\Delta p_{MA} = \underbrace{P_{Stat} + \rho \cdot g \cdot H_U}_{Transmitter 1} - \underbrace{P_{Stat}}_{Transmitter 2}$ 

Full-scale:  $\Delta p_{ME} = P_{Stat} + \rho \cdot g \cdot H_{O} - P_{Stat}$ 

Transmitter 1 Transmitter 2

Legend

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

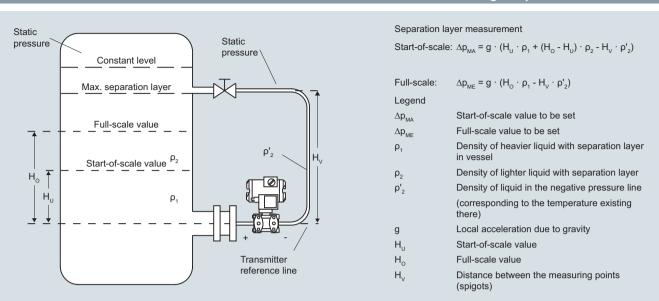
 ${
m H_{U}}$  Start-of-scale value  ${
m H_{O}}$  Full-scale value

H<sub>V</sub> Distance between the measuring points (spigots)

The pressure measuring range (≜ level) will be calculated by subtraction of measuring range of transmitter 1 minus measuring range of transmitter 2 in the process control system.

Remote seals for pressure transmitters SITRANS P300, P DS III, P410, P500

# Measuring setups without remote seals



**Fittings** 

#### Technical description

#### Overview

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

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

The measuring instruments can be screwed onto the shut-off fittings right at the end when all piping has been completed.

If an instrument has to be removed for maintenance, the fittings and pipes remain as they are. It is only necessary to close the valves – the instrument can then be removed, and refitted following maintenance.

# Classification according to pressure equipment directive (PED 2014/68/EU):

For gases of fluid group 1 and liquids of fluid group 1; compliance with requirements of article 4, paragraph 3 (sound engineering practice).

#### New standard IEC 61518/DIN EN 61518

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

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

#### Material acceptance test certificate to EN 10204-3.1

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

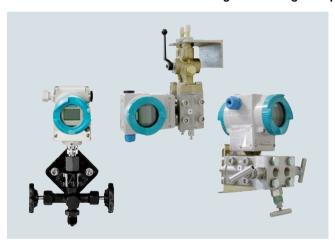
#### Minimum/maximum operating temperatures

The maximum operating temperatures are given for each value or valve manifold.

The minimum operating temperatures depend on the material used for the valves or valve manifold. They are as follows:

Material	Minimum operating temperature
Brass	-10 °C (-14 °F) according to EN 12516-4
Steel	-10 °C (-14 °F) according to AD200-W10
Stainless steel	-40 °C (-40 °F)

#### Pressure transmitters with shut-off fittings - mounting examples



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



SITRANS P transmitter for differential pressure with 3-way valve manifold, 3-spindle valve manifold or valve manifold combination DN 5/DN 8



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



SITRANS P pressure transmitter mounted on valve combination "Monoflange" for direct connection to flanges (available on request)

Fittings

# Selection aid

# Selection of available shut-off valves

Transmitters	Shut-off valves for general applications	Page		Shut-off valves for special applications	Page	
Relative and absolute pressure transmitters with process connection G½" male thread e.g.  • SITRANS P200 7MF1565 • SITRANS P210	Shut-off valves/double shut- off valves to DIN 16270, DIN 16271 and DIN 16272	1/475		Double shut-off valve DN 5 for crossover ½-NPT-F to G½ nipple connection 7MF9011-4EA	1/478	
7MF1566 • SITRANS P220 7MF1567				2-spindle valve manifold DN 5 for installation in pro- tective boxes	1/496	
• SITRANS P300 7MF8020				7MF9412-1B		
• SITRANS P 320/420 7MF030D 7MF032D 7MF040D 7MF042D						
<ul> <li>SITRANS P DS III series</li> <li>7MF4030 and</li> <li>7MF4230</li> <li>SITRANS P410</li> </ul>						
7MF2430 C41						
Gauge and absolute pressure transmitters with process connection ½"-14 NPT female or male thread	Double shut-off valve DN 5 7MF9011-4EA, -4FA, -4GA and -4KA	1/478		Double shut-off valve DN 5 for process connection ½-NPT	1/478	
e.g. • SITRANS P200 7MF1565			7MF9011-4FA	7MF9011-4HA		<u> </u>
• SITRANS P210 7MF1566			71VII 9011-41 A			
• SITRANS P220 7MF1567						
• SITRANS P300 7MF8021			200			
• SITRANS P 320/420 7MF030E 7MF030F 7MF032E 7MF040E 7MF040F 7MF042E 7MF042F			7MF9011-4KA			
SITRANS P DS III series 7MF4031 and 7MF4231						
• SITRANS P410 7MF2431 C41						
Absolute pressure transmitter with process connection to IEC 61518/DIN EN 61518 e.g. • SITRANS P 320/420 7MF033	2-spindle valve manifold DN 5 7MF9411-5A.	1/481	The state of the s	2-spindle valve manifold DN 5 for installation in pro- tective boxes 7MF9412-1C.	1/496	
TMF043  • SITRANS P DS III series TMF433						

Fittings

# Selection aid

Transmitters	Shut-off valves for general applications	Page		Shut-off valves for special applications	Page	
Differential pressure transmitter with process connection to IEC 61518/DIN EN 61518 e.g. • SITRANS P 320/420 7MF034 7MF044	For 3/5-spindle valve manifold DN 5 7MF9411-5B. and 7MF9411-5C.	1/481		3-way valve manifold DN 5, forged version 7MF9410-1	1/486	
<ul> <li>SITRANS P DS III series 7MF443 and 7MF453</li> <li>SITRANS P410 7MF443 C41; 7MF453 C41</li> <li>SITRANS P500</li> </ul>			To and	5-way valve manifold, DN 5, forged version 7MF9410-3	1/486	
7MF54	PN 100 multiway cocks 7MF9004	1/484		3-way valve manifolds DN 8, forged version 7MF9416-1 and 7MF9416-2	1/489	
				valve manifold combination DN 5/DN 8 for vapor measurement 7MF9416-6	1/492	
				valve manifold combination DN 8 for vapor measurement 7MF9416-4	1/494	
				3- and 5-spindle valve manifold for DN 5 for installation in protective boxes 7MF9412-1D. and 7MF9412-1E.	1/496	
				3- and 5-spindle valve	1/500	
				manifold for vertical differential pressure lines 7MF9413-1		1
				Low-pressure multiway cock 7MF9004-4	1/503	

Article No.

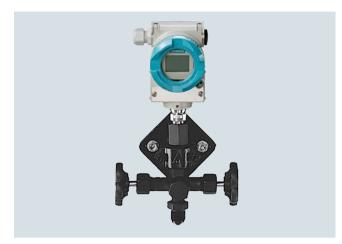
**Fitttings** 

Shut-off valves for gauge and absolute pressure transmitters

Selection and Ordering data

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

# Overview



Transmitter for pressure with double shut-off valve 7MF9401-...

The shut-off valves for pressure gauges are used to shut off the line of the measured medium when dealing with aggressive and non-aggressive gases, vapors and liquids.

# Design

(mat. No. 1.4571/316Ti)

A water trap must be connected upstream of the shut-off valve in the case of temperatures of the medium above 120 °C. The shut-off valves form B have a shaft with which they can be secured on an instrument bracket. An adapter is therefore not required to secure these valves. The vent/test connection can be shut off separately with the double shut-off valves DN 5. This permits checking of the zero on the pressure gauge. In addition, the characteristic of the pressure gauge can be checked using an external pressure source. The valve packing material is PTEF.

external pressure source. The valve packing material is PTFE					
Selection and Orderin	ng data	Article No.			
Shut-off valves, form	B, DIN 16270				
without test collar, con without certificate	nection shank,				
Material Valve housing	Maximum permissible working pressure				
CW614N (CuZn39Pb3 (mat. No. 2.0402)	)250 bar (3626 psi)	7MF9401-7AA			
P250GH (mat. No. 1.0460)	400 bar (5800 psi)	7MF9401-7AB			
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti		7MF9401-7AC			
Shut-off valves, form	B, DIN 16271				
with test collar, connect without certificate	ction shank,				
Material Valve housing	Maximum permissible working pressure				
CW614N (CuZn39Pb3 (mat. No. 2.0402)	)250 bar (3626 psi)	7MF9401-7BA			
P250GH (mat. No. 1.0460)	400 bar (5800 psi)	7MF9401-7BB			
X 6 CrNiMoTi 17 12 2	400 bar (5800 psi)	7MF9401-7BC			

Shut-off valves, form		
without test collar, pipe 12 S DIN EN ISO 8434		
Material Valve housing	Maximum permissible working pressure	
P250GH (mat. No. 1.0460)	400 bar (5800 psi)	7MF9401-8AB
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti		7MF9401-8AC
Shut-off valves, form	B, DIN 16271	
with test collar, pipe ur 12 S DIN EN ISO 8434		
Material Valve housing	Maximum permissible working pressure	
P250GH (mat. No. 1.0460)	400 bar (5800 psi)	7MF9401-8BB
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti		7MF9401-8BC
Double shut-off valve	es, form B, DIN 16272	
with test collar, connect without certificate	ction shank,	
Material Valve housing	Maximum permissible working pressure	
CW614N (CuZn39Pb3 (mat. No. 2.0402)	)250 bar (3626 psi)	7MF9401-7DA
P250GH (mat. No. 1.0460)	400 bar (5800 psi)	7MF9401-7DB
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti	400 bar (5800 psi)	7MF9401-7DC
Double shut-off valve	es, form B, DIN 16272	
with test collar, pipe ur 12 S DIN EN ISO 8434		
Material Valve housing	Maximum permissible working pressure	
P250GH (mat. No. 1.0460)	400 bar (5800 psi)	7MF9401-8DB
X 6 CrNiMoTi 17 12 2 400 bar (5800 psi) (mat. No. 1.4571/316Ti)		7MF9401-8DC
Accessories		
Factory test certificate	7MF9000-8AB	
Material acceptance to EN 10204-3.1	7MF9000-8AD	

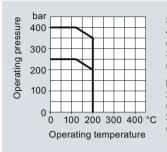
Instrument bracket, see page 1/480.

Fitttings

Shut-off valves for gauge and absolute pressure transmitters

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

#### Characteristic curves

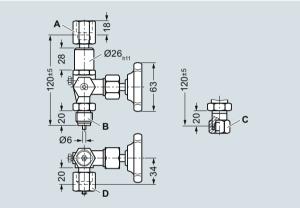


Steel or stainless steel version 400 bar (5800 psi) at 120 °C (248 °F) 350 bar (5076 psi) at 200 °C (392 °F)

Brass version 250 bar (3626 psi) at 120 °C (248 °F) 200 bar (2901 psi) at 200 °C (392 °F)

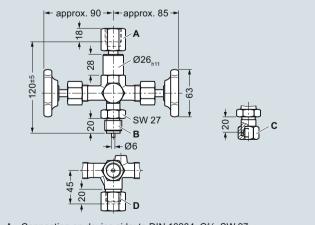
Permissible operating pressure as a function of the permissible operating temperature

#### Dimensional drawings



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

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



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

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

Fitttings

Shut-off valves for gauge and absolute pressure transmitters

Angle adapter

# Overview

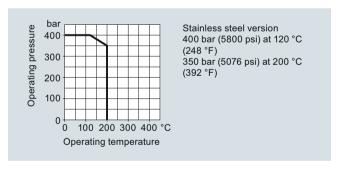


P300 pressure transmitter with shut-off valve and angle adapter

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

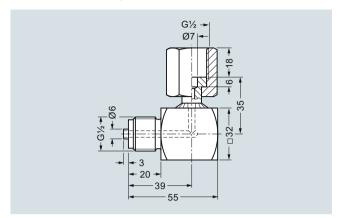
# Selection and Ordering data Article No. Angle adapters Material: X 12 CrNiMoTi 17 12 2 (mat. No. 1.45714/316Ti), max. permissible operating pressure 400 bar (5800 psi) Accessories Factory test certificate EN 10204–2.2 Material acceptance test certificate EN 10204-3.1 Article No. 7MF9401-7WA 7MF9000-8AB 7MF9000-8AB

#### Characteristic curves



Permissible operating overpressure as a function of the permissible operating temperature

# Dimensional drawings



Angle adapter, dimensions in mm

**Fitttings** 

Shut-off valves for gauge and absolute pressure transmitters

# Shut-off valves/Double shut-off valves

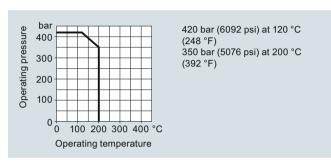
#### Overview

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

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

The valve packing material is PTFE.

