# SITRANS P measuring instruments for pressure



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2/232	Compensation vessels
2/233	Connection parts

You can download all instructions, catalogs and certificates for SITRANS P free of charge at the following Internet address: www.siemens.com/sitransp Overview Application Description Software for Page Parameterization Two- or three-wire transmitters SITRANS P, Z series 2/4 for measuring gage and abso-Compact single-range transmitters lute pressure Analog electronics Available ex stock Two- or three-wire transmitters SITRANS P250 2/12 for measuring differential pres-Compact single-range transmitters sure Analog electronics Available ex stock SITRANS P, ZD series 2/17 Two- or three-wire transmitters for measuring gage and abso-Range adjustment: 5 : 1 lute pressure Digital display Available ex stock Transmitters for gage and abso-SITRANS P Compact 2/21 lute pressure for food, phar-Single-range transmitters in 2-wire system maceuticals and biotechnology Hygiene-based design with various aseptic connections according to EHEDG, FDA and GMP recommendations. SITRANS P300 2/28 SIMATIC PDM Two-wire transmitters for measuring gage and absolute Hygiene-based design according to EHEDG, FDA pressure and GMP Parameterization over 3 buttons or communication over HART, PROFIBUS PA or FOUNDATION Fieldbus • Standard process connection G1/2, 1/2-NPT and flush-mounted process connections available Measuring range adjustment 100 : 1 Two-wire transmitters for SITRANS P300 and DS III series with PMC con-2/47 SIMATIC PDM nection for the paper industry measuring gage pressure Measuring range adjustment 100 : 1 · Process connections for the paper industry • Parameter assignment over 3 buttons and HART, PROFIBUS PA or FOUNDATION Fieldbus Two-wire transmitters for SITRANS P, DS III series 2/63 SIMATIC PDM measuring: SITRANS P, DS III PA series SIMATIC PDM Gage pressure. SITRANS P, DS III FF series Absolute pressure Range adjustment: 100 : 1 Differential pressure and Parameterization using: • Flow or • 3 keys and HART for DS III series • Level 3 keys and PROFIBUS-PA for DS III PA series 3 buttons and FOUNDATION Fieldbus for DS III FF series Available ex stock Output: 0 or 4 to 20 mA 2/134 Supplementary electronics for adaptatioSiemens FI 01 · 2009n Power supply: 24 V AC/DC, 230 V AC of two-wire transmitters for fourwire connections

# SITRANS P measuring instruments for pressure Product overview

	Application	Description	Page	Software for Parameterization
internet and	2-wire transmitter for measuing hydrostatic levels	SITRANS P, MPS series (submersible sensor) For measuring liquid levels in wells, tanks, channels, dams etc.	2/146	-
	Remote seals for measuring viscous, corrosive or fibrous media (as well as media at extreme temperatures)	Remote seals in sandwich and flange designs Quick-release remote seals for the food industry Wide range of diaphragm materials and filling liquids available	2/150	-
	Shutting off the lines for the medium and differential pres- sure Mounting of transmitter on valve manifold or shut-off fitting	Shut-off fittings and valve manifolds available in steel, brass or stainless steel Valve manifolds available for the various process connections of the SITRANS P transmitters	2/190	-

# **SITRANS P** measuring instruments for pressure

#### Z series for gage pressure

#### Siemens FI 01 · 2009Overview



SITRANS P pressure transmitters, Z series for gage pressure (7MF1562-...)

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

#### Benefits

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

#### Application

The pressure transmitter of the Z series for gage pressure (7MF1562-...) is used above all in the following industrial areas:

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

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

#### Design

The main components of the pressure transmitter are:

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

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

The process connection to DIN EN 837-1 is made of brass and has a male thread  $G^{1/2}B$  or a female thread  $G^{1}/_{8}B$ .

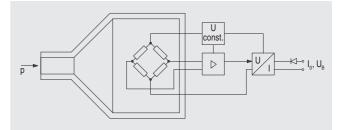
The electrical connection is made using a plug to DIN 43650 with a M16x1.5 cable inlet.

#### Function

The pressure transmitters of the Z series for gage pressure measure the pressure of aggressive and non-aggressive gases, liquids and vapors.

The measuring cell is temperature-compensated.

#### Mode of operation



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

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

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

# **SITRANS P** measuring instruments for pressure

#### Technical specifications

in film atrain mana					
in film attain anna					
Thin-film strain gage					
altive pressure					
to 16 bar g (0 to 232 psi g) or to 25 bar g (0 to 363 psi g)					
20 mA					
EN 60770-1					
5% of full-scale value-typical					
D.1 s					
3% of full-scale value/year - bical					
3% of full-scale value/year - bical					
3%/10 K (0.3%/10 K) of full- ale value - typical					
3%/10 K (0.3%/10 K) of full- ale value - typical					
) +120 °C (-22 +248 °F)					
65					
5 85 °C (-13 +185 °F)					
0 100 °C (-58 +212 °F)					

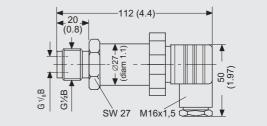
#### Z series for gage pressure Design Weight ≈ 0.2 kg (≈ 0.44 lb) Wetted parts materials • Measuring cell Al<sub>2</sub>O<sub>3</sub> - 96% Brass, mat. No. 2.0402 • Process connection Gasket Viton Process connection Male thread G1/2B female thread G1/8B Power supply Terminal voltage on pressure transmitter • For current output 10 to 36 V DC

#### Certificate and approvals

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

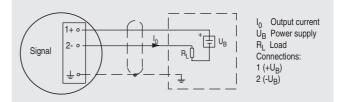
For gases of fluid group 1 and liquids of fluid 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)

#### Dimensional drawings



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

#### Schematics



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

Selection and Ordering data	Order No.	Order code	
SITRANS P pressure transmitters 2-wire system, characteristic rising	D) 7MF1562 - 00		
Measured range			
0 16 bar g (0 232 psi g)	32 bar g (464 psi g)	3 C B	
0 25 bar g (0 363 psi g)	64 bar g (928 psi g)	3 C D	
Other version for measuring range Measuring range: to bar g (ps	≥ 1 bar g (≥ 14.5 psi g), add Order code and plain text: i g)	9 A A	H 1 Y

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

Z series for gage and absolute pressure

#### Overview



SITRANS P pressure transmitters, Z series for pressure and absolute pressure (7MF1564-...)

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

#### Benefits

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

#### Application

The pressure transmitter of the Z series for gage pressure and absolute pressure (7MF1564-...) is used above all in the following industrial areas:

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

#### Design

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

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

Main components:

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

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

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

Main components:

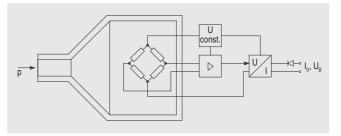
- Stainless steel housing with ceramic measuring cell and electronics module. The temperature-compensated ceramic measuring cell has a thin-film strain gage which is mounted on a ceramic diaphragm. The ceramic diaphragm can also be used for aggressive media.
- Process connection made of stainless steel in diverse designs (see Selection and Ordering data)
- Electrical connection made using a plug to DIN 43650 with the cable inlet M16 x 1.5,  $^{1\!\!/_2-14}$  NPT or round plug connector M12.

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

#### Function

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

#### Mode of operation



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

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

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

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

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

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

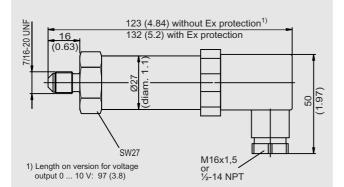
The thin-film measuring cell has a thin-film resistance bridge to which the operating pressure p is transmitted through a ceramic diaphragm.

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

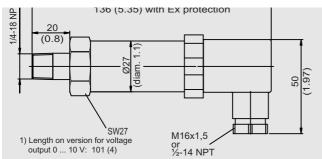
The output current and voltage are linearly proportional to the input pressure

Technical specifications		Power supply <i>U</i> <sub>H</sub>	
SITRANS P pressure transmitters, lute pressure and level	Z series for gage pressure, abso-	Terminal voltage on pressure trans- mitter	
Mode of operation		<ul> <li>For current output</li> </ul>	10 36 V DC
<ul> <li>Measuring range &lt;1 bar (&lt;14.5 psi)</li> </ul>	Piezo-resistive	<ul> <li>For voltage output signal (only measuring range ≥ 1 bar (14.5 psi))</li> </ul>	15 36 V DC
<ul> <li>Measuring range ≥1 bar (≥14.5 psi)</li> </ul>	Thin-film strain gage	Certificate and approvals	
Input		Classification according to pressure	For gases of fluid group 1 and
Measured variable	Gage and absolute pressure	equipment directive (DRGL 97/23/EC)	liquids of fluid 1; complies with requirements of article 3, para- graph 3 (sound engineering
Measured range			practice)
• Pressure		Explosion protection	
- Metric	0 400 bar g (0 5802 psi g)	Intrinsic safety "i" (only with current     output)	TÜV 02 ATEX 1953X
- US measuring range	0 6000 psi g	output) - Identification	Ex II 1/2G EEx ia IIC T4
<ul> <li>Absolute pressure</li> </ul>			
- Metric	0 16 bar a (0 232 psi a)	<ul> <li>Intrinsic safety "T.I.I.S." (only with current output)</li> </ul>	applied
- US measuring range	0 300 psi a	Lloyds Register of Shipping	Certificate No. 03/30003
Output			
Output signal			
<ul> <li>Current output signal</li> </ul>	4 20 mA	Dimensional drawings	
<ul> <li>Voltage output signal (only measuring range ≥ 1 bar (14.5 psi))</li> </ul>	0 10 V DC		
Accuracy	To EN 60770-1		Dut Ex protection <sup>1)</sup>
Error in measurement (at 25 °C (77 °F), including conformity error, hysteresis and repeatability)	0.25% of full-scale value - typical		
Response time T <sub>99</sub> Long-term drift	< 0.1 s	G <sup>5/B<sup>2</sup>)</sup> g <sup>27</sup> (diam. 1.1)	
Start of scale	0.25% of full scale value/year		
Full-scale value	0.25% of full scale value/year		
Influence of ambient temperature		SW27	
Start of scale	0.25%/10 K (0.25%/10 K) of full- scale value	<ol> <li>Length on version for voltage output 0 10 V: 106 (4.2)</li> <li>Inner diameter 3 (0.12)</li> </ol>	M16x1,5 oder ½-14 NPT
Full-scale value	0.25%/10 K (0.25%/10 K) of full- scale value	Pressure transmitter 7MF1564 with	
Rated operating conditions		dimensions in mm (inch)	
Process temperature	-30 +120 °C (-22 +248 °F)		ut Ex protection <sup>1)</sup>
Ambient temperature	-25 +85 °C (-13 +185 °F)		h Ex protection
Storage temperature	-50 +100 °C (-58 +212 °F)		
Degree of protection to EN 60529	IP65		
Design		(diam.)	
Weight	≈ 0.25 kg (≈ 0.55 lb)		
Wetted parts materials		SW27	
<ul> <li>Measuring cell</li> </ul>		1) Length on version for voltage	
- Measuring range <1 bar (<14.5 psi)	Stainless steel, 1.4571/316Ti	output 0 10 V: 96 (3.8) 2) Inner diameter 3 (0.12)	M16x1,5 oder ½-14 NPT
- Measuring range ≥1 bar (≥14.5 psi)	Al <sub>2</sub> O <sub>3</sub> - 96%	Pressure transmitter 7MF1564 with	n process connection G <sup>1</sup> /4" male,
<ul> <li>Process connection</li> </ul>	Stainless steel, mat. No. 1.4571/316Ti	dimensions in mm (inch)	
• Gasket	Viton		

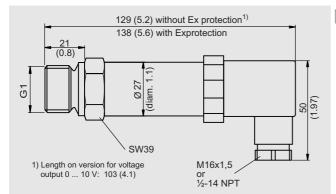
#### Z series for gage and absolute pressure



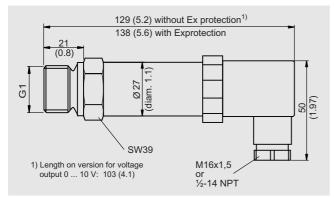
Pressure transmitter 7MF1564-... with process connection 7/16-20 UNF male, dimensions in mm (inch)



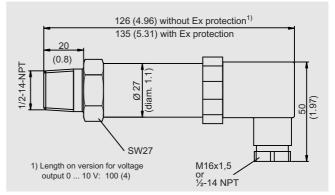
Pressure transmitter 7MF1564-... with process connection 1/4"-18 NPT male, dimensions in mm (inch)



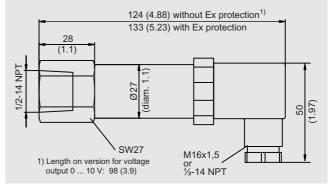
Pressure transmitter 7MF1564-... with process connection 1/4"-18 NPT female, dimensions in mm (inch)



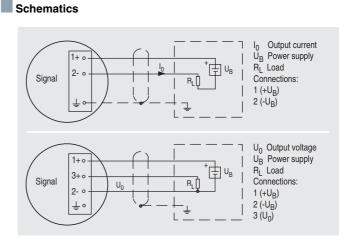
Pressure transmitter 7MF1564-... with process connection G1" male, dimensions in mm (inch)



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



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



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

#### Z series for gage and absolute pressure

Selection and C	Ordering data								Order No.		Orde	r cod
	ssure transmitte			Z for gage	and absolute	e pressure		D)	7 MF 1 5 6 4	•	1	
Measuring rang			rking pressu	ro		Burst pre	ssuro	_				-
weasuring rang	Je	Min.	rking pressu	Max.		Duistpie	55010					
For gage press	ure			maxi								
with metal meas	urina cell											
0 100 mbar g 0 160 mbar g	(0 1.45 psi g) (0 2.32 psi g) (0 3.63 psi g)	-0,6 bar g -0,6 bar g -1 bar g	(-8.7 psi g) (-8.7 psi g) (-14.5 psi g)	0,6 bar g 0,6 bar g 1 bar g	(8.7 psi g) (8.7 psi g) (14.5 psi g)	1 bar g 1 bar g 1.7 bar g	(14.5 psi g) (14.5 psi g) (25 psi g)			3 A A 0 3 A B 0 3 A C 0		
0	(0 5.80 psi g) (0 8.70 psi g)	-1 bar g -1 bar g	(-14.5 psi g) (-14.5 psi g)	-	(14.5 psi g) (43.5 psi g)	1.7 bar g 5 bar g	(25 psi g) (72 psi g)			3 A D 0 3 A G 0		
	r measuring range e: up to mba			-	code and pla	in text:	,			9 A C 0		H 1
with ceramic me	·	, g (poi g)										
0 1 bar g 0 1.6 bar g 0 2.5 bar g 0 4 bar g 0 6 bar g	(0 14.5 psi g) (0 23.2 psi g) (0 36.3 psi g) (0 58.0 psi g) (0 87.0 psi g)	-0,4 bar g -0,4 bar g -0,8 bar g -0,8 bar g -1 bar g	(-5.8 psi g) (-5.8 psi g) (-11.6 psi g) (-11.6 psi g) (-14.5 psi g)	2 bar g 3,2 bar g 5 bar g 8 bar g 12 bar g	(30 psi g) (45 psi g) (72 psi g) (115 psi g) (175 psi g)	5 bar g 5 bar g 12 bar g 12 bar g 25 bar g	(72 psi g) (72 psi g) (175 psi g) (175 psi g) (360 psi g)			3 B A 3 B B 3 B D 3 B E 3 B G		
) 10 bar g ) 16 bar g ) 25 bar g ) 40 bar g ) 60 bar g	(0 145 psi g) (0 232 psi g) (0 363 psi g) (0 580 psi g) (0 870 psi g)	-1 bar g -1 bar g -1 bar g -1 bar g -1 bar g	(-14.5 psi g) (-14.5 psi g) (-14.5 psi g) (-14.5 psi g) (-14.5 psi g)	20 bar g 32 bar g 50 bar g 80 bar g 120 bar g	(290 psi g) (460 psi g) (725 psi g) (1150 psi g) (1750 psi g)	50 bar g 50 bar g 120 bar g 120 bar g 250 bar g	(725 psi g) (725 psi g) (1750 psi g) (1750 psi g) (3600 psi g)			3 C A 3 C B 3 C D 3 C E 3 C G		
0 100 bar g 0 160 bar g 0 250 bar g 0 400 bar g	(0 1450 psi g) (0 2320 psi g) (0 3626 psi g) (0 5802 psi g)	-1 bar g -1 bar g -1 bar g -1 bar g	(-14.5 psi g) (-14.5 psi g) (-14.5 psi g) (-14.5 psi g)	200 bar g 320 bar g 500 bar g 600 bar g	(2900 psi g) (4640 psi g) (7250 psi g) (8700 psi g)	450 bar g 450 bar g 650 bar g 650 bar g	(6525 psi g) (6525 psi g) (9425 psi g) (9425 psi g)	)		3 D A 3 D B 3 D D 3 D E		
	r measuring range		(≥ 14.5 psi g)	, add Orde	r code and p	lain text:				9 A A		H 1
	e: up to bar (	osi g)"							,			
For absolute pr		1		1		1						
) 600 mbar a ) 1 bar a ) 1.6 bar a ) 2.5 bar a	(0 8.7 psi a) (0 14.5 psi a) (0 23.2 psi a) (0 36.3 psi a)	0 bar a 0 bar a 0 bar a 0 bar a	(0 psi a) (0 psi a) (0 psi a) (0 psi a)	3 bar a 2 bar a 3,2 bar a 5 bar a	(43.5 psi a) (30 psi a) (45 psi a) (72 psi a)	5 bar a 5 bar a 5 bar a 12 bar a	(72 psi a) (72 psi a) (72 psi a) (175 psi a)		J)	5 A G 0 5 B A 5 B B 5 B D		
) 4 bar a ) 6 bar a ) 10 bar a ) 16 bar a	(0 58.0 psi a) (0 58.0 psi a) (0 87.0 psi a) (0 145 psi) (0 232 psi)	0 bar a 0 bar a 0 bar a 0 bar a	(0 psi a) (0 psi a) (0 psi a) (0 psi a) (0 psi a)	8 bar a 12 bar a 20 bar a 32 bar a	(115 psi a) (175 psi a) (290 psi a) (460 psi a)	12 bar a 25 bar a 50 bar a 50 bar a	(175 psi a) (360 psi a) (725 psi a) (725 psi a)		J) J)	5 B E 5 B G 5 C A 5 C B		
Other version fo	r measuring range e: up to mba	I ə < 1 bar (<	,						J)	9 A B 0		H 1

Available ex stock

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

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

#### Please note:

• It is not possible to have a smaller span than the smallest span of the device of the entire device range.

• The value must not fall below the minimum permissible operating pressure of the special measuring range of the selected measuring cell.

• The required span of the device must lie between the smallest and the largest possible span of the entire device range

#### Z series for gage and absolute pressure

Selection and Ordering data		<b>.</b>				order co
SITRANS P pressure transm 2 or 3-wire system, rising char		es ∠ tor pressure and ab	solute pressure	U) 7 MI	F1564	1
leasuring range	Perm. working pressu	re	Burst pressure			
	min.	max.				
leasuring ranges for gage p	ressure (only for US m	arket)				
(0 10 psi g)	(-3 psi g)	(20 psi g)	(60 psi g)		4 B A	
(0 15 psi g)	(-6 psi g)	(30 psi g)	(72 psi g)		4 B B	
(3 15 psi g)	(-6 psi g)	(30 psi g)	(72 psi g)		4 B C	
(0 20 psi g)	(-6 psi g)	(40 psi g)	(72 psi g)		4 B D	
(0 30 psi g)	(-6 psi g)	(60 psi g)	(72 psi g)		4 B E	
(0 60 psi g)	(-11.5 psi g)	(120 psi g)	(175 psi g)		4 B F	
(0 100 psi g)	(-14.5 psi g)	(200 psi g)	(360 psi g)		4 B G	
(0 150 psi g)	(-14.5 psi g)	(300 psi g)	(725 psi g)		4 C A	
(0 200 psi g)	(-14.5 psi g)	(400 psi g)	(725 psi g)		4 C B	
(0 200 psi g)	(-14.5 psi g)	(600 psi g)	(1750 psi g)		4 C D	
(0 500 psi g)	(-14.5 psi g)	(1000 psi g)			4 C E	
(0 500 psi g) (0 750 psi g)	( I O,	, , , , , , , , , , , , , , , , , , , ,	(1750 psi g) (2600 psi g)		4 C E 4 C F	
( 10/	(-14.5 psi g)	(1500 psi g)	(3600 psi g) (3600 psi g)			
(0 1000 psi g)		(2000 psi g)	(3600 psi g) (6525 psi g)		4 C G 4 D A	
(0 1500 psi g) (0 2000 psi g)	( ) )	(3000 psi g) (4000 psi g)	(6525 psi g) (6525 psi g)		4 D A 4 D B	
(0 3000 psi g)	( )	(6000 psi g)	(9425 psi g)		4 D D	
(0 5000 psi g)		(8700 psi g)	(9425 psi g)		4 D E	
(0 6000 psi g)	(-14.5 psi g)	(8700 psi g)	(9425 psi g)		4 D F	
ther version, add Order code	e and plain text: Measurir	ng range: up to psi g			9 B A	н
easuring ranges for absolu	ite pressure (only for U	S market)				
(0 10 psi a)	(0 psi a)	(20 psi a)	(60 psi a)	J)	6 A G	
(0 15 psi a)	(0 psi a)	(30 psi a)	(72 psi a)	J)	6 B A	
(0 20 psi a)	(0 psi a)	(40 psi a)	(72 psi a)	J)	6 B B	
(0 30 psi a)	(0 psi a)	(60 psi a)	(72 psi a)	J)	6 B D	
(0 60 psi a)	(0 psi a)	(120 psi a)	(175 psi a)	J)	6 B E	
(0 100 psi a)	(0 psi a)	(200 psi a)	(360 psi a)	J)	6 B G	
(0 150 psi a)	(0 psi a)	(300 psi a)	(725 psi a)	J)	6 C A	
(0 200 psi a)	(0 psi a)	(400 psi a)	(725 psi a)	J)	6 C B	
(0 200 psi a) (0 300 psi a)	(0 psi a)	(400 psi a) (600 psi a)	(1725 psi a)	J)	6 C C	
ther version, add Order code			(1725 psi a)		9 B B	н
utput signal		ig lange up to psi a		J)	300	
1 0						
20 mA;C 2-wire system; p 10 V; 3-wire system; powe	11.2				0 1 0	
xplosion protection						
/ithout					o	
/ith explosion protection Ex II	1/2 G EEv in IIC T4 (only	(for vorsion 4 20 mA: 2	wire evetom:		1	
ower supply 10 30 V DC)	1/2 O LLX 18 110 14 (011)	101 VEISION 4 20 MA, 2	wile system,			
/ith explosion protection "Intri	nsic safety T.I.I.S." (availa	able soon)			2	
ectrical connection	available a					
	blo inlot M16 v 1 F					
lug to DIN 43650, Form A, ca	IDIE INIET IVI 16 X 1.5				1	
ound connector M12, IP67					2	
lug to DIN 43650, cable inlet					3	
lug to DIN 43650, cable inlet	0				4	
able gland Pg11 with 2 m PE					6	
pecial version (specify Order	code and plain lext)				9	N

Available ex stock

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

Z series for gage and absolute pressure

Selection and Ordering data		Order No.	Ord	er code
SITRANS P pressure transmitters for pressure, series Z for pressure and absolute pressure 2 or 3-wire system, rising characteristic curve	D	)7 MF 1 5 6 4 -		
Process connection				
G½" male to EN 837-1 (½" BSP male) (standard for metric pressure ranges mbar, bar) G½" male thread and G1/8" female thread G¼" male to EN837-1 (¼" BSP male) 7/16"-20 UNF male ¼"-18 NPT male (standard for pressure ranges psi)			A B C D E	
¼"-18 NPT female ½"-14 NPT male ½"-14 NPT female RC ½" male to JIS B 7505 G1" male (only for measuring ranges ≥ 1 bar g (14.5 psi g)) and max. permissible working pressure 100 bar g (1450 psi g) Special version (specify Order code and plain text)			F G H K M	Р1'
Sealing material between sensor and housing		-		
Viton (standard) Neoprene Perbunan Special version (specify Order code and plain text)			A B C Z	Q 1
Further designs		Order code / Order No.	_	
Quality inspection certificate (Factory calibration) to IEC 60770-2, add "-Z" to Order No. and Order code.		C11		
Oxygen version, oil and grease-free cleaning (only if the sealing material between sensor and housing is Viton and only for measuring ranges ≥ 1 bar g (≥ 14.5 psi g) and ≥ 1 bar a (≥ 14.5 psi a)		E10		
Accessories		Order No.		
Quality inspection certificate (Factory calibration) to IEC 60770-2 supplied later, specify factory no. of transmitter.	D	7MF1564-8CC11		
Available av stock D) Subject to expect regulations AL N ECON EAPOOH				

Available ex stock

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

Z series for gage and absolute pressure

#### Overview



SITRANS P250 transmitter for differential pressure

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

#### Benefits

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

#### Application

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

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

#### Design

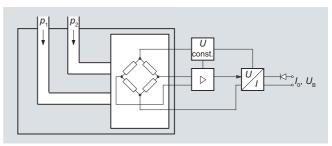
Main components:

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

#### Function

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

#### Mode of operation



SITRANS P250 pressure transmitter, function diagram

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

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

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

SITRANS P250 differential pressur	e transmitter		
Application			
Differential pressure transmitter	Liquids and neutral gases		
Mode of operation			
Measuring principle	Piezo-resistive measuring cell (ceramic diaphragm)		
Input			
Measured variable	Differential pressure		
Measuring range	0 0.1 to 0 25 bar (0 1.45 to 0 363 psi)		
Operating pressure	≤ 25 bar (363 psi) at a differenti pressure range < 6 bar (87 psi) ≤ 50 bar (725 psi) at a differenti pressure range > 10 bar (145 p		
Burst pressure	1.5 x operating pressure		
Output			
Output signal			
<ul> <li>Current output signal</li> </ul>	4 20 mA		
<ul> <li>Voltage output signal</li> </ul>	0 5 V and 0 10 V DC		
Load			
3-wire	> 10 kΩ		
2-wire	≤ (U <sub>H</sub> - 11 V) / 0.02 A		
Measuring accuracy			
Dynamic behavior (at 25°C (77°F), including conformity error, hystere- sis and repeatability)	≤ 1 % of typical full-scale value, see "Measuring range" table		
Long-term drift acc. to IEC 60770	$\leq$ 0.5 % of full-scale value/year		
Influence of ambient temperature			
Start of scale	$\leq$ 0.6 %/10K of full-scale value ( $\leq$ 1.2 % / 10K for measuring cel 0 0.1 bar (1.45 psi))		
• Full-scale value	≤ 0.22 %/10K of full-scale value (≤ 0.37 % / 10K for measuring ce 0 0.1 bar (1.45 psi))		
Dynamic behavior	Suitable for static and dynamic measurements		
Response time T <sub>99</sub>	< 5 ms		
Load variation	< 50 Hz		

#### Z series for gage and absolute pressure

Conditions of use	
Ambient conditions	
<ul> <li>Temperature of medium</li> </ul>	- 15+ 85 °C (5 185 °F)
<ul> <li>Ambient temperature</li> </ul>	- 15+ 85 °C (5 185 °F)
<ul> <li>Storage temperature</li> </ul>	- 40+ 85 °C (-40 +185 °F)
Degree of protection acc. to EN 60529	IP65
Mounting position	Any
Mounting	Mounting bracket, included in delivery
Design	
Weight	Approx. 430 g (approx. 0.95 lb)
Enclosure material	Stainless steel 1.4305/AISI 303
Electrical connection	• Plug EN 175301-803-A
	Circular plug EN 60130-9
	• Cable 1.5 m
Process connection	• Hose sleeve Ø 4 mm/6 mm
	<ul> <li>Pipe union Ø 6 mm/8 mm</li> <li>Male thread 7/16-20 UNF, G1/8</li> </ul>
	Female thread 1/8-27 NPT
	• (Standard), G1/8
Wetted parts materials	Stainless steel 1.4305/AISI 303, CuZn nickel-plated
<ul> <li>Process connection</li> </ul>	Approx. 430 g (approx. 0.95 lb)
• Diaphragm	Ceramic Al <sub>2</sub> O <sub>3</sub> (96 %)
Sealing material	FPM (standard), EPDM, NBR, MVQ, CR
Power supply <i>U</i> <sub>H</sub>	
Terminal voltage on pressure trans- mitter	
• 2-wire, 4 20 mA	11 33 V DC
• 3-wire, 0 5 V DC	11 33 V DC/ 24 V AC ± 15 %
• 3-wire, 0 10 V DC	18 33 V DC/ 24 V AC ± 15 %
Current consumption at nominal pressure	

• 2-wire	< 20 mA
• 3-wire	< 5 mA
Protection against polarity reversal	Protected against short-circuit and polarity reversal. Each con-

#### Certificates and approvals

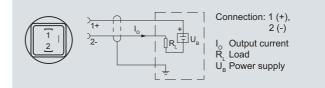
Approval

CE conformity

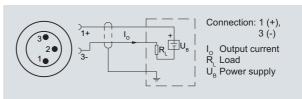
nection against the other with max. supply voltage.

Measuring	Measuring range		Burst pressure	Max. per- missible operating pressure (on one side)	Accuracy
[bar]	[psi]				
0 0,1	0 1.45	25 bar (363 psi)	37,5 bar (544 psi)	0.6 bar (8.7 psi)	≤ 1,0 %
0 0,2	0 2.9	25 bar (363 psi)	37,5 bar (544 psi)	0.6 bar (8.7 psi)	≤ 1,0 %
0 0,25	0 3.63	25 bar (363 psi)	37,5 bar (544 psi)	0.6 bar (8.7 psi)	≤0,5 %
0 0,3	0 4.35	25 bar (363 psi)	37,5 bar (544 psi)	0.6 bar (8.7 psi)	≤0,5 %
0 0,4	0 5.8	25 bar (363 psi)	37,5 bar (544 psi)	1.2 bar (17.4 psi)	≤0,8 %
0 0,5	0 7.25	25 bar (363 psi)	37,5 bar (544 psi)	1.2 bar (17.4 psi)	≤0,5 %
0 0,6	0 8.7	25 bar (363 psi)	37,5 bar (544 psi)	1.2 bar (17.4 psi)	≤0,5 %
0 1,0	0 14.5	25 bar (363 psi)	37,5 bar (544 psi)	2 bar (29 psi)	≤0,5 %
0 1,6	0 23.2	25 bar (363 psi)	37,5 bar (544 psi)	3.2 bar (46.4 psi)	≤0,5 %
0 2,5	0 36.3	25 bar (363 psi)	37,5 bar (544 psi)	5 bar (72.5 psi)	≤0,5 %
0 4	0 58	25 bar (363 psi)	37,5 bar (544 psi)	8 bar (116 psi)	≤0,5 %
0 6	0 87	25 bar (363 psi)	37,5 bar (544 psi)	12 bar (174 psi)	≤0,5 %
0 10	0 145	50 bar (725 psi)	75 bar (1088 psi)	20 bar (290 psi)	≤0,5 %
0 16	0 232	50 bar (725 psi)	75 bar (1088 psi)	32 bar (464 psi)	≤0,5 %
0 25	0 363	50 bar (725 psi)	75 bar (1088 psi)	50 bar (725 psi)	≤0,5 %

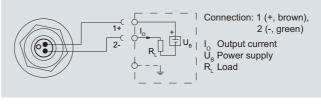
#### Schematics



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

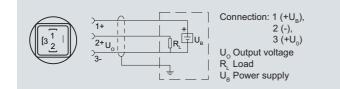


Connection with current output 4 ... 20 mA and round connector

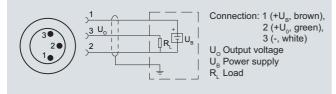


Connection with current output 4 ... 20 mA and permanently fixed cable

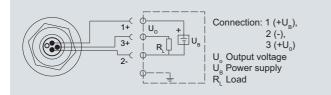
#### Z series for gage and absolute pressure



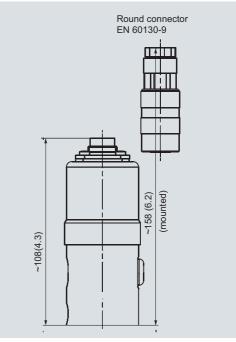
Connection with voltage output 0  $\dots$  5 V DC (0  $\dots$  10 V DC) and plug to EN 175301-803-A



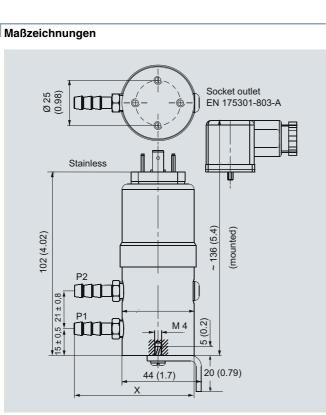
Connection with voltage output 0  $\dots$  5 V DC (0  $\dots$  10 V DC) and round connector



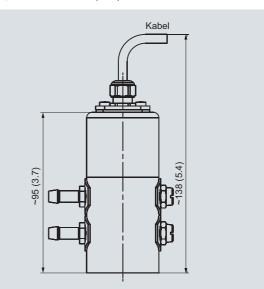
Connection with voltage output 0  $\dots$  5 V DC (0  $\dots$  10 V DC) and permanently fixed cable



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



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



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

Z series for gage and absolute pressure

Process connections		Ø	Width across flats	L	x	
		[mm] [inch]		[mm]	[inch] [mr	n] [inch
<u>← L</u> →	Pipe union with screw-in nipple for outer pipe (stainless steel 1.4305/AISI 303)	6	a = 10 b = 12	24	65	
		8	a = 12 b = 14	26	67	
G1/8	Female thread G1/8 (stainless steel 1.4305/AISI 303)	-	a = 14	12	53	
L L	Pipe union with screw-in nipple for outer pipe (CuZn nickel-plated)	6	a = 10 b = 12	24	65	
		8	a = 12 b = 14	25	66	
	Hose connection for hose (CuZn nickel-plated,	4	a = 10	20	61	
	stainless steel 1.4571/AISI 316TI)	6	a = 10	25	66	
L LdN LZ-8/L	Male thread G1/8 (CuZn nickel-plated)	-	a = 10 b = 12	20	61	
7/16-20 UNF	Male thread G1/8 7/16-20 UNF (CuZn nickel-plated)	-	a = 14	18	59	

#### Z series for gage and absolute pressure

Selection and o	-		Order No.	Order c
	pressure transmitter for differential pressure		7 M F 1 6 4 1 -	0 - 0
	, wetted parts ceramic/stainless steel 1.4301, y: transmitter, mounting bracket and instruction manual, without explosion protection			
Measuring rang				
0 0.1 bar	(0 1.45 psi)		3 A A	
0 0.2 bar	(0 2.90 psi)		3 A C	
0 0.25 bar	(0 3.63 psi)	•	3 A D	
0 0.3 bar	(0 5.35 ps)	•	3 A E	
0 0.4 bar	(0 5.80 psi)		3 A F	
0 0.5 bar	(0 7.25 psi)		3 A G	
0 0.6 bar	(0 8.70 psi)		3 A H	
0 1.0 bar	(0 14.5 psi)		3 B A	
0 1.6 bar	(0 23.2 psi)		3 B B	
0 2.5 bar	(0 36.3 psi)		3 B D	
0 4.0 bar	(0 58.0psi)		3 B E	
0 6.0 bar	(0 87.0 psi)		3 B G	
0 10.0 bar	(0 145 psi)		3 C A	
0 16.0 bar	(0 232 psi)		3 C B	
0 25.0 bar	(0 363 psi)		3 C D	
Output signal				
4 20 mA				0
0 5 V DC				1
0 10 V DC				2
0	N 175 301-803-A (suitable coupling included in scope of delivery) tor acc. to EN 60139-9 ith cable gland			1 2 3
Process conne				
	ctions, female thread 1/8-27 NPT			Α
<ul> <li>Hose connecti</li> </ul>				^
	plated, for hose Ø 4 mm			в
	plated, for hose Ø 6 mm			č
- PVDF, for ho				D
<ul> <li>Pipe union</li> </ul>				
	plated, for pipe Ø 6 mm			E
- Stainless ste	el 1.4304, for pipe Ø 6 mm			F
- CuZn nickel-	plated, for pipe Ø 8 mm			G
- Stainless ste	el 1.4304, for pipe Ø 8 mm			н
<ul> <li>Male thread, 7</li> </ul>	/16-20 UNF (CuZn nickel-plated)			L
<ul> <li>Adapter</li> </ul>				
- Inner, G1/8 (	stainless steel), for pipe Ø 6 mm			м
- Outer, with u	nion nut, for pipe Ø 6 mm			N
ealing material				
<ul> <li>Fluoro rubber</li> </ul>				Α
	/lene diene monomer rubber (EPDM)			В
	ne rubber (NBR)			С
<ul> <li>Silicone rubbe</li> </ul>				D
<ul> <li>Neoprene (CR</li> </ul>	)			E
Weitere Ausfüh	rungen		Kurzangabe	
Please add "-Z"	to Order No. and specify Order code(s).			
Quality inspection	on certificate (Factory calibration) to IEC 60770-2 supplied		C11	

Available ex stock

#### ZD series for gage and absolute pressure

At the rear of the housing is the electrical connection for the voltage supply using a current loop 4 ... 20 mA. The connection is made with a plug connector.

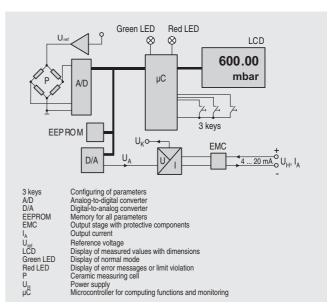
At the front of the housing is the 5-digit display behind a glass cover. Underneath the display are the 3 keys for parameterizing the pressure transmitter. Above the display are a green and a red LED for indicating the operating status.

The ZD pressure transmitter is available in two versions (see "Dimension drawing"):

In the radial version (type A) the display is fitted in parallel with the process connection. The display can be rotated by up to  $\pm 120^{\circ}$  relative to the process connection.

In the axial version (type B) the display is at right angles to the process connection. The display can be rotated by  $360^{\circ}$  relative to the process connection.

#### Function



SITRANS P pressure transmitters, ZD series, mode of operation

#### Mode of operation

The ZD pressure transmitter has a thin-film strain gage which is mounted on a ceramic diaphragm.

