

1/3	Product overview		Pressure transmitters
.,,			for applications with advanced
	Single-range transmitters for general		requirements (Advanced)
	applications		SITRANS P320/P420
1/6	SITRANS P200 for gauge and absolute	1/86	Technical description
	pressure		Technical specifications, ordering data,
1/12	SITRANS P210 for gauge pressure		dimensional drawings
1/17	SITRANS P220 for gauge pressure	1/91	- for gauge pressure (pressure series)
	Transmitter for hydrostatic level	1/100	- for gauge pressure (differential pressure
1/23	- SITRANS LH100		series)
1/28	- SITRANS LH300	1/109	- for gauge and absolute pressure,
1/34	SITRANS P Compact for gauge and abso-		flush-mounted diaphragm
	lute pressure	1/121	- for absolute pressure (pressure series)
	Pressure transmitters	1/129	- for absolute pressure (differential pressure
	for food, pharmaceuticals and		series)
	biotechnology	1/138	- for differential pressure and flow
1/43	SITRANS P300 for gauge and ab-	1/152	- for level
	solute pressure		SITRANS P DS III
1/65	SITRANS P300 Accessories/Spare parts	1/166	Technical description
1/66	SITRANS P300 - Factory-mounting of		Technical specifications, ordering data,
	valve manifolds on transmitters		dimensional drawings
	-	1/173	- for gauge pressure
	Pressure transmitters	1/183	- for gauge/absolute pressure,
	for gauge pressure for the		with front-flush diaphragm
	paper industry	1/196	- for absolute pressure (from gauge pressure
1/68	SITRANS P DS III and P300 with PMC		series)
4 (70	connection - Technical description	1/206	- for absolute pressure (from differential
1/73	SITRANS P DS III with PMC connection		pressure series)
1/79	SITRANS P300 with PMC connection	1/217	- for differential pressure and flow
		1/233	- for level
		1/247	Accessories/Spare Parts
		1/253	Factory-mounting of valve manifolds on
			transmitters
			SITRANS P410
		1/257	Technical description
			Technical specifications, ordering data,
			dimensional drawings
		1/263	- for gauge pressure
		1/275	- for differential pressure and flow
		1/294	Accessories/Spare parts
			Pressure transmitters for applications
			with highest requirements (Premium)
			SITRANS P500
		1/297	Technical description
			Technical specifications, ordering data,
			dimensional drawings
		1/302	- for differential pressure and flow
		1/310	- for level
		1/319	Accessories/Spare parts
		1/321	Factory-mounting of valve manifolds on
			transmitters

Siemens FI 01 · 2021 US Edition

www.usa.siemens.com/pressure

address:

You can download all instructions, catalogs and certificates for SITRANS P free of charge at the following Internet

Remote seals for transmitters

## **Pressure Measurement**



	Remote seals for transmitters
	and pressure gauges
	SITRANS P320/P420
1/324	Technical description
	Diaphragm seals of sandwich design
1/338	- with flexible capillary
	Diaphragm seals of flange design
1/345	- with flexible capillary
1/353	- mounted directly on transmitter
1/360	- mounted directly and with capillary
	Diaphragm seal, screwed design
1/367	- mounted directly mounted or/and with
1,001	capillary
1/372	Quick-release diaphragm seals
1/377	Miniature diaphragm seals
1/379	Inline seals in sandwich design
1/385	Quick-release inline seals
1/390	Flushing rings for diaphragm seals
1/395	
	Measuring setups
1/396	Measuring setups with remote seals
1/398	Measuring setups without remote seals
	SITRANS P DS III
1/401	Technical description
1/407	Pancake type diaphragm seal with flexible
	capillary tube
1/408	Flange-type diaphragm seal directly con-
	nected
1/409	Flange-type diaphragm seal with exten-
	sion
1/411	Diaphragm seal "flanged off-line low-pres-
	sure type", directly connected
1/413	Flange-type diaphragm seal with flexible
	capillary tube
1/415	Diaphragm seal "flanged off-line type"
1/417	Diaphragm seal "flanged off-line low-pres-
	sure type"
1/419	Flushing rings
1/421	Diaphragm seal with quick connection
1/422	Inline diaphragm seal with quick connec-
	tion
1/424	Inline diaphragm seal with quick connec-
	tion
1/426	Diaphragm seal "threaded design"
1/427	Diaphragm seal "threaded, low-pressure
	design"
1/429	Inline diaphragm seal, wafer for pressure
1/431	Diaphragm seal, saddle
1/433	Measuring setups
1/434	- with remote seals
1/436	- 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

- Instrument brackets

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
  - protective box
  - 3- and 5-spindle valve manifolds for vertical angular differential 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.usa.siemens.com/pressure

Product overview

# Overview

	Application	Description		Software for parameterization
SITRANS P Single-range trans	smitters for general applica	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	-
		• Sitrans P210 • Single-range transmitters for gauge pressure • Stainless steal measuring cell • For low-pressure applications	1/12	-
T I		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 JAMUNY 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 fo	od, pharmaceuticals and biote	chnology		
	Two-wire transmitters for measuring gauge and absolute pressure  CERTIFIED  CHEDG  TYPE EL  CLASS January 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  Measuring 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		· ·		00.44716.7716
	Two-wire transmitters for measuring gauge pressure	SITRANS P300 and SITRANS P DS III with PMC connection for the paper industry  • Measuring 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	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	1/86	SIMATIC PDM
	• Level	SIL validation remotely     Diagnostics according to Namur NE107     4-key operation	4/400	CIMATIO DDM
	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 %  Measuring 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	1/166	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	1/253	-
	Two-wire transmitters for measuring:  • Gauge pressure,  • Differential pressure and  • Flow	SITRANS P410  Measuring accuracy up to 0.04 %  Measuring 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	1/257	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 1/253).		-
SITRANS P - Transmitters for	applications with highest r	equirements (Premium)		
	Two-wire transmitters for measuring:  • Differential pressure  • Volume flow  • Mass flow  • Level  • Volume  • Mass	SITRANS P500  Measuring accuracy up to 0.03 %  Measuring range adjustment: 200 :1  High measuring accuracy  Very fast response time  Extremely good long-term stability  Parameterization using 3 buttons or HART	1/297	SIMATIC PDM
		Factory-mounting of manifolds on differential pressure transmitters SITRANS P500  • Simplified assembly  • With pressure test  • Stainless steel valve manifolds	1/321	-

Product overview

	Application	Description		Software for parameterization
Remote seals for transmitters S	ITRANS 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	1/324 1/401	-
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	1/440	-
		As accessory for fittings are available:		
		Oval flange	1/473	
		• Adapters	1/474	
		Connection glands	1/475	
		• Connection parts G½	1/476	
		Water traps	1/477	
		• Sealing rings to EN 837-1	1/477	
		Pressure surge reducers	1/478	
		Primary shut-off valves	1/479	
		Compensation vessels	1/481	
		Connection parts	1/482	

# 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.

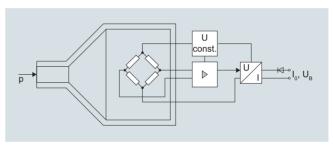
## Device structure with explosion protection

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 valie /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 mm²) 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		<ul> <li>Perbunan</li> </ul>
• Auxiliary power U <sub>B</sub>	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)
Auxiliary power U <sub>B</sub>	5 V DC ± 10 %	• Rack	Plastic
Power consumption	$< 7$ mA at 10 k $\Omega$	<ul> <li>Cables</li> </ul>	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 1113	Germanischer Lloyd (GL) <sup>1)</sup>	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) <sup>1)</sup>	A 12553
span	0.25 /6/10 K of measuring spain	Drinking water approval (ACS) <sup>1)</sup>	ACS 15 ACC NY 360
Influence of power supply  Operating conditions	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>	
made of:		• for USA and Canada	LII 00110017 F244F2
FPM (Standard)	-15 +125 °C (+5 +257 °F)		UL 20110217 - E34453
Neoprene	-35 +100 °C (-31 +212 °F)	• worldwide	IEC UL DK 21845
• Perbunan	-20 +100 °C (-4 +212 °F)	Explosion protection	E 11 1/0 0 E 1 1/0 E 1
• 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  Degree of protection (to EN 60529)	-50 +100 °C (-58 +212 °F)  • IP 65 with connector per EN 175301-803-A	Connection to certified intrinsically- safe resistive circuits with maxi-	$U_i \le 30 \text{ V DC}$ ; $I_i \le 100 \text{ mA}$ ; $P_i \le 0.75 \text{ W}$
	IP 67 with device plug M12     IP 67 with cable     IP 67 with cable     IP 67 with cable guick screw	mum values:  Effective internal inductance and capacity for versions with plugs per	$L_i = 0 \text{ nH}; C_i = 0 \text{ nF}$

 $<sup>^{\</sup>rm 1)}\,$  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 200 pressure trar	nemittere	for pressure	and abe	olute pressur	e for genera	l annlications	Article No. <b>7MF1565</b> -		Order cod
	c curve deviation			- anu aust	viate hiessur	e ioi genera	αρμιισαιιστίο	7W1 1303-		
Vetted parts	materials: Ceram	ic and sta	ainless steel -	sealing n	naterial					
lon-wetted p	oarts materials: sta	ainless ste	eel							
	he Article No. for t			in the PIA	Life Cycle Po	ortal.				
Measuring r			ad limit		. <u></u>	Burst pres	SIIFA			
neasuring i	ange		ad IIIIII	Max		Duist pies	Suic			
		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 B A	
) 1.6 bar	(0 23.2 psi)	-1 bar	(-14.5 psi)	4 bar	(58.02 psi)	> 4 bar	(> 58.0 psi)		3 B B	
) 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 B D	
) 4 bar	(0 58.0 psi)	-1 bar	(-14.5 psi)	10 bar	(145 psi)	> 10 bar	(> 145 psi)		3 B E	
) 6 bar	(0 87.0 psi)	-1 bar	(-14.5 psi)	15 bar	(217 psi)	> 15 bar	(> 217 psi)		3 B G	
) 10 bar	(0 145 psi)	-1 bar	(-14.5 psi)	25 bar	(362 psi)	> 25 bar	(> 362 psi)		3 C A	
) 16 bar	(0 232 psi)	-1 bar	(-14.5 psi)	40 bar	(580 psi)	> 40 bar	(> 580 psi)		3 C B	
0 25 bar	(0 363 psi)	-1 bar	(-14.5 psi)	62.5 bar	(906 psi)	> 62.5 bar	(> 906 psi)		3 C D	
) 40 bar	(0 580 psi)	-1 bar	(-14.5 psi)	100 bar	(1450 psi)	> 100 bar	(> 1450 psi)		3 C E	
) 60 bar	(0 870 psi)	-1 bar	(-14.5 psi)	150 bar	(2175 psi)	> 150 bar	(> 2175 psi)		3 C G	
Other version	n, add Order code	and plai	n text: Measi		: up to ba	ı ar (psi)			9 A A	H 1
or absolute				Jg		(1 /				
	(0 8.7 psi a)	0 bar a	(0 psi a)	I 2.5 har a	(36.26 psi a)	> 2.5 bar a	(> 36.3 psi a)		5 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)		5 B A	
) 1.6 bar a		0 bar a	(0 psi a)		(58.02 psi a)	> 4 bar a	(> 58.0 psi a)		5 B B	
) 2.5 bar a		0 bar a	(0 psi a)		a (90.65 psi a)		(> 90.7 psi a)		5 B D	
) 4 bar a	,		(0 psi a)		` ' '				5 B E	
) 4 bar a ) 6 bar a	(0 58.0 psi 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)		5 B G	
) 0 bar a	(0 145 psi)	0 bar a	(0 psi a) (0 psi a)		(362 psi a)	> 15 bar a	(> 217 psi a) (> 362 psi a)		5 C A	
) 16 bar a	(0 143 psi) (0 232 psi)	0 bar a	(0 psi a) (0 psi a)		(562 psi a) (580 psi a)	> 40 bar a	(> 582 psi a) (> 580 psi a)		5 C B	
			, , ,			1	(> 300 psi a)			
	n, add Order code			iring range	: up to m	ibar a (psi a)		_	9 A A	H 2
leasuring r	anges for gauge 0 15 psi	pressure	• -14.5 psi	ı	35 psi	I	> 35 psi		4 B B	
	3 15 psi		-14.5 psi		35 psi		> 35 psi		4 B C	
	0 20 psi		-14.5 psi		50 psi		> 50 psi		4 B D	
	0 20 psi 0 30 psi		-14.5 psi -14.5 psi		80 psi		> 80 psi		4 B E	
	0 60 psi		-14.5 psi		140 psi 200 psi		> 140 psi		4BF	
	0 100 psi		-14.5 psi				> 200 psi		4BG	
	0 150 psi		-14.5 psi		350 psi		> 350 psi		4 C A	
	0 200 psi		-14.5 psi		550 psi		> 550 psi		4 C B	
	0 300 psi		-14.5 psi		800 psi		> 800 psi		4 C D	
	0 500 psi		-14.5 psi		1400 psi		> 1400 psi		4 C E	
	0 750 psi		-14.5 psi		2000 psi		> 2000 psi		4 C F	
	0 1000 psi		-14.5 psi		2000 psi		> 2000 psi		4 C G	
	n, add Order code			iring range	: up to p	si			9 A A	H 1
leasuring r	anges for absolu	te pressi		1	05 - '	ń	05			
	0 10 psi a		0 psi a		35 psi a		> 35 psi a		6 A G	
	0 15 psi a		0 psi a		35 psi a		> 35 psi a		6 B A	
	0 20 psi a		0 psi a		50 psi a		> 50 psi a		6 B B	
	0 30 psi a		0 psi a		80 psi a		> 80 psi a		6 B D	
	0 60 psi a		0 psi a		140 psi a		> 140 psi a		6 B E	
	0 100 psi a		0 psi a		200 psi a		> 200 psi a		6 B G	
	0 150 psi a		0 psi a		350 psi a		> 350 psi a		6 C A	
	0 200 psi a		0 psi a		550 psi a		> 550 psi a		6 C B	
	0 300 psi a		0 psi a		800 psi a		> 800 psi a		6 C C	
544 1	n, add Order code	and nlai	n teyt: Measi	ırina rənac	. un to n	ci o			9 A A	H 2

Pressure transmitters

Single-range transmitters for general applications

# SITRANS P200 for gauge and absolute pressure

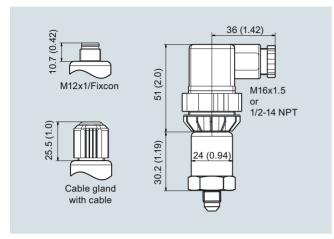
Selection and ordering data	Article No.		Ord	der c	od
SITRANS P 200 pressure transmitters for pressure and absolute pressure for general applications $$ Accuracy typ. 0.25 $\%$	7MF1565-	1	1		
Wetted parts materials: Ceramic and stainless steel + sealing material					
Non-wetted parts materials: stainless steel					
Output signal					П
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 %	0 1 2 3	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		0 3	1 2 3 4 5 6	ı	N 1
Process connection					
G½" male per EN 837-1 (½" BSP male) (standard for metric pressure ranges mbar, bar) G½" male thread and G1/8" female thread G¼" male per EN 837-1 (¼" BSP male) 7/16"-20 UNF male ¼"-18 NPT male (standard for pressure ranges inH <sub>2</sub> O and psi) ¼"-18 NPT female ½"-14 NPT male ½"-14 NPT male			ABCD EFGHJ		
M20x1.5 male			P		
G1/4" to DIN 3852 Form E			Q		
G1/2" to DIN 3852 Form E			R		
Special version			Z	P	7 1
Sealing material between sensor and enclosure					
Viton (FPM, standard) Neoprene (CR) Perbunan (NBR)			A B C	3	
EPDM Control of the c			D		
Special version			Z	G	2 1
Version Standard version				1	
Further designs					
Supplement the Article No. with "-Z" and add Order code.					
Quality test certificate, 5-point factory calibration (IEC 60770-2)	C11				
Oxygen version, free of oil and degreased, max. operating pressure 60 bar, max. temperature of medium +85 °C (only in conjunction with the sealing material Viton between sensor and enclosure and not with explosion protection version)	E10				

Pressure transmitters

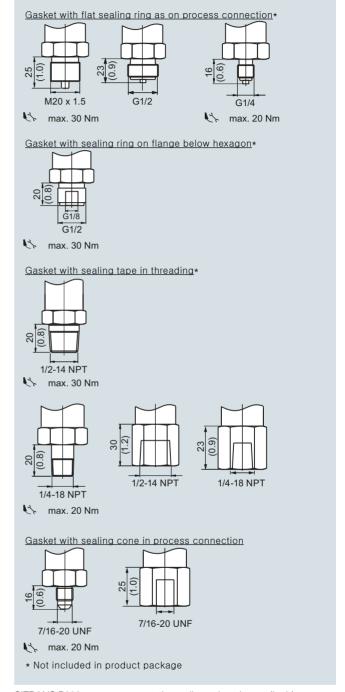
Single-range transmitters for general applications

## SITRANS P200 for gauge and absolute pressure

## Dimensional drawings



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



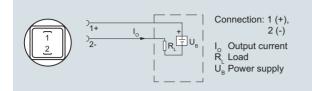
SITRANS P200, process connections, dimensions in mm (inch)

Pressure transmitters

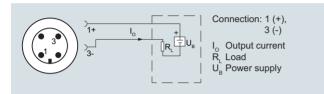
Single-range transmitters for general applications

# SITRANS P200 for gauge and absolute pressure

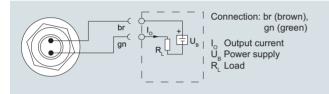
## Schematics



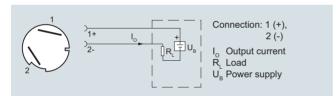
Connection with current output and connector per EN 175301



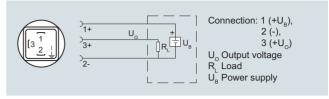
Connection with current output and device plug M12x1



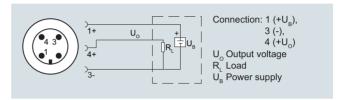
Connection with current output and cable



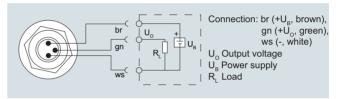
Connection with current output and Quickon cable quick screw connection



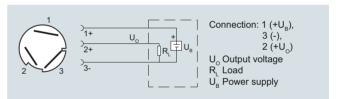
Connection with voltage output, ratiometric output and plug according to EN 175301



Connection with voltage output, ratiometric output and device plug M12x1



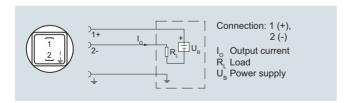
Connection with voltage output, ratiometric output and cable



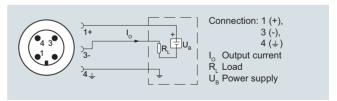
Connection with voltage output, ratiometric output and Quickon fast cable termination

#### 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.

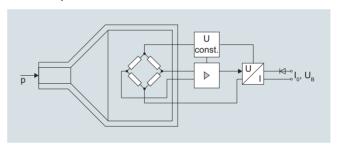
## Device structure with explosion protection

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	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
Measured variable	Gauge pressure		or Pg 11
Inputs			Device plug M12
Measuring range			<ul> <li>2 or 3-wire (0.5 mm<sup>2</sup>) cable (Ø ± 5.4 mm)</li> </ul>
Gauge pressure	100 600 mbar (1.5 8.7 psi)		Quickon cable quick screw c 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 Todess connection	(SST 316 L)
Voltage signal	0 10 V DC	Gasket	• FPM (Standard)
• Load	≥ 10 kΩ		• Neoprene
<ul> <li>Auxiliary power U<sub>B</sub></li> </ul>	12 33 V DC		<ul><li>Perbunan</li></ul>
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
<ul> <li>Auxiliary power U<sub>B</sub></li> </ul>	5 V DC ± 10 %		(SST 316 L)
Power consumption	$<$ 7 mA at 10 k $\Omega$	• Rack	Plastic
Characteristic curve	Linear rising	• cables	PVC
Measuring accuracy		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
Lower range value and measuring	0.25 % of measuring span/year	Germanischer Lloyd (GL) <sup>1)</sup>	GL19740 11 HH00
span	3	American Bureau of Shipping	ABS_11_HG 789392_PDA
Influence of ambient temperature		(ABS) <sup>1)</sup>	
<ul> <li>Lower range value and measuring</li> </ul>	• 0.25 %/10 K of measuring span	Bureau Veritas (BV) <sup>1)</sup>	BV 271007A0 BV
span	• 0.5 %/10K of measuring span	Det Norske Veritas (DNV)1)	A 12553
	for a measuring range	Drinking water approval (ACS) <sup>1)</sup>	ACS 15 ACC NY 360
Influence of power supply	0.005 %/V	EAC <sup>1)</sup>	№ TC RU C-DE.ГБ05.В.0073 ОС НАНИО «ЦСВЭ»
Operating conditions		Underwriters Laboratories (UL)1)	
Process temperature with gasket		for USA and Canada	UL 20110217 - E34453
made of: • FPM (Standard)	15 . 105 °C ( . 5 257 °C)	• worldwide	IEC UL DK 21845
Neoprene	-15 +125 °C (+5 +257 °F) -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),	(only with current output)	Ex II 1/2 D Ex ia IIIC T125 °C
- El DIVI	usable for drinking water		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 <sub>i</sub> ≤ 0.75 W
	<ul><li>IP 67 with device plug M12</li><li>IP 67 with cable</li></ul>	Effective internal inductance and capacity for versions with plugs per EN 175301-803-A and M12	$L_i = 0 \text{ nH}; C_i = 0 \text{ nF}$
	<ul> <li>IP 67 with cable quick screw connection</li> </ul>	1) For variants with output signal 0 5	V and ratiometric output available
Electromagnetic compatibility	acc. IEC 61326-1/-2/-3     acc. NAMUR NE21, only for ATEX versions and with a max.	soon.	- San
	measuring deviation ≤ 1 %		
Mounting position	upright		

Mounting position

upright

Pressure transmitters

Single-range transmitters for general applications

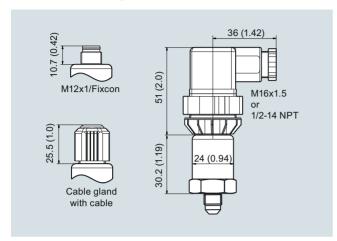
# SITRANS P210 for gauge pressure

Selection and ordering da	ta			Article No.		Orde	er code
SITRANS P 210 pressure t Accuracy typ. 0.25 %	ransmitters for gauge pres	ssure for low pressure ap	pplications	7M F 1 5 6 6 -		ш	
	nless steel + sealing materia	al					
Non-wetted parts materials:							
	or the online configuration in	the PIA Life Cycle Portal.					
Measuring range	Overload limit		Burst pressure				
	min.	max.					
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)	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 3 A 3 A 3 A 9 A	IB IC ID IG		H1\
Measuring range: up to							
Output signal							
0 10 V; three-wire system 0 5 V; 3-wire system; auxi	n; power supply 7 33 V DC; power supply 12 33 V DC liary power 7 33 V DC ire system; auxiliary power 5	C`	versions)		0 1 0 2 0 3 0		
Explosion protection (only	4 20 mA)						
None With explosion protection Ex	k ia IIC T4				0 1		
Electrical connection							
Quickon cable quick screw Connector per DIN EN 1753	ed cable, 2 m (not for type o connection PG9 (not for type 801-803-A, stuffing box threa 801-803-A, stuffing box threa n 5 m	e of protection "Intrinsic sand 1/2"-14 NPT (with coupl	afety i")		0	3 4 5 6 7 9	N 1 Y
Process connection				_			
		etric pressure ranges mbai	r, bar)			A B C D	
14"-18 NPT male (standard f 14"-18 NPT female 1/2"-14 NPT male 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	or pressure ranges inH <sub>2</sub> O ar	nd psi)				E F G H J P Q R	
Special version						z	P 1 Y
Sealing material between	sensor and enclosure						
Viton (FPM, standard) Neoprene (CR) Perbunan (NBR) EPDM Special version						A B C D	Q 1 Y
Version							٠,١
Standard version						1	
Further designs							
Supplement the Article No.	with " <b>-Z</b> " and add Order cod	e.					
ouppionioni ino 7 il iloio 140.							

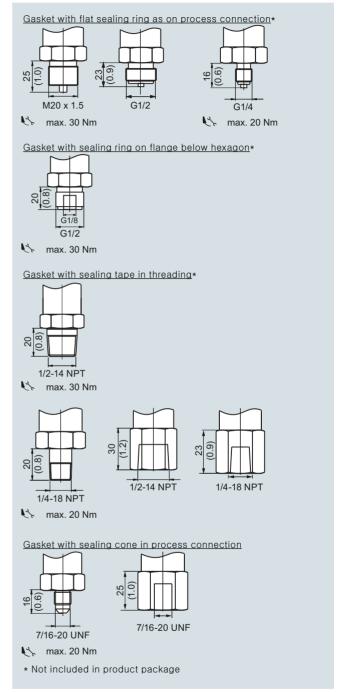
Pressure transmitters Single-range transmitters for general applications

# SITRANS P210 for gauge pressure

# Dimensional drawings



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



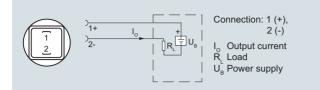
SITRANS P210, process connections, dimensions in mm (inch)

Pressure transmitters

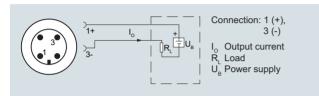
Single-range transmitters for general applications

## SITRANS P210 for gauge pressure

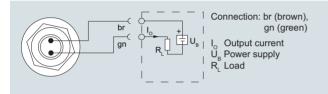
## Schematics



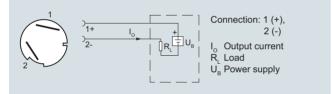
Connection with current output and connector per EN 175301



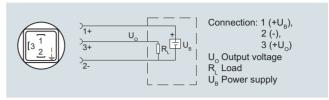
Connection with current output and device plug M12x1



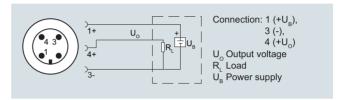
Connection with current output and cable



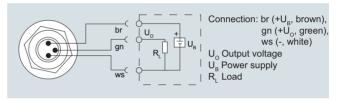
Connection with current output and Quickon cable quick screw connection



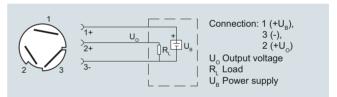
Connection with voltage output, ratiometric output and plug according to EN 175301



Connection with voltage output, ratiometric output and device plug M12x1



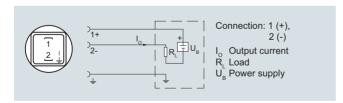
Connection with voltage output, ratiometric output and cable



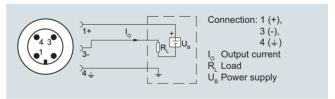
Connection with voltage output, ratiometric output and Quickon fast cable termination

#### 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.

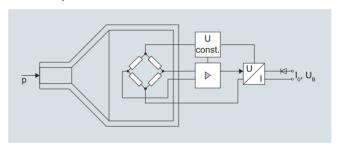
## Device structure with explosion protection

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

Technical specifications			
Application		Design	
Gauge pressure measurement	Liquids, gases and vapors	Weight	Approx. 0.090 kg (0.198 lb)
Mode of operation	Liquius, gases ariu vapors	Process connections	See dimension drawings
Measuring principle	Piezoresistive measuring cell (stainless steel diaphragm)	Electrical connections	Connector per     EN 175301-803-A Form A with cable inlet M16x1.5 or ½-14 NPT
Measured variable	Gauge pressure		or Pg 11
Inputs			Device plug M12
Measuring range			<ul> <li>2 or 3-wire (0.5 mm<sup>2</sup>) cable (Ø ± 5.4 mm)</li> </ul>
Gauge pressure     Metric	2.5 1000 bar		Quickon cable quick screw con- nection
- Wettie	(36 14500 psi)	Wetted parts materials	nection
- US measuring range	30 14500 psi	Measuring cell	Stainless steel, matNo. 1.4016
Output		Process connection	Stainless steel, mat. No. 1.4404
Current signal	4 20 mA		(SST 316 L)
• Load	(U <sub>B</sub> - 10 V)/0.02 A	Non-wetted parts materials	
<ul> <li>Auxiliary power U<sub>B</sub></li> </ul>	DC 7 33 V (10 30 V for Ex)	• Enclosure	Stainless steel, mat. No. 1.4404 (SST 316 L)
Voltage signal	0 10 V DC	• Rack	Plastic
• Load	≥ 10 kΩ	• cables	PVC
Auxiliary power U <sub>B</sub>	12 33 V DC	Certificates and approvals	
Power consumption	$<$ 7 mA at 10 k $\Omega$	Classification according to pressure	For gases of fluid group 1 and liq-
Ratiometric output	0 90 %	equipment directive (PED 2014/68/EU)	uids of fluid group 1; complies with requirements of article 4,
• Load	≥ 10 kΩ	( == == : ,, ==, == ,	paragraph 3 (sound engineering
<ul> <li>Auxiliary power U<sub>B</sub></li> </ul>	5 V DC ± 10 %	Lloyd's Register of Chinning (LD)1)	practice)
Power consumption	$< 7$ mA at 10 k $\Omega$	Lloyd's Register of Shipping (LR) <sup>1)</sup> Germanischer Lloyd (GL) <sup>1)</sup>	12/20010 GL19740 11 HH00
Characteristic curve	Linear rising	American Bureau of Shipping	ABS_11_HG 789392_PDA
Measuring accuracy	204049	(ABS) <sup>1)</sup>	7.80_11_11d 703002_1 B/(
Error in measurement at limit setting	Typical: 0.25 % of measuring	Bureau Veritas (BV)1)	BV 271007A0 BV
incl. hysteresis and reproducibility	span	Det Norske Veritas (DNV)1)	A 12553
	<ul> <li>Maximum: 0.5 % of measuring span</li> </ul>	Drinking water approval (ACS) <sup>1)</sup> EAC <sup>1)</sup>	ACS 15 ACC NY 360 № TC RU C-DE.ГБ05.В.00732
Step response time T <sub>99</sub>	< 5 ms	ODN(2)	ОС НАНИО «ЦСВЭ»
Long-term stability		CRN <sup>2)</sup>	0F18659.5C
<ul> <li>Lower range value and measuring span</li> </ul>	0.25 % of measuring span/year	Underwriters Laboratories (UL) <sup>1)</sup> • for USA and Canada	UL 20110217 - E34453
Influence of ambient temperature		• worldwide	IEC UL DK 21845
Lower range value and measuring span	0.25 %/10 K of measuring span	Explosion protection Intrinsic safety "i"	Ex II 1/2 G Ex ia IIC T4 Ga/Gb
Influence of power supply	0.005 %/V	(only with current output)	Ex II 1/2 D Ex ia IIIC T125 °C Da/Db
Operating conditions		EC type-examination certificate	SEV 10 ATEX 0146
Process temperature	-40 +120 °C (-40 +248 °F)	Connection to certified intrinsically-	$U_i \le 30 \text{ V DC}$ ; $I_i \le 100 \text{ mA}$ ;
Ambient temperature	-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)	, , , , , , , , , , , , , , , , , , ,	capacity for versions with plugs per EN 175301-803-A and M12	L <sub>i</sub> = 01111, O <sub>i</sub> = 0111
	<ul><li>IP 67 with device plug M12</li><li>IP 67 with cable</li></ul>	CSA <sup>2)</sup>	70006348 Class I, Division I, Groups A, B, C and D;
	<ul> <li>IP 67 with cable quick screw connection</li> </ul>		Class II, Division 1, Groups E, F and G,
Electromagnetic compatibility	<ul> <li>acc. IEC 61326-1/-2/-3</li> <li>acc. NAMUR NE21, only for ATEX versions and with a max. measuring deviation ≤ 1 %</li> </ul>		Class III Class I, Division 2, Groups A, B, C and D; 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

For variants with output signal 0 ... 5 V and ratiometric output available soon.
 See ordering data for available versions.

Pressure transmitters

Single-range transmitters for general applications

# SITRANS P220 for gauge pressure

	l ordering data								Article No.	_	rder code
	20 pressure trans fully-welded vers		or gauge pre	essure, hig	h-pressure a	nd refriger	ation		7MF1567-		A
, ,,	u.25 % naterials: stainless	estacl									
•			N.								
•	arts materials: stai										
✓ Click on the	e Article No. for the	e online c	onfiguration i	n the PIA L	ife Cycle Porta	al.					
Measuring rai	nge	Overlo	ad limit			Burst pro	essure				
		Mini-		Max.							
		mum									
For gauge pre	essure	1		1		-1					
0 2.5 bar	(0 36.3 psi)	-1 bar	(-14.5 psi)	6.25 bar	(90.7 psi)	25 bar	(363 psi)		3 B D		
0 4 bar	(0 58 psi)	-1 bar	(-14.5 psi)	10 bar	(145 psi)	40 bar	(870 psi)		3 B E		
0 6 bar	(0 87 psi)	-1 bar	(-14.5 psi)	15 bar	(217 psi)	60 bar	(522 psi)		3 B G		
0 10 bar	(0 145 psi)	-1 bar	(-14.5 psi)	25 bar	(362 psi)	60 bar	(870 psi)		3 C A		
0 16 bar	(0 232 psi)	-1 bar	(-14.5 psi)	40 bar	(580 psi)	96 bar	(1392 psi)		3 C B		
0 25 bar	(0 363 psi)	-1 bar	(-14.5 psi)	62.5 bar	(906 psi)	150 bar	(2176 psi)		3 C D		
0 40 bar	(0 580 psi)	-1 bar	(-14.5 psi)	100 bar	(1450 psi)	240 bar	(3481 psi)		3 C E		
0 60 bar	(0 870 psi)	-1 bar	(-14.5 psi)	150 bar	(2175 psi)	360 bar	(5221 psi)		3 C G		
0 100 bar	(0 1450 psi)	-1 bar	(-14.5 psi)	250 bar	(3625 psi)	600 bar	(8702 psi)		3 D A		
0 160 bar	(0 2320 psi)	-1 bar	(-14.5 psi)	400 bar	(5801 psi)	960 bar	(13924 psi)		3 D B		
0 250 bar	(0 3625 psi)	-1 bar	(-14.5 psi)	625 bar	(9064 psi)	1500 bar			3 D D		
0 400 bar	(0 5801 psi)	-1 bar	(-14.5 psi)	1000 bar	(14503 psi)	2400 bar			3 D E		
0 600 bar	(0 8702 psi)	-1 bar	(-14.5 psi)	1500 bar	(21755 psi)	3600 bar	(52200 psi)		3 D G		
0 1000 bar	(0 14500 psi)	-1 bar	(-14.5 psi)	1500 bar	(21755 psi)	5000 bar	(72520 psi)		3 E A		
Other version.	add Order code a	and plain	text:	1		T.			9 A A		H1
	ge: up to bar										
Measuring ra	nges for gauge p	ressure									
J	0 30 psi		-14.5 psi		75 psi		360 psi	*	4 B E		
	0 60 psi		-14.5 psi		150 psi		580 psi	*	4 B F		
	0 100 psi		-14.5 psi		250 psi		580 psi	*	4 B G		
	0 150 psi		-14.5 psi		375 psi		870 psi	*	4 C A		
	0 200 psi		-14.5 psi		500 psi		1390 psi	*	4 C B		
	0 300 psi		-14.5 psi		750 psi		2170 psi	*	4 C D		
	0 500 psi		-14.5 psi		1250 psi		3481 psi	*	4 C E		
	0 750 psi		-14.5 psi		1875 psi		5220 psi	*	4 C F		
	0 1000 psi		-14.5 psi		2500 psi		5220 psi	*	4 C G		
	0 1500 psi		-14.5 psi		3750 psi		8700 psi	*	4 D A		
	0 2000 psi		-14.5 psi		5000 psi		13920 psi	*	4 D B		
	0 3000 psi		-14.5 psi		7500 psi		21750 psi	*	4 D D		
	0 5000 psi		-14.5 psi		12500 psi		34800 psi	*	4 D E		
	0 6000 psi		-14.5 psi		15000 psi		34800 psi	*	4 D F		
	0 8700 psi		-14.5 psi		21755 psi		52200 psi	*	4 D G		
	0 14500 psi		-14.5 psi		21755 psi		72520 psi		4 E A		
Other version,	add Order code a	and plain	text: Measuri	ng range: .	up to psi				9 A A		H 1
Output signal		•									
	o-wire system; po	wor our	N 7 22 N D	C (10 20	N DC for ATE	Y vorsions			0		
	o-wire system; po e-wire system; pov		•	,	V DO IOI ALE	A VEISIONS)	1		10		
	e-wire system; pov e system; auxiliary								2 0		
	s system, auxiliary ) 90 %; 3-wire s			5 V DC + 1	0 %				3 0		
	otection (only 4		a., powor		- /-				-		
	Account (Offiny 4	. 20 IIIA)									
None	and a street of the	IO T4							0		
	protection Ex ia I	IU 14							1		
Electrical con	nection										
Connector per	DIN EN 175301-8	303-A, stu	ffing box thre	ad M16 (w	ith coupling)			*		1	
	l12 per IEC 61076									2	
	a fixed mounted ca								0	3	
	quick screw con		٠	•		• ,			0	4	
	DIN EN 175301-8							*		5	
•	DIN EN 175301-8		iffing box thre	ad PG11 (\	with coupling)			*		6	
Fixed mounted	d cable, length 5 n	n							0	7	
Special version										9	N 1 '

Pressure transmitters

Single-range transmitters for general applications

# SITRANS P220 for gauge pressure

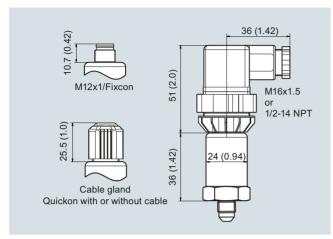
Selection and ordering data		Article No.	Order code
SITRANS P 220 pressure transmitters for gauge pressure, high-pressure and refrigeration applications, fully-welded version Accuracy typ. 0.25 % Wetted parts materials: stainless steel		7M F 1 5 6 7 -	- A A A A A A A A A A A A A A A A A A A
Non-wetted parts materials: stainless steel			
Process connection			
G½" male per EN 837-1 (½" BSP male) (standard for metric pressure ranges mbar, bar) G½" male thread and G1/8" female thread G¼" male per EN 837-1 (¼" BSP male) 7/16"-20 UNF male			A B C D
4"-18 NPT male (standard for pressure ranges inH <sub>2</sub> O and psi) $4$ "-18 NPT female $2$ "-14 NPT male $2$ "-14 NPT female (Only for measuring ranges ≤ 60 bar (870 psi)) $1$ 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 P1Y
Version Standard version	*		1
Further designs			
Supplement the Article No. with "-Z" and add Order code.			
Quality test certificate, 5-point factory calibration (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 $_{\rm c}{\rm CSA}_{\rm us}$ Ex approval (only for measuring ranges 0 30 psi bis 0 8 700 psi)		E21	

 $<sup>\</sup>hspace{0.1cm} \rule{0.1cm}{0.8em}\hspace{0.1cm}$  Order code E21 required for complete configuration with CRN and  $_{c}\text{CSA}_{us}$  Ex approval..

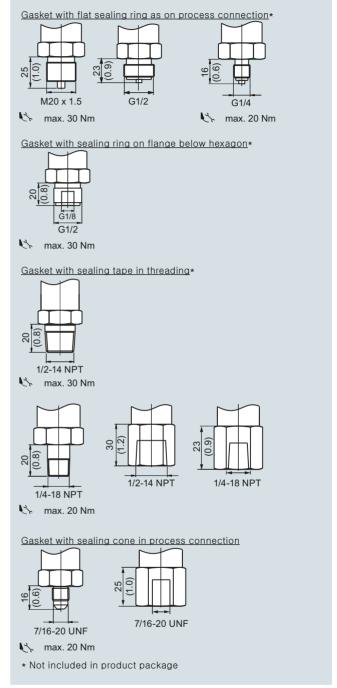
Pressure transmitters Single-range transmitters for general applications

SITRANS P220 for gauge pressure

# Dimensional drawings



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



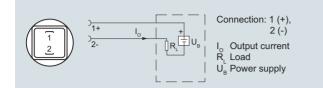
SITRANS P220, process connections, dimensions in mm (inch)

Pressure transmitters

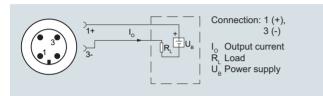
Single-range transmitters for general applications

## SITRANS P220 for gauge pressure

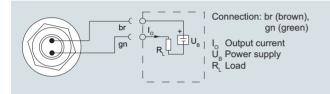
## Schematics



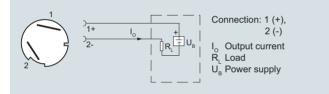
Connection with current output and connector per EN 175301



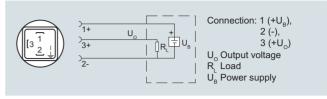
Connection with current output and device plug M12x1



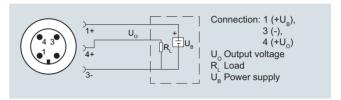
Connection with current output and cable



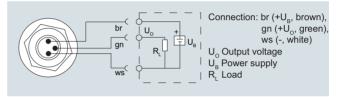
Connection with current output and cable quick screw connection Quick-on



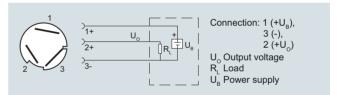
Connection with voltage output, ratiometric output and plug according to EN 175301



Connection with voltage output, ratiometric output and device plug M12x1



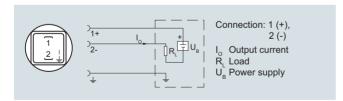
Connection with voltage output, ratiometric output and cable



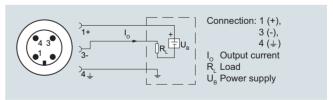
Connection with voltage output, ratiometric output and Quickon fast cable termination

#### 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.

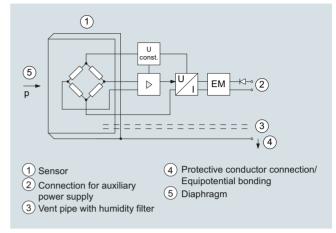
These pressure transmitters are equipped with an electronic circuit fitted together with the sensor in a stainless steel enclosure. In addition, the connecting cable contains a vent pipe which is equipped with a humidity filter to prevent the build-up of condensation.

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.

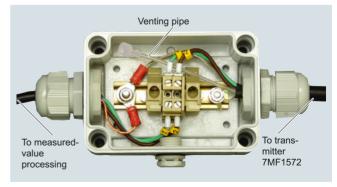
The output voltage of the sensor is applied to the electronic circuit where it is converted into an output current of 4 to 20 mA.

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 cable box, which can be ordered separately, and secured with the anchoring clamp, 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

Proceure transmitter CITDANG LU46	00 (submorsible sensor)
Pressure transmitter SITRANS LH10  Mode of operation	o (submersible sensor)
	pione registive
Measuring principle	piezo-resistive
Input	
Measured variable	Hydrostatic level
Measuring range ● 0 3 mH <sub>2</sub> O (0 9 ftH <sub>2</sub> O)	<ul> <li>Max. permissible operating pressure</li> <li>1.5 bar (21.8 psi) (corresponds to</li> </ul>
• 0 4 mH <sub>2</sub> O (0 12 ftH <sub>2</sub> O)	15 mH <sub>2</sub> O (45 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)	• 1.5 bar (21.8 psi) (corresponds to 15 mH <sub>2</sub> O (45 ftH <sub>2</sub> O))
• 0 6 mH <sub>2</sub> O (0 18 ftH <sub>2</sub> O)	<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)	• 3.0 bar (43.5 psi) (corresponds to 30 mH2O (90 ftH <sub>2</sub> O))
• 0 20 mH <sub>2</sub> O (0 60 ftH <sub>2</sub> O)	• 5.0 bar (72.5 psi) (corresponds to 50 mH <sub>2</sub> O (150 ftH <sub>2</sub> O))
• 0 0.3 bar • 0 0.4 bar	<ul><li>1.5 bar</li><li>1.5 bar</li></ul>
• 0 0.4 bar • 0 0.5 bar	• 1.5 bar
• 0 0.6 bar	• 1.5 bar
• 0 1 bar	• 3.0 bar
• 0 2 bar	• 5.0 bar
Output	
Output signal	4 20 mA
Measuring accuracy	According to IEC 60770-1
Error in measurement at limit setting including hysteresis and reproducibility	0.3% of upper range 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 upper range value (typical) 1.0% of upper range value (maxi- mum)
• For all other measuring ranges	0.3 % of upper range value (typical) 0.6% of upper range value (maximum)
Influence of ambient temperature	
Measuring range	Zero and span
• 3 mH <sub>2</sub> O (9 ftH <sub>2</sub> O or 0.3 bar) • 4 6 mH <sub>2</sub> O	0.5 %/10 K of upper range value 0.45 %/10 K of upper range value
(12 18 ftH <sub>2</sub> O or 0.40.6 bar) • > 6 mH <sub>2</sub> O ( > 18 ftH <sub>2</sub> O or > 0.6 bar)	0.3 %/10 K of upper range value
Long-term stability	
Measuring range	Zero and span
• 3 mH <sub>2</sub> O (9 ftH <sub>2</sub> O or 0.3 bar)	0.4 % of upper range value/year
• 4 6 mH <sub>2</sub> O	0.25% of upper range value/year
(12 18 ftH <sub>2</sub> O or 0.40.6 bar) • > 6 mH <sub>2</sub> O ( > 18 ftH <sub>2</sub> O or > 0.6 bar)	0.2 % of upper range value/year
Operating conditions	
Ambient conditions	
Process temperature	-10 +80 °C (14 176 °F)
Storage temperature	-40 +80 °C (-40 +176 °F)
Degree of protection according to IEC 60529	IP68

Pressure transmitters

# Single-range transmitters for general applications

# SITRANS LH100 Transmitter for hydrostatic level

-	
Design	
Weight	
Pressure transmitter	≈ 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)
	EPDM (optional)
<ul> <li>Connecting cable</li> </ul>	PE-HD (standard)
	PE-LD (in the case of versions with EPDM seal, suitable for drinking water)
Auxiliary power	
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 valve for atmospheric pressure	
Operating 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. Order code
Pressure transmitter SITRANS LH100 (submersible sensor)	7MF1572-
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 configuration in the PIA Life Cycle Portal.	File two
Measuring range Cable length	•
$\begin{array}{llllllllllllllllllllllllllllllllllll$	1 C 1 D 1 E 1 F 1 H 1 K 2 C 2 D 2 E 2 F 2 H 2 K 3 C 3 D 3 E
0 0.6 bar 10 m 0 1 bar 20 m 0 2 bar 30 m	3 F fo 3 H 3 K
Special versions: Measuring ranges for special versions between 0 3 mH <sub>2</sub> O and 0 30 mH <sub>2</sub> O or 0 9 ftH <sub>2</sub> O and 0 100 ftH <sub>2</sub> O or 0 0.3 bar and 0 3 bar possible.  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
For evaluation of the maximum possible cable length following data have to be regarded: Transmitter: $\overline{C_i} = 0 \ \mu F, \ \overline{L_i} = 0 \ \mu H$ Cable: $\overline{C_k} = 0.19 \ nF \ per \ meter \ cable$ $L_k = 1.5 \ \mu H \ per \ meter \ cable$ The maximum permitted data of the transmitter's power supply have to be considered!	
3 m (10 ft) 5 m (16 ft) 7 m (23 ft) 10 m (33 ft) 15 m (49 ft) 20 m (66 ft)	H1A H1B H1C H1D H1E H1F
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>	H1G H1H H1J H1K H1L H1M
90 m (297 ft) <sup>1)</sup> 100 m (330 ft) <sup>1)</sup>	H1P H1Q

Selection and ordering data	Article No. Order code
Pressure transmitter SITRANS LH100 (submersible sensor)	7 M F 1 5 7 2 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	
Sealing material between sensor and enclosure	
FPM (Standard)  EPDM (for drinking water applications)	1 2
Explosion protection  • without	0
With ATEX II1 G Ex ia IIC T4 Ga and IECEx Ex ia IIC T4 Ga	1
Additional versions	Order code
Quality test certificate, 5-point factory calibration (IEC 60770-2), add "-Z" to article no. and add order code.	C11
Indication of measuring range (only at special cable lengths) in " to mH <sub>2</sub> O" or " to ftH <sub>2</sub> O" or " to bar"	Y01
Accessories/spare parts	Article No.
<b>Junction box</b> for connecting the transmitter cable	7MF1572-8AA
<b>Cable hanger</b> for securing the pressure transmitter	7MF1572-8AB
Protective caps as spare parts (10-pack)	7MF1572-8AD
Humidity filters as spare parts (10-pack)	7MF1572-8AE
1) Approvale ponding	

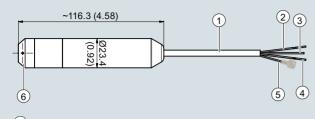
<sup>1)</sup> Approvals pending.

Pressure transmitters

Single-range transmitters for general applications

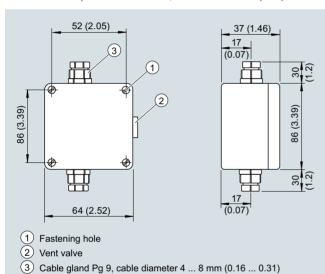
## SITRANS LH100 Transmitter for hydrostatic level

## Dimensional drawings

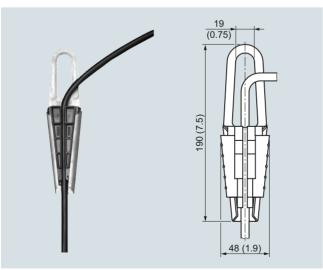


- 1) Cable, sheat Ø 4.8 (0.19) (black, PE)
- 2 (green)
- (3) + (brown)
- 4 Protective conductor connection/Equipotential bonding (white)
- (5) Vent pipe with humidity filter Ø 1 (0.04) (inner diameter)
- 6 Protective cap with 4 x Ø 2.5 (0.10) holes (black, PPE)

SITRANS LH100 pressure transmitter, dimensions in mm (inch)



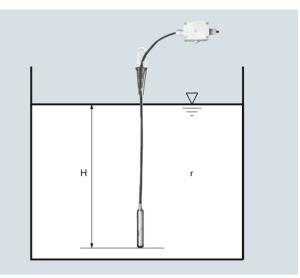
Junction box, dimensions in mm (inch)



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,  $\rho = 1~000~kg/m^3$ Acceleration due to gravity: 9.81 m/s<sup>2</sup>

Lower range value: 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.

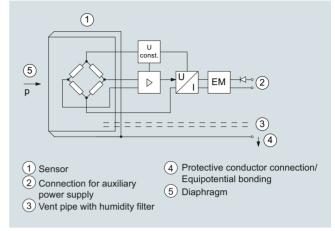
These pressure transmitters are equipped with an electronic circuit fitted together with the sensor in a stainless steel enclosure. In addition, the connecting cable contains a vent pipe which is equipped with a humidity filter to prevent the build-up of condensation.

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 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 cable box, which can be ordered separately, and secured with an anchoring clamp, also available separately. The cable plug is to be installed near the measuring point, but outside the medium.

Likewise, in the case of media other than water the compatibility with the specified materials of the transmitter, cable and seal must be checked.



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

Piezo-resistive  Hydrostatic level  Max. permissible operating pressur  • 1.5 bar (21.8 psi) (corresponds to 15 mH <sub>2</sub> O (45 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))  • 1.5 bar (21.8 psi) (corresponds to 15 mH <sub>2</sub> O (45 ftH <sub>2</sub> O))  • 2 bar (29 psi) (corresponds to 20 mH <sub>2</sub> O (60 ftH <sub>2</sub> O))  • 2 bar (29 psi) (corresponds to 20 mH <sub>2</sub> O (60 ftH <sub>2</sub> O))  • 2 bar (29 psi) (corresponds to 20 mH <sub>2</sub> O (60 ftH <sub>2</sub> O))  • 5 bar (72.5 psi) (corresponds to 50 mH <sub>2</sub> O (60 ftH <sub>2</sub> O))  • 10 bar (145 psi) (corresponds to 100 mH <sub>2</sub> O (300 ftH <sub>2</sub> O))  • 20 bar (290 psi) (corresponds to 200 mH <sub>2</sub> O (300 ftH <sub>2</sub> O))
Hydrostatic level  Max. permissible operating pressur  • 1.5 bar (21.8 psi) (corresponds to 15 mH <sub>2</sub> O (45 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))  • 1.5 bar (21.8 psi) (corresponds to 15 mH <sub>2</sub> O (45 ftH <sub>2</sub> O))  • 2 bar (29 psi) (corresponds to 20 mH <sub>2</sub> O (60 ftH <sub>2</sub> O))  • 2 bar (29 psi) (corresponds to 20 mH <sub>2</sub> O (60 ftH <sub>2</sub> O))  • 2 bar (29 psi) (corresponds to 20 mH <sub>2</sub> O (60 ftH <sub>2</sub> O))  • 5 bar (72.5 psi) (corresponds to 50 mH <sub>2</sub> O (150 ftH <sub>2</sub> O))  • 10 bar (145 psi) (corresponds to 100 mH <sub>2</sub> O (300 ftH <sub>2</sub> O))  • 20 bar (290 psi) (corresponds to
Max. permissible operating pressur  1.5 bar (21.8 psi) (corresponds to 15 mH <sub>2</sub> O (45 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))  1.5 bar (21.8 psi) (corresponds to 15 mH <sub>2</sub> O (45 ftH <sub>2</sub> O))  2 bar (29 psi) (corresponds to 20 mH <sub>2</sub> O (60 ftH <sub>2</sub> O))  2 bar (29 psi) (corresponds to 20 mH <sub>2</sub> O (60 ftH <sub>2</sub> O))  4 bar (29 psi) (corresponds to 20 mH <sub>2</sub> O (60 ftH <sub>2</sub> O))  5 bar (72.5 psi) (corresponds to 20 mH <sub>2</sub> O (60 ftH <sub>2</sub> O))  5 bar (72.5 psi) (corresponds to 50 mH <sub>2</sub> O (150 ftH <sub>2</sub> O))  10 bar (145 psi) (corresponds to 100 mH <sub>2</sub> O (300 ftH <sub>2</sub> O))  20 bar (290 psi) (corresponds to
Max. permissible operating pressur  1.5 bar (21.8 psi) (corresponds to 15 mH <sub>2</sub> O (45 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))  1.5 bar (21.8 psi) (corresponds to 15 mH <sub>2</sub> O (45 ftH <sub>2</sub> O))  2 bar (29 psi) (corresponds to 20 mH <sub>2</sub> O (60 ftH <sub>2</sub> O))  2 bar (29 psi) (corresponds to 20 mH <sub>2</sub> O (60 ftH <sub>2</sub> O))  4 bar (29 psi) (corresponds to 20 mH <sub>2</sub> O (60 ftH <sub>2</sub> O))  5 bar (72.5 psi) (corresponds to 20 mH <sub>2</sub> O (60 ftH <sub>2</sub> O))  5 bar (72.5 psi) (corresponds to 50 mH <sub>2</sub> O (150 ftH <sub>2</sub> O))  10 bar (145 psi) (corresponds to 100 mH <sub>2</sub> O (300 ftH <sub>2</sub> O))  20 bar (290 psi) (corresponds to
<ul> <li>1.5 bar (21.8 psi) (corresponds to 15 mH<sub>2</sub>O (45 ftH<sub>2</sub>O))</li> <li>1.5 bar (21.8 psi) (corresponds to 15 mH<sub>2</sub>O (45 ftH<sub>2</sub>O))</li> <li>1.5 bar (21.8 psi) (corresponds to 15 mH<sub>2</sub>O (45 ftH<sub>2</sub>O))</li> <li>2 bar (29 psi) (corresponds to 20 mH<sub>2</sub>O (60 ftH<sub>2</sub>O))</li> <li>2 bar (29 psi) (corresponds to 20 mH<sub>2</sub>O (60 ftH<sub>2</sub>O))</li> <li>2 bar (29 psi) (corresponds to 20 mH<sub>2</sub>O (60 ftH<sub>2</sub>O))</li> <li>5 bar (72.5 psi) (corresponds to 50 mH<sub>2</sub>O (60 ftH<sub>2</sub>O))</li> <li>10 bar (145 psi) (corresponds to 100 mH<sub>2</sub>O (300 ftH<sub>2</sub>O))</li> <li>20 bar (290 psi) (corresponds to 20 mH<sub>2</sub>O)</li> </ul>
15 mH <sub>2</sub> O (45 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))  1.5 bar (21.8 psi) (corresponds to 15 mH <sub>2</sub> O (45 ftH <sub>2</sub> O))  2 bar (29 psi) (corresponds to 20 mH <sub>2</sub> O (60 ftH <sub>2</sub> O))  2 bar (29 psi) (corresponds to 20 mH <sub>2</sub> O (60 ftH <sub>2</sub> O))  2 bar (29 psi) (corresponds to 20 mH <sub>2</sub> O (60 ftH <sub>2</sub> O))  5 bar (72.5 psi) (corresponds to 50 mH <sub>2</sub> O (60 ftH <sub>2</sub> O))  10 bar (145 psi) (corresponds to 100 mH <sub>2</sub> O (300 ftH <sub>2</sub> O))  20 bar (290 psi) (corresponds to
15 mH <sub>2</sub> O (45 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))  2 bar (29 psi) (corresponds to 20 mH <sub>2</sub> O (60 ftH <sub>2</sub> O))  2 bar (29 psi) (corresponds to 20 mH <sub>2</sub> O (60 ftH <sub>2</sub> O))  2 bar (29 psi) (corresponds to 20 mH <sub>2</sub> O (60 ftH <sub>2</sub> O))  5 bar (72.5 psi) (corresponds to 50 mH <sub>2</sub> O (50 ftH <sub>2</sub> O))  10 bar (145 psi) (corresponds to 100 mH <sub>2</sub> O (300 ftH <sub>2</sub> O))  20 bar (290 psi) (corresponds to
15 mH <sub>2</sub> O (45 ftH <sub>2</sub> O))  • 2 bar (29 psi) (corresponds to 20 mH <sub>2</sub> O (60 ftH <sub>2</sub> O))  • 2 bar (29 psi) (corresponds to 20 mH <sub>2</sub> O (60 ftH <sub>2</sub> O))  • 2 bar (29 psi) (corresponds to 20 mH <sub>2</sub> O (60 ftH <sub>2</sub> O))  • 5 bar (72.5 psi) (corresponds to 50 mH <sub>2</sub> O (150 ftH <sub>2</sub> O))  • 10 bar (145 psi) (corresponds to 100 mH <sub>2</sub> O (300 ftH <sub>2</sub> O))  • 20 bar (290 psi) (corresponds to
20 mH <sub>2</sub> O (60 ftH <sub>2</sub> O))  • 2 bar (29 psi) (corresponds to 20 mH <sub>2</sub> O (60 ftH <sub>2</sub> O))  • 2 bar (29 psi) (corresponds to 20 mH <sub>2</sub> O (60 ftH <sub>2</sub> O))  • 5 bar (72.5 psi) (corresponds to 50 mH <sub>2</sub> O (150 ftH <sub>2</sub> O))  • 10 bar (145 psi) (corresponds to 100 mH <sub>2</sub> O (300 ftH <sub>2</sub> O))  • 20 bar (290 psi) (corresponds to
20 mH <sub>2</sub> O (60 ftH <sub>2</sub> O))  • 2 bar (29 psi) (corresponds to 20 mH <sub>2</sub> O (60 ftH <sub>2</sub> O))  • 5 bar (72.5 psi) (corresponds to 50 mH <sub>2</sub> O (150 ftH <sub>2</sub> O))  • 10 bar (145 psi) (corresponds to 100 mH <sub>2</sub> O (300 ftH <sub>2</sub> O))  • 20 bar (290 psi) (corresponds to
20 mH <sub>2</sub> O (60 ftH <sub>2</sub> O)) • 5 bar (72.5 psi) (corresponds to 50 mH2O (150 ftH <sub>2</sub> O)) • 10 bar (145 psi) (corresponds to 100 mH <sub>2</sub> O (300 ftH <sub>2</sub> O)) • 20 bar (290 psi) (corresponds to
50 mH2O (150 ftH <sub>2</sub> O))  • 10 bar (145 psi) (corresponds to 100 mH <sub>2</sub> O (300 ftH <sub>2</sub> O))  • 20 bar (290 psi) (corresponds to
100 mH <sub>2</sub> O (300 ftH <sub>2</sub> O)) • 20 bar (290 psi) (corresponds to
<ul> <li>20 bar (290 psi) (corresponds to 200 mH<sub>2</sub>O (600 ftH<sub>2</sub>O))</li> </ul>
<ul> <li>24 bar (348 psi) (corresponds to 240 mH<sub>2</sub>O (720 ftH<sub>2</sub>O))</li> </ul>
• 1.5 bar
• 1.5 bar
• 1.5 bar
• 2 bar
• 2 bar
• 2 bar
• 5 bar
• 10 bar
• 20 bar
• 20 bar
• 24 bar
4 20 mA
According to IEC 60770-1
$\leq$ 0.15 % of upper range value (typ cal)
$\leq$ 0.3 % of upper range value (maximum)
$\leq$ 0.05 %/10 K of upper range value (zero and span)
≤ 0.15 % of upper range value/year (zero and span)
-10 +80 °C (14 176 °F)
-20 +80 °C (-4 +176 °F)
· · · · · · · · · · · · · · · · · · ·
IP68

Pressure transmitters

Single-range transmitters for general applications

# SITRANS LH300 Transmitter for hydrostatic level

Design	
Weight	
Pressure transmitter	≈ 0.4 kg ( ≈ 0.88 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 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 II 1 G Ex ia IIC T4 Ga
-	

Junction box	
Application	For connecting the transmitter cable
Design	
Weight	0.2 kg (0.44 lb)
Electrical connection	2 x 3-way (28 to 18 AWG)
Cable entry	2 x PG 13.5
Enclosure material	Polycarbonate
Vent valve for atmospheric pressure	
Operating 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 submersible transmi	•			PE cable for general purpose and drinking water applications		
material of protective PPE (colour black) material of protective	fixed mounted cable, e cap at PE cable:	Ш		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
PPE (colour white)  Note: junction box a be ordered separate	nd cable hanger have to	ш		3 m (≈ 10 ft) 5 m (≈ 16 ft) 7 m (≈ 23 ft)	ш	H1A H1B H1C
→ Click on the Artic	le No. for the online con- PIA Life Cycle Portal.	Ш		10 m (≈ 33 ft) 15 m (≈ 50ft)	Ш	H1D H1E
<b>Measuring range</b> 0 1 mH <sub>2</sub> O  0 2 mH <sub>2</sub> O	Cable length (PE cable) 5 m 5 m	1 A 1 B		20 m (≈ 65 ft) 25 m (≈ 80 ft) 30 m (≈ 100 ft) 40 m (≈ 130 ft)	Ш	H1F H1G H1H H1J
0 3 mH <sub>2</sub> O 0 4 mH <sub>2</sub> O 0 5 mH <sub>2</sub> O	10 m 10 m 10 m	1 C 1 D 1 E		50 m (≈ 160 ft) 60 m (≈ 200 ft) 70 m (≈ 230 ft)	Ш	H 1 K H 1 L H 1 M
0 6 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	10 m 20 m 30 m 50 m	1 F 1 H 1 K 1 L		80 m (≈ 265 ft) 90 m (≈ 295 ft) 100 m (≈ 330 ft)	Ш	H1N H1P H1Q H1R
0 3 ftH <sub>2</sub> O 0 6 ftH <sub>2</sub> O 0 9 ftH <sub>2</sub> O 0 12 ftH <sub>2</sub> O	5 m (≈ 15 ft) 5 m (≈ 15 ft) 10 m (≈ 30 ft) 10 m (≈ 30 ft)	2 A 2 B 2 C 2 D		125 m (≈ 410 ft) 150 m (≈ 495 ft) 175 m (≈ 575 ft) 200 m (≈ 650 ft) 225 m (≈ 740 ft)		H1S H1T H1U H1V
0 15 ftH <sub>2</sub> O 0 18 ftH <sub>2</sub> O 0 30 ftH <sub>2</sub> O 0 60 ftH <sub>2</sub> O 0 120 ftH <sub>2</sub> O	10 m (≈ 30 ft) 10 m (≈ 30 ft) 20 m (≈ 60 ft) 30 m (≈ 90 ft) 50 m (≈ 150 ft)	2 E 2 F 2 H 2 K 2 L		250 m (~ 820 ft) 275 m (~ 900 ft) 300 m (~ 990 ft) 350 m (~ 1150 ft) 400 m (~ 1320 ft)		H 1 W H 1 X H 2 A H 2 B H 2 C
0 0.1 bar 0 0.2 bar 0 0.3 bar 0 0.4 bar 0 0.5 bar	5 m 5 m 10 m 10 m 10 m	3 A 3 B 3 C 3 D 3 E		450 m (≈ 1480 ft) 500 m (≈ 1650 ft) 550 m (≈ 1815 ft) 600 m (≈ 1980 ft) 650 m (≈ 2145 ft)		H 2 D H 2 E H 2 F H 2 G H 2 H
0 0.6 bar 0 1 bar 0 2 bar 0 4 bar Special versions:	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)		H 2 J H 2 K H 2 L H 2 M H 2 N
Measuring ranges for between	or special versions			950 m (≈ 3135 ft) 1000 m (≈ 3300 ft)	Ш	H 2 P H 2 Q
0 1 mH $_2$ O and 0 . 0 3 ftH $_2$ O and 0 0 0.1 bar and 0	. 530 ftH <sub>2</sub> O or	Ш		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 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)	7 M F 1 5 7	5 -
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) 20 m (≈ 65 ft)	Ш	H 5 A H 5 B H 5 C H 5 D H 5 E H 5 F
25 m (≈ 80 ft) 30 m (≈ 100 ft) 40 m (≈ 130 ft) 50 m (≈ 160 ft)	Ш	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)	Ш	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)	Ш	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)	Ш	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)	Ш	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)	Ш	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

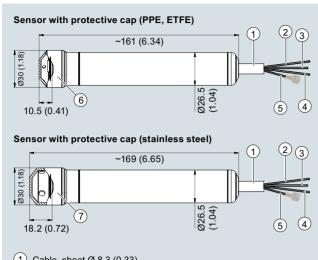
Selection and orderi	ng data	Art No		е		Ord cod	
Pressure transmitter SITRANS LH300 (submersible sensor)		7 N			75-		
Enclosure material	Material of protective cap					Ī	
Stainless steel 316L (1.4404)	Protective capability made of PPE (recom- mended for PE cable)		A				
Stainless steel 316L (1.4404)	Protective cap made of ETFE (standard with FEP cable)		В				
Stainless steel 316L (1.4404)	Stainless steel 316L (1.4404)		С				
Stainless steel 904L (1.4539) for sea water applications	Protective cap PPE		D				
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	ween sensor and						
enclosure FPM (Standard) EPDM (for drinking wa	ater)			1			
Explosion protection							
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		Order code					
Quality test certificate tion (IEC 60770-2)	, 5-point factory calibra-	C11					
Accessories/spare p	parts	Art					
Junction box		7MF1575-8AA					
Cable hanger				_	5-8AE		
Protective caps, PPE, as spare part (10-pack)		7MF1575-8AD					
Protective caps, ETF (10-pack)	Protective caps, ETFE, as spare part (10-pack)		7MF1575-8AE				
Humidity filters as spare part (10-pack)		7M	F1	57	'5-8AI		
Protective cap, stainless steel 316L (1.4404) for waste water applications		7M	F1	57	'5-8A(	ì	
Protective cap, stainless steel 904L (1.4539) for sea water applications		7M	F1	57	′5-8AI	1	

Pressure transmitters

Single-range transmitters for general applications

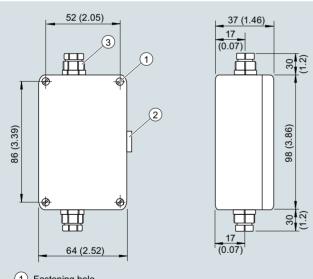
## SITRANS LH300 Transmitter for hydrostatic level

## Dimensional drawings



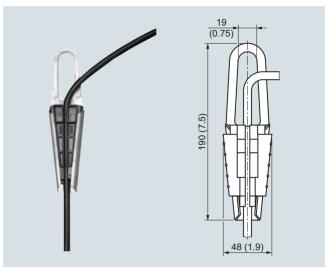
- 1) Cable, sheat Ø 8.3 (0.33)
- (2) (blue)
- (3) + (brown)
- (4) Protective conductor connection/Equipotential bonding (black)
- (5) Vent pipe with humidity filter Ø 1 (0.04) (inner diameter)
- (6) Protective cap (PPE or PTFE) with 4 x Ø 2.5 (0.10) holes
- (7) Protective cap (stainless steel) with 4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

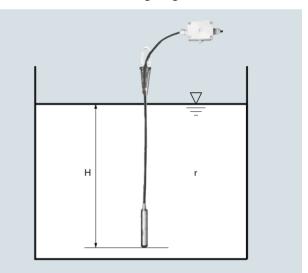
Junction box, dimensions in mm (inch)



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,  $\rho = 1000 \text{ kg/m}^3$ Acceleration due to gravity: 9.81 m/s<sup>2</sup> Lower range value: 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 enclosure 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 °C (392 °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 the end 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 enclosure 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 enclosures 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 enclosure

**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

## SITRANS P Compact for gauge and absolute pressure

## Function

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

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

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

## Technical specifications

Pressure transmitters for food, pharmaceuticals and biotechnology				
Mode of operation	<del>-</del>			
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 upper range value			
Adjustment accuracy	$\leq$ ± 0.2 % of upper range value			
Step response time	< 20 ms			
Influence of ambient temperature				
On the enclosure				
• Zero point	< 0.2 %/10 K of upper range value			
Measuring span	< 0.2 %/10 K of upper range 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)			
• Inline 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 series and a series of the				

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.

SITHANS F Compact for 9	auge una absolute pressure		
Operating 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 temperatures on request.		
• Degree of protection (to EN 60529)	IP65, optional IP67		
Electromagnetic Compatibility			
- Emitted interference	To EN 50081 Part 1, issue 1993		
2	(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 enclosure IP65 or IP67,		
	<ul><li>with screwed gland</li><li>Angled plug DIN 43650, IP65</li></ul>		
	Cable connection, IP67		
	Device plug M12, IP65		
Material	Stainless steel, mat.		
	no. 1.4404/316L/1.4305		
Material of union nut	Polyamide (with electrical con- nection using plug or cable)		
	Electronics unit potted with silicone Internal ventilation for measuring		
	ranges < 16 bar (< 232 psi), through enclosure thread or con-		
	nection cable depending on design		
Process connection			
• Versions	See ordering data		
Material of coupling	Stainless steel, mat. no. 1.4404/316L		
Power supply			
Terminal voltage on transmitter	10 30 V DC		
Rated voltage	24 V DC		
Certificates and approvals			
Classification according to pressure equipment directive (PED 2014/68/EU)			
• For 7MF8010-1	For gases of fluid group 1 and		
(with diaphragm seal)	liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)		
• For 7MF8010-2 (with inline 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"	TÜV 03 ATEX 2099 X		
	E !! 00 E !! !!0 To		

Ex II 2G Ex ib IIC T6

- Marking

Pressure transmitters

Single-range transmitters for general applications

# SITRANS P Compact for gauge and absolute pressure

SITHANS P Compact for gauge ar	ra abcorato p				
Selection and Ordering data	Article No.	Ord. code	Selection and Ordering data	Article No.	Ord. code
SITRANS P Compact pressure trans- mitters for pressure and absolute pressure with diaphragm flush at front	7 M F 8 0 1 0 -		SITRANS P Compact pressure trans- mitters for pressure and absolute pressure with diaphragm flush at front	7MF8010-	
2-wire system Process temperature up to 140 °C (284 °F) Accuracy: 0.2 % of upper range value Output 4 20 mA	1	•	2-wire system Process temperature up to 140 °C (284 °F) Accuracy: 0.2 % of upper range 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 Milk pipe union to DIN 11851 with			• 1 inch • 1½ inch	PM PN	
slotted union nut			• 2 inch	PP	
• DN 25	A D		• 2½ inch	PQ	
• DN 32	A E A F		Aseptic screwed gland to DIN 11864-1, form A		
• DN 40 • DN 50	AG		with threaded socket		
• DN 65	AH		• 1 inch	QM	
Milk pipe union to DIN 11851 with	A		• 1½ inch	QN	
threaded socket			• 2 inch	QP	
• DN 25	BD		• 2½ inch	QQ	
• DN 32	BE		Aseptic screwed NEUMO with slotted union nut <sup>1)</sup>		
• DN 40	BF		• DN 25	RD	
<ul><li>DN 50</li><li>DN 65</li></ul>	B G B H		• DN 32	RE	
Clamp connection to DIN 32676			• DN 40	RF	
• DN 25	CD		• DN 50	RG	
• DN 40	CF		Aseptic screwed NEUMO		
• DN 50	CG		with threaded socket <sup>1)</sup> • DN 25	SD	
Clamp connection to ISO 2852			• DN 32	SE	
• 1 inch	DM		• DN 40	SF	
• 1½ inch	DN		• DN 50	SG	
• 2 inch • 2½ inch	D P D Q		Aseptic screwed NEUMO		
IDF standard with slotted union nut	Du		with clamp connection, form R <sup>1)</sup>		
• 1 inch	EM		• DN 25	T D T E	
• 1½ inch	EN		• DN 32 • DN 40	TE	
• 2 inch	E P		• DN 50	TG	
IDF standard with threaded socket			Aseptic screwed NEUMO		
• 1 inch	FM		with clamp connection, form V1)		
• 1½ inch	F N F P		• DN 25	UD	
<ul> <li>2 inch</li> <li>SMS standard with slotted union nut</li> </ul>	r r		• DN 32	UE	
• 1 inch	GM		<ul><li>DN 40</li><li>DN 50</li></ul>	UF	
• 1½ inch	GN		Male thread DIN 3852 Form A	UG	
• 2 inch	GP		• G½", min. meas. span 1.6 bar (23.2 psi)	XA	
SMS standard with threaded socket			• G¾", min. meas. span 1 bar (14.5 psi)	ХВ	
• 1 inch	нм		• G1", min. meas. span 0.4 bar (5.8 psi)	хс	
• 1½ inch • 2 inch	HN		• G1½", min. meas. span 0.25 bar	X D	
<ul><li>2 inch</li><li>DRD flange, without welding-type flange</li><li>DN 50, PN 40</li></ul>	H P J H		(3.63 psi)  G2", min. meas. span 0.16 bar (2.32 psi)	ΧE	
Varivent connection (Tuchenhagen)	0.1		Special version	ZA	J 1 Y
• D = 50, for Varivent enclosure DN 25 and 1 inch	KF		(add Order code and plain text)  Filling liquid	-	
• D = 68, for Varivent enclosure	KL		Food oil, FDA-listed	3	
DN 40 DN 125 and 1½ 6 inch	7.4	14 7	Special version	9	L 1 Y
Special version (add Order code and plain text)	ZA	J 1 Y	(add Order code and plain text)		
Filling liquid			Output signal		
Food oil, FDA-listed	3		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>	ee table "Further	designs" on
		MAV	next page		
Special version (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 Ordering data	Article No.	Ord. code	Selection and Orderi	ng data	Article No.	Ord. code
SITRANS P Compact pressure trans- mitters for pressure and absolute pressure with diaphragm flush at front	7 M F 8 0 1 0 -	0.0.000	SITRANS P Compact mitters for pressure a pressure with diaphr	pressure trans- and absolute	7 M F 8 0 1 0 -	5.4. 5545
2-wire system Process temperature up to 140 °C (284 °F) Accuracy: 0.2 % of upper range value Output 4 20 mA	1		2-wire system Process temperature u Accuracy: 0.2 % of up Output 4 20 mA		1	
Enclosure design (stainless steel mat. No. 1.4404/316L) / electr. connection			Measured range	Overload pressure		
Enclosure with angled plug to DIN 43650, IP65	1		(continued) -1 +9 bar	60 bar	G A	
Enclosure with device plug M12, IP65, union nut made of polyamide	2		(-14.5 +130.5 psi) -1 +15 bar	(870 psi) 60 bar	GB	
Enclosure with device plug M12, IP65, union nut made of stainless steel	3		(-14.5 +217.6 psi) 0 1 bar a	(870 psi) 3 bar a	НА	
Stainless steel field enclosure (small) with cable gland, IP65	4		(0 14.5 psi a) 0 1.6 bar a	(43.5 psi a) 10 bar	нв	
Stainless steel field enclosure (small) with cable gland, IP67 Internal ventilation for measuring ranges	5		(0 23.2 psi a) 0 2.5 bar a (0 36.3 psi a)	(145 psi) 10 bar a (145 psi a)	нс	
< 16 bar (< 232 psi)			0 4 bar a (0 58 psi a)	10 bar a (145 psi a)	HD	
Measured range Overload pressure 0 160 mbar 1 bar	ВВ		0 6 bar a (0 87 psi a)	60 bar a (870 psi a)	HE	
(0 2.32 psi) (14.5 psi) 0 250 mbar 1 bar (0 3.63 psi) (14.5 psi)	вс		0 10 bar a (0 145 psi a)	60 bar a (870 psi a)	JA	
0 400 mbar 3 bar (0 5.8 psi) (43.5 psi)	B D		Special version (add Order code and	plain text)	ZA	P 1 Y
0 600 mbar 3 bar (0 8.7 psi) (43.5 psi)	BE		Explosion protection without	]		1
0 1 bar 3 bar (0 14.5 psi) (43.5 psi)	CA		with, to ATEX 100a, II	2 G, Ex ib IIC T6		2
0 1.6 bar 10 bar (0 23.2 psi) (145 psi)	СВ		Further designs Please add "-Z" to Artic	cle No. and specify	Order code	
0 2.5 bar 10 bar (0 36.3 psi) (145 psi)	cc		Order code Hygiene version		P01	
0 4 bar 20 bar (0 58 psi) (290 psi)	CD		Roughness of process Foil R <sub>a</sub> < 0.8 µm (3.15			
0 6 bar 60 bar (0 87 psi) (870 psi)	CE		Welded seams $R_a < 1$ (5.9·10 <sup>-8</sup> inch)	.5 μm		
0 10 bar 60 bar (0 145 psi) (870 psi)	DA		Integral cooling elem Process temperature r	max. 200 °C	K01	
0 16 bar 60 bar (0 232 psi) (870 psi)	DB		(392 °F) instead of 140 Connections for pipe	,		
0 25 bar 60 bar (0 363 psi) (870 psi)	DC		Pipes to DIN 11850		R01	
0 40 bar 100 bar (0 580 psi) (1450 psi)	DD		ISO pipes to DIN 2463 Pipes to O. D. Tubing		R02 R03	
-160 0 mbar 1 bar (-2.32 0 psi) (14.5 psi) -250 0 bar 1 bar	EB EC		Certificates  Quality test certificate calibration (IEC 60770)	, 5-point factory	C11	
(-3.73 0 psi) (14.5 psi) -400 0 bar 3 bar	ED		Inspection certificate t		C12	
(-5.8 0 psi) (43.5 psi) -600 0 bar 3 bar	EE		Use of FDA-listed rem liquids certified by fac according to EN 1020	tory certificate	C17	
(-8.7 0 psi) (43.5 psi) -1 0 bar 3 bar (-14.5 0 psi) (43.5 psi)	FA		Roughness depth mea	asurement R <sub>a</sub>	C18	
-1 0.6 bar 10 bar (-14.5 8.7 psi) (145 psi)	FB		to EN 10204-3.1  Certification to EHEDO		C19	
-1 1.5 bar 10 bar (-14.5 21.8 psi) (145 psi)	FC		with aseptic screwed	gland to DIN 11864		
-1 3 bar 20 bar (-14.5 43.5 psi) (290 psi)	FD					
-1 5 bar 20 bar (-14.5 72.5 psi) (290 psi)	FE					

Pressure transmitters

Single-range transmitters for general applications

## SITRANS P Compact for gauge and absolute pressure

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

<sup>&</sup>lt;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- mitters for pressure and absolute pressure with inline seal	7MF8010-	
2-wire system Process temperature up to 140 °C (284 °F) Accuracy: 0.2 % of upper range value Output 4 20 mA	2	
Inline 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 25 • DN 32	TE	
• DN 40	TF	
• DN 50	TG	
Aseptic screwed gland SÜDMO	1 G	
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 (add Order code and plain text)	ZA	J 1 Y
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)		
,		

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

Pressure transmitters

Single-range transmitters for general applications

## SITRANS P Compact for gauge and absolute pressure

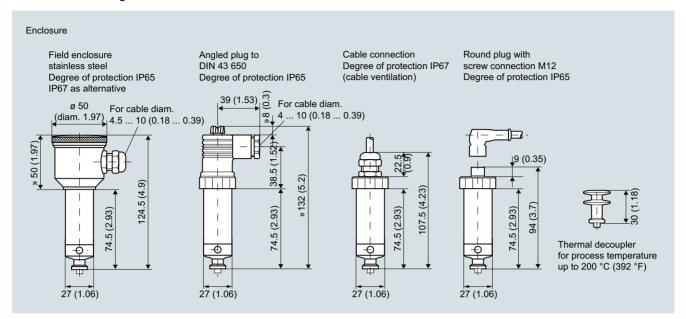
Selection and Ord	ering data	Article No.	Ord. code	Selection and Ordering data	Article No.	Ord. code
SITRANS P Compa mitters for pressur pressure with inlin		7MF8010-		SITRANS P Compact pressure trans- mitters for pressure and absolute pressure with inline seal	7MF8010-	
2-wire system Process temperature Accuracy: 0.2 % of to Output 4 20 mA	e up to 140 °C (284 °F) upper range value	2		2-wire system Process temperature up to 140 °C (284 °F) Accuracy: 0.2 % of upper range value Output 4 20 mA	2	
Enclosure design No. 1.4404/316L) /	(stainless steel mat. electr. connection			Measured range Overload pressure (continued)		
Enclosure with angl DIN 43650, IP65, ur amide	ed plug to nion nut made of poly-	1		-1 9 bar 60 bar (-14.5 130.5 psi) (870 psi)	G A	
Enclosure with devi union nut made of p		2		-1 15 bar 60 bar (-14.5 217.6 psi) (870 psi)	GE	
Enclosure with devi union nut made of s		3		0 1 bar a 3 bar a (0 14.5 psi a)	н	
Stainless steel field with cable gland, IF		4		0 1.6 bar a 10 bar (0 23.2 psi a) (145 psi)	HE	
Stainless steel field with cable gland, IF		5		0 2.5 bar a 10 bar a (0 36.3 psi a) (145 psi a)	н с	
	or measuring ranges			0 4 bar a 10 bar a (0 58 psi a) (145 psi a)	Н.	
Measured range	Overload pressure			0 6 bar a 60 bar a (0 87 psi a) (870 psi a)	HE	
0 160 mbar (0 2.32 psi)	1 bar (14.5 psi)	ВВ		0 10 bar a 60 bar a (0 145 psi a) (870 psi a)	J A	
0 250 mbar (0 3.63 psi)	1 bar (14.5 psi)	ВС		Special version (add Order code and plain text)	Z	P1Y
0 400 mbar (0 5.8 psi)	3 bar (43.5 psi)	BD		Explosion protection	_	
0 600 mbar (0 8.7 psi)	3 bar (43.5 psi)	BE		without with, to ATEX 100a, II 2 G, Ex ib IIC T6		1
0 1 bar (0 14.5 psi)	3 bar (43.5 psi)	CA		Further designs	Order code	
0 1.6 bar (0 23.2 psi)	10 bar (145 psi)	СВ		Please add "-Z" to Article No. and specify Order code		
0 2.5 bar (0 36.3 psi)	10 bar (145 psi)	cc		Hygiene version Roughness of process connection:	P01	
0 4 bar (0 58 psi)	20 bar (290 psi)	CD		Foil $\dot{R}_a$ < 0.8 µm (3.15·10 <sup>-8</sup> inch); Welded seams $R_a$ < 1.5 µm		
0 6 bar (0 87 psi)	60 bar (870 psi)	CE		(5.9·10 <sup>-8</sup> inch) Integral cooling element	K01	
0 10 bar (0 145 psi)	60 bar (870 psi)	DA		Process temperature max. 200 °C (392 °F) instead of 140 °C (284 °F)		
0 16 bar (0 232 psi)	60 bar (870 psi)	DB		Connections for pipe Pipes to DIN 11850	R01	
0 25 bar (0 363 psi)	60 bar (870 psi)	DC		ISO pipes to ISO 2463	R02	
0 40 bar (0 580 psi)	100 bar (1450 psi)	D D		Pipes to O. D. Tubing "BS 4825 Part 1"  Certificates	R03	
-160 0 mbar (-2.32 0 psi)	1 bar (14.5 psi)	EB		Quality test certificate, 5-point factory calibration (IEC 60770-2)	C11	
-250 0 bar (-3.73 0 psi)	1 bar (14.5 psi)	EC		Inspection certificate to EN 10204-3.1	C12	
-400 0 bar (-5.8 0 psi)	3 bar (43.5 psi)	E D		Use of FDA-listed remote seal filling liquids certified by factory certificate according to EN 10204-2.2	C17	
-600 0 bar (-8.7 0 psi)	3 bar (43.5 psi)	EE		Roughness depth measurement R <sub>a</sub>	C18	
-1 0 bar (-14.5 0 psi)	3 bar (43.5 psi)	FA		certified by tactory certificate according to EN 10204-3.1		
-1 0.6 bar (-14.5 8.7 psi)	10 bar (145 psi)	FB		Certification to EHEDG for inline seals with aseptic screwed gland to DIN 11864	C19	
-1 1.5 bar (-14.5 21.8 psi)	10 bar (145 psi)	FC				
-1 3 bar (-14.5 43.5 psi)	20 bar (290 psi)	F D				
-1 5 bar	20 bar (290 psi)	FE				

Pressure transmitters

Single-range transmitters for general applications

## SITRANS P Compact for gauge and absolute pressure

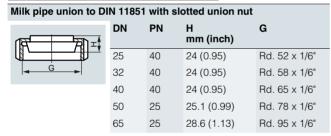
## Dimensional drawings

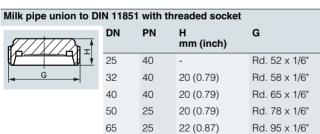


SITRANS P Compact, dimenclosureensions in mm (inch)

#### **Process connections**

Diaphragm seal with quick-release clamp





Clamp connection to DIN 32676				
<u> </u>	DN	PN	H mm (inch)	D mm (inch)
\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	25	16	14 (0.55)	50.5 (2)
D I	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					
<u>‡</u> _	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	11/2"	40	13.5 (0.53)	11/2"	
	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"		
1.	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/////>n-1	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"

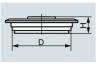
DRD flange, without welding-type flange				
<u> </u>	DN	PN	H mm (inch)	D mm (inch)
D T	50	40	16.7 (0.66)	65.5 (2.58)

Pressure transmitters

Single-range transmitters for general applications

## SITRANS P Compact for gauge and absolute pressure

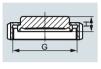
## Varivent connection



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



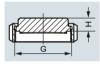
DN	PN	H mm (inch)	G
1"	40	20 (0.79)	Rd 52 x 1/6"
11/2"	40	20 (0.79)	Rd 58 x 1/6"
2"	25	20 (0.79)	Rd 65 x 1/6"
21/2"	25	20 (0.79)	Rd 78 x 1/6"

# 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)

#### Male thread DIN 3852, form A SW SW mm mm mm mm (inch) (inch) (inch) G½A 26 (0.55)(1.06)(1.02)(0.69)(1.06)dM G¾A 32 226 31 16 32 G (1.26)(0.89)(1.22)(0.63)(1.26)39 G1A 33 18 51 (1.06)(1.30)(2.01)(1.54)(0.71)G11/2A (2.17)(1.57)(1.57)(0.87)(2.17)70

51

42 (2.68) (2.00) (1.65) (0.94) (2.76)

Inline seal (screwed gland at both ends) with quick-release clamps

G2A

Milk pipe union to DIN 11851 with threaded socket

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

## Clamp connection to DIN 32676



-	DN	PN	L mm (inch)	D mm (inch)
,	25	16	110 (4.33)	50.5 (2)
	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)

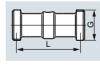
## Clamp connection to ISO 2852



<u> </u>	DN	PN	L mm (inch)	D mm (inch)
1	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)

Inline seal with aseptic connection

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



DN	PN	L mm (inch)	G
1"	40	110 (4.33)	Rd 52 x 1/6"
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



ī	DN	PN	L mm (inch)	G
į	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

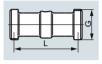
Pressure transmitters

Single-range transmitters for general applications

## SITRANS P Compact for gauge and absolute pressure

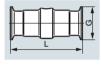
#### Aseptic screwed NEUMO BioConnect with clamp connection, form $\ensuremath{\mathbf{R}}$ DN mm (inch) mm (inch) 25 50.4 (2) 16 110 (4.33) 32 16 110 (4.33) 50.4 (2) 40 16 110 (4.33) 64 (2.52) 50 16 110 (4.33) 77.4 (3.05)

## Aseptic screwed gland SÜDMO with threaded socket W 501



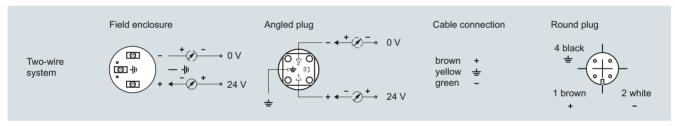
DN	PN	L mm (inch)	G
1"	25	110 (4.33)	Rd 44 x 1/6"
11/2"	25	110 (4.33)	Rd 58 x 1/6"
2"	20	110 (4.33)	Rd 78 x 1/6"

## Aseptic screwed gland SÜDMO with threaded socket W 601



DN	ı	PN	L mm (inch)	D mm (inch)
1"		16	110 (4.33)	50.5 (2)
11/3	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 enclosure. 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 measuring 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, non-aggressive and hazardous gases, vapors and liquids.

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

1/43

Pressure transmitters for food, pharmaceuticals and biotechnology

## SITRANS P300 for gauge and absolute pressure

#### Design

The device comprises:

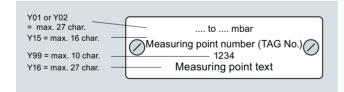
- Electronics
- Enclosure
- · Measuring cell



#### Perspective view of SITRANS P300

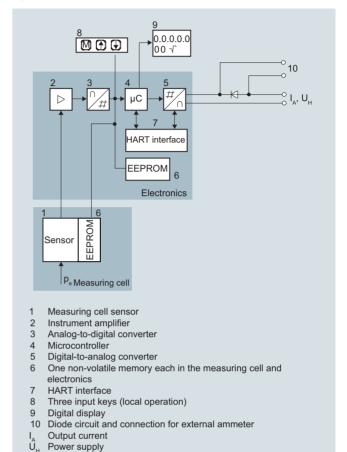
The enclosure has a screw-on lid (5) and, depending on the version, is with or without an inspection window. The electrical terminal enclosure, the buttons for operation of the device are located under this lid and, depending on the version, the display. The connections for the auxiliary power  $U_{\rm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

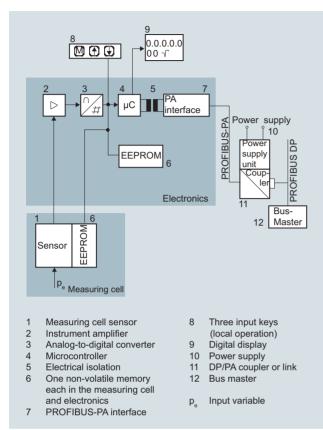
The input pressure is converted into an electrical signal by the sensor (1). This signal is amplified by the measuring amplifier (2) and digitalized in an analog-to-digital converter (3). The digital signal is analyzed in a microcontroller (4) and corrected according to linearity and thermal characteristics.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

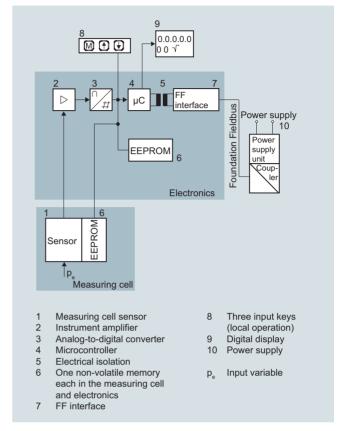


## Function diagram of electronics

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

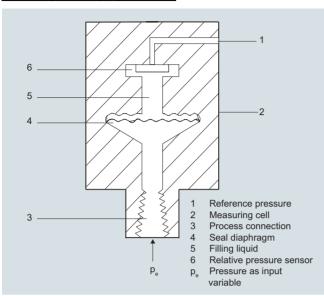
The process connections available include the following:

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

Pressure transmitters for food, pharmaceuticals and biotechnology

## SITRANS P300 for gauge and absolute pressure

#### Measuring cell for gauge pressure

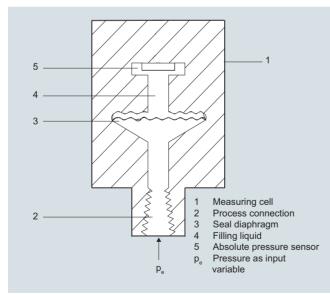


Measuring cell for gauge pressure, function diagram

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

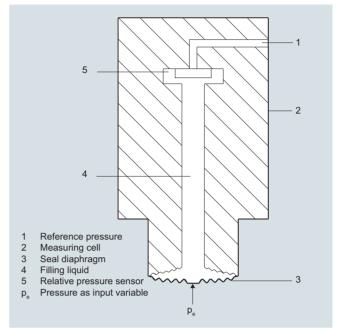
## Measuring cell for absolute pressure



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

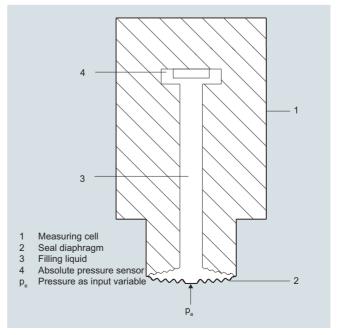


Measuring cell for gauge pressure, front-flush diaphragm, function diagram

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 measuring spans  $\leq$  63 bar ( $\leq$  926.1 psi) measure the input pressure compared to atmospheric, transmitters with measuring 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**

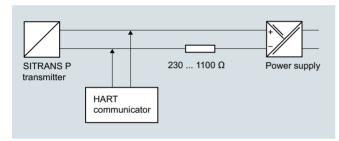
Depending on the version, there are a range of options for parameterizing the pressure transmitter and for setting or scanning the parameters.

## Parameterization using the input buttons (local operation)

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

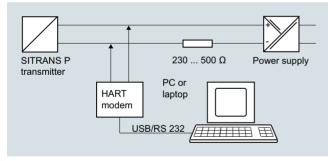
## Parameterization using HART communication

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

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

# Diagnostic functions for SITRANS P300 with HART communication

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

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

Table style: Technical specifications 2

Physical dimensions
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
m, cm, mm, ft, in
m³, dm³, hl, yd³, ft³, in³, US gallon, lmp. gallon, bushel, barrel, barrel liquid
g, kg, t, lb, Ston, Lton, oz
K, °C, °F, °R
%, 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	X	X
Position of decimal point	X	X
Bus address	X	X
Adjustment of characteristic	X	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> , hl, yd <sup>3</sup> , ft <sup>3</sup> , in <sup>3</sup> , US gallon, lmp. gallon, bushel, barrel, barrel liquid		
	volume flow	m³/s, m³/min, m³/h, m³/d, l/s, l/min, l/h, l/ d, Ml/d, ft³/s, ft³/min, ft³/h, ft³/d, US 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

Measuring span (infinitely adjustable) or nominal 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/temperature of medium)

HART	PROFIBUS PA/ FOUNDATION Fieldbus		
Measuring 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

#### 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. measuring span (for oxygen measurement max. 100 bar/10 MPa/1450 psi and 60  $^{\circ}$  (140  $^{\circ}\text{F})$  ambient temperature/temperature of medium)

#### Absolute pressure input

Measured variable

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

Absolute pressure

Absolute pressure			
HART	PROFIBUS PA/ FOUNDATION Fieldbus		
Measuring 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 psi a			
Measuring cell with inert filling liquid				
- for temperature of medium -20 °C < $\vartheta$ ≤ +60 °C (-4 °F < $\vartheta$ ≤ +140 °F)	30 mbar a/3 kPa a/0.44 psi a			
- for temperature of medium 60 °C < $\vartheta$ ≤ +100 °C (max. 85 °C for measuring cell 30 bar) (140 °F < $\vartheta$ ≤ +212 °F (max. 185 °F for meas. cell 435 psi))	30 mbar a + 20 mbar a · (ϑ - 60 °C)/°C 3 kPa a + 2 kPa a · (ϑ - 60 °C)/°C 0.44 psi a + 0.29 psi a · (ϑ - 140 °F)/°F			
Upper measuring limit	100 % of max. measuring span (for oxygen measurement max. 100 bar/10 MPa/1450 psi und 60 °C (140 °F) ambient temperature/temperature of medium)			
Lower range value	Between the measuring limits (fully adjustable)			
Input of gauge pressure, with front-flush diaphragm				
Measured variable	Gauge pressure, front-	flush		
Measuring span (infinitely adjustable) or nominal measuring range, max. permissible operating pressure and max. test pressure	HART	PROFIBUS PA/ FOUNDATION Fieldbus		
	Measuring 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		I	-1	
Measuring cell with silicone oil filling	100 mbar a/10 kPa a/1	.45 psi a		
Measuring cell with inert filling liquid	100 mbar a/10 kPa a/1.45 psi a			
Measuring cell with Neobee	100 mbar a/10 kPa a/1.45 psi a			
Upper measuring limit	100% of max. measuri	ng span		
Input of absolute pressure, with front-flush diaphragm				
Measured variable	Absolute pressure, from	nt-flush		
Measuring span (infinitely adjustable) or nominal measuring range and max. permissible test pressure	HART	PROFIBUS PA/ FOUNDATION Fieldbus		
	Measuring span	Nominal measuring 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 proc	ess connection, the m	neasuring span may o	differ from these values
Lower measuring limit	0 mbar a/0 kPa a/0 psi	a		
Upper measuring limit	100 % of max. measur	ing span		
Output	HART		PROFIBUS PA/ FO	OUNDATION Fieldbus
Output signal	4 20 mA		Fieldbus signal	PA or FOUNDATION
Physical bus Protection against polarity reversal	Protected against short			
Electrical damping (step width 0.1 s)	Each connection against the other with max. supply voltage.  Set to 2 s (0 100 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

• Increasing characteristic

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

- · Lower range 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 measuring range

 $\leq (0.008 \cdot r + 0.065) \%$ 

r ≤ 1.25 : ≤ 0.075 %  $1.25 < r \le 30$ :

≤ 0.075 %

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

 $r \le 3$ : ≤ 0.075 %

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

 $\leq (0.16 \cdot r + 0.1) \%$  $\leq (0.07 \cdot r + 0.08) \%$ 

≤ (0.25 · r) % per year

 $\leq$  (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° inclination

(zero point correction is possible with position error compensation)

0.005 % per 1 V

3 · 10<sup>-5</sup> of the nominal 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	<ul> <li>Increasing characteristic</li> <li>Lower range 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 meas	oan or nominal measuring 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	≤ (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 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 nominal 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>Lower range 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 nominal measuring 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 temperature of medium (in pressure per temperature change)					
Temperature difference between temperature of medium and ambient temperature	3 mbar/0.3 kPa/0.04 psi per 10 K				
Long-term stability (temperature change ± 30 °C (± 54 °F))	± 54 °F)) (0.25 · r) % in 5 years				
Effect of mounting position (in pressure per change in angle)	gle) 0.4 mbar/0.04 kPa/0.006 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	$3 \cdot 10^{-5}$ of the nominal measuring range				

Pressure transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 for gauge and absolute pressure				
Operating conditions				
Installation conditions				
Ambient temperature	Observe the temperature class in areas subject to explosion hazard.			
Measuring cell with silicone oil	-40 +85 °C (-40 +185 °F)			
Measuring cell with Neobee oil (FDA-compliant, with flush-mounted diaphragm)	-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)			
<ul> <li>Measuring cell with silicone oil (FDA-compliant, with flush-mounted diaphragm)</li> </ul>	-40 +150 °C (-40 +302 °F)			
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)	-10 +250 °C (14 482 °F)			
Design (standard version)				
Weight (without options)	Approx. 800 g (1.8 lb)			
Enclosure material	Stainless steel, mat. no. 1.4301/304			
Material of parts in contact with the medium				
Connection shank	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>-7/<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	<ul><li>Silicone oil</li><li>Inert filling liquid</li><li>FDA compliant fill fluid (Neobee oil)</li></ul>				
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 $R_a$	<sub>)</sub> ≤ 1.6 μm (64 μ-inch)			
	(Process connections acc. to 3A; $\rm R_{a}\text{-}val$ (32 $\rm \mu\text{-}inch)$	(Process connections acc. to 3A; $R_a$ -values $\leq$ 0.8 $\mu m$ (32 $\mu$ -inch)/welds $R_a$ $\leq$ 0.8 $\mu m$ (32 $\mu$ -inch)			
Power supply $U_{H}$	HART	PROFIBUS PA/FOUNDATION Fieldbus			
Power supply <i>U</i> <sub>H</sub> Terminal voltage on transmitter	HART  10.5 42 V DC for intrinsically safe operation: 10.5 30 V DC	PROFIBUS PA/FOUNDATION Fieldbus			
	10.5 42 V DC for intrinsically safe operation:	PROFIBUS PA/FOUNDATION Fieldbus  Supplied though bus			
Terminal voltage on transmitter	10.5 42 V DC for intrinsically safe operation:				
Terminal voltage on transmitter  Power supply	10.5 42 V DC for intrinsically safe operation:	Supplied though bus			
Terminal voltage on transmitter  Power supply Separate supply voltage	10.5 42 V DC for intrinsically safe operation:	Supplied though bus			
Terminal voltage on transmitter  Power supply Separate supply voltage Bus voltage	10.5 42 V DC for intrinsically safe operation:	Supplied though bus Not necessary			
Terminal voltage on transmitter  Power supply Separate supply voltage Bus voltage  • Without Ex	10.5 42 V DC for intrinsically safe operation:	Supplied though bus Not necessary 9 32 V			
Terminal voltage on transmitter  Power supply Separate supply voltage Bus voltage  • Without Ex • With intrinsically-safe operation	10.5 42 V DC for intrinsically safe operation:	Supplied though bus Not necessary 9 32 V			
Terminal voltage on transmitter  Power supply Separate supply voltage Bus voltage  • Without Ex  • With intrinsically-safe operation Current consumption	10.5 42 V DC for intrinsically safe operation:	Supplied though bus Not necessary  9 32 V 9 24 V			
Power supply Separate supply voltage Bus voltage  • Without Ex  • With intrinsically-safe operation Current consumption  • Max. basic current	10.5 42 V DC for intrinsically safe operation:	Supplied though bus 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:		
	$\begin{aligned} & \text{U}_{\text{i}} = 30 \text{ V, I}_{\text{i}} = 100 \text{ mA,} \\ & \text{P}_{\text{i}} = 750 \text{ mW, R}_{\text{i}} = 300 \ \Omega \end{aligned}$	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:	$L_i = 0.4 \text{ mH}$	C <sub>i</sub> = 1.11π L <sub>i</sub> ≤ 7 μH		
Explosion protection to FM for USA and Canada (cFM <sub>US</sub> )	L <sub>i</sub> = 0.4 mm	$L_i \leq i \mu i$		
Identification (DIP) or (IS); (NI)	Certificate of Compliance 3025099			
• Identification (DIF) of (IS), (NI)	CL I, DIV 1, GP ABCD T4 T6; CL II, DIV T4 T6; CL I, DIV 2, GP ABCD T4 T6;			
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, GI	1, GP EFG; CL III; Ex ia IIC 4 T6; CL I, P 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: $U_{i}=30\ V,\ I_{i}=100\ mA,\ P_{i}=750\ mW$	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 <sub>i</sub> = 5 nF		
Effective internal inductance:	$L_i = 0.4 \mu H$	$L_i = 10 \mu H$		
Type of protection Ex nA/nL/ic (Zone 2)	PTB 05 ATEX 2048			
Marking	II 2/3 G Ex 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: $U_{\rm m}$ = 45 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: $U_{\rm i}$ = 45 V	To certified intrinsically-safe circuits with peak values: $U_i = 32 \text{ V}$		
• Effective inner capacitance:	$C_i = 6 \text{ nF}$	$C_i = 5 \text{ nF}$		
Effective internal inductance:	$L_i = 0.4 \text{ mH}$	$L_i = 20 \mu H$		

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 communication	
HART communication	230 1100 Ω		
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 0 100 s
The address can be set using	Configuration tool or	- Electrical damping, adjustable	
e dadrees san se set deling	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
Internal preprocessing	recet rangues recovery	<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	Physical block	1 resource block
Function blocks	2 Transducer blocks		1 transducer block Pressure with
Analog input			calibration, 1 transducer block
- Adaptation to customer-specif-	Yes, linearly rising or falling		LCD
ic process variables	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 function	parameterizable (last good value, substitute value, incorrect	- Simulation function: Measured	Constant value or over parame-
	value)	pressure value, sensor tem-	terizable 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		

• 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 sensor temperature

characteristic with
- Simulation function for mea-

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	ı data	Aı	tic	le N	lo.		
	re transmitters for rela- sure, single chamber						
4 20 mA/HART	iscription in English	7	M E	0 0	٠,	,	
				8 0			
PROFIBUS PA				8 0	_	-	
FOUNDATION Fieldbus	` '			8 0			
Click on the Article N tion in the PIA Life Cy	✓ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.  Measuring cell filling Measuring cell cleaning  Measuring  Me						
Measuring cell filling Silicone oil Inert liquid	Measuring cell cleaning normal Cleanliness level 2 to DIN 25410	1 3					
Measuring span (min.		-					
8.3 250 mbar 0.01 1 bar 0.04 4 bar 0.16 16 bar 0.63 63 bar 1.6 160 bar 4 400 bar 8.34 250 mbar a 43.34 1300 mbar a 0.17 5 bar a	(0.12 3.63 psi) (0.145 14.5 psi) (0.58 58 psi) (2.32 232 psi) (9.14 914 psi) (23.2 2320 psi) (58 5802 psi) (0.13 3.63 psi a) (0.63 18.86 psi a) (2.43 72.5 psi a)		A B C D E F G Q S T				
1 30 bar a	(14.6 435 psi a)		U				
Wetted parts materials Seal diaphragm	Measuring cell						
Stainless steel	Stainless steel		A				
Hastelloy Hastelloy Version for diaphragm s process connector "fem (recommended version	Stainless steel Hastelloy eals in conjunction with ale thread ½-14 NPT" 1) 1) 2) 3) 4) 5)		B C Y				
Process connection Connection shank G½ Female thread ½-14 N Stainless steel oval fla tion (Oval flange has Mounting thread 7/16 EC 61518/DIN EN 6 Mounting thread M10 Mounting thread M11 Male thread M20 x 1.5 Male thread ½ -14 NP	PT nge with process connector female thread) 6) -20 UNF to 1518 D to DIN 19213 2 to DIN 19213			0 1 2 3 4 5 6			
polished	rials drawn and electrolytically	_		4			
<ul><li>Version</li><li>Standard versions</li></ul>							
Explosion protection							
<ul> <li>None</li> <li>With ATEX, Type of pro- "Intrinsic safety (Ex ia</li> </ul>						A B	
<ul> <li>Zone 20/21/22<sup>7)</sup></li> <li>Ex nA/nL (Zone 2)<sup>8)</sup></li> <li>with FM "intrinsic safety" (cFM<sub>US</sub>)</li> </ul>						C E M	
<ul> <li>Electrical connection /</li> <li>Screwed gland M20x1</li> <li>Screwed gland M20x1</li> <li>Screwed gland M20x1</li> <li>Device plug M12 (stai without cable socket)</li> </ul>					E	3	
<ul> <li>Screwed gland ½-14 N</li> <li>Screwed gland ½-14 N</li> </ul>					H	ł J	

Selection and Ordering data	Article No.
SITRANS P300 pressure transmitters for relative and absolute pressure, single chamber enclosure, 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.

- When also ordering the quality test 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.
- 2) If the inspection 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. measuring span 160 bar (2320 psi) 7/16-20 UNF and M12 fastening thread: Max. measuring 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.
- <sup>10)</sup>Without cable gland.
- <sup>11)</sup>Display cannot be turned.