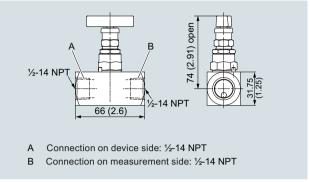
#### Characteristic curves



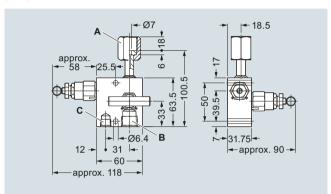
Permissible operating pressure as a function of the permissible operating temperature

Selection and Ordering data	Article No.
Shut-off valve DN 5	
Material: X 6 CrNiMoTi 17 13 2 (WNr. 1.4404/316L), max. permissible operating overpressure 420 bar (6092 psi)	
• Sleeve-sleeve	7MF9011-3HA
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-nipple connection	7MF9011-4EA
• Sleeve-sleeve	7MF9011-4HA
Sleeve-collar	7MF9011-4FA
Collar-collar	7MF9011-4GA
Collar-sleeve	7MF9011-4KA
Accessories	
Factory test certificate EN 10204–2.2	7MF9000-8AB
Material acceptance test certificate EN 10204-3.1	7MF9000-8AD
Further designs	Order code
Add "-Z" to Article No. and specify Order code.	
Oil- and grease-free cleaning for oxygen applications, max. pressure PN 100 (1450 psi) and max. temperature 60 °C (140 °F)	S12
NACE MR-0175-certified	D07
incl. acceptance test certificate 3.1 to EN 10204	

# Dimensional drawings

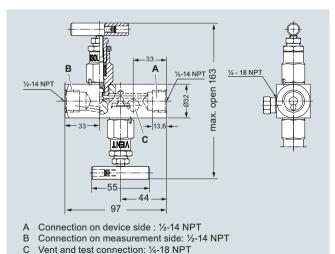


Shut-off valve DN 5 (sleeve-sleeve) 7MF9011-3HA, dimensions in mm (inch)



- A Connection on device side: nipple to DIN 16284, G1/2, SW 27
- B Connection on measurement side: ½-14 NPT
- C Vent and test connection: 1/4-18 NPT

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

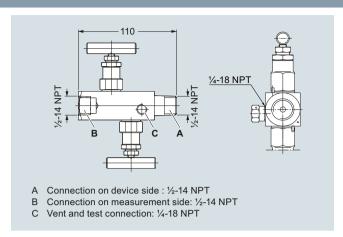


Double shut-off valve DN 5 (sleeve-sleeve) 7MF9011-4HA, dimensions in  $\mbox{\sc mm}$ 

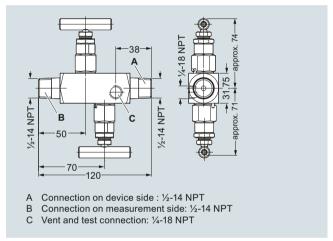
Fitttings

Shut-off valves for gauge and absolute pressure transmitters

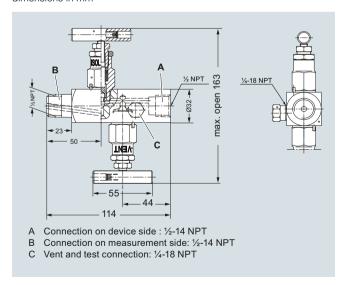
Shut-off valves/Double shut-off valves



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



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



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

**Fitttings** 

Shut-off valves for gauge and absolute pressure transmitters

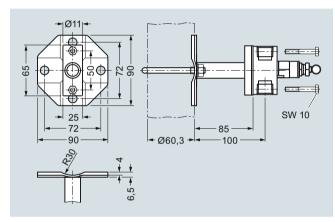
# Accessories for shut-off valves/double shut-off valves

#### Overview

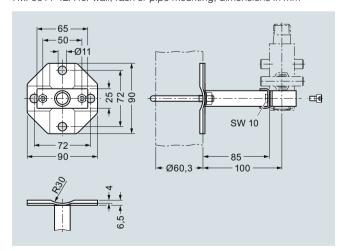
The mounting set is suitable for the double shut-off valves 7MF9011-4.A and for wall, rack and pipe mounting.

Selection and Ordering data	Article No.
Mounting set for shut-off valves	
• 7MF9011-4DA and -4EA	7MF9011-8AB
made of stainless steel, scope of delivery: 1x mounting bracket, 2x hexagon screws M6x40, 1x mounting clip, 2x washers 8.4 to DIN 125; 2x hexagon nuts 8.4 to DIN EN 24032	
• 7MF9011-4FA, -4GA, 4HA, -4KA and -3HA	7MF9011-8AC
made of stainless steel, scope of delivery: 1x mounting bracket, 2x hexagon screws M6x10, 1x mounting clip, 2x washers 8.4 to DIN 125; 2x hexagon nuts 8.4 to DIN EN 24032	

# Dimensional drawings



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



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

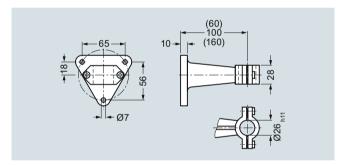
# Overview

The instrument brackets are needed to mount the following units:

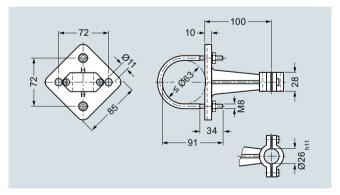
- Pressure gauges with threaded connection at the bottom
- Shut-off valves to DIN 16270, DIN 16271 and DIN 16272 (7MF9401-7.. and 7MF9401-8..)

Selection and Ordering data	Article No.
Instrument bracket, form H, DIN 16281	
(e.g. for gauge) made of aluminium alloy, painted black, for wall mounting, screw-type bracket cover • Projection length 60 mm • Projection length 100 mm	M56340-A0046 M56340-A0047
Instrument bracket, form A, DIN 16281	
(e.g. for transmitter) made of annealed cast iron, galvanized and primed <b>for mounting on a wall</b> or rack or or on a sectional rail (horizontal/vertical); Screw-type bracket cover	M56340-A0053
Instrument bracket, form A, DIN 16281	
(e.g. for transmitter) made of annealed cast iron, galvanized and primed with pipe clamp for wall and pipe mounting (horizotal/vertical) Screw-type bracket cover	M56340-A0079

# Dimensional drawings



Instrument bracket form H, for wall mounting, M56340-A0046/-A0047, dimensions in mm



Instrument bracket form A, wall or pipe mounting, M56340-A0053/-A0079, dimensions in mm

**Fitttinas** 

Shut-off valves for differential pressure transmitters

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

# Overview



The 2-spindle, 3-spindle and 5-spindle valve manifolds 7MF9411-5.. are for pressure transmitters for absolute pressure or differential pressure.

The valve manifolds are used to shut off the differential pressure lines and to check the pressure transmitter zero.

The 2-spindle and the 5-spindle valve manifold enable in addition venting on the transmitter side and checking of the pressure transmitter characteristic.

#### Benefits

- Max. working pressure 420 bar (6092 psi)
- Each available in version for oxygen

#### Application

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

Each is available in a version for oxygen on request.

#### Design

All versions of the valve manifolds have a process connection ½-14 NPT. The connection for the pressure transmitter is always designed as a flange connection to IEC 61518/DIN EN 61518, form B . The 2-spindle and the 5-spindle valve manifold have in addition a vent and test connection ¼-18 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	Article No.
Valve manifolds DN 5	7MF9411-
for liquids and gases, for flanging to pressure transmitters for absolute and differential pressure, max. working pressure 420 bar (order accessory set with Order code), without certificate	
<ul> <li>2-spindle valve manifold</li> </ul>	5 A
<ul> <li>3-spindle valve manifold</li> </ul>	5 B
<ul> <li>5-spindle valve manifold</li> </ul>	5 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	Article No.
Further designs <sup>1)</sup>		
Please add "-Z" to Article No. and specify Order code.		
Accessory set to EN (connection between valve manifold and pressure transmitter)		
for valve manifold 7MF9411-5A.		
2x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 1¾ inch to ASME B18.2.1; chromized steel 1x gasket made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)	K35	7MF9411-7DB
2x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 1% 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 manifolds 7MF9411-5B. and -5C.		
4x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 1¾ 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 <sup>7</sup> / <sub>16</sub> -20 UNF x 1% inch to ASME B18.2.1; <b>stainless steel</b> 2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)	K46	7MF9411-5DC
Accessory set to DIN <sup>2)</sup>		
(connection between valve manifold and pressure transmitter)		
for valve manifold 7MF9411-5A.		
2x screws M10x45 to DIN EN 24014; chromized steel 2x washers Ø 10.5 mm to DIN 125; 1x gasket made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)	K15	7MF9411-7BB
2x screws M10x45 to DIN EN 24014; stainless steel 2x washers Ø 10.5 mm to DIN 125, stainless steel; 1x gasket made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)	K25	7MF9411-7BC

#### **Fitttings**

Shut-off valves for differential pressure transmitters

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

2-, 3- and 5-spindle valve man	iloius DN 5	
Selection and Ordering data	Order code	Article No.
Further designs <sup>1)</sup>		
Please add "-Z" to Article No. and specify Order code.		
for valve manifolds 7MF9411-5B. and -5C.		
4x screws M10x45 to DIN EN 24014; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F) Flange connection with M10 screws only permissible up to PN 160.	K16	7MF9411-6BB
4x screws M10x45 to DIN EN 24014; stainless steel	K26	7MF9411-6BC
4x washers Ø 10.5 mm to DIN 125, stainless steel; 2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F) Flange connection with M10 screws only permissible up to PN 160.		
Mounting plate		
for valve manifold, made of electrogalvanized sheet-steel     for wall mounting or for securing on rack (72 mm grid), weight 0.5 kg Scope of delivery: 1 mounting plate with bolts for mounting on valve manifold	M11	7MF9006-6EA
<ul> <li>for pipe mounting, weight 0.7 kg Scope of delivery: 1x mounting plate M11, 2x pipe brackets with nuts and washers (for pipe with max. Ø 60.3 mm) and fastening screws for mounting on valve manifold</li> </ul>	M12	7MF9006-6GA
• for valve manifold, made of		
stainless steel 316L  - for wall mounting or for securing on rack (72 mm grid), weight 0.5 kg Scope of delivery: 1 mounting plate with bolts for mounting on valve manifold	M21	7MF9006-6EC
<ul> <li>for pipe mounting, weight 0.7 kg Scope of delivery:</li> <li>1x mounting plate M21, 2x pipe brackets with nuts and washers (for pipe with max. Ø 60.3 mm)</li> </ul>	M22	7MF9006-6GC
Valve manifold 100 bar		
Oil- and grease-free cleaning for oxygen applications, max. pressure PN 100 (1450 psi) and max. temperature 60 °C (140 °F) • for 7MF9411-5A. • for 7MF9411-5B. • for 7MF9411-5C.  NACE MR-0175-certified incl. acceptance test certificate 3.1	S12 S13 S14 D07	
to EN 10204		

When ordering accessory set or mounting together with the valve manifolds, please use Order code; otherwise use Article No.
 Flange connections to DIN 19213 only permissible up to PN 160 (2321 psi)!

# Accessories

# Accessory set for 2-, 3- and 5-spindle valve manifolds

#### 2-spindle valve manifold DN 5

- K35: 2 screws <sup>7</sup>/<sub>16</sub>-20 UNF x 1<sup>3</sup>/<sub>4</sub> inch to ASME B18.2.1, 1 flat gasket
- K15: 2 screws M10x45 to DIN EN 24014, 2 washers, 1 flat gasket

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

- K36: 4 screws <sup>7</sup>/<sub>16</sub>-20 UNF x 1<sup>3</sup>/<sub>4</sub> inch to ASME B18.2.1,
- K16: 4 screws M10x45 to DIN EN 24014, 4 washers, 2 flat gaskets

Washers Ø 10.5 to DIN 125

Flat gaskets made of PTFE, max. 420 bar (6092 psi), 80 °C

Note: Flange connection with M10 screws only permissible up to PN 160!

#### Mounting plate

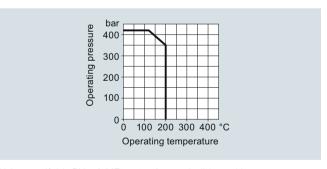
Made of electrogalvanized sheet-steel

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

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

- S12: For 2-way valve manifold
- S13: For 3-way valve manifold
- S14: For 5-way valve manifold

# Characteristic curves



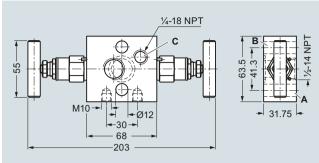
Valve manifolds PN 5 (7MF9411-5..), permissible working pressure as a function of the permissible working temperature

**Fitttings** 

Shut-off valves for differential pressure transmitters

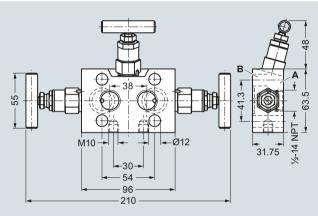
# 2-, 3- and 5-spindle valve manifolds DN 5

# Dimensional drawings

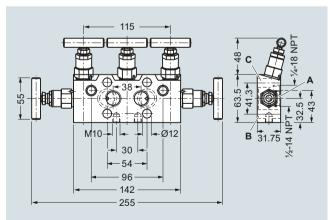


- A Process connection: ½-14 NPT
- B Transmitter connection: Flange connection to IEC 61518, form B
- C Vent / test connection: 1/4-18 NPT
- Valve design: external spindle thread

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

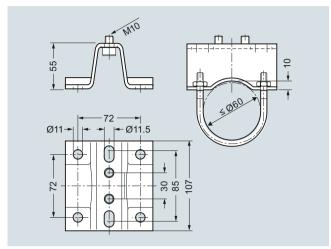


- A Process connection: ½-14 NPT
- B Transmitter connection: Flange connection to IEC 61518, form B Valve design: external spindle thread
- 3-spindle valve manifold DN 5 (7MF9411-5B.), dimensions in mm



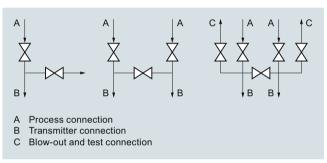
- A Process connection: 1/2-14 NPT
- B Transmitter connection: Flange connection to IEC 61518, form B
- C Vent / test connection: 1/4-18 NPT
- Valve design: external spindle thread

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



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

# Schematics



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

**Fitttings** 

Shut-off valves for differential pressure transmitters

#### Multiway cocks PN 100

#### Overview



Multiway cock PN 100 (1450 psi) (7MF9004-1P.) for differential pressure transmitters

The multiway cock PN 100 (1450 psi) can be flanged to pressure transmitters for differential pressure.

#### Benefits

- Version available for aggressive liquids, gases and vapors
- · Robust design
- Oil-free and grease-free version possible
- One-hand operation

#### Application

The PN 100 (1450 psi) multiway cock is available in versions for aggressive and non-aggressive liquids, gases and vapors.

#### Design

The multiway cock can be flanged with four screws to pressure transmitters for differential pressure.

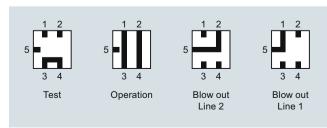
The PN 100 (1450 psi) has 2 process connections and one blowout connection. A steel version of the multiway cock is available for non-aggressive media, and a stainless steel version for aggressive media. The housing is forged in one piece. The switching lever is removable.

Sealing can be improved during operation.