The measuring cell is temperature-compensated.

#### Functions

The ZD pressure transmitter has a 5-digit display behind a glass cover. The following data are shown on the display:

- Measured pressure
- Technical pressure dimension (default setting: bar)
- Limit violation in upward or downward direction, indicated by LED and arrow symbols in the display

The pressure transmitter is set using the 3 input keys behind the glass cover underneath the display.

The key "M" is used to select the operating mode. Following modes of operation are available:

- Measured value
- Password
- Dimension
- · Start and end of scale
- Upper and lower limit value
- · Zero adjustment



SITRANS P pressure transmitters, ZD series, are for measuring the gage pressure, absolute pressure and level of liquids and gases.

They are used to indicate and monitor the pressure measured at the point of installation. ZD pressure transmitters are available in an axial and a radial version.

#### Benefits

- · Robust stainless steel housing with 2 connection versions
- · Integrated display with status messages
- Thin-film measuring cell with ceramic diaphragm
- 2-wire system, 4 ... 20 mA
- · Parameterizable using keys underneath the housing cover
- Range adjustment 1:5 (max. 1:10)
- Measuring accuracy < 0.25% (typical)

#### Application

The ZD is a configurable pressure transmitter for measuring the gage and absolute pressure of gases, liquids and vapor.

It is equipped with a display for indicating the pressure value at the point of installation.

SITRANS P pressure transmitters, ZD series, are used in the following industrial areas for example:

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

#### Design

The pressure transmitter is comprised of a thin-film measuring cell with a ceramic diaphragm, an electronics board and a digital indicator.

All parts are accommodated in a stainless steel field housing ( $\varnothing$  80 mm) with a glass cover and stainless steel process connection.

#### ZD series for gage and absolute pressure

- Upper and lower current saturation limit
- Electrical damping

The other two keys are used to set the values in the individual operating modes.

Two LED indicators are fitted above the display to monitor the set range and the status.

The green LED signals that the measured pressure lies within the set limits. The red LED lights up when the measured pressure lies outside the set limits and when there is an error.

#### Technical specifications

SITRANS P pressure transmitters, ZD series						
Mode of operation						
Measuring principle	Thin-film strain gage					
Input						
Measured variable	Gage and absolute pressure					
Measured range	Resolution					
0 2 bar (0 29 psi)	0.6 mbar (0.008 psi)					
0 10 bar (0 145 psi)	3 mbar (0.044 psi)					
0 50 bar (0 725 psi)	15 mbar (0.218 psi)					
0 200 bar (0 2900 psi)	60 mbar (0.9 psi)					
0 400 bar (0 5800 psi)	120 mbar (1.8 psi)					
Measured range	Overload limit					
0 2 bar (0 29 psi)	5 bar (72.5 psi)					
0 10 bar (0 145 psi)	25 bar (363 psi)					
0 50 bar (0 725 psi)	120 bar (1740 psi)					
0 200 bar (0 2900 psi)	500 bar (7250 psi)					
0 400 bar (0 5800 psi)	600 bar (8700 psi)					
Range adjustment (turndown)	5:1					
Output						
Output signal	4 20 mA					
Lower current limit	min. 3.6 mA					
Upper current limit	max. 23 mA					
Output protected against	Reversed polarity, overvoltage and short-circuiting					
Max. load	$R_{\rm B} = (U_{\rm H} - 12 \text{ V}) / 0.023 \text{ A}$					
Voltage measurement	Linear rising					
Measuring accuracy	To EN 60770-1					
Error in measurement (including non-linearity, hysteresis and repea- tability, at 25 °C (77 °F))	< 0.25% of full-scale value (typi- cal), max. 0.5%					
Adjustment time	< 100 ms					
Long-term drift	0.25% of full scale value/year					
Influence of ambient temperature	< ±0.25%/10 K (< ±0.25%/10 K) of full-scale value					
Vibration influence	0.05%/g to 500 Hz in all directions (to IEC 68-2-64)					
Power supply effect	$<\pm0.01\%/V$ of full-scale value					

#### Rated conditions

Ambient conditions• Ambient temperature $-25 \dots + 85 \degree C (-13 \dots + 185 \degree F)$ • Storage temperature $-40 \dots + 85 \degree C (-40 \dots + 185 \degree F)$ Medium conditions $-30 \dots + 100 \degree C (-22 \dots + 212 \degree F)$ Degree of protectionIP65 to EN 60529Electromagnetic compatibility• Emitted interference and interferere company• Emitted interference and interferere companyTo EN 61326/A1 appendix A (1998)Display and controlsLCD, max. 5 digits, digit height 9 mmDecimal pointFreely parameterizableLimit valuesFreely parameterizableLimit violation displayRed LED and message on LCD (1 symbol / 4 symbol in case of minit violation in upward / downward direction)ParameterizationWth 3 keysUnitsmA or % or physical variable (default setting: bar)DampingCher (1.3.2 lb)Electrical connectionUsing 2-pole plug connector with M16x1.5-Cable inlet to EN 175301-803A, plasticProcess connection• Male thread G <sup>1</sup> / <sub>6</sub> B• GlyB to EN 837-1• Female thread: ½-14 NPTVersion of housing/process connection• Male thread G <sup>1</sup> / <sub>6</sub> B• GlyB to EN 837-1• Female thread: ½-14 NPT• Version of housing/process connection• Axial (type B), can be swiveled by max. ±120° (a)• Axial (type B, can be swiveled by max. ±360°• Axial (type B, can be swiveled by max. ±360°MaterialNon-wetted parts materials• Aladia files steel, mat. No. 1.4016• Measuring cellAl_2O_3• Gasket• Freely parts materials• Measuring cellAl_2O_3• Gasket		
• Storage temperature       -40 +85 °C (-40 +185 °F)         Medium conditions       -30 +100 °C (-22 +212 °F)         Degree of protection       IP65 to EN 60529         Electromagnetic compatibility       • To EN 61326/A1 appendix A (1998)         Displays and controls       To EN 61326/A1 appendix A (1998)         Displays and controls       To EN 61326/A1 appendix A (1998)         Displays and controls       To EN 61326/A1 appendix A (1998)         Displays and controls       Freely parameterizable         Limit values       Freely parameterizable         Limit values       Freely parameterizable         Limit values       Preely parameterizable         Limit violation display       With 3 keys         Units       mA or % or physical variable (default setting: bar)         Other dimensions: mbar, kPa, MPa, mmHg, g/Grm <sup>2</sup> , torr, atm         Damping       Other dimensions: mbar, kPa, MPa, mmHg, g/Grm <sup>2</sup> , torr, atm         Design       =0.6 kg (=1.32 lb)         Veright       =0.6 kg (=1.32 lb)         Electrical connection       Using 2-pole plug connector with M16X 15-Cable inlet to EN 175301-803A, plastic         Process connection       • Male thread Gl/ <sub>0</sub> B         Version of housing/process connection       • Malai (type A), can be swiveled by max. ±120° (a)         Non-wetted par		
Medium conditions $-30 \dots \pm 100 \ {}^\circ C (-22 \dots \pm 212 \ {}^\circ F)$ Degree of protectionIP65 to EN 60529Electromagnetic compatibility $To EN 61326/A1$ appendix A (1998)Display and controlsDisplay and controlsDisplayLCD, max. 5 digits, digit height 9 mmDecimal pointFreely parameterizableLimit valuesFreely parameterizableLimit violation displayRed LED and message on LCD (1 symbol /4 symbol in case of limit violation in upward / down- ward direction)ParameterizationWith 3 keysUnitsmA or % or physical variable (default setting: bar) Other dimensions: mbar, kPa, MPa, mmH <sub>2</sub> 0, mH <sub>2</sub> 0, psi, inH <sub>2</sub> 0, mmH <sub>3</sub> , kg/Cm <sup>2</sup> , torr, atmDamping $=0.6 \ kg (=1.32 \ lb)$ Electrical connectionUsing 2-pole plug connector with M18x1.5-Cable inlet to EN 175301-803A, plasticProcess connection• Male thread G <sup>1</sup> / <sub>6</sub> B • G/ <sub>2</sub> B to EN 837-1 • Female thread S <sup>1</sup> / <sub>2</sub> B and female thread G <sup>1</sup> / <sub>6</sub> B • G/ <sub>2</sub> B to EN 837-1 • Female thread S <sup>1</sup> / <sub>2</sub> B and female thread G <sup>1</sup> / <sub>6</sub> B • G/ <sub>2</sub> B to EN 837-1 • Female thread S <sup>1</sup> / <sub>2</sub> B and female thread G <sup>1</sup> / <sub>6</sub> B • G/ <sub>2</sub> B to EN 837-1 • Female thread S <sup>1</sup> / <sub>2</sub> B and female thread G <sup>1</sup> / <sub>2</sub> B		
• Process temperature Degree of protection-30 + 100 °C (-22 + 212 °F)Degree of protectionIP65 to EN 60529Electromagnetic compatibilityTo EN 61326/A1 appendix A (1998)Display and controlsDisplayDisplay and controlsLCD, max. 5 digits, digit height 9 mmDecimal pointFreely parameterizableLimit valuesFreely parameterizableLimit violation displayRed LED and message on LCD (1 symbol in case of limit violation in upward / down- ward direction)ParameterizationWith 3 keysUnitsmA or % or physical variable (default setting: bar)DampingCher dimensions: mbar, kPa, MPa, mmH <sub>2</sub> 0, mH <sub></sub>	0	-40 +85 °C (-40 +185 °F)
Degree of protection       IP65 to EN 60529         Electromagnetic compatibility       To EN 61326/A1 appendix A (1998)         Displays and controls       Display         Displays and controls       LCD, max. 5 digits, digit height 9 mm         Decimal point       Freely parameterizable         Limit values       Freely parameterizable         Limit violation display       Red LED and message on LCD (1 symbol in case of limit violation in upward / downward direction)         Parameterization       With 3 keys         Units       mA or % or physical variable (default setting: bar)         Other dimensions: mbar, KPa, MPa, mmH20, set, inH20, mH20, set, inH20, inH20, mH20, set, inH20, mH20, inH20, mH20, set, inH	Medium conditions	
Electromagnetic compatibility • Emitted interference and interfe- rence immunity Display Display LCD, max. 5 digits, digit height 9 mm Decimal point Freely parameterizable Limit values Freely parameterizable Limit violation display Red LED and message on LCD (1 symbol / 4 symbol in case of limit violation in upward / down- ward direction) Parameterization With 3 keys Units MA are % or physical variable (default setting: bar) Other dimensions: mbar, kPa, MPa, mmH <sub>2</sub> 0, mH <sub>2</sub> 0, psi, inH <sub>2</sub> 0, mmH <sub>3</sub> , kg/cm <sup>2</sup> , torr, atm Between 0.1 and 100 s (increment: 0.1 s) freely parame- terizable Design Weight = 0.6 kg (=1.32 lb) Electrical connection Using 2-pole plug connector with M16x1.5-Cable inlet to EN 175301-803A, plastic Process connection • Male thread G <sup>1</sup> / <sub>8</sub> B • G <sup>1</sup> / <sub>8</sub> B to EN 837-1 • Female thread 1 <sup>1</sup> / <sub>8</sub> -14 NPT Version of housing/process connect tion • Acial (type A), can be swiveled by max. ±120° ( <i>a</i> ) • Axial (type B), can be swiveled by max. ±120° ( <i>a</i> ) • Axial (type B), can be swiveled by max. ±120° ( <i>a</i> ) • Axial (type B), can be swiveled by max. ±120° ( <i>a</i> ) • Axial (type B), can be swiveled by max. ±120° ( <i>a</i> ) • Axial (type B), can be swiveled by max. ±120° ( <i>a</i> ) • Axial (type A), can be swiveled by max. ±120° ( <i>a</i> ) • Axial (type A), can be swiveled by max. ±120° ( <i>a</i> ) • Axial (type B), can be swiveled by max. ±120° ( <i>a</i> ) • Axial (type B), can be swiveled by max. ±120° ( <i>a</i> ) • Axial (type B), can be swiveled by max. ±120° ( <i>a</i> ) • Axial (type B), can be swiveled by max. ±120° ( <i>a</i> ) • Axial (type B), can be swiveled by max. ±120° ( <i>a</i> ) • Axial (type B), can be swiveled by max. ±120° ( <i>a</i> ) • Axial (type B), can be swiveled by max. ±120° ( <i>a</i> ) • Axial (type B), can be swiveled by max. ±120° ( <i>b</i> ) • Axial (type B), can be swiveled by max. ±120° ( <i>b</i> ) • Axial (type B), can be swiveled by max. ±120° ( <i>b</i> ) • Axial (type B), can be swiveled by max. ±120° ( <i>b</i> ) • Axial (type B), can be swiveled by max. ±120° ( <i>b</i> ) • Axial (type B), can be swiveled by ma	<ul> <li>Process temperature</li> </ul>	-30 +100 °C (-22 +212 °F)
<ul> <li>Emitted interference and interference immunity</li> <li>To EN 61326/A1 appendix A (1998)</li> <li>Display LCD, max. 5 digits, digit height 9 mm</li> <li>Decimal point Freely parameterizable</li> <li>Limit values Freely parameterizable</li> <li>Limit violation display Red LED and message on LCD (1 symbol /4 symbol in case of limit violation in upward / downward direction)</li> <li>Parameterization With 3 keys</li> <li>Units MA or % or physical variable (default setting: bar) Other dimensions: mbar, kPa, MPa, mmH<sub>2</sub>0, mH<sub>2</sub>0, psi, inH<sub>2</sub>0, mmH<sub>3</sub>, kg/cm<sup>2</sup>, tor, atm</li> <li>Damping Between 0.1 and 100 s (increment: 0.1 s) freely parameterizable</li> <li>Electrical connection Using 2-pole plug connector with M16x1.5-Cable inlet to EN 175301-803A, plastic</li> <li>Process connection Alle thread G<sup>1</sup>/<sub>8</sub>B</li> <li>G<sup>1</sup>/<sub>8</sub>B to EN 837-1</li> <li>Female thread: ½-14 NPT</li> <li>Version of housing/process connection</li> <li>Material</li> <li>Non-wetted parts materials</li> <li>Field housing</li> <li>Ø 80 mm (3.15 inch), stainless steel mat. No. 1.4016</li> <li>Wetted parts materials</li> <li>Field housing</li> <li>Ø 80 mm (3.15 inch), stainless steel mat. No. 1.4016</li> <li>Worver Supply</li> <li>Terminal voltage on pressure trans-</li> <li>12 30 V DC</li> </ul>	Degree of protection	IP65 to EN 60529
rence immunity       (1998)         Displays and controls         Display       LCD, max. 5 digits, digit height 9 mm         Decimal point       Freely parameterizable         Limit values       Freely parameterizable         Limit violation display       Red LED and message on LCD (1 symbol /4 symbol in case of limit violation in upward / downward direction)         Parameterization       With 3 keys         Units       mA or % or physical variable (default setting: bar)         Other dimensions: mbar, kPa, MPa, mMH20, mH20, p. si, inH20, mmH20, exi, inH20, mmH20, mH20, p. si, inH20, mmH20, mH20, p. si, inH20, mmH20, mH20, p. si, inH20, mmH20, mH20, msi, inH20, mmH20, mH20, msi, inH20, mmH20, mH20, msi, inH20, mmH20, msi, inH20, msi, inH20, mmH20, msi, inH20,	Electromagnetic compatibility	
DisplayLCD, max. 5 digits, digit height 9 mmDecimal pointFreely parameterizableLimit valuesFreely parameterizableLimit violation displayRed LED and message on LCD (1 symbol /4 symbol in case of limit violation in upward / down- ward direction)ParameterizationWith 3 keysUnitsmA or % or physical variable (default setting: bar) Other dimensions: mbar, kPa, MPa, mmH20, 0mH20, psi, inH20, mmHg, kg/cm², torr, atmDampinge0.6 kg (<1.32 lb)		
9 mmDecimal pointFreely parameterizableLimit valuesFreely parameterizableLimit violation displayRed LED and message on LCD (1 symbol / 4 symbol in case of limit violation in upward / down- ward direction)ParameterizationWith 3 keysUnitsmA or % or physical variable (default setting: bar) Other dimensions: mbar, kPa, MPa, mmH_20, mH_20, psi, inH_20, mmHg, kg/cm², torr, atmDampingBetween 0.1 and 100 s (increment: 0.1 s) freely parame- terizableDesign=0.6 kg (=1.32 lb)Electrical connectionUsing 2-pole plug connector with M16×1.5-Cable inlet to EN 175301-803A, plasticProcess connectionUsing 2-pole plug connector with M16×1.5-Cable inlet to EN 175301-803A, plasticProcess connection• Male thread G1/ <sub>8</sub> B • Gl/ <sub>8</sub> B • Gl	Displays and controls	
Limit valuesFreely parameterizableLimit violation displayRed LED and message on LCD (1 symbol /4 symbol in case of limit violation in upward / down- ward direction)ParameterizationWith 3 keysUnitsmA or % or physical variable (default setting: bar)Other dimensions: mbar, kPa, MPa, mmH_0, psi, inH_20, mH_0, psi, inH_20, mmH_0, kg/cm², torr, atmDampingBetween 0.1 and 100 s (increment: 0.1 s) freely parame- terizableDesign~0.6 kg (=1.32 lb)Electrical connectionUsing 2-pole plug connector with Mf6x1.5-Cable inlet to EN 175301-803A, plasticProcess connection• Male thread G½B and female thread G1/gB • G½B to EN 837-1 • Female thread G1/gB • G½B to EN 837-1 • Female thread G1/gB • G½B to EN 837-1 • Female thread (type A), can be swiveled by max. ±120° (α) • Axial (type B), can be swiveled by max. ±360°Material Non-wetted parts materialsØ 80 mm (3.15 inch), stainless steel mat. No. 1.4016 with glassWetted parts materialsViton • Process connection• Measuring cellAl <sub>2</sub> O <sub>3</sub> • Gasket• Measuring cellAl <sub>2</sub> O3 • Cover• Mea	Display	
Limit violation display       Red LED and message on LCD (1 symbol /l symbol in case of limit violation in upward / downward direction)         Parameterization       With 3 keys         Units       mA or % or physical variable (default setting: bar)         Other dimensions: mbar, kPa, MPa, mmH <sub>2</sub> 0, mH <sub>2</sub> 0, psi, inH <sub>2</sub> 0, mmH <sub>3</sub> , kg/cm <sup>2</sup> , torr, atm         Damping       Between 0.1 and 100 s (increment: 0.1 s) freely parameterizable         Veight       ≈0.6 kg (≈1.32 lb)         Electrical connection       Using 2-pole plug connector with M16x1.5-Cable inlet to EN 175301-803A, plastic         Process connection       • Male thread G <sup>1</sup> / <sub>8</sub> B and female thread G <sup>1</sup> / <sub>8</sub> B to EN 837-1         • Female thread G <sup>1</sup> / <sub>8</sub> B       • Gi/2B to EN 837-1         • Female thread G <sup>1</sup> / <sub>8</sub> B       • Gi/2B to EN 837-1         • Female thread G <sup>1</sup> / <sub>8</sub> B       • Gi/2B to EN 837-1         • Female thread G <sup>1</sup> / <sub>8</sub> B       • Gi/2B to EN 837-1         • Female thread G <sup>1</sup> / <sub>8</sub> B       • Gi/2B to EN 837-1         • Female thread G <sup>1</sup> / <sub>8</sub> B       • Gi/2B to EN 837-1         • Female thread G <sup>1</sup> / <sub>8</sub> B       • Gi/2B to EN 837-1         • Female thread G <sup>1</sup> / <sub>8</sub> B       • Gi/2B to EN 837-1         • Female thread G <sup>1</sup> / <sub>8</sub> B       • Gi/2B to EN 837-1         • Female thread G <sup>1</sup> / <sub>8</sub> B       • Gi/2B to EN 837-1         • Female thread G <sup>1</sup> / <sub>8</sub> B       • Gi/2B to EN         Non-w	Decimal point	Freely parameterizable
(† symbol /L symbol in case of limit violation in upward / down- ward direction)ParameterizationWith 3 keysUnitsmA or % or physical variable (default setting: bar) Other dimensions: mbar, kPa, MPa, mmH <sub>2</sub> 0, mH <sub>2</sub> 0, mH <sub>2</sub> 0, mg/cm², torr, atm Between 0.1 and 100 s (increment: 0.1 s) freely parame- terizableDesignSetween 0.1 and 100 s (increment: 0.1 s) freely parame- terizablePosignSetween 0.1 and 100 s (increment: 0.1 s) freely parame- terizableDesignSetween 0.1 and 100 s (increment: 0.1 s) freely parame- terizablePoses connectionUsing 2-pole plug connector with M16x1.5-Cable inlet to EN 175301-803A, plasticProcess connection• Male thread G1/ <sub>8</sub> B •	Limit values	Freely parameterizable
UnitsmA or % or physical variable (default setting: bar) Other dimensions: mbar, kPa, MPa, mmH20, mH20, psi, inH20, mmH3, kg/cm², torr, atmDampingBetween 0.1 and 100 s (increment: 0.1 s) freely parame- terizableDesign $\approx$ 0.6 kg ( $\approx$ 1.32 lb)BetchriedUsing 2-pole plug connector with M16x1.5-Cable inlet to EN 175301-803A, plasticProcess connectionUsing 2-pole plug connector with M16x1.5-Cable inlet to EN 175301-803A, plasticProcess connection• Male thread Gl/B and female thread Gl/B e Gl/B to EN 837-1 • Female thread: ½-14 NPTVersion of housing/process connection• Radial (type A), can be swiveled by max. ±120° ( $\alpha$ ) • Axial (type B), can be swiveled by max. ±360°Material Non-wetted parts materials• Ø 80 mm (3.15 inch), stainless steel mat. No. 1.4016 with glassWetted parts materials• Measuring cellAlg_O_3 • GasketViton · Process connectionProcess connection $Al_2O_3$ · Terminal voltage on pressure trans- 12 30 V DC	Limit violation display	(↑ symbol /↓ symbol in case of limit violation in upward / down-
(default setting: bar)         Other dimensions: mbar, kPa, MPa, mmH20, mH20, psi, inH20, mmH2, kg/cm², torr, atm         Damping       Between 0.1 and 100 s (increment: 0.1 s) freely parameterizable         Design       ≈0.6 kg (≈1.32 lb)         Electrical connection       Using 2-pole plug connector with M16x1.5-Cable inlet to EN 175301-803A, plastic         Process connection       • Male thread G½B and female thread G½B to EN 837-1         • Female thread: ½-14 NPT       • Female thread: ½-14 NPT         Version of housing/process connection       • Radial (type A), can be swiveled by max. ±120° (α)         Material       Non-wetted parts materials         • Field housing       Ø 80 mm (3.15 inch), stainless steel mat. No. 1.4016         • Cover       Stainless steel, mat. No. 1.4016         • Measuring cell       Al <sub>2</sub> O <sub>3</sub> • Gasket       Viton         • Process connection       Stainless steel, mat. No. 1.4016	Parameterization	With 3 keys
MPa, mmH20, mH20, psi, inH20, mmHg, kg/cm², torr, atmDampingBetween 0.1 and 100 s (increment: 0.1 s) freely parame- terizableDesignusing 2-pole plug connector with M16x1.5-Cable inlet to EN 175301-803A, plasticProcess connection• Male thread G1/2B and female thread G1/8B • G½B to EN 837-1 • Female thread: ½-14 NPTVersion of housing/process connection• Radial (type A), can be swiveled by max. ±120° (α) • Axial (type B), can be swiveled by max. ±360°Material Non-wetted parts materialsØ 80 mm (3.15 inch), stainless steel mat. No. 1.4016 with glass• Field housing cellAl <sub>2</sub> O <sub>3</sub> • Gasket• Measuring cellAl <sub>2</sub> O <sub>3</sub> • Stainless steel, mat. No. 1.4571/316Ti• Process connectionStainless steel, mat. No. 1.4571/316Ti	Units	
Weight=0.6 kg (≈1.32 lb)Electrical connectionUsing 2-pole plug connector with M16x1.5-Cable inlet to EN 175301-803A, plasticProcess connection• Male thread G1/2B and female thread G1/2B and	Damping	MPa, mmH <sub>2</sub> 0, mH <sub>2</sub> 0, psi, inH <sub>2</sub> 0, mmHg, kg/cm <sup>2</sup> , torr, atm Between 0.1 and 100 s (increment: 0.1 s) freely parame-
Electrical connectionUsing 2-pole plug connector with M16x1.5-Cable inlet to EN 175301-803A, plasticProcess connection• Male thread G1/8B • G1/8B • G1/8B • G1/8B • G1/8B • G1/2B to EN 837-1 • Female thread: ½-14 NPTVersion of housing/process connection• Radial (type A), can be swiveled by max. ±120° (α) 	Design	
M16x1.5-Cable inlet to EN 175301-803A, plastic         Process connection       • Male thread G½B and female thread G1/ <sub>8</sub> B         • G½B to EN 837-1         • Female thread: ½-14 NPT         Version of housing/process connec- tion       • Radial (type A), can be swiveled by max. ±120° (α)         • Axial (type B), can be swiveled by max. ±360°         Material         Non-wetted parts materials         • Field housing         Ø 80 mm (3.15 inch), stainless steel mat. No. 1.4016         • Cover         Stainless steel, mat. No. 1.4016         with glass         Wetted parts materials         • Measuring cell         • Al <sub>2</sub> O <sub>3</sub> • Gasket         Viton         • Process connection         Stainless steel, mat. No. 1.4571/316Ti         Power supply         Terminal voltage on pressure trans-         12 30 V DC	Design	
thread G <sup>1</sup> / <sub>8</sub> B         • G½B to EN 837-1         • Female thread: ½-14 NPT         Version of housing/process connection         • Radial (type A), can be swiveled by max. ±120° (α)         • Axial (type B), can be swiveled by max. ±360°         Material         Non-wetted parts materials         • Field housing       Ø 80 mm (3.15 inch), stainless steel mat. No. 1.4016         • Cover       Stainless steel, mat. No. 1.4016         • Cover       Stainless steel, mat. No. 1.4016         • Measuring cell       Al <sub>2</sub> O <sub>3</sub> • Gasket       Viton         • Process connection       Stainless steel, mat. No. 1.4571/316Ti         Power supply       Terminal voltage on pressure trans-         12 30 V DC       12 30 V DC	-	≈0.6 kg (≈1.32 lb)
tion by max. ±120° (α) • Axial (type B), can be swiveled by max. ±360° <u>Material</u> Non-wetted parts materials • Field housing Ø 80 mm (3.15 inch), stainless steel mat. No. 1.4016 • Cover Stainless steel, mat. No. 1.4016 with glass Wetted parts materials • Measuring cell Al <sub>2</sub> O <sub>3</sub> • Gasket Viton • Process connection Stainless steel, mat. No. 1.4571/316Ti <b>Power supply</b> Terminal voltage on pressure trans- 12 30 V DC	Weight	Using 2-pole plug connector with M16x1.5-Cable inlet to
by max. ±360° <u>Material</u> Non-wetted parts materials • Field housing • Cover • Cover Wetted parts materials • Measuring cell • Meas	Weight Electrical connection	Using 2-pole plug connector with M16x1.5-Cable inlet to EN 175301-803A, plastic • Male thread G½B and female thread G <sup>1</sup> / <sub>8</sub> B • G½B to EN 837-1
Non-wetted parts materials         • Field housing       Ø 80 mm (3.15 inch), stainless steel mat. No. 1.4016         • Cover       Stainless steel, mat. No. 1.4016 with glass         • Measuring cell       Al <sub>2</sub> O <sub>3</sub> • Gasket       Viton         • Process connection       Stainless steel, mat. No. 1.4571/316Ti         Power supply       Terminal voltage on pressure trans-         12 30 V DC	Weight Electrical connection Process connection Version of housing/process connec-	Using 2-pole plug connector with M16x1.5-Cable inlet to EN 175301-803A, plastic • Male thread G½B and female thread G <sup>1</sup> / <sub>8</sub> B • G½B to EN 837-1 • Female thread: ½-14 NPT • Radial (type A), can be swiveled
<ul> <li>Field housing Ø 80 mm (3.15 inch), stainless steel mat. No. 1.4016</li> <li>Cover Stainless steel, mat. No. 1.4016 with glass</li> <li>Wetted parts materials</li> <li>Measuring cell Al<sub>2</sub>O<sub>3</sub></li> <li>Gasket Viton</li> <li>Process connection Stainless steel, mat. No. 1.4571/316Ti</li> <li>Power supply</li> <li>Terminal voltage on pressure trans-</li> </ul>	Weight Electrical connection Process connection Version of housing/process connec-	<ul> <li>Using 2-pole plug connector with M16x1.5-Cable inlet to EN 175301-803A, plastic</li> <li>Male thread G½B and female thread G½B to EN 837-1</li> <li>Female thread: ½-14 NPT</li> <li>Radial (type A), can be swiveled by max. ±120° (α)</li> <li>Axial (type B), can be swiveled</li> </ul>
steel mat. No. 1.4016 • Cover Stainless steel, mat. No. 1.4016 with glass Wetted parts materials • Measuring cell Al <sub>2</sub> O <sub>3</sub> • Gasket Viton • Process connection Stainless steel, mat. No. 1.4571/316Ti <b>Power supply</b> Terminal voltage on pressure trans- 12 30 V DC	Weight Electrical connection Process connection Version of housing/process connec- tion	<ul> <li>Using 2-pole plug connector with M16x1.5-Cable inlet to EN 175301-803A, plastic</li> <li>Male thread G½B and female thread G1/8B</li> <li>G1/2B to EN 837-1</li> <li>Female thread: ½-14 NPT</li> <li>Radial (type A), can be swiveled by max. ±120° (α)</li> <li>Axial (type B), can be swiveled</li> </ul>
with glass Wetted parts materials  Measuring cell Al <sub>2</sub> O <sub>3</sub> Gasket Viton  Process connection Stainless steel, mat. No. 1.4571/316Ti  Power supply Terminal voltage on pressure trans- 12 30 V DC	Weight Electrical connection Process connection Version of housing/process connec- tion	<ul> <li>Using 2-pole plug connector with M16x1.5-Cable inlet to EN 175301-803A, plastic</li> <li>Male thread G½B and female thread G1/8B</li> <li>G1/2B to EN 837-1</li> <li>Female thread: ½-14 NPT</li> <li>Radial (type A), can be swiveled by max. ±120° (α)</li> <li>Axial (type B), can be swiveled</li> </ul>
Measuring cell Al <sub>2</sub> O <sub>3</sub> Gasket Viton     Process connection Stainless steel, mat. No. 1.4571/316Ti      Power supply Terminal voltage on pressure trans- 12 30 V DC	Weight Electrical connection Process connection Version of housing/process connec- tion <u>Material</u> Non-wetted parts materials	<ul> <li>Using 2-pole plug connector with M16x1.5-Cable inlet to EN 175301-803A, plastic</li> <li>Male thread G½B and female thread G1/<sub>8</sub>B</li> <li>G½B to EN 837-1</li> <li>Female thread: ½-14 NPT</li> <li>Radial (type A), can be swiveled by max. ±120° (α)</li> <li>Axial (type B), can be swiveled by max. ±360°</li> <li>Ø 80 mm (3.15 inch), stainless</li> </ul>
Gasket Viton     Process connection Stainless steel, mat. No.     1.4571/316Ti      Power supply Terminal voltage on pressure trans- 12 30 V DC	Weight Electrical connection Process connection Version of housing/process connec- tion <u>Material</u> Non-wetted parts materials • Field housing	<ul> <li>Using 2-pole plug connector with M16x1.5-Cable inlet to EN 175301-803A, plastic</li> <li>Male thread G½B and female thread G1/<sub>8</sub>B</li> <li>G1/<sub>2</sub>B to EN 837-1</li> <li>Female thread: ½-14 NPT</li> <li>Radial (type A), can be swiveled by max. ±120° (α)</li> <li>Axial (type B), can be swiveled by max. ±360°</li> <li>Ø 80 mm (3.15 inch), stainless steel mat. No. 1.4016</li> <li>Stainless steel, mat. No. 1.4016</li> </ul>
Process connection     Stainless steel, mat. No.     1.4571/316Ti      Power supply Terminal voltage on pressure trans-     12 30 V DC	Weight Electrical connection Process connection Version of housing/process connec- tion <u>Material</u> Non-wetted parts materials • Field housing • Cover	<ul> <li>Using 2-pole plug connector with M16x1.5-Cable inlet to EN 175301-803A, plastic</li> <li>Male thread G½B and female thread G1/<sub>8</sub>B</li> <li>G1/<sub>2</sub>B to EN 837-1</li> <li>Female thread: ½-14 NPT</li> <li>Radial (type A), can be swiveled by max. ±120° (α)</li> <li>Axial (type B), can be swiveled by max. ±360°</li> <li>Ø 80 mm (3.15 inch), stainless steel mat. No. 1.4016</li> <li>Stainless steel, mat. No. 1.4016</li> </ul>
1.4571/316Ti         Power supply         Terminal voltage on pressure trans-         12 30 V DC	Weight Electrical connection Process connection Version of housing/process connec- tion Material Non-wetted parts materials • Field housing • Cover Wetted parts materials	<ul> <li>Using 2-pole plug connector with M16x1.5-Cable inlet to EN 175301-803A, plastic</li> <li>Male thread G½B and female thread G1/<sub>8</sub>B</li> <li>G1/<sub>2</sub>B to EN 837-1</li> <li>Female thread: ½-14 NPT</li> <li>Radial (type A), can be swiveled by max. ±120° (α)</li> <li>Axial (type B), can be swiveled by max. ±360°</li> <li>Ø 80 mm (3.15 inch), stainless steel mat. No. 1.4016</li> <li>Stainless steel, mat. No. 1.4016 with glass</li> </ul>
Terminal voltage on pressure trans- 12 30 V DC	Weight Electrical connection Process connection Version of housing/process connec- tion <u>Material</u> Non-wetted parts materials • Field housing • Cover Wetted parts materials • Measuring cell	Using 2-pole plug connector with M16x1.5-Cable inlet to EN 175301-803A, plastic • Male thread G½B and female thread G1/ <sub>8</sub> B • G½B to EN 837-1 • Female thread: ½-14 NPT • Radial (type A), can be swiveled by max. ±120° (α) • Axial (type B), can be swiveled by max. ±360° Ø 80 mm (3.15 inch), stainless steel mat. No. 1.4016 Stainless steel, mat. No. 1.4016 with glass
	Weight Electrical connection Process connection Version of housing/process connec- tion Material Non-wetted parts materials • Field housing • Cover Wetted parts materials • Measuring cell • Gasket	<ul> <li>Using 2-pole plug connector with M16x1.5-Cable inlet to EN 175301-803A, plastic</li> <li>Male thread G½B and female thread G<sup>1</sup>/<sub>8</sub>B</li> <li>G½E to EN 837-1</li> <li>Female thread: ½-14 NPT</li> <li>Radial (type A), can be swiveled by max. ±120° (α)</li> <li>Axial (type B), can be swiveled by max. ±360°</li> <li>Ø 80 mm (3.15 inch), stainless steel mat. No. 1.4016</li> <li>Stainless steel, mat. No. 1.4016</li> <li>Witon Stainless steel, mat. No.</li> </ul>
	Weight Electrical connection Process connection Version of housing/process connec- tion <u>Material</u> Non-wetted parts materials • Field housing • Cover Wetted parts materials • Measuring cell • Gasket • Process connection	<ul> <li>Using 2-pole plug connector with M16x1.5-Cable inlet to EN 175301-803A, plastic</li> <li>Male thread G½B and female thread G<sup>1</sup>/<sub>8</sub>B</li> <li>G½E to EN 837-1</li> <li>Female thread: ½-14 NPT</li> <li>Radial (type A), can be swiveled by max. ±120° (α)</li> <li>Axial (type B), can be swiveled by max. ±360°</li> <li>Ø 80 mm (3.15 inch), stainless steel mat. No. 1.4016</li> <li>Stainless steel, mat. No. 1.4016</li> <li>Witon Stainless steel, mat. No.</li> </ul>

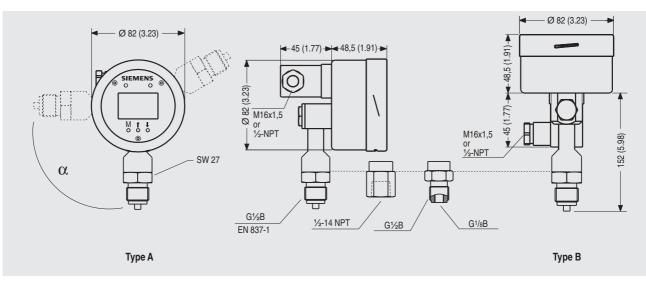
#### Certificate and approvals

Classification according to pressure equipment directive 97/23/EC

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

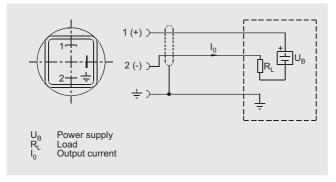
ZD series for gage and absolute pressure

#### Dimensional drawings



SITRANS P pressure transmitters, ZD series, dimensional drawing, dimensions in mm (inch)

#### Schematics



SITRANS P pressure transmitters, ZD series, connection diagram

Ζ	D	ser	ies t	for c	lage	and	abso	lute	pressure	e

Selection and Order	-					Code
SITRANS P pressur series for gage and		7M F	158	30-		
Conformity error 0.25 1 : 5 (max. 1 : 10), ho connection made of membrane made of output 4 20 mA		ľ	0		Π	
Input variable Gage pressure			1			
Absolute pressure		► F)	2			
Measured range	Span					
0 2 bar (0 29 psi)	0 0.4 / 2 bar (0 5.8 / 29 psi)		D			
0 10 bar (0 145 psi)	0 2 / 10 bar (0 5.8 / 145 psi)		E			
0 50 bar (0 725 psi)	0 10 / 50 bar (0 145 / 725 psi)		F			
0 200 bar (0 2900 psi)	0 40 / 200 bar (0 580 / 2900 psi)		G			
0 400 bar (0 5800 psi)	0 80 / 400 bar (0 1160 / 5800 psi)		н			
Other version (on rec add Order Code and Process connection:	plain text:		z			J 1 Y
Process connection	1					
G1/2B male thread an	d G <sup>1</sup> / <sub>8</sub> B female thread		A			
G1/2B to EN 837-1		F)	В			
Female thread ½-14 G 1" male thread	NPI	F) F)	C N			
		1)	IV			
Design Process connection	vertically downwards,			1		
thread in connector N						
Process connection horizontally to rear,				2		
thread in connector N	vertically downwards,			3		
thread in connector 1	⁄2"-14 NPT			J		
Process connection I thread in connector 1	norizontally to rear,			4		
ineau in connector ;	2 - 1 - T (NI I					

Selection and Ordering data	Order Code
Further designs	
Please add "Z" to Order No. and specify Order code(s) and plain text.	
Quality inspection certificate (Factory calibration) to IEC 60770-2 supplied	C1 1
Factory certificate to EN 10204-2.2 supplied	C1 4
Oxygen application, oil and grease-free cleaned	E10
(only in conjunction with the sealing material Viton between sensor and enclosure and only in conjunction with measuring ranges >= 1 bar g and 1 bar abs)	
Sealing material FEP between sensor and housing, instead of Viton	E20
max. operating pressure 15 bar (218 psi), max. measuring temperature -10 +50 °C	
Additional data	
Please add "Z" to Order No. and specify Order code(s) and plain text.	
Measuring range to be set, specify in plain text:	Y01
Y01: up to mbar, bar, kPa, MPa, psi	
TAG number made of stainless steel	Y15
Accessories	Order No.
Quality inspection certificate (Factory calibration) to IEC 60770-2 supplied later, specify factory of transmitter.	7MF1564-8CC11
Available ex stock	
F) Subject to export regulations AL: 91999, ECCN:	N.