Pressure transmitters for food, pharmaceuticals and biotechnology

## SITRANS P300 for gauge and absolute pressure

Citivate 1 000 for gauge and abcolute procedic								
Selection and Ordering	Selection and Ordering data							
SITRANS P300 pressure and absolute pressure brane, single chamber e inscription in English								
4 20 mA/HART	7	MF	8	1 2	23 -			
PROFIBUS PA		7	MF	8	1 2	24 -		
FOUNDATION Fieldbus	: (FF)					25 -		
	o. for the online configura-							
tion in the PIA Life Cy								
Measuring cell filling	Measuring cell cleaning	١.						
Silicone oil Inert liquid	normal	1						
FDA compliant fill fluid		3						
Neobee oil	normal	4						
Measuring span (min	max.)	1						
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					
43.34 1300 mbar a <sup>1)</sup>	(0.63 18.86 psi a) <sup>1)</sup>		S					
0.17 5 bar a <sup>1)</sup>	(2.43 72.5 psi a) <sup>1)</sup>		Т					
1 30 bar a <sup>1)</sup>	(14.6 435 psi a) <sup>1)</sup>		U					
Wetted parts materials								
Seal diaphragm	Measuring cell							
Stainless steel	Stainless steel Stainless steel							
Hastelloy <sup>2)</sup>	Stainless steel		В					
• Flange version with Or (see "Further designs")	der code M, N, R or Q			7				
Non-wetted parts mate • Stainless steel, deep-opolished	rials drawn and electrolytically				4			
Version • Standard versions						1		
Explosion protection								
• None						Α		
With ATEX, Type of protection:								
- "Intrinsic safety (Ex ia)"						В		
<ul> <li>Zone 20/21/22<sup>3)</sup></li> <li>Ex nA/nL (Zone 2)<sup>4)</sup></li> </ul>						C E		
• with FM "intrinsic safety" (cFM <sub>US</sub> )						M		
		-						
<ul> <li>Electrical connection /</li> <li>Screwed gland M20x1</li> </ul>					Α			
<ul> <li>Screwed gland M20x1</li> </ul>					B			
<ul> <li>Screwed gland M20x1</li> </ul>						C		
Device plug M12 (stair						G		
without cable socket)								
• Screwed gland ½-14 N						H		
• Screwed gland ½-14 NPT stainless steel thread <sup>6)</sup>								

Selection and Ordering data	Article No.
SITRANS P300 pressure transmitters for relative and absolute pressure with front-flush mem- brane, single chamber enclosure, 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 -
Display  ◆ 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
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>	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.
- $^{5)}$  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	5.401	HART	РΔ	FF
Add "-Z" to Article No. and		HANT	FA	•••
specify Order code.				
Pressure transmitter with mounting	A02	1	1	1
bracket (2 shackles, 4 nuts, 4 U-plates,	AUZ	ľ	•	•
1 angle) made of:				
made completely of stainless steel, for wall or				
pipe mounting				
Cable socket for device plugs M12				
Stainless steel	A51	✓	✓	1
Rating plate inscription				
(instead of English)				
German	B10	✓	✓	✓
French	B12	✓	✓	✓
Spanish	B13	✓	✓	✓
Italian	B14	✓	✓	1
English rating plate	B21	✓	✓	1
Pressure units in inH <sub>2</sub> 0 and/or psi				
Quality test certificate, 5-point	C11	1	1	1
factory calibration (IEC 60770-2) <sup>1)</sup>	J.,			
Inspection certificate <sup>2)</sup>	C12	1	1	1
Acc. to EN 10204-3.1	0.12	•	·	
	014	1	1	1
Factory certificate	C14	•	✓	•
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	✓	✓	1
Ex-protection Ex ia according to EAC Ex	E80	1	1	1
(Russia)				
Ex Approval Ex ia/ib NEPSI	E55	1	1	1
Only for SITRANS P300 with front-flush				
diaphragm (7MF81)				
Flange to EN 1092-1, Form B1  ■ DN 25, PN 40 <sup>3)</sup>	M11	1	1	1
• DN 40, PN 40	M13	1	1	1
• DN 40, PN 100	M23	1	1	1
• DN 50, PN 16	M04	1	1	1
	M14	•	· .	1
• DN 50, PN 40		1	1	1
• DN 80, PN 16	M06	<b>*</b> /	<b>*</b> /	<b>v</b>
• DN 80, PN 40	M16	•	٧	•
Flanges to ASME B16.5				
• 1", class 150 <sup>4</sup> )	M40	<b>V</b>	✓.	✓.
• 1½", class 150	M41	<b>V</b>	✓.	✓.
• 2", class 150	M42	✓	✓	✓
• 3", class 150	M43	✓	✓	1
• 4", class 150	M44	✓	✓	✓
• 1", class 300 <sup>4)</sup>	M45	✓	✓	✓
• 1½", class 300	M46	✓	✓	✓
• 2", class 300	M47	✓	✓	✓
• 3", class 300	M48	1	✓	✓
• 4", class 300	M49	1	✓	✓
Threaded connector to DIN 3852-2, form A,				
thread to ISO 228				
• G ¾"-A, front-flush <sup>4)</sup>	R01	1	1	✓
• G 1"-A, front-flush <sup>4)</sup>	R02	✓	✓	✓
• G 2"-A, front-flush	R04	✓	1	✓
Tank connection <sup>5)</sup>				
Sealing is included in delivery				
• TG 52/50, PN 40	R10	1	1	1
		/	1	1
• TG 52/150, PN 40	R11	<b>V</b>	<b>V</b>	<b>V</b>

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	1	✓	1
• DN 80, PN 25	N06	✓	✓	✓
<b>Tri-Clamp connection according DIN 32676/ISO 2852</b> 3A compliant <sup>6)</sup>				
• DN 50/2", PN 16	N14	✓	✓	✓
• DN 65/2.5", PN 10	N15	1	1	1
<ul><li>Clamp 2" ISO 2852 PN 16</li><li>Clamp 3" ISO 2852 PN 16</li></ul>	N22 N23	1	<b>*</b>	<b>*</b>
Varivent connection	1420	,	·	Ť
3A and EHEDG compliant <sup>6)</sup>				
<ul> <li>Type N = 68 for Varivent enclosure DN 40 125 and 1½" 6", PN 40</li> </ul>	N28	✓	✓	✓
Temperature decoupler up to 200 °C <sup>7)</sup>	P00	1	✓	1
for front-flush diaphragm version				
Sanitary process connection to DRD  • DN 50. PN 40	M32	1	1	/
SMS threaded socket	WOZ	Ť	•	·
• 2"	M73	1	1	1
• 2½"	M74	✓	✓	✓
• 3"	M75	✓	✓	✓
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>
• DN 80, PN 16	Q07	<b>√</b>	1	<b>✓</b>
<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>V</b>	<b>*</b>	1
• DN 3", PN 16	Q15	<b>✓</b>	1	1
• DN 4", PN 16	Q16	✓	✓	✓
Sanitary process connection to NEUMO				
<ul><li>Bio-Connect S flange connection</li><li>DN 2", PN 16</li></ul>	Q72	1	✓	✓

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	N33 N34	<b>√</b> ✓	<b>* * *</b>	<b>*</b>
<ul><li>DN 80, PN 25</li><li>DN 100, PN 25</li></ul>	N35 N36	<b>√</b>	<b>√</b>	<b>√</b>
Aseptic flange with notch to DIN 11864-2 Form A 3A compliant <sup>6)</sup>				
<ul> <li>DN 50, PN 16</li> <li>DN 65, PN 16</li> <li>DN 80, PN 16</li> <li>DN 100, PN 16</li> </ul>	N43 N44 N45 N46	<b>* * * *</b>	<b>V V V</b>	√ √ √ √
Aseptic flange with groove to DIN 11864-2 Form A  3A compliant <sup>6)</sup>				
• DN 50, PN 16	N43 + P11	✓	✓	✓
• DN 65, PN 16	N44 + P11		✓	
• DN 80, PN 16	N45 + P11		✓	
• 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>	<b>V V V</b>

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> 8)	
Specify in plain text (max. 5 characters): Y01: up to mbar, bar, kPa, MPa, psi				
Stainless steel tag plate and entry in device variable (measuring point 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 TAG	Y17	✓		
Max. 8 characters, specify in plain text: Y17:				
Setting of the display in pressure units Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi, Note: The following pressure units can be selected:	Y21	✓	✓	✓
bar, mbar, mm $H_2O^*$ ), $inH_2O^*$ ), $ftH_2O^*$ ), mmHG, $inHG$ , psi, Pa, $kPa$ , $MPa$ , $g/cm^2$ , $kg/cm^2$ , Torr, ATM or % *) ref. temperature 20 °C				
Setting of the display in non-pressure units <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)

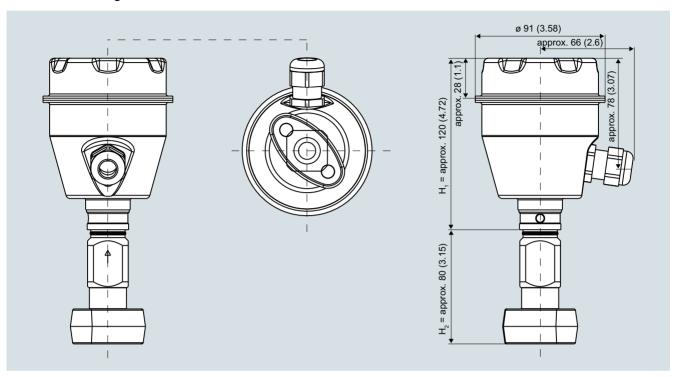
C line: Y21: bar (psi)

- When also ordering the quality test 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.
- 2) If the inspection certificate 3.1 is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.
- $^{3)}$  Special seal in Viton included in the scope of delivery (FKM; temperature range -20  $\dots$  +200 °C (-4  $\dots$  +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.

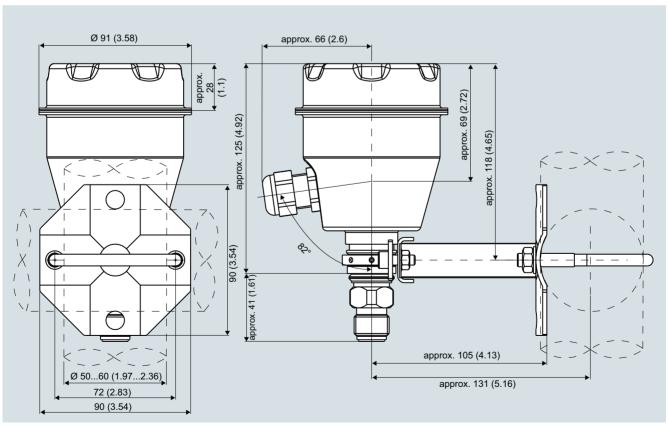
Pressure transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 for gauge and absolute pressure

## Dimensional drawings



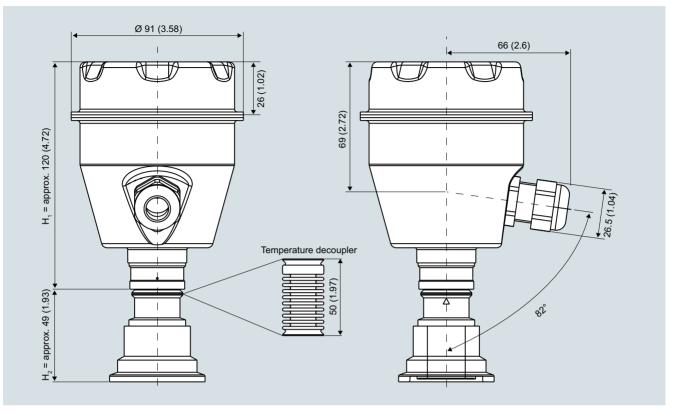
SITRANS P300, with oval flange, dimensions in mm (inch)



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<sub>1</sub> = Height of the SITRANS P300 up to a defined cross-section

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

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

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 ΡN ØD 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 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

## **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")	

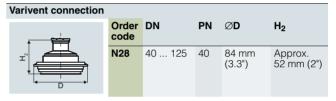
## NuG and pharmaceutical connections

#### Connections to DIN

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

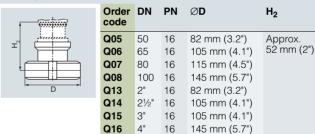
Tri-Clamp nach DIN 32676									
	Order code	DN	PN	ØD	H <sub>2</sub>				
	N14 N15	50 65	16 10	64 mm (2.5") 91 mm (3.6")	Approx. 52 mm (2")				

## Other connections

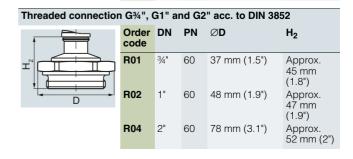


Sanitary process connection to DRD						
	Order code	DN	PN	ØD	H <sub>2</sub>	
T <sup>z</sup> D	M32	50	40	105 mm (4.1")	Approx. 52 mm (2")	

## Sanitary process screw connection to NEUMO Bio-Connect



# Sanitary process connection to NEUMO Bio-Connect S flange connection Order DN PN ØD H<sub>2</sub> 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							
	Order code	DN	PN	ØD	H <sub>2</sub>		
Ŧ Ţ	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						
<b>1</b>	Order code	DN	PN	ØD	H <sub>2</sub>	
T D	M73 M74 M75		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>	
T D	N33 N34 N35 N36	50 65 80 100	25 25 25 25 25	78 × 1/6" 95 × 1/6" 110 × ½" 130 × ½"	Approx. 52 mm (2")	

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

Aseptic flange with groove to DIN 11864-2 Form A						
<b>1</b>	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")	
Ξ̈	N54	65	25	91	52 mm (2")	
J	N55	80	16	106		
D	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	7ME4007 011A
PMC Style Standard: Thread 1½"  PMC Style Minibolt: front-flush 1"	7MF4997-2HA 7MF4997-2HB
Gaskets for PMC connection	- 11111 1001 2112
(packing unit = 5 units)	
PTFE seal for PMC Style Standard:	7MF4997-2HC
Thread 1½"  • Gasket made of Viton for PMC Style Minibolt:	7MF4997-2HD
front-flush 1"	/WF455/-2ND
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	
• hard copy (to order)	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 PTFE gaskets between the 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 complete unit is checked for leaks under pressure after assembly (air pressure 6 bar (87 psi)) and certified with a factory certificate according to EN 10204 - 2.2.

All valve manifolds should preferably be secured with the corresponding 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 inspection certificate 3.1 to EN 10204 after choosing the option "Factory mounting of valve manifolds", a separate certificate is provided for the transmitter and for the valve manifold.

## 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 including high-pressure test certified by factory certificate according 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
Inspection certificate according to EN 10204-3.1 supplied for transmitters and mounted valve manifold	C12

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



Add <b>-Z</b> to the Article No. of the transmitter and add Order codes	Order code
SITRANS P300 7MF8020	T02
with process connection collar 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 including high-pressure test certified by factory certificate according 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
Inspection certificate according to EN 10204-3.1 supplied for transmitters and mounted valve manifold	C12

Pressure transmitters for food, pharmaceuticals and biotechnology

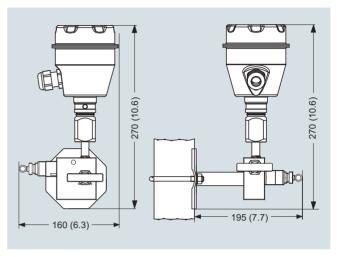
SITRANS P300 - Factory-mounting of valve manifolds on transmitters

## Dimensional drawings

## Valve manifolds mounted on SITRANS P300



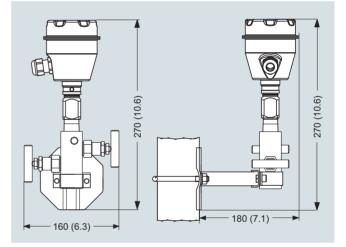
7MF9011-4EA valve manifold with mounted gauge pressure and absolute pressure transmitters



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

SITRANS P300 and SITRANS PDS III series pressure transmitters are digital pressure transmitters featuring extensive 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 measuring spans 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 measuring spans 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.

Measuring 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

Measuring 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 enclosure. 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).

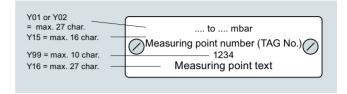
The approval label is located on the opposite side.

The enclosure is made of die-cast aluminium or stainless steel precision casting. A round cover is screwed on at the front and rear of the enclosure. 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 enclosure.

The electrical connections for the power supply and screen are accessible by unscrewing the rear cover. The bottom part of the enclosure 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 enclosure is a plastic cover (1), which hides the input keys.

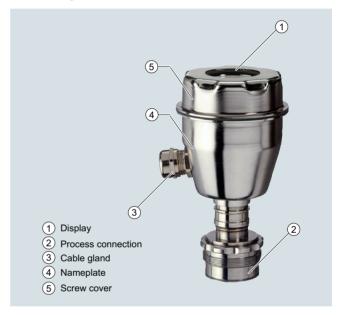
## Example for an attached measuring point label



#### SITRANS P300

The device comprises:

- Electronics
- Enclosure
- Measuring cell



Perspective view of the SITRANS P300

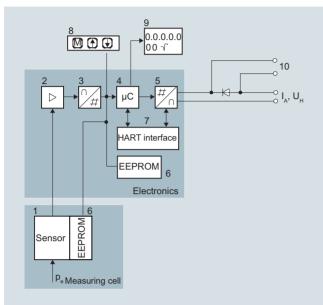
The enclosure has a screw-on lid (5) and, depending on the version, is with or without an inspection window. The electrical terminal enclosure, the buttons for operation of the device are located under this lid and, depending on the version, the display. The connections for the auxiliary power UH and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

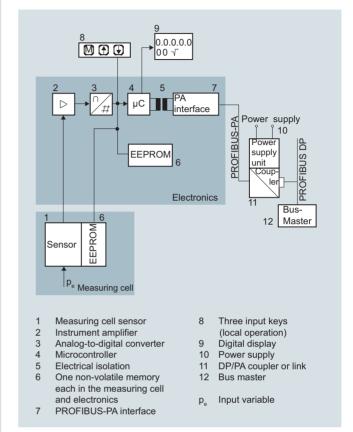
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The one memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced 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 measuring measuring spans ≤ 63 bar (914 psi) measure the input pressure compared to atmosphere, the transmitters with measuring measuring 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.

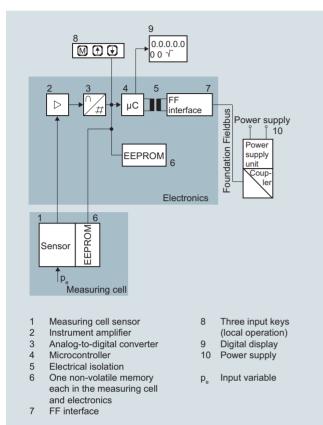
Using the three input buttons (8) you can parameterize the pressure transmitter directly at the measuring point. The input buttons can also be used to control the view of the results, the error messages and the operating modes on the display (9).

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



## 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.

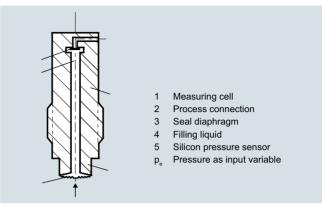
Using the three input buttons (8) you can parameterize the pressure transmitter directly at the measuring point. The input buttons can also be used to control the view of the results, the error messages and the operating modes on the display (9).

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**

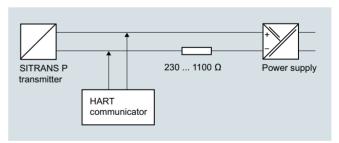
Depending on the version, there are a range of options for parameterizing the pressure transmitter and for setting or scanning the parameters.

Parameterization using the input buttons (local operation)

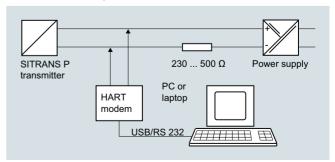
With the input buttons you can easily set the most important parameters without any additional equipment.

## 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

Parameters	Input keys	HART communication
Lower range value	×	X
Upper range value	X	X
Electrical damping	×	X
Lower range value without application of a pressure ("Blind setting")	Х	X
Upper range 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	x	x <sup>1)</sup>
Type of dimension and actual dimension	×	X
Characteristic (linear)	×	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 $_2$ O, inH $_2$ O (4 °C), mmH $_2$ O, ftH $_2$ O (20 °C), inHg, mmHg
Level (height data)	m, cm, mm, ft, in
Volume	m <sup>3</sup> , dm <sup>3</sup> , hI, 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

## 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)	X	X
Buttons and/or function disabling	X	X
Source of measured-value display	X	X
Physical dimension of display	X	X
Position of decimal point	X	X
Bus address	X	X
Adjustment of characteristic	X	X
Input of characteristic		X
Freely-programmable LCD		X
Diagnostic functions		x

Diagnostic functions for DS III 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

Thysical differsions 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, 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, 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> , hl, yd <sup>3</sup> , ft <sup>3</sup> , in <sup>3</sup> , 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 con	nection for the pape	r industry			
Input					
Measured variable	Gauge pressure				
Measuring span (infinitely adjustable) or nominal measuring range, max. operating pressure and max. test pressure	HART	PROFIBUS PA/ FOUNDATION Fieldbus			
	Measuring 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	
ower measuring limit For PMC-Style Minibolt no measuring span < 500 mbar adjustable)	100 mbar a/10 kPa	a/1.45 psi a	'	1	
Jpper measuring limit	100% of max. meas	uring span			
Output	HART		PROFIBUS PA/ FOU	JNDATION Fieldb	
Output signal	4 20 mA		Digital PROFIBUS PA		
Lower limit (infinitely adjustable)	3.55 mA, factory preset to 3.84 mA				
Upper limit (infinitely adjustable)	23 mA, factory pres optionally set to 22.		-		
oad					
Without HART communication	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0$ $U_{\rm H}$ : Power supply in		-		
With HART communication	$R_{\rm B} = 230 \dots 500 \Omega$ (S $R_{\rm B} = 230 \dots 1100 \Omega$	SIMATIC PDM) or (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)				
Measuring accuracy	Acc. to IEC 60770-1				
Reference conditions All error data refer always refer to the set span)	<ul> <li>Increasing character</li> <li>Lower range value</li> <li>Stainless steel sea</li> <li>Silicone oil filling</li> <li>Room temperature</li> </ul>	e 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. systeresis and reproducibility					
Linear characteristic					
- r≤5	≤ 0.075 %				
- 5 < r ≤ 100	$\leq (0.005 \cdot r + 0.05)^{\circ}$	%			
nfluence of ambient temperature (in percent per 28 $^{\circ}$ C (50 $^{\circ}$ F))	$\leq (0.08 \cdot r + 0.16) \%$				
ong-term stability (temperature change ± 30 °C (± 54 °F))	≤ (0.25 · r) % in 5 ye	ears			
iffect of mounting position	(zero point correction	a/0.00145 psi per 10° 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 n	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 connection for the paper industry					
	HART	PROFIBUS PA and FOUNDATION Fieldbus			
Operating 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 supply voltage	-	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 fluarticle 4, paragraph 3 (sound engineering	uid group 1; complies with requirements of g practice)			

Pressure transmitters for gauge pressure for the paper industry

		SITRANS P	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		- Adaptation to customer-specif-	Yes, linearly rising or falling
Simultaneous communication with master class 2 (max.)	4	ic process variables - Electrical damping, adjustable	characteristic 0 100 s
The address can be set using	Configuration tool or local operation (standard setting	- Simulation function	Output/input (can be locked
	address 126)		within the device with a bridge)
Cyclic data usage		- Failure mode	parameterizable (last good value, substitute value, incorrect
Output byte	5 (one measured value) or 10 (two measured values)	Limit monitoring	value)
• Input byte	0, 1, or 2 (register operating mode and reset function for	- 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 Field- bus function block
	3.0, class B	<ul><li>Physical block</li></ul>	1 resource block
Function blocks  • Analog input	2	Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block
- Adaptation to customer-specif-	Yes, linearly rising or falling		LCD
ic process variables	characteristic	Pressure transducer block	
- 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 respec- tively		
<ul> <li>Physical block</li> </ul>	1		
Transducer blocks	2		
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 Yes

Yes

Max. 30 nodes

Parameterizable

Constant value or over parameterizable ramp function

Pressure transmitters for gauge pressure for the paper industry

### **SITRANS P DS III with PMC connection**

Selection and Ordering		Arti	cle N	Э.		
SITRANS P pressure t pressure, with PMC co series DS III with HAR	nnection		F 4 1			-
7 Click on the Article N     ration in the PIA Life	lo. for the online configu- Cycle Portal.	П				
Measuring cell filling Silicone oil	Measuring cell- cleaning normal	1	П			
Inert liquid	grease-free to cleanliness level 2	3				
<b>Measuring span (min.</b> 0.01 1 bar <sup>1)</sup> 0.04 4 bar 0.1.6 16 bar	max.) (0.15 14.5 psi) <sup>1)</sup> (0.58 58 psi) (2.32 232 psi)	B C D				
<b>Wetted parts materials</b> Seal diaphragm	Connection shank	П				
Hastelloy	Stainless steel		В			
mum measuring span sion "B")	ont-flush 1" (not with mini- : 500 mbar (7.25 psi) - ver-		2 3			
Non-wetted parts mate • Enclosure made of die • Enclosure stainless ste	e-cast aluminium		0			
<ul> <li>etting for pressure ur</li> <li>Chinese version, Englis setting for pressure uni</li> </ul>	nit: bar English plate inscription, nit: bar sh plate inscription, t: Pascal D with compact operating	l		1 2 3		
Explosion protection None With ATEX, Type of promoter intrinsic safety (Ex improved) Explosion-proof (Ex may	a)" d)" <sup>2)</sup> fe (is) <sup>4)</sup>				B D E F	
Electrical connection /  • Female thread M20 x  • Female thread ½-14 N  • Device plugs M12 (sta	1.5 IPT				B C F	
Display  • Without display  • Without visible display setting: mA)						0
ified, Order code "Y21	c display (setting as spec-					6 7

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.
- 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 Orde	ring data re transmitter for gauge	Art	icle	e N	10.		
pressure, with PMC							
DS III with PROFIBI	JS PA (PA)	7 N	IF 4	4 1	3	4 -	
	ATION Fieldbus (FF)	7 N			_	-	
	le No. for the online configu-						
ration in the PIA L		П	Ī	Г	П	ı	ľ
Measuring cell fillir	ng Meas. cell cleaning		П				Ī
Silicone oil	normal	1					
Inert liquid	grease-free to	3					
NI! I!	cleanliness level 2	-					
Nominal measuring 1 bar <sup>1)</sup>	(14.5 psi) <sup>1)</sup>	В					
4 bar	(58 psi)	C					
16 bar	(232 psi)	D					
Wetted parts mater							
Seal diaphragm	Connection shank						
Hastelloy	Stainless steel		В				
Process connection							
PMC Style Standar				2			
	: front-flush 1" (minimum mea- nbar (7.25 psi), not available			3			
with	ivai (1.20 poi), Hut available						
1-bar-measuring c	ell (Option B))						
Non-wetted parts n							
Enclosure made of				0			
	s steel precision casting			3			
Version							
<ul> <li>Standard version, setting for pressure</li> </ul>	German plate inscription,					1	
• .	on, English plate inscription,					2	
setting for pressure	e unit: bar						
<ul> <li>Chinese version, Er setting for pressure</li> </ul>	nglish plate inscription,				1	3	
	DVD with compact operating						
instructions in variou							
Explosion protection	on	Ш					
None  None	i nunto ation .					Α	
<ul> <li>With ATEX, Type of - "Intrinsic safety (I</li> </ul>	•					В	
- "Explosion-proof						D	
- "Ex nA/ic (Zone 2						E	
• FM + CSA intrinsic						F	
• With FM + CSA, Ty							
- "Intrinsic Safe and	d Explosion Proof (is $+ xp)^{(3)5}$ )					N	
Electrical connection							
Female thread M20							
<ul> <li>Female thread ½-1</li> </ul>							
Device plugs M12      Diapley	(stairliess steer)						
<ul><li>Display</li><li>Without display</li></ul>							
	olay (display concealed,						
setting: bar)							
<ul> <li>With visible display</li> </ul>							
<ul> <li>Mith quotomor one</li> </ul>	cific 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

Further designs  Add "-Z" to Article No. and specify Order code.  Device plugs  • Angled  • Han 8D (metal, gray)  M12 cable sockets (metal (CuZn))  Fating plate inscription (instead of German)  • English  • French  • Spanish  • Italian  • Cyrillic (russian)  English rating plate  Pressure units in inH <sub>2</sub> 0 and/or psi  Quality test certificate, 5-point factory calibration (IEC 60770-2)  Inspection certificate  Acc. to EN 10204-3.1  Factory certificate  Acc. to EN 10204-2.2  "Functional safety (SIL2/3)" certificate acc.  to IEC 61508  PED for Russia with initial calibration mark  Cept of the upper saturation limit of the output signal to 22.0 mA  Degree of protection IP66/IP68  (only for M20 x 1.5 and ½-14 NPT)  Export approval Korea  Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)  Ex protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4E)  Exprotection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4E)	Selection and Ordering data	Order	code		
Add "-Z" to Article No. and specify Order code.  Device plugs  • Angled  • Han 8D (metal, gray)  M12 cable sockets (metal (CuZn))  • English  • English  • French  • Spanish  • Italian  • Cyrillic (russian)  English rating plate  • Cyrillic (russian)  English rating plate  • Cyrillic (russian)  English rating plate  Pressure units in inH₂0 and/or psi  Quality test certificate, 5-point factory calibration (IEC 60770-2)  Inspection certificate  Acc. to EN 10204-3.1  Factory certificate  Acc. to EN 10204-2.2  "Functional safety (SIL2/3)" certificate acc.  to IEC 61508  PED for Russia with initial calibration mark  C99  Setting of the upper saturation limit of the output signal to 22.0 mA  Degree of protection IP66/IP68  (only for M20 x 1.5 and ½-14 NPT)  Export approval Korea  Explosion-proof "Intrinsic safety" to NEPSI (China)  (only for transmitter 7MF4B.)  Explosion protection "Explosion-proof" to NEPSI (China)  (only for transmitter 7MF4B.)  Ex protection "Zone 2" to NEPSI (China)  (only for transmitter 7MF4B.)  Ex protection "Explain", "Ex d" and "Zone 2" to NEPSI (China)  (only for transmitter 7MF4B.)  Ex protection "Explain", "Ex d" and "Zone 2" to NEPSI (China)  (only for transmitter 7MF4B.)  Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China)  (only for transmitter 7MF4B.)  Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China)  (only for transmitter 7MF4B.)		Oraci		DΛ	FF
Device plugs  Angled Ana BO (metal, gray)  M12 cable sockets (metal (CuZn))  Fating 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  Cuality test certificate, 5-point factory calibration (IEC 60770-2) Inspection certificate Acc. to EN 10204-2.2  "Functional safety (SIL2)" certificate acc. to IEC 61508  PED for Russia with initial calibration mark  Setting of the upper saturation limit of the output signal to 22.0 mA  Degree of protection IP66/IP68 (only for M20 x 1.5 and ½-14 NPT)  Export approval Korea  Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B.)  Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4B.)  Ex protection "Ex ia", "Ex d" and "Zone 2" to NEJ (China) (only for transmitter 7MF4B.)  Exprotection "Ex ia", "Ex d" and "Zone 2" to NEJ (China) (only for transmitter 7MF4B.)  Mounting  Weldable sockets for standard 1½" threaded connection  Weldable sockets for standard 1½" threaded connection  Weldable sockets for minibolt connection 1" PO2			HANI	ГА	••
• Angled • Han 8D (metal, gray)  M12 cable sockets (metal (CuZn))  Rating plate inscription (instead of German) • English • French • Spanish • Italian • Cyrillic (russian)  English rating plate Pressure units in inH <sub>2</sub> 0 and/or psi  Quality test certificate, 5-point factory calibration (IEC 60770-2) Inspection certificate Acc. to EN 10204-3.1  Factory certificate Acc. to EN 10204-2.2  "Functional safety (SIL2/3)" certificate acc. to IEC 61508  PED for Russia with initial calibration mark Pender of protection IP66/IP68 (only for M20 x 1.5 and ½-14 NPT)  Export approval Korea  Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)  Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)  Mounting • Weldable sockets for standard 1½" threaded connection • Weldable sockets for standard 1½" threaded connection • Weldable sockets for minibolt connection 1" P02					
• Han 8D (metal, gray)  M12 cable sockets (metal (CuZn))  Rating plate inscription (instead of German)  • English • French • Spanish • Italian • Cyrillic (russian)  English rating plate Pressure units in inH <sub>2</sub> 0 and/or psi  Quality test certificate, 5-point factory calibration (IEC 60770-2) Inspection certificate Acc. to EN 10204-2.2  "Functional safety (SIL2)" certificate acc. to IEC 61508  "Functional safety (SIL2)" certificate acc. to IEC 61508  "Functional safety (SIL2/3)" certificate acc. to IEC 61508  PED for Russia with initial calibration mark  Setting of the upper saturation limit of the output signal to 22.0 mA  Degree of protection IP66/IP68 (only for M20 x 1.5 and ½-14 NPT)  Export approval Korea  Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)  Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4B)  Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4B)  Ex protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4B)  Ex protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4B)  Ex protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4B)  Ex protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4B)  Ex protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4B)  Weldable sockets for standard 1½" threaded connection  • Weldable socket for minibolt connection 1°  PO02  V V V	. •				
M12 cable sockets (metal (CuZn))  Rating plate inscription (instead of German)  • English • French • Spanish • Italian • Cyrillic (russian)  English rating plate Pressure units in inH <sub>2</sub> 0 and/or psi  Quality test certificate, 5-point factory calibration (IEC 60770-2) Inspection certificate Acc. to EN 10204-3.1  Factory certificate Acc. to EN 10204-2.2  "Functional safety (SIL2)" certificate acc. to IEC 61508  PED for Russia with initial calibration mark Setting of the upper saturation limit of the output signal to 22.0 mA  Degree of protection IP66/IP68 (only for M20 x 1.5 and ½-14 NPT)  Export approval Korea  Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B.)  Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4B.)  Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4B.)  Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4B.)  Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4B.)  Ex protection "Exe ia", "Ex d" and "Zone 2" to NEPSI (China) (only for transmitter 7MF4B.)  Mounting  • Weldable socket for minibolt connection 1"  P02  • V d    **  **  **  **  **  **  **  **  **					
### Rating plate inscription (instead of German)  • English  • French  • Spanish • Italian • Cyrillic (russian)  English rating plate  Pressure units in inH20 and/or psi   Quality test certificate, 5-point factory calibration (IEC 60770-2)  Inspection certificate  Acc. to EN 10204-3.1  Factory certificate  Acc. to EN 10204-2.2  "Functional safety (SIL2)" certificate acc. to IEC 61508  "Functional safety (SIL2/3)" certificate acc. to IEC 61508  PED for Russia with initial calibration mark  Setting of the upper saturation limit of the output signal to 22.0 mA  Degree of protection IP66/IP68 (only for M20 x 1.5 and ½-14 NPT)  Export approval Korea  Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B.)  Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4B.)  Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4B.)  Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4B.)  Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China) (only for transmitter 7MF4B.)  Mounting  • Weldable sockets for standard 1½" threaded connection • Weldable socket for minibolt connection 1"  P02  • V • V					
(instead of German)  • English • French • Spanish • Italian • Italian • Cyrillic (russian)  English rating plate Pressure units in inH20 and/or psi  Quality test certificate, 5-point factory calibration (IEC 60770-2)  Inspection certificate Acc. to EN 10204-3.1  Factory certificate Acc. to EN 10204-2.2  "Functional safety (SIL2)" certificate acc. to IEC 61508  "Functional safety (SIL2/3)" certificate acc. to IEC 61508  "Functional safety (SIL2/3)" certificate acc. to IEC 61508  PED for Russia with initial calibration mark PED for Russia with initial calibration mark C99  Setting of the upper saturation limit of the output signal to 22.0 mA  Degree of protection IP66/IP68 Conly for M20 x 1.5 and ½-14 NPT)  Export approval Korea  Explosion-proof "Intrinsic safety" to NEPSI (China) Conly for transmitter 7MF4B.)  Explosion protection "Explosion-proof" to NEPSI (China) Conly for transmitter 7MF4B.)  Ex protection "Zone 2" to NEPSI (China) Conly for transmitter 7MF4B.)  Ex protection "Explosion-proof" to NEPSI (China) Conly for transmitter 7MF4B.)  Ex protection "Explosion-proof" to NEPSI (China) Conly for transmitter 7MF4B.)  Ex protection "Explosion-proof" to NEPSI (China) Conly for transmitter 7MF4B.)  Ex protection "Explosion-proof" to NEPSI (China) Conly for transmitter 7MF4B.)  Ex protection "Explosion-proof" to NEPSI (China) Conly for transmitter 7MF4B.)  Ex protection "Explosion-proof" to NEPSI (China) Conly for transmitter 7MF4B.)	M12 cable sockets (metal (CuZn))	A50	✓	<b>✓</b>	<b>✓</b>
• English • French • French • Spanish • Spanish • Italian • Cyrillic (russian) English rating plate Pressure units in inH₂0 and/or psi  Quality test certificate, 5-point factory calibration (IEC 60770-2) Inspection certificate Acc. to EN 10204-3.1  Factory certificate Acc. to EN 10204-2.2  "Functional safety (SIL2)" certificate acc. to IEC 61508  "Functional safety (SIL2)" certificate acc. to IEC 61508  "Functional safety (SIL2/3)" certificate acc. to IEC 61508  PED for Russia with initial calibration mark  Setting of the upper saturation limit of the output signal to 22.0 mA  Degree of protection IP66/IP68 (only for M20 x 1.5 and ½-14 NPT)  Export approval Korea  Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)  Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China) (only for transmitter 7MF4R)  Mounting  • Weldable socket for standard 1½" threaded connection • Weldable socket for minibolt connection 1" P02 ✓ ✓ ✓	- · · · · · · · · · · · · · · · · · · ·				
• French • Spanish • Italian • Italian • Cyrillic (russian) • English rating plate Pressure units in inH₂0 and/or psi  Quality test certificate, 5-point factory calibration (IEC 60770-2) Inspection certificate Acc. to EN 10204-3.1  Factory certificate Acc. to EN 10204-2.2  "Functional safety (SIL2)" certificate acc. to IEC 61508  "Functional safety (SIL2/3)" certificate acc. to IEC 61508  PED for Russia with initial calibration mark PED for Russia with initial calibration mark  Setting of the upper saturation limit of the output signal to 22.0 mA  Degree of protection IP66/IP68 (only for M20 x 1.5 and ½-14 NPT)  Export approval Korea  Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)  Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4B)  Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Explosion proce" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Explosion proce" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4E)	· ·	B11	1	1	1
• Italian  • Cyrillic (russian)  English rating plate Pressure units in inH <sub>2</sub> 0 and/or psi  Quality test certificate, 5-point factory calibration (IEC 60770-2) Inspection certificate Acc. to EN 10204-3.1  Factory certificate Acc. to EN 10204-2.2  "Functional safety (SIL2)" certificate acc. to IEC 61508  "Functional safety (SIL2/3)" certificate acc. to IEC 61508  PED for Russia with initial calibration mark Setting of the upper saturation limit of the output signal to 22.0 mA  Degree of protection IP66/IP68 (only for M20 x 1.5 and ½-14 NPT)  Export approval Korea  Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)  Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4E)	3				1
• Cyrillic (russian)  English rating plate Pressure units in inH20 and/or psi  Quality test certificate, 5-point factory calibration (IEC 60770-2)  Inspection certificate Acc. to EN 10204-3.1  Factory certificate Acc. to EN 10204-2.2  "Functional safety (SIL2)" certificate acc. to IEC 61508  "Functional safety (SIL2/3)" certificate acc. to IEC 61508  PED for Russia with initial calibration mark Setting of the upper saturation limit of the output signal to 22.0 mA  Degree of protection IP66/IP68 (only for M20 x 1.5 and ½-14 NPT)  Export approval Korea  Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)  Exprotection "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Ex plosion-proof" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Ex a", "Ex d" and "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Ex a", "Ex d" and "Zone 2" to NEPSI (China) (only for transmitter 7MF4R)  Wounting  • Weldable sockets for standard 1½" threaded connection  • Weldable socket for minibolt connection 1" P02 ✓ ✓ ✓	• Spanish	B13	✓	✓	1
English rating plate Pressure units in inH20 and/or psi  Quality test certificate, 5-point factory calibration (IEC 60770-2)  Inspection certificate Acc. to EN 10204-3.1  Factory certificate Acc. to EN 10204-2.2  "Functional safety (SIL2)" certificate acc. to IEC 61508  "Functional safety (SIL2/3)" certificate acc. to IEC 61508  PED for Russia with initial calibration mark C99  Setting of the upper saturation limit of the output signal to 22.0 mA  Degree of protection IP66/IP68 (only for M20 x 1.5 and ½-14 NPT)  Export approval Korea  Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)  Exprotection "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)  Weldable sockets for standard 1½" threaded connection  Weldable socket for minibolt connection 1"  P02  V   V   V				✓	✓
Pressure units in inH20 and/or psi  Quality test certificate, 5-point factory calibration (IEC 60770-2) Inspection certificate Acc. to EN 10204-3.1  Factory certificate Acc. to EN 10204-2.2  "Functional safety (SIL2)" certificate acc. to IEC 61508  "Functional safety (SIL2/3)" certificate acc. to IEC 61508  PED for Russia with initial calibration mark Ped for Russia with initial calibration for Ped for V V V V V V V V V V V V V V V V V V V	Cyrillic (russian)	B16	✓	✓	✓
Quality test certificate, 5-point factory calibration (IEC 60770-2)  Inspection certificate  Acc. to EN 10204-3.1  Factory certificate  Acc. to EN 10204-2.2  "Functional safety (SIL2)" certificate acc. to IEC 61508  "Functional safety (SIL2/3)" certificate acc. to IEC 61508  PED for Russia with initial calibration mark  Setting of the upper saturation limit of the output signal to 22.0 mA  Degree of protection IP66/IP68 (only for M20 x 1.5 and ½-14 NPT)  Export approval Korea  Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)  Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)  Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)  Weldable sockets for standard 1½" threaded connection  Weldable socket for minibolt connection 1" P02		B21	✓	✓	✓
factory calibration (IEC 60770-2)  Inspection certificate  Acc. to EN 10204-3.1  Factory certificate  Acc. to EN 10204-2.2  "Functional safety (SIL2)" certificate acc. to IEC 61508  "Functional safety (SIL2/3)" certificate acc. to IEC 61508  PED for Russia with initial calibration mark  PES etting of the upper saturation limit of the output signal to 22.0 mA  Degree of protection IP66/IP68  (only for M20 x 1.5 and ½-14 NPT)  Export approval Korea  Explosion-proof "Intrinsic safety" to NEPSI (China)  (only for transmitter 7MF4B)  Explosion protection "Explosion-proof" to NEPSI (China)  (only for transmitter 7MF4B)  Ex protection "Zone 2" to NEPSI (China)  (only for transmitter 7MF4E)  Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China)  (only for transmitter 7MF4R)  Mounting  Weldable sockets for standard 1½" threaded connection  Weldable socket for minibolt connection 1"  PO2   V  V	Pressure units in inH <sub>2</sub> 0 and/or psi				
Acc. to EN 10204-3.1  Factory certificate Acc. to EN 10204-2.2  "Functional safety (SIL2)" certificate acc. to IEC 61508  "Functional safety (SIL2/3)" certificate acc. to IEC 61508  PED for Russia with initial calibration mark  Setting of the upper saturation limit of the output signal to 22.0 mA  Degree of protection IP66/IP68 (only for M20 x 1.5 and ½-14 NPT)  Export approval Korea  Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)  Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)  Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China) (only for transmitter 7MF4R)  Mounting  • Weldable sockets for standard 1½" threaded connection • Weldable socket for minibolt connection 1"  P02  V   V		C11	✓	1	✓
Factory certificate  Acc. to EN 10204-2.2  "Functional safety (SIL2)" certificate acc. to IEC 61508  "Functional safety (SIL2/3)" certificate acc. to IEC 61508  PED for Russia with initial calibration mark  Setting of the upper saturation limit of the output signal to 22.0 mA  Degree of protection IP66/IP68 (only for M20 x 1.5 and ½-14 NPT)  Export approval Korea  Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)  Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)  Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4B)  Ex protection "Ex and "Zone 2" to NEPSI (China) (only for transmitter 7MF4R)  Mounting  Weldable sockets for standard 1½" threaded connection  Weldable socket for minibolt connection 1"  P02  V   V	Inspection certificate	C12	✓	1	1
Acc. to EN 10204-2.2  "Functional safety (SIL2)" certificate acc. to IEC 61508  "Functional safety (SIL2/3)" certificate acc. to IEC 61508  PED for Russia with initial calibration mark  PED for Russia with initial calibration mark  Setting of the upper saturation limit of the output signal to 22.0 mA  Degree of protection IP66/IP68 (only for M20 x 1.5 and ½-14 NPT)  Export approval Korea  Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)  Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)  Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China) (only for transmitter 7MF4R)  Mounting  • Weldable sockets for standard 1½" threaded connection  • Weldable socket for minibolt connection 1" P02	Acc. to EN 10204-3.1				
Acc. to EN 10204-2.2  "Functional safety (SIL2)" certificate acc. to IEC 61508  "Functional safety (SIL2/3)" certificate acc. to IEC 61508  PED for Russia with initial calibration mark  PED for Russia with initial calibration mark  Setting of the upper saturation limit of the output signal to 22.0 mA  Degree of protection IP66/IP68 (only for M20 x 1.5 and ½-14 NPT)  Export approval Korea  Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)  Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)  Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China) (only for transmitter 7MF4R)  Mounting  • Weldable sockets for standard 1½" threaded connection  • Weldable socket for minibolt connection 1" P02	Factory certificate	C14	1	1	1
to IEC 61508  "Functional safety (SIL2/3)" certificate acc. to IEC 61508  PED for Russia with initial calibration mark  Setting of the upper saturation limit of the output signal to 22.0 mA  Degree of protection IP66/IP68 (only for M20 x 1.5 and ½-14 NPT)  Export approval Korea  Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)  Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)  Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4B)  Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China) (only for transmitter 7MF4R)  Mounting  • Weldable sockets for standard 1½" threaded connection • Weldable socket for minibolt connection 1"  P02  V   V	•	• • •			
"Functional safety (SIL2/3)" certificate acc. to IEC 61508  PED for Russia with initial calibration mark  Setting of the upper saturation limit of the output signal to 22.0 mA  Degree of protection IP66/IP68 (only for M20 x 1.5 and ½-14 NPT)  Export approval Korea  Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)  Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)  Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China) (only for transmitter 7MF4R)  Mounting  • Weldable sockets for standard 1½" threaded connection • Weldable socket for minibolt connection 1"  P02  ✓ ✓		C20	✓		
Setting of the upper saturation limit of the output signal to 22.0 mA  Degree of protection IP66/IP68 (only for M20 x 1.5 and ½-14 NPT)  Export approval Korea  Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)  Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)  Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China) (only for transmitter 7MF4R)  Mounting  • Weldable sockets for standard 1½" threaded connection • Weldable socket for minibolt connection 1"  P02  ✓ ✓	"Functional safety (SIL2/3)" certificate acc.	C23	✓		
output signal to 22.0 mA  Degree of protection IP66/IP68 (only for M20 x 1.5 and ½-14 NPT)  Export approval Korea  Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)  Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)  Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China) (only for transmitter 7MF4R)  Mounting  • Weldable sockets for standard 1½" threaded connection • Weldable socket for minibolt connection 1"  P02  ✓ ✓	PED for Russia with initial calibration mark	C99	✓	✓	1
(only for M20 x 1.5 and ½-14 NPT)  Export approval Korea  Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)  Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)  Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China) (only for transmitter 7MF4R)  Mounting  • Weldable sockets for standard 1½" threaded connection • Weldable socket for minibolt connection 1"  P02  ✓ ✓		D05	✓	✓	✓
Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)  Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)  Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China) (only for transmitter 7MF4R)  Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China) (only for transmitter 7MF4R)  Mounting  • Weldable sockets for standard 1½" threaded connection • Weldable socket for minibolt connection 1" P02		D12	✓	✓	✓
NEPSI (China)  (only for transmitter 7MF4B)  Explosion protection "Explosion-proof" to NEPSI (China)  (only for transmitter 7MF4D)  Ex protection "Zone 2" to NEPSI (China)  (only for transmitter 7MF4E)  Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China)  (only for transmitter 7MF4R)  Mounting  • Weldable sockets for standard 1½"  P01  ✓ ✓ ✓ ✓ ✓ ✓ Weldable socket for minibolt connection 1" P02 ✓ ✓ ✓ ✓ ✓	Export approval Korea	E11	✓	✓	✓
NEPSI (China)  (only for transmitter 7MF4B)  Explosion protection "Explosion-proof" to NEPSI (China)  (only for transmitter 7MF4D)  Ex protection "Zone 2" to NEPSI (China)  (only for transmitter 7MF4E)  Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China)  (only for transmitter 7MF4R)  Mounting  • Weldable sockets for standard 1½"  P01  ✓ ✓ ✓ ✓ ✓ ✓ Weldable socket for minibolt connection 1" P02 ✓ ✓ ✓ ✓	Explosion-proof "Intrinsic safety" to	E55 <sup>1)</sup>	1	1	1
to NEPSI (China)  (only for transmitter 7MF4D)  Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China) (only for transmitter 7MF4R)  Mounting  • Weldable sockets for standard 1½"	NEPSI (China)				
(only for transmitter 7MF4D)  Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)  Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China) (only for transmitter 7MF4R)  Mounting  • Weldable sockets for standard 1½" threaded connection • Weldable socket for minibolt connection 1"  P02  V   V		E56 <sup>1)</sup>	✓	✓	✓
(only for transmitter 7MF4E)  Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China) (only for transmitter 7MF4R)  Mounting  • Weldable sockets for standard 1½"  P01  ✓ ✓ ✓  threaded connection • Weldable socket for minibolt connection 1" P02 ✓ ✓ ✓	•				
Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China)  (only for transmitter 7MF4R)  Mounting  • Weldable sockets for standard 1½" P01		E57 <sup>1)</sup>	✓	✓	✓
(only for transmitter 7MF4R)  Mounting  • Weldable sockets for standard 1½" threaded connection  • Weldable socket for minibolt connection 1"  P02 ✓ ✓ ✓	Ex protection "Ex ia", "Ex d" and "Zone 2"	E58 <sup>1)</sup>	✓	✓	1
<ul> <li>Weldable sockets for standard 1½"         threaded connection</li> <li>Weldable socket for minibolt connection 1"</li> <li>P02</li> <li>✓</li> </ul>	,				
<ul> <li>Weldable sockets for standard 1½"         threaded connection</li> <li>Weldable socket for minibolt connection 1"</li> <li>P02</li> <li>✓</li> </ul>	Mounting				
	<ul> <li>Weldable sockets for standard 1½"</li> </ul>	P01	✓	✓	✓
		P02	1	✓	✓

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	1	<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 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				
, ,	Vaa .	./		
Setting of pressure indication in non- pressure units <sup>2)</sup>	Y22 + Y01	•		
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)				
Preset bus address	Y25		✓	✓
possible between 1 and 126 Max. 8 characters, specify in plain text:				

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)

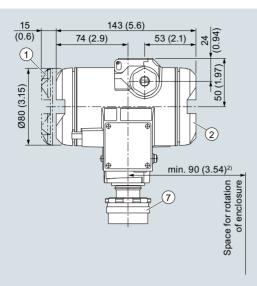
<sup>1)</sup> Measuring accuracies for PROFIBUS PA transmitters with Option Y01 are calculated in the same way as for HART devices.

<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) (21.3) 06 (21.3) 06 (21.3) 07 (2

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

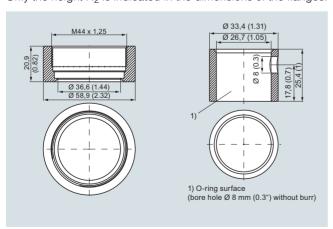
- 4 Cover over buttons
- 5 Blanking plug
- 6 Safety catch (only for "flameproof enclosure" type of protection; not shown in the drawing)
- (7) Process connection: PMC standard
- 1) In addition, allow approx. 20 mm (0.79 inch) for the thread length
- <sup>2)</sup> 92 mm (3.62 inch) minimum distance for 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  $\rm H_2$ .

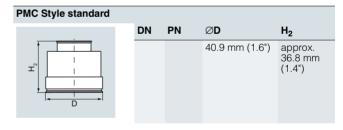
 $\mathrm{H}_1 = \mathrm{Height}$  of the SITRANS P DS III up to a defined cross-section

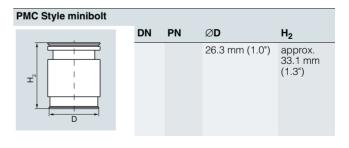
 $H_2$  = Height of the flange up to this defined cross-section Only the height  $H_2$  is indicated in the dimensions of the flanges.



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

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





Pressure transmitters for gauge pressure for the paper industry

# SITRANS P300 with PMC connection

# Technical specifications

SITRANS P300 for gauge pressure with PMC connection fo	r the paper industry				
Input					
Measured variable	Gauge pressure (fro	ont-flush)			
Measuring span (infinitely adjustable) or nominal measuring range and max. permissible test pressuree	HART	PROFIBUS PA/ FOUNDATION Fieldbus			
	Measuring 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 measuring span < 500 mbar adjustable)	100 mbar a/10 kPa	a/1.45 psi a	1	ı	
Upper measuring limit	100 % of max. meas	suring span			
Output	HART		PROFIBUS PA/ FOU	JNDATION Fieldb	
Output signal	4 20 mA		Digital PROFIBUS PA FOUNDATION Fields		
<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 communication	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0$ $U_{\rm H}$ : Power supply in	n V	-		
With HART communication	$R_{\rm B}$ = 230 500 $\Omega$ (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 other with max. supply voltage.				
Electrical damping (step width 0.1 s)	Set to 2 s (0 100 s	s)			
Measuring accuracy	Acc. to IEC 60770-1				
Reference conditions	<ul> <li>Increasing charac</li> <li>Lower range value</li> <li>Stainless steel sea</li> <li>Measuring cell wit</li> <li>Room temperature</li> </ul>	e 0 bar/kPa/psi al diaphragm h silicone oil			
Measuring span ratio r (spread, Turn-Down)	r = max. measuring	span/set measuring	span or nominal meas	suring 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))	$\leq (0.08 \cdot r + 0.16) \%$				
Long-term stability (temperature change ± 30 °C (± 54 °F))	≤ (0.25 · r) % in 5 ye	ears			
Effect of mounting position	(zero point correction	n/0.00145 psi per 10° 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 n	neasuring range			

Pressure transmitters for gauge pressure for the paper industry

# SITRANS P300 with PMC connection

SITRANS P300 for gauge pressure with PMC connec	tion for the paper industry			
Operating conditions				
Installation conditions				
Ambient temperature	Observe the temperature class in are	eas 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 use in the tropics		
Degree of protection				
• according to EN 60529	IP65, IP68			
• according to NEMA 250	Type 4X, enclosure cleaning, resista	nt to lyes, steam to 150 °C (302 °F)		
Electromagnetic Compatibility				
• Emitted interference and interference immunity	Acc. to IEC 61326 and NAMUR NE 2	21		
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)/weld	s 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 supply voltage	-	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 fluid group 1; complies with requirements Article 4, paragraph 3 (sound engineering 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: $U_i = 24 \text{ V}, I_i = 250 \text{ mA}, P_i = 1.2 \text{ W}$		
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 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			
<ul> <li>Identification (DIP) or (IS)</li> </ul>	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			

Pressure transmitters for gauge pressure for the paper industry

# SITRANS P300 with PMC connection

HART Protocol Protocol HART Version 5.x Software for computer  PROFIBUS PA communication Simultaneous communication with master class 2 (max.) The address can be set using  Output byte One measured value: 5 bytes Two measured values: 10 bytes Procing Profile Profile Profile Profile Profile Profile Profile Profile Profile Process Control Devices Version 3.0, class B  Function blocks Analog input Adaptation to customer-specific process variables Electrical damping Simulation function Limit monitoring Profile Profile Profile Input /Output  Register (totalizer)  Register (totalizer)  Profile Input /Output  One upper and lower warning limit and one alarm limit respectively  Profile Input /Output  One upper and lower warning limit and one alarm limit respectively  Prossure transducer block Pressure transducer block Monitoring of sensor limits Specification of a container characteristic curve Simulation function Vavailable  Transducer block "Electronic temperature"  Simulation function Transducer block "Electronic temperature"  Simulation function Vavailable	HART communication	
Protocol Software for computer  PROFIBUS PA communication Simultaneous communication with master class 2 (max.) The address can be set using  Cyclic data usage  Output byte Input byte Input byte Input byte One measured value: 5 bytes Two measured values: 10 bytes Register operating mode: 1 bytes Reset function due to metering. 1 bytes PROFIBUS PA Profile for Process Control Devices Version 3.0, class B  Function blocks Analog input Adaptation to customer-specific process variables Electrical damping Simulation function Limit monitoring One upper and lower warning limit and one alarm limit respectively  Register (totalizer)  One upper and lower warning limit and one alarm limit respectively  Physical block Transducer blocks Pressure transducer block Monitoring of sensor limits Pransducer block "Electronic temperature"  Input / Output  Awailable  Nax. 31 nodes  Available  Transducer block "Electronic temperature"		230 1100 O
Software for computer  PROFIBUS PA communication  Simultaneous communication with master class 2 (max.)  The address can be set using  One measured value: 5 bytes Two measured values: 10 bytes  Input byte  Input byte  One measured values: 10 bytes Register operating mode: 1 bytes Reset function due to metering. 1 bytes Reset function function 1 cess Control Devices Version 3.0, class B  Function blocks  Analog input  Adaptation to customer-specific process variables  Electrical damping Simulation function  Linearly rising or falling characteristic  Input /Output  One upper and lower warning limit and one alarm limit respectively  Register (totalizer)  Can be reset and preset Optional direction of counting Simulation function of the register output  Limit monitoring  One upper and lower warning limit and one alarm limit respectively  Physical block  Transducer blocks  Pressure transducer block  Monitoring of sensor limits  Specification of a container characteristic with  Characteristic curve  Simulation function  Transducer block "Electronic temperature"		
PROFIBUS PA communication  Simultaneous communication with master class 2 (max.)  The address can be set using  Output byte  One measured value: 5 bytes Two measured values: 10 bytes Register operating mode: 1 bytes Reset function due to metering. 1 bytes PROFIBUS PA Profile for Process Control Devices Version 3.0, class B  Function blocks  Analog input  Adaptation to customer-specific process variables Electrical damping Simulation function Limit monitoring  Register (totalizer)  Register (totalizer)  Can be reset and preset Optional direction of counting Simulation function of the register output  Limit monitoring  Physical block Monitoring of sensor limits  Sepcification of a container characteristic with Characteristic curve Simulation function Transducer block "Electronic temperature"  Available		
Simultaneous communication with master class 2 (max.)  The address can be set using  Configuration tool Local operation (standard setting Address 126)  Cyclic data usage  Output byte  One measured value: 5 bytes Two measured values: 10 bytes  Register operating mode: 1 bytes Reset function due to metering. 1 bytes Reset function due to metering. 1 bytes  PROFIBUS PA Profile for Process Control Devices Version 3.0, class B  Function blocks  Analog input  Adaptation to customer-specific process variables Electrical damping Simulation function Limit monitoring  Register (totalizer)  Register (totalizer)  Can be reset and preset Optional direction of counting Simulation function of the register output  Register (totalizer)  Physical block  Pressure transducer block Monitoring of sensor limits Specification of a container characteristic with Characteristic curve Simulation function Transducer block "Electronic temperature"  Ventage of the set using Configuration tool Local operation (standard setting Address 126)  Configuration tool Local operation (standard setting Address 126)  Cone measured value: 5 bytes Two measured value: 10 bytes Two meas	· · · · · · · · · · · · · · · · · · ·	SIMATIC FOIN
The address can be set using  Configuration tool Local operation (standard setting Address 126)  Cyclic data usage  Output byte  One measured value: 5 bytes Two measured values: 10 bytes  Register operating mode: 1 bytes  Reset function due to metering. 1 bytes  Device profile  PROFIBUS PA Profile for Process Control Devices Version 3.0, class B  Function blocks  Analog input  Adaptation to customer-specific process variables Electrical damping Simulation function Limit monitoring  Register (totalizer)  Register (totalizer)  Can be reset and preset Optional direction of counting Simulation function of the register output  Limit monitoring  Physical block  Pressure transducer block Monitoring of sensor limits Specification of a container characteristic with Characteristic curve Simulation function  Transducer block "Electronic temperature"  Cone measured value: 5 bytes Two measured valu		4
Local operation (standard setting Address 126)  Cyclic data usage  Output byte  One measured value: 5 bytes Two measured values: 10 bytes  Register operating mode: 1 bytes Reset function due to metering. 1 bytes  Device profile  PROFIBUS PA Profile for Process Control Devices Version 3.0, class B  Function blocks Analog input Adaptation to customer-specific process variables Electrical damping Simulation function Limit monitoring  Register (totalizer)  Register (totalizer)  Can be reset and preset Optional direction of counting Simulation function of the register output  Limit monitoring  Physical block  Pressure transducer block Monitoring of sensor limits Specification of a container characteristic curve Simulation function  Transducer block "Electronic temperature"	master class 2 (max.)	
Cyclic data usage  Output byte  One measured value: 5 bytes Two measured values: 10 bytes  Register operating mode: 1 bytes Reset function due to metering. 1 bytes PROFIBUS PA Profile for Process Control Devices Version 3.0, class B  Function blocks  Analog input  Adaptation to customer-specific process variables Electrical damping Simulation function Limit monitoring  Register (totalizer)  Can be reset and preset Optional direction of counting Simulation function of the register output  Limit monitoring  Physical block  Pressure transducer block Monitoring of sensor limits Pressure transducer block Monitoring of sensor limits Characteristic curve Simulation function  Transducer block "Electronic temperature"	The address can be set using	
Cyclic data usage  Output byte  One measured value: 5 bytes Two measured values: 10 bytes  Register operating mode: 1 bytes Reset function due to metering. 1 bytes  PROFIBUS PA Profile for Process Control Devices Version 3.0, class B  Function blocks  Analog input  Adaptation to customer-specific process variables Electrical damping Simulation function Limit monitoring  Register (totalizer)  Can be reset and preset Optional direction of counting Simulation function of the register output  Limit monitoring  Physical block  Physical block  Pressure transducer block Monitoring of sensor limits Specification of a container characteristic curve Simulation function Characteristic curve Simulation function Available  Transducer block "Electronic temperature"		•
<ul> <li>Output byte</li> <li>One measured value: 5 bytes         Two measured values: 10 bytes</li> <li>Input byte</li> <li>Register operating mode:         1 bytes         Reset function due to metering.         1 bytes</li> <li>Device profile</li> <li>PROFIBUS PA Profile for Process Control Devices         Version 3.0, class B</li> <li>Analog input         <ul> <li>Adaptation to customer-specific process variables</li> <li>Electrical damping</li> <li>Simulation function</li> <li>Limearly rising or falling characteristic</li> </ul> </li> <li>Electrical damping         <ul> <li>Simulation function</li> <li>Linput /Output</li> </ul> </li> <li>Analog input         <ul> <li>Adaptation to customer-specific process variables</li> <li>Electrical damping</li> <li>Input /Output</li> </ul> </li> <li>Analog input         <ul> <li>Aliently rising or falling characteristic</li> <li>Linearly rising or falling characteristic</li> <li>Plus yising or falling characteristic</li> <li>Can be reset and lower warning limit and one alarm limit respectively</li> </ul> </li> <li>Pressimulation function of the register output</li> <li>Limit monitoring</li> <li>One upper and lower warning limit and one alarm limit respectively</li> <li>Physical block</li> <li>Pressure transducer block</li> <li>Monitoring of sensor limits</li> <li>Specification of a container characteristic with</li> <li>Characteristic curve</li> <li>Simulation function</li> </ul> <li>Transducer block "Electronic temperature"</li>	Cualia data usaga	(standard setting Address 126)
Input byte Input byte Input byte Register operating mode: 1 bytes Reset function due to metering. 1 bytes PROFIBUS PA Profile for Process Control Devices Version 3.0, class B  Function blocks Analog input Adaptation to customer-specific process variables Electrical damping Simulation function Limit monitoring Register (totalizer)  Register (totalizer)  Register (totalizer)  Physical block Physical block Physical block Physical block Pressure transducer block Monitoring of sensor limits Specification of a container characteristic curve Simulation function Characteristic curve Simulation function Available  Transducer block "Electronic temperature"		One management value. E by the
<ul> <li>Input byte         <ul> <li>Register operating mode: 1 bytes</li> <li>Reset function due to metering. 1 bytes</li> </ul> </li> <li>Device profile         <ul> <li>PROFIBUS PA Profile for Process Control Devices Version 3.0, class B</li> </ul> </li> <li>Function blocks         <ul> <li>Analog input</li> <li>Adaptation to customer-specific process variables</li> <li>Electrical damping</li> <li>Simulation function</li> <li>Linearly rising or falling characteristic</li> <li>Input /Output</li> </ul> </li> <li>Limit monitoring         <ul> <li>One upper and lower warning limit and one alarm limit respectively</li> </ul> </li> <li>Register (totalizer)         <ul> <li>Can be reset and preset</li> <li>Optional direction of counting Simulation function of the register output</li> <li>Limit monitoring</li> <li>One upper and lower warning limit and one alarm limit respectively</li> </ul> </li> <li>Physical block         <ul> <li>Pressure transducer blocks</li> <li>Pressure transducer block</li> <li>Monitoring of sensor limits</li> <li>Specification of a container characteristic with</li> <li>Characteristic curve</li> <li>Simulation function</li> </ul> </li> <li>Transducer block "Electronic temperature"</li> </ul>	Output byte	•
Reset function due to metering. 1 bytes  Device profile  PROFIBUS PA Profile for Process Control Devices Version 3.0, class B  Function blocks  • Analog input  - Adaptation to customer-specific process variables  - Electrical damping  - Simulation function  - Limit monitoring  • Register (totalizer)  • Register (totalizer)  - Limit monitoring  - Limit monitoring  - Limit monitoring  - Can be reset and preset Optional direction of counting Simulation function of the register output  - Limit monitoring  - Limit monitoring  - Physical block  - Pressure transducer block  - Monitoring of sensor limits  - Specification of a container characteristic with  - Characteristic curve  - Simulation function  • Transducer block "Electronic temperature"	• Input byte	Register operating mode:
Device profile  Device profile  PROFIBUS PA Profile for Process Control Devices Version 3.0, class B  Function blocks  Analog input  Adaptation to customer-specific process variables  Electrical damping Simulation function  Limit monitoring  Register (totalizer)  Pressure transducer block  Monitoring of sensor limits  Specification of a container characteristic with  Characteristic ourve Simulation function  Available  Transducer block "Electronic temperature"		,
cess Control Devices Version 3.0, class B  Function blocks  • Analog input  - Adaptation to customer-specific process variables  - Electrical damping  - Simulation function  - Limit monitoring  • Register (totalizer)  • Register (totalizer)  • Physical block  Transducer blocks  • Pressure transducer block  - Monitoring of sensor limits  - Specification of a container characteristic with  - Characteristic curve  - Simulation function  - Limer  - Simulation function  - Characteristic curve  - Simulation function  - Characteristic with  - Transducer block "Electronic temperature"  - Adaptation to customer-specific tiener  - Limer  - Simulation function  - Available  - Linear  - Available  - Linear  - Simulation function  - Available		
<ul> <li>Analog input         <ul> <li>Adaptation to customer-specific process variables</li> <li>Electrical damping</li> <li>Simulation function</li> <li>Limearly rising or falling characteristic</li> </ul> </li> <li>Electrical damping         <ul> <li>Simulation function</li> <li>Limit monitoring</li> </ul> </li> <li>Register (totalizer)</li> <li>Can be reset and preset         <ul> <li>Optional direction of counting</li> <li>Simulation function of the register output</li> </ul> </li> <li>Limit monitoring         <ul> <li>One upper and lower warning limit and one alarm limit respectively</li> </ul> </li> <li>Physical block         <ul> <li>Pressure transducer block</li> <li>Monitoring of sensor limits</li> <li>Specification of a container characteristic with</li> <li>Characteristic curve</li> <li>Simulation function</li> </ul> </li> <li>Transducer block "Electronic temperature"</li> </ul>	Device profile	cess Control Devices
- Adaptation to customer-specific process variables  - Electrical damping  - Simulation function - Limit monitoring  - Register (totalizer)  - Register (totalizer)  - Limit monitoring  - Limit monitoring  - Can be reset and preset Optional direction of counting Simulation function of the register output  - Limit monitoring  - Limit monitoring  - Limit monitoring  - Physical block  - Pressure transducer block - Monitoring of sensor limits - Specification of a container characteristic with - Characteristic curve - Simulation function - Transducer block "Electronic temperature"  - Linear Linear Linear Linear Linear - Available	Function blocks	2
ic process variables  - Electrical damping  - Simulation function  - Limit monitoring  - Register (totalizer)  - Register (totalizer)  - Can be reset and preset Optional direction of counting Simulation function of the register output  - Limit monitoring  - Limit monitoring  - Limit monitoring  - Limit monitoring  - Physical block  - Physical block  - Monitoring of sensor limits - Specification of a container characteristic with - Characteristic curve - Simulation function  - Simulation function  - Max. 31 nodes  - Available  - Transducer block "Electronic temperature"	Analog input	
- Simulation function - Limit monitoring  One upper and lower warning limit and one alarm limit respectively  Register (totalizer)  Can be reset and preset Optional direction of counting Simulation function of the register output  - Limit monitoring  One upper and lower warning limit and one alarm limit respectively  Physical block  Physical block  Transducer blocks  Pressure transducer block  Monitoring of sensor limits - Specification of a container characteristic with - Characteristic curve - Simulation function  Transducer block "Electronic temperature"  Available		
- Limit monitoring  One upper and lower warning limit and one alarm limit respectively  Register (totalizer)  Can be reset and preset Optional direction of counting Simulation function of the register output  - Limit monitoring  One upper and lower warning limit and one alarm limit respectively  Physical block  Transducer blocks  Pressure transducer block  Monitoring of sensor limits - Specification of a container characteristic with  Characteristic curve - Simulation function  Transducer block "Electronic temperature"  Available	- Electrical damping	0 100 s adjustable
• Register (totalizer)  • Register (totalizer)  • Register (totalizer)  • Can be reset and preset Optional direction of counting Simulation function of the register output  • Limit monitoring  • One upper and lower warning limit and one alarm limit respectively  • Physical block  • Physical block  • Pressure transducer block  • Monitoring of sensor limits  • Specification of a container characteristic with  • Characteristic curve  • Simulation function  • Transducer block "Electronic temperature"    Imit and one alarm limit respectively    Available	- Simulation function	Input /Output
Optional direction of counting Simulation function of the register output  - Limit monitoring  One upper and lower warning limit and one alarm limit respectively  • Physical block  Transducer blocks  • Pressure transducer block  - Monitoring of sensor limits  - Specification of a container characteristic with  - Characteristic curve  - Simulation function  • Transducer block "Electronic temperature"  One upper and lower warning limit and one alarm limit respectively   Max. 31  Nax. 31 nodes  Available	- Limit monitoring	limit and one alarm limit respec-
Simulation function of the register output  - Limit monitoring  One upper and lower warning limit and one alarm limit respectively  • Physical block  1  Transducer blocks  • Pressure transducer block  - Monitoring of sensor limits  - Specification of a container characteristic with  - Characteristic curve  - Simulation function  • Transducer block "Electronic temperature"	Register (totalizer)	Can be reset and preset
limit and one alarm limit respectively  Physical block  Transducer blocks  Pressure transducer block  Monitoring of sensor limits  Specification of a container characteristic with  Characteristic curve  Simulation function  Transducer block "Electronic temperature"		Simulation function of the regis-
Transducer blocks  Pressure transducer block  Monitoring of sensor limits  Specification of a container characteristic with  Characteristic curve  Simulation function  Transducer block "Electronic temperature"	- Limit monitoring	limit and one alarm limit respec-
<ul> <li>Pressure transducer block</li> <li>Monitoring of sensor limits</li> <li>Specification of a container characteristic with</li> <li>Characteristic curve</li> <li>Simulation function</li> <li>Transducer block "Electronic temperature"</li> </ul>	Physical block	1
<ul> <li>Monitoring of sensor limits</li> <li>Specification of a container characteristic with</li> <li>Characteristic curve</li> <li>Simulation function</li> <li>Transducer block "Electronic temperature"</li> </ul>	Transducer blocks	2
- Specification of a container characteristic with  - Characteristic curve Linear  - Simulation function Available  • Transducer block "Electronic temperature"	Pressure transducer block	
characteristic with  - Characteristic curve  - Simulation function  • Transducer block "Electronic temperature"	- Monitoring of sensor limits	Yes
<ul> <li>Simulation function Available</li> <li>Transducer block "Electronic temperature"</li> </ul>		Max. 31 nodes
Transducer block "Electronic temperature"	- Characteristic curve	Linear
temperature"	- Simulation function	Available
	·	Available

FOUNDATION Fieldbus communication	
Function blocks	3 function blocks analog input, 1 function block PID
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	Output/input (can be locked within the device with a bridge)
- Failure mode	parameterizable (last good value, substitute value, incorrect value)
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respectively
<ul> <li>Square-rooted characteristic for flow measurement</li> </ul>	Yes
• PID	Standard FOUNDATION Field-bus function block
<ul> <li>Physical block</li> </ul>	1 resource block
Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block LCD
Pressure transducer block	
<ul> <li>Can be calibrated by applying two pressures</li> </ul>	Yes
- Monitoring of sensor limits	Yes
<ul> <li>Simulation function: Measured pressure value, sensor tem- perature and electronics tem- perature</li> </ul>	Constant value or over parameterizable ramp function

Pressure transmitters for gauge pressure for the paper industry

# SITRANS P300 with PMC connection

Selection and Ordering		Д	rtic	le	No		
<b>SITRANS P300 pressu connection</b> , single charplate inscription in Engli							
with 4 20 mA / HART	•	7	М	<b>-</b> 8	1 2	3 -	
with PROFIBUS PA		7	М	<b>-</b> 8	1 2	4 -	
with FOUNDATION Fie	dbus (FF)	7	MI	F 8	1 2	5 -	
7 Click on the Article N     tion in the PIA Life Cy	o. for the online configura-	-		1	-		
Measuring cell filling	Measuring cell cleaning	١.					
Silicone oil Inert liquid	normal Cleanliness level 2 to DIN 25410	3					
Measuring span		1					
1 bar <sup>1)</sup>	(14.5 psi)	ı	В				
4 bar	(58 psi)	ı	С				
16 bar	(232 psi)		D				
Wetted parts materials		ı					
		ı					
Hastelloy	Stainless steel		E	3			
real diaphragm Measuring cell dastelloy Stainless steel  rocess connection  PMC Style Standard: Thread 1½"  PMC Style Minibolt: front-flush 1" (minimum measuring span: 500 mbar (7.25 psi), not available with 1-bar-measuring cell (Option B))  lon-wetted parts materials  Stainless steel, deep-drawn and electrolytically polished  rersion		_		3	4		
·							
Version • Standard versions						1	
Explosion protection		ı					
<ul><li>None</li><li>With ATEX, Type of pro</li></ul>	ntection:					Α	
- "Intrinsic safety (Ex is						В	
• Zone 20/21/22 <sup>2)</sup>	,	ı				С	
<ul> <li>Ex nA/nL (Zone 2)<sup>3)</sup></li> </ul>		ı				E	
• With FM + CSA, Type							
- "Intrinsic Safe (is)" (p	<u> </u>					M	
Electrical connection/o	_;	ı				١.	
<ul> <li>Screwed gland M20 x</li> <li>Screwed gland M20 x</li> </ul>						A B	
<ul> <li>Screwed gland M20 x</li> <li>Screwed gland M20 x</li> </ul>	,					C	
<ul> <li>Device plug M12 (stail</li> </ul>						G	
without cable socket)							
<ul> <li>½-14 NPT metal threa</li> <li>½-14 NPT stainless ste</li> </ul>						H J	
▼ 72-14 INF EStairliess Ste	eerulleau~/					J	

Selection and Ordering data	Article No.
SITRANS P300 pressure transmitters with PMC connection, single chamber enclosure, rating plate inscription in English	
with 4 20 mA / HART	7MF8123-
with PROFIBUS PA	7 M F 8 1 2 4 -
with FOUNDATION Fieldbus (FF)	7 M F 8 1 2 5 -
Display	
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
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

- 1) Only with "Standard" process connection"
- 2) Not in conjunction with electrical connection option A.
- 3) Only available together with electrical connection options B, C or G.
- 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	1	1	1
Rating plate inscription				
<ul><li>(instead of English)</li><li>German</li><li>French</li></ul>	B10 B12	<b>*</b>	<b>✓</b>	<b>√</b>
Spanish	B13	✓	<b>√</b>	✓
• Italian	B14	✓	✓	✓
<b>English rating plate</b> Pressure units in inH <sub>2</sub> 0 and/or psi	B21	<b>√</b>	✓	✓
Quality test certificate, 5-point factory calibration (IEC 60770-2)	C11	✓	✓	1
Inspection certificate 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	✓	✓	✓
Degree of protection IP65/IP68 (only for M20x1.5 and ½-14 NPT)	D12	✓	✓	✓
Mounting • Weldable sockets for standard 1½" threaded connection	P01	<b>√</b>	1	✓
• Weldable socket for minibolt connection 1" (incl. screw 5/16-18 UNC-2B and washer)	P02	1	1	1

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)	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	✓		
Max. 8 char., specify in plain text: Y17:				
Setting of pressure indication in pressure units	Y21	✓	✓	✓
Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi, Note: The following pressure units can be selected:				
bar, mbar, mm H <sub>2</sub> O <sup>*)</sup> , inH <sub>2</sub> O <sup>*)</sup> , ftH <sub>2</sub> O <sup>*)</sup> , mmHG, inHG, psi, Pa, kPa, MPa, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , Torr, ATM or % *) ref. temperature 20 °C				
Setting of pressure indication in non-pressure units <sup>2)</sup>	Y22 +	1		
Specify in plain text: Y22: up to I, m³, m, USg, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	Y01			
Preset bus address possible between 1 and 126 Specify in plain text: Y25:	Y25		✓	✓

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

<sup>✓ =</sup> available

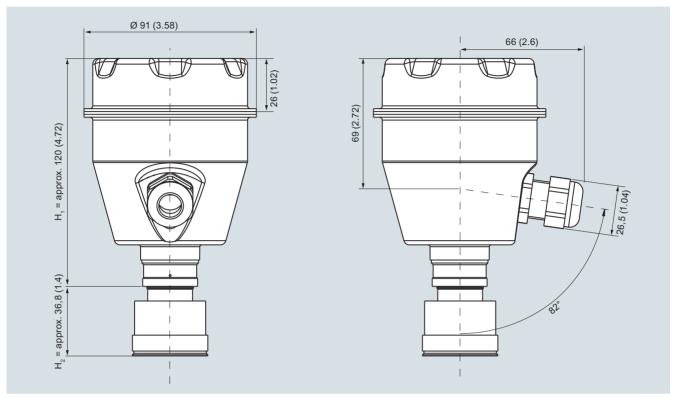
<sup>1)</sup> Measuring accuracies for PROFIBUS PA transmitters with Option Y01 are calculated in the same way as for HART devices.

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

Pressure transmitters for gauge pressure for the paper industry

### SITRANS P300 with PMC connection

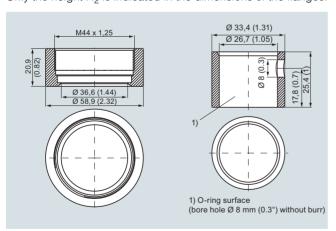
# Dimensional drawings



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

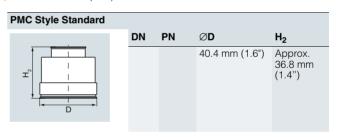
The diagram shows a SITRANS P300 with an example of a flange. In this drawing the height is subdivided into  $H_1$  and  $H_2$ .

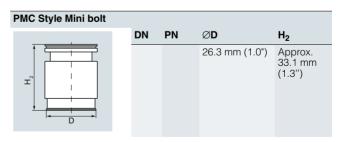
 $H_1$  = Height of the SITRANS P300 up to a defined cross-section  $H_2$  = Height of the flange up to this defined cross-section Only the height  $H_2$  is indicated in the dimensions of the flanges.



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

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





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 measuring 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.

Measuring 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.

Measuring 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  $q \sim \sqrt{\Delta p}$  (together with a primary differential pressure transducer (see section "Flow meters"))

Measuring 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

Measuring span (infinitely adjustable)

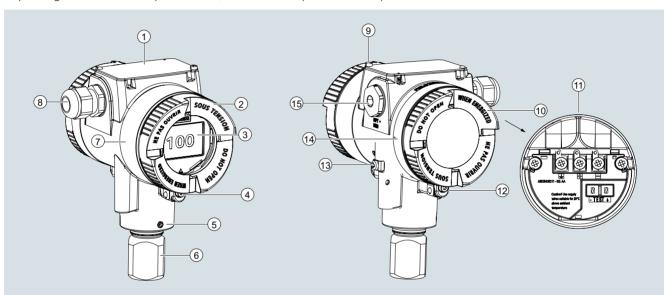
• For SITRANS P320/P420 with HART: 25 mbar to 5 bar (0.363 to 72.5 psi)

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
- Process connection
- Approval label with approval information
- (8) Cable inlet, optionally with cable gland

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

#### Device front view

- · The electronics enclosure is made of die cast aluminum or precision cast stainless steel.
- The enclosure 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 screw (5).
- 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

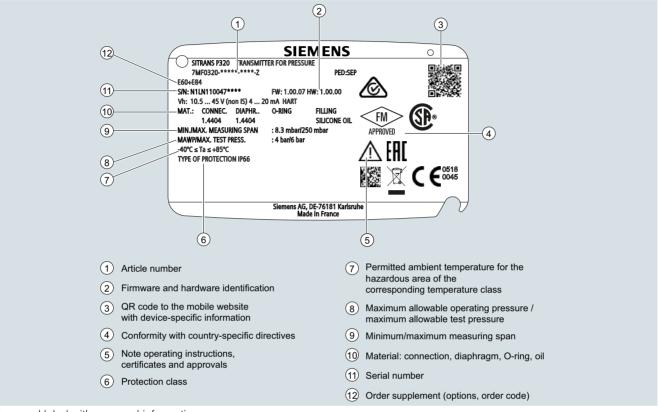
for applications with advanced requirements (Advanced) SITRANS P320/P420

#### **Technical description**

#### Nameplates

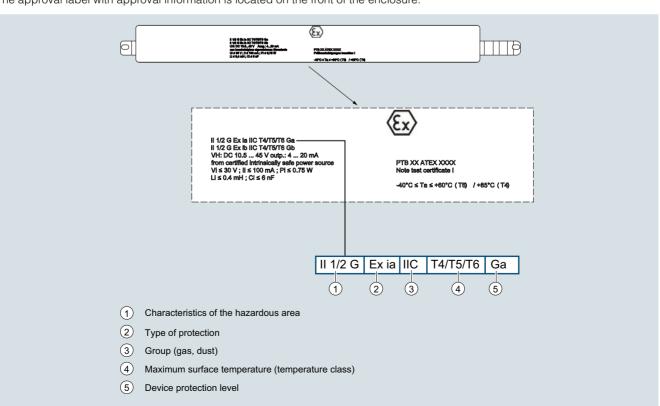
#### Nameplate

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

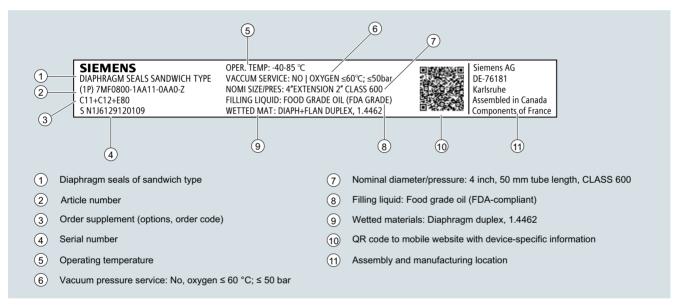
#### Measuring point label

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, measure- ment type	Х	Х	Х
Lower range value/ upper range value	x	х	X
Lower range value/ upper range value	x	х	X
Electrical damping	×	X	x
Zero adjustment	×	X	x
Fault current	x	X	x
Saturation limits	x	X	x
Scaling of the display	x	X	x
Characteristic selection	X	X	Х
Temperature unit	x	x	х
Key lock	×	x	x
Change user pin	x	x	х
Functional safety	×	x	x
Loop test	x	x	х
Start view	X	x	х
Pressure reference	X	x	х
Reset	x	x	х
Diagnostics and trend log			
Min/Max pointer		x	х
Limit monitoring		2	2
Event counter (over- flow/underflow)		2	2
Trend log			2, max. 1 500 values
Diagnostic log		x	х
Parameters change log			х

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 pressure	e (pressure series)					
nput						
Measured variable	Gauge pressure					
range, max. permissible operating pressure (in	Measuring span	Max. permissible operating pressure MAWP (PS)	Maximum permissible test pressure			
accordance with Pressure Equipment Directive 2014/68/EU) and max. test pressure (pursuant to	8.3 250 mbar	3.3 250 mbar 4 bar 6 bar				
IN 16086) (for oxygen measurement, max.	0.83 25 kPa	0.4 MPa	0.6 MPa			
00 bar/10 MPa/1450 psi and 60 °C (140 °F) ambient emperature/temperature of medium)	0.12 3.6 psi	58 psi	87 psi			
	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 11603 psi	80 MPa 11603 psi			
	102 10153 psi	1 1003 psi	1 1003 psi			
		asuring cells, the lower measuring lin -resistant up to 30 mbar a/3 kPa a/0.				
	30 mbar a/3 kPa a/0.44 psi a	•	·			
ū .	30 mbar a/3 kPa a/0.44 psi a					
,	100 mbar a/10 kPa a/1.45 psi a	"	00 L (40 MD /4450 ' 1000			
	(140 °F) ambient temperature/tei	an (for oxygen measurement max. 10 mperature of medium)	00 bar/10 MPa/ 1450 psi and 60 °			
	Between the measuring limits (in	•				
Output	HART					
utput signal	4 20 mA					
, 3	3.55 mA, factory preset to 3.8 m.	A				
	22.8 mA, factory-set to 20.5 mA $$					
Ripple (without HART communication)	$I_{pp} \le 0.5\%$ of max. output curren	t				
djustable damping	0 100 s, continuously adjustal	ole over remote operation				
	0 100 s, in increments of 0.1 s	s, adjustable over display				
	3.55 22.8 mA	0.55 (A)				
-	3.55 22.8 mA (factory preset t	(0 3.55 mA)				
	Resistor R [ $\Omega$ ] R = (U <sub>H</sub> - 10.5 V)/22.8 mA,					
Without HART communication	4: Power supply in V = 230 1100 Ω (HART communicator (handheld))					
Without HART communication With HART communication		, ,,				
Without HART communication With HART communication haracteristic curve	R = 230 1100 $\Omega$ (HART comm R = 230 500 $\Omega$ (SIMATIC PDM • Linearly increasing or linearly of	1)	or differential pressure and flow)			
Without HART communication With HART communication Characteristic curve	R = 230 1100 $\Omega$ (HART comm R = 230 500 $\Omega$ (SIMATIC PDM • Linearly increasing or linearly of	1) decreasing	or differential pressure and flow)			

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)

Me	eas	urii	ηg	acc	cur	асу
----	-----	------	----	-----	-----	-----

Reference conditions

- According to EN 60770-1
- Rising characteristic curve
- Lower range 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 hys-

teresis and repeatability

Measuring span ratio r (spread, Turn-Down)

• 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

r ≤ 1.25:

≤ 0.075% (SITRANS P320)

r = max. measuring span/set measuring span and nominal measuring range

≤ 0.065% (SITRANS P420)

1.25 < r ≤ 30: r < 5:  $\leq$  (0.008 · r + 0.055)%  $\leq$  0.065% (SITRANS P320)

5 < r ≤ 100:

 $\leq$  0.04% (SITRANS P420)  $\leq$  (0.004 · r + 0.045)%

0 < 1 \( \) 100.

≤ 0.075% (SITRANS P320)

r ≤ 3: 3 < r ≤ 100:

≤ (0.005 · r + 0.05)% (SITRANS P320)

r ≤ 5:

≤ 0.075% (SITRANS P420)

5 < r ≤ 100:

≤ (0.005 · r + 0.05)% (SITRANS P420)

Influence of ambient temperature in % 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

700 bai/70 Wil a/10 102 pci

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

250 mbar/25 kPa/3.6 psi1 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

Step response time T<sub>63</sub> (without electrical damping)

Effect of mounting position (in pressure per change of angle)

Effect of auxiliary power (in % per voltage change)

 $\leq (0.16 \cdot r + 0.1)\%$  $\leq (0.05 \cdot r + 0.1)\%$ 

≤ (0.025 · r + 0.125)%

≤ (0.08 · r + 0.16)%

 $\leq$  (0.25 · r)% per year In 5 years  $\leq$  (0.25 · r)% In 10 years  $\leq$  (0.35 · r)% In 5 years  $\leq$  (0.125 · r)%

In 10 years  $\leq$  (0.15 · r)% In 5 years  $\leq$  (0.25 · r)%

In 10 years  $\leq$  (0.35 · r)%

≤ 0.05 mbar/0.005 kPa/0.000725 psi per 10° incline

(zero point correction is possible with position error compensation)

0.005% per 1 V

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)
Operating conditions	
Temperature of medium	
Measuring cell with silicone oil filling	-40 +100 °C (-40 +212 °F)
Measuring cell with inert oil	
- 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 400 bar/40 MPa/5802 psi	-20 +100 °C (-4 +212 °F)
700 bar/70 MPa/10152 psi	
<ul> <li>Measuring cell with FDA-compliant oil</li> </ul>	-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)
<ul> <li>Measuring cell with FDA-compliant oil</li> <li>Display</li> </ul>	-10 +85°C (14 +185°F) -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
Degree of protection	
- According to IEC 60529	IP66, IP68
<ul><li>According to NEMA 250</li><li>Electromagnetic compatibility</li></ul>	Type 4X
- 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
	Approx. 4.2 kg (9.25 lb) for stainless steel enclosure
Material	
<ul> <li>Wetted parts materials</li> </ul>	
- 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
<ul><li>Seal diaphragm</li><li>Non-wetted parts materials</li></ul>	Stainless steel, material no. 1.4404/316L or Alloy C276, material no. 2.4819
- Electronics enclosure	• Low-copper die-cast aluminum GD-AlSi 12 or stainless steel precision casting, mat. no. 1.4409/ CF-3M
	Standard: Powder coating with polyurethane     Online: 2 coats 1 coats 1 coats 2 coats 2 coats 2 coats 3
	Option: 2 coats: Coat 1: epoxy-based; coat 2: Polyurethane  • 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
	<ul> <li>Female thread ½-14 NPT</li> <li>Male thread M20 x 1.5 and ½-14 NPT</li> </ul>
	Oval flange (PN 160 (MWP 2320 psi g)) with fastening screw thread:
	<ul> <li>7/16-20 UNF according to EN 61518</li> <li>M10 according to DIN 19213</li> </ul>
	Oval flange (PN 420 (MWP 2320 psi g)) with fastening screw thread:
	- 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
	<ul> <li>½-14 NPT</li> <li>Device plug Han 7D/Han 8D<sup>1)</sup></li> </ul>
	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)

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  • 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	II 1/2 G Ex ia/ib IIC T4/T6 Ga/Gb
- Permissible ambient temperature	-40 +80 °C (-40 +176 °F) temperature class T4
- Permissible temperature of measuring medium	-40 +55 °C (-40 +131 °F) temperature class T6 -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 • Flameproof enclosure "d"	$L_i = 0.24 \mu H/C_i = 3.29 \text{ nF}$
- 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     Permissible ambient temperature	Ex II 2D Ex tb IIIC T120 °C Db Ex II 3D Ex tc IIIC T120 °C Dc -40 +80 °C (-40 +176 °F)
<ul> <li>Permissible temperature of measuring medium</li> <li>Max. surface temperature</li> <li>Connection</li> </ul>	-40 +100 °C (-40 +212 °F) 120 °C (248 °F) To a circuit with the operating values:
Dust explosion protection for zones 20, 21, 22     Marking	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
<ul><li>Permissible ambient temperature</li><li>Permissible temperature of measuring medium</li><li>Connection</li></ul>	-40 +80 °C (-40 +176 °F) -40 +100 °C (-40 +212 °F) To certified intrinsically safe circuits with the peak values:
- Effective internal inductance/capacitance	$\begin{array}{l} U_i = 30 \text{ V, } I_i = 101 \text{ mA, } P_i = 760 \text{ mW} \\ U_i = 29 \text{ V, } I_i = 110 \text{ mA, } P_i = 800 \text{ mW} \\ L_i = 0.24 \ \mu\text{H/C}_i = 3.29 \text{ nF} \end{array}$

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)

• Type of protection for Zone 2

- Marking
- Permissible ambient temperature "ec

- Permissible ambient temperature "ec"

- Permissible temperature of measuring medium

- "ec" connection

• Explosion protection acc. to FM

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

• Explosion protection according to CSA

- Marking (XP/DIP) or (IS)

- Marking (XP/DIP) or (IS)

NAMUR recommendations

NE 06NE 21NE 23NE 43

• NE 43 • NE 53 • NE 80 • NE 105

• NE 107 • NE 131 Ex II 3G Ex ec IIC T4/T6 Gc

-40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +40 °C (-40 ... +104 °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:  $U_n = 10.5$  to 30 V, 4 ... 20 mA

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

<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

	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		
nert liquid			3		
Neobee oil		4	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/ <sub>16</sub> -20 UNF (IEC 61518)			G	i	
Oval flange, mounting thread: M10 (DIN 19213)			Н	4	
Oval flange, mounting thread: M12 (DIN 19213)			J		
/ersion 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					Α
ntrinsic safety					В
Flameproof enclosure					С
Flameproof enclosure, intrinsic safety					D
Oust 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 DCable gland must be ordered separately as option (Axx)ivision)					т
Electrical connections/cable entries					
Fhread 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)					9
With display (cover closed)					
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

Options	Order code	Options	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)	D30
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)	
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		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
Cable entry/connector mounting		IECEx (Worldwide)	E23
2x sealing plugs M20 x 1.5, IP66/68 installed on both	A90	EACEx (GOST-R, -K, -B) INMETRO (Brazil)	E24 E25
sides		KCs (Korea)	E26
2x sealing plugs ½-14 NPT, IP66/68 installed on both sides	A91	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	1.00	ATEX (Europe) and IECEx (Worldwide)	E47
(standard labeling: English, unit bar)		CSA (Canada) and FM (USA)	E48
German (bar)	B11	ATEX (Europe) and IECEx (Worldwide) + CSA (Canada) and FM (USA)	E49
French (bar)	B12	Marine approvals	
Spanish (bar)	B13	DNV-GL (Det Norske Veritas/Germanischer Lloyd)	E50
Italian (bar)	B14	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	
Inspection certificate (EN 10204-3.1) - Material of pressurized and wetted parts	C12	CRN approval Canada (Canadian Registration Number)  Special approvals	E60
Factory certificate - NACE (MR 0103-2012 and MR 0175-2009))	C13	Oxygen application (with inert liquid, max. 100 bar (1 450 psi) at 60° C (140 °F))	E80
Factory certificate (EN 10204-2.2) - Wetted parts	C14	Dual seal	E81
Inspection certificate (EN 10204-3.1) - PMI test of pressurized and wetted parts	C15	WRC / WRAS (drinking water); only with pressure cap O-rings made of EPDM	E83
Certificates for functional safety		NSF61 (drinking water)	E84
Functional safety (IEC 61508) - SIL2/3	C20	ACS (drinking water)	E85

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

# for gauge pressure (pressure series)

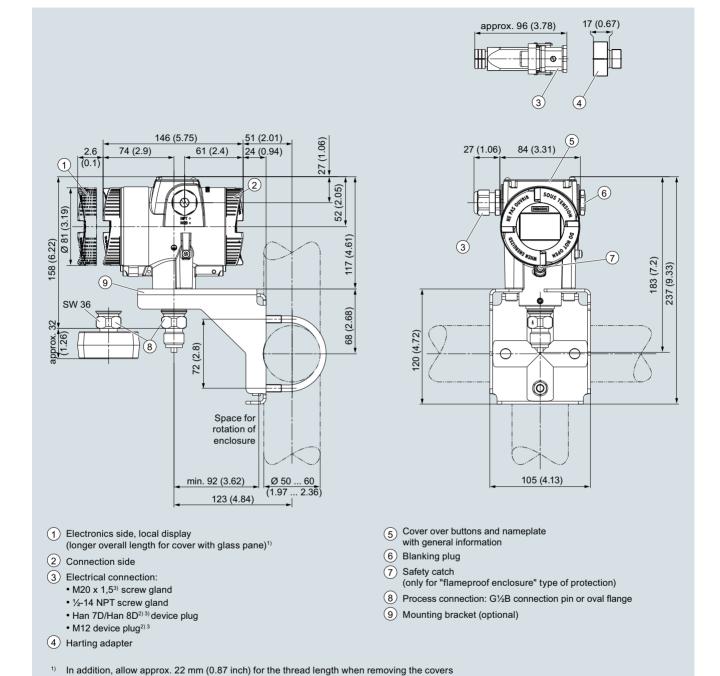
Options	Order code
Append "-Z" to Article No., add order code and plain text or entry from drop-down list.	
Mounting bracket	
Steel, galvanized	H01
Stainless steel 1.4301/304	H02
Stainless steel 1.4404/316L	H03
Flange connections with flange EN 1092-1	
With flange adapter G½ Form B1  • DN 25 PN 40, stainless 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 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 in factory certificate (EN 10204-2.2)	T02
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 factory certificate (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 factory certificate (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 factory certificate (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 Lower range value (max. 5 characters), upper range 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).	Y01
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), mH <sub>2</sub> 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 (on stainless steel plate and device parameters, max. 32 characters) Input field: Free text, max. 32 characters	Y16
TAG short	Y17
(device parameters, max. 8 characters)	
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, m³, I, hI, in³, ft³, yd³, gal, gal (UK), bu, bbl, bbl (US), SCF, Nm³, 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 Input field: max. 4 characters and only natural numbers	Y99
from 0 9999	

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

for gauge pressure (pressure series)

# Dimensional drawings



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

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)

Technical specifications			
SITRANS P320 / SITRANS P420 for gauge pressur	e (differential pressure series)		
Input			
Measured variable	Gauge pressure		
Measuring span (infinitely adjustable) or measuring range and maximum operating pressure (pursuant to	Measuring span	Max. permissible operating pressure MAWP (PS)	Maximum permissible test pressure
range and maximum operating pressure (pursuant to Pressure Equipment Directive 2014/68/EU)	1 20 mbar 0.1 2 kPa 0.4019 8.037 inH <sub>2</sub> O 1 60 mbar 0.1 6 kPa 0.4019 24.11 inH <sub>2</sub> O 2.5 250 mbar 0.2 25 kPa 1.005 100.5 inH <sub>2</sub> O 6 600 mbar 0.6 60 kPa 2.41 241.1 inH <sub>2</sub> O 16 1600 mbar 1.6 160 kPa 6.43 643 inH <sub>2</sub> O 50 5000 mbar 5 500 kPa 20.09 2009 inH <sub>2</sub> O 0.3 30 bar 0.03 3 MPa 4.35 435 psi	160 bar 16 MPa 2320 psi	240 bar 24 MPa 3481 psi
	5 100 bar 0.5 10 MPa	160 bar 16 MPa	240 bar 24 MPa
M	76.9 1450 psi	2320 psi	3481 psi
Measuring limits  Low measuring limit  Measuring cell with silicone oil filling  Measuring cell with inert oil  Measuring cell with FDA-compliant oil  Upper measuring limit  Lower range value	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% of the max. measuring span (for oxygen measurement max. 100 bar/10 MPa/ 1450 psi and 60 °C (140 °F) ambient temperature/temperature of medium) Between the measuring limits (infinitely 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 $I_{pp} \leq$ 0.5% of max. output current		
Adjustable damping     Current transmitter     Failure signal	0 100 s, continuously adjustable over remote operation 0 100 s, in increments of 0.1 s, adjustable over display 3.55 22.8 mA 3.55 22.8 mA		
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		

 $R = 230 \dots 1100 \Omega$  (HART communicator (handheld))

Linearly increasing or linearly decreasing
Linear increase or decrease or according to the square root (only for differential pressure and flow)

 $R = 230 \dots 500 \Omega$  (SIMATIC PDM)

• With HART communication

Characteristic curve

Physical bus Polarity-independent

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 pressur	e (differential pressure series)		
Measuring accuracy			
Reference conditions	<ul><li>According to EN 60770-1</li><li>Rising characteristic curve</li><li>Lower range value 0 bar/kPa/psi</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: 5 < r ≤ 20:	≤ 0.075% ≤ (0.005 · r + 0.05)%	
- 60 mbar/6 kPa/24.09 inH <sub>2</sub> O	r ≤ 5: 5 < r ≤ 60:	≤ 0.075% ≤ (0.005 · r + 0.05)%	
<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>	r ≤ 5: 5 < r ≤ 100:	≤ 0.065% (SITRANS P320) ≤ 0.04% (SITRANS P420) ≤ (0.004 · r + 0.045) %	
• 100 bar/10 MPa/1450 psi	r < 10: 10 < r < 30:	= 0.1% = 0.2%	
Influence of ambient temperature as % per 28 °C (50 °F))			
<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> <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>	$\leq$ (0.15 · r + 0.1)% $\leq$ (0.075 · r + 0.1)% $\leq$ (0.025 · r + 0.125)% (SITRANS P320)		
<ul> <li>250 mbar/25 kPa/3.6 psi 5000 mbar/500 kPa/2008 inH<sub>2</sub>O</li> <li>600 mbar/60 kPa/240.9 inH<sub>2</sub>O</li> </ul>	$\leq$ (0.025 · r + 0.0625)% (SITRANS $\leq$ (0.0125 · r + 0.0625)% (SITRANS	·	
1600 mbar/160 kPa/642.4 inH <sub>2</sub> O 30 bar/3 MPa/435 psi	, , ,	51 <del>42</del> 0)	
• 100 bar/10 MPa/1450 psi	0.08 · r + 0.16%		
Long-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 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</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)%		
<ul> <li>100 bar/10 MPa/1450 psi</li> </ul>	In 5 years ≤ (0.25 · r)%		
Step response time T <sub>63</sub> (without electrical damping) • 20 mbar/2 kPa/8.031 inH <sub>2</sub> O • 60 mbar/6 kPa/24.09 inH <sub>2</sub> O • 250 mbar/25 kPa/3.6 psi 600 mbar/60 kPa/240.9 inH <sub>2</sub> O 1600 mbar/160 kPa/642.4 inH <sub>2</sub> O 500 mbar/500 kPa/2008 inH <sub>2</sub> O	Approx. 0.160 s Approx. 0.150 s Approx. 0.135 s		
30 bar/3 MPa/435 psi • 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 10° incline (zero offset is possible with position error compensation)		
Effect of auxiliary power (in % per voltage change)	0.005% per 1 V		
Operating 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)		
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	-40 +85 °C (-4 +185 °F)  Observe the temperature class in -40 +85 °C (-40 +185 °F) -40 +85 °C (-40 +185 °F) -20 +80 °C (-4 +176 °F) -50 +85 °C (-58 +185 °F) 4K4H	areas subject to explosion hazard.	
- According to IEC 60529	IP66, IP68		
<ul><li>According to NEMA 250</li><li>Electromagnetic compatibility</li></ul>	Type 4X		
- Emitted interference and interference immunity	According to IEC 61326 and NAM	UR NE 21	

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 pressur	re (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	0.11		
- 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			
- Electronics enclosure	<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		
D (1	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	14-18 NPT female thread and flat connection with 7/16-20 UNF fastening screw thread in accordance		
riocess connection	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	<ul><li>With or without integrated display (optional)</li><li>Cover with inspection window (optional)</li></ul>		
Auxiliary power U <sub>H</sub>	от от таке (трания)		
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			
<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	Ton S. W. To de occor (option els)		
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 +10 °C (-40 +156 °F) temperature class T4 -40 +70 °C (-40 +158 °F) temperature class T4		
- 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		
- Permissible temperature of measuring medium	-40 +70 °C (-40 +158 °F) temperature class T6 -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:		
	$U_n = 10.5 \text{ to } 45 \text{ V}, 4 \dots 20 \text{ mA}$		

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 explosion protection for zones 21, 22

- Marking - Permissible ambient temperature

- Permissible temperature of measuring medium

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

- Connection

• Dust explosion protection for zones 20, 21, 22

- Marking

- Permissible ambient temperature - Permissible temperature of measuring medium

- Effective internal inductance/capacitance

• Type of protection for Zone 2

- Marking

- Permissible ambient temperature "ec"

- Permissible temperature of measuring medium

- "ec" 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

• NE 06

• NE 21 • NE 23

• NE 43

• NE 53

• NE 80

• NE 105 • NE 107

• NF 131 1) Han 8D is identical to Han 8U

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)

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 -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

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

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

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

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	Article Nic
Dragouse transmitters for gouge processes (differential processes assists)	Article No.
Pressure transmitters for gauge pressure (differential pressure series)	7M50045 5 5 5 5 5 5
SITRANS P320 SITRANS P420	7MF031
✓ Click on the Article no. for the online configuration in the PIA Life Cycle Portal.	710111111111111111111111111111111111111
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)	H H
1 600 mbar (643 inH <sub>2</sub> O)	m 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)	
Oval flange, mounting thread: M10 (PN 160), (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: 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	4
(not in combination with maximum measuring span 20 mbar (0.29 psi) and 60 mbar (0.87 psi))	
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	
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
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	F M
Local operation/display	
Local operation/display Without display (cover closed)	0
	0

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 $\ensuremath{\mathcal{V}}_2\text{-}14$ 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
Inspection certificate (EN 10204-3.1) - Material of pressurized and wetted parts	C12
Factory certificate - NACE (MR 0103-2012 and MR 0175-2009))	C13
Factory certificate (EN 10204-2.2) - Wetted parts	C14
Inspection 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 for applications with advanced requirements (Advanced) SITRANS P320/P420

# for gauge pressure (differential pressure series)

Tor gauge pressure (differential pressure se	ries)
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	J70 J71 J72
<ul> <li>DN 15 PN 40, stainless steel 1.4571/316Ti</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> </ul>	J78 J73 J74
<ul> <li>DN 80 PN 40, stainless steel 1.4571/316Ti</li> </ul>	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)	
approved for food) O-ring, process flanges, FFKM (FFPM)	K52
approved for food)	K52 K53 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 factory certificate (EN 10204-2.2)	U01
With mounted valve manifold (3-way) 7MF9411-5BA, PTFE sealing rings, stainless steel screws and pressure test certified in factory certificate (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 factory certificate (EN 10204-2.2)	U03
With mounted valve manifold (5-way) 7MF9411-5CA, PTFE sealing rings, stainless steel screws and pressure test certified in factory certificate (EN 10204-2.2)	U04

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

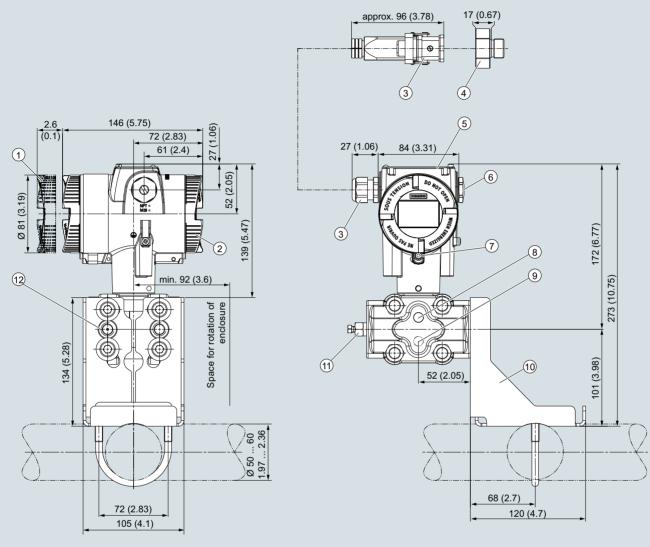
for gauge pressure (differential pressure series)

Options	Order code
Append "-Z" to Article No., add order code and plain text or entry from drop-down list.	
Device settings	
Measuring span Lower range value (max. 5 characters), upper range 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 (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, m³, I, hI, in³, ft³, yd³, gal, gal (UK), bu, bbl, bbl (US), SCF, Nm³, 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.	102
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 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

SITRANS P320 / SITRANS P420 for gauge and abs	solute pressure, with flush-mount	ed diaphragm				
Input of gauge pressure, with flush-mounted dia- phragm						
Measured variable	Gauge pressure					
Measuring span (infinitely adjustable) or measuring range, max. operating pressure and max. test pressure	Measuring span	Max. permissible operating pressure MAWP (PS)  Maximum permissible test pressure				
sure	0.01 1 bar 1 100 kPa 0.15 14.5 psi 0.04 4 bar 4 400 kPa	Refer to the information on the nameplate of the pressure transmitter and the data on the mounting flange <sup>1)</sup>				
	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					
NA	9.1 914 psi					
Measuring limits  Low measuring limit  Measuring cell with silicone oil filling  Measuring cell with inert oil  Measuring cell with FDA-compliant oil  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. measuring span					
Input of absolute pressure, with flush-mounted						
diaphragm	Alexandra management					
Measured variable  Measuring span (infinitely adjustable) or measuring range, max. operating pressure and max. test pres-	Absolute pressure Measuring span	Max. permissible operating pressure MAWP (PS)  Maximum permissible test pressure				
sure	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					
	Depending on the process conne	ction, the measuring span may differ from these values.				
Measuring limits  • Low measuring limit  - Measuring cell with silicone oil filling  • Upper measuring limit	0 bar a/0 kPa a/0 psi a 100% of max. measuring span					
Lower range value	Between the measuring limits (infi	nitely 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 $I_{pp} \le 0.5\%$ of max. output current					
Adjustable damping  Current transmitter Failure signal	0 100 s, continuously adjustable over remote operation 0 100 s, in increments of 0.1 s, adjustable over display 3.55 22.8 mA 3.55 22.8 mA					
	Resistor R [ $\Omega$ ] R = (U <sub>H</sub> - 10.5 V)/22.8 mA,					
Load  Without HART communication	U <sub>H</sub> : Power supply in V	$R = 230 \dots 1100 \Omega$ (HART communicator (handheld)) $R = 230 \dots 500 \Omega$ (SIMATIC PDM)				
	$U_H$ : Power supply in V R = 230 1100 $\Omega$ (HART commu					
Without HART communication	$U_{H}$ : Power supply in V R = 230 1100 $\Omega$ (HART commu R = 230 500 $\Omega$ (SIMATIC PDM) • Linearly increasing or linearly de					

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

#### Gauge pressure measuring accuracy, with flush-mounted diaphragm

Reference conditions

- According to EN 60770-1
- · Rising characteristic curve
- Lower range 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

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 r = maximum measuring span/set measuring span or nominal measuring range ≤ 0.075%

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

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

 $\leq (0.08 \cdot r + 0.16)\%$ 

r < 5

Influence of the temperature of medium (in pressure per temperature unit)

• Temperature difference between temperature of medium 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 4 bar/400 kPa/58 psi • 16 bar/1.6 MPa/232 psi 63 bar/6.3 MPa/914 psi In 5 years  $\leq$  (0.25 · r)% In 5 years  $\leq$  (0.125 · r)%

Step response time T<sub>63</sub> (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
  Lower range 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 hys-

teresis and repeatability

r = maximum measuring span/set measuring span or nominal measuring range

≤ 0.4%

Measuring span ratio r (spread, Turn-Down) Linear characteristic

- All measuring cells

r ≤ 10:

≤ 0.2%

10 < r ≤ 30:

Influence of ambient temperature

in % per 28 °C (50 °F) · All measuring cells

 $\leq (0.16 \cdot r + 0.24)\%$ 

Influence of the temperature of medium

(in pressure per temperature unit)

• Temperature difference between temperature of medium 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  $\leq$  (0.25 · r)% < 0.105 s

Step response time  $T_{63}$  (without electrical damping)

Effect of mounting position (in pressure per change

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

1/110

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				
Operating 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			
Measuring cell with inert oil	-20 +100 °C (-4 +212 °F)			
Measuring cell with FDA-compliant oil	-10 +150 °C (14 +302 °F)			
Ambient conditions	Observe the temperature close in cross subject to evaluation hazard			
<ul> <li>Ambient temperature/enclosure</li> <li>Measuring cell with silicone oil filling</li> </ul>	Observe the temperature class in areas subject to explosion hazard.  -40 +85 °C (-40 +185 °F)			
Measuring cell with inert oil     (different pressure classes)	1 bar/100 kPa/14.5 psi -40 +85 °C (-40 +185 °F) 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				
- According to IEC 60529	IP66, IP68			
- According to NEMA 250	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	Obstalland short and 4 4404/0401			
<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	otalilioss steel, material no. 1.4404/010E of Alloy O210, material no. 2.4010			
- Electronics enclosure	<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  • Device plug Han 7D/Han 8D <sup>3)</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	$U_{\text{eff}} \le 1.2 \text{ mV } (0.5 \dots 10 \text{ kHz})$			
Auxiliary power	-			
Separate supply voltage	-			

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 temperature of measuring medium

- "ec" 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:

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

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 2D Ex tb IIIC T120 °C Db Ex II 3D Ex to IIIC T120 °C Do -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 -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

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

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

1/112

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,

• Explosion protection according to CSA

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

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

<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 temperature of medium 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

Selection and ordering data	
	Article No.
Pressure transmitter for gauge and absolute pressure, with flush-mounted diaphragm	
SITRANS P320 for gauge pressure	7MF030
SITRANS P420 for gauge pressure	7MF040
SITRANS P320 for absolute pressure	7MF032
SITRANS P420 for absolute pressure	7MF042
→ 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
Neobee oil	
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	K
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	
Alloy C22/2.4602, alloy C276/2.4819	2
Non-wetted parts materials	
Die-cast aluminum	1 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 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)	
With display (cover with glass pane)	2
The display (2010) Mail glado partoj	

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	7.01
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	A
Stainless steel, without cable socket	A62
Stainless steel, with cable socket	A63
Cable entry/connector mounting	7.00
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
Inspection certificate (EN 10204-3.1) - Material of pressurized and wetted parts	C12
Factory certificate - NACE (MR 0103-2012 and MR 0175-2009))	C13
Factory certificate (EN 10204-2.2) - Wetted parts	C14
Inspection certificate (EN 10204-3.1) - PMI test of pressurized and wetted parts	C15
Certificates for functional safety	
Functional safety (IEC 61508) - SIL2/3	C20

Append "-Z" to Article No., add order code and plain text or entry from drop-down list.  Device options	
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 E48
CSA (Canada) and FM (USA)	
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 and absolute pressure, flush-mounted diaphragm

for gauge and absolute pressure, flush-mo	unted diaphrag
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)  Process flanges, gaskets (instead of standard gas-	E87
kets 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  • DN 50 PN 16	M03
• DN 80 PN 16	M05
• DN 25 PN 40	M10
<ul><li>DN 40 PN 40</li><li>DN 50 PN 40</li></ul>	M12 M13
• DN 80 PN 40	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 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 standard	
Sanitary flange DIN 11851	NOS
<ul><li>with slotted union nut DN 50 PN 25</li><li>with slotted union nut DN 80 PN 25</li></ul>	N03 N05
Tri-Clamp	
• DIN 32676 DN 50 PN 16	N14
<ul> <li>DIN 32676 DN 65 PN 10</li> <li>ISO 2852 2" PN 40</li> </ul>	N15 N22
• ISO 2852 3" PN 40	N23
Aseptic threaded socket	Noo
<ul> <li>DIN 11864-1 Form A DN 50 PN 25</li> <li>DIN 11864-1 Form A DN 65 PN 25</li> </ul>	N33 N34
• DIN 11864-1 Form A DN 80 PN 25	N35
• DIN 11864-1 Form A DN100 PN 25	N36
Aseptic flange with notch  • DIN 11864-2 Form A DN 50 PN 16	N43
• DIN 11864-2 Form A DN 65 PN 16	N44
• DIN 11864-2 Form A DN 80 PN 16	N45
DIN 11864-2 Form A DN100 PN 16     Aseptic clamp with groove	N46
DIN 11864-3 Form A DN 50 PN 25	N53
• DIN 11864-3 Form A DN 65 PN 25	N54
<ul><li>DIN 11864-3 Form A DN 80 PN 16</li><li>DIN 11864-3 Form A DN100 PN 16</li></ul>	N55 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

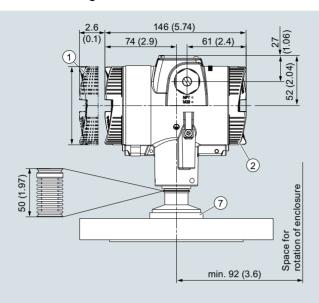
for gauge and absolute pressure, flush-mounted diaphragm

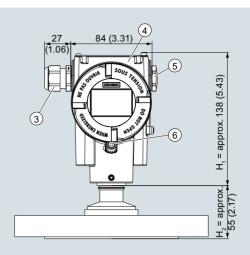
Options	Order code
Append "-Z" to Article No., add order code and plain text or entry from drop-down list.	
Device settings	
Measuring span Lower range value (max. 5 characters), upper range value (max. 5 characters), unit [mbar, bar, kPa, MPa, psi,], example: -0.5 10.5 psi	Y01
Input field 1 and input 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	Y17
(device parameters, max. 8 characters) Input field: Free text, max. 8 characters	
	V04
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, m³, I, hI, in³, ft³, yd³, gal, gal (UK), bu, bbl, bbl (US), SCF, Nm³, 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 $\dots$ 9999	

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

for gauge and absolute pressure, flush-mounted diaphragm

### Dimensional drawings





- 1 Electronics side, local display (longer overall length for cover with glass pane)<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) Cover over buttons and nameplate with general information
- (5) Blanking plug
- 6 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<sub>1</sub> = Height of the SITRANS P320P420 up to a defined cross-section

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

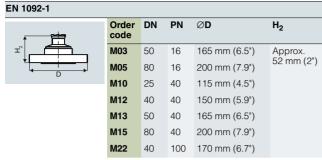
Only the height  $H_2$  is indicated in the dimensions of the flanges.