**Note**: An accessory set is always required for flanging of the multiway cock to a differential pressure transmitter.

#### Function

- Shutting off the differential pressure lines
- Blowing out the differential pressure lines
- Testing the pressure transmitter zero



Cock positions; the symbols are printed on the cock

# Technical specifications

Multiway cocks PN 100			
Measured medium	Water, non-aggressive liquids and gases	Aggressive liquids, gases and vapors	
Material	P250GH, mat. No.: 1.0460	X 6 CrNiMoTi 17 12 2, mat. No. 1.4571/316Ti	
Connections	Steel, for pipe Ø 12 mm, L series	Stainless steel, for pipe Ø 12 mm, L series	
<ul><li>Process connection</li><li>Connection for blowing out</li></ul>	2 bulkhead glands Pipe union with ferrule		
Max. permissible working temperature	200 °C (392 °F)		
Max. permissible working pressure	100 bar (1450 psi) (up to max. 60 °C (140 °F)) 2.5 kg		
Weight			

Selection and Ordering data	Article No.		
Multiway cock PN 100 (1450 psi)	7 M F 9 0 0 4 - A		
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.			
for flanging to pressure transmitters, weight 2.5 kg (without accessory set), without certificate			
For water and non-aggressive gases and vapors	1 P		
For aggressive liquids, gases and vapors	1 Q		
Accessories			
Factory test certificate EN 10204–2.2 Material acceptance test certificate EN 10204-3.1	7MF9000-8AB 7MF9000-8AD		

Selection and Ordering data	Order code	Article No.
Further designs <sup>1)</sup> Please add "-Z" to Article No. and specify Order code.		
Accessory set to EN (required for flanging, weight 0.2 kg) 4x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 1 inch to ASME B18.2.1; chromized steel 2x gaskets made of PTFE, max. permissible temperature 80 °C (176 °F)	L31	7MF9004-5CC
Accessory set to DIN (required for flanging, weight 0.2 kg) 4x screws M10x25 to DIN EN 24017; chromized steel, 4x washers Ø 10.5 mm to DIN 125; 2x gaskets made of PTFE, max. permissible temperature 80 °C (176 °F)		
Standard design     Version for oxygen (together with Order code S11	L11 L15	7MF9004-6AD 7MF9004-6AE
Multiway cock in oil-free and grease- free design		
Oil- and grease-free cleaning for oxygen applications, max. pressure PN 100 (1450 psi) and max. temperature 60 °C (140 °F), BAM-tested lubricant, gasket suitable for oxygen measurement (only with Article No. 7MF9004–1Q.Z)	S11	
Mounting bracket Required for wall mounting or for securing on rack (72 mm grid), made of electrogalvanized sheet-steel, weight 0.85 kg	M13	7MF9004-6AA
NACE MR-0175-certified incl. acceptance test certificate 3.1 to EN 10204 (only available for version 7MF9004-1QA)	D07	

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

Fitttings

Shut-off valves for differential pressure transmitters

Multiway cocks PN 100

# Accessories

# Accessory set for multiway cock PN 100

- L31: 4 screws <sup>7</sup>/<sub>16</sub>-20 UNF x 1 inch, 2 flat gaskets
- L11: 4 screws M10x25 to DIN EN 24017, 4 washers, 2 flat gaskets
- L15 (suitable for oxygen): 4 screws M10x25 to DIN EN 24017, 4 washers, 2 flat gaskets

Washers Ø 10.5 to DIN 125

Flat gaskets made of PTFE, max. permissible temperature 80 °C (176 °F)

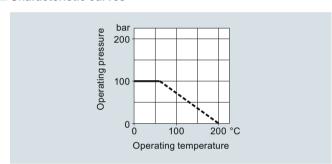
#### Multiway cock in oil-free and grease-free design

 S11 (only for aggressive liquids, gases and vapors (7MF9004-1Q.)): Max. PN 63 (914 psi) (instead of PN 100 (1450 psi)), BAM-tested lubricant, gasket suitable for oxygen

#### Mounting brackets

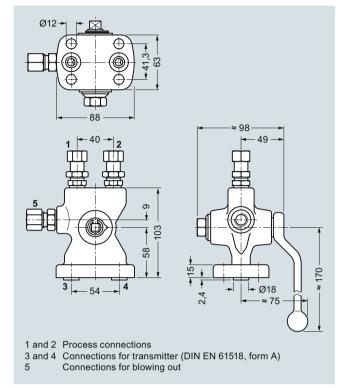
 M13: Required for wall mounting or for securing on rack (72 mm grid); made of electrogalvanized sheet-steel

#### Characteristic curves

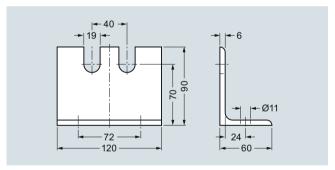


Multiway cock PN 100 (1450 psi), permissible operating pressure as a function of the permissible operating temperature

# Dimensional drawings



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



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

**Fitttings** 

Shut-off valves for differential pressure transmitters

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

#### Overview



The three-spindle and five-spindle valve manifolds DN 5 (7MF9410-1../-3..) are used to shut off the differential pressure lines and to check the transmitter zero.

In addition, the five-way valve manifold permits blowing out of the differential pressure lines.

#### Benefits

- Available for aggressive and non-aggressive liquids and gases
- Max. working pressure 420 bar (6092 psi), with version for oxygen max. 100 bar (1450 psi)

# Application

The 3-way and 5-way valve manifolds are available in versions for aggressive and non-aggressive liquids and gases.

Mounting plates are available for wall mounting, for securing to mounting racks or for pipe mounting.

# Design

The process connection of the 3-way and 5-way valve manifolds is a pipe union with ferrule.

Both valve manifolds have 2 flange connections for connecting a pressure transmitter.

In addition, the five-way valve manifold has 2 blow-out connections.

Depending on the version the valve manifold has either 3 or 5 valves, each with an internal spindle thread.

#### Materials used

	For non-aggressive liquids and gases		For aggre	
Component	Material	Mat. No.	Material	Mat. No.
Housing	P250GH	1.0460	X 6 CrN-	1.4571/
Head parts	C 35	1.0501	iMoTi17 12 2	316Ti
Spindles	X 12 CrMoS 17	1.4104		
Cones	X 35 CrMo 17 hardened and tempered	1.4122		
Valve seats	X 6 CrNiMoTi 17 12 2	1.4571/ 316Ti		
Packings	PTFE	-	PTFE	-

# Function

- Shutting off the differential pressure lines
- · Checking the pressure transmitter zero
- In addition, the five-way valve manifold permits blowing out of the differential pressure lines.

Selection and Ordering data	Article No.
3-way valve manifold DN 5	7MF9410-
For flanging to pressure transmitters for differential pressure, process connection: Pipe union with ferrule, max. working pressure 420 bar (6092 psi), weight 2.9 kg (order accessory set and mounting plate with Order code), without certificate	
<ul> <li>for non-aggressive liquids and gases</li> </ul>	1 E
<ul> <li>for aggressive liquids and gases</li> </ul>	1 F
5-way valve manifold DN 5	
For flanging to pressure transmitters for differential pressure, process connection: Pipe union with ferrule, max. working pressure 420 bar (6092 psi), weight 4.4 kg (order accessory set and mounting plate with Order code), without certificate	
• for non-aggressive liquids and gases	3 E
<ul> <li>for aggressive liquids and gases</li> </ul>	3 F
Accessories	
Factory test certificate EN 10204–2.2	7MF9000-8AB
Material acceptance test certificate EN 10204-3.1	7MF9000-8AD

**Fitttings** 

Shut-off valves for differential pressure transmitters

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

Selection and Ordering data	Order code	Article No.
Further designs <sup>1)</sup>		
Please add "-Z" to Article No. and specify Order code.		
Accessory set to EN		
(required for flanging, weight 0.2 kg)		
$4 x \ screws \ ^7/_{16}\ -20 \ UNF \ x \ 2^1/_8 \ inch to \ ASME B18.2; chromized steel                                  $	B31	7MF9010-5CC
4x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 2 <sup>1</sup> / <sub>8</sub> inch to ASME B18.2; chromized steel 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F)	B34	7MF9410-5CA
Accessory set to DIN <sup>2)</sup>		
(required for flanging, weight 0.2 kg)  4x screws M10x55 to DIN EN 24014; chromized steel  4x washers Ø 10.5 mm to DIN 125; 2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi),  80 °C (176 °F)		
Standard design	B11	7MF9010-6AD
Version for oxygen	B15	7MF9010-6AE
4x screws M10x55 to DIN EN 24014; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F)	B16	7MF9010-6CC
Mounting plate		
for valve manifold, made of electrogalvanized sheet-steel for wall mounting or for securing on rack (72 mm grid), weight 0.5 kg Scope of delivery:  1 mounting plate with bolts for mounting on valve manifold	M11	7MF9006-6EA
for pipe mounting, weight 0.7 kg	M12	7MF9006-6GA
Scope of delivery: 1x mounting plate M11, 2x pipe brackets with nuts and washers (for pipe with max. Ø 60.3 mm)		
valve manifold 100 bar		
suitable for oxygen		
for 7MF9410-1F	S13	
for 7MF9410-3F	S14	
NACE MR-0175-certified	D07	
incl. acceptance test certificate 3.1 to EN 10204 (only available for version 7MF9410-1FA and -3FA)		

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

# Accessories

# Accessory set for 3-way and 5-way valve manifold DN 5 for flanging

- B31: 4 screws <sup>7</sup>/<sub>16</sub>-20 UNF x 2<sup>1</sup>/<sub>8</sub> inch to ASME B18.2.1, 2 flat gaskets
- B34: 4 screws  $^{7}/_{16}$ -20 UNF x  $2^{1}/_{8}$  inch to ASME B18.2.1, 2 O-rings (FPM 90)
- B11: 4 screws M10x55 to DIN EN 24014, 4 washers, 2 flat gaskets
- B15 (suitable for oxygen): 4 screws M10x55 to DIN EN 24014, 4 washers, 2 flat gaskets
- B16: 4 screws M10x55 to DIN EN 24014, 4 washers, 2 O-rings (FPM 90)

Washers Ø 10.5 to DIN 125

Flat gaskets made of PTFE, max. 420 bar (6092 psi), 80  $^{\circ}$ C (176  $^{\circ}$ F)

O-ring to DIN 3771, 20 x 2.65 – S – FPM90, max. 420 bar (6092 psi), 120 °C (248 °F)

Note: M10 screws only permissible up to PN 160 (2320 psi)!

#### Mounting plate

Made of electrogalvanized sheet-steel

- M11: For wall mounting or for securing on rack (72 mm grid)
   Scope of delivery:
  - 1 mounting plate 7MF9006-6EA with bolts for mounting on valve manifold
- M12: For pipe mounting Scope of delivery:
  - 1 mounting plate M11
  - 2 pipe brackets with nuts and washers for pipes with max.
     Ø 60.3 mm

#### Valve manifold 100 bar, suitable for oxygen

S12: Only in combination with versions for aggressive liquids and gases

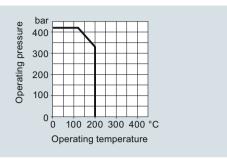
<sup>&</sup>lt;sup>2)</sup> Flange connections to DIN 19213 only permissible up to PN 160 (2321 psi)

Fitttings

Shut-off valves for differential pressure transmitters

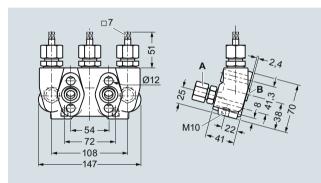
# 3-way and 5-way valve manifolds DN 5

# Characteristic curves



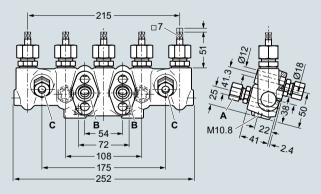
Permissible operating pressure as a function of the permissible operating temperature

# Dimensional drawings



- A Process connection (e.g. on primary device): Pipe union with ferrule, diameter 12 mm, S series to DIN 2353
- B Transmitter connection: Flange connection to EN 61518, form A Valve design: internal spindle thread

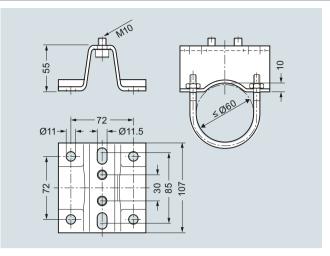
3-way valve manifold DN 5 (7MF9410-1..), dimensions in mm



- A Process connection (e.g. on primary device): Pipe union with ferrule, diameter 12 mm, S series to DIN 2353
- B Transmitter connection: Flange connection to IEC 61518, form A
- C Blow-out connection: Pipe union with ferrule, diameter 12 mm, S series to DIN 2353

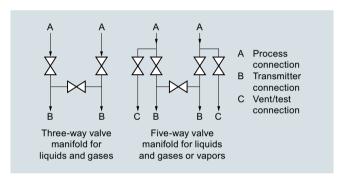
Valve design: internal spindle thread

5-way valve manifold DN 5 (7MF9410-3..), dimensions in mm



Mounting plate 7MF9006-6.. (M11, M12) for valve manifold, dimensions in mm

# Schematics



3-way and 5-way valve manifolds, connections

**Fitttings** 

Shut-off valves for differential pressure transmitters

# 3-way valve manifold DN 8

# Overview



The 3-way valve manifold DN 8 (7MF9416-1../-2..) is for pressure transmitters for differential pressure. It is used to shut off and blow out differential pressure lines and to test the pressure transmitter zero.

In the designs with a test connection, a test device can be connected to test the pressure transmitter characteristic.

#### Benefits

- For aggressive and non-aggressive liquids and gases
- The maximum working pressure is 420 bar (6092 psi).

# Application

The 3-way valve manifold is available in versions for aggressive and non-aggressive liquids and gases.

Mounting plates are available for wall mounting, for securing to mounting racks or for pipe mounting.

#### Design

For the process connection on the version for non-aggressive media it is possible to choose between a pipe union with ferrule and welding pins.

The version for aggressive media always has a pipe union with ferrule

Both versions are available optionally with a test connection M20x1.5.

The valves have an internal spindle thread.