#### SITRANS P Compact for gage and absolute pressure

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

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

#### Design

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

#### Notes on operating the pressure transmitter

Compensation of internal atmospheric pressure

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

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

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

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

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

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

#### CE marking

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

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

#### Hazardous areas

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

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

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





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

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

Particular value has been placed on a high surface quality. It is therefore possible, for example, to guarantee roughness values down to  $R_a=0.4~\mu m~(1.57\cdot 10^{-5}~inch)$  in the wetted area (welded seam area  $R_a<0.8~\mu m~(3.15\cdot 10^{-5}~inch)$ ). The system can be electropolished in addition.

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

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

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

#### Benefits

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

#### Application

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

# SITRANS P Compact for gage and absolute pressure

#### Function

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

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

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

#### Technical specifications

Pressure transmitters for food, pharmaceuticals and biotechnology						
Mode of operation						
Measuring principle	Piezo-resistive					
Input						
Measured variable	Gage or absolute pressure					
Measured range	0 160 mbar (0 2.32 psi)					
	 0 40 bar (0 580 psi)					
Output						
Output signal						
<ul> <li>Two-wire system</li> </ul>	4 20 mA					
Three-wire system	0 20 mA					
Measuring accuracy	To EN 60770-1					
Linearity error including hysteresis (reference point adjustment)	$\leq$ 0.2% of full-scale value					
Adjustment accuracy	$\leq \pm 0.2\%$ of full-scale value					
Adjustment time	< 20 ms					
Influence of ambient temperature						
On th enclosure						
• Zero	< 0.2%/10 K of full-scale value					
<ul> <li>Measured span</li> </ul>	< 0.2%/10 K of full-scale value					
On the process connection (remote seal)	Zero error (depends on design)					
<ul> <li>Flange remote seal</li> </ul>						
- DN 25 / 1"	4.8 mbar/10 K (0.070 psi/10 K)					
- DN 32 / 1¼"	2.3 mbar/10 K (0.033 psi/10 K)					
- DN 40 / 1½"	1.6 mbar/10 K (0.023 psi/10 K)					
- DN 50 / 2"	0.6 mbar/10 K (0.009 psi/10 K)					
Clamp-on seal						
- DN 25 / 1"	9.5 mbar/10 K (0.138 psi/10 K)					
- DN 32 / 1¼"	4.1 mbar/10 K (0.060 psi/10 K)					
- DN 40 / 1½"	3.9 mbar/10 K (0.057 psi/10 K)					
- DN 50 / 2"	3.9 mbar/10 K (0.057 psi/10 K)					

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

#### **Rated conditions**

Installation conditions	
Mounting position	Any, vertical as standard
Ambient conditions	
Ambient temperature	-10 +70 °C (14 158 °F)
Storage temperature	-10 +90 °C (14 194 °F)
Process temperature	Max. 200 °C (392 °F), depends on design
• Degree of protection (to EN 60529)	IP65, optional IP67
<ul> <li>Electromagnetic compatibility</li> </ul>	
- Emitted interference	To EN 50081 Part 1, issue 1993 (residential and industrial areas). The unit has no own emissions.
- Interference immunity to	EN 50082 Part 2, issue March 1995 (industrial areas)
Design	
Weight (without remote seal)	
<ul> <li>Field housing</li> </ul>	≈ 460 g (≈ 1.01 lb)
Housing with plug	≈ 200 g (≈ 0.44 lb)
Housing • Designs	• Field housing IP65 or IP67, with
	screwed gland • Angled plug DIN 43650, IP65
	Cable connection, IP67
	Round plug connector M12, IP65
Material	Stainless steel, mat. No. 1.4404/1.4305
Material of union nut	Polyamide (with electrical con- nection using plug or cable) Electronics unit potted with sili- cone
	Internal ventilation for measuring ranges < 16 bar (< 232 psi), through housing thread or con- nection cable depending on design
Process connection	
Versions	See Ordering data
Material of coupling	Stainless steel, mat. No. 1.4404/316L
Power supply	
Terminal voltage on transmitter	10 30 V DC
Rated voltage	24 V DC
Certificate and approvals	
Classification according to pressure equipment directive (DRGL 97/23/EC)	For gases of fluid group 1 and liquids of fluid group 1; complies with the requirements of article 3, paragraph 1 (appendix 1); assig- ned to category III, conformity evaluation module H by the TÜV Nord
Explosion protection	
<ul> <li>Intrinsic safety "i"</li> </ul>	TÜV 03 ATEX 2099 X
- Identification	Ex II 2G EEx ib IIC T6

# SITRANS P Compact for gage and absolute pressure

Selection and Ordering data	Order No.	Ord. code	Selection and Ordering data	Order No.	Ord. code
SITRANS P Compact pressure trans- mitters for pressure and absolute pressure with 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	7 M F 8 0 1 0 -	
2-wire system	1		2-wire system	1	- 886
Process temperature up to 140 °C (284 °F)			Process temperature up to 140 °C (284 °F)		
Accuracy: 0.2% of full-scale value Output 4 20 mA			Accuracy: 0.2% of full-scale value Output 4 20 mA		
Diaphragm seal			Diaphragm seal		
with quick-release clamp Milk pipe union to DIN 11851 with			with aseptic connection Aseptic screwed gland to DIN 11864-1,		
slotted union nut			form A,		
• DN 25	AD		with slotted union nut • 1 inch	РМ	
• DN 32	A E A F		• 1½ inch	PN	
• DN 40 • DN 50	AF		• 2 inch	PP	
• DN 65	AH		• 2½ inch	PQ	
Milk pipe union to DIN 11851 with	~"		Aseptic screwed gland to		
threaded socket			DIN 11864-1, form A		
• DN 25	BD		with threaded socket		
• DN 32	BE		• 1 inch	QM	
• DN 40	BF		• 1½ inch	QN	
• DN 50	BG		• 2 inch	QP	
• DN 65	BH		• 2½ inch	QQ	
Clamp connection to DIN 32676			Aseptic screwed NEUMO with slotted union nut <sup>1)</sup>		
• DN 25	CD		• DN 25	RD	
• DN 40	CF		• DN 32	RE	
• DN 50	CG		• DN 40	RF	
Clamp connection to ISO 2852			• DN 50	RG	
• 1 inch	DM		Aseptic screwed NEUMO		
<ul> <li>1½ inch</li> <li>2 inch</li> </ul>	D N D P		with threaded socket 1)		
• 2 // inch	DQ		• DN 25	SD	
IDF standard with slotted union nut	DQ		• DN 32	SE	
• 1 inch	ЕМ		• DN 40	SF	
• 1½ inch	EN		• DN 50	SG	
• 2 inch	EP		Aseptic screwed NEUMO with clamp connection, form R <sup>1)</sup>		
IDF standard with threaded socket			• DN 25	TD	
• 1 inch	FM		• DN 32	TE	
• 1½ inch	FN		• DN 40	TF	
• 2 inch	FP		• DN 50	TG	
SMS standard with slotted union nut			Aseptic screwed NEUMO		
• 1 inch	GM		with clamp connection, form V <sup>1)</sup>		
• 11/2 inch	GN		• DN 25	UD	
• 2 inch	G P		• DN 32	UE	
SMS standard with threaded socket			• DN 40	UF	
• 1 inch	НМ		• DN 50	UG	
• 1½ inch	HN		Special version (add Order code and plain text)	ZA	j 1 y
• 2 inch	НР				
<ul><li>DRD flange, without welding-type flange</li><li>DN 50, PN 40</li></ul>			Filling liquid		
Varivent connection (Tuchenhagen)	JH		Vegetable oil	1	
<ul> <li>D = 50, for Varivent housing DN 25 and 1 inch</li> </ul>	KF		medicinal white oil Food oil, FDA-listed	2 3	
• D = 68, for Varivent housing	KL		Special version	9	l 1 y
DN 40 DN 125 and 1½ 6 inch			(add Order code and plain text)	5	i i y
Special version (add Order code and plain text)	ZA	J 1 Y	Output signal 4 20 mA		
Filling liquid Vegetable oil	1		4 20 mA Special version (add Order code and plain text)	1 9	m 1 y
medicinal white oil	2				
Food oil, FDA-listed	3		1) Please specify as well:		
Special version	9	L 1 y	Connections for pipes: R01, R02 or R03, see table "Further designs" on next page		
(add Order code and plain text) Output signal					
4 20 mA	1	m 1 v			
Special version (add Order code and plain text)	9	m1y			

#### SITRANS P Compact for gage and absolute pressure

Selection and Ordering data	Order No. Ord. code	Selection and Ordering data	Order No. Ord. code
SITRANS P Compact pressure trans- mitters for pressure and absolute pressure with 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	7 M F 8 0 1 0 -
2-wire system Process temperature up to 140 °C (284 °F)	1	2-wire system Process temperature up to 140 °C (284 °F)	1-1-1-1-1-1-1-1-1
Accuracy: 0.2% of full-scale value Output 4 20 mA		Accuracy: 0.2% of full-scale value Output 4 20 mA	
Housing design (stainless steel mat. No. 1.4404/316L) / electr. connection		Measured range Overload pres- sure	
Housing with angled plug to DIN 43650, IP65	1	(continued)	
Housing with round plug M12, IP65, union nut made of polyamide	2	-1 9 bar g	GA GB
Housing with round plug M12, IP65, union nut made of stainless steel	3	(-14.5 217.6 psi g) (725 psi g) 0 1 bar a 10 bar a F	
Stainless steel field housing (small) with cable gland, IP65	4	(0 14.5 psi a) (145 psi a) 0 1.6 bar a 10 bar a F	
Stainless steel field housing (small) with cable gland, IP67	5	(0 23.2 psi a) (145 psi a) 0 2.5 bar a 16 bar a F	
Internal ventilation for measuring ranges < 10 bar (< 145 psi)		(0 36.3 psi a) (232 psi a) 0 4 bar a 16 bar a F	) <b>HD</b>
Measured rangeOverload pressure0 160 mbar g2 bar g	BB	(0 58 psi a) (232 psi a) 0 6 bar a 30 bar a F (0 87 psi a) (435 psi a)	) HE
(0 2.32 psi g) (29 psi g) 0 250 mbar g 2 bar g	вс	0 10 bar a 30 bar a F (0 145 psi a) (435 psi a)	) <b>j A</b>
(0 3.63 psi g) (29 psi g) 0 400 mbar g 6 bar g (0 5.8 psi g) (87 psi g)	B D	Special version F (add Order code and plain text)	) z A P 1 y
0 600 mbar g 6 bar g (0 8.7 psi g) (87 psi g)	BE	Explosion protection without	
0 1 bar g	CA	with, to ATEX 100a, II 2 G, EEx ib IIC T6	2
0 1.6 bar g 10 bar g (0 23.2 psi g) (145 psi g)	СВ	Further designs Please add "-Z" to Order No. and specify Order so de	Order code
0 2.5 bar g 16 bar g (0 36.3 psi g) (232 psi g)	cc	Order code Hygiene version	p01
0 4 bar g 16 bar g (0 58 psi g) (232 psi g) 0 6 bar g 30 bar g (0 6 bar g (425 psi a)	C D C E	Roughness of process connection: Foil $R_a < 0.8 \mu m$ (3.15·10 <sup>-8</sup> inch); Welded seams $R_a < 1.5 \mu m$	
(0 87 psi g) (435 psi g) 0 10 bar g 30 bar g	DA	(5.9·10 <sup>-8</sup> inch) Integral cooling element	k01
(0 145 psi g) (435 psi g) 0 16 bar g 50 bar g (0 232 psi g) (725 psi g)	DB	Process temperature max. 200 °C (392 °F) instead of 140 °C (284 °F)	
0 25 bar g 50 bar g (0 363 psi g) (725 psi g)	DC	Connections for pipe Pipes to DIN 11850	r01
0 40 bar g 70 bar g (0 580 psi g) (1015 psi g)	DD	ISO pipes to DIN 2463 Pipes to O. D. Tubing "BS 4825 Part 1"	r02 r03
-160 0 mbar g 2 bar g (-2.32 0 psi g) (29 psi g)	EB	Certificates Quality inspection certificate (Factory	C11
-250 0 bar g 2 bar g (-3.73 0 psi g) (29 psi g) -400 0 bar g 6 bar g	E C E D	calibration) to IEC 60770-2 Acceptance test certificate to	C12
(-5.8 0 psi g) (87 psi g) -600 0 bar g 6 bar g	EE	EN 10204-3.1 Use of FDA-listed remote seal filling liquids certified by factory certificate to	C17
(-8.7 0 psi g) (87 psi g) -1 0 bar g 10 bar g	FA	EN 10204-2.2 Roughness depth measurement R <sub>a</sub>	C18
(-14.5 0 psi g) (145 psi g) -1 0.6 bar g 10 bar g (-14.5 8.7 psi g) (145 psi g)	FB	certified by factory certificate to EN 10204-3.1	010
(-14.5 8.7 psi g) (145 psi g) -1 1.5 bar g 16 bar g (-14.5 21.8 psi g) (232 psi g)	FC	Certification to EHEDG for clamp-on seals with aseptic screwed gland	C19
-1 3 bar g 16 bar g (-14.5 43.5 psi g) (232 psi g)	F D	to DIN 11864 F) Subject to export regulations AL: 91999, E(	CCN: N
-1 5 bar g 30 bar g (-14.5 72.5 psi g) (435 psi g)	FE	. , cuspor lo oxport regulations AL. 91999, El	

#### SITRANS P Compact for gage and absolute pressure

Selection and Ordering data	Order No.	Ord. code	Selection and Ordering data	Order No.	Ord. cod
SITRANS P Compact pressure trans- mitters for pressure and absolute pressure with clamp-on remote seal	7 M F 8 0 1 0 -		SITRANS P Compact pressure trans- mitters for pressure and absolute pressure with clamp-on remote seal	7MF8010-	
2-wire system Process temperature up to 140 °C (284 °F) Accuracy: 0.2% of full-scale value Output 4 20 mA	2		2-wire system Process temperature up to 140 °C (284 °F) Accuracy: 0.2% of full-scale value Output 4 20 mA	2 -	
Clamp-on remote seal (screwed gland at both ends)			Clamp-on seal with aseptic connection		
<pre>with quick-rélease clamps Milk pipe union to DIN 11851 with threaded socket • DN 25 • DN 32 • DN 40 • DN 50 • DN 65 Clamp connection to DIN 32676 • DN 25 • DN 32 • DN 40 • DN 50 • DN 50 • DN 65 Clamp connection to ISO 2852<sup>1)</sup> • 1 inch • 1½ inch</pre>	AD AE AF AG AH CD CE CF CG CH DM DN		Aseptic screwed gland to DIN 11864-1, form A with threaded socket • 1 inch • 1½ inch • 2 inch Aseptic screwed NEUMO with threaded socket <sup>1)</sup> • DN 25 • DN 32 • DN 40 • DN 50 • DN 65 Aseptic screwed NEUMO with clamp connection, form R <sup>1)</sup> • DN 25 • DN 32 • DN 40	QM QN QP SD SE SF SG Sh TD TE TF	
<ul> <li>2 inch</li> <li>2½ inch</li> <li>Special version</li> <li>(add Order code and plain text)</li> </ul>	D P D Q Z a	j 1 y	<ul> <li>DN 50</li> <li>Aseptic screwed gland SÜDMO with threaded socket W 501</li> </ul>	ΤG	
Filling liquid Vegetable oil Medicinal white oil	1		<ul> <li>1 inch</li> <li>1½ inch</li> <li>2 inch</li> <li>Aseptic screwed gland SÜDMO</li> </ul>	VM VN VP	
Food oil, FDA-listed	3		with clamp connection W 601		
Special version (add Order code and plain text)	9	l 1 y	• 1 inch • 1½ inch • 2 inch	WM WN WP	
Output signal 4 20 mA	1		Special version (add Order code and plain text)	ZA	j 1 y
Special version (add Order code and plain text)	9	M 1 y	Filling liquid Vegetable oil	1	

Please note the internal diameter of the pipe. Please specify pipe classes (see "Further designs")

• 1½ inch	QN	
• 2 inch	QP	
Aseptic screwed NEUMO with threaded socket <sup>1)</sup>		
• DN 25	SD	
• DN 32	SE	
• DN 40	SF	
• DN 50	SG	
• DN 65	Sh	
Aseptic screwed NEUMO with clamp connection, form R <sup>1)</sup>		
• DN 25	TD	
• DN 32	TE	
• DN 40	TF	
• DN 50	TG	
Aseptic screwed gland SÜDMO with threaded socket W 501		
• 1 inch	VM	
• 1½ inch	VN	
• 2 inch	VP	
Aseptic screwed gland SUDMO with clamp connection W 601		
1 inch	WM	
• 1½ inch	WN	
• 2 inch	WP	
Special version	ZA	j 1 y
(add Order code and plain text)		
Filling liquid		
Vegetable oil	1	
medicinal white oil	2	
Food oil, FDA-listed	3	
Special version (add Order code and plain text)	9	l 1 y
<b>Output signal</b> 4 20 mA	1	
Special version (add Order code and plain text)	9	m 1 y

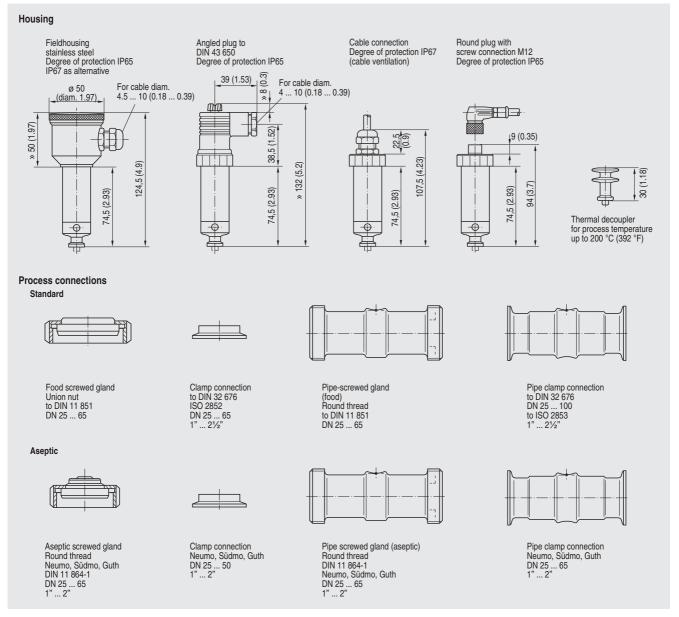
Please specify as well: Connections for pipes: R01, R02 or R03, see table "Further designs" on next page

SITRANS P Compact for gage and absolute pressure

Selection and Ordering data	Order No. Ord. code	Selection and Ordering data	Order No. Ord. code
SITRANS P Compact pressure trans- mitters for pressure and absolute pressure with clamp-on remote seal	7 M F 8 0 1 0 -	SITRANS P Compact pressure trans- mitters for pressure and absolute pressure with clamp-on remote seal	7 M F 8 0 1 0 -
2-wire system Process temperature up to 140 °C (284 °F)	2	2-wire system Process temperature up to 140 °C (284 °F)	2 -
Accuracy: 0.2% of full-scale value Output 4 20 mA		Accuracy: 0.2% of full-scale value Output 4 20 mA	
Housing design (stainless steel mat. No. 1.4404/316L) / electr. connection		Measured range Overload pressure (continued)	
Housing with angled plug to DIN 43650, IP65, union nut made of polyamide	1	-1 9 bar g 30 bar g	GA
Housing with round plug M12, IP65, union nut made of polyamide	2	(-14.5 130.5 psi g)(435 psi g) -1 15 bar g	GB
Housing with round plug M12, IP65, union nut made of stainless steel	3	(-14.5 217.6 psi g)(725 psi g) 0 1 bar a 10 bar a F	-) <b>HA</b>
Stainless steel field housing (small) with	4	(0 14.5 psi a) (145 psi a)	) HB
cable gland, IP65 Stainless steel field housing (small) with	5	(0 23.2 psi a) (145 psi a)	) HC
cable gland, IP67 Internal ventilation for measuring ranges		(0 36.3 psi a) (232 psi a)	) HD
< 10 bar (< 145 psi) Measured range Overload pressure		(0 58 psi a) (232 psi a)	) HE
0 160 mbar g 2 bar g (0 2.32 psi g) (29 psi g)	BB	(0 87 psi a) (435 psi a)	
0 250 mbar g 2 bar g (0 3.63 psi g) (29 psi g)	BC	0 10 bar a	) <b>jA</b>
0 400 mbar g 6 bar g (0 5.8 psi g) (87 psi g)	ВD	Special version F (add Order code and plain text)	<sup>-</sup> ) <b>z A P 1 y</b>
0 600 mbar g 6 bar g (0 8.7 psi g) (87 psi g)	BE	Explosion protection without	1
0 1 bar g 10 bar g	CA	without with, to ATEX 100a, II 2 G, EEx ib IIC T6	2
(0 14.5 psi g) (145 psi g) 0 1.6 bar g 10 bar g	СВ	Further designs Please add "-Z" to Order No. and specify	Order code
(0 23.2 psi g) (145 psi g) 0 2.5 bar g 16 bar g	cc	Order code	
(0 36.3 psi g) (232 psi g) 0 4 bar g 16 bar g	CD	Hygiene version Roughness of process connection:	p01
(0 58 psi g) (232 psi g) 0 6 bar g 30 bar g (0 87 psi g) (435 psi g)	CE	Foil ${f R}_a < 0.8~\mu m$ (3.15 $\cdot 10^{-8}$ inch); Welded seams ${f R}_a < 1.5~\mu m$ (5.9 $\cdot 10^{-8}$ inch)	
0 10 bar g 30 bar g (0 145 psi g) (435 psi g)	DA	Integral cooling element Process temperature max. 200 °C	k01
0 16 bar g 50 bar g (0 232 psi g) (725 psi g)	DB	(392 °F) instead of 140 °C (284 °F)	
0 25 bar g 50 bar g (0 363 psi g) (725 psi g)	DC	Connections for pipe Pipes to DIN 11850	r01
0 40 bar g 70 bar g	DD	ISO pipes to ISO 2463 Pipes to O. D. Tubing "BS 4825 Part 1"	r02 r03
-160 0 mbar g 2 bar g	EB	Certificates	C11
(-2.32 0 psi g) (29 psi g) -250 0 bar g 2 bar g	EC	Quality inspection certificate (Factory calibration) to IEC 60770-2	C11 C12
(-3.73 0 psi g) (29 psi g) -400 0 bar g 6 bar g	ED	Acceptance test certificate to EN 10204-3.1	
(-5.8 0 psi g) (87 psi g) -600 0 bar g 6 bar g (87 psi g) (87 psi g)	EE	Use of FDA-listed remote seal filling liquids certified by factory certificate to EN 10204-2.2	C17
(-8.7 0 psi g) (87 psi g) -1 0 bar g 10 bar g (14.5 0 psi g) (14.5 psi g)	FA	Roughness depth measurement R <sub>a</sub>	C18
(-14.5 0 psi g) (145 psi g) -1 0.6 bar g 10 bar g (14.5 8 7 psi g) (145 psi g)	FB	certified by factory certificate to EN 10204-3.1	
(-14.5 8.7 psi g) (145 psi g) -1 1.5 bar g 16 bar g (14.5 21.8 psi g) (222 psi g)	FC	Certification to EHEDG for clamp-on seals with aseptic screwed gland	C19
(-14.5 21.8 psi g) (232 psi g) -1 3 bar g 16 bar g (14.5 42.5 psi g) (222 psi g)	FD	to DIN 11864	
(-14.5 43.5 psi g) (232 psi g) -1 5 bar g 30 bar g	FE	F) Subject to export regulations AL: 91999, Et	UUN: N.
(-14.5 72.5 psi g) (435 psi g)			

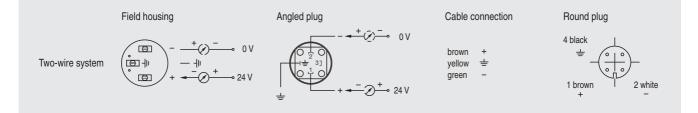
SITRANS P Compact for gage and absolute pressure

#### Dimensional drawings



SITRANS P, dimensions in mm (inch)

#### Schematics



SITRANS P Compact, connection diagram

Siemens FI 01 · 2009

# SITRANS P measuring instruments for pressure

Transmitters for gage and absolute pressure

#### **SITRANS P300**

#### Overview



The SITRANS P300 is a digital pressure transmitter for gage and absolute pressure. All conventional thread versions are available as process connections. In addition, various hygiene-based connections and flange connections with front-flush diaphragms meet the requirements of a dead space free process connection.

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

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

#### Benefits

- · High quality and long 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 8 mbar to 400 bar
- High measuring accuracy
- Parameterization over control keys and HART communication or PROFIBUS PA communication

#### Application

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

- Gage pressure
- Absolute pressure

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

- Level
- Volume
- Mass

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

#### Gage pressure

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

The smallest measuring span is 10 mbar g, the largest 400 bar g.

#### Level

With appropriate parameter settings, the gage pressure variant measures the level of aggressive, non-aggressive and hazar-dous 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 8 mbar a, the largest 30 bar a.

#### **SITRANS P300**

#### Function

**Operation of the electronics with HART communication** 

- Electronics
- Housing

Design

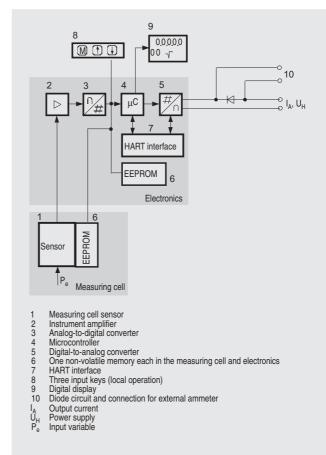
• Measuring cell

The device comprises:



#### Perspective view of the SITRANS P300

The housing has a screw-on cover (3), with or without an inspection window depending on the version. The electrical terminal housing, the buttons for operation of the device and, depending on the version, the digital display are located under this cover. The connections for the auxiliary power UH and the shield are in the terminal housing. The cable gland is mounted on the side of the housing. The measuring cell with the process connection (5) is located on the underside of the housing. Depending on the version of the device, the measuring cell with the process connection may differ from the one shown in the diagram.



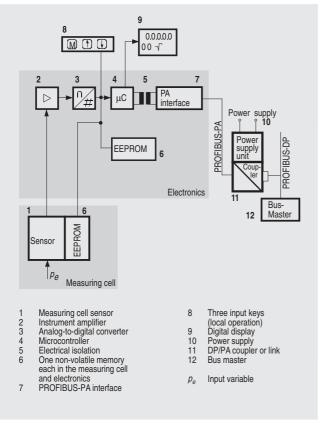
#### Function diagram of electronics

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 with regard 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 voltage 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 with the measuring cell, the second with the electronics.

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

#### **SITRANS P300**

Operation of the electronics with PROFIBUS PA communication

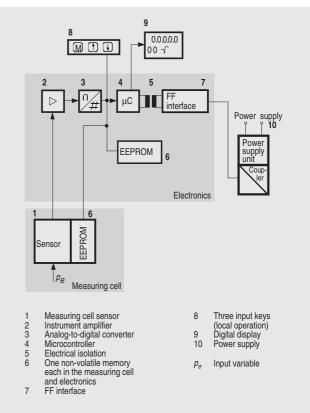


#### Function diagram of electronics

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 with regard 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 with the measuring cell, the second with the electronics.

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

#### Mode of operation of the FOUNDATION Fieldbus electronics



#### Function diagram of electronics

The bridge output voltage created by the sensor (1, Figure "Function diagram of electronics") is amplified by the instrument 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 keys (8) you can parameterize the pressure transmitter directly at the point of measurement. The input keys can also be used to control the view of the results, the error messages and the operating modes on the digital display (9).

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

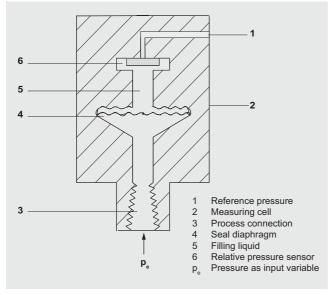
#### Mode of operation of the measuring cells

The process connections available include the following:

- G<sup>1</sup>/<sub>2</sub>
- 1/2-14 NPT
- Front-flush diaphragm:
  - Flanges to EN
  - Flanges to ASME
  - NuG and pharmaceutical connections

#### **SITRANS P300**

Measuring cell for gage pressure

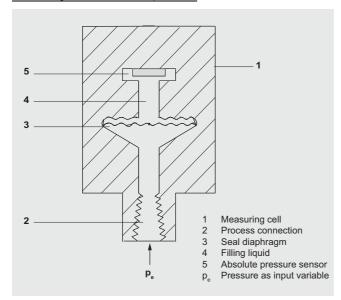


Measuring cell for gage pressure, function chart

The input pressure  $(p_e)$  is transferred to the gage 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.

The transmitters with spans  $\leq$  63 bar measure the input pressure against atmosphere, those with spans  $\geq$  160 bar against vacuum.

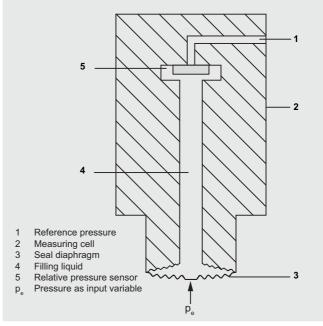
#### Measuring cell for absolute pressure



Measuring cell for absolute pressure, function chart

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 gage pressure, front-flush diaphragm

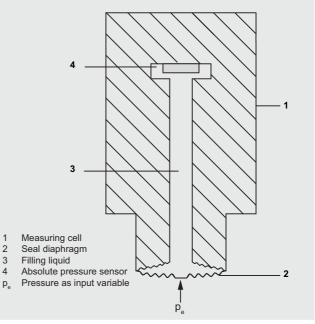


Measuring cell for gage pressure, front-flush diaphragm, function chart

The input pressure  $(p_e)$  is transferred to the gage 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.

The transmitters with spans  $\leq$  63 bar measure the input pressure against atmosphere, those with spans  $\geq$  160 bar against vacuum.

Measuring cell for absolute pressure, front-flush diaphragm



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

The input pressure (pe) is transferred to the absolute pressure sensor (5) via the seal diaphragm (3) and the filling liquid (4),

#### SITRANS P300

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 of SITRANS P300

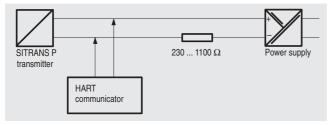
Depending on the version, there are a range of options for parameterizing the pressure transmitter and for setting or scanning the parameters.

Parameterization using the input keys (local operation)

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

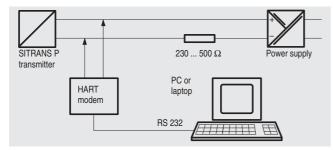
Parameterization using HART communication

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 system.



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

<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

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

#### Parameterization through PROFIBUS PA interface

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

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

#### Parameterization through FOUNDATION Fieldbus Interface

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

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

Adjustable parameters for P300 PA and FF

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

Diagnostic functions for P300 PA and FF

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

Physical dimensions available for the display

Physical variable	Physical dimensions
Pressure (setting can also be made in the factory)	MPa, kPa, Pa, bar, mbar, torr, atm, psi, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , mmH <sub>2</sub> O, mmH <sub>2</sub> O (4 °C), inH <sub>2</sub> O, inH <sub>2</sub> O (4 °C), ftH <sub>2</sub> O (20 °C), mmHg, inHg
Level (height data)	m, cm, mm, ft, in, yd
Volume	m <sup>3</sup> , dm <sup>3</sup> , hl, yd <sup>3</sup> , ft <sup>3</sup> , in <sup>3</sup> , US gallon, Imp. gallon, bushel, barrel, barrel liquid
Volume flow	m <sup>3</sup> /s, m <sup>3</sup> /min, m <sup>3</sup> /h, m <sup>3</sup> /d, l/s, l/min, l/h, l/ d, Ml/d, ft <sup>3</sup> /s, ft <sup>3</sup> /min, ft <sup>3</sup> /h, ft <sup>3</sup> /d, US gal- lon/s, US gallon/min, US gallon/h, US gal- lon/d, bbl/s, bbl/min, bbl/h, bbl/d
Mass flow	g/s, g/min, g/h, g/d, kg/s, kg/min, kg/h, kg/d, t/s, t/min, t/h, /t/d, lb/s, lb/min, lb/h, lb/d, STon/s, STon/min, STon/h, STon/d, LTon/s, LTon/min, LTon/h, LTon/d
Total mass flow	t, kg, g, lb, oz, LTon, STon
Temperature	K, °C, °F, °R
Miscellaneous	%

#### **SITRANS P300**

#### 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. HART

#### SITRANS P300

#### Technical specifications

#### SITRANS P300 for gage pressure and absolute pressure

Gage pressure input
Measured variable
Spans (infinitely adjustable nominal measuring range a max. pemissible test press