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

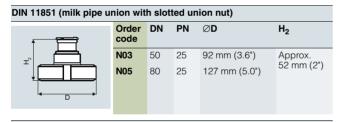


### Flanges according to ASME

#### **ASME B16.5** Order DN Clas ØD code M30 1" 150 110 mm (4.3") Approx 52 mm (2") M31 11/2" 150 125 mm (4.9") M32 2" 150 150 mm (5.9") M33 3" 150 190 mm (7.5") M34 4" 230 mm (9.1") 150 M36 11/2" 300 155 mm (6.1") 2" M37 300 165 mm (6.5") M38 3" 300 210 mm (8.1") M39 4" 255 mm (10.0")

### NuG and pharmaceutical connections

Connections to DIN

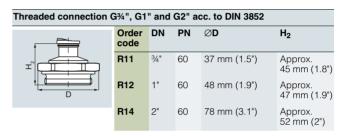


TriClamp according to DIN 32676							
	Order code	DN	PN	ØD	H <sub>2</sub>		
	N14	50	16	64 mm (2.5")	Approx.		
	N15	65	16	91 mm (3.6")	52 mm (2")		
· -	N22	2"	16	64 mm (2.5")	Approx.		
D	N23	3"	10	91 mm (3.6")	52 mm (2")		

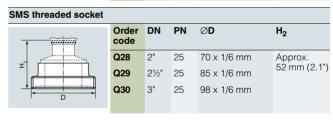
### Other connections

Varivent connection							
	Order code	DN	PN	ØD	H <sub>2</sub>		
T D	P06	40 125	40	84 mm (3.3")	Approx. 52 mm (2")		

Sanitary process connection according to DRD						
	Order code	DN	PN	ØD	H <sub>2</sub>	
I <sup>N</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>		
	Q00	25	40	63 mm (2.5")	Approx. 63 mm (2.5")		
D	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

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

Aseptic flange with notch to DIN 11864-2 Form A						
	Order code	DN	PN	ØD	H <sub>2</sub>	
±	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")		

Aseptic clamp with groove according to DIN 11864-3 Form A						
<del>  ((())</del>	Order code	DN	PN	ØD	H <sub>2</sub>	
	N53	50	25	77.5 (3.1")	Approx.	
Σ I	N54	65	25	91 (3.6")	52 mm (2.1")	
	N55	80	16	106 (4.2")		
D	N56	100	16	130 (5.1")		

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

lechnical specifications						
SITRANS P320 / SITRANS P420 for absolute press	sure (pressure series)					
Input						
Measured variable	Absolute pressure					
Measuring span (infinitely adjustable) or measuring range, max. permissible operating pressure (in	Measuring span	Max. permissible operating pressure MAWP (PS)	Maximum permissible test pressure			
accordance with Pressure Equipment Directive 2014/68/EU) and max. test pressure (pursuant to	8.3 250 mbar a	4 bar a	6 bar a			
DIN 16086)	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			
Low measuring limit     Measuring cell with silicone oil filling     Measuring cell with inert oil	0 mbar a/kPa a/psi a For temperature of medium -20-°C < $\vartheta \le$ +60 °C (-4 °F < $\vartheta \le$ +140 °F) 30 mbar a/3 kPa a/0.44 psi a For temperature of medium 60 °C < $\vartheta \le$ +100 °C (max. 85 °C for mea- 30 mbar a + 20 mbar a · ( $\vartheta$ - suring cell 30 bar) (140 °F < $\vartheta \le$ +212 °F (max. 185 °F for measuring cell 435 psi)) 60 °C)/°C 3 kPa a + 2 kPa a · ( $\vartheta$ - 60 °C)/°C 0.44 psi a + 0.29 psi a · ( $\vartheta$ -					
			140 °F)/°F			
Upper measuring limit	(140 °F) ambient temperature/tem	•	0 bar/10 MPa/ 1450 psi and 60 °C			
Lower range value	Between the measuring limits (infi	nitely 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 o $l_{pp} \le 0.5\%$ of max. output current					
Adjustable damping	0 100 s, continuously adjustab	le 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 (factory preset to 3.55 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	$R = 230 \dots 1100 \Omega$ (HART commu $R = 230 \dots 500 \Omega$ (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)			
Physical bus	-					
Polarity-independent	-					
•						

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) Measuring accuracy Reference conditions • According to EN 60770-1 • Rising characteristic curve Lower range 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) r = maximum measuring span/set measuring span or nominal measuring range • Linear characteristic (all measuring cells) - r≤10 ≤ 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 $\leq (0.15 \cdot r + 0.1)\%$ • 1300 mbar a/130 kPa a/18.8 psi a $\leq (0.08 \cdot r + 0.16)\%$ 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 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 ≤ 0.05 mbar/0.005 kPa/0.000725 psi per 10° incline (zero point correction is possible with position error compensation) of angle) Effect of auxiliary power (in % per voltage change) 0.005% per 1 V **Operating conditions** Temperature of medium -40 ... +100 °C (-40 ... +212 °F) · Measuring cell with silicone oil filling • Measuring cell with inert filling fluid -20 ... +100 °C (-4 ... +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)

- Measuring cell with inert filling fluid -40 ... +85 °C (-40 ... +185 °F)

4K4H

- Display

Climatic class in accordance with IEC 60721-3-4

Degree of protection

• Storage temperature

- According to IEC 60529 IP66, IP68 - According to NEMA 250 Type 4X · Electromagnetic compatibility

- Emitted interference and interference immunity

According to IEC 61326 and NAMUR NE 21

-50 ... +85 °C (-58 ... +185 °F) (with FDA-compliant oil: -20 ... + 85 °C (-4 ... +185 °F))

-20 ... +80 °C (-4 ... +176 °F)

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
3 3	Approx. 4.2 kg (9.25 lb) for stainless steel enclosure
Material	
Wetted parts materials     Process connection     Oval flange     Seal diaphragm     Non-wetted parts materials     Electronics enclosure	Stainless steel, material no. 1.4404/316L or Alloy C22, material no. 2.4602 Stainless steel, mat. no. 1.4404/316L Stainless steel, material no. 1.4404/316L or Alloy C276, material no. 2.4819  • Low-copper die-cast aluminum GD-AlSi 12 or stainless steel precision casting, mat. no. 1.4409/CF-3M
- Mounting bracket	Standard: Powder coating with polyurethane     Option: 2 coats: Coat 1: epoxy-based; coat 2: Polyurethane     Stainless steel type plate (1.4404/316L)  Electrogalvanized steel or stainless steel
-	
Process connection	<ul> <li>Connection shank G1/2A according to DIN EN 837-1</li> <li>Female thread ½-14 NPT</li> <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: <ul> <li>7/16-20 UNF according to EN 61518</li> <li>M10 according to DIN 19213</li> </ul> </li> <li>Oval flange (PN 420 (MWP 2320 psi g)) with fastening screw thread: <ul> <li>7/16-20 UNF according to EN 61518</li> <li>M12 according to DIN 19213</li> </ul> </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  • ½-14 NPT  • Device plug Han 7D/Han 8D <sup>1)</sup>
Displays and controls	Device plug M12
	A love for a secretion discrete and a secret
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	$U_{\text{eff}} \le 1.2 \text{ mV } (0.5 \dots 10 \text{ kHz})$
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 • WRAS (England)	No.: 1903094 (option E83)
<ul><li>ACS (France)</li><li>NSF (USA)</li></ul>	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"	II 1/2 G Ex ia/ib IIC T4/T6 Ga/Gb
<ul><li>Marking</li><li>Permissible ambient temperature</li></ul>	-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} $
<ul> <li>Effective internal inductance/capacitance</li> <li>Flameproof enclosure "d"</li> <li>Marking</li> </ul>	$L_i = 0.24 \mu\text{H/C}_i = 3.29 \text{nF}$ 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: 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 explosion protection for zones 21, 22

- Permissible ambient temperature

- Permissible temperature of measuring medium

- Max. surface temperature

- Connection

- Marking

• Dust explosion protection for zones 20, 21, 22

- Marking

- Permissible ambient temperature

- Permissible temperature of measuring medium

- Effective internal inductance/capacitance

• Type of protection for Zone 2

- Marking

- Permissible ambient temperature "ec"

- Permissible temperature of measuring medium

- "ec" 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

• NE 06

• NE 21 • NE 23

• NE 43

NE 53

• NE 80 • NE 105

• NE 107

• NF 131

Ex II 2D Ex tb IIIC T120 °C Db Ex II 3D Ex to IIIC T120 °C Do -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 -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

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

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

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

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

for absolute pressure (pressure series)

# Selection and ordering data

	Article No.
Pressure transmitters for absolute pressure (pressure series)	
SITRANS P320	7MF032
SITRANS P420	7MF042
✓ 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
Ilnert filling liquid	3
Maximum measuring span	
250 mbar a (100.5 inH <sub>2</sub> O a)	F
1 300 mbar a (522 inH <sub>2</sub> O a)	L L L
5000 mbar a (72.5 psi a)	P
30 bar a (435 psi a)	R
160 bar a (2 321 psi a)	V
400 bar a (5 802 psi a)	w
700 bar a (10153 psi a)	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 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	
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)	
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)	o
With display (cover closed) 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 (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 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
Inspection certificate (EN 10204-3.1) - Material of pressurized and wetted parts	C12
Factory certificate - NACE (MR 0103-2012 and MR 0175-2009))	C13
Factory certificate (EN 10204-2.2) - Wetted parts	C14
Inspection 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 for applications with advanced requirements (Advanced) SITRANS P320/P420

## for absolute pressure (pressure series)

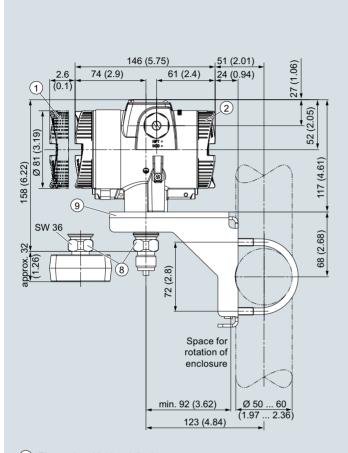
Options	Order code
Append "-Z" to Article No., add order code and plain text or entry from drop-down list.	
Special approvals	
Oxygen application (with inert liquid, max. 100 bar (1 450 psi) at 60° C (140 °F))	E80
Dual seal	E81
WRC / WRAS (drinking water); only with pressure cap O-rings made of EPDM	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 in factory certificate (EN 10204-2.2)	T02
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 factory certificate (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 factory certificate (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 factory certificate (EN 10204-2.2)	Т06

Options	Order code
Append "-Z" to Article No., add order code and plain	0.40. 0040
text or entry from drop-down list.	
Device settings	
Measuring span Lower range value (max. 5 characters), upper range 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	Y17
(device parameters, max. 8 characters) 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	Y22
Scaling with standard units [m³/s, l/s, m, inch,], example 1 5 m	122
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	Y31
Fault current instead of 3.6 mA [22.5 mA, 22.8 mA]  Drop-down list: 3.75; 21.75; 22.5; 22.6	131
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 Input field: max. 4 characters and only natural numbers from 0 9999	Y99

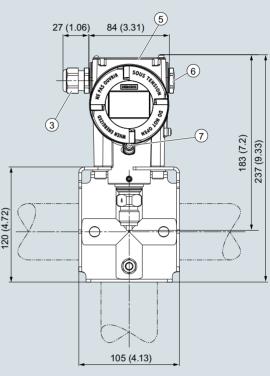
Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P320/P420

for absolute pressure (pressure series)

### Dimensional drawings



approx. 96 (3.78) 17 (0.67)



- 1 Electronics side, local display (longer overall length for cover with glass pane)<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
- (only for "flameproof enclosure" type of protection)
- 8 Process connection: G½B connection pin or oval flange
- Mounting bracket (optional)
- 1) In addition, allow approx. 22 mm (0.87 inch) for the thread length when removing the covers
- <sup>2)</sup> Not with "flameproof enclosure" type of protection
- 3) Not with type of protection "FM + CSA" [is + XP]"

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 (differential pressure series)			
Input				
Measured variable	Absolute pressure			
Measuring span (infinitely adjustable) and maximum operating pressure (pursuant to Pressure Equipment Directive 2014/68/EU)	Measuring span	Max. permissible operating pressure MAWP (PS)	Maximum permissible test pres sure	
	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				
<ul> <li>Measuring cell with silicone oil filling</li> <li>Measuring cell with inert liquid</li> </ul>	0 mbar a/kPa a/psi a For temperature of medium -20-°C < $\vartheta$ ≤ +60 °C (-4 °F < $\vartheta$ ≤ +140 °F) 30 mbar a/3 kPa a/0.44 psi a			
	For temperature of medium 60 °C < $\vartheta$ ≤ +100 °C (max. 85 °C for mea- 30 mbar a + 20 mbar a · ( $\vartheta$ - suring cell 30 bar) (140 °F < $\vartheta$ ≤ +212 °F (max. 185 °F for measuring 60 °C)/°C			
	cell 435 psi)) 3 kPa a + 2 kPa a ⋅ (ϑ - 60 °C)/°C			
	0.44 psi a + 0.29 psi a · (ϑ - 140 °F)/°F			
Upper measuring limit	100% of the max. measuring span (for oxygen measurement max. 100 bar/10 MPa/ 1450 psi and 60 °C (140 °F) ambient temperature/temperature of medium)			
Lower range value	Between the measuring limits (infi	nitely 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 $I_{\rm DD} \le 0.5\%$ of max. output current			
Adjustable damping	0 100 s, continuously adjustable			
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			
_oad • 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 communicator (handheld)) 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	-			
Measuring accuracy				
Reference conditions	According to EN 60770-1 Rising characteristic curve Lower range value 0 bar/kPa/ps Seal diaphragm stainless steel Measuring cell with silicone oil fi Room temperature 25 °C (77 °F)	lling		

Pressure transmitters

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

for absolute pressure (differential pressure series)

for absolute pressure (differential pressure series)			
SITRANS P320 / SITRANS P420 for absolute pressure (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)	≤ 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		
Operating 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	10 100 0 (1 1100 1)		
<ul> <li>Ambient temperature/enclosure</li> <li>Measuring cell with silicone oil filling</li> <li>Measuring cell with inert oil</li> <li>Display</li> <li>Storage temperature</li> <li>Climatic class in accordance with IEC 60721-3-4</li> </ul>	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		
<ul> <li>Degree of protection</li> <li>According to IEC 60529</li> <li>According to NEMA 250</li> <li>Electromagnetic compatibility</li> </ul>	IP66, IP68 Type 4X		
- Emitted interference and interference immunity	According to IEC 61326 and NAMUR NE 21		
<b>Design</b> Weight	Approx. 3.9 kg (8.5 lb) with aluminum enclosure Approx. 5.8 kg (12.7 lb) with stainless steel enclosure		
Material			
<ul><li>Wetted parts materials</li><li>Seal diaphragm</li></ul>	Stainless steel, mat. no. 1.4404/316L, Alloy C276, mat. no. 2.4819, Monel, mat. no. 2.4360, tantalum or		
- Process flanges and sealing plugs	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		
- O-ring	FPM (Viton) or optionally: PTFE, FEP, FEPM and NBR		
Non-wetted parts materials     Electronics enclosure	Low-copper die-cast aluminum GD-AlSi 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	$\frac{1}{4}$ -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		
	. 0		

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)			
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 <sub>eff</sub> ≤ 1.2 mV (0.5 10 kHz)		
Auxiliary power	- The state of the		
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:		
<ul> <li>Effective internal inductance/capacitance</li> <li>Flameproof enclosure "d"</li> <li>Marking</li> </ul>	$U_i = 30 \text{ V}, I_i = 101 \text{ mA}, P_i = 760 \text{ mW}$ $U_i = 29 \text{ V}, I_i = 110 \text{ mA}, P_i = 800 \text{ mW}$ $L_i = 0.24 \mu\text{H/C}_i = 3.29 \text{nF}$ Ex II 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: $U_n = 10.5$ to 45 V, 4 20 mA		
<ul> <li>Dust explosion protection for zones 21, 22</li> <li>Marking</li> </ul>	Ex II 2D Ex tb IIIC T120 °C Db Ex II 3D Ex tc IIIC T120 °C Dc		
<ul> <li>Permissible ambient temperature</li> <li>Permissible temperature of measuring medium</li> <li>Max. surface temperature</li> <li>Connection</li> </ul>	-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		
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		
<ul> <li>Permissible ambient temperature</li> <li>Permissible temperature of measuring medium</li> <li>Connection</li> </ul>	-40 +80 °C (-40 +176 °F) -40 +100 °C (-40 +212 °F) To certified intrinsically safe circuits with the peak values: $U_i = 30 \text{ V}, \ I_i = 101 \text{ mA}, \ P_i = 760 \text{ mW}$		
- Effective internal inductance/capacitance	$\dot{U}_{i}^{'}=29~\dot{V},~\dot{I}_{i}^{'}=110~mA,~\dot{P}_{i}^{'}=800~mW$ $L_{i}=0.24~\mu H/C_{i}=3.29~nF$		

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

- Permissible ambient temperature "ec"

- Permissible temperature of measuring medium

- "ec" 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 • NE 06

• NE 21 • NE 23

• NE 43

• NE 53 • NE 80 • NE 105

• NE 107 • NF 131 Ex II 3G Ex ec IIC T4/T6 Gc

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

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

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

HARI 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 absolute pressure (differential pressure series)

# Selection and ordering data

	Article No.
Pressure transmitters for absolute pressure (differential pressure series)	
SITRANS P320	7MF 0 3 3
SITRANS P420	7MF 0 4 3
↑ Click on the Article no. for the online configuration in the PIA Life Cycle Portal.  ↑ Click on the Article no. for the online configuration in the PIA Life Cycle Portal.  ↑ The configuration in the PIA	
Communication	
HART, 4 20 mA	0
Measuring cell filling	
Silicone oil	
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)	
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	Τ
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
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 1 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 1 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	
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)	
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)	o
With display (cover closed)	
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

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 $\frac{1}{2}$ -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
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	200
Quality test certificate, 5-point factory calibration	C11
(IEC 60770-2) Inspection certificate (EN 10204-3.1) - Material of pres-	C12
surized and wetted parts  Factory certificate - NACE (MR 0103-2012 and MR	C13
0175-2009)) Factory certificate (EN 10204-2.2) - Wetted parts	C14
Inspection 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 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.	
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)	
approved for food) O-ring, process flanges, FFKM (FFPM)	K52
approved for food)	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 factory certificate (EN 10204-2.2)	U01
With mounted valve manifold (3-way) 7MF9411-5BA, PTFE sealing rings, stainless steel screws and pressure test certified in factory certificate (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 factory certificate (EN 10204-2.2)	U03
With mounted valve manifold (5-way) 7MF9411-5CA, PTFE sealing rings, stainless steel screws and pressure test certified in factory certificate (EN 10204-2.2)	U04

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

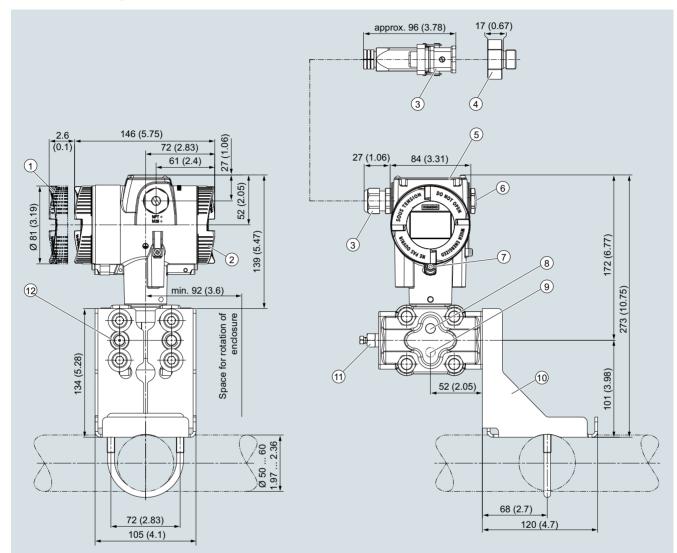
# for absolute pressure (differential pressure series)

Options	Order code
Append "-Z" to Article No., add order code and plain text or entry from drop-down list.	
Device settings	
Measuring span Lower range value (max. 5 characters), upper range 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, m³, l, hl, in³, ft³, yd³, gal, gal (UK), bu, bbl, bbl (US), SCF, Nm³, 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) 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 9999	

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		
Measuring span (infinitely adjustable) and maximum operating pressure (pursuant to Pressure Equipment	Measuring span	Max. permissible operating pressure MAWP (PS)	Maximum permissible test pressure
Directive 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 24 MPa
	1.6 160 kPa 6.43 643 inH <sub>2</sub> O	16 MPa 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	420 bar	630 bar
	1.6 160 kPa	42 MPa	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 0.3 30 bar	6092 psi 420 bar	9137 psi 630 bar
	0.03 3 MPa	42 MPa	63 MPa
	4.35 435 psi	6092 psi	9137 psi
Measuring limits		p.	
Low measuring limit			
- Measuring cell with silicone oil filling		span (-33% for measuring cell 30 b	par/3 MPa/435 psi PN 420) or
- Measuring cell with inert liquid	30 mbar a /3 kPa a /0.44 psi a		
	F	0 4 00 00 ( 4 05 0 4 440 05)	1000/ (
	For temperature of medium -20 °C < $9 \le$ +60 °C (-4 °F < $9 \le$ +140 °F) -100% of maximum measuring range or 30 mbar a /3 kPa a /0.44 psi a		
	For temperature of medium 60 °C	< 9 ≤ +100 °C (max. 85 °C for mea-	-100% of maximum measuring
		$0 \text{ °F} < \vartheta \le +212 \text{ °F (max. 185 °F for }$	
			30 mbar a + 20 mbar a $\cdot$ ( $\vartheta$ - 60 °C)/°C 3 kPa a + 2 kPa a $\cdot$ ( $\vartheta$ - 60 °C)/°C0.44 psi a + 0.29 psi a $\cdot$ ( $\vartheta$ - 140 °F)/°F
- Measuring cell with FDA-compliant oil	For temperature of medium -10 °C ≤ +212 °F)	< ϑ≤+100 °C (-14 °F < ϑ	-100% of maximum measuring range or 100 mbar a /10 kPa a /14.5 psi a
Upper measuring limit     Lower range value	(140 °F) ambient temperature/tem	•	0 bar/10 MPa/ 1450 psi and 60 °C
Lower range value	Between the measuring limits (infin	illery aujustable)	

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

for differential pressure and flow

		ioi unicientiai pressure and now			
SITRANS P320 / SITRANS P420 for differential pressure and flow					
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 $I_{pp} \le 0.5\%$ of max. output current				
Adjustable 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				
Load	Resistor R $[\Omega]$				
Without HART communication     With HART communication	$R = (U_H - 10.5 \text{ V})/22.8 \text{ mA},$ $U_H: \text{Power supply in V}$ $R = 230 \dots 1100 \Omega \text{ (HART communicator (handheld))}$				
	$R = 230 \dots 500 \Omega \text{ (SIMATIC PDM)}$				
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	According to EN 60770-1 Rising characteristic curve Lower range 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  - 20 mbar/2 kPa/0.29 psi	r = maximum measuring span/set measuring span or nominal measuring range $ r \le 5 \colon \le 0.075\% $				
- 60 mbar/6 kPa/0.87 psi	5 < r ≤ 20: r ≤ 5:	≤ (0.005 · r + 0.05)% ≤ 0.075%			
- 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	5 < r ≤ 60: r ≤ 5: 5 < r ≤ 100:	≤ (0.005 · r + 0.05)% ≤ 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:	≤ 0.075%			
- 60 mbar/6 kPa/0.87 psi	5 < r ≤ 20: r ≤ 5: 5 < r ≤ 60:	$\leq (0.005 \cdot r + 0.05)\%$ $\leq 0.075\%$ $\leq (0.005 \cdot r + 0.05)\%$			
<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> </ul>	r≤5: 5 < r≤ 100:	≤ 0.065% (SITRANS P320) ≤ 0.04% (SITRANS P420) ≤ (0.004 · r + 0.045)%			
5 bar/500 kPa/72.5 psi 30 bar/3 MPa/435 psi	5 CT 2 100.	2 (0.004 1 1 0.040)/0			
<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	$r \le 5$ : $5 < r \le 60$ :	≤ 0.15% ≤ 0.01 · r + 0.1)% ≤ (0.01 · 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>	r ≤ 5: 5 < r ≤ 100:	≤ 0.13% (SITRÁNS P320) ≤ 0.08% (SITRANS P420) ≤ (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 pressure 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 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  $\leq$  (0.025 · r + 0.0625)% (SITRANS P420) 5 bar/500 kPa/72.5 psi

- 600 mbar/60 kPa/8.7 psi 1600 mbar/160 kPa/23.21 psi 30 bar/3 MPa/435 psi

≤ (0.0125 · r + 0.0625)% (SITRANS P420)

≤ (0.025 · r + 0.125)% (SITRANS P320)

Effect of static pressure

• on the lower range value Zero-point correction is possible with position error compensation - 20 mbar/2 kPa/0.29 psi

≤ (0.3 · r)% per 70 bar (SITRANS P320) ≤ (0.2 · r)% per 70 bar (SITRANS P420) ≤ (0.1 · r)% per 70 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 30 bar/3 MPa/435 psi - 5 bar/500 kPa/72.5 psi

≤ (0.15 · r)% per 70 bar

• on the measuring span - 20 mbar/2 kPa/0.29 psi - 60 mbar/6 kPa/0.87 psi

≤ 0.2% per 70 bar ≤ 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)

• 20 mbar/2 kPa/0.29 psi • 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

Static pressure max. 70 bar/7 MPa/1015 psi

 $\leq$  (0.2 · r)% per year In 5 years  $\leq$  (0.25 · r)% In 5 years  $\leq$  (0.125 · r)% In 10 years  $\leq (0.15 \cdot r)\%$ 

• 30 bar/3 MPa/435 psi

In 5 years  $\leq$  (0.25 · r)% In 10 years ≤ (0.35 · r)%

Step response time  $T_{63}$  (without electrical damping for pressure rating PN 1600)

• 20 mbar/2 kPa/0.29 psi

• 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

Approx. 0.160 s

Approx. 0.150 s Approx. 0.135 s

Effect of mounting position (in pressure per change

 $\leq$  0.7 mbar/0.07 kPa/0.028 inH $_2$ O 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

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			
Operating 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	Observe the temperature class in areas subject to explosion hazard40 +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		
<ul> <li>According to IEC 60529</li> <li>According to NEMA 250</li> <li>Electromagnetic compatibility</li> <li>Emitted interference and interference immunity</li> </ul>	IP66, IP68 Type 4X  According to IEC 61326 and NAMUR NE 21		
Design	5 5		
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 enclosure</li></ul>	<ul> <li>FPM (Viton) or optionally: PTFE, FEP, FEPM and NBR</li> <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>		
<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	$\frac{1}{4}$ -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	-		

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 temperature of measuring medium
- "ec" 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:

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

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

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

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 -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

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

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

1/142

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

 Marking (XP/DIP) or IS; NI; S
 Explosion protection according to CSA
 Marking (XP/DIP) or (IS)

 Explosion protection according to CSA

 Marking (XP/DIP) or (IS)

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

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

NE 80
 NE 105
 Ine 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

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 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
Communication	
HART, 4 20 mA	0
Measuring cell filling	
Silicone oil	1
Inert liquid	3
Neobee oil	
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)	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: 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 <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 1 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	
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)	
Electrical connections/cable entries	
Thread for cable gland: Cable gland must be ordered separately as option (Axx)	
• 2 x M20 x 1.5	

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

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
nert 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)	1111
Oval flange, mounting thread: M12 (PN 420) (DIN 19213)	М
Oval flange, mounting thread: 7/16-20 UNF (IEC 61518) with lateral ventilation	N
Oval flange, mounting thread: M12 (PN 420) (DIN 19213) with lateral ventilation	P
/ersion for diaphragm seal with mounting thread 7/16-20 UNF (IEC 61518)	V
Version for diaphragm seal with mounting thread M10 (DIN 19213)	W
/ersion for diaphragm seal (level and capillary) with mounting thread 7/16-20 UNF (IEC 61518)	x
Netted 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	
Stainless steel 316L/1.4404, gold-plated, process flange stainless steel 316/1.4408	8
Non-wetted parts materials	
Die-cast aluminum	1 1 1
Stainless steel precision casting CF3M/1.4409 similar to 316L	2
Enclosure	
Dual chamber device	5
Type of protection	
Without Ex	A
ntrinsic safety	В
Flameproof enclosure	С
Flameproof enclosure, intrinsic safety	D
Oust 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
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	F
Local operation/display	
Nithout display (cover closed)	
With display (cover closed)  With display (cover closed)	
With display (cover vith glass pane)	

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 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
Inspection certificate (EN 10204-3.1) - Material of pressurized and wetted parts	C12
Factory certificate - NACE (MR 0103-2012 and MR 0175-2009))	C13
Factory certificate (EN 10204-2.2) - Wetted parts	C14
Inspection certificate (EN 10204-3.1) - PMI test of pressurized and wetted parts	C15
Certificates for functional safety	

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 media of fluid group 2 acc. to DGRL. Not suitable for use with hazardous 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

for differential pressure and flow	
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 $G1\!\!\!/_{\!\!2}$ 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
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
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 factory certificate (EN 10204-2.2)	U01
With mounted valve manifold (3-way) 7MF9411-5BA, PTFE sealing rings, stainless steel screws and pressure test certified in factory certificate (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 factory certificate (EN 10204-2.2)	U03
With mounted valve manifold (5-way) 7MF9411-5CA, PTFE sealing rings, stainless steel screws and pressure test certified in factory certificate (EN 10204-2.2)	U04

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

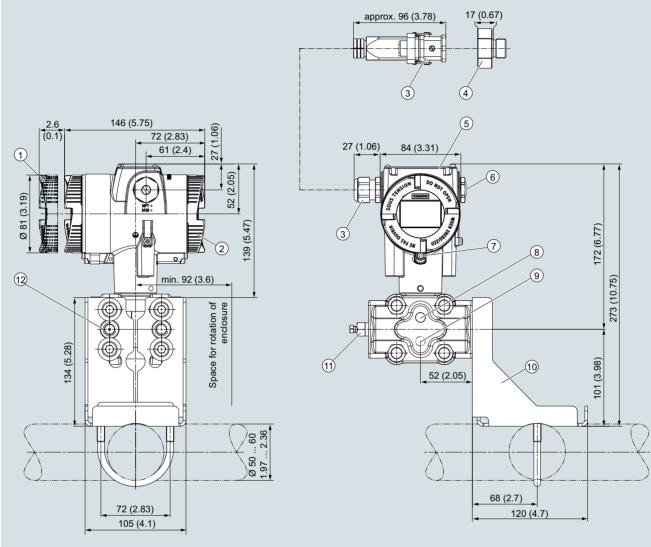
for differential pressure and flow

Options	Order code
Append "-Z" to Article No., add order code and plain text or entry from drop-down list.	
Device settings	
Measuring span Lower range value (max. 5 characters), upper range 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-	Y01
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 (4°C), mH₂O (4°C), mmHg, inHg, atm, torr	
Square-rooted characteristic [VSLN2, MSLN2], example: VSLN2	Y02
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	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 [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, hl, in³, ft³, yd³, gal, gal (UK), bu, bbl, bbl (US), SCF, Nm³, Nl, 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] 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.	102
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 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

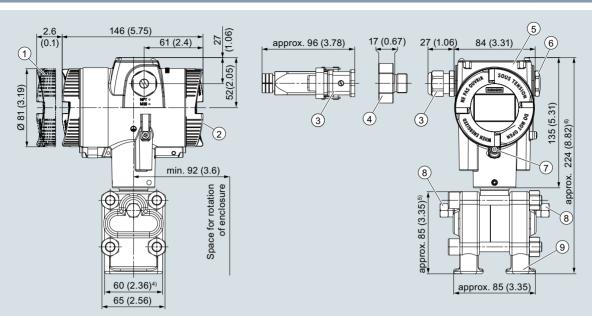
- 6 Blanking plug
- (7) Safety catch
- (only for "flameproof enclosure" type of protection)
- (8) Lateral ventilation for liquid measurement (Standard)
- (9) Lateral ventilation for gas measurement (order option K85)
- 10 Mounting bracket (optional)
- (11) Sealing plug with valve (optional)
- 12) Process 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



- 1 Electronics side, local display (longer overall length for cover with inspection window)1)
- (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
- Not with "flameproof enclosure" type of protection Not with type of protection "FM + CSA" [is + XP]"
- <sup>4)</sup> 74 mm (2.9 inch) for PN ≥ 420 (MAWP ≥ 6092 psi)
- 91 mm (3.6 inch) for PN ≥ 420 (MAWP ≥ 6092 psi)
- 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

Technical specifications			
SITRANS P320 / SITRANS P420 for level			
Input			
Measured variable	Level		
Measuring span (infinitely adjustable) and maximum operating pressure (pursuant to Pressure Equipment	Measuring span	Max. permissible operating pressure MAWP (PS)	Maximum permissible test pressure
Directive 2014/68/EÜ)	25 250 mbar	See "Mounting flange"	
	2.5 25 kPa	coo mounting name	
	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  • Low measuring limit  - Measuring cell with silicone oil filling  - Measuring cell with inert oil  - Measuring cell with FDA-compliant oil  • Upper measuring limit  • Lower range value	-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. measuring 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 $I_{\rm DD} \le$ 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,		
With HART communication	$U_H$ : Power supply in V R = 230 1100 $\Omega$ (HART communicator (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	According to EN 60770-1 Rising characteristic curve Lower range 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		
<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:	≤ (0.007 · r + 0.09)%	

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

SITRANS P320 / SITRANS P420 for level		
Influence of ambient temperature		
in % per 28 °C (50 °F)  • SITRANS P320  - 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	$\leq (0.025 \cdot r + 0.125)\%$	
SITRANS P420     250 mbar/25 kPa/3.6 psi     5 bar/500 kPa/72.5 psi     600 mbar/60 kPa/8.7 psi     1600 mbar/160 kPa/23.21 psi	$\leq (0.025 \cdot r + 0.0625)\%$ $\leq (0.125 \cdot r + 0.0625)\%$	
Effect of static pressure  • on the lower range value  - 250 mbar/25 kPa/3.63 psi  - 600 mbar/60 kPa/8.70 psi 1.6 bar/160 kPa/23.21 psi 5 bar/500 kPa/72.52 psi  • on the pressuring appear	≤ (0.3 · r)% per nominal pressure ≤ (0.15 · r)% per nominal pressure	
• on the measuring 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	
Operating conditions		
Temperature of medium		
Measuring cell with silicone oil filling	<ul> <li>High-pressure side: See "Mounting flange"</li> <li>Low-pressure side: -40 +100 °C (-40 +212 °F)</li> </ul>	
Ambient conditions		
<ul> <li>Ambient temperature/enclosure</li> <li>Measuring cell with silicone oil filling</li> </ul>	Always consider the assignment of max. permissible operating temperature to max. permissible operating pressure of the respective flange connection.  -40 +85 °C (-40 +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) 4K4H	
Degree of protection		
<ul><li>According to IEC 60529</li><li>According to NEMA 250</li></ul>	IP66, IP68 Type 4X	
Electromagnetic compatibility	1,900 470	
- Emitted interference and interference immunity	According to IEC 61326 and NAMUR NE 21	
Vibration resistance  • Reference conditions  • General operating conditions	Specifications apply to devices without mounting bracket	
- 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	2000 Sriocks/axis 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	
Operating conditions for marine applications     IEC 60068-2-6     DNVGL-CG-0339, clause 6     Lloyd's Register Test Specification Number 1, section 12.     Bureau Veritas Pt C, Ch 3, Sec 6, Table 1, No 7	2 25 Hz, 1.6 mm (0.06 inch) 25 100 Hz, 40 m/s² (131.23 ft/s²) 1 octave/min	

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 flange	Stainless steel, mat. no. 1.4404/316L, Monel 400, mat. no. 2.4360, 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)
Non-wetted parts materials     Electronics enclosure	<ul> <li>Low-copper die-cast aluminum GD-AlSi 12 or stainless steel precision casting, mat. no. 1.4409/ CF-</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 Silicone oil or other material	
Process connection  • High-pressure side  • Low-pressure side	Flange according to EN and ASME 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	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	$U_{\text{eff}} \le 1.2 \text{ mV } (0.5 \dots 10 \text{ kHz})$	
Auxiliary power	-	
Separate supply voltage	-	

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

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 temperature of measuring medium
- "ec" 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

-40 ... +80 °C (-40 ... +176 °F)

-40 ... +100 °C (-40 ... +212 °F)

To certified intrinsically safe circuits with the peak values:

U<sub>i</sub> = 30 V, I<sub>i</sub> = 101 mA, P<sub>i</sub> = 760 mW U<sub>i</sub> = 29 V, I<sub>i</sub> = 110 mA, P<sub>i</sub> = 800 mW

 $L_i = 0.24 \mu H/C_i = 3.29 \text{ nF}$ 

Ex II 3G Ex ec IIC T4/T6 Gc

-40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +40 °C (-40 ... +104 °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:  $U_n = 10.5 \text{ to } 30 \text{ V}, 4 \dots 20 \text{ mA}$ 

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

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 ABCD T4 T6; CL II, DIV 2, GP FG; CL III
<ul> <li>Explosion protection according to CSA</li> </ul>	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
• 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>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 • Acc. to EN 1092-1	Nominal pressure
- DN 80 - DN100 • According to ASME B16.5	PN 40 PN 16, PN 40
- 3 inch - 4 inch	Class 150, class 300 Class 150, class 300

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

for level

## Selection and ordering data

	Article No.
Pressure transmitters for level	
SITRANS P320	7MF036
SITRANS P420	7MF046
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 <sup>7</sup> / <sub>16</sub> -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 1 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	
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)	
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)	i i i i i i i i i i i i i i i i i i i
With display (cover with glass pane)	2

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

for level

## 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	400
Plastic	A00
Metal Stainless steel	A01 A02
Stainless steel 316L/1.4404 CMP, for XP devices	A03 A10
CAPRI ADE 4F, CuZn, cable inner diameter 7 12 mm,	A11
cable outer diameter 10 16 mm	All
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
Inspection certificate (EN 10204-3.1) - Material of pressurized and wetted parts	C12
Factory certificate - NACE (MR 0103-2012 and MR 0175-2009))	C13
Factory certificate (EN 10204-2.2) - Wetted parts	C14
Inspection 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 ext 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
P66/IP68 degree of protection (not for device plugs M12 and Han )	D30
FAG label empty	D40
Without labeling of the measuring range on the TAG abel	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	
Norldwide (CE, RCM) except EAC, FM, CSA, KCC	E00
Vorldwide (CE, RCM, EAC, FM, CSA, KCC)	E01
CSA (USA and Canada)	E06
EAC	E07
FM	E08
(CC	E09
Export approval CPA (China)	E12
Explosion protection approvals	
ATEX (Europe)	E20
CSA (USA and Canada)	E21
FM (USA and Canada)	E22
ECEx (Worldwide)	E23
EACEx (GOST-R, -K, -B)	E24
NMETRO (Brazil)	E25
KCs (Korea)	E26
NEPSI (China)	E27
PESO (India)	E28
JKR Sepro (Ukraine)	E30 E47
ATEX (Europe) and IECEx (Worldwide) CSA (Canada) and FM (USA)	E47
ATEX (Europe) and IECEx (Worldwide) + CSA (Canada)	E49
and FM (USA)	L43
Marine approvals	E50
DNV-GL (Det Norske Veritas/Germanischer Lloyd) _R (Lloyds Register)	E50
Ln (Lioyus negister) 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

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	
Measuring span Lower range value (max. 5 characters), upper range 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	Y17
(device parameters, max. 8 characters) Input field: Free text, max. 8 characters	
Local display	Y21
[Pressure, Percent], reference [None, Absolute, Relative], example: Pressure gauge	
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 auto-	
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	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,	Y30
example: 3.8 22.0 mA 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 $\dots$ 9999	

SITRANS P320/P420

Pressure transmitters for applications with advanced requirements (Advanced)

ioi ievei									
Selection and Orde	ring data	Article No.	Order code						
Diaphragm seal		7MF0814-							
Flange type design, SITRANS P transmitt 7MF03/7MF04 (ord Scope of delivery: 1	der separately)	0 3 - 0	-						
Click on the Articl figuration in the P									
Connecting standar									
Nominal diameter DN 40	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	rd ASME B16.5								
Nominal diameter	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 MA 1 MB 1 MD 1 MF							
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	1QA 1QB 1QD 1QF							
5 inch	class 150 class 300 class 400	1RA 1RB 1RC							
Connecting standar	rd J.I.S.								
Nominal diameter	Nominal pressure								
DN 50	10K	2 E S							
	20k 50K	2 E T 2 E U							
DN 80	10K 20k 50K	2GS 2GT 2GU							
DN 100	10K 20k 50K	2 H S 2 H T 2 H U							
Other version Add Order code and	l plain text	9 A A	H 1 Y						

Selection and Ordering data	Article No.		)rd od		
Diaphragm seal	7MF0814-				Ī
Flange type design, direct connected to a SITRANS P transmitter for level 7MF03/7MF04 (order separately) Scope of delivery: 1 off	03-0		-		
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		Р	1	Y
Wetted parts materials					
Stainless steel 316L  Without coating  With PFA coating  With PTFE 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		A D E O F G J K L O Q R S O O V O Z 8			
Other version Add Order code and plain text		2 0	Q	1	T
Extension length  • without  • 50 mm (2")  • 100 mm (4")  • 150 mm (6")  • 200 mm (8")  • 250 mm (10")  Other version		0 1 2 3 4 5 Z 8	Q	1	Y
Add Order code and plain text					

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

0 1 11 10 1 1	A .: 1 A1	0.1					
Selection and Orderi	ng data	Article No.	Order code				
Diaphragm seal		7MF0814-					
Flange type design, d SITRANS P transmitter 7MF03/7MF04 (orde Scope of delivery: 1 or	03-0						
Customer-specific ex							
Wetted parts stainless Range	-						
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")	•	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				
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	steel with PFA coating   Standard length						
20 50 mm	50 mm (1.97")		D 1				
(0.79 1.97") 51 100 mm	100 mm (3.94")	ı	D 2				
(2.01 3.94") 101 150 mm	150 mm (5.91")	ı	D 3				
(3.98 5.91") 151 200 mm (5.94 7.87")	200 mm (7.87")		D 4				
(3.94 7.07 ) 201 250 mm (7.91 9.84")	250 mm (9.84")	1	D 5				
Wetted parts Monel 4	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 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 Hastello	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				

Selection and Or	Selection and Ordering data						
Diaphragm seal	Diaphragm seal						
Flange type desig SITRANS P transr 7MF03/7MF04 Scope of delivery	03-0						
Wetted parts Tar	Wetted parts Tantalum						
Range	Standard length						
20 50 mm (0.79 1.97")	50 mm (1.97")	,	<b>K</b> 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")	,	<b>K</b> 3				
151 200 mm (5.94 7.87")	200 mm (7.87")		<b>(</b> 4				

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

for level	
Selection and Ordering data	Order code
Further designs	
Add "-Z" to Article No. and specify Order code.	
Factory certificates	
Quality test certificate, 5-point factory calibration (IEC 60770-2)	C11
Inspection certificate according to EN 10204-3.1 for main body and diaphragm	C12
Manufacturer code according to NACE (MR 0103-2012 and MR 0175-2009) (only in combination with wetted parts made of stainless steel 316 L and Hastelloy)	C13
Inspection certificate (EN 10204-3.1) - PMI test of pressurized and wetted parts	C15
Factory certificate on the FDA listing of the oil according to EN 10204-2.2	C17
Factory certificate functional safety (SIL2/3), suitability of devices for use according to IEC 61508 and IEC 61511 (contains SIL declaration of conformity)	C20
Accessories Spark arrestor (for differential pressure and level transmitter)	D62
Low-temperature version (for Silicon Oil M50 only)	D67
Negative pressure services	
Negative pressure service (for differential pressure transmitters)	D83
Extended negative pressure services (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 ${\rm O_2}$ -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)	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)	
• DN 40	M71
• DN 50	M72
• DN 80	M73 M74
• DN 100 • DN 125	M75
Sealing surface with spigot to EN1092-1, form E	
(wetted parts 316L only)	
• DN 40	M77
• DN 50	M78
<ul><li>DN 80</li><li>DN 100</li></ul>	M79 M80
• DN 125	M81
Sealing surface with recess to EN1092-1, form F (wetted parts 316L only)	
• DN 50	M84
• DN 80	M85
• DN 100 • DN 125	M86 M87
2.1.120	

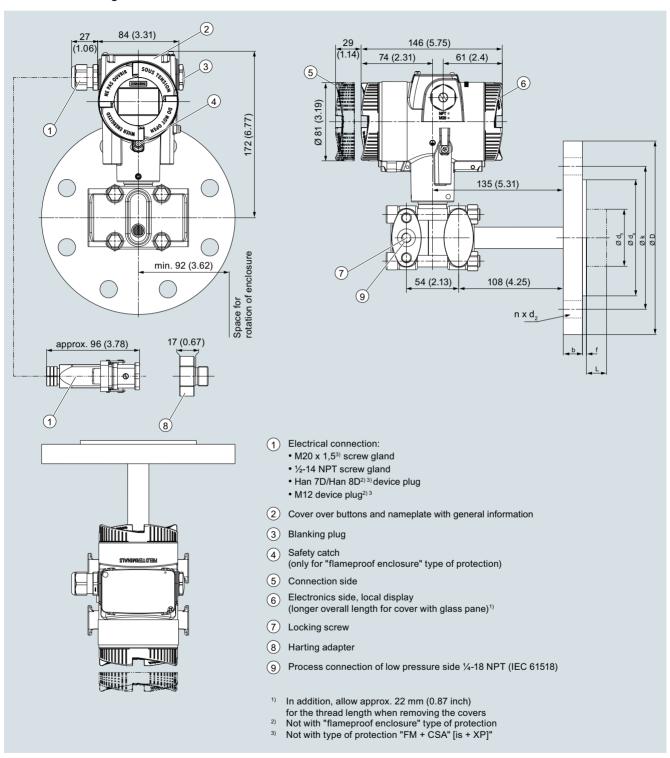
Selection and Ordering data	Order code
Further designs	
Add "-Z" to Article No. and specify Order code.	
Remote seal connection	
Elongated pipe,	S05
150 mm (5.9 inch) instead of 100 mm (3.9 inch)	
Elongated pipe,	S06
200 mm (7.9 inch) instead of 100 mm (3.9 inch)	
Customer-specific tube length	
Customer-specific 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
. 100000 toporataro 0/( 1 //maxi 0/( 1 /	

See also "Specification of process conditions for selection and ordering data", page 1/337.

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>	d <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)	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		
	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	(0, 50, 100, 150 or		
	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		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			
	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			

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, 150 or 200
	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	
	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	(0, 2, 3.94, 5.94 or
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<sub>M</sub>: 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 measuring spans 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.

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.

Measuring 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.

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

Measuring 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 liguids in open and closed vessels

Measuring 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 enclosure. 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).

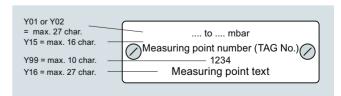
The approval label is located on the opposite side.

The enclosure 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 enclosure. 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 enclosure.

The electrical connections for the power supply and screen are accessible by unscrewing the rear cover. The bottom part of the enclosure 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 enclosure is a plastic cover (1), which hides the input keys.

#### Example for an attached measuring point label

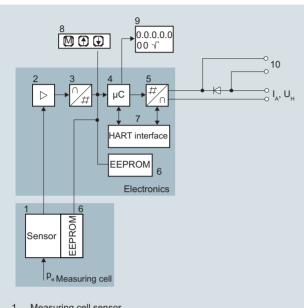


Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

#### **Technical description**

#### Function

#### Operation of electronics with HART communication



- Measuring cell sensor
- Instrument amplifier
- 3 Analog-to-digital converter
- Microcontroller
- 5 Digital-to-analog converter
- One non-volatile memory each in the measuring cell and 6 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.

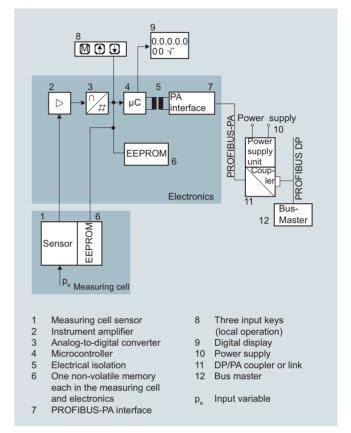
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The one memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced 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 measuring spans ≤ 63 bar measure the input pressure compared to atmosphere, transmitters with measuring 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.

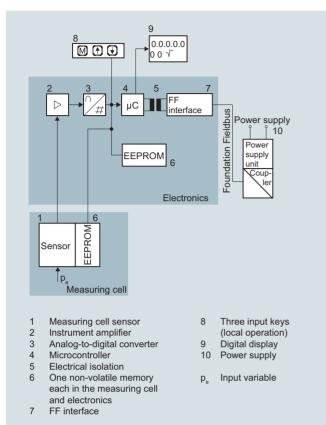
Using the three input buttons (8) you can parameterize the pressure transmitter directly at the measuring point. The input buttons can also be used to control the view of the results, the error messages and the operating modes on the display (9).

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 P DS III

**Technical description** 

#### Operation of electronics with FOUNDATION Fieldbus communication



#### Function diagram of electronics

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

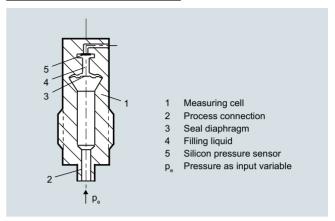
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The one memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced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

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

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

#### Mode of operation of the measuring cells

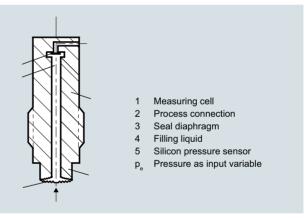
Measuring cell for gauge pressure



Measuring cell for gauge pressure, function diagram

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

Measuring cell for gauge pressure with front-flush diaphragm



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

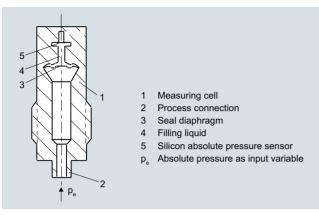
The pressure  $p_e$  is applied through the process connection (2, Figure "Measuring cell for gauge pressure, with front-flush diaphragm for paper industry, function diagram") to the measuring cell (1). This pressure is subsequently transmitted further through the seal diaphragm (3) and the filling liquid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

Pressure transmitters

for applications with advanced requirements (Advanced)

# SITRANS P DS III Technical description

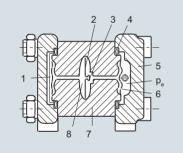
Measuring cell for absolute pressure from gauge pressure series



Measuring cell for absolute pressure from the pressure series, function diagram  $% \left( 1\right) =\left( 1\right) \left( 1\right) \left$ 

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

Measuring cell for absolute pressure from differential pressure series



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

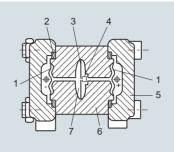
Measuring cell for absolute pressure from differential pressure series, function diagram

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

The difference in pressure between the input pressure  $p_e$  and the reference vacuum (1) on the low-pressure side of the measuring cell flexes the measuring diaphragm. This changes the resistance of the four piezo-resistors fitted in the diaphragm in a bridge circuit. This change in resistance results in a bridge output voltage proportional to the absolute pressure.

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

Measuring cell for differential pressure and flow



- 1 Seal diaphragm
- 2 O-ring
- 3 Overload diaphragm
- 4 Silicon pressure sensor
- 5 Process flange
- 6 Body of measuring cell
- 7 Filling liquid

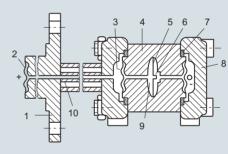
Measuring cell for differential pressure and flow, function diagram

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



- 1 Flange with tube
- 2 Seal diaphragm on mounting flange
- 3 Seal diaphragm
- 4 Body of measuring cell
- 5 Overload diaphragm
- 6 Silicon pressure sensor
- 7 O-ring
- 8 Process flange
- 9 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 flexed.

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

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

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

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P.DS III

**Technical description** 

#### Parameterization DS III

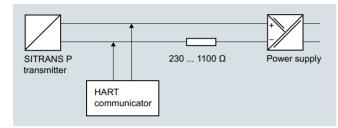
Depending on the version, there are a range of options for parameterizing the pressure transmitter and for setting or scanning the parameters.

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

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

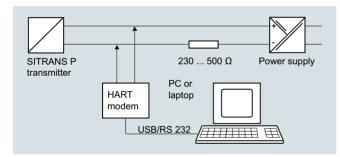
#### Parameterization using HART

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, Do III Wi		
Parameters	Input keys (DS III HART)	HART communication
Lower range value	Х	Χ
Upper range value	X	X
Electrical damping	X	X
Lower range value without application of a pressure ("Blind setting")	Х	Х
Upper range value without application of a pressure ("Blind setting")	Х	Х
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

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

#### 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

Pa, MPa, kPa, bar, mbar, torr, atm, psi,
$g/cm^2$ , $kg/cm^2$ , $inH_2O$ , $inH_2O$ (4 °C), $inH_2O$ , $inH_2O$ , $inH_2O$ , $inHg$ , $inHg$ , $inHg$
m, cm, mm, ft, in
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
g, kg, t, lb, Ston, Lton, oz
$\rm m^3/d,m^3/h,m^3/s,l/min,l/s,ft^3/d,ft^3/min,ft^3/s,US$ gallon/min, US gallon/s
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
K, °C, °F, °R
%, 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	X	X
Zero adjustment (correction of position)	X	Х
Buttons and/or function disabling	X	X
Source of measured-value display	X	X
Physical dimension of display	X	X
Position of decimal point	X	Х
Bus address	X	Х
Adjustment of characteristic	X	X
Input of characteristic		X
Freely-programmable LCD		X
Diagnostics functions		х

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

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

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

Pressure transmitters 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

Measuring span (fully adjustable) or nominal 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/temperature of medium)

Gauge pressure

HART	PROFIBUS PA/ FOUNDATION Fieldbus		
Measuring span	Nominal measuring 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	25 MPa
23 2321 psi	2321 psi	2422 psi	3626 psi
4 400 bar	400 bar	400 bar	600 bar
0.4 40 MPa	40 MPa	40 MPa	60 MPa
58 5802 psi	5802 psi	5802 psi	8702 psi
7 700 bar	700 bar	800 bar	800 bar
0.7 70 MPa	70 MPa	80 MPa	80 MPa
102 10153 psi	10153 psi	11603 psi	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
- 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. measuring span (max. 100 bar/10 MPa/1450 psi for oxygen measurement) ambient temperature/temperature of medium 60 °C (140 °F)

	ment) ambient temperature/temperature of medium 60 °C (140 °F)				
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)				

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
- Lower range 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 nominal measuring 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) %

 $\leq (0.05 \cdot r + 0.1) \; \%$ 

 $\leq$  (0.025 · r + 0.125) %

 $\leq$  (0.08 · r + 0.16) %

 $\leq$  (0.25 · r) % per year

 $\leq$  (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				
Operating conditions				
Degree of protection				
• according to EN 60529	IP66 (optional IP66/IP68)			
<ul> <li>according to NEMA 250</li> </ul>	Type 4X			
Temperature of medium				
<ul> <li>Measuring cell with silicone oil filling</li> </ul>	-40 +100 °C (-40 +212 °F)			
<ul> <li>Measuring cell with inert filling liquid</li> </ul>				
<ul> <li>1 bar/100 kPa/14.5 psi</li> <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> </ul>	-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				
Ambient temperature (silicone oil and inert oil)				
- Transmitter	-40 +85 °C (-40 +185 °F)			
- Display readable	-30 +85 °C (-22 +185 °F)			
Ambient temperature (Neobee fill fluid)				
- Transmitter	-10 +85 °C (+14 +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	Discount aburainum (CO bar (CA A II-)			
Weight (without options)  Enclosure material	Die-cast aluminum: ≈ 2.0 kg (≈ 4.4 lb)  Stainless steel precision casting: ≈ 4.6 kg (≈ 10.1 lb)			
	Low-copper die-cast aluminum, GD-AlSi 12 or stainless steel precision casting, mat. no. 1.4408			
Wetted parts materials	Obsiglate shall make as at 4404/0401 and			
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	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			
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 $ extstyle{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 supply voltage	-	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		

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	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	$L_{i} = 0.4 \text{ mH}, C_{i} = 6 \text{ nF}$	$L_{i} = 7 \mu H, C_{i} = 1.1 nF$		
• 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: $U_H = 10.5 \dots 45 \text{ V DC}$	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	$L_{i} = 0.4 \text{ mH}, C_{i} = 6 \text{ nF}$	$L_{i} = 7 \mu H, C_{i} = 1.1 nF$		
<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: $U_{H} = 10.5 \dots 45 \text{ V DC}$ ; $P_{max} = 1.2 \text{ W}$	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)	$U_{\rm m} = 45 \text{ V}$	$U_{\rm m} = 32 \text{ V}$		
- 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	$L_i = 0.4 \text{ mH}, C_i = 6 \text{ nF}$	$L_{i} = 7 \mu H, C_{i} = 1.1 nF$		
• 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			
- 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			

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	<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 local opera-	- Electrical damping, adjustable		
me dadices can be est deling	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 Pro-	• PID	Standard FOUNDATION	
·	cess Control Devices Version		Fieldbus function block	
Europhian Islanda	3.0, class B	<ul><li>Physical block</li></ul>	1 resource block	
Function blocks  • Analog input	2	Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block	
- Adaptation to customer-specif-	Yes, linearly rising or falling	_	LCD	
ic process variables	characteristic	Pressure transducer block		
- 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	- Simulation function: Measured	Constant value or over parame-	
	value)	pressure value, sensor tem-	terizable 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				

• 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 P DS III

for gauge pressure

Salaatian and Ordarin	n doto	A rti	alo Ni	_			
Selection and Ordering	-		Article No. <b>7MF4033-</b>				
Pressure transmitter for SITRANS P DS III with	or gauge pressure, HART		F 4 0 ;				
Click on the Article N ration in the PIA Life	lo. for the online configu- Cycle Portal.	Ш					
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	· · · · · · · · · · · · · · · · · · ·	-11					
Seal diaphragm	Process connection						
Stainless steel	Stainless steel		A				
Hastelloy	Stainless steel		В				
Hastelloy	Hastelloy		C				
Version for diaphragm s process connector "fem (recommended version	seals in conjunction with ale thread ½-14 NPT" n) 3) 4) 5) 6)		Y 1				
Version for diaphragm s with process connector shank" 3) 4) 5) 6)	seals in conjunction	Ш	Y 0				
Process connection		_					
• Connection shank G1/2	B to EN 837-1		0				
• Female thread ½-14 N	IPT		1				
• Stainless steel oval fla							
nection (Oval flange h	as no female thread)						
- Mounting thread <sup>7</sup> / <sub>16</sub> IEC 61518/DIN EN 6	<sub>3</sub> -20 UNF to		2				
- Mounting thread M1			3				
- Mounting thread M1			4				
Male thread M20 x 1.5			5				
• Male thread ½ -14 NP	T		6				
Non-wetted parts mate							
<ul><li>Enclosure made of die</li><li>Enclosure stainless st</li></ul>	<b>→</b> \	Ш	0 3				
Version							
• Standard version, Ger				1			
setting for pressure ur							
	English plate inscription,			2			
setting for pressure ur	III. Dar			2			
<ul> <li>Chinese version, English setting for pressure unit</li> </ul>	sn plate inscription, t Pascal			3			
All versions include DVI	O with compact operat-						
ing instructions in variou	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)"	В	
- "Explosion-proof (Ex d)"8)	D	
- "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d)"9)	P	
- "Ex nA/ic (Zone 2)"10)	Е	
<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	
• With FM + CSA, Type of protection:		
<ul> <li>"Intrinsic Safe and Explosion Proof (is + xp)"<sup>8)12)</sup></li> </ul>	N C	;
Electrical connection / cable entry	-	
• Screwed gland M20 x1 .5	В	3
• Screwed gland ½-14 NPT	C	;
<ul> <li>Device plug Han 7D (plastic enclosure) incl. mating connector<sup>13)</sup></li> </ul>	D	)
<ul> <li>Device plugs M12 (stainless steel)<sup>13)14)</sup></li> </ul>	F	
Display	-	
Without display		0
Without visible display (display concealed, setting: mA)		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 Chan, 7 "Supplementary Co	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 also ordering the quality test 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.
- 4) If the inspection 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
- 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 or E.
- 14) M12 delivered without cable socket

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

for gauge pressure

Selection and Ordering data		Α	Article No.				
Pressure transmitter	for gauge pressure						
SITRANS P DS III with	PROFIBUS PA (PA)	7	M F	4 0	3 4	١ -	
	FOUNDATION Fieldbus (FF)	7	M F	<b>4</b> 0	3.5		
	No. for the online configu-		7 M F 4 0 3 5 -				
ration in the PIA Lit							
Measuring cell filling	Measuring cell clean- ing						
Silicone oil	normal	1					
Inert liquid <sup>1)</sup>	grease-free to cleanliness level 2	3					
FDA compliant fill fluid		١.					
Neobee oil	normal	4					
Nominal measuring							
250 mbar	(3.6 psi)		A				
1 bar	(14.5 psi)		В				
4 bar	(58 psi)		С				
16 bar	(232 psi)		D				
63 bar	(914 psi)		E				
160 bar	(2320 psi)		F				
400 bar	(5802 psi)		G				
700 bar	(10153 psi)		J				
Wetted parts materia							
Seal diaphragm	Process connection						
Stainless steel	Stainless steel		A	١			
Hastelloy	Stainless steel		E	3			
Hastelloy	Hastelloy		C				
Version for diaphragm	seals in conjunction with		)	1			
(recommended version	male thread ½-14 NPT"						
Version for diaphragm	seals in conjunction		١,	0			
with process connect	or		ľ				
"G½B connection sha	nk"" <sup>3) 4) 5) 6)</sup>						
Process connection							
• Connection shank G	61⁄2B to EN 837-1			0			
• Female thread 1/2-14	NPT			1			
• Stainless steel oval	flange with process connec-						
	s no female thread) 7)						
<ul> <li>Mounting thread <sup>7</sup></li> <li>IEC 61518/DIN EN</li> </ul>	/ <sub>16</sub> -20 UNF to			2			
				2			
<ul> <li>Mounting thread N</li> <li>Mounting thread N</li> </ul>				3			
3				4			
<ul> <li>Male thread M20 x</li> <li>Male thread ½ -14 N</li> </ul>				5 6			
		-		O			
Non-wetted parts ma							
Enclosure made of control of the control of th				0			
	steel precision casting			3			
Version							
Standard version, G     setting of pressure :	erman label inscription,				1		
setting of pressure unit: bar					2		
<ul> <li>International version, English label inscription, setting of pressure unit: psi</li> </ul>					-		
Chinese version, English label inscription,					3	5	
setting of pressure unit: kPa							
All versions include D	VD with compact operating						

instructions in various EU languages.

tor	gauge pressure
Selection and Ordering data	Article No.
Pressure transmitter for gauge pressure	
SITRANS P DS III with PROFIBUS PA (PA)	7 M F 4 0 3 4 -
SITRANS P DS III with FOUNDATION Fieldbus (FF)	7 M F 4 0 3 5 -
Explosion protection	
• None	A
With ATEX, Type of protection:  "Intrinsic safety (Ex ia)"  "Explosion-proof (Ex d)"8)  "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d)"9)  "Ex nA/ic (Zone 2)"10)  "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia + Ex d + Zone 1D/2D)"9) 11)  FM + CSA intrinsic safe (is)12)  FM + CSA (is + ep) + Ex ia + Ex d (ATEX) + Zone 1D/2D <sup>9)11)12</sup> With FM + CSA, Type of protection:  "Intrinsic Safe and Explosion Proof (is + xp)"8)12)	B D P E R F S
Electrical connection/cable entry  • Screwed gland M20 x 1.5  • Screwed gland ½-14 NPT  • Device plugs M12 (stainless steel) <sup>13)14)</sup>	B C F
Display	
<ul><li>Without display</li><li>Without visible display (display concealed,</li></ul>	0
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) For oxygen application, add Order code E10.
- 2) Available for measuring ranges 1 ... 63 bar.
- When also ordering the quality test 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.
- 4) If the inspection 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.
- M10 fastening thread:
- Max. measuring span 160 bar (2320 psi) 7/16-20 UNF and M12 fastening thread: Max. measuring span 400 bar (5802 psi)
- 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) 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

Tor gauge pressure				
Selection and Ordering data	Order	code		
Further designs		HART	РΔ	FF
Add "-Z" to Article No. and specify Order code.		112.111		••
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	✓	✓	✓
Stainless steel 316L	A03	✓	✓	✓
Device plugs <sup>1)</sup>				
Han 7D (metal)	A30	✓		
<ul> <li>Han 8D (instead of Han 7D)</li> </ul>	A31	✓		
Angled	A32	✓		
Han 8D (metal)	A33	✓		
Cable sockets for device plugs M12 (metal (CuZn))	A50	✓	✓	✓
Rating plate inscription				
(instead of German)				
• English	B11	✓	✓	✓
• French	B12	✓	✓	✓
Spanish	B13	✓	✓	✓
• Italian	B14	✓	✓	1
Cyrillic (russian)	B16	✓	1	1
English rating plate	B21	1	1	1
Pressure units in inH <sub>2</sub> 0 and/or psi	D2 1	Ť		·
Quality test certificate, 5-point factory	C11	✓	<b>✓</b>	✓
calibration (IEC 60770-2) <sup>2)</sup> Inspection certificate <sup>3)</sup>	C12	1	1	1
Acc. to EN 10204-3.1				
Factory certificate	C14	1	1	1
Acc. to EN 10204-2.2				
Inspection 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	✓		
Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009)	D07	✓	✓	✓
Degree of protection IP66/IP68 (only for M20x1.5 and ½-14 NPT)	D12	✓	✓	✓
Supplied with oval flange	D37	✓	✓	✓
(1 item), PTFE packing and screws in thread of oval flange				
Capri cable gland 4F CrNi and clamping device (848699 + 810634) included	D59	✓	✓	1
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	<i></i>	<b>√</b>	<b>√</b>
Oxygen application (In the case of oxygen measurement and inert liquid max. 100 bar (1450 psi) at 60°C	E10	<b>✓</b>	✓	✓
(140 °F)) Export approval Korea	E11	1	✓	✓

Selection and Ordering data	Order	code		
Further designs Add "-Z" to Article No. and specify Order		HART	PA	FF
code.				
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>
(only for transmitter 7MF4D)  Explosion-proof "Intrinsic safety" (Ex ia	E28 <sup>7)</sup>	1	./	
+ Ex d) to INMETRO (Brazil)  (only for transmitter 7MF4	E28.	•	•	
Ex Approval IEC Ex (Ex ia)	E45 <sup>7)</sup>	1	1	1
(only for transmitter 7MF4B)	L43 /	·	•	·
Ex Approval IEC Ex (Ex d)	E46 <sup>7)</sup>	✓	✓	✓
(only for transmitter 7MF4	_,			
Explosion-proof "Intrinsic safety" to NEPSI (China)	E5 <sup>7)</sup>	✓	✓	✓
(only for transmitter 7MF4B)	7\		,	,
Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)	E56 <sup>7)</sup>	<b>✓</b>	✓	<b>√</b>
Ex protection "Zone 2" to NEPSI (China)	E57 <sup>7)</sup>	1	/	1
(only for transmitter 7MF4)			•	Ť
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	✓	✓	✓
(only for transmitter 7MF4B)				
Ex-protection Ex d according to EAC Ex (Russia) (only for transmitter 7MF4D)	E81	✓	✓	✓
Ex-protection Ex nA/ic (Zone 2) according	E82	✓	✓	✓
to EAC Ex (Russia) (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 enclosure and cover (PU on epoxy)	G10	✓	✓	✓
Transient protector 6 kV (lightning protection)	J01	1	✓	✓
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	✓	✓	✓
<ul> <li>Lloyds Register (LR)</li> </ul>	S11	✓	✓	✓
<ul> <li>French marine classification society Bureau Veritas (BV)</li> </ul>	S12	✓	✓	✓
<ul> <li>American Bureau of Shipping (ABS)</li> </ul>	S14	✓	✓	✓
<ul> <li>Russian Maritime Register (RMR)</li> </ul>	S16	✓	✓	✓
<ul> <li>Korean Register of Shipping (KR)</li> </ul>	S17	✓	✓	✓

- 1) Device plug Han IP65
- 2) When also ordering the quality test certificate (factory calibration) according to IEC 60770-2 for transmitters with mounted diaphragm seals: Order this certificate only together with the remote seals. The measuring accuracy of the total combination is certified here.
- 3) If the inspection 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
- 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	1	<b>√</b> 1)	
Stainless steel tag plate and entry in device variable (measuring point description)  Max. 16 characters, specify in plain text:	Y15 <sup>2)</sup>	✓	✓	✓
Y15:  Measuring point text (entry in device	Y16	1	✓	✓
variable) Max. 27 characters, specify in plain text: Y16:				
Entry of HART address (TAG)	Y17	1		
Max. 8 characters, specify in plain text: Y17:				
Setting of pressure indication in 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	Y22 +	✓		
non-pressure units <sup>3)</sup> Specify in plain text: Y22: up to I/min, m <sup>3</sup> /h, m, USgpm, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	Y01			
Preset bus address possible between 1 and 126 Specify in plain text: Y25:	Y25		✓	1
Damping adjustment in seconds (0 100 s)	Y30	1	✓	✓

Factory mounting of valve manifolds, see accessories.

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

✓ = available

### Ordering example

Item line: 7MF4033-1EA00-1AA7-Z

B line: A01 + Y01 + Y21

C line: Y01: 10 ... 20 bar (145 ... 290 psi)

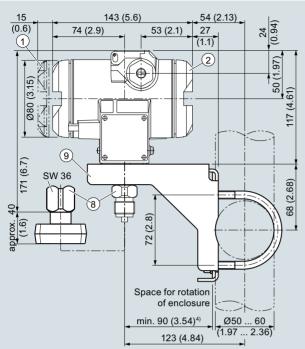
C line: Y21: bar (psi)

- 1) Measuring accuracies for PROFIBUS PA transmitters with Option Y01 are calculated in the same way as for HART devices.
- 2) If you do not wish to have any text engraved for Y15, then do not make any further text entries as "Y15:".
- 3) Preset values can only be changed over SIMATIC PDM.

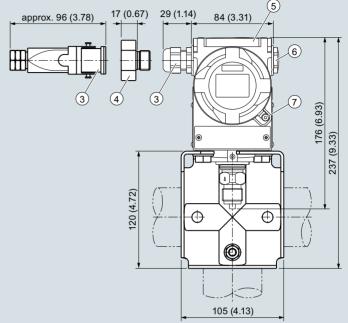
Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

for gauge pressure

### Dimensional drawings



- 1 Electronic side, digital display (longer overall length for cover with window)¹)
- 2 Terminal side1)
- 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"
- 3) Not with type of protection "FM + CSA" [IS + XP]"
- 4) 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)
- 8 Process connection: Connection shank G½B 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						
SITRANS P DS III series for gauge and absolute pressure, with front-flush diaphragm						
Input of gauge pressure, with front-flush diaphragm						
Measured variable	Gauge pressure, front-flush					
Measuring span (continuously adjustable) or nominal measuring range, max. operating pressure and max. test pressure	HART					
	Measuring 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 6.7MPa 972 psi	100 bar 10 MPa 1450 psi		
Lower measuring limit				'		
Measuring cell with silicone oil filling	100 mbar a/10 kPa a/1.45 psi a					
Measuring cell with inert filling liquid	100 mbar a/10 kPa a/1.45 psi a					

### Input of absolute pressure, with front-flush diaphragm

Measured variable

Upper measuring limit

• Measuring cell with Neobee

Electrical damping (step width 0.1 s)

Absolute pressure, front-flush

100 mbar a/10 kPa a/1.45 psi a

100 % of max. measuring span

Measuring span (continuously adjustable) or nominal measuring range, max. operating pressure and max. test pressure	HART	PROFIBUS PA/ FOUNDATION Fieldbus			
	Measuring span	Nominal measur- ing range	Max. operating pressure MAWP (PS)	Max. perm. test pressure	
	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	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 14.6 435 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	
	Depending on the process connection, the measuring span may differ from these value				
Lower measuring limit	0 mbar a/0 kPa a/0 psi a				
Upper measuring limit	100 % of max. measuring span				
Output	HART PROFIBER PA/FOLINDATION Fieldburg				

Upper measuring limit	100 % of max. measuring 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	$R_{\rm B} \leq (U_{\rm H}$ - 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 reversal. Each connection against the other with max. supply voltage.			

Set to 2 s (0 ... 100 s)

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			
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>Lower range 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 nominal measuring 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	≤ (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)) Effect of ambient temperature (in pressure per temperature change)	≤ (0.08 · r + 0.16) %	≤ (0.16 · r + 0.24) %		
Temperature difference between medium temperature and ambient temperature	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 position)			
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			
Operating conditions				
Installation conditions				
Ambient temperature	Observe the temperature class in areas subject to explosion hazard.			
Measuring cell with silicone oil	-40 +85 °C (-40 +185 °F)			
• Measuring cell with Neobee oil (with front-flush diaphragm)	-10 +85 °C (14 +185 °F)			
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 (for high temperature oil: -10 + 85 °C (14			
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 frontinto 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)			
<ul> <li>Measuring cell with silicone oil, with temperature decoupler (only for gauge pressure version with front-flush diaphragm)</li> </ul>	-40 +200 °C (-40 +392 °F)			
<ul> <li>Measuring cell with Neobee oil, with temp. decoupler (only for gauge pressure version with flush-mounted diaphragm)</li> </ul>	-10 +200 °C (14 392 °F)			
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 <sub>a</sub> -values $\le$ 0.8 μm (32 μ-inch)/welds R <sub>a</sub> ) $\le$ 1.6 μm (64 μ-inch) (Process connections acc. to 3A; R <sub>a</sub> -values $\le$ 0.8 μm (32 μ-inch)/welds R <sub>a</sub> ) $\le$ 0.8 μm (32 μ-inch)			

	(OZ p 111011)	
Power supply U <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 supply voltage	-	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 manual absolute processes with front flush d	lion by sam				
for gauge/absolute pressure, with front-flush d	napnragm				
SITRANS P DS III series for gauge and absolute pressu	re, 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) 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_{i} = 30 \text{ V}, \ l_{i} = 100 \text{ mA}, \\ P_{i} = 750 \text{ mW}; \ R_{i} = 300 \ \Omega $	FISCO supply unit: $U_0 = 17.5 \text{ V, } I_0 = 380 \text{ mA}, P_0 = 5.32 \text{ W}$ Linear barrier: $U_0 = 24 \text{ V, } I_0 = 250 \text{ mA}, P_0 = 1.2 \text{ W}$			
- Effective internal inductance/capacitance	$L_{i} = 0.4 \text{ mH}, C_{i} = 6 \text{ nF}$	$L_{i} = 7 \mu H, C_{i} = 1.1 \text{ nF}$			
• 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, $R_{\rm i}$ = 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	$L_i = 0.4 \text{ mH}, C_i = 6 \text{ nF}$	$L_{i} = 7  \mu H,  C_{i} = 1.1  \text{nF}$			
<ul> <li>Dust explosion protection for zone 21/22</li> </ul>	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: $U_{\rm H} = 9 \dots 32 \text{ V}$ DC; $P_{\rm max} = 1 \text{ W}$			
<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 V, $I_0$ = 570 mA Linear barrier: $U_0$ = 32 V, $I_0$ = 132 mA, $P_0$ = 1 W			
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 \; {\rm mH}, \; C_{\rm i} = 6 \; {\rm nF}$	$L_{\rm i} = 7  \mu \text{H},  C_{\rm i} = 1.1  \text{nF}$			
<ul> <li>Explosion protection acc. to FM</li> </ul>	Certificate of Compliance 3008490				
- Identification (XP/DIP) or (IS); (NI)	CL I, DIV 1, GP ABCD T4T6; CL II, DIV 1 T4T6; CL I, DIV 2, GP ABCD T4T6; CL				

# Hygiene version

• Explosion protection to CSA

- Identification (XP/DIP) or (IS)

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

Certificate of Compliance 1153651

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

		for gauge/absolute pressure	, with front-flush diaphragm
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 - Electrical damping, adjustable	characteristic 0 100 s
The address can be set using	Configuration tool or local	- Simulation function	Output/input (can be locked
	operation (standard setting address 126)	- officiation function	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 Pro-	• PID	Standard FOUNDATION
	cess Control Devices Version 3.0. class B		Fieldbus function block
Function blocks	2	Physical block	1 resource block
Analog input	_	Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block LCD
<ul> <li>Adaptation to customer-specific process variables</li> </ul>	Yes, linearly rising or falling characteristic	Pressure transducer block	LOD
- Electrical damping, adjustable	0 100 s	- Can be calibrated by applying	Yes
- Simulation function	Input /Output	two pressures	Yes
- Failure mode	parameterizable (last good	<ul><li>Monitoring of sensor limits</li><li>Simulation function: Measured</li></ul>	
	value, substitute value, incorrect value)	pressure value, sensor temperature and electronics tem-	Constant value or over parameterizable ramp function
- Limit monitoring	Yes, one upper and lower warn- ing 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 respectively		
Physical block	1		
Transducer blocks	2		
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 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/absolute pressure, with front-flush diaphragm

Selection and Ordering		Art						
Pressure transmitter for pressure, front-flush d SITRANS P DS III HAR	iaphragm,	7 1						
	lo. for the online configu- Cycle Portal.							
Measuring cell filling Silicone oil Inert liquid FDA compliant fill fluid • Neobee oil	Measuring cell cleaning normal	1 3					I	
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> 1 30 bar a <sup>1)</sup> Wetted parts materials Seal diaphragm	(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> (4.35 435 psi a) <sup>1)</sup>	E C C E S T T L	) E					
Stainless steel Hastellov <sup>2)</sup>	Stainless steel Stainless steel		A B					
	der code M, N, R or Q			7				
instructions in various E	e-cast aluminium eel precision casting  man plate inscription, iit: bar English plate inscription, iit: bar sh plate inscription, t: Pascal O with compact operating	-			0 3	1 2 3		
Explosion protection  None  With ATEX, Type of protection:  "Intrinsic safety (Ex ia)"  "Explosion-proof (Ex d)" 3)  "Ex nA/ic (Zone 2)" 4)  FM + CSA intrinsic safe (is) 5)  FM + CSA (is + ep) + Ex ia + Ex d (ATEX) + Zone 1D/2D 5) 6) 7)  With FM + CSA, Type of protection:  "Intrinsic Safe and Explosion Proof (is + xp)" 3) 5)							B D E F S	
Female thread ½-14 N     Device plug Han 7D (mating connector8)     Device plugs M12 (statement)	cable entry 5 PT plastic enclosure) incl.						B C D	

Selection and Ordering data	Article No.
Pressure transmitter for gauge and absolute pressure, front-flush diaphragm, SITRANS P DS III HART	7 M F 4 1 3 3 -
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

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 Order	ring data	Д	rti	cle	e N	0.
Pressure transmitte	er P for gauge and absolute	İ				
pressure, front-flus	h diaphragm:					
SITRANS P DS III witi	h PROFIBUS PA (PA)	7	M	F	4 1	34-
SITRANS P DS III witi	h FOUNDATION Fieldbus (FF)	7	M	F	4 1	35-
Click on the Articl ration in the PIA L	e No. for the online configuife Cycle Portal.	i		Ī	ī	-
Measuring cell fillin	g Measuring cell clean- ing					
Silicone oil	normal	1				
Inert liquid		3				
FDA compliant fill flu						
Neobee oil	normal	4				
Nominal measuring	-					
1 bar	(14.5 psi)		В			
4 bar	(58 psi)		C			
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			
Wetted parts materi	, , ,	-	Ī			
Seal diaphragm	Connection shank					
Stainless steel	Stainless steel			Α		
Hastelloy <sup>2)</sup>	Stainless steel			В		
Q Non-wetted parts m	aterials					
<ul> <li>Enclosure made of</li> </ul>	die-cast aluminium				0	
<ul> <li>Enclosure stainless</li> </ul>	s steel precision casting				3	
Version						
<ul> <li>Standard version, 0</li> </ul>	German plate inscription,					1
setting for pressure						
setting for pressure	n, English plate inscription,					2
	glish plate inscription,					3
setting for pressure	unit: Pascal					
	OVD with compact operating					
nstructions in variou		-				
Explosion protectio	n					Δ
<ul><li>None</li><li>With ATEX, Type of</li></ul>	protection:					A
- "Intrinsic safety (E	•					В
- "Explosion-proof (						D
- "Ex nA/ic (Zone 2						E
• FM + CSA intrinsic						F
• FM + CSA (is + ep)	) + Ex ia + Ex d (ATEX) +					S
Zone 1D/2D <sup>5)6)7)</sup>	no of protoction:					
<ul> <li>With FM + CSA, Tyl</li> <li>"Intrinsic Safe and</li> </ul>	pe of protection: d Explosion Proof (is + xp)" <sup>3)5)</sup>					
(available soon)	1 ENPRODICITI TOOL (13 T NP)					NC
Electrical connection	on/cable entry					
<ul> <li>Screwed gland M2</li> </ul>						В
<ul> <li>Screwed gland ½-</li> </ul>	14 NPT					С
- Davids - John Mid O	(atainlana ataal)8) 9)					

• Device plugs M12 (stainless steel)<sup>8) 9)</sup>

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)	7 M F 4 1 3 4 -
SITRANS P DS III with FOUNDATION Fieldbus (FF)	7 M F 4 1 3 5 -
Display	
Without display	0
<ul> <li>Without visible display (display concealed, setting: bar)</li> </ul>	1
	•
<ul> <li>With visible display (setting: bar)</li> </ul>	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

ioi gauge/absolute pressure, with it				· J
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	✓.		
Han 8D (instead of Han 7D)	A31	<b>√</b>		
<ul><li>Angled</li><li>Han 8D (metal)</li></ul>	A32 A33	<b>✓</b>		
,		· /	,	,
Cable sockets for device plugs M12 (metal (CuZn))	A50	•	•	•
Rating plate inscription (instead of German)				
• English	B11	<b>1</b>	<b>1</b>	<b>1</b>
• French	B12 B13	1	1	<b>√</b>
<ul><li>Spanish</li><li>Italian</li></ul>	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	D21	Ť	•	٧
Quality test certificate, 5-point factory calibration (IEC 60770-2)	C11	✓	✓	✓
Inspection certificate	C12	✓	✓	✓
Acc. to EN 10204-3.1				
Factory certificate Acc. to EN 10204-2.2	C14	<b>~</b>	✓	✓
Functional safety (SIL2)	C20	1		
Devices suitable for use according to				
IEC 61508 and IEC 61511. Includes SIL conformity declaration				
Functional safety (PROFIsafe) Certificate and PROFIsafe protocol	C21 <sup>2)</sup>		✓	
Functional safety (SIL2/3)	C23	✓		
Devices suitable for use according to 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	✓
(In the case of oxygen measurement and inert liquid max. 100 bar (1450 psi) at 60°C (140 °F))				
Export approval Korea	E11	1	✓	✓
CRN approval Canada (Canadian Registration Number)	E22 <sup>3)</sup>	✓	✓	✓
Dual seal	E24	✓	✓	✓
Explosion-proof "Intrinsic safety" (Ex ia) to	E25 <sup>4)</sup>	✓	1	✓
INMETRO (Brazil) (only for transmitter 7MF4B)				
"Flameproof" explosion protection according to INMETRO (Brazil)	E26 <sup>4)</sup>	✓	✓	✓
(only for transmitter 7MF4D)  Explosion-proof "Intrinsic safety" (Ex ia +	E28 <sup>4)</sup>	1	1	
Ex d) to INMETRO (Brazil) (only for transmitter 7MF4P)				
Ex Approval IEC Ex (Ex ia)	E45 <sup>4)</sup>	✓	✓	✓
(only for transmitter 7MF4B)	E464)	,	,	,
Ex Approval IEC Ex (Ex d) (only for transmitter 7MF4D)	E46 <sup>4)</sup>	•	•	•
(only for transmitter /MF4				

Selection and Ordering data	Order	code		
Further designs	Ordor	HART	PA	FF
Add "-Z" to Article No. and specify Order code.	- A			
Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)	E55 <sup>4)</sup>	<b>√</b>	<b>√</b>	<b>√</b>
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 7MF4	E57 <sup>4)</sup>	✓	✓	✓
Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China)	E58 <sup>4)</sup>	✓	✓	✓
(only for transmitter 7MF4R)  "Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (only for transmitter	E70 <sup>4)</sup>	✓	✓	✓
7MF4[Β, D]Z + E11)				
Ex-protection Ex ia according to EAC Ex (Russia)	E80	✓	✓	<b>√</b>
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 enclosure and cover (PU on epoxy)	G10	✓	✓	✓
Transient protector 6 kV (lightning protection)	J01	✓	✓	<b>✓</b>
Flanges to EN 1092-1, Form B1				
• DN 25, PN 40 <sup>5</sup> ) • DN 40, PN 40	M11 M13	1	<b>√</b>	<b>√</b>
• DN 40, PN 100	M23	1	1	1
• DN 50, PN 16	M04	✓	✓	✓
• DN 50, PN 40	M14	✓.	✓.	✓.
• DN 80, PN 16	M06	1	<b>√</b>	<b>√</b>
• DN 80, PN 40	M16	•	•	•
Flanges to ASME B16.5  • Stainless steel flange 1" class 150 <sup>5)</sup>	M40	1	1	1
• Stainless steel flange 1½" class 150	M41	1	1	1
• Stainless steel flange 2" class 150	M42	✓	✓	✓
Stainless steel flange 3" class 150	M43	✓.	<b>1</b>	<b>V</b>
<ul> <li>Stainless steel flange 4" class 150</li> <li>Stainless steel flange 1½" class 300</li> </ul>	M44	<b>✓</b>	<b>√</b>	<b>✓</b>
Stainless steel flange 1/2 class 300     Stainless steel flange 2" class 300	M46 M47	<b>*</b>	<b>*</b>	<b>V</b>
• Stainless steel flange 3" class 300	M48	1	1	1
• Stainless steel flange 4" class 300	M49	✓	✓	✓
Threaded connector to DIN 3852-2, form A, thread to ISO 228				
• G ¾"-A, front-flush <sup>6)</sup>	R01	✓	1	✓
<ul> <li>G 1"-A, front-flush<sup>6)</sup></li> <li>G 2"-A, front-flush</li> </ul>	R02 R04	<b>✓</b>	<b>√</b>	1
Tank connection <sup>7)</sup>				
Sealing is included in delivery	Dan	,	,	,
• TG 52/50, PN 40 • TG 52/150, PN 40	R10 R11	1	1	1
,,				

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 Add "-Z" to Article No. and specify Order code.		HART	PA	FF
Sanitary process connection according				
DIN 11851 (Dairy connection with slotted				
union nut)	NO4	,	,	,
<ul><li>DN 50, PN 25</li><li>DN 80, PN 25</li></ul>	N04 N06	1	1	1
'	1400	ľ	•	Ť
Tri-Clamp connection according DIN 32676/ISO 2852				
• DN 50/2", PN 16	N14	✓	✓	✓
• DN 65/2.5", PN 10	N15	✓	✓	✓
• Clamp 2" ISO 2852 PN 16	N22	<b>1</b>	1	<b>V</b>
• Clamp 3" ISO 2852 PN 16	N23	<b>✓</b>	✓	<b>✓</b>
Varivent connection EHEDG compliant				
Type N = 68 for Varivent enclosure	N28	1	1	1
DN 40 125 and 1½" 6", PN 40	1120		•	•
Temperature decoupler up to 200 °C8)	P00	1	<b>✓</b>	<b>√</b>
for version with front-flush diaphragm				
Sanitary process connection to DRD				
• DN 50, PN 40	M32	✓	✓	✓
SMS socket with union nut				
• 2"	M67	✓	✓.	<b>✓</b>
• 2½"	M68	1	1	1
• 3"	M69	<b>V</b>	•	•
SMS threaded socket • 2"	M72	1	1	1
• 21/2"	M73 M74	<b>✓</b>	<b>*</b>	<b>V</b>
• 3"	M75	1	1	1
IDF socket with union nut ISO 2853				
• 2"	M82	✓	1	✓
• 21/2"	M83	✓	✓	✓
• 3"	M84	✓	✓	✓
IDF threaded socket ISO 2853				
• 2"	M92	<b>√</b>	<b>1</b>	✓.
• 2½" • 3"	M93	<b>√</b>	1	1
	M94			
Sanitary process connection to NEUMO Bio-Connect screw connection				
EHEDG compliant				
• DN 50, PN 16	Q05	✓	1	✓
• DN 65, PN 16	Q06	<b>√</b>	<b>1</b>	<b>√</b>
• DN 80, PN 16	Q07	<b>1</b>	<b>√</b>	<b>V</b>
<ul><li>DN 100, PN 16</li><li>DN 2", PN 16</li></ul>	Q08	1	1	<b>✓</b>
• DN 2½", PN 16	Q13 Q14	<b>✓</b>	<b>∀</b>	<b>✓</b>
• DN 3", PN 16	Q15	1	1	1
• DN 4", PN 16	Q16	✓	1	✓
Sanitary process connection to NEUMO				
Bio-Connect flange connection				
EHEDG compliant  • DN 50, PN 16	Q23	1	1	1
• DN 65, PN 16	Q24	1	1	<b>V</b>
• DN 80, PN 16	Q25	1	✓	1
• DN 100, PN 16	Q26	✓	✓	✓
• DN 2", PN 16	Q31	✓	✓	<b>∀ ∀</b>
• DN 2½", PN 16	Q32	✓.	✓	✓
• DN 3", PN 16	Q33	<b>V</b>	1	<b>V</b>
• DN 4", PN 16	Q34	✓	✓	✓

Ξ					
	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				
	EHEDG compliant • DN 50, PN 16	Q39	1	1	1
	• DN 65, PN 10	Q40	1	1	1
	• DN 80, PN 10	Q41	1	<i>'</i>	1
	• DN 100, PN 10	Q42	1	1	1
	• DN 2½", PN 16	Q48	1	1	1
	• DN 3", PN 10	Q49	1	1	1
	• DN 4", PN 10	Q50	1	1	1
	Bio-Control sanitary process connection				
	• DN 50, PN 16	Q53	1	1	1
	• DN 65, PN 16	Q54	1	1	1
		QJ-T	•		•
	Sanitary process connection to NEUMO Bio-Connect S flange connection				
	• DN 2", PN 16	Q72	1	1	1
		Q, L	·		•
	Aseptic threaded socket to DIN 11864-1 Form A				
	• DN 50. PN 25	N33	1	1	1
	• DN 65, PN 25	N34	1	1	1
	• DN 80, PN 25	N35	1	✓	1
	• DN 100, PN 25	N36	1	1	1
	Aseptic flange with notch to DIN 11864-2 Form A				
	• DN 50, PN 16	N43	1	✓	1
	• DN 65, PN 16	N44	1	✓	✓
	• DN 80, PN 16	N45	1	✓	✓
	• DN 100, PN 16	N46	1	✓	✓
	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	✓	✓	✓
	Aseptic clamp with groove to DIN 11864-3 Form A				
	• DN 50, PN 25	N53	1	1	✓
	• DN 65, PN 25	N54	✓	✓	✓
	• DN 80, PN 16	N55	✓	✓	✓
	• DN 100, PN 16	N56	✓	✓	✓

- 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) Cannot be ordered with remote seal.
- 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.

  Special seal in Viton included in the scope of delivery. FKM; temperature range -20 ... +200 °C (-4 ... +392 °C).
- 6) Cannot be combined with Order code P00. Can only be ordered with silicone oil measuring cell filling.
- 7) The weldable socket can be ordered under accessories.
- 3A 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			
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 descrip-	Y15	✓	✓	✓
tion) 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 indicator 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 <sub>2</sub> O <sup>*)</sup> , inH <sub>2</sub> O <sup>*)</sup> , ftH <sub>2</sub> O <sup>*)</sup> , mmHG, inHG, psi, Pa, kPa, MPa, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , Torr, ATM or % *) ref. temperature 20 °C				
Setting of pressure indication in non-pressure units <sup>2)</sup>	Y22 + Y01	✓		
Specify in plain text: Y22: up to l/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	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)

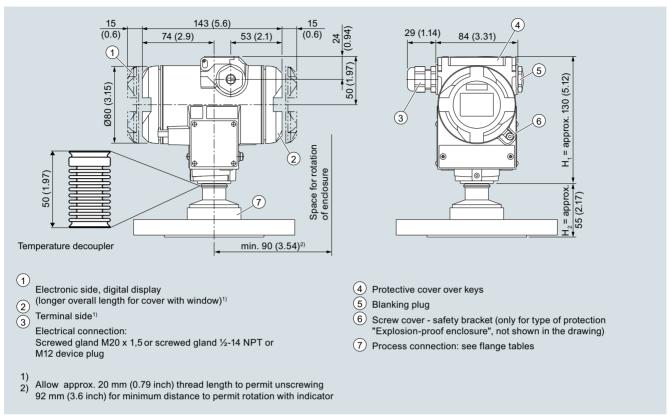
<sup>1)</sup> Measuring accuracies for PROFIBUS PA transmitters with Option Y01 are calculated in the same way as for HART devices.