#### Materials used

	For non-aggressive li gases	For aggre		
Component	Material	Mat. No.	Material	Mat. No.
Housing	P250GH	1.0460	X 6 CrN-	1.4571/
Head parts	C 35	1.0501	iMoTi17 12 2	316Ti
Spindles	X 12 CrMoS 17	1.4104		
Cones	X 35 CrMo 17 hard- ened and tempered	1.4122		
Valve seats	X 6 CrNiMoTi 17 12 2	1.4571/316Ti		
Packings	PTFE	-	PTFE	-

# Function

The 3-way valve manifold DN 8 performs two functions as standard:

- Shutting off the differential pressure lines
- Checking the pressure transmitter zero

All versions are also available with a test connection, to which a test device for checking the pressure transmitter characteristic can be connected.

Selection and Ordering data	Article No.
3-way valve manifold DN 8	7MF9416-
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
For flanging to pressure transmitters for differential pressure, max. working pressure 420 bar (6092 psi), (order accessory set and mounting plate with Order code), without certificate	
For non-aggressive liquids and gases procedss connection: Pipe union with ferrule Ø 12 mm	
• without test connection	1 B
• with test connection	1 C
For non-aggressive liquids and gases procedss connection: Welding pin Ø 14 x 2.5	
• without test connection	2 C
• with test connection	2 D
For aggressive liquids and gases process connection: Pipe union with ferrule Ø 12 mm	
• without test connection	1 D
• with test connection	1 E
Accessories	
Factory test certificate EN 10204–2.2	7MF9000-8AB
Material acceptance test certificate EN 10204-3.1	7MF9000-8AD

Fitttings

Shut-off valves for differential pressure transmitters

#### 3-way valve manifold DN 8

5-way valve mainloid bit o		
Selection and Ordering data	Order code	Article No.
Further designs <sup>1)</sup>		
Please add "-Z" to Article No. and specify Order code.		
Accessory set to EN (required for flanging, weight 0.2 kg)		
4x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 2 <sup>1</sup> / <sub>8</sub> inch to ASME B18.2; chromized steel 2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)	B31	7MF9010-5CC
4x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 2 <sup>1</sup> / <sub>8</sub> inch to ASME B18.2; chromized steel 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permiss-ble 420 bar (6092 psi), 120 °C (248 °F)	B34	7MF9410-5CA
Accessory set to DIN <sup>2)</sup>		
(required for flanging, weight 0.2 kg)  4x screws M10x55 to DIN EN 24014; chromized steel  4x washers Ø 10.5 mm to DIN 125; 2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi),  80 °C (176 °F)	B11	7MF9010-6AD
4x screws M10x55 to DIN EN 24014; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permiss-ble 420 bar (6092 psi), 120 °C (248 °F)	B16	7MF9010-6CC
Mounting plate For valve manifold, made of electrogalvanized sheet-steel		
for wall mounting or for securing on rack (72 mm grid), weight 0.5 kg Scope of delivery: 1 mounting plate with bolts for mounting on valve manifold	M11	7MF9006-6EA
for pipe mounting, weight 0.7 kg Scope of delivery: 1x mounting plate M11, 2x pipe brackets with nuts and washers (for pipe with max. Ø 60.3 mm)	M12	7MF9006-6GA
NACE MR-0175-certified	D07	
incl. acceptance test certificate 3.1 to EN 10204 (only available for version 7MF9416-1DA and -1EA)		

When ordering accessory set or mounting together with the valve manifold, please use Order code; otherwise use Article No.

# Accessories

# Accessory set for 3-way valve manifold DN 8 for flanging

- B31: 4 screws <sup>7</sup>/<sub>16</sub>-20 UNF x 2<sup>1</sup>/<sub>8</sub> inch to ASME B18.2.1, 2 flat gaskets
- B34: 4 screws <sup>7</sup>/<sub>16</sub>-20 UNF x 2<sup>1</sup>/<sub>8</sub> inch to ASME B18.2.1, 2 O-rings (FPM 90)
- B11: 4 screws M10x55 to DIN EN 24014, 4 washers, 2 flat gaskets
- B16: 4 screws M10x55 to DIN EN 24014, 4 washers, 2 O-rings (FPM 90)

Washers Ø 10.5 to DIN 125

Flat gaskets made of PTFE, max. 420 bar (6092 psi), 80 °C (176 °F)

O-ring to DIN 3771, 20 x 2.65 – S – FPM90, max. 420 bar (6092 psi), 120 °C (248 °F)

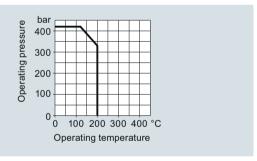
Note: M10 screws only permissible up to PN 160 (2320 psi)!

#### Mounting plate

Made of electrogalvanized sheet-steel

- M11: For wall mounting or for securing on rack (72 mm grid) Scope of delivery:
- 1 mounting plate with bolts for mounting on valve manifold
- M12: For pipe mounting Scope of delivery:
  - 1 mounting plate M11
  - 2 pipe brackets with nuts and washers for pipes with max.
     Ø 60.3 mm

# Characteristic curves



3-way valve manifold DN 8, permissible working pressure as a function of the permissible working temperature

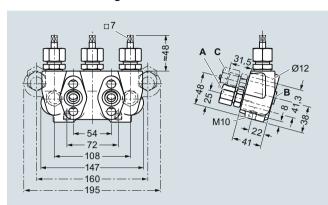
<sup>2)</sup> Flange connections to DIN 19213 only permissible up to PN 160 (2321 psi)!

Fitttings

Shut-off valves for differential pressure transmitters

# 3-way valve manifold DN 8

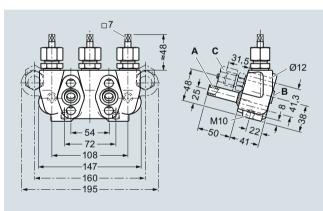
# Dimensional drawings



- A Process connection (e.g. on primary device): Pipe union with ferrule, diameter 12 mm, S series to DIN 2353
- B Transmitter connection: Flange connection to EN 61518, form A
- C Test connection: M20 x 1,5

Valve design: internal spindle thread

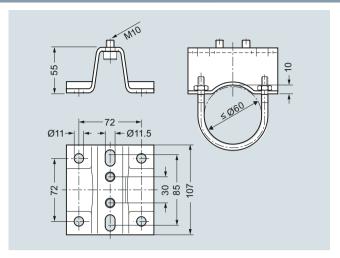
3-way valve manifold DN 8 (7MF9416-1..) with pipe union, dimensions in mm



- A Process connection (e.g. on primary device): Welding pin, diameter 14 x 2,5
- B Transmitter connection: Flange connection to EN 61518, form A
- C Test connection: M20 x 1,5

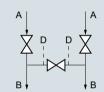
Valve design: internal spindle thread

3-way valve manifold DN 8 (7MF9416-2..) with welding pin, dimensions in  $\ensuremath{\mathsf{mm}}$ 



Mounting plate 7MF9006-6.. (M11, M12) for valve manifold, dimensions in mm

# Schematics



- A Process connection
- 3 Transmitter connection
- D Vent/test connection

Three-way valve manifold for liquids and gases

3-way valve manifold DN 8, connections

**Fitttings** 

Shut-off valves for differential pressure transmitters

# Valve manifold combination DN 5/DN 8

#### Overview



The valve manifold combination DN 5/DN 8 (7MF9416-6..) is for pressure transmitters for differential pressure.

The combination is used to shut off and blow out differential pressure lines and to test the pressure transmitter zero.

In the designs with a test connection, a test device can be connected to test the pressure transmitter characteristic.

#### Benefits

• Max. working pressure 420 bar (6092 psi)

#### Application

The valve manifold combination DN 5/DN 8 is designed for vapors.

# Design

The valve manifold combination DN 5/DN 8 has a process connection with welding pins.

The connection for the pressure transmitter is designed as as flange connection, while the blow-out connection is designed as a pipe union with ferrule.

The manifold valves have an internal spindle thread, while the blow-out valves have an external spindle thread.

The optional test connections are M20x1.5.

#### Materials used

	Valve manifold DN 5		Blow-out valv	ves DN 8
Component	Material	Mat. No.	Material	Mat. No.
Housing	P250GH	1.0460	16 Mo 3	1.5415
Head parts	C 35	1.0501	21 CrMo V57	1.7709
Spindles	X 12 CrMoS 17	1.4104	X 20 Cr 13	1.4021
Cones	X 35 CrMo 17	1.4122	X 35 CrMo 17 hardened and tem- pered	1.4122
Valve seats	X 6 CrNiMoTi	1.4571/316Ti	X 20 Cr 13	1.4021
Packings	PTFE	-	Pure graphite	-
Welding pins	-	-	16 Mo 3	1.5415

# Function

- Shutting off the differential pressure lines
- Blowing out the differential pressure lines
- Checking the pressure transmitter zero

As an option it is possible to order a version with a test connection, to which a test device for checking the transmitter characteristic can be connected.

Selection and Ordering data	Article No.	
Valve manifold combination DN 5/DN 8 for vapors	7 M F 9 4 1 6 - 6 A	
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
For flanging to pressure transmitters for differential pressure, max. working pressure 420 bar (6092 psi), also available in stainless steel on request (order accessory set with Order code), without certificate		
• without test connection	C	
$\bullet$ with test connection M20 $ imes$ 1.5	D	
Accessories		
Factory test certificate EN 10204–2.2	7MF9000-8AB	
Material acceptance test certificate EN 10204-3.1	7MF9000-8AD	

Selection and Ordering data	Order code	Article No.
Further designs <sup>1)</sup>		
Please add "-Z" to Article No. and specify Order code.		
Accessory set to EN (required for flanging, weight 0.2 kg)		
4x screws $^7/_{16}$ -20 UNF x $^21/_8$ inch to ASME B18.2; chromized steel 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permiss-ble 420 bar (6092 psi), 120 °C (248 °F)	B34	7MF9410-5CA
Accessory set to DIN <sup>2</sup> ) (required for flanging, weight 0.2 kg)		
4x screws M10x55 to DIN EN 24014; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F); Flange connection to DIN 19213 only permissible up to PN 160!	B16	7MF9010-6CC

- 1) When ordering accessory set together with the valve manifold combination, please use Order code; otherwise use Article No.
- <sup>2)</sup> Flange connections to DIN 19213 only permissible up to PN 160 (2321 psi)

Fitttings

Shut-off valves for differential pressure transmitters

# Valve manifold combination DN 5/DN 8

# Accessories

# Accessory set for valve manifold combination DN 5/DN 8 for flanging

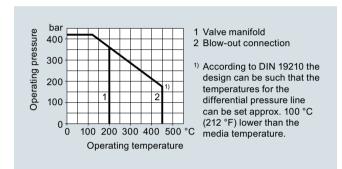
- B34: 4 screws  $^{7}/_{16}$ -20 UNF x  $^{21}/_{8}$  inch to ASME B18.2.1, 2 O-rings (FPM 90)
- B16: 4 screws M10x55 to DIN EN 24014, 4 washers, 2 O-rings (FPM 90)

Washers Ø 10.5 to DIN 125

O-ring to DIN 3771,  $20 \times 2.65 - S - FPM90$ , max. 420 bar (6092 psi),  $120 \, ^{\circ}\text{C}$  (248  $^{\circ}\text{F}$ )

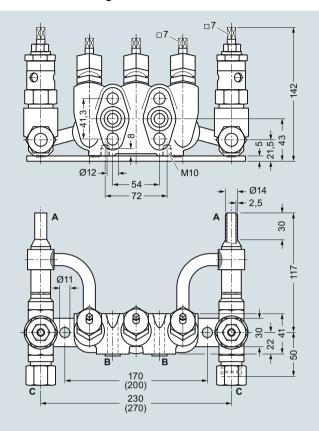
Note: M10 screws only permissible up to PN 160 (2321 psi)!

#### Characteristic curves



Permissible operating pressure as a function of the permissible operating temperature

# Dimensional drawings



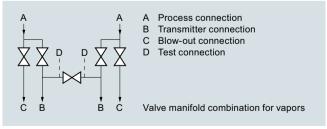
- A Process connection (e.g. on primary device): Welding pin
- B Transmitter connection: Flange connection to EN 61518, form A
- C Blow-out connection: Pipe union with ferrule, diameter 14 mm, S series to DIN 2353

#### Valve design:

- Manifold valves: internal spindle thread
- Blow-out valves: external spindle thread

Valve manifold combination DN 5/DN 8 (7MF9416-6C.), dimensions in mm (deviating dimensions for 7MF9416-6D. shown in brackets)

# Schematics



Valve manifold combination DN 5/DN 8, connections

**Fitttings** 

Shut-off valves for differential pressure transmitters

#### Valve manifold combination DN 8

#### Overview



The valve manifold combination DN 8 (7MF9416-4..) is for pressure transmitters for differential pressure.

It is used to shut off and blow out the differential pressure lines and to check the pressure transmitter zero.

In the designs with a test connection, a test device can be connected to check the pressure transmitter characteristic.

#### Benefits

• Max. working pressure 420 bar (6092 psi)

#### Application

The valve manifold combination DN 8 is designed for vapors.

#### Design

The valve manifold combination DN 8 has a process connection with welding pins.

The connection for the pressure transmitter is designed as as flange connection, while the blow-out connection is designed as a pipe union with ferrule.

The manifold valves have an internal spindle thread, while the blow-out valves have an external spindle thread.

The optional test connection is M20x1.5.

The valve manifold combination DN 8 is supplied with a mounting plate.

#### Materials used

	Valve manifold		Blow-out valves	
Component	Material	Mat. No.	Material	Mat. No.
Housing	P250GH	1.0460	16 Mo 3	1.5415
Head parts	C 35	1.0501	21 CrMo V57	1.7709
Spindles	X 12 CrMoS 17	1.4104	X 20 Cr 13	1.4021
Cones	X 35 CrMo 17	1.4122	X 35 CrMo 17 hardened and tem- pered	1.4122
Valve seats	X 6 CrNiMoTi	1.4571/316Ti	X 20 Cr 13	1.4021
Packings	PTFE	-	Pure graphite	-
Welding pins	-	-	16 Mo 3	1.5415

#### Function

- Shutting off the differential pressure lines
- · Blowing out the differential pressure lines
- Checking the pressure transmitter zero

As an option it is possible to order a version with a test connection, to which a test device for checking the pressure transmitter characteristic can be connected.