Measure variable         Gage pressure         Span for the sure of sure sure sure sure sure sure sure sure	Gage pressure input					
nommar, permissible test pressure         Sure         range         sure         sure         range         sure         range         sure         sure <th< th=""><th>Measured variable</th><th colspan="2">Gage pressure</th><th></th><th>_</th></th<>	Measured variable	Gage pressure			_	
Unit - 1 Garg g ()         (1.5, -1.45 prig)         (67 prig)         (1.5 prig)         (67 prig)           0.06, -, 45 prig)         (1.45 prig)         (1.45 prig)         (1.45 prig)         (1.45 prig)           0.06, -, 63 prig)         (1.45 prig)         (1.45 prig)         (1.45 prig)         (1.45 prig)           0.16, 16 berg         32 berg         (1.45 prig)         (1.45 prig)         (1.45 prig)           0.16, 16 berg         32 berg         (1.45 prig)         (1.45 prig)         (1.45 prig)           0.6, 63 berg         (1.45 prig)         (1.45 prig)         (1.45 prig)         (1.45 prig)           0.6, 63 berg         (1.45 prig)         (1.45 prig)         (1.45 prig)         (1.45 prig)           0.6, 63 berg         (1.45 prig)         (1.45 prig)         (1.45 prig)         (1.45 prig)           0.6, 63 berg         (1.45 prig)         (1.45 prig)         (1.45 prig)         (1.45 prig)           0.6, 63 berg         (1.45 prig)         (1.45 prig)         (1.45 prig)         (1.45 prig)           0.6, 63 berg         (1.45 prig)         (1.45 prig)         (1.45 prig)         (1.45 prig)           0.6 berg         (1.45 prig)         (1.45 prig)         (1.45 prig)         (1.45 prig)           1.6 berg <th>nominal measuring range and</th> <td>Span</td> <td></td> <td></td> <td></td>	nominal measuring range and	Span				
(0.5858 př.g)         (145 psř.g)         (145 psř.g)         (145 psř.g)           0.1616 bar g         32 bar g         (15 bar g         32 bar g           0.663 bar g         (160 bar g)         (1640 psi g)         (1450 psi g)           0.663 bar g         (160 bar g)         (232 psi g)         (160 bar g)           (15						
		0.04 4 bar g (0.58 58 psi g)				
(9.1914 pail)         (1450 pail)						
$ \left  \begin{array}{cccccccccccccccccccccccccccccccccccc$						
(686802 psig)(6700 psig)(6700 psig)(6700 psig)Lower measuring limit						
Image differ from these values     nal measuring range may differ from these values       Lower measuring limit     30 mbar a (0.44 psi a)       Upper measuring limit     100% of max. span       Measured variable     100% of max. span       Absolute pressure input     Measured variable       Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure     Span       Max. perm. test pressure     Span       0.0431.30 bar a     6 bar a       (0.7236 psi a)     (36 psi a)       0.0431.30 bar a     10 bar a       (0.6219 psi a)     (145 psi a)       0.165 bar a     30 bar a       (145 psi a)     (145 psi a)       0.165 bar a     30 bar a       (14237 psi a)     (145 psi a)       100 bar a     (130 bar a)       100 bar a     (145 psi a)       1000% of max. span     100 bar a       100% of the max. nominal measuring range and max. pantile     100 bar a       100% of max. span     100 bar a       100% of max. span     100 bar a       100% of max. span     100 bar a       100% of the max. nominal measuring range and max. pantile       Max. perm. test pressure. with fromt-flue			600 bar g (8700 psi g)			
• Measuring cell with silicone oil30 mbar a (0.44 psi a)Upper measuring limit100% of max. span100% of the max. nominal measuring rangeAbsolute pressure inputAbsolute pressure100% of the max. nominal measuring rangeMeasured variableAbsolute pressureSpanMax. perm. test pressure sureNaminal measuring rangeMax. perm. test pressure andeSpan (infinitely adjustable) or nominal measuring range and (0.22						
Upper measuring limit100% of max. span100% of the max. nominal measuring rangeAbsolute pressure input Measured variable Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressureMax. perm. test pres- sureNominal measuring range and (67 psi a)Max. perm. test pres- sure8 250 mbar a (0.42 130 bar a (0.43 130 bar a (145 psi a)Max. perm. test pres- sureNominal measuring range and (145 psi a)Max. perm. test pres- sure9 260 mbar a (0.43 130 bar a (0.43 130 bar a (0.43 130 bar a (0.43 130 bar a) (145 psi a)10 bar a (145 psi a)10 bar a (145 psi a)10 bar a (145 psi a)0.16 5 bar a (1.45 435 psi a)30 bar a (145 psi a)30 bar a (145 psi a)30 bar a (145 psi a)100 word measuring limit • Measuring cell with silicone oil0 mbar a (0 psi a)100 bar a (1450 psi a)30 bar a (1450 psi a)100% of max. span100% of max. span100% of max. span100% of the max. nominal measuring rangeMeasured variable Span moninal measuring range and max. permissible test pressureSpan (1.1. 1 bar g (0.1. 1 bar g) (0.58 58 psi g)Max. perm. test pres- sureSpan (0.1. 1. 1 bar g (0.58 58 psi g)Max. perm. test pres- sureNominal measuring mange max. permissible test pressureSpan (0.1. 1. 1 bar g (0.58 58 psi g)Max. perm. test pres- sureNominal measuring mange (145 psi	Lower measuring limit					
<ul> <li>Measuring cell with silicone oil</li> <li>100% of max. span</li> <li>100% of max. nominal measuring range</li> <li>Absolute pressure input</li> <li>Measured variable</li> <li>Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure</li> <li>Span Max. perm. test pressure</li> <li>Span (145 psi a)</li> <li>O.043 1.30 bar a</li> <li>O.16 50 bar a</li> <li>Span 30 bar a</li> <li>O.16 50 bar g</li> <li>O.16 50 bar g</li></ul>	<ul> <li>Measuring cell with silicone oil</li> </ul>	30 mbar a (0.44 psi a)				
Absolute pressure input       Absolute pressure         Measured variable       Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure       Spans (infinitely adjustable) or nominal measuring range       Nominal measuring range and (36 psi a)       Nax. perm. test pressure         8 250 mbar a (0.12 3.6 psi a)       6 bar a (137 psi a)       10 bar a (130 bar a (145 psi a))       Spans (145 psi a)       10 bar a (145 psi a)	Upper measuring limit					
Measured variableAbsolute pressureNominal measuring rangeMax. perm. test pres- sureSpanMax. perm. test pres- sureNominal measuring rangeMax. perm. test pres- rangemax. permissible test pressure86 bar a (0.12250 mbar a (0.436 bar a (3.6 psi a)6 bar a (3.6 psi a)6 bar a (3.6 psi a)0.043 1.30 bar a (0.43 1.30 bar a (1.45 psi a)1.30 bar a (1.45 psi a)1.0 bar a (1.45 psi a)1.0 bar a (1.45 psi a)0.16 5 bar a (2.3 73 psi a)30 bar a (3.5 psi a)30 bar a (435 psi a)30 bar a (435 psi a)Lower measuring limit0 1.30 bar a (1.45 psi a)100 bar a (145 psi a)100 bar a (145 psi a)Measured variable0 1.30 bar a (1.45 psi a)100 bar a (1.45 psi a)100 bar a (1.45 psi a)Measuring cell with silicone oil0.0% of max. span100% of the max. nominal measuring rangeMeasured variableGage pressure, mith front-flushImageMeasured variableGage pressure, font-flushSpane (infinitely adjustable) or nominal measuring range and max. pemissible test pressureGage pressure, font-flushMax. perm. test pres- sureSpanMax. perm. test pres- sureSpane (infinitely adjustable) or (0.145 14.5 psi g)(145 psi g) (145 psi g)Nominal measuring range and max. pemissible test pressureSpanMax. perm. test pres sureSpanSpan (infinitely adjustable) or (0.145 14.5 psi g)<	<ul> <li>Measuring cell with silicone oil</li> </ul>	100% of max. span		100% of the max. nominal measuring range		
Spans (infinitely adjustable) or nominal measuring range and max. pemissible test pressureSpanMax. perm. test pres- sureNominal measuring rangeMax. perm. test pres- sure8 250 mbar a (0.2 3.6 psi a)6 bar a (3.6 psi a)6 bar a (145 psi a)6 bar a (145 psi a)10 bar a (145 psi g)10 bar a <br< th=""><th>Absolute pressure input</th><th></th><th></th><th></th><th></th></br<>	Absolute pressure input					
nominal measuring range and max. pemissible test pressure 8 250 mbar a (0.12 3.6 psi a) (0.43 1.30 bar a (0.62 19 psi a) 0.16 5 bar a (0.62 19 psi a) 10 bar a (145 psi a) 100 bar a 100 bar g (145 psi g) 10 bar g 10 bar g	Measured variable	Absolute pressure			_	
6 200 mbar a       6 bar a       200 mbar a       (3.6 psi a)       (37 psi a)       (36 psi a)       (67 psi a)         0.043 1.30 bar a       10 bar a       1.30 bar a       10 bar a       10 bar a       (145 psi a)       19 psi a)       (145	nominal measuring range and	Span		0		
Image: basis of the set of						
				(19 psi a)		
Lower measuring limit(14.5 435 psi a)(1450 psi a)(435 psi a)(1450 psi a)• Measuring cell with silicone oil0 mbar a (0 psi a)0 mbar a (0 psi a)0 mbar a (0 psi a)0 mbar a (0 psi a)• Measuring cell with silicone oil100% of max. span100% of the max. nominal measuring rangeInput of gage pressure, with front-flush diaphragmGage pressure, front-flush100% of the max. nominal measuring rangeMeasured variableGage pressure, front-flushSpanMax. perm. test pressureSpans (infinitely adjustable) or nominal measuring range and max. pemissible test pressureGage pressure, front-flushMax. perm. test pressure0,01 1 bar g (0,58 58 psi g)6 bar g (145 psi g)1 bar g (145 psi g)6 bar g (145 psi g)0,04 4 bar g (0,58 58 psi g)0,04 4 bar g (145 psi g)10 bar g (145 psi g)10 bar g (145 psi g)0,01 1 6 bar g (2,32 232 psi g)32 bar g (145 psi g)100 bar g (145 psi g)32 bar g (145 psi g)Lower measuring limit-100 mbar g (-1.45 psi g)100 bar g (1450 psi g)100 bar g (1450 psi g)100 bar g (1450 psi g)Lower measuring limit-100 mbar g (-1.45 psi g)100 bar g (1450 psi g)100 bar g (1450 psi g)100 bar g (1450 psi g)						
<ul> <li>Measuring cell with silicone oil</li> <li>O mbar a (0 psi a)</li> <li>Upper measuring limit</li> <li>Measuring cell with silicone oil</li> <li>100% of max. span</li> <li>100% of the max. nominal measuring range</li> <li>100% of the max. nominal measuring range</li> <li>Input of gage pressure, with front-flush diagram pressure, front-flush</li> <li>Spans (infinitely adjustable) or nominal measuring range and max. pemissible test pressure</li> <li>O,01 1 bar g</li> <li>O,01 1 bar g</li> <li>O,04 4 bar g</li> <li>O,04 4 bar g</li> <li>O,16 16 bar g</li> <li>O,23 232 psi g)</li> <li>D,6 63 bar g</li> <li>O,10 bar g</li> <li>O,145 14.5 psi g)</li> <li>Dobar g</li> <li>O,16 16 bar g</li> <li>O,16 16 bar g</li> <li>O,16 16 bar g</li> <li>O,145 14.5 psi g)</li> <li>O,10 bar g</li> <li>O,16 16 bar g</li> <li>O,16 bar g</li> <li>O,145 bar g</li> <li>O,16 bar g</li> <li>O,16 bar g</li> <li>O,145 bar g</li> <li>O,</li></ul>					100 bar a (1450 psi a)	
Upper measuring limit • Measuring cell with silicone oil100% of max. span100% of the max. nominal measuring rangeInput of gage pressure, with front-flush diaptragmMeasured variable spans (infinitely adjustable) or nominal measuring range and max. pemissible test pressureGage pressure, front-flushNominal measuring rangeMax. perm. test pressure sureNominal measuring rangeMax. perm. test pressure0,01 1 bar g (0.145 14.5 psi g)6 bar g (0.145 14.5 psi g)10 bar g (145 psi g)6 bar g (145 psi g)10 bar g (145 psi g)0,04 4 bar g (0.58 58 psi g)10 bar g (145 psi g)10 bar g (145 psi g)10 bar g (145 psi g)0,01 1 har g (0.6 63 bar g (9.14 914 psi g)10 bar g (145 psi g)10 bar g (145 psi g)Lower measuring limit Upper measuring limit	Lower measuring limit					
• Measuring cell with silicone oil100% of max. span100% of the max. nominal measuring rangeImput of gage pressure, with front-flush diaptragmGage pressure, front-flushGage pressure, front-flushMeasured variableGage pressure, front-flushSpans (infinitely adjustable) or nominal measuring range and max. pemissible test pressureMax. perm. test pres- sureNominal measuring rangeMax. perm. test pres- sure0,01 1 bar g (0,145 14.5 psi g)6 bar g (145 psi g)1 bar g (145 psi g)6 bar g (145 psi g)0,04 4 bar g (0,58 58 psi g)10 bar g (145 psi g)10 bar g (145 psi g)10 bar g (145 psi g)0,04 4 bar g (0,58 58 psi g)0,6 63 bar g (145 psi g)10 bar g (232 psi g)32 bar g (1464 psi g)Lower measuring limit Upper measuring limit-100 mbar g (-1.45 psi g)100 bar g (1450 psi g)100 bar g (1450 psi g)	<ul> <li>Measuring cell with silicone oil</li> </ul>	0 mbar a (0 psi a)				
Input of gage pressure, with front-flush diaphragmMeasured variableGage pressure, front-flushSpans (infinitely adjustable) or nominal measuring range and max. pemissible test pressureGage pressure, front-flushSpanMax. perm. test pres- sureNominal measuring range0,01 1 bar g (0.145 14.5 psi g)6 bar g (145 psi g)1 bar g (145 psi g)0,04 4 bar g (0.58 58 psi g)10 bar g (145 psi g)4 bar g (58 psi g)10 bar g (145 psi g)0,16 16 bar g (2.32 232 psi g)32 bar g (145 psi g)16 bar g (232 psi g)32 bar g (145 psi g)Lower measuring limit-100 mbar g (-1.45 psi g)-100 mbar g (-1.45 psi g)100 bar g (145 psi g)	Upper measuring limit					
Measured variableGage pressure, front-flushNominal measuring range and max. pemissible test pressureGage pressure, front-flushNominal measuring rangeMax. perm. test pressure0,01 1 bar g (0.145 14.5 psi g)6 bar g (87 psi g)1 bar g (145 psi g)6 bar g (145 psi g)6 bar g (145 psi g)0,04 4 bar g (0.58 58 psi g)10 bar g (145 psi g)10 bar g (145 psi g)10 bar g (145 psi g)10 bar g (145 psi g)0,06 63 bar g (2.32 232 psi g)0,16 16 bar g (145 psi g)32 bar g (145 psi g)32 bar g (145 psi g)Lower measuring limit Upper measuring limit-100 mbar g (-1.45 psi g)-100 mbar g (-1.45 psi g)100 bar g (145 psi g)				100% of the max. nominal measuring range		
Spans (infinitely adjustable) or nominal measuring range and max. pemissible test pressureSpanMax. perm. test pres- sureNominal measuring rangeMax. perm. test pres- sure0,01 1 bar g (0,145 14.5 psi g)6 bar g (145 psi g)1 bar g (145 psi g)6 bar g (14.5 psi g)6 bar g (14.5 psi g)0,04 4 bar g (0,58 58 psi g)10 bar g (145 psi g)10 bar g (145 psi g)10 bar g (145 psi g)10 bar g (145 psi g)0,06 63 bar g (14.5 psi g)0,16 16 bar g (2.32 232 psi g)32 bar g (464 psi g)32 bar g (1450 psi g)32 bar g (1450 psi g)Lower measuring limit-100 mbar g (-1.45 psi g)-100 mbar g (-1.45 psi g)100 bar g (1450 psi g)100 bar g (1450 psi g)						
nominal measuring range and max. pemissible test pressure         sure         range         sure           0,011 bar g (0.14514.5 psi g)         6 bar g (87 psi g)         1 bar g (14.5 psi g)         6 bar g (14.5 psi g)         6 bar g (87 psi g)           0,044 bar g (0.5858 psi g)         10 bar g (145 psi g)         4 bar g (58 psi g)         10 bar g (145 psi g)           0,1616 bar g (2.32232 psi g)         32 bar g (464 psi g)         16 bar g (232 psi g)         32 bar g (464 psi g)           0,663 bar g (9.14914 psi g)         100 bar g (1450 psi g)         63 bar g (914 psi g)         100 bar g (1450 psi g)           Lower measuring limit         -100 mbar g (-1.45 psi g)         -100 mbar g (-1.45 psi g)         -100 mbar g (-1.45 psi g)			1	I	L	
0,01 1 bar g       6 bar g       1 bar g       6 bar g         (0.145 14.5 psi g)       (87 psi g)       (14.5 psi g)       (87 psi g)         0,04 4 bar g       10 bar g       4 bar g       10 bar g         (0.58 58 psi g)       10 bar g       4 bar g       10 bar g         (145 psi g)       0,16 16 bar g       32 bar g       16 bar g       32 bar g         (2.32 232 psi g)       0,6 63 bar g       100 bar g       (232 psi g)       (464 psi g)         0,6 63 bar g       100 bar g       (1450 psi g)       63 bar g       100 bar g         (9.14 914 psi g)       -100 mbar g (-1.45 psi g)       -100 mbar g (-1.45 psi g)       1450 psi g)       1450 psi g)	nominal measuring range and		sure	range	sure	
(0.58 58 psi g)       (145 psi g)       (58 psi g)       (145 psi g)         0,16 16 bar g       32 bar g       16 bar g       32 bar g         (2.32 232 psi g)       (464 psi g)       (232 psi g)       (464 psi g)         0,6 63 bar g       100 bar g       63 bar g       100 bar g         (9.14 914 psi g)       -100 mbar g (-1.45 psi g)       -100 mbar g (-1.45 psi g)       100 bar g         Upper measuring limit       -100 mbar g (-1.45 psi g)       -100 mbar g (-1.45 psi g)       -100 mbar g (-1.45 psi g)		(0.145 14.5 psi g)	(87 psi g)	(14.5 psi g)	(87 psi g)	
(2.32 232 psi g)       (464 psi g)       (232 psi g)       (464 psi g)         0,6 63 bar g       100 bar g       63 bar g       100 bar g         (9.14 914 psi g)       (1450 psi g)       (914 psi g)       100 bar g         Lower measuring limit       -100 mbar g (-1.45 psi g)       -100 mbar g (-1.45 psi g)       -100 mbar g (-1.45 psi g)						
Lower measuring limit(9.14 914 psi g)(1450 psi g)(914 psi g)(1450 psi g)Upper measuring limit-100 mbar g (-1.45 psi g)-100 mbar g (-1.45 psi g)-100 mbar g (-1.45 psi g)						
Upper measuring limit						
	Lower measuring limit	-100 mbar g (-1.45 psi g)				
Measuring cell with silicone oil     100% of max. span     100% of the max. nominal measuring range	Upper measuring limit					
	Measuring cell with silicone oil	100% of max. span		100% of the max. nominal measuring range		

PROFIBUS PA and FOUNDATION Fieldbus

**SITRANS P300** 

SITRANS P300 for gage pressure and abso	olute pressure						
	HART	HART			PROFIBUS PA and FOUNDATION Fieldbus		
Input of absolute pressure, with front-flush	n diaphragm						
Measured variable	Absolute pressure (front-flush)						
Spans (infinitely adjustable) or nominal measuring range and	Span	Max. perm sure	. test pres-	Nominal measuring range	Max. perm sure	i. test pres-	
max. pemissible test pressure	43 1300 mbar a (0.62 18.9 psi a)	10 bar a (145 psi a)		1300 mbar a (18.9 psi a)	10 bar a (145 psi a)		
	0,16 5 bar a (2.32 72,5 psi a)	30 bar a (435 psi a)		5 bar a (72,5 psi a)	30 bar a (435 psi a)		
	1 30 bar a (14.5 435 psi a)	100 bar a (1450 psi a	a)	30 bar a (435 psi a)	100 bar a (1450 psi a)		
	Depending on the process connection, the span may differ from these values			Depending on the process connection, the nominal measuring range may differ from these value			
Lower measuring limit	0 bar a (0 psi a)						
Upper measuring limit							
<ul> <li>Measuring cell with silicone oil</li> </ul>	100% der max. Messsp	anne		100% des max. Nennm	Vennmessbereichs		
Output							
Output signal	4 20 mA	4 20 mA Digital PROFIBUS PA signal					
Physical bus	- IEC 61158-2						
With polarity reversal protection	No Yes						
Electrical damping T <sub>63</sub> (step width 0.1 s)	Set to 0.1 s (0 100 s)						
Accuracy	To EN 60770-1						
Reference conditions (All error data refer always refer to the set span)	Increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, measuring cell with silicone oil, room temperature 25 °C (77 °F), span ratio (r = max. span / set span)						
Measurement deviation with cut-off point set- ting, including hysteresis and repeatability.							
	Gage pressure	Absolute pressure	(Absolute pressure, front- flushed)	Gage pressure	Absolute pressure	(Absolute pressure, front- flushed)	
Linear characteristic curve		1		≤ 0,075%	≤0,1%	≤ 0,2%	
• r ≤ 10	≤ (0.0029 · r + 0.071)%	≤ 0,1%	≤ 0,2%				
• 10 < r ≤ 30	≤ (0.0045 · r + 0.071)%	≤ 0,2%	≤ 0,4%				
• 30 < r ≤ 100	≤ (0.005 · r + 0.05)%	-	-				
Settling time T <sub>63</sub> without electrical damping	Approx. 0.2 s	1	1	1	I	ļ	
Long-term drift at ± 30 °C (± 54 °F)	≤ (0.25 · r)%/5 years					ar	
Influence of ambient temperature		l		1	Ĩ		
• at -10 +60 °C (14 140 °F)	≤ (0.1 · r +0.2)%	$\leq (0.1 \cdot r + 0.2)\%$ $\leq (0.2 \cdot r + 0.3)\%$			≤ 0,5%		
• at -4010 °C and +60 +85 °C (-40 14 °F and 140 185 °F)	≤ (0.1 · r + 0.15)% / 10 k	K	≤ (0.2 · r + 0.3)%/10 K	≤ 0.25%/10 K		≤ 0.5%/ 10 K	
Influence of the medium temperature (only with front-flush diaphragm)							
Temperature difference between medium temperature and ambient temperature	3 mbar/10 K (0.04 psi/10	0 K)					

#### SITRANS P300

#### SITRANS P300 for gage pressure and absolute pressure

	HART	PROFIBUS PA and FOUNDATION Fieldbus
Rated 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)	
<ul> <li>Measuring cell with inert liquid (not with front-flush diaphragm)</li> </ul>	-20 +85 °C (-4 +185 °F)	
• Digital display	-30 +85 °C (-22 +185 °F)	
Storage temperature	-50 +85 °C (-58 +185 °F) (with Neobee: -20 +85 °C (-4 +185 °F)	
Climatic class		
Condensation	Permissible	
Degree of protection to EN 60529	IP65, IP68, NEMA X, enclosure cleaning, resistar	nt to lyes, steam to 150° C (302 °F)
Electromagnetic compatibility		
• Emitted interference and interference immunity	To EN 61326 and NAMUR NE 21	
Medium conditions		
Process temperature		
<ul> <li>Measuring cell with silicone oil</li> </ul>	-40 +100 °C (-40 +212 °F)	
<ul> <li>Measuring cell with silicone oil (with front- flush diaphragm)</li> </ul>	-40 +150 °C (-40 +302 °F)	
<ul> <li>Measuring cell with Neobee oil (with front- flush diaphragm)</li> </ul>	-40 +150 °C (-40 +302 °F)	
<ul> <li>Measuring cell with silicone oil, with tempe- rature isolator (only with front-flush dia- phragm)</li> </ul>	-40 +200 °C (-40 +392 °F)	
<ul> <li>Measuring cell with inert liquid</li> </ul>	-20 +100 °C (-4 +212 °F)	
<ul> <li>Measuring cell with high temperature oil</li> </ul>	-10 +250 °C (14 +482 °F)	
Design (standard version)		
Weight (without options)	Approx. 800 g (1.8 lb)	
Housing 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 Hastello	y C276, mat. No. 2.4819
Oval flange	Stainless steel, mat. No. 1.4404/316L	
Seal diaphragm	Stainless steel, mat. No. 1.4404/316L or Hastello	y 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 DIN EN 837-1</li> <li>Female thread ½-14 NPT</li> <li>Oval flange PN 160 (MWP 2320 psi) with faster</li> <li>- 7/<sub>16</sub>-20 UNF to IEC 61518</li> <li>- M10 as per DIN 19213</li> </ul>	ing thread:
Design (version with front-flush dia- phragm)		
Weight (without options)	Approx. 1 13 kg (2.2 29 lb)	
Housing 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>	

	HART	PROFIBUS PA and FOUNDATION Fieldbus
Power supply <i>U</i> <sub>H</sub>		
Terminal voltage on transmitter	10.5 42 V DC for intrinsically safe operation: 10.5 30 V DC	Supplied through bus
Separate power supply	-	Not necessary
Bus voltage		
Without EEx	-	9 32 V
<ul> <li>For intrinsically-safe operation</li> </ul>	-	9 24 V
Current consumption		
Max. basic current	-	12.5 mA
<ul> <li>Startup current ≤ basic current</li> </ul>	-	Yes
Max. fault current in the event of a fault	-	15.5 mA
Fault disconnection electronics (FDE)	-	Available
Certificate and approvals		
Classification according to pressure equip- ment directive (DRGL 97/23/EC)	For gases of fluid group 1 and liquids of fluid gro graph 3 (sound engineering practice)	pup 1; complies with requirements of Article 3, para-
Water, waste water	Available soon	
Explosion protection		
Intrinsic safety "i"	PTB 05 ATEX 2048	
Identification	Ex II 1/2 G EEx ia/ib IIB/IIC T4, T5, T6	
Permissible ambient temperature		
Temperature class T4	-40 +85 °C (-40 +185 °F)	
Temperature class T5	-40 +70 °C (-40 +158 °F)	
Temperature class T6	-40 +60 °C (-40 +140 °F)	
Connection	To certified intrinsically-safe circuits with maxi- mum values:	To certified intrinsically-safe circuits with maxi- mum values:
	$\begin{array}{l} U_i = 30 \text{ V}, \text{ I}_i = 100 \text{ mA}, \\ P_i = 750 \text{ mW}, \text{ R}_i = 300 \ \Omega \end{array}$	$\frac{FISCO \text{ supply unit:}}{U_i = 17.5 \text{ V}, I_i = 380 \text{ mA}, P_i = 5.32 \text{ W}}$ Linear barrier:
		U <sub>i</sub> = 24 V, I <sub>i</sub> = 250 mA, P <sub>i</sub> = 1.2 W
Effective inner capacitance:	C <sub>i</sub> = 6 nF	C <sub>i</sub> = 1.1 nF
Effective inner inductance:	$L_i = 0.4 \text{ mH}$	$L_i \leq 7 \mu H$
Explosion protection to FM for USA and Canada (cFMUS)		
<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 CL I, DIV 2, GP ABCD T4 T6; CL II, DIV 2, GP	
<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 CL I, DIV 2, GP ABCD T4 T6; CL II, DIV 2, GP	

HART communication		Communication FOUNDATION Fi	
HART communication	230 1100 Ω	Function blocks	3 function blocks analog input, 1 function block PID
Protocol Software for computer	HART Version 5.x SIMATIC PDM	<ul> <li>Analog input</li> </ul>	
PROFIBUS PA communication		<ul> <li>Adaptation to customer-speci- fic process variables</li> </ul>	Yes, linearly rising or falling cha- racteristic
Simultaneous communication with master class 2 (max.)	4	- Electrical damping T <sub>63</sub> , adjus- table	0 100 s
The address can be set using	Configuration tool or local opera- tion (standard setting address	- Simulation function	Output/input (can be locked within the device with a bridge)
Cyclic data usage	126)	- Failure mode	Can be parameterized (last good value, substitute value, incorrect
Output byte	5 (one measuring value) or		value)
Input byte	10 (two measuring values) 0, 1, or 2 (register operating mode	- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respec- tively
Internal preprocessing	and reset function for metering)	<ul> <li>Square-rooted characteristic for flow measurement</li> </ul>	Yes
	PROFIBUS PA Profile for Process	PID	Standard FF function block
Device profile	Control Devices Version 3.0,	Physical block	1 Resource block
	Class B	Transducer blocks	1 transducer block Pressure with
<ul><li>Function blocks</li><li>Analog input</li></ul>	2	TRESCUCE DIOCKS	calibration, 1 transducer block
- Adaptation to customer-speci-	Yes, linearly rising or falling cha-	Pressure transducer block	
fic process variables - Electrical damping T <sub>63</sub> , adjus-	racteristic	<ul> <li>Can be calibrated by applying two pressures</li> </ul>	Yes
table	01003	- Monitoring of sensor limits	Yes
- Simulation function	Input /Output	- Simulation function: Measured	Constant value or over paramete-
- Failure mode	Can be parameterized (last good value, substitute value, incorrect value)	pressure value, sensor tempe- rature and electronics tempera- ture	rizable ramp function
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respec- tively		
Register (totalizer)	Can be reset, preset, optional direction of counting, simulation function of register output		
- Failure mode	Can be parameterized (summation with last good value, continuous summation, summation with incor- rect value)		
- Limit monitoring	One upper and lower warning limit and one alarm limit respectively		
<ul> <li>Physical block</li> </ul>	1		
Transducer blocks	2		
Pressure transducer block			
<ul> <li>Can be calibrated by applying two pressures</li> </ul>	Yes		
- Monitoring of sensor limits	Yes		
<ul> <li>Specification of a container characteristic with</li> </ul>	Max. 30 nodes		
<ul> <li>Square-rooted characteristic for flow measurement</li> </ul>	Yes		
<ul> <li>Gradual volume suppression and implementation point of square-root extraction</li> </ul>	Parameterizable		
- Simulation function for measu- red pressure value and sensor temperature	Constant value or over paramete- rizable ramp function		

Selection and Ordering	data		Order No.
SITRANS P300 pressur	e transmitters for gage		
	single-chamber measu-		
ring housing, rating plate	e 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 -
Measuring cell filling	Measuring cell cleanin	g	
Silicone oil	Standard		1
Inert liquid	Cleanliness level 2 to		3
	DIN 25410		
max. span	(0.145 - 145  points)		в
0,01 1 bar g 0,04 4 bar g	(0.145 14.5 psi g)		B C
0,04 4 bar g	(0.58 58 psi g) (2.32 232 psi g)		D
0,63 63 bar g	(9.14 914 psi g)		E
1,6 160 bar g	(23.2 2320 psi g)		F
4 400 bar g	(58 5800 psi g)		G
2,5 25 mbar a	(0,036 3.63 psi a)	F)	Q
13 1300 mbar a	(0.19 18.9 psi a)	F)	S
0,05 5 bar a	(0,7 72.5 psi a)	F)	T
0,3 30 bar a	(4.35 435 psi a)	F)	U
Wetted parts materials	( I )		
Seal diaphragm	Measuring cell		
Stainless steel	Stainless steel	_	A
Hastelloy	Stainless steel	F)	В
Hastelloy	Hastelloy	F)	С
Version for diaphragm se	eal <sup>1) 2)</sup>		Y
Process connection			
• G½B to EN 837-1			0
• ½-14 NPT			1
<ul> <li>Oval flange made of st</li> </ul>			
<ul> <li>Mounting thread <sup>7</sup>/<sub>16</sub></li> </ul>	-20 UNF to EN 61518		2
<ul> <li>Mounting thread M10</li> </ul>			3
- Mounting thread M12 to DIN 19213			4
<ul> <li>Male thread M20 x 1,5</li> <li>Male thread ½ -14 NPT</li> </ul>			5
			6
Non-wetted parts mate     St stool doop drawn c	rials and electrolytically polishe	А	4
Version	and electrolytically polishe	u	
Standard version			1
Explosion protection			
Without			А
<ul> <li>With ATEX, Type of pro</li> </ul>	tection:		
- "Intrinsic safety (EEx	ia)"		В
• Zone 20/21/22 <sup>3)</sup>			С
<ul> <li>Ex nA/nL (zone 2)<sup>4)</sup></li> </ul>			E
• With FM "Intrinsic safe	' (cFM <sub>US</sub> )		м
Electrical connection /			
<ul> <li>Screwed gland M20x1</li> </ul>	.5 (Polyamide) <sup>5)</sup>		A
Screwed gland M20x1	.5 (metal)		В
Screwed gland M20x1			С
M12 connector (metal, without cable socket)			F
M12 connector (stainless steel, without cable socket)			G
<ul> <li>½-14 NPT thread, meta</li> </ul>	-		н
<ul> <li>½-14 NPT thread, stair</li> </ul>	lless steel <sup>b)</sup>		J

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

Power supply units see "SITRANS I power supply units and isol. amplifiers".

Factory-mounting of shut-off valves and valve manifolds see page 2/142.

Included in delivery of the device:

Brief instructions (Leporello)

• CD-ROM with detailed documentation

<sup>1)</sup> When the manufacture's certificate M (calibration certificate) has to be ordered for transmitters with diaphragm seals, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the <u>total</u> combination is certified here.

2) Whe the acceptance test certificate 3.1 for transmitters with direct-connected diaphragm seals is ordered, this certificate must also be ordered with the corresponding seals.

- <sup>3)</sup> Can only be ordered in conjunction with electrical connection Option A.
- <sup>4)</sup> Can only be ordered in conjunction with electrical connection Option B, C, F or G.
- <sup>5)</sup> Only together with HART electronics.

6) Without cable gland.

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

# **SITRANS P300**

OFFICIANO F 000			
Selection and Ordering	data		Order No.
SITRANS P300 pressure transmitters for gage and absolute pressure with front-flush membrane, single-chamber measuring housing, rating plate inscription in English			
4 20 mA/HART		=)	7 M F 8 1 2 3 -
PROFIBUS PA		<i>´</i>	7MF8124-
FOUNDATION Fieldbus		<i>′</i>	7MF8125-
1 CONDATION TIERDbus	((1))	'	-
	Meesuring cell cleaning	_	
Measuring cell filling Silicone oil Inert liquid	Measuring cell cleaning Standard Cleanliness level 2 to DIN 25410		1 3
<ul><li>FDA compliant fill fluid</li><li>Neobee oil</li></ul>	Standard		4
max. span		_	
0,01 1 bar g 0,04 4 bar g 0,16 16 bar g 0,63 63 bar g 13 1300 mbar a <sup>1)</sup> 0,05 5 bar a <sup>1)</sup>	(0.15 14.5 psi g) (0.58 58 psi g) (2.32 232 psi g) (9.14 914 psi g) (0.19 18.9 psi a) (0.7 725 psi a)		B C D E S
0,05 5 bar a <sup>1)</sup> 0,03 30 bar a <sup>1)</sup>	(0.7 72.5 psi a) (4.35 435 psi a)		TU
Wetted parts materials	(4.00 400 poi a)	_	U
Seal diaphragm	Measuring cell		
Stainless steel	Stainless steel		A
<ul> <li>Process connection</li> <li>Flange version with Ori (see "Further designs")</li> </ul>	der code M, N, R or Q	_	7
<ul> <li>Non-wetted parts mate</li> <li>Stainless steel, deep-d polished</li> </ul>	rials Irawn and electrolytically		4
Version <ul> <li>Standard version</li> </ul>			1
Explosion protection • Without • With ATEX, Type of pro - "Intrinsic safety (EEx • Zone 20/21/22 <sup>2)</sup> • Ex nA/nL (zone 2) <sup>3)</sup> • With FM "Intrinsic safe	ʻ (cFM <sub>US</sub> )		A C E M
Electrical connection / • Screwed gland M20x1 • Screwed gland M20x1 • Screwed gland M20x1 • M12 connector (without • M12 connector (stainless • ½-14 NPT thread, metat • ½-14 NPT thread, stain	.5 (Polyamide) <sup>4)</sup> .5 (metal) .5 (stainless steel) It cable socket) ss steel, without cable socket II <sup>5)</sup>	:)	A B C F G H J

Selection and Ordering data	Order No.
SITRANS P300 pressure transmitters for gage and absolute pressure with front-flush membrane, single-chamber measuring housing, rating plate inscription in English	
4 20 mA/HART	7 M F 8 1 2 3 -
PROFIBUS PA F	7 M F 8 1 2 4 -
FOUNDATION Fieldbus (FF)	7 M F 8 1 2 5 -
Display	
<ul> <li>Without display, with keys, closed lid<sup>4)</sup></li> </ul>	1
<ul> <li>With display and keys, closed lid</li> </ul>	2
With display and keys, lid with macrolon washer (setting on HART devices: mA, Setting on HART devices: mA,	4
on PROFIBUS PA and FOUNDATION Fieldbus devices: pressure units)	
<ul> <li>With display (setting acc. to specifications, Order code "Y21" or "Y22" required), lid with macrolon washer</li> </ul>	5
<ul> <li>With display and keys, lid with glass pane (setting on HART devices: mA,</li> </ul>	6
on PROFIBUS PA and FOUNDATION Fieldbus devices: pressure units)	
With display (setting acc. to specifications, Order code "Y21" or "Y22" required), lid with glass pane	7
Dever events units and "CITDANC Leasurer events units	

Power supply units see "SITRANS I power supply units and isol. amplifiers".

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

• CD-ROM with detailed documentation

1) Not with temperature decoupler P00 and P10, not for process connections R02, R04, R10 and R11, and can only be ordered in conjunction with silicone oil.

<sup>2)</sup> Can only be ordered in conjunction with electrical connection Option A. <sup>3)</sup> Can only be ordered in conjunction with electrical connection Option B, C, F or G.

<sup>4)</sup> Only together with HART electronics.

5) Without cable gland.

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

Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add "-Z" to Order No. and specify Order				
code.				
Mounting bracket	A02	✓	✓	<ul><li>✓</li></ul>
made completely of stainless steel, for wall or				
pipe mounting				
Cable socket for M12 plug				
Metal	A50		✓	<ul><li>✓</li></ul>
Stainless steel	A51		✓	<ul><li>✓</li></ul>
Rating plate inscription				
(instead of English)				
• German	B10	✓	✓	✓
French	B12	✓	✓	✓
Spanish	B13	✓	✓	<ul><li>✓</li></ul>
Italian	B14	✓	✓	✓
English rating plate	B21	1	1	<b>√</b>
Pressure units in in $H_20$ or psi				
			,	
Quality inspection certificate (Factory calibration) to IEC 60770-2 <sup>1)</sup>	011	✓	~	1
to IEC 60770-2				
Acceptance test certificate <sup>2)</sup>	C12	✓	~	<ul><li>✓</li></ul>
to EN 10204-3.1				
Factory certificate	C14	✓	✓	1
to EN 10204-2.2				
Type of protection IP68	D12	1	1	- √
Only for SITRANS P300 with front-flush diaphragm (7MF81)				
Flange to EN 1092-1, form B1	M44			
• DN 25, PN 40 <sup>3)</sup> • DN 25, PN 100 <sup>3)</sup>	M11 M21	✓ ✓	√ √	✓ ✓
• DN 23, PN 100-7 • DN 40, PN 40	M21 M13	¥	¥	<b>↓</b>
• DN 40, PN 40 • DN 40, PN 100	M23	<b>↓</b>	¥.	<b>↓</b>
• DN 50, PN 16	M04	<b>↓</b>	¥.	<b>↓</b>
• DN 50, PN 18	M04 M14	✓	¥.	-
• DN 80, PN 25	M06	¥	~	1
• DN 80, PN 40	M16	· /		, ,
,				,
Flanges to ASME B16.5 • 1", class 150 <sup>3)</sup>	M40	~	1	
	M40	✓ ✓	√ √	<b>√</b>
• 1½", class 150	M41	×	✓ ✓	✓ ✓
• 2", class 150	M42	✓ ✓	¥ •	✓ ✓
• 3", class 150 • 4", class 150	M43 M44	× ✓	* -	Ž
• 4 , class 150 • 1", class 300 <sup>3)</sup>	M44 M45	× ✓	<b>↓</b>	<b>↓</b>
• 1 ½", class 300-7	M45 M46	× ✓	¥.	<b>↓</b>
• 172, class 300 • 2", class 300	M46	× ×	1	<b>↓</b>
• 2 , class 300 • 3". class 300	M47 M48	1	1	
- ,	WI-40	, in the second s	v	
Threaded connection acc. to DIN 3852-2,				
• G ¾"-A, flush-mounted <sup>4)</sup>	DOI			
<ul> <li>G <sup>3</sup>/<sub>4</sub><sup>"</sup>-A, flush-mounted <sup>1</sup>/</li> <li>G 1<sup>"</sup>-A, flush-mounted<sup>4</sup>)</li> </ul>	R01	✓ ✓	√ √	✓ ✓
• G T -A, flush-mounted <sup>17</sup> • G 2"-A, flush-mounted <sup>4)</sup>	R02 R04		1	
	n04	<b>V</b>	·	
Tank connection <sup>5)</sup>				
Sealing is included in delivery	D40			
• TG 52/50, PN 40	R10	×,		
• TG 52/150, PN 40	R11	× I	v	
Constant and constant in				
DIN 11851 (Dairy connection)			1	
certified to $3A^{6}$	NO4	V I		
DIN 11851 (Dairy connection) certified to 3A <sup>6)</sup> • DN 50, PN 25	N04			<b>₩</b>
DIN 11851 (Dairy connection) certified to 3A <sup>6)</sup> • DN 50, PN 25 • DN 80, PN 25	N04 N06	1	v	
DIN 11851 (Dairy connection) certified to 3A <sup>6)</sup> • DN 50, PN 25 • DN 80, PN 25 Tri-Clamp connection according		*	v	
DIN 11851 (Dairy connection) certified to 3A <sup>6)</sup> • DN 50, PN 25 • DN 80, PN 25 Tri-Clamp connection according DIN 32676/ISO 2852		*	v	
DIN 11851 (Dairy connection) certified to 3A <sup>6)</sup> • DN 50, PN 25 • DN 80, PN 25 Tri-Clamp connection according DIN 32676/ISO 2852 certified to 3A <sup>6)</sup>	N06	*	v	
DIN 11851 (Dairy connection) certified to 3A <sup>6)</sup> • DN 50, PN 25 • DN 80, PN 25 Tri-Clamp connection according DIN 32676/ISO 2852		*	•	~

Selection and Ordering data	Order	code		
Ţ	JUE	HART	PA	FF
<i>Further designs</i> Add "-Z" to Order No. and specify Order		TARI	PA	rr
code.				
Varivent connection				
certified to 3A and EHEDG <sup>3)</sup>				
• Type N = 68 for Varivent housing	N28	✓	✓	✓
DN 40 125 and 1½" 6", PN 40				
Temperature decoupler up to 200 °C <sup>7)</sup> for version with front-flush diaphragm	P00	<b>~</b>	1	~
Temperature decoupler up to 250 °C	P10	✓	1	✓
Measuring cell filling: High-temperature oil, only in conjunction with measuring cell filling				
silicone oil				
Bio-Control (Neumo) sanitary connection				
certified to 3A and EHEDG <sup>3)</sup>				
• DN 50, PN 16	Q53	✓	1	✓
• DN 65, PN 16	Q54	✓	1	✓
Sanitary process connection to DRD				
• 65 mm, PN 40	M32	✓	1	1
SMS socket with union nut				
• 2"	M67	✓	✓	✓
• 21/2"	M68	✓	✓	✓
• 3"	M69	✓	1	1
SMS threaded socket				
• 2"	M73	✓	✓	✓
• 2½"	M74	<ul> <li>✓</li> </ul>	1	<ul> <li>✓</li> </ul>
• 3"	M75	✓	1	~
IDF socket with union nut ISO 2853				
• 2"	M82	<b>√</b>	√	✓
• 2½"	M83	1	1	1
• 3"	M84	1	~	v
IDF threaded socket ISO 2853				
• 2" • 01/"	M92	<b>1</b>	4	1
• 2½" • 3"	M93 M94	<b>*</b>	4	4
-	10194	<b>v</b>	v	•
Sanitary process connection to NEUMO Bio-Connect screw connection				
certified to 3A and EHEDG <sup>3)</sup>				
• DN 50, PN 16	Q05	✓	1	✓
• DN 65, PN 16	Q06	✓	✓	✓
• DN 80, PN 16	Q07	<b>√</b>	1	<b>√</b>
• DN 100, PN 16	Q08	<b>√</b>	1	1
• DN 2", PN 16	Q13	× ,	1	1
• DN 2 <sup>1</sup> /2", PN 16	Q14		4	4
<ul> <li>DN 3", PN 16</li> <li>DN 4", PN 16</li> </ul>	Q15 Q16		4	4
	GIU			
Sanitary process connection to NEUMO Bio-Connect flange connection				
• DN 50 PN 16	022	~	1	1
<ul> <li>DN 50, PN 16</li> <li>DN 65, PN 16</li> </ul>	Q23 Q24	✓ ✓	<b>v</b> √	~
• DN 80, PN 16	Q24	✓	<b>√</b>	* * * * *
• DN 100, PN 16	Q26	1	1	1
• DN 2", PN 16	Q31	✓	✓	✓
• DN 2½", PN 16	Q32	✓	✓	✓
• DN 3", PN 16	Q33	✓	✓	
• DN 4", PN 16	Q34	✓	1	1
Sanitary process connection to				
<b>NEUMÓ Bio-Connect clamp connection</b> certified to 3A and EHEDG <sup>3</sup>				
• DN 50, PN 16	Q39	~	1	~
• DN 55, PN 10	Q40	✓	1	1
• DN 80, PN 10	Q41	¥	√ √	1
• DN 100, PN 10	Q42	1	1	* * * * * *
• DN 21⁄2", PN 16	Q48	✓	✓	✓
• DN 3", PN 10	Q49	✓	✓	✓
• DN 4", PN 10	Q50	✓	1	✓

# **SITRANS P300**

Selection and Ordering data	Order	code		
Further designs Add "-Z" to Order No. and specify Order code.		HART	PA	FF
Sanitary process connection to NEUMO Connect S flange connection certified to 3A and EHEDG • DN 50, PN 16	Q63	~	✓	*
<ul> <li>DN 65, PN 10</li> <li>DN 80, PN 10</li> <li>DN 100, PN 10</li> </ul>	Q64 Q65 Q66	* * *	✓ ✓ ✓	* * *
<ul> <li>DN 2", PN 16</li> <li>DN 2½", PN 10</li> <li>DN 3", PN 10</li> </ul>	Q72 Q73 Q74	* * *	* * *	* * *
• DN 4", PN 10	Q75	~	✓	~
Aseptic threaded socket to DIN 11864-1 Form A • DN 50, PN 25 • DN 65, PN 25 • DN 80, PN 25 • DN 100, PN 25	N33 N34 N35 N36	* * * *	* * * *	$\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$
Aseptic flange with notch to DIN 11864-2 Form A				
<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	* * * *	* * * *	* * * *
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				
<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	* * * *	* * *	* * * *

<sup>1)</sup> When the manufacture's certificate M (calibration certificate) has to be ordered for transmitters with diaphragm seals, 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>2)</sup> Whe the acceptance test certificate 3.1 for transmitters with direct-connected diaphragm seals is ordered, this certificate must also be ordered with the corresponding seals.