<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

 $H_2$  = 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

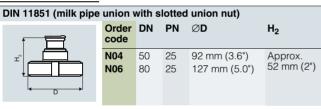
EN 1092-1					
	Order code	DN	PN	ØD	H <sub>2</sub>
Ŧ,	M11	25	40	115 mm (4.5")	Approx.
D	M13	40	40	150 mm (5.9")	52 mm (2")
D	M23	40	100	170 mm (6.7")	
	M04	50	16	165 mm (6.5")	
	M14	50	40	165 mm (6.5")	
	M06	80	16	200 mm (7.9")	
	M16	80	40	200 mm (7.9")	

#### Flanges according to ASME



#### NuG and pharmaceutical connections

Connections to DIN



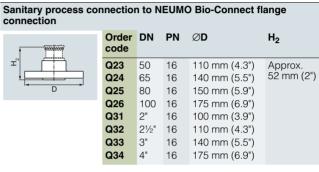
Tri-Clamp nach DIN 32676									
	Order code	DN	PN	ØD	H <sub>2</sub>				
T <sup>C</sup> D	N14 N15	50 65	16 10	64 mm (2.5") 91 mm (3.6")	Approx. 52 mm (2")				

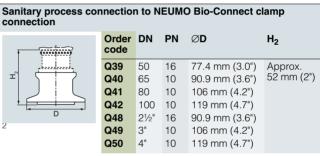
#### Other connections

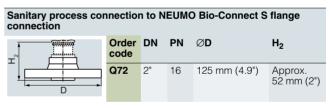
Varivent connection					
<u> </u>	Order code	DN	PN	ØD	H <sub>2</sub>
T <sup>2</sup>	N28	40 125	40	84 mm (3.3")	Approx. 52 mm (2")

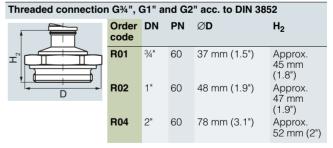
Sanitary process connection to DRD									
	Order code	DN	PN	ØD	H <sub>2</sub>				
D	M32	50	40	105 mm (4.1")	Approx. 52 mm (2")				

#### Sanitary process screw connection to NEUMO Bio-Connect Order DN PN $\emptyset$ 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")









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 PN ØD Order DN $H_2$ code R10 63 mm (2.5") 25 40 Approx. 63 mm (2.5") Approx. 170 mm (6.7") R11 25 40 63 mm (2.5")

SMS socket with union nut									
	Order code	DN	PN	ØD	H <sub>2</sub>				
T	M67 M68 M69	2" 2½" 3"	25	84 mm (3.3") 100 mm (3.9") 114 mm (4.5")	Approx. 52 mm (2")				

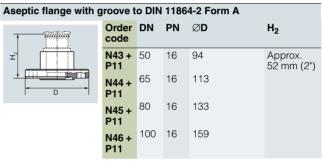
	rder ode	DN	PN	ØD	H <sub>2</sub>
M7	74	21/2"	25	70 x 1/6 mm 85 x 1/6 mm 98 x 1/6 mm	Approx. 52 mm (2")

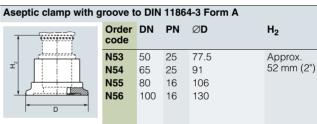
IDF socket with union nut					
	Order code	DN	PN	ØD	H <sub>2</sub>
T D	M82 M83 M84	2" 2½" 3"		77 mm (3") 91 mm (3.6") 106 mm (4.2")	Approx. 52 mm (2")

IDF threaded socket					
(m)	Order code	DN	PN	ØD	H <sub>2</sub>
T D	M93	2" 2½" 3"		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					
(	Order code	DN	PN	ØD	H <sub>2</sub>
Ŧ D	N33 N34 N35 N36	50 65 80 100	25 25 25 25 25	78 × 1/6" 95 × 1/6" 110 × ½" 130 × ½"	Approx. 52 mm (2")

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

#### Input

Measured variable

Measuring span (fully adjustable) or nominal 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		
Measuring 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 temperature of medium -20 °C <  $\vartheta$  ≤ +60 °C  $(-4 \, {}^{\circ}\text{F} < \vartheta \le +140 \, {}^{\circ}\text{F})$
- for temperature of medium 60 °C <  $\vartheta$  ≤ +100 °C (max. 85 °C for measuring cell 30 bar) (140 °F < v ≤ +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  $\cdot$  ( $\vartheta$  - 60 °C)/°C 3 kPa a + 2 kPa a  $\cdot$  ( $\vartheta$  - 60 °C)/°C 0.44 psi a + 0.29 psi a · (ϑ - 140 °F)/°F

100 % of max. measuring span

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

ambient temperature/temperature of medium)

Lower range value	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 reversal.  Each connection against the other with max. supply voltage.		
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

SITRANS P DS III series for absolute pressure (from the 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>Lower range 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 nominal measuring 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			
Operating 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)			
• 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			

Pressure transmitters

for applications with advanced requirements (Advanced)

SITRANS P DS III

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-AlSi 12 or stainless steel precision casting, mano. $1.4408$			
Wetted parts materials				
Connection shank	Stainless steel, mat. no. 1.4404/316L or Ha	stelloy C4, mat. no. 2.4602		
Oval flange	Stainless steel, mat. no. 1.4404/316L			
Seal diaphragm	Stainless steel, mat. no. 1.4404/316L or Ha	stelloy C276, mat. no. 2.4819		
Measuring cell filling	Silicone oil or inert filling liquid (maximum value with oxygen measurement pressure 100 bar (1450 psi) at 60 °C (140 °F))			
Process connection	Connection shank G½B to EN 837-1, female thread ½ -14 NPT or oval flange (PN 160 (MAWP 2320 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-plate	d		
Stainless steel 304	Sheet stainless steel, mat. no. 1.4301 (SS 3	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 supply voltage	- No			

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 supply voltage	-	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

m the gauge pressure series)				
HART	PROFIBUS PA/ FOUNDATION Fieldbus			
	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)			
PTB 13 ATEX 2007 X	PTB 13 ATEX 2007 X			
Ex II 1/2 G Ex ia/ib IIC T4/T5/T6 Ga/Gb				
-40 +70 °C (-40 +158 °F) temperatu	-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: $U_{\rm i}$ = 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: $U_0 = 24 \text{ V}$ , $I_0 = 250 \text{ mA}$ , $P_0 = 1.2 \text{ W}$			
$L_{\rm i} = 0.4  {\rm mH},  C_{\rm i} = 6  {\rm nF}$	$L_{\rm i} = 7  \mu \text{H},  C_{\rm i} = 1.1  \text{nF}$			
PTB 99 ATEX 1160				
Ex II 1/2 G Ex d IIC T4/T6 Gb				
To circuits with values: $U_{\rm H}$ = 10.5 45 V DC	To circuits with values: $U_{\rm H}$ = 9 32 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 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: $U_0 = 24 \text{ V}$ , $I_0 = 250 \text{ mA}$ , $P_0 = 1.2 \text{ W}$			
$L_{i} = 0.4 \text{ mH}, C_{i} = 6 \text{ nF}$	$L_i = 7  \mu \text{H},  C_i = 1.1  \text{nF}$			
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; $P_{\rm max}$ = 1.2 W	To circuits with values: $U_{\rm H}$ = 9 32 V DC; $P_{\rm max}$ = 1 W			
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				
$U_{\rm m} = 45  {\rm V}$	$U_{\rm m} = 32 \text{ V}$			
To circuits with values: $U_{\rm i}$ = 45 V	FISCO supply unit ic: $U_0 = 17.5 \text{ V}$ , $I_0 = 570 \text{ mA}$ Linear barrier: $U_0 = 32 \text{ V}$ , $I_0 = 132 \text{ mA}$ , $P_0 = 1 \text{ W}$			
$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{\rm i} = 7  \mu \text{H},  C_{\rm i} = 1.1  \text{nF}$			
Certificate of Compliance 3008490				
	1, GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC L II, DIV 2, GP FG; CL III			
Certificate of Compliance 1153651				
	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			
	HART  For gases of fluid group 1 and liquids of article 4, paragraph 3 (sound engineerin 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) temperatt -40 +70 °C (-40 +158 °F) temperatt -40 +70 °C (-40 +140 °F) temperatt -40 +60 °C (-40 +140 °F) temperatt -40 +60 °C (-40 +140 °F) temperatt -40 +60 °C (-40 +140 °F) temperatt -40 +85 °C (-40 +185 °F) temperatt -40 +60 °C (-40 +185 °F) temperatt -40 +60 °C (-40 +185 °F) temperatt -40 +60 °C (-40 +140 °F) temperatt -40 +60 °C (-40 +185 °F) temperatt -40 +60 °C (-40 +185 °F) temperatt -40 +60 °C (-40 +185 °F) temperatt -40 +85 °C (-40 +185 °F)  To circuits with values: $U_H = 10.5 45 \text{ V}$ 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: $U_I = 30 \text{ V}$ , $I_I = 100 \text{ mA}$ , $P_I = 750 \text{ mW}$ , $P_I = 300 \Omega$ $L_I = 0.4 \text{ mH}$ , $L_I = 6 \text{ nF}$ PTB 01 ATEX 2055  Ex II 2 D Ex tb IIIC T120°C Db  To circuits with values: $U_H = 10.5 45 \text{ V}$ DC; $P_{\text{max}} = 1.2 \text{ W}$ 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  Ex II 2/3 G Ex ic iIC T4/T5/T6 Gb/Gc  Ex II 2/3 G Ex ic IIC T4/T5/T6 Gb/Gc  Ex II 2/3 G Ex nA IIC T4/T5/T6 Gb/Gc  Ex II 2/3 G Ex nA IIC T4/T5/T6 Gb/Gc  Ex II 2/3 G Ex nA IIC T4/T5/T6 Gb/Gc  Ex II 2/3 G Ex nA IIC T4/T5/T6 Gb/Gc  Ex II 2/3 G Ex nA IIC T4/T5/T6 Gb/Gc  Ex II 2/3 G Ex nA IIC T4/T5/T6 Gb/Gc  Ex II 2/3 G Ex nA IIC T4/T5/T6 Gb/Gc  Ex II 2/3 G Ex nA IIC T4/T5/T6 Gb/Gc  Ex II 2/3 G Ex nA IIC T4/T5/T6 Gb/Gc  Ex II 2/3 G Ex nA IIC T4/T5/T6 Gb/Gc  Ex II 2/3 G Ex nA IIC T4/T5/T6 Gb/Gc  Ex II 2/3 G Ex nA IIC T4/T5/T6 Gb/Gc  Ex II 2/3 G Ex nA IIC T4/T5/T6 Gb/Gc  Ex II 2/3 G Ex nA IIC T4/T5/T6 Gb/Gc  Ex II 2/3 G Ex nA IIC T4/T5/T6 Gb/Gc			

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P DS III

### for absolute pressure (from gauge pressure series)

ioi absolute pressure (iroin g	gauge pressure series,
HART communication	
HART	230 1100 Ω
Protocol	HART Version 5.x
Software for computer	SIMATIC PDM
PROFIBUS PA communication	
Simultaneous communication with master class 2 (max.)	4
The address can be set using	Configuration tool or local opera- tion (standard setting address 126)
Cyclic data usage	
Output byte	5 (one measured value) or 10 (two measured values)
• Input byte	0, 1, or 2 (register operating mode and reset function for metering)
Internal preprocessing	
Device profile	PROFIBUS PA Profile for Process Control Devices Version 3.0, class B
Function blocks	2
Analog input	
<ul> <li>Adaptation to customer-specific process variables</li> </ul>	Yes, linearly rising or falling characteristic
- Electrical damping, adjustable	0 to 100 s
- Simulation function	Input /Output
- Failure mode	parameterizable (last good value, substitute value, incorrect value)
- Limit monitoring	Yes, one upper and lower 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
- 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 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 absolute pressure (from gauge pressure series)

Pressure transmitters t	g data	Ar	IC	le	No	Ο.	
		7 N	1F	4	2 3	3 3	•
from gauge pressure s SITRANS P DS III with							
	lo. for the online configu-						
ration in the PIA Life							
Measuring cell filling	Measuring cell						
Silicone oil	cleaning normal	1					
Inert liquid <sup>1)</sup>	grease-free to	3					
inert liquid	cleanliness level 2	ľ					
Measuring span (min.	max.)	-					
3.34 250 mbar a	(0.13 3.63 psi a)		)				
43.34 1300 mbar a	(0.63 18.86 psi a)	F					
0.17 5 bar a	(2.43 72.5 psi a)	0					
1 30 bar a	(14.6 435 psi a)	ŀ	-				
5.34 160 bar a <sup>2)</sup>	(77.4 2 321 psi a)	L					
13.34 400 bar a <sup>2)</sup> 23.34 700 bar a <sup>2)</sup>	(193.4 5 802 psi a) (338.43 10 153 psi a)	N					
		_					
<b>Wetted parts material:</b> Seal diaphragm	Process connection						
Stainless steel	Stainless steel		A				
Stainiess steei Hastellov	Stainless steel Stainless steel		B				
Hastelloy	Hastelloy		C				
Version for diaphragm :	seals in conjunction with			1			
process connector "fem (recommended version)	nale thread ½-14 NPT"		ĺ				
			v	0			
Version for diaphragm s with process connector	seals in conjunction : "G1/2B connection		Y	U			
with process connector shank" <sup>3) 4) 5) 6) 7)</sup>							
Process connection							
• Connection shank G1/	½B to EN 837-1			0			
<ul> <li>Female thread ½-14 N</li> </ul>				1			
Stainless steel oval flagger	ange with process con-						
nection (Oval flange h	,			2			
<ul> <li>Mounting thread <sup>7</sup>/<sub>1</sub></li> <li>IEC 61518/DIN EN 6</li> </ul>	6-20 0191 10 31518			2			
- Mounting thread M1				3			
- Mounting thread M1	2 to DIN 19213			4			
				4			
				5			
				-			
<ul> <li>Male thread ½ -14 NF</li> <li>Non-wetted parts mate</li> </ul>	erials	$\ $		5			
<ul> <li>Male thread ½ -14 NF</li> <li>Non-wetted parts mate</li> <li>Enclosure made of die</li> </ul>	erials e-cast aluminium			5	0		
<ul> <li>Male thread ½ -14 NF</li> <li>Non-wetted parts mat</li> <li>Enclosure made of di</li> <li>Enclosure stainless st</li> </ul>	erials e-cast aluminium			5	0		
<ul> <li>Male thread ½ -14 NF</li> <li>Non-wetted parts mate</li> <li>Enclosure made of die</li> <li>Enclosure stainless state</li> <li>Version</li> </ul>	e <b>rials</b> e-cast aluminium eel precision casting <sup>8)</sup>			5			
<ul> <li>Male thread ½ -14 NF</li> <li>Non-wetted parts mate</li> <li>Enclosure made of die</li> <li>Enclosure stainless st</li> <li>Version</li> <li>Standard version, Ge</li> </ul>	erials e-cast aluminium eel precision casting <sup>8)</sup> rman plate inscription,	-		5		1	
<ul> <li>Male thread ½ -14 NF</li> <li>Non-wetted parts mate</li> <li>Enclosure made of die</li> <li>Enclosure stainless st</li> <li>Version</li> <li>Standard version, Ge setting for pressure united</li> </ul>	erials e-cast aluminium eel precision casting <sup>8)</sup> rman plate inscription,	-		5		1 2	
<ul> <li>Male thread ½ -14 NF</li> <li>Non-wetted parts mate</li> <li>Enclosure made of die</li> <li>Enclosure stainless st</li> <li>Version</li> <li>Standard version, Gesetting for pressure under the setting for pressure un</li></ul>	erials e-cast aluminium eeel precision casting <sup>8)</sup> rman plate inscription, nit: bar English plate inscription, nit: bar			5		2	
<ul> <li>Male thread ½ -14 NF</li> <li>Non-wetted parts mate</li> <li>Enclosure made of die</li> <li>Enclosure stainless st</li> <li>Version</li> <li>Standard version, Gesetting for pressure under the setting for pressure un</li></ul>	erials e-cast aluminium eeel precision casting <sup>8)</sup> rman plate inscription, nit: bar English plate inscription, nit: bar sh plate inscription,	-		5			
<ul> <li>Male thread ½ -14 NF</li> <li>Non-wetted parts mate</li> <li>Enclosure made of die</li> <li>Enclosure stainless st</li> <li>Version</li> <li>Standard version, Gesetting for pressure ue</li> <li>International version, setting for pressure ue</li> <li>Chinese version, Englisetting for pressure un</li> </ul>	erials e-cast aluminium eeel precision casting <sup>8</sup> )  rman plate inscription, nit: bar English plate inscription, nit: bar sh plate inscription, it: Pascal			5		2	
<ul> <li>Male thread ½ -14 NF</li> <li>Non-wetted parts mate</li> <li>Enclosure made of die</li> <li>Enclosure stainless st</li> <li>Version</li> <li>Standard version, Gesetting for pressure usefung for pressure usefung for pressure unesting for pressure unesti</li></ul>	erials e-cast aluminium eel precision casting <sup>8)</sup> rman plate inscription, nit: bar English plate inscription, nit: bar sh plate inscription, it: Pascal D with compact operat-	-		5		2	
Male thread ½ -14 NF Non-wetted parts mate Enclosure made of die Enclosure stainless st Version Standard version, Ge setting for pressure une International version, setting for pressure une Chinese version, Englisetting for pressure une All versions include DV ng instructions in vario	erials e-cast aluminium eel precision casting <sup>8)</sup> rman plate inscription, nit: bar English plate inscription, nit: bar sh plate inscription, it: Pascal D with compact operat-	_		5		2	
<ul> <li>Male thread ½ -14 NF</li> <li>Non-wetted parts mate</li> <li>Enclosure made of die</li> <li>Enclosure stainless st</li> <li>Version</li> <li>Standard version, Gesetting for pressure une</li> <li>International version, setting for pressure une</li> <li>Chinese version, Englisetting for pressure une</li> <li>All versions include DV ing instructions in vario</li> <li>Explosion protection</li> </ul>	erials e-cast aluminium eel precision casting <sup>8)</sup> rman plate inscription, nit: bar English plate inscription, nit: bar sh plate inscription, it: Pascal D with compact operat-	_		5		2	
<ul> <li>Male thread ½ -14 NF</li> <li>Non-wetted parts mate</li> <li>Enclosure made of die</li> <li>Enclosure stainless st</li> <li>Version</li> <li>Standard version, Gesetting for pressure uie</li> <li>International version, setting for pressure uie</li> <li>Chinese version, Englisetting for pressure und All versions include DV ing instructions in vario</li> <li>Explosion protection</li> <li>None</li> <li>With ATEX, Type of pr</li> </ul>	erials e-cast aluminium eeel precision casting <sup>8</sup> )  rman plate inscription, nit: bar English plate inscription, nit: bar sh plate inscription, it: Pascal D with compact operat- us EU languages.	-		5		2	A
<ul> <li>Male thread ½ -14 NF</li> <li>Non-wetted parts mate</li> <li>Enclosure made of die</li> <li>Enclosure stainless st</li> <li>Version</li> <li>Standard version, Gesetting for pressure une</li> <li>International version, setting for pressure une</li> <li>Chinese version, Englisetting for pressure une</li> <li>All versions include DVing instructions in vario</li> <li>Explosion protection</li> <li>None</li> <li>With ATEX, Type of presunder</li> <li>"Intrinsic safety (Ex</li> </ul>	erials e-cast aluminium eel precision casting <sup>8</sup> )  rman plate inscription, nit: bar English plate inscription, nit: bar sh plate inscription, it: Pascal D with compact operat- us EU languages.	_		5		2	A
<ul> <li>Male thread ½ -14 NF</li> <li>Non-wetted parts mate</li> <li>Enclosure made of die</li> <li>Enclosure stainless st</li> <li>Version</li> <li>Standard version, Gesetting for pressure uie</li> <li>International version, setting for pressure uie</li> <li>Chinese version, Englisetting for pressure uie</li> <li>Chinese version include DV ing instructions in vario</li> <li>Explosion protection</li> <li>None</li> <li>With ATEX, Type of presult in the internation in vario</li> <li>Explosion-proof (Explosion-proof)</li> </ul>	erials e-cast aluminium eel precision casting <sup>8</sup> )  rman plate inscription, nit: bar English plate inscription, nit: bar sh plate inscription, it: Pascal D with compact operat- us EU languages.  otection: ia)" (c d)"9)	_		5		2	A B D
<ul> <li>Male thread ½ -14 NF</li> <li>Non-wetted parts mate</li> <li>Enclosure made of die</li> <li>Enclosure stainless st</li> <li>Version</li> <li>Standard version, Gesetting for pressure une</li> <li>International version, setting for pressure une</li> <li>Chinese version, Englisetting for pressure une</li> <li>All versions include DVing instructions in vario</li> <li>Explosion protection</li> <li>None</li> <li>With ATEX, Type of presult in the material safety (Exemplision in the proof (Exemplision)</li> <li>"Explosion-proof (Exemplision)</li> <li>"Intrinsic safety and</li> </ul>	erials e-cast aluminium eel precision casting <sup>8</sup> )  rman plate inscription, nit: bar English plate inscription, nit: bar sh plate inscription, it: Pascal D with compact operat- us EU languages.	_		5		2	A
<ul> <li>Male thread ½ -14 NF</li> <li>Non-wetted parts mate</li> <li>Enclosure made of die</li> <li>Enclosure stainless st</li> <li>Version</li> <li>Standard version, Gesetting for pressure uie</li> <li>International version, setting for pressure uie</li> <li>Chinese version, Englisetting for pressure uie</li> <li>Chinese version include DV ing instructions in vario</li> <li>Explosion protection</li> <li>None</li> <li>With ATEX, Type of presult in the internation in vario</li> <li>Explosion-proof (Explosion-proof)</li> </ul>	erials e-cast aluminium eel precision casting <sup>8</sup> )  rman plate inscription, nit: bar English plate inscription, nit: bar sh plate inscription, it: Pascal D with compact operat- us EU languages.  otection: ia)" (a)"9) flameproof enclosure"	_		5		2	A B D
<ul> <li>Male thread ½ -14 NF</li> <li>Non-wetted parts mate</li> <li>Enclosure made of die</li> <li>Enclosure stainless st</li> <li>Version</li> <li>Standard version, Gesetting for pressure une</li> <li>International version, setting for pressure une</li> <li>Chinese version, Englissetting for pressure une</li> <li>All versions include DVing instructions in vario</li> <li>Explosion protection</li> <li>None</li> <li>With ATEX, Type of presult in trinsic safety (Exelexion)</li> <li>"Intrinsic safety and (Exelexia + Exel)</li> <li>"Explosion (Exelexia)</li> <li>"Explosion safety, explosion safety, explosions safety</li> </ul>	erials e-cast aluminium eeel precision casting <sup>8</sup> )  rman plate inscription, nit: bar English plate inscription, nit: bar sh plate inscription, it: Pascal D with compact operat- us EU languages.  otection: ia)" (c d)"9) flameproof enclosure"  1) losion-proof enclosure	_		5		2	A B D P
<ul> <li>Male thread ½ -14 NF</li> <li>Non-wetted parts mate</li> <li>Enclosure made of die</li> <li>Enclosure stainless st</li> <li>Version</li> <li>Standard version, Gesetting for pressure une</li> <li>International version, setting for pressure une</li> <li>Chinese version, Englisetting for pressure une</li> <li>All versions include DVing instructions in vario</li> <li>Explosion protection</li> <li>None</li> <li>With ATEX, Type of presult intrinsic safety (Exelosion-proof (Exe</li></ul>	erials e-cast aluminium eel precision casting <sup>8</sup> )  rman plate inscription, nit: bar English plate inscription, nit: bar sh plate inscription, it: Pascal D with compact operat- us EU languages.  otection: ia)" (c d)"9) flameproof enclosure"	_		5		2	A B D P
<ul> <li>Male thread ½ -14 NF</li> <li>Non-wetted parts mate</li> <li>Enclosure made of die</li> <li>Enclosure stainless st</li> <li>Version</li> <li>Standard version, Gesetting for pressure une</li> <li>International version, setting for pressure une</li> <li>Chinese version, Englisetting for pressure une</li> <li>All versions include DV ing instructions in vario</li> <li>Explosion protection</li> <li>None</li> <li>With ATEX, Type of presult intrinsic safety (Exelosion-proof (Exelosion)</li> <li>"Intrinsic safety (Exelosion)</li> <li>"Ex nA/ic (Zone 2)*1</li> <li>"Intrinsic safety, expend dust explosion zone 1D/2D)*10/12)</li> </ul>	erials e-cast aluminium eeel precision casting <sup>8</sup> )  rman plate inscription, nit: bar English plate inscription, nit: bar sh plate inscription, it: Pascal D with compact operat- us EU languages.  otection: ia)" (c d)" <sup>9</sup> ) flameproof enclosure"  1) losion-proof enclosure protection (Ex ia+ Ex d +	-		5		2	A B D P E R
<ul> <li>Male thread ½ -14 NF</li> <li>Non-wetted parts mate</li> <li>Enclosure made of die</li> <li>Enclosure stainless st</li> <li>Version</li> <li>Standard version, Gesetting for pressure used international version, setting for pressure used in the setting for pressure</li></ul>	erials e-cast aluminium e-el precision casting <sup>8</sup> )  rman plate inscription, nit: bar English plate inscription, nit: bar sh plate inscription, it: Pascal D with compact operat- us EU languages.  otection: ia)" (a d)"9) flameproof enclosure"  1) losion-proof enclosure orotection (Ex ia+ Ex d + fe (is) <sup>13</sup> )	_		5		2	A B D P E R
<ul> <li>Male thread ½ -14 NF</li> <li>Non-wetted parts mate</li> <li>Enclosure made of die</li> <li>Enclosure stainless st</li> <li>Version</li> <li>Standard version, Gesetting for pressure used international version, setting for pressure used in the setting for pressure</li></ul>	erials e-cast aluminium e-el precision casting <sup>8</sup> )  rman plate inscription, nit: bar English plate inscription, nit: bar sh plate inscription, it: Pascal D with compact operat- us EU languages.  otection: ia)" (a d)"9) flameproof enclosure"  1) losion-proof enclosure orotection (Ex ia+ Ex d + fe (is) <sup>13</sup> )	_		5		2	A B D P E R
<ul> <li>Male thread ½ -14 NF</li> <li>Non-wetted parts mate</li> <li>Enclosure made of die</li> <li>Enclosure stainless st</li> <li>Version</li> <li>Standard version, Gesetting for pressure une</li> <li>International version, setting for pressure une</li> <li>Chinese version, Englisetting for pressure une</li> <li>All versions include DVing instructions in vario</li> <li>Explosion protection</li> <li>None</li> <li>With ATEX, Type of presult intrinsic safety (Exelosion-proof (Exe</li></ul>	erials e-cast aluminium eel precision casting <sup>8</sup> )  rman plate inscription, nit: bar English plate inscription, nit: bar sh plate inscription, it: Pascal D with compact operat- us EU languages.  otection: ia)" (c d)"9) flameproof enclosure"  1) losion-proof enclosure orotection (Ex ia+ Ex d + fe (is) <sup>13</sup> ) Ex ia + Ex d (ATEX) +			5		2	A B D P E R
<ul> <li>International version, setting for pressure un</li> <li>Chinese version, Englisetting for pressure un</li> <li>All versions include DV ing instructions in vario</li> <li>Explosion protection</li> <li>None</li> <li>With ATEX, Type of promotion and (Explosion-proof (Explosion-proo</li></ul>	erials e-cast aluminium eeel precision casting <sup>8</sup> )  rman plate inscription, nit: bar English plate inscription, nit: bar sh plate inscription, it: Pascal D with compact operat- us EU languages.  otection: ia)" (c d)"9) flameproof enclosure"  1) losion-proof enclosure	_		5		2	A B D P

Octobies and Oudering date	At: - 1 - N   -	
Selection and Ordering data	Article No.	
Pressure transmitters for absolute pressure	7 M F 4 2 3 3 -	
from gauge pressure series SITRANS P DS III with HART		
Electrical connection/cable entry		
Screwed gland M20x1.5	В	
• Screwed gland ½-14 NPT	С	
Device plug Han 7D (plastic enclosure) incl. mating connector <sup>14)</sup>	D	
• Device plugs M12 (stainless steel) <sup>15)</sup> <sup>16)</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
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.

- 1) For oxygen application, add Order code E10.
- 2) Available soon
- 3) Version 7MF4233-1DY... only up to max. measuring span 200 mbar a (80 inH<sub>2</sub>O a).
- 4) When also ordering the quality test 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.
- 5) If the inspection 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) 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.
- <sup>15)</sup> 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 Orderin	g data	Arti	cle No	).				
Pressure transmitters	for absolute pressure							
from gauge pressure								
SITRANS P DS III with PROFIBUS PA (PA)			7 M F 4 2 3 4 -					
	OUNDATION Fieldbus (FF)	7 M F 4 2 3 5 -						
ration in the PIA Life	No. 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						
Nominal measuring ra	inge							
250 mbar a	(3.63 psi a)	D						
1300 mbar a	(18.86 psi a)	F						
5 bar a	(72.5 psi a)	G						
30 bar a 160 bar a <sup>2)</sup>	(435 psi a)	H						
400 bar a <sup>2)</sup>	(2 321 psi a) (5 802 psi a)	M						
700 bar a <sup>2)</sup>	(10 153 psi a)	N						
Wetted parts materials	. ,	- 1						
Seal diaphragm	Process connection							
Stainless steel	Stainless steel		Α					
Hastelloy	Stainless steel		В					
Hastelloy	Hastelloy		С					
Version for diaphragm s process connector "fem	seals in conjunction with		Y 1					
(recommended versio	<b>n)</b> <sup>3) 4) 5) 6) 7)</sup>							
Version for diaphragm s	seals in conjunction		Y 0					
with process connector "G½B connection shanl	( <sup>nn</sup> 3) 4) 5) 6) 7)							
Process connection								
• Connection shank G½B to EN 837-1			0					
Female thread ½-14 NPT     Stainless steel oval flange with process connec-			1					
tion (Oval flange has	no female thread)							
<ul> <li>Mounting thread <sup>7</sup>/<sub>1</sub>, IEC 61518/DIN EN 6</li> </ul>	<sub>6</sub> -20 UNF to 31518		2					
- Mounting thread M1	0 to DIN 19213		3					
<ul> <li>Mounting thread M1</li> </ul>			4					
Male thread M20 x 1.5			5					
• Male thread ½ -14 NP			6					
<ul> <li>Non-wetted parts mate</li> <li>Enclosure made of die</li> </ul>			0					
Enclosure stainless st			3					
Version								
• Standard version, Ger				1				
setting for pressure u								
<ul> <li>International version, setting for pressure up</li> </ul>	English plate inscription,			2				
Chinese version, Engli				3				
setting for pressure un	it: Pascal							
All versions include DV	D with compact operating							
instructions in various E	:U languages.							

Selection and Ordering data	Article No.	
Pressure transmitters for absolute pressure from gauge pressure series		
SITRANS P DS III with PROFIBUS PA (PA)	7 M F 4 2 3 4 -	
SITRANS P DS III with FOUNDATION Fieldbus (FF)	7 M F 4 2 3 5 -	
Explosion protection		
• None	A	
With ATEX, Type of protection:	_	
- "Intrinsic safety (Ex ia)"	В	
- "Explosion-proof (Ex d)" - "Intrinsic safety and flameproof enclosure"	D P	
(Ex ia + Ex d) <sup>(9)</sup>	r	
- "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)"<sup>8)12)</sup></li> </ul>	NC	
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	0	
<ul> <li>Without visible display (display concealed, setting: bar)</li> </ul>	1	
With visible display (setting: bar)	6	
with customer-specific display	7	
(setting as specified, Order code "Y21" or "Y22" 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
- Version 7MF4233-1DY... only up to max. measuring span 200 mbar a (2.9 psi a).
- 4) When also ordering the quality test 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.
- 5) If the inspection 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.
- 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		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
Stainless steel 316L	A03	✓	✓	1
Device plugs <sup>1)</sup>				
Han 7D (metal)	A30	✓.		
Han 8D (instead of Han 7D)  Applied	A31	<b>√</b>		
<ul><li>Angled</li><li>Han 8D (metal)</li></ul>	A32 A33	<b>✓</b>		
, ,		1		1
Cable sockets for device plugs M12 (metal (CuZn))	A50	•	•	•
Rating plate inscription (instead of German)				
• English	B11	✓	✓	✓
• French	B12	✓	✓	✓
• Spanish	B13	<b>√</b>	<b>√</b>	<b>V</b>
• Italian	B14	<b>√</b>	<b>√</b>	1
Cyrillic (russian)  - The state and the state are state as the state are state a	B16		<b>v</b>	<b>v</b>
English rating plate Pressure units in inH <sub>2</sub> 0 and/or psi	B21	✓	•	•
Quality test certificate, 5-point factory calibration (IEC 60770-2) <sup>2)</sup>	C11	✓	✓	✓
Inspection certificate <sup>3)</sup> Acc. to EN 10204-3.1	C12	✓	✓	1
Factory certificate Acc. to EN 10204-2.2	C14	✓	✓	✓
Inspection certificate (EN 10204-3.1)	C15	✓	✓	✓
PMI test of parts in contact with medium				
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>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	✓	✓	✓
Degree of protection IP66/IP68 (only for M20 x 1.5 and ½-14 NPT)	D12	✓	✓	✓
Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flange	D37	✓	✓	✓
Capri cable gland 4F CrNi and clamping device (848699 + 810634) included	D59	✓	✓	✓
Use in or on zone 1D/2D <sup>5)</sup>	E01	J	1	1
(only together with type of protection "Intrinsic safety" (transmitter 7MF4B Ex ia) and IP65)	EUI	•	V	•
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	1	✓	1

ior absolute pressure (from ga	luge p	1033u		1163)
Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add "-Z" to Article No. and specify Order code.				
CRN approval Canada	E22 <sup>6)</sup>	✓	✓	✓
(Canadian Registration Number) <b>Dual seal</b>	E24	1	1	1
Explosion-proof "Intrinsic safety" (Ex ia)	E25 <sup>7)</sup>	<b>v</b>	· •	1
to INMETRO (Brazil)	E23.	<b>,</b>	•	· ·
(only for transmitter 7MF4B)				
"Flameproof" explosion protection	E26 <sup>7)</sup>	✓	✓	✓
according to INMETRO (Brazil) (only for transmitter 7MF4D)				
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	E55 <sup>7)</sup>	1	1	1
NEPSI (China)				
(only for transmitter 7MF4B)  Explosion protection "Explosion-proof"	E56 <sup>7)</sup>	./	./	./
to NEPSI (China)  (only for transmitter 7MF4	E30.)	•	•	•
Explosion-proof "Zone 2" to NEPSI	E57 <sup>7)</sup>	1	/	1
(China) (only for transmitter 7MF4E)	L31 /	·	·	Ť
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>	<b>V</b>	<b>√</b>	•
7MF4[B, D]Z + E11)	E80	1		,
Ex-protection Ex ia according to EAC Ex (Russia)	EOU	<b>,</b>	•	•
Ex-protection Ex d according to EAC Ex (Russia)	E81	✓	✓	✓
Ex-protection Ex nA/ic (Zone 2) according to EAC Ex (Russia)	E82	✓	✓	1
Ex-protection Ex ia + Ex d + Zone 1D/2D according to EAC Ex (Russia)	E83	✓	✓	✓
Two coats of lacquer on enclosure and cover (PU on epoxy)	G10	<b>√</b>	<b>√</b>	<b>√</b>
Transient protector 6 kV (lightning protect.)	J01	<b>V</b>	<b>√</b>	<b>√</b>
Oval flange NAM (ASTAVA)	J06	<b>√</b>	<b>✓</b>	<b>V</b>
Marine approvals  • Det Norske Veritas Germanischer Lloyd (DNV-GL)	S10	✓	✓	✓
• Lloyds Register (LR)	S11	✓	✓	✓
French marine classification society	S12	✓	✓	✓
Bureau Veritas (BV)  • American Bureau of Shipping (ABS)	S14	1	1	1
Russian Maritime Register (RMR)	S16	1	1	1
Korean Register of Shipping (KR)	S17	✓	✓	1

- 1) Device plug Han IP65
- When also ordering the quality test certificate (factory calibration) according to IEC 60770-2 for transmitters with mounted diaphragm seals: Order this certificate only together with the remote seals. The measuring accuracy of the total combination is certified here.
- 3) If the inspection 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.
- 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.

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	✓	✓	1
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	✓	✓	✓
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, $inHG$ , $psi$ , $Pa$ , $kPa$ , $MPa$ , $g/cm^2$ , $kg/cm^2$ , $Torr$ , $ATM$ or $\%$				
Setting of pressure indication in non-pressure units <sup>3</sup> ) Specify in plain text: Y22: up to I/min, m <sup>3</sup> /h, m, USgpm, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	Y22 + Y01	<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.

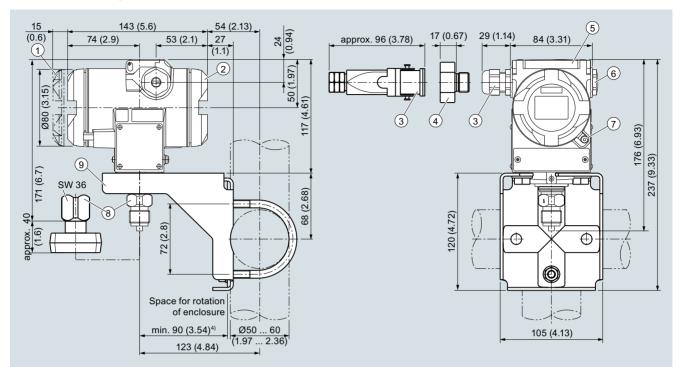
<sup>2)</sup> Only absolute pressure units selectable. Negative pressure values not permitted.

<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



- 1 Electronic side, digital display (longer overall length for cover with window)<sup>1)</sup>
- 2 Terminal side1)
- (3) 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
- 1) Allow approx. 20 mm (0.79 inch) thread length to permit unscrewing
- Not with type of protection "Explosion-proof enclosure"
- 3) Not with type of protection "FM + CSA" [IS + XP]"
- 4) Minimum distance for rotating

5 Protective cover over keys

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

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

recinical specifications			
SITRANS P, DS III for absolute pressure (from the different	tial pressure series)		
Input			
Measured variable	Absolute pressure		
Measuring span (infinitely adjustable) or nominal measuring range, max. operating pressure (in accordance with 97/23/EC Pressure Equipment Directive) and max. test pres-	HART	PROFIBUS PA/ FOUNDATION Fieldbus	
sure (pursuant to DIN 16086)	Measuring 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		Г	'
Measuring cell with silicone oil filling	0 mbar a/0 kPa a/0 psi	а	
Measuring cell with inert filling liquid			
- for temperature of medium -20 °C $<\vartheta \leq$ +60 °C (-4 °F $<\vartheta \leq$ +140 °F)	30 mbar a/3 kPa a/0.44	I psi a	
- for temperature of medium 60 °C < $\vartheta$ ≤ +100 °C (max. 85 °C for measuring cell 30 bar) (140 °F < $\vartheta$ ≤ +212 °F (max. 185 °F for measuring cell 435 psi))	30 mbar a + 20 mbar a 3 kPa a + 2 kPa a · (ϑ - 0.44 psi a + 0.29 psi a	60 °C)/°C	
Upper measuring limit	100 % of max. measuri (for oxygen measuremeambient temperature/te	ent max. 100 bar/10 I	MPa/1450 psi and 60 °C (140 °F) n)
Lower range 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
• Lower limit (infinitely adjustable)	3.55 mA, factory prese	t to 3.84 mA	-
Upper limit (infinitely adjustable)	23 mA, factory preset tally set to 22.0 mA	o 20.5 mA or option-	-
Load			
Without HART	$R_{\rm B} \le (U_{\rm H}$ - 10.5 V)/0.023 A in $\Omega$ , - $U_{\rm H}$ : Power supply in V		-
• With HART	$R_{\rm B} = 230 \dots 500 \ \Omega$ (SIMATIC PDM) or $R_{\rm B} = 230 \dots 1100 \ \Omega$ (HART Communicator)		
Physical bus	-		IEC 61158-2
Protection against polarity reversal	Protected against shore 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

# for absolute pressure (from differential pressure series)

SITRANS P, DS III for absolute pressure (from the differen	tial 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>Lower range 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 nominal measuring 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> <li>100 bar a/10 MPa a/1450 psi a</li> </ul>	$\leq$ (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
Operating conditions	
Degree of protection	
according to EN 60529	IP66 (optional IP66/IP68)
according to NEMA 250	Type 4X
Temperature of medium	
<ul> <li>Measuring cell with silicone oil filling</li> </ul>	-40 +100 °C (-40 +212 °F)
<ul> <li>Measuring cell with inert filling liquid</li> </ul>	-20 +100 °C (-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

• Stainless steel 316L

# for absolute pressure (from differential pressure series)

SITRANS P, DS III for absolute pressure (from the differential pressure series)					
Design					
Weight (without options)	$\approx 4.5 \text{ kg} (\approx 9.9 \text{ (lb)})$				
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	$1/\!\!\!/_{-}$ 18 NPT and flange connection with mounting thread M10 to DIN 19213 or $7/\!\!\!/_{16}$ -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)				

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 supply voltage	-	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

Sheet stainless steel, mat. no. 1.4404 (SS 316L)

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P DS III

# for absolute pressure (from 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 article 4, paragraph 3 (sound engineering)	fluid group 1; complies with requirements of
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: $U_0 = 17.5 \text{ V}$ , $I_0 = 380 \text{ mA}$ , $P_0 = 5.32 \text{ W}$ Linear barrier: $U_0 = 24 \text{ V}$ , $I_0 = 250 \text{ mA}$ , $P_0 = 1.2 \text{ W}$
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH}, \ C_{\rm i} = 6 {\rm nF}$	$L_{i} = 7  \mu H,  C_{i} = 1.1  \text{nF}$
• 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) temperatu -40 +60 °C (-40 +140 °F) temperatu	
- 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	$L_{\rm i} = 0.4 {\rm mH}, \ C_{\rm i} = 6 {\rm nF}$	$L_{i} = 7  \mu H,  C_{i} = 1.1  \text{nF}$
<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: $U_H = 9 \dots 32 \text{ V DC}$ ; $P_{\text{max}} = 1 \text{ W}$
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)	$U_{\rm m} = 45 \ {\rm V}$	$U_{\rm m} = 32 \text{ V}$
- Connection (Ex ic)	To circuits with values: $U_{\rm i} = 45 \text{ V}$	FISCO supply unit ic: $U_0 = 17.5 \text{ V}$ , $I_0 = 570 \text{ mA}$ Linear barrier: $U_0 = 32 \text{ V}$ , $I_0 = 132 \text{ mA}$ , $P_0 = 1 \text{ W}$
- Effective internal inductance/capacitance	$L_{\rm i}$ = 0.4 mH, $C_{\rm i}$ = 6 nF	$L_{i} = 7 \mu H, C_{i} = 1.1 nF$
Explosion protection acc. to FM	Certificate of 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; C	1, GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC L 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 2, GP ABCD T4T6; CL II, DIV 2, GP FG	1, GP EFG; CL III; Ex ia IIC T4T6; CL I, DIV i; CL III

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P DS III

### for absolute pressure (from differential pressure series)

for absolute pressure (from d	lifferential pressure series)
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	
- Can be calibrated by applying two pressures	Yes
- Monitoring of sensor limits	Yes
- Specification of a container characteristic with	Max. 30 nodes
- Square-rooted characteristic for flow measurement	Yes
<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 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 to 100 s

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

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

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

Yes

Standard FOUNDATION Fieldbus function block

1 resource block

1 transducer block Pressure with calibration, 1 transducer block LCD

Yes

Yes

Constant value or over parameterizable ramp function

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P DS III

### for absolute pressure (from differential pressure series)

Selection and Orderin	g data	Art	icle	No	٥.	
	for absolute pressure sure series,		IF 4			
	No. for the online configu-					
ration in the PIA Life  Measuring cell filling	Measuring cell		H	H		Н
Silicone oil	cleaning normal					
nert liquid <sup>1)</sup>		1				
inert ilquia 7	grease-free to cleanliness level 2	3				
Measuring span (min.	max.)	Ш				
3.34 250 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)	Н				
5.3 100 bar a	(76.9 1450 psi a)	_ K	Έ			
<b>Wetted parts material</b> : Seal diaphragm	S Parts of measuring cell	П				
Stainless steel	Stainless steel		Α			
Hastelloy	Stainless steel		В			
Hastelloy	Hastelloy		C			
Tantalum	Tantalum		Ē			
Monel	Monel		н			
Gold	Gold		L			
Version for diaphragm			Υ			
Process connection						
emale thread 1/4-18 NF	PT with flange connection					
<ul> <li>Sealing screw opposi</li> </ul>						
<ul> <li>Mounting thread <sup>7</sup>/<sub>1</sub> IEC 61518/DIN EN 6</li> </ul>	<sub>6</sub> -20 UNF to		2	2		
			Ш			
- Mounting thread M1			C	)		
<ul><li>(only for replacement</li><li>Vent on side of proce</li></ul>						
• Verit or side of proce • Mounting thread 7/.	20 LINE to		6			
<ul> <li>Mounting thread <sup>7</sup>/<sub>1</sub> IEC 61518/DIN EN 6</li> </ul>	61518		l l'			
- Mounting thread M1	0 to DIN 19213		4	ı		
(only for replacement						
Non-wetted parts mat process flange screws		П				
Stainless steel	Die-cast aluminum			2		
Stainless steel	Stainless steel precision			3		
Stairiicss steet	casting <sup>8)</sup>			ŭ		
Vorcion		111				
					1	
Standard version, Ge		П				
<ul> <li>Standard version, Ge setting for pressure u</li> </ul>	nit: bar				2	
<ul> <li>Standard version, Ge setting for pressure u</li> </ul>	nit: bar English plate inscription,	ı			2	
<ul> <li>Standard version, Ge setting for pressure u</li> <li>International version, setting for pressure u</li> </ul>	nit: bar English plate inscription, nit: bar	ı			2	
<ul> <li>Standard version, Ge setting for pressure u</li> <li>International version, setting for pressure u</li> <li>Chinese version, Engli setting for pressure un</li> </ul>	nit: bar English plate inscription, nit: bar sh plate inscription, it: Pascal	ı				
<ul> <li>Standard version, Ge setting for pressure u</li> <li>International version, setting for pressure u</li> <li>Chinese version, Engli setting for pressure un</li> <li>All versions include DV</li> </ul>	nit: bar English plate inscription, nit: bar sh plate inscription, it: Pascal D with compact operating					
<ul> <li>Standard version, Ge setting for pressure u</li> <li>International version, setting for pressure u</li> <li>Chinese version, Engli setting for pressure un</li> <li>All versions include DV nstructions in various E</li> </ul>	nit: bar English plate inscription, nit: bar sh plate inscription, it: Pascal D with compact operating					
<ul> <li>Standard version, Ge setting for pressure u</li> <li>International version, setting for pressure u</li> <li>Chinese version, Engli setting for pressure un</li> <li>All versions include DV instructions in various Explosion protection</li> <li>None</li> </ul>	nit: bar English plate inscription, nit: bar sh plate inscription, it: Pascal D with compact operating EU languages.	-			3	A
<ul> <li>Standard version, Ge setting for pressure u</li> <li>International version, setting for pressure u</li> <li>Chinese version, Englisetting for pressure until versions include DV instructions in various Explosion protection</li> <li>None</li> <li>With ATEX, Type of pressure until versions in various Explosion</li> </ul>	nit: bar English plate inscription, nit: bar sh plate inscription, it: Pascal D with compact operating U languages.	-			3	
<ul> <li>Standard version, Ge setting for pressure u</li> <li>International version, setting for pressure u</li> <li>Chinese version, Englis setting for pressure until versions include DV instructions in various Explosion protection</li> <li>None</li> <li>With ATEX, Type of presult in various affects</li> </ul>	nit: bar English plate inscription, nit: bar sh plate inscription, it: Pascal D with compact operating EU languages.  rotection: ia)"	_			3	В
Standard version, Ge setting for pressure u International version, setting for pressure u Chinese version, Englis setting for pressure until versions include DV instructions in various Explosion protection None With ATEX, Type of promotion in various for pressure until versions in various Explosion protection Intrinsic safety (Ex - "Explosion-proof (Ex )	nit: bar English plate inscription, nit: bar sh plate inscription, it: Pascal D with compact operating EU languages.  rotection: ia)" (cd)"9)				3	B D
<ul> <li>Standard version, Ge setting for pressure u</li> <li>International version, setting for pressure u</li> <li>Chinese version, Engli setting for pressure un</li> <li>All versions include DV instructions in various Explosion protection</li> <li>None</li> <li>With ATEX, Type of pr "Intrinsic safety (Ex "Explosion-proof (E) "Intrinsic safety and</li> </ul>	nit: bar English plate inscription, nit: bar sh plate inscription, it: Pascal D with compact operating EU languages.  rotection: ia)"	_			3	В
International version, setting for pressure u Chinese version, Engli setting for pressure un All versions include DV instructions in various Explosion protection None With ATEX, Type of proper and the properties of the provided in the pr	nit: bar English plate inscription, nit: bar sh plate inscription, it: Pascal D with compact operating EU languages.  otection: ia)" ( d)"9) flameproof enclosure"	-			3	B D P
Standard version, Ge setting for pressure u International version, setting for pressure u Chinese version, Engli setting for pressure u All versions include DV instructions in various Explosion protection None With ATEX, Type of promotion in various explosion protection Intrinsic safety (Ex - "Explosion-proof (Ex - "Intrinsic safety and (Ex ia + Ex d)" 10) - "Ex nA/ic (Zone 2)" 10	nit: bar English plate inscription, nit: bar sh plate inscription, it: Pascal D with compact operating EU languages.  otection: ia)" ( d)"9) flameproof enclosure"				3	B D P
Standard version, Ge setting for pressure u International version, setting for pressure u Chinese version, Englis setting for pressure unter setting for pr	nit: bar English plate inscription, nit: bar sh plate inscription, it: Pascal D with compact operating EU languages.  rotection: ia)" (c d)"9) flameproof enclosure"  1) losion-proof enclosure and ection (Ex ia+ Ex d +				3	B D P
Standard version, Ge setting for pressure u International version, setting for pressure u Chinese version, Engli setting for pressure un All versions include DV instructions in various Explosion protection None With ATEX, Type of presure un (Ex ia + Ex d)* 10) "Ex nA/ic (Zone 2)* 1 "Intrinsic safety and (Ex ia + Ex d)* 10) "Ex nA/ic (Zone 2)* 1 "Intrinsic safety and (Ex ia + Ex d)* 10) "Ex nA/ic (Zone 2)* 1 "Intrinsic safety and (Ex ia + Ex d)* 10)  "Ex nA/ic (Zone 2)* 1 "Intrinsic safety and (Ex ia + Ex d)* 10)  "Ex nA/ic (Zone 2)* 1 "Intrinsic safety and (Ex ia + Ex d)* 10)  Standard version, setting the control of the contro	nit: bar English plate inscription, nit: bar sh plate inscription, it: Pascal D with compact operating EU languages.  otection: ia)" (c d)"9) flameproof enclosure"  1) losion-proof enclosure and ection (Ex ia+ Ex d +  ufe (is) <sup>13)</sup>				3	B D P
Standard version, Ge setting for pressure u International version, setting for pressure u Chinese version, Engli setting for pressure un All versions include DV instructions in various Explosion protection None With ATEX, Type of presure un (Ex ia + Ex d)* 10) "Ex nA/ic (Zone 2)* 1 "Intrinsic safety and (Ex ia + Ex d)* 10) "Ex nA/ic (Zone 2)* 1 "Intrinsic safety and (Ex ia + Ex d)* 10) "Ex nA/ic (Zone 2)* 1 "Intrinsic safety and (Ex ia + Ex d)* 10)  "Ex nA/ic (Zone 2)* 1 "Intrinsic safety and (Ex ia + Ex d)* 10)  "Ex nA/ic (Zone 2)* 1 "Intrinsic safety and (Ex ia + Ex d)* 10)  Standard version, setting the control of the contro	nit: bar English plate inscription, nit: bar sh plate inscription, it: Pascal D with compact operating EU languages.  otection: ia)" (c d)"9) flameproof enclosure"  1) losion-proof enclosure and ection (Ex ia+ Ex d +  ufe (is) <sup>13)</sup>				3	B D P E R
Standard version, Ge setting for pressure u International version, setting for pressure u Chinese version, Engli setting for pressure un All versions include DV instructions in various Explosion protection  None With ATEX, Type of promotion of the compart of t	nit: bar English plate inscription, nit: bar sh plate inscription, it: Pascal D with compact operating EU languages.  rotection: ia)" (x d)"9) flameproof enclosure"  1) losion-proof enclosure and ection (Ex ia+ Ex d +  afe (is) <sup>13)</sup> Ex ia + Ex d (ATEX) +				3	B D P E R
Standard version, Ge setting for pressure u International version, setting for pressure u Chinese version, Engli setting for pressure un All versions include DV instructions in various Explosion protection None With ATEX, Type of presure un (Ex ia + Ex d)* 10) "Ex nA/ic (Zone 2)* 1 "Intrinsic safety and (Ex ia + Ex d)* 10) "Ex nA/ic (Zone 2)* 1 "Intrinsic safety and (Ex ia + Ex d)* 10) "Ex nA/ic (Zone 2)* 1 "Intrinsic safety and (Ex ia + Ex d)* 10)  "Ex nA/ic (Zone 2)* 1 "Intrinsic safety and (Ex ia + Ex d)* 10)  "Ex nA/ic (Zone 2)* 1 "Intrinsic safety and (Ex ia + Ex d)* 10)  Standard version, setting the control of the contro	nit: bar English plate inscription, nit: bar sh plate inscription, it: Pascal D with compact operating EU languages.  otection: ia)" (d)"9) flameproof enclosure"  1) losion-proof enclosure and ection (Ex ia+ Ex d + afe (is) <sup>13)</sup> Ex ia + Ex d (ATEX) + of protection:				3	B D P E R

Selection and Ordering data	Article No.	
Pressure transmitters for absolute pressure from differential pressure series, SITRANS P DS III with HART	7 M F 4 3 3 3 -	
<ul> <li>Electrical connection/cable entry</li> <li>Screwed gland M20 x 1.5</li> <li>Screwed gland ½-14 NPT</li> <li>Device plug Han 7D (plastic enclosure) incl. mating connector 14)</li> <li>Device plugs M12 (stainless steel) 15) 16)</li> </ul>	E C C	
Display  Without display  Without visible display (display concealed, setting: mA)  With visible display (setting: mA)  with customer-specific display (setting as specified, Order code "Y21" or "Y22" required)		0 1 6 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. measuring span 200 mbar a
- 3) When also ordering the quality test 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. 4) If the inspection 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 wiht 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 measuring 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
- <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 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)

for absolute press	ure (from differential p	re	SS	u	re	S	eri	es)
Selection and Orderin	g data	Ar	tic	le	Ν	0.		
Pressure transmitter f	or absolute pressure							
from differential press								
SITRANS P DS III with F	` '					3 4		
	OUNDATION Fieldbus (FF)				Ŀ	3 5		
ration in the PIA Life	*		ľ					
Measuring cell filling	Measuring cell cleaning							
Silicone oil Inert liquid <sup>1)</sup>	normal grease-free to	1						
Nominal measuring ra	cleanliness level 2	-						
250 mbar a	(3.63 psi a)		D					
1300 mbar a	(18.86 psi a)		F					
5 bar a	(72.5 psi a)		G					
30 bar a	(435 psi a)		H ., -					
100 bar a	(1450 psi a)		KE					
Wetted parts materials Seal diaphragm	Parts of measuring cell							
Stainless steel	Stainless steel	П	A					
Hastelloy	Stainless steel		E					
Hastelloy	Hastelloy		C					
Tantalum	Tantalum		E					
Monel	Monel		H					
Gold	Gold		L					
Version as diaphragm s	seal 2) 3) 4) 3) 0)		Y					
Process connection	OT with flamma and a single							
	PT with flange connection							
Sealing screw opposi				•				
- Mounting thread <sup>7</sup> / <sub>1</sub> IEC 61518/DIN EN 6				2				
<ul> <li>Mounting thread M1 (only for replacement</li> </ul>		П		0				
Vent on side of proces	. ,							
<ul> <li>Mounting thread <sup>7</sup>/<sub>1</sub></li> <li>IEC 61518/DIN EN 6</li> </ul>				6				
<ul> <li>Mounting thread M1 (only for replacement</li> </ul>				4				
Non-wetted parts mate process flange screws								
Stainless steel	Die-cast aluminum				2			
Stainless steel	Stainless steel precision casting				3			
Version • Standard version, Ger	rman plate inscription	Ш				1		
setting for pressure u						ľ		
	English plate inscription,	П				2		
Chinese version, Engli setting for pressure un	sh plate inscription,					3		
All versions include DV	D with compact operating							
Explosion protection	LO IANGUAGES.							
None  With ATEX Type of pr	atastian:						A	
<ul> <li>With ATEX, Type of pr</li> <li>"Intrinsic safety (Ex</li> </ul>							В	
- "Explosion-proof (Ex	,						D	
- "Intrinsic safety and	flameproof enclosure"	П					P	
(Ex ia + Ex d)" <sup>9)</sup>	n)							
<ul> <li>"Ex nA/ic (Zone 2)"<sup>1/2</sup></li> <li>"Intrinsic safety, expl dust explosion prote Zone 1D/2D)"<sup>9)</sup> 11)</li> </ul>	osion-proof enclosure and ection (Ex ia + Ex d +						E R	
• FM + CSA intrinsic sa • FM + CSA (is + ep) + Zone 1D/2D <sup>9)11)12)</sup>	fe (is) <sup>12)</sup>						F S	
• With FM + CSA, Type							NC	;

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)	7MF4335-	
Electrical connection/cable entry		
<ul> <li>Screwed gland M20 x 1.5</li> </ul>	E	3
<ul> <li>Screwed gland ½-14 NPT</li> </ul>	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
<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)
- 1) For oxygen application, add Order code E10.
- $^{2)}$  Version 7MF4334-1DY... only up to max. measuring span 200 mbar a (80  $\rm inH_2O$  a).
- 3) When also ordering the quality test 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.
- 4) If the inspection 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 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
- $^{10)}$  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) 11Only 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 differential pressure series)

Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add "-Z" to Article No. and specify Order code.				
Pressure transmitter with mounting bracket (1x fixing angle, 2 x nut, 2 x U-washer or 1 x bracket, 2 x nut, 2 x U-washer) made of:				
• Steel	A01	✓	1	1
<ul><li>Stainless steel 304</li><li>Stainless steel 316L</li></ul>	A02 A03	<b>√</b>	<b>✓</b>	<b>√</b>
O-rings for process flanges				
(instead of FPM (Viton))				
PTFE (Teflon)     FFR (with alliance acre, approved for food)	A20 A21	1	<b>√</b>	<b>√</b>
<ul> <li>FEP (with silicone core, approved for food)</li> <li>FFPM (Kalrez, for measured medium tem-</li> </ul>	A21 A22	<b>y</b>	<b>*</b>	1
peratures -15 100 °C (5 212 °F))	722	Ť	•	•
• NBR (Buna N)	A23	✓	✓	✓
Device plugs <sup>1)</sup>				
Han 7D (metal)  All and 3D (instance of Librar 3D)	A30	<b>V</b>		
<ul><li>Han 8D (instead of Han 7D)</li><li>Angled</li></ul>	A31 A32	1		
Angled     Han 8D (metal)	A32	<b>V</b>		
Sealing screw	A40	1	1	1
1/4-18 NPT, with vent valve in mat. of process flanges	71.0			
Cable sockets for device plugs M12 (metal (CuZn))	A50	✓	✓	✓
Rating plate inscription				
(instead of German)	B11		1	1
English     French	B12	<b>V</b>	1	1
• Spanish	B13	1	1	1
• Italian	B14	✓	✓	✓
Cyrillic (russian)	B16	✓	✓	✓
<b>English rating plate</b> Pressure units in inH <sub>2</sub> 0 and/or psi	B21	✓	✓	✓
Quality test certificate, 5-point factory calibration (IEC 60770-2) <sup>2)</sup>	C11	✓	✓	1
Inspection certificate <sup>3)</sup> Acc. to EN 10204-3.1	C12	✓	✓	✓
Factory certificate Acc. to EN 10204-2.2	C14	✓	✓	✓
Inspection certificate (EN 10204-3.1)	C15	1	1	1
PMI test of parts in contact with medium				
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	✓		
DED for Bussia with initial calibration mark			,	,

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	✓		
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

for absolute pressure (from differential pressure series)

	tiai pi	- Joseph	- 5001	-
Selection and Ordering data	Order			
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	✓	1	✓
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 NEPSI (China)	E56 <sup>7)</sup>	✓	✓	✓
(only for transmitter 7MF4D)  Explosion-proof "Zone 2" to NEPSI (China)	E57 <sup>7)</sup>	✓	✓	✓
(only for transmitter 7MF4E)  Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China)	E58 <sup>7)</sup>	1	✓	✓
(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	✓	✓	✓
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 enclosure and cover (PU on epoxy)	G10	✓	1	✓
Interchanging of process connection side	H01	✓	✓	✓
Vent on side for gas measurements	H02	✓	✓	✓
Stainless steel process flanges for vertical differential pressure lines	H03	✓	✓	✓
(not together with K01, K02 and K04) <sup>8)</sup>				

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)	S10 S11 S12		✓ ✓ ✓	\[   \lambda   \]
American Bureau of Shipping (ABS)     Russian Maritime Register (RMR)     Korean Register of Shipping (KR)	S14 S16 S17	<b>∀ ∀ ∀</b>	<b>√ √</b>	✓ ✓ ✓

<sup>1)</sup> Device plug Han IP65

<sup>2)</sup> When also ordering the quality test 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.

<sup>3)</sup> If the inspection certificate 3.1.is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.

<sup>&</sup>lt;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.

<sup>8)</sup> Not suitable for connection of remote seals.

<sup>9)</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 P DS III

for absolute pressure (from differential pressure series)

Selection and Ordering data	Order	code		
Additional data	Sidel	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>4</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)  Max. 27 characters, specify in plain text: Y16:	Y16	✓	✓	✓
Entry of HART address (TAG) Max. 8 characters, specify in plain text: Y17:	Y17	✓		
Setting of pressure indication in pressure	Y21	✓	✓	✓
units Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi,				
Note: The following pressure units can be selected: bar, mbar, mm H <sub>2</sub> O*), inH <sub>2</sub> O*), ftH <sub>2</sub> O*), mmHG, inHG, psi, Pa, kPa, MPa, g/cm², kg/cm², Torr, ATM or % *) ref. temperature 20 °C				
Setting of pressure indication in non-pressure units³) Specify in plain text: Y22: up to l/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		✓	1
Damping adjustment in seconds (0 100 s)	Y30	1	✓	✓

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.

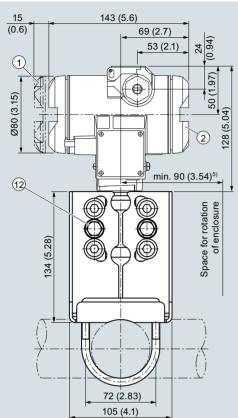
Only absolute pressure units selectable. Negative pressure values not permitted.

<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**



- 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)2)3)
  - M20 x 1,5 screw gland
  - 1/2-14 NPT screw gland
  - Han 7D/Han 8D2)3) device plug
- 4 Harting adapter
- 5 Cover over buttons

not shown in the drawing) (8) Lateral ventilation for liquid measurement (Standard)

6 Blanking plug

(9) Lateral ventilation for gas measurement (order option H02)

Safety catch (only for "flameproof enclosure" type of protection;

166 (6.54)

(3.8)

96

262 (

- (10) Mounting bracket (optional)
- 11) Sealing plug with valve (optional)
- 12) Process connection: 1/4-18 NPT (IEC 61518)
- 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

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

Measuring span (infinitely adjustable) or nominal measuring range and maximum operating pressure (pursuant to 2014/68/EU Pressure Equipment Directive)

Differential pressure and flow

HART	PROFIBUS PA/ FOUNDATION Fieldbus	
Measuring span	Nominal measuring range	Max. operating pressure MAWP (PS)
1 20 mbar 0.1 2 kPa 0.4 8 inH <sub>2</sub> O	20 mbar 2 kPa 8 inH <sub>2</sub> O	32 bar 3.2 MPa 464 psi
1 60 mbar 0.1 6 kPa 0.4 24 inH <sub>2</sub> O	60 mbar 6 kPa 24.1 inH <sub>2</sub> O	160 bar 16 MPa 2320 psi
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	
6 600 mbar 0.660 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 5500 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	
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	420 bar 42 MPa 6091 psi
6 600 mbar 0.660 kPa 2.4 240 inH <sub>2</sub> O	600 mbar 60 kPa 240 inH <sub>2</sub> O	(500 bar/50 MPa/7250 psi can be ordered optionally with Order Code D56)
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 5500 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
- Measuring cell with inert filling liquid
- for temperature of medium -20 °C <  $\vartheta$  ≤ +60 °C (-4 °F <  $\vartheta$  ≤ +140 °F)
- for temperature of medium 60 °C <  $\vartheta$  ≤ +100 °C (max. 85 °C for measuring cell 30 bar) (140 °F <  $\vartheta$  ≤ +212 °F (max. 185 °F for measuring cell 435 psi))

Upper measuring limit

Lower range value

- -100 % of max. measuring 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. measuring 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. measuring span

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

Between the measuring limits (fully adjustable)

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			
Output	HART		PROFIBUS PA/FOUNDATION Fieldbus
Output signal	4 20 mA		Digital PROFIBUS PA and
5 2 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	=		FOUNDATION Fieldbus signal
Lower limit (infinitely adjustable)	3.55 mA, factory p		-
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	$0.023~{ m A}$ in $\Omega$ , in ${ m V}$	-
With HART		(SIMATIC PDM) or Ω (HART Communica-	-
Physical bus	-		IEC 61158-2
Protection against polarity reversal	Protected against other with max. sup		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>Lower range valu</li> <li>Stainless steel se</li> <li>Silicone oil filling</li> <li>Room temperatu</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 nominal measuring 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≤5: 5 <r≤60:< td=""><td>≤ 0.075 % ≤ (0.005 · r + 0.05) °</td><td>%</td></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 > 50 %)			
- 20 mbar/2 kPa/0.29 psi	r ≤ 5 : 5 < r ≤ 10 : 10 < r ≤ 20 :	$\leq 0.075 \%$ $\leq (0.0029 \cdot r + 0.07^{-2})$ $\leq (0.0045 \cdot r + 0.07^{-2})$	
- 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≤5: 5 < r≤10: 10 < r≤20:	≤ 0.15 % ≤ (0.0058 · r + 0.142 ≤ (0.009 · r + 0.142)	
- 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:< td=""><td>≤ 0.13 % ≤ (0.008 · r + 0.09) °</td><td>%</td></r≤100:<>	≤ 0.13 % ≤ (0.008 · r + 0.09) °	%

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	
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 lower range value	
- 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 measuring 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	≤ (0.2 · r) % per year
• 60 mbar/6 kPa/0.87 psi 30 bar/3 MPa/435 psi	≤ (0.25 · r) % in 5 years
<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>	≤ (0.125 · r) % in 5 years
Effect of mounting position (in pressure per change in angle)	$\leq$ 0.7 mbar/0.07 kPa/0.028 inH $_2$ O per 10 $^\circ$ 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 · 10 <sup>-5</sup> 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					
Operating 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)				
	-20 +85 °C (-4 +185 °F) with 30 bar	measuring cell			
- Display readable	-30 +85 °C (-22 +185 °F)				
• Ambient temperature (Neobee fill fluid)					
- Transmitter	-10 +85 °C (+14 +185 °F)				
Storage temperature	-50 +85 °C (-58 +185 °F)				
Climatic class					
- Condensation	Relative humidity 0 100 % Condensation permissible, suitable for us	e 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 kg ( $\approx$ 9.9 lb) Stainless steel precision casting: $\approx$ 7.1 kg	(≈ 15.6 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 Hmat. no. 2.4360, tantalum or gold	astelloy C276, mat. no. 2.4819, Monel,			
Process flanges and sealing screw	Stainless steel, mat. no. 1.4408, Hastelloy mat. no. 2.4360				
• O-Ring	FPM (Viton) or optionally: PTFE, FEP, FEP				
Measuring cell filling	Silicone oil or inert filling liquid (maximum 100 bar (1450 psi) at 60 °C (140 °F))				
Process connection	Female thread 1/4-18 NPT and flange conr DIN 19213 or 7/16-20 UNF to IEC 61518/D				
Material of mounting bracket					
• Steel	Sheet-steel, Mat. No. 1.0330, chrome-pla				
Stainless steel 304     Stainless steel 304	Sheet stainless steel, mat. no. 1.4301 (SS	<i>'</i>			
• Stainless steel 316L	Sheet stainless steel, mat. no. 1.4404 (SS	,			
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 supply voltage	-	No			
Bus voltage					
• Not Ex	-	9 32 V			
With intrinsically-safe operation	-	9 24 V			
Current consumption		10.5 mA			
Basic current (max.)  Clart up gurrent ( basic gurrent		12.5 mA			

Yes

Yes

15.5 mA

Fault disconnection electronics (FDE) available

• Start-up current ≤ basic current

• Max. current in event of fault

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

#### 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
- Markino
- 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**

 $U_0 = 17.5 \text{ V}, I_0 = 380 \text{ mA}, P_0 = 5.32 \text{ W}$ 

 $U_0 = 24 \text{ V}, I_0 = 250 \text{ mA}, P_0 = 1.2 \text{ W}$ 

- 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*<sub>H</sub> = 10.5 ... 45 V DC

To circuits with values:  $U_{H} = 9 ... 32 \text{ V DC}$ 

FISCO supply unit:

 $L_i = 7 \mu H, C_i = 1.1 nF$ 

Linear barrier:

 $P_{\text{max}} = 1 \text{ W}$ 

FISCO supply unit:

 $L_i = 7 \mu H, C_i = 1.1 nF$ 

Linear barrier:

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:

 $U_0 = 17.5 \text{ V}, I_0 = 380 \text{ mA}, P_0 = 5.32 \text{ W}$ 

 $U_0 = 24 \text{ V}, I_0 = 250 \text{ mA}, P_0 = 1 \text{ W}$ 

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

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

To circuits with values:  $U_{\rm i} = 45 \text{ V}$ 

 $U_{\rm m} = 32 \, {\rm V}$ FISCO supply unit ic:  $U_0 = 17.5 \text{ V}, I_0 = 570 \text{ mA}$ 

Linear barrier:  $U_0 = 32 \text{ V}, I_0 = 132 \text{ mA}, P_0 = 1 \text{ W}$  $L_i = 7 \mu H, C_i = 1.1 nF$ 

 $L_i = 0.4 \text{ mH}, C_i = 6 \text{ nF}$ 

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

## for differential pressure and flow

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	
- Adaptation to customer-specific process variables	Yes, linearly rising or falling characteristic
- Electrical damping, adjustable	0 100 s
- Simulation function	Input /Output
- Failure mode	parameterizable (last good value, substitute value, incorrect value)
- Limit monitoring	Yes, one upper and lower warn- ing limit and one alarm limit respectively
Register (totalizer)	Can be reset, preset, optional direction of counting, simulation function of register output
- Failure mode	parameterizable (summation with last good value, continuous summation, summation with incorrect value)
- Limit monitoring	One upper and lower warning limit and one alarm limit respec- tively
Physical block	1
Transducer blocks	2
Pressure transducer block	
<ul> <li>Can be calibrated by applying two pressures</li> </ul>	Yes
- Monitoring of sensor limits	Yes
<ul> <li>Specification of a container characteristic with</li> </ul>	Max. 30 nodes
- Square-rooted characteristic for flow measurement	Yes
<ul> <li>Gradual volume suppression and implementation point of square-root extraction</li> </ul>	Parameterizable
- Simulation function for measured pressure value and sensor 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

sor temperature

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

for differential pressure and flow

Selection and Orde	ring data	Article No.
SITRANS P DS III w	rith HART pressure trans- tial pressure and flow,	7 M F 4 4 3 3 -
	le No. for the online configu-	
Measuring cell fillir		
Ciliaana ail	cleaning	
Silicone oil Inert liquid <sup>1)</sup>	normal grease-free to	1 3
men nquia ,	cleanliness level 2	3
FDA compliant fill flu		
Neobee oil	normal	4
Measuring span (m		
PN 32 (MAWP 464 p		
1 20 mbar <sup>3)</sup>	(0.4 8 inH <sub>2</sub> O)	В
PN 160 (MAWP 232)	O psi)	
1 60 mbar	(0.4 24 inH <sub>2</sub> O)	С
2.5 250 mbar	(1.004 100.4 inH <sub>2</sub> O)	D
6 600 mbar	(2.4 240 inH <sub>2</sub> O)	<u>E</u>
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)	_
Wetted parts mater		
(stainless steel proc		
Seal diaphragm	Parts of measuring cell	
Stainless steel	Stainless steel	A
Hastelloy	Stainless steel	В
Hastelloy Tantalum <sup>4)</sup>	Hastelloy	C E
Monel <sup>4)</sup>	Tantalum Monel	E H
Gold <sup>4)</sup>	Gold	
Version for diaphrag		Y
Process connectio		-
	NPT with flange connection	
	osite process connection	
- Mounting thread IEC 61518/DIN E		2
- Mounting thread	M10 to DIN 19213	0
<ul> <li>Vent on side of pro</li> </ul>	ment requirement)	
- Mounting thread	7/ <sub>10</sub> -20 UNF to	6
- Mounting thread IEC 61518/DIN E	:N 61518	
- Mounting thread	M10 to DIN 19213 ment requirement)	4
Non-wetted parts n		
•	ws Electronics enclosure	
Stainless steel	Die-cast aluminum	2
Stainless steel	Stainless steel precision casting <sup>9)</sup>	3
Version		
setting for pressure		1
<ul> <li>International versionsetting for pressure</li> </ul>	on, English plate inscription, e unit: bar	2
	nglish plate inscription,	3
• .	DVD with compact operat-	

Selection and Ordering data	Article No.	
SITRANS P DS III with HART pressure trans-	7 M F 4 4 3 3 -	
mitters for differential pressure and flow, PN 32/160 (MAWP 464/2320 psi)		
Explosion protection		
• None	Α	
With ATEX, Type of protection:	_	
<ul> <li>"Intrinsic safety (Ex ia)"</li> <li>"Explosion-proof (Ex d)"<sup>10)</sup></li> </ul>	B D	
- "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d)"11)	P	
- "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	
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX) + Zone 1D/2D <sup>11</sup> ) <sup>13</sup> ) <sup>14</sup> )	s	
• With FM + CSA, Type of protection:		
<ul> <li>"Intrinsic Safe and Explosion Proof (is + xp)"<sup>10)14)</sup></li> </ul>	N	C
Electrical connection/cable entry		
• Screwed gland M20 x 1.5	į.	В
• Screwed gland ½-14 NPT		C
<ul> <li>Device plug Han 7D (plastic enclosure) 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)		_
<ul><li>With visible display (setting: mA)</li><li>with customer-specific display</li></ul>		6 7
(setting as specified, Order code "Y21" or "Y22" required)		,
Power supply units see Chap. 7 "Supplementary Co	mponents".	

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. measuring span 20 and 60 mbar (8.03 and 24.09 inH<sub>2</sub>O))
- 5) When also ordering the quality test 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.
- 6) If the inspection 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 wiht 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".
- 10) 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.
- 15) 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.
- <sup>18)</sup> M12 delivered without cable socket.

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P DS III

for differential pres	ssure and flow						
Selection and Ordering	g data	Α	rtic	le	Nc	).	
Pressure transmitters and flow PN 32/160 (M	for differential pressure						
SITRANS P DS III with P		7	ΜF	4	4 3	3 4	
	OUNDATION Fieldbus (FF)	7	ΜF	4	4 3	5 5	
	lo. for the online configu- Cycle Portal.	i			-		۰
Measuring cell filling	Measuring cell					П	
Silicone oil	cleaning normal	1					
Inert liquid <sup>1)</sup>	grease-free to	3					
FDA compliant fill fluid <sup>2</sup>	cleanliness level 2						
Neobee oil	normal	4					
Nominal measuring ra	nge						
PN 32 (MAWP 464 psi)							
20 mbar <sup>3)</sup>	(8.03 inH <sub>2</sub> O)		В				
PN 160 (MAWP 2320 ps			_				
60 mbar 250 mbar	(24 inH <sub>2</sub> O) (100 inH <sub>2</sub> O)		C 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	<del>-</del> .						
Seal diaphragm	Parts of measuring cell		١,				
Stainless steel Hastelloy	Stainless steel Stainless steel		A B				
Hastelloy	Hastelloy		C				
Tantalum <sup>4)</sup>	Tantalum		Ē				
Monel <sup>4)</sup>	Monel		Н				
Gold <sup>4)</sup>	Gold		L				
Version as diaphragm s	eal <sup>3) 6) 7) 6)</sup>		Y				
Process connection	T with flance connection						
<ul> <li>Sealing screw opposit</li> </ul>	T with flange connection						
<ul> <li>Mounting thread <sup>7</sup>/<sub>16</sub></li> <li>IEC 61518/DIN EN 6</li> </ul>	- -20 UNF to			2			
<ul> <li>Mounting thread M1 (only for replacement</li> </ul>				0			
Venting on side of pro							
<ul> <li>Mounting thread <sup>7</sup>/<sub>16</sub> IEC 61518/DIN EN 6</li> </ul>	<sub>3</sub> -20 UNF to 1518			6			
- Mounting thread M1				4			
(only for replacemen							
Non-wetted parts mate process flange screws	erials Electronics enclosure						
Stainless steel	Die-cast aluminum				2		
Stainless steel	Stainless steel precision casting				3		
Version							
<ul> <li>Standard versions</li> <li>International version</li> </ul>	English label inscriptions,					1 2	
documentation in 5 la (no Order code select	nguages on DVD					_	
Version							
<ul> <li>Standard version, Ger setting for pressure ur</li> </ul>						1	
<ul> <li>International version, I</li> </ul>	English plate inscription,					2	
<ul> <li>etting for pressure ur</li> <li>Chinese version, Englis</li> </ul>						3	
setting for pressure uni	t: Pascal						
All versions include DVI	D with compact operating						

Selection and Ordering data	Article No.		
Pressure transmitters for differential pressure and flow PN 32/160 (MAWP 464/2320 psi)			
SITRANS P DS III with PROFIBUS PA (PA)	7 M F 4 4 3 4 -		
SITRANS P DS III with FOUNDATION Fieldbus (FF)	7 M F 4 4 3 5 -		
Explosion protection			
• None	A		
<ul> <li>With ATEX, Type of protection:</li> </ul>			
- "Intrinsic safety (Ex ia)"	В		
- "Explosion-proof (Ex d)" <sup>9)</sup>	D		
<ul> <li>"Intrinsic safety and flameproof enclosure" (Ex ia + Ex d)"<sup>10)</sup></li> </ul>	Р		
- "Ex nA/ic (Zone 2)" <sup>11)</sup>	E		
<ul> <li>"Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia + Ex d + Zone 1D/2D)*10)12)</li> </ul>	R		
• FM + CSA intrinsic safe (is) <sup>13)</sup>	F		
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX)+ Zone 1D/2D <sup>10</sup> ) <sup>12</sup> ) <sup>13</sup> )	S		
<ul> <li>With FM + CSA, Type of protection:</li> </ul>			
<ul> <li>"Intrinsic Safe and Explosion Proof (is + xp)"<sup>9)13)</sup></li> </ul>	N	С	
Electrical connection/cable entry	-		
<ul> <li>Screwed gland M20 x 1.5</li> </ul>		В	
<ul> <li>Screwed gland ½-14 NPT</li> </ul>		С	
<ul> <li>Device plugs M12 (stainless steel)<sup>14) 15)</sup></li> </ul>		F	
Display	-		
Without display			0
Without visible display			1
(display concealed, setting: bar)			
With visible display (setting: bar)			6
With customer-specific display (setting as specified, Order code "Y21" required)			7
Included in delivery of the device:			

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. measuring span 20 and 60 mbar (8.03 and 24.09 inH<sub>2</sub>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
- $^{6)}$  If the inspection 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 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.
- <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 approval A, B, E or F.
- 15) M12 delivered without cable socket

instructions in various EU languages.

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

for differential pressure and flow

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:				
• Steel	A01	✓	✓	✓
<ul><li>Stainless steel 304</li><li>Stainless steel 316L</li></ul>	A02 A03	<b>✓</b>	<b>√</b>	1
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	* * * * *		\ \ \ \ \ \
Device plugs <sup>1)</sup>				
<ul><li>Han 7D (metal)</li><li>Han 8D (instead of Han 7D)</li></ul>	A30 A31	<b>∀ ∀</b>		
<ul><li>Angled</li><li>Han 8D (metal)</li></ul>	A32 A33	<b>V</b>		
Sealing screws (2 units) 1/4-18 NPT, with vent valve in mat. of process flanges	A40	<b>*</b>	1	1
Cable sockets for device plugs M12 (metal (CuZn))	A50	✓	✓	1
Rating plate inscription (instead of German)				
• English	B11	✓	✓	1
• French	B12	<b>√</b>	1	1
<ul><li>Spanish</li><li>Italian</li></ul>	B13 B14	<b>√</b>	1	1
Cyrillic (russian)	B16	<b>✓</b>	<b>*</b>	1
English rating plate	B21	1	1	1
Pressure units in inH <sub>2</sub> O and/or psi	<b>D</b> 21	Ť	·	
Quality test certificate, 5-point factory calibration (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	C14	✓	✓	1
Inspection 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	✓

for different	ial pre	ssure	and	TIOW
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)	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	✓	✓	✓
(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)	===7\			
"Flameproof" explosion protection according to INMETRO (Brazil) (only for transmitter 7MF4D)	E26 <sup>7)</sup>	<b>V</b>	✓	<b>✓</b>
Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil) (only for transmitter 7MF4P)	E28 <sup>7)</sup>	1	✓	
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 NEPSI (China)	E56 <sup>7)</sup>	✓	✓	✓
(only for transmitter 7MF4D)	F7)	,	,	
Explosion-proof "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)	E57 <sup>7)</sup>	<b>V</b>	<b>V</b>	<b>√</b>
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>	1	✓	✓
(only for transmitter 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.		HART	PA	FF
Ex-protection Ex ia according to EAC Ex (Russia)	E80	✓	✓	1
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 enclosure 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 (not together with K01, K02 and K04 <sup>8)</sup>	H03	✓	✓	✓
Transient protector 6 kV (lightning protection)	J01	✓	✓	✓
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	K01	✓	✓	✓
• Monel	K02	<b>√</b>	<b>1</b>	✓.
<ul> <li>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</li> </ul>	K04	•	✓	•
Marine approvals				
Det Norske Veritas     Germanischer Lloyd (DNV-GL)	S10	<b>√</b>	1	1
Lloyds Register (LR)	S11	1	1	1
<ul> <li>French marine classification society Bureau Veritas (BV)</li> </ul>	S12	✓	✓	✓
American Bureau of Shipping (ABS)	S14	<b>V</b>	1	1
<ul><li>Russian Maritime Register (RMR)</li><li>Korean Register of Shipping (KR)</li></ul>	S16 S17	1	1	1
- Noreall hegister of Shipping (Nn)	317		•	•

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 <u>total</u> combination is certified here.
- 3) If the inspection 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:  • in the case of linear characteristic curve	Y01	./	<b>√</b> 1)	
(max. 5 characters): Y01: up to mbar, bar, kPa, MPa, psi		,	• ,	
<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	•		
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 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 $H_2O^*$ ), $inH_2O^*$ ), $ftH_2O^*$ ), mmHG, inHG, psi, Pa, kPa, MPa, g/cm², kg/cm², Torr, ATM or % *) ref. temperature 20 °C				
Setting of pressure 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 or Y02			
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
- 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

Selection and Orderi	ng data		٩rt	ic	le N	lo.	
	h HART pressure trans-		7 N	IF	4 5	3 3	١ -
mitters for differentia PN 420 (MAWP 6092	I pressure and flow,					-	
•	No. for the online configu-						
ration in the PIA Life	e Cycle Portal.						
Measuring cell filling	Measuring cell cleaning	1					
Silicone oil	normal		1				
Inert liquid <sup>1)</sup>	grease-free to		3				
	cleanliness level 2						
Measuring span (min							
2.5 250 mbar	(1.004 100 inH <sub>2</sub> O)		D				
6 600 mbar	(2.4 240 inH <sub>2</sub> O)		E				
16 1600 mbar 50 5000 mbar	(6.4 642 inH <sub>2</sub> O)		-				
0.3 30 bar	(20 2000 inH <sub>2</sub> O) (4.35 435 psi)		G				
	, , ,	_	-				
Wetted parts materia							
(stainless steel proces							
Seal diaphragm	Parts of measuring cell	.					
Stainless steel	Stainless steel			A			
Hastelloy	Stainless steel			В			
Gold <sup>2)</sup> Varsian far diambra and	Gold			L			
Version for diaphragm	seal 3) 4) 3) 6)			Υ			
Process connection							
	PT with flange connection						
	site process connection						
<ul> <li>Mounting thread <sup>7</sup>/ IEC 61518/DIN EN</li> </ul>	<sub>16</sub> -20 UNF to				3		
- Mounting thread M					1		
(only for replacement					•		
<ul> <li>Venting on side of presented in the side of th</li></ul>	ocess flanges. location of						
vent valve at top of p	rocess flanges (see dimen-						
sional drawing)							
<ul> <li>Mounting thread <sup>7</sup>/ IEC 61518/DIN EN</li> </ul>	<sub>16</sub> -20 UNF to				7		
- Mounting thread M					5		
(only for replacement					3		
Non-wetted parts ma		-1					
process flange screws							
Stainless steel	Die-cast aluminum				2		
Stainless steel	Stainless steel precision				3		
Stall liess steel	casting <sup>7)</sup>				٥		
Version		-1					
	erman plate inscription,					1	
setting for pressure						Ι.	
- ·	, English plate inscription,					2	!
setting for pressure							
Chinese version, Eng						3	
setting for pressure u							
instructions in various	VD with compact operating						
		-1					
<ul><li>Explosion protection</li><li>None</li></ul>							A
<ul> <li>None</li> <li>With ATEX, Type of p</li> </ul>	protection:						^
- "Intrinsic safety (Ex							В
- "Explosion-proof (E							D
	,						P
- "Intringic eafaty and	a nameproor enclosure						
<ul> <li>"Intrinsic safety and (Ex ia + Ex d)"<sup>9)</sup></li> </ul>	10)						Е
(Ex ia + Ex d)" <sup>9)</sup>	10)						R
(Ex ia + Ex d)"9) - "Ex nA/ic (Zone 2)" - "Intrinsic safety, ext	plosion-proof enclosure and						
(Ex ia + Ex d)"9) - "Ex nA/ic (Zone 2)" - "Intrinsic safety, ext	plosion-proof enclosure and						
(Ex ia + Ex d)"9)  - "Ex nA/ic (Zone 2)"  - "Intrinsic safety, exp dust explosion pro Zone 1D/2D)"9)11)	olosion-proof enclosure and tection (Ex ia+ Ex d +						
<ul> <li>(Ex ia + Ex d)"9)</li> <li>"Ex nA/ic (Zone 2)"</li> <li>"Intrinsic safety, explosion pro Zone 1D/2D)"9)11)</li> <li>FM + CSA intrinsic s</li> </ul>	olosion-proof enclosure and tection (Ex ia+ Ex d + afe (is) <sup>12)</sup>						F
<ul> <li>(Ex ia + Ex d)"9)</li> <li>"Ex nA/ic (Zone 2)"</li> <li>"Intrinsic safety, explosion pro Zone 1D/2D)"9)11)</li> <li>FM + CSA intrinsic s</li> </ul>	olosion-proof enclosure and tection (Ex ia+ Ex d + afe (is) <sup>12)</sup>						F S
(Ex ia + Ex d)"9)  - "Ex nA/ic (Zone 2)"  - "Intrinsic safety, exy dust explosion pro Zone 1D/2D)"9)11)  • FM + CSA intrinsic s  • FM + CSA (is + ep) Zone 1D/2D <sup>9)11)12)</sup>	olosion-proof enclosure and tection (Ex ia+ Ex d + afe (is) <sup>12)</sup> + Ex ia + Ex d (ATEX) +						
<ul> <li>(Ex ia + Ex d)"9)</li> <li>"Ex nA/ic (Zone 2)"</li> <li>"Intrinsic safety, explosion pro Zone 1D/2D)"9)11)</li> <li>FM + CSA intrinsic s</li> </ul>	plosion-proof enclosure and tection (Ex ia+ Ex d + afe (is) <sup>12)</sup> + Ex ia + Ex d (ATEX) + e of protection:						

Selection and Ordering data	Article No.
SITRANS P DS III with HART pressure transmitters for differential pressure and flow, PN 420 (MAWP 6092 psi)	7 M F 4 5 3 3 -
Electrical connection/cable entry  Screwed gland M20x1.5  Screwed gland ½-14 NPT  Device plug Han 7D (plastic enclosure) incl. mating connector (13)14)  Device plugs M12 (stainless steel) (15) 16)	B C D
Display  • Without display  • Without visible display (display concealed, setting: mA)  • With visible display (setting: mA)  • with customer-specific display (setting as specified, Order code "Y21" or "Y22" required)	0 1 6 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. measuring 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 inspection 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.
- <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 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.
- 16) M12 delivered without cable socket.

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

### for differential pressure and flow

Selection and Orderin		Artio	de N	O
Pressure transmitters and flow, PN 420 (MAV	for differential pressure VP 6092 psi)			
SITRANS P DS III with PROFIBUS PA (PA)			F 4 5	3 4 -
SITRANS P DS III with F	OUNDATION Fieldbus (FF)	7 M	F 4 5	35-
	No. for the online configu- Cycle Portal.	-	П	
Measuring cell filling	Measuring cell cleaning			
Silicone oil	normal	1		
Inert liquid <sup>1)</sup>	grease-free to cleanliness level 2	3		
Nominal measuring ra	nge			
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	<b>;</b>			
(stainless steel process	flanges)			
Seal diaphragm	Parts of measuring cell			
Stainless steel	Stainless steel		4	
Hastelloy	Stainless steel		3	
Gold <sup>2)</sup>	Gold			
Version for diaphragm s	seal <sup>3) 4) 5) 6)</sup>	1	Y	
Process connection				
	T with flange connection			
<ul> <li>Sealing screw opposite process connection</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 31518		3	
- Mounting thread M1			1	
(only for replacement				
	cess flanges, location of ocess flanges (see dimen-			
sional drawing).	ocess hanges (see dimen-			
<ul> <li>Mounting thread <sup>7</sup>/<sub>10</sub></li> <li>IEC 61518/DIN EN 6</li> </ul>	<sub>3</sub> -20 UNF to		7	
<ul> <li>Mounting thread M1 (only for replacement</li> </ul>			5	
Non-wetted parts mate	erials			
Process flange screws	Electronics enclosure			
Stainless steel	Die-cast aluminum		2	
Stainless steel	Stainless steel precision casting	П	3	
Version				
<ul> <li>Standard version, Ger setting for pressure ur</li> </ul>	nit: bar			1
	English plate inscription,			2
Chinese version, English				3
setting for pressure uni	t: Pascal			Ĭ
All versions include DVI	O with compact operating			
instructions in various E	U 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)	7 M F 4 5 3 4 -		
SITRANS P DS III with FOUNDATION Fieldbus (FF)	7MF4535-		
Explosion protection			
• None	A		
<ul> <li>With ATEX, Type of protection:</li> </ul>			
- "Intrinsic safety (Ex ia)"	В		
- "Explosion-proof (Ex d)"7)	D		
<ul> <li>"Intrinsic safety and flameproof enclosure" (Ex ia + Ex d)"<sup>8)</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)*8) 10)</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)10)11)</sup>	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>	N	С	
Electrical connection/cable entry			
• Screwed gland M20 x 1.5	E	В	
• Screwed gland ½-14 NPT	(	С	
• Device plugs M12 (stainless steel) 12) 13)		F	
Display			
Without (display hidden)		(	0
Without visible display			1
(display concealed, setting: bar)			
<ul> <li>With visible display (setting: bar)</li> </ul>		(	6
<ul> <li>With customer-specific display (setting as specified, Order code "Y21" required)</li> </ul>		i	7

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. measuring 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 inspection 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 wiht 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	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	✓	✓	✓
<ul> <li>Stainless steel 304</li> </ul>	A02	✓	✓	✓
<ul> <li>Stainless steel 316L</li> </ul>	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 tempera-	A22	✓	1	1
tures -15 100 °C (5 212 °F))				
NBR (Buna N)  Device plugs <sup>1)</sup>	A23	✓	✓	✓
Han 7D (metal)	A30	✓		
Han 8D (instead of Han 7D)	A31	✓		
Angled	A32	✓		
<ul><li>Han 8D (metal)</li></ul>	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	✓	✓	✓
Rating plate inscription (instead of German)				
• English	B11	✓	✓	✓
• French	B12	✓.	✓.	✓.
• Spanish	B13	✓,	✓,	1
• Italian	B14	1	1	1
Cyrillic (russian)	B16	✓	✓	✓
English rating plate Pressure units in inH <sub>2</sub> O and/or psi	B21	✓	✓	✓
Quality test certificate, 5-point factory calibration (IEC 60770-2)	C11	✓	✓	✓
Inspection certificate	C12	✓	✓	✓
Acc. to EN 10204-3.1  Factory certificate	C14	1	✓	1
Acc. to EN 10204-2.2			,	,
Inspection 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>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

for differentia	ı pres	sure	and	TIOW
Selection and Ordering data	Order	code		
Setting of the upper saturation limit of the	D05	<b>✓</b>		
output signal to 22.0\ mA				
Manufacturer's declaration acc. to NACE	D07	1	1	✓
(MR 0103-2012 and MR 0175-2009)				
(only together with seal diaphragm made of Hastelloy and stainless steel)				
Degree of protection IP66/IP68	D12	✓	✓	✓
(only for M20 x 1.5 and ½-14 NPT)	DEC	,		
Nominal pressure rating PN 500 (MAWP 7250 psi) (Only for measuring cell 600 mbar 30 bar (240 inH <sub>2</sub> O 435 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	<b>✓</b>	1	<b>√</b>
(only together with type of protection "Intrinsic safety" (transmitter 7MF4B Ex ia)"and IP66)				
Export approval Korea	E11	1	1	1
	E22 <sup>5)</sup>		/	_
CRN approval Canada (Canadian Registration Number)	E22°,	•	Ť	•
Dual seal	E24	✓	✓	✓
Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil)	E25 <sup>6)</sup>	✓	✓	✓
(only for transmitter 7MF4				
"Flameproof" explosion protection according to INMETRO (Brazil) (only for transmitter 7MF4)	E26 <sup>6)</sup>	✓	✓	✓
Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil)	E28 <sup>6)</sup>	✓	✓	
(only for transmitter 7MF4P)				
Ex Approval IEC Ex (Ex ia)	E45 <sup>6)</sup>	✓	✓	✓
(only for transmitter 7MF4B)				
Ex Approval IEC Ex (Ex d)	E46 <sup>6)</sup>	✓	✓	✓
(only for transmitter 7MF4D)	6)	,		,
Explosion-proof "Intrinsic safety" to NEPSI (China)	E55 <sup>6)</sup>	✓	•	•
(only for transmitter 7MF4B)				
Ex prot. "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)	E56 <sup>6)</sup>	✓	✓	<b>✓</b>
Explosion-proof "Zone 2" to NEPSI (China)	E57 <sup>6)</sup>	✓	1	✓
(only for transmitter 7MF4E)				
Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China)	E58 <sup>6</sup> )	✓	✓	✓
(only for transmitter 7MF4R)				
"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea)	E70 <sup>6)</sup>	✓	✓	✓
(only for transmitter 7MF4[B, D]Z + E11)				
Ex-protection Ex ia acc. to EAC Ex (Russia)	E80	✓	1	✓
Ex-protection Ex d acc. to EAC Ex (Russia)	E81	1	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	✓	✓	✓

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 enclosure and cover (PU on epoxy)	G10	✓	✓	1
Interchanging of process connection side	H01	✓	✓	✓
Stainless steel process flanges for vertical differential pressure lines	H03	✓	✓	✓
Transient protector 6 kV (lightning protection)	J01	✓	✓	✓
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				
Det Norske Veritas Germanischer Lloyd (DNV-GL)	S10	✓	✓	✓
Lloyds Register (LR)	S11	✓	✓	✓
<ul> <li>French marine classification society Bureau Veritas (BV)</li> </ul>	S12	✓	1	✓
<ul> <li>American Bureau of Shipping (ABS)</li> </ul>	S14	✓	✓	✓
Russian Maritime Register (RMR)	S16	<b>√</b>	<b>V</b>	<b>V</b>
<ul> <li>Korean Register of Shipping (KR)</li> </ul>	S17	✓	✓	✓

- 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) Tested according to IEC 61010. Only for media of the group of fluids 2 in accordance with PED permissible. Not for use with dangerous media suitable.
- 4) 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		HART	PA	FF
Please add "-Z" to Article No. and specify Order code(s) and plain text.				
Measuring range to be set				
Specify in plain text:  • in the case of linear characteristic curve (max. 5 characters): Y01: up to mbar, bar, kPa, MPa, psi	Y01	✓	<b>√</b> 1)	
• in the case of square rooted characteristic (max. 5 characters): Y02: up to mbar, bar, kPa, MPa, psi	Y02	1		
Stainless steel tag plate and entry in device variable (measuring point description)	Y15	✓	✓	✓
Max. 16 characters, specify in plain text:				
Measuring point text (entry in device variable)	Y16	✓	✓	✓
Max. 27 char., specify in plain text: Y16:				
Entry of HART address (TAG)	Y17	✓		
Max. 8 char., specify in plain text: Y17:			,	
Setting of pressure indication in pressure units	Y21	<b>~</b>	<b>~</b>	✓
Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi,				
Note: The following pressure units can be selected: bar, mbar, mm H <sub>2</sub> O*), inH <sub>2</sub> O*), ftH <sub>2</sub> O*), mmHG, inHG, psi, Pa, kPa, MPa, g/cm², kg/cm², Torr, ATM or % *) ref. temperature 20 °C				
Setting of pressure indication in	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		✓	✓
possible between 1 and 126 Specify in plain text: Y25:				
Damping adjustment in seconds (0 100 s)	Y30	1	1	✓

Factory mounting of valve manifolds, see accessories.

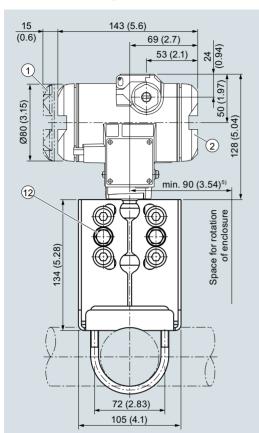
Only Y01, Y15, Y16, Y17, Y21, Y22, Y25 and D05 can be factory preset.

- ✓ = available
- 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.

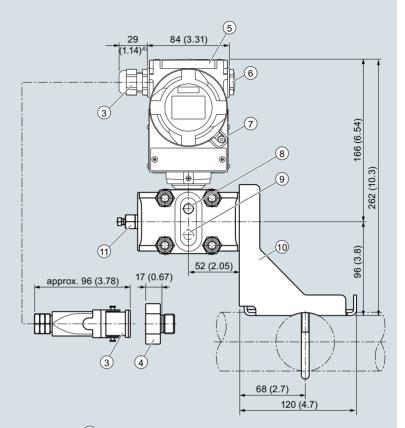
Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

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)<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
- 6 Cover over buttons
- 1) In addition, allow approx. 20 mm (0.79 inch) for the thread length
- 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



- 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)
- 11) Sealing plug with valve (optional)
- 12 Process connection: 1/4-18 NPT (IEC 61518)

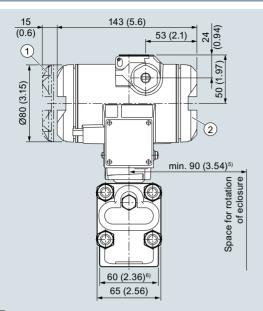
SITRANS P DS III pressure transmitters for differential pressure and flow, dimensions in mm (inch)

Pressure transmitters

for applications with advanced requirements (Advanced)

#### SITRANS P DS III

### for differential pressure and flow



- 3 4 3 7 89 (3.78) 17 (0.67) 29 (1.14)<sup>4</sup> 84 (3.31) 6 6 7 82 1 8 8 (3.43) 8 8 (3.43) 9 approx. 87 (3.43)
- (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 1,5 screw gland
  - 1/2-14 NPT screw gland
  - Han 7D/Han 8D2)3) device plug
- 4 Harting adapter

- 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)
- 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)
- 7) 91 mm (3.6 inch) for PN ≥ 420 (MAWP ≥ 6092 psi)
- 8) 219 mm (8.6 inch) for PN ≥ 420 (MAWP ≥ 6092 psi)

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

Electrical damping (step width 0.1 s)

SITRANS P DS III for level			
Input			
Measured variable	Level		
Measuring span (infinitely adjustable) or nominal measuring range and maximum operating pressure (pursuant to Pressure Equipment Directive 2014/68/EU)	HART	PROFIBUS PA/ FOUNDATION Fieldbus	
	Measuring 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 5.3 160 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			
Measuring cell with silicone oil filling	-100 % of max. mea		ar a/3 kPa a/0.44 psi a
Measuring cell with inert filling liquid	-100 % of max. mea		ar a/3 kPa a/0.44 psi a
Upper measuring limit	100 % of max. meas	suring span	
Lower range value	Between the measu	ring limits (fully adjust	able)
Output	HART		PROFIBUS PA/FOUNDATION Fieldbu
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 presoptionally set to 22.0		-
Load			
Without HART	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.023 \text{ A in } \Omega,$ $U_{\rm H}$ : Power supply in V		-
• 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		nort-circuit and polarit ainst the other with m	

Set to 2 s (0 ... 100 s)

Pressure transmitters

for applications with advanced requirements (Advanced)

#### 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 lower range value

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 measuring 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

• Lower range 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 nominal measuring 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 · 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

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

#### Operating 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)

 $\begin{array}{l} p_{abs} \geq 1 \ bar: \ -40 \ ... \ +175 \ ^{\circ}C \ (-40 \ ... \ +347 \ ^{\circ}F) \\ p_{abs} < 1 \ bar: \ -40 \ ... \ +80 \ ^{\circ}C \ (-40 \ ... \ +176 \ ^{\circ}F) \end{array}$ 

-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  $\dots$  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-AIS mat. no. 1.4408	i12 or 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 $^{1}\!\!4$ -18 NPT and flange cor DIN 19213 or $^{7}\!\!/_{16}$ -20 UNF to IEC 61518/	nnection with mounting thread M10 to DIN EN 61518			
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 mod	e			

	- 10	
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-sat	fe mode -
Power supply		Supplied through bus
Separate supply voltage	-	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 fluid group 1; complies with requiren 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) temperature class T4; -40 +70 °C (-40 +158 °F) temperature class T5; -40 +60 °C (-40 +140 °F) temperature class T6					
- Connection	To certified intrinsically-safe circuits with peak values: $U_{\rm l}=30$ V, $I_{\rm l}=100$ mA, $P_{\rm l}=750$ mW; $R_{\rm l}=300$ $\Omega$	$U_0 = 17.5 \text{ V}, \ \dot{l}_0 = 380 \text{ mA}, \ P_0 = 5.32 \text{ W}$ Linear barrier: $U_0 = 24 \text{ V}, \ l_0 = 250 \text{ mA}, \ P_0 = 1.2 \text{ W}$				
- 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: $U_H = 10.5 \dots 45 \text{ V DC}$	To circuits with values: U <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, $R_{\rm i}=300$ $\Omega$	FISCO supply unit: $U_0 = 17.5 \text{ V}, I_0 = 380 \text{ mA}, P_0 = 5.32 \text{ W}$ Linear barrier: $U_0 = 24 \text{ V}, I_0 = 250 \text{ mA}, P_0 = 1.2 \text{ W}$				
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4  {\rm mH},  C_{\rm i} = 6  {\rm nF}$	$L_{i} = 7 \mu H, C_{i} = 1.1 nF$				
• 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: $U_{\rm H}$ = 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	$L_i = 0.4 \text{ mH}, C_i = 6 \text{ nF}$ $L_i = 7 \mu\text{H}, C_i = 1.1 \text{ nF}$					
• 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, 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					
- Identification (XP/DIP) or (IS)	CL I, DIV 1, GP ABCD T4T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4T6; CL I, DIV 2, GP ABCD T4T6; CL II, DIV 2, GP FG; CL III					

 $<sup>^{\</sup>mbox{\scriptsize 1)}}$  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

			tor level
HART communication		FOUNDATION Fieldbus communication	
HART	230 1100 Ω		
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	- Adaptation to customer-specific process variables	Yes, linearly rising or falling characteristic
master class 2 (max.)	·	- Electrical damping, adjustable	0 100 s
The address can be set using	Configuration tool or local operation (standard setting address 126)	- Simulation function	Output/input (can be locked within the device with a bridge)
Cyclic data usage	add.000 120)	- Failure mode	parameterizable (last good value, substitute value, incorrect
Output byte	5 (one measured value) or 10 (two measured values)	Lineit meanitaring	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 Field- bus function block
	3.0, class B	<ul> <li>Physical block</li> </ul>	1 resource block
Function blocks  • Analog input	2	Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block
- Adaptation to customer-specif-	Yes, linearly rising or falling		LCD
ic process variables	characteristic	Pressure transducer block	
- 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 warn- ing limit and one alarm limit respectively	perature  Mounting flange	
Register (totalizer)	Can be reset, preset, optional	Nominal diameter	Nominal pressure
	direction of counting, simulation function of register output	• Acc. to EN 1092-1	·
- Failure mode		- DN 80	PN 40
- Fallure mode	parameterizable (summation with last good value, continuous	- DN100	PN16, PN40
	summation, summation with incorrect value)	• To ASME B16.5	
- Limit monitoring	One upper and lower warning	- 3 inch	class 150, class 300
g	limit and one alarm limit respec- tively	- 4 inch	class 150, class 300
Physical block	1		
Transducer blocks	2		
Pressure transducer block			
<ul> <li>Can be calibrated by applying two pressures</li> </ul>	Yes		
- Monitoring of sensor limits	Yes		
<ul> <li>Specification of a container characteristic with</li> </ul>	Max. 30 nodes		
- Square-rooted characteristic for flow measurement	Yes		

- Gradual volume suppression and implementation point of

- Simulation function for measured pressure value and sensor temperature

square-root extraction

Parameterizable

Constant value or over parameterizable ramp function

Pressure transmitters

for applications with advanced requirements (Advanced)

SITRANS P DS III

### for level

ioi ievei								
Selection and Orderin	g data	Δ	rtic	le	Ν	0.		
Pressure transmitter f SITRANS P DS III with	or level, HART		MF					
	No. for the online configu- Cycle Portal.							
Measuring cell filling	Measuring cell cleaning							
Silicone oil	normal	1						
Measuring span (min.								
25 250 mbar	(10 100 inH <sub>2</sub> O)		D					
25 600 mbar 53 1600 mbar	(10 240 inH <sub>2</sub> O)		E					
0.16 5 bar	(21 642 inH <sub>2</sub> O) (64.3 2000 inH <sub>2</sub> O)		G					
		-	u					
Process connection o								
	PT with flange connection			_				
<ul> <li>Mounting thread <sup>7</sup>/<sub>16</sub>- IEC 61518/DIN EN 61</li> </ul>	20 UNF 10 518			2				
Mounting thread M10				0				
(only for replacement				U				
Non-wetted parts mate								
process flange screws	Electronics enclosure							
					_			
Stainless steel	Die-cast aluminum				2			
Stainless steel	Stainless steel precision casting <sup>1)</sup>				3			
Varaian	Cacing	-						
Version						ı,		
<ul> <li>Standard version, Ger setting for pressure un</li> </ul>						1		
0 1	English plate inscription,					2		
setting for pressure u	nit: bar					ľ		
• Chinese version, Engli	sh plate inscription,					3		
setting for pressure un								
All versions include DV instructions in various E	D with compact operating							
Explosion protection	io languagoo.	-						
None							Α	
With ATEX, Type of pr	otection:						^	
- "Intrinsic safety (Ex i							В	
- "Explosion-proof (Ex							D	
- "Intrinsic safety and	flamenroof enclosure"						Р	
(Ex ia + Ex d)"3)	flameproof enclosure"							
- "Ex nA/ic (Zone 2)" 4							Ε	
- "Intrinsic safety, expl	osion-proof enclosure and						R	
dust explosion prote	ection (Ex ia+ Ex d +							
• FM + CSA intrinsic sa	fo (io)6)						_	
• FM + CSA (is + ep) +							S	
Zone 1D/2D <sup>3)5)6)</sup>	Ex la + Ex u (ATEA) +						3	
• With FM + CSA, Type	of protection:							
	xplosion Proof (is + xp)"1)6)						N	0
Electrical connection/		1						
Screwed gland M20x	•						П	3
• Screwed gland ½-14								С
• Device plug Han 7D (								o o
mating connector <sup>7)</sup>								
Device plugs M12 (statement)	ainless steel) <sup>8) 9)</sup>							F
Display								
<ul> <li>Without display</li> </ul>								0
Without visible display								1
(display concealed, s	- '							
With visible display (s     With a section of the section of	- :							6
<ul> <li>With customer-specification</li> </ul>	c display (setting as e "Y21" or "Y22" required)							7
specified, Older code	, IZI OI IZZ IEYUIIEU)							

#### 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: Y0

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".
- 2) 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.
- 5) 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 Orde	ering data	Α	rti	cle	١	VО	١.			
Pressure transmitt	ers for level									
SITRANS P DS III wi	th PROFIBUS PA (PA)	7	M	F 4	6	3	4			
SITRANS P DS III wi	th FOUNDATION Fieldbus (FF)	7	7MF4635-							
	` /			Υ.					ı	
ration in the PIA I	ele No. for the online configu- Life Cycle Portal.	•	-	1	ľ	Ī	П	•	ı	
Nominal measuring	n range				H					
250 mbar	(100 inH <sub>2</sub> O)		D							
600 mbar	(240 inH <sub>2</sub> O)		Ε							
1600 mbar	(642 inH <sub>2</sub> O)		F							
5 bar	(2000 inH <sub>2</sub> O)		G							
	, , ,	-	Ī							
	n of low-pressure side  NPT with flange connection									
				2						
<ul> <li>Mounting thread <sup>7</sup>, IEC 61518/DIN EN</li> </ul>	161518									
<ul> <li>Mounting thread N</li> </ul>				0						
(only for replacen				Ŭ						
Non-wetted parts r										
	ws Electronics enclosure									
Stainless steel	Die-cast aluminum				2					
Stainless steel	Stainless steel precision				3					
Clair 11000 Cloor	casting				ľ	1				
Version		-								
	German plate inscription,						1			
setting for pressur							i			
<ul> <li>International version</li> </ul>	on, English plate inscription,						2			
setting for pressur	e unit: bar									
<ul> <li>Chinese version, E</li> </ul>	nglish_plate inscription,						3			
setting for pressure										
All versions include instructions in varior	DVD with compact operating									
		-								
<ul><li>Explosion protection</li><li>None</li></ul>	on							Α		
<ul><li>None</li><li>With ATEX, Type o</li></ul>	f protection:							A		
- "Intrinsic safety (								В		
- "Explosion-proof								_		
- Explosion-proof	(EX U) '/							D P		
(Fx ia + Fx d)"2)	and flameproof enclosure"							_		
- "Ex nA/ic (Zone 2								Е		
- "Intrinsic safety, e	explosion-proof enclosure and							R		
dust explosion p	rotection (Ex ia + Ex d +									
								_		
• FM + CSA intrinsic								F		
<ul> <li>FM + CSA (is + ep Zone 1D/2D<sup>2)4)5)</sup></li> </ul>	)) + Ex ia + Ex d (ATEX) +							S		
• With FM + CSA, Ty	vpe of protection:									
	d Explosion Proof (is + xp)"1)5)							N C		
<ul> <li>Electrical connecti</li> <li>Screwed gland M2</li> </ul>	-							В		
<ul> <li>Screwed gland ½-</li> </ul>								c		
<ul> <li>Device plugs M12</li> </ul>	(stainless steel) <sup>6) 7)</sup>							F		
Display	, ,									
<ul><li>Without display</li></ul>									(	
Without visible dis	play								1	
(display concealed										
<ul> <li>With visible displa</li> </ul>	y (setting: bar)								6	
With customer-spe	ecific display (setting as								7	
specified, Order c										

#### 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.

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

## for level

Selection and Ordering data	Order	code		
Further designs	Oraci	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))	A20	1	1	1
<ul><li>PTFE (Teflon)</li><li>FEP (with silicone core, approved for food)</li></ul>	A20 A21	<b>V</b>	<b>∀</b>	<b>*</b>
• FFPM (Kalrez, for measured medium tem-	A22	1	1	1
peratures -15 100 °C (5 212 °F))	400	1	1	,
• NBR (Buna N)	A23	•	•	•
Device plugs <sup>1)</sup> • Han 7D (metal)	A30	1		
• Han 8D (instead of Han 7D)	A31	1		
• Angled	A32	✓		
• Han 8D (metal)	A33	✓		
Sealing screw	A 40	1	1	
1/4-18 NPT, with vent valve in mat. of process flanges	A40	•	•	•
Cable sockets for device plugs M12	A50	1	1	1
(metal (CuZn))				
Rating plate inscription				
(instead of German) • English	B11	1	1	1
• French	B12	1	1	1
• Spanish	B13	✓	✓	✓
• Italian	B14	1	1	<b>√</b>
Cyrillic (russian)	B16	<b>√</b>	<b>4</b>	<b>V</b>
English rating plate Pressure units in inH <sub>2</sub> 0 and/or psi	B21	•	✓	•
Quality test certificate, 5-point	C11	<b>✓</b>	<b>✓</b>	1
factory calibration (IEC 60770-2)				
Inspection certificate	C12	✓	1	1
Acc. to EN 10204-3.1		_		
Factory certificate Acc. to EN 10204-2.2	C14	✓	✓	✓
	C15	1	1	./
Inspection certificate (EN 10204-3.1) PMI test of parts in contact with medium	CIS	<b>,</b>	•	•
Functional safety (SIL2)	C20	1		
Devices suitable for use according to IEC				
61508 and IEC 61511. Includes SIL conformity declaration				
Functional safety (PROFIsafe)	C21 <sup>2)</sup>		1	
Certificate and PROFIsafe protocol				
Functional safety (SIL2/3) Devices suitable for use according to IEC	C23	✓		
61508 and IEC 61511. Includes SIL confor-				
mity declaration				
PED for Russia with initial calibration mark		✓	✓	✓
Setting of the upper saturation limit of the output signal to 22.0 mA	D05	1		
Degree of protection IP66/IP68	D12	1	1	1
(only for M20x1.5 and ½-14 NPT)				
Supplied with oval flange	D37	✓	✓	1
(1 item), PTFE packing and screws in thread of process flange				
Capri cable gland 4F CrNi and clamping	D59	1	1	1
device (848699 + 810634) included				

Selection and Ordering data	Order	code		
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	✓	✓	✓
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")		✓		
Export approval Korea	E11	✓	✓	✓
Dual seal	E24	1	✓	<b>~</b>
Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil) (only for transmitter 7MF4B)	E25 <sup>4)</sup>	✓	✓	<b>V</b>
"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) <b>Ex Approval IEC Ex (Ex ia)</b> (only for transmitter 7MF4B)	E45 <sup>4)</sup>	✓	✓	٧
Ex Approval IEC Ex (Ex d) (only for transmitter 7MF4D)	E46 <sup>4)</sup>	✓	✓	٧
Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)	E55 <sup>4)</sup>	✓	✓	٧
Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)	E56 <sup>4)</sup>	✓	✓	٧
Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)	E57 <sup>4)</sup>	✓	✓	٧
Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China) (only for transmitter 7MF4R)	E58 <sup>4)</sup>	✓	✓	٧
"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	✓	✓	٧
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	✓	<b>✓</b>	٧
Two coats of lacquer on enclosure and cover (PU on epoxy)	G10	<b>√</b>	<b>√</b>	•
Replacement of process connection side	H01	✓	1	٧

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 "-Z" to Article No. and specify Order code.				
Transient protector 6 kV (lightning protection)	J01	✓	✓	✓
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) <sup>5)</sup>	J09	✓	1	✓

- 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
- 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	code		
Additional data		HART	PA	FF
Please add "-Z" to Article No. and specify Order code(s) and plain text.				
Measuring range to be set Specify in plain text (max. 5 characters): Y01: up to mbar, bar, kPa, MPa, psi	Y01	1	<b>√</b> 1)	
Stainless steel tag plate and entry in device variable (measuring point 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	1		
Setting of pressure indicator in pressure units	Y21	✓	✓	✓
Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi,				
Note: The following pressure units can be selected: bar, mbar, mm H <sub>2</sub> O*), inH <sub>2</sub> O*), ftH <sub>2</sub> O*), mmHG, inHG, psi, Pa, kPa, MPa, g/cm², kg/cm², Torr, ATM or % *) ref. temperature 20 °C				
Setting of pressure indicator in 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 possible between 1 and 126 Specify in plain text: Y25:	Y25		✓	✓
Damping adjustment in seconds	Y30	✓	✓	✓

Only Y01, Y15, Y16, Y17, Y21, Y22, Y25 and  $\overline{\text{D05}}$  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> 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

for level			
Selection and Ord	dering data	Article No.	Order code
Mounting flange		7MF491	2
	on the SITRANS P pressure rter part) for level, for DS III	3	Т
Click on the Art ration in the PIA	icle No. for the online configu- Life Cycle Portal.		
Connection to EN			
Nominal diameter DN 25	Nominal pressure PN 10/16/25/40	z	JOA
DIN 25	PN 63/100/160	Z	JOB
DN 40	PN 10/16/25/40	Z	JOC
	PN 63/100	Z	JOD
DN 50	PN 160 PN 10/16/25/40	Z	JOE
514 00	PN 100	В	
DN 80	PN 10/16/25/40	D	
DN 100	PN 10/16	G	
	PN 25/40	Н	
Connection to AS			
Nominal diameter	r Nominal pressure	z	J 6 A
THIOTI	class 300	Z	J 6 B
	class 400/600	Z	J 6 C
1½ inch	class 900/1500 class 150	Z Z	J6D J6E
1 /2 ITICH	class 300	Z	J6F
	class 400/600	Z	J 6 G
0.1	class 900/1500	Z	J 6 H
2 inch	class 150 class 300	L M	
	class 400/600	N	
	class 900/1500	P	
3 inch	class 150 class 300	Q R	
4 inch	class 150	T	
	class 300	U	
Flange acc. to JIS			
Nominal diameter	r Nominal pressure 10 K 316L	z	J 7 A
010 011 00	20 K 316L	Z	J7B
JIS DN 80	10 K 316L	Z	J 7 C
Other version, ade	20 K 316L	Z	J 7 D
Nominal diameter:	l Order code and plain text: ; Nominal press.:	Z	J 1 Y
Wetted parts mat			
<ul> <li>Stainless steel 3</li> <li>Coated with PF</li> </ul>		A D	
- Coated with PT		E 0	
- Coated with EC	CTFE <sup>1)</sup>	F	
• Monel 400, mat.		G	
Hastelloy C276, I		J	
<ul> <li>Hastelloy C4, ma</li> <li>Hastelloy C22, m</li> </ul>		U V 0	
• Tantalum		K	
	o. 3.7035 (max. 150 °C (302 °F))	L 0	
<ul><li>Nickel 201 (max.</li><li>Duplex 2205, max.</li></ul>		M 0 Q	
	at. no. 1.4462, incl. main body	R	
Stainless steel 3: thickness approx	16L, gold plated,	S 0	
Tube length	λ. 20 μπ		
<ul> <li>without tube</li> </ul>		0	
	Order code and plain text: contact with medium:,	Z 8	K 1 Y
atoriai oi parto III			

Selection and Ordering data				No		rde	
Mounting flange		7 M	= 4	9	1 2		
Directly mounted on the SITRAN transmitter (converter part) for lesseries		3			•		
Customer-specific tubus leng Specify customer-specific lengt Order Code							
Wetted parts materials: Stainles Range	s steel without foil 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")	,	A 1 A 2 A 3 A 4 A 5				
Wetted parts materials: Stainles 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")	50 mm (1.97") 100 mm (3.94") 150 mm (5.91") 200 mm (7.87") 250 mm (9.84")	1	= 1 = 2 = 3 = 4 = 5				
<ul> <li>Wetted parts materials: Stainles PFA</li> <li>Range</li> </ul>	s steel coated with    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")	1	0 1 0 2 0 3 0 4				
• Wetted parts materials: Monel 4 Range	1 400   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				
<ul> <li>Wetted parts materials: Hastelle Range</li> </ul>	oy 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				
<ul> <li>Wetted parts materials: Tantalu Range</li> </ul>	m   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")		( 1 ( 2 ( 3 ( 4				
Filling liquid  • Silicone oil M5  • Silicone oil M50  • High-temperature oil  • Halocarbon oil (for O <sub>2</sub> -measur  • Food oil (FDA-listed)	rement) <sup>2)</sup>			1 2 3 4 7			
Other version, add Order code and plain text: filling liquid:				9	M	1 `	Y

<sup>1)</sup> For vacuum on request

Oil and grease-free cleaning according to DIN 25410, level 2, and packaging included in scope of delivery. Refer to "Further designs" C10 and E10.