Selection and Ordering data	Article No.	
Valve manifold combination DN 8 for vapors	7MF9416-	
for flanging to pressure transmitters for differential pressure, with mounting plate, max. working pressure 420 bar (6092 psi), also available in stainless steel on request (order accessory set with Order code), without certificate		
• without test connection	4 C	
• with test connection M20 × 1.5	4 D	
Accessories		
Factory test certificate EN 10204–2.2	7MF9000-8AB	
Material acceptance test certificate EN 10204-3.1	7MF9000-8AD	

Selection and Ordering data	Order code	Article No.
Further designs <sup>1)</sup>		
Please add "-Z" to Article No. and specify Order code.		
Accessory set to EN (required for flanging, weight 0.2 kg)		
4x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 2 <sup>1</sup> / <sub>8</sub> inch to ASME B18.2; chromized steel 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F)	B34	7MF9410-5CA
Accessory set to DIN <sup>2</sup> )		
4x screws M10x55 to DIN EN 24014; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F) Flange connection to DIN 19 213 only permissible up to PN 160!	B16	7MF9010-6CC
	Further designs <sup>1)</sup> Please add "-Z" to Article No. and specify Order code.  Accessory set to EN (required for flanging, weight 0.2 kg)  4x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 2 <sup>1</sup> / <sub>8</sub> inch to ASME B18.2; chromized steel 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F)  Accessory set to DIN <sup>2)</sup> (required for flanging, weight 0.2 kg) 4x screws M10x55 to DIN EN 24014; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F) Flange connection to DIN 19 213	Further designs¹)  Please add "-Z" to Article No. and specify Order code.  Accessory set to EN (required for flanging, weight 0.2 kg)  4x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 2¹/ <sub>8</sub> inch to ASME B18.2; chromized steel 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F)  Accessory set to DIN²) (required for flanging, weight 0.2 kg) 4x screws M10x55 to DIN EN 24014; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F) Flange connection to DIN 19 213

- 1) When ordering accessory set together with the valve manifold combination, please use Order code; otherwise use Article No.
- 2) Flange connections to DIN 19213 only permissible up to PN 160 (2321 psi)

#### Accessories

# Accessory set for valve manifold combination DN 8 for flanging

- $\bullet\,$  B34: 4 screws  $^7/_{16}$  -20 UNF x  $2^1/_8$  inch to ASME B 18.2.1, 2 O-rings (FPM 90)
- B16: 4 screws M10x55 to DIN EN 24014, 4 washers, 2 O-rings (FPM 90)

Washers Ø 10.5 to DIN 125

O-ring to DIN 3771, 20 x 2.65 – S – FPM90, max. 420 bar (6092 psi), 120 °C (248 °F)

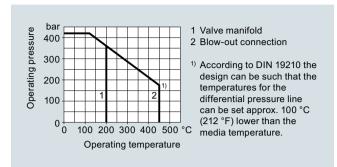
Note: M10 screws only permissible up to PN 160 (2321 psi)!

Fitttings

Shut-off valves for differential pressure transmitters

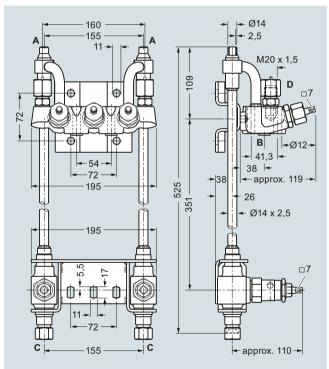
# Valve manifold combination DN 8

# Characteristic curves



Permissible operating pressure as a function of the permissible operating temperature

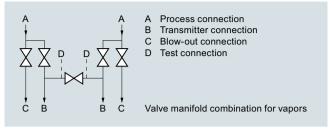
# Dimensional drawings



- A Process connection (e.g. on primary device): Welding pin
- B Transmitter connection: Flange connection to EN 61518, form A
   C Blow-out connection: Pipe union with ferrule, diameter 14 mm,
   S series to DIN 2353
- D  $\,$  Test connection (only with Article No. 7MF9416-4D.): M20 x 1,5 Valve design:
- Manifold valves: internal spindle thread
- Blow-out valves: external spindle thread

Valve manifold combination DN 8 (7MF9416-4..), dimensions in mm

# Schematics



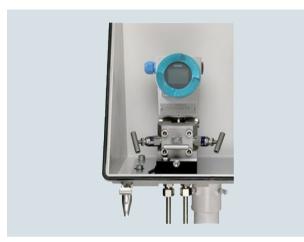
Valve manifold combination DN 8, connections

**Fitttings** 

Shut-off valves for differential pressure transmitters

# 2-, 3- and 5-spindle valve manifolds for installing in protective boxes

#### Overview



The 2-spindle, 3-spindle and 5-spindle valve manifolds (7MF9412-1..) are used to shut off the differential pressure lines and to check the transmitter zero.

The five-spindle valve manifold permits venting on the transmitter side and checking of the transmitter characteristic.

These valve manifolds are preferentially used when mounting in protective boxes. In addition, they can also be used for wall, frame or pipe mounting together with the mounting bracket.

Transmitters of the DS series can be operated and read from the front when using these valve manifolds.

# Application

The valve manifolds DN 5 are designed for liquids and vapors and for installing in protective boxes.

Each is available in a version for oxygen on request

# Design

All versions of the spindle manifolds have a process connection ½-14 NPT.

The connection for the pressure transmitter is always designed as a flange connection to IEC 61518/DIN EN 61518, Form A.

The 2-spindle and the 5-spindle valve manifold have in addition a vent and test connection 1/4-18 NPT.

The valves have an external spindle thread.

#### Materials used

Components	Material	Mat. No.
Housing	X 2 CrNiMo 17 13 2	1.4404/316L
Cones	X 6 CrNiMoTi 17 12 2	1.4571/316Ti
Spindles	X 2 CrNiMo 18 10	1.4404/316L
Head parts	X 5 CrNiMo 18 10	1.4401/316
Packings	PTFE	-

#### Functions

Functions of all valve manifolds:

- Shutting off the differential pressure lines
- · Checking the pressure transmitter zero

Additional functions of the 2-spindle and 5-spindle valve manifolds through the vent and test connection:

- Venting on the transmitter side
- Checking the pressure transmitter characteristic

Selection and Ordering data	Article No.
Valve manifolds DN 5 for mounting in protective boxes	7 M F 9 4 1 2 -
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
for liquids and gases for flanging to pressure transmitters for absolute and differential pressure Material: stainless steel, mat. No: 1.4404/316L max. working pressure 420 bar (6092 psi) (order accessory set with Order code), without certificate	
• 2-spindle valve manifold with rotatng sleeve $G\frac{1}{2}$	1 B
2-spindle valve manifold with flange connection	1 C
• 3-spindle valve manifold	1 D
• 5-spindle valve manifold	1 E
Accessories	
Factory test certificate EN 10204–2.2	7MF9000-8AB
Material acceptance test certificate EN 10204-3.1	7MF9000-8AD

Selection and Ordering data	Order code	Article No.
Further designs <sup>1)</sup>		
Please add "-Z" to Article No. and specify Order code.		
Accessory set to EN		
(connection between valve manifold and pressure transmitter)		
for valve manifold 7MF9412-1C.		
2x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 2 inch to ASME B18.2.1; chromized steel 1x O-ring to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F)	F32	7MF9412-6CA
2x screws $^{7}$ / <sub>16</sub> -20 UNF x 2 inch to ASME B18.2.1; chromized steel 1x gasket made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F) <sup>2)</sup>	F35	7MF9412-6DA
for valve manifold 7MF9412–1D and		
-1E.  4x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 2 inch to ASME B18.2.1; chromized steel 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F) <sup>2)</sup>	F34	7MF9412-6GA
4x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 2 inch to ASME B18.2.1; chromized steel 2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F) <sup>2</sup> )	F36	7MF9412-6HA

		2-, 3- and
Selection and Ordering data	Order code	Article No.
Further designs <sup>1)</sup>		
Please add "-Z" to Article No. and specify Order code.		
Accessory set to DIN (connection between valve manifold and pressure transmitter) For valve manifold 7MF9412–1C.		
2x screws M10x50 to DIN EN 24014; chromized steel 2x washers Ø 10.5 mm to DIN 125; 1x O-ring to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F) <sup>2)</sup>	F12	7MF9412-6AA
2x screws M10x50 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) <sup>2)</sup> For valve manifold 7MF9412–1D and -1E.	F15	7MF9412-6BA
4x screws M10x50 to DIN EN 24014; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F) <sup>2)</sup>	F14	7MF9412-6EA
4x screws M10x50 to DIN EN 24014; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F) <sup>2)</sup>	F16	7MF9412-6FA
Mounting bracket required for wall mounting or for		
securing to mounting rack, with bolts for mounting on valve manifold		
• for valve manifolds 7MF9412-1B. and -1C.	M14	7MF9006-6LA
• for valve manifold 7MF9412-1D.	M17	7MF9006-6NA
• for valve manifold 7MF9412-1E.	M18	7MF9006-6PA
Mounting clip 2 off, to secure mounting bracket to pipe	M16	7MF9006-6KA
Valve manifold 100 bar		
Oil- and grease-free cleaning for oxygen applications, max. pressure PN 100 (1450 psi) and max. temperature 60 °C (140 °F)		
• for valve manifolds 7MF9412-1B. and -1C.	S12	
• for valve manifold 7MF9412-1D.	S13	
• for valve manifold 7MF9412-1E.	S14	
NACE MR-0175-certified incl. acceptance test certificate 3.1 to EN 10204	D07	

<sup>1)</sup> When ordering accessory set or mounting together with the valve manifolds, please use Order code; otherwise use Article No.

#### Accessories

# Accessory set for 2-, 3- and 5-spindle valve manifolds (Connection between valve manifold and transmitter)

2-spindle valve manifold DN 5 with flange connection

- F32: 2 screws 7/16 20 UNF x 2 inch to ASME B 18.2.1, 1 O Ring (FPM90)
- F35: 2 screws 7/16 20 UNF x 2 inch to ASME B 18.2.1, 1 flat-gasket
- F12: 2 screws M10x50 to DIN EN 24014, 2 washers, 1 O-ring (FPM90)
- F15: 2 screws M10x50 to DIN EN 24014, 2 washers, 1 flat gasket

#### 3-spindle and 5-way valve manifold DN 5

- F34: 4 screws 7/16 20 UNF x 2 inch toASME B 18.2.1, 2 O-rings (FPM90)
- F36: 4 screws 7/16 20 UNF x 2 inch toASME B 18.2.1, 2 flat-gaskets
- F14: 4 screws M10x50 to DIN EN 24014, 4 washers, 2 O-rings (FPM90)
- F16: 4 screws M10x50 to DIN EN 24014, 4 washers, 2 flat-gaskets

Washers Ø 10.5 to DIN 125

Flat-gaskets made of PTFE, max. 420 bar (6092 psi), 80  $^{\circ}$ C (176  $^{\circ}$ F)

O-ring to DIN 3771, 20 x 2.65 - S - FPM90; max.420 bar (6092 psi), 120 °C (248 °F)

#### Note

Flange connections with M10 screws only permissible up to PN 160 (2321 psi)!

# Mounting bracket for wall mounting or for securing to mounting rack

With bolds for mounting on valve manifold

- M14: For 2-spindle valve manifold DN 5
- M17: For 3-spindle valve manifold DN 5
- M18: For 5-spindle valve manifold DN 5

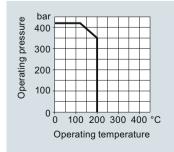
#### Mounting clips (2 off)

 M16: For securing the mounting brackets M14, M17 and M18 to pipe

#### Valve manifold 100 bar, suitable for oxygen

- S12: For 2-spindle valve manifold DN 5
- S13: For 3-spindle valve manifold DN 5
- S14: For 5-spindle valve manifold DN 5

# Characteristic curves



420 bar (6092 psi) at 120 °C (248 °F) 350 bar (5076 psi) at 200 °C (392 °F)

Permissible operating pressure as a function of the permissible operating temperature

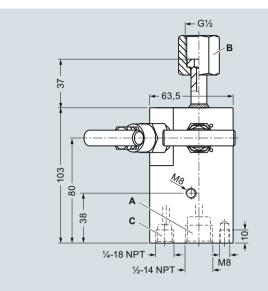
<sup>2)</sup> Flange connections with M10 screws only permissible up to PN 160 (2321 psi)!