<sup>3)</sup> Special Viton seal included in delivery.

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

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

6) Certified to 3A.

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

<sup>7)</sup> 3A certification only if used in conjunction with 3A-compliant sealing rings.

Selection and Ordering data	Order	code		
Additional data Add "-Z" to Order No. and specify Order code.		HART	PA	FF
Measuring range to be set Specify in plain text V (max. 5 digits): Y01: up to mbar, bar, kPa, MPa, psi	Y01	~		
Measuring point number (TAG No.) Max. 16 characters, specify in plain text: Y15:	Y15	~	1	1
Measuring point text Max. 27 characters, specify in plain text: Y16:	Y16	*	~	1
Entry of HART TAG Max. 8 characters, specify in plain text: Y17:	Y17	*		
Setting of pressure indication in pressure units Specify in plain text (standard setting: mA): 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	Y21	*	*	~
Setting of pressure indicator in non-pressure units Specify in plain text: Y22: up to I, m <sup>3</sup> , m, USg, (specification of measuring range in pressure units "V01" is essential, unit with max. 5 cha- racters)	Y22 + Y01	*		
Preset bus address possible between 1 126) Specify in plain text: Y25:	Y25		~	~

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

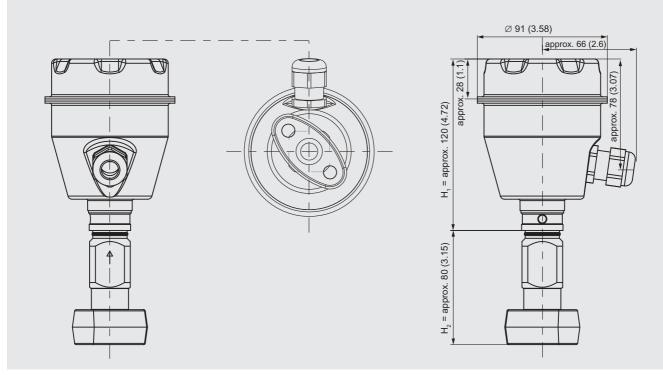
✓ = available

## Ordering example

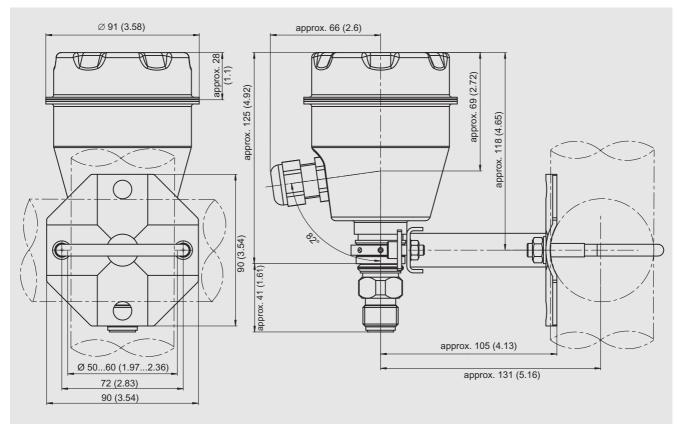
Item line:	7MF8023-1DB24-1AB7-Z
B line:	A02 + Y01 + Y21
C line:	Y01: 1 10 bar (14.5 145 psi)
C line:	Y21: bar (psi)

SITRANS P300

# Dimensional drawings

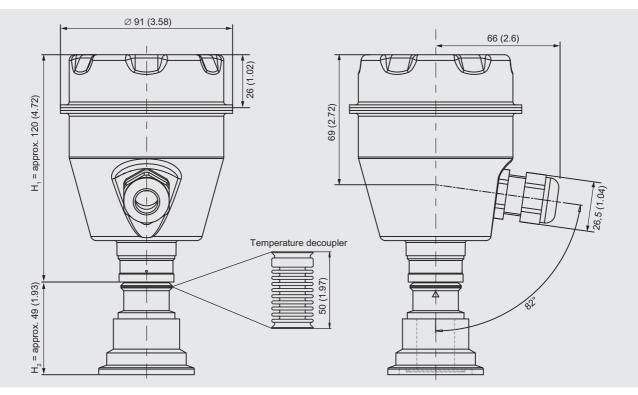


SITRANS P300, with oval flange, dimensions in mm (inch)



SITRANS P300, process connection M20 x 1,5, with mounted mounting bracket, dimensions in mm (inch)

# SITRANS P300



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

The diagram shows a SITRANS P300 with an example of a

flange. In this drawing the height is subdivided into  $H_1$  and  $H_2$ .  $H_1$  = Height of the SITRANS P300 up to a defined cross-section

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

Only the height  $\mathrm{H}_{\mathrm{2}}$  is indicated in the dimensions of the flanges.

# Flanges to EN and ASME

# Flanges to EN

# EN 1092-1



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

## Flanges to ASME

## ASME B16.5



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

# NuG and pharmaceutical connections Connections to DIN

# DIN 11851 (Dairy connection)

H2			Ĩ	
,	, 🗀			
				_
	-	D		

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

# Tri-Clamp according DIN 32676

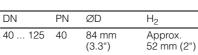


2114	/11 52070						
	DN	PN	ØD	H <sub>2</sub>			
	50	16	64 mm (2.5")	Approx.			
	65	16	91 mm (3.6")	<del>-</del> 52 mm (2")			

Other connections

Varivent connection





## **Bio-Control connection**



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

## Sanitary process connection to DRD

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

# Sanitary process screw connection to NEUMO Bio-Connect ΡN

DN

H <sup>2</sup>	

50	16	82 mm (3.2")	Approx
65	16	105 mm (4.1")	-52 mm
80	16	115 mm (4.5")	-
100	16	145 mm (5.7")	_
2"	16	82 mm (3.2")	_
21⁄2"	16	105 mm (4.1")	_
3"	16	105 mm (4.1")	-
4"	16	145 mm (5.7")	_

ØD

## Sanitary connection to NEUMO Bio-Connect flange connection

H <sup>2</sup>	

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

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

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		►  )

DN	PN	ØD	H <sub>2</sub>
50	16	77,4 mm (3.0")	Approx.
65	10	90,9 mm (3.6")	- 52 mm (2")
80	10	106 mm (4.2")	-
100	10	119 mm (4.7")	-
2"	16	64 mm (2.5")	-
21⁄2"	16	77,4 mm (3.0")	-
3"	10	90,9 mm (3.6")	-
4"	10	119 mm (4.7")	-

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

T_2	
↓	
-	
	D

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

**SITRANS P300** 

 $H_2$ 

(2")

# **SITRANS P300**

Thread connection G¾", G1" and G2" to DIN 3852						
	DN	PN	ØD	H <sub>2</sub>		
	3⁄4"	63	37 mm (1.5")	Approx. 45 mm (1.8")		
	1"	63	48 mm (1.9")	Approx. 47 mm (1.9")		
U	2"	63	78 mm (3.1")	Approx. 52 mm (2")		

## Tank connection TG52/50 und TG52/150

DN

2"

21/2'

3"

ΡN

25

25

25

ØD

г	
H <sub>2</sub>	
L	
	D

SMS socket with union nut

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

84 mm (3.3")

100 mm (3.9")

114 mm (4.5")

 $H_2$ 

Approx. 52 mm (2.1")

## Aseptic threaded socket to DIN 11864-1 Form A

	DN	PN	ØD	H <sub>2</sub>
	50	25	78 x 1/6"	Approx. 52
τ <sup>*****</sup>	65	25	95 x 1/6"	mm (2.1")
	80	25	110 x ¼"	
	100	25	130 x ¼"	

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

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

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

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

# SMS threaded socket

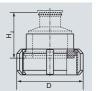
_	DN	PN	ØD	H <sub>2</sub>
	2"	25	70 x 1/6 mm	Approx. 52
<u></u>	21/2"	25	85 x 1/6 mm	- mm (2.1")
	3"	25	98 x 1/6 mm	-
•				

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

	DN	PN	Ø
	50	25	77
	65	25	91
_	80	16	10
_	100	16	13
-		-	

•				
	DN	PN	ØD	H <sub>2</sub>
	50	25	77,5	Approx. 52 mm (2.1")
	65	25	91	(1)(1) (2. 1°)
	80	16	106	
	100	16	130	

## IDF socket with union nut



2" 25 77 mm (3") Approx	52
	. 02
2½" 25 91 mm (3.6") mm (2.1	1.)
3" 25 106 mm (4.2")	

# IDF threaded socket



DN	PN	ØD	H <sub>2</sub>
2"	25	64 mm (2.5")	Approx. 52
21⁄2"	25	77,5 mm (3.1")	- mm (2.1")
3"	25	91 mm (3.6")	-

# SITRANS P300 and DS III series with PMC connection – Technical description

- Small long-term drift
- · Wetted parts made of Hastelloy
- Infinitely adjustable spans from 30 mbar g to 16 bar g for DS III with HART interface
- Nominal measuring range from 1 mbar g to 16 bar g for DS III
   with PROFIBUS PA and FOUNDATION Fieldbus interface
- Infinitely adjustable spans from 30 mbar g to 16 bar g for SITRANS P300 with HART interface
- Nominal measuring range from 1 bar g to 16 bar g 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 ... 1 GHz makes the DS III pressure transmitters suitable for locations with high electromagnetic emissions.

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

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

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

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

## SITRANS P, DS III series

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

Span (infinitely adjustable)

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

Nominal measuring range

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

## SITRANS P300

Span (infinitely adjustable)

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

Nominal measuring range

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

# Overview



The SITRANS P300 and DS III pressure transmitters have been fitted with special process connections for the paper industry. With the two process connection threads  $1\frac{1}{2}$ " and 1" flush at the front, the SITRANS P300 and DS III transmitters can be used for all processes in the paper industry.

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

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:

- Gage pressure
- Filling level
- Volume level
- Mass level

## Benefits

- · High quality and long 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

SITRANS P300 and DS III series with PMC connection – Technical description

# Design

SITRANS P, DS III series



### Device front view, SITRANS P DS III

The transmitter comprises a range of different components, depending on the order specifications. The various options are listed in the ordering information. The components described below are the same for all transmitters.

The rating plate (3, Figure "Front view") with the Order No. is located on the side of the housing. The specified number together with the ordering information provide details on the optional design details and on the possible measuring range (physical properties of built-in sensor element).

The approval label is located on the opposite side.

The housing is made of die-cast aluminium or stainless steel precision casting. A round cover is screwed on at the front and rear of the housing. The front cover (6) can be fitted with a viewing pane so that the measured values can be read directly on the digital display. The inlet (4) for the electrical connection is located either on the left or right side. The unused opening on the opposite side is sealed by a blanking plug. The protective earth connection is located on the rear of the housing.

The electrical connections for the power supply and screen are accessible by unscrewing the rear cover. The bottom part of the housing contains the measuring cell with process connection (1). The measuring cell is prevented from rotating by a locking screw (8). As the result of this modular design, the measuring cell and the electronics can be replaced separately from each other. The set parameter data are retained.

At the top of the housing is a plastic cover (5), which hides the input keys.

# SITRANS P300

The device comprises:

- Electronics
- Housing
- Measuring cell



Perspective view of the SITRANS P300

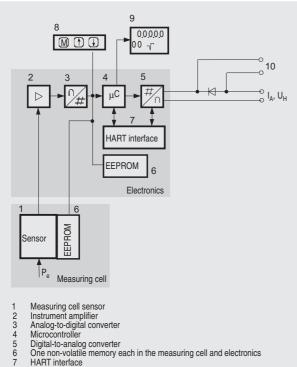
The housing has a screwable cover (3), with or without an inspection window depending on the version. The electrical terminal housing, the buttons for operation of the device and, depending on the version, the digital display are located under this cover. The connections for the auxiliary power U<sub>H</sub> and the shield are in the terminal housing. The cable gland is on the side of the housing. The measuring cell with the process connection (5) is located on the underside of the housing. Depending on the version of the device, the measuring cell with the process connection may differ from the one shown in the diagram.

SITRANS P300 and DS III series with PMC connection – Technical description

Operation of the electronics with PROFIBUS PA communication

# Function

Operation of the electronics with PROFIBUS PA communication



- 8 Three input keys (local operation)
- 9 Digital display
- 10 Diode circuit and connection for external ammeter
- I<sub>A</sub> Output current
- Ú<sub>H</sub> Power supply
- Pe Input variable

#### Function diagram of electronics

The bridge output voltage created by the sensor (1, Figure "Function diagram of electronics") is amplified by the instrument 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.

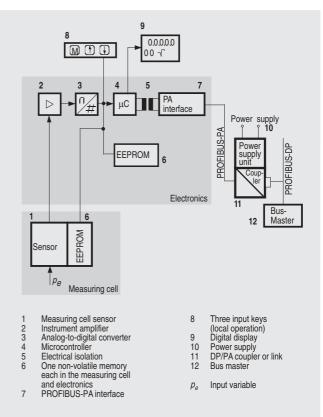
The diode circuit (10) protects against incorrect polarity.

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 point of measurement. The input keys can also be used to control the view of the results, the error messages and the operating modes on the digital display (9).

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

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



#### Function diagram of electronics

The bridge output voltage created by the sensor (1, Figure "Function diagram of electronics") is amplified by the instrument 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).

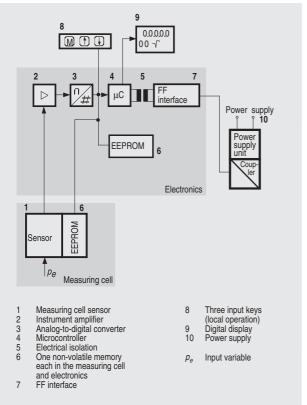
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The first memory is linked with the measuring cell, the second with the electronics. This modular design means that the electronics and the measuring cell can be replaced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

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

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

# SITRANS P300 and DS III series with PMC connection – Technical description

# Mode of operation of the FOUNDATION Fieldbus electronics



### Function diagram of electronics

The bridge output voltage created by the sensor (1, Figure "Function diagram of electronics") is amplified by the instrument 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).

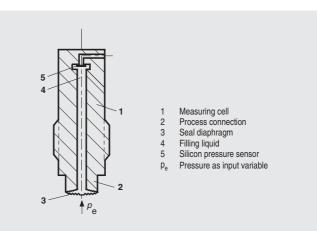
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The one memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced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

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

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

## Mode of operation of the measuring cell

Measuring cell for gage pressure with front-flush diaphragm



Measuring cell for gage pressure, with front-flush diaphragm, function diagram

The pressure  $p_e$  is applied through the process connection (2, Figure "Measuring cell for gage 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 input pressure.

### **Parameterization**

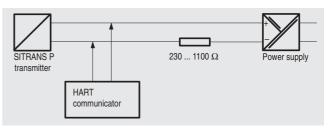
Depending on the version, there are a range of options for parameterizing the pressure transmitter and for setting or scanning the parameters.

Parameterization using the input keys (local operation)

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

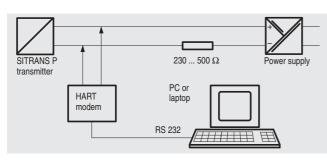
Parameterization using HART communication

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 system.



HART communication between a PC communicator and a pressure transmitter

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

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

## Adjustable parameter DS III HART and P300 HART

Parameters	Input keys	HART com- munication
Start of scale	Х	х
Full-scale value	Х	х
Electrical damping	Х	х
Start-of-scale value without application of a pressure ("Blind setting")	х	х
Full-scale value without application of a pressure ("Blind setting")	х	х
Zero adjustment	х	х
Current transmitter	х	х
Fault current	Х	х
Disabling of keys, write protection	Х	x <sup>1)</sup>
Type of dimension and actual dimension	Х	х
Characteristic (linear)	Х	х
Input of characteristic		х
Freely-programmable LCD		х
Diagnostics functions		х

1) Cancel apart from write protection

Diagnostic functions for DS III HART and P300 HART

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

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

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

SITRANS P300 and DS III series with PMC connection – Technical description

# Parameterization through PROFIBUS PA interface

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

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

Parameterization through FOUNDATION Fieldbus Interface

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

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

Adjustable parameters for DS III PA and FF and P300 PA and FF

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

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

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

### Physical dimensions available for the display

Physical variable	Physical dimensions
Pressure (setting can also be made in the factory)	MPa, kPa, Pa, bar, mbar, torr, atm, psi, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , mmH <sub>2</sub> O, mmH <sub>2</sub> O (4 °C), inH <sub>2</sub> O, inH <sub>2</sub> O (4 °C), ftH <sub>2</sub> O (20 °C), 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, Imp, gallon, bushel, barrel, barrel liquid
Temperature	K, °C, °F, °R
Miscellaneous	%

# DS III series with PMC connection

# Technical specifications

SITRANS P, DS III series for gage pressure	HART	· · · · · · · · · · · · · · · · · · ·	PROFIBUS PA or FO	INDATION Einidhun
	TAR I		PROFIBUS PA OF FOU	UNDATION Fieldbus
Input				
Measured variable	Gage pressure	1	I	L
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span	Max. perm. test pres- sure	Nominal measuring range	Max. perm. test pres- sure
	0.01 1 bar g (0.145 14.5 psi g)	6 bar g (87 psi g)	1 bar g (14.5 psi g)	6 bar g (87 psi g)
	0.04 4 bar g (0.58 58 psi g)	10 bar g (145 psi g)	4 bar g (58 psi g)	10 bar g (145 psi g)
	0.16 16 bar g (2.23 232 psi g)	32 bar g (464 psi g)	16 bar g (232 psi g)	32 bar g (464 psi g)
Lower measuring limit				
<ul> <li>Measuring cell with silicone oil filling</li> </ul>	100 mbar a (1.45 psi a)		•	
Upper measuring limit	100% of max. span			
Output				
Output signal	4 20 mA		Digital PROFIBUS PA	or FOUNDATION Fieldbus
<ul> <li>Lower limit (infinitely adjustable)</li> </ul>	3.55 mA, factory preset	to 3.84 mA	-	
Upper limit (infinitely adjustable)	23 mA, factory preset to to 22.0 mA	20.5 mA or optionally set	-	
Load				
Without HART communication	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.023$ $U_{\rm H}$ : Power supply in V	3 A in <b>Ω</b> ,	-	
With HART communication	$R_{\rm B}$ = 230 500 Ω (SIMATIC PDM) or $R_{\rm B}$ = 230 1100 Ω (HART Communicator)			
Physical bus	-		IEC 61158-2	
With polarity reversal protection	-		Yes	
Accuracy	To EN 60770-1			
Reference conditions (All error data refer always refer to the set span)		ic, start-of-scale value 0 ba C (77 °F)) r: Span ratio (r =		aphragm, silicone oil filling
Error in measurement and fixed-point setting (including hysteresis and repeatability)				
Linear characteristic			≤ 0,075%	
- r ≤ 10	≤ (0.0029 · r + 0.071)%			
- 10 < r ≤ 30	≤ (0.0045 · r + 0.071)%			
- 30 < r ≤ 100	≤ (0.005 · r + 0.05)%			
Long-term drift (temperature change $\pm$ 30 °C ( $\pm$ 54 °F))	≤ (0.25 · r)% every 5 ye	ars	$\leq$ 0.25% every 5 years	
Influence of ambient temperature			•	
• at -10 +60 °C (14 140 °F)	≤ (0.08 · r + 0.1)%		≤ 0,3%	
• at -4010 °C and +60 +85 °C (-40 +14 °F and 140 185 °F)	≤ (0.1 · r + 0.15)%/10 K		≤ 0.25%/10 K	
Influence of medium temperature				
Temperature difference between medium temperature and ambient temperature	3 mbar/10 K (0.04 psi/1	0 K)		
Influence of mounting position	≤ 0.1 mbar g (0.00145 g	osi g) per 10° inclination		
Measured Value Resolution	-		$3 \cdot 10^{-5}$ of nominal means	asuring range

**DS III series with PMC connection** 

SITRANS P, DS III series for gage pressure with PMC connection for the paper industry			
	HART	PROFIBUS PA or FOUNDATION Fieldbus	
Rated operating conditions		<b>I</b>	
Degree of protection (to EN 60529)	IP65, IP68, NEMA X, enclosure cleaning, resistant to lyes, steam to 150° C (302 °F)		
Process temperature	-20 +100 °C (-4 +212 °F)		
Ambient conditions			
<ul> <li>Ambient temperature</li> </ul>	-20 +85 °C (-4 +185 °F)		
Storage temperature	-50 +85 °C (-58 +185 °F)		
Climatic class			
- Condensation	Permissible		
<ul> <li>Electromagnetic compatibility</li> </ul>			
- Emitted interference and interference im- munity	To EN 61326 and NAMUR NE 21		
Design			
Weight (without options)	≈ 1.5 kg (≈ 3.3 lb)		
Housing material	Poor in copper die-cast aluminium, GD-AlSi12		
Wetted parts materials	Stainless steel		
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)	Front-flush, 11/2", PMC Standard design		
Process connection (minibolt)	Front-flush, 1", minibolt design		
Power supply $oldsymbol{U}_{\!$		Supplied through bus	
Terminal voltage on transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically-safe mode	-	
Separate 24 V power supply necessary	-	No	
Bus voltage		'	
• Not Ex	-	9 32 V	
<ul> <li>With intrinsically-safe operation</li> </ul>	-	9 24 V	
Current consumption		'	
<ul> <li>Basic current (max.)</li> </ul>	-	12.5 mA	
• Startup current $\leq$ basic current	-	Yes	
<ul> <li>Max. current in event of fault</li> </ul>	-	15.5 mA	
Fault disconnection electronics (FDE) avai- lable	-	Yes	
Certificate and approvals			

Classification according to pressure equip-ment directive (DRGL 97/23/EC)

For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of Article 3, para-graph 3 (sound engineering practice)

# **DS III series with PMC connection**

SITRANS P, DS III series for gage pressure with PMC connection		Communication FOUNDATION Fieldbus		
for the paper industry		Function blocks	3 function blocks analog input, 1	
HART communication	000 1400 0		function block PID	
HART communication	230 1100 Ω	Analog input		
Protocol	HART Version 5.x	<ul> <li>Adaptation to customer-speci- fic process variables</li> </ul>	Yes, linearly rising or falling cha- racteristic	
Software for computer	SIMATIC PDM	- Electrical damping T <sub>63</sub> , adjus-	0 100 s	
PROFIBUS PA communication		table		
Simultaneous communication with master class 2 (max.)	4	- Simulation function	Output/input (can be locked within the device with a bridge)	
The address can be set using	Configuration tool or local opera- tion (standard setting address 126)	- Failure mode	Can be parameterized (last good value, substitute value, incorrect value)	
Cyclic data usage		- Limit monitoring	Yes, one upper and lower warning	
Output byte	5 (one measuring value) or 10 (two measuring values)		limit and one alarm limit respec- tively	
Input byte	0, 1, or 2 (register operating mode and reset function for metering)	<ul> <li>Square-rooted characteristic for flow measurement</li> </ul>	Yes	
Internal preprocessing	6,	• PID	Standard FF function block	
Device profile	PROFIBUS PA Profile for Process	<ul> <li>Physical block</li> </ul>	1 Resource block	
	Control Devices Version 3.0, Class B	Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block LCD	
Function blocks	2	<ul> <li>Pressure transducer block</li> </ul>	200	
<ul> <li>Analog input</li> </ul>		- Can be calibrated by applying	Yes	
<ul> <li>Adaptation to customer-speci- fic process variables</li> </ul>	Yes, linearly rising or falling cha- racteristic	two pressures		
<ul> <li>Electrical damping T<sub>63</sub>, adjus- table</li> </ul>	0 100 s	<ul> <li>Monitoring of sensor limits</li> <li>Simulation function: Measured</li> </ul>	Yes Constant value or over paramete-	
- Simulation function	Input /Output	pressure value, sensor tempe- rature and electronics tempera-	rizable ramp function	
- Failure mode	Can be parameterized (last good value, substitute value, incorrect value)	ture		
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respec- tively			
Register (totalizer)	Can be reset, preset, optional direction of counting, simulation function of register output			
- Failure mode	Can be parameterized (summation with last good value, continuous summation, summation with incor- rect value)			
- Limit monitoring	One upper and lower warning limit and one alarm limit respectively			
<ul> <li>Physical block</li> </ul>	1			
Transducer blocks	2			
<ul> <li>Pressure transducer block</li> </ul>				
<ul> <li>Can be calibrated by applying two pressures</li> </ul>	Yes			
- Monitoring of sensor limits	Yes			
<ul> <li>Specification of a container characteristic with</li> </ul>	Max. 30 nodes			
<ul> <li>Square-rooted characteristic for flow measurement</li> </ul>	Yes			
<ul> <li>Gradual volume suppression and implementation point of square-root extraction</li> </ul>	Parameterizable			
- Simulation function for measu- red pressure value and sensor temperature	Constant value or over paramete- rizable ramp function			

Selection and Orderin	g data	Order No.
SITRANS P pressure t	7 M F 4 1 3 3 -	
pressure, with PMC co series DS III HART	Intelligence	
Measuring cell filling	Measuring cell cleaning	
Silicone oil	Standard	1
Inert liquid	Grease-free	3
Span		
0.01 1 bar g <sup>1)</sup>	(0.15 14.5 psi g) <sup>1)</sup>	В
0.04 4 bar g	(0.58 58 psi g)	С
0.16 16 bar g	(2.32 232 psi g)	D
Wetted parts materials		
Seal diaphragm	Connection shank	
Hastelloy	Stainless steel	В
	" front-flush (min. span: an not be ordered with mit	2 3
Non-wetted parts mate	erials	
<ul> <li>Housing made of die-</li> </ul>	cast aluminum	0
<ul> <li>Housing stainless stee</li> </ul>	el precision casting	3
Version		
<ul> <li>Standard version</li> </ul>		1
<ul> <li>International version, documentation in 5 la</li> </ul>	English label inscriptions,	2
Explosion protection	nguages on ob	-
None		А
Electrical connection	/ cable entry	
<ul> <li>Female thread M20x1</li> </ul>	.5	В
<ul> <li>Female thread ½-14 N</li> </ul>	NPT	С
<ul> <li>M12 connectors (meta</li> </ul>	al)	F
Display		
Without indicator	indiantar (dialt-lin-lin-t	0
<ul> <li>Without visible digital hidden, setting: mA)</li> </ul>	indicator (digital indicator >	1
With visible digital ind	lication setting mA	6
	c digital indication (setting	7
as specified, Order co		,
required)		
Power supply units see	"SITRANS I power supply ur	nits and isolation
amplifiers".		

amplifiers".

Included in delivery of the device:

Brief instructions (Leporello)

· CD-ROM with detailed documentation

• Sealing ring

1) Only with "PMC Style Standard" process connection

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

Selection and Ordering data			No.
SITRANS P pressure transmitter for gage pressure, with PMC connection			
DS III PA (PROFIBUS PA) series			134 -
DS III FF series (FOUNDATION Fieldbus)		7 M F 4	135-
	,		
Measuring cell filling	Measuring cell		
Measuring cen ming	cleaning		
Silicone oil	Standard	1	
Inert liquid	Grease-free	3	
Nominal measuring ra	nge		
1 bar g <sup>1)</sup>	(14.5 psi g) <sup>1)</sup>	в	
4 bar g	(58 psi g)	С	
16 bar g	(232 psi g)	D	
Wetted parts materials	3		
Seal diaphragm	Connection shank		
Hastelloy	Stainless steel	в	
<ul> <li>PMC Style Mini bolt: front-flush 1" (min. span: 500 mbar (7.25 psi), can not be or- dered with mit 1-bar (14.5 psi) measuring cell (Option B))</li> </ul>			
Non-wetted parts materials <ul> <li>Housing made of die-cast aluminum</li> <li>Housing stainless steel precision casting</li> </ul>			0 3
Version			
<ul> <li>Standard version</li> </ul>			1
<ul> <li>International version, English label inscriptions, documentation in 5 languages on CD</li> </ul>			2
Explosion protection			
None			Α
Electrical connection			
Screwed gland M20x <sup>-</sup>			В
<ul> <li>Screwed gland ½-14</li> <li>M12 connectors (meta</li> </ul>			C
<ul><li>Display</li><li>Without indicator</li></ul>			0
	indicator (digital indicator 🕨		1
hidden, setting: mA)			1
• With visible digital dis	play		6
With customer-specific specified, Order code	c digital display (setting as "Y21" or required)		7
Included in delivery of t	he device:		

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

Sealing ring

1) Only with "PMC Style Standard" process connection

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

# DS III series with PMC connection

Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add "-Z" to Order No. and specify Order code.				
M12 cable sockets (metal)	A50	✓	1	✓
Rating plate inscription (instead of German)				
• English	B11	✓	✓	✓
• French	B12	✓	1	✓
• Spanish	B13	* * *	* * *	<b>V</b>
• Italian	B14			•
English rating plate Pressure units in inH <sub>2</sub> 0 or psi	B21	~	~	~
Quality inspection certificate (Factory cali- bration) to IEC 60770-2	C11	~	✓	~
Acceptance test certificate To EN 10204-3.1	C12	1	*	1
Factory certificate To EN 10204-2.2	C14	~	~	*
Output signal can be set to upper limit of 22.0 mA	D05	~	1	1
<ul> <li>Mounting</li> <li>Weldable sockets for standard 1½" threaded connection</li> </ul>	P01	~	~	*
• Weldable socket for mini bolt connection 1" (incl. screw 5/16-18 UNC-2B and washer)	P02	1	1	*

Selection and Ordering data	Order	code		
Additional data		HART	PA	FF
Add "-Z" to Order No. and specify Order code.				
Measuring range to be set Specify in plain text (max. 5 digits): Y01: up to mbar, bar, kPa, MPa, psi	Y01	~		
Measuring point number (TAG No.) Max. 16 characters, specify in plain text: Y15:	Y15	1	1	1
Measuring point text Max. 27 characters, specify in plain text: Y16:	Y16	~	1	1
Entry of HART address (TAG) Max. 8 characters, specify in plain text: Y17:	¥17	~		
Setting of pressure indication in pressure units	Y21	<ul> <li>✓</li> </ul>	✓	1
Specify in plain text (standard setting: mA): Y21: mbar, bar, kPa, MPa, psi, Note: The following pressure units can be selected: bar, mbar, mm $H_2O^{3}$ , in $H_2O^{3}$ , ft $H_2O^{3}$ , mmHG, inHG, psi, Pa, kPa, MPa, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , Torr, ATM or % *) ref. temperature 20 °C				
Setting of pressure indication in	Y22 +	1		
non-pressure units Specify in plain text: Y22: up to I, m <sup>3</sup> , m, USg, (specification of measuring range in pressure units "V01" is essential, unit with max. 5 characters)	Y01			
Preset bus address	Y25		✓	1
Max. 8 characters, specify in plain text: Y25:				

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

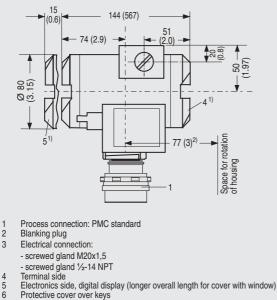
✓ = available

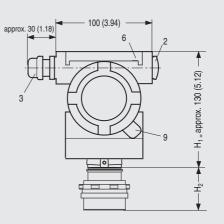
# Ordering example

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

# **DS III series with PMC connection**

## Dimensional drawings





- 2
- 5
- 6
- Mounting bracket (option)
- 8
- Sealing srew with valve (option) Screw cover safety bracket (only for explosion-proof enclosure, ġ not shown in the drawing)
- Allow approx. 20 mm (0.79 inch) thread length in addition 1)
- 2) 92 mm (3.6 inch) for minimum distance to permit rotation with indicator

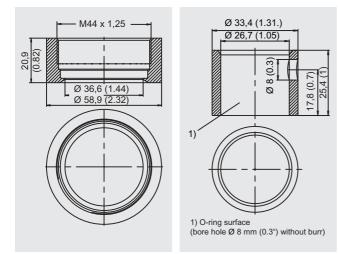
SITRANS P DS III pressure transmitters for gage pressure, with PMC connection, dimensions in mm (inch)

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

H1 = Height of the SITRANS P DS III up to a defined cross-section

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

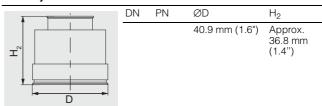
Only the height H2 is indicated in the dimensions of the flanges.