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

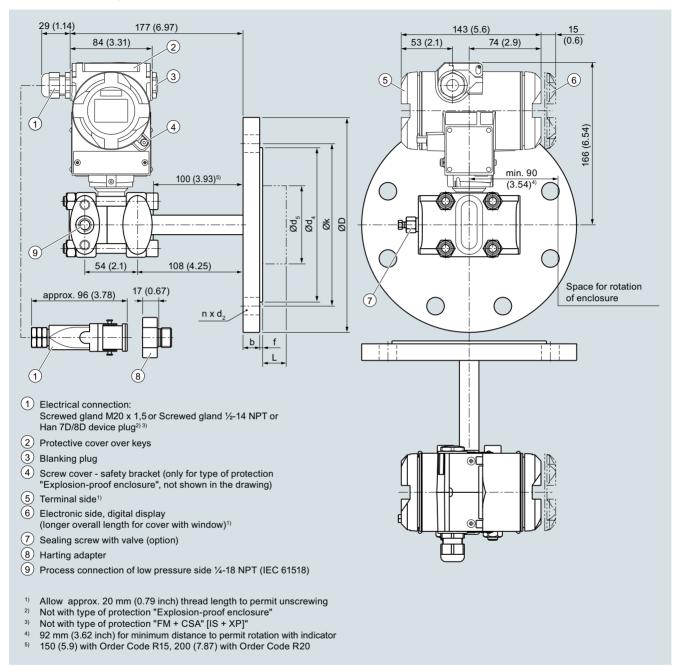
for level

Selection and Ordering data	Order	code			Selection and Ordering
Further designs		HART	PA	FF	Further designs
Add "-Z" to Article No. and specify Order code					Add "-Z" to Article No. and
Customer-specific tubus length	Y44	1	<b>✓</b>	✓	One sided-mounting, sea
Select range, enter desired length in plain text (No entry = standard length)					Sealing surface smooth (Stainless steel diaphra previously DIN 2501, forn
Spark arrester For mounting on zone 0 (incl. documentation)	A01	✓	✓	✓	Sealing surface groove, instead of sealing surface
Remote seal nameplate	B20	✓	✓	✓	parts made of stainless s
attached out of stainless steel, contains Arti- cle No. and order number of the remote seal supplier					Sealing surface with spi EN 1092-1, form F, (prev form F) in stainless stee
Oil- and grease-free cleaned version	C10	✓	✓	✓	DN 25
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					DN 40 DN 50 DN 80 DN 100
Quality test certificate, 5-point factory calibration (IEC 60770-2)	C11	<b>V</b>	✓	✓	DN 125
Inspection certificate Acc. to EN 10204-3.1	C12	✓	✓	✓	Sealing surface with ma to EN 1092-1, form E (pr form V13) in stainless s
2.2 Certificate of FDA approval of fill oil	C17	✓	✓	✓	DN 25
Only in conjunction with filling liquid "Food oil" (FDA listed)"					DN 40 DN 50
"Functional safety (SIL2)" certificate to IEC 61508	C20	✓	✓		DN 80 DN 100
(only for conjunction with the Order code "C20" in the case of SITRANS P DS III transmitter)					DN 125 Sealing surface with fem
"Functional safety (SIL2/3)" certificate to IEC 61508	C23	✓	✓		to EN 1092-1, form F (pre form R13) in stainless ste DN 25
(only for conjunction with the Order code "C23" in the case of SITRANS P DS III transmitter)					DN 40
Certification acc. to NACE MR-0175	D07	1	✓	✓	DN 50 DN 80
Includes inspection certificate 3.1 acc. to EN 10204 (only for wetted parts made of stainless steel 1.4404/316L and Hastelloy C276)					DN 100 DN 125
Certification acc. to NACE MR-0103	D08	1	✓	1	Sealing surface B1 or
Includes inspection certificate 3.1 acc. to EN 10204 (only for wetted parts made of stainless steel 1.4404/316L and Hastelloy C276)					ASME B16.5 RF 125 2 instead of sealing surface (only for wetted parts mad
Oil- and grease-free cleaned version	E10	1	1	✓	<ul> <li>(2.4819), tantalum and Du and for nominal sizes 2", 3</li> </ul>
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					Sealing surface RJF (gr RTJ) ASME B16.5 instead of sealing surface 125 250 AA (only for we stainless steel 316L)
Epoxy painting	E15	✓	✓	1	Elongated pipe, 150 mm
Not possible with negative pressure service Color: transparent, coverage: front and rear of					max. medium temperatur the maximum permissible
the remote seal, capillary(ies) or connecting tube, process connection of the transmitter.					of the filling liquid.
With transmitters 7MF40 and 7MF42, only possible with process connection G½B according to EN 837-1.					Elongated pipe, 200 mm max. medium temperatur the maximum permissible of the filling liquid.
					Vacuum rasistant dasia

			101	ievei
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)	J11	✓	✓	✓
previously DIN 2501, form E				
Sealing surface groove, EN 1092-1, form D	J14	1	1	1
instead of sealing surface B1 (only for wetted	0.4		·	•
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	J30	1	1	1
DN 40	J31	1	1	1
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	1	1	1
DN 40	J41	1	1	1
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	<b>√</b>	1	<b>√</b>
DN 40 DN 50	J51 J52	<b>∀</b>	<b>✓</b>	<b>V</b>
DN 80	J53	1	1	1
DN 100	J54	✓	✓	1
DN 125	J55	✓	✓	✓
Sealing surface B1 or	J12	✓	✓	✓
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)				
Sealing surface RJF (groove, previously	J24	✓	✓	✓
RTJ) ASME B16.5				
instead of sealing surface ASME B16.5 RF 125 250 AA (only for wetted parts made of stainless steel 316L)				
Elongated pipe, 150 mm instead of 100 mm,	R15	1	1	1
max. medium temperature 250 °C, observe	0			
the maximum permissible media temperature of the filling liquid.				
Elongated pipe, 200 mm instead of 100 mm,	R20	✓	✓	✓
max. medium temperature 300 °C, observe the maximum permissible media temperature of the filling liquid.				
Vacuum resistant design				
Design with negative pressure service for	V04	✓	1	✓
level transmitter	VE4	./	./	./
Design with extended negative pressure service for level transmitter	V54	•	•	•
Note: suffix "Y01" required with				
pressure transmitter				

for level

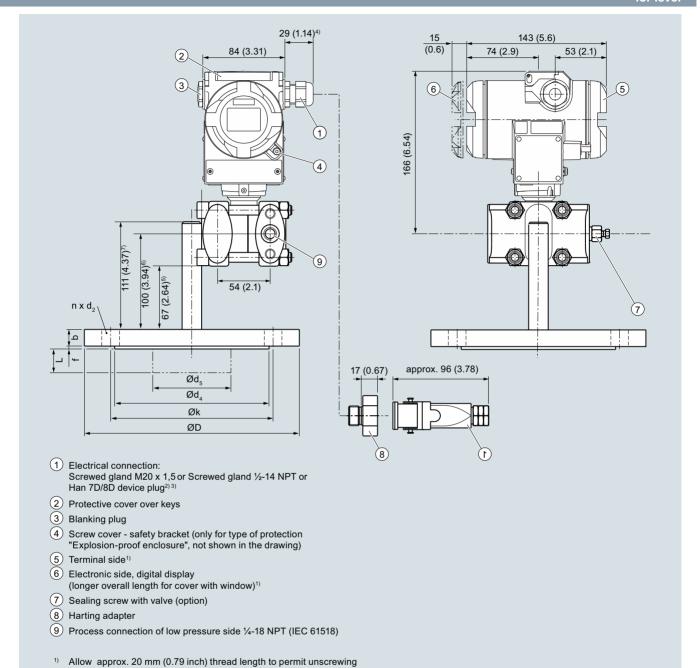
### Dimensional drawings



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



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)

Not with type of protection "Explosion-proof enclosure" Not with type of protection "FM + CSA" [IS + XP]" For Pg 13,5 with adapter approx. 45 mm (1.77 inch)

117 (4.61) with Order Code R15, 167 (6.57) with Order Code R20
 150 (5.19) with Order Code R15, 200 (7.87) with Order Code R20
 161 (6.34) with Order Code R15, 211 (8.31) with Order Code R20

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 <sup>2)</sup> (72)	0.08 (2)	6.63 (168.5)	8	
	600	1.53 (38.8)	8.27 (210)	0.87 (22)	5 (127)	3 (76)	2.83 <sup>2)</sup> (72)	0.28 (7)	6.63 (168.5)	8	
4 inch	150	0.96 (24.3)	9.06 (230)	0.79 (20)	6.22 (158)	3.69 (94)	3.5 (89)	0.08 (2)	7.5 (190.5)	8	
	300	1.27 (32.2)	10.04 (255)	0.87 (22)	6.22 (158)	3.69 (94)	3.5 (89)	0.08 (2)	7.87 (200)	8	
	400	1.65 (42)	10.04 (255)	1.02 (26)	6.22 (158)	3.69 (94)	3.5 (89)	0.28 (7)	7.87 (200)	8	

d: Internal diameter of gasket to DIN 2690

d<sub>M</sub>: 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.

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

Replacement mea for SITRANS P DS				4990- 0-0DB0	
✓ Click on the Article  tion in the PIA Li	cle No. for the online configura- fe Cycle Portal.				
Measuring cell filli Silicone oil Inert liquid  Measured span (m	ng Measuring cell cleaning Normal grease-free to cleanliness level 2	1 3			
8.3 250 mbar (0.12 3.6 psi) 0.01 1 bar (0.15 14.5 psi) 0.04 4 bar (0.6 58 psi) 0.16 16 bar (2.32 232 psi) 0.63 63 bar (9.14 914 psi) 1.6 160 bar (23.2 2 320 psi) 4.0 400 bar (58.0 5 802 psi) 7.0 700 bar (102.0 10 153 psi)					
Wetted parts mate Seal diaphragm	rials Process connection				
Stainless steel Hastelloy Hastelloy	Stainless steel Stainless steel Hastelloy			A B C	
- Mounting thread IEC 61518/DIN	k G½B to EN 837-1 14 NPT tof stainless steel, pan 160 bar (2320 psi) 17/ <sub>16</sub> -20 UNF to				0 1 2 3
Further designs	C	)rc	dei	code	
Please add "-Z" to A Order code.	Article No. and specify				

Selection and Orde Replacement meas		icle No. <b>IF 4 9 9 2 -</b>	
pressure for SITRA pressure series)		0 - 0 D B	
✓ Click on the Artic tion in the PIA Life	П		
•	ng Measuring cell cleaning		
Silicone oil Inert liquid	Normal grease-free to cleanliness level 2	3	
Measured span (mi	n max.)	111	
8.3 250 mbar a 43 1300 mbar a 0.16 5 bar a 1 30 bar a	(0.12 3.63 psi a) (0.62 18.86 psi a) (2.32 72.5 psi a) (14.5 435 psi a)	F G	
Wetted parts mater	ials	Ш	
Seal diaphragm	Process connection		
Stainless steel Hastelloy Hastelloy	Stainless steel Stainless steel Hastelloy		A B C
- Mounting thread IEC 61518/DIN E	G½B to EN 837-1 4 NPT of stainless steel, pan 160 bar (2320 psi) 7/ <sub>16</sub> -20 UNF to N 61518		0 1 2 3
- Mounting thread	M10 to DIN 19213		
Further designs	Or	der code	
Please add <b>"-Z"</b> to Al Order code.	rticle No. and specify		
Inspection certifica	to.	C1	2

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

Selection and Orderin	g data	Article No.	Selection and Ordering data	Article No.
	ng cell for absolute pres-	7MF4993-	Replacement measuring cell for differential	7MF4994-
	ntial pressure series) for	- 0 DC 0	pressure and PN 32/160 (MAWP 464/2320 psi) for	
	HART, DS III with PROFIBUS NDATION Fieldbus series		SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus series	
	No. for the online configura-	Ш	✓ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	Ш
Measuring cell filling	Measuring cell cleaning		Measuring cell filling Measuring cell cleaning Silicone oil Normal	1
	Normal	1	Inert liquid grease-free to	3
	grease-free to cleanliness level 2	3	cleanliness level 2	3
		-	Measured span (min max.)	
Measured span (min 8.3 250 mbar a	•		PN 32 (MAWP 464 psi)	
	(0.12 3.63 psi a)	D F	1 20 mbar <sup>1)</sup> (0.4 8 inH <sub>2</sub> O)	В
	(0.62 18.86 psi a)		PN 160 (MAWP 2320 psi)	
	(2.32 72.5 psi a)	G H	1 60 mbar (0.4 24 inH <sub>2</sub> O)	С
	(14.5 435 psi a) (76.9 1450 psi a)	KE	2.5 250 mbar (1 100 inH <sub>2</sub> O)	D
	<u> </u>	_	6 600 mbar (2.4 240 inH <sub>2</sub> O)	E
Wetted parts materials			16 1600 mbar (6.4 642 inH <sub>2</sub> O)	F
Seal diaphragm	Parts of measuring cell		50 5000 mbar (20 2000 inH <sub>2</sub> O)	G
Stainless steel	Stainless steel	Α	0.3 30 bar (4.35 435 psi)	H
Hastelloy	Stainless steel	В	Wetted parts materials	
•	Hastelloy	С	(stainless steel process flanges)	
,	Tantalum	Ē	Seal diaphragm Parts of measuring cell	
Monel	Monel	Н		
Gold	Gold	L	Stainless steel Stainless steel Hastelloy Stainless steel	A B
Process connection			Hastelloy Hastelloy	B C
	PT with flange connection		Tantalum <sup>2)</sup> Tantalum	E
	•		Monel <sup>2)</sup> Monel	H
Sealing screw opposi      Mounting throad M1	•	0	Gold <sup>2)</sup> Gold	_ L
- Mounting thread M1		2	Process connection	
<ul> <li>Mounting thread <sup>7</sup>/<sub>1</sub>, IEC 61518/DIN EN 6</li> </ul>	6-20 UNF 10 31518	2	Female thread 1/4-18 NPT with flange connection	
• Vent on side of proces			Sealing screw opposite process connection	
<ul> <li>Mounting thread M1</li> </ul>	-	4	- Mounting thread M10 to DIN 19213	0 2
<ul> <li>Mounting thread <sup>7</sup>/<sub>10</sub></li> </ul>		6	<ul> <li>Mounting thread <sup>1</sup>/16-20 UNF to IEC 61518/DIN EN 61518</li> </ul>	2
IEC 61518/DIN EN 6		, i	Vent on side of process flange	
		-	- Mounting thread M10 to DIN 19213	4
Non-wetted parts mate		2	<ul> <li>Mounting thread <sup>7</sup>/<sub>16</sub>-20 UNF to</li> </ul>	6
Stainless steel proces	ss liarige screws		IEC 61518/DIN EN 61518	
Further designs	la Na and anasit.	Order code	Non-wetted parts materials	
Please add "-Z" to Artic Order code.	le No. and specify		Stainless steel process flange screws	2
			Further designs	Order code
O-rings for process fla			Please add "-Z" to Article No. and specify Order code.	
(instead of FPM (Viton))	)	400	O-rings for process flanges	
PTFE (Teflon)		A20	(instead of FPM (Viton))	
<ul> <li>FEP (with silicone cor</li> <li>FERM (Kalzaz for man)</li> </ul>		A21	PTFE (Teflon)	A20
• FFPM (Kairez, for mea -15 100 °C (5 212	asured medium temperatures	A22	• FEP (with silicone core, approved for food)	A21
• NBR (Buna N)	- ' //	A23	<ul> <li>FFPM (Kalrez, for measured medium temperatures</li> <li>-15 100 °C (5 212 °F))</li> </ul>	A22
			• NBR (Buna N)	A23
Inspection certificate to EN 10204-3.1		C12	Inspection certificate	C12
Process connection G	6½B	D16	to EN 10204-3.1	
Remote seal flanges		D20	Remote seal flanges (not together with K01, K02 and K04)	D20
(not together with K01,	K02 and K04)		Vent on side for gas measurements	H02
Vent on side for gas m		H02	Stainless steel process flanges for vertical	H03
			differential pressure lines	
Process flanges		KOO	(not together with K01, K02 and K04)	
<ul> <li>with process flance m</li> </ul>	ando of	K00	Process flanges	
with process flange m	IAUE UI	V01	• without	K00
- Hastelloy		K01	with process flange made of	
- Monel	DVDE incort	K02	- Hastelloy	K01
<ul> <li>Stainless steel with I max. PN 10 (MAWP</li> </ul>		K04	- Monel	K02
	medium 90 °C (194 °F)		- Stainless steel with PVDF insert, max. PN 10	K04
	process connection on the		(MAWP 145 psi), max. temperature of medium	
side in the middle of	f the process flange, vent		90 °C (194 °F). For ½-14 NPT inner process con-	
valve not possible	-		nection on the side in the middle of the process	
1) Not for massuring	on F.2 100 box /70.0 1450	aail	flange, vent valve not possible	
v Not for measuring spa	an 5.3 100 bar (76.9 1450 <sub> </sub>	J91)	1) Not suitable for connection of remote seal	

Not suitable for connection of remote seal
 Only together with max. measuring span 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

PA and DS III with FOUN	MAWP 6092 psi) for ART, DS III with PROFIBUS NDATION Fieldbus series to for the online configura-	7 M F 4 9	
tion in the PIA Life Cy Measuring cell filling Silicone oil Measured span (min	/cle Portal.  Measuring cell cleaning	Ш	
Silicone oil  Measured span (min	•		
•	INUITIAI	1	
6 600 mbar 16 1600 mbar 50 5000 mbar 0.3 30 bar	<b>max.)</b> (1 100 inH <sub>2</sub> O) (2.4 240 inH <sub>2</sub> O) (6.4 642 inH <sub>2</sub> O) (20 2000 inH <sub>2</sub> O) (4.35 435 psi)	D E F G	
Wetted parts materials		-  "	
(stainless steel process			
Seal diaphragm	Parts of measuring cell		
Stainless steel Hastelloy Gold <sup>1)</sup>	A B L		
<ul> <li>Mounting thread M12 to DIN 19213</li> <li>Mounting thread <sup>7</sup>/<sub>16</sub>-20 UNF to IEC 61518/DIN EN 61518</li> <li>Vent on side of process flange</li> <li>Mounting thread M12 to DIN 19213</li> <li>Mounting thread <sup>7</sup>/<sub>16</sub>-20 UNF to IEC 61518/DIN EN 61518</li> </ul>		1 3 5 7	
Non-wetted parts mate  • Stainless steel process		2	
Further designs		Order co	ode
Please add "-Z" to Article code.			
O-rings for process fla (instead of FPM (Viton)) • PTFE (Teflon) • FEP (with silicone core • FFPM (Kalrez, for meas -15 100 °C (5 212 • NBR (Buna N)	A20 A21 A22 A23		
Inspection certificate to EN 10204-3.1	C12		
Stainless steel process	H03		
differential pressure linguistment without process flange		K00	

 $<sup>^{1)}</sup>$  Not together with max. measuring span 600 mbar (240 inH $_2$ O)

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

Selection and Ordering data	Article No.	Selection and Ordering data	Article No.
Spare parts/Accessories	Alticle No.	Digital indicator	7MF4997-1BR
· · ·		Including mounting material for SITRANS P	1WI 4337-1DI
Mounting bracket and fastening parts		DS III with HART, DS III with PROFIBUS PA and	
for pressure transmitters		DS III with FOUNDATION Fieldbus	
SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION		Measuring point label	
Fieldbus (7MF403C.)		<ul><li>without inscription (5 units)</li></ul>	7MF4997-1CA
For absolute pressure transmitters		Printed (1 unit)	7MF4997-1CB-Z
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.)  I made of steel	7MF4997-1AB	Mounting screws	
made of stainless steel 304/1.4301	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	
	7 WII 4337-1AI	(50 units)	
Mounting bracket and fastening parts		Sealing screws	
or pressure transmitters SITRANS P DS III with HART, DS III with		(1 set = 2 units) for process flange	
PROFIBUS PA and DS III with FOUNDATION		made of stainless steel	7MF4997-1CG
Fieldbus (7MF403A.,B.,D. andF.)		made of Hastelloy	7MF4997-1CH
For absolute pressure transmitters		Sealing screws with vent valve	
SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION		Complete (1 set = 2 units)	
Fieldbus 7MF423A.,B.,D. andF.)		made of stainless steel	7MF4997-1CP
made of steel	7MF4997-1AC	made of Hastelloy	7MF4997-1CQ
made of stainless steel 304/1.4301	7MF4997-1AJ	Application electronics	
made of stainless steel 316L/1.4404	7MF4997-1AQ	<ul> <li>for SITRANS P DS III with HART</li> </ul>	7MF4997-1DK
Mounting and fastening brackets		<ul> <li>for SITRANS P DS III with PROFIBUS PA</li> </ul>	7MF4997-1DL
or differential pressure transmitters with		for SITRANS P DS III with FOUNDATION  Fieldburg	7MF4997-1DM
lange thread M10		Fieldbus	
SITRANS P DS III with HART, DS III with		Connection board	
PROFIBUS PA and DS III with FOUNDATION Fieldbus (7MF433 and 7MF443)		• for SITRANS P DS III	7MF4997-1DN
made of steel	7MF4997-1AD	<ul> <li>for SITRANS P DS III PROFIBUS PA and FOUNDATION Fieldbus</li> </ul>	7MF4997-1DP
• made of stainless steel 304/1.4301	7MF4997-1AK		
• made of stainless steel 316L/1.4404	7MF4997-1AR	O-rings for process flanges made of:	
<u> </u>	- 11111	• FPM (Viton)	7MF4997-2DA
Mounting and fastening brackets		• PTFE (Teflon)	7MF4997-2DB
For differential pressure transmitters with flange thread M12		• FEP (with silicone core, approved for food)	7MF4997-2DC
SITRANS P DS III with HART, DS III with		<ul><li>FFPM (Kalrez)</li><li>NBR (Buna N)</li></ul>	7MF4997-2DD 7MF4997-2DE
PROFIBUS PA and DS III with FOUNDATION			
Fieldbus (7MF453)	7ME4007 1 A E	Sealing ring for process connection	see "Fittings"
<ul> <li>made of steel</li> <li>made of stainless steel 304/1.4301</li> </ul>	7MF4997-1AE 7MF4997-1AL	Weldable sockets for PMC connection	
• made of stainless steel 304/1.4301	7MF4997-1AS	<ul> <li>PMC Style Standard: Thread 1½"</li> </ul>	7MF4997-2HA
· · · · · · · · · · · · · · · · · · ·	7 WII 4997-1A3	<ul> <li>PMC Style Minibolt: front-flush 1"</li> </ul>	7MF4997-2HB
Mounting and fastening brackets		Gaskets for PMC connection	
For differential and absolute pressure transmit- ters with flange thread 7/16 -20 UNF		(packing unit = 5 units)	
SITRANS P DS III with HART, DS III with		PTFE seal for PMC Style Standard:  There and 41/1	7MF4997-2HC
PROFIBUS PA and DS III with FOUNDATION		Thread 1½"	7ME4007 0UD
Fieldbus		<ul> <li>Gasket made of Viton for PMC Style Minibolt: front-flush 1"</li> </ul>	7MF4997-2HD
(7MF433, 7MF443 and 7MF453)  • made of steel	7ME4007 1 A E		
• made of steel • made of stainless steel 304/1.4301	7MF4997-1AF 7MF4997-1AM	Weldable socket for TG52/50 and TG52/150 connection	
made of stainless steel 304/1.4301 made of stainless steel 316L/1.4404	7MF4997-1AM 7MF4997-1AT	TG52/50 connection	7MF4997-2HE
<u> </u>	1 WII 7331-1741	• TG52/150 connection	7MF4997-2HF
Cover		Seals for TG 52/50 and TG 52/150 made of	
Made of die-cast aluminum, including gasket,		silicone (FDA compliant)	7MF4997-2HG
for SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION			
Fieldbus.		Seals for flange connection with front-flush diaphragm	
Compatible for Ex and non-Ex transmitters		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, or SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus.			
without window	7MF4997-1BC		
• with window	7MF4997-1BF		

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P DS III

Accessories/Spare Parts

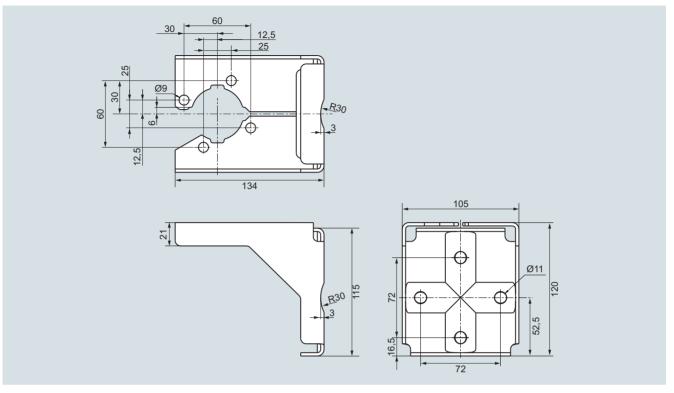
Selection and Ordering data	Article No.
Documentation	
The entire documentation is available for download free-of-charge in various languages at: http://www.siemens.com/processinstrumentation/documentation	
Compact operating instructions SITRANS P DS III/P410 • English, German, Spanish, French, Italian, 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".

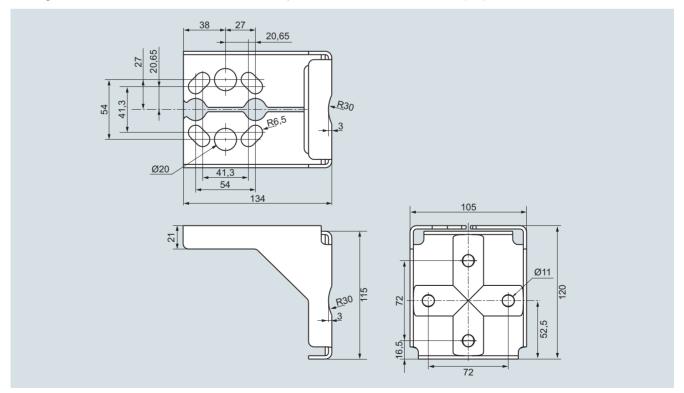
SITRANS P DS III

**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 PTFE gaskets between the 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 gaskets between the transmitter and the valve manifold.

The complete unit is checked for leaks under pressure after assembly (air pressure 6 bar (87 psi)) and certified with a factory certificate according to EN 10204 - 2.2.

All valve manifolds should preferably be secured with the corresponding 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 inspection certificate 3.1 according to EN 10204 after choosing the option "Factory mounting of valve manifolds", a separate certificate is provided for the transmitter and for the valve manifold.

#### Selection and Ordering data

### AMP3411-5AA valve manifold for relative and absolute pressure transmitters



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



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

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



Add <b>-Z</b> 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 factory certificate according 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
Inspection certificate according to EN 10204-3.1 supplied 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 -Z 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:	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
Inspection certificate according to EN 10204-3.1 supplied 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 1) mounted with gaskets made of PTFE and screws made of • chromized steel • made of stainless steel Delivery incl. high-pressure test certified by factory certificate according to EN 10204-2.2	U01 U02
Further designs:	
Delivery includes mounting bracket and mounting clips made of • Steel • Stainless steel (instead of the mounting bracket supplied with the transmitter)	A01 A02
Inspection certificate according to EN 10204-3.1 supplied for transmitters and mounted valve manifold	C12
With manufacturer declaration according to NACE. MR-0175	D07

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



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 factory certificate according 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
Inspection certificate according to EN 10204-3.1 supplied 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

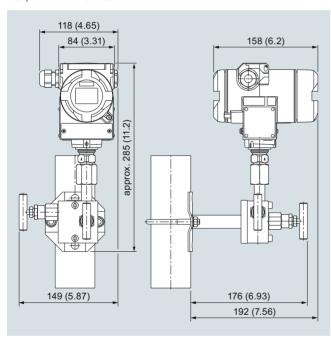
### Valve manifolds mounted on SITRANS P DS III



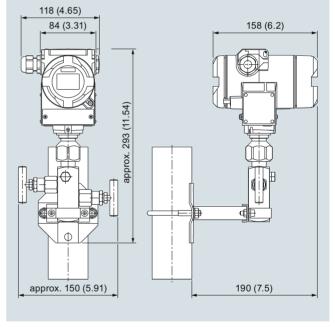
7MF9011-4EA valve manifold with mounted gauge pressure and absolute pressure transmitters



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



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



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

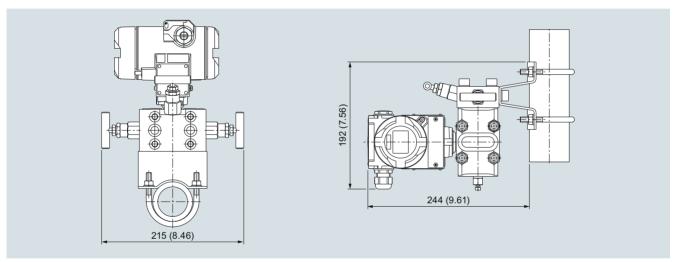
### Factory-mounting of valve manifolds on transmitters



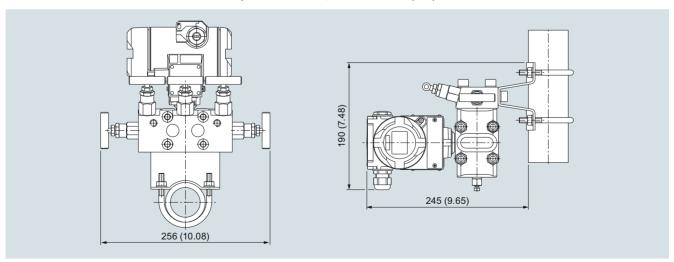
 $7\mbox{MF9411-5BA}$  valve manifold with mounted differential pressure transmitter



 $7\mbox{MF9411-5CA}$  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 measuring 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.

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

Measuring 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)

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 enclosure. 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).

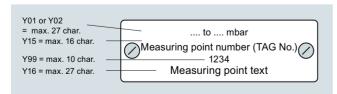
The approval label is located on the opposite side.

The enclosure 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 enclosure. 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 enclosure.

The electrical connections for the power supply and screen are accessible by unscrewing the rear cover. The bottom part of the enclosure 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 enclosure is a plastic cover (1), which hides the input keys.

#### Example for an attached measuring point label



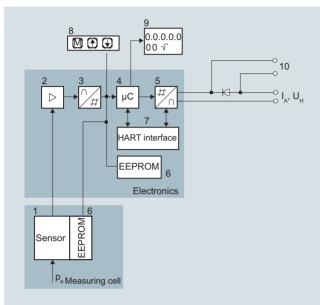
Pressure transmitters

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
- 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.

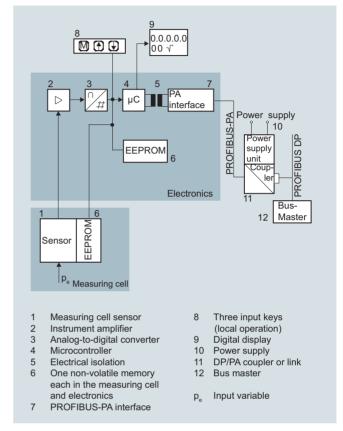
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The one memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced 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 measuring spans ≤ 63 bar measure the input pressure compared to atmosphere, transmitters with measuring 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.

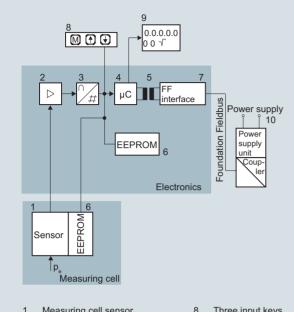
Pressure transmitters

for applications with advanced requirements (Advanced)

SITRANS P410

### Technical description

#### Operation of electronics with FOUNDATION Fieldbus communication



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

- Three input keys (local operation)
- 9 Digital display
- 10 Power supply
- Input variable

### Function diagram of electronics

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

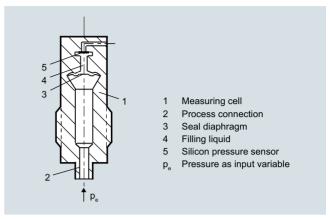
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The one memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced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

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

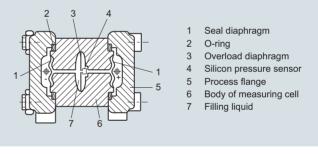
Measuring cell for gauge pressure



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

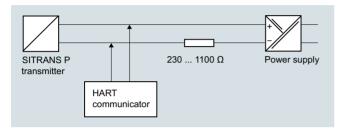
Depending on the version, there are a range of options for parameterizing the pressure transmitter and for setting or scanning the parameters.

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

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

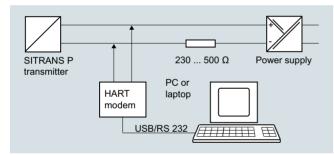
#### Parameterization using HART

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

rajustable parameters; errivity		
Parameters	Input keys (DS III HART)	HART communication
Lower range value	Х	Х
Upper range value	X	X
Electrical damping	X	X
Lower range value without application of a pressure ("Blind setting")	Х	Х
Upper range value without application of a pressure ("Blind setting")	Х	Х
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	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
- 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

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	m³, dm³, hl, yd³, ft³, in³, 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 PROFIBUŚ 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	X
Buttons and/or function disabling	X	X
Source of measured-value display	X	X
Physical dimension of display	X	X
Position of decimal point	Х	X
Bus address	X	X
Adjustment of characteristic	X	X
Input of characteristic		X
Freely-programmable LCD		X
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
- Display of zero correction
- Limit transmitter
- Saturation alarm

Physical dimensions available for the display

Physical variable	Physical dimensions	
Pressure (setting can also be made in the factory)	MPa, kPa, Pa, bar, mbar, torr, atm, psi, g/cm², kg/cm², mmH $_2$ O, mmH $_2$ O (4 °C), inH $_2$ O, inH $_2$ O (4 °C), ftH $_2$ O (20 °C), mmHg, inHg	
Level (height data)	m, cm, mm, ft, in, yd	
Volume	m <sup>3</sup> , dm <sup>3</sup> , hl, yd <sup>3</sup> , ft <sup>3</sup> , in <sup>3</sup> , US gallon, lmp. gallon, bushel, barrel, barrel liquid	
volume flow	m³/s, m³/min, m³/h, m³/d, l/s, l/min, l/h, l/d, Ml/d, ft³/s, ft³/min, ft³/h, ft³/d, US 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

reclinical specifications				
SITRANS P410 for gauge pressure				
Input				
Measured variable	Gauge pressure			
Measuring span (infinitely adjustable) or nominal measuring range, max. operating pressure (in accordance with 97/23/EC Pressure Equipment Directive) and max. test pressure (pursuable DNA 1009).	HART	PROFIBUS PA/ FOUNDATION Fieldbus		
ant to DIN 16086)	Measuring 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. meas	suring span		
Output	HART		PROFIBUS PA/FOU	NDATION Fieldbus
Output signal	4 20 mA		Digital PROFIBUS PA	A and FOUNDATION
• 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		-	
Load				
Without HART	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.$ $U_{\rm H}$ : Power supply in		-	
• With HART	$R_{\rm B} = 230 \dots 500 \Omega ({\rm S} R_{\rm B} = 230 \dots 1100 \Omega ({\rm S} R_{\rm B} = 230 \dots 1100 \Omega )$	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	3)		

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  $\pm$  30 °C ( $\pm$  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

• Lower range 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 nominal measuring range

 $r \le 5$ :  $\le 0.04 \%$ 

 $5 < r \le 100$ :  $\le (0.004 \cdot r + 0.045) \%$ 

 $\leq (0.05 \cdot r + 0.1) \%$  $\leq (0.025 \cdot r + 0.125) \%$ 

 $\leq$  (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

 $3\cdot 10^{\text{--}5}$  of nominal measuring range

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P410

for gauge pressure

SITRANS P410 for gauge pressure		3 3 1
Operating conditions		
Degree of protection	IDOC (- ati - a - LIDOC/IDOC)	
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)	
<ul> <li>Measuring cell with inert filling liquid</li> </ul>	-20 +100 °C (-4 +212 °F)	
• In conjunction with dust explosion protection	-20 +60 °C (-4 +140 °F)	
Ambient conditions		
Ambient temperature		
- 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	Condensation permissible, suitable for u	se 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: ≈ 2.0 kg (≈ 4.4 lb) Stainless steel precision casting: ≈ 4.6 k	g (≈ 10.1 lb)
Enclosure material	·	12 or stainless steel precision casting, mat.
Wetted parts materials		
Connection shank	Stainless steel, mat. no. 1.4404/316L or	Hastollov C4, mat, no. 2,4602
		18516110y 04, 11181. 110. 2.4002
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))	ent pressure 100 bar (1450 psi) at 60 °C
Process connection		, female thread ½ -14 NPT or oval flange with mounting thread M10 or $^{7}\!/_{16}\text{-}20$ UNF
Material of mounting bracket		
• Steel	Sheet-steel, Mat. No. 1.0330, chrome-pla	ated
• Stainless steel 304	Sheet stainless steel, mat. no. 1.4301 (St	
• Stainless steel 316L	Sheet stainless steel, mat. no. 1.4404 (St	,
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	The state of the s	Supplied through bus
Separate supply voltage		No
1 117 0		TVO
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

SITE	$\Delta NS$	P410	tor	dallide	nressure

#### 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"
- Markino
- Permissible ambient temperature
- Connection
- Dust explosion protection for zone 20 (pending)
- Marking
- Permissible ambient temperature
- Max. surface temperature
- Connection
- Effective internal inductance/capacitance
- Dust explosion protection for zone 21/22 (pending)
- Marking
- Connection
- Type of protection "n" (zone 2)
- Marking
- Connection (Ex nA)
- Connections (Ex ic)
- Effective internal inductance/capacitance
- Explosion protection acc. to FM (pending)
- Identification (XP/DIP) or (IS); (NI)
- Explosion protection to CSA (pending)
- Identification (XP/DIP) or (IS)

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

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: FISCO supply unit:  $U_0 = 17.5 \text{ V}, I_0 = 380 \text{ mA}, P_0 = 5.32 \text{ W}$ 

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

 $P_{\rm i} = 750 \text{ mW}; R_{\rm i} = 300 \Omega$ 

 $L_{i} = 0.4 \text{ mH}, C_{i} = 6 \text{ nF}$ 

PTB 99 ATEX 1160

Ex II 1/2 G Ex d IIC T4/T6 Ga/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 ... 45 V To circuits with values:  $U_{\rm H}$  = 9 ... 32 V DC DC

Linear barrier:

 $L_i = 7 \mu H$ ,  $C_i = 1.1 nF$ 

 $U_{\rm O} = 24 \text{ V}, I_{\rm O} = 174 \text{ mA}, P_{\rm O} = 1 \text{ W}$ 

 $U_0 = 17.5 \text{ V}, I_0 = 380 \text{ mA}, P_0 = 5.32 \text{ W}$ 

 $U_0 = 24 \text{ V}, I_0 = 250 \text{ mA}, P_0 = 1 \text{ W}$ 

 $U_{\rm H} = 9 \dots 32 \text{ V DC}; P_{\rm max} = 1 \text{ W}$ 

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: FISCO supply unit:  $U_0 = 17.5 \text{ V}, I_0 = 38 \text{ C}$ 

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

 $P_{\rm i} = 750 \text{ mW}, R_{\rm i} = 300 \Omega$ 

 $T_{i} = 730 \text{ HeV}, T_{i} = 300 \text{ S2}$ 

 $L_{i} = 0.4 \text{ mH}, C_{i} = 6 \text{ nF}$ 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;  $P_{\rm max}$  = 1.2 W

OH = 10.5 ... 45 V DO, 7 max = 1.2 V

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

 $U_{\rm m} = 45 \text{ V}$   $U_{\rm m} = 32 \text{ V}$ 

To circuits with values: FISCO supply unit ic:  $U_{\rm i}$  = 45 V FISCO supply unit ic:  $U_{\rm o}$  = 17.5 V,  $I_{\rm o}$  = 570 mA

Linear barrier:

Linear barrier:

 $L_i = 7 \mu H$ ,  $C_i = 1.1 nF$ 

To circuits with values:

 $U_0 = 32 \text{ V}, I_0 = 132 \text{ mA}, P_0 = 1 \text{ W}$ 

 $L_i = 0.4 \text{ mH}, C_i = 6 \text{ nF}$   $L_i = 7 \mu\text{H}, C_i = 1.1 \text{ nF}$ 

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 1153651

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 P410

			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		- Adaptation to customer-specif-	Yes, linearly rising or falling
Simultaneous communication with master class 2 (max.)	4	ic process variables - Electrical damping, adjustable	characteristic 0 100 s
The address can be set using	Configuration tool or local opera-	- Simulation function	Output/input (can be locked
·	tion (standard setting address 126)	- Simulation function	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	- Limit monitoring	Yes, one upper and lower warn- ing limit and one alarm limit
• input byte	mode and reset function for		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
·	cess Control Devices Version 3.0, class B		Fieldbus function block
Function blocks	2.0, class b	Physical block	1 resource block
Analog input	2	Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block
- Adaptation to customer-specif-	Yes, linearly rising or falling		LCD
ic process variables	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	- Simulation function: Measured	Constant value or over parame-
	value)	pressure value, sensor tem-	terizable 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		
Physical block	1		
Transducer blocks	2		

• 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 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 code
Pressure transmitter for gauge pressure, SITRANS P410 with HART	7MF4033-			-Z 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)		) )		
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)		A B C Y 1		
Version for diaphragm seals in conjunction with process connector "G½B connection shank" 1) 2) 3) 4)		Y 0		
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) - Mounting thread <sup>7</sup> / <sub>16</sub> -20 UNF to IEC 61518/DIN EN 61518 - Mounting thread M10 to DIN 19213 - Mounting thread M12 to DIN 19213  Male thread M20 x 1.5 Male thread ½ -14 NPT		0 1 2 3 4 5		
Non-wetted parts materials	_			
<ul> <li>Enclosure made of die-cast aluminium</li> <li>Enclosure stainless steel precision casting<sup>5)</sup></li> </ul>		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> <li>- "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d)"<sup>7)</sup></li> <li>- "Ex nA/ic (Zone 2)"<sup>8)</sup></li> <li>- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia + Ex d + Zone 1D/2D)"<sup>7)9)</sup></li> </ul>			B D P E R	
<ul> <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> <li>"Intrinsic Safe and Explosion Proof (is + xp)"<sup>6)10)</sup></li> </ul>			F S NC	
Electrical connection / cable entry  • Screwed gland M20 x1 .5  • Screwed gland ½-14 NPT  • Device plug Han 7D (plastic enclosure) 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.

- 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 inspection 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 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 fo		7		0.46. 0040
SITRANS P410 with PRO		7MF4034-		-Z C41
SITRANS P410 with FOU	. ,	7MF4035-		
	o. for the online configuration in the PIA Life Cycle Portal.	71111 1000		2 0
Measuring cell filling	Measuring cell cleaning			
Silicone oil	normal	1		
Nominal measuring ran	ge			
1 bar (14.5 psi)		В		
4 bar (58 psi) 16 bar (232 psi)		C		
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	A		
Hastelloy	Stainless steel	В		
Hastelloy	Hastelloy	C		
(recommended version	eals in conjunction with process connector "female thread ½-14 NPT" 1) 2) 3) 4)	Ť		
Version for diaphragm se	eals in conjunction with process connector "G½B connection shank" 1) 2) 3) 4)	Y	0	
Process connection				
Connection shank G½			0	
<ul> <li>Female thread ½-14 NF</li> <li>Stainless stool avail flan</li> </ul>	rige with process connection (Oval flange has no female thread) <sup>5)</sup>		1	
	20 UNF to IEC 61518/DIN EN 61518		2	
- Mounting thread M10			3	
- Mounting thread M12	to DIN 19213		4	
Male thread M20 x 1.5			5	
• Male thread ½ -14 NPT		_	6	
<ul> <li>Non-wetted parts mater</li> <li>Enclosure made of die-</li> </ul>			0	
Enclosure stainless ste			3	
Version		-		
	nan label inscription, setting of pressure unit: bar		1	
	nglish label inscription, setting of pressure unit: psi		2	
-	h label inscription, setting of pressure unit: kPa		3	
All versions include DVD	with compact operating instructions in various EU languages.	_		
Explosion protection				
• None			A	
With ATEX, Type of pro				
<ul><li>"Intrinsic safety (Ex ia</li><li>"Explosion-proof (Ex or</li></ul>			D	
	ameproof enclosure" (Ex ia + Ex d)" <sup>7)</sup>		P	
- "Ex nA/ic (Zone 2)"8)	amoproof character (Exta)		E	
- "Intrinsic safety, explo	osion-proof enclosure and dust explosion protection		R	
<ul><li>(Ex ia + Ex d + Zone</li><li>FM + CSA intrinsic safe</li></ul>				
	Ex ia + Ex d (ATEX) + Zone 1D/2D <sup>7)9)10)</sup>		S	
• With FM + CSA, Type of			, i	
	plosion Proof (is + xp) <sup>#6)10)</sup>		NC	
Electrical connection/c	•			
Screwed gland M20 x			В	
<ul> <li>Screwed gland ½-14 N</li> <li>Device plugs M12 (stai</li> </ul>			C	
- Device plugs Wiz (Stat	THOSE Stooly ' '			

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
<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) 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 inspection 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 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. measuring span 160 bar (2320 psi) 7/16-20 UNF and M12 fastening thread: Max. measuring 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.
- <sup>11)</sup> M12 delivered without cable socket.
- 12) Only in connection with Ex approval A, B, E or F.

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P410

### for gauge pressure

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	<b>V</b>	✓	1
Stainless steel 316L	A03	1	1	1
Device plugs <sup>1)</sup>				
Han 7D (metal)	A30	✓		
Han 8D (instead of Han 7D)	A31	✓		
Angled	A32	✓		
Han 8D (metal)	A33	✓		
Cable sockets for device plugs M12 (metal (CuZn))	A50	✓	✓	✓
Rating plate inscription				
(instead of German)	D14	,	,	./
• English	B11 B12	<b>√</b>	<b>✓</b>	1
• French	B13	<b>*</b>		1
<ul><li>Spanish</li><li>Italian</li></ul>	B14	<b>✓</b>	<b>√</b>	1
		1	· /	٠,
English rating plate Pressure units in inH <sub>2</sub> 0 and/or psi	B21	•	•	✓
Quality test certificate, 5-point factory calibration (IEC 60770-2) <sup>2)</sup>	C11	1	✓	1
·	C12	./	./	./
Inspection certificate <sup>3)</sup>	C12		•	•
Acc. to EN 10204-3.1		_	,	,
Factory certificate Acc. to EN 10204-2.2	C14	✓	✓	✓
Inspection certificate (EN 10204-3.1) PMI test of parts in contact with medium	C15	✓	✓	✓
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	✓	✓	✓
Degree of protection IP66/IP68 (only for M20x1.5 and ½-14 NPT)	D12	✓	✓	✓
Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flange	D37	✓	✓	1
Capri cable gland 4F CrNi and clamping device (848699 + 810634) included	D59	✓	✓	✓
TAG plate empty (no inscription)	D61	✓	✓	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>√</b>	<b>✓</b>
<b>CRN approval Canada</b> (Canadian Registration Number)	E22 <sup>5)</sup>	✓	✓	✓
Dual seal	E24	✓	✓	✓
Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)	E55 <sup>6)</sup>	✓	✓	✓
Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)	E56 <sup>6)</sup>	✓	✓	✓
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>	✓	<b>√</b>	✓
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 enclosure 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>V</b>	<b>*</b>	<b>*</b>
<ul> <li>Lloyds Register (LR)</li> <li>French marine classification society Bureau Veritas (BV)</li> </ul>	S11 S12	<b>√</b>	<b>✓</b>	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>	<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 1/253).

<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 <u>total</u> combination is certified here.

<sup>3)</sup> If the inspection 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	✓	<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)	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, $g/cm^2$ , $kg/cm^2$ , Torr, ATM or % *) ref. temperature 20 °C				
Setting of pressure indication in non-pressure units <sup>2)</sup>	Y22 + Y01	✓		
Specify in plain text: Y22: up to I/min, m³/h, m, USgpm, (specification of measuring range in pres- sure units "Y01" is essential, unit with max. 5 characters)				

✓ = available

### Ordering example

Item line: 7MF4033-1EA00-1AA7-Z C41

B line: A01 + Y01 + Y21

C line: Y01: 10 ... 20 bar (145 ... 290 psi)

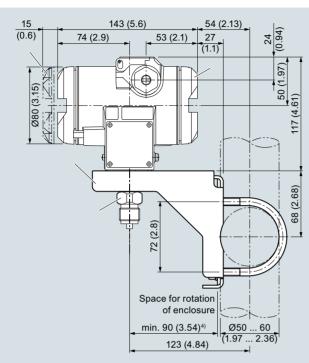
C line: Y21: bar (psi)

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.

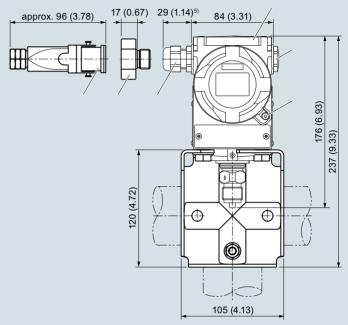
Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P410

### for gauge pressure

### Dimensional drawings



- 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  $^{2)}$   $\,$  Not with "flameproof enclosure" type of protection
- Not for type of protection "FM + CSA" [is + XP]"
- Minimum distance for rotating
- For Pg 13.5 with adapter, approx. 45 mm (1.77 inch)



- 5 Cover over buttons
- 6 Blanking plug
- 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

Technical specifications			
SITRANS P410 for differential pressure and flow			
Input			
Measured variable	Differential pressure	and flow	
Measuring span (infinitely adjustable) or nominal measuring range and maximum operating pressure (pursuant to 2014/68/EU Pressure Equipment Directive)	HART	PROFIBUS PA/ FOUNDATION Fieldbus	
	Measuring 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. mea or 30 mbar a/3 kPa		ith measuring cell 30 bar/3 MPa/435 psi)
Upper measuring limit	100 % of max. meas	suring span	
Lower range 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 pres optionally set to 22.		-
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		hort-circuit and polarit painst the other with m	
Electrical damping (step width 0.1 s)	Set to 2 s (0 100	s)	

Pressure transmitters

for applications with advanced requirements (Advanced)

### SITRANS P410

### for differential pressure and flow

### SITRANS P410 for differential pressure and flow

#### Measuring accuracy

Reference conditions

Acc. to IEC 60770-1

- Increasing characteristic
- Lower range value 0 bar/kPa/psi
- · Silicone oil filling
- Room temperature 25 °C (77 °F)

Measuring span ratio r (spread, Turn-Down)

Error in measurement at limit setting incl. hysteresis and reproducibility

- · Linear characteristic
  - 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
- Square-rooted characteristic (flow > 50 %)
- 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
- Square-rooted characteristic (flow > 25 ... 50 %)
- 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

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

 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

Influence of static pressure

- on the lower range value
- 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
- on the measuring span
- 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 (temperature change ± 30 °C (± 54 °F))

- 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

Effect of mounting position (in pressure per change in angle)

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

Measuring value resolution for PROFIBUS PA and FOUNDATION Fieldbus

- Stainless steel seal diaphragm

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

r ≤ 5 : ≤ 0.04 %

5 < r ≤ 100 :  $\leq (0.004 \cdot r + 0.045) \%$ 

r≤5: ≤ 0.04 %

5 < r ≤ 100 :  $\leq$  (0.004 · r + 0.045) %

≤ 0.08 % r ≤ 5 :

5 < r ≤ 100 :  $\leq (0.008 \cdot r + 0.09) \%$ 

 $\leq (0.025 \cdot r + 0.125) \%$ 

≤ (0.1 · r) % per 70 bar

(zero offset is possible with position error adjustment)

 $\leq$  (0.2 · r) % per 70 bar

(zero offset is possible with position error adjustment)

≤ 0.14 % per 70 bar

Static pressure max. 70 bar/7 MPa/1015 psi

≤ (0.125 · r) % in 5 years

≤ (0.25 · r) % in 5 years

≤ 0.7 mbar/0.07 kPa/0.028 inH<sub>2</sub>O per 10° inclination (zero offset is possible with position error adjustment)

0.005 % per 1 V

3 · 10<sup>-5</sup> of nominal measuring range

1/276

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P410

### for differential pressure and flow

		for differential pressure and flo				
SITRANS P410 for differential pressure and flow						
Operating conditions						
Degree of protection						
• according to EN 60529	IP66 (optional IP66/IP68)	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) -20 +100 °C (-4 +212 °F) with 30 b	par measuring cell				
<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					
Design						
Weight (without options)	Die-cast aluminum: $\approx 4.5 \text{ kg} \ (\approx 9.9 \text{ lb})$ Stainless steel precision casting: $\approx 7.1$	Die-cast aluminum: ≈ 4.5 kg (≈ 9.9 lb) Stainless steel precision casting: ≈ 7.1 kg (≈ 15.6 lb)				
Enclosure material	Low-copper die-cast aluminum, GD-AIS no. 1.4408	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				
<ul> <li>Process flanges and sealing screw</li> </ul>	Stainless steel, mat. no. 1.4408, Hastell	oy C4, mat. no. 2.4602				
• O-Ring	FPM (Viton) or optionally: PTFE, FEP, FE	EPM and NBR				
Measuring cell filling	Silicone oil or inert filling liquid (maximum value with oxygen measurer (140 °F))	nent pressure 100 bar (1450 psi) at 60 °C				
Process connection	Female thread $^{1}\!\!4$ -18 NPT and flange co DIN 19213 or $^{7}\!\!/_{16}$ -20 UNF to IEC 61518	nnection with mounting thread M10 to JUN EN 61518				
Material of mounting bracket						
• Steel	Sheet-steel, Mat. No. 1.0330, chrome-p	lated				
• Stainless steel 304	Sheet stainless steel, mat. no. 1.4301 (S	SS 304)				
Stainless steel 316L	Sheet stainless steel, mat. no. 1.4404 (\$	SS 316L)				
Power supply <i>U</i> <sub>H</sub>	HART	PROFIBUS PA/ FOUNDATION Fieldbu				
Terminal voltage on transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically-safe mod	- de				
Power supply		Supplied through bus				
Separate supply voltage	-	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

Classification according to PED 2014/68/EU

Explosion protection

- · Intrinsic safety "i"
- Permissible ambient temperature
- Connection
- Effective internal inductance/capacitance
- Explosion-proof "d"
- Marking
- Permissible ambient temperature
- Connection
- Dust explosion protection for zone 20 (pending)
- Markino
- Permissible ambient temperature
- Max. surface temperature
- Connection
- Effective internal inductance/capacitance
- Dust explosion protection for zone 21/22 (pending)
- Marking
- Connection
- Type of protection "n" (zone 2)
- Marking
- Connection (Ex nA)
- Connection (Ex ic)
- Effective internal inductance/capacitance
- Explosion protection acc. to FM (pending)
- Identification (XP/DIP) or (IS); (NI)
- Explosion protection to CSA (pending)
- Identification (XP/DIP) or (IS)

#### HART

#### PROFIBUS PA/ FOUNDATION Fieldbus

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

FISCO supply unit:

 $L_i = 7 \mu H$ ,  $C_i = 1.1 nF$ 

FISCO supply unit:

 $L_i = 7 \mu H, C_i = 1.1 nF$ 

Linear barrier:

Linear barrier:

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:

 $U_{\rm i}$  = 30 V,  $I_{\rm i}$  = 100 mA,  $P_{\rm i}$  = 750 mW;

 $R = 300 \Omega$ 

 $L_i = 0.4 \text{ mH}, C_i = 6 \text{ nF}$ 

PTB 99 ATEX 1160

PTB 01 ATEX 2055

Ex II 1/2 G Ex d IIC T4/T6 Ga/Gb

-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +60 °C (-40 ... +140 °F) temperature class T6

To circuits with values:  $U_{\rm H} = 10.5 \dots 45 \, \rm V$  To circuits with values:  $U_{\rm H} = 9 \dots 32 \, \rm V \, DC$ 

 $U_0 = 17.5 \text{ V}, I_0 = 380 \text{ mA}, P_0 = 5.32 \text{ W}$ 

 $U_{\rm O}$  = 24 V,  $I_{\rm O}$  = 250 mA,  $P_{\rm O}$  = 1.2 W

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

 $U_{\rm i} = 30 \text{ V}, I_{\rm i} = 100 \text{ mA},$  $P_{\rm i} = 750 \text{ mW}, R_{\rm i} = 300 \Omega$ 

 $L_i = 0.4 \text{ mH}, C_i = 6 \text{ nF}$ 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;

 $U_0 = 17.5 \text{ V}, I_0 = 380 \text{ mA}, P_0 = 5.32 \text{ W}$ 

 $U_{\rm O}$  = 24 V,  $I_{\rm O}$  = 250 mA,  $P_{\rm O}$  = 1 W

 $P_{\text{max}} = 1 \text{ W}$ 

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

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

To circuits with values:

 $L_i = 0.4 \text{ mH}, C_i = 6 \text{ nF}$ 

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

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

FISCO supply unit ic:  $U_0 = 17.5 \text{ V}, I_0 = 570 \text{ mA}$ 

Linear barrier:

 $U_0 = 32 \text{ V}, I_0 = 132 \text{ mA}, P_0 = 1 \text{ W}$ 

 $L_i = 7 \mu H, C_i = 1.1 nF$ 

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 1153651

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 P410

		for d	ifferential pressure and flow
HART communication		FOUNDATION Fieldbus	
HART	230 1100 Ω	communication	
Protocol	HART Version 5.x	Function blocks	3 function blocks analog input, 1 function block PID
Software for PC	SIMATIC PDM	Analog input	
PROFIBUS PA communication		- Adaptation to customer-	Yes, linearly rising or falling
Simultaneous communication with master class 2 (max.)	4	specific process variables	characteristic
The address can be set using	Configuration tool or local opera-	- Electrical damping, adjustable	0 100 s
The address 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)	Limit magnitoring	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 Field- bus function block
	3.0, class B	Physical block	1 resource block
Function blocks	2	Transducer blocks	1 transducer block Pressure with
Analog input			calibration, 1 transducer block 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 respec- tively		
Physical block	1		
Transducer blocks	2		
Pressure transducer block			
- Can be calibrated by applying two pressures	Yes		

two pressures

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

- Monitoring of sensor limits - Specification of a container

Max. 30 nodes

Parameterizable

Constant value or over parame-

terizable ramp function

Yes

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
	o. for the online configuration in the PIA Life Cycle Portal.		
Measuring cell filling Silicone oil	Measuring cell cleaning normal	1	
Measuring span (min	max.)		
2.5 250 mbar 6 600 mbar 16 1600 mbar 50 5000 mbar 0.3 30 bar	$(1.004 \dots 100.4 \text{ inH}_2\text{O})$ $(2.409 \dots 240.9 \text{ inH}_2\text{O})$ $(6.424 \dots 642.4 \text{ inH}_2\text{O})$ $(20.08 \dots 2008 \text{ inH}_2\text{O})$ $(4.35 \dots 435 \text{ psi})$	D E F G H	
Wetted parts materials			
(stainless steel process to Seal diaphragm	flanges) Parts of measuring cell		
Stainless steel Hastelloy Hastelloy Version for diaphragm se	Stainless steel Stainless steel Hastelloy eal 1) 2) 3) 4)	A B C Y	
<ul> <li>Mounting thread M10</li> <li>Vent on side of process</li> <li>Mounting thread <sup>7</sup>/<sub>16</sub></li> </ul>	-20 UNF to IEC 61518/DIN EN 61518 to DIN 19213 (only for replacement requirement)	2 0 6 4	
Non-wetted parts mater process flange screws	rials Electronics enclosure		
Stainless steel Stainless steel	Die-cast aluminum Stainless steel precision casting <sup>6)</sup>	2 3	
Version			
<ul><li>International version, E</li><li>Chinese version, Englis</li></ul>	man plate inscription, setting for pressure unit: bar inglish plate inscription, setting for pressure unit: bar h plate inscription, setting for pressure unit: Pascal with compact operating instructions in various EU languages.	1 2 3	
Explosion protection			
<ul><li>None</li><li>With ATEX, Type of pro</li><li>"Intrinsic safety (Ex ia</li></ul>		A	
- "Explosion-proof (Ex	· _:	D P	
- "Ex nA/ic (Zone 2)"9)	psion-proof enclosure and dust explosion protection	E R	
(Ex ia+ Ex d + Zone) • FM + CSA intrinsic safe	1D/2D) <sup>#8)10)</sup>	, in the second	
	Ex ia + Ex d (ATEX) + Zone 1D/2D8)10)11)	s	
	plosion Proof (is + xp) <sup>#7)11)</sup>	N	С

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 enclosure) 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 inspection 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.
- <sup>15)</sup>M12 delivered without cable socket.

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P410

### for differential pressure and flow

Selection and Ordering	data	Article No.					Order co	de
Pressure transmitters fo	r differential pressure and flow PN 160 (MAWP 2320 psi)							
SITRANS P410 with PROF	IBUS PA (PA)	7MF4434-					-Z C41	
SITRANS P410 with FOUN	DATION Fieldbus (FF)	7MF4435-	-				-Z C41	
	for the online configuration in the PIA Life Cycle Portal.							
Measuring cell filling	Measuring cell cleaning							
Silicone oil	normal		1					
Nominal measuring rang	ie	-						
250 mbar (100.4 inH <sub>2</sub> O			D					
600 mbar (240.9 inH <sub>2</sub> O	·		E					
1600 mbar (642.4 inH <sub>2</sub> O 5 bar (2008 inH <sub>2</sub> O)			F G					
30 bar (435 psi)			Н					
Wetted parts materials		_						
(stainless steel process fla	anges)							
Seal diaphragm	Parts of measuring cell							
Stainless steel	Stainless steel		1	١				
Hastelloy	Stainless steel		E	3				
Hastelloy	Hastelloy		(					
Version as diaphragm sea	1) 2) 3) 4)	_	١					
Process connection	the flore are a second self-or							
Female thread 1/4-18 NPT • Sealing screw opposite								
	0 UNF to IEC 61518/DIN EN 61518			2				
	o DIN 19213 (only for replacement requirement)			0				
Venting on side of proce								
	0 UNF to IEC 61518/DIN EN 61518			6				
	o DIN 19213 (only for replacement requirement)	_		4				
Non-wetted parts materi								
process flange screws	Electronics enclosure							
Stainless steel	Die-cast aluminum			2				
Stainless steel	Stainless steel precision casting	-		3				
Version	on plate incorintian, cotting for procesure units har				١,			
	an plate inscription, setting for pressure unit: bar glish plate inscription, setting for pressure unit: bar				1 2			
	plate inscription, setting for pressure unit: Pascal				3			
	with compact operating instructions in various EU languages.							
Explosion protection		_						
• None						Α		
• With ATEX, Type of prote	ection:							
- "Intrinsic safety (Ex ia)"						В		
- "Explosion-proof (Ex d	"O)					D		
- "Intrinsic safety and fla - "Ex nA/ic (Zone 2)" 8)	meproof enclosure" (Ex ia + Ex d)"7)					P E		
	ion-proof enclosure and dust explosion protection					R		
(Ex ia + Ex d + Zone 1	D/2D) <sup>*7) 9)</sup> (not for DS III FF)							
• FM + CSA intrinsic safe						F		
	(ia + Ex d (ATEX) + Zone 1D/2D <sup>7)9)10)</sup>					S		
With FM + CSA, Type of     "Intringia Safe and Fyre								
	losion Proof (is + xp)*8)10)					NC		
Electrical connection/ca								
Screwed gland M20 x 1.						В		
<ul> <li>Screwed gland ½-14 NF</li> <li>Daviss plugs M12 (stein</li> </ul>						C		
Device plugs M12 (stain	1622 2(661)					F		

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P410

### for differential pressure and flow

Selection and Ordering data	Article No.	Order cod
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
<ul> <li>Without visible display (display concealed, setting: bar)</li> </ul>		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)
- 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 inspection 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) 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		
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	✓	✓	✓
<ul><li>Stainless steel 304</li><li>Stainless steel 316L</li></ul>	A02 A03	<b>√</b>	<b>√</b>	1
O-rings for process flanges				
(instead of FPM (Viton))				
• PTFE (Teflon)	A20	<b>√</b>	<b>1</b>	<b>1</b>
• FEP (with silicone core, approved for food)	A21	1	1	1
<ul> <li>FFPM (Kalrez, for measured medium tem- peratures -15 100 °C (5 212 °F))</li> </ul>	A22	<b>V</b>	٧	٧
• NBR (Buna N)	A23	✓	✓	✓
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	✓	✓	✓
1/4-18 NPT, with vent valve in mat. of process flanges				
Cable sockets for device plugs M12 (metal (CuZn))	A50	✓	✓	✓
Rating plate inscription				
(instead of German)		,	,	
• English	B11	<b>V</b>	<b>1</b>	1
<ul><li>French</li><li>Spanish</li></ul>	B12 B13	1	1	1
• Italian	B14	1	1	1
English rating plate	B21	1	1	1
Pressure units in inH <sub>2</sub> O and/or psi	D21	•	•	•
Quality test certificate, 5-point factory calibration (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	C14	✓	✓	✓
Inspection certificate (EN 10204-3.1) PMI test of parts in contact with medium	C15	✓	✓	✓
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	✓	✓	✓

Selection and Ordering data	Order	code		
Further designs	0.00.	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	✓		
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)				
Degree of protection IP66/IP68 (only for M20 x 1.5 and ½-14 NPT)	D12	✓	✓	✓
Supplied with oval flange set	D37	✓	✓	✓
(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> (only together with type of protection "Intrinsic safety" (transmitter 7MF4B Ex ia)"and IP66)	E01	✓	✓	✓
Dual seal	E24	✓	✓	✓
Explosion-proof "Intrinsic safety" to NEPSI (China)	E55 <sup>5)</sup>	✓	✓	✓
(only for transmitter 7MF4B)				
Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)	E56 <sup>5)</sup>	<b>√</b>	✓	✓
Explosion-proof "Zone 2" to NEPSI (China)	E57 <sup>5)</sup>	✓	✓	✓
(only for transmitter 7MF4				
Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China)	E58 <sup>5)</sup>	✓	✓	✓
(only for transmitter 7MF4R)		_		
"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (pending)	E70 <sup>5)</sup>	<b>√</b>	✓	✓
(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	<b>✓</b>	<b>✓</b>	✓
Two coats of lacquer on enclosure and cover (PU on epoxy)	G10	<b>4</b>	<b>✓</b>	<b>✓</b>
Interchanging of process connection side	H01	✓	✓	✓
Vent on side for gas measurements	H02	✓	1	1
Stainless steel process flanges for verti- cal differential pressure lines (not together with K01, K02 and K04) <sup>6)</sup>	H03	<b>✓</b>	✓	✓
(not together with Not, Noz and No4)"				

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	✓	✓	✓			
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	✓	✓	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	✓	✓	✓			
<ul> <li>Russian Maritime Register (RMR)</li> </ul>	S16	✓	✓	✓			
<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 1/253).

#### ✓ = 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 inspection 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
- 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.
- 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	Oluel	HART	DΛ	FF		
Please add "-Z" to Article No. and specify Order code(s) and plain text.		HANI	FA	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)			
<ul> <li>in the case of square rooted characteristic (max. 5 characters):</li> </ul>	Y02	✓				
Y02: up to mbar, bar, kPa, MPa, psi						
Stainless steel tag plate and entry in device variable (measuring point description)	Y15	<b>√</b>	✓	✓		
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	✓				
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 $H_2O^*$ ), $inH_2O^*$ ), $ftH_2O^*$ ), mmHG, $inHG$ , psi, Pa, $kPa$ , $MPa$ , $g/cm^2$ , $kg/cm^2$ , Torr, ATM or % *) ref. temperature 20 °C						
Setting of pressure indicator in 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 or Y02					
Preset bus address possible between 1 and 126	Y25		✓	✓		
Specify in plain text: Y25:						
Damping adjustment in seconds (0 100 s)	Y30	✓	✓	✓		

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	·	Article No				Order cod
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.					
Measuring cell filling Bilicone oil	Measuring cell cleaning normal		1	Ī	П	
Measuring span (min.	max.)					
6 600 mbar	(2.4 240 inH <sub>2</sub> O)		Е			
16 1600 mbar	(6.4 642 inH <sub>2</sub> O)		F			
50 5000 mbar	(20 2000 in H <sub>2</sub> O)		G			
).3 30 bar	(4.35 435 psi)		Н			
Vetted parts materials						
stainless steel process						
Seal diaphragm	Parts of measuring cell					
Stainless steel	Stainless steel		A			
Hastelloy	Stainless steel		В			
ersion for diaphragm s	seal 1, 2, 3, 4)		Y			
Process connection						
emale thread 1/4-18 NF	PT with flange connection					
Sealing screw opposi-						
- Mounting thread 7/10	<sub>6</sub> -20 UNF to IEC 61518/DIN EN 61518			3		
	2 to DIN 19213 (only for replacement requirement)			1		
Venting on side of pro	ocess flanges, location of vent valve at top of process flanges					
(see dimensional drav	ving)					
	<sub>6</sub> -20 UNF to IEC 61518/DIN EN 61518			7		
	2 to DIN 19213 (only for replacement requirement)			5		
Non-wetted parts mate	erials					
process flange screws	Electronics enclosure					
Stainless steel	Die-cast aluminum			2		
Stainless steel	Stainless steel precision casting <sup>5)</sup>			3		
	Otaliness steel precision easting /			ď		
/ersion					I, I	
	rman 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	
All versions include DVI	D with compact operating instructions in various EU languages.					
Explosion protection						
None					Α	
With ATEX, Type of pro	otection:					
- "Intrinsic safety (Ex i					В	
- "Explosion-proof (Ex						
	,				D	
	flameproof enclosure" (Ex ia + Ex d)" <sup>7)</sup>				P	
- "Ex nA/ic (Zone 2)"8)					E	
	losion-proof enclosure and dust explosion protection				R	
	• /					
(Ex ia+ Ex d + Zone	fo (is) (panding) IU)				F	
FM + CSA intrinsic sa					S	
FM + CSA intrinsic sa FM + CSA (is + ep) +	Ex ia + Ex d (ATEX) + Zone $1D/2D^{7(9)10}$					
<ul> <li>FM + CSA intrinsic sa</li> <li>FM + CSA (is + ep) +</li> <li>With FM + CSA, Type</li> </ul>	Ex ia + Ex d (ATEX) + Zone 1D/2D <sup>7)9)10)</sup> of protection:					
FM + CSA intrinsic sa FM + CSA (is + ep) + With FM + CSA, Type	Ex ia + Ex d (ATEX) + Zone $1D/2D^{7(9)10}$				NC	
PFM + CSA intrinsic sa PFM + CSA (is + ep) + With FM + CSA, Type - "Intrinsic safety and	Ex ia + Ex d (ATEX) + Zone 1D/2D <sup>7)9)10)</sup> of protection: explosion-proof (is + xp)" <sup>6)10)</sup> , max PN 360					
• FM + CSA intrinsic sa • FM + CSA (is + ep) + • With FM + CSA, Type - "Intrinsic safety and Electrical connection/	Ex ia + Ex d (ATEX) + Zone 1D/2D <sup>7)9)10)</sup> of protection: explosion-proof (is + xp)" <sup>6)10)</sup> , max PN 360 <b>cable entry</b>				NC	
PFM + CSA intrinsic sa PFM + CSA (is + ep) + With FM + CSA, Type - "Intrinsic safety and Electrical connection/ Screwed gland M20x"	Ex ia + Ex d (ATEX) + Zone 1D/2D <sup>7)9)10)</sup> of protection: explosion-proof (is + xp)" <sup>6)10)</sup> , max PN 360 <b>cable entry</b> 1.5				N C B	
• FM + CSA intrinsic sa • FM + CSA (is + ep) + • With FM + CSA, Type - "Intrinsic safety and • Electrical connection/ • Screwed gland M20x: • Screwed gland ½-14	Ex ia + Ex d (ATEX) + Zone 1D/2D <sup>7)9)10)</sup> of protection: explosion-proof (is + xp)" <sup>6)10)</sup> , max PN 360 <b>cable entry</b> 1.5				NC	

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.
- 2) If the inspection certificate 3.1 is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote
- 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
   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.
- 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) 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

### for differential pressure and flow

Selection and Ordering	g data	Article No.	Order Code
Pressure transmitters	for differential pressure and flow, PN 420 (MAWP 6092 psi)		
SITRANS P410 with PRO	OFIBUS PA (PA)	7MF4534-	-Z C41
SITRANS P410 with FOL	• •	7MF4535-	
	lo. for the online configuration in the PIA Life Cycle Portal.	71111 4000	2 041
	,		
Measuring cell filling Silicone oil	Measuring cell cleaning normal	1	
Silicone oil	noma		
Nominal measuring ra	· ·		
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)	G H	
	(435 psi)		
Wetted parts materials			
(stainless steel process	9 ,		
Seal diaphragm	Parts of measuring cell		
Stainless steel	Stainless steel	A	
Hastelloy Version for diaphragm s	Stainless steel	B	
	eai / / · /		
Process connection	T with flange connection		
Sealing screw opposit	T with flange connection		
	-20 UNF to IEC 61518/DIN EN 61518	3	
	2 to DIN 19213 (only for replacement requirement)	i	
	cess flanges, location of vent valve at top of process flanges		
(see dimensional drav			
	-20 UNF to IEC 61518/DIN EN 61518	7	
- Mounting thread M1	2 to DIN 19213 (only for replacement requirement)	5	
Non-wetted parts mate			
Process flange screws	Electronics enclosure		
Stainless steel	Die-cast aluminum	2	
Stainless steel	Stainless steel precision casting	3	
Version			
	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	
	O with compact operating instructions in various EU languages.		
Explosion protection			
<ul><li>None</li><li>With ATEX, Type of pro</li></ul>	ataction:	A	
- "Intrinsic safety (Ex is		В	
- "Explosion-proof (Ex	,	D	
	flameproof enclosure" (Ex ia + Ex d)"6)	P	
- "Ex nA/ic (Zone 2)" 7		E	
- "Intrinsic safety, expl	osion-proof enclosure and dust explosion protection	R	
(Ex ia + Ex d + Zone	e 1D/2D)" <sup>6)8)</sup>		
• FM + CSA intrinsic sat	re (is) (pending) <sup>9)</sup> Fulla - Full (ATEX) - Zana 1D/0D6) <sup>7/0</sup>	F	
	Ex ia + Ex d (ATEX) + Zone 1D/2D <sup>6)7)9)</sup>	S	
<ul> <li>With FM + CSA, Type</li> <li>"Intrinsic safety and</li> </ul>	or protection: explosion-proof (is + xp) <sup>=6)9)</sup> , max PN 360	N.	С
Electrical connection/o	•		B
<ul> <li>Screwed gland M20 x</li> <li>Screwed gland ½-14 i</li> </ul>			B C
<ul> <li>Device plugs M12 (sta</li> </ul>			F
- Device plugs WIZ (Sta	annoss stoory		

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)		0
<ul> <li>Without visible display (display concealed, setting: bar)</li> </ul>		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 inspection certificate 3.1 is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote
- 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.-..... 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.
  10) 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			
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
• Stainless steel 304	A02	<b>√</b>	1	1
Stainless steel 316L	A03	<b>*</b>	✓	<b>V</b>
O-rings for process flanges (instead of FPM (Viton)) • PTFE (Teflon) • FEP (with silicone core, approved for food)	A20 A21	<b>✓</b>	<b>*</b>	<b>*</b>
<ul> <li>FFPM (Kalrez, for measured medium temperatures -15 100 °C (5 212 °F))</li> <li>NBR (Buna N)</li> </ul>	A22 A23	1	<b>√</b>	<b>√</b>
Device plugs <sup>1)</sup>	ALU	ľ	·	•
• Han 7D (metal)	A30	1		
Han 8D (instead of Han 7D)	A31	1		
• Angled	A32	✓		
Han 8D (metal)	A33	✓		
Sealing screws (2 units) 1/4-18 NPT, with vent 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	<b>√</b>	<b>√</b>	1
Spanish     Italian	B13 B14	<b>*</b>	<b>v</b>	<b>y</b>
	B21	1	1	1
English rating plate Pressure units in inH <sub>2</sub> O and/or psi	DZI	•	•	•
Quality test certificate, 5-point factory calibration (IEC 60770-2)	C11	1	<b>✓</b>	✓
Inspection certificate Acc. to EN 10204-3.1	C12	✓	✓	✓
Factory certificate Acc. to EN 10204-2.2	C14	✓	✓	✓
Functional safety (SIL2) (pending) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL con- formity 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	<b>✓</b>	<b>√</b>	<b>√</b>
PED for Russia with initial calibration mark		<b>√</b>	✓	✓
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)  (only together with seal diaphragm made of Hostelley and steinless steel)	D07	<b>✓</b>	✓	✓
Hastelloy and stainless steel)  Degree of protection IP66/IP68  (only for M20 x 1.5 and ½-14 NPT)	D12	✓	1	✓
	D59	1	1	1
Capri cable gland 4F CrNi and clamping device (848699 + 810634) included	200			

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)	EUI	•	•	·
Dual seal	E24	✓	✓	✓
Explosion-proof "Intrinsic safety" to NEPSI (China)	E55 <sup>3)</sup>	✓	✓	1
(only for transmitter 7MF4B)				
<b>Ex prot.</b> "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)	E56 <sup>3)</sup>	✓	✓	✓
<b>Explosion-proof "Zone 2" to NEPSI (China</b> ) (only for transmitter 7MF4E)	E57 <sup>3)</sup>	✓	✓	✓
Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China)	E58 <sup>3)</sup>	✓	✓	✓
(only for transmitter 7MF4R)				
"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (pending) (only for transmitter 7MF4[B, D]Z + E11)	E70 <sup>3)</sup>	<b>✓</b>	✓	✓
Ex-protection Ex ia according to EAC Ex (Russia)	E80	✓	✓	1
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 enclosure 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
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				
<ul> <li>Det Norske Veritas Germanischer Lloyd (DNV-GL)</li> </ul>	S10	<b>√</b>	1	1
Lloyds Register (LR)	S11	1	1	1
French marine classification society     Bureau Veritas (BV)	S12	✓	✓	✓
American Bureau of Shipping (ABS)	S14	✓	1	1
	016	1	1	1
<ul><li>Russian Maritime Register (RMR)</li><li>Korean Register of Shipping (KR)</li></ul>	S16 S17		٠.	

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 1/253).

<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			
Additional data		HART	PA	FF
Please add "-Z" to Article No. and specify Order code(s) and plain text.				
Measuring range to be set				
Specify in plain text:  • in the case of linear characteristic curve (max. 5 characters):	Y01	<b>√</b>	<b>√</b> 1)	
<ul><li>Y01: up to mbar, bar, kPa, MPa, psi</li><li>in the case of square rooted characteristic (max. 5 characters):</li></ul>	Y02	✓		
Y02: up to mbar, bar, kPa, MPa, psi				
Stainless steel tag plate and entry in device variable (measuring point description)	Y15	<b>V</b>	✓	<b>√</b>
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	✓		
Setting of pressure indication in pressure units	Y21	✓	✓	✓
Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi,				
Note: The following pressure units can be selected: bar, mbar, mm H <sub>2</sub> O*), inH <sub>2</sub> O*), ftH <sub>2</sub> O*), mmHG, inHG, psi, Pa, kPa, MPa, g/cm², kg/cm², Torr, ATM or % *) ref. temperature 20 °C				
Setting of pressure indication in	Y22 +	✓		
non-pressure units <sup>2</sup> ) Specify in plain text: Y22: up to I/min, m³/h, m, USgpm, (specification of measuring range in pressure units "Y01" or "Y02" is essential, unit with max. 5 characters)	Y01 or Y02			
Preset bus address	Y25		1	1
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.

<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.

(3)

<del>-</del>

approx. 96 (3.78)

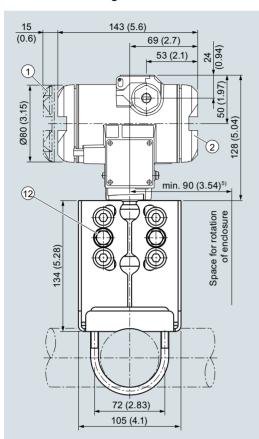
17 (0.67)

#### **Pressure Measurement**

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)<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

6 Blanking plug

**(4)** 

- Safety catch (only for "flameproof enclosure" type of protection; not shown in the drawing)
- 8 Lateral ventilation for liquid measurement (Standard)

84 (3.31)

 $\oplus$ 

52 (2.05)

(6)

(8)

(9)

(10)

68 (2.7)

120 (4.7)

166 (6.54)

(3.8)

96

262 (

- (9) Lateral ventilation for gas measurement (order option H02)
- 10 Mounting bracket (optional)
- 11) Sealing plug with valve (optional)
- 12 Process connection: 1/4-18 NPT (IEC 61518)
- 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]"
- <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

SITRANS P410 pressure transmitters for differential pressure and flow, dimensions in mm (inch)



approx. 96 (3.78)

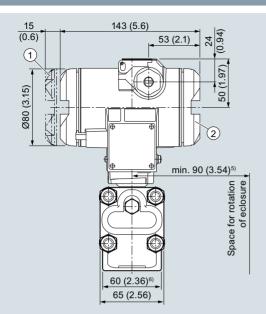
#### **Pressure Measurement**

Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P410

84 (3.31)

for differential pressure and flow

(6)



29 (1.14)4)

17 (0.67)

- (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 1,5 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
- 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)
- 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 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

Accessories/Spare parts	
Selection and Ordering data	Article No.
Accessories/Spare parts	
Mounting bracket and fastening parts	
for pressure transmitters	
SITRANS P410 with HART, P410 with PROFIBUS PA and P410 with FOUNDATION	
Fieldbus (7MF403C.)	
made of steel     made of steinless steel 204/1, 4201	7MF4997-1AB
<ul> <li>made of stainless steel 304/1.4301</li> <li>made of stainless steel 316L/1.4404</li> </ul>	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     made of steinless steel 204/1, 4201	7MF4997-1AC
<ul> <li>made of stainless steel 304/1.4301</li> <li>made of stainless steel 316L/1.4404</li> </ul>	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	7MF4997-1AD
made of stainless steel 304/1.4301	7MF4997-1AD
<ul> <li>made of stainless steel 316L/1.4404</li> </ul>	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	7MF4997-1AE
made of stainless steel 304/1.4301	7MF4997-1AL
made of stainless steel 316L/1.4404	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)	
<ul><li>made of steel</li><li>made of stainless steel 304/1.4301</li></ul>	7MF4997-1AF 7MF4997-1AM
made of stainless steel 304/1.4404      made of stainless steel 316L/1.4404	7MF4997-1AM
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	7MF4997-1BB
• with window	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	7MF4997-1BC
• with window	7MF4997-1BF
Digital indicator	7MF4997-1BR
Including mounting material, for SITRANS P410 with HART, P410 with PROFIBUS PA and	
P410 with FOUNDATION Fieldbus	
Measuring point label	
without inscription (5 units)     Printed (1 unit)	7MF4997-1CA 7MF4997-1CB-Z
<ul> <li>Printed (1 unit)</li> <li>Data according to Y01 or Y02, Y15, Y16 and</li> </ul>	Y:
Y99 (see "Pressure transmitters")	

Selection and Ordering data	Article No.
Mounting screws	
For measuring point label, grounding and con- nection terminals or for display (50 units)	7MF4997-1CD
Sealing screws (1 set = 2 units) for process flange	
<ul><li>made of stainless steel</li><li>made of Hastelloy</li></ul>	7MF4997-1CG 7MF4997-1CH
Sealing screws with vent valve Complete (1 set = 2 units)	
<ul><li>made of stainless steel</li><li>made of Hastelloy</li></ul>	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"

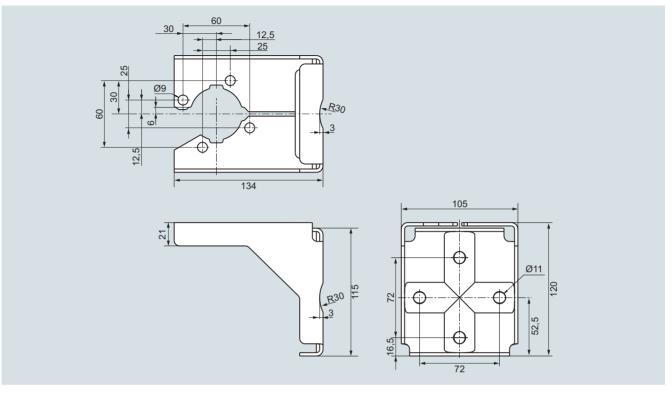
Pressure transmitters for applications with advanced requirements (Advanced) SITRANS P410

Accessories/Spare parts

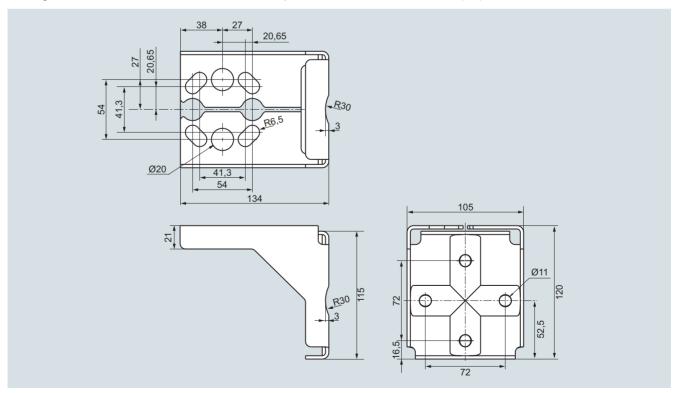
Selection and Ordering data	Article No.
Documentation	
The entire documentation is available for download free-of-charge in various languages at: http://www.siemens.com/processinstrumentation/documentation	
Compact operating instructions SITRANS P DS III/P410 • English, German, Spanish, French, Italian, 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".

### 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 measuring 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 temperature of mediums 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 ~ √∆p (together with a primary element (see Chapter "Flow Meters"))
- Measuring 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.
- Measuring span (freely adjustable) for SITRANS P500: 1.25 to 6250 mbar (0.5 to 2509 inH<sub>2</sub>O)

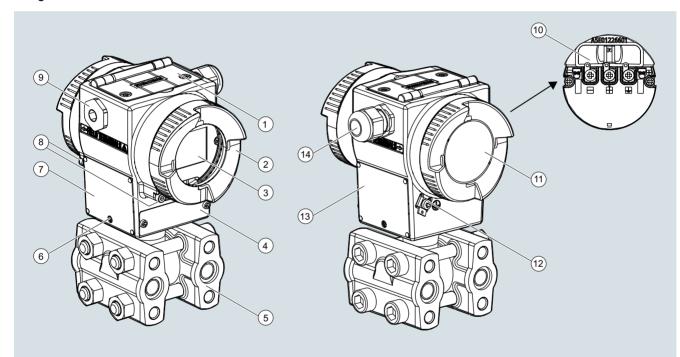
- Nominal diameter of the mounting flange
- DN 50 / PN 40
- DN 80 / PN 40
- DN 100/ PN 16, PN 40
- 2 inch/class 150, class 300
- 3 inch/class 150, class 300
- 4 inch/ class 150, class 300
- customized special version

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

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

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

#### Design



- 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
- (7) 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

#### View of transmitter

- The electronics enclosure is made of coated die-cast aluminum.
- The enclosure 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 enclosure.

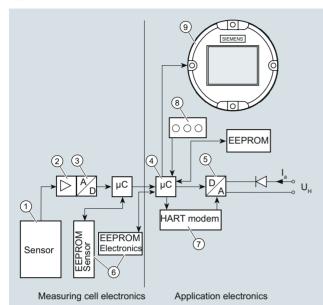
- Access to the terminal compartment for auxiliary power and shielding by unscrewing the cover.
- Beneath the electronic enclosure is the measuring cell with its process flanges at which the process connections are available. The modular design of the pressure transmitter lets you replace the measuring cell, electronics and connection board as required.
- On the top of the enclosure 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
- 7 HART modem
- 8 Keys (local operation)
- 9 Digital display
- I, Output current
- **Û**<sub>H</sub> Auxiliary power

#### Function diagram of electronics

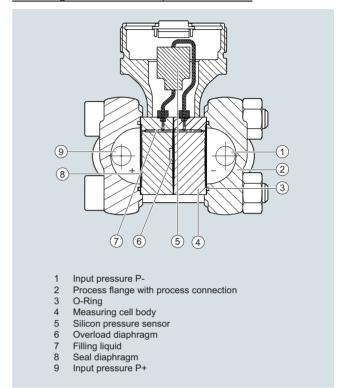
- The input pressure is converted into an electrical signal by the sensor.
- This signal is amplified by the measuring amplifier and digitalized in an analog-to-digital converter.
- The digital signal is analyzed in a microcontroller and corrected according to linearity and thermal characteristics.
-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



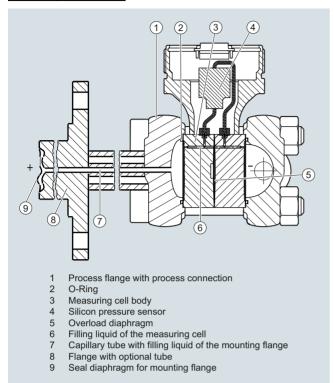
Measuring cell for differential pressure and flow, function diagram

- 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.

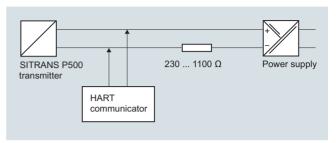
# Configuration using the pushbuttons (local operation)

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.

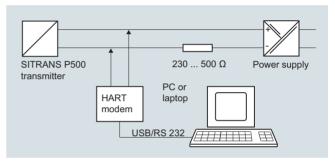
#### Configuration using HART

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

diopidy	
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 <sub>2</sub> O (4 °C), inH <sub>2</sub> O (20 °C), mmH <sub>2</sub> O, mmH <sub>2</sub> O (4 °C), ftH <sub>2</sub> O (20 °C), inH <sub>2</sub> O (mmH <sub>2</sub> O, mmH <sub>2</sub> O, mmH <sub>2</sub> O, mmH <sub>2</sub> O (4 °C), ftH <sub>2</sub> O (20 °C), inHg, mmHg, hPA
Level	m, cm, mm, ft, in
Volume	m <sup>3</sup> , dm <sup>3</sup> , hI, yd <sup>3</sup> , ft <sup>3</sup> , in <sup>3</sup> , gallon, lmp. 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

Pressure transmitters for applications with highest requirements (Premium) SITRANS P500

ieciiiiicai speciiicalions	Technical	specifications
----------------------------	-----------	----------------

Technical specifications					
Input			Measuring accuracy		
Measuring approving to the Manager of the Manager o	Differential pressure and flow  Measuring span (min max.)  Maximum operating pressure (static pressure)		Reference conditions (in accordance with IEC 60770-1)	<ul> <li>Rising characteristic curve</li> <li>Lower range value 0 bar</li> <li>Stainless steel seal diaphragm</li> <li>Measuring cell with silicone oil filling</li> <li>Room temperature (25 °C (77 °F))</li> </ul>	
Measuring span (infinitely adjustable)			All error information always refers to the set measuring span.		
	1.00 50 mbar (0.4 20 inH <sub>2</sub> O)		Error in measurement at limit setting incl. hysteresis and reproducibility		
	1.25 250 mbar (0.5 100 inH <sub>2</sub> O)	160 bor	r: measuring span ratio		
	6.25 1250 mbar (2.5 502 inH <sub>2</sub> O)	160 bar (2320 psi)	(r: measuring span ratio (r = max. measuring span / set span))		
	31.25 6250 mbar (12.54 2509 inH <sub>2</sub> O)		Linear characteristic	r ≤ 10	r ≥ 10
	0.16 32 bar		<ul> <li>50 mbar (20 inH<sub>2</sub>O)</li> </ul>	≤ 0.06 %	≤ (0.006 · r) %
	(2.33 465 psi)		• 250 mbar (100 inH <sub>2</sub> O)	≤ 0.03 %	≤ (0.003 · r) %
Lower range limit  Measuring cell with silicone oil	-100 % of max. measu	ıring span	1250 mbar (502 inH <sub>2</sub> O) 6250 mbar (2509 inH <sub>2</sub> O) 32 bar (465 psi)		
filling	and/or 30 mbar a (0.44	4 psi a)	Square-rooted characteristic		ı
Upper range limit	100 % of max. measur	ring span	• Flow > 50 %	r ≤ 10	r ≥ 10
Lower range value	Between measuring lir adjustable)	mits (freely	- 50 mbar (20 inH <sub>2</sub> O)	≤ 0.06 %	≤ (0.006· r) %
Output	aujustable)		- 250 mbar (100 inH <sub>2</sub> O)	≤ 0.03 %	≤ (0.003 · r) %
Output current signal	4 20 mA		1250 mbar (502 inH <sub>2</sub> O) 6250 mbar (2509 inH <sub>2</sub> O) 32 bar (465 psi)		
Lower current limit     (freely adjustable)	3.55 mA, factory setting	ng 3.8 mA	• Flow 25 % 50 %	r ≤ 10	r ≥ 10
<ul><li>(freely adjustable)</li><li>Upper current limit</li></ul>	22 mA factory actting	20.5 mA	- 50 mbar (20 inH <sub>2</sub> O)	≤ 0.12 %	≤ (0.012 · r) %
(freely adjustable)	23 mA, factory setting 20.5 mA  I <sub>pp</sub> ≤ 0.4 % of max. output current		- 250 mbar (100 inH <sub>2</sub> O)	≤ 0.06 %	≤ (0.006 · r) %
<ul> <li>Ripple (without HART communication)</li> </ul>			1250 mbar (502 inH <sub>2</sub> O) 6250 mbar (2509 inH <sub>2</sub> O) 32 bar (465 psi)	_ 0.00 /0	_ (0.000 1) //
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)	≤ (0.04 · r + 0.05) %	
Failure signal adjustable within limits::     Pottom: 3.55		• 250 mbar (100 inH <sub>2</sub> O)	≤ (0.025 · r + 0.0	,	
	<ul> <li>Bottom: 3.55 3.7 mA (default value: 3.6 mA)</li> </ul>		• 1250 mbar (502 inH <sub>2</sub> O)	$\leq (0.006 \cdot r + 0.03) \%$	
	• Top: 21.0 23 mA (default value: 22.8 r	,	6250 mbar (2509 in $\text{H}_2\text{O}$ ) 32 bar (465 psi)	(	,
Load			Influence of static pressure		
Without HART communication	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.02$ $U_{\rm H}$ : Power supply in \	23 A in $\Omega$ ,	<ul> <li>At the lower range value (PKN)</li> </ul>		
With HART communication			- 50 mbar (20 inH <sub>2</sub> O)	$\leq$ (0.1 · r) % per rection via zero	70 bar (1015 psi) cor-
- HART Communicator	$R_{B} = 230 \dots 1100  \Omega$		- 250 mbar (100 inH <sub>2</sub> O)		•
- HART modem	$R_{B} = 230 \dots 500 \; \Omega$		200 mbar (100 mm 1 <u>2</u> 0)	≤ (0.035 · r) % per 70 bar (1015 p correction via zero point correction	
Characteristic curve	Linearly rising, linearly rooted characteristic r tional square rooted cl	ising, bidirec-	- 1250 mbar (502 in ${\rm H_2O}$ ) 6250 mbar (2509 in ${\rm H_2O}$ ) 32 bar (465 psi)		
	and user-specific		<ul> <li>On the measuring span (PKS)</li> </ul>		
			- 50 mbar (20 inH <sub>2</sub> O)	≤ 0.13 % per 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 % per 70	bar (1015 psi)
			- 6250 mbar (2509 inH <sub>2</sub> O)	≤ 0.09 % per 70	bar (1015 psi)
			- 32 bar (465 psi)	≤ 0.05 % per 70	bar (1015 psi)

Pressure transmitters for applications with highest requirements (Premium) SITRANS P500

# for differential pressure and flow

			fo	or differential pressure and flow
Total Performance <sup>1)</sup>			Design	
Linear characteristic	r ≤ 5	5 < r ≤ 10	Weight (without options)	Approx. 3.3 kg (7.3 lb)
- 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	
- 1250 mbar (502 inH <sub>2</sub> O)	≤ 0.09 %	≤ 0.14 %	<ul> <li>Seal diaphragm</li> </ul>	Stainless steel, mat. no. 1.4404/316L, Hastelloy C276, Monel 400
6250 mbar (2509 inH <sub>2</sub> O) 32 bar (465 psi)			Process connection and seal-	PN 160: stainless steel, matNo.
Square rooted characteristic		1	ing screw	1.4404/316L
• Flow > 50 %	r≤5	5 < r ≤ 10	Sealing material in the pro-	
- 50 mbar (20 inH <sub>2</sub> O)	≤0.27 %	≤ 0.46 %	cess connections	• Chandard.
- 250 mbar (100 inH <sub>2</sub> O)	≤ 0.14 %	≤ 0.27 %	- O-Ring	<ul> <li>Standard: Viton (FKM (FPM))</li> </ul>
- 1250 mbar (502 inH <sub>2</sub> O)	≤ 0.09 %	≤ 0.14 %		Optional:
6250 mbar (2509 inĤ <sub>2</sub> Ó)				NBR PTFE (virginal)
32 bar (465 psi)  • Flow 25 % 50 %	- / E	E . r < 10		PTFE (glass fiber-reinforced)
	r≤5	5 < r ≤ 10		FFPM (Kalrez) <sup>2)</sup> Graphite
- 50 mbar (20 inH <sub>2</sub> O)	≤ 0.54 %	≤ 0.92 % ≤ 0.54 %	Material of parts not in contact	·
- 250 mbar (100 inH <sub>2</sub> O)	≤ 0.28 %		with media	. I
<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 enclosure	<ul> <li>Low copper die-cast aluminum AC-AlSi12 (Fe) or AC-AlSi 10 Mg (Fe) to DIN EN 1706</li> </ul>
Step response time T <sub>63</sub> without electrical damping		ı		<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> </ul>	≤ 88 ms, contains ≤ 45 ms	a dead time of	Stainless steel precision cast enclosure	Stainless steel, mat. no. 1.4404/316L
6250 mbar (2509 inH <sub>2</sub> O) 32 bar (465 psi)			Process connection screws	Stainless steel, mat. no. 1.4404/316L
Long-term stability	≤ (0.05 · r) % per 5	•	Mounting bracket	Steel or stainless steel mat. no. 1.4301
Influence of newer supply	≤ (0.08 · r) % per 1	o years	Measuring cell filling	Silicone oil
Influence of power supply  Operating conditions	≤ 0.005 %/1 V		Process connection	1/4-18 NPT female thread and flange connection with M10 to DIN 19213 or
Mounting position	Any			7/16-20 UNF mounting thread to IEC 61518/DIN EN 61518
Ambient conditions	, <b>,</b>		Electrical connection	
Ambient temperature			Electrical connection	<ul><li>Screw terminals</li><li>Cable entry via the following</li></ul>
(Note: Observe the tempera-				screwed glands:
ture class in areas subject to explosion hazard.)				- M20 x 1.5 - ½-14 NPT
- Total device	-40 +85 °C (-40			- Device plug Han 7D/Han 8D
- Readable display	-20 +85 °C (-4		Diambara and a sustants	- Device plug M12
- Storage temperature Climatic class	-50 +90 °C (-58	+ 194 г)	Displays and controls	2 for local are grananian directly on
Condensation	Relative humidity (	100 %	Pushbuttons	3 for local programming directly on transmitter
Condensation	(condensation per		Display	With or without integrated display
Degree of protection (to IEC 60529)	IP66/IP 68 and NE sponding cable gla		Auxiliary power supply	Cover with or without window
Electromagnetic Compatibility			Terminal voltage on transmitter	• DC 10.6 44 V
<ul> <li>Emitted interference and interference immunity</li> </ul>	Acc. to IEC 61326	and NAMUR NE 21	a. rollago on tranomitor	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

Certificates and approvals		Explosion protection for USA (to FM)	
Classification according to PED 2014/68/EU		Certificate of Compliance	No. 3033013
PN 160 (MAWP 2320 psi)  Explosion protection	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 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 CL I, Zone 1, AEx ib IIC T4
Explosion protection for Europe		- Permissible Ambient Tem-	T <sub>a</sub> = T4: -40 +85 °C
(to ATEX)  • Intrinsic safety "i"  - Marking	PTB 09 ATEX 2004 X Ex II 1/2 G Ex ia/ib IIC T4	perature	(-40 +185 °F) T <sub>a</sub> = T6: -40 +60 °C (-40 +140 °F)
Permissible ambient temperature     Connection	-40 +85 °C (-40 +185 °F)  To certified intrinsically-safe circuits with peak values:	- Entity parameters	According to "control drawing": A5E02189134N $U_m=30~V,~I_m=100~mA,\\ P_i=750~mW,~L_i=400\mu H~,~Ci=6~nF$
- Effective internal inductance: - Effective inner capacitance:	,	Marking (NI/NO)	NI CL I, DIV 2, GP ABCD T4/T6 NI CL I, Zone 2, GP IIC T4/T6 S CL II, III, GPFG T4/T6 NI CL I, DIV 2, GP ABCD T4/T6, NIFW NI CL I, Zone 2, GP IIC T4/T6, NIFW NI CLII, III, DIV 2, GP FG T4/T6, NIFW
<ul> <li>Explosion-proof "d"</li> <li>Marking</li> <li>Permissible ambient temperature</li> </ul>	BVS 09 ATEX E 027 Ex II 1/2 G Ex db ia IIC T4/T6 Ga/Gb -40 +85 °C (-40 +185 °F) temperature class T4; -40 +60 °C (-40 +140 °F)	- Permissible Ambient Temperature	$\begin{array}{l} T_a = 74: -40 \dots +85  ^{\circ}\text{C} \\ (-40 \dots +185  ^{\circ}\text{F}) \\ T_a = 76: -40 \dots +60  ^{\circ}\text{C} \\ (-40 \dots +140  ^{\circ}\text{F}) \end{array}$
- Connection	temperature class T6  To circuits with values: $U_{\rm m} = {\rm DC \ 10.5 \ \ 45 \ V}$	- (NI/S) parameters	According to "control drawing": A5E02189134N $U_m = 45 \text{ V}, L_i = 400 \mu\text{H}, C_i = 6 \text{ nF},$
Dust explosion protection for zone 20	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
<ul> <li>Permissible ambient tem- perature</li> </ul>	-40 +85 °C (-40 +185 °F)	<ul><li>Marking (XP/DIP)</li></ul>	CL I, DIV 1, GP ABCD T4 /T6; CL II, DIV 1, GP EFG T4/T6
<ul><li>Max. surface temperature</li><li>Connection</li></ul>	120 °C (248 °F) To certified intrinsically-safe circuits	<ul> <li>Permissible ambient tem- perature</li> </ul>	$\begin{array}{l} T_a = \text{T4: -40 +85 °C (-40 +185 °F)} \\ T_a = \text{T6: -40 +60 °C (-40 +140 °F)} \end{array}$
Effective internal inches	with peak values: $U_i = 30 \text{ V}, I_j = 100 \text{ mA},$ $P_i = 750 \text{ mW}, P_i = 300 \Omega$	- Entity parameters	According to "control drawing": A5E02189134N U <sub>m</sub> = 45 V
<ul> <li>Effective internal inductance:</li> </ul>	$L_i = 400  \mu H$	<ul><li>Marking (ia/ib)</li></ul>	CL I, Ex ia/Ex ib IIC, T4
<ul><li>Effective inner capacitance:</li><li>Dust explosion protection for</li></ul>	$C_i = 6 \text{ nF}$ BVS 09 ATEX E 027		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	$U_i = 30 \text{ V}, \ I_i = 100 \text{ mA}, \ P_i = 750 \text{ mW}, \ R_i = 300 \ \Omega, \ L_i = 400 \ \mu\text{H}, \ C_i = 6 \text{ nF}$
Type of protection "n" (zone 2)     Marking	PTB 09 ATEX 2004 X Ex II 3 G Ex nA II T4/T6 Ex II 2/3 G Ex ib/nL IIC T4/T6 Ex II 2/3 G Ex ib/ic IIC T4/T6	<ul><li>Marking (NI/n)</li></ul>	CL I, DIV 2, GP ABCD T4/T6 CL II, III, DIV 2, GP FG T4/T6 Ex nA IIC T4/T6 AEx nA IIC T4/T6
- "nA" connection - "nL, ic" connection	$U_{m} = 45 \text{ V DC}$ $U_{i} = 45 \text{ V}$		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>	$T_a = T4: -40 \dots +85 ^{\circ}\text{C} (-40 \dots +185 ^{\circ}\text{F})$ $T_a = T6: -40 \dots +60 ^{\circ}\text{C} (-40 \dots +140 ^{\circ}\text{F})$
- Effective inner capacitance:	C₁ = o nf	- 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

for differential pressure and flow

Explosion protection for China (acc. to NEPSI)

GYJ111111X · Intrinsic safety "i" Ex ia/ib IIB/IIC T4 - Marking

- Perm. ambient temperature 40 ... +85 °C (-40 ... +185 °F)

To certified intrinsically-safe circuits - Connection

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

- Permissible ambient temperature

-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +60 °C (-40 ... +140 °F) temperature class T6

- Connection To circuits with values:  $U_m = DC 10.5 ... 45 V$ 

GYJ111112 • Dust explosion protection for

zone 21/22 - Marking

DIP A21 TA,T120 °C IP68 D21

To circuits with values:  $U_m = DC 10.5 ... 45 V$ - Connection

• Type of protection "n" (zone 2) GYJ111111X

- Marking Ex nL IIB/IIC T4/T6

Ex nA II T4/T6

- Connection U: = 45 V DC - Effective internal inductance  $L_i = 400 \text{ mH}$ - Effective inner capacitance C<sub>i</sub> = 6 nF

Not in combination wiht measuring span "G".

НΔ	ВT	com	mun	icat	ion

Load with connection of

 HART communicator  $R_{\rm B} = 230 \dots 1100 \Omega$ • HART modem  $R_{\rm B} = 230 \dots 500 \ \Omega$ 2 wire shielded: ≤ 3.0 km Cable

(1.86 miles)

multiwire shielded: ≤ 1.5 km

(0.93 miles)

Protocol HART Version 6.0

PC/laptop requirements IBM compatible, RAM > 32 MByte, hard disk > 70 MByte, depending

on modem type: RS 232-interface

or USB connection, VGA graphics

Software for computer SIMATIC PDM 6.0

<sup>1)</sup> The total performance includes the errors caused by temperature effects, static pressure effects and conformity error, including hysteresis and

Pressure transmitters for applications with highest requirements (Premium) SITRANS P500

Selection and Ordering data			Article No.	
Pressure transmitters for differential pressure and flow, SITRANS P500 HART, PN 160 (MAWP 2320 psi)			7 M F 5 4 0	
	the online configuration in the P	IA Life Cycle Portal.		
Enclosure		Thread for cable gland <sup>1)</sup>		
Die-cast aluminum, dual chan	nber enclosure	M20x1.5	0	
Die-cast aluminum, dual chan	nber enclosure	½-14 NPT	1	
Stainless steel precision castil	ng, dual chamber enclosure	M20x1.5	2	
Stainless steel precision casti	ng, dual chamber enclosure	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 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 process connection</li> <li>Mounting thread 7/16 - 20 UNF according to IEC 61518/DIN EN 61518</li> <li>Mounting thread M10 to DIN 19213</li> </ul>		0		
<ul> <li>Vent on side of process flange<sup>3)</sup></li> <li>Mounting thread 7/16 - 20 UNF according to IEC 61518/DIN EN 61518</li> <li>Mounting thread M10 to DIN 19213</li> </ul>			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>2)</sup> Not in conjunction with remote seals (option V00).

Pressure transmitters for applications with highest requirements (Premium) SITRANS P500

Selection and Ordering data	Order code	Selection and Ordering d
Further designs Add "-Z" to Article No. and specify Order code.		Further designs Add "-Z" to Article No. and
Attachments		Degree of protection appro
Mounting bracket made of steel	A01	Ex ia/ib protection (ATEX) (
Mounting bracket made of stainless steel 304	A02	Ex IS protection (FM) (T4)
Mounting bracket made of stainless steel 316L	A03	Ex IS protection ( <sub>C</sub> CSA <sub>US</sub> ) Ex ia/ib protection (NEPSI)
Display		Degree of protection app
(Standard: no display, cover closed)		Ex d explosion-proof (ATE)
With display and blanking cover	A10	Ex XP explosion-proof and
With display and glass cover	A11	Ex XP explosion-proof and
Special enclosure / cover version		Ex d explosion-proof (NEPS
Two coats of lacquer on enclosure, cover (PU on epoxy)	A20	Degree of protection app
Electrical connection and cable entry (Standard: no cable gland, only dust protection caps)		Zone 2 (nA, nL, ic) (ATEX) Div2 NI, Div2 NI-field wiring
Cable gland made of plastic (IP66/68) <sup>4)</sup>	A50	Zone 2 (nA, nL), Div2 NI ( <sub>C</sub> Zone 2 (nA, nL) (NEPSI) (T
Cable glands made of metal (IP66/68)	A51	Degree of protection app
Cable glands made of stainless steel (IP66/68)	A52	Use in Zone 21/22 (Ex tD)
Device plug M12 without cable socket (IP66/67) <sup>4)</sup>	A60	Use in Zone 20/21/22 (Ex i
Device plug M12 complete with cable socket (IP66/67) <sup>4)</sup>	A61	Use in Zone 21/22 (Ex DIP
Device plug Han 7D, plastic, straight (with cable socket) (IP65) <sup>4)</sup>	A71	<b>Degree of protection app</b> IS protection and XP and D
Device plug Han 7D, plastic, angled (with cable socket) (IP65) <sup>4)</sup>	A72	IS protection and XP and D IS protection and XP and D
Device plug Han 7D, metal enclosure, straight (with cable socket) (IP65) <sup>4)</sup>	A73	Supplementary approvals Ex-protection Ex ia accord
Device plug Han 7D, metal enclosure, angled (with cable socket) (IP65) <sup>4)</sup>	A74	Ex-protection Ex d accordi Dual Seal approval <sup>5)</sup>
Device plug Han 8D, plastic, straight (with cable socket) (IP65) <sup>4)7)</sup>	A75	Export approval Korea
Device plug Han 8D, plastic, angled	A76	Special process connecti
(with cable socket) (IP65) <sup>4)7)</sup>	AIV	Side vents for gas measure
Device plug Han 8D, metal enclosure, straight with cable socket) (IP65) <sup>4)7)</sup>	A77	Swap process connection:  Mosquito protection
Device plug Han 8D, metal enclosure, angled	A78	4 pcs. for 1/4-18 NPT thread
(with cable socket) (IP65) <sup>4)7)</sup>		Process flanges, O-rings Standard: Viton (FKM (FF
PG 13.5 adapters <sup>4)</sup>	A82	Process connection sealing
Language for labels, quick-start guide, menu language default <sup>9)</sup> (instead of English as standard)		Process connection sealing Process connection sealing
German	B10	Drain/Vent valve (1 set = 2
French	B12	2 ventilation valves 1/4- 18 N
Spanish	B13	Remote seals
Italian	B14	Transmitters with connection
Chinese	B15	(For premounted valve ma
Russian	B16	1) Enclosed in print or as DV
Japanese	B17	When also ordering the quing to IEC 60770-2 for trans
English with units psi/inH <sub>2</sub> O/°F	B21	this certificate only togeth racy of the total combinati
Special version: Supplementary menu languages (Standard: English, German, French, Spanish, Italian)		When also ordering the in for transmitters with moun
Asia language package (in addition: Chinese, Japanese, Russian)	B80	well in addition to the resp  4) Not together with types of "Intrinsic safety and explo-
Certificates (available online for downloading) <sup>1)</sup>	044	<ul><li>Only in conjunction with F</li><li>Please select a remote se</li></ul>
Quality test certificate, 5-point factory calibration (IEC 60770-2) <sup>2)</sup>	C11	footnote 2). Remote seals  7) The device plug Han 8D is  8) For option B15, B16 and B
Inspection certificate according to EN 10204-3.1 <sup>3)</sup>	C12	Otherwise the Option B80
Inspection certificate (EN 10204-3.1); PMI test of parts in contact with medium	C15	<ol> <li>Only in conjunction with p <sup>10)</sup>Not together with measuring</li> </ol>
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 ( <sub>C</sub> CSA <sub>US</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 (CCSAUS)(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>LIS</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 (CCSA <sub>US</sub> )	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)	E80
Ex-protection Ex d according to EAC Ex (Russia)	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	
4 pcs. for 1/4-18 NPT thread	L36
Process flanges, O-rings, special material Standard: Viton (FKM (FPM)	
Process connection sealing rings made of FFPM (Kalrez) <sup>10</sup>	L62
Process connection sealing rings made of NBR	L63
Process connection sealing rings made of graphite	L64
<b>Drain/Vent valve</b> (1 set = 2 units)	
2 ventilation valves ½- 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 1/321)	V00

- VD: see page 1/319.
- quality test certificate (factory calibration) accordansmitters with mounted diaphragm seals: Order ther with the remote seals. The measuring accutation is certified here.
- nspection certificate according to EN 10204-3.1 inted diaphragm seals: Order this certificate as spective remote seals.
- of protection "Explosion-proof", "Ex nA" and osion-proof"
- FM and/or <sub>C</sub>CSA<sub>US</sub> eal separately. Also refer to the information under s see page 1/401.
- is identical with the former Han 8U version.
- B17 the menu language default is english. 0 (Asia language package) is necessary.
- process connection "Vent on side".
- ring span "G".