Fitttings

Shut-off valves for differential pressure transmitters

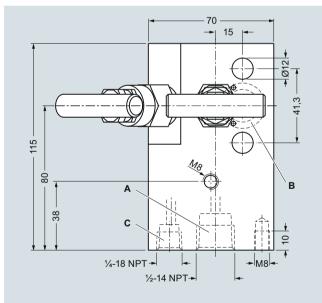
# 2-, 3- and 5-spindle valve manifolds for installing in protective boxes

# Dimensional drawings



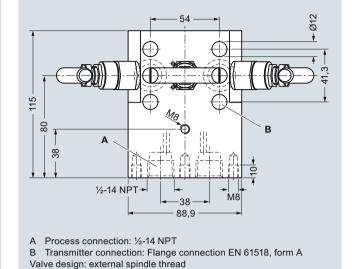
- A Process connection: 1/2-14 NPT
- B Transmitter connection: Nipple to DIN 16284, G½, SW 27
- C Vent / test connection: 1/4-18 NPT

2-spindle valve manifold DN 5 (7MF9412-1B..) with rotating sleeve, dimensions in  $\ensuremath{\mathsf{mm}}$ 

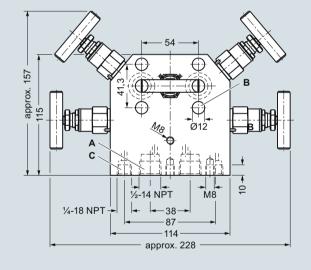


- A Process connection: 1/2-14 NPT
- B Transmitter connection: Flange connection to EN 61518, form A
- C Vent / test connection: 1/4-18 NPT Valve design: external spindle thread

2-spindle valve manifold DN 5 (7MF9412-1C..), dimensions in mm



3-spindle valve manifold DN 5 (7MF9412-1D..), dimensions in mm



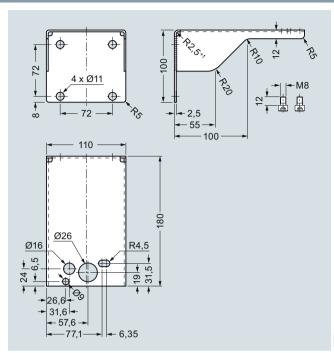
- A Process connection: ½-14 NPT
- B Transmitter connection: Flange connection to EN 61518, form A
- C Vent / test connection: ¼-18 NPT Valve design: external spindle thread

5-spindle valve manifold DN 5 (7MF9412-1E..), dimensions in mm

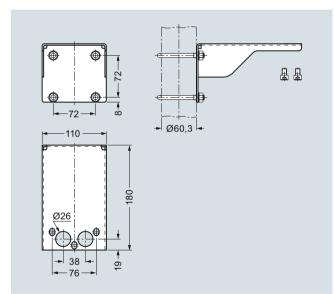
Fitttings

Shut-off valves for differential pressure transmitters

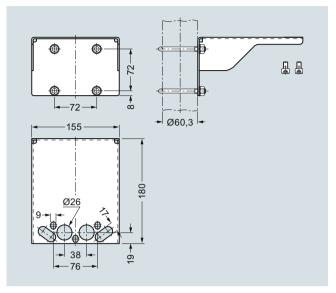
# 2-, 3- and 5-spindle valve manifolds for installing in protective boxes



Mounting bracket (7MF9006-6LA)/(M14) for 2-spindle valve manifold, dimensions in  $\mbox{mm}$ 

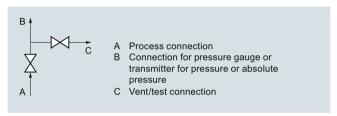


Mounting bracket (7MF9006-6NA)/(M17) for 3-spindle valve manifold, dimensions in mm  $\,$ 

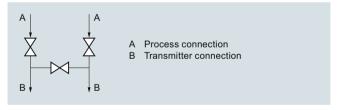


Mounting bracket (7MF9006-6PA)/(M18) for 5-spindle valve manifold, dimensions in mm

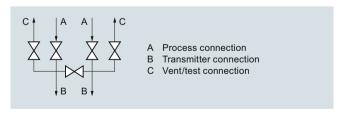
# Schematics



2-spindle valve manifold DN 5 (with rotating sleeve  $G\frac{1}{2}$  or flange connection), connections



3-spindle valve manifold DN 5, connections



5-spindle valve manifold DN 5, connections

**Fitttinas** 

Shut-off valves for differential pressure transmitters

#### 3- and 5-spindle valve manifolds for vertical angular differential pressure lines

#### Overview



These 3-spindle and 5-spindle valve manifolds 7MF9413-1.. were developed specially for vertical differential pressure lines.

The valve manifolds are used to shut off the differential pressure lines and to check the pressure transmitter zero.

The 5-spindle valve manifold permits venting on the transmitter side and checking of the pressure transmitter characteristic.

#### Benefits

- For vertical differential pressure lines
- Max. operating pressure 420 bar (6092 psi)
- Transmitters of the DS series can be operated and read from the front.

#### Application

The 3-spindle and 5-spindle valve manifolds for vertical differential pressure lines are for liquids and gases. The valve manifolds are flanged on the pressure transmitter.

#### Design

All versions of the spindle valve manifolds have a process connection  $\frac{1}{2}$ -14 NPT.

The connection for the pressure transmitter is always designed as a flange connection to IEC 61518/DIN EN 61518, form B .

The 2-spindle and the 5-spindle valve manifold have in addition a vent and test connection 1/4-18 NPT.

Materials used:

Component	Material	Mat. No.
Housing	X 2 CrNiMo 17 13 2	1.4404/316L
Cones	X 6 CrNiMoTi 17 12 2	1.4571/316Ti
Spindles	X 2 CrNiMo 18 10	1.4404/316L
Head parts	X 5 CrNiMo 18 10	1.4401/316
Packings	PTFE	-

#### Function

Functions of all valve manifolds:

- Shutting off the differential pressure lines
- Checking the pressure transmitter zero

Additional functions of the 2-spindle and 5-spindle valve manifolds through the vent and test connection:

- Venting on the transmitter side
- Checking the pressure transmitter characteristic

Selection and Ordering data	Article No.
Valve manifolds for vertical differential pressure lines	7 M F 9 4 1 3 - A
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
for liquids and gases for flanging to pressure transmitters for abso- lute and differential pressure Material: stainless steel, mat. No: 1.4404/316L max. working pressure 420 bar (6092 psi) (order accessory set with Order code), without certificate	
3-spindle valve manifold	1 D
• 5-spindle valve manifold	1 E
Accessories	
Factory test certificate EN 10204–2.2	7MF9000-8AB
Material acceptance test certificate EN 10204-3.1	7MF9000-8AD

EN 10204-3.1		
Selection and Ordering data	Order code	Article No.
Further designs <sup>1)</sup>		
Please add "-Z" to Article No. and specify Order code.		
Accessory set to EN		
(connection between valve manifold and pressure transmitter)		
4x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 1¾ inch to ASME B18.2.1; chro- mized steel 2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)	K36	7MF9411-5DB
Accessory set to DIN <sup>2)</sup>		
(connection between valve manifold and pressure transmitter)		
4x screws M10x45 to DIN EN 24014; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F); Flange connection with M10 screws only permissible up to PN 160 (2321 psi).	K16	7MF9411-6BB
Mounting bracket		
required <b>for wall mounting</b> or for securing to mounting rack, with bolts for mounting on valve manifold		
• for valve manifold 7MF9413-1D.	M17	7MF9006-6NA
• for valve manifold 7MF9413-1E.	M18	7MF9006-6PA
required for mounting on 2" stand- pipe, with bolts for mounting on valve manifold		
• for valve manifold 7MF9413-1D.	M19	7MF9006-6QA
Mounting clip		
2 off, to secure mounting bracket to pipe	M16	7MF9006-6KA
valve manifold 100 bar (1450 psi) suitable for oxygen		
• for valve manifold 7MF9413-1D.	S13	
• for valve manifold 7MF9413-1E.	S14	
NACE MR-0175-certified incl. acceptance test certificate 3.1 to EN 10204	D07	
1) 140		

- 1) When ordering accessory set or mounting together with the multiway cock, please use Order code; otherwise use Article No.
- Flange connections to DIN 19213 only permissible up to PN 160 (2321 psi)!

# 3- and 5-spindle valve manifolds for vertical angular differential pressure lines

# Accessories

# Accessory set (connection between valve manifold and transmitter)

- K36: 4 screws <sup>7</sup>/<sub>16</sub>-20 UNF x 1<sup>3</sup>/<sub>4</sub> inch to ASME B18.2.1, 2 flat gaskets
- K16: 4 screws M10x45 to DIN EN 24014, 4 washers, 2 flat gaskets

Washers Ø 10.5 to DIN 125

Flat gaskets made of PTFE, max. 420 bar (6092 psi), 80  $^{\circ}$ C (176  $^{\circ}$ F)

**Note**: Flange connection with M10 screws only permissible up to PN 160 (2321 psi)!

# Mounting bracket for wall mounting or for securing to mounting rack

With bolts for mounting on valve manifold

- M17: For 3-spindle valve manifold
- M18: For 5-spindle valve manifold

#### Mounting bracket for mounting on 2" standpipe

With bolts for mounting on valve manifold

• M19: For 3-spindle valve manifold

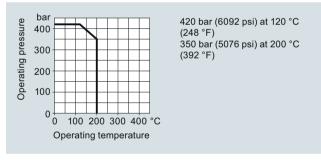
#### Mounting clips (2 off)

For securing the mounting brackets M17, M18 and M19 to pipe

#### Valve manifold 100 bar, suitable for oxygen

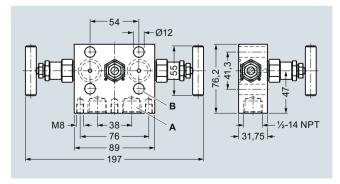
- For 3-spindle valve manifold
- For 5-spindle valve manifold

#### Characteristic curves

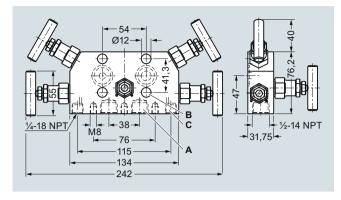


Permissible operating pressure as a function of the permissible operating temperature

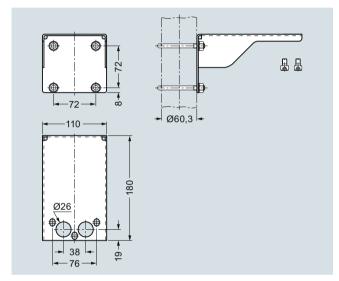
# Dimensional drawings



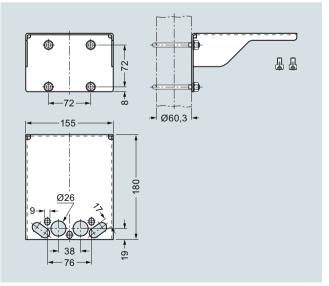
3-spindle valve manifold 7MF9413-1D. for vertical differential pressure lines, dimensions in mm



5-spindle valve manifold 7MF9413-1E. for vertical differential pressure lines, dimensions in mm



Mounting bracket (7MF9006-6NA)/(M17) for 3-spindle valve manifold, dimensions in mm

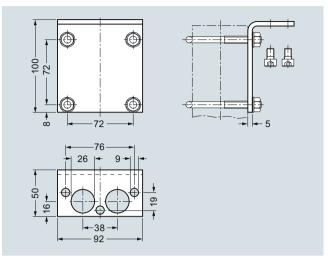


Mounting bracket (7MF9006-6PA)/(M18) for 5-spindle valve manifold, dimensions in mm

Fitttings

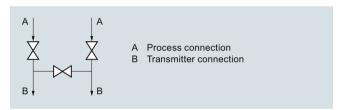
Shut-off valves for differential pressure transmitters

# 3- and 5-spindle valve manifolds for vertical angular differential pressure lines

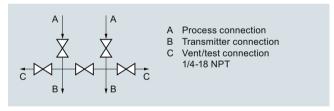


Mounting bracket (7MF9006-6QA)/(M19) for 3-spindle valve manifold, dimensions in mm  $\,$ 

# Schematics



3-spindle valve manifold for vertical differential pressure lines, connections



5-spindle valve manifold for vertical differential pressure lines, connections

Fitttings

# Shut-off valves for differential pressure transmitters

# Low-pressure multiway cock

# Overview



The low-pressure multiway cock 7MF9004-4CA/-4DA can be flanged to pressure transmitters for differential pressure.

#### Benefits

- Robust design
- For liquids and gases
- One-hand operation

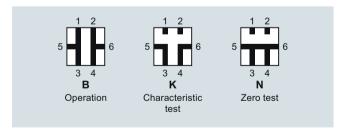
# Design

The multiway cock has 2 process connections and 2 test connections, which are available in 2 versions (with sealing screws  $\rm G^3/_8$  or quick-release couplings). The housing is made of hotpressed brass CuZn39Pb3, CW 614N. Test connections with sealing screws or with self-sealing quick-release couplings.

**Note:** An accessory set is always required for flanging of the multiway cock to a differential pressure transmitter.

#### Function

- Shutting off the differential pressure lines
- Testing the pressure transmitter zero
- Testing the pressure transmitter characteristic



Cock positions; the symbols are printed on the cock

Selection and Ordering data	Article No.
Low-pressure multiway cock	
for liquids and gases, for flanging to pressure transmitters, max. working pressure 25 bar (363 psi), max. working temperature 60 °C (140 °F) (up to 80 °C (176 °F) for a short time), weight 1.75 kg (without accessory set)	
Test connections	
2x sealing screws G <sup>3</sup> / <sub>8</sub>	7MF9004-4CA
2x quick-release couplings	7MF9004-4DA
Accessories	
Test report to EN 10204-3.1	7MF9000-8AB
Material acceptance test certificate to EN 10204-3.1	7MF9000-8AD

Selection and Ordering data	Order code	Article No.
Further designs <sup>1)</sup>		
Please add "-Z" to Article No. and specify Order code.		
Accessory set to EN (required for flanging, weight 0.2 kg)		
4x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 1 inch to ASME B18.2.1; chromized steel 2x gaskets made of PTFE, max. permissible temperature 80 °C (176 °F)	L31	7MF9004-5CC
Accessory set to DIN (required for flanging, weight 0.2 kg)		
4x screws M10x25 to DIN EN 24017; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x gaskets made of PTFE, max. permissible temperature 80 °C (176 °F)		
Standard design	L11	7MF9004-6AD
Version for oxygen	L15	7MF9004-6AE
Multiway cock in oil-free and grease-free design BAM-tested lubricant, gasket suitable for oxygen	S11	
Mounting bracket required for wall mounting or for securing on rack (72 mm grid), made of electrogalvanized sheet- steel, weight 0.85 kg	M13	7MF9004-6AA

<sup>1)</sup> When ordering accessory set or mounting together with the multiway cock, please use Order code; otherwise use Article No.