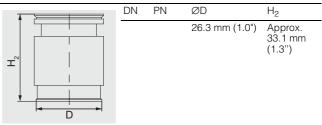
PMC Style standard (left) and PMC Style minibolt (right) weldable sockets, dimensions in mm (inch)

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

# PMC Style standard



## PMC Style minibolt



# SITRANS P300 with PMC connection

# Technical specifications

SITRANS P300 for gage pressure with PMC		ber industry	1		
	HART		PROFIBUS PA		
Input					
Measured variable	Gage pressure (flush-m	1	L	<b>b</b>	
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span	Max. perm. test pres- sure	Nominal measuring range	Max. perm. test pres- sure	
	0.01 1 bar g (0.15 14.5 psi g)	6 bar g (87 psi g)	1 bar g (14.5 psi g)	6 bar g (87 psi g)	
	0.04 4 bar g (0.58 58 psi g)	10 bar g (145 psi g)	4 bar g (58 psi g)	10 bar g (145 psi g)	
	0.16 16 bar g (2.3 232 psi g)	32 bar g (464 psi g)	16 bar g (232 psi g)	32 bar g (464 psi g)	
	Depending on the proc may differ from these va	ess connection, the span alues		cess connection, the nom may differ from these value	
Lower measuring limit			1		
<ul> <li>Measuring cell with silicone oil</li> </ul>	100 mbar a (1.45 psi a)				
Upper measuring limit					
<ul> <li>Measuring cell with silicone oil</li> </ul>	100% of max. span		100% of the max. nor	ninal measuring range	
Output			•		
Output signal	4 20 mA		Digital PROFIBUS PA	signal	
Physical bus	-		IEC 61158-2		
With polarity reversal protection	No		Yes		
Electrical damping T <sub>63</sub> (step width 0.1 s)	Set to 0.1 s (0 100 s)		1		
Accuracy	To EN 60770-1				
Reference conditions (All error data refer always refer to the set span)		c, start-of-scale value 0 b emperature 25 °C (77 °F),			
Measurement deviation with cut-off point set- ting, including hysteresis and repeatability.					
Linear characteristic curve			≤ 0,075%		
• r ≤ 10	$\leq (0.0029 \cdot r + 0.071)\%$				
• 10 < r ≤ 30	≤ (0.0045 · r + 0.071)%				
• 30 < r ≤ 100	≤ (0.005 · r + 0.05)%				
Settling time T <sub>63</sub> without electrical damping	Approx. 0.2 s				
Long-term drift at ±30 °C (±54 °F)	≤ (0.25 · r)%/5 years		≤ 0.25%/5 years		
Influence of ambient temperature					
• at -10 +60 °C (14 140 °F)	≤ (0.1 · r + 0.2)%		≤ 0,3%		
• at -4010 °C and +60 +85 °C (-40 14 °F and 140 185 °F)	≤ (0.1 · r + 0.15)%/10 K		≤ 0.25%/10 K		
Influence of the medium temperature (only with front-flush diaphragm)					
• Temperature difference between medium temperature and ambient temperature	3 mbar/10 K (0.04 psi/1	0 K)			
Rated operating conditions					
Installation conditions					
Ambient temperature	Observe the temperatu	re class in areas subject to	o explosion hazard.		
<ul> <li>Measuring cell with silicone oil</li> </ul>	-40 +85 °C (-40 +	185 °F)			
Digital display	-30 +85 °C (-22 +	185 °F)			
Storage temperature	-50 +85 °C (-58 +	185 °F)			
Climatic class					
Condensation	Permissible				
Degree of protection to EN 60529	IP65, IP68, NEMA X, en	closure cleaning, resistan	t to lyes, steam to 150°	C (302 °F)	
Electromagnetic compatibility					
• Emitted interference and interfer. immunity	To EN 61326 and NAM	JR NE 21			
Medium conditions					
Process temperature					

# SITRANS P300 with PMC connection

SITRANS P300 for gage pressure with PM	C connection for the paper industry		
	HART	PROFIBUS PA	
<ul> <li>Measuring cell with silicone oil</li> </ul>	-40 +100 °C (-40 +212 °F)	1	
Design			
Weight (without options)	Approx. 1 kg (2.2 lb)		
Housing 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		
Power supply <i>U</i> <sub>H</sub>			
Terminal voltage on transmitter	10.5 42 V DC for intrinsically safe operation: 10.5 30 V DC	Supplied through bus	
Separate power supply	-	Not necessary	
Bus voltage			
Without EEx	-	9 32 V	
<ul> <li>For intrinsically-safe operation</li> </ul>	-	9 24 V	
Current consumption			
Max. basic current	-	12.5 mA	
<ul> <li>Startup current ≤ basic current</li> </ul>	-	Yes	
<ul> <li>Max. fault current in the event of a fault</li> </ul>	-	15.5 mA	
Fault disconnection electronics (FDE)	-	Available	
Certificate and approvals			
Classification according to pressure equip- ment directive (DRGL 97/23/EC)	For gases of fluid group 1 and liquids of fluid gro graph 3 (sound engineering practice)	up 1; complies with requirements of Article 3, para	
Explosion protection			
Intrinsic safety "i"	PTB 05 ATEX 2048		
Identification	Ex II 1/2 G EEx ia/ib IIB/IIC T4, T5, T6		
Permissible ambient temperature			
Temperature class T4	-40 +85 °C (-40 +185 °F)		
Temperature class T5	-40 +70 °C (-40 +158 °F)		
<ul> <li>Temperature class T6</li> </ul>	-40 +60 °C (-40 +140 °F)		
Connection	To certified intrinsically-safe circuits with maxi- mum values:	To certified intrinsically-safe circuits with maxi- mum values:	
	$U_i$ = 30 V, I_i = 100 mA, $P_i$ = 750 mW, $R_i$ = 300 $\Omega$	$\frac{FISCO \text{ supply unit:}}{U_i = 17.5 \text{ V, } I_i = 380 \text{ mA, } P_i = 5.32 \text{ W}}$	
		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 inner inductance:	$L_i = 0.4 \text{ mH}$	$L_i \leq 7 \ \mu H$	
Explosion protection to FM for USA <u>and</u> 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 CL I, DIV 2, GP ABCD T4 T6; CL II, DIV 2, GP I		

and pressure with DMC composition for the paper induction

# SITRANS P300 with PMC connection

SITRANS P300 for gage pressure paper industry	with PMC connection for the
HART communication	
HART communication	230 1100 Ω
Protocol	HART Version 5.x
Software for computer	SIMATIC PDM
PROFIBUS PA communication	
Simultaneous communication with master class 2 (max.)	4
The address can be set using	configuration tool Local operation (standard setting Address 126)
Cyclic data usage	
Output byte	One measuring value: 5 bytes Two measuring values: 10 bytes
Input byte	Register operating mode: 1 bytes Reset function due to metering. 1 bytes
Device profile	PROFIBUS PA Profile for Process Control Devices Version 3.0, Class B
Function blocks	2
<ul> <li>Analog input</li> </ul>	
<ul> <li>Adaptation to customer-specific process variables</li> </ul>	Linearly rising or falling characteristic
- Electrical damping T <sub>63</sub>	0 100 s adjustable
- Simulation function	Input /Output
- Limit monitoring	One upper and lower warning limit and one alarm limit respectively
<ul> <li>Register (totalizer)</li> </ul>	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
<ul> <li>Physical block</li> </ul>	1
Transducer blocks	2
Pressure transducer block	
- Monitoring of sensor limits	Yes
<ul> <li>Specification of a container characteristic with</li> </ul>	Max. 31 nodes
- Characteristic	Linear
- Simulation function	Available
Transducer block "Electronic tem- perature"	
- Simulation function	Available

2

SITRANS	P300 with PM0	C connection
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F)	Subject to	export	regulations	ΑI・	91999	FCCN <sup>.</sup> N

Selection and Ordering		Order No.	
	re transmitters with PMC mber measuring housing, n English		
4 20 mA/HART	F)	7 M F 8 1 2 3 -	
PROFIBUS PA	F)	7 M F 8 1 2 4 -	
FOUNDATION Fieldbus	,	7MF8125-	
I CONDATION I leidbus	<b>(II)</b>	-	
Measuring cell filling Silicone oil	Measuring cell cleaning Standard	1	
Inert liquid	Cleanliness level 2 to DIN 25410	3	
Span			
1 bar g	(14.5 psi g)	В	
4 bar g	(58 psi g)	С	
16 bar g	(232 psi g)	D	
Wetted parts materials			
Seal diaphragm	Measuring cell		
Hastelloy	Stainless steel	В	
	front-flush (min. span: 500 ot be ordered with mit 1-bar	2 3	
Non-wetted parts mate • Stainless steel, deep-or- polished Version	rials drawn and electrolytically	4	
Standard version		1	
Explosion protection			
None     Mith ATEX Turns of pre-	te etien.	А	
<ul> <li>With ATEX, Type of pro - "Intrinsic safety (EEx</li> </ul>		в	
• Zone 20/21/22 <sup>1)</sup>	la)	C	
• Ex nA/nL (zone 2) <sup>2)</sup>		E	
<ul> <li>With FM + CSA, Type</li> </ul>	-		
- "Intrinsic Safe (is)" (p	•	м	
• Screwed gland M20x1	5 (Polyamide) <sup>3)</sup>	•	
<ul> <li>Screwed gland M20x1</li> <li>Screwed gland M20x1</li> </ul>		R	
<ul> <li>Screwed gland M20x1</li> <li>Screwed gland M20x1</li> </ul>		c	
M12 connector (without)	,	F	
	ss steel, without cable socket)	G	
<ul> <li>½-14 NPT thread, met</li> </ul>		н	
<ul> <li>½-14 NPT thread, stair</li> </ul>		J	
Display			
Without display, with k		1	
<ul> <li>With display and keys</li> </ul>			
<ul> <li>With display and keys (setting on HART devi- on PROFIBUS PA and vices: pressure unit)</li> </ul>		6	
With display (setting a Order code "Y21" or "Y glass pane	cc. to specifications, '22" required), lid with	7	
Power supply units see amplifiers".	"SITRANS I power supply unit	ts and isolation	
Included in delivery of the Brief instructions (Lep.	orello)		

CD-ROM with detailed documentation

```
<sup>3)</sup> Only together with HART electronics.
```

Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add "-Z" to Order No. and specify Order code.				
Cable socket for M12 plug				
Metal	A50		✓	√
Stainless steel	A51		1	1
Rating plate inscription (instead of English)				
• German	B10	1	✓	√
French	B12	✓	✓	✓ ✓ ✓ ✓
• Spanish	B13	✓	✓	√
• Italian	B14	✓	✓	1
<b>English rating plate</b> Pressure units in inH <sub>2</sub> O or psi	B21	<b>~</b>	~	~
Quality inspection certificate (Factory cali- bration) to IEC 60770-2	C11	~	✓	~
Acceptance test certificate To EN 10204-3.1	C12	~	✓	~
Factory certificate To EN 10204-2.2	C14	~	~	~
Set output signal to upper limit of 22.0 mA	D05	1	1	1
Type of protection IP68	D12	1	1	1
Mounting			•	
<ul> <li>Weldable sockets for standard 1½" threaded connection</li> <li>Weldable socket for mini balt connection 1"</li> </ul>	P01 P02		•	1 1
Weldable socket for mini bolt connection 1" (incl. screw 5/16-18 UNC-2B and washer)	PUZ	<b>v</b>	•	Ť
Additional data				
Add "-Z" to Order No. and specify Order code.				
<b>Measuring range to be set</b> Specify in plain text (max. 5 digits): Y01: up to mbar, bar, kPa, MPa, psi	Y01	1		
Measuring point number (TAG No.) Max. 16 characters, specify in plain text: Y15:	Y15	1	~	~
Measuring point text Max. 27 characters, specify in plain text: Y16:	Y16	~	1	~
Entry of HART address (TAG) Max. 8 characters, specify in plain text: Y17:	Y17	~		
Setting of pressure indication in pressure	Y21	~	1	1
units Specify in plain text (standard setting: mA): Y21: mbar, bar, kPa, MPa, psi, Note: The following pressure units can be selected:				
bar, mbar, mm H <sub>2</sub> O <sup>*)</sup> , inH <sub>2</sub> O <sup>*)</sup> , ftH <sub>2</sub> O <sup>*)</sup> , mmHG, inHG, psi, Pa, kPa, MPa, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , Torr, ATM or % *) ref. temperature 20 °C				
Setting of pressure indication in non-pres- sure units Specify in plain text:	Y22 + Y01	*		
Y22: up to I, m <sup>3</sup> , m, USg, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 cha- racters)				
Preset bus address	Y25		1	1
Specify in plain text: Y25:				

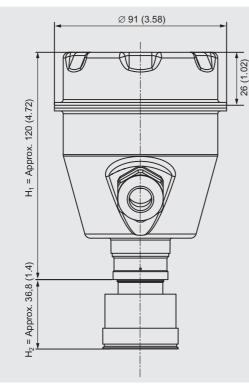
✓ = available

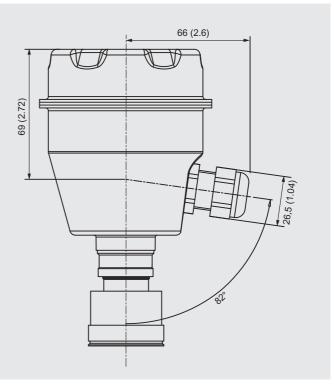
<sup>•</sup> Sealing ring

<sup>1)</sup> Can only be ordered in conjunction with electrical connection Option A. <sup>2)</sup> Can only be ordered in conjunction with electrical connection Option B, C, F or G.
 <sup>2)</sup> For G.

# **SITRANS P300 with PMC connection**

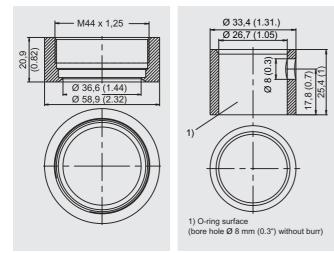
# Dimensional drawings



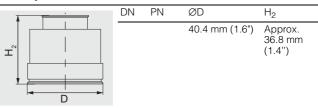


SITRANS P300 pressure transmitters for gage pressure, with PMC connection, dimensions in mm (inch)

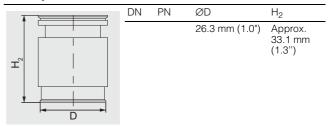
The diagram shows a SITRANS P300 with an example of a flange. In this drawing the height is subdivided into  $H_1$  and  $H_2$ . H<sub>1</sub> = Height of the SITRANS P300 up to a defined cross-section  $H_2$  = Height of the flange up to this defined cross-section Only the height H2 is indicated in the dimensions of the flanges.



PMC Style Standard



## PMC Style Minibolt



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

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

DS III series Technical description

### Overview



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

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

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

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

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

- Gage pressure
- Absolute pressure
- For differential pressure transmitters
- · Filling level
- Mass level
- Volume level
- Volume flow
- Mass flow

# Benefits

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

- Infinitely adjustable span from 0.01 mbar to 400 mbar for DS III with HART communication
- Nominal measuring range from 1 to 400 bar for DS III PA (PRO-FIBUS PA) and FF (FOUNDATION Fieldbus)
- High measuring accuracy
- Parameterization over control keys and HART communication, PROFIBUS PA communication or FOUNDATION Fieldbus interface.

### Application

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

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

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

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

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

# DS III series Technical description

## Pressure transmitter for gage pressure

- Measured variable: Gage pressure of aggressive and non-aggressive gases, vapors and liquids.
- Span (infinitely adjustable) for DS III HART: 0.01 ... 400 bar g (0.145 ... 5802 psi g)
- Nominal measuring range for DS III PA and FF: 1 ... 400 bar g (14.5 ... 5802 psi g)

### Pressure transmitters for absolute pressure

- Measured variable: Absolute pressure of aggressive and non-aggressive gases, vapors and liquids.
- Span (infinitely adjustable) for DS III HART: 8.3 mbar a ... 100 bar a (0.12 ... 1450 psi a)
- Nominal measuring range for DS III PA and FF: 250 mbar a ... 100 bar a (3.63 ... 1450 psi a)
- There are two series:
   Gage pressure series
  - Differential pressure series

## Pressure transmitters for differential pressure and flow

- Measured variables:
  - Differential pressure
  - Small positive or negative pressure
  - Flow q ~  $\sqrt{\Delta p}$  (together with a primary differential pressure device (see Chapter "Flow Meters"))
- Span (infinitely adjustable) for DS III HART: 1 mbar ... 30 bar (0.0145 ... 435 psi)
- Nominal measuring range for DS III PA and FF: 20 mbar ... 30 bar (0.29 ... 435 psi)

## Pressure transmitters for level

- Measured variable: Level of aggressive and non-aggressive liquids in open and closed vessels.
- Span (infinitely adjustable) for DS III HART: 25 mbar ... 5 bar (0.363 ... 72.5 psi)
- Nominal measuring range for DS III PA and FF: 250 mbar ... 5 bar (3.63 ... 72.5 psi)
- Nominal diameter of the mounting flange
- DN 80 or DN 100
- 3 inch or 4 inch

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

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

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



## Front view

Design

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

The approval label is located on the opposite side.

The housing is made of die-cast aluminium or stainless steel precision casting. A round cover is screwed on at the front and rear of the housing. The front cover (6) can be fitted with a viewing pane so that the measured values can be read directly on the digital display. The inlet (4) for the electrical connection is located either on the left or right side. The unused opening on the opposite side is sealed by a blanking plug. The protective earth connection is located on the rear of the housing.

The electrical connections for the power supply and screen are accessible by unscrewing the rear cover. The bottom part of the housing contains the measuring cell with process connection (1). The measuring cell is prevented from rotating by a locking screw (8). As the result of this modular design, the measuring cell and the electronics can be replaced separately from each other. The set parameter data are retained.

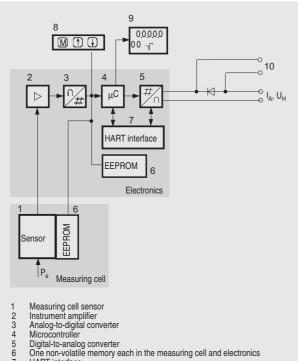
At the top of the housing is a plastic cover (5), which hides the input keys.



# DS III series Technical description

# Function

Operation of the electronics with PROFIBUS PA communication



- 7 HART interface8 Three input keys (local operation)
- 9 Digital display
- 10 Diode circuit and connection for external ammeter
- I<sub>A</sub> Output current
- Ú<sub>H</sub> Power supply
- Pe Input variable

#### Function diagram of the electronics

The bridge output voltage created by the sensor (1, Figure "Function diagram of the electronics") is amplified by the instrument 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.

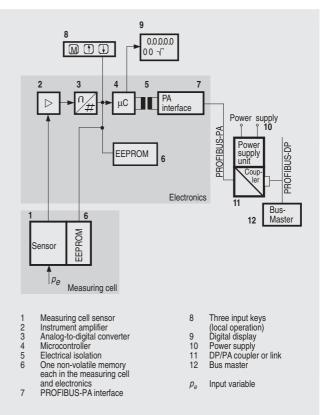
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The one memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced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

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

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

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

Operation of the electronics with PROFIBUS PA communication



#### Function diagram of the electronics

The bridge output voltage created by the sensor (1, Figure "Function diagram of the electronics") is amplified by the instrument 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).

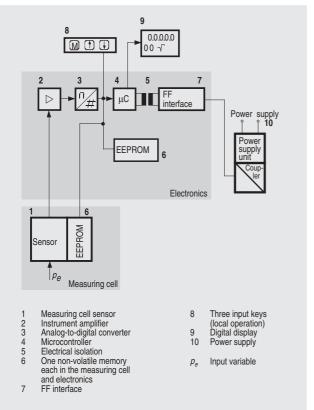
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The first memory is linked with the measuring cell, the second with the electronics. This modular design means that the electronics and the measuring cell can be replaced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

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

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

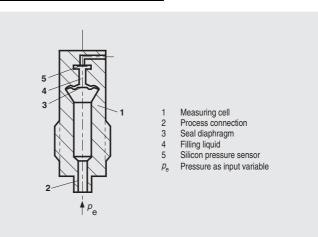
DS III series Technical description

# Mode of operation of the FOUNDATION Fieldbus electronics



## Mode of operation of the measuring cells

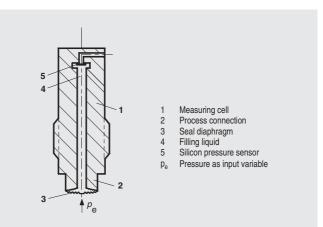
Measuring cell for gage pressure



Measuring cell for gage pressure, function diagram

The pressure pe is applied through the process connection (2, Figure "Measuring cell for gage 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 input pressure.

Measuring cell for gage pressure, with front-flush diaphragm for paper industry



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

The pressure pe is applied through the process connection (2, Figure "Measuring cell for gage 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 input pressure.

## Function diagram of the electronics

The bridge output voltage created by the sensor (1, Figure "Function diagram of the electronics") is amplified by the instrument 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).

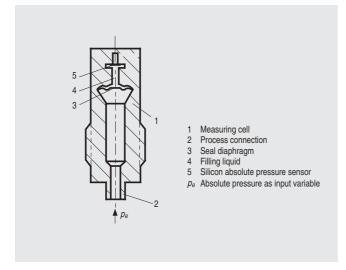
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The one memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced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

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

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

Measuring cell for absolute pressure from gage pressure series

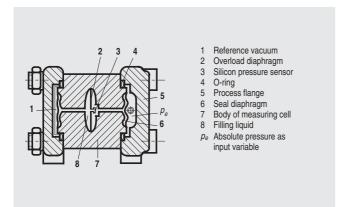
Measuring cell for differential pressure and flow



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

The absolute pressure  $p_e$  is transmitted through the seal diaphragm (3, Figure "Measuring cell for absolute pressure from the gage pressure series, 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 input pressure.

Measuring cell for absolute pressure from differential pressure series

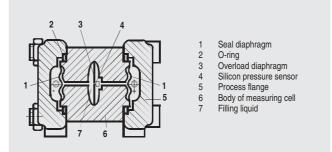


Measuring cell for absolute pressure from differential pressure series, function diagram

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 pe and the reference vacuum (1) on the low-pressure side of the measuring cell flexes the measuring diaphragm. The resistance of the four piezo-resistors fitted in the diaphragm in a bridge circuit thus changes. 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.



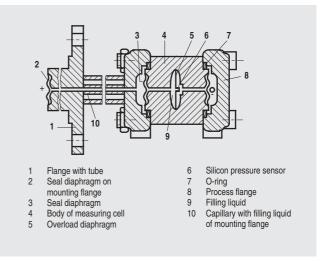
Measuring cell for differential pressure and flow, function diagram

The differential pressure is transmitted through the seal diaphragms (1, Figure "Measuring cell for differential pressure and flow, function diagram") and the filling liquid (7) to the silicon pressure sensor (4).

The measuring diaphragm is flexed by the applied differential pressure. This changes the resistance of the four piezo-resistors fitted in the diaphragm in a bridge circuit. This change in resistance results in a bridge output voltage proportional to the absolute pressure.

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

Measuring cell for level



Measuring cell for level, function diagram

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

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

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

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

DS III series

**Technical description** 

# DS III series Technical description

## Parameterization DS III

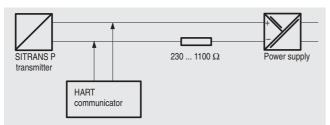
Depending on the version, there are a range of options for parameterizing the pressure transmitter and for setting or scanning the parameters.

# Parameterization using the input keys (local operation)

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

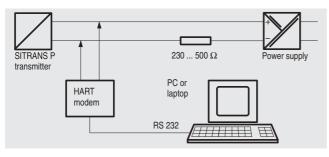
## Parameterization using HART communication

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



Communication between a HART communicator and a pressure transm.

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



HART communication between a PC communicator and a pressure transmitter

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

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

### Adjustable parameters, DS III HART

Parameters	Input keys (DS III HART)	HART com- munication
Start of scale	х	Х
Full-scale value	х	Х
Electrical damping	х	Х
Start-of-scale value without application of a pressure ("Blind setting")	х	х
Full-scale value without application of a pressure ("Blind setting")	Х	х
Zero adjustment	х	Х
Current transmitter	х	Х
Fault current	х	Х
Disabling of keys, write protection	х	x <sup>1)</sup>
Type of dimension and actual dimension	х	Х
Characteristic (linear / square-rooted)	x <sup>2)</sup>	x <sup>2)</sup>
Input of characteristic		Х
Freely-programmable LCD		Х
Diagnostics functions		х

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

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

## Diagnostic functions for DS III HART

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

## Available physical units of display for DS III HART

Table style: Technical specifications 2

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

## Parameterization through PROFIBUS PA interface

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

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

### Parameterization through FOUNDATION Fieldbus Interface

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

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

## Adjustable parameters for DS III PA and FF

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

DS III series Technical description

# Diagnostic functions for DS III PA and FF

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

Physical dimensions available for the display

Physical variable	Physical dimensions
Pressure (setting can also be made in the factory)	MPa, kPa, Pa, bar, mbar, torr, atm, psi, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , mmH <sub>2</sub> O, mmH <sub>2</sub> O (4 °C), inH <sub>2</sub> O, inH <sub>2</sub> O (4 °C), ftH <sub>2</sub> O (20 °C), mmHg, inHg
Level (height data)	m, cm, mm, ft, in, yd
Volume	m <sup>3</sup> , dm <sup>3</sup> , hl, yd <sup>3</sup> , ft <sup>3</sup> , in <sup>3</sup> , US gallon, Imp. gallon, bushel, barrel, barrel liquid
Volume flow	m <sup>3</sup> /s, m <sup>3</sup> /min, m <sup>3</sup> /h, m <sup>3</sup> /d, l/s, l/min, l/h, l/ d, Ml/d, ft <sup>3</sup> /s, ft <sup>3</sup> /min, ft <sup>3</sup> /h, ft <sup>3</sup> /d, US gal- lon/s, US gallon/min, US gallon/h, US gal- lon/d, bbl/s, bbl/min, bbl/h, bbl/d
Mass flow	g/s, g/min, g/h, g/d, kg/s, kg/min, kg/h, kg/d, t/s, t/min, t/h, /t/d, lb/s, lb/min, lb/h, lb/d, STon/s, STon/min, STon/h, STon/d, LTon/s, LTon/min, LTon/h, LTon/d
Total mass flow	t, kg, g, lb, oz, LTon, STon
Temperature	K, °C, °F, °R
Miscellaneous	%

DS III series for gage pressure

# Technical specifications

# SITRANS P, DS III series for gage pressure

	HART		PROFIBUS PA or FOUNDATION Fieldbus		
Input					
Measured variable	Gage pressure		1		
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span	Max. perm. test pres- sure	Nominal measuring range	Max. perm. test pres- sure	
	0.01 1 bar g (0.145 14.5 psi g)	6 bar g (87 psi g)	1 bar g (14.5 psi g)	6 bar g (87 psi g)	
	0.04 4 bar g (0.58 58 psi g)	10 bar g (145 psi g)	4 bar g (58 psi g)	10 bar g (145 psi g)	
	0.16 16 bar g (2.23 232 psi g)	32 bar g (464 psi g)	16 bar g (232 psi g)	32 bar g (464 psi g)	
	0.6 63 bar g (9.14 914 psi g)	100 bar g (1450 psi g)	63 bar g (914 psi g)	100 bar g (1450 psi g)	
	1.6 160 bar g (23.2 2320 psi g)	250 bar g (3626 psi g)	160 bar g (2320 psi g)	250 bar g (3626 psi g)	
	4.0 400 bar g (58 5802 psi g)	600 bar g (8700 psi g)	400 bar g (5802 psi g)	600 bar g (8700 psi g)	
	7.0 700 bar g (102 10153 psi g)	800 bar g (11603 psi g)	700 bar g (10153 psi g)	800 bar g (11603 psi g)	
Lower measuring limit					
<ul> <li>Measuring cell with silicone oil filling</li> </ul>	30 mbar a (0.435 psi a)				
<ul> <li>Measuring cell with inert filling liquid</li> </ul>	30 mbar a (0.435 psi a)				
Upper measuring limit	100% of max. span (max. 160 bar g (2320 psi g) with o		with oxygen measuremer	t and inert liquid)	
Output					
Output signal	4 20 mA		Digital PROFIBUS PA or FOUNDATION Fieldbu 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 communication	$R_{\rm B} \leq (U_{\rm H}$ - 10.5 V)/0.023 A in $\Omega$ , $U_{\rm H}$ : Power supply in V		-		
With HART communication	$R_{\rm B}$ = 230 500 $\Omega$ (SIMATIC PDM) or $R_{\rm B}$ = 230 1100 $\Omega$ (HART Communicator)		-		
Physical bus	-		IEC 61158-2		
With polarity reversal protection	-	-		Yes	
Accuracy	To EN 60770-1				
Reference conditions (All error data refer always refer to the set span)	Increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil filling room temperature 25 °C (77 °F)) r: Span ratio (r = max. span/set span)				
Error in measurement and fixed-point setting (including hysteresis and repeatability)					
Linear characteristic			≤ 0,075%		
- r ≤ 10	≤ (0.0029 · r + 0.071)%				
- 10 < r ≤ 30	≤ (0.0045 · r + 0.071)%				
- 30 < r ≤ 100	≤ (0.005 · r + 0.05)%				
Long-term drift (temperature change ±30 °C (±54 °F))	≤ (0.25 · r)% every 5 yea	ars	≤ 0.25% every 5 years		
Influence of ambient temperature			_		
• at -10 +60 °C (14 140 °F)	$\leq (0.08 \cdot r + 0.1)\%$ (at 700 bar: $\leq (0.1 \cdot r + 0.1)\%$	0.2)%)	≤ 0,3%		
• at -4010 °C and +60 +85 °C (-40 +14 °F and 140 185 °F)	≤ (0.1 · r + 0.15)%/10 K		≤ 0.25%/10 K		
Measured Value Resolution	-		$3 \cdot 10^{-5}$ of nominal meas	suring range	

DS III series for gage pressure

# SITRANS P, DS III series for gage pressure

	HART	PROFIBUS PA or FOUNDATION Fieldbus	
Rated operating conditions			
Degree of protection (to EN 60529)	IP65		
Process temperature			
<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			
- Digital indicators	-30 +85 °C (-22 +185 °F)		
Storage temperature	-50 +85 °C (-58 +185 °F)		
Climatic class			
- Condensation	Permissible		
<ul> <li>Electromagnetic compatibility</li> </ul>			
- Emitted interference and interference immunity	To EN 61326 and NAMUR NE 21		
Design			
Weight (without options)	≈ 1.5 kg (≈ 3.3 lb)		
Housing material	Poor in copper die-cast aluminium, GD-AlSi12	or stainless steel precision casting, mat. No. 1.440	
Netted parts materials			
Connection shank	Stainless steel, mat. No. 1.4404/316L or Hastelloy C4, mat. No. 2.4610		
• Oval flange	Stainless steel, mat. No. 1.4404/316L		
Seal diaphragm	Stainless steel, mat. No. 1.4404/316L or Hastelloy C276, mat. No. 2.4819		
Measuring cell filling	Silicone oil or inert filling liquid (max. 160 bar (2320 psi g) with oxygen measurement)		
Process connection	Connection shank G <sup>1</sup> / <sub>2</sub> A to DIN EN 837-1, female thread <sup>1</sup> / <sub>2</sub> -14 NPT or oval flange (PN 160 (MWP 2320 psi g)) to DIN 19213 with mounting thread M10 or <sup>7</sup> / <sub>16</sub> -20 UNF to EN 61518		
Material of the mounting bracket			
• Steel	Sheet steel, Mat. No. 1.0330, chrome-plated		
Stainless steel	Stainless steel, Mat. No. 1.4301 (SS304)		
Power supply $\textit{U}_{\!$		Supplied through bus	
Terminal voltage on transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically-safe mode	-	
Separate 24 V power supply necessary	-	No	
Bus voltage			
• Not Ex	-	932 V	
With intrinsically-safe operation	-	924 V	
Current consumption			
Basic current (max.)	-	12.5 mA	
Startup current ≤ basic current	-	Yes	
Max. current in event of fault	-	15.5 mA	
Fault disconnection electronics (FDE) avai- able	-	Yes	

DS III series for gage pressure

# SITRANS P, DS III series for gage pressure

	HART	PROFIBUS PA or FOUNDATION Fieldbus	
Certificate and approvals			
Classification according to pressure equip- ment directive (DRGL 97/23/EC)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of Article 3, para- graph 3 (sound engineering practice)		
Explosion protection			
Intrinsic safety "i"	PTB 99 ATEX 2122		
- Identification	Ex II 1/2 G EEx ia/ib IIB/IIC T6		
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperature class T4; -40 +70 °C (-40 +158 °F) temperature class T5; -40 +60 °C (-40 +140 °F) temperature class T6		
- Connection	To certified intrinsically-safe circuits with maximum values: $U_i = 30 \text{ V}, I_i = 100 \text{ mA},$ $P_i = 750 \text{ mW}; R_i = 300 \Omega$	FISCO supply unit: $U_0 = 17.5$ V, $I_0 = 380$ mA, $P_0 = 5.32$ W Linear barrier: $U_0 = 24$ V, $I_0 = 250$ mA, $P_0 = 1.2$ W	
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4  {\rm mH},  C_{\rm i} = 6  {\rm nF}$	$L_{\rm i} = 7 \ \mu {\rm H}, \ C_{\rm i} = 1.1 \ {\rm nF}$	
• Explosion-proof "d"	PTB 99 ATEX 1160		
- Identification	Ex II 1/2 G EEx d IIC T4/T6		
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperature class T4; -40 +60 °C (-40 +140 °F) temperature class T6		
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC	To circuits with values: $U_{\rm H}$ = 9 32 V DC	
Dust explosion protection for zone 20	PTB 01 ATEX 2055		
- Identification	Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C		
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F)		
- Max.surface temperature	120 °C (248 °F)		
- Connection	To certified intrinsically-safe circuits with maximum values: $U_i = 30 \text{ V}, I_i = 100 \text{ mA},$ $P_i = 750 \text{ mW}, R_i = 300 \Omega$	FISCO supply unit: $U_0 = 17.5$ V, $I_0 = 380$ mA, $P_0 = 5.32$ W Linear barrier: $U_0 = 24$ V, $I_0 = 250$ mA, $P_0 = 1.2$ W	
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4  {\rm mH},  C_{\rm i} = 6  {\rm nF}$	$L_{\rm i} = 7 \ \mu {\rm H}, \ C_{\rm i} = 1.1 \ {\rm nF}$	
Dust explosion protection for zone 21/22	PTB 01 ATEX 2055	1	
- Identification	Ex II 2 D IP65 T 120 °C		
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC; $P_{\rm max}$ = 1.2 W	To circuits with values: $U_{\rm H}$ = 9 32 V DC; $P_{\rm max}$ = 1.2 W	
<ul> <li>Type of protection "n" (zone 2)</li> </ul>	TÜV 01 ATEX 1696 X	Planned	
- Identification	Ex II 3 G EEx nA L IIC T4/T5/T6	-	
<ul> <li>Explosion protection 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, GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4T6; CL I, DIV 2, GP ABCD T4T6; CL II, DIV 2, GP FG; CL III		
<ul> <li>Explosion protection to CSA</li> </ul>	Certificate of 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		

			for gage pressure
HART communication		Communication FOUNDATION Fi	eldbus
HART communication	230 1100 Ω	Function blocks	3 function blocks analog input,
Protocol	HART Version 5.x		1 function block PID
Software for computer	SIMATIC PDM	Analog input	
PROFIBUS PA communication		<ul> <li>Adaptation to customer-speci- fic process variables</li> </ul>	Yes, linearly rising or falling cha- racteristic
Simultaneous communication with master class 2 (max.)	4	<ul> <li>Electrical damping T<sub>63</sub>, adjustable</li> </ul>	0 100 s
The address can be set using	Configuration tool or local opera- tion (standard setting address	- Simulation function	Output/input (can be locked within the device with a bridge)
Cyclic data usage	126)	- Failure mode	Can be parameterized (last good value, substitute value, incorrect
Output byte	5 (one measuring value) or		value)
Input byte	10 (two measuring values) 0, 1, or 2 (register operating mode	- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respec- tively
	and reset function for metering)	- Square-rooted characteristic	Yes
Internal preprocessing		for flow measurement	Other shared EE from sticks below the
Device profile	PROFIBUS PA Profile for Process Control Devices Version 3.0,	PID	Standard FF function block
	Class B	Physical block	1 Resource block
Function blocks	2	Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block
<ul> <li>Analog input</li> </ul>			LCD
<ul> <li>Adaptation to customer-speci- fic process variables</li> </ul>	Yes, linearly rising or falling cha- racteristic	<ul> <li>Pressure transducer block</li> <li>Can be calibrated by applying</li> </ul>	Yes
<ul> <li>Electrical damping T<sub>63</sub>, adjustable</li> </ul>	0 100 s	two pressures	Vec
- Simulation function	Input /Output	- Monitoring of sensor limits	Yes
- Failure mode	Can be parameterized (last good value, substitute value, incorrect value)	<ul> <li>Simulation function: Measured pressure value, sensor tempe- rature and electronics tempera- ture</li> </ul>	Constant value or over paramete- rizable ramp function
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respec- tively		
Register (totalizer)	Can be reset, preset, optional direction of counting, simulation function of register output		
- Failure mode	Can be parameterized (summation with last good value, continuous summation, summation with incor- rect value)		
- Limit monitoring	One upper and lower warning limit and one alarm limit respectively		
<ul> <li>Physical block</li> </ul>	1		
Transducer blocks	2		
<ul> <li>Pressure transducer block</li> </ul>			
<ul> <li>Can be calibrated by applying two pressures</li> </ul>	Yes		
- Monitoring of sensor limits	Yes		
<ul> <li>Specification of a container characteristic with</li> </ul>	Max. 30 nodes		
<ul> <li>Square-rooted characteristic for flow measurement</li> </ul>	Yes		
<ul> <li>Gradual volume suppression and implementation point of square-root extraction</li> </ul>	Parameterizable		
- Simulation function for measu- red pressure value and sensor temperature	Constant value or over paramete- rizable ramp function		

#### DS III series

for gage pressure

Selection and Orderin		Orc	ler	No			
SITRANS P pressure t	7 M	F 4	03	3	-		
pressure, series DS III	HART		10	i.			
Measuring cell filling	Measuring cell		-	-			-
measuring oen ming							
Silicone oil	Standard		1				
Inert liquid <sup>1)</sup>	Grease-free		3				
Span							
0.01 1 bar g	(0.15 14.5 psi g)		в				
0.04 4 bar g	(0.58 58 psi g)		С				
0.16 16 bar g	(2.32 232 psi g)	►	D				
0.63 63 bar g	(9.14 914 psi g)	►	E				
1.6 160 bar g	(23.2 2320 psi g)		F				
4.0 400 bar g	(58.0 5802 psi g)		G				
7,0 700 bar g	(102.010153 psi g)		J				
Wetted parts materials	5						
Seal diaphragm	Process connection						
Stainless steel	Stainless steel			Α			
Hastelloy	Stainless steel			в			
Hastelloy	Hastelloy			С			
Version as diaphragm s	eal <sup>2) 3)</sup>			Υ			
Process connection							
Connection shank G <sup>1</sup> /2	2B to EN 837-1			0			
<ul> <li>Female thread ½-14 N</li> </ul>	IPT			1			
				2			
0				3			
-				4			
				5			
				6			
•							
					0 3		
	er precision casting ?				3		
						1	
	English Jabol inscriptions					1	
	nert liquid <sup>1)</sup> Grease-freeipan.01 1 bar g $(0.15 14.5 \text{ psi g})$ .04 4 bar g $(0.58 58 \text{ psi g})$ .16 16 bar g $(2.32 232 \text{ psi g})$ .63 63 bar g $(9.14 914 \text{ psi g})$ .6 160 bar g $(23.2 2320 \text{ psi g})$ .0 400 bar g $(58.0 5802 \text{ psi g})$ .0 700 bar g $(102.0 10153 \text{ psi g})$ Vetted parts materialsteal diaphragmProcess connectiontainless steeldastelloyStainless steeldastelloyStainless steelAstelloyHastelloyVetted parts materialsteal diaphragmProcess connectiontainless steelAstended parts materialsConnection shank G½B to EN 837-1Female thread ½-14 NPTOval flange made of stainless steel- Mounting thread 71/16-20 UNF to EN 61518- Mounting thread M10 to DIN 19213- Mounting thread M12 to DIN 19213Male thread M20 x 1,5Male thread M20 x 1,5Male thread 1/2-14 NPTIon-wetted parts materialsHousing made of die-cast aluminiumHousing stainless steel precision casting <sup>4</sup> )Constainless steel precision casting <sup>4</sup> )					2	
Without							4
	otection:						
						E	3
- "Explosion-proof (EE	x d)" <sup>5)</sup>						כ
- "Intrinsic safety and	explosion-proof enclosure	Э				F	2
	cleaningllicone oilStandardert liquid <sup>1)</sup> Grease-freepan01 1 bar g $(0.15 14.5 \text{ psi g})$ 04 4 bar g $(0.58 58 \text{ psi g})$ 16 16 bar g $(2.32 232 \text{ psi g})$ 63 63 bar g $(9.14 914 \text{ psi g})$ 6 160 bar g $(23.2 2320 \text{ psi g})$ 0 400 bar g $(58.0 5802 \text{ psi g})$ 0 700 bar g $(102.0 10153 \text{ psi g})$ Vetted parts materialseal diaphragmProcess connectiontainless steelStainless steelastelloyHastelloyersion as diaphragm seal $^{2}$ ) 3)rocess connectionConnection shank G½B to EN 837-1Female thread ½-14 NPTOval flange made of stainless steel- Mounting thread M10 to DIN 19213Mounting thread M12 to DIN 19213Mounting thread M12 to DIN 19213Male thread ½2-14 NPTon-wetted parts materialsHousing made of die-cast aluminiumHousing made of die-cast aluminiumHousing stainless steel precision casting <sup>4</sup> )ersionStandard versionInternational version, English label inscriptiordocumentation in 5 languages on CDxplosion-proof (EEx ia)****************************						
						r	2
Zone 1D/2D)" <sup>6)</sup>							
<ul> <li>With FM + CSA, Type</li> </ul>							
- "Intrinsic safety and	ressure, series DS III HART leasuring cell filling Measuring cell cleaning illicone oil Standard tert liquid <sup>1)</sup> Grease-free pan 01 1 bar g (0.15 14.5 psi g) 0.4 4 bar g (0.58 58 psi g) 16 16 bar g (2.32 232 psi g) 63 63 bar g (9.14 914 psi g) 6 160 bar g (23.2 2320 psi g) 0 400 bar g (58.0 5802 psi g) 0 700 bar g (102.0 10153 psi g) // etted parts materials eal diaphragm Process connection tainless steel Stainless steel astelloy Hastelloy ersion as diaphragm seal <sup>2) 3)</sup> rocess connection Connection shank G½B to EN 837-1 Female thread $\frac{1}{2}$ -14 NPT Oval flange made of stainless steel - Mounting thread $\frac{7}{16}$ -20 UNF to EN 61518 - Mounting thread M10 to DIN 19213 - Mounting thread M12 to DIN 19213 Male thread $\frac{1}{2}$ -14 NPT on-wetted parts materials Housing made of die-cast aluminium Housing stainless steel precision casting <sup>4</sup> ) ersion Standard version International version, English label inscription documentation in 5 languages on CD xplosion protection Without With ATEX, Type of protection: - "Intrinsic safety and explosion-proof enclosure a dust explosion-proof (EEx d)" <sup>5</sup> ) - "Ex nA/hL (zone 2)" - "Intrinsic safety and explosion-proof enclosure a dust explosion protection (EEx ia + EEx d) + Zone 1D/2D) <sup>6</sup> With FM + CSA, Type of protection: - "Intrinsic safety and explosion-proof (is + xp)" <sup>5</sup> ) lectrical connection / cable entry Screwed gland Pg 13.5 (adapter) <sup>7</sup> ) Screwed gland M20x1.5 Screwed gland M20x1.5 Screwed gland M20x1.5					1	۱C
Electrical connection	cable entry						
							A
-							В
-							C
<ul> <li>Han / D plug (plastic l connector <sup>7</sup>)</li> </ul>	iousing) inci. mating						D

• M12 connector (metall) 8)

Selection and Ordering data	Order No.	
SITRANS P pressure transmitters for gage	7 M F 4 0 3 3 -	
pressure, series DS III HART		
Display		
Without indicator		0
<ul> <li>Without visible digital indicator (digital indicator &gt; hidden, setting: mA)</li> </ul>		1
With visible digital indicator, setting: mA		6
<ul> <li>with customer-specific digital indicator (setting as specified, Order code "Y21" or "Y22" required)</li> </ul>		7

#### Available ex stock

Power supply units see "SITRANS I power supply units and isolation amplifiers".