Pressure transmitters for applications with highest requirements (Premium) SITRANS P500

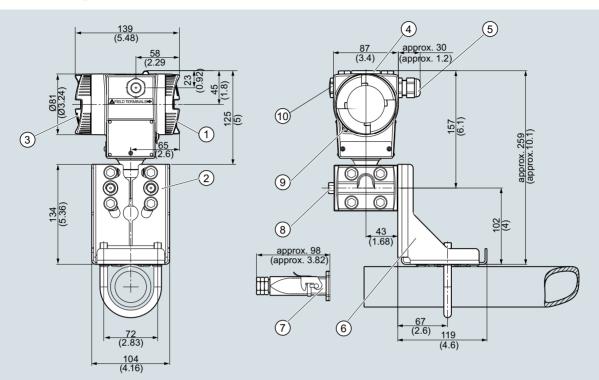
Selection and Ordering data	Order code
Additional data Please add "-Z" to Article No. and specify Order code(s) and plain text.	61461 6646
Measuring range to be set	
Specify in plain text:	
<ul> <li>In the case of linear characteristic curve (max. 5 characters):</li> <li>Y01: up to mbar, bar, kPa, MPa, 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 side1)
- 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 or 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			Long-term stability	≤ (0.05 · r) % per 5 years
Measured variable	Level			≤ (0.08 · r) % per 10 years
Measuring span (infinitely adjustable)	Measuring span (min max.)	Maximum operating	Influence of ambient temperature per 28 °C (50 °F) <sup>1)</sup>	
	1.25 250 mbar	pressure	<ul> <li>250 mbar (100 inH<sub>2</sub>O)</li> </ul>	≤ (0.025 · r + 0.014) %
	(0.5 100 inH <sub>2</sub> O)		<ul> <li>1250 mbar (502 inH<sub>2</sub>O)</li> <li>6250 mbar (2509 inH<sub>2</sub>O)</li> </ul>	≤ (0.006 · r + 0.03) %
	6.25 1250 mbar (2.5 500 inH <sub>2</sub> O)	See "Mounting flange"	Influence of static pressure	
	31.25 6250 mbar (12.54	nange	<ul> <li>At the lower range value (PKN)<sup>1) 2)</sup></li> </ul>	
	2509 inH <sub>2</sub> O)		- 250 mbar (100 inH <sub>2</sub> O)	≤ (0.035 · r) % je 70 bar (1015 psi) correction via zero point correction
Lower range limit     Measuring cell with silicone oil filling	-100 % of max. meast 500 mbar a (7.25 psi		<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) % je 70 bar (1015 psi) correction via zero point correction
IIIIII	tance Also available as vaci	•	<ul> <li>On the measuring span (PKS)<sup>1)</sup></li> </ul>	
	remote seal: 30 mbar		- 250 mbar (100 inH <sub>2</sub> O)	≤ 0.03 % je 70 bar (1015 psi)
Upper range limit	100% of max. measur		1250 mbar (502 inH <sub>2</sub> O)	< 0.00 % in 70 har (1015 pai)
Lower range value	Between measuring li adjustable)	mits (freely	<ul> <li>6250 mbar (2509 inH<sub>2</sub>O)</li> <li>Influence of power supply</li> </ul>	≤ 0.09 % je 70 bar (1015 psi) ≤ 0.005 %/1 V
Output	, ,		Operating conditions	S 0.003 /6/1 V
Output current signal	4 20 mA		Mounting position	Defined by flange
Lower current limit	3.55 mA, factory setting	ng 3.8 mA	Ambient conditions	Defined by hange
<ul><li>(freely adjustable)</li><li>Upper current limit (freely adjustable)</li></ul>	23 mA, factory setting 20.5 mA		Ambient temperature     (Note: Observe the temperature class in areas subject to	
, , , ,	- I <sub>pp</sub> ≤ 0.4 of max. output current		explosion hazard.) - total device	-40 +85 °C (-40 +185 °F)
adjustable damping	0 100 s in steps of 0.1 s, factory setting 2 s		<ul><li>Readable display</li><li>Storage temperature</li></ul>	-20 +85 °C (-4 +185 °F) -50 +90 °C (-58 +194 °F)
current transmitter	3.55 23 mA		Climatic class	
• Failure signal	Adjustable within limits:  • Lower: 3.55 3.7 mA (factory setting 3.6 mA)  • Upper: 21.0 23 mA (factory setting 3.6 mA)		Condensation	Relative humidity 0 100 % (condensation permissible)
			Degree of protection to IEC 60529	IP66/IP68 and NEMA 4X (with corresponding cable gland)
Lood	ting 22.8 mA)		Electromagnetic Compatibility	
<ul><li>Without HART communication</li></ul>	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.0$ $U_{\rm H}$ : Power supply in V	23 A in Ω,	ference immunity	Acc. to IEC 61326 and NAMUR NE 21
With HART communication	O <sub>H</sub> . Power supply in	V	Permissible pressures	According to 2014/68/EU pressure equipment directive
<ul><li>HART Communicator</li><li>HART modem</li></ul>	$R_{\rm B} = 230 \dots 1100 \Omega$ $R_{\rm B} = 230 \dots 500 \Omega$		Medium temperature of high- pressure side	
Characteristic curve	Linearly rising or linear user-specific	arly falling and	<ul> <li>Measuring cell with silicone oil filling</li> </ul>	
Measuring accuracy	user-specific		- p <sub>abs</sub> ≥1 bar	-40 +175 <sup>3)</sup> °C (-40 +347 <sup>3)</sup> °F)
Reference conditions	Rising characteristic	curve	- p <sub>abs</sub> < 1 bar	-40 +80 °C (-40 +176 °F)
(in accordance with IEC 60770-1)	Lower range value 0 bar     Stainless steel seal diaphragm		<b>Design</b> Weight	
All error information always refers to the set measuring span.	<ul> <li>Measuring cell with silicone oil filling</li> <li>Room temperature (25 °C (77 °F))</li> </ul>		<ul> <li>To EN (pressure transmitter with mounting flange, without tube)</li> </ul>	approx. 9.8 11.8 kg (21.6 26.0 (lb)
Error in measurement at limit setting incl. hysteresis and reproducibility			<ul> <li>To ASME (pressure transmitter with mounting flange, without tube)</li> </ul>	
r: measuring span ratio (r = max. measuring span / set measuring span)				
Linear characteristic		≥ 10		
<ul> <li>250 mbar (100 inH<sub>2</sub>O)</li> <li>1250 mbar (502 inH<sub>2</sub>O)</li> <li>6250 mbar (2509 inH<sub>2</sub>O)</li> </ul>	≤ 0.03 % ≤	(0.003 · r) %		

Pressure transmitters for applications with highest requirements (Premium) SITRANS P500

			for level
Material of wetted parts at the		Auxiliary power supply	
high-pressure side		* * * * * * * * * * * * * * * * * * * *	• DC 10.6 44 V
<ul> <li>Seal diaphragm of mounting flange</li> </ul>	Stainless steel 1.4404/316L, Hastelloy C276, mat. no. 2.4819, Monel 400, mat. no. 2.4360, Tantal,	Ü	• With intrinsically-safe operation DC 10.6 30 V
	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	(*** * * * * * * * * * * * * * * * * *
- O-Ring	• Standard: Viton (FKM (FPM))	Explosion protection for Europe (to ATEX)	
	Optional:	<ul><li>Intrinsic safety "i"</li></ul>	PTB 09 ATEX 2004 X
	NBR PTFE (virginal)	- Marking	Ex II 1/2 G Ex ia/ib IIC T4
	PTFE (glas fiber-reinforced) FFPM (Kalrez) Graphite	<ul> <li>Permissible ambient temperature</li> </ul>	-40 +85 °C (-40 +185 °F)
<ul> <li>For vacuum application of mounting flange</li> </ul>	Copper	- Connection	To certified intrinsically-safe circuits with peak values:
Material of wetted parts at the low-pressure side			$U_{\rm i} = 30$ V, $I_{\rm i} = 100$ mA, $P_{\rm i} = 750$ mW; $R_{\rm i} = 300 \ \Omega$
• Seal diaphragm	Stainless steel, mat. no. 1.4404/316L, Hastelloy C276, Monel 400	<ul> <li>Effective internal inductance:</li> </ul>	$L_i = 400 \mu H$
Process connection and seal-	• Stainless steel, mat. no. 1.4404/316L	- Effective inner capacitance:	$C_i = 6 \text{ nF}$
ing screw	otaliless steel, mat. no. 1.4404/010E	<ul><li>Explosion-proof "d"</li></ul>	BVS 09 ATEX E 027
<ul> <li>Sealing material in the pro-</li> </ul>		- Marking	Ex II 1/2 G Ex db ia IIC T4/T6 Ga/Gb
cess connection - 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
	<ul> <li>Optional: NBR PTFE (virginal)</li> </ul>	- 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	·	- Marking	Ex II 1 D Ex ta ia IIIC T120°C Da
with media  Die-cast aluminum enclosure	Low copper die-cast aluminum	<ul> <li>Permissible ambient tem- perature</li> </ul>	-40 +85 °C (-40 +185 °F)
	AC-AlSi12 (Fe) or AC-AlSi 10 Mg (Fe) to DIN EN 1706	- Max. surface temperature	120 °C (248 °F)
	<ul> <li>Lacquer on polyurethane base, optional epoxy-based primer</li> <li>Stainless steel serial plate</li> </ul>	- Connection	To certified intrinsically-safe circuits with peak values: $U_{\rm i} = 30 \text{ V}, \ I_{\rm i} = 100 \text{ mA}, \\ P_{\rm i} = 750 \text{ mW}, \ R_{\rm i} = 300 \ \Omega$
Stainless steel precision cast enclosure	Stainless steel, mat. no. 1.4404/316L	<ul> <li>Effective internal inductance:</li> </ul>	$L_i = 400 \mu H$
Process connection screws	Stainless steel	- Effective inner capacitance:	$C_i = 6 \text{ nF}$
Measuring cell filling	Silicone oil	<ul> <li>Dust explosion protection for zone 21/22</li> </ul>	BVS 09 ATEX E 027
<ul> <li>Liquid mounting flange</li> </ul>	Silicone oil or other material	- Marking	Ex II 2 D Ex tb ia IIIC T120°C Db
Process connection		- Marking - Connection	To circuits with values:
<ul> <li>High-pressure side</li> </ul>	Flange to EN and ASME	- Connection	$U_{\rm H} = 10.5 \dots 45 \text{ V DC}; P_{\rm max} = 1.2 \text{ W}$
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	• Type of protection "n" (zone 2)	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 Ex II 2/3 G Ex ib/ic IIC T4/T6
	Cable entry via the following scrowed glands:	- "nA" connection	$U_{\rm m} = 45 \text{ V DC}$
	screwed glands: - M20 x 1.5	- "nL, ic" connection	$U_i = 45 \text{ V}$
	- ½-14 NPT - Device plug Han 7D/Han 8D	- Effective internal inductance	'
	- Device plug M12	- Effective inner capacitance	•
Displays and controls			

3; for operation directly on the device

With or without integrated displayCover with or without window

Push buttons

Display

Pressure transmitters

for applications with highest requirements (Premium) SITRANS P500

#### for level

Explosion protection for USA (to FM)	
Certificate of Compliance	No. 3033013
• 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 CL I, Zone 1, AEX ib IIC T4
- Permissible Ambient Tem- perature	$T_a = T4: -40 \dots +85 ^{\circ}\text{C}$ $(-40 \dots +185 ^{\circ}\text{F})$ $T_a = T6: -40 \dots +60 ^{\circ}\text{C}$ $(-40 \dots +140 ^{\circ}\text{F})$
- Entity parameters	According to "control drawing": A5E02189134N $U_m=30$ V, $I_m=100$ mA, $P_i=750$ mW, $L_i=400$ $\mu\text{H}$ , $C_i=6$ nF
Marking (NI/NO)	NI CL I, DIV 2, GP ABCD T4/T6 NI CL I, Zone 2, GP IIC T4/T6 S CL II, III, GPFG T4/T6 NI CL I, DIV 2, GP ABCD T4/T6, NIFV NI CL I, Zone 2, GP IIC T4/T6, NIFW NI CLII, III, DIV 2, GP FG T4/T6, NIFW
- Permissible Ambient Tem- perature	$T_a = T4: -40 \dots +85 ^{\circ}C$ $(-40 \dots +185 ^{\circ}F)$ $T_a = T6: -40 \dots +60 ^{\circ}C$ $(-40 \dots +140 ^{\circ}F)$
- (NI/S) parameters	According to "control drawing": A5E02189134N $U_{\rm m}=45$ V, L $_{\rm i}=400$ $\mu{\rm H}$ , Ci = 6 nF
Explosion protection for Canada	
(to <sub>C</sub> CSA <sub>US</sub> )	
Certificate of Compliance	No. 2280963
Marking (XP/DIP)	CL I, DIV 1, GP ABCD T4 /T6; CL II, DIV 1, GP EFG T4/T6
- Permissible Ambient Tem- perature	T <sub>a</sub> = T4: -40 +85 °C (-40 +185 °F) T <sub>a</sub> = T6: -40 +60 °C (-40 +140 °F)
- Entity parameters	According to "control drawing": A5E02189134N, U <sub>m</sub> = 45 V
Marking (ia/ib)	CL I, Ex ia/Ex ib IIC, T4 CL II, III, Ex ia/Ex ib, GP EFG, T4 CL I, AEx ia/AEx ib IIC, T4 CL II, III, AEx ia/ AEx ib, GP EFG, T4
<ul> <li>Permissible Ambient Temperature</li> </ul>	T <sub>a</sub> = T4: -40 +85 °C (-40 +185 °F)
- Entity parameters	$U_i$ = 30 V, $I_i$ = 100 mA, $P_i$ = 750 mW, $R_i$ = 300 $\Omega$ , $L_i$ = 400 $\mu H,$ $C_i$ = 6 nF
Marking (NI/n)	CL I, DIV2, GP ABCD T4/T6 CL II, III, DIV2, GP FG T4/T6 Ex nA IIC T4/T6 AEx nA IIC T4/T6 Ex nL IIC T4/T6 AEx nL IIC T4/T6
- Permissible Ambient Tem- perature	$T_a = T4: -40 \dots +85 ^{\circ}\text{C}$ $(-40 \dots +185 ^{\circ}\text{F})$ $T_a = T6: -40 \dots +60 ^{\circ}\text{C}$ $(-40 \dots +140 ^{\circ}\text{F})$
- 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

Explosion protection for China (acc. to NEPSI) GYJ111111X • Intrinsic safety "i" - Marking Ex ia/ib IIB/IIC T4 - Permissible ambient tem-40 ... +85 °C (-40 ... +185 °F) perature To certified intrinsically-safe circuits - Connection with maximum values:  $U_i = 30 \text{ V } I_i = 100 \text{ mA}, P_i = 750 \text{ mW}$ - Effective internal inductance  $L_i = 400 \text{ mH}$ - Effective inner capacitance C<sub>i</sub> = 6 nF • Explosion-proof "d" GYJ111112 - Marking Ex dia IIC T4/T6 -40 ... +85 °C (-40 ... +185 °F) - Permissible ambient temperature temperature class T4; -40 ... +60 °C (-40 ... +140 °F) temperature class T6 - Connection To circuits with values: U<sub>m</sub> = DC 10.5 ... 45 V GYJ111112 • Dust explosion protection for zone 21/22 DIP A21 TA,T120 °C IP68 D21 - Marking - Connection To circuits with values: U<sub>m</sub> = DC 10.5 ... 45 V • Type of protection "n" (zone 2) GYJ111111X Ex nL IIB/IIC T4/T6 - Marking Ex nA II T4/T6  $U_i = 45 \text{ V DC}$ - Connection

1) Only relevant for the pressure transmitter. The temperature error of the remote seal must calculated separately.

- Effective internal inductance  $L_i = 400 \text{ mH}$ - Effective inner capacitance  $C_i = 6 \text{ nF}$ 

- 2) If the Type 'D' measuring cell is used, the error should be increased by a factor of 5. This error can be reduced to 0 by a means of a zero adjustment.
- 3) This value may be increased if the process connection is sufficiently insulated.

# **HART** communication

HART COMMUNICATION	
Load with connection of	
<ul> <li>HART Communicator</li> </ul>	$R_{\rm B}=230~~1100~\Omega$
HART modem	$R_{\rm B}=230\ldots500~\Omega$
Cable	2 wire shielded: ≤ 3.0 km (1.86 miles), multiwire shielded: ≤ 1.5 km (0.93 miles)
Protocol	HART Version 6.0
PC/laptop requirements	IBM compatible, RAM > 32 MByte, hard disk > 70 MByte, depending on modem type: RS 232-interface or USB connection, VGA graphics
Software for computer	SIMATIC PDM 6.0

Pressure transmitters for applications with highest requirements (Premium) SITRANS P500

for level

			Article No.		Order o	
Pressure transmitters for leve	el, SITRANS P500 HART		7 M F 5 6	0 -		
Click on the Article No. for the	ne online configuration in the P	PIA Life Cycle Portal.				
Enclosure Die-cast aluminum, dual chamb Die-cast aluminum, dual chamb Stainless steel precision castin	ber enclosure	Thread for cable gland <sup>9)</sup> M20x1.5 ½-14 NPT M20x1.5	0 1 2			
Stainless steel precision casting	<b>o</b> .	½-14 NPT	3			
Output 20 mA, HART	g, duai chamber chelosure	72-1 <del>4 INI</del> I	3			
Measuring cell filling	Measuring cell cleaning normal		1			
<b>Measuring span (min max.</b> .25 250 mbar 3.25 1250 mbar 11.25 6250 mbar	.) (0.5 100 inH <sub>2</sub> O) (2.5 500 inH <sub>2</sub> O) (12.54 2509 inH <sub>2</sub> O)					
Vetted parts of the low-press stainless steel process flanges						
Seal diaphragm	Process connection	<u></u>				
Stainless steel 1.4404/316L Hastelloy C276 Monel 400	Stainless steel 1.4404/316L Stainless steel 1.4404/316L Stainless steel 1.4404/316L			A B C		
Process connection of low-pr	ressure side					
emale thread 1/4-18 NPT						
Sealing screw opposite proce - Mounting thread 7/16 - 20 U - Mounting thread M10 to DIN	JNF according to IEC 61518/D	IN EN 61518		0		
Vent on side of process flanger - Mounting thread 7/16 - 20 U - Mounting thread M10 to DIN	JNF according to IEC 61518/D	IN EN 61518		4 5		
Vetted parts materials (high-	pressure side)					
Stainless steel 1.4404/316L Hastelloy C276 mat. no. 2.4819 Monel 400 mat. no. 2.4360 Fantalum PFA coated on stainless steel PTFE on stainless steel 1.4404/ Other version Add Order code and plain text: Material:; Extension length:	/316L (not in combination with	an extension)			0 1 2 3 4 6 A 9 Y	N 1
Process connection on high-		qth				
None 10 mm (1.97 inch) 00 mm (3.94 inch) 50 mm (5.90 inch) 100 mm (7.87 inch) Other version: See option "9" fo					A B C D	
Process connection on high-	pressure side: Nominal diam	eter/Nominal pressure				
DN 50, PN 40 <sup>6)</sup> DN 80, PN 40 DN 100, PN 16 DN 100, PN 40 ", class 150 <sup>6)</sup> ", class 300 <sup>6)</sup> ", class 300 ", class 300 ", class 300					B D G H L M Q R	

Pressure transmitters for applications with highest requirements (Premium) SITRANS P500

# for level

Selection and Ordering data	Article No.	Order cod	le
Pressure transmitters for level, SITRANS P500 HART	7 M F 5 6	0 -	
Process connection on high-pressure side: Filling liquid			
Silicone oil M5		0	
Silicone oil M50		1	
High-temperature oil		2	
Halocarbon (for oxygen measurement)		3	
FDA compliant oil		4	
Other version, add		9 R1	Υ
Order code and plain text: Filling liquid:			
· ······· · · · · · · · · · · · · · ·			

Pressure transmitters for applications with highest requirements (Premium) SITRANS P500

for level

Selection and Ordering data	Order code	Selection and Ordering data
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)
With display and glass cover	A11	Ex XP explosion-proof and DIP (FM)(T4/T6)
Special version: cover/enclosure	A	Ex XP explosion-proof and DIP ( <sub>C</sub> CSA <sub>US</sub> )(T4/T6)
Two coats of lacquer on enclosure, cover (PU on epoxy)	A20	Ex d explosion-proof (NEPSI)(T4/T6)
Electrical connection and cable entry		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)
Cable gland made of plastic (IP66/68) <sup>4)</sup>	A50	Zone 2 (nA, nL), Div2 NI ( <sub>C</sub> CSA <sub>US</sub> ) (T4/T6)
Cable glands made of metal (IP66/68)	A51	Zone 2 (nA, nL) (NEPSI) (T4/T6)
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
Device plug M12, cable socket (IP66/67) <sup>4)</sup>	A61	Use in Zone 20/21/22 (Ex iaD) (ATEX) Ex ta
Device plug Han 7D, plastic, straight (with cable socket) (IP65) <sup>4)</sup>	A71	Use in Zone (Ex DIP) (ATEX) (NEPSI)
Device plug Han 7D, plastic, angled	A72	Degree of protection approvals: Combinations
(with cable socket) (IP65) <sup>4)</sup>	AIZ	IS protection and XP and DIP (FM)
Device plug Han 7D, metal enclosure, straight	A73	IS protection and XP and DIP (CCSAUS)
(with cable socket) (IP65) <sup>4)</sup>		IS protection and XP and DIP (FM/ <sub>C</sub> CSA <sub>US</sub> )
Device plug Han 7D, metal enclosure, angled (with cable socket) (IP65) <sup>4)</sup>	A74	<b>Supplementary approvals / degree of protection</b> Ex-protection Ex ia according to EAC Ex (Russia)
Device plug Han 8D, plastic, straight (with cable socket) (IP65) <sup>4)7)</sup>	A75	Ex-protection Ex d according to EAC Ex (Russia)
Device plug Han 8D, plastic, angled	A76	Dual Seal approval <sup>5)</sup>
(with cable socket) (IP65) <sup>4)7)</sup>		Export approval Korea
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 from
Device plug Han 8D, metal enclosure, angled (with cable socket) (IP65) <sup>4)7)</sup>	A78	Mosquito protection  4 pcs. for 1/4-18 NPT thread
PG 13.5 adapters <sup>4)</sup>	A82	Process flanges, O-rings, special material
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 (Ka
German	B10	Process connection sealing rings made of NBR
French	B12	Process connection sealing rings made of graphite
Spanish	B13	<b>Drain/Vent valve</b> (1 set = 2 units)
Italian	B14	2 ventilation valves 1/4- 18 NPT, in material of process
Chinese	B15	flange) Vacuum-proof design
Russian	B16	Vacuum service
Japanese	B17	Spark arrester
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)		<ul> <li>1) Enclosed in print or as DVD: see page 1/319.</li> <li>2) When also ordering the quality test certificate (factory</li> </ul>
Asia language package (in addition: Chinese, Japanese, Russian)	B80	ing to IEC 60770-2 for transmitters with mounted diag this certificate only together with the remote seals. The
Certificates (available online for downloading) <sup>1)</sup>		racy of the total combination is certified here.
Quality test certificate, 5-point factory calibration (IEC 60770-2) <sup>2)</sup>	C11	3) When also ordering the inspection certificate accordi EN 10204-3.1 for transmitters with mounted diaphrag certificate as well in addition to the respective remote
Inspection certificate according to EN 10204-3.13)	C12	4) Not together with types of protection "Explosion-proof "Intrinsic safety and explosion-proof"
Inspection certificate (EN 10204-3.1); PMI test of parts in contact with medium	C15	5) Only in conjunction with FM and/or <sub>C</sub> CSA <sub>US</sub> 6) Not recommended for measuring span "D"
Functional Safety (SIL2) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	C20	7) The device plug Han 8D is identical with the former H 8) For option B15, B16 and B17 the menu language def Otherwise the Option B80 (Asia language package) i
Degree of protection approvals: Ex ia/ib (intrinsic safety	)	9) Cable glands must be ordered separately from "Further
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) Ex ia/ib protection (NEPSI) (T4)	E02 E06	
Extração protoction (NEI OI) (17)		

Selection and Ordering data	Order code
Further designs Add "-Z" to Article No. and specify Order code.	
Degree of protection approvals: Ex d (flameproof)	
Ex d explosion-proof (ATEX)(T4/T6)	E20
Ex XP explosion-proof and DIP (FM)(T4/T6)	E21
Ex XP explosion-proof and DIP (CCSAUS)(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: 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 (Ex DIP) (ATEX) (NEPSI)	E66
Degree of protection approvals: Combinations	
IS protection and XP and DIP (FM)	E71
IS protection and XP and DIP ( $_{\mbox{\scriptsize C}}\mbox{\scriptsize CSA}_{\mbox{\scriptsize US}})$	E72
IS protection and XP and DIP (FM/ $_{\mbox{\scriptsize C}}$ CSA $_{\mbox{\scriptsize US}}$ )	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)	
Swap process connection: high-pressure side at front	L33
Mosquito protection	LUU
4 pcs. for 1/4-18 NPT thread	L36
Process flanges, O-rings, special material Standard: Viton (FKM (FPM)	
Process connection sealing rings made of FFPM (Kalrez)	L62
Process connection sealing rings made of NBR	L63
Process connection sealing rings made of graphite	L64
Drain/Vent valve (1 set = 2 units)	
2 ventilation valves $\frac{1}{4}$ - 18 NPT, in material of process flange)	L80
Vacuum-proof design	
Vacuum service	V04
Spark arrester	V05

- factory calibration) accord-ed diaphragm seals: Order als. The measuring accu-
- ccording to aphragm seals: Order this remote seals.
- -proof", "Ex nA" and
- rmer Han 8U versio.
- ge default is English. kage) is necessary.
- "Further designs"

Pressure transmitters for applications with highest requirements (Premium) SITRANS P500

# for level

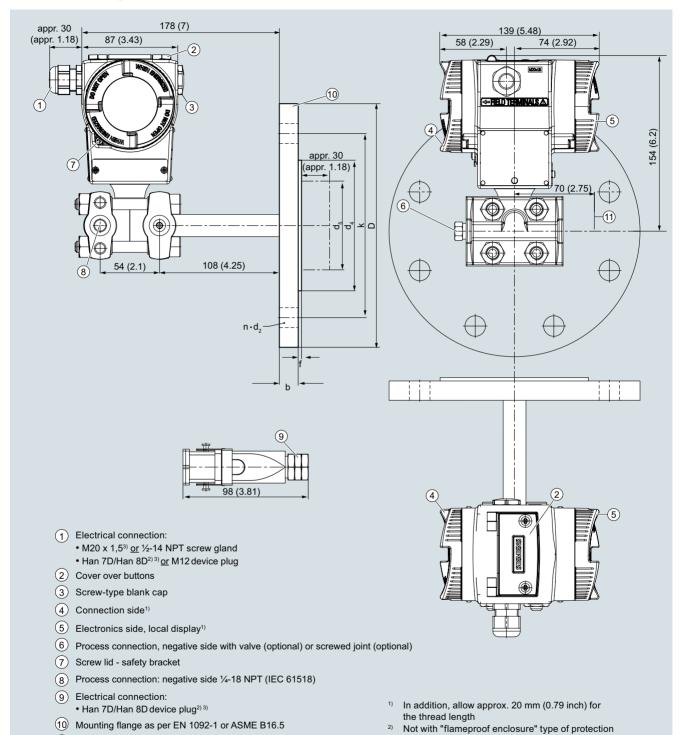
	Order code
Additional data Please add "-Z" to Article No. and specify Order code(s) and plain text.	
Measuring range to be set	
Specify in plain text:	
Linear characteristic curve (max. 5 characters): Y01: up to mbar, kPa, MPa, psi	Y01
Measuring point number and measuring point identifier (only standard ASCII character set)	
Specify in plain text:	
Measuring point number (TAG No.), max. 16 characters	Y15
Y15:	
	Y16
Y16:	
Entry of HART address (TAG), max. 32 characters Y17:	Y17
Setting of pressure indication in pressure units	Y21
Specify in plain text (standard setting: mbar) Y21: bar, kPa, MPa, psi,	
Note: The following pressure units are selectable: bar, mbar, mm H <sub>2</sub> O*), in H <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 mA	
*) Reference temperature 20 °C	
coming of processing management in their processing armine	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>1)</sup> Preset values can only be changed over SIMATIC PDM.

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)

11 Space for rotation of enclosure

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

Pressure transmitters for applications with highest requirements (Premium) SITRANS P500

# for level

# Connection to EN 1092-1

Nominal diameter	Nominal pressure		D	d	d <sub>2</sub>	d <sub>4</sub>	<b>d</b> <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)	$2.83 (72)^{2)}$	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.

2) 89 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

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
<b>Digital indicator</b> 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 enclosure (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/enclosure (10 pcs.)	See catalog Fl01, "Fittings" 7MF4997-2EA 7MF4997-2EB

# Selection and Ordering data

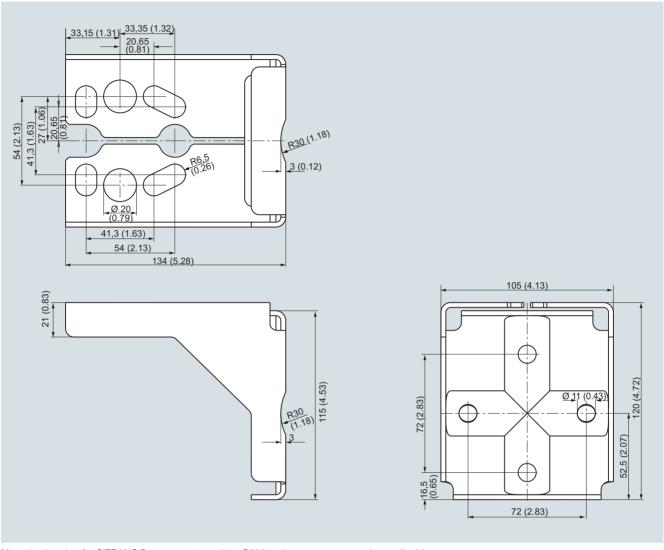
	Article No.
Documentation	
The entire documentation is available for download free-of-charge in various languages at: http://www.siemens.com/processinstrumentation/documentation	
Compact operating instructions	
• German, Spanish, French, Italian, Dutch	A5E02344532
• Estonian, Latviaan, Lithuanian, Polish, Romanian	A5E02307339
<ul> <li>Bulgarian, Czech, Finnish, Slovakian, Slovenian</li> </ul>	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 gaskets between the transmitter and the valve manifold.

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

All valve manifolds should preferably be secured with the corresponding 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 inspection certificate 3.1 to EN 10204 after choosing the option "Factory mounting of valve manifolds", a separate certificate is provided for the transmitter and for the valve manifold.

#### 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)	
Inspection certificate according to EN 10204-3.1 supplied for transmitters and mounted valve manifold	C12

# Valve manifold 7MF9411-5CA on SITRANS P500 pressure transmitter for differential pressure and flow



 processing and morn	
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)	
Inspection certificate according to EN 10204-3.1 supplied for transmitters and mounted valve manifold	C12

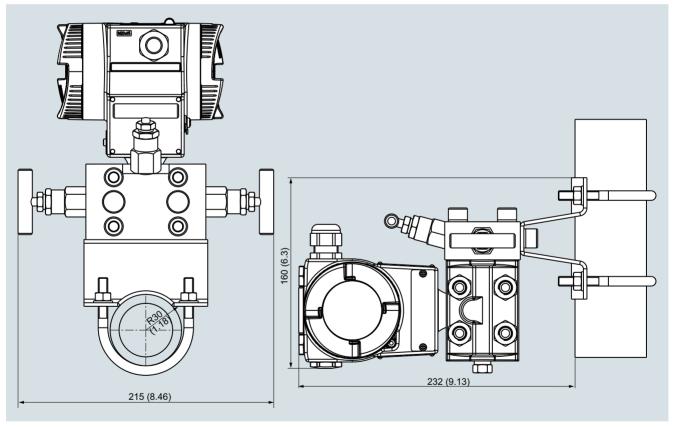
Pressure transmitters for applications with highest requirements (Premium) SITRANS P500

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)



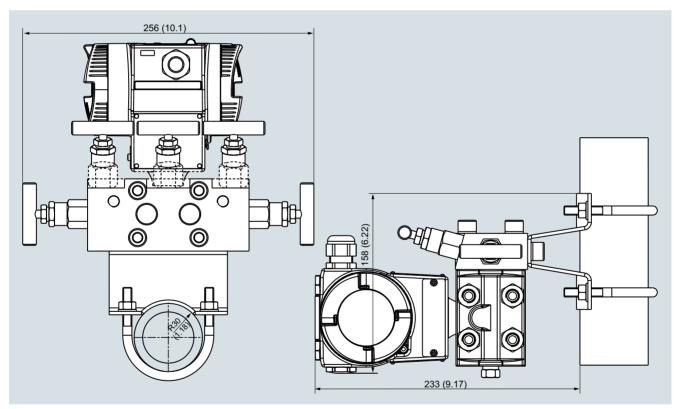
Valve manifold 7MF9411-5BA with attached SITRANS P500 pressure transmitter for differential pressure and flow, measurements in mm (inch)

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 transmitters and pressure gauges SITRANS P320/P420

#### Technical description

#### Overview

In many cases the pressure transmitter and the 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 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 space for the medium is sealed off with a flat embedded elastic diaphragm. Between the diaphragm and the pressure transmitter is the filling liquid.

In many cases, a capillary must be connected between the remote seal and the pressure transmitter in order, for example, to reduce the temperature effects on the pressure transmitter when the measured medium is hot.

However, the capillary influences the activation time and the temperature response of the overall remote seal system. When capillaries are used to connect a remote seal to a pressure transmitter for differential pressure, two capillaries of equal length must always be used.

Optionally, the remote seal with diaphragm extension (tube) can be ordered.

The remote seals in sandwich design are secured with a blank flange.

#### Designs

#### Diaphragm seal

With diaphragm seals, the pressure is measured by means of a flat diaphragm which rests in a bed.

The following types of diaphragm seals exist:



Diaphragm seal of sandwich design without (left) and with a projecting diaphragm (tube)

- · Sandwich design
- Sandwich design with projecting diaphragm (tube) to DIN or ASME which are secured using a dummy flange.



Diaphragm seal of flange design without (left) and with a projecting diaphragm (tube)

- · Flange design
- Flange design with projecting diaphragm (tube) to DIN or ASME, secured using holes in the flange.



Quick-release diaphragm seal

- Quick-release remote seals, e.g. to DIN 11851, SMS standard, IDF standard, APV RJF standard, clamp connection, etc.
- Miniature diaphragm seal with male thread for screwing into tapped holes
- · Remote seals with customer-specific process connections

Remote seals for transmitters and pressure gauges SITRANS P320/P420

**Technical description** 



Miniature diaphragm seal with diaphragm flush with front

· Miniature diaphragm seals

The quick-release remote seals are used above all in the food industry. Their design means that the medium cannot accumulate in dead volumes. The quick-release clamp present on the remote seal means that quick dismounting is possible for cleaning.

#### Inline seal



Inline seal with quick-release design (left) and for flange mounting

With inline 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 inline seal is a special design for flowing media. It consists of a cylindrical pipe in which a cylindrical diaphragm is embedded. Since it is completely integrated in the process pipe, no turbulences, dead volumes or other obstructions to the flow occur. Furthermore, the inline seal can be cleaned by a pig.

The following types of inline seals exist:

- Quick-release inline 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.
- Inline seals for flanging to EN or ASME.
- Inline seals with customer-specific process connections.

#### Note:

The pressure data on the transmitter and the remote seal must be observed with regard to pressure/temperature behavior.

### Function

The measured pressure is transferred from the diaphragm to the filling liquid and passes through the capillary to the measuring chamber of the pressure transmitter. The interior of the diaphragm seal and of the capillary, as well as the measuring chamber of the transmitter, are filled gas-free by the filling liquid.

#### Transmission response

The transmission response of a remote seal is characterized by the following variables:

- Temperature error
- · Adjustment time

#### Temperature error

Temperature errors are caused by the change of volume of the filling liquid due to temperature variations. To select the right remote seal you must calculate the temperature error.

Below you will find an overview of the factors which influence the size of the temperature error, as well as information on how to calculate the temperature error.

The temperature error is dependent on the following variables:

- · Rigidity of the diaphragm used
- Filling liquid used
- Influence of the filling liquid underneath the process flanges or in the connection shank of the pressure transmitter
- Internal diameter of the capillary: The bigger the internal diameter, the bigger the temperature error
- Length of the capillary: The longer the capillary, the bigger the temperature error

#### Diaphragm rigidity

The rigidity of the diaphragm is of decisive importance. The bigger the diameter of the diaphragm, the softer the diaphragm and the more sensitively it reacts to temperature-induced changes in volume of the filling liquid.

The result is that small measuring ranges are only possible with large diaphragm diameters.

Other factors apart from diaphragm rigidity which also play a role:

- Diaphragm thickness
- Diaphragm material
- · Coatings if present

### Filling liquid

Every filling liquid reacts to temperature variations with a change of volume. Temperature errors can be minimized by selecting a suitable filling liquid, but the filling liquid must also be appropriate for the temperature limits and operating pressure. Furthermore, the filling liquid must also be physiologically harmless.

Since the filling liquid is present under the diaphragm, in the capillary and under the process flange of the pressure transmitter (or in the connection shank), the temperature error must be calculated separately for each combination.

#### Note

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

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

Remote seals for transmitters and pressure gauges 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 measuring 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 transmitters and pressure gauges 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 [mm <sup>2</sup> /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	X	X
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	x

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".

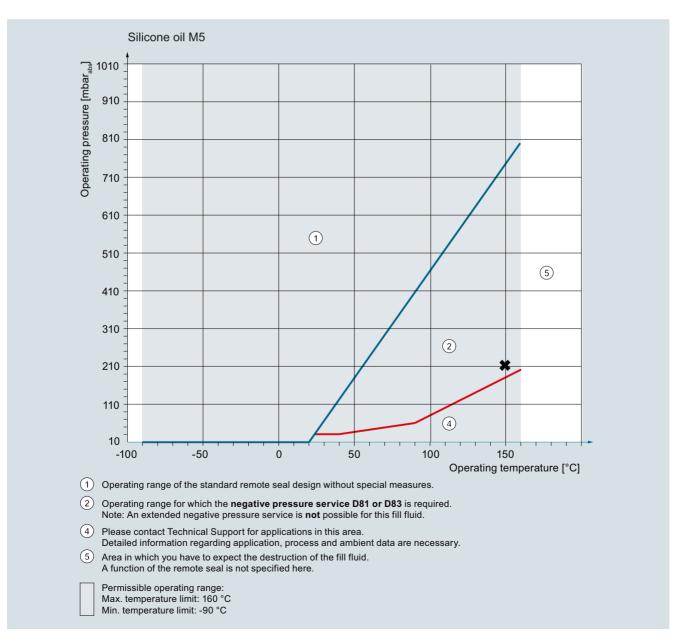
#### Selection of the required negative pressure service

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.

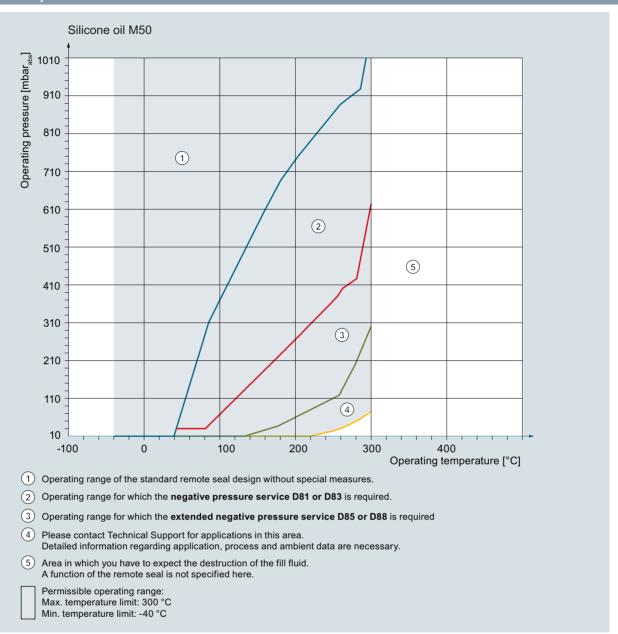
#### Note:

Note the response times according to the table on page 1/336.



Remote seals for transmitters and pressure gauges SITRANS P320/P420

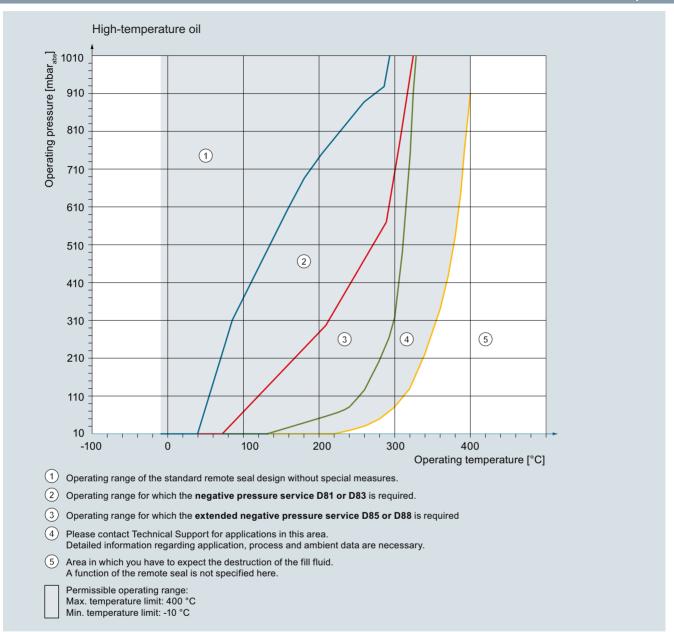
### **Technical description**



Negative pressure applications with silicone oil M50

Remote seals for transmitters and pressure gauges SITRANS P320/P420

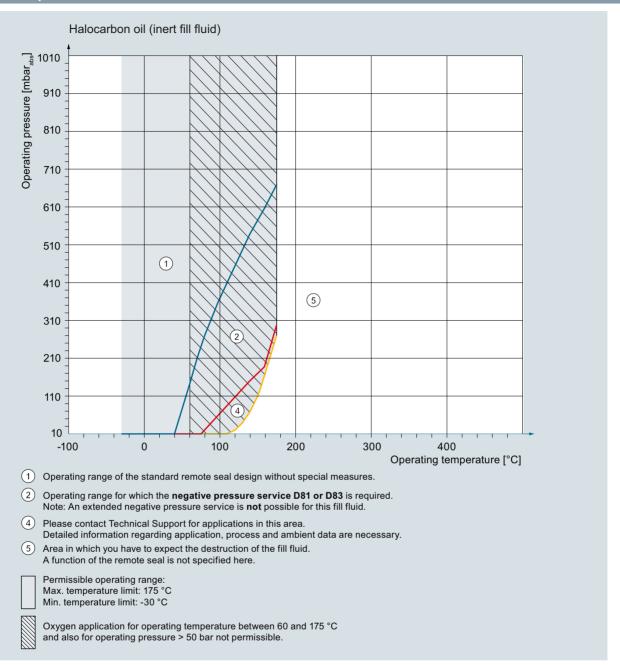
**Technical description** 



Negative pressure applications with high-temperature oil

Remote seals for transmitters and pressure gauges SITRANS P320/P420

### **Technical description**

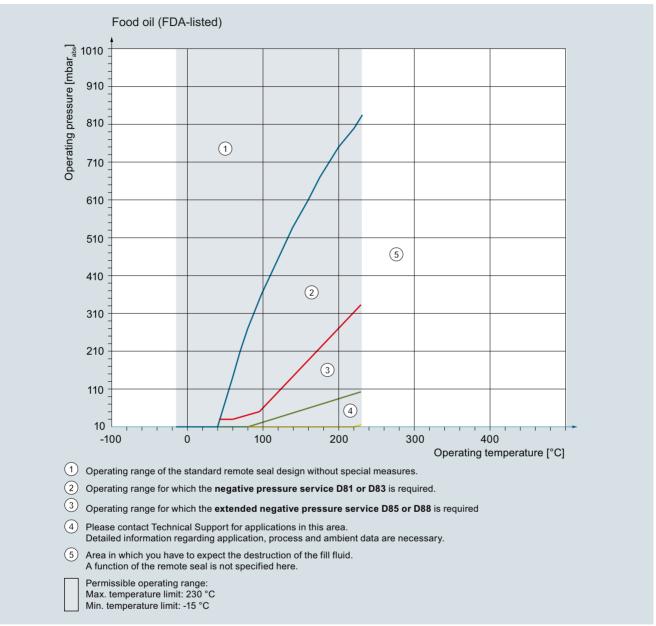


Negative pressure applications with halocarbon oil (inert filling liquid)

A BAM approval for process temperatures up to  $60 \, ^{\circ}\text{C}$  ( $140 \, ^{\circ}\text{F}$ ) and system pressures up to  $50 \, \text{bar}$  ( $725 \, \text{psi}$ ) is available for the oxygen application.

Remote seals for transmitters and pressure gauges SITRANS P320/P420

**Technical description** 



Negative pressure applications with food oil (FDA listed)

Remote seals for transmitters and pressure gauges 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	Diaph diame	ragm eter	Temperature error of remote seal f <sub>RS</sub>		Temperature c capillary f <sub>Cap</sub>	Temperature error of capillary f <sub>Cap</sub>		Temperature error of process flange/connec- tion spigot f <sub>PF</sub>		Recommended min. measuring spans (guidance values, observe temp. error)	
		mm	(inch)	mbar/ 10 K	(psi/ 10 K)	mbar/ (10 K · m <sub>Cap</sub> )	(psi/ (10 K · m <sub>Cap)</sub> ))	mbar/ 10 K	(psi/ 10 K)	mbar	(psi)	
Sandwich	DN 50 without tube	59	(2.32)	1.5	(0.022)	2	(0.029)	2	(0.029)	200	(2.90)	
design or with flange to	DN 50 with tube	45	(1.89)	5	(0.073)	10	(0.145)	10	(0.145)	500	(7.25)	
EN 1092-1	DN 80 without tube	89	(3.50)	0.2	(0.003)	0.2	(0.003)	0.2	(0.003)	100	(1.45)	
	DN 80 with tube	72	(2.83)	1	(0.015)	1	(1.015)	1	(1.015)	250	(3.63)	
	DN 100 without tube	89	(3.50)	0.2	(0.003)	0.4	(0.006)	0.4	(0.006)	100	(1.45)	
	DN 100 with tube	89	(3.50)	0.4	(0.006)	0.4	(0.006)	0.4	(0.006)	100	(1.45)	
	DN 125 without tube	124	(4.88)		(0.003)	0.1	(0.002)	0.1	(0.002)	20	(0.29)	
	DN 125 with tube	124	(4.88)	0.2	(0.003)	0.1	(0.002)	0.1	(0.002)	20	(0.29)	
Sandwich	2 inch without tube	59	(2.32)		(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	(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)	1	(0.015)	1	(0.015)	1	(0.015)	250	(3.63)	
Remote seal, screwed gland design	DN 50	52	(2.05)	4	(0.058)	5	(0.073)	5	(0.073)	500	(7.25)	
Remote seal	DN 25	25	(0.98)	20	(0.290)	60	(0.870)	60	(0.870)	6000	(87)	
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	(2.83)		(0.015)	1	(0.015)	1	(0.015)	250	(3.63)	
Clamp connec-	1½ inch	32	(1.26)		(0.116)	25	(0.363)	25	(0.363)	4000	(58)	
ion	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-	G1B	25	` '	20	(0.290)	60	(0.870)	60	(0.870)	6000	(87)	
ohragm seal	G11/2B	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 transmitters and pressure gauges SITRANS P320/P420

**Technical description** 

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

	Nominal diameter/ design	Diaphra diamet		Temperature error Temperature error of 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. measur- ing 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 transmitters and pressure gauges SITRANS P320/P420

### **Technical description**

### Temperature error inline seals

Temperature errors of inline 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 capillary f <sub>Cap</sub>		Temperature error of process flange/connection spigot f <sub>PF</sub>		Recommended min. mea- suring spans (guidance values, observe tempera- ture 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 inline seals with double-sided connection to pressure transmitters for differential pressure

Nominal diameter/ design	Temperature error of remote seal f <sub>RS</sub>		Temperature error of capillary f <sub>Cap</sub>		Temperature error of process flange/connection spigot f <sub>PF</sub>		Recommended min. mea- suring spans (guidance values, observe tempera- ture error)	
	mbar/10 K	(psi/10 K)	mbar/10 K	(psi/10 K)	mbar/10 K	(psi/10 K)	mbar	(psi)
DN 25 (1 inch)	2.3	(0.033)	1.8	(0.026)	1.8	(0.026)	1000	(14.5)
DN 40 (1½ inch)	0.8	(0.012)	0.3	(0.004)	0.3	(0.004)	250	(3.63)
DN 50 (2 inch)	0.3	(0.004)	0.1	(0.002)	0.1	(0.002)	100	(1.45)
DN 80 (3 inch)	3.0	(0.044)	0.5	(0.007)	0.5	(0.007)	100	(1.45)
DN 100 (4 inch)	1.0	(0.015)	0.1	(0.002)	0.1	(0.002)	100	(1.45)

### Remarks:

- Values apply for the filling liquids silicone oil M5, silicone oil M50, high-temperature oil, halocarbon oil and food oil (FDA listed).
- Half the values apply to glycerin/water mixture as the filling liquid.
- · Values apply to stainless steel as the diaphragm material.
- Diaphragm thickness 0.05 mm (0.002 inch) for DN 25/DN 40/DN 50 and 0.1 mm (0.004 inch) for DN 80/DN 100

Remote seals for transmitters and pressure gauges SITRANS P320/P420

### **Technical description**

#### Calculation of the temperature error

The following equation is used to calculate the temperature error:

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

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

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

#### **Existing conditions:**

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 <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	$\vartheta_{\text{Cap}} = 50  ^{\circ}\text{C}  (122  ^{\circ}\text{F})$
Temperature on pressure transmitter	ϑ <sub>TR</sub> = 50 °C (122 °F)
Calibration temperature	ϑ <sub>Cal</sub> = 20 °C (68 °F)

#### Required:

Additional temperature error of remote seals: dp

#### Calculation:

-		
in	mba	r

 $dp = (100 \,^{\circ}\text{C} - 20 \,^{\circ}\text{C}) \cdot 0.05 \,\, \text{mbar/10 K} + (50 \,^{\circ}\text{C} - 20 \,^{\circ}\text{C}) \cdot 6 \,\, \text{m} \cdot 0.07 \,\, \text{mbar/(10 K} \cdot \text{m}) + (50 \,^{\circ}\text{C} - 20 \,^{\circ}\text{C}) \cdot 0.07 \,\, \text{mbar/10 K}$   $dp = 0.4 \,\, \text{mbar} + 1.26 \,\, \text{mbar} + 0.21 \,\, \text{mbar}$ 

#### 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 measuring 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 <u>added</u> to the error determined above from connection of the remote s<u>eal</u>.

### Dependence of temperature error on diaphragm material

The temperature errors listed in the previous table are based on the use of stainless steel as the diaphragm material. If other diaphragm materials are used, the temperature errors change as follows:

Diaphragm material	Change in temperature error of remote seal
	Increase in values by
Stainless steel, 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.

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 transmitters and pressure gauges SITRANS P320/P420

### **Technical description**

# Maximum capillary length for diaphragm seals (guidance values)

Nom. diam.		Max. length of capillary					
		Diaphragi	n seal	inline 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 measuring 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 measuring span within the range of the respective transmitter. The response times are of insignificant importance for measuring 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. measuring 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 1/327 ff.

Remote seals for transmitters and pressure gauges 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)	Е	-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	Order code
• -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

Remote seals for transmitters and pressure gauges SITRANS P320/P420

### Diaphragm seals of sandwich design with flexible capillary

### Overview



Disabasan and a facility desired				
Diaphragm seals of sandwich desi	gn			
Technical specifications				
Diaphragm seals of sandwich de	esign	Sealing material in the process		
Nominal diameter	Nominal pressure	flanges	Conner	
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  • For other applications	Viton	
Connecting standard ASME B16.5				
• 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		
DN 80, DN 100, DN 125 Sealing surface		• Length	Max. 10 m (32.8 ft), longer lengths 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)	
• For 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	
Wetted parts	Stainless steel mat. no. 1.4404/316L		Halocarbon oil (for measuring $O_2$ )	
	Without coating		Food grade oil (FDA listed)	
	PTFE coating     ECTFE coating (for vacuum on request)	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	Certificate and approvals		
	Titanium, mat. no. 3.7035 Nickel 201 Duplex 2205, mat. no. 1.4462 Stainless steel 316L, gold plated, thickness approx. 25 μm	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)	

Capillary

Sheath

Stainless steel, mat. No. 1.4571/316Ti

Spiral protective tube made of stainless steel, mat. No. 1.4404/316L

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Diaphragm seal  Sandwich type design, with flexible capillary tube, connected with flexible capillary tube to a  SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only together with negative pressure ser-  Diaphragm seal  Sandwich type design, with flexible capillary tube to a  SITRANS P320/P420 transmitter for gauge pressure or absolute pressure (only together with negative pressure ser-	7 M F 0				
tube, connected with flexible capillary tube to a  • SITRANS P320/P420 transmitter for gauge pressure or absolute pressure  • SITRANS P320/P420 transmitter for gauge pressure or absolute pressure	7 M F 0				
pressure or absolute pressure pressure pressure or absolute pressure	7 M F 0				
vice), 7MF03/7MF04 order separately Scope of delivery: 1 off Scope of delivery: 1 off		080	0 -		
• SITRANS P320/P420 transmitter for absolute pressure, 7MF03/7MF04 order separately, Scope of delivery: 1 off  • SITRANS P320/P420 transmitter for absolute pressure, 7MF03/7MF04 order separately, Scope of delivery: 1 off	7 M F 0	801	1 -		
• SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03/7MF04 order separately, Scope of delivery: 2 off  • SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03/7MF04 order separately, Scope of delivery: 2 off	7 M F 0	802	2 -		
		- (	0		
7 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) 13 m (only for 7MF0802)	2	2 3 2 4 2 5			
14 m (only for 7MF0802)		2 6			
Connecting standard EN 1092-1  (DN 25, DN 40 and DN 50 recommended	2	2 7			
only for pressure transmitters)  Other version	9	8 (		L 1	1 Y
DN 25 PN 16 400 0 BQ Add Order code and plain text					
DN 40 PN 16 400 <b>0 DQ Filling liquid</b> DN 50 PN 16 400 <b>0 EQ</b> Silicone oil M50			В		
DN 65 PN 16 400 <b>0 FQ</b> High-temperature oil			C		
DN 80 PN 16 400 <b>0 GQ</b> Silicone oil M5			Ā		
DN 100 PN 16 400 <b>0 HQ</b> Food-grade oil (FDA listed)			E		
DN 125 PN 16 400 <b>0 J Q</b> Halocarbon oil			D		
Connecting standard ASME B16.5 Other version			Z	P 1	1 Y
(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 <b>1 KX</b> Stainless steel 316L					
1½ inch class 150 2500			A		
2½ inch class 150 2500 1NX			D		
3 inch class 150 2500 1PX • With PTFE coating			E 0	)	
4 inch class 150 2500 10X			F		
5 inch class 150 2500 <b>1 R X</b> Monel 400, 2.4360			G		
Connecting standard J.I.S.  Hastelloy C276, 2.4819  Tantalum			J K		
(DN 25, DN 40 and DN 50 recommended Titanium, 3.7035			L O	,	
only for pressure transmitters)  Nickel 201			МО		
DN 25 10K 63K <b>2 BW</b> Diaphragm Duplex, 1.4462			Q		
DN 40 10K 63K 2 DW Diaphragm plus flange Duplex, 1.4462			R		
DN 50 10K 63K 2 EW Stainless steel 316L with gold coating			S 0	)	
DN 65 10K 63K <b>2 FW</b> Hastelloy C4, 2.4610 DN 80 10K 63K <b>2 GW</b> Hastelloy C32, 3,4603			U 0		
DN 80 10K 63K 2 GW Hastelloy C22, 2.4602 DN 100 10K 63K 2 HW			V 0	)	
DN 125 10K 62K 2 LW Other version			Z 8	Q 1	ΙY
Other version Add Order code and plain text  Add Order code and plain text  Extension length					
• without			0		
● 50 mm (2") 1 m ■ 10 ■ 100 mm (4")			1		
1,6 m • 150 mm (6")			3		
2 m • 200 mm (8")			4		
2,5 m • 250 mm (10")			5		
3 m Other version			Z 8	Q	ΙY
4 m Add Order code and plain text					
5 m					
6 m					
7 m 8 m 2 0					
9 m 20					
10 m					

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Selection and Ordering data	Diaphragm seals	of sandwich	design	with	flexible	capilla
Sandwich type design, with flexible capillary tube, 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 absolute pressure, 7MF03./7MF04 order separately, Scope of delivery: 2 off  • SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03./7MF04 order separately, Scope of delivery: 2 off  • Wetted parts stainless steel without coating Range Standard length  • Wetted parts stainless steel without coating Range Standard length  10. — 197')  51 — 100 mm 100 mm (3.94')  101 — 150 mm 150 mm (5.91')  151 — 200 mm 250 mm (7.87')  201 — 250 mm 250 mm (1.97')  43  • Wetted parts stainless steel with ECTFE coating  Range Standard length  20 — 50 mm 100 mm (3.94')  101 — 150 mm 100 mm (3.94')  101 — 250 mm 200 mm (7.87')  51 — 100 mm 200 mm (7.87')  51 — 100 mm 100 mm (3.94')  101 — 150 mm 150 mm (5.91')   Selection and Orderi	ng data		Article	No.		
• 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 absolute pressure, 7MF03./7MF04. order separately Scope of delivery: 1 off  • SITRANS P320/P420 transmitter for absolute pressure, 7MF03./7MF04 order separately, Scope of delivery: 2 off  • SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03./7MF04 order separately, Scope of delivery: 2 off  • SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03./7MF04 order separately, Scope of delivery: 2 off  • Velted parts stainless steel without coating Range Standard length  • Velted parts stainless steel without coating Range Standard length  • Velted parts stainless steel with E0.91')  • S1 200 mm 100 mm (3.94')  • Velted parts stainless steel with ECTFE coating  Range Standard length  • Velted parts stainless steel with ECTFE coating  Range Standard length  • Velted parts stainless steel with E0.91')  • S1 100 mm 100 mm (3.94')  • Velted parts stainless steel with PFA coating  Range Standard length  • Velted parts stainless steel with PFA coating  Range Standard length  • Velted parts stainless steel with PFA coating  Range Standard length  • Velted parts stainless steel with PFA coating  Range Standard length  • Velted parts stainless steel with PFA coating  Range Standard length  • Velted parts stainless steel with PFA coating  Range Standard length  • Velted parts stainless Steel with PFA coating  Range Standard length  • Velted parts Stainless Steel with PFA coating  Range Standard length  • Velted parts Monel 400  Ran	Diaphragm seal					
pressure or absolute pressure (only together with negative pressure service), 7MF03./7MF04 order separately Scope of delivery: 1 off  SITRANS P320/P420 transmitter for absolute pressure. 7MF03./7MF04 order separately, Scope of delivery: 1 off  SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03./7MF04 order separately, Scope of delivery: 2 off  SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03./7MF04 order separately, Scope of delivery: 2 off  Customer-specific extension length  • Wetted parts stainless steel without coating Range   Standard length    20 50 mm   50 mm (1.97')   A1	tube, connected with t					
Lite pressure, 7MF03. /7MF04 order separatelyly, Scope of delivery: 1 off  SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03. /7MF04 order separately, Scope of delivery: 2 off  Customer-specific extension length  Wetted parts stainless steel without coating Range   Standard length  20 50 mm   50 mm (1.97")   A1	pressure or absolute (only together with n vice), 7MF03/7MF0	pressure egative pressur 4 order separa	e ser-	7 M F 0	800-	
ential pressure and flow, 7MF03./7MF04 order separately, Scope of delivery: 2 off  Customer-specific extension length  • Wetted parts stainless steel without coating 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 200 mm (7.87")  • Wetted parts stainless steel with ECTFE coating Range Standard length  20 50 mm 100 mm (3.94")  • Wetted parts stainless steel with ECTFE coating Range Standard length  20 50 mm 100 mm (3.94")  (2.01 3.94")  101 150 mm 150 mm (5.91")  51 100 mm 200 mm (7.87")  51 200 mm 200 mm (7.87")  51 200 mm 200 mm (7.87")  520 50 mm 200 mm (9.84")  • Wetted parts stainless steel with PFA coating Range Standard length  20 50 mm 100 mm (9.84")  • Wetted parts stainless steel with PFA coating Range Standard length  20 50 mm 100 mm (3.94")  • Wetted parts stainless steel with PFA coating Range Standard length  20 50 mm 100 mm (3.94")  • Wetted parts stainless steel with PFA coating Range Standard length  20 50 mm 100 mm (3.94")  • Wetted parts Stainless Steel with PFA coating Range Standard length  20 50 mm 100 mm (5.91")  51 100 mm 200 mm (7.87")  51 200 mm 50 mm (5.91")  51 200 mm 50 mm (5.91")  51 200 mm 50 mm (5.91")  51 200 mm 50 mm (1.97")  61 55 mm 50 mm (1.97")  62 50 mm (0.79 1.97")  51 100 mm 50 mm (1.97")  63 5.91")  151 200 mm 50 mm (1.97")  63 5.91")  151 200 mm 50 mm (5.91")  63 5.91")  151 200 mm 50 mm (5.91")  151	lute pressure, 7MF03	3/7MF04 orde		7 M F 0	801-	
Customer-specific extension length         • Wetted parts stainless steel without coating Range         Standard length           20 50 mm (0.79 1.97')         50 mm (1.97*)         A1           51 100 mm (2.01 3.94')         100 mm (3.94*)         A2           (2.01 3.94')         150 mm (5.91*)         A3           (3.98 5.91*)         150 mm (5.91*)         A3           (3.98 5.91*)         250 mm (5.91*)         A4           (5.94 7.87*)         200 mm (7.87*)         A4           (5.94 7.87*)         250 mm (9.84*)         A5           (7.91 9.84*)         250 mm (9.84*)         A5           (7.91 9.84*)         50 mm (1.97*)         F1           (0.79 1.97*)         50 mm (1.97*)         F1           (0.79 1.97*)         150 mm (5.91*)         F3           (3.98 5.91*)         150 mm (5.91*)         F3           (3.98 5.91*)         250 mm (9.84*)         F5           (7.91 9.84*)         90 mm (1.97*)         90 mm (7.87*)           (5.94 7.87*)         250 mm (9.84*)         90 mm (7.87*)           (5.94 7.87*)         250 mm (9.84*)         90 mm (7.87*)           (5.94 7.87*)         90 mm (7.87*)         90 mm (7.87*) <t< td=""><td>ential pressure and f</td><td>low, 7MF03/7N</td><td>1F04</td><td></td><td></td><td></td></t<>	ential pressure and f	low, 7MF03/7N	1F04			
• Wetted parts stainless steel without coating Range Standard length  20 50 mm (0.79 1.97") 51 100 mm (2.01 3.94") 101 150 mm (5.91") 151 200 mm (5.91") 151 200 mm (7.87") 201 250 mm (7.91") 200 50 mm (1.97") 43  45  • Wetted parts stainless steel with ECTFE coating Range Standard length  20 50 mm (1.97") 51 100 mm (3.94") 101 150 mm (5.91") 151 200 mm (5.91") 151 200 mm (7.87") 51 100 mm (1.97") 51 100 mm (1.97") 51 100 mm (5.91") 151 200 mm (7.87") 55 mm (7.91 9.84")  • Wetted parts stainless steel with PFA coating Range Standard length  20 50 mm (7.91") 51 100 mm (7.87") 51 100 mm (7.87") 51 200 mm (7.87") 51 200 mm (7.87") 51 100 mm (7.87") 51 200 mm (7.87") 51 100 mm (7.87") 50 mm (7.87") 50 mm (7.87") 50 mm (7.87") 50 mm (7.87") 51 100 mm (7.87") 51 100 mm (7.87") 51 100 mm (7.87")					- 0	
Range Standard length  20 50 mm (0.79 1.97')  51 100 mm (2.01 3.94')  101 150 mm (5.91')  151 200 mm (5.94 7.87')  201 250 mm (7.87')  43 (3.98 5.91')  151 200 mm (5.94 7.87')  201 250 mm (7.87')  44 (7.91 9.84')  • Wetted parts stainless steel with ECTFE coating  Range Standard length  20 50 mm (0.79 1.97')  51 100 mm (3.94')  (5.94 7.87')  201 250 mm (7.87')  50 mm (1.97")  51 100 mm (3.94')  (0.79 1.97')  51 100 mm (5.91")  (5.94 7.87')  201 250 mm (7.87")  50 mm (7.91 9.84')  • Wetted parts stainless steel with PFA coating  Range Standard length  20 50 mm (5.94")  • Wetted parts stainless steel with PFA coating  Range Standard length  20 50 mm (0.79 1.97")  51 100 mm (3.94")  • Wetted parts stainless steel with PFA coating  Range Standard length  20 50 mm (0.79 1.97")  51 100 mm (3.94")  101 150 mm (3.94")  102 50 mm (5.91")  50 mm (7.97")  51 200 mm (7.87")  50 mm (7.87")  50 mm (7.87")  51 200 mm (7.87")  50 mm (7.91 9.84")  • Wetted parts Monel 400  Range Standard length  20 50 mm (7.87")  50 mm (7.91 9.84")  • Wetted parts Monel 400  Range Standard length  20 50 mm (7.87")  51 100 mm (7.87")  62 (201 3.94")  101 150 mm (5.91")  151 200 mm (5.91")  151 200 mm (7.87")	•	_				
(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 stainless steel with ECTFE coating Range  20 50 mm (0.79 1.97") 51 150 mm (7.91 9.84")  • Wetted parts stainless steel with ECTFE coating Range  Standard length  20 50 mm (0.79 1.97") 51 100 mm (3.98 5.91") 151 250 mm (7.91 9.84")  • Wetted parts stainless steel with PFA coating Range  Standard length  20 50 mm (7.91 9.84")  • Wetted parts stainless steel with PFA coating Range  Standard length  20 50 mm (7.91 9.84")  • Wetted parts stainless steel with PFA coating Range  Standard length  20 50 mm (0.79 1.97") 51 100 mm (1.97") 51 150 mm (3.98 5.91") 151 200 mm (7.87") 520 mm (7.87") 53 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (7.87")  G1  150 mm (5.91")  151 200 mm  100 mm (5.91")  152 mm (7.87")  153 mm (7.91	Range	Standard length	•			
51 100 mm (2.01 3.94") 101 150 mm (3.94") 101 150 mm (5.91") 151 200 mm 200 mm (7.87") 151 200 mm 250 mm (9.84")  • Wetted parts stainless steel with ECTFE coating Range Standard length 20 50 mm (0.79 1.97") 51 100 mm 100 mm (3.94")  • Wetted parts stainless steel with ECTFE coating Range Standard length 20 50 mm (0.79 1.97") 51 100 mm 100 mm (3.94") 151 200 mm (7.87") 52		50 mm (1.97")			A	1
(3.98 5.91*) 151 200 mm (5.94 7.87*) 201 250 mm (7.91 9.84*)  • Wetted parts stainless steel with ECTFE coating Range   Standard length   20 50 mm (0.79 1.97*) 51 100 mm (1.97*) 101 150 mm (3.94*) 111 200 mm (5.91*) 112 200 mm (7.87*) 113 200 mm (7.87*) 114 200 mm (7.91 9.84*)  • Wetted parts stainless steel with PFA coating Range   Standard length   20 50 mm (7.91 9.84*)  • Wetted parts stainless steel with PFA coating Range   Standard length   20 50 mm (7.91 9.84*)  • Wetted parts stainless steel with PFA coating Range   Standard length   20 50 mm (7.97 1.97*) 51 100 mm (3.94*) (3.98 5.91*) 151 200 mm (5.91*) 151 200 mm (7.87*) 201 250 mm (7.97*) 51 100 mm (7.97*) 61 100 mm (7.97*) 62 50 mm (7.97*) 63 5.91*) 151 100 mm (7.97*) 63 5.91*) 151 200 mm (7.87*) 64	51 100 mm (2.01 3.94")	100 mm (3.94"	)		A	2
151 200 mm	101 150 mm	150 mm (5.91"	)		A	3
(7.91 9.84")       ◆ Wetted parts stainless steel with ECTFE coating         Range       Standard length         20 50 mm (0.79 1.97")       50 mm (1.97")       F1         (0.79 1.97")       100 mm (3.94")       F2         (2.01 3.94")       100 mm (3.94")       F2         (101 150 mm (3.98 5.91")       150 mm (5.91")       F3         (3.98 5.91")       200 mm (7.87")       F4         (5.94 7.87")       201 250 mm (9.84")       F5         (7.91 9.84")       250 mm (9.84")       F5         • Wetted parts stainless steel with PFA coating       Standard length         20 50 mm (0.79 1.97")       100 mm (3.94")       D2         (2.01 3.94")       100 mm (5.91")       D3         (3.98 5.91")       150 mm (5.91")       D4         (5.94 7.87")       201 250 mm (9.84")       D5         (7.91 9.84")       250 mm (9.84")       D5         • Wetted parts Monel 400       Range       Standard length         20 50 mm (0.79 1.97")       50 mm (1.97")       G1         51 100 mm (0.79 1.97")       50 mm (1.97")       G2         (2.01 3.94")       100 mm (5.91")       G2         (2.01 3.94")       150	151 200 mm	200 mm (7.87"	)		A	4
coating         Standard length           20 50 mm (0.79 1.97")         50 mm (1.97")         F1           50 mm (1.97")         F2         F2           (2.01 3.94")         150 mm (3.94")         F2           (2.01 3.94")         150 mm (5.91")         F3           (3.98 5.91")         250 mm (5.91")         F4           (5.94 7.87")         200 mm (7.87")         F4           (5.94 7.87")         250 mm (9.84")         F5           (7.91 9.84")         50 mm (1.97")         D1           (0.79 1.97")         50 mm (1.97")         D1           (0.79 1.97")         50 mm (5.91")         D3           (3.98 5.91")         150 mm (5.91")         D3           (3.98 5.91")         250 mm (9.84")         D5           (5.94 7.87")         201 250 mm (9.84")         D5           (5.94 7.87")         250 mm (9.84")         D5           (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")         150 mm (5.91")		250 mm (9.84"	)		A	5
Range   Standard length   20 50 mm   50 mm   (1.97")   F1   (0.79 1.97")   51 100 mm   100 mm   (3.94")   F2   (2.01 3.94")   150 mm   (5.91")   F3   (3.98 5.91")   151 200 mm   200 mm   (7.87")   F4   (5.94 7.87")   201 250 mm   250 mm   (9.84")   F5   (7.91 9.84")   F5   (7.91 9.84")   F5   (7.91 3.94")   101 150 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   (7.91 9.84")   - Wetted parts Monel 400   Range   Standard length   20 50 mm   50 mm   (1.97")   G1   (0.79 1.97")   51 100 mm   100 mm   (3.94")   G2   (2.01 3.94")   101 150 mm   150 mm   (3.94")   G2   (2.01 3.94")   151 200 mm   150 mm   (5.91")   G3   (3.98 5.91")   151 200 mm   150 mm   (5.91")   G3   (3.98 5.91")   151 200 mm   200 mm   (5.91")   G3   (3.98 5.91")   151 200 mm   200 mm   (7.87")   G4   (3.98 5.91")   151 200 mm   200 mm   (7.87")   G4   (3.98 5.91")   151 200 mm   200 mm   (7.87")   G4   (3.98 5.91")   151 200 mm   200 mm   (7.87")   G4   (3.98 5.91")   151 200 mm   200 mm   (7.87")   G4   (3.98 5.91")   151 200 mm   200 mm   (7.87")   G4   (3.98 5.91")   151 200 mm   200 mm   (7.87")   G4   (3.98 5.91")   151 200 mm   200 mm   200 mm   (7.87")   G4   (3.98 5.91")   151 200 mm   200 mm   200 mm   (7.87")   G4   (3.98 5.91")   151 200 mm   200 mm   200 mm   (7.87")   G4   (3.98 5.91")   151 200 mm   200 mm   (7.87")   G4   (3.98 5.91")   151 200 mm   200 mm   200 mm   (7.87")   G4   (3.98 5.91")   151 200 mm   200 mm   200 mm   (7.87")   G4   (3.98 5.91")   151 200 mm   200 mm   200 mm   (7.87")   G4   (3.98 5.91")   (3.98 5.91")   (3.98 5.91")   (3.98 5.91")   (3.98		ss steel with EC	TFE			
(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 stainless steel with PFA coating 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") 205 mm (5.94 7.87") 207 mm (5.94 7.87") 208 mm (5.94 7.87") 209 mm (5.94 7.87") 201 250 mm (6.94 7.87") 201 250 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (7.91 9.91")  51 100 mm (7.91 1.91")  51 100 mm (7.91 1.91")  51 100 mm (7.91")  62 (2) (2) (3) (3) (3) (3) (3) (3) (3) (3) (3) (3	_	Standard length	th			
51 100 mm (2.01 3.94")  101 150 mm (5.91")  151 200 mm (5.94")  200 mm (7.87")  201 250 mm (7.91 9.84")  • Wetted parts stainless steel with PFA coating  Range	20 50 mm	50 mm (1.97")			F	1
101 150 mm (3.98 5.91") 151 200 mm (5.91") 201 250 mm (7.91 9.84")  • Wetted parts stainless steel with PFA coating Range  Standard length  20 50 mm (5.91") 51 100 mm (5.91") 151 200 mm (5.91") 151 200 mm (7.91 9.84")  101 150 mm (5.91") 151 200 mm (5.94 7.87") 201 250 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  250 mm (1.97") 250 mm (7.91") 250 mm (7.91") 250 mm (7.91") 250 mm (7.91") 250 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (7.91 9.84")  • Wetted parts Monel 400 Range  Standard length  20 50 mm (7.91")  G1	51 100 mm	100 mm (3.94"	)		F	2
(5.94 7.87") 201 250 mm (7.91 9.84")  • Wetted parts stainless steel with PFA coating 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")  • Wetted parts Monel 400 Range   Standard length   D2   Common (1.97")   D3   Common (1.97")   D4   Common (1.97")   D5   Common (1.97")	101 150 mm (3.98 5.91")	150 mm (5.91"	)		F	3
201 250 mm (7.91 9.84")  • Wetted parts stainless steel with PFA coating  Range    Standard length		200 mm (7.87"	)		F	4
ing Range   Standard length  20 50 mm (0.79 1.97")	201 250 mm	250 mm (9.84"	)		F	5
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")   D5   (7.91 9.84")   D5   (7.91 9.84")   C1 50 mm   (0.79 1.97")   C2 50 mm   (0.79 1.97")   C3 100 mm   (0.79 1.97")   C4   (0.79 3.94")   (		ss steel with PFA	A coat-			
(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   Standard length   Standard length   Co 50 mm (0.79 1.97")   Somm (1.97")   Somm (2.01 3.94")   Standard length		Standard lengt	th			
51 100 mm (2.01 3.94")  101 150 mm (5.91")  151 200 mm (7.87")  201 250 mm (5.91")  • Wetted parts Monel 400  Range   Standard length  20 50 mm (0.79 1.97")  51 100 mm (2.01 3.94")  100 mm (3.94")  G2  G3  G3  G3  G3  G3  G4		50 mm (1.97")			D	1
(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 200 mm (7.87")  Summ (7.87")  G1  G2  G3  G3	51 100 mm	100 mm (3.94"	)		D	2
(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   200 mm (7.87")   G3	(3.98 5.91")					
(7.91 9.84")          • Wetted parts Monel 400	(5.94 7.87")	200 mm (7.87"	)		D	4
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  200 mm (7.87")  G1  G2  G3  G3		250 mm (9.84"	)		D	5
20 50 mm (0.79 1.97")			th			
(0.79 1.97") 51 100 mm (2.01 3.94") 101 150 mm (3.98 5.91") 151 200 mm 200 mm (7.87")  G2  G3			LI I		G	1
101 150 mm (5.91") <b>G 3</b> (3.98 5.91") 151 200 mm 200 mm (7.87") <b>G 4</b>	(0.79 1.97") 51 100 mm		)		G	2
151 200 mm 200 mm (7.87") <b>G 4</b>	101 150 mm	150 mm (5.91"	)		G	3
	151 200 mm	200 mm (7.87"	)		G	4

Selection and Orderi	ng data	Article No.	Order code		
Diaphragm seal					
Sandwich type design tube, connected with to a					
SITRANS P320/P420 pressure or absolute (only together with n vice), 7MF03/7MF0 Scope of delivery: 1	7MF0800-				
<ul> <li>SITRANS P320/P420 lute pressure, 7MF00 rately, Scope of deliv</li> </ul>	3/7MF04 order sepa-	7MF0801-			
<ul> <li>SITRANS P320/P420 ential pressure and forder 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	im				
Range	Standard length				
20 50 mm (0.79 1.97")	50 mm (1.97")		K 1		
51 100 mm (2.01 3.94")	51 100 mm (3.94")				
101 150 mm (3.98 5.91")	01 150 mm 150 mm (5.91")				
151 200 mm (5.94 7.87")	200 mm (7.87")		K 4		

Remote seals for transmitters and pressure gauges 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
Factory certificate 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 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 absolute pressure transmitters) (only 7MF0800)	D85
Extended negative pressure service (for differential pressure transmitters)	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) 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.	M50
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	M64
(instead of sealing surface RF 125250AA, wetted parts 316L only)	
Sealing surface with tongue to EN1092-1, form C (wetted parts 316L only)	
<ul><li>DN 25</li><li>DN 40</li></ul>	M70 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)	W/ J
• DN 25	M76
• DN 40	M77
<ul><li>DN 50</li><li>DN 80</li></ul>	M78 M79
• DN 100	M80
• DN 125	M81

O-lti	0
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	M82 M83 M84 M85
• DN 100	M86
• DN 125  Capillary connection (only for 7MF0800)	M87
Single-side mounted at differential pressure transmit-	S03
ters at high-side	503
Single-side mounted at differential pressure transmitters at low-side	S04
Capillary coating	
PE 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)  12 m (only for 7MF0802)  13 m (only for 7MF0802)  14 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	\$10 \$11 \$12 \$13 \$14 \$15 \$16 \$17 \$18 \$19 \$20 \$21 \$22 \$23 \$24 \$25 \$26 \$40 \$41 \$42 \$43 \$44 \$45 \$46 \$47
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) 14 m (only for 7MF0802) 15 m (only for 7MF0802)	\$47 \$48 \$49 \$50 \$51 \$52 \$53 \$54 \$55 \$55

Remote seals for transmitters and pressure gauges SITRANS P320/P420

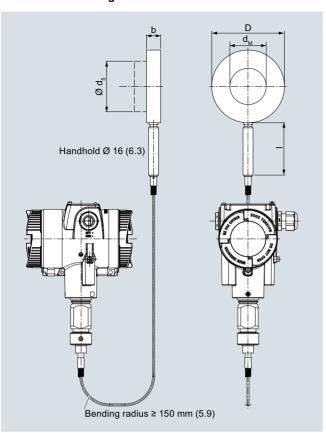
Selection and Ordering data	Order code
Further designs	
Add "-Z" to Article No. and specify Order code.	
PVC protective tube	
1 m	S70
1,6 m	S71
2 m	S72
2,5 m	S73
3 m	S74
4 m	S75
5 m	S76
6 m	S77
7 m	S78
8 m	S79
9 m	S80
10 m	S81
11 m (only for 7MF0802)	S82
12 m (only for 7MF0802)	S83
13 m (only for 7MF0802)	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 1/337.

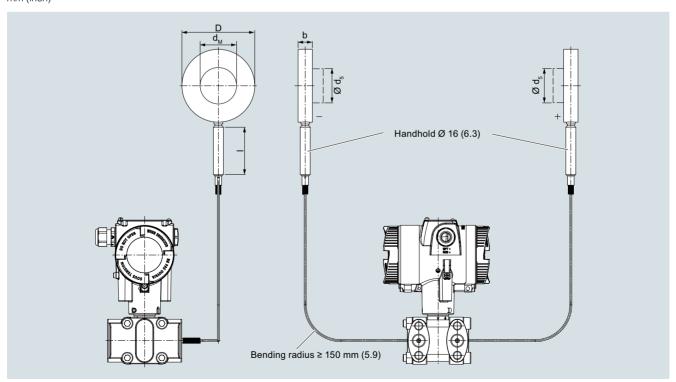
Remote seals for transmitters and pressure gauges SITRANS P320/P420

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 transmitters and pressure gauges 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.

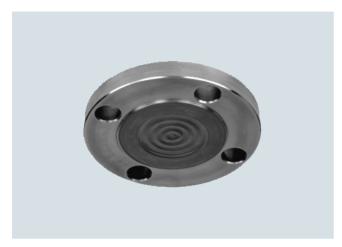
Nom. diame- ter	Nom. pres- sure	b	D 10K, 20K	D 30K 63K	d <sub>5</sub>	d <sub>M</sub> with tube	d <sub>M</sub> w/o tube	1
		mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)
DN 25	10K 63K	20 (0.79)	67 (2.64)	70 (2.76)	24.5 (0.96)	22.6 (0.89)	30 (1.18)	100 (3.94)
DN 40	_	20 (0.79)	81 (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 transmitters and pressure gauges **SITRANS P320/P420** 

### Diaphragm seals of flange design with flexible capillary

### Overview



Diaphragm seals of flange design

#### Technical specifications

Di	iapl	hragm	seals	s of	flange	desigr	with	flexibl	e capi	llary

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

• 1 inch Class 150/300/600/1500 Class 150/300/400/600/900/1500 • 1½ inch • 2 inch Class 150/300/400/600/900/1500 • 3 inch Class 150/300/600/1500 Class 150/300/400/1500 • 4 inch Class 150/300/400 • 5 inch Connecting standard J.I.S.

• DN 50 10K DN 80 20K • DN 100 40K Sealing surface

• For stainless steel, mat. To EN 1092-1, form B1 or ASMR B16.5 RF 125 ... 250 AA No. 1.4404/316L

To EN 1092-1, form B2 or ASME B16.5 RFSF • For the other materials

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

Copper

Viton

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

See above and the technical data

Without tube as standard (tube

of the pressure transmitter

Max. 10 m (32.8 ft), longer

available on request)

lengths on request

2 mm (0.079 inch)

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)

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)

Remote seals for transmitters and pressure gauges SITRANS P320/P420

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	0/P420 transmitter for gauge solute pressure with negative pressure ser-/7MF04 order separately ery: 1 off	7MF0810-		<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>	7MF0810-	
lute pressure f	0/P420 transmitter for absorom differential pressure, 4 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>	7MF0811-	
ential pressure	0/P420 transmitter for different and flow, 7MF03/7MF04 sly, 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>	7MF0812-	_
		- 0			- 0	
	Article No. for the online conhe PIA Life Cycle Portal.	ш		Connecting standard J.I.S.  (DN 50 recommended only for pressure	ш	ш
Nominal diame	ter Nominal pressure			transmitters)		
Connecting stan	•			DN 50 10 K	2 E S	
	and DN 50 recommended			20 K	2 E T	
only for pressure				40 K	2 E U	
DN 25	PN 10/16/25/40	0 B D		DN 80 10 K	2 G S	
	PN 63/100	0 B F		20 K 40 K	2 G T 2 G U	
	PN 160	0 B G		DN 100 10 K	2 H S	
	PN 250	0 B H		20 K	2 H T	
DN 40	PN 10/16/25/40	0 D D		40 K	2 H U	
	PN 63/100	0 D F		Other version	9 A A	H1Y
	PN 160	0 D G		Add Order code and plain text	JAA	
DN 50	PN 10/16/25/40	0 E D		Transmitter connection		
	PN 63	0 E E		Connection via capillary tube		
D11.00	PN 100	0 E F		Length of capillary		
DN 80	PN 10/16/25/40	0 G D		1 m	1 0	
DN 100	PN 100 PN 10/16	0 G F 0 H B		1,6 m	11	
DN 100	PN 25/40	OHD		2 m	1 2	
DN 125	PN 16	0 J B		2,5 m	1 3	
DIN 125	PN 40	0 J D		3 m	1 4	
		000		4 m	1 5	
	dard ASME B16.5			5 m	1 6	
(1 inch, 1½ inch only for pressure	and 2 inch recommended			6 m	1 7	
1 inch	class 150	1 K L		7 m	1 8	
THICH	class 300	1 KM		8 m	2 0	
	class 600	1 K N		9 m	2 1 2 2	
	class 1500	1 K P		10 m 11 m (only for 7MF0812)	2 2	
1½ inch	class 150	1 L A		12 m (only for 7MF0812)	2 4	
	class 300	1 L B		13 m (only for 7MF0812)	25	
	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	1 M B		Add Order code and plain text		
	class 400/600	1 M D		Filling liquid		
O in al	class 900/1500	1MF		Silicone oil M50	E	3
3 inch	class 150	1 P A		High-temperature oil	C	;
	class 300 class 600	1 P B 1 P D		Silicone oil M5	A	
	class 600 class 1500	1 P F		Food-grade oil (FDA listed)		
4 inch	class 1500	1QA		Halocarbon oil	9	
1 111011	class 300	1 Q B		Other version Add Order code and plain text	Z	P1Y
	class 400	1QC		Add Order code and plain lext		
	class 1500	1QF				
5 inch	class 150	1 R A				
	class 300	1 R B				
	class 400	1 R C				

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Selection and Orde	ering data	Article No.	Order code	Selection and Orde	ring data	Article No.	Order code
Diaphragm seal				Diaphragm seal			
Flange type design, v	with flexible capillary tube, ble capillary tube to a			Flange type design, v	vith flexible capillary tube, le capillary tube to a		
pressure or absolution (only together with	negative pressure ser- F04 order separately	7MF0810-		<ul> <li>SITRANS P320/P4 pressure or absolutionly together with vice), 7MF03/7MI Scope of delivery:</li> </ul>	7MF0810-		
<ul> <li>SITRANS P320/P42 lute pressure from 7MF03/7MF04 o delivery: 1 off</li> </ul>	7MF0811-		<ul> <li>SITRANS P320/P4. lute pressure from 7MF03/7MF04 o delivery: 1 off</li> </ul>	7MF0811-			
ential pressure and	20 transmitter for differd flow, 7MF03/7MF04 Scope of delivery: 2 off	7MF0812-		ential pressure and	20 transmitter for differd flow, 7MF03/7MF04 Scope of delivery: 2 off	7MF0812-	
		- 0 -				- 0	
Wetted parts mater	rials				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 coatin</li></ul>		F		51 100 mm (2.01 3.94")	100 mm (3.94")	F	2
Monel 400, 2.4360 Hastelloy C276, 2.48	319	G J		101 150 mm (3.98 5.91")	150 mm (5.91")	F	3
Tantalum Titanium, 3.7035			0	151 200 mm (5.94 7.87")	200 mm (7.87")		4
Nickel 201 Diaphragm Duplex,		M Q		201 250 mm (7.91 9.84")	250 mm (9.84")	F	5
Diaphragm plus flan Stainless steel 316L		R	0	•	ess steel with PFA coating		
Hastelloy C4, 2.4610	0		0	Range	Standard length	_	
Hastelloy C22, 2.460	02		0	20 50 mm (0.79 1.97")	50 mm (1.97")		1
Other version Add Order code and	d plain text		8 Q1Y	51 100 mm (2.01 3.94")	100 mm (3.94")		2
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")		4
• 150 mm (6")			3 4	201 250 mm (7.91 9.84")	250 mm (9.84")		5
<ul><li>200 mm (8")</li><li>250 mm (10")</li></ul>			5	Wetted parts Mone			
Other version Add Order code and	d plain text	Z	8 Q1Y	Range 20 50 mm	Standard length 50 mm (1.97")	G	1
Customer-specific				(0.79 1.97") 51 100 mm	100 mm (3.94")	G	2
<ul> <li>Wetted parts stainl</li> <li>Range</li> </ul>	less steel without coating   Standard length			(2.01 3.94") 101 150 mm	150 mm (5.91")	G	i 3
20 50 mm	50 mm (1.97")	A	1	(3.98 5.91") 151 200 mm	200 mm (7.87")		i 4
(0.79 1.97") 51 100 mm	100 mm (3.94")	A	2	(5.94 7.87")  • Wetted parts Haste	,	_	
(2.01 3.94") 101 150 mm	150 mm (5.91")	A	3	Range	Standard length		
(3.98 5.91") 151 200 mm	200 mm (7.87")	A	4	20 50 mm (0.79 1.97")	50 mm (1.97")	J	1
(5.94 7.87") 201 250 mm	250 mm (9.84")	A	5	51 100 mm (2.01 3.94")	100 mm (3.94")		2
(7.91 9.84")				101 150 mm (3.98 5.91")	150 mm (5.91")		3
				151 200 mm (5.94 7.87")	200 mm (7.87")	J	4

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Selection and Order	ng data	Article No. Ord								
Diaphragm seal	Diaphragm seal									
Flange type design, wi connected with flexible										
SITRANS P320/P420 pressure or absolute (only together with r vice), 7MF03/7MF0 Scope of delivery: 1	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-								
		- 0								
Wetted parts Tantalu										
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")	11 150 mm (5.91")									
151 200 mm (5.94 7.87")	200 mm (7.87")	K	4							

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
Factory certificate 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 pressure transmitters) (only for 7MF0810)	D81
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></ul>	M70 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
<ul><li>DN 50</li><li>DN 80</li></ul>	M78 M79
• DN 100	M80
• DN 125	M81

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Selection and Ordering data  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	ae
Add "-Z" to Article No. and specify Order code.  Sealing surface with recess to EN1092-1, form F (wetted parts 316L only)	
Sealing surface with recess to EN1092-1, form F (wetted parts 316L only)	
(wetted parts 316L only)	
, , ,	
• 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 transmit- <b>S03</b>	
ters at high-side Single-side mounted at differential pressure transmitters at low-side  S04	
For 7MF0811	
Radial capillary pipe outlet (for single-side mounting S01	
and capillary connection only)  For 7MF0812	
Radial capillary pipe outlet (for double-side mounting) <b>\$02</b>	
Capillary coating	
PE protective tube 1 m S10	
1,6 m S11	
2 m S12	
2,5 m <b>S13</b>	
3 m S14	
4 m <b>S15</b> 5 m <b>S16</b>	
5 m <b>S16</b> 6 m <b>S17</b>	
7 m S18	
8 m <b>S19</b>	
9 m <b>S20</b>	
10 m <b>S21</b>	
11 m (only for 7MF0802) <b>S22</b>	
12 m (only for 7MF0802) <b>S23</b>	
13 m (only for 7MF0802) <b>S24</b> 14 m (only for 7MF0802) <b>S25</b>	
15 m (only for 7MF0802) <b>S26</b>	
PTFE protective tube	
1 m S40	
1,6 m <b>S41</b>	
2 m <b>S42</b>	
2,5 m <b>\$43</b>	
3 m	
4 m <b>\$45</b> 5 m <b>\$46</b>	
6 m <b>S47</b>	
7 m S48	
8 m <b>S49</b>	
9 m <b>\$50</b>	
9 m	
9 m S50 10 m S51 11 m (only for 7MF0802) S52	
9 m S50 10 m S51 11 m (only for 7MF0802) S52 12 m (only for 7MF0802) S53	
9 m S50 10 m S51 11 m (only for 7MF0802) S52 12 m (only for 7MF0802) S53	

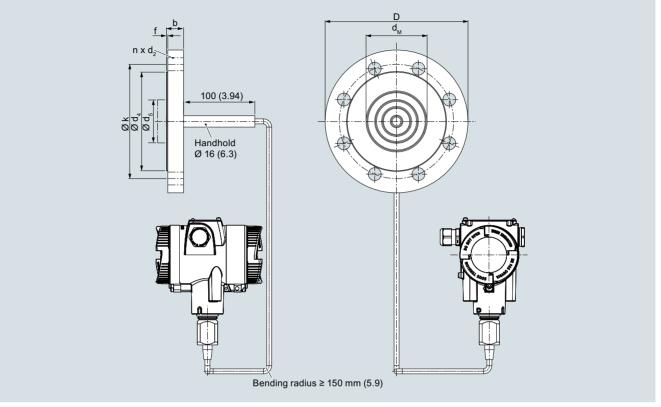
	· · · ·
Selection and Ordering data	Order code
Further designs	
Add "-Z" to Article No. and specify Order code.	
PVC protective tube	
1 m	S70
1,6 m	S71
2 m	S72
2,5 m	S73
3 m	S74
4 m	S75
5 m	S76
6 m	S77
7 m	S78
8 m	S79
9 m	S80
10 m	S81
11 m (only for 7MF0802)	S82
12 m (only for 7MF0802)	S83
13 m (only 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
riocess temperature min O/( r //max O/( r)	130

See also "Specification of process conditions for selection and ordering data", page 1/337.

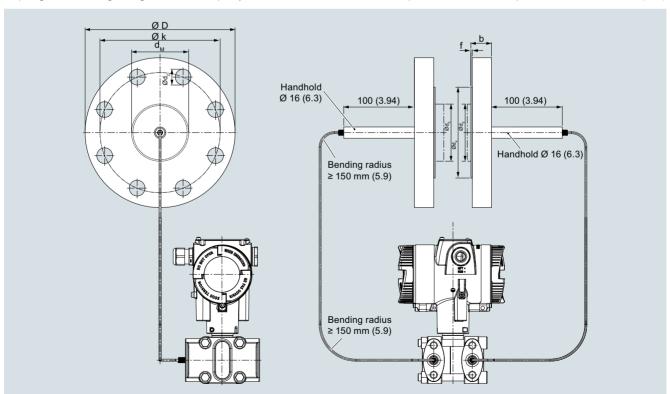
Remote seals for transmitters and pressure gauges SITRANS P320/P420

### 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 transmitters and pressure gauges 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
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,
	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 transmitters and pressure gauges SITRANS P320/P420

### Diaphragm seals of flange design with flexible capillary

### Connection to J.I.S

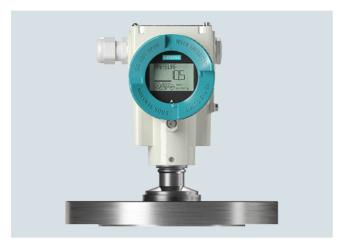
Nominal diameter	Nominal pressure	b	D	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub> with exten- sion	d <sub>M</sub> without exten- sion	f	k	n	L
		mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)		mm (inch)
DN 50	10K	14 (0.55)	155 (6.10)	19 (0.75)	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 transmitters and pressure gauges 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) for pressure and absolute pressure, directly fitted on a transmitter									
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									
• For stainless steel, mat. No. 1.4404/316L	To EN 1092-1, form B1 or ASME B16.5 RF 125 250 AA								
• For the other materials	Smooth to EN 1092-1, form B2 o 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

Copper

Duplex 2205, mat. no. 1.4462 Stainless steel 316L, gold plated, thickness approx. 25 µm

Stainless steel, 1.4404/316L

· Sealing material at the transmitter

Maximum pressure

Capillary

connection

Tube length

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

- 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)

170 °C (338 °F)

Max. recommended temperature of medium

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) Weight

### Certificate and approvals

Classification according to pressure equipment directive For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)

(DGRL 2014/68/EU)

Remote seals for transmitters and pressure gauges SITRANS P320/P420

## Diaphragm seals of flange design mounted directly on transmitter

Selection and Or	Article No. Order code							
Diaphragm seal								
Flange type design	n, directly mounted to a							
• SITRANS P320/F	7 N	1F 0	8 (	10-				
pressure or abso	olute pressure							
(only together wi	ith negative pressure ser- MF04 order separately							
Scope of deliver	y: 1 off							
					- 0			
	ticle No. for the online con-							
	PIA Life Cycle Portal.							
Nominal diamete	·							
Connecting standards DN 25	PN 10/16/25/40	0 B	חו					
DIN 23	PN 63/100	0 B						
	PN 160	0 B						
	PN 250	0 B	ВН					
DN 40	PN 10/16/25/40	0 D	D					
	PN 63/100	0 D	F					
DNIFO	PN 160	0 0						
DN 50	PN 10/16/25/40	0 E						
	PN 63 PN 100	0 E						
DN 80	PN 10/16/25/40	0 G						
211 00	PN 100	0 G						
DN 100	PN 10/16	0 H	ΙB					
	PN 25/40	0 H	ID					
DN 125	PN 16	0 J						
0	PN 40	0 J	טו					
Connecting standa	class 150	1 K						
T IIICH	class 300	1 K						
	class 600	1 K						
	class 1500	1 K	P					
1½ inch	class 150	1 L						
	class 300	1 L						
	class 400/600	1 L						
2 inch	class 900/1500 class 150	1 N						
2 111011	class 300	1 N						
	class 400/600	1 N	1D					
	class 900/1500	1 N	۱F					
3 inch	class 150	1 P						
	class 300	1 P						
	class 600 class 1500	1 P						
4 inch	class 1500	1 G						
1 111011	class 300	1 G						
	class 400	1 G	C					
	class 1500	1 G						
5 inch	class 150	1 R						
	class 300 class 400	1 R						
	CIASS 400	1 1						
Connecting stand	ard IIS							
Connecting standard		2 F	s					
Connecting stands DN 50	ard J.I.S. 10K 20K	2 E						
	10K		T					
	10K 20K	2 E	T					
DN 50	10K 20K 40K 10K 20K	2 E 2 E 2 G	T U S					
DN 50	10K 20K 40K 10K 20K 40K	2 E 2 E 2 G 2 G	T U S T					
DN 50	10K 20K 40K 10K 20K 40K 10K	2 E 2 E 2 G 2 G 2 G 2 H	T U S T U					
DN 50	10K 20K 40K 10K 20K 40K 10K 20K	2 E 2 G 2 G 2 G 2 G 2 H 2 H	T U S T U IS					
DN 50	10K 20K 40K 10K 20K 40K 10K	2 E 2 E 2 G 2 G 2 G 2 H	T U S T IU IS IT				H11	

Plange 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  Transmitter connection  Without capillary tube, direct mount straight connection (for gauge pressure)  Without capillary tube, direct mount connection via 90°-bow (for gauge pressure)  Without capillary tube, direct mount connection via 90°-bow (for gauge pressure)  Filling liquid  Silicone oil M50  High-temperature oil Silicone oil M5  Food-grade oil (FDA listed)  Halocarbon oil Other version Add Order code and plain text  Wetted parts materials  Stainless steel 316L  Without coating  With PFA coating  With PFE coating  With ECTFE coating  Monel 400, 2.4360  Hastelloy C276, 2.4819  Tantalum  Titanium, 3.7035  Nickel 201  Diaphragm Duplex, 1.4462  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 Add Order code and plain text  Extension length  without  • 50 mm (2°)  • 100 mm (4°)  • 250 mm (6°)  • 200 mm (8°)  • 250 mm (10°)  Other version  Control of 810 - 00  TMF 0 8 1 0 - 00  TMF 0 8 10 - 00	Selection and Ordering data	Article	No.		Ord cod	
• 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  Transmitter connection  Without capillary tube, direct mount straight connection (for gauge pressure)  Without capillary tube, direct mount connection via 90°-bow (for gauge pressure)  Filling liquid  Silicone oil M50  High-temperature oil  Silicone oil M5  Food-grade oil (FDA listed)  Halocarbon oil  Other version  Add Order code and plain text  Wetted parts materials  Stainless steel 316L  • With PFA coating  • With PFA 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  Add Order code and plain text  Extension length  • without  • 50 mm (2")  • 100 mm (4")  • 150 mm (6")  • 200 mm (8")  • 250 mm (10")	Diaphragm seal					
pressure or absolute pressure (only together with negative pressure service), 7MF03./7MF04. order separately Scope of delivery: 1 off  Transmitter connection  Without capillary tube, direct mount straight connection (for gauge pressure)  Without capillary tube, direct mount connection via 90°-bow (for gauge pressure)  Filling liquid  Silicone oil M50  High-temperature oil  Silicone oil M5  Food-grade oil (FDA listed)  Halocarbon oil  Other version  Add Order code and plain text  Wetted parts materials  Stainless steel 316L  With PTA coating  A  A  U  P1 Y  P1 Y  A	Flange type design, directly mounted to a					
Transmitter connection Without capillary tube, direct mount straight connection (for gauge pressure) Without capillary tube, direct mount connection via 90°-bow (for gauge pressure)  Filling liquid Silicone oil M50 High-temperature oil Silicone oil M5 Food-grade oil (FDA listed) Halocarbon oil Other version Add Order code and plain text  Wetted parts materials  Stainless steel 316L • Without coating • With PFA coating • With PFA coating • With PFE 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 Add Order code and plain text  Extension length • without • 50 mm (2") • 100 mm (4") • 150 mm (6") • 200 mm (8") • 250 mm (10")	pressure or absolute pressure (only together with negative pressure ser- vice), 7MF03/7MF04 order separately	7 M F 0	810			
Without capillary tube, direct mount straight connection (for gauge pressure) Without capillary tube, direct mount connection via 90°-bow (for gauge pressure)  Filling liquid Silicone oil M50 High-temperature oil Silicone oil M5 Food-grade oil (FDA listed) Halocarbon oil Other version Add Order code and plain text  Wetted parts materials Stainless steel 316L • Without coating • With PFA coating • With PFE 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 Add Order code and plain text  Extension length • without • 50 mm (2*) • 100 mm (4*) • 150 mm (6*) • 200 mm (8*) • 250 mm (10*)			- 0			
connection (for gauge pressure) Without capillary tube, direct mount connection via 90°-bow (for gauge pressure)  Filling liquid Silicone oil M50 High-temperature oil Silicone oil M5 Food-grade oil (FDA listed) Halocarbon oil Other version Add Order code and plain text  Wetted parts materials  Stainless steel 316L • With per coating • With PFA coating • With PFA coating • With ECTFE coating Monel 400, 2.4360 Hastelloy C276, 2.4819 Tantalum Titanium, 3.7035 Nickel 201 Diaphragm Duplex, 1.4462 Diaphragm Duplex, 1.4462 Diaphragm Duplex, 1.4462 Stainless steel 316L with gold coating Hastelloy C4, 2.4610 Hastelloy C22, 2.4602 Other version Add Order code and plain text  Extension length • without • 50 mm (2") • 100 mm (4") • 150 mm (6") • 200 mm (8") • 250 mm (10")	Transmitter connection					
tion via 90°-bow (for gauge pressure)  Filling liquid Silicone oil M50 High-temperature oil Silicone oil M5 Food-grade oil (FDA listed) Halocarbon oil Other version Add Order code and plain text  Wetted parts materials Stainless steel 316L • Without coating • With PFA coating • With PFE coating Monel 400, 2.4360 Hastelloy C276, 2.4819 Tantalum Titanium, 3.7035 Nickel 201 Diaphragm Duplex, 1.4462 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 Add Order code and plain text  Extension length • without • 50 mm (2") • 100 mm (4") • 150 mm (6") • 200 mm (8") • 250 mm (10")	connection (for gauge pressure)					
Silicone oil M50 High-temperature oil Silicone oil M5 Food-grade oil (FDA listed) Halocarbon oil Other version Add Order code and plain text  Wetted parts materials Stainless steel 316L • Without coating • With PTFE 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 C2, 2.4602 Other version Add Order code and plain text  Extension length • without • 50 mm (2") • 100 mm (4") • 150 mm (6") • 250 mm (10")	Without capillary tube, direct mount connection via 90°-bow (for gauge pressure)	0	1			
High-temperature oil   Silicone oil M5   Food-grade oil (FDA listed)   Halocarbon oil   D   D   D   D   D   D   D   D   D	• .		_			
Silicone oil M5 Food-grade oil (FDA listed) Halocarbon oil Other version Add Order code and plain text  Wetted parts materials  Stainless steel 316L • Without coating • With PFA coating • With ECTFE coating Monel 400, 2.4360 Hastelloy C276, 2.4819 Tantalum Titanium, 3.7035 Nickel 201 Diaphragm Duplex, 1.4462 Diaphragm Duplex, 1.4462 Diaphragm plus flange Duplex, 1.4462 Stainless steel 316L with gold coating Hastelloy C2, 2.4602 Other version Add Order code and plain text  Extension length • without • 50 mm (2") • 150 mm (6") • 250 mm (10")						
Food-grade oil (FDA listed) Halocarbon oil Other version Add Order code and plain text  Wetted parts materials  Stainless steel 316L  • Without coating • With PFA coating • With PTFE 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 C22, 2.4602 Other version Add Order code and plain text  Extension length • without • 50 mm (2") • 100 mm (4") • 150 mm (6") • 250 mm (10")  F P1Y  A  A  P1Y  Extension  A  A  A  A  A  A  A  A  A  A  A  A  A	•			1		
Halocarbon oil Other version Add Order code and plain text  Wetted parts materials  Stainless steel 316L  • Without coating  • With PFA coating  • With PTFE 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 C22, 2.4602  Other version Add Order code and plain text  Extension length  • without  • 50 mm (2")  • 100 mm (4")  • 150 mm (6")  • 250 mm (10")  Tantalum  Cantalum  Add Order code and plain text  Dantalum  Titanium, 3.7035  Mo  Gantalum  Fantalum  Ado Order code and plain text  Dantalum  Ado Order code and plain text  Extension length  • without  • 50 mm (2")  • 100 mm (4")  • 150 mm (6")  • 250 mm (10")						
Add Order code and plain text  Wetted parts materials  Stainless steel 316L  • Without coating  • With PFA coating  • With PFE 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 C2, 2.4610  Hastelloy C22, 2.4602  Other version Add Order code and plain text  Extension length  • without  • 50 mm (2")  • 100 mm (4")  • 150 mm (6")  • 200 mm (8")  • 250 mm (10")	,		[	)		
Stainless steel 316L  • Without coating  • With PFA coating  • With PFE coating  • With PTFE 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  Add Order code and plain text   Extension length  • without  • 50 mm (2")  • 100 mm (4")  • 150 mm (6")  • 200 mm (8")  • 250 mm (10")			2	<u> </u>	P	1 Y
<ul> <li>Without coating</li> <li>With PFA coating</li> <li>With PTFE coating</li> <li>With ECTFE coating</li> <li>Monel 400, 2.4360</li> <li>Hastelloy C276, 2.4819</li> <li>Tantalum</li> <li>Titanium, 3.7035</li> <li>Nickel 201</li> <li>Diaphragm Duplex, 1.4462</li> <li>Diaphragm Plus flange Duplex, 1.4462</li> <li>Stainless steel 316L with gold coating</li> <li>Hastelloy C4, 2.4610</li> <li>Hastelloy C22, 2.4602</li> <li>Other version</li> <li>Add Order code and plain text</li> <li>Extension length</li> <li>without</li> <li>50 mm (2")</li> <li>100 mm (4")</li> <li>200 mm (8")</li> <li>250 mm (10")</li> <li>70 01 V</li> </ul>	Wetted parts materials					
<ul> <li>With PFA coating</li> <li>With PTFE coating</li> <li>With ECTFE coating</li> <li>Monel 400, 2.4360</li> <li>Hastelloy C276, 2.4819</li> <li>Tantalum</li> <li>Titanium, 3.7035</li> <li>Nickel 201</li> <li>Diaphragm Duplex, 1.4462</li> <li>Diaphragm Plus flange Duplex, 1.4462</li> <li>Stainless steel 316L with gold coating</li> <li>Hastelloy C4, 2.4610</li> <li>Hastelloy C22, 2.4602</li> <li>Other version</li> <li>Add Order code and plain text</li> <li>Extension length</li> <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>70 01 V</li> </ul>	Stainless steel 316L					
<ul> <li>With PTFE coating</li> <li>With ECTFE coating</li> <li>Monel 400, 2.4360</li> <li>Hastelloy C276, 2.4819</li> <li>Tantalum</li> <li>Titanium, 3.7035</li> <li>Nickel 201</li> <li>Diaphragm Duplex, 1.4462</li> <li>Diaphragm plus flange Duplex, 1.4462</li> <li>Stainless steel 316L with gold coating</li> <li>Hastelloy C4, 2.4610</li> <li>Hastelloy C22, 2.4602</li> <li>Other version</li> <li>Add Order code and plain text</li> <li>Extension length</li> <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>70 01 V</li> </ul>	<ul> <li>Without coating</li> </ul>			Α		
• 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 Add Order code and plain text  Extension length • without • 50 mm (2") • 100 mm (4") • 150 mm (6") • 200 mm (8") • 250 mm (10")	g .					
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 Add Order code and plain text  Extension length  • without • 50 mm (2") • 100 mm (4") • 150 mm (6") • 200 mm (8") • 250 mm (10")	9					
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 Add Order code and plain text  Extension length  • without • 50 mm (2") • 100 mm (4") • 150 mm (6") • 200 mm (8") • 250 mm (10")	<u> </u>					
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 Add Order code and plain text  Extension length  • without • 50 mm (2") • 100 mm (4") • 150 mm (6") • 200 mm (8") • 250 mm (10")						
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 Add Order code and plain text  Extension length  • without  • 50 mm (2")  • 100 mm (4")  • 150 mm (6")  • 200 mm (8")  • 250 mm (10")						
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 Add Order code and plain text  Extension length  • without  • 50 mm (2")  • 100 mm (4")  • 150 mm (6")  • 200 mm (8")  • 250 mm (10")						
Diaphragm plus flange Duplex, 1.4462 Stainless steel 316L with gold coating Hastelloy C4, 2.4610 Hastelloy C22, 2.4602  Other version Add Order code and plain text  Extension length  • without  • 50 mm (2")  • 100 mm (4")  • 150 mm (6")  • 200 mm (8")  • 250 mm (10")	· ·					
Stainless steel 316L with gold coating Hastelloy C4, 2.4610 Hastelloy C22, 2.4602  Other version Add Order code and plain text  Extension length  • without  • 50 mm (2")  • 100 mm (4")  • 150 mm (6")  • 200 mm (8")  • 250 mm (10")	Diaphragm Duplex, 1.4462			Q		
Hastelloy C4, 2.4610 Hastelloy C22, 2.4602  Other version Add Order code and plain text  Extension length  • without • 50 mm (2") • 100 mm (4") • 150 mm (6") • 200 mm (8") • 250 mm (10")	Diaphragm plus flange Duplex, 1.4462			R		
Hastelloy C22, 2.4602  Other version Add Order code and plain text  Extension length  • without  • 50 mm (2")  • 100 mm (4")  • 150 mm (6")  • 200 mm (8")  • 250 mm (10")	0 0					
Other version Add Order code and plain text  Extension length  • without  • 50 mm (2")  • 100 mm (4")  • 150 mm (6")  • 200 mm (8")  • 250 mm (10")  2 8 Q1Y  0 0 1 1  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0						
Add Order code and plain text  Extension length  • without  • 50 mm (2")  • 100 mm (4")  • 150 mm (6")  • 200 mm (8")  • 250 mm (10")						
<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> </ul>				Z 8	Q.	1 Y
• 50 mm (2") • 100 mm (4") • 150 mm (6") • 200 mm (8") • 250 mm (10")  1 2 4 5	_					
• 100 mm (4") • 150 mm (6") • 200 mm (8") • 250 mm (10")  2 2 3 4 5						
• 150 mm (6") • 200 mm (8") • 250 mm (10")  3 4 5	* /			-		
• 200 mm (8") • 250 mm (10")	· ·					
• 250 mm (10") 5	. ,					
Other version Z 8 Q 1 Y	• •			5		
Other version	Other version			Z 8	Q	1 Y
Add Order code and plain text						

Remote seals for transmitters and pressure gauges SITRANS P320/P420

## Diaphragm seals of flange design mounted directly on transmitter

			Diaph
Selection and Order	ing data	Article No.	Order code
Diaphragm seal			
Flange type design, d	rectly mounted to a		
SITRANS P320/P42 pressure or absolut (only together with vice), 7MF03/7MF0 Scope of delivery: 1	7MF0810-		
		- 0	
Customer-specific e	xtension length		
Wetted parts stainle	ess steel without coating		
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")	A	2
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
Wetted parts stainle coating	ss 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 stainles	ss steel with PFA coating		
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	
151 200 mm (5.94 7.87")	200 mm (7.87")	D	
201 250 mm (7.91 9.84")	250 mm (9.84")	D	5
Wetted parts Monel			
Range	Standard length		
20 50 mm (0.79 1.97")	50 mm (1.97")	G	
51 100 mm (2.01 3.94")	100 mm (3.94")	G	
101 150 mm (3.98 5.91")	150 mm (5.91")	G	
151 200 mm (5.94 7.87")	200 mm (7.87")	G	4
	•		

Selection and Ordering	Article No.		Ord cod		
Diaphragm seal					
Flange type design, dire	ectly mounted to a				
<ul> <li>SITRANS P320/P420 pressure or absolute (only together with no vice), 7MF03/7MF0- Scope of delivery: 1</li> </ul>	7MF0810-				
		- 0			
Wetted parts Hastello	y 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 Tantalur	n				
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 transmitters and pressure gauges SITRANS P320/P420

### Diaphragm seals of flange design mounted directly on transmitter

Biapinagin seals of hange design mounted	unectly on the
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
Factory certificate 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)	
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) 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)	N45.4
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)  • DN 25  • DN 40  • DN 50  • DN 80  • DN 100  • DN 125	M70 M71 M72 M73 M74 M75
Sealing surface with spigot to EN1092-1, form E (wetted parts 316L only)  • DN 25  • DN 40  • DN 50  • DN 80  • DN 100  • DN 125	M76 M77 M78 M79 M80 M81

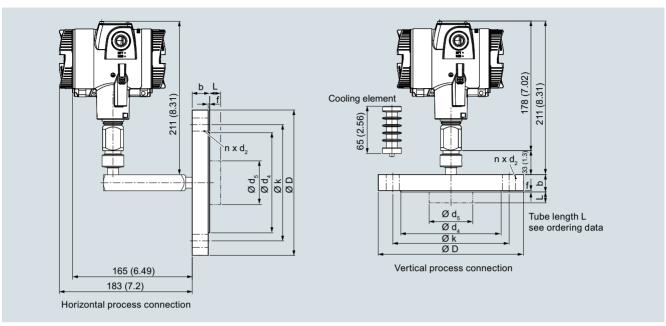
Selection and Ordering data	Order code
Further designs	
Add "-Z" to Article No. and specify Order code.	
Sealing surface with recess to EN1092-1, form F (wetted parts 316L only)  • DN 25  • DN 40  • DN 50  • DN 80  • DN 100  • DN 125	M82 M83 M84 M85 M86 M87
Capillary connection Elongated pipe, 150 mm instead of 100 mm, max. medium temperature 300 °C (572 °F), observe the max. permissible media temperature of the fill liquid.	S05
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.	S06
Elongated pipe elbow, 200 mm instead of 130 mm, max. medium temperature 300 °C (572 °F), observe the 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.	S07
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
1) Can also "Charification of process conditions for calcuti	

See also "Specification of process conditions for selection and ordering data", page 1/337.