#### Accessories

# Accessory set for low-pressure multiway cock

- L31: 4 screws  $\frac{7}{16}$ -20 UNF x 1 inch, 2 flat gaskets
- L11: 4 screws M10x25 to DIN EN 24017, 4 washers, 2 flat gaskets
- L15 (suitable for oxygen): 4 screws M10x25 to DIN EN 24017, 4 washers, 2 flat gaskets

Washers Ø 10.5 to DIN 125

Flat gaskets made of PTFE, max. permissible temperature 80 °C (176 °F)

#### Multiway cock in oil-free and grease-free design

• S11: BAM-tested lubricant, gasket suitable for oxygen

#### Mounting brackets

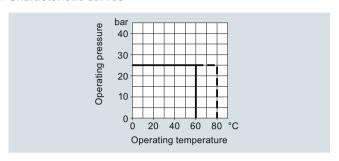
 M13: Required for wall mounting or for securing on rack (72 mm grid); made of electrogalvanized sheet-steel

# Options

Test connections

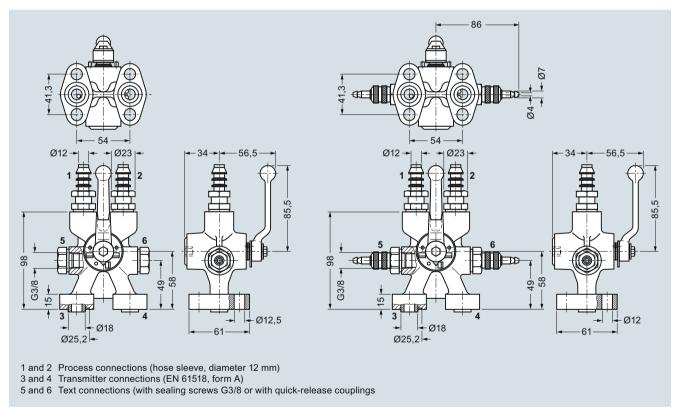
- 2 sealing screws G<sup>3</sup>/<sub>8</sub>
- 2 quick-release couplings

#### Characteristic curves

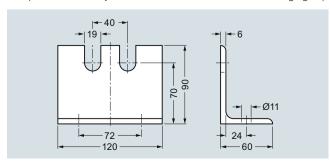


Low-pressure multiway cock, permissible operating pressure as a function of the permissible operating temperature

# Dimensional drawings



Low-pressure multiway cock 7MF9004-4CA/-4DA for direct flanging to pressure transmitters for differential pressure, dimensions in mm



Mounting bracket 7MF9004-6AA (M13), dimensions in mm

**Fittings** Accessories

Oval flange

# Overview



The oval flange 7MF9408-2C. for pressure transmitters for absolute pressure and differential pressure has a 1/2-14 NPT female thread and is designed for max. operating pressure 400 bar (5800 psi).

#### Accessories

#### Accessory set for oval flange

- E36: 2 screws <sup>7</sup>/<sub>16</sub>-20 UNF x 1½ inch to ASME B18.2.1, 1 flat gasket
- $\bullet$  E34: 2 screws  $^7\!/_{16}$  -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 (6092 psi), 120 °C (248 °F)

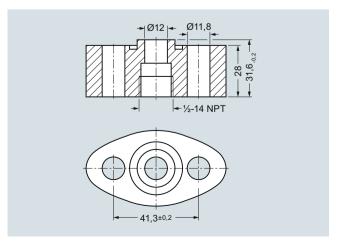
Note: M10 screws only permissible up to PN 160 (2321 psi)!

Selection and Ordering data	Article No.
Oval flange with female thread ½-14 NPT, max. working pressure 420 bar (6092 psi), flange connec- tion to IEC 61518/DIN EN 61518, form A	
Material	
P250GH, mat. No.: 1.0460	7MF9408-2CE
X 2 CrNiMo 17 13 2, mat. No. 1.4404/316L	7MF9408-2CL

Order code	Article No.
Order code	Article No.
E36	7MF9408-5DA
E34	7MF9408-5CA
E13	7MF9408-6AA
E16	7MF9408-6BA
D07	
	E13

- 1) When ordering accessory set together with the oval flange, please use Order code; otherwise use Article No.
- <sup>2)</sup> Flange connections with M10 screws only permissible up to PN 160 (2321 psi)

# Dimensional drawings



Oval flange 7MF9408-2C., dimensions in mm

**Fittings** 

Accessories

#### **Adapters**

#### Overview

Adapters enable e.g. a transition from medium connections with NPT thread to shut-off valves to DIN 16270 ... 16272 or pipes in conjunction with a connection gland (e.g. 7MF9008).

#### Design

The connection pieces are made of X 6 CrNiMoTi 17 12 2, mat. No. 1.4571 and available in 3 versions

- Thread 1/4-18 NPT and connection shank G1/2 to DIN EN 837-1
- Thread ½-14 NPT and connection shank G½ to DIN EN 837-1

Article No.

7MF9001-1AA

7MF9001-1CA

7MF9001-1DA

7MF9001-1EA

7MF9008-1CA

7MF9008-1CB

7MF9008-1CC

7MF9008-1CD

• Thread ½-14 NPT and thread ½-14 NPT

SW 22

13,6

13,6

13,6

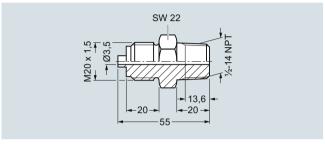
20

13,6

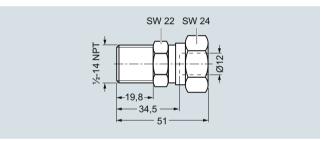
20

14 NPT and thread ½-14 NPT

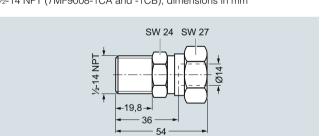
Connection piece with thread 1/2 -14 NPT and thread 1/2 -14 NPT (7MF9001-1DA), dimensions in mm



Connection piece with thread 1/2-14 NPT and connection shank M20 x 1.5 (7MF9001-1EA), dimensions in mm



Connection piece with pipe union with ferrule 12 S,  $\varnothing$  12 mm and thread ½-14 NPT (7MF9008-1CA and -1CB), dimensions in mm



Connection piece with pipe union with ferrule 14 S,  $\varnothing$  14 mm and thread ½-14 NPT (7MF9008-1CC and -1CD), dimensions in mm

#### Selection and Ordering data

#### Mounting collar

Max. operating pressure: 689 bar (10 000 psi), Weight: 0.2 kg

with thread 1/4-18 NPT - G1/2

with thread  $\frac{1}{2}$ -14 NPT –  $G\frac{1}{2}$ 

with thread ½-14 NPT - ½-14 NPT

with thread  $\frac{1}{2}$ -14 NPT – M20 x 1.5

with pipe union with ferrule 12 S, max. operating pressure 630 bar (9 100 psi),  $\varnothing$  12 mm – ½-14 NPT

• 9 SMnPb 28, mat. No. 1.0718

• X 6 CrNiMoTi 17 122, mat. No. 1.4571

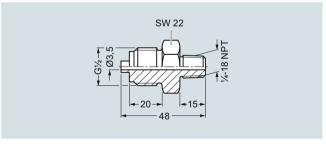
with pipe union with ferrule 14 S, max. operating pressure 630 bar (9 100 psi),  $\varnothing$  14 mm – 1/2-14 NPT

• 9 SMnPb 28, mat. No. 1.0718

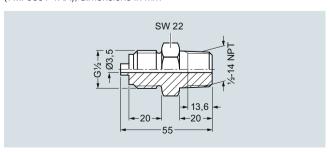
• X 6 CrNiMoTi 17 122, mat. No. 1.4571

\_\_\_\_\_





Connection piece with thread  $\frac{1}{10}$  NPT and connection shank G $\frac{1}{10}$  (7MF9001-1AA), dimensions in mm



Connection piece with thread  $\%\mbox{-}14$  NPT and connection shank G% (7MF9001-1CA), dimensions in mm

Pressure Measurement
Fittings
Accessories

**Connection glands** 

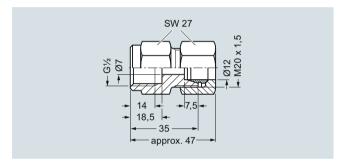
# Overview

Connection glands to connect medium or differential pressure lines to collars  $G1\!\!\!/_{\!2}$  to DIN EN 837-1

- For rated pressures up to PN 630 (9137psi)
- For oxygen only up to PN 250 (3626 psi)

Selection and Ordering	Article No.	
Connection screwed g for pipelines (weight 0.2 kg)		
Material	Design	
11SMn30 (mat. No. 1.0715)	Standard	7MF9008-1GA
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)	Standard	7MF9008-1GB
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)	Grease-free	7MF9008-1GC

# Dimensional drawings



Connection gland 7MF9008-1G., dimensions in mm

**Fittings** 

Accessories

# **Connection parts G 1/2**

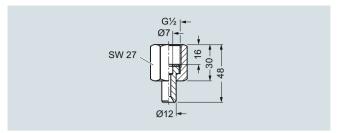
# Overview

Connection parts  $G1\!\!/_{\!2}$  for pressure gauges and shut-off fittings are available in 3 versions:

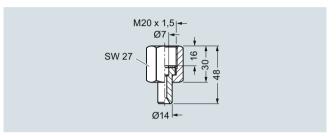
- Nipple connection
- Clamping sleeve
- Collar connection piece

0 1 11 10 1		A 12 1 N1				
Selection and Order	Article No.					
Adapters G½ for pressure gauges a	for pressure gauges and shut-off fittings					
Nipple connection	-					
G½ to DIN 16284 (uni gasket); max. working (5802 psi); weight 0.1 connection: G½ to DII Female thread G½						
Material	Mat. No.					
CuZn39Pb3	CW 614N	M56340-A0001				
Union nut 9 SMn 28 k Nipple:	1.0715	M56340-A0002				
RSt 37-2	1.0037					
Union nut X 8 CrNiS 18 9 Nipple:	1.4305	M56340-A0003				
X 6 CrNiMoTi 17 12 2	1.4571/316Ti					
(5802 psi); weight 0.1 connection: M20 x 1.5 Female thread M20 x	5 to DIN EN 837-1; 1.5					
Material	Mat. No.					
Union nut X 8 CrNiS 18 9 Nipple: X 6 CrNiMoTi 17 12 2		M56340-A0008				
Clamping sleeve	-					
G½ to DIN 16283; ma 400 bar (5802 psi); w Connections: G½ to E Female thread: G½ ri	eight 0.1 kg;					
Material	Mat. No.					
CuZn39Pb3	CW614N	M56340-A0004				
9 SMn 28 k	1.0715	M56340-A0005				
Collar-adapter		-				
max. working pressur Connections: G½ to I Male thread: G½, G½						
Material	Material Mat. No.					
CuZn39Pb3	CW614N	M56340-A0006				
9 SMn 28 k	1.0715	M56340-A0007				

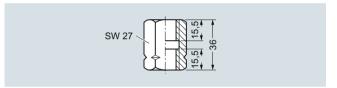
# Dimensional drawings



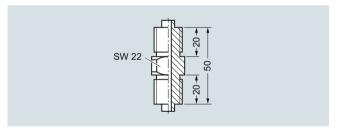
Nipple connection  $G\frac{1}{2}$  (M56340-A0001 to -A0003), dimensions in mm



Nipple connection M20 x 1.5 (M56340-A0008), dimensions in mm



Clamping sleeve (M56340-A0004/-A0005), dimensions in mm



Collar connection piece (M56340-A0006/-A0007), dimensions in mm

# **Pressure Measurement Fittings**

Accessories

# Water traps, Sealing rings to EN 837-1

# Overview

Water traps protect pressure gauges and shut-off fittings from heating up (e.g. by steam) by the water column produced by the water trap.

The max. working temperature is 120 °C (248 °F) at 100 bar (1450 psi), 300 °C (572 °F) at 80 bar (1160 psi) or 400 °C (752 °F) at 63 bar (914 psi). If the temperature of the measured medium is higher, a sufficiently long line has to be connected upstream of the trap to enable heat dissipation.

#### Design

The water traps are available in U shape (type B) or circular shape (type D) to DIN 16282. They have a weld-on end  $\emptyset$  20 mm  $\times$  2.6 mm on the measurement side. The connection on the device side is a clamping sleeve G½ to DIN 16283.

The water traps are made of steel (P250GH) or stainless steel (X 6 CrNiMoTi 17 12 2)

Water traps are designed as standard for max. operating temperature 120 °C (248 °F) at max. operating pressure 100 bar (1450 psi) (300 °C (572 °F) at 80 bar (1160 psi), 400 °C (752 °F) at 63 bar (914 psi). Water traps for higher operating pressures and temperatures are available on request.

Article No.

M56340-A0045

M56340-A0063

#### Water traps for pressure gauges and pressure transmitters, max. working temperature 120 °C (248 °F), max. working pressure 100 bar (1450 psi) (or 300 °C (572 °F) at 80 bar (1160 psi), or 400 °C (752 °F) at 63 bar (914 psi)), weight 0.7 kg Water trap B to DIN 16282 Material Mat. No. P235GH 1.0345 M56340-A0043 X 6 CrNiMoTi 17 12 2 1.4571/316Ti M56340-A0061 Water trap D to DIN 16282

Mat. No.

1.0345

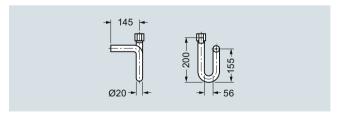
# Dimensional drawings

X 6 CrNiMoTi 17 12 2 1.4571/316Ti

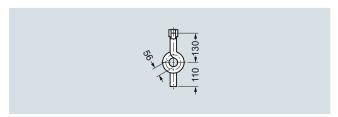
Material

P235GH

Selection and Ordering data



Water traps, type B, M56340-A0043/-A0061, dimensions in mm

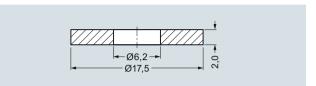


Water traps, type D, M56340-A0045/-A0063, dimensions in mm

# Overview

The sealing rings to EN 837-1 are required to seal measuring instruments for pressure with the process connection G½B.

#### Dimensional drawings



Sealing ring 7MF9007-7A. to EN 837-1, dimensions in mm

Selection and Ordering data	Article No.
Sealing ring to EN 837-1 for thread G½ made of (packing unit 100 pcs)	
• Copper	7MF9007-7AA
• Soft iron	7MF9007-7AB
• Stainless steel, matNo. 1.4571	7MF9007-7AC
• PTFE	7MF9007-7AD
Accessories	
Test report to EN 10204-3.1	7MF9000-8AB
Material acceptance test certificate to EN 10204-3.1	7MF9000-8AD

Fittings

Accessories

# Pressure surge reducers

# Overview

The pressure surge reducer protects the pressure gauge against damage, premature wear and tear and inaccurate/fluctuating indications.