Factory-mounting of shut-off valves and valve manifolds see page 2/142.

- Included in delivery of the device:
- Brief instructions (Leporello)
- CD-ROM with detailed documentation
- <sup>1)</sup> For oxygen application, add Order code E10.
- 2) When the manufacture's certificate M (calibration certificate) has to be ordered for transmitters with diaphragm seals, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.
- 3) Whe the acceptance test certificate 3.1 for transmitters with direct-connected diaphragm seals is ordered, this certificate must also be ordered with the corresponding seals.
- <sup>4)</sup> Not together with Electrical connection "Screwed gland Pg 13.5" and "Han7D plug".
- <sup>5)</sup> Without cable gland, with blanking plug
- <sup>6)</sup> With enclosed cable gland EEx ia and blanking plug
- 7) Not together with type of protection "Explosion-proof" and type of protection "Ex nA".
- 8) Cannot be used together with the following types of protection: "Explosion-proof" and "Intrinsic safety and explosion-proof"
- F) Subject to export regulations AL: 91999, ECCN: N.

**DS III series** for gage pressure

Selection and Orderin	ng data	Order No.	Selection and Ordering data	Order No.
SITRANS P pressure			SITRANS P pressure transmitters for gage pressure	
DS III PA (PROFIBUS	PA) sorios	7 M F 4 0 3 4 -	DS III PA (PROFIBUS PA) series	7 M F 4 0 3 4 -
•			DS III FF series (FOUNDATION Fieldbus)	7MF4035-
DS III FF series (FOU)	NDATION Fleidbus)	7 M F 4 0 3 5 -		-
			Dianlay	
Measuring cell filling	Measuring cell cleaning		<ul> <li>Display</li> <li>Without indicator</li> </ul>	o
Silicone oil	Standard	1	Without visible digital indicator (digital indicator)	-
Inert liquid <sup>1)</sup>	Grease-free	3	hidden, setting: mA)	
Nominal measuring ra	ange		With visible digital indicator	6
1 bar g	(14.5 psi g)	В	<ul> <li>With customer-specific digital indicator (setting as specified, Order code "Y21" or required)</li> </ul>	7
4 bar g	(58 psi g)	С		ifelde energe
16 bar g	(232 psi g)	D	Factory-mounting of shut-off valves and valve mar 2/142.	illoids see page
63 bar g	(914 psi g)	E	The device is delivered together with brief instruction	ons (Lenorello) and
160 bar g	(2320 psi g)	F	CD-ROM containing detailed documentation.	
400 bar g	(5802 psi g)	G	Ũ	
700 bar g	(10153 psi g)	J	<ol> <li>For oxygen application, add Order code E10.</li> <li>When the property factorial partificate M (additional)</li> </ol>	
Wetted parts material			2) When the manufacture's certificate M (calibration c ordered for transmitters with diaphragm seals, it is	
Seal diaphragm	Process connection		order this certificate exclusively with the diaphragn	
Stainless steel	Stainless steel	Α	accuracy of the <u>total</u> combination is certified here. <sup>3)</sup> Whe the acceptance test certificate 3.1 for transmit	toro with direct conr
Hastelloy	Stainless steel	В	ted diaphragm seals is ordered, this certificate mu	st also be ordered v
Hastelloy	Hastelloy	С	the corresponding seals.	
Version as diaphragm	seal <sup>2) 3)</sup>	Y	4) Without cable gland, with blanking plug.	
Process connection			<ul> <li><sup>5)</sup> With enclosed cable gland EEx ia and blanking plu</li> <li><sup>6)</sup> Cannot be used together with the following types of</li> </ul>	
Connection shank G <sup>1</sup>	⁄2A to EN 837-1	0	"Explosion-proof" and "Intrinsic safety and explosio	
<ul> <li>Female thread ½-14 I</li> </ul>	NPT	1	F) Subject to export regulations AL: 91999, ECCN: N.	
Oval flange made of:			T) Subject to export regulations AL. 51555, ECON. N.	
	6-20 UNF to EN 61518	2		
<ul> <li>Mounting thread M<sup>-</sup></li> </ul>		3		
- Mounting thread M		4		
• Male thread M20 x 1,		5		
Male thread ½-14 NP	2	6		
Non-wetted parts mat				
Housing made of die		0		
<ul> <li>Housing stainless ste</li> </ul>	el precision casting	3		
Version				
<ul> <li>Standard version</li> </ul>		1		
International version,	English label inscriptions,	2		
documentation in 5 la	anguages on CD	_		
Explosion protection				
Without	voto otion.	A		
With ATEX, Type of pr				
<ul> <li>"Intrinsic safety (EE:</li> <li>"Explosion-proof (EE</li> </ul>		B		
- Explosion-proof (Et	explosion-proof enclosure	P		
(EEx ia + EEx d)" <sup>5)</sup>	exprosion-proof enclosure	r		
- "Ex nA/nL (zone 2)"		Е		
- "Intrinsic safety, exp	losion-proof enclosure and	R		
dust explosion prote	ection (EEx ia + EEx d + t for DS III FF)			
With FM + CSA, Type	1			
<ul> <li>"Intrinsic safety and (is + xp)" <sup>5)</sup></li> </ul>	explosion-proof	NC		
$(IS + XD)^{n}$		_		
Electrical connection	•			
Electrical connection     Screwed gland M20x	:1.5	В		
Electrical connection	:1.5	B C F		

**DS III series** for gage pressure

Selection and Ordering data	Order	code		
Further designs	01401	HART	PA	FF
Add "-Z" to Order No. and specify Order code.				
Pressure transmitter with mounting bra- cket made of:				
• Steel	A01	✓	✓	1
Stainless steel	A02	✓	✓	1
Plug				
Han 7D (metal, gray)	A30 A31			
Han 8U (instead of Han 7D)		*		
Cable sockets for M12 connectors (metal)	A50	v	•	•
Rating plate inscription (instead of German)				
• English	B11	✓	✓	1
• French	B12	✓	✓	✓
Spanish	B13	✓	✓	✓
• Italian	B14	✓	~	1
<b>English rating plate</b> Pressure units in inH <sub>2</sub> O or psi	B21	1	~	~
Quality inspection certificate (Factory cali-	C11	~	1	~
bration) to IEC 60770-2 <sup>1)</sup>	CII	•	•	•
Acceptance test certificate <sup>2)</sup>	C12	✓	✓	✓
To EN 10204-3.1				
Factory certificate	C14	✓	✓	✓
To EN 10204-2.2				
"Functional Safety (SIL)" certificate	C20	✓		
"PROFIsafe" certificate and protocol	C21		~	
Setting of upper limit of output signal to 22.0 mA	D05	~		
Manufacturer's declaration acc. to NACE	D07	1	✓	✓
Type of protection IP68	D12	✓	✓	✓
(not together with 7D/ Han 8U plug, cable gland Pg 13.5)				
	D27	~	1	
<b>Digital indicator alongside the input keys</b> (only together with the devices 7MF4033-	027	v	v	v
0A.6 orA.7-Z, Y21 or Y22 + Y01)				
Supplied with oval flange	D37	✓	✓	✓
(1 item), PTFE packing and screws in thread				
of oval flange	-			
Use in or on zone 1D/2D	E01	×	~	~
(only together with type of protection "Intrinsic safety (EEx ia)")				
Use on zone 0	E02	1	1	1
(only together with type of protection				
"Intrinsic safety (EEx ia)")				
Oxygen application	E10	✓	✓	✓
(max. 120 bar g (1740 psi g) at 60°C (140 °F) for oxygen measurement and inert liquid)				
Explosion-proof "Intrinsic safety" to INME-	E25	1	1	1
TRO (Brazil)	LZJ	•	•	•
(only for transmitter 7MF4B)				
Explosion-proof "Intrinsic safety" to	E55	✓	✓	✓
NEPSI (China) (only for transmitter 7MF4B)				
( )	E56		1	1
Explosion protection "Explosion-proof" to	200		•	v
NEPSI (China)				
NEPSI (China) (only for transmitter 7MF4D)				
NEPSI (CRINA) (only for transmitter 7MF4D) Explosion-proof "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)	E57	~	~	~

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

<sup>2)</sup> Whe the acceptance test certificate 3.1 for transmitters with direct-connected diaphragm seals is ordered, this certificate must also be ordered with the corresponding seals.

Selection and Ordering data	Order	code		
Additional data Add "-Z" to Order No. and specify Order code.		HART	PA	FF
<b>Measuring range to be set</b> Specify in plain text (max. 5 digits): Y01: up to mbar, bar, kPa, MPa, psi	Y01	*		
Measuring point number (TAG No.) Max. 16 characters, specify in plain text: Y15:	Y15	~	1	~
Measuring point text Max. 27 characters, specify in plain text: Y16:	Y16	~	✓	*
Entry of HART address (TAG) Max. 8 characters, specify in plain text: Y17:	¥17	*		
Setting of pressure indication in pressure units Specify in plain text (standard setting: mA): 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 oder % *) ref. temperature 20 °C	Y21	*	*	*
Setting of pressure indication in non-pressure units Specify in plain text: Y22: up to l/min, m <sup>3</sup> /h, m, USgpm, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	Y22 + Y01	*		
Preset bus address (possible between 1 and 126) Specify in plain text: Y25:	Y25		*	

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

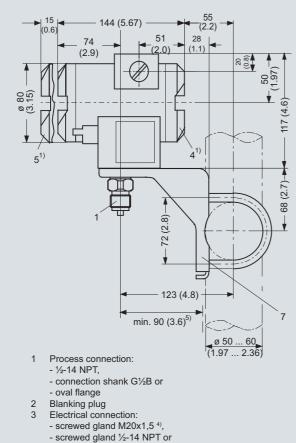
✓ = available

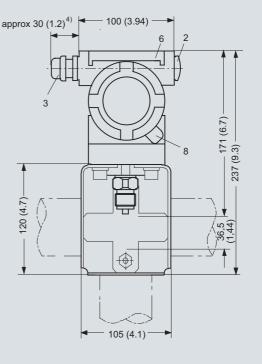
#### Ordering example

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

DS III series for gage pressure

#### Dimensional drawings

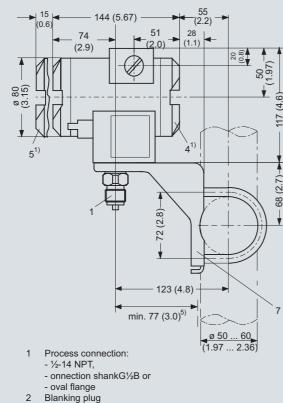




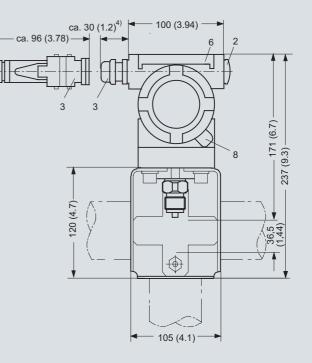
- screwed gland <sup>1</sup>/<sub>2</sub>-14 NPT or
   PROFIBUS-Stecker M12 <sup>3) 4)</sup>
- 4 Terminal side
- 5 Electronic side, digital display (longer overall
- length for cover with window)
- 6 Protective cover over keys
- 7 Mounting bracket (option)
- 8 Screw cover safety bracket (only for type of protection "Explosion-proof enclosure", not shown in the drawing)
- 1) Allow approx. 20 mm (0.79 inch) thread length in addition
- 2) Minimum distance for rotating
- 3) Not with type of protection "Explosion-proof enclosure"
- 4) Not with type of protection "FM + CSA"

SITRANS P pressure transmitters, DS III HART series for gage pressure, dimensions in mm (inch)

DS III series for gage pressure



- 3 Electrical connection:
  - screwed gland Pg 13,5 (adapter)<sup>2) 3)</sup>,
  - screwed gland M20x1,5<sup>3)</sup>,
  - screwed gland 1/2-14 NPT or
  - Han 7D/ Han 8U 2) 3) plug
- 4 Terminal side
- 5 Electronic side, digital display (longer overall
- length for cover with window)
- 6 Protective cover over keys
- 7 Mounting bracket (option)
- 8 Screw cover safety bracket (only for type of protection "Explosion-proof enclosure", not shown in the drawing)



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

SITRANS P pressure transmitters, DS III PA and FF series for gage pressure, dimensions in mm (inch)

#### Technical specifications

	lute pressure, with front-fl HART		PROFIBUS PA or FOL			
nput gage pressure, with front-flush	HARI		PROFIBUS PA or FOL	JNDATION Fleidbus		
diaphragm						
Measured variable	Gage pressure, flush-m	ounted				
Spans (infinitely adjustable) or nominal measuring range and	Span	Max. perm. test pres- sure	Nominal measuring range	Max. perm. test pres sure		
nax. permissible test pressure	0.01 1 bar g (0.145 14.5 psi g)	6 bar g (87 psi g)	1 bar g (14.5 psi g)	6 bar g (87 psi g)		
	0.04 4 bar g (0.58 58 psi g)	10 bar g (145 psi g)	4 bar g (58 psi g)	10 bar g (145 psi g)		
	0.16 16 bar g (2.23 232 psi g)	32 bar g (464 psi g)	16 bar g (232 psi g)	32 bar g (464 psi g)		
	0.6 63 bar g (9.14 914 psi g)	100 bar g (1450 psi g)	63 bar g (914 psi g)	100 bar g (1450 psi g)		
ower measuring limit	-100 mbar a (-1.45 psi a	a)				
Ipper measuring limit	100% of max. span		100% of nominal meas	uring range		
nput absolute pressure, with front-flush iaphragm						
leasured variable	Absolute pressure, flush	n-mounted				
pans (infinitely adjustable) or ominal measuring range and	Span	Max. perm. test pres- sure	Nominal measuring range	Max. perm. test pres- sure		
nax. permissible test pressure	43 1300 mbar a (0.62 18.9 psi a)	10 bar a (145 psi a)	1300 mbar a (18.9 psi a)	10 bar a (145 psi a)		
	0,16 5 bar a (2.32 72,5 psi a)	30 bar a (435 psi a)	5 bar a (72,5 psi a)	30 bar a (435 psi a)		
	1 30 bar a (14.5 435 psi a)	100 bar a (1450 psi a)	30 bar a (435 psi a)	100 bar a (1450 psi a)		
	may differ from these va		Je nach Prozessanschluss kann die Mess- spanne von diesen Werten abweichen			
ower measuring limit	100 mbar a (1.45 psi a)					
Jpper measuring limit	100% of max. span		100% of nominal meas	uring range		
Dutput	4 00 4					
Dutput signal	4 20 mA		signal	r FOUNDATION Fieldbi		
Lower limit (infinitely adjustable)	3.55 mA, factory preset	to 3.84 mA	-			
Upper limit (infinitely adjustable)	23 mA, factory preset to set to 22.0 mA	20.5 mA or optionally	-			
Load						
Without HART communication	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.023$ $U_{\rm H}$ : Power supply in V	3 A in $\Omega$ ,	-			
With HART communication	$R_{\rm B} = 230 \dots 500 \ \Omega \ ({\rm SIM})$ $R_{\rm B} = 230 \dots 1100 \ \Omega \ ({\rm HA})$	ATIC PDM) or ART Communicator)	-			
Physical bus	-		IEC 61158-2			
Vith polarity reversal protection	-		Yes			
ccuracy	To EN 60770-1					
Reference conditions All error data refer always refer to the set spa			bar, stainless steel seal o tio (r = max. span/set sp			
Fror in measurement and fixed-point setting including hysteresis and repeatability)		1	1			
	Gage pressure, front-flushed	Absolute pressure, front-flushed	Gage pressure, front-flushed	Absolute pressure, front-flushed		
Linear characteristic			≤ 0,075%	≤ 0,2%		
- r ≤ 10	≤ (0.0029 · r + 0.071)%					
- 10 < r ≤ 30	≤ (0.0045 · r + 0.071)%	≤ 0,4%				
- 30 < r ≤ 100	≤ (0.005 · r + 0.05)%	-				
.ong-term drift (temperature change ±30 °C ±54 °F))	≤ (0.25 · r)% every 5 years		≤ 0.25% every 5 years			
Influence of ambient temperature						

# SITRANS P measuring instruments for pressure Transmitters for gage, absolute and differential pressure, flow and level DS III series for gage and absolute pressure, with front-flush diaphragm

SITRANS P, DS III series for gage and absolut	e pressure, with front-fl	ush diaphragm		
	HART		PROFIBUS PA or FOU	NDATION Fieldbus
• at -10 +60 °C (14 140 °F)	≤ (0.1 · r + 0.2)%	≤ (0,2 · r + 0,3)%	≤ 0,3%	≤ 0,5%
• at -4010 °C and +60 +85 °C (-40 +14 °F and 140 185 °F)	≤ (0.1 · r + 0.15)%/10 K	≤ (0,2 · r + 0,3)%/10 K	≤ 0.25%/10 K	≤ 0,5%/10 K
Influence of mounting position	0.1 mbar g (0.00145 ps	i g) per 10° inclination		•
Measured Value Resolution	-		3 · 10 <sup>-5</sup> of nominal measure	suring range
Influence of the medium temperature (only with front-flush diaphragm)				
Temperature difference between medium tem- perature and ambient temperature	3 mbar/10 K (0.04 psi/1	0 K)		
Rated operating conditions				
Installation conditions				
Ambient temperature	Observe the temperatur	e class in areas subject	to explosion hazard.	
<ul> <li>Measuring cell with silicone oil</li> </ul>	-40 +85 °C (-40 +1	85 °F)		
<ul> <li>Measuring cell with Neobee oil (with front-flush diaphragm)</li> </ul>	-10 +85 °C (14 +18	35 °F)		
<ul> <li>Measuring cell with inert liquid (not with front- flush diaphragm)</li> </ul>	-20 +85 °C (-4 +18	5 °F)		
Digital display	-30 +85 °C (-22 +1	85 °F)		
Storage temperature	-50 +85 °C (-58 +1 (with Neobee: -20 +8			
Climatic class				
Condensation	Permissible			
Degree of protection to EN 60529	IP65, IP68, NEMA X, en	closure cleaning, resista	nt to lyes, steam to 150°	C (302 °F)
Electromagnetic compatibility				
• Emitted interference and interference immunity	To EN 61326 and NAMU	JR NE 21		
Medium conditions				
Process temperature				
<ul> <li>Measuring cell with silicone oil</li> </ul>	-40 +100 °C (-40 +	212 °F)		
<ul> <li>Measuring cell with silicone oil (with front-flush diaphragm)</li> </ul>	-40 +150 °C (-40 +	302 °F)		
<ul> <li>Measuring cell with Neobee oil (with front-flush diaphragm)</li> </ul>	-40 +150 °C (-40 +	302 °F)		
<ul> <li>Measuring cell with silicone oil, with temperature isolator (only with front-flush diaphragm)</li> </ul>	-40 +200 °C (-40 +	392 °F)		
<ul> <li>Measuring cell with inert liquid</li> </ul>	-20 +100 °C (-4 +2	12 °F)		
<ul> <li>Measuring cell with high temperature oil</li> </ul>	-10 +250 °C (14 +4	482 °F)		
Design				
Weight (without options)	≈ 1.5 kg (≈ 3.3 lb)			
Housing material	Poor in copper die-cast	aluminium, GD-AlSi12 or	stainless steel precision of	casting, mat. No. 1.4408
Wetted parts materials	Stainless steel, mat. No	1.4404/316L		
Measuring cell filling	Silicone oil or inert filling	g liquid		

DS III series for gage and absolute pressure, with front-flush diaphragm

	HART	PROFIBUS PA or FOUNDATION Fieldbus
Power supply $U_{ m H}$		Supplied through bus
Terminal voltage on transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically-safe mode	-
Separate 24 V power supply necessary	-	No
Bus voltage		1
• Not Ex	-	932 V
<ul> <li>With intrinsically-safe operation</li> </ul>	-	924 V
Current consumption		I
Basic current (max.)	-	12.5 mA
<ul> <li>Startup current ≤ basic current</li> </ul>	-	Yes
<ul> <li>Max. current in event of fault</li> </ul>	-	15.5 mA
Fault disconnection electronics (FDE) available	-	Yes
Certificate and approvals		

Classification according to pressure equipment directive (DRGL 97/23/EC) For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of Article 3, paragraph 3 (sound engineering practice)

#### Hygiene version

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

# SITRANS P measuring instruments for pressure Transmitters for gage, absolute and differential pressure, flow and level DS III series for gage and absolute pressure, with front-flush diaphragm

HART communication		Communication FOUNDATION Fieldbus						
HART communication	230 1100 Ω	Function blocks	3 function blocks analog input,					
Protocol	HART Version 5.x		1 function block PID					
Software for computer	SIMATIC PDM	<ul> <li>Analog input</li> </ul>						
PROFIBUS PA communication		<ul> <li>Adaptation to customer-speci- fic process variables</li> </ul>	Yes, linearly rising or falling cha- racteristic					
Simultaneous communication with master class 2 (max.)	4	- Electrical damping T <sub>63</sub> , adjustable	0 100 s					
The address can be set using	Configuration tool or local opera- tion (standard setting address	- Simulation function	Output/input (can be locked within the device with a bridge)					
	126)	- Failure mode	Can be parameterized (last good value, substitute value, incorrect					
Cyclic data usage			value)					
Output byte	5 (one measuring value) or 10 (two measuring values)	- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respec-					
Input byte	0, 1, or 2 (register operating mode and reset function for metering)	- Square-rooted characteristic	tively Yes					
Internal preprocessing		for flow measurement						
Device profile	PROFIBUS PA Profile for Process	• PID	Standard FF function block					
	Control Devices Version 3.0, Class B	<ul> <li>Physical block</li> </ul>	1 Resource block					
Function blocks	2	Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block					
Analog input			LCD					
<ul> <li>Adaptation to customer-speci- fic process variables</li> </ul>	Yes, linearly rising or falling cha- racteristic	<ul> <li>Pressure transducer block</li> <li>Can be calibrated by applying</li> </ul>	Yes					
<ul> <li>Electrical damping T<sub>63</sub>, adjus- table</li> </ul>	0 100 s	two pressures - Monitoring of sensor limits	Yes					
- Simulation function	Input /Output	- Simulation function: Measured	Constant value or over paramete-					
- Failure mode	Can be parameterized (last good value, substitute value, incorrect value)	pressure value, sensor tempe- rature and electronics tempera- ture	rizable ramp function					
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respec- tively							
Register (totalizer)	Can be reset, preset, optional direction of counting, simulation function of register output							
- Failure mode	Can be parameterized (summation with last good value, continuous summation, summation with incor- rect value)							
- Limit monitoring	One upper and lower warning limit and one alarm limit respectively							
Physical block	1							
Transducer blocks	2							
Pressure transducer block								
<ul> <li>Can be calibrated by applying two pressures</li> </ul>	Yes							
- Monitoring of sensor limits	Yes							
<ul> <li>Specification of a container characteristic with</li> </ul>	Max. 30 nodes							
<ul> <li>Square-rooted characteristic for flow measurement</li> </ul>	Yes							
- Gradual volume suppression and implementation point of square-root extraction	Parameterizable							
- Simulation function for measu- red pressure value and sensor temperature	Constant value or over paramete- rizable ramp function							

DS III series for gage and absolute pressure, with front-flush diaphragm

Selection and Orderin	g data	0	rde	er No.		Selection and Orderin	g data		Orde
bsolute pressure, fro	ransmitters for gage and F) ont-flush membrane,			4133-		SITRANS P pressure t pressure, front-flush r			
series DS III HART					_	DS III PA series (PROF	IBUS PA)	F)	7 M F
leasuring cell filling	Measuring cell cleaning					DS III FF series (FOUN	IDATION Fieldbus)	F)	7 M F
Silicone oil	Standard	1							
nert liquid	Grease-free	3				Measuring cell filling	Measuring cell		
DA compliant fill fluid						incuculing con ming	cleaning		
Neobee oil	Standard	4				Silicone oil	Standard		1
pan						Inert liquid	Grease-free		3
01 1 bar g <sup>1)</sup>	(0.15 14.5 psi g) <sup>1)</sup>		В			FDA compliant fill fluid	Chandard		
04 4 bar g	(0.58 58 psi g)		C			Neobee oil	Standard		4
16 16 bar g	(2.32 232 psi g)		D			Nominal measuring ra			_
63 63 bar g	(9.14 914 psi g)		E			1 bar g <sup>1)</sup>	(14.5 psi g) <sup>1)</sup>		В
3 1300 mbar a <sup>2)</sup>	(0.19 18.9 psi a) <sup>2)</sup>		S			4 bar g 16 bar g	(58 psi g) (232 psi g)		C D
05 5 bar a <sup>2)</sup> 30 bar a <sup>2)</sup>	(0.7 72.5 psi a) <sup>2)</sup>		Т			63 bar g	(232 psi g) (914 psi g)		E
	(43.5 435 psi a) <sup>2)</sup>		U			0			
etted parts materials						1300 mbar a <sup>2)</sup> 5 bar a <sup>2)</sup>	(18.9 psi a) <sup>2)</sup> (72.5 psi a) <sup>2)</sup>		S T
eal diaphragm	Connection shank					30 bar a <sup>2)</sup>	(435 psi a) <sup>2)</sup>		U
ainless steel	Stainless steel		A			Wetted parts materials			. Č
rocess connection						Seal diaphragm	Connection shank		
	order code M., N., R. or			7				-	
Q		_				Stainless steel	Stainless steel		A
<b>Ion-wetted parts mate</b> Housing made of die-	-cast aluminium			0		<ul> <li>Flange version with O Q</li> </ul>	rder code M., N., R. or		
<ul> <li>Housing stainless stee</li> </ul>	el precision casting	_		3					
/ersion						<ul> <li>Non-wetted parts mate</li> <li>Housing made of die-</li> </ul>			
Standard version	English label incorintions			1		Housing stainless ste			
documentation in 5 la	English label inscriptions, inguages on CD			2		Version			
Explosion protection	0 0	-				Standard version			
Without				А			English label inscriptions,		
With ATEX, Type of pr	rotection:					documentation in 5 la			
- "Intrinsic safety (EE)	x ia)"			В		Explosion protection			
- "Explosion-proof (EE				D		Without			
- "Intrinsic safety, expl	losion-proof enclosure and			R		<ul> <li>With ATEX, Type of pr</li> </ul>			
Zone 1D/2D) <sup>#4)</sup>	ection (EEx ia + EEx d +					- "Intrinsic safety (EE>			
With FM + CSA, Type	of protection:					- "Explosion-proof (EE			
<ul> <li>"Intrinsic safety and (is + xp)"<sup>3)</sup> (available)</li> </ul>	explosion-proof			NC		<ul> <li>"Intrinsic safety, expl dust explosion prote Zone 1D/2D)"<sup>4)</sup></li> </ul>	losion-proof enclosure and ection (EEx ia + EEx d +		
Electrical connection	/ cable entry					• With FM + CSA, Type	of protection:		
Inner thread M20x1.5	-			в		<ul> <li>"Intrinsic safety and (is + xp)"<sup>3)</sup> (availabl)</li> </ul>	explosion-proof		
Female thread 1/2-14 N				С		(is + xp)" <sup>3)</sup> (availabl	e soon)		
M12 connectors (met	al) <sup>o</sup>			F		Electrical connection	•		
Display						Screwed gland M20x			
without (digital indicat	tor hidden, setting: mA)				1	Screwed gland ½-14			
with visible digital ind	lication, setting: mA				6	M12 connectors (met	ai) -/		
with customer-specific	c digital indication (setting				7	Display	· · la talala · · · · ·		
as specified, Order co						<ul> <li>Without (digital displa</li> <li>With visible digital displacements</li> </ul>			
required)						0	piay c digital display (setting as		
Power supply units see	SITRANS I power supply u	nits	an	d isolation		<ul> <li>With customer-specified</li> <li>Order and</li> </ul>	c uigitai uispiay (settii 19 as		

Power supply units see "SITRANS I power supply units and isolation amplifiers".

Included in delivery of the device:

Brief instructions (Leporello)

CD-ROM with detailed documentation

1) Only with "Standard" process connection

2) Not with temperature decoupler P00 and P10, not for process connections R02, R04, R10 and R11, and can only be ordered in conjunction with silicone oil.

3) Without cable gland, with blanking plug.

<sup>4)</sup> With enclosed cable gland EEx ia and blanking plug.

<sup>5)</sup> Cannot be used together with the following types of protection: "Explosion-proof" and "Intrinsic safety and explosion-proof"

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

Selection and Orderin	g data	С	)rd	er	N	Э.	
SITRANS P pressure t pressure, front-flush r	00						
DS III PA series (PROF	) 7	M	= 4	1	34-		
DS III FF series (FOUN	) 7	M	= 4	1	35-		
<b>, ,</b>	· · · · · <b>,</b>	·				-	
Measuring cell filling	Measuring cell cleaning	T	Π			П	Г
Silicone oil	Standard	1					
Inert liquid	Grease-free	3					
FDA compliant fill fluid							
<ul> <li>Neobee oil</li> </ul>	Standard	4					
Nominal measuring ra	nge						
1 bar g <sup>1)</sup>	(14.5 psi g) <sup>1)</sup>		в				
4 bar g	(58 psi g)		С				
16 bar g	(232 psi g)		D				
63 bar g	(914 psi g)		Е				
1300 mbar a <sup>2)</sup>	(18.9 psi a) <sup>2)</sup>		s				
5 bar a <sup>2)</sup>	(72.5 psi a) <sup>2)</sup>		Т				
30 bar a <sup>2)</sup>	(435 psi a) <sup>2)</sup>		U				
Wetted parts materials	3	-					
Seal diaphragm	Connection shank						
Stainless steel	Stainless steel		1	4			
Process connection		-					
Flange version with O     Q	rder code M, N, R or			7			
Non-wetted parts mate	erials						
<ul> <li>Housing made of die-</li> </ul>					0		
<ul> <li>Housing stainless stee</li> </ul>	el precision casting				3		
Version							
<ul> <li>Standard version</li> </ul>						1	
	English label inscriptions,					2	
documentation in 5 la	nguages on CD	_					
<ul><li>Explosion protection</li><li>Without</li></ul>						Α	
With ATEX, Type of pr	otection.					^	
- "Intrinsic safety (EEx						в	
- "Explosion-proof (EE						D	
	osion-proof enclosure and					R	
dust explosion prote	ection (EEx ia + EEx d +						
• With FM + CSA, Type	-						•
<ul> <li>"Intrinsic safety and (is + xp)"<sup>3)</sup> (available</li> </ul>	explosion-prool e soon)					N	
Electrical connection		-					
<ul> <li>Screwed gland M20x<sup>-</sup></li> </ul>	•						в
Screwed gland 1/2-14							B C F
M12 connectors (meta							F
Display							
Without (digital displa	v hidden)						1
With visible digital dis							6
-	c digital display (setting as						7
specified, Order code							
Included in delivery of t	he device:	_	-	-			_

 Brief instructions (Leporello) • CD-ROM with detailed documentation

1) Only with "Standard" process connection

2) Not with temperature decoupler P00 and P10, not for process connections R02, R04, R10 and R11, and can only be ordered in conjunction with silicone oil.

3) Without cable gland, with blanking plug.

<sup>4)</sup> With enclosed cable gland EEx ia and blanking plug.