Remote seals for transmitters and pressure gauges 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 transmitters and pressure gauges 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
	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,
	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 transmitters and pressure gauges 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>	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 transmitters and pressure gauges **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

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	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									
• 1½ inch	Class 150/300/400/600/900/1500								
• 2 inch	Class 150/300/400/600/900/1500								
• 3 inch	Class 150/300/600/1500								
• 4 inch	Class 150/300/400/1500								
• 5 inch	Class 150/300/400								

Connecting standard J.I.S. • DN 50 10K • DN 80 20K • DN 100 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

Capillary • Length

• Internal diameter · Minimum bending radius

Filling liquid

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)

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

Food oil (FDA listed) 170 °C (338 °F)

Max. recommended temperature of medium

Permissible ambient temperature

Dependent on the pressure transmitter and the filling liquid of the remote seal

Halocarbon oil (for measuring O<sub>2</sub>)

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 transmitters and pressure gauges SITRANS P320/P420

### Diaphragm seals of flange design mounted directly and with capillary

Selection and Ord	Article No. Ord				
Diaphragm seal					
Flange type design high-side and with low-side to	n, direct connected at flexible capillary tube at				
<ul> <li>SITRANS P320/P ential pressure ar 7MF03/7MF04</li> </ul>	7MF0813-				
Scope of delivery					
	- 0	Ш			
Nominal diameter					
Connecting standa	· ·				
DN 40	PN 10/16/25/40	0 D D			
DIV 10	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			
DN 400	PN 100	0 G F			
DN 100	PN 10/16	0 H B			
DN 125	PN 25/40 PN 16	0 H B			
DIV 125	0 J D				
Connecting standa	PN 40				
1½ inch	class 150	1 L A			
172 111011	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			
O to all	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 standa		2 5 6			
DN 50	10K 20K	2 E S 2 E T			
	40K	2 E U			
DN 80	10K	2 G S			
	20K	2 G T			
	40K	2 G U			
DN 100	10K	2 H S			
	20K	2 H T			
	40K	2 H U			

Selection and Ordering data	Article N	0.	Ord		
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	13-			
		- 0			
Length of capillary tube at low-side				Ī	
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	1 6				
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	Υ
Filling liquid					
Silicone oil M50		В			
High-temperature oil		С			
Silicone oil M5		Α			
Food-grade oil (FDA listed)		E			
Halocarbon oil		D			
Other version Add Order code and plain text		Z	P	1	Y

Remote seals for transmitters and pressure gauges SITRANS P320/P420

### Diaphragm seals of flange design mounted directly and with capillary

Diapiliagili Seais	of flange design me	builted direc	lly allu		
Selection and Orderi	ng data	Article No.	Order code		
Diaphragm seal					
Flange type design, d high-side and with flex low-side to					
• SITRANS P320/P420 ential pressure and 7MF03/7MF04 orc Scope of delivery: 2	7MF0813-				
	- 0				
Wetted parts materia					
Stainless steel 316L					
<ul><li>Without coating</li><li>With PFA coating</li></ul>		A			
With PTFE coating		_	0		
With ECTFFE coating	g	F			
Monel 400, 2.4360	0	G			
Hastelloy C276, 2.481 Tantalum	9	J K			
Titanium, 3.7035		-	0		
Nickel 201		-	10		
Diaphragm Duplex, 1. Diaphragm plus flang		G			
Stainless steel 316L w	•		0		
Hastelloy C4, 2.4610	3	U	0		
Hastelloy C22, 2.4602	•	v	0		
Other version Add Order code and	Z	8 Q1Y			
Extension length		-			
• without			0		
• 50 mm (2")			1		
• 100 mm (4") • 150 mm (6")			2		
• 200 mm (8")			4		
• 250 mm (10")			5		
Other version Add Order code and	nlain tevt	Z	8 Q1Y		
Customer-specific ex					
-	ss steel without coating				
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")	A	2		
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		
Wetted parts stainles coating					
Range	Standard length				
20 50 mm (0.79 1.97")	/				
51 100 mm (2.01 3.94")	F	2			
101 150 mm (3.98 5.91")	F	3			
(5.94 7.87")	200 mm (7.87")	F	4		
201 250 mm (7.91 9.84")	250 mm (9.84")	F	5		
(	ĺ				

Selection and Order	ing data	Article No.	Order code			
Diaphragm seal						
Flange type design, on high-side and with flat low-side to	direct connected at exible capillary tube at					
ential pressure and 7MF03/7MF04 or	<ul> <li>SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03/7MF04 order separately Scope of delivery: 2 off</li> </ul>					
ocope of delivery.	- 011	- 0				
Wetted parts stainle:	ss steel with PFA coating					
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			
Wetted parts Monel	400	-				
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 4			
Wetted parts Hastel	loy 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 Tantal	ım					
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")		К 3			
151 200 mm (5.94 7.87")	200 mm (7.87")		K 4			
	•					

Remote seals for transmitters and pressure gauges SITRANS P320/P420

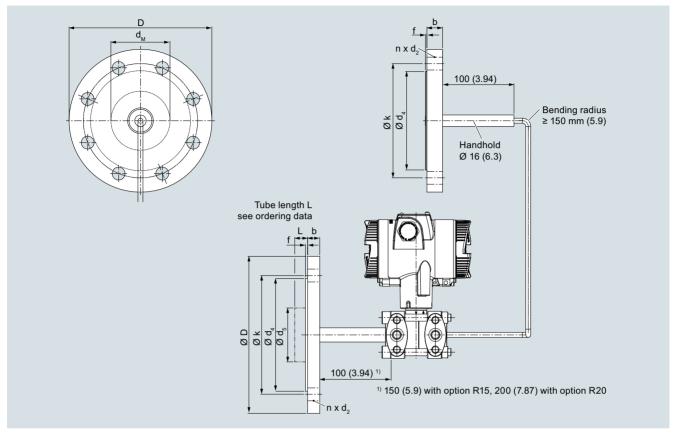
### Diaphragm seals of flange design mounted directly and with capillary

Selection and Ordering data	Order code	Selection and Ordering data	Order code
Further designs	0.40. 0040	Further designs	0.40.0040
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 1 m	S10
Inspection certificate to EN 10204-3.1 - material of body and wetted parts	C12	1,6 m 2 m	S11 S12
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	2,5 m 3 m 4 m 5 m	S13 S14 S15 S16
Inspection certificate (EN 10204-3.1) - PMI test of pressure containing and wetted parts	C15	6 m 7 m	S17 S18
Certificate of FDA-approved fill oil (to EN10204-2.2)	C17	8 m	S19
Factory certificate functional safety (SIL2/3), devices suitable for use according to IEC 61508 and IEC 61511 (includes SIL conformity declaration)	C20	9 m 10 m PTFE protective tube	S20 S21
Accessories Spark arrestor (for differential pressure and level transmitters)		1 m 1,6 m 2 m	\$40 \$41 \$42
Low-temperature version (for Silicon Oil M50 only)	D67	2,5 m 3 m	S43 S44
Negative pressure services  Negative pressure service (for differential pressure transmitters)  Extended negative pressure service (for differential	D83	4 m 5 m 6 m	S45 S46 S47
pressure transmitters)	D00	7 m	S48
General product approvals without explosion proof approvals		9 m	S49 S50
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	E87	10 m  PVC protective tube 1 m 1,6 m 2 m 2,5 m	\$51 \$70 \$71 \$72 \$73
(only with fill fluid Halocarbon oil)		3 m	S74
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	4 m 5 m 6 m 7 m	S75 S76 S77 S78
Sealing surface RJF (groove) to ASME B16.5 (instead of sealing surface RF 125250AA, wetted parts 316L only)	M64	8 m 9 m 10 m	S79 S80 S81
Sealing surface with tongue to EN1092-1, form C (wetted parts 316L only)  • DN 25	M70	Customer-specific tube length  Customer-specific tube length (specify in plain text)	Y44
• DN 25 • DN 40 • DN 50 • DN 80 • DN 100 • DN 125	M70 M71 M72 M73 M74 M75	Specification of process conditions¹)  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
Sealing surface with spigot to EN1092-1, form E (wetted parts 316L only)  • DN 25	M76	Process temperature min °C/(°F)/max °C/(°F)  1) See also "Specification of process conditions for select data", page 1/337.	Y50 ion and ordering
<ul> <li>DN 40</li> <li>DN 50</li> <li>DN 80</li> <li>DN 100</li> <li>DN 125</li> </ul>	M77 M78 M79 M80 M81	auta, pago 1,007.	
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		

Remote seals for transmitters and pressure gauges 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 transmitters and pressure gauges 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
	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	7.87 (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 transmitters and pressure gauges 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
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 transmitters and pressure gauges SITRANS P320/P420

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

### Overview

Capillary



Diaphragm seal, screwed gland design with inside diaphragm for gauge, absolute and differential pressure for direct mounting



Process connection, open measuring flange

Technical specifications	ith incide diaphyse:	Sealing material on the process	Viton or copper (in the case of
Diaphragm seal, screwed gland w		connection	vacuum-free version)
Process connection  Open flange EN1092-1  - DN 15	Nominal pressure PN 10/16/25/40/63/100/160/250	Sealing material between top and bottom section	Viton (FKM) (standard) Teflon (PTFE) metal spring ring (silver-coated)
- DN 13 - DN 20	PN 10/16/25/40	Capillary	
- DN 25	PN 10/16/25/40/63/100/160/250	• Length	Max. 10 m (32.8 ft)
Open flange ASME B16.5		Internal diameter	2 mm (0.079 inch)
- ½ inch, ¾ inch, 1 inch	Class 150/300/600/1500	Minimum bending radius	150 mm (5.9 inch)
• Thread to EN 837-1		• Sheath	Stainless steel protective tube,
- G¼"B, G½"B, G¾"B, G1"B	PN 100/250	5.75da.7	mat. No. 1.4301/304
• Thread ASME B1.20.1		Filling liquid	• Silicone oil M5
- ½" NPT-M, ½" NPT-F	1/4" NPT-M, 1/4" NPT-F Class 1500/3675		• Silicone oil M50
- ½" NPT-M, ½" NPT-F	Class 1500/3675		<ul> <li>High-temperature oil</li> </ul>
- ¾" NPT-M, ¾" NPT-F Class 1500/3675 - 1" NPT-M, 1" NPT-F Class 1500/3675			<ul> <li>Halocarbon oil (for measuring O<sub>2</sub>)</li> </ul>
Sealing surface for open measure-			<ul> <li>Food oil (FDA listed)</li> </ul>
ment flange		Max. recommended temperature of	170 °C (338 °F)
<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	medium  Permissible ambient temperature	Dependent on the pressure
Materials		·	transmitter and the filling liquid of the remote seal
• Lower section (in the case of process connection thread)	Stainless steel, Mat. no. 1.4404/316L		More information can be found in
• Diaphragm	Stainless steel, Mat. no. 1.4404/316L		the technical specifications of the pressure transmitters and in the section "Technical data of filling liquid" in the introduction to the
	<ul> <li>No coating</li> </ul>		remote seals
	With PTFE coating	Weight	Approx. 1.5 kg (3.3 lb)
	Monel 400, mat. no. 2.4360	Certificates and approvals	
	Hastelloy C276, mat. no. 2.4819	Classification according to	For gases of fluid group 1 and lic
	Hastelloy C4, mat. no. 2.4602	pressure equipment directive	uids of fluid group 1; complies
	Tantal	(PED 2014/68/EU)	with requirements of article 4, paragraph 3 (sound engineering
	Stainless steel 316L, gold plated, thickness approx. 25 µm		practice)
Top section (process connection in the case of an open measure- ment flange)	Stainless steel, mat. no. 1.4404/316L		
0 !!!	01 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		

Stainless steel 1.4404/316L

### **Pressure Measurement**

Remote seals for transmitters and pressure gauges SITRANS P320/P420

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

Selection and (	Ordering data	Article	e No.	Order code	Selection and Ordering data	Article N	О.		ode
Diaphragm sea	al threaded design				Diaphragm seal threaded design				
	hragm, 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 negative	0/P420 transmitter for gauge osolute pressure (only togeth-ve pressure service), 04 order separately very: 1 off	7 M F	0840-		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	7 M F 0 8	40-		
ential pressure	04 order separately,		0842-		<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			
7 Click on the	Article No. for the online con-		- 0	0	Transmitter connection		- 0	0	
	the PIA Life Cycle Portal.				Without capillary tube, direct mount straight	0 0			
Nominal diame	•				connection (for gauge pressure) Connection via capillary tube				
Open flange, col	nnecting standard EN 1092-1 PN 10/16/25/40	0 A D			Length of capillary				
DIV 10	PN 63/100	0 A F			1 m	10			
	PN 160	0 A G			1,6 m 2 m	1 1 1 2			
	PN 250	0 A H			2,5 m	13			
DN 20 DN 25	PN 10/16/25/40	0 A M 0 B D			3 m	1 4			
DN 25	PN 10/16/25/40 PN 63/100	0 B F			4 m	1 5			
	PN 160	0 B G			5 m	16			
	PN 250	0 B H			6 m 7 m	17 18			
Open flange, co ASME B16.5	onnecting standard				8 m	2 0			
½ inch	class 150	1 KA			9 m	2 1			
	class 300	1 K B			10 m	2 2			
	class 600	1 K C			Other version Add Order code and plain text	9 8			L1Y
¾ inch	class 1500 class 150	1KD			Filling liquid	-			
94 ITICH	class 300	1 KG			Silicone oil M50		В		
	class 600	1KH			High-temperature oil		С		
	class 1500	1 K J			Silicone oil M5		A		
1 inch	class 150	1KL			Food-grade oil (FDA listed) Halocarbon oil		E D		
	class 300 class 600	1 K M 1 K N			Other version		Z		P 1 Y
	class 1500	1 K P			Add Order code and plain text				
	ction thread EN 837-1				Wetted parts materials				
G1/4"B	PN 100	3 S B			Stainless steel 316L without coating			A	
G1/4"B G1/2"B	PN 250 PN 100	3 S C 3 S F			Stainless steel 316L with PTFE-coating			E	
G½"B	PN 250	3 S G			Monel 400, 2.4360 Hastelloy C276, 2.4819			G J	
G¾"B	PN 100	3 S K			Tantalum			K	
G¾"B	PN 250	3 S L			Stainless steel 316L with gold coating			S	
G1"B G1"B	PN 100 PN 250	3SP 3SQ			Hastelloy C4, 2.4610		1	U	
	ction thread ASME B1.20.1	3 3 Q			Other version			Z	Q1Y
1/4"-NPT-M	Class 1500	5 T A			Add Order code and plain text				
1/4"-NPT-M	Class 3675	5 T B							
1/4"-NPT-F 1/4"-NPT-F	Class 1500 Class 3675	5 T C 5 T D							
½"-NPT-M	Class 3073 Class 1500	5 TE							
½"-NPT-M	Class 3675	5 T F							
½"-NPT-F	Class 1500	5 T G							
½"-NPT-F ¾"-NPT-M	Class 3675 Class 1500	5 T H 5 T J							
% -NP I-IVI 34"-NPT-M	Class 3675	5 T K							
34"-NPT-F	Class 1500	5 T L							
3/4"-NPT-F	Class 3675	5 T M							
1"-NPT-M	Class 1500	5 T N							
1"-NPT-M 1"-NPT-F	Class 3675 Class 1500	5TP 5TQ							
1"-NPT-F	Class 3675	5 T R							
Other version		9 A A		H 1 Y					
Add Order code	e and plain text				I				

Remote seals for transmitters and pressure gauges SITRANS P320/P420

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

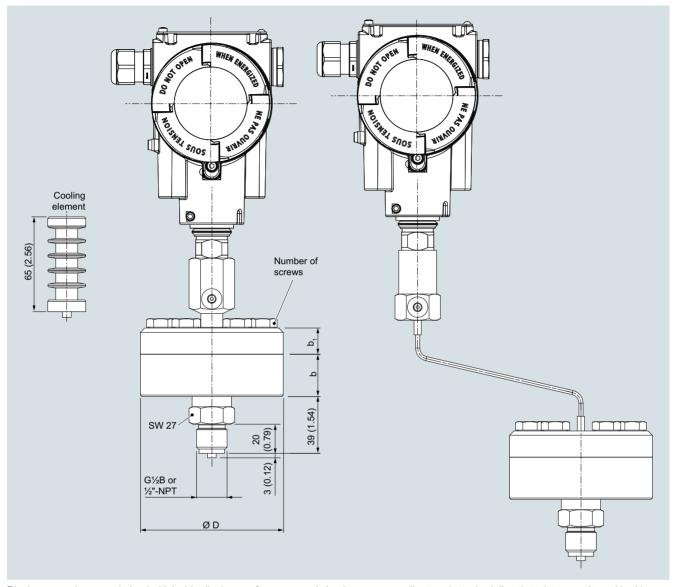
Selection and Ordering data	Order code	Selection and Ordering data	Order code
Further designs		Further designs	
Add "-Z" to Article No. and specify Order code.		Add "-Z" to Article No. and specify Order code.	
Factory certificates		Capillary coating	
Quality inspection certificate (Five-step factory	C11	PE protective tube	
calibration) to IEC 60770-2		1 m	S10
Inspection certificate to EN 10204-3.1 - material of	C12	1,6 m	S11
body and wetted parts		2 m	S12
Manufacturer's declaration acc. to NACE	C13	2,5 m	S13
(MR 0103-2012 and MR 0175-2009) (only together with seal diaphragm made of Hastelloy		3 m 4 m	S14 S15
and stainless steel)		5 m	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
Factory certificate functional safety (SIL2/3), devices	C20	9 m	S20 S21
suitable for use according to IEC 61508 and IEC 61511		10 m	521
(includes SIL conformity declaration)		PTFE protective tube 1 m	S40
Accessories		1,6 m	S41
Low-temperature version (for Silicon Oil M50 only)	D67	2 m	S42
Flushing port 1/4"-18 NPT unsealed	D70	2,5 m	S43
Flushing port $\frac{1}{4}$ "-18 NPT sealed with stainless steel plug	D71	3 m	S44
Sealing material between upper and lower enclosure	D75	4 m	S45
PTFE (instead of FKM viton)		5 m 6 m	S46 S47
Sealing material between upper and lower enclosure	D76	7 m	S48
metal C-circlip (instead of FKM viton)		8 m	S49
PTFE coating for lower enclosure (only for G½B PN 100, DN 25 PN 10 40, 1 inch Class 150/300)	D77	9 m	S50
		10 m	S51
Negative pressure services	B04	PVC protective tube	
Negative pressure service (for gauge and absolute pressure transmitters)	D81	1 m	S70
Negative pressure service (for differential pressure	D83	1,6 m 2 m	S71 S72
transmitters)		2,5 m	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		7 m 8 m	S78 S79
Oil-and grease-free cleaned version (for O <sub>2</sub> -appl.	E80	9 m	S80
including certificate EN10204-2.2 (only with fill fluid Halocarbon oil max. temperature		10 m	S81
60 °C and max. pressure 50 bar)		Customer-specific tube length	
Oil-and grease-free cleaned version (not for O <sub>2</sub> -appl.	E87	Customer-specific tube length (specify in plain text)	Y44
including certificate EN10204-2.2 (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	300	• -10 +50 °C (14 +122 °F) preset • -40 +50 °C (-40 +122 °F)	D67
Single-side mounted at differential pressure transmit-	S04	• -10 +85 °C (14 +185 °F)	D68
ters at low-side	600	Process temperature min °C/(°F)/max °C/(°F)	Y50
Cooling element	S08		.00

See also "Specification of process conditions for selection and ordering data", page 1/337.

Remote seals for transmitters and pressure gauges SITRANS P320/P420

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

### Dimensional drawings

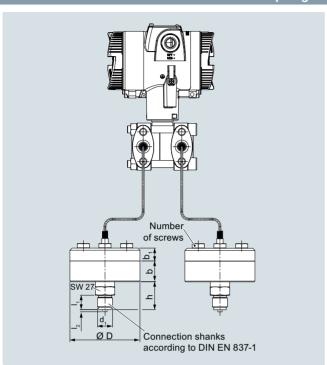


Diaphragm seal, screwed gland with inside diaphragm, for gauge and absolute pressure, direct and attached directly to the transmitter with with capillaries, dimensions in mm (inch)

Range	D mm	b mm	b <sub>1</sub> mm	Number of screws	
up to 100 bar	98	14	16	6	
up to 250 bar	98	14	20	12	

Remote seals for transmitters and pressure gauges SITRANS P320/P420

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



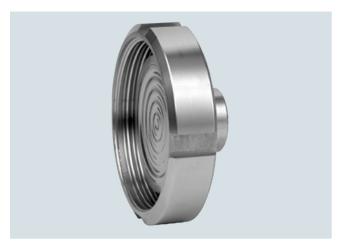
Diaphragm seal, screwed gland with inside diaphragm, for differential pressure, direct and attached directly to the transmitter with with capillaries, dimensions in mm (inch)

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

Remote seals for transmitters and pressure gauges **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 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

roommour opcomounomo	
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
- 3 inch

 Standard clamp DIN 32676, row A metric

- DN 25/32/40
- DN 50
- DN 65
- Varivent
- DN 25/32/40/50
- DRD-flange
- DN 50

Sealing surface

- For stainless steel, mat. No. 1 4404/316[
- For the other materials

Materials

- Main body
- Wetted parts
- Capillary
- Sheath

Maximum pressure

Tube length

Capillary

- Length
- Internal diameter • Minimum bending radius
- Sheath

Filling liquid

Weight

**EHEDG** 

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)

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

1/372

Remote seals for transmitters and pressure gauges SITRANS P320/P420

### Quick-release diaphragm seals

	dering data	Article No	o. Order code
Quick release dia	phragm seal		
Flange type design or directly connected	n, with flexible capillary tube ed to a		
• SITRANS P320/F pressure or absorber with negative 7MF03/7MF04. Scope of deliver	7MF08	3 0 -	
ential pressure a	order separately	7MF08	
	ticle No. for the online con- PIA Life Cycle Portal.		- 0 A 0
Nominal diamete	<u> </u>		
Connection standa	rd DIN 11851 with nut		
DN 25	PN 40	0 B M	
DN 32	PN 40	0 C D	
DN 40	PN 40	0 D M	
DN 50	PN 25	0 E K	
DN 65	PN 25	0 F L	
DN 80	PN 25	0 G K	
Connection standa	rd 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	PN 25	1 F L	
DN 80	PN 25	1 G K	
Connection standa	rd 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	
	ard Clamp DIN 32676,	ш	
row C Tri-clamp DN 1"	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	
Connection standa row A metric	rd Clamp DIN 32676,		
DN 25	PN 25	4 B L	
DN 32	PN 25	4 C C	
DN 40	PN 25	4 C C	
DN 50	PN 16	4 D L 4 E J	
DN 65	PN 10	4 E 5	
	7 14 10	7 . K	
<u>Varivent</u>	Divisor		
DN 25/32	PN 25	5 C L	
DN 40/50	PN 25	5 D K	
DRD-flange			
DRD-flange DN 50	PN 40	6 E M	
	PN 40	6 E M 9 A A	H1Y

Selection and Ordering data	Article N	No.	Ord cod		-
Quick release diaphragm seal					
Flange type design, with flexible capillary tube or directly connected to a					
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	7 M F 0 8	330-			
<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 0 8	332-			
		- 0 A 0			
Transmitter connection				Ħ	
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	11				
2 m	1 2	2			
2,5 m	1 3	3			
3 m	1 4	l.			
4 m	1 5	5			
5 m	1 6	i .			
6 m	1 7				
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	3	L	1 '	
Filling liquid Food-grade oil (FDA listed)		E			
Other version Add Order code and plain text		Z	Р	1 '	

# Remote seals for transmitters and pressure gauges SITRANS P320/P420

### Quick-release diaphragm seals

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
Factory certificate 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 transmit-	S03 S04
ters at low-side	C00
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
6 m	S17
7 m	S18
8 m	S19
9 m	S20 S21
10 m	521
PTFE protective tube	
1 m	S40
1,6 m	S41
2 m	S42
2,5 m	S43
3 m	S44 S45
4 m 5 m	S45
6 m	S47
7 m	S48
8 m	S49
9 m	S50
10 m	S51

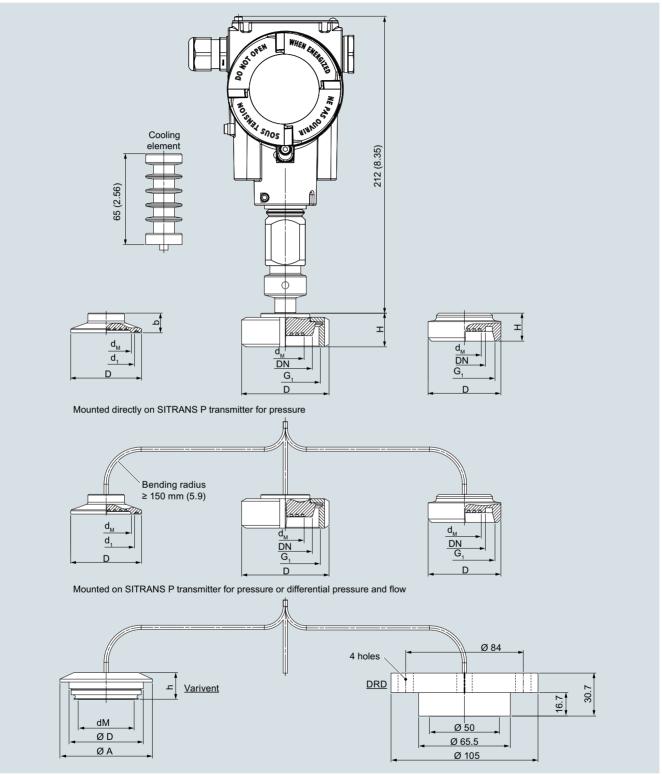
Selection and Ordering data	Order code
Further designs	Order code
· ·	
Add "-Z" to Article No. and specify Order code.	
PVC protective tube	
1 m	S70
1,6 m	S71
2 m	S72
2,5 m	S73
3 m	S74
4 m	S75
5 m	S76
6 m	S77
7 m	S78
8 m	S79
9 m	S80
10 m	S81
Customer-specific tube length	
Customer-specific tube length (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)	100

See also "Specification of process conditions for selection and ordering data", page 1/337.

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Quick-release diaphragm seals

### Dimensional drawings



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

Remote seals for transmitters and pressure gauges 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 diameter	Ø d <sub>M</sub>	Н	G <sub>1</sub>
	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	Nominal pressure	d <sub>M</sub>	d <sub>1</sub>	b	D
diameter		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 diameter	Nominal pressure	d <sub>M</sub>	d <sub>1</sub>	b	D
		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)
1½"	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)
2½"	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 diameter	Nominal pressure	Ø d <sub>M</sub>	d <sub>1</sub>	b	D
		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 transmitters and pressure gauges **SITRANS P320/P420** 

#### Miniature diaphragm seals

### Overview



Miniature diaphragm seals

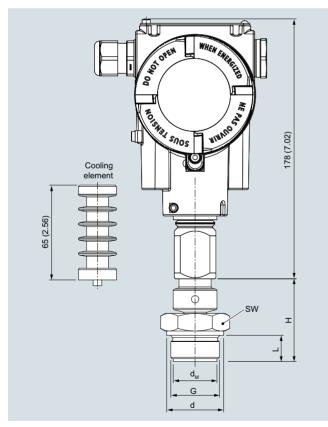
The miniature diaphragm seals are available for the SITRANS P320/420 pressure transmitter series.

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>	,	SW	Q	Ø d		L		Н
	mm	(inch)	mm	(inch)	mm	(inch)	$\mathbf{m}\mathbf{m}$	(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	∂ 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

Measuring span when

- 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 temperature of medium

#### 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 transmitters and pressure gauges SITRANS P320/P420

### Miniature diaphragm seals

Selection and C	Ordering data	Article I	No.	Orc	-	
Miniature diaph	ragm seal					
directly connecte	ed to a					
pressure or ab er with negativ	NP420 transmitter for gauge solute pressure (only togethe pressure service), 4 order separately ery: 1 off	7 M F 0 8	350-			
	Article No. for the online con- ne PIA Life Cycle Portal.	0 0	0 - 0	0 =		
Process connec	ction					
Connection stand						
G 1/2"	PN 400	4 S T				
G ¾"	PN 400	4 S U				
G 1"	PN 400	4 S V				
G 1½"	PN 400	4 S W				
G 2"	PN 400	4 S X				
	dard ASME B1.20.1					
½"-NPT-M	class 5800	5 T S				
34"-NPT-M	class 5800	5 T T				
1"-NPT-M 11⁄2"-NPT-M	class 5800 class 5800	5 T U				
2"-NPT-M	class 5800	5 T W				
	01833 3000					.,
Other version Add Order code	and plain text	9 A A		н	1	Y
Filling liquid Silicone oil M5 Food-grade oil (l	FDA listed)		A E			
Other version Add Order code		Z	P	1	Υ	
Wetted parts management Stainless steel 3 Hastelloy C276,	16L without coating		A J			

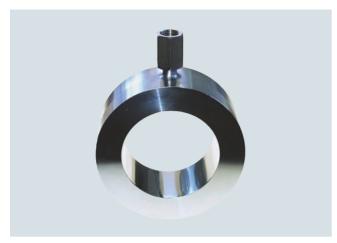
Selection and Ordering data	Order code
Further designs	
Add "-Z" to Article No. and specify Order code.	
Factory certificates	
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11
Inspection certificate to EN 10204-3.1 - material of body and wetted parts	C12
Manufacturer's 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
Factory certificate 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 1/337.

Remote seals for transmitters and pressure gauges 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 seal consists of a cylindrical jacket into which a thinwalled 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

Weight Approx. 4 kg (8.82 lb)

### Certificates and approvals

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

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, confor-

mity evaluation module H by the TÜV Nord

Remote seals for transmitters and pressure gauges SITRANS P320/P420

### Inline seals in sandwich design

minic ocale in o	andwich design			
Selection and Orde	ring data	Article	No.	Order code
Inline seal				
Sandwich type desig connected with flexib	n, directly connected or le capillary tube to a			
pressure or absolution (only together with	negative pressure ser- -04 order separately	7 M F 0	900-	
ential pressure and	20 transmitter for differdilow, 7MF03/7MF04 Scope of delivery: 2 off		902-	
	le No. for the online con- IA Life Cycle Portal.		- 0	0
Nominal diameter	Nominal pressure			
Connecting standar	d EN 1092-1			
DN 25	PN 6 100	0 B P		
DN 40	PN 6 100	0 D P		
DN 50	PN 6 100	0 E P		
DN 65	PN 6 100	0 F P		
DN 80	PN 6 100	0 G P		
DN 100	PN 6 100	0 H P		
DN 125	PN 6 100	0 J P		
Connecting standard				
1 inch	class 150 2500	1 K X		
1½ inch	class 150 2500	1 L X		
2 inch	class 150 2500	1 M X		
2½ inch	class 150 2500	1 N X		
3 inch	class 150 2500	1 P X		
4 inch	class 150 2500	1 Q X		
5 inch	class 150 2500	1 R X		
Other version		9 A A		H 1 Y
Add Order code and	·			
Transmitter connect				
connection (for gaug			0	
Without capillary tub tion via 90°-bow (for Connection via capi		0	1	
Length of capillary	,		0	
1,6 m			1	
2 m			2	
2,5 m			3	
3 m			4	
4 m			5	
5 m			6	
6 m			7	
7 m			8	
8 m			0	
9 m			1	
10 m	200)		2	
11 m (only for 7MF0	,		3	
12 m (only for 7MF0			4	
13 m (only for 7MF0			5	
14 m (only for 7MF0			6	
15 m (only for 7MF0	900)		7	, , ,
Other version	d plain tout	9	8	L 1 Y
Add Order code and	ı pıaın text			

Selection and Ordering data	Article No.	Order code
Inline seal		
Sandwich type design, directly connected or connected with flexible capillary tube to a		
<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>	7MF0900-	
<ul> <li>SITRANS P320/P420 transmitter for differential pressure and flow, 7MF03/7MF04</li> <li>order separately, Scope of delivery: 2 off</li> </ul>	7MF0902-	
	- 0	0
Filling liquid Silicone oil M50 High-temperature oil Silicone oil M5 Food-grade oil (FDA listed) Halocarbon oil Other version Add Order code and plain text	B C A E D Z	P1Y
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	A D F G J K U	Q1 Y
Add Order code and plain text		QII

Remote seals for transmitters and pressure gauges SITRANS P320/P420

### Inline seals in sandwich design

Order code

M82 M83 M84 M85 M86 M87

S03

S04 S08

S10 S11 S12 S13 S14 S15 **S16** S17 S18 S19 S20 S21 S22 S23 S24 S25 S26

S40 S41 S42 S43 S44 S45 S46 **S47** S48 S49 S50 S51 S52 **S53 S54** S55 **S56** 

		iniine seais in san
Selection and Ordering data	Order code	Selection and Ordering data
Further designs		Further designs
Add "-Z" to Article No. and specify Order code.		Add "-Z" to Article No. and specify Order code.
Factory certificates		Sealing surface with recess to EN1092-1, form F (wetted parts 316L only)
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11	• DN 25
Inspection certificate to EN 10204-3.1 - material of body and wetted parts	C12	• DN 40 • DN 50
Manufacturer's declaration acc. to NACE	C13	• DN 80 • DN 100
(MR 0103-2012 and MR 0175-2009) (only together with seal diaphragm made of Hastelloy		• DN 125
and stainless steel)		Capillary connection
Inspection certificate (EN 10204-3.1) - PMI test of pressure containing and wetted parts	C15	For 7MF0900
Certificate of FDA-approved fill oil (to EN10204-2.2)	C17	Single-side mounted at differential pressure transmitters at high-side
Factory certificate functional safety (SIL2/3), devices suitable for use according to IEC 61508 and IEC 61511 (includes SIL conformity declaration)	C20	Single-side mounted at differential pressure transmit- ters at low-side cooling element
Accessories		Capillary coating
Spark arrestor (for gauge and absolute pressure transmit	- D61	PE protective tube
ters)		1 m
Spark arrestor (for differential pressure and level transmitters)	D62	1,6 m
Low-temperature version (for Silicon Oil M50 only)	D67	2 m
Negative pressure services		2,5 m 3 m
Negative pressure service (for gauge and absolute	D81	4 m
pressure transmitters)	Dea	5 m
Negative pressure service (for differential pressure transmitters)	D83	6 m 7 m
Extended negative pressure service (for gauge and absolute pressure transmitters)	D85	8 m
Extended negative pressure service (for differential	D88	9 m 10 m
pressure transmitters)		11 m (only for 7MF0902)
General product approvals without explosion proof approvals		12 m (only for 7MF0902)
Oil-and grease-free cleaned version (for O <sub>2</sub> -appl.	E80	13 m (only for 7MF0902) 14 m (only for 7MF0902)
including certificate EN10204-2.2		15 m (only for 7MF0902)
(only with fill fluid Halocarbon oil max. temperature 60 °C and max. pressure 50 bar)		PTFE protective tube
Oil-and grease-free cleaned version (not for $O_2$ -appl.	E87	1 m
including certificate EN10204-2.2 (only with fill fluid Halocarbon oil)		1,6 m
Sealing surface		2 m 2,5 m
Sealing surface smooth, form B2/EN1092-1 resp.	M50	3 m
RFSF/ANSI B16.5 (wetted parts 316L only)		4 m
Sealing surface groove to EN1092-1, form D (instead of sealing surface B1, wetted parts 316L only)	M54	5 m 6 m
Sealing surface RJF (groove) to ASME B16.5	M64	7 m
(instead of sealing surface RF 125250AA, wetted		8 m
parts 316L only)		9 m 10 m
Sealing surface with tongue to EN1092-1, form C (wetted parts 316L only)		11 m (only for 7MF0902)
• DN 25	M70	12 m (only for 7MF0902)
• DN 40	M71	13 m (only for 7MF0902)
• DN 50	M72	14 m (only for 7MF0902)
<ul><li>DN 80</li><li>DN 100</li></ul>	M73 M74	15 m (only for 7MF0902)
• DN 100 • DN 125	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 M80	
<ul><li>DN 100</li><li>DN 125</li></ul>	M81	
יוט אוע צו אוע צו אוע אוע אווע אווע אווע א	IVIO I	

Remote seals for transmitters and pressure gauges SITRANS P320/P420

### Inline seals in sandwich design

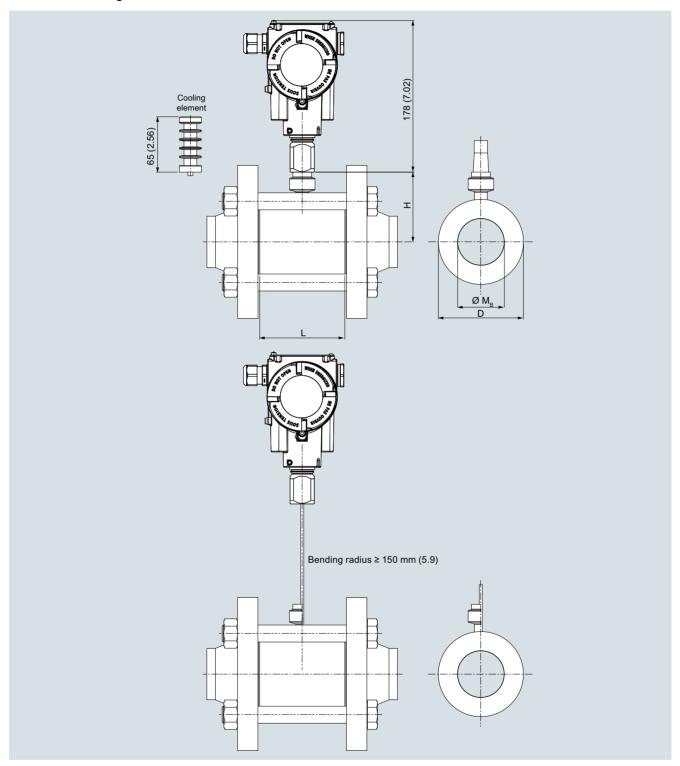
Selection and Ordering data	Order code
Further designs	0.40.0040
Add "-Z" to Article No. and specify Order code.	
PVC protective tube	
1 m	S70
1,6 m	S71
2 m	S72
2,5 m	S73
3 m	S74
4 m	S75
5 m	S76
6 m	S77
7 m	S78
8 m	S79
9 m	S80
10 m	S81
11 m (only for 7MF0902)	S82
12 m (only for 7MF0902)	S83
13 m (only 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 1/337.

Remote seals for transmitters and pressure gauges 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 transmitters and pressure gauges 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 transmitters and pressure gauges 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 and high-viscosity media. Because it is completely integrated in the process line, there are no turbulences, dead spaces or other obstacles in the flow direction. The medium flows almost unhindered through the inline seal and causes self-cleaning of the sample chamber. The inline seal is also piggable.

#### 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

Quick-release inline seals for ga	uge pressure		
Connection	Nominal diameter	Nominal pressure	
Standard to DIN 11851 with	DN 25/32/40	PN 40	
thread	DN 50/65/80	PN 25	
Standard Clamp ISO 2852	DN 25/38/51	PN 16	
	DN 63.5/76.1	PN 10	
Standard Clamp DIN 32676,	1, 1½ inch	PN 25	
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		
Diaphragm	Stainless steel 1.4404/316L		
Capillary			
• Length	Max. 10 m (32.8	ft)	
Internal diameter	2 mm (0.079 inch)		
Minimum bending radius	150 mm (5.9 inc	h)	
• Sheath	Spiral protective stainless steel, n 1.4404/316L		
Filling liquid	• Food oil (FDA	isted)	
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 (ap	prox. 8.82 lb)	
Certificate and approvals			
Classification according to pres-			

Classification according to pres sure 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

EHEDG

Complies with EHEDG recommendations

Remote seals for transmitters and pressure gauges SITRANS P320/P420

### Quick-release inline seals

Selection and Orde	Selection and Ordering data					
Quick release inlin	e-seal					
Flange type design, or directly connected						
SITRANS P320/P4 pressure or absolu (only together with vice), 7MF03/7M Scope of delivery:	7MF0930-	40				
	ele No. for the online con- PIA Life Cycle Portal.	ш				
Nominal diameter	Nominal pressure					
	d 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 DN 65	PN 25 PN 25	1 E K 1 F L				
DN 80	PN 25	1GK				
	= -	IGK				
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	Clamp DIN 32676.					
row C Tri-clamp						
DN 1"	PN 25	3 K V				
DN 1½"	PN 25	3 L V				
DN 2"	PN 16	3 M V				
DN 2½"	PN 16	3 N V				
DN 3"	PN 10	3 P V				
Connection standard	Clamp DIN 32676,					
row A metric 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			
Add Order code and	d plain text	1.1.1				

code	€
• · · · · · · · · · · · · · · · · · · ·	
Quick release inline-seal	
Flange type design, with flexible capillary tube or directly connected 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	
- 0 A 0	
Transmitter connection	
Without capillary tube, direct mount straight	
connection (for gauge pressure)  Connection via capillary tube	
Length of capillary	
1 m	
1,6 m	
2 m 1 2	
2,5 m 1 3	
3 m	
4 m 1 5	
5 m 1 6	
6 m	
7 m	
8 m 2 0 9 m 2 1	
9 m 10 m 2 2	
Other version 9 8 L 1 Add Order code and plain text	Y
Filling liquid	
Food-grade oil (FDA listed)	
Other version Add Order code and plain text	Y

Remote seals for transmitters and pressure gauges SITRANS P320/P420

### Quick-release inline seals

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
Factory certificate 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 transmit-	S03
ters at high-side 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 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	S20
10 m	S21
PTFE protective tube	
1 m	S40
1,6 m	S41 S42
2 m 2,5 m	S43
3 m	S44
4 m	S45
5 m	S46
6 m	S47
7 m	S48
8 m	S49
9 m	S50
10 m	S51

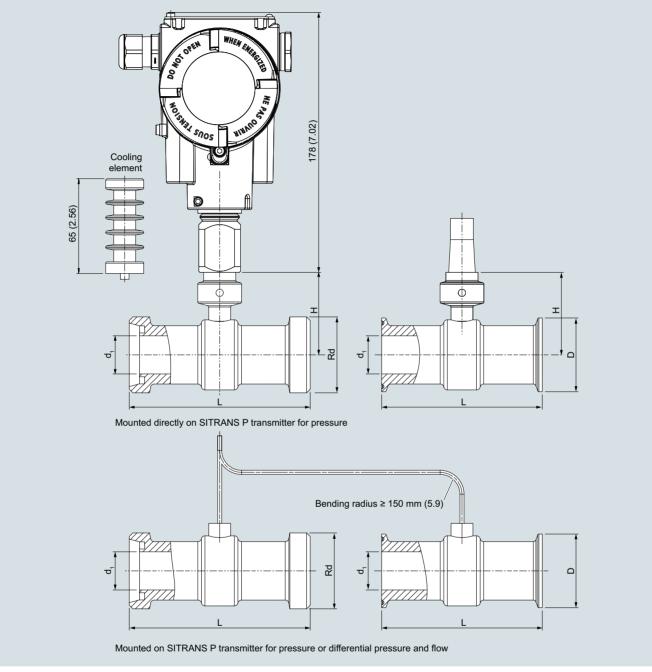
Selection and Ordering data	Order code
	Order code
Further designs	
Add "-Z" to Article No. and specify Order code.	
PVC protective tube	
1 m	S70
1,6 m	S71
2 m	S72
2,5 m	S73
3 m	S74
4 m	S75
5 m	S76
6 m	S77
7 m	S78
8 m	S79
9 m	S80
10 m	S81
Customer-specific tube length	
Customer-specific tube length (specify 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
1100033 temperature min 0/( 1 //max 0/( F)	130

See also "Specification of process conditions for selection and ordering data", page 1/337.

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Quick-release inline seals

### Dimensional drawings



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

Remote seals for transmitters and pressure gauges SITRANS P320/P420

Quick-release inline seals

Inline seals for pipes according to EN 10357 (DIN 11851)

				Food connec	tions		
				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

Inline seals for pipes according to BS 4825 Part 3 and O.D. Tube (suitable for pipes according to ASME-BPE)

					Food connect	tion		
					IDF to ISO 28	53	Clamp conne	ection 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

Remote seals for transmitters and pressure gauges 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.

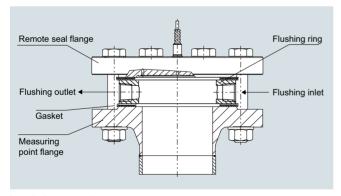
#### Process connection

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

Material

#### Flushing ring for remote seals of sandwich and flange design Nominal diameter Nominal pressure • DN 50 PN 16 ... PN 100 • DN 80 PN 16 ... PN 100 • DN 100 PN 16 ... PN 100 • DN 125 PN 16 ... PN 100 Class 150 ... class 600 • 2 inch • 3 inch Class 150 ... class 600 • 4 inch Class 150 ... class 600 Class 150 ... class 600 • 5 inch 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 • G1/2 • 1/4-18 NPT

• ½-14 NPT

Stainless steel 1.4404/316L

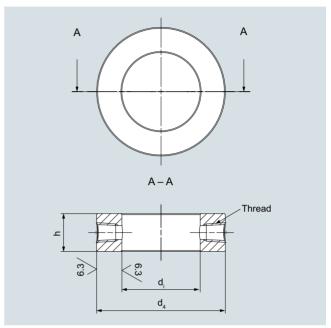
Remote seals for transmitters and pressure gauges **SITRANS P320/P420** 

Flushing rings for diaphragm seals

#### Article No.Ord. code Dimensional drawings Selection and Ordering data 7MF4925-Flushing ring for remote seals 7MF0800 to 7MF0814 1 ration in the PIA Life Cycle Portal. Nom. diam. Nominal pressure • DN 50 PN 16 ... PN 100 • DN 80 PN 16 ... PN 100 В PN 16 ... PN 100 С • DN 100 • DN 125 PN 16 ... PN 100 D G • 2 inch Class 150 ... 600 Class 150 ... 600 Н • 3 inch Class 150 ... 600 • 4 inch J • 5 inch Class 150 ... 600 K Only for RJF ring groove, 7MF4925-1\*R....: • 2 inch Class 150 NR Class 150 • 3 inch PR • 4 inch Class 150 QR • 5 inch Class 150 RR • 2 inch Class 300 ... 600 UR • 3 inch Class 300 ... 600 **VR** • 4 inch Class 300 ... 600 WR Class 300 ... 600 • 5 inch XR Other version z J 1 Y Add Order code and plain text: Nominal diameter: ...; Nominal pressure: ... Sealing surface • EN 1092-1 - Form B1 - Form B2 С - Form C/Form C D - Form D/Form C Ε - Form D/Form D F G - Form E - Form F Н • ASME B16.5 - RF 125 ... 250 AA М - RFSF Q - RJF ring groove R Other version Z K1Y Add Order code and plain text: Sealing surface: Flushing holes (2 off) • Female thread G1/4 2 3 • Female thread G1/2 • Female thread 1/4-18 NPT 4 • Female thread 1/2-14 NPT Material • Stainless steel 316L 0 Other version 9 M 1 Y Add Order code and plain text: Material: .. Further designs Order code Please add "-Z" to Article No. and specify Order C12 Inspection certificate to EN 10204, section 3.1

### Connection according to EN 1092-1

Form B1 and form B2



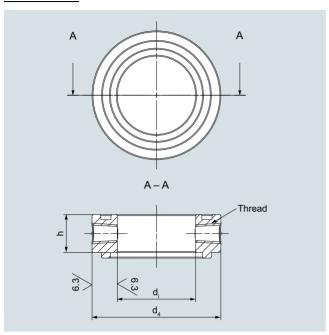
Flushing ring; sealing surface (EN 1092-1), form B1 and form B2

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 transmitters and pressure gauges SITRANS P320/P420

### Flushing rings for diaphragm seals

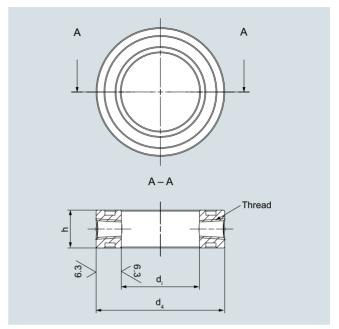
### Form D/form C



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



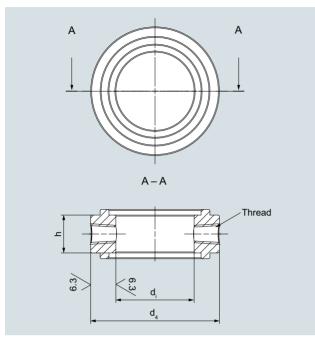
Flushing ring; sealing surface (EN 1092-1), form D/form D

DN	PN	Thread	d₄	di	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)

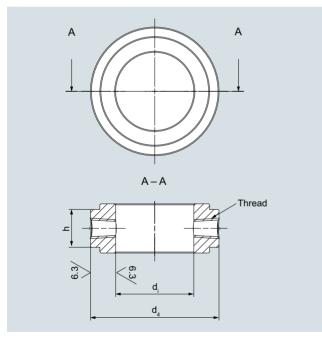
Remote seals for transmitters and pressure gauges SITRANS P320/P420

### Flushing rings for diaphragm seals

### Form C/form C and form E



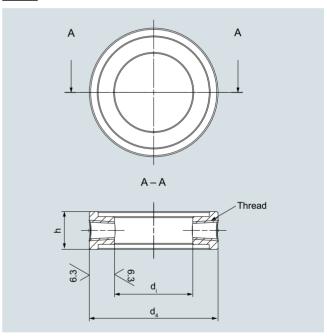
Flushing ring; sealing surface (EN 1092-1), form C/form C



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

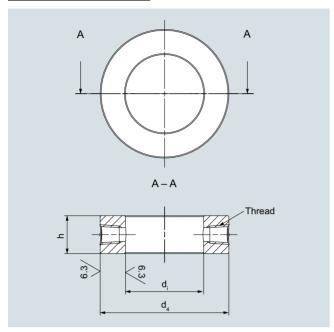
riusii	Flushing ring; sealing surface (EN 1092-1), form F									
DN	PN	Thread	$d_4$	d <sub>i</sub>	h	x	f3	Weight		
mm	bar		Ø in mm (inch)	kg lb)						
50	16 100	1/4 NPT	102 (4.02)	62 (2.44)	35 (1.38)	88 (3.46)	4 (0.16)	1.25 (2.76)		
80	16 100	1/4 NPT	138 (5.43)	92 (3.62)	35 (1.38)	121 (4.76)	4 (0.16)	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 transmitters and pressure gauges SITRANS P320/P420

### Flushing rings for diaphragm seals

### Connection according to ASME B 16.5

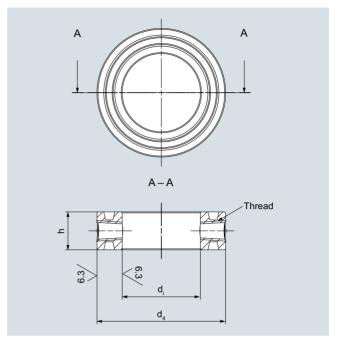
RFSF and RF 125 ... 250 AA



Flushing ring; sealing surface (ASME B 16.5), RFSF and RF 125 to 250 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 transmitters and pressure gauges 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 lower range value and upper range value 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 lower range value and upper range value 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

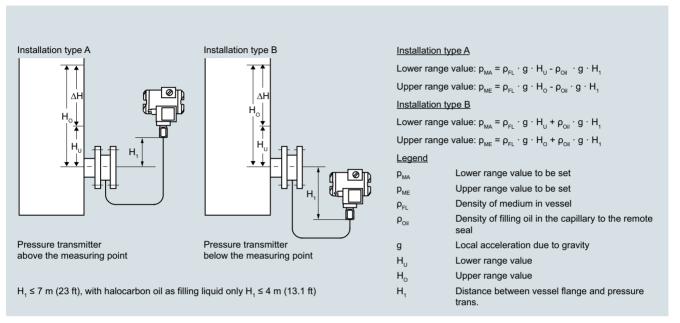
Type of installation	Pressure trans- mitters	Remote seals
A/B	7MF030 7MF031 7MF040 7MF041	7MF0800 7MF0810
C <sub>1</sub> and C <sub>2</sub>	7MF032 7MF042	7MF0800 7MF0810 (negative pressure service in each case)
	7MF033 7MF043	7MF0801 7MF0811
D	7MF034 7MF035 7MF044 7MF045	7MF0802 7MF0812
E	7MF034 7MF035 7MF044 7MF045	7MF0813
G, H and J	7MF034 7MF035 7MF044 7MF045	7MF0802 7MF0812

Remote seals for transmitters and pressure gauges SITRANS P320/P420

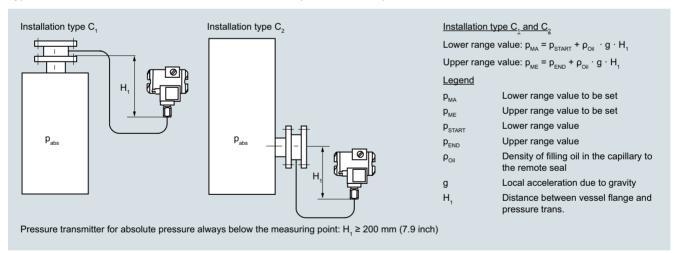
### Measuring setups with remote seals

### Dimensional drawings

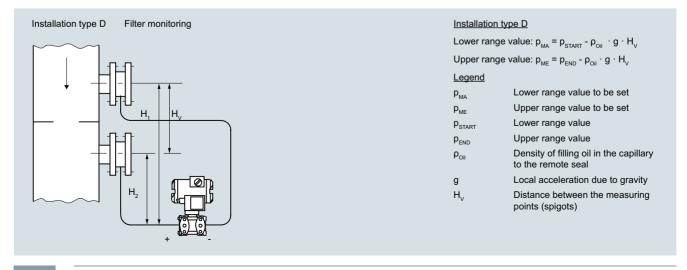
### Types of installation for pressure and level measurements (open vessels)



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



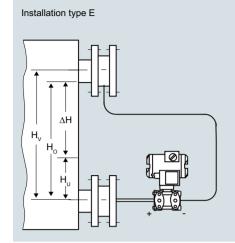
#### Type of installation for differential pressure and flow measurements



Remote seals for transmitters and pressure gauges SITRANS P320/P420

## Measuring setups with remote seals

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



#### Installation type E

 $\begin{aligned} & \text{Lower range value: } \textbf{p}_{\text{MA}} = \textbf{p}_{\text{FL}} \cdot \textbf{g} \cdot \textbf{H}_{\text{U}} - \textbf{p}_{\text{Oil}} \cdot \textbf{g} \cdot \textbf{H}_{\text{V}} \\ & \text{Upper range value: } \textbf{p}_{\text{ME}} = \textbf{p}_{\text{FL}} \cdot \textbf{g} \cdot \textbf{H}_{\text{O}} - \textbf{p}_{\text{Oil}} \cdot \textbf{g} \cdot \textbf{H}_{\text{V}} \end{aligned}$ 

#### Legend

 $\begin{array}{ll} {\rm p_{MA}} & {\rm Lower~range~value~to~be~set} \\ {\rm p_{ME}} & {\rm Upper~range~value~to~be~set} \\ {\rm p_{FI}} & {\rm Density~of~medium~in~vessel} \end{array}$ 

 $\rho_{\text{Oil}}$  Density of filling oil in the capillary to

the remote seal

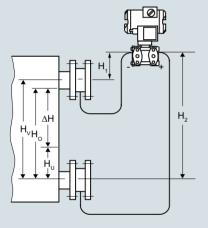
g Local acceleration due to gravity

 $egin{array}{ll} H_{_{\rm U}} & & {
m Lower \ range \ value} \\ H_{_{\rm O}} & & {
m Upper \ range \ value} \end{array}$ 

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

points (spigots)

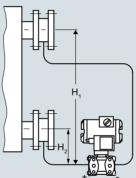




Pressure transmitter for differential pressure above the upper measuring point, no vacuum

 $H_2 \le 7$  m (23 ft), with halocarbon oil as filling liquid only  $H_1 \le 4$  m (13.1 ft)

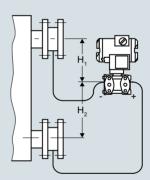
#### Installation type H



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  $H_2 \le 4$  m (13.1 ft)

#### Installation type G, H and J

Lower range value:

 $p_{_{MA}} = \rho_{_{FL}} \cdot g \cdot H_{_{U}} - \rho_{_{Oil}} \cdot g \cdot H_{_{V}}$ 

Upper range value:

 $p_{\text{ME}} = \rho_{\text{FL}} \cdot g \cdot H_{\text{O}} - \rho_{\text{Oil}} \cdot g \cdot H_{\text{V}}$ 

#### <u>Legend</u>

 $\boldsymbol{p}_{\text{MA}}$ 

 $p_{ME}$ 

Lower range value to be set
Upper range value to be set

 $\begin{array}{ll} \rho_{\text{FL}} & \text{Density of medium in vessel} \\ \rho_{\text{Oil}} & \text{Density of filling oil in the capillary to} \end{array}$ 

the remote seal

#### g Local acceleration due to gravity

H<sub>U</sub> Lower range valueH<sub>O</sub> Upper range value

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

points (spigots)

Remote seals for transmitters and pressure gauges **SITRANS P320/P420** 

#### Measuring setups without remote seals

#### Overview

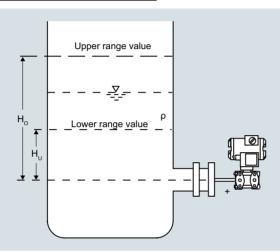
#### Notes

- 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



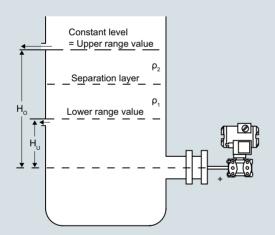
#### Level measurement

Lower range value:  $p_{MA} = \rho \cdot g \cdot H_U$ Upper range value:  $p_{MF} = \rho \cdot g \cdot H_{O}$ 

#### Legend

Lower range value to be set  $p_{MA}$ Upper range value to be set Density of medium in vessel ρ Local acceleration due to gravity g

 $H_{\upsilon}$ Lower range value  $H_{\circ}$ Upper range value



#### Separation layer measurement

Lower range value:  $p_{MA} = g \cdot (H_U \cdot \rho_1 + (H_O - H_U) \cdot \rho_2)$ 

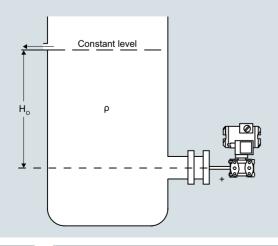
Upper range value:  $p_{ME} = \rho_1 \cdot g \cdot H_0$ 

#### Legend

Lower range value to be set  $\boldsymbol{p}_{\text{MA}}$ Upper range value to be set  $p_{ME}$ Density of heavier liquid ρ, Density of lighter liquid  $\rho_{\scriptscriptstyle 2}$ 

Local acceleration due to gravity g

 $H_{ij}$ Lower range value  $H_{\circ}$ Upper range value



#### Density measurement

Lower range value:  $p_{MA} = p_{MIN} \cdot g \cdot H_{O}$ Upper range value:  $p_{ME} = p_{MAX} \cdot g \cdot H_{O}$ 

#### Legend

Lower range value to be set  $\boldsymbol{p}_{\text{MA}}$ Upper range value to be set  $\boldsymbol{p}_{\text{ME}}$ 

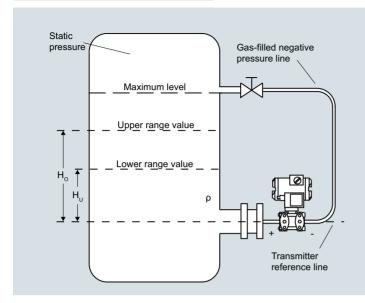
Minimum density of medium in vessel  $\rho_{\text{MIN}}$ Maximum density of medium in vessel  $\rho_{\text{MAX}}$ Local acceleration due to gravity g Upper range value in m

 $H_{\circ}$ 

Remote seals for transmitters and pressure gauges SITRANS P320/P420

## Measuring setups without remote seals

## Measuring setups for closed containers



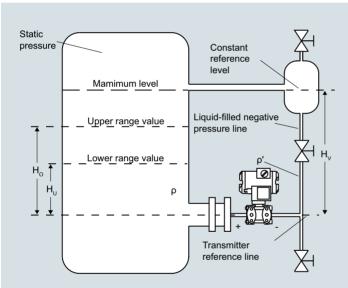
#### Level measurement, Version 1

Lower range value:  $\Delta p_{MA} = \rho \cdot g \cdot H_{U}$ Upper range value:  $\Delta pME = \rho \cdot g \cdot H_{O}$ 

#### Legend

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

 ${
m H_{U}}$  Lower range value  ${
m H_{O}}$  Upper range value



#### Level measurement, Version 2

 $\begin{aligned} &\text{Lower range value: } \Delta p_{\text{MA}} = g \, \cdot \, (\text{H}_{\text{U}} \cdot \, \rho \, \text{-} \, \text{H}_{\text{V}} \cdot \, \rho') \\ &\text{Upper range value: } \Delta p_{\text{ME}} = g \, \cdot \, (\text{H}_{\text{O}} \cdot \, \rho \, \text{-} \, \text{H}_{\text{V}} \cdot \, \rho') \end{aligned}$ 

#### Legend

 $\begin{array}{ll} \Delta p_{\text{MA}} & \quad \text{Lower range value to be set} \\ \Delta p_{\text{ME}} & \quad \text{Upper range value to be set} \\ \rho & \quad \text{Density of medium in vessel} \end{array}$ 

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

existing there)

g Local acceleration due to gravity

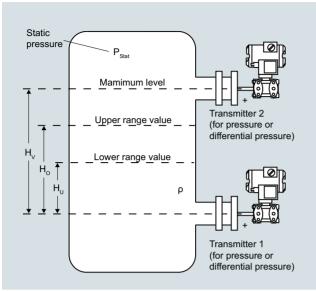
 ${
m H_{U}}$  Lower range value  ${
m H_{O}}$  Upper range value

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

(spigots)

Remote seals for transmitters and pressure gauges SITRANS P320/P420

#### Measuring setups without remote seals



#### Level measurement, Version 3

Lower range value:  $\Delta p_{MA} = P_{Stat} + \rho \cdot g \cdot H_U - P_{Stat}$ 

Transmitter 1 Transmitter 2

Upper range value:  $\Delta p_{ME} = P_{Stat} + \rho \cdot g \cdot H_{O} - P_{Stat}$ 

Transmitter 1 Transmitter 2

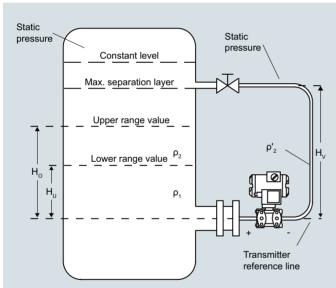
#### Legend

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

 $H_{_{\mathrm{U}}}$  Lower range value  $H_{_{\mathrm{O}}}$  Upper range 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

Lower range value:  $\Delta p_{MA} = g \cdot (H_U \cdot \rho_1 + (H_O - H_U) \cdot \rho_2 - H_V \cdot \rho_2')$ 

Upper range value:  $\Delta p_{MF} = g \cdot (H_O \cdot \rho_1 - H_V \cdot \rho_2)$ 

#### Legend

 $\begin{array}{ll} \Delta p_{_{MA}} & \quad \text{Lower range value to be set} \\ \Delta p_{_{MF}} & \quad \text{Upper range value to be set} \end{array}$ 

 $\rho_{_{1}} \hspace{1.5cm} \text{Density of heavier liquid with separation layer} \\$ 

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

H<sub>U</sub> Lower range value H<sub>O</sub> Upper range value

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

(spigots)

Remote seals for transmitters and pressure gauges SITRANS P DS III

Technical description

#### Application

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

- pressure (SITRANS P300, P310, DSIII and P410).
- absolute pressure (SITRANS P300 and DSIII) and
- differential pressure and flow (SITRANS P310, DSIII, P410 and P500).

#### Design and mode of operation

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

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

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

#### Fields of use

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

- The temperature of the medium is outside the limits specified for the transmitter.
- The medium is *corrosive* and requires diaphragm materials in the transmitter which are not available.
- The medium is highly viscous or contains solids which would block the measuring chambers of the transmitter.
- The medium may freeze in the measuring chambers or impulse line.
- The medium is *heterogeneous* and *fibrous*.
- The medium tends towards polymerization or crystallization.
- The process requires quick-release remote seals, as necessary e.g. in the food industry for fast cleaning.
- The process requires cleaning of the measuring site, e.g. in a batch process.

#### Constructional designs

A differentiation is made between diaphragm seals and inline seals.

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

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

The inline seal is a special design for flowing media. It consists of a cylindrical pipe in which a cylindrical diaphragm is embedded. Since it is completely integrated in the process pipe, no turbulences, dead volumes or other obstructions to the flow occur.



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



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



Tri-Clamp sanitary remote seal

## Diaphragm seals

The following types of diaphragm seals exist:

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

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

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

Remote seals for transmitters and pressure gauges SITRANS P DS III

#### **Technical description**

#### Clamp-on seals

The following types of clamp-on seals exist:

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

## Transmission response

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

#### Diaphragm characteristic

The charateristic of the remote seal is of great importance. The larger the diaphragm diameter, the softer it is. In comparison to a smaller diaphragm, this means that it can respond far easier to temperature-based expansions of the filling liquid.

The result is that low measuring ranges are only possible with large diaphragm diameters. In addition, the diaphragm thickness, its material, and any coatings which may be present must also be considered.

#### Fill fluid

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

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

#### Response time

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

#### Internal diameter:

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

#### Viscosity:

The response time increases as the viscosity increases.

#### Capillary length:

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

#### Measuring system pressure:

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

#### Recommendations

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

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



Button diaphragm seal with diaphragm flush with front



Sanitary tri-clamp seal and for flange pancake mounting

- A filling liquid should be selected which has the lowest viscosity and the lowest coefficient of expansion, and which simultaneously fulfills the process requirements with respect to pressure/vacuum and temperature. The filling liquid must also be compatible with the process medium.
- When installing the equipment for vacuum applications, the transmitter must always be located <u>below</u> the lowest tap.
- It should also be noted that some of the filling liquids are very limited with respect to the permissible temperature of the medium for vacuum applications.
- When operating permanently at a vacuum, the remote seal must be designed in the version resistant to those vacuum applicaton.
- Recommendations on the minimum span can be found in the tables on pages 1/403 and 1/404.

#### Note

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

Other versions could be:

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

Please contact your Siemens Regional Office for more information.

Remote seals for transmitters and pressure gauges SITRANS P DS III

## **Technical description**

paragraph 3 (sound engineering practice)

## Technical specifications

Nominal diameter, nominal See Ordering data pressure, pressure connection To ANSI B16.5 RF 250 RMS for Sealing face (only for pancake and flanged remote seals) stainless steel or solid materials ANSI B16.5 RFSF (smooth finish) for other materials Materials • Main body for pancake and flange Stainless steel, mat. No. 1.4435/316L remote seals • Wetted parts materials See Ordering data Stainless steel, mat. No. 1.4435/ • Housing and diaphragm for Inline seals 316L or stainless steel, 7MF4880-... and 7MF4883-... Capillary Stainless steel, mat. No. 1.4571/316Ti Armor Spiral sheath made of stainless steel, mat. No. 304

Sealing material in the transmitter pressure flanges	
<ul> <li>For absolute pressure transmitters and vacuum applications</li> </ul>	Copper
<ul> <li>For other applications</li> </ul>	Viton
Max. pressure	See nominal pressure of remote seal and transmitter
Capillary	
• Length	Max. 30 ft.
	longer lengths on inquiry
<ul> <li>Internal bore</li> </ul>	0.079 inch
<ul> <li>Smallest bending radius</li> </ul>	6.0 inch
Fill fluid	
For pancake and flange remote	
seals	See Ordering data
<ul> <li>For sanitary remote seals</li> </ul>	Neobee M20 (food oil)
Ambient temperature	See transmitter and filling liquid
Certificates and approvals Classification according to pressure equipment directive (DGRL 97/23/EC)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 3,

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

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

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

Temperature errors of diaphragm seals (part 1)

#### Remarks:

- Values apply to fill fluid: silicone oil DC 200, high-temperature oil, halocarbon oil and Neobee M20.
- Values apply to stainless steel as the diaphragm material.

Remote seals for transmitters and pressure gauges SITRANS P DS III

## **Technical description**

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

	Nominal diameter/ design	Effective diaphragm diameter [in]	Temperature error of remote seal [inH <sub>2</sub> O/25 °F]	Temperature error of capillary [inH <sub>2</sub> O/25 °F/3 ft]	Temperature error of transmitter flange connection [inH <sub>2</sub> O/25 °F]	Recommended values, min. spans (observe tempera- ture error) [psi]
Flange to ANSI B16.5	2" flush flanged 2" with extension 3" flush flanged 3" with extension 4" flush flanged 4" with extension 5" flush flanged 5" with extension	2.32 1.89 3.5 2.83 3.5 3.5 4.88 4.88	0.384 0.692 0.077 0.154 0.077 0.077 0.038 0.038	0.42 1.051 0.042 0.126 0.042 0.042 0.017 0.017	0.42 1.051 0.042 0.126 0.042 0.042 0.017 0.017	3.5 3.5 1 1.5 1 0.3 0.3
Flange to DIN 2501	DN 50 flush flanged DN 50 with extension DN 80 flush flanged DN 80 with extension DN 100 flush flanged DN 100 with extension DN 125 flush flanged DN 125 with extension	2.32 1.89 3.5 2.83 3.5 4.88 4.88	0.384 0.692 0.077 0.154 0.077 0.077 0.038 0.038	0.42 1.051 0.042 0.126 0.042 0.042 0.017 0.017	0.42 1.051 0.042 0.126 0.042 0.042 0.017 0.017	3.5 3.5 1 1.5 1 0.3 0.3
Sanitary Tri-Clamp	2" 2 ½" 3" 4"	1.57 2.32 2.83 3.5	0.961 0.384 0.154 0.077	1.849 0.42 0.126 0.042	1.849 0.42 0.126 0.042	30 3.5 1.5

Temperature errors of diaphragm seals (part 2)

#### Remarks:

- Values apply to fill fluids: silicone oil DC 200, high-temperature oil, halocarbon oil and Neobee M20.
- · Values apply to stainless steel as the diaphragm material.

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

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

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

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

Temperature errors of clamp-on seals

#### Remarks

- Values apply to fill fluids: silicone oil DC 200, high-temperature oil, halocarbon oil and Neobee M20.
- Values apply to stainless steel as the diaphragm material.
- Diaphragm thickness: 1" & 1 ½" & 2":0.002 inch 3" & 4": 0.004 inch

Remote seals for transmitters and pressure gauges SITRANS P DS III

**Technical description** 

#### Calculation of temperature error for remote seals

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

dp :	$dp = (t_{RS} - t_{Cal}) \cdot f_{RS} + (t_{Cap} - t_{Cal}) \cdot I_{Cap} \cdot f_{Cap} + (t_{TR} - t_{Cal}) \cdot f_{PF}$							
dp	Additional temperature error (inH <sub>2</sub> O)							
t <sub>RS</sub>	Temperature on remote seal diaphragm (generally corresponds to temperature of medium)							
t <sub>Cal</sub>	Reference (calibration) temperature 68 °F							
f <sub>RS</sub>	Temperature error of remote seal (see tables on pages 1/403 and 1/404)							
t <sub>Cap</sub>	Ambient temperature on the capillaries							
I <sub>Cap</sub>	Capillary extension length (error given per 3 ft)							
$f_{Cap}$	Temperature error of capillaries (see tables on pages 1/403 and 1/404)							
$t_{TR}$	Ambient temperature on transmitter							
$f_{PF}$	Temperature error of oil filling in process flanges of transmitter (see tables on pages 1/403 and 1/404)							

#### Example of calculation of temperature error for remote seals

#### **Existing conditions:** $f_{RS} = 0.054 \text{ inH}_2\text{O}/25 \text{ °F}$ SITRANS P transmitter for differential pressure, 100 inH2O, set to 0 to 40 inH2O with 3 in flush flanged remote seal, diaphragm made of stainless steel, mat. No. 1.4535/316L Capillary 2 x 15 ft $I_{Cap} = 2 \times 15 \text{ ft}$ $f_{Cap} = 0.042 \text{ inH}_2\text{O}/25 \text{ °F/3 ft}$ Capillaries fitted on both sides Filled with silicone oil DC 200-10 $f_{PF} = 0.042 \text{ inH}_2\text{O}/25 \text{ °F}$ t<sub>RS</sub> = 212 °F Temperature of medium 212 °F Temperature on capillaries 122 °F $t_{Cap} = 122 \, ^{\circ}F$ Temperature on transmitter 122 °F $t_{TR} = 122 \, ^{\circ}F$

#### Required:

Additional temperature error of remote seal: dp

## Calculation:

 $dp = (212 \text{ °F} - 68 \text{ °F}) \cdot 0.077 \text{ inH}_2\text{O}/25 \text{ °F} + (122 \text{ °F} - 68 \text{ °F}) \cdot 15 \text{ ft} \\ \cdot 2 \cdot 0.042 \text{ inH}_2\text{O}/25 \text{ °F} / 3 \text{ ft} + (122 \text{ °F} - 68 \text{ °F}) \cdot 0.042 \text{ inH}_2\text{O}/25 \text{ °F} \\ dp = 0.444 \text{ inH}_2\text{O} + 0.907 \text{ inH}_2\text{O} + 0.091 \text{ inH}_2\text{O}$ 

#### Result:

dp = 1.442 inH<sub>2</sub>O (corresponds to 3.605 % of set span)

#### Note:

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

The transmission response of the respective transmitter is not included in this consideration. It must be calculated separately, and the resulting error added to the error determined above from connection of the remote seal.

#### Dependence of temperature error on diaphragm material

The errors listed in the tables on pages 1/403 and 1/404 refer to the use of stainless steel as the diaphragm material. If a different material is used, the listed values change by the amount shown in the following table.

3	
Diaphragm material	Change in temperature error of remote seal
Stainless steel	Values as specified in tables on pages 1/403 and 1/404
Hastelloy C4, mat. No. 2.4610	Increase in values by 50%
Hastelloy C276, mat. No. 2.4819	Increase in values by 50%
Monel 400, mat. No. 2.4360	Increase in values by 60%
Tantalum	Increase in values by 50%
Titanium	Increase in values by 50%
Gold coating on stainless steel diaphragm	Increase in values by 40%

#### Response times (approximate)

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

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

The response times are independent of the set span within the range of the respective transmitter. The response times are of insignificant importance for spans above 145 psi (10 bar). The response time of the transmitter has not been considered.

Remote seals for transmitters and pressure gauges SITRANS P DS III

## **Technical description**

Filling liquid	Density		Temperature on capillary Response time in s/m (s/ft) with max. span of transmitter							
	kg/dm <sup>3</sup>	(lb/in <sup>3</sup> )	°C	(°F)	250 mbar	(3.63 psi)	600 mbar	(8.7 psi)	1600 mbar	(23.2 psi)
Silicone oil DC 200-10	0.934	(0.033)	+60 +20 - 20	(140) (68) (-4)	0.06 0.11 0.3	(0.018) (0.034) (0.091)	0.02 0.02 0.12	(0.006) (0.006) (0.037)	0.01 0.02 0.05	(0.003) (0.006) (0.015)
Silicone oil DC 200-50	0.966	(0.035)	+60 +20 - 20	(140) (68) (-4)	0.6 0.61 1.69	(0.183) (0.186) (0.515)	0.25 0.26 0.71	(0.076) (0.079) (0.216)	0.09 0.1 0.27	(0.027) (0.030) (0.082)
Syltherm 800	0.935	(0.034)	+60 +20 - 20	(140) (68) (-4)	0.06 0.11 0.3	(0.018) (0.034) (0.091)	0.02 0.02 0.12	(0.006) (0.006) (0.37)	0.01 0.02 0.05	(0.003) (0.006) (0.015)
Silicone oil DC704	1.07	(0.039)	+60 +20 -10	(140) (68) (14)	0.14 0.65 3.96	(0.043) (0.198) (1.207)	0.06 0.27 1.65	(0.018) (0.082) (0.503)	0.02 0.1 0.62	(0.006) (0.030) (0.189)
Halocarbon oil	1.968	(0.071)	+60 +20 - 20	(140) (68) (68)	0.07 0.29 2.88	(0.021) (0.088) (0.878)	0.03 0.12 1.2	(0.009) (0.037) (0.366)	0.01 0.05 0.45	(0.003) (0.015) (0.137)
Fluorolube	1.866	(0.068)	+60 +20 - 20	(140) (68) (68)	0.07 0.29 2.88	(0.021) (0.088) (0.878)	0.03 0.12 1.2	(0.009) (0.037) (0.366)	0.01 0.05 0.45	(0.003) (0.015) (0.137)
Neobee M20	0.917	(0.033)	+60 +20 - 20	(140) (68) (68)	0.18 0.43 1.19	(0.055) (0.131) (0.363)	0.08 0.18 0.5	(0.024) (0.055) (0.152)	0.03 0.07 0.18	(0.009) (0.021) (0.055)
Glycerine/water	1.22	(0.044)	+60 +20 0	(140) (68) (32)	0.13 0.76 9.72	(0.040) (0.232) (2.963)	0.05 0.32 4.05	(0.015) (0.098) (12.34)	0.02 0.12 1.51	(0.006) (0.037) (0.460)

## Technical specifications of filling liquid

When selecting the filling liquid, check that it is suitable with respect to the permissible temperature of the medium and the process pressure. Also check the compatibility with the measured medium. For example, only food grade filling liquids may be used in the food industry. A special case are oxygen and chlorine as the measured media; the fill fluid must not react with them, otherwise an explosion or fire may occur if there is a leak in the remote seal.

Filling liquid						Viscosity at 20 °C (68 °F)		Expansion coefficient		
	p <sub>abs</sub> <1 bar	(p <sub>abs</sub> <14.5 psi)	p <sub>abs</sub> >1 bar	(p <sub>abs</sub> >14.5 psi)	kg/dm <sup>3</sup>	kg/dm <sup>3</sup> (lb/in <sup>3</sup> )	lb/in <sup>3</sup> ) m <sup>2</sup> /s·10 <sup>6</sup>		1/°C	(1/°F)
	°C	(°F)	°C	(°F)						
Silicone oil DC200-10	-40 to +121	(-40 to +248)	-40 to +200	(-40 to +392)	0.934	(0.03)	10	(107.6)	0.00108	(0.00060)
Silicone oil DC 200-50	-20 to +150	(-4 to +302)	-20 to +250	(-4 to +482)	0.96	(0.03)	50	(538)	0.00104	(0.00058)
Syltherm 800	-40 to +121	(-40 to +250)	-40 to +205	(-40 to +400)	0.935	(0.034)	10.03	(107.9)	0.00109	(0.00061)
Silicone oil DC704	-10 to +200	(+14 to +392)	-10 to +350	(+14 to +662)	1.07	(0.04)	39	(420)	0.0008	(0.00044)
Halocarbon oil	-40 to +80	(-40 to +176)	-40 to +175	(-40 to +347)	1.968	(0.07)	14	(151)	0.00086	(0.00048)
Fluorolube	Not possible	Not possible	-40 to +175	(-40 to +347)	1.866	(0.068)	15.5	(167)	0.000864	(0.00048)
Neobee M20	10 to +90	(+14 to +195)	-10 to +200	(+14 to +392)	0.917	(0.03)	9.8	(105)	0.00082	(0.00045)
Glycerine/water	Not possible	Not possible	-10 to +120	(+14 to +248)	1.22	(0.04)	88	(947)	0.0005	(0.00028)

## Maximum temperature of medium

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

Material	p <sub>abs</sub> < (14.5 p	1 bar si)	p <sub>abs</sub> > 1 bar (14.5 psi)		
	°C	(°F)	°C	(°F)	
Stainless steel, mat. No. 1.4571/316Ti	200	(392)	350	(662)	
Hastelloy C4, mat. No. 2.4610	200	(392)	350	(662)	
Hastelloy C276, mat. No. 2.4819	200	(392)	350	(662)	
Monel 400, mat. No. 2.4360	200	(392)	350	(662)	
Tantalum	200	(392)	300	(572)	

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

Nominal d	iameter	Max. length of capillary					
		Diaphragm seal		Inline seal			
DN 25	(1 inch)	2.5 m	(8.2 ft)	2.5 m	(8.2 ft)		
DN 32	(11/4 inch)	2.5 m	(4.9 ft)	2.5 m	(8.2 ft)		
DN 40	(1½ inch)	4 m	(13.1 ft)	6 m	(19.7 ft)		
DN 50	(2 inch)	6 m	(19.7 ft)	10 m	(32.8 ft)		
DN 65	(2½ inch)	8 m	(26.2 ft)	10 m	(32.8 ft)		
DN 80	(3 inch)	10 m	(32.8 ft)	10 m	(32.8 ft)		
Size	4 inch		(30.0 ft)	-			
Size	5 inch		(30.0 ft)	-	-		

Remote seals for transmitters and pressure gauges SITRANS P DS III

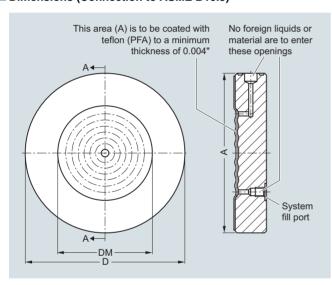
## Pancake type diaphragm seal with flexible capillary tube

# Overview



Pancake type diaphragm seal

## Dimensions (Connection to ASME B16.5)



Pancake type diaphragm seal, dimensions

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

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

Selection and Ordering data	Article 1	Vo.	Orde	er c	00	de
Pancake type diaphragm seal						
with flexible capillary extension, connected to						
a SITRANS P transmitter (order separately)						
for pressure 7MF40 ■ ■ or 7MF42 ■ ■	7 M F 4	8 0	0 -			
for absolute pressure 7MF43 ■ ■	7 M F 4	8 0	1 -			
for differential pressure 7MF44 ■ ■	7 M F 4	8 0	3 -			
• dual seals for DP	1	-	В			
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.						
• 2 inch class 150 2500	E					
• 3 inch class 150 2500	Н					
• 4 inch class 150 2500 • 5 inch class 150 2500	L					
				١.		v
Special design, customer information to be supplied	Z			J	1	ĭ
Materials and wetted parts						
• SST 316L	Α					
<ul> <li>Monel 400, mat. No. 2.4360</li> </ul>	G					
<ul><li>Hastelloy C276, mat. No. 2.4819</li><li>Tantal</li></ul>	J K					
Special design, customer information to be	z			K	1	J
supplied	Ī					
Extension length (316SS standard)						
Without extension (standard version)	0			ı.		.,
Special design, customer information to be supplied for extension	9			Ľ	1	Y
System fill						
• Silicone oil DC 200-10		1				
• Silicone oil DC 200-50		2 4				
<ul> <li>Halocarbon (for O<sub>2</sub>-application)</li> <li>Silicone oil M5</li> </ul>		5				
• Syltherm 800		6				
DC704 silicone oil		7				
• Fluorolube		8		.,	_	v
Special design, customer inform. to be supplied		9		IVI	1	Y
Length of capillary  • 3 ft			2			
• 5 ft			3			
• 10 ft			4			
• 15 ft			5			
• 20 ft • 25 ft			6 7			
• 30 ft			8			
Special design, customer inform. to be supplied			9	N	1	Y
Further designs						
Please add "-Z" to Article No. and specifiy Order code						
for 7MF4800						i
Integrated flame path restriction				A	0	1
Certificate of calibration N.I.S.T. (20% steps)				С	1	1
Material conformance certificate					1	
Vacuum service (must be specified with HT oil)				٧	0	1
Calculation of span of transmitter (completed questionnaire to be attached)				Y	0	5
for 7MF4801						
Integrated flame path restriction				Α	0	1
Certificate of calibration N.I.S.T. (20% steps)					1	
Material conformance certificate					1	
Calculation of span of transmitter (completed questionnaire to be attached)				Y	0	5
for 7MF4803						
Integrated flame path restriction				Α	0	2
Certificate of calibration N.I.S.T. (20% steps)					1	
Material conformance certificate					1	
Vacuum service (must be specified with HT oil)					0	
Calculation of span of transmitter (completed				Y	0	5
questionnaire to be attached)						

Remote seals for transmitters and pressure gauges SITRANS P DS III

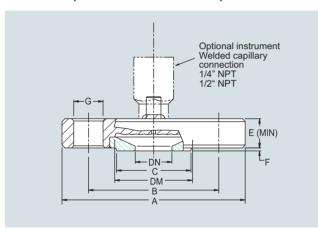
## Flange-type diaphragm seal directly connected

## Overview

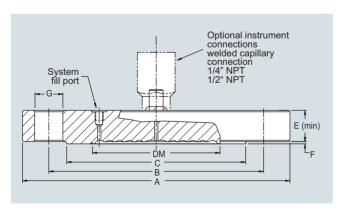


Flange-type diaphragm seal, without extension

## Dimensions (connection to ASME B16.5)



Flange-type diaphragm seal without extension for flanges ≤ 1"



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

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

DN = Nominal pipe size

DM = Effective diaphragm diameter Class = Flange rating per ASME B16.5

X = Number of bolt holes

All dimensions in inches unless otherwise noted

Flange-type diaphragm seal, without extension, dimensions

Remote seals for transmitters and pressure gauges SITRANS P DS III

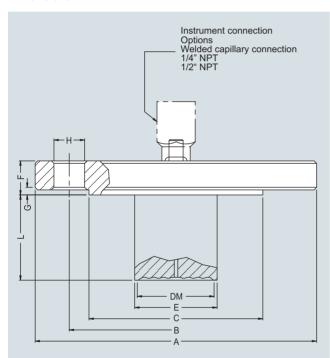
## Flange-type diaphragm seal with extension

# Overview



Flange-type diaphragm seal, with extension

## Dimensions



Size DN	Class	Α	В	С	DM	E <sup>1)</sup>	F	G	Н	X		I	-	
2"	150	6.00	4.75	2 62	10	1.90	0.75		0.75	4				
	300	6.50	5.00	3.02	1.0	1.90	0.88		0.75	8				
3"	150	7.50	6.00	5.00	20	2.00	0.94	0.06	0.75	4	2.0	2 N	4.0	6.0
	300	8.25	6.62	5.00	2.0	2.99	1.12	0.00	0.88	8	2.0	3.0	4.0	0.0
4"	150	9.00	7.50	6 10	2.5	3.70	0.94		0.75	8				
	300	10.04	7.88	0.19	3.3	3.70	1.25		0.88	8				

<sup>1)</sup> based on schedule 40

DN = Nominal pipe size

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

All dimensions in inches unless otherwise noted

Flange-type diaphragm seal, with extension, dimensions

Selection and Ordering data	Arti	icle	No	. Order	CC	OC	le
Flange-type diaphragm seal							
directly connected to a SITRANS P 7MF40 ■ ■ or 7MF42 ■ ■ (order separately)		F 4		10-			
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.							
Process connection vertical (transmitter upright) horizontal	0 2						
Size and class							
<ul> <li>2 inch</li> <li>2 inch</li> <li>2 inch</li> <li>2 inch</li> <li>2 inch</li> <li>150</li> <li>2 inch</li> <li>2 inch</li> <li>2 inch</li> <li>2 inch</li> <li>2 inch</li> </ul>	N N P						
• 3 inch       class       150         • 3 inch       class       300         • 3 inch       class       600	G R S						
<ul> <li>4 inch</li> <li>4 inch</li> <li>4 inch</li> <li>4 inch</li> <li>4 inch</li> <li>4 inch</li> </ul>	T U V						
Special design, customer information to be supplied	Z				J	1	Y
Materials and wetted parts  SST 316L  Monel 400, mat. No. 2.4360  Hastelloy C276, mat. No. 2.4819  Tantal  Special design, customer information to be		A G J K Z			K	1	Υ
supplied	_	L					
Extension length (316SS standard) Without extension (standard version) 2"		0					
4"		1 2					
6" 8"		3					
Special design, customer information to be supplied for extension		9			L	1	Y
System fill  Silicone oil DC 200-10 Silicone oil DC 200-50 Halocarbon (for O <sub>2</sub> -application) Silicone oil M5 Syltherm 800			1 2 4 5 6				
DC704 silicone oil			7				
<ul> <li>Fluorolube</li> <li>Special design, customer information to be supplied</li> </ul>			9		M	1	Y
Further designs Please add "-Z" to Article No. and specifiy Order code							
Integrated flame path restriction					Α	0	1
Rotatable Flange					В		
Certification of calibration N.I.S.T. (20% steps)					C	-	
Material conformance certificate					C		
Vacuum service (must be specified with HT oil) Calculation of span of transmitter (completed questionnaire to be attached)					Y		

Remote seals for transmitters and pressure gauges SITRANS P DS III

# Flange-type diaphragm seal with extension

Selection and	Ordering data	a	Article No.	Order code
Mounting flan	ge			
directly mounte 7MF46 ■ ■ (ord	ed at SITRANS der separately)	7 M F 4 8 1 2	2 -	
	Article No. for the PIA Life Cy	the online conficle Portal.		
Flange	Size	Class		
ANSI B16.5	2 inch	150	L	
	3 inch	300 150 300	M Q R	
	4 inch	150 300	T	
Special desigr supplied	n, customer info		Z	J 1 Y
<ul><li>Hastelloy C2</li><li>Tantal</li></ul>	wetted parts nat. No. 2.4360 76, mat. No. 2.	4819	A G J K	K 1 Y
supplied	., 040:0:			
2" 4" 6" 8" Special desigr supplied for ex	ion (standard v 50 mm 100 mm 150 mm 200 mm a, customer info ttension		0 1 2 3 4 9	L 1 Y
<ul><li>Silicone oil M</li><li>Syltherm 800</li><li>DC704 silico</li><li>Fluorolube</li></ul>	C 200-50 for O <sub>2</sub> -applica l5	,	1 2 4 5 6 7 8 9	M 1 Y
Further desig Please add "-Z Order code	ns 2" to Article No.	. and specifiy		
Integrated flan	ne path restrict	ion		A 0 1
Rotatable Flan	ge			B 0 1
Certificates: Certification of	calibration N.I	.S.T. (20% steps)		C 1 1
	rmance certific	,		C 1 2
Vacuum servic	e (must be spe	ecified with HT oil)		V 0 4
	span of transm to be attached)	itter (completed )		Y 0 5

Selection and	Ordering data		Article N	lo.	Order	CC	nde
Mounting flang Seal, w/o exter	ge at High-Side	pe seal via	Authore 14		Oraci		,ac
capillary exten extension	sion on low-si	de without					
for SITRANS P f 7MF44 ■ (orde		ressure	7 M F 4 8			_	
∠ Click on the a	Article No. for the PIA Life Cycle		1	Ī	В	Ī	
	Size			H			
Flange ANSI B16.5	2 inch	Class 150	L				
C.01 D 10.11	Z ITICIT	300	M				
	3 inch	150	Q R				
	4 inch	300 150	T				
	-	300	U				
Special design, supplied	customer infor	mation to be	Z			J.	1 Y
Materials and v	wetted parts						
<ul> <li>SST 316L</li> <li>Monel 400, ma</li> </ul>	at No. 2 4360		A G				
<ul> <li>Hastelloy C27</li> </ul>		319	Ĵ				
<ul> <li>Tantal</li> <li>Special design,</li> </ul>	customor infor	mation to bo	K Z			κ.	1 Y
supplied	customer imon	mation to be				_	1 1
Extension leng		•					
Without extension 2"	on (standard ve 50 mm	rsion, 0 mm)	0				
4"	100 mm		2				
	150 mm 200 mm		3 4				
Special design, supplied for ext	customer inform	mation to be	9			L.	1 Y
System fill							
• Silicone oil DC			1				
<ul> <li>Silicone oil DC</li> <li>Halocarbon (fe</li> </ul>		on)	2				
<ul> <li>Silicone oil M5</li> </ul>		,	5	5			
<ul><li>Syltherm 800</li><li>DC704 silicon</li></ul>	e oil		7				
• Fluorolube			8				
Special design, supplied	customer infor	mation to be	Ş	)		M.	1 Y
Capillary lengt	h at low-side						
• 3 ft				2			
• 5 ft • 10 ft				3			
• 15 ft				5			
• 20 ft • 25 ft				7			
• 30 ft				8			
Special design, supplied	customer infor	mation to be		9	9		
Further design	s to Article No. :	and specifiv					
Order code	.57 11 11010 1 10. (	aa opcomy					
Integrated flame	e path restriction	n				Α (	0 2
Rotatable Flang	je						0 1
Certification of o		` '					1 1
Material conform							1 2
		ified with HT oil)					04
Calculation of s questionnaire to		ei (completea				Υ (	0 5

Remote seals for transmitters and pressure gauges SITRANS P DS III

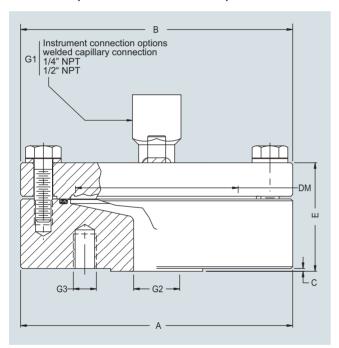
## Diaphragm seal "flanged off-line low-pressure type", directly connected

# Overview



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

# Dimensions (Connection to ASME B16.5)



(	G2	G3	Х	Α	В	С	DM	E
Size	Class							
1/2"	150#	½"-13UNC	4	5.91		0.06		2.36
1/2"	300#	½"-13UNC	4	5.91		0.06		2.36
1/2"	600#	½"-13UNC	4	5.91		0.25		2.55
3/4"	150#	½"-13UNC	4	5.91		0.06		2.36
3/4"	300#	<sup>5</sup> / <sub>8</sub> "-11UNC	4	5.91		0.06		2.36
3/4"	600#	<sup>5</sup> / <sub>8</sub> "-11UNC	4	5.91		0.25		2.55
1"	150#	½"-13UNC	4	5.91		0.06		2.36
1"	300#	<sup>5</sup> / <sub>8</sub> "-11UNC	4	5.91	5.91	0.06	3.5	2.36
1"	600#	<sup>5</sup> / <sub>8</sub> "-11UNC	4	5.91		0.25		2.55
1 1/2"	150#	½"-13UNC	4	5.91		0.06		2.36
1 ½"	300#	34"-10UNC	4	6.12		0.06		2.46
1 1/2"	600#	34"-10UNC	4	6.12		0.25		2.65
2"	150#	<sup>5</sup> / <sub>8</sub> "-11UNC	4	6.00		0.06		2.36
2"	300#	<sup>5</sup> / <sub>8</sub> "-11UNC	8	6.50		0.06		2.36
2"	600#	<sup>5</sup> / <sub>8</sub> "-11UNC	8	6.50		0.25		2.55

DM = Effective diaphragm diameter G1 = Instrument connection

G2 = Process connection

G3 = Threaded bolt hole

X = Number of bolt holes

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

Remote seals for transmitters and pressure gauges SITRANS P DS III

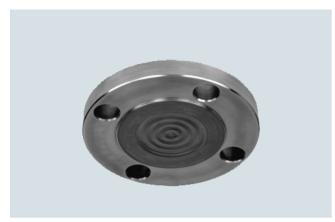
# Diaphragm seal "flanged off-line low-pressure type", directly connected

Selection and Ordering data	Article	No.	Order	CC	de	=
Diaphragm seal "flanged off-line low-pressure type"						
direct mount to transmitter, 316 stainless steel upper housing SITRANS P for 7MF44 ■ ■ or 7MF46 ■ ■ (order separately)	7 M F 4		4 -			
∠ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.						
Size and class						
• ½ inch class 150#RF • ½ inch class 300#RF • ½ inch class 600#RF • ¾ inch class 150#RF • ¾ inch class 300#RF • ¾ inch class 300#RF • ¾ inch class 300#RF • 1 inch class 150#RF • 1 inch class 300#RF • 1 inch class 300#RF • 1 ½ inch class 150#RF • 1 ½ inch class 150#RF • 1 ½ inch class 300#RF • 1 ½ inch class 300#RF • 1 ½ inch class 300#RF • 2 inch class 300#RF • 2 inch class 600#RF Special design, customer information to be supplied	A B C E F G J K L N P Q S T U Z			J.	1 Y	,
Materials and wetted parts  • SST 316L  • Monel 400, mat. No. 2.4360  • Hastelloy C276, mat. No. 2.4819  • Tantal  Special design, customer information to be supplied	A G J K Z			K	1 Y	
Flushing port(s)						
None 1 x $^1$ /4"NPT-female (available w/ SS, HC or MO) 2 x $^1$ /4"NPT-female (available w/ SS, HC or MO) Special design, customer information to be supplied	0 2 4 9			L	1 Y	
System fill						
Silicone oil DC 200-10 Silicone oil DC 200-50 Halocarbon (for O <sub>2</sub> -application) Silicone oil M5 Syltherm 800 DC704 silicone oil Fluorolube Special design, customer information to be supplied		1 2 4 5 6 7 8 9		M	1 Y	
Further designs Please add "-Z" to Article No. and specifiy Order code						
Integrated flame path restriction Certification of calibration N.I.S.T. (20 % steps)				A		
Material conformance certificate				C		
Vacuum service (must be specified with HT oil)					01	1
Calculation of span of transmitter (completed questionnaire to be attached)					0 5	

Remote seals for transmitters and pressure gauges SITRANS P DS III

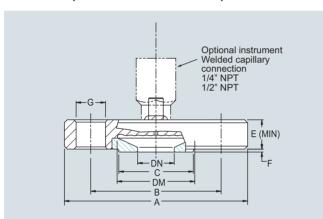
## Flange-type diaphragm seal with flexible capillary tube

# Overview

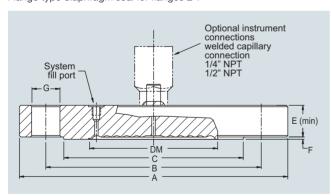


Flange-type diaphragm seal with flexible capillary extension

## Dimensions (Connection to ASME B16.5)



Flange-type diaphragm seal for flanges ≤ 1"



Flange-type diaphragm seal for flanges ≥ 1.5"

# Connection to ASME B16.5

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

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

All dimensions in inches unless otherwise noted

Remote seals for transmitters and pressure gauges SITRANS P DS III

# Flange-type diaphragm seal with flexible capillary tube

Flange-type diaphragm seal  with flexible capillary extension, connected to a SITRANS P transmitter (order separately)  for pressure 7MF40 ■ or 7MF42 ■ 7MF4820-  for absolute pressure 7MF43 ■ 7MF4821-  for differential pressure 7MF44 ■ 7MF4823-  • dual seals for DP  ☐ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.  Size and class • 2 inch class 150 L • 2 inch class 300 M • 2 inch class 150 P • 3 inch class 300 R • 3 inch class 150 V • 3 inch class 150 V • 5 inch class 400 V • 5 inch class 300 V • 5 inch class 300 V • 5 inch class 400 V Special design, customer information to be supplied  Materials and wetted parts	•	
a SITRANS P transmitter (order separately)  for pressure 7MF40 or 7MF42 or 7MF48 20-  for absolute pressure 7MF43 or 7MF48 21-  for differential pressure 7MF44 or 7MF48 21-  7MF48 2	•	
for absolute pressure 7MF43  7 M F 4 8 2 1 - for differential pressure 7MF44  7 M F 4 8 2 3 -	•	
for differential pressure 7MF44  7MF4823-  • dual seals for DP  7 Click on the Article No. for the online configuration in the PIA Life Cycle Portal.  Size and class  • 2 inch	-	
• dual seals for DP  ☐ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.  Size and class  • 2 inch class 150 Moderate Sinch class 300 Moderate Sinch class 1500 Moderate Sinch class 150 Moderate Sinch class 300 Moderate Sinch class 150 Moderate Sinch class 300 Moderate Sinch class 300 Moderate Sinch class 300 Moderate Sinch class 150 Moderate Sinch class 150 Moderate Sinch class 300 Moderate Sinch Class 3		
• dual seals for DP      ☐ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.      ☐ Size and class     ☐ 2 inch	-	
guration in the PIA Life Cycle Portal.  Size and class  • 2 inch class 150 L • 2 inch class 300 M • 2 inch class 600 N • 2 inch class 1500 P • 3 inch class 150 Q • 3 inch class 300 R • 3 inch class 600 S • 4 inch class 150 T • 4 inch class 150 U • 5 inch class 150 W • 5 inch class 300 V • 5 inch class 300 V • 5 inch class 300 V • 5 inch class 400 V • 5 inch class		
• 2 inch class 150		
• 2 inch class 300 M N   • 2 inch class 600 N   • 2 inch class 600 P   • 3 inch class 1500 P   • 3 inch class 300 R   • 3 inch class 300 S   • 4 inch class 150 U   • 4 inch class 150 U   • 5 inch class 150 W   • 5 inch class 300 X   • 5 inch class 400 Y   • 5 inch class 400		
• 2 inch class 600 N • 2 inch class 1500 P • 3 inch class 150 Q • 3 inch class 300 R • 3 inch class 600 S • 4 inch class 150 T • 4 inch class 300 U • 4 inch class 400 V • 5 inch class 150 W • 5 inch class 300 X • 5 inch class 400 Y Special design, customer information to be supplied  Materials and wetted parts		
• 2 inch class 1500		
• 3 inch class 150 Q • 3 inch class 300 R • 3 inch class 600 S • 4 inch class 150 T • 4 inch class 300 V • 5 inch class 150 V • 5 inch class 300 V • 5 inch class 300 V • 5 inch class 300 V • 5 inch class 400 V • 5 inch class 300 V • 5 inch class 400 V • 5 inch		
• 3 inch class 300 R • 3 inch class 600 S • 4 inch class 150 T • 4 inch class 300 V • 5 inch class 150 W • 5 inch class 300 V • 5 inch class 300 V • 5 inch class 400 V • 5 inch class 300 V • 5 inch class 400 V • 5 inch		
4 inch class 150     4 inch class 300     4 inch class 300     5 inch class 150     5 inch class 300     5 inch class 300     Special design, customer information to be supplied  Materials and wetted parts		
4 inch class 300     4 inch class 400     5 inch class 150     5 inch class 300     5 inch class 300     Special design, customer information to be supplied  Materials and wetted parts		
4 inch class 400     5 inch class 150     5 inch class 300     5 inch class 400     Y     Special design, customer information to be supplied  Materials and wetted parts		
• 5 inch class 300 • 5 inch class 400  Special design, customer information to be supplied  Materials and wetted parts		
• 5 inch class 400  Special design, customer information to be supplied  Materials and wetted parts		
Special design, customer information to be supplied  Materials and wetted parts		
supplied  Materials and wetted parts		
Materials and wetted parts	J 1	1 Y
· ·		
• SST 316L		
<ul> <li>Monel 400, mat. No. 2.4360</li> </ul>		
Hastelloy C276, mat. No. 2.4819  J  Tartel		
• Tantal K Special design, customer information to be Z	K 1	· v
Special design, customer information to be supplied	K I	
Extension length (316SS standard)		
Without extension (standard version) 0		
Special design, customer information to be	L 1	1 Y
supplied for extension		
System fill  • Silicone oil DC 200-10  1		
• Silicone oil DC 200-10  • Silicone oil DC 200-50		
<ul> <li>Halocarbon (for O<sub>2</sub>-application)</li> </ul>		
• Silicone oil M5		
<ul><li>Syltherm 800</li><li>DC704 silicone oil</li><li>7</li></ul>		
• Fluorolube 8		
Special design, customer information to be	M 1	1 Y
supplied		
Length of capillary		
• 3 ft • 5 ft		
• 10 ft		
• 15 ft 5		
• 20 ft 6		
• 25 ft • 30 ft		
Special design, customer information to be	N 1	ıv
supplied		

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

Remote seals for transmitters and pressure gauges SITRANS P DS III

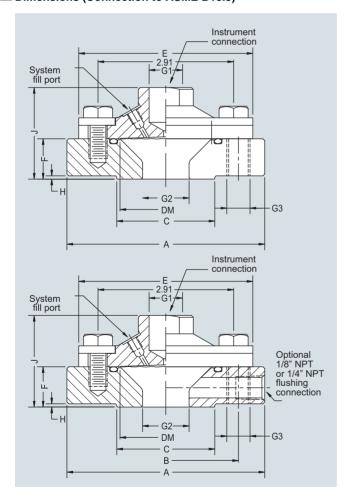
## Diaphragm seal "flanged off-line type"

# Overview



Diaphragm seal "flanged off-line type"

## Dimensions (Connection to ASME B16.5)



G1	(	G2	G3	Α	В	С	DM	E
	1/2"	150#	4 x ½"-13UNC	3.75	2.38			
	1/2"	300#	4 x ½"-13UNC	3.75	2.62	1.38		
	1/2"	600#	4 x ½"-13UNC	3.75	2.62			
	1"	150#	4 x ½"-13UNC	4.25	3.12			
	1"	300#	4 x <sup>5</sup> / <sub>8</sub> "-11UNC	4.88	3.50	2.00	2.1	
1/4"-NPT	1"	600#	4 x <sup>5</sup> / <sub>8</sub> "-11UNC	4.88	3.50			3.74
or ½"-NPT	1 ½"	150#	4 x ½"-13UNC	5.00	3.88		۷.۱	3.74
	1 ½"	300#	4 x ¾"-10UNC	6.12	4.50	2.88		
	1 ½"	600#	4 x ¾"-10UNC	6.12	4.50			
	2"	150#	4 x <sup>5</sup> / <sub>8</sub> "-11UNC	6.00	4.75			
	2"	300#	8 x 0.75	6.50	5.00	3.62		
	2"	600#	8 x 0.75	6.50	5.00			

G1	(	G2	G3	F	Н	J	Weight
							lbs
	1/2"	150#	4 x ½"-13UNC	1.10	0.06	2.20	4.3
	1/2"	300#	4 x ½"-13UNC	1.10	0.06	2.20	4.3
	1/2"	600#	4 x ½"-13UNC	1.26	0.25	2.36	4.4
	1"	150#	4 x ½"-13UNC	0.87	0.06	1.97	4.4
	1"	300#	4 x <sup>5</sup> / <sub>8</sub> "-11UNC	0.87	0.06	1.97	8.5
1/4"-NPT	1"	600#	4 x <sup>5</sup> / <sub>8</sub> "-11UNC	1.26	0.25	2.36	8.5
or ½"-NPT	1 ½"	150#	4 x ½"-13UNC	0.87	0.06	1.97	5.0
	1 ½"	300#	4 x ¾"-10UNC	0.87	0.06	1.97	6.6
	1 ½"	600#	4 x ¾"-10UNC	1.26	0.25	2.36	9.1
	2"	150#	4 x <sup>5</sup> / <sub>8</sub> "-11UNC	0.87	0.06	1.97	6.1
	2"	300#	8 x 0.75	0.89	0.06	1.99	8.5
	2"	600#	8 x 0.75	1.28	0.25	2.38	10.0

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

G3 = Threaded bolt hole All dimensions in inches unless otherwise noted

Diaphragm seal "flanged off-line type", dimensions

Remote seals for transmitters and pressure gauges SITRANS P DS III

# Diaphragm seal "flanged off-line type"

Solootion and Ordering data	Artiala Na Ordar anda	_
Selection and Ordering data  Diaphragm seal "flanged off-line type"	Article No. Order code	;
MAWP depends on flange		
with flexible armored capillary, 316 stainless steel upper housing SITRANS P for 7MF40 ■ ■ and 7MF42 ■ ■ (order separately)	7 M F 4 8 2 6 -	
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
Seal design		
Stud mount All-welded stud mount	1 2	
Through-hole flange mount	3	
Size and class		
<ul> <li>½ inch class 150#RF</li> <li>½ inch class 300#RF</li> </ul>	A B	
• ½ inch class 500#RF	Č	
• ¾ inch class 150#RF	E	
• ¾ inch class 300#RF	F	
<ul><li>¾ inch class 600#RF</li><li>1 inch class 150#RF</li></ul>	G J	
• 1 inch class 300#RF	K	
• 1 inch class 600#RF	Ļ.	
• 1 ½ inch class 150#RF • 1 ½ inch class 300#RF	N P	
• 1 ½ inch class 600#RF	Q	
• 2 inch class 150#RF	S	
• 2 inch class 300#RF	Ţ	
• 2 inch class 600#RF	U Z J 1 Y	
Special design, customer information to be supplied	2 311	
Materials and wetted parts		
• SST 316L	A	
<ul> <li>Monel 400, mat. No. 2.4360</li> <li>Hostollov C276, mat. No. 2.4810</li> </ul>	G J	
<ul><li>Hastelloy C276, mat. No. 2.4819</li><li>Tantal</li></ul>	K	
Special design, customer information to be	Z K 1 Y	
supplied		
Flushing port(s) None	0	
1 x ½"NPT-female (available w/ SS, HC or MO)	2	ı
2 x 1/4"NPT-female (available w/ SS, HC or MO)	4	
Special design, customer information to be	9 L 1 Y	
supplied		
System fill  Silicone oil DC 200-10	1	
• Silicone oil DC 200-50	2	
<ul> <li>Halocarbon (for O<sub>2</sub>-application)</li> </ul>	4	
• Silicone oil M5	5 6	
<ul><li>Syltherm 800</li><li>DC704 silicone oil</li></ul>	7	
• Fluorolube	8	
Special design, customer information to be supplied	9 M 1 Y	
Length of capillary		
Direct mount	0	
• 3 ft	2	
<ul><li>5 ft</li><li>10 ft</li></ul>	3 4	
• 15 ft	5	
• 20 ft	6	
• 25 ft • 30 ft	7 8	
Special design, customer information to be	9 N 1 Y	
supplied	, III	
oupphou		

			_	
Selection and Ordering data	Article No.	Order	СО	de
Further designs Please add "-Z" to Article No. and specifiy Order code				
Integrated flame path restriction			Α (	1
DP "H" flange service		ı	В	2
Certification of calibration N.I.S.T. (20 % steps)		(	<b>C</b> 1	1
Material conformance certificate		(	<b>C</b> 1	2
Vacuum service (must be specified with HT oil)		,	V (	1
Calculation of span of transmitter (completed questionnaire to be attached)			Y	5

Remote seals for transmitters and pressure gauges SITRANS P DS III

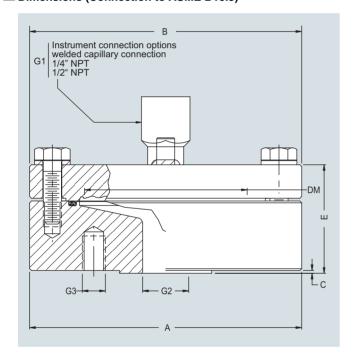
## Diaphragm seal "flanged off-line low-pressure type"

# Overview



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

## Dimensions (Connection to ASME B16.5)



(	G2	G3		Α	В	С	DM	Е
Size	Class							
1/2"	150#	½"-13UNC	4	5.91		0.06		2.36
1/2"	300#	½"-13UNC	4	5.91		0.06		2.36
1/2"	600#	½"-13UNC	4	5.91		0.25		2.55
3/4"	150#	½"-13UNC	4	5.91		0.06		2.36
3/4"	300#	<sup>5</sup> / <sub>8</sub> "-11UNC	4	5.91		0.06		2.36
3/4"	600#	<sup>5</sup> / <sub>8</sub> "-11UNC	4	5.91		0.25		2.55
1"	150#	½"-13UNC	4	5.91		0.06		2.36
1"	300#	<sup>5</sup> / <sub>8</sub> "-11UNC	4	5.91	5.91	0.06	3.5	2.36
1"	600#	<sup>5</sup> / <sub>8</sub> "-11UNC	4	5.91		0.25		2.55
1 ½"	150#	½"-13UNC	4	5.91		0.06		2.36
1 ½"	300#	¾"-10UNC	4	6.12		0.06		2.46
1 ½"	600#	¾"-10UNC	4	6.12		0.25		2.65
2"	150#	<sup>5</sup> / <sub>8</sub> "-11UNC	4	6.00		0.06		2.36
2"	300#	5/8"-11UNC	8	6.50		0.06		2.36
2"	600#	5/8"-11UNC	8	6.50		0.25		2.55

DM = Effective diaphragm diameter

G2 = Process connection G3 = Threaded bolt hole

X = Number of bolt holes

Class = Flange rating per ASME B16.5

Size = Nominal pipe size

All dimensions in inches unless otherwise noted

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

Remote seals for transmitters and pressure gauges SITRANS P DS III

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

Selection and Ordering data	Article No. Ord	er code	Selection and Ordering data	Article No. Orc	der code	
Diaphragm seal "flanged off-line			Diaphragm seal "flanged off-line			
with flexible armored capillary, 316 stainless steel upper housing SITRANS P for 7MF40 ■ and 7MF42 ■ (order separately)  Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7 M F 4 8 2 7 -	-	low-pressure type"  with flexible armored capillary, 316 stainless steel upper housing SITRANS P for 7MF44 ■ ■ (order separately)  Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7 M F 4 8 2 8 -	П	
Size and class  1/2 inch class 300#RF  1/2 inch class 300#RF  1/2 inch class 600#RF  1/2 inch class 600#RF  1/2 inch class 150#RF  1/2 inch class 300#RF  1/2 inch class 600#RF  1/2 inch class 150#RF  1/2 inch class 300#RF  1/2 inch class 600#RF  2/2 inch class 600#RF  3/4 inch class 600#RF  5/4 inch class 600#RF  5/5 inch class 600#RF  6/5 inch class 600#RF  8/6 inch class 600#RF  9/6 inch class 600#RF  9/6 inch class 600#RF  1/2 inch class 600#RF  1/2 inch class 600#RF  2/4 inch class 600#RF  2/5 inch class 600#RF  2/6 inch class 60#RF  2/6 inch class 600#RF  2/6 inc	A B C E F G J K L N P Q S T U Z A G J K	J1Y	Size and class  1/2 inch class 150#RF  1/2 inch class 300#RF  1/3 inch class 600#RF  3/4 inch class 150#RF  3/4 inch class 300#RF  3/4 inch class 600#RF  1 inch class 600#RF  1 inch class 150#RF  1 inch class 300#RF  1 inch class 300#RF  1 inch class 300#RF  1 1/2 inch class 300#RF  1 1/2 inch class 300#RF  1 1/2 inch class 300#RF  2 inch class 300#RF  2 inch class 600#RF  2 inch class 600#RF  2 inch class 600#RF  2 inch class 600#RF  Special design, customer information to be supplied  Materials and wetted parts  SST 316L  Monel 400, mat. No. 2.4360  Hastelloy C276, mat. No. 2.4819  Tantal	A B C E F G J K L N P Q S T U Z A G J K	J 1 Y	
Special design, customer information to be supplied  Flushing port(s)  None  1 x ¼"NPT-female (available w/ SS, HC or MO) 2 x ¼"NPT-female (available w/ SS, HC or MO)  Special design, customer information to be supplied	0 2 4 9	K1Y L1Y	Special design, customer information to be supplied  Flushing port(s)  None  1 x ½*NPT-female (available w/ SS, HC or MO) 2 x ½*NPT-female (available w/ SS, HC or MO) Special design, customer information to be supplied	0 2 4 9	K1Y	
System fill  • Silicone oil DC 200-10  • Silicone oil DC 200-50  • Halocarbon (for O <sub>2</sub> -application)  • Silicone oil M5  • Syltherm 800  • DC704 silicone oil  • Fluorolube  Special design, customer information to be supplied	1 2 4 5 6 7 8 9	M 1 Y	System fill  Silicone oil DC 200-10  Silicone oil DC 200-50  Halocarbon (for O <sub>2</sub> -application)  Silicone oil M5  Syltherm 800  DC704 silicone oil  Fluorolube  Special design, customer information to be supplied	1 2 4 5 6 7 8 9	M 1 Y	
Length of capillary  Direct mount  3 ft  5 ft  10 ft  15 ft  20 ft  25 ft  30 ft  Special design, customer information to be	0 2 3 4 5 6 7 8 9	N 1 Y	Length of capillary  3 ft 5 ft 10 ft 15 ft 20 ft 25 ft 30 ft Special design, customer information to be supplied	2 3 4 5 6 7 8 9	N 1 Y	
supplied  Further designs  Please add "-Z" to Article No. and specifiy Order code			Further designs Please add "-Z" to Article No. and specifiy Order code Integrated flame path restriction		A 0 2	
Integrated flame path restriction DP "H" flange service Certification of calibration N.I.S.T. (20 % steps) Material conformance certificate Vacuum service (must be specified with HT oil) Calculation of span of transmitter (completed questionnaire to be attached)		A 0 1 B 0 2 C 1 1 C 1 2 V 0 1 Y 0 5	Certification of calibration N.I.S.T. (20 % steps) Material conformance certificate Vacuum service (must be specified with HT oil) Calculation of span of transmitter (completed questionnaire to be attached)		C11 C12 V01 Y05	

Remote seals for transmitters and pressure gauges SITRANS P DS III

Flushing rings

## Overview



#### Flushing ring

Flushing rings are required for flange-mounted and pancake type remote seals (Article No. 7MF4800 ... 7MF4823) if the danger exists that the process conditions and the geometry of the connection could cause the process to form deposits or blockages.