#### Application

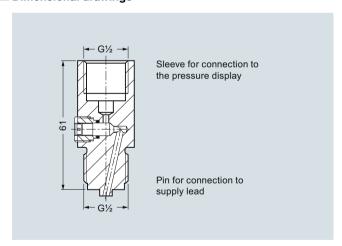
The pressure reducer is used when pulsations occur in the measured medium (e.g. in slow-running vapor engines, piston pumps and compressors), or if drastic fluctuations are likely to occur in the measured medium (e.g. in hydraulic presses and tensile testing machines).

# Design

- Enclosure made of brass or stainless steel (mat. no. 1.4571)
- Adjustable nozzle
- Sleeve for connection to the measuring instrument
- Pin for connection to supply lead

Selection an	lection and Ordering data Article No.					
Pressure su Weight appro						
Material	Full-scale value	Weight approx. in kg				
Brass	250 bar (3626 psi)	0.21	M56340-A54			
Stainless steel	600 bar (8702 psi)	0.21	M56340-A59			

# Dimensional drawings



Pressure surge reducer, dimensions in mm

1/510

Fittings Accessories

Primary shut-off valves

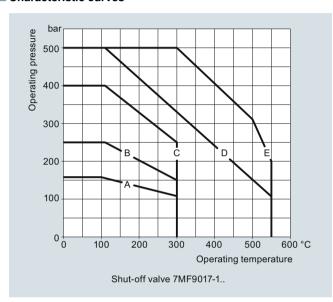
# Overview

Primary shut-off valves are available in the following versions:

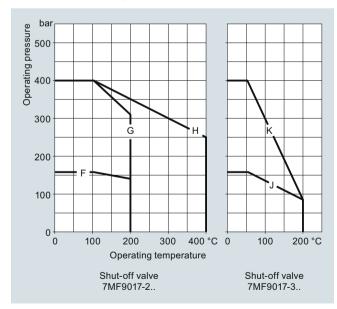
- For non-corrosive liquids, gases and vapors
- For corrosive liquids and gases
- Grease-free for oxygen

The shut-off valves are available in various materials and with various connections (see Selection and Ordering data)

# Characteristic curves

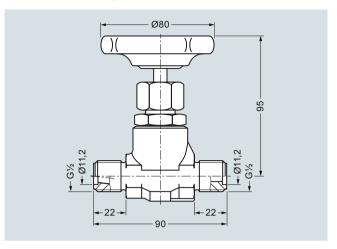


Shut-off valve 7MF9017-1.., permissible working pressure as a function of the permissible working temperature

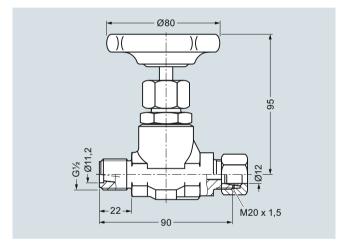


Shut-off valve 7MF9017-2.. and -3.., permissible working pressure as a function of the permissible working temperature

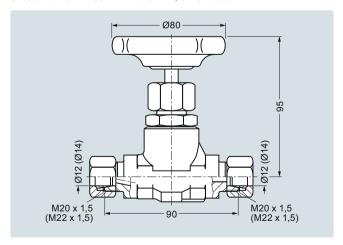
# Dimensional drawings



Shut-off valve 7MF9017-1A., dimensions in mm



Shut-off valve 7MF9017-1B. and -2B., dimensions in mm

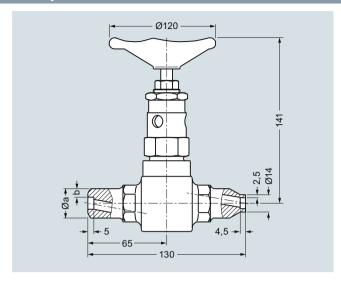


Shut-off valves 7MF9017-1C., -1D. and -2C., dimensions in mm

Fittings

Accessories

# **Primary shut-off valves**



Shut-off valves 7MF9017-, dimensions in mm

Ø A x b	7MF9017-
14 mm x 2.5 mm	1F. and 1G.
21.3 mm x 6.3 mm	1H. and 2H.
24 mm x 7.1 mm	1J., 1K. and 2J.

Selection and Ordering data
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Max. working pressure	teristic <sup>1)</sup>	Material	Mat. No.	Spindle thread	Connections	Approx. weight kg	Article No.
Shut-off valve for	non-aggr	essive liquids, gases	and vapo	rs			7MF9017-1
	cle No. fo	r the online configuration	on in the P	IA Life Cy	rcle Portal.		
160 bar (2321 psi)	Α	P250GH	1.0460	Internal	Threaded socket G½ form R, DIN 19207	0.8	Α
160 bar (2321 psi)	А	P250GH	1.0460	Internal	Threaded socket G½ form R, DIN 19207 DIN 19207 and pipe union with ferrule for pipe Ø 12 mm, S series	0.8	В
400 bar (5800 psi)	С	P250GH	1.0460	Internal	Pipe union with ferrule for pipe Ø 12 mm, S series	1	С
400 bar (5800 psi)	С	P250GH	1.0460	Internal	Pipe union with ferrule for pipe Ø 14 mm, S series	1	D
500 bar (7252 psi)	D	16 Mo 3	1.5415	External	Welding sleeves Ø 14 mm x 2.5 mm	1.6	F
500 bar (7252 psi)	E	11 CrMo 9 10	1.7383	External	Welding sleeves Ø 14 mm x 2.5 mm	1.6	G
500 bar (7252 psi)	D	16 Mo 3	1.5415	External	Welding sleeves $\varnothing$ 21.3 mm $\times$ 6.3 mm and $\varnothing$ 14 mm $\times$ 2.5 mm	1.6	н
500 bar (7252 psi)	D	16 Mo 3	1.5415	External	Welding sleeves $\varnothing$ 24 mm $\times$ 7.1 mm and $\varnothing$ 14 mm $\times$ 2.5 mm	1.6	J
500 bar (7252 psi)	E	11 CrMo 9 10	1.7383	External	Welding sleeves $\varnothing$ 24 mm $\times$ 7.1 mm and $\varnothing$ 14 mm $\times$ 2.5 mm	1.6	K
Shut-off valve for	aggressiv	ve liquids and gases				_	7MF9017-2
160 bar (2321psi)	F	X 6 CrNiMoTi 17 12 2	1.4571/ 316Ti	Internal	Threaded socket G½ form R, DIN 19207 DIN 19207 and pipe union with ferrule for pipe Ø 12 mm, S series	0.8	В
400 bar (5800 psi)	G	X 6 CrNiMoTi 17 12 2	1.4571/ 316Ti	Internal	Pipe union with ferrule for pipe $\varnothing$ 12 mm, S series	1	С
400 bar (5800 psi)	Н	X 6 CrNiMoTi 17 12 2	1.4571/ 316Ti	External	Welding sleeves $\varnothing$ 21.3 mm $\times$ 6.3 mm and $\varnothing$ 14 mm $\times$ 2.5 mm	1.6	Н
400 bar (5800 psi)	Н	X 6 CrNiMoTi 17 12 2	1.4571/ 316Ti	External	Welding sleeves $\varnothing$ 24 mm $\times$ 7.1 mm and $\varnothing$ 14 mm $\times$ 2.5 mm	1.6	J

<sup>1)</sup> See Figure "Permissible working pressure as a function of the permissible working temperature"

Material acceptance test certificate EN 10204-3.1

7MF9000-8AD

Fittings Accessories

Compensation vessels

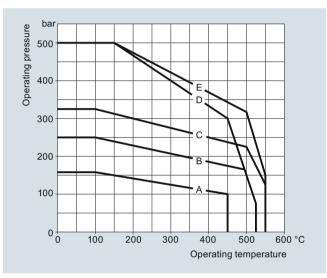
# Overview

The compensation vessels prevent the level difference which occurs with pressure changes in the pressure lines and which falsifies the measurement.

According to DIN 19211, the temperature in the compensation vessel must be assumed to be 50 K less than the steam temperature in the pipe when calculating the wall thicknesses. This is because the temperature in the compensation vessel during operation can only rise up to the saturated steam temperature.

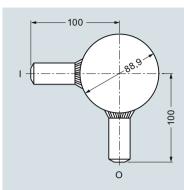
A material acceptance test certificate A to EN 10204-3.1 is available for the materials from which the compensation vessels are made.

# Characteristic curves



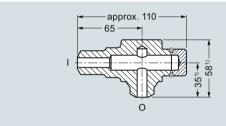
Permissible operating pressure as a function of the permissible operating temperature

# Dimensional drawings



- I Input (see Ordering data for dimensions)
- O Output (see Ordering data for dimensions)

Compensation vessel 7MF9015-1.., dimensions in mm



- I Input (see Ordering data for dimensions)
- O Output (see Ordering data for dimensions)
- 1) 30 mm longer with 7MF9015-5A

Compensation vessel 7MF9015-5.., dimensions in mm

#### Selection and Ordering data

Compensation ves	ssel, witho	out certificate						
Max. working pressure	Charac- teristic <sup>1)</sup>	Material	Mat. No.	Connections Input	Output	Approx. contents cm <sup>3</sup>	Approx. weight kg	Article No.
								7MF9015-
	cle No. for	the online con	figuration	in the PIA Life Cycle Porta	al.			
160 bar (2321 psi)	Α	16 Mo 3	1.5415	Threaded socket G½, form R, DIN 19207	Threaded socket G½, form V, DIN 19207	250	0.8	1 A
250 bar (3626 psi)	В	16 Mo 3	1.5415	Welding sleeve Ø 21.3 mm × 6.3 mm	Welding sleeve Ø 21.3 mm × 6.3 mm	250	0.8	1 B
250 bar (3626 psi)	В	16 Mo 3	1.5415	Welding sleeve Ø 24 mm × 7.1 mm	Welding sleeve Ø 24 mm × 7.1 mm	250	1	1 C
500 bar (7252 psi)	E	11 CrMo 9 10	1.7383	Welding sleeve Ø 24 mm × 7.1 mm	Welding sleeve Ø 24 mm × 7.1 mm	170	1	1 D
250 bar (3626 psi)	В	16 Mo 3	1.5415	Welding sleeve Ø 33.7 mm × 4.5 mm	Welding sleeve Ø 24 mm × 7.1 mm	700	0.7	1 E
160 bar (2321 psi)	Α	16 Mo 3	1.5415	Threaded socket G½, form R, DIN 19207	Threaded socket G½, form V, DIN 19207	20	1.6	5 A
500 bar (7252 psi)	D	16 Mo 3	1.5415	Welding sleeve Ø 21.3 mm × 6.3 mm	Welding sleeve Ø 21.3 mm × 6.3 mm	20	1.6	5 B
500 bar (7252 psi)	D	16 Mo 3	1.5415	Welding sleeve Ø 24 mm × 7.1 mm	Welding sleeve Ø 24 mm × 7.1 mm	20	1.6	5 C
500 bar (7252 psi)	E	11 CrMo 9 10	1.7383	Welding sleeve Ø 24 mm × 7.1 mm	Welding sleeve Ø 24 mm × 7.1 mm	20	1.6	5 D

Accessories

Factory test certificate EN 10204-2.2

Material acceptance test certificate EN 10204-3.1

1) See Figure "Permissible working pressure as a function of the permissible working temperature"

7MF9000-8AB 7MF9000-8AD

Fittings

Accessories

# **Connection parts**

# Overview

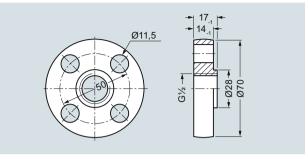
Connection parts are available in the following versions:

- Threaded flange pair G½ with stainless steel gasket
- Nipple G½ form V to DIN 19207
- Union nut G1/2 made of C 35 to DIN 16284
- Gasket B½ (grooved) to DIN 19207

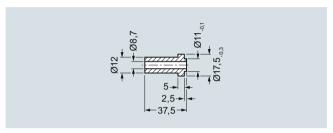
All connection parts are also available grease-free for oxygen.

Selection and Ordering data	Article No.
Threaded flange pair G½	
with stainless steel gasket	7MF9007-4CA
grease-free for oxygen, with stainless steel gasket	7MF9007-4DA
Scope of delivery:	
2x threaded flanges G½ to DIN 19207; material: P250GH (mat. No. 1.0460)	
4x hexagon screws M10x45 to DIN EN 24014; Material: C35E (mat. No. 1.1181)	
4x hexagon screws M10x50 to DIN EN 24032	
1x gasket G½ (7MF9007-6BA) grooved, to DIN 19207; Material: X 6 CrNiMoTi 17 12 2 (mat. No. 14571/316Ti)	
Only for 7MF9007-4CA!	
1x gasket G½ (7MF9k007-6CA), grease-free for oxygen, grooved, to DIN 19207; Material: X 6 CrNiMoTi 17 12 2 (mat. No. 14571/316Ti)	
Only for 7MF9007-4DA!	
Nipple G½	
to DIN 19207	
<ul> <li>Material: 16 Mo 3 (mat. No. 1.5415)</li> </ul>	7MF9007-4KA
<ul> <li>grease-free for oxygen, Material: X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)</li> </ul>	7MF9007-4LA
Union nut G½	
to DIN 16284	
• Material: C35E (mat. No. 1.1181)	7MF9007-4MA
<ul> <li>grease-free for oxygen, Material: X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)</li> </ul>	7MF9007-4NA
Gasket G½	
to DIN 19207, grooved	
<ul> <li>Material: X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)</li> </ul>	7MF9007-6BA
<ul> <li>grease-free for oxygen, Material: X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)</li> </ul>	7MF9007-6CA

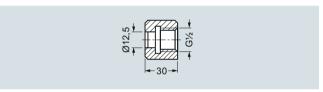
# Dimensional drawings



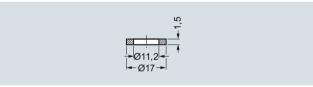
Threaded flange 7MF9007-4CA/-4DA, dimensions in mm



Nipple G½ 7MF9007-4KA/-4LA, dimensions in mm



Union nut G½ 7MF9007-4MA/-4NA, dimensions in mm



Gasket 7MF9007-6BA/-6CA, dimensions in mm