The flushing ring is clamped between the process flange and the remote seal.

Deposits can be flushed away from the diaphragm through the holes in the side, or the pressure volume can be vented. Different nominal diameters and forms permit adaptation to the respective process flange.

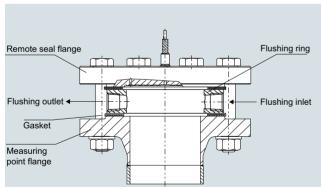
#### **Process connection**

For flanges to EN and ASME: DN 50, 80, 100, 125; PN 16 ... 100 or DN 2 inch, 3 inch, 4 inch, 5 inch; Class 150 ... 600

## Standard design

Material: CrNi-Stahl, mat. No. 1.4404/316L Sealing faces and flushing holes: See Ordering data

## Design

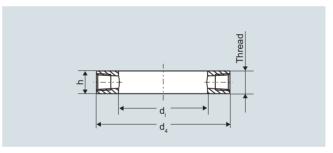


Installation example

## Technical specifications

Flushing ring for remote seals of	pancake and flange design
Nom. diam.  • DN 50  • DN 80  • DN 100  • DN 125	Nom. press. PN 16 PN 100
<ul><li>2 inch</li><li>3 inch</li><li>4 inch</li><li>5 inch</li></ul> Sealing face	Class 150 class 600 Class 150 class 600 Class 150 class 600 Class 150 class 600
• To EN 1092-1	Form B1 Form B2 Form D/Form D Form C/Form C Form C/Form C Form E Form F
• To ASME B16.5	RF 125 250 AA RFSF RJT ring groove
Flushing holes (2 off), female thread:	• G¼ • G½ • ¼-18 NPT • ½-14 NPT
Material	Stainless steel 1.4404/316L

#### Dimensional drawings



## Connection to EN 1092-1

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

#### Connection to ASME B 16.5

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

Flushing ring, dimension drawing

Remote seals for transmitters and pressure gauges SITRANS P DS III

# Flushing rings

Selection and Orde	ring data	Article	No.	Ord. c	00	эb
Flushing ring		7 M F	4825	j <b>-</b>		
for remote seals 7MF	4900 to 7MF4923	1			1	
Click on the Articleration in the PIA L	e No. for the online configuife Cycle Portal.					
Nom. diam.	Nom. press.					
<ul><li>2 inch</li><li>3 inch</li><li>4 inch</li><li>5 inch</li></ul>	Class 150 600 Class 150 600 Class 150 600 Class 150 600	G H J K				
Other version Add Order code and Nominal diameter:	plain text: ; Nominal pressure:	Z		J	1 '	Y
Sealing face  • ASME B16.5  - RF 125 250 AA  - RFSF  - RJT ring groove Other version Add Order code and Sealing face:		M Q R Z		K	1 '	Y
Flushing holes (2 or Female thread G½ Female thread ½-1 Female thread ½-1	8 NPT	:	1 2 3 4			
Material • Stainless steel 316 Other version Add Order code and Material:	_		0 9	M	1 '	Y
Further designs Please add "-Z" to A Order code	rticle No. and specifiy					
Acceptance test certo EN 10204, section				С	1 :	2

Remote seals for transmitters and pressure gauges SITRANS P DS III

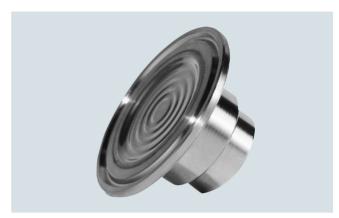
# Diaphragm seal with quick connection

## Overview



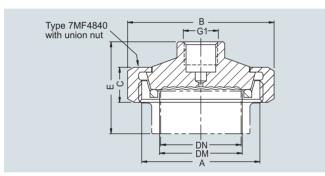
Diaphragm seal with quick connection, with slotted union nut

## Overview



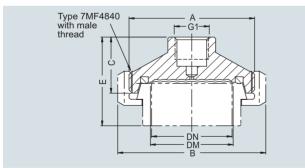
Diaphragm seal with quick connection, Tri-Clamp connection

## Dimensions (connection to ASME B16.5)



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

Diaphragm seal with quick connection, with slotted union nut



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

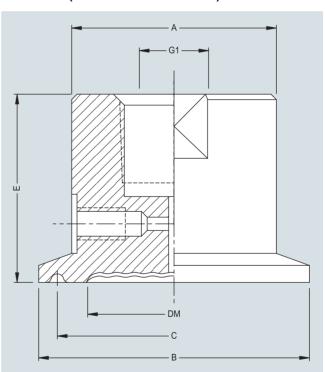
DM = Effective diaphragm diameter MAWP = Maximum Working Pressure @ 250 °F G1 = Instrument connection

DN = Nominal pipe size

All dimensions in inches unless otherwise noted

Diaphragm seal with quick connection, with male thread, dimensions

## Dimensions (connection to ASME B16.5)



Size [in]	MAWP [psi]	Α	В	С	DM	E	G1	Weight [lbs]
1.5	600	1.50	1.97	1.71	1.0		1/4"-NPT or 1/2"-NPT female	1.3
2	550	1.50	2.52	2.22	1.6			1.7
2.5	450	2.52	3.05	2.78	2.0	1.38		2.0
3	350	2.31	3.58	3.28	2.8			2.4
4	250	2.31	4 68	4.34	3.5			27

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

appropriate clamping device G1 = Instrument connection

Size = Nominal pipe size

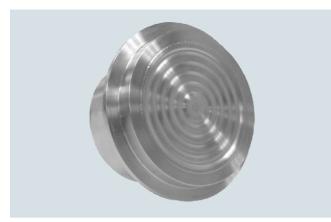
All dimensions in inches unless otherwise noted

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

Remote seals for transmitters and pressure gauges SITRANS P DS III

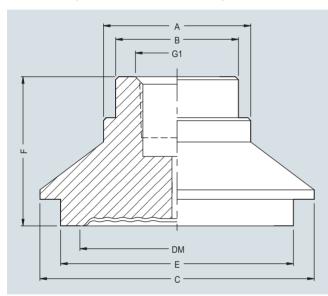
## Inline diaphragm seal with quick connection

## Overview



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

## Dimensions (connection to ASME B16.5)



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

DM = Effective diaphragm diameter
MAWP = Maximum Working Pressure @ 250 °F, higher rating with appropriate clamping device
G1 = Instrument connection
Size = Nominal pipe size
All dimensions in jectors upless atherwise noted

All dimensions in inches unless otherwise noted

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

Selection and Ordering data	Article	No.	(	Order	C	od	е
Diaphragm seal with quick connection for gage pressure transmitter SITRANS P 7MF40 ■ and 7MF42 ■ (order separately) made of 316 SS	7 M F 4						
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.							
Process connection DIN 11 851 with slotted union nut DN 25/PN 40 DN 32/PN 40 DN 40/PN 40 DN 50/PN 25 DN 65/PN 25 DN 80/PN 25 DN 80/PN 25	1 B 1 C 1 D 1 E 1 F 1 G						
DIN 11 851 with screw necks DN 25/PN 40 DN 32/PN 40 DN 40/PN 40 DN 50/PN 25 DN 65/PN 25 DN 80/PN 25 Tri-Clamp Connection 1 ½" 650 psi	2 B 2 C 2 D 2 E 2 F 2 G						
2" 550 psi 2 ½" 450 psi 3" 350 psi Varivent (Tuchenhagen)	4 N 4 P						
Size 25132 Size 40150 Sanitary (4" Tank Spud) 2" extension	5 C 5 E 6 B						
6" extension "I"-Line (Cherry Burrell - male) 1 ½" 500 psi 2" 450 psi	6 D 5 U 5 V						
3" 350 psi Special design, customer information to be supplied	5 W 9 Z			+	H	1 ' 1 '	
System fill  • Vegetable oil  • Glycerin/Water 86.5/13.5 %  • Neobee M20  • Mineral oil Special design, customer information to be supplied		1 2 3 4 9			M	1 '	Y
Length of capillary  • Direct Mount			0				
<ul> <li>3 ft</li> <li>5 ft</li> <li>10 ft</li> <li>15 ft</li> <li>20 ft</li> <li>25 ft</li> <li>30 ft</li> </ul>			2 3 4 5 6 7 8				
Special design, customer information to be supplied			9		N	1 '	Y
Further designs Please add "-Z" to Article No. and specifiy Order code							
Certification of calibration N.I.S.T. (20 % steps)						1	
Material conformance certificate  Vacuum service (must be specified with vege-						1 : 0 :	
table oil)  Calculation of span of transmitter (completed questionnaire to be attached)					Υ	0 :	5
Tank Spud accessories							
Sanitary Tank Spud Clamp (1 pc.)						1 (	
Sanitary Tank Spud O-ring (1 pc.) Sanitary Tank Spud Weldolet 2" extension						1:	
(1 pc.) Sanitary Tank Spud Weldolet 6" extension (1 pc.)					P	1 :	3

Remote seals for transmitters and pressure gauges SITRANS P DS III

Inline diaphragm seal with quick connection

Selection and Ordering data	Arti	cle	No	. (	Orde	er co	ode
Diaphragm seal							
with quick connection for differential transmitter SITRANS P 7MF44 ■ ■ (order separately) made of 316 SS	7 M						
→ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.							
Process connection DIN 11 851 with slotted union nut DN 50/PN 25 DN 65/PN 25 DN 80/PN 25	1 E 1 F 1 G						
DIN 11 851 with screw necks DN 50/PN 25 DN 65/PN 25 DN 80/PN 25	2 E 2 F 2 G						
Tri-Clamp Connection 2" 550 psi 2 ½" 450 psi 3" 350 psi 4" 250 psi	4 M 4 N 4 P 4 Q						
"I"-Line (Cherry Burrell - male) 3" 350 psi 4" 200 psi	5 W 5 X						
Sanitary (4" Tank Spud) 2" extension 6" extension Special design, customer information to be supplied	6 B 6 D 9 Z					H + J	1 Y 1 Y
System fill  • Vegetable oil  • Glycerin/Water 86.5/13.5 %  • Neobee M20  • Mineral oil  Special design, customer information to be supplied			1 2 3 4 9			M	1 Y
Length of capillary  3 ft 5 ft 10 ft 15 ft 20 ft 25 ft 30 ft				2 3 4 5 6 7 8			
Special design, customer information to be supplied				9		N	1 Y
Further designs Please add "-Z" to Article No. and specifiy Order code							
Certification of calibration N.I.S.T. (20 % steps)  Material conformance certificate  Vacuum service (must be specified with vege-						С	1 1 1 2 0 3
table oil)  Calculation of span of transmitter (completed							0 5
questionnaire to be attached)							
<b>Tank Spud accessories</b> Sanitary Tank Spud Clamp (1 pc., two required)						Р	1 0
Sanitary Tank Spud O-ring (1 pc., two required)						P	1 1
Sanitary Tank Spud Weldolet 2" extension (1 pc., two required)						Р	1 2

Remote seals for transmitters and pressure gauges SITRANS P DS III

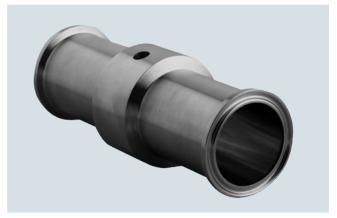
## Inline diaphragm seal with quick connection

## Overview



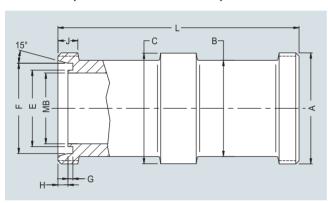
Inline diaphragm seal with quick connector, DIN 11851 with thread

## Overview



Inline diaphragm seal with quick connection, Tri-clamp

## Dimensions (connection to ASME B16.5)



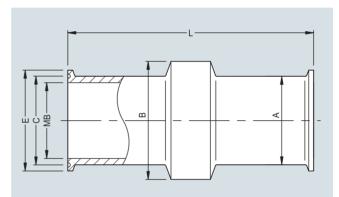
DN	MAWP	Α	В	С	Е	G	Н	J	L	MB
[mm]	[psi]									
15	600	Rd34x1/8	1.10	1.57	0.71	0.12	0.16	0.47	4.1	0.63
25	600	Rd52x1/6	1.50	2.05	1.18	0.14	0.28	0.55	5.0	1.02
40	600	Rd65x1/6	2.17	2.56	1.65	0.14	0.28	0.55	6.3	1.50
50	360	Rd78x1/6	2.68	3.07	2.13	0.14	0.28	0.55	6.7	1.97
65	360	Rd95x1/6	3.35	3.74	2.80	0.14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

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

All dimensions in inches unless otherwise noted

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

# Dimensions (connection to ASME B16.5)



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

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

Size = Nominal pipe size

All dimensions in inches unless otherwise noted

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

Remote seals for transmitters and pressure gauges SITRANS P DS III

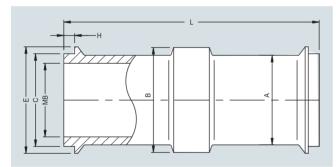
## Inline diaphragm seal with quick connection

# Overview



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

## Dimensions (connection to ASME B16.5)



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

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

All dimensions in inches unless otherwise noted

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

Selection and Ordering data	Arti	cle	No	. С	)rde	r c	0	de
Inline diaphragm seal								
with quick connection for transmitter	7 M	F 4	8 !	5 0	-			
SITRANS P for 7MF40 ■ and 7MF42 ■ (order separately) made of 316 SS		Α0	١.		В	ŀ	ı	
guration in the PIA Life Cycle Portal.								
Process connection								
DIN 11 851 with thread [C] DN 25/PN 40	2 B							
DN 40/PN 40 DN 50/PN 25	2 D 2 E							
DN 65/PN 25	2 F							
DN 80/PN 25 DN100/PN 25	2 G 2 H							
Tri-Clamp Connection	2 11							
1" 600 psi	4 K							
1 ½" 600 psi 2" 550 psi	4 L 4 M							
2 ½" 450 psi	4 N							
3" 350 psi "I"-Line (Cherry Burrell - male/male)	4 P							
1" 500 psi	5 R							
1 ½" 500 psi 2" 450 psi	5 U 5 V							
3" 350 psi	5 W							
Special design, customer information to be supplied	9 Z							Y
System fill								
Vegetable oil     Chaptin Motor RC 5/12 5 8/			1					
<ul><li>Glycerin/Water 86.5/13.5 %</li><li>Neobee M20</li></ul>			2					
Mineral oil			4			ı.		.,
Special design, customer information to be supplied			9			N	// 1	Υ
Length of capillary								
<ul><li>Direct mount</li><li>3 ft</li></ul>				0				
• 5 ft				3				
• 10 ft • 15 ft				4 5				
• 20 ft				6				
• 25 ft • 30 ft				7 8				
Special design, customer information to be supplied				9		٨	l 1	Y
Further designs								
Please add "-Z" to Article No. and specifiy Order code								
Certification of calibration N.I.S.T. (20 % steps)								1
Material conformance certificate								2
Vacuum service (must be specified with vegetable oil)								3
Calculation of span of transmitter (completed questionnaire to be attached)						Y	0	5

Remote seals for transmitters and pressure gauges SITRANS P DS III

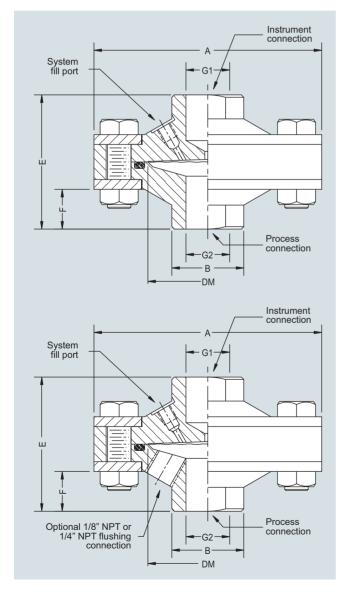
## Diaphragm seal "threaded design"

## Overview



Diaphragm seal "threaded design"

## Dimensions (Connection to ASME B16.5)



G1	G2	A	В	DM	E	F	Weight [lbs]
1/4"-NPT	1/4"-NPT or 1/2"-NPT	0.74	1.18	2.1	2.20	0.63	3.0
or ½"-NPT	¾"-NPT	3.74	1.41	2.1	2.36	0.79	3.4
72 <b>-</b> INF I	1"-NPT		1.77	2.1	3.46	1.89	3.6

 $G1 = Instrument\ connection,\ G2 = Process\ connection$   $DM = Effective\ diaphragm\ diameter$  All dimensions in inches unless otherwise noted

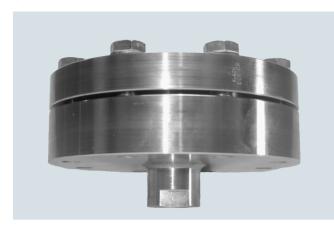
Diaphragm seal "threaded design"

Diaphragm seal "threaded design"					
Selection and Ordering data	Article No.	Order	CC	OC	le
Diaphragm seal "threaded design" MAWP 3675 psi with flexible armored capillary, 316 stainless steel upper housing SITRANS P for 7MF40	7 M F 4 8 6		_		
and 7MF42 ■ pressure (order separately)  Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	1	=В			
Size and class			H		
<ul> <li>¼"NPT-female</li> <li>½"NPT-female</li> <li>¾"NPT-female</li> <li>1"NPT-female</li> </ul> Special design, customer information to be supplied	A B C D		J	1	Y
Materials and wetted parts					
<ul> <li>SST 316L</li> <li>SST 316L with Hastelloy C276 diaphragm</li> <li>SST 316L with PFA coated diaphragm (good upto 500 °F)</li> <li>Monel 400, mat. No. 2.4360</li> <li>Hastelloy C276, mat. No. 2.4819</li> </ul>	A F D G J				
<ul> <li>Hastelloy C276 lower housing with Tantalum</li> </ul>	K				
diaphragm	z		K		v
Special design, customer inform. to be supplied			^	•	I
Flushing port(s) None	0				
1 x ½"NPT-female 2 x ½"NPT-female	2 4				
Special design, customer inform. to be supplied	9		L	1	Y
System fill  Silicone oil DC 200-10 Silicone oil DC 200-50 Halocarbon (for O <sub>2</sub> -application) Silicone oil M5 Syttherm 800 DC704 silicone oil Fluorolube Special design, customer inform. to be supplied	1 2 4 5 6 7 8 9		M	1	Y
Length of capillary					
<ul> <li>Direct mount</li> <li>3 ft</li> <li>5 ft</li> <li>10 ft</li> <li>15 ft</li> <li>20 ft</li> <li>25 ft</li> <li>30 ft</li> </ul>		0 2 3 4 5 6 7			
Special design, customer inform. to be supplied		9	N	1	Υ
Further designs Please add "-Z" to Article No. and specify Order code					
Integrated flame path restriction DP "H" flange service Certification of calibration N.I.S.T. (20 % steps) Material conformance certificate Vacuum service (must be specified with HT oil) Calculation of span of transmitter (completed questionnaire to be attached)			A B C C V Y	0 1 1 0	2 1 2 1

Remote seals for transmitters and pressure gauges SITRANS P DS III

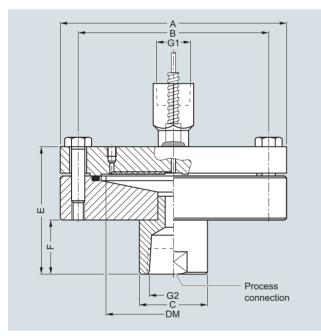
## Diaphragm seal "threaded, low-pressure design"

# Overview



Diaphragm seal "threaded, low-pressure design"

## Dimensions (Connection to ASME B16.5)



Diaphragm seal "threaded, low-pressure design, dimensions

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

G1 = Instrument connection
G2 = Process connection
DM = Effective diaphragm diameter
All dimensions in inches unless otherwise noted

Selection and Ordering data	Article No.	Order	CO	de
Diaphragm seal "threaded, low-pressure design" MAWP 1,500 psi				
with flexible armored capillary, 316 stainless steel upper housing SITRANS P for 7MF40■ and 7MF42 ■ pressure (order separately)	7 M F 4 8 6			
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.				
Size and class				
• ¼"NPT-female • ½"NPT-female • ¾"NPT-female • 1"NPT-female Special design, customer information to be supplied	A B C D		J 1	Y
Materials and wetted parts				
SST 316L     SST 316L with Hastelloy C276 diaphragm     SST 316L with PFA coated diaphragm     Monel 400, mat. No. 2.4360     Hastelloy C276, mat. No. 2.4819     Hastelloy C276 lower housing with Tantalum diaphragm     Special design, customer information to be supplied	A F D G J K		K 1	Y
Flushing port(s)				
None 1 x ½"NPT-female 2 x ½"NPT-female Special design, customer information to be supplied	0 2 4 9		L 1	Y
System fill				
Silicone oil DC 200-10 Silicone oil DC 200-50 Halocarbon (for O <sub>2</sub> -application) Silicone oil M5 Syltherm 800 DC704 silicone oil Fluorolube Special design, customer information to be supplied	1 2 4 5 6 7 8		M 1	Y
Length of capillary				
<ul> <li>Direct mount</li> <li>3 ft</li> <li>5 ft</li> <li>10 ft</li> <li>15 ft</li> <li>20 ft</li> <li>25 ft</li> <li>30 ft</li> </ul> Special design, customer information to be		0 2 3 4 5 6 7 8	N 1	v
supplied		9	IN I	•
Further designs Please add "-Z" to Article No. and specifiy Order code				
Integrated flame path restriction			Α0	1
Certification of calibration N.I.S.T. (20 % steps)			C 1	
Material conformance certificate			C 1	
Vacuum service (must be specified with HT oil)			V 0	
Calculation of span of transmitter (completed questionnaire to be attached)			Y 0	J

Remote seals for transmitters and pressure gauges SITRANS P DS III

# Diaphragm seal "threaded, low-pressure design"

Selection and Ordering data	Article	No.	Order	C	od	е
Diaphragm seal "threaded, low-pressure design" MAWP 1,500 psi						
with flexible armored capillary, 316 stainless steel upper housing SITRANS P for 7MF44 ■ ■ (order separately)	7 M F 4					
∠ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.						
Size and class						
<ul> <li>¼"NPT-female</li> <li>½"NPT-female</li> <li>¾"NPT-female</li> <li>1"NPT-female</li> <li>Special design, customer information to be supplied</li> </ul>	A B C D			J	1	Y
Materials and wetted parts						
• SST 316L	A					
<ul> <li>SST 316L with Hastelloy C276 diaphragm</li> <li>SST 316L with PFA coated diaphragm (good upto 500 °F)</li> <li>Monel 400, mat. No. 2.4360</li> <li>Hastelloy C276, mat. No. 2.4819</li> <li>Hastelloy C276 lower housing with Tantalum diaphragm</li> </ul>	F D G J K					
Special design, customer information to be supplied	Z			K	1	Y
Flushing port(s)						
None	0					
1 x ¼"NPT-female 2 x ¼"NPT-female	2					
Special design, customer information to be	9			L	1	γ
supplied				Ī	•	
System fill						
• Silicone oil DC 200-10		1				
• Silicone oil DC 200-50		2				
<ul> <li>Halocarbon (for O<sub>2</sub>-application)</li> <li>Silicone oil M5</li> </ul>		5				
Syltherm 800		6				
DC704 silicone oil		7				
<ul> <li>Fluorolube</li> <li>Special design, customer information to be</li> </ul>		8 9		М		v
supplied		9		IVI	•	I
Length of capillary	_					
• 3 ft			2			
• 5 ft			3			
• 10 ft • 15 ft			4 5			
• 20 ft			6			
• 25 ft			7			
• 30 ft			8			
Special design, customer information to be supplied			9	N	1	Y
Further designs Please add "-Z" to Article No. and specifiy Order code						
Integrated flame path restriction				A	0	2
Certification of calibration N.I.S.T. (20 % steps)				С	1	1
Material conformance certificate				C	1	2
Vacuum service (must be specified with HT oil)				٧	0	3
Calculation of span of transmitter (completed				Υ	0	5
questionnaire to be attached)						

Remote seals for transmitters and pressure gauges SITRANS P DS III

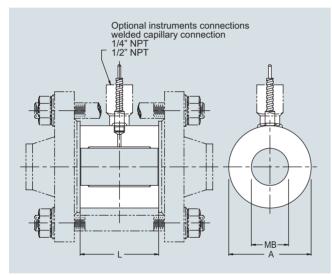
## Inline diaphragm seal, wafer for pressure

# Overview



Inline diaphragm seal, wafer for pressure

## Dimensions (Connection to ASME B16.5)



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

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

Inline diaphragm seal, wafer for pressure, dimensions

Selection and Ordering data	Article	e No	). (	Order	CC	od	е
Inline diaphragm seals wafer assembled to							
SITRANS P for 7MF40 ■ ■ and 7MF42 ■ ■	7 M F	4 8	8 0	-			
(order separately)	1	0		В			
∠ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.							
Size and class						T	
<ul> <li>1 inch</li> <li>1½ inch</li> <li>2 inch</li> <li>2 inch</li> <li>3 inch</li> <li>4 inch</li> <li>6 ass 150 to 2500</li> </ul>	L M N P Q						
Special design, customer information to be supplied	Z				J	1 '	Y
Materials and wetted parts							
• SST 316L	A						
<ul> <li>SST 316L with PFA-Coating (good up to 500 °F)</li> </ul>	D						
<ul> <li>Monel 400, mat. No. 2.4360</li> </ul>	G						
<ul><li>Hastelloy C276, mat. No. 2.4819</li><li>Tantal</li></ul>	J K						
Special design, customer information to be supplied	Z				K	1 '	Y
System fill							
Silicone oil DC 200-10 Silicone oil DC 200-50 Halocarbon (for O <sub>2</sub> -application) Silicone oil M5 DC704 silicone oil Fluorolube Special design, customer information to be supplied		1 2 4 5 7 8 9			М	1 '	Y
Length of capillary	_						
<ul> <li>Direct mount</li> <li>3 ft</li> <li>5 ft</li> <li>10 ft</li> <li>15 ft</li> <li>20 ft</li> <li>25 ft</li> <li>30 ft</li> </ul> Special design, customer information to be			0 2 3 4 5 6 7 8		N	1,	Y
supplied			Ĭ				•
Further designs Please add "-Z" to Article No. and specifiy Order code							
Integrated flame path restriction					Α	0	1
Certification of calibration N.I.S.T. (20 % steps)					С		
Material conformance certificate					С	1 :	2
Vacuum service (must be specified with HT oil)					٧	0	1
Calculation of span of transmitter (completed questionnaire to be attached)					Y	0 !	5

Remote seals for transmitters and pressure gauges SITRANS P DS III

# Inline diaphragm seal, wafer for pressure

Selection and Ordering data	Article N	lo. (	Order	СО	de
Inline diaphragm seals wafer assembled to					
SITRANS P for 7MF44 ■ ■ (order separately)	7 M F 4	883	-		
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	1 0		В	Ĭ	ī
Size and class					
<ul> <li>1 inch class 150 to 2500</li> <li>1½ inch class 150 to 2500</li> <li>2 inch class 150 to 2500</li> <li>3 inch class 150 to 2500</li> <li>4 inch class 150 to 2500</li> <li>Special design, customer information to be supplied</li> </ul>	L M N P Q Z			J 1	ΙY
Materials and wetted parts					
<ul> <li>SST 316L</li> <li>SST 316L with PFA-Coating (good up to 500 °F)</li> <li>Monel 400, mat. No. 2.4360</li> <li>Hastelloy C276, mat. No. 2.4819</li> <li>Tantal</li> </ul>	A D G J K				
Special design, customer information to be supplied	Z			K 1	ΙY
System fill					
<ul> <li>Silicone oil DC 200-10</li> <li>Silicone oil DC 200-50</li> <li>Halocarbon (for O<sub>2</sub>-application)</li> <li>Silicone oil M5</li> <li>DC704 silicone oil</li> <li>Fluorolube</li> <li>Special design, customer information to be supplied</li> </ul>		1 2 4 5 7 8		M 1	ΙY
Length of capillary					
• 3 ft • 5 ft • 10 ft • 15 ft • 20 ft • 25 ft • 30 ft		2 3 4 5 6 7 8			
Special design, customer information to be supplied		9		N 1	ΙY
Further designs Please add "-Z" to Article No. and specifiy Order code					
Integrated flame path restriction				A (	2
Certification of calibration N.I.S.T. (20 % steps)				C 1	
Material conformance certificate				C 1	
Vacuum service (must be specified with HT oil)					3
Calculation of span of transmitter (completed questionnaire to be attached)				YC	) 5

Remote seals for transmitters and pressure gauges SITRANS P DS III

Diaphragm seal, saddle

# Overview



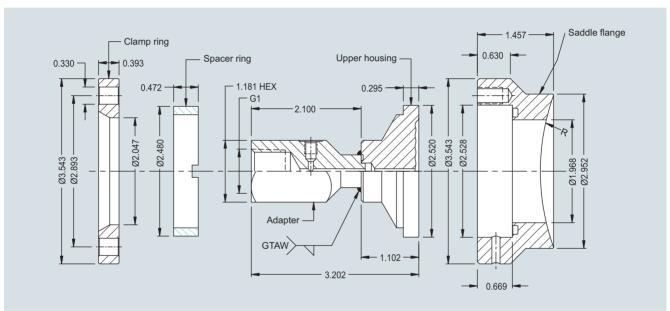
Diaphragm seal, saddle

# Dimensions (Connection to ASME B16.5)

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

G1 = Instrument connection
All dimensions in inches unless otherwise noted

Diaphragm seal, saddle, dimensions



Remote seals for transmitters and pressure gauges SITRANS P DS III

# Diaphragm seal, saddle

Selection and Ordering data	Article No	) Oro	ler code
Diaphragm seal, saddle, MAWP 1,500 psi	, a dole 140	J. OIC	101 00ue
with flexible armored capillary or direct mount, 316 stainless steel upper housing and assemply hardware SITRANS P for 7MF40 ■ ■ or 7MF42 ■ ■ (order separately)	7 M F 4 8		
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.			
Nominal pipe size  Not applicable (Retrofit for existing 7MF48 ■ ■)  2.5"  3"  4"  5"  6"  8" Retrofit 3" Conoflow (6 bolt pattern)	N A B C D E G P C		
Retrofit 3" M&G style (8 bolt pattern) Retrofit 4" Conoflow (6 bolt pattern) Retrofit 4" M&G style (8 bolt pattern) Special design, customer information to be supplied  Retrofit 4" M&G style (8 bolt pattern) Special design, customer information to be supplied	Q R S Z		J 1 Y
Diaphragm material SST 316L SST 316L with PFA coated diaphragm (good upto 500 °F) Monel 400, mat. No. 2.4360 Hastelloy C276, mat. No. 2.4819 Tantal	A D G J K Z		K1 Y
Special design, customer information to be supplied			KII
Saddle Material  None (Retrofit order) Carbon steel, Ni plated SST 316L Hastelloy C276, mat. No. 2.4819 Special design, customer information to be supplied	0 1 2 4 9		L 1 Y
System fill			
<ul> <li>Silicone oil DC 200-10</li> <li>Silicone oil DC 200-50</li> <li>Halocarbon (for O<sub>2</sub>-application)</li> <li>Silicone oil M5</li> <li>DC704 silicone oil</li> <li>Fluorolube</li> <li>Special design, customer information to be supplied</li> </ul>	1 2 4 5 7 8 9		M 1 Y
Length of capillary  • Direct mount  • 3 ft  • 5 ft  • 10 ft  • 15 ft  • 20 ft  • 25 ft  • 30 ft  Special design, customer information to be	•	0 2 3 4 5 6 7 8	N 1 Y
supplied  Further designs Please add "-Z" to Article No. and specifiy			
Order code			A 0 1
Integrated flame path restriction Certification of calibration N.I.S.T. (20 % steps) Material conformance certificate			A 0 1 C 1 1 C 1 2
Vacuum service (must be specified with HT oil) Calculation of span of transmitter (completed questionnaire to be attached)			V 0 1 Y 0 5

Remote seals for transmitters and pressure gauges SITRANS P DS III

**Measuring setups** 

## Measuring setups

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

- Setups for transmitters with connection of remote seals, with associated equations for calculation.
- Questionnaires
- Checking of combination between transmitter and remote seal
- Setups for transmitters without remote seals, with associated equations for calculation
- Questionnaires
  For hydrostatic level measurements

## Installation

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

#### Offset of measuring range

If there is a difference in height between the two connection flanges when measuring with two remote seals, an additional differential pressure results from the oil filling of the remote seal capillaries. This results in an offset of the actual measuring range and must be taken into account when adjusting the transmitter. An offset in the measuring range also occurs when combining a remote seal with a transmitter if the latter is not installed at the same height as the former.

## Transmitter output

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

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

## Influence of ambient temperature

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

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

#### Notes

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

#### Possible combinations of transmitter and remote seal

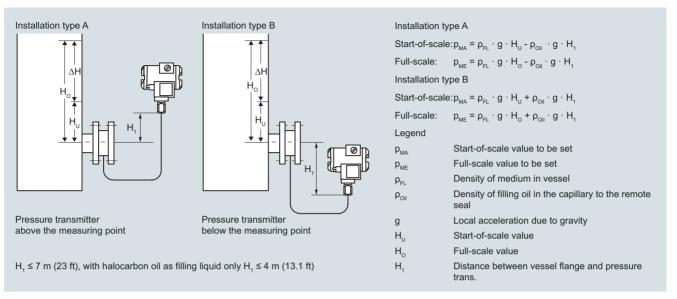
Installation type	Transmitter	Remote seal	
A/B	<b>7MF4033</b> and <b>7MF4034</b>	7MF4800, 7MF4810, 7MF4820, 7MF4826, 7MF4827, 7MF4840, 7MF4850, 7MF4861, 7MF4862, 7MF4862, 7MF4880 and 7MF4890	
C1/C2	<b>7MF4233</b> and <b>7MF4234</b>	7MF4800, 7MF4810, 7MF4820, 7MF4826, 7MF4827, 7MF4840, 7MF4850, 7MF4861,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

Remote seals for transmitters and pressure gauges SITRANS P DS III

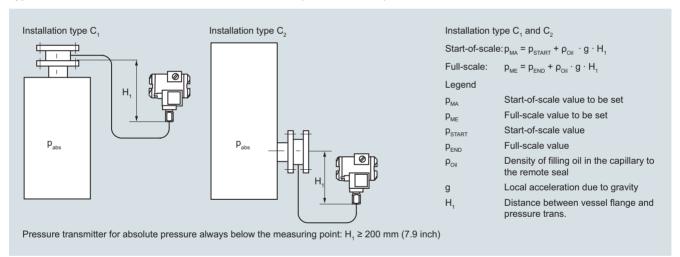
## Measuring setups with remote seals

## Dimensional drawings

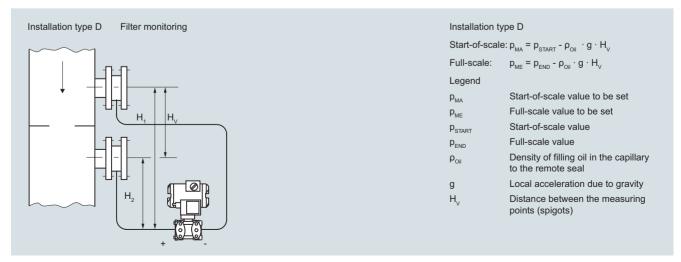
## Types of installation for pressure and level measurements (open vessels)



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



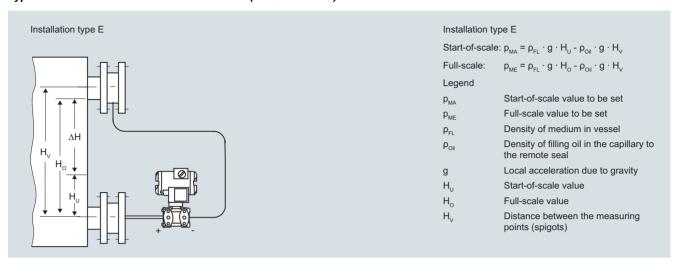
## Type of installation for differential pressure and flow measurements

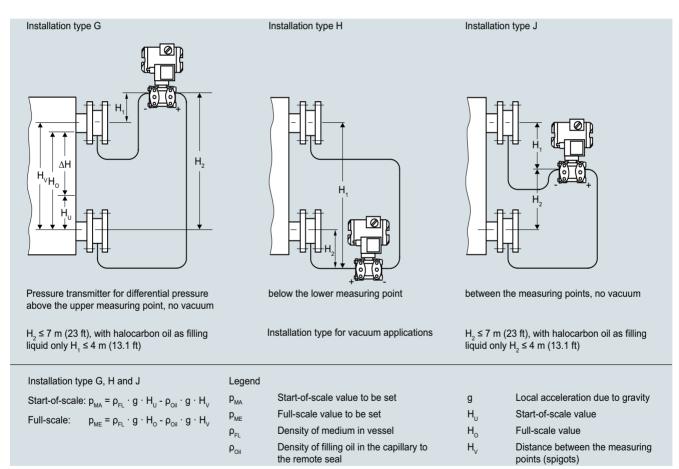


Remote seals for transmitters and pressure gauges SITRANS P DS III

## Measuring setups with remote seals

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





## Measuring setups without remote seals

#### Overview

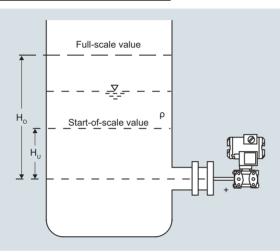
#### Notes

- 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



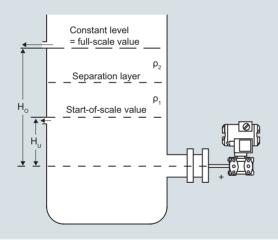
#### Level measurement

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

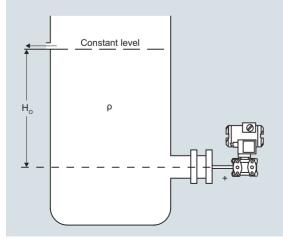
Full-scale:  $p_{ME} = \rho_1 \cdot g \cdot H_0$ 

Legend

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

g Local acceleration due to gravity

 $H_{\cup}$  Start-of-scale value  $H_{\odot}$  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

 $\begin{array}{ll} {\rm p_{{\rm MA}}} & {\rm Start}\mbox{-of}\mbox{-scale} \ \mbox{value} \ \mbox{to} \ \mbox{be} \ \mbox{set} \\ {\rm p_{{\rm ME}}} & {\rm Full}\mbox{-scale} \ \mbox{value} \ \mbox{to} \ \mbox{be} \ \mbox{set} \end{array}$ 

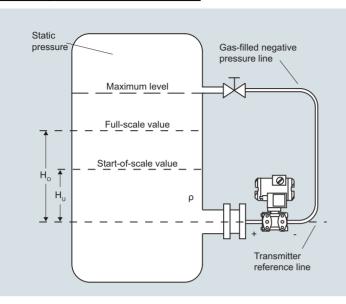
 $\begin{array}{ll} \rho_{\text{MIN}} & \text{Minimum density of medium in vessel} \\ \rho_{\text{MAX}} & \text{Maximum density of medium in vessel} \\ g & \text{Local acceleration due to gravity} \end{array}$ 

H<sub>o</sub> Full-scale value in m

## Remote seals for transmitters and pressure gauges SITRANS P DS III

## Measuring setups without remote seals

## Measuring setups for closed containers



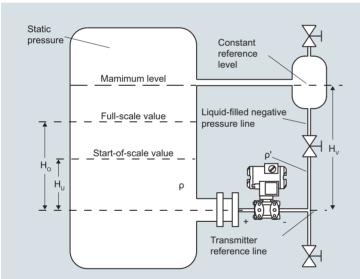
Level measurement, Version 1 Start-of-scale:  $\Delta p_{MA} = \rho \cdot g \cdot H_{II}$ 

Full-scale: Legend

Start-of-scale value to be set  $\Delta p_{MA}$ Full-scale value to be set  $\Delta p_{ME}$ ρ Density of medium in vessel Local acceleration due to gravity g

 $\Delta pME = \rho \cdot g \cdot H_0$ 

Н Start-of-scale value Full-scale value  $H_{\circ}$ 



Level measurement, Version 2

Start-of-scale:  $\Delta p_{MA} = g \cdot (H_{II} \cdot \rho - H_{V} \cdot \rho')$ 

Full-scale:  $\Delta p_{MF} = g \cdot (H_O \cdot \rho - H_V \cdot \rho')$ 

Legend

Start-of-scale value to be set  $\Delta p_{MA}$ Full-scale value to be set  $\Delta p_{MF}$ Density of medium in vessel ρ

ρ' Density of liquid in the negative pressure

line (corresponding to the temperature

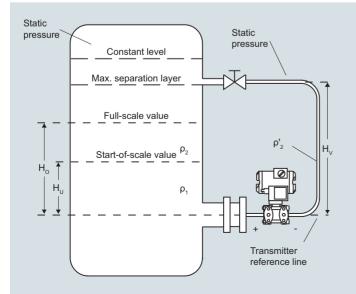
existing there)

g Local acceleration due to gravity

 $H_{\upsilon}$ Start-of-scale value  $H_{\circ}$ Full-scale value

Н,, Distance between the measuring points

(spigots)



#### Separation layer measurement

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

Full-scale:  $\Delta p_{ME} = g \cdot (H_O \cdot \rho_1 - H_V \cdot \rho_2)$ 

Legend

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

Density of heavier liquid with separation layer

in vessel

Density of lighter liquid with separation layer  $\rho_2$ Density of liquid in the negative pressure line  $\rho'_2$ 

(corresponding to the temperature existing

there)

Local acceleration due to gravity g

Start-of-scale value  $H_{\rm U}$  $H_{\circ}$ Full-scale value

Distance between the measuring points  $H_{v}$ 

(spigots)

Remote seals for transmitters and pressure gauges

## Questionnaire for hydrostatic level measurement

Order date:		±>∀
Processing date:		-11-
Ordering code (customer):	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	
Ordering code (supplier):	· - · - · · · · · · · · · · · · · ·	       
Customer reference:	<del> </del>	
Measuring point:		***************************************
Position:		
Dimensions:		
Pressure:		\$ # ````\\
Temperature: ☐ K ☐ °C		X X
Measuring range: ☐ cm ☐ m (please mark with cross)		
Article No. of transmitter SITRANS P DS III/P300/P310/P410 <sup>1)</sup> :		L
_7 _M _F _4		
<b>Y01</b> Article No. of transmitter SITRANS P500 <sup>1)</sup> :		k'J
7,M,F,5, , , , , 0		

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

The calibration data are determined in addition.

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

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

Please mark type of boiler with a cross:	Closed <sup>1)</sup>		
	Open or not under pres	ssure <sup>2)</sup>	
Medium			
Licensed boiler pressure (absolute)			bar
Operating pressure (absolute)	Lowest		bar
operating product (absolute)	Normal <sup>3)</sup>		bar
	Highest		bar
Temperature of reference column (cold)			K
Distance between measuring points (dir	nension according to ske	etch) H <sub>V</sub> =	_ m
Measuring range <sup>4)</sup> = start-of-scale value	e to full-scale value	•	
	Start-of-scale value	H <sub>U</sub> =	_ m
	Full-scale value	H <sub>O</sub> =	_ m
Position of equalizing vessel above botto point if different from ${\rm H}_{\rm V}$	om measuring		_ m
Please mark pressure correction of level			
	Yes <sup>2</sup>	1)	

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

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

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

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

The influence is practically riegingle to a security points.

4) If a pressure correction of the level is required, the **measuring range must be the same as the distance between the measuring points**, and the transmitter is designed for the calculation pressure of 1 bar (absolute). Pressure correction means: the static pressure and the temperature are measured separately and calculated by a correction computer or measured-value computer.

Remote seals for transmitters and pressure gauges

## Questionnaire - Checking of transmitter/remote seal combinations

* Ordering code: * Ordering department:	Item No.:  Person responsible:  Phone:  S P DS III/P300/P310/P410: 7MF	□ <b>□-1</b> □□□
Yes	ticle No. of diaphragm seal known?	7
* Article No. of remote seal:  7MF 4 8	* Or without Article No.: Proc  * Standard:  * Nominal diameter:  * Nominal pressure:  * Constructional design:	ess connection  Sandwich-type rem. seal Flanged remote seal Quick-release remote seal Clamp-on seal Other.:
	* Vacuum-proof design * Wetted parts materials: * Tube: * Filling liquid	Direct connection  Capillary on one side; connection to:  + side - side  Capillaries on both sides; Capillary length: ft  Yes No  No Yes, inch long
	* Miscellaneous ion of measuring range necessary?	
* Range to be set: (without calculation) Start-of-scale: psi ( 4 mA) Full-scale: psi (20 mA)  * Required measuring accuracy: Error: < % of set span per 18 °F change in temperature	* Temperature of medium:  * Ambient temperature on capillaries:  * Ambient temperature on transmitter:	kg/m <sup>3</sup> Normal °F  Minimum °F  Maximum °F  Normal °F  Minimum °F  Maximum °F  Mormal °F
Please fill in this questionnaire and enclose with every order! *) Values must be entered here!		$H_{U} = $ inch; $H_{O} = $ inch $H_{1} = $ inch
Checked: Name: Department: Date:	* Start-of-scale value following calculation:  Full-scale value following calculation:  Associated span:  Error to be expected:  * Moreover to be expected to the state of the second to	psi ( 4 mA) psi (20 mA) psi

**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).

#### Norm 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.

#### Inspection certificate to EN 10204-3.

If an inspection certificate according to EN 10204-3.1 is required for ordering valve manifolds or shut-off fittings, be aware that one certificate is sufficient for each valve type ordered. 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	Shut-off valves/double shut- off valves to DIN 16270, DIN 16271 and DIN 16272	1/443		Double shut-off valve DN 5 for crossover ½-NPT-F to G½ nipple connection 7MF9011-4EA	1/446	
7MF1565 • SITRANS P210 7MF1566			1-4-4	0 1 1 1 1 1 1 1 1	1/101	
• SITRANS P220 7MF1567				2-spindle valve manifold DN 5 for installation in protective boxes	1/464	
• SITRANS P300 7MF8020				7MF9412-1B		
• SITRANS P 320/420 7MF030D 7MF032D 7MF040D 7MF042D						
• SITRANS P DS III series 7MF4030 and 7MF4230						
• SITRANS P410 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	1/446		Double shut-off valve DN 5 for process connection ½-NPT	1/446	
e.g. • SITRANS P200 7MF1565				7MF9011-4HA		<u> </u>
• SITRANS P210 7MF1566			7MF9011-4FA			
• SITRANS P220 7MF1567						
• SITRANS P300 7MF8021						
• SITRANS P 320/420 7MF030E 7MF030F 7MF032E 7MF040E 7MF040F 7MF040F 7MF042E			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	2-spindle valve manifold DN 5 7MF9411-5A.	1/449	المحمد	2-spindle valve manifold DN 5 for installation in protective boxes	1/464	
e.g. • SITRANS P 320/420 7MF033 7MF043 • SITRANS P DS III series 7MF433			The Court	7MF9412-1C.		200

## 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	1/449	12:00	3-way valve manifold DN 5, forged version 7MF9410-1	1/454	35.
<ul> <li>SITRANS P DS III series 7MF443 and 7MF453</li> <li>SITRANS P410 7MF443 C41; 7MF453 C41</li> <li>SITRANS P500</li> </ul>			1000	5-way valve manifold, DN 5, forged version 7MF9410-3	1/454	
7MF54	PN 100 multiway cocks 7MF9004	1/452		3-way valve manifolds DN 8, forged version 7MF9416-1 and 7MF9416-2	1/457	
				valve manifold combination DN 5/DN 8 for vapor measurement 7MF9416-6	1/460	
				valve manifold combination DN 8 for vapor measurement 7MF9416-4	1/462	
				3- and 5-spindle valve manifold for DN 5 for installation in protective boxes 7MF9412-1D. and 7MF9412-1E.	1/464	
						A . C. H
				3- and 5-spindle valve manifold for vertical differ- ential pressure lines 7MF9413-1	1/468	
				Low-pressure multiway cock 7MF9004-4	1/471	

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)

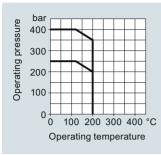
A water trap must be connected upstream of the shut-off valve in the case of temperatures of the medium above 120 °C. The shut-off valves form B have a shaft with which they can be secured on an instrument bracket. An adapter is therefore not required to secure these valves. The vent/test connection 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 PTFF

external pressure so	ource. The valve packir	ng material is PTFE.
Selection and Orderi	ng data	Article No.
Shut-off valves, form	B, DIN 16270	
without test collar, con without certificate	nection shank,	
Material Valve enclosure	Maximum permissible working pressure	
CW614N (CuZn39Pb3 (mat. No. 2.0402)	3)250 bar (3626 psi)	7MF9401-7AA
P250GH (mat. No. 1.0460)	400 bar (5800 psi)	7MF9401-7AB
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti		7MF9401-7AC
Shut-off valves, form	B, DIN 16271	
with test collar, connect without certificate	ction shank,	
Material Valve enclosure	Maximum permissible working pressure	
CW614N (CuZn39Pb3 (mat. No. 2.0402)	s)250 bar (3626 psi)	7MF9401-7BA
P250GH (mat. No. 1.0460)	400 bar (5800 psi)	7MF9401-7BB
X 6 CrNiMoTi 17 12 2		7MF9401-7BC

Shut-off valves, form	B, DIN 16270	
without test collar, pipe 12 S DIN EN ISO 8434		
Material Valve enclosure	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 enclosure	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 enclosure	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 enclosure	Maximum permissible working pressure	
P250GH (mat. No. 1.0460)	400 bar (5800 psi)	7MF9401-8DB
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti	7MF9401-8DC	
Accessories		
Factory certificate acc	ording to EN 10204-2.2	7MF9000-8AB
Material inspection ce	rtificate EN 10204-3.1	7MF9000-8AD

Instrument bracket, see page 1/448.

## Characteristic curves

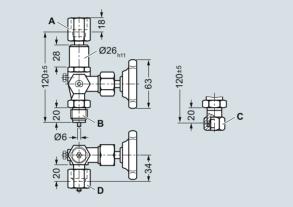


Steel or stainless steel version 400 bar (5800 psi) at 120 °C (248 °F) 350 bar (5076 psi) at 200 °C (392 °F)

Brass version 250 bar (3626 psi) at 120 °C (248 °F) 200 bar (2901 psi) at 200 °C (392 °F)

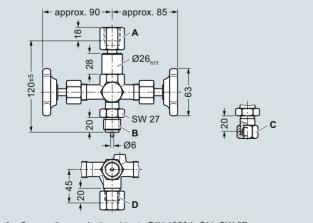
Permissible operating pressure as a function of the permissible operating temperature

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

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



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

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

1/444

Fitttings

Shut-off valves for gauge and absolute pressure transmitters

Angle adapter

## Overview

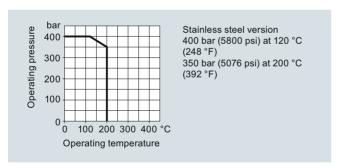


P300 pressure transmitter with shut-off valve and angle adapter

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

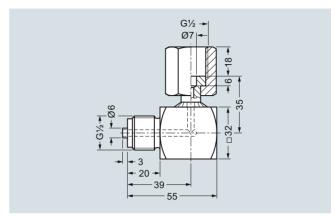
# Selection and Ordering data Article No. Angle adapters Material: X 12 CrNiMoTi 17 12 2 (mat. No. 1.45714/316Ti), max. permissible operating pressure 400 bar (5800 psi) Accessories Factory certificate according to EN 10204–2.2 Material inspection certificate EN 10204-3.1 Article No. 7MF9401-7WA 7MF9000-8AB 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

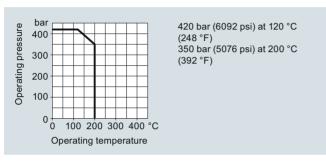
#### Overview

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.

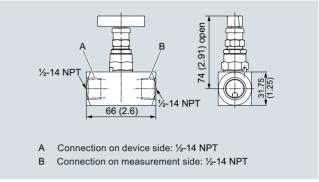
## Characteristic curves



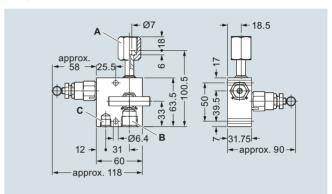
Permissible operating pressure as a function of the permissible operating temperature

Selection and Ordering data	Article No.
Shut-off valves 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 certificate according to EN 10204–2.2	7MF9000-8AB
Material inspection 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. inspection certificate 3.1 to EN 10204	

## Dimensional drawings

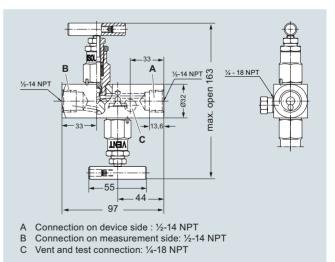


Shut-off valve DN 5 (sleeve-sleeve) 7MF9011-3HA, dimensions in mm (inch)



- 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: ½-18 NPT

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

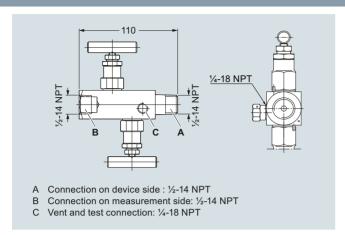


Double shut-off valve DN 5 (sleeve-sleeve) 7MF9011-4HA, dimensions in  $\,\mathrm{mm}$ 

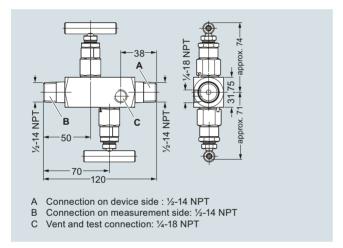
Fitttings

Shut-off valves for gauge and absolute pressure transmitters

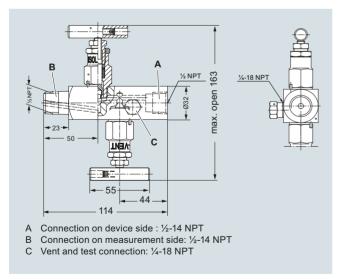
Shut-off valves/Double shut-off valves



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  $\mbox{mm}$ 

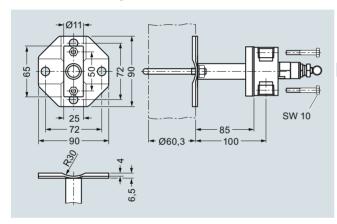


Double shut-off valve DN 5 (collar-sleeve) 7MF9011-4KA, dimensions in  $\,\mathrm{mm}$ 

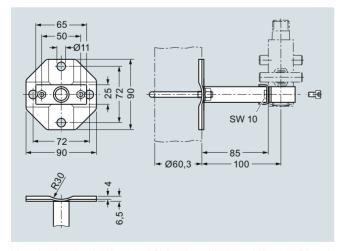
The mounting set is suitable for the double shut-off valves 7MF9011-4.A and for wall, rack and pipe mounting.

Selection and Ordering data	Article No.
Mounting set for shut-off valves	
<ul> <li>7MF9011-4DA and -4EA</li> </ul>	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

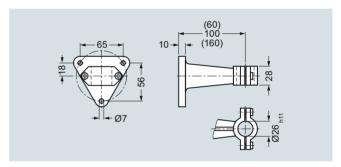
## Overview

The instrument brackets are needed to mount the following units:

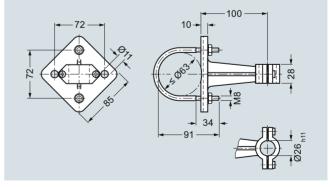
- Pressure gauges with threaded connection at the bottom
- Shut-off valves to DIN 16270, DIN 16271 and DIN 16272 (7MF9401-7.. and 7MF9401-8..)

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

**Fitttings** 

Shut-off valves for differential pressure transmitters

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

## Overview



The 2-spindle, 3-spindle and 5-spindle valve manifolds 7MF9411-5.. are for pressure transmitters for absolute pressure or differential pressure.

The valve manifolds are used to shut off the differential pressure lines and to check the pressure transmitter zero.

The 2-spindle and the 5-spindle valve manifold enable in addition venting on the transmitter side and checking of the pressure transmitter characteristic.

#### Benefits

- Max. working pressure 420 bar (6092 psi)
- Each available in version for oxygen

## Application

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

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.
Enclosure	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

Calaction and Ordering data	Article No	
Selection and Ordering data	Article No.	
Valve manifolds DN 5	7MF9411-	
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
for liquids and gases, for flanging to pressure transmitters for absolute and differential pressure, max. working pressure 420 bar (order accessory set with Order code), without certificate		
<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 certificate according to EN 10204–2.2	7MF9000-8AB	
Material inspection certificate EN 10204-3.1	7MF9000-8AD	

Material inspection certificate EN 1020	4-3.1 / IVIF	9000-6AD	
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 $^{7}$ / <sub>16</sub> -20 UNF x 1 $^{3}$ 4 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 1¾ inch to ASME B18.2.1; <b>stainless steel</b> 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 1¾ 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 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.  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 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.	K26	7MF9411-6BC		
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 mount- ing on valve manifold</li> </ul>	M12	7MF9006-6GA		
<ul> <li>for valve manifold, made of stainless steel 316L</li> </ul>				
- 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.	S12 S13 S14			
NACE MR-0175-certified incl. inspection certificate 3.1 to EN 10204	D07			
		and the second second		

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

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, 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 °C (176 °F)

**Note**: Flange connection with M10 screws only permissible up to PN 160!

#### Mounting plate

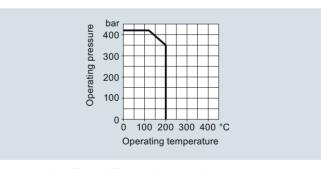
Made of electrogalvanized sheet-steel

- 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.
     Ø 60.3 mm

## 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

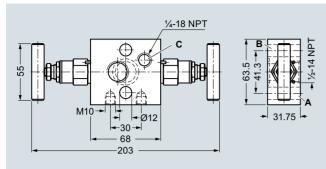
<sup>&</sup>lt;sup>2)</sup> Flange connections to DIN 19213 only permissible up to PN 160 (2321 psi)!

**Fitttings** 

Shut-off valves for differential pressure transmitters

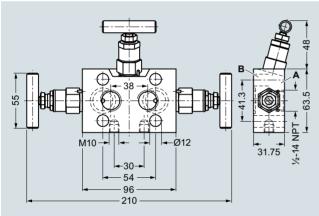
## 2-, 3- and 5-spindle valve manifolds DN 5

## Dimensional drawings



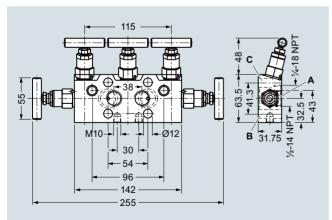
- A Process connection: ½-14 NPT
- B Transmitter connection: Flange connection to IEC 61518, form B
- C Vent / test connection: 1/4-18 NPT
- Valve design: external spindle thread

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



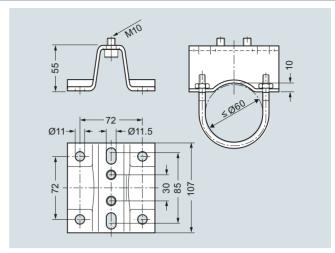
- A Process connection: ½-14 NPT
- B Transmitter connection: Flange connection to IEC 61518, form B Valve design: external spindle thread

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



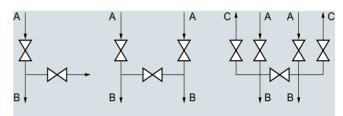
- A Process connection: 1/2-14 NPT
- B Transmitter connection: Flange connection to IEC 61518, form B
- C Vent / test connection: 1/4-18 NPT Valve design: external spindle thread

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



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

## Schematics



- A Process connection
- B Transmitter connection
- C Blow-out and test connection

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.

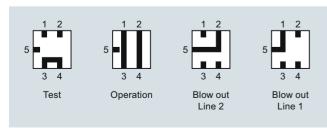
The PN 100 (1450 psi) has 2 process connections and one blowout connection. A steel version of the multiway cock is available for non-aggressive media, and a stainless steel version for aggressive media. The enclosure is forged in one piece. The switching lever is removable.

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			
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))		
Weight	2.5 kg		

Selection and Ordering data	Article No.
Multiway cock PN 100 (1450 psi)	7MF9004-
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 certificate according to EN 10204–2.2 Material inspection 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 measure-ment (only with Article No. 7MF9004–1Q.Z)	S11	
Mounting bracket Required for wall mounting or for securing on rack (72 mm grid), made of electrogalvanized sheet-steel, weight 0.85 kg	M13	7MF9004-6AA
NACE MR-0175-certified incl. inspection certificate 3.1 to EN 10204 (only available for version 7MF9004-1QA)	D07	

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

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)

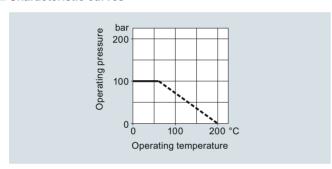
## Multiway cock in oil-free and grease-free design

 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

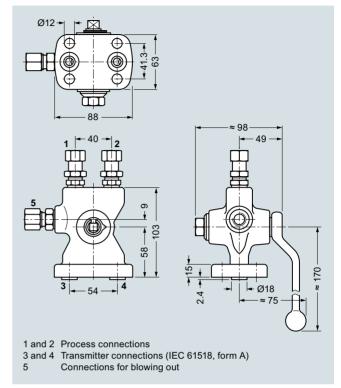
 M13: Required for wall mounting or for securing on rack (72 mm grid); made of electrogalvanized sheet-steel

#### Characteristic curves

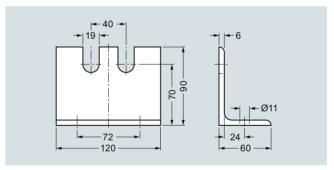


Multiway cock PN 100 (1450 psi), permissible operating pressure as a function of the permissible operating temperature

## 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.
Enclosure	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-
✓ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
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	
<ul> <li>for non-aggressive liquids and gases</li> </ul>	3 E
<ul> <li>for aggressive liquids and gases</li> </ul>	3 F
Accessories	
Factory certificate according to EN 10204–2.2	7MF9000-8AB
Material inspection 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)		
4x screws $^{7}/_{16}$ -20 UNF x $2^{1}/_{8}$ 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. permissble 420 bar (6092 psi), 120 °C (248 °F)	В34	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. inspection certificate 3.1 to EN 10204 (only available for version 7MF9410-1FA and -3FA)		

When ordering accessory set or mounting together with the valve manifolds, please use Order code; otherwise use 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

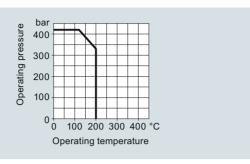
<sup>&</sup>lt;sup>2)</sup> Flange connections to DIN 19213 only permissible up to PN 160 (2321 psi)

**Fitttings** 

Shut-off valves for differential pressure transmitters

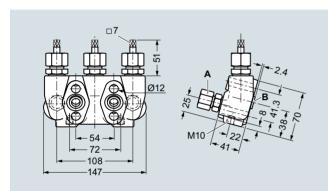
## 3-way and 5-way valve manifolds DN 5

## Characteristic curves

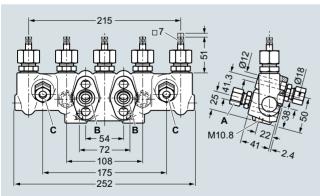


Permissible operating pressure as a function of the permissible operating temperature

## Dimensional drawings



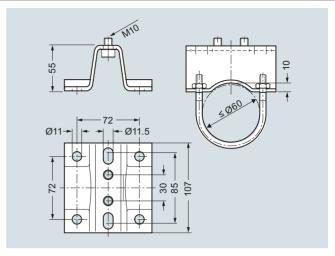
- A Process connection (e.g. on primary device):
   Pipe union with ferrule, diameter 12 mm, S series to DIN 2353
   B Transmitter connection: Flange connection to IEC 61518, form A Valve design: internal spindle thread
- 3-way valve manifold DN 5 (7MF9410-1..), dimensions in mm



- 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:

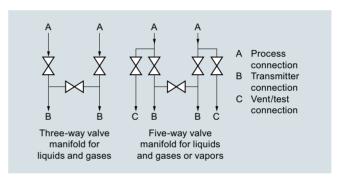
Pipe union with ferrule, diameter 12 mm, S series to DIN 2353 Valve design: internal spindle thread

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 liquids and gases		For aggre	
Component	Material	Mat. No.	Material	Mat. No.
Enclosure	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-	= 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), (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 certificate according to EN 10204–2.2	7MF9000-8AE	3
Material inspection certificate EN 10204-3.1	7MF9000-8AD	)

**Fitttings** 

Shut-off valves for differential pressure transmitters

## 3-way valve manifold DN 8

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. permissble 420 bar (6092 psi), 120 °C (248 °F)	В34	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 incl. inspection certificate 3.1 to EN 10204 (only available for version 7MF9416-1DA and -1EA)	D07	

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  $^{\circ}$ C (176  $^{\circ}$ F)

O-ring to DIN 3771, 20 x 2.65 – S – FPM90, max. 420 bar (6092 psi), 120 °C (248 °F)

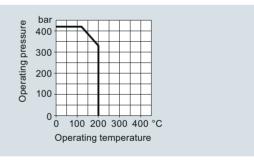
Note: M10 screws only permissible up to PN 160 (2320 psi)!

#### 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 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

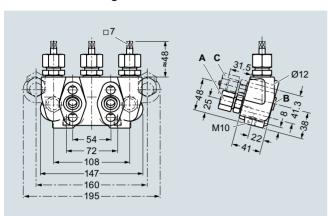
<sup>2)</sup> Flange connections to DIN 19213 only permissible up to PN 160 (2321 psi)!

Fitttings

Shut-off valves for differential pressure transmitters

## 3-way valve manifold DN 8

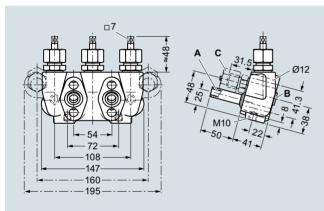
## Dimensional drawings



- 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 IEC 61518, form A
- C Test connection: M20 x 1.5

Valve design: internal spindle thread

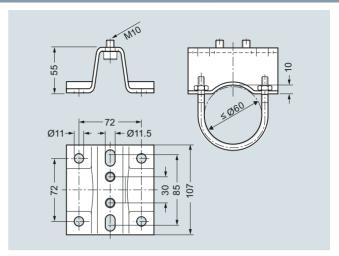
3-way valve manifold DN 8 (7MF9416-1..) with pipe union, dimensions in mm



- A Process connection (e.g. on primary device): Welding pin, diameter 14 x 2.5
- B Transmitter connection: Flange connection to IEC 61518, form A
- C Test connection: M20 x 1.5

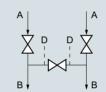
Valve design: internal spindle thread

3-way valve manifold DN 8 (7MF9416-2..) with welding pin, dimensions in  $\,\mathrm{mm}$ 



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

## Schematics



- A Process connection
- 3 Transmitter connection
- Vent/test connection

Three-way valve manifold for liquids and gases

3-way valve manifold DN 8, connections

**Fitttinas** 

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 valves DN 8	
Component	Material	Mat. No.	Material	Mat. No.
Enclosure	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	7MF9416-6 A
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 certificate according to EN 10204–2.2	7MF9000-8AB
Material inspection 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)	В34	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

- 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)

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

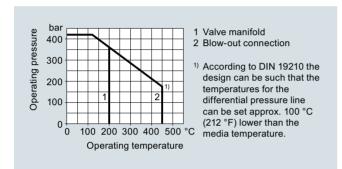
- $\bullet$  B34: 4 screws  $^7\!/_{16}\text{-}20$  UNF x  $2^1\!/_8$  inch to ASME B18.2.1, 2 O-rings (FPM 90)
- B16: 4 screws M10x55 to DIN EN 24014, 4 washers, 2 O-rings (FPM 90)

Washers Ø 10.5 to DIN 125

O-ring to DIN 3771,  $20 \times 2.65 - S - FPM90$ , max. 420 bar (6092 psi),  $120 \, ^{\circ}\text{C}$  (248  $^{\circ}\text{F}$ )

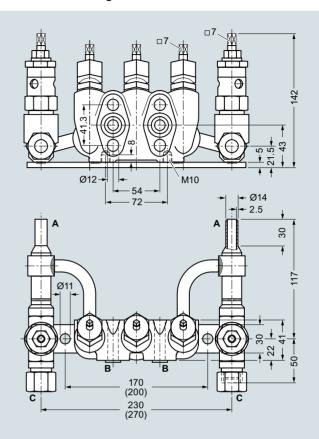
Note: M10 screws only permissible up to PN 160 (2321 psi)!

#### Characteristic curves



Permissible operating pressure as a function of the permissible operating temperature

## Dimensional drawings



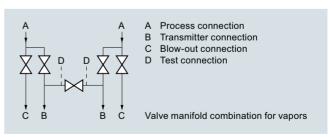
- A Process connection (e.g. on primary device): Welding pin
- B Transmitter connection: Flange connection to IEC 61518, form A
- C Blow-out connection: Pipe union with ferrule, diameter 14 mm, S series to DIN 2353

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		ld	Blow-out valves	
Component	Material	Mat. No.	Material	Mat. No.
Enclosure	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-
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
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
$\bullet$ with test connection M20 $ imes$ 1.5	4 D
Accessories	
Factory certificate according to EN 10204–2.2	7MF9000-8AB
Material inspection 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)	В34	7MF9410-5CA
Accessory set to DIN <sup>2</sup> ) (required for flanging, weight 0.2 kg)		
4x screws M10x55 to DIN EN 24014; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F) Flange connection to DIN 19 213 only permissible up to PN 160!	B16	7MF9010-6CC

- When ordering accessory set together with the valve manifold combination, please use Order code; otherwise use Article No.
- <sup>2)</sup> 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)

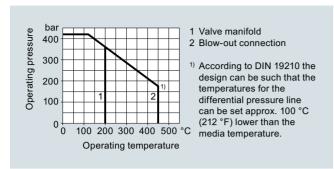
Note: M10 screws only permissible up to PN 160 (2321 psi)!

Fitttings

Shut-off valves for differential pressure transmitters

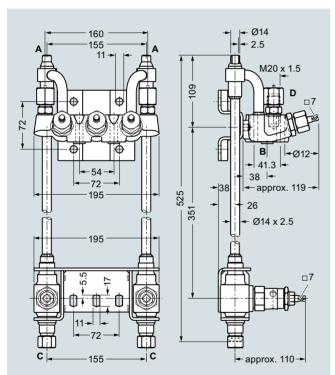
## Valve manifold combination DN 8

## Characteristic curves



Permissible operating pressure as a function of the permissible operating temperature

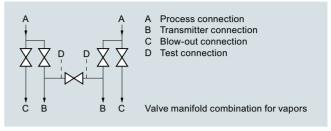
## Dimensional drawings



- A Process connection (e.g. on primary device): Welding pin
- B Transmitter connection: Flange connection to IEC 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



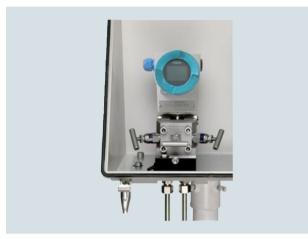
Valve manifold combination DN 8, connections

**Fitttings** 

Shut-off valves for differential pressure transmitters

## 2-, 3- and 5-spindle valve manifolds for protective box

#### 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 point.

The 2-spindle and the 5-spindle valve manifolds also enable venting on the transmitter side and checking of the pressure transmitter characteristic.

These valve manifolds are designed for installation in protective boxes. However, using a mounting bracket, they can also be used for wall, frame or tube mounting.

SITRANS P DS III and SITRANS P500 transmitters can be operated and read from the front if these valve manifolds are used..

#### 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

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.
Enclosure	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	7MF9412-
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	
$\bullet$ 2-spindle valve manifold with rotatng sleeve $G \slash\hspace{-0.6em} \%$	1 B
<ul> <li>2-spindle valve manifold with flange connection</li> </ul>	1 C
• 3-spindle valve manifold	1 D
• 5-spindle valve manifold	1 E
Accessories	
Factory certificate according to EN 10204–2.2	7MF9000-8AB
Material inspection certificate EN 10204-3.1	7MF9000-8AD

Coloction and Ordering data	Order code	Artiala Na
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 <sup>7</sup> / <sub>16</sub> -20 UNF x 2 inch to ASME B18.2.1; chromized steel 1x gasket made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F) <sup>2)</sup>	F35	7MF9412-6DA
for valve manifold 7MF9412–1D and -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

## Shut-off valves for differential pressure transmitters

2-, 3- and 5-spindle valve manifolds for protective box

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. inspection certificate 3.1 to EN 10204	D07	

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 to ASME B 18.2.1, 2 O-rings (FPM90)
- F36: 4 screws 7/16 20 UNF x 2 inch to ASME 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 °C (176°F)

O-ring to DIN 3771, 20 x 2.65 - S - FPM90; max.420 bar (6092 psi), 120 °C (248 °F)

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

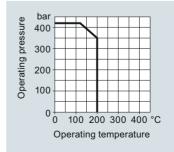
#### Mounting clips (2 off)

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

#### 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

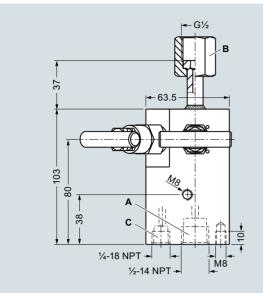
Flange connections with M10 screws only permissible up to PN 160 (2321 psi)!

Fitttings

Shut-off valves for differential pressure transmitters

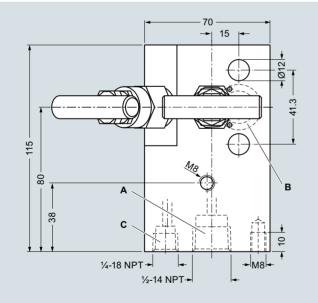
## 2-, 3- and 5-spindle valve manifolds for protective box

## Dimensional drawings



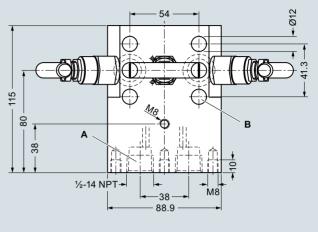
- A Process connection: 1/2-14 NPT
- B Transmitter connection: Nipple to DIN 16284,  $G\frac{1}{2}$ , SW 27
- C Vent / test connection: 1/4-18 NPT

2-spindle valve manifold DN 5 (7MF9412-1B..) with rotating sleeve, dimensions in  $\ensuremath{\mathsf{mm}}$ 



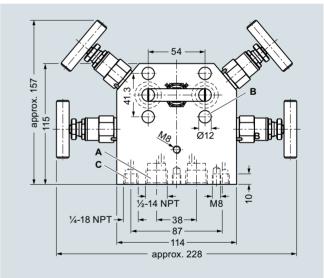
- A Process connection: ½-14 NPT
- B Transmitter connection: Flange connection to IEC 61518, form A
- C Vent / test connection: 1/4-18 NPT Valve design: external spindle thread

2-spindle valve manifold DN 5 (7MF9412-1C..), dimensions in mm



- A Process connection: ½-14 NPT
- B Transmitter connection: Flange connection IEC 61518, form A Valve design: external spindle thread

3-spindle valve manifold DN 5 (7MF9412-1D..), dimensions in mm



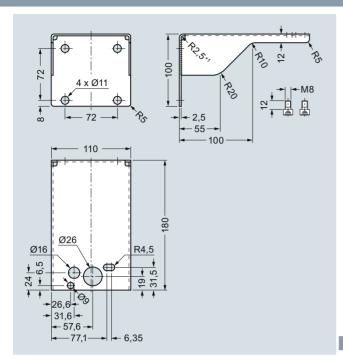
- A Process connection: ½-14 NPT
- B Transmitter connection: Flange connection to IEC 61518, form A
- C Vent / test connection: 1/4-18 NPT Valve design: external spindle thread

5-spindle valve manifold DN 5 (7MF9412-1E..), dimensions in mm

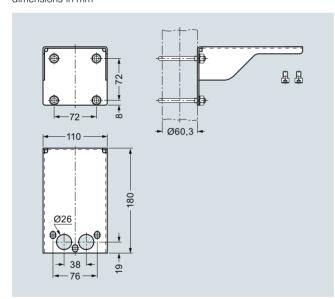
Fitttings

Shut-off valves for differential pressure transmitters

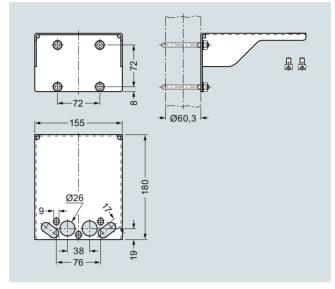
## 2-, 3- and 5-spindle valve manifolds for protective box



Mounting bracket (7MF9006-6LA)/(M14) for 2-spindle valve manifold, dimensions in mm  $\,$ 

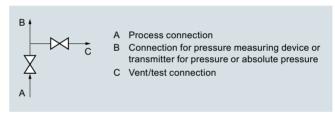


Mounting bracket (7MF9006-6NA)/(M17) for 3-spindle valve manifold, dimensions in mm  $\,$ 

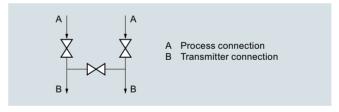


Mounting bracket (7MF9006-6PA)/(M18) for 5-spindle valve manifold, dimensions in mm

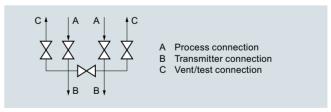
## Schematics



2-spindle valve manifold DN 5 (with rotating sleeve  $G\ensuremath{\mathbb{Z}}_2$  or flange connection), connections



3-spindle valve manifold DN 5, connections



5-spindle valve manifold DN 5, connections

**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:

Material	Mat. No.
X 2 CrNiMo 17 13 2	1.4404/316L
X 6 CrNiMoTi 17 12 2	1.4571/316Ti
X 2 CrNiMo 18 10	1.4404/316L
X 5 CrNiMo 18 10	1.4401/316
PTFE	-
	X 2 CrNiMo 17 13 2 X 6 CrNiMoTi 17 12 2 X 2 CrNiMo 18 10 X 5 CrNiMo 18 10

## 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	7MF9413-	
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		
• 3-spindle valve manifold	1 D	
• 5-spindle valve manifold	1 E	
Accessories		
Factory certificate according to EN 10204–2.2	7MF9000-8AB	
Material inspection certificate EN 10204-3.1	7MF9000-8AD	

Material inspection certificate EN 10204-3.1		
Selection and Ordering data	Order coc	le 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 <b>for mounting on 2" stand-</b> <b>pipe</b> , with bolts for mounting on valve manifold		
• for valve manifold 7MF9413-1D.	M19	7MF9006-6QA
Mounting clip		
2 off, to secure mounting bracket to pipe	M16	7MF9006-6KA
valve manifold 100 bar (1450 psi) suitable for oxygen		
• for valve manifold 7MF9413-1D.	S13	
• for valve manifold 7MF9413-1E.	S14	
NACE MR-0175-certified incl. inspection certificate 3.1 to EN 10204	D07	
1) When ordering accessory set or mount	ing together	with the multiway cock

- When ordering accessory set or mounting together with the multiway cock, please use Order code; otherwise use Article No.
- 2) Flange connections to DIN 19213 only permissible up to PN 160 (2321 psi)!

3- and 5-spindle valve manifolds for vertical angular differential pressure lines

#### Accessories

### Accessory set (connection between valve manifold and transmitter)

- K36: 4 screws <sup>7</sup>/<sub>16</sub>-20 UNF x 1¾ inch to ASME B18.2.1, 2 flat gaskets
- K16: 4 screws M10x45 to DIN EN 24014, 4 washers, 2 flat gaskets

Washers Ø 10.5 to DIN 125

Flat gaskets made of PTFE, max. 420 bar (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

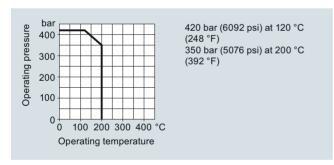
#### Mounting clips (2 off)

For securing the mounting brackets M17, M18 and M19 to pipe

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

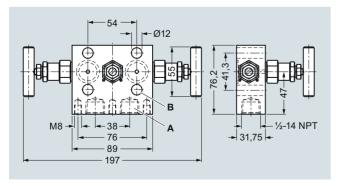
- For 3-spindle valve manifold
- For 5-spindle valve manifold

#### Characteristic curves

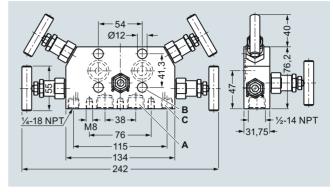


Permissible operating pressure as a function of the permissible operating temperature

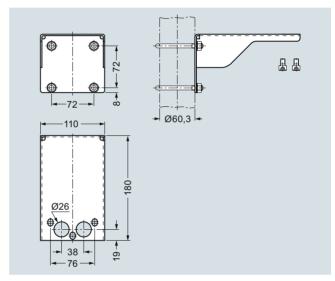
#### Dimensional drawings



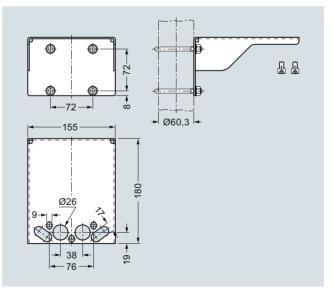
3-spindle valve manifold 7MF9413-1D. for vertical differential pressure lines, dimensions in mm



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

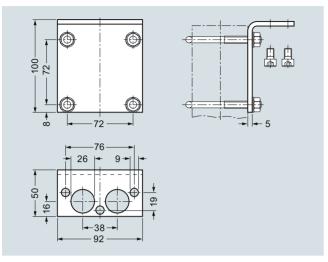


Mounting bracket (7MF9006-6PA)/(M18) for 5-spindle valve manifold, dimensions in mm

Fitttings

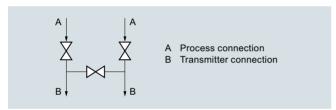
Shut-off valves for differential pressure transmitters

#### 3- and 5-spindle valve manifolds for vertical angular differential pressure lines

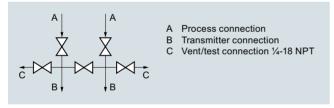


Mounting bracket (7MF9006-6QA)/(M19) for 3-spindle valve manifold, dimensions in  $\mbox{mm}$ 

#### 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

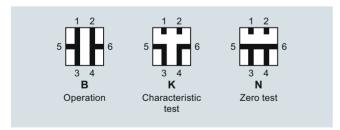
#### Design

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 enclosure 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	
Factory certificate according to EN 10204–2.2	7MF9000-8AB
Material inspection certificate to EN 10204-3.1	7MF9000-8AD

Selection and Ordering data	Order code	e 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
<ul> <li>Version for oxygen</li> </ul>	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.

#### Low-pressure multiway cock

#### 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

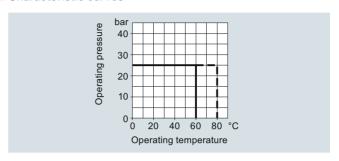
 M13: Required for wall mounting or for securing on rack (72 mm grid); made of electrogalvanized sheet-steel

#### Options

Test connections

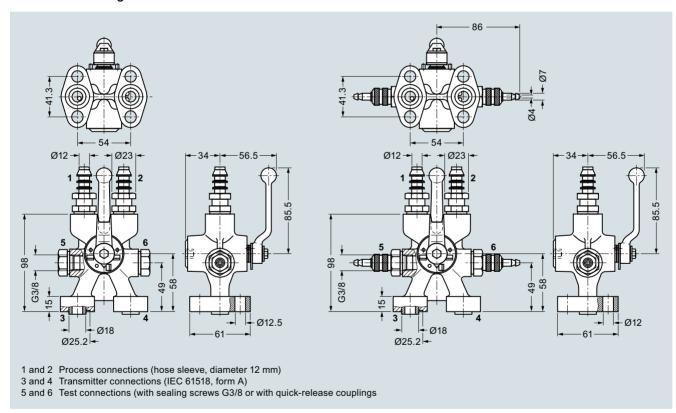
- 2 sealing screws G<sup>3</sup>/<sub>8</sub>
- 2 quick-release couplings

#### Characteristic curves

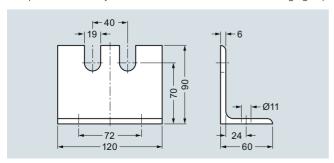


Low-pressure multiway cock, permissible operating pressure as a function of the permissible operating temperature

#### 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 °Č (176 °F)

O-ring to DIN 3771, 20 x 2.65 - S - FPM90, max. 420 bar (6092 psi), 120 °C (248 °F)

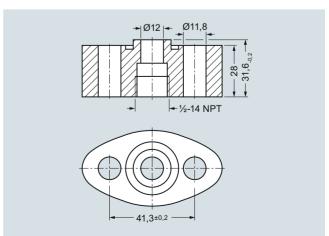
Note: M10 screws only permissible up to PN 160 (2321 psi)!

Selection and Ordering data	Article No.
Oval flange with female thread ½-14 NPT, max. working pressure 420 bar (6092 psi), flange connection 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

	0 1	,	A .: 1 N1
Selection and Ordering data	Order c	ode	Article No.
Further designs <sup>1)</sup>			
Please add "-Z" to Article No. and specify Order code.			
Accessory set to EN			
2x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 1½ inch to ASME B 18.2.3; chro- mized steel 1x flat gasket made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)	E36		7MF9408-5DA
2x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 1½ inch to ASME B 18.2.3; chro- mized steel 1x O-ring to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F)	E34		7MF9408-5CA
Accessory set to DIN			
2x screws M10x40 to DIN EN ISO 4762; chromized steel 2x washers Ø 10.5 mm to DIN 125; 1x O-ring to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 160 bar (2321 psi), 120 °C (248 °F) <sup>2)</sup>	E13		7MF9408-6AA
2x screws M10x40 to DIN EN ISO 4762; chromized steel 2x washers Ø 10.5 mm to DIN 125; 1x flat gasket made of PTFE, max. permissible 160 bar (2321 psi), 80 °C (176 °F) <sup>2)</sup>	E16		7MF9408-6BA
NACE MR-0175-certified	D07		
incl. inspection certificate 3.1 to EN 10204			

- 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 adapters 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

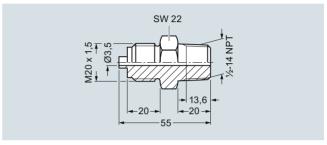
7MF9008-1CC

7MF9008-1CD

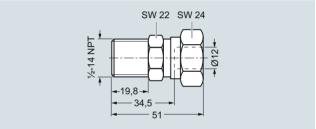
• Thread ½-14 NPT and thread ½-14 NPT

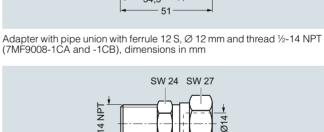
# SW 22 13.6 13.6 13.6 13.6 13.6 13.7 13.6 13.6 13.6 13.6 13.6 13.6

Adapter with thread  $1/\!\!\!/_2\text{-}14$  NPT and thread  $1/\!\!\!/_2\text{-}14$  NPT (7MF9001-1DA), dimensions in mm



Adapter with thread  $\frac{1}{2}$ -14 NPT and connection shank M20 x 1.5 (7MF9001-1EA), dimensions in mm





Adapter with pipe union with ferrule 14 S,  $\varnothing$  14 mm and thread ½-14 NPT (7MF9008-1CC and -1CD), dimensions in mm

54

-19,8 **→** 

#### Selection and Ordering data

#### Adapters

Max. operating pressure: 689 bar (10 000 psi), Weight: 0.2 kg

with thread 1/4-18 NPT - G1/2

with thread ½-14 NPT - G1/2

with thread 1/2-14 NPT - 1/2-14 NPT

with thread 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 –  $\frac{1}{2}$ -14 NPT

• 9 SMnPb 28, mat. No. 1.0718

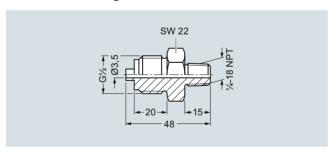
• X 6 CrNiMoTi 17 122, mat. No. 1.4571

with pipe union with ferrule 14 S, max. operating pressure 630 bar (9 100 psi),  $\varnothing$  14 mm – 1/2-14 NPT

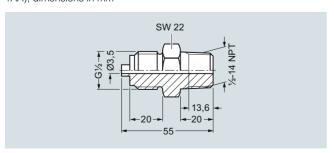
• 9 SMnPb 28, mat. No. 1.0718

• X 6 CrNiMoTi 17 122, mat. No. 1.4571

#### Dimensional drawings



Adapter with thread 14-18 NPT and connection shank G% (7MF9001-1AA), dimensions in mm



Adapter with thread %-14 NPT and connection shank G% (7MF9001-1CA), dimensions in mm

# Pressure Measurement Fittings Accessories

**Connection glands** 

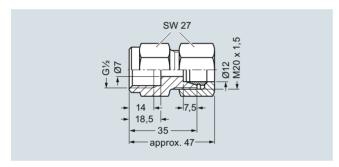
#### Overview

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 data		Article No.
Connection screwed g for pipelines (weight 0.2 kg)	land	
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**

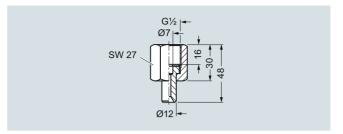
#### Overview

Connection parts  $\mbox{G}\mbox{$1\!/$_2$}$  for pressure gauges and shut-off fittings are available in 3 versions:

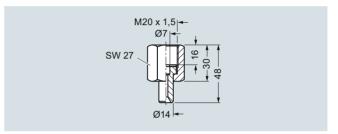
- Nipple connection
- Clamping sleeve
- Collar connection piece

Selection and Ordering data		Article No.
Adapters G½ for pressure gauges and shut-off fittings		
Nipple connection G½ to DIN 16284 (unit gasket); max. working (5802 psi); weight 0.1 connection: G½ to DIN Female thread G½	pressure 400 bar kg;	
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	
Nipple connection M20 x 1.5 to DIN 1628 and gasket); max. wor (5802 psi); weight 0.1 connection: M20 x 1.5 Female thread M20 x	kg; to DIN EN 837-1;	
Material	Mat. No.	
Union nut X 8 CrNiS 18 9 Nipple: X 6 CrNiMoTi 17 12 2	1.4305 1.4571/316Ti	M56340-A0008
Clamping sleeve		
G½ to DIN 16283; max 400 bar (5802 psi); we Connections: G½ to D Female thread: G½ rig	eight 0.1 kg; IN EN 837-1;	
Material	Mat. No.	
CuZn39Pb3	CW614N	M56340-A0004
9 SMn 28 k	1.0715	M56340-A0005
Collar-adapter		
max. working pressure Connections: $G\frac{1}{2}$ to D Male thread: $G\frac{1}{2}$ , $G\frac{1}{2}$		
Material	Mat. No.	
CuZn39Pb3	CW614N	M56340-A0006
9 SMn 28 k	1.0715	M56340-A0007

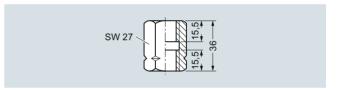
#### Dimensional drawings



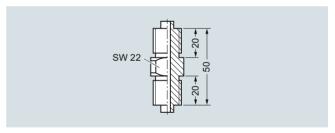
Nipple connection  $G\frac{1}{2}$  (M56340-A0001 to -A0003), dimensions in mm



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  $G\frac{1}{2}$  to DIN 16283.

The water traps are made of steel (P250GH) or stainless steel (X 6 CrNiMoTi 17 12 2)

Water traps are designed as standard for max. operating temperature 120 °C (248 °F) at max. operating pressure 100 bar (1450 psi) (300 °C (572 °F) at 80 bar (1160 psi), 400 °C (752 °F) at 63 bar (914 psi). Water traps for higher operating pressures and temperatures are available on request.

# Selection and Ordering data Water traps for pressure gauges and pressure transmitters, max. working temperature 120 °C

ror pressure gauges and pressure transmit ters, 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

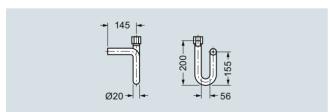
#### Water trap B to DIN 16282

Material	Mat. No.	
P235GH	1.0345	M56340-A0043
X 6 CrNiMoTi 17 12 2	1.4571/316Ti	M56340-A0061

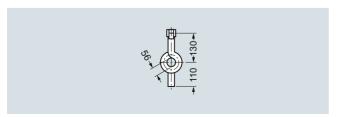
#### Water trap D to DIN 16282

Material	Mat. No.	
P235GH	1.0345	M56340-A0045
X 6 CrNiMoTi 17 12 2	1.4571/316Ti	M56340-A0063

#### Dimensional drawings



Water traps, type B, M56340-A0043/-A0061, dimensions in mm

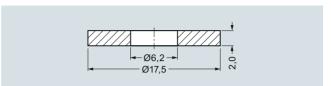


Water traps, type D, M56340-A0045/-A0063, dimensions in mm

#### 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	
Factory certificate according to EN 10204–2.2	7MF9000-8AB
Material inspection 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

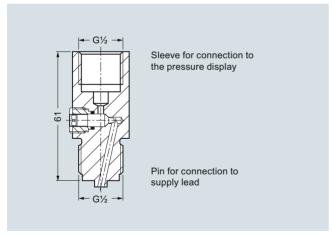
The pressure reducer is used when pulsations occur in the measured medium (e.g. in slow-running vapor engines, piston pumps and compressors), or if drastic fluctuations are likely to occur in the measured medium (e.g. in hydraulic presses and tensile testing machines).

#### 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 and Ordering data Article No.		Article No.	
Pressure sur Weight appro			
Material	Full-scale value	Weight approx. in kg	
Brass	250 bar (3626 psi)	0.21	M56340-A54
Stainless steel	600 bar (8702 psi)	0.21	M56340-A59

#### Dimensional drawings



Pressure surge reducer, dimensions in mm

Fittings Accessories

Primary shut-off valves

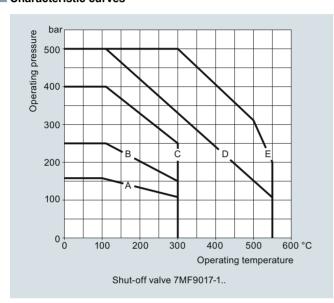
#### Overview

Primary shut-off valves are available in the following versions:

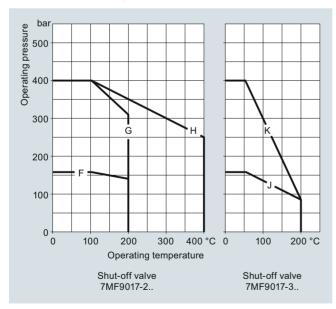
- For non-corrosive liquids, gases and vapors
- For corrosive liquids and gases
- Grease-free for oxygen

The shut-off valves are available in various materials and with various connections (see Selection and Ordering data)

#### Characteristic curves

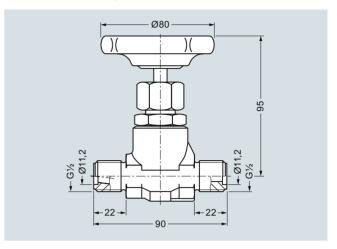


Shut-off valve 7MF9017-1.., permissible working pressure as a function of the permissible working temperature

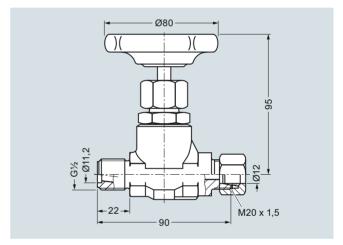


Shut-off valves 7MF9017-2.. and -3.., permissible working pressure as a function of the permissible working temperature

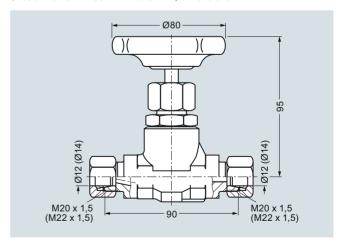
#### Dimensional drawings



Shut-off valve 7MF9017-1A., dimensions in mm



Shut-off valve 7MF9017-1B. and -2B., dimensions in mm

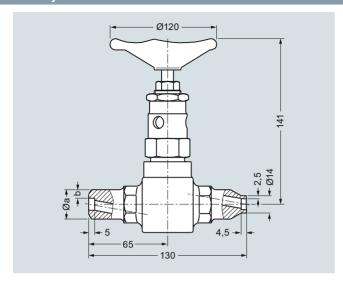


Shut-off valves 7MF9017-1C., -1D. and -2C., dimensions in mm

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.

Max. working pressure	Charac- 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. for	r the online configuration	on in the P	IA Life Cy	cle Portal.		
160 bar (2321 psi)	Α	P250GH	1.0460	Internal	Threaded socket G½ form R, DIN 19207	0.8	A
160 bar (2321 psi)	A	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 × 2.5 mm	1.6	F
500 bar (7252 psi)	E	11 CrMo 9 10	1.7383	External	Welding sleeves Ø 14 mm × 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	e 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 Ø 21.3 mm $\times$ 6.3 mm and Ø 14 mm $\times$ 2.5 mm	1.6	Н
400 bar (5800 psi)	Н	X 6 CrNiMoTi 17 12 2	1.4571/ 316Ti	External	Welding sleeves $\varnothing$ 24 mm $\times$ 7.1 mm and $\varnothing$ 14 mm $\times$ 2.5 mm	1.6	J

7MF9000-8AD

Material inspection certificate EN 10204-3.1

<sup>1)</sup> See Figure "Permissible working pressure as a function of the permissible working temperature"

Fittings Accessories

**Compensation vessels** 

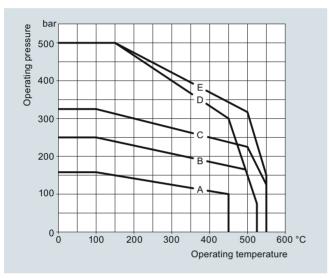
#### Overview

The compensation vessels prevent the level difference which occurs with pressure changes in the pressure lines and which falsifies the measurement.

According to DIN 19211, the temperature in the compensation vessel must be assumed to be 50 K less than the steam temperature in the pipe when calculating the wall thicknesses. This is because the temperature in the compensation vessel during operation can only rise up to the saturated steam temperature.

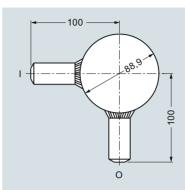
A material inspection certificate A to EN 10204-3.1 is available for the materials from which the compensation vessels are made.

#### Characteristic curves



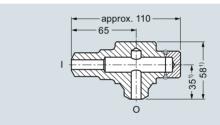
Permissible operating pressure as a function of the permissible operating temperature

#### 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 vessel, without 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-	A
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 $\emptyset$ 21.3 mm $\times$ 6.3 mm	250	0.8		1 B
250 bar (3626 psi)	В	16 Mo 3	1.5415	Welding sleeve Ø 24 mm x 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 x 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 x 7.1 mm	Welding sleeve $\emptyset$ 24 mm $\times$ 7.1 mm	20	1.6		5 C
500 bar (7252 psi)	E	11 CrMo 9 10	1.7383	Welding sleeve Ø 24 mm x 7.1 mm	Welding sleeve Ø 24 mm × 7.1 mm	20	1.6		5 D

Accessories

Factory certificate according to EN 10204–2.2 Material inspection 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

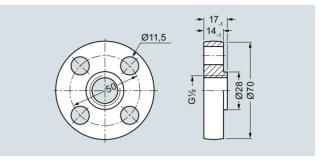
Connection parts are available in the following versions:

- 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

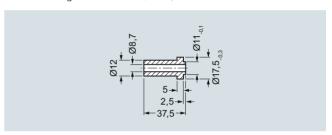
All connection parts are also available grease-free for oxygen.

Selection and Ordering data	Article No.		
Threaded flange pair G½			
• with stainless steel gasket	7MF9007-4CA		
<ul> <li>grease-free for oxygen, with stainless steel gasket</li> </ul>	7MF9007-4DA		
Scope of delivery:			
2x threaded flanges G½ to DIN 19207; material: P250GH (mat. No. 1.0460)			
4x hexagon screws M10x45 to DIN EN 24014; Material: C35E (mat. No. 1.1181)			
4x hexagon screws M10x50 to DIN EN 24032			
1x gasket G½ (7MF9007-6BA) grooved, to DIN 19207; Material: X 6 CrNiMoTi 17 12 2 (mat. No. 14571/316Ti)			
Only for 7MF9007-4CA!			
1x gasket G½ (7MF9k007-6CA), grease-free for oxygen, grooved, to DIN 19207; Material: X 6 CrNiMoTi 17 12 2 (mat. No. 14571/316Ti)			
Only for 7MF9007-4DA!			
Nipple G½			
to DIN 19207			
• Material: 16 Mo 3 (mat. No. 1.5415)	7MF9007-4KA		
<ul> <li>grease-free for oxygen, Material: X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)</li> </ul>	7MF9007-4LA		
Union nut G½			
to DIN 16284			
• Material: C35E (mat. No. 1.1181)	7MF9007-4MA		
<ul> <li>grease-free for oxygen, Material: X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)</li> </ul>	7MF9007-4NA		
Gasket G1/2			
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		

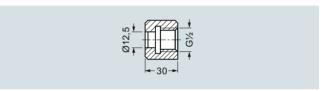
#### Dimensional drawings



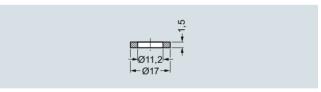
Threaded flange 7MF9007-4CA/-4DA, dimensions in mm



Nipple G½ 7MF9007-4KA/-4LA, dimensions in mm



Union nut G½ 7MF9007-4MA/-4NA, dimensions in mm



Gasket 7MF9007-6BA/-6CA, dimensions in mm