Cannot be used together with the following types of protection: "Explosion-proof" and "Intrinsic safety and explosion-proof" 5)

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

# SITRANS P measuring instruments for pressure Transmitters for gage, absolute and differential pressure, flow and level DS III series for gage and absolute pressure, with front-flush diaphragm

FF

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Selection and Ordering data	Order	code			Selection and Ordering data	Order	code	
Further designs		HART	PA	FF	Further designs		HART	PA
Add "-Z" to Order No. and specify Order					Add "-Z" to Order No. and specify Order			
code.					code.			
Cable sockets for M12 connectors (metal)	A50	✓	✓	✓	Temperature decoupler up to 200 °C <sup>4)</sup>	P00	✓	~
Rating plate inscription (instead of German)					for version with front-flush diaphragm Temperature decoupler up to 250 °C	P10	~	~
• English	B11	~	1	1	Measuring cell filling: High-temperature oil, only in conjunction with measuring cell filling			
• French	B12	✓	1	1	silicone oil			
• Spanish	B13	✓	✓	✓	Bio-Control (Neumo) sanitary connection			
• Italian	B14	✓	✓	✓	certified to EHEDG			
English rating plate	B21	✓	✓	✓	• DN 50, PN 16	Q53	✓	✓
Pressure units in inH <sub>2</sub> O or psi					• DN 65, PN 16	Q54	✓	✓
Quality inspection certificate (Factory cali- bration) to IEC 60770-2	C11	~	~	~	Sanitary process connection to DRD • 65 mm, PN 40	M32	~	~
	010	~	~	1	SMS socket with union nut			
Acceptance test certificate To EN 10204-3.1	C12	×	v	•	• 2"	M67	✓	1
					• 21/2"	M68	✓	✓
Factory certificate	C14	✓	1	✓	• 3"	M69	✓	✓
To EN 10204-2.2					SMS threaded socket			
"PROFIsafe" certificate and protocol	C21		✓		• 2"	M73	✓	1
Flanges to EN 1092-1					• 21/2"	M74	<b>√</b>	<b>√</b>
• DN 25, PN 40 <sup>1)</sup>	M11	✓	1	1	• 3"	M75	✓	✓
• DN 25, PN 100 <sup>1)</sup>	M21	✓	✓	✓	IDF socket with union nut ISO 2853			
• DN 40, PN 40	M13	✓	✓	✓	• 2"	M82	<b>1</b>	<b>1</b>
• DN 40, PN 100	M23	<b>√</b>	1	<b>√</b>	• 2½" • 3"	M83 M84	× ×	✓ ✓
• DN 50, PN 16	M04	✓ ✓	√ √	✓ ✓		1014	•	•
• DN 50, PN 40 • DN 80, PN 16	M14 M06	✓ ✓	✓ ✓	✓ ✓	IDF threaded socket ISO 2853 • 2"	M92	1	~
• DN 80, PN 40	M16	· ✓		1	• 2½"	M92	¥	<i>v</i>
Flanges to ASME B16.5					• 3"	M94	1	1
Stainless steel flange 1" class 150 <sup>1)</sup>	M40	1	1	1	Sanitary process connection to			
Stainless steel flange 11/2" class 150	M41	<ul> <li>✓</li> </ul>	1	✓	NEUMO Bio-Connect screw connection			
<ul> <li>Stainless steel flange 2" class 150</li> </ul>	M42	✓	✓	✓	certified to EHEDG	0.07		
Stainless steel flange 3" class 150	M43	✓	<b>√</b>	✓	• DN 50, PN 16	Q05 Q06	× ×	✓ ✓
Stainless steel flange 4" class 150	M44	<b>1</b>	√ √	1	• DN 65, PN 16 • DN 80, PN 16	Q07	✓	<b>v</b>
<ul> <li>Stainless steel flange 1" class 300<sup>1)</sup></li> <li>Stainless steel flange 1½" class 300</li> </ul>	M45 M46	✓ ✓	✓ ✓	✓ ✓	• DN 100, PN 16	Q08	1	1
Stainless steel flange 2" class 300	M40 M47	¥	✓	· ·	• DN 2", PN 16	Q13	✓	1
Stainless steel flange 3" class 300	M48	1	1	1	• DN 21/2", PN 16	Q14	✓	✓
Stainless steel flange 4" class 300	M49	✓	✓	✓	• DN 3", PN 16	Q15	<ul> <li>✓</li> </ul>	<ul> <li>✓</li> </ul>
Threaded connection acc. to DIN 3852-2,					• DN 4", PN 16	Q16	✓	1
Form A • G <sup>3</sup> / <sub>4</sub> ", flush-mounted <sup>2)</sup>	R01	~	~	~	Sanitary process connection to NEUMO Bio-Connect flange connection certified to EHEDG			
• G 1", flush-mounted <sup>2)</sup>	R02	✓	✓	✓	• DN 50, PN 16	Q23	✓	1
<ul> <li>G 2", flush-mounted<sup>2)</sup></li> </ul>	R04	<ul><li>✓</li></ul>	~	✓	• DN 65, PN 16	Q24	✓	✓
Tank connection <sup>3)</sup>					• DN 80, PN 16	Q25	✓	<b>√</b>
Sealing is included in delivery	<b>D10</b>	1	~	1	• DN 100, PN 16	Q26	<b>1</b>	1
• TG 52/50, PN 40 • TG 52/150, PN 40	R10 R11	¥	¥	<b>↓</b>	• DN 2", PN 16	Q31 Q32	× ×	✓ ✓
		ľ		•	• DN 2½", PN 16 • DN 3", PN 16	Q32 Q33	✓	<b>v</b>
Sanitary process connection according DIN 11851 (Dairy connection)					• DN 4", PN 16	Q34	1	1
• DN 50, PN 25	N04	<ul> <li>✓</li> </ul>	1	1	Sanitary process connection to			
• DN 80, PN 25	N06	✓	✓	1	NEUMO Bio-Connect clamp connection			
Tri-Clamp connection according DIN 32676/ISO 2852					certified to EHEDG • DN 50, PN 16	Q39	~	~
• DN 50/2", PN 16	N14	✓	~	1	• DN 65, PN 10	Q40	✓	1
• DN 65/3", PN 10	N15	✓	✓	✓	• DN 80, PN 10	Q41	<ul> <li>✓</li> </ul>	<b>√</b>
Varivent connection					• DN 100, PN 10	Q42	<b>1</b>	1
certified to EHEDG					• DN 2½", PN 16 • DN 3", PN 10	Q48 Q49	✓ ✓	✓ ✓
<ul> <li>Type N = 68 for Varivent housing DN 40 125 and 1½" 6", PN 40</li> </ul>	N28	<ul><li>✓</li></ul>	~	✓	• DN 4", PN 10	Q49 Q50	<b>↓</b>	<i>v</i>
DIV TO 120 and 172 0,1 IN 40					, ,			1

DS III series for gage and absolute pressure, with front-flush diaphragm

Selection and Ordering data	Order code				Selection and Ordering data	Order code		
Further designs		HART	PA	FF	Additional data		HART	
Add "-Z" to Order No. and specify Order code.					Add "-Z" to Order No. and specify Order code.			
Sanitary process connection to NEUMO Connect S flange connection certified to EHEDG					<b>Measuring range to be set</b> Specify in plain text (max. 5 digits): Y01: up to mbar, bar, kPa, MPa, psi	Y01	1	
• DN 50, PN 16	Q63	<ul> <li>✓</li> </ul>	1	✓	Measuring point number (TAG No.)	Y15	<ul> <li>✓</li> </ul>	
• DN 65, PN 10	Q64	<ul> <li>✓</li> </ul>	✓	✓	Max. 16 characters, specify in plain text:			
• DN 80, PN 10	Q65	<ul> <li>✓</li> </ul>	✓	✓	Y15:			
• DN 100, PN 10	Q66	✓	<b>√</b>	<b>√</b>	Measuring point text	Y16	✓	
• DN 2", PN 16	Q72	<ul> <li>✓</li> </ul>	✓	<b>√</b>	Max. 27 characters, specify in plain text:	110	•	
• DN 2½", PN 10	Q73	✓	✓	<ul> <li>✓</li> </ul>	Y16:			
• DN 3", PN 10	Q74	✓	✓	1		Y21	✓	
• DN 4", PN 10	Q75	✓	✓	<ul> <li>✓</li> </ul>	Setting of pressure indicator in pressure units	121	v	
Aseptic threaded socket to DIN 11864-1 Form A					Specify in plain text (standard setting: mA): Y21: mbar, bar, kPa, MPa, psi,			
• DN 50, PN 25	N33	✓	✓	<ul> <li>✓</li> </ul>	Note:			
• DN 65, PN 25	N34	✓	✓	<ul> <li>✓</li> </ul>	The following pressure units can be selected:			
• DN 80, PN 25	N35	✓	✓	<ul> <li>✓</li> </ul>	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> ,			
• DN 100, PN 25	N36	✓	✓	<ul> <li>✓</li> </ul>	mmHG, inHG, psi, Pa, kPa, MPa, g/cm <sup>2</sup> ,			
Aseptic flange with notch to DIN 11864-2 Form A					kg/cm <sup>2</sup> , Torr, ATM oder % *) ref. temperature 20 °C			
• DN 50, PN 16	N43	✓	✓	1	Preset bus address	Y25		
• DN 65, PN 16	N44	✓	✓	1	(possible between 1 and 126)			
• DN 80, PN 16	N45	✓	✓	1	Specify in plain text: Y25:			
• DN 100, PN 16	N46	✓	✓	<ul> <li>✓</li> </ul>				
Aseptic flange with groove to DIN 11864-2 Form A					Only "Y01" and "Y21" can be factory preset ✓ = available			
• DN 50, PN 16	N43 + P11	✓	✓	✓	Ordering example			
• DN 65, PN 16	N44 + P11	✓	~	✓	Item line:         7MF4133-1DB20-1AB7-Z           B line:         A22 + Y01 + Y21			
• DN 80, PN 16	N45 + P11	~	~	1	C line: Y01: 1 10 bar (14.5 145 C line: Y21: bar (psi)	psi)		
• DN 100, PN 16	N46 + P11	~	~	1				
Aseptic clamp with groove to DIN 11864-3 Form A								
• DN 50, PN 25	N53	✓	✓	✓				
• DN 65, PN 25	N54	<ul> <li>✓</li> </ul>	✓	✓				
• DN 80, PN 16	N55	✓	1	✓				
• DN 100, PN 16	N56	<ul> <li>Image: A start of the start of</li></ul>	✓	1				

1) Special Viton seal included in delivery.

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

3) The weldable socket can be ordered under accessories
 4) The maximum temperatures of the medium depend on the respective cell fillings.

PA

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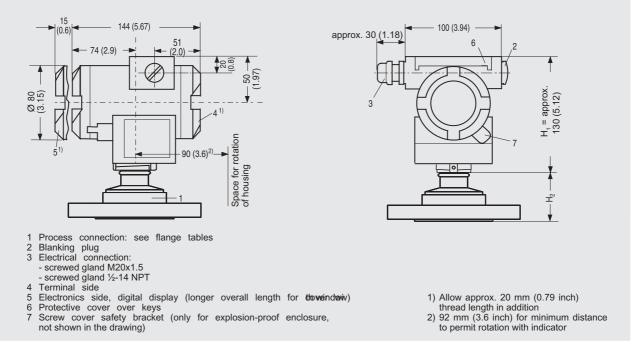
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DS III series for gage and absolute pressure, with front-flush diaphragm

#### Dimensional drawings

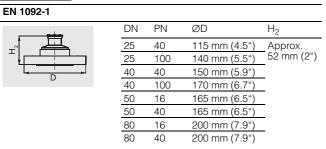


SITRANS P pressure transmitters, DS III series for gage pressure, with front-flush diaphragm, dimensions in mm (inch)

The diagram shows a SITRANS P DS III with an example of a flange. In this drawing the height is subdivided into  $H_1$  and  $H_2$ . H<sub>1</sub> = Height of the SITRANS 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.

#### Flanges to EN and ASME

#### Flanges to EN

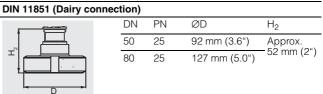


#### Flanges to ASME

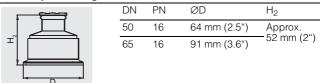
ASME B16.5				
	DN	class	ØD	H <sub>2</sub>
	1"	150	110 mm (4.3")	Approx.
	1"	300	125 mm (4.9")	52 mm (2")
	1½"	150	130 mm (5.1")	_
D	11⁄2"	300	155 mm (6.1")	_
	2"	150	150 mm (5.9")	_
	2"	300	165 mm (6.5")	_
	3"	150	190 mm (7.5")	_
	3"	300	210 mm (8.1")	_
	4"	150	230 mm (9.1")	_
	4"	300	255 mm (10.0")	_

### NuG and pharmaceutical connections

#### Connections to DIN



#### Tri-Clamp according DIN 32676



DN

#### Other connections

#### Varivent connection



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

#### **Bio-Control connection**

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

<b>DS III series for</b>	gage and absolute pressure,
	with front-flush diaphragm

Thread connection G2" to DIN 3852							
	DN	PN	ØD	H <sub>2</sub>			
	2"	63	78 mm (3.1")	Approx. 52 mm (2")			

ΡN

40

DN

25

ØD

63 mm (2.5")

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

ΡN

DN

DN

50

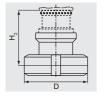
ΡN

40

ØD

ØD

105 mm (4.1")



т

Sanitary process connection to DRD

-			
50	16	82 mm (3.2")	Approx.
65	16	105 mm (4.1")	<del>-</del> 52 mm (2")
80	16	115 mm (4.5")	_
100	16	145 mm (5.7")	_
2"	16	82 mm (3.2")	_
21⁄2"	16	105 mm (4.1")	_
3"	16	105 mm (4.1")	_
4"	16	145 mm (5.7")	_

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

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

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

	DN	PN	ØD	H <sub>2</sub>
μ <sup>N</sup>	50	16	77,4 mm (3.0")	Approx.
	65	10	90,9 mm (3.6")	- 52 mm (2")
	80	10	106 mm (4.2")	
	100	10	119 mm (4.7")	
D	2"	16	64 mm (2.5")	
	21⁄2"	16	77,4 mm (3.0")	-
	3"	10	90,9 mm (3.6")	
	4"	10	119 mm (4.7")	-

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

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

10

180 mm (7.1")

4"

 $H_2$ 

H<sub>2</sub>

Approx.

52 mm (2")

SMS socket with union nut

Tank connection TG52/50

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

 $H_2$ 

 $H_2$ 

Approx. 52 mm (2.1")

Approx.

63 mm (2.5")

#### SMS threaded socket

	DN	PN	ØD
1	2"	25	70 x 1/6 mm
	21⁄2"	25	85 x 1/6 mm
	3"	25	98 x 1/6 mm

#### IDF socket with union nut

,

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

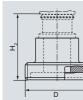
#### **IDF** threaded socket



DN	PN	ØD	H <sub>2</sub>
2"	25	64 mm (2.5")	Approx. 52
21⁄2"	25	77,5 mm (3.1")	- mm (2.1")
3"	25	91 mm (3.6")	-

DS III series for gage and absolute pressure, with front-flush diaphragm

### Aseptic threaded socket to DIN 11864-1 Form A



	DN	PN	ØD	H <sub>2</sub>
	50	25	78 x 1/6"	Approx. 52
	65	25	95 x 1/6"	- mm (2.1")
_	80	25	110 x ¼"	
I	100	25	130 x ¼"	_

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

H <sup>2</sup>	
	D I

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

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

H	
	D

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

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

	10
hannah	50
	65
	30
	0

ve to i		504-3 FUIII A	
DN	PN	ØD	H <sub>2</sub>
50	25	77,5	Approx. 52
65	25	91	— mm (2.1")
80	16	106	
100	16	130	

DS III series for absolute pressure (from gage pressure series)

#### Technical specifications

SITRANS P, DS III series for absolute press	,	essure series)	1		
	HART		PROFIBUS PA or FO	UNDATION Fieldbus	
Input					
Measured variable	Absolute pressure				
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span	Max. perm. test pres- sure	Nominal measuring range	Max. perm. test pres- sure	
	8.3 250 mbar a (0.12 3.6 psi a)	6 bar a (87 psi a)	250 mbar a (3.6 psi a)	6 bar a (87 psi a)	
	43 1300 mbar a (0.62 18.9 psi a)	10 bar a (145 psi a)	1300 mbar a (18.9 psi a)	10 bar a (145 psi a)	
	160 5000 mbar a (2.32 72.5 psi a)	30 bar a (435 psi a)	5 bar a (72.5 psi a)	30 bar a (435 psi a)	
	1 30 bar a (14.5 435 psi a)	100 bar a (1450 psi a)	30 bar a (435 psi a)	100 bar a (1450 psi a)	
Lower measuring limit					
<ul> <li>Measuring cell with silicone oil filling</li> </ul>	0 mbar a (0 psi a)				
Upper measuring limit	100% of max. span				
Output					
Output signal	4 20 mA Digital PROFIBUS PA or FOUNDAT signal			or FOUNDATION Fieldbu	
<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 22.0 mA	to 20.5 mA or optionally set	-		
Load					
<ul> <li>Without HART communication</li> </ul>	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.023 \text{ A in } \Omega, U_{\rm H}$ : Power supply in V		-		
With HART communication	$R_{\rm B} = 230 \dots 500 \Omega ({\rm SII} R_{\rm B} = 230 \dots 1100 \Omega ({\rm H}$		-		
Physical bus	-		IEC 61158-2		
With polarity reversal protection	-		Yes		
Accuracy	To EN 60770-1				
Reference conditions (All error data refer always refer to the set span)		tic, start-of-scale value 0 ba °C (77 °F)) r: Span ratio (r =		aphragm, silicone oil fillin	
Error in measurement and fixed-point setting (including hysteresis and repeatability)					
Linear characteristic			≤ 0.1%		
- r ≤ 10	≤ 0.1%				
- 10 < r ≤ 30	≤0.2%				
Long-term drift (temperature change ±30 °C (±54 °F))	≤ (0.1 · r)%/year		≤ 0.1%/year		
Influence of ambient temperature					
• at -10 +60 °C (14 140 °F)	≤ (0.1 · r +0.2)%		≤ 0,3%		
• at -4010 °C and +60 +85 °C (-40 +14 °F and 140 185 °F)	≤ (0.1 · r + 0.15)%/10	К	≤ 0.25%/10 K		
Measured Value Resolution	-		$3 \cdot 10^{-5}$ of nominal mea	asuring range	

# SITRANS P measuring instruments for pressure Transmitters for gage, absolute and differential pressure, flow and level DS III series for absolute pressure (from gage pressure series)

SITRANS P, DS III series for absolute pres	sure (from the gage pressure series)	
	HART	PROFIBUS PA or FOUNDATION Fieldbus
Rated operating conditions		·
Degree of protection (to EN 60529)	IP65	
Process temperature		
<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		
- Digital indicators	-30 +85 °C (-22 +185 °F)	
Storage temperature	-50 +85 °C (-58 +185 °F)	
Climatic class		
- Condensation	Permissible	
<ul> <li>Electromagnetic compatibility</li> </ul>		
- Emitted interference and interference im- munity	To EN 61326 and NAMUR NE 21	
Design		
Weight (without options)	≈ 1.5 kg (≈ 3.3 lb)	
Housing material	Poor in copper die-cast aluminium, GD-AlSi12 c	or stainless steel precision casting, mat. No. 1.440
Wetted parts materials		
Connection shank	Stainless steel, mat. No. 1.4404/316L or Hastell	oy C4, mat. No. 2.4610
Oval flange	Stainless steel, mat. No. 1.4404/316L	
<ul> <li>Seal diaphragm</li> </ul>	Stainless steel, mat. No. 1.4404/316L or Hastell	oy C276, mat. No. 2.4819
Measuring cell filling	Silicone oil or inert filling liquid (max. 160 bar a	(2320 psi a) with oxygen measurement)
Process connection	Connection shank G½A to DIN EN 837-1, femal (MWP 2320 psi a)) to DIN 19213 with mounting	le thread $\frac{1}{2}$ -14 NPT or oval flange (PN 160 thread M10 or $^{7}/_{16}$ -20 UNF to EN 61518
Material of the mounting bracket		
• Steel	Sheet steel, Mat. No. 1.0330, chrome-plated	
Stainless steel	Stainless steel, Mat. No. 1.4301 (SS304)	
Power supply $oldsymbol{U}_{ec{ec{h}}}$		Supplied through bus
Terminal voltage on transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically-safe mode	-
Separate 24 V power supply necessary	-	No
Bus voltage		
• Not Ex	-	9 32 V
<ul> <li>With intrinsically-safe operation</li> </ul>	-	9 24 V
Current consumption		
Basic current (max.)	-	12.5 mA
<ul> <li>Startup current ≤ basic current</li> </ul>	-	Yes
<ul> <li>Max. current in event of fault</li> </ul>	-	15.5 mA
Fault disconnection electronics (FDE) avai- lable	-	Yes

DS III series for absolute pressure (from gage pressure series)

	HART	PROFIBUS PA or FOUNDATION Fieldbus		
Certificate and approvals				
Classification according to pressure equip- ment directive (DRGL 97/23/EC)	For gases of fluid group 1 and liquids of fluid grou graph 3 (sound engineering practice)	up 1; complies with requirements of Article 3, para		
Explosion protection				
<ul> <li>Intrinsic safety "i"</li> </ul>	PTB 99 ATEX 2122			
- Identification	Ex II 1/2 G EEx ia/ib IIB/IIC T6			
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperature class -40 +70 °C (-40 +158 °F) temperature class -40 +60 °C (-40 +140 °F) temperature class	T5;		
- Connection	To certified intrinsically-safe circuits with maximum values: $U_i = 30 \text{ V}, \ l_i = 100 \text{ mA},$ $P_i = 750 \text{ mW}; \ R_i = 300 \Omega$	FISCO supply unit: $U_0 = 17.5$ V, $I_0 = 380$ mA, $P_0 = 5.32$ W Linear barrier: $U_0 = 24$ V, $I_0 = 250$ mA, $P_0 = 1.2$ W		
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4  {\rm mH},  C_{\rm i} = 6  {\rm nF}$	$L_{\rm i} = 7 \ \mu {\rm H}, \ C_{\rm i} = 1.1 \ {\rm nF}$		
• Explosion-proof "d"	PTB 99 ATEX 1160			
- Identification	Ex II 1/2 G EEx d IIC T4/T6			
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperature class -40 +60 °C (-40 +140 °F) temperature class			
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC	To circuits with values: $U_{\rm H}$ = 9 32 V DC		
Dust explosion protection for zone 20	PTB 01 ATEX 2055			
- Identification	Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C			
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F)			
- Max.surface temperature	120 °C (248 °F)			
- Connection	To certified intrinsically-safe circuits with maximum values: $U_i = 30 \text{ V}, \ l_i = 100 \text{ mA}, \ P_i = 750 \text{ mW}, \ R_i = 300 \Omega$	FISCO supply unit: $U_0 = 17.5 \text{ V}$ , $I_0 = 380 \text{ mA}$ , $P_0 = 5.32 \text{ W}$ Linear barrier: $U_0 = 24 \text{ V}$ , $I_0 = 250 \text{ mA}$ , $P_0 = 1.2 \text{ W}$		
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{\rm i} = 7 \ \mu {\rm H}, \ C_{\rm i} = 1.1 \ {\rm nF}$		
Dust explosion protection for zone 21/22	PTB 01 ATEX 2055			
- Identification	Ex II 2 D IP65 T 120 °C			
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC; $P_{\rm max}$ = 1.2 W	To circuits with values: $U_{\rm H}$ = 9 32 V DC; $P_{\rm max}$ = 1.2 W		
<ul> <li>Type of protection "n" (zone 2)</li> </ul>	TÜV 01 ATEX 1696 X	Planned		
- Identification	Ex II 3 G EEx nA L IIC T4/T5/T6	-		
<ul> <li>Explosion protection 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, GP EF DIV 2, GP ABCD T4T6; CL II, DIV 2, GP FG; CL	FG; CL III; CL I, ZN 0/1 AEx ia IIC T4T6; CL I, III		
<ul> <li>Explosion protection to CSA</li> </ul>	Certificate of Compliance 1153651			
- Identification (XP/DIP) or (IS)	CL I, DIV 1, GP ABCD T4T6; CL II, DIV 1, GP EF T4T6; CL II, DIV 2, GP FG; CL III	FG; CL III; Ex ia IIC T4T6; CL I, DIV 2, GP ABCD		

2

# SITRANS P measuring instruments for pressure Transmitters for gage, absolute and differential pressure, flow and level DS III series for absolute pressure (from gage pressure series)

HART communication		Communication FOUNDATION F	aldhua
	000 1100 0	Communication FOUNDATION Fi	
HART communication	230 1100 Ω	Function blocks	3 function blocks analog input, 1 function block PID
Protocol	HART Version 5.x	<ul> <li>Analog input</li> </ul>	
Software for computer	SIMATIC PDM	<ul> <li>Adaptation to customer-speci- fic process variables</li> </ul>	Yes, linearly rising or falling cha- racteristic
PROFIBUS PA communication Simultaneous communication with	4	- Electrical damping T <sub>63</sub> , adjus- table	
master class 2 (max.) The address can be set using	Configuration tool or local opera-	- Simulation function	Output/input (can be locked within the device with a bridge)
	tion (standard setting address 126)	- Failure mode	Can be parameterized (last good value, substitute value, incorrect
Cyclic data usage			value)
Output byte	5 (one measuring value) or 10 (two measuring values)	- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respec-
Input byte	0, 1, or 2 (register operating mode and reset function for metering)	- Square-rooted characteristic	tively Yes
Internal preprocessing		for flow measurement	
Device profile	PROFIBUS PA Profile for Process	• PID	Standard FF function block
	Control Devices Version 3.0, Class B	<ul> <li>Physical block</li> </ul>	1 Resource block
Function blocks	2	Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block
<ul> <li>Analog input</li> </ul>			LCD
<ul> <li>Adaptation to customer-speci- fic process variables</li> </ul>	Yes, linearly rising or falling cha- racteristic	<ul> <li>Pressure transducer block</li> <li>Can be calibrated by applying</li> </ul>	Yes
- Electrical damping T <sub>63</sub> , adjus- table	0 100 s	two pressures - Monitoring of sensor limits	Yes
- Simulation function	Input /Output	- Simulation function: Measured	Constant value or over paramete-
- Failure mode	Can be parameterized (last good value, substitute value, incorrect value)	pressure value, sensor tempe- rature and electronics tempera- ture	rizable ramp function
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respec- tively		
Register (totalizer)	Can be reset, preset, optional direction of counting, simulation function of register output		
- Failure mode	Can be parameterized (summation with last good value, continuous summation, summation with incor- rect value)		
- Limit monitoring	One upper and lower warning limit and one alarm limit respectively		
<ul> <li>Physical block</li> </ul>	1		
Transducer blocks	2		
Pressure transducer block			
<ul> <li>Can be calibrated by applying two pressures</li> </ul>	Yes		
- Monitoring of sensor limits	Yes		
<ul> <li>Specification of a container characteristic with</li> </ul>	Max. 30 nodes		
<ul> <li>Square-rooted characteristic for flow measurement</li> </ul>	Yes		
<ul> <li>Gradual volume suppression and implementation point of square-root extraction</li> </ul>	Parameterizable		
- Simulation function for measu- red pressure value and sensor temperature	Constant value or over paramete- rizable ramp function		

2

temperature

Selection and Orderin	g data	Order No.	
SITRANS P pressure t	7 M F 4 2 3	3 -	
pressure, from the pressure series DS III HART			
Measuring cell filling	Measuring cell		
Silicone oil	<b>cleaning</b> Standard	1	
Inert liquid <sup>1)</sup>	Grease-free	3	
Span			
8.3 250 mbar a	(0.12 3.63 psi a)	D	
43 1300 mbar a	(0.62 18.9 psi a)	F	
0.16 5 bar a	(2.32 72.5 psi a)	G	
1 30 bar a	(14.5 435 psi a)	н	
Wetted parts materials	6		
Seal diaphragm	Process connection		
Stainless steel	Stainless steel	A	
Hastelloy	Stainless steel	в	
Hastelloy	Hastelloy	С	
Version for diaphragm s	seal <sup>2)3)4)</sup>	Y	
Process connection			
Connection shank G <sup>1</sup> / <sub>2</sub>		0	
• Female thread 1/2-14 N		1	
Oval flange made of s		•	
- Mounting thread <sup>7</sup> / <sub>10</sub>		2	
<ul> <li>Mounting thread M1</li> <li>Male thread M20 x 1.5</li> </ul>		3 5	
<ul> <li>Male thread 1/2-14 NPT</li> </ul>		6	
Non-wetted parts mate		0	
<ul><li>Housing made of die-</li><li>Housing stainless stee</li></ul>		0 3	
	er precision casting ?	3	
Version			
Standard version	-naliah lahal inagrintiang		1
<ul> <li>International version, i documentation in 5 la</li> </ul>	English label inscriptions,		2
Explosion protection	.99	-	
Without			Α
With ATEX, Type of pre-	otection:		~
- "Intrinsic safety (EEx			в
- "Explosion-proof (EE			D
- "Intrinsic safety and	explosion-proof enclosure		Р
(EEx ia + EEx d)" <sup>7</sup> )			
- "Ex nA/nL (zone 2)"			E
<ul> <li>"Intrinsic safety, expl dust explosion prote</li> </ul>	osion-proof enclosure and		R
Zone 1D/2D)"7)	ection (EEx ia + EEx d +		
• With FM + CSA, Type	of protection:		
- "Intrinsic safety and			NC
(is + xp)" <sup>6)</sup>			
Electrical connection	•		
Screwed gland Pg 13		Α	
Screwed gland M20x		В	
Screwed gland ½-14			C
<ul> <li>Han 7D plug (plastic l connector<sup>8)</sup></li> </ul>		D	
<ul> <li>Plug M12 (metal)<sup>9)</sup></li> </ul>		F	
Display	tor hiddon, potting, mA)		
<ul> <li>Without (digital indica</li> <li>With visible digital ind</li> </ul>	<b>e</b> ,		1
<ul> <li>With visible digital ind</li> <li>With customer-specific</li> </ul>	c digital indicator (setting		6 7
as specified, Order co			'

Power supply units see "SITRANS I power supply units and isolation amplifiers".

Factory-mounting of shut-off valves and valve manifolds see page 2/142.

Included in delivery of the device:

Brief instructions (Leporello)

CD-ROM with detailed documentation

# DS III series for absolute pressure (from gage pressure series)

- For oxygen application, add Order code E10.
   Vanian ZME 4000 1DV, and was to make an application.
- <sup>2)</sup> Version 7MF4233-1DY... only up to max. span 200 mbar a (2.9 psi a)
   <sup>3)</sup> When the manufacture's certificate M (calibration certificate) has to be ordered for transmitters with diaphragm seals, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.
- <sup>4)</sup> Whe the acceptance test certificate 3.1 for transmitters with direct-connected diaphragm seals is ordered, this certificate must also be ordered with the corresponding seals.
- <sup>5)</sup> Not together with Electrical connection "Screwed gland Pg 13.5" and "Han7D plug".
- <sup>6)</sup> Without cable gland, with blanking plug.
- 7) With enclosed cable gland EEx ia and blanking plug.
- Not together with type of protection "Explosion-proof" and type of protection "Ex nA".
- 9) Not together with types of protection "Explosion-proof" or "Intrinsic safety and explosion-proof"
- F) Subject to export regulations AL: 91999, ECCN: N.

DS III series for absolute pressure (from gage pressure series)

Selection and Ordering data         Order No.           SITRANS P pressure transmitters for absolute pressure (from the gage pressure series)         P           DS III PA series (PROFIBUS PA)         P)         7MF 4 2 3 4 -           DS III PA series (FOUNDATION Fieldbus)         P)         7MF 4 2 3 4 -           DS III PA series (FOUNDATION Fieldbus)         P)         7MF 4 2 3 5 -           Measuring cell filling         Measuring cell cleaning         1           Silicone oil         Standard         1           Inert fliquid <sup>1</sup> Grease-free         3           Nominal measuring range         250 mbar a         (3.63 psi a)           So bar a         (72.5 psi a)         G           30 bar a         (435 psi a)         F           Stainless steel         A         B           Hastelloy         Stainless steel         B           Hastelloy         Hastelloy         C           Version as diaphragm seal <sup>21304</sup> Y         Y           Process connection         1         0           Connection shark Gl/B to EN 837-1         0         C           Process connection         1         1         1           Oval flange made of stainless steel         B         2         1				
SITRANS P pressure transmitters for absolute pressure (from the gage pressure series)       P)         DS III PA series (PROFIBUS PA)       F)       7 MF 4 2 3 4 -         DS III FF series (FOUNDATION Fieldbus)       F)       7 MF 4 2 3 5 -         Measuring cell filling       Measuring cell cleaning       1         Silicone oil       Standard       1         Inert liquid <sup>1)</sup> Grease-free       3         Nominal measuring range       250 mbar a       (18.9 psi a)         250 mbar a       (18.9 psi a)       G         30 bar a       (1435 psi a)       G         30 bar a       (1435 psi a)       G         4 Mastelloy       Hastelloy       Stainless steel       A         Hastelloy       Hastelloy       Y       Y         Process connection       C       C       C         Version as diaphragm seal <sup>2/3/4)</sup> Y       Y       Y         Process connection       0       S       A       B         - Mounting thread M10 to DIN 19213       3       S       S       S         - Mounting thread M2 14 NPT       1       C       C       C         - Nounting thread M2 15       S       S       S       S       S       S     <	Selection and Ordering	g data	Order	· No.
DS III PA series (PROFIBUS PA)       F)       7 MF 4 2 3 4 -         DS III FF series (FOUNDATION Fieldbus)       F)       7 MF 4 2 3 5 -         Measuring cell filling       Measuring cell       1         Silicone oil       Standard       1         Inert liquid <sup>1</sup> Grease-free       3         Nominal measuring range       250 mbar a       (3.63 psi a)         250 mbar a       (3.63 psi a)       3         30 bar a       (4.35 psi a)       G         30 bar a       (4.35 psi a)       G         30 bar a       (4.35 psi a)       G         Wetted parts materials       Seal diaphragm       Process connection         Stainless steel       Stainless steel       A         Hastelloy       Hastelloy       Hastelloy         Version as diaphragm seal <sup>(2)3(4)</sup> Y       Y         Process connection       0       F         Connection shank Gl/&B to EN 837-1       0       F         Oval flange made of stainless steel       A       B         Mounting thread M10 to DIN 19213       Male thread M20 x 1,5       S         Male thread M20 x 1,5       S       S         Mate thread M20 x 1,5       S       S         Mate thread M20 x	SITRANS P pressure to	ansmitters for absolute		
Measuring cell filling       Measuring cell cleaning         Silicone oil Inert liquid <sup>1)</sup> Grease-Free         Sominal measuring range       D         250 mbar a       (3.63 psi a)         1300 mbar a       (18.9 psi a)         5 bar a       (72.5 psi a)         30 bar a       (435 psi a)         5 bar a       (72.5 psi a)         30 bar a       (435 psi a)         Fe       Stainless steel         Hastelloy       Stainless steel         Hastelloy       Hastelloy         Version as diaphragm seal <sup>2(3)4)</sup> Y         Process connection       C         Connection shank G½B to EN 837-1       0         Female thread ½-14 NPT       1         Oval flange made of stainless steel       1         Mounting thread 71/16-20 UNF to EN 61518       2         Male thread ½-14 NPT       5         Male thread ½-14 NPT       6         Non-wetted parts materials       0         Housing made of die-cast aluminum       0         Housing stainless steel precision casting       0         Version       1       2         Standard version       1       2         International version, English label inscriptions, documentat			7 M F	4234 -
Measuring cell filling       Measuring cell cleaning         Silicone oil Inert liquid <sup>1)</sup> Grease-Free         Sominal measuring range       D         250 mbar a       (3.63 psi a)         1300 mbar a       (18.9 psi a)         5 bar a       (72.5 psi a)         30 bar a       (435 psi a)         5 bar a       (72.5 psi a)         30 bar a       (435 psi a)         Fe       Stainless steel         Hastelloy       Stainless steel         Hastelloy       Hastelloy         Version as diaphragm seal <sup>2(3)4)</sup> Y         Process connection       C         Connection shank G½B to EN 837-1       0         Female thread ½-14 NPT       1         Oval flange made of stainless steel       1         Mounting thread 71/16-20 UNF to EN 61518       2         Male thread ½-14 NPT       5         Male thread ½-14 NPT       6         Non-wetted parts materials       0         Housing made of die-cast aluminum       0         Housing stainless steel precision casting       0         Version       1       2         Standard version       1       2         International version, English label inscriptions, documentat	DS III FE series (FOUN	DATION Fieldbus)	7 M F	4235 -
CleaningISilicone oilStandard1Ihert liquid <sup>1</sup> )Grease-free3Nominal measuring range250 mbar a $(3.63 \text{ psi a})$ D250 mbar a $(18.9 \text{ psi a})$ F30 bar a $(72.5 \text{ psi a})$ 30 bar a(72.5 psi a)30 bar a $(72.5 \text{ psi a})$ B30 bar a $(72.5 \text{ psi a})$ HWetted parts materialsSeal diaphragmProcess connectionStainless steelStainless steelBHastelloyHastelloyBVersion as diaphragm seal <sup>213/4</sup> )YProcess connection0• Connection shank G½B to EN 837-10• Female thread ½-14 NPT0• Oval flange made of stainless steel1• Mounting thread 7/16-20 UNF to EN 615182• Mounting thread M10 to DIN 192133• Male thread ½-14 NPT6Non-wetted parts materials0• Housing made of die-cast aluminum0• Housing stainless steel precision casting0Version•• Standard version1• Intrinsic safety (Ex ia)*-• Thirtinsic safety (Ex ia)*-• Thirtinsic safety (Ex ia)*-• Thirtinsic safety (Ex ia)*-• Thirtinsic safety and explosion-proof enclosure and dust explosion proof ((Ex d)*5)• Thirtinsic safety and explosion-proof• Thirtinsic safety and explosion-proof• Thirtinsic safety and explosion-proof• Thirtinsic safety (Ex ia)*•		,	_	
Silicone oil       Standard       1         Inert liquid <sup>1</sup> )       Grease-free       3         Nominal measuring range       250 mbar a       (3.63 psi a)       D         250 mbar a       (18.9 psi a)       F         30 bar a       (435 psi a)       G         30 bar a       (435 psi a)       G         Stainless steel       Stainless steel       A         Hastelloy       Stainless steel       B         Hastelloy       Hastelloy       C         Version as diaphragm seal <sup>2(3)4)</sup> Y       Y         Process connection       C       C         Connection shank G½B to EN 837-1       0       C         Female thread ½-14 NPT       1       0         Oval flange made of stainless steel       2       .         Mounting thread /½-14 NPT       1       0         Non-wetted parts materials       1       2         Housing stainless steel precision casting       3       3         Version       1       2       6         International version       1       2       6         Non-wetted parts materials       1       2       6         Version       Standard version       1	Measuring cell filling			
Inert Ilquid <sup>1</sup> )       Grease-free       3         Nominal measuring range       250 mbar a       (3.63 psi a)       0         1300 mbar a       (18.9 psi a)       5         5 bar a       (72.5 psi a)       0         30 bar a       (435 psi a)       F         Seal diaphragm       Process connection       A         Stainless steel       Stainless steel       A         Hastelloy       Hastelloy       C         Version as diaphragm seal <sup>2(3)4)</sup> Y       Y         Process connection       C       Y         Process connection       C       Y         Oval flange made of stainless steel       A       B         - Mounting thread ½-14 NPT       1       0         Oval flange made of stainless steel       - Mounting thread %10 to DIN 19213       3         Male thread ½20 UNF to EN 61518       2       - Mounting thread %10 to DIN 19213       3         • Male thread ½214 NPT       6       0       1         Non-wetted parts materials       • Housing made of die-cast aluminium       0       1         • Housing stainless steel precision casting       0       1       2         Version       •       *       1       0      <	Silicono oil	•	1	
Nominal measuring range 250 mbar a(3.63 psi a)1300 mbar a(18.9 psi a) 5 bar a $(72.5 psi a)$ 30 bar a $(435 psi a)$ 5 bar a(72.5 psi a) 30 bar a $(435 psi a)$ $H$ Wetted parts materials Seal diaphragmProcess connectionStainless steelA BHastelloyStainless steelHastelloyVersion as diaphragm seal <sup>2(3)(4)</sup> YProcess connectionConnection shark Gl/B to EN 837-1O C connection shark Gl/B to EN 837-1O C connection shark Gl/B to EN 837-1O Connection for thread M10 to DIN 19213O Male thread $V_2$ -14 NPTO Vari flange made of die-cast aluminiumO Convected parts materialsHousing stainless steel precision castingVersionStandard versionI a Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d)* Zon end/Colspan="2">B D PVithoutWithoutNon-wetted parts materialsHousing stainless steelI furting cafety and explosion-proof enclosure (EEx				
250 mbar a $(3.63 \text{ psi a})$ $(3.00 \text{ mbar a})$ $(3.63 \text{ psi a})$ $(3.63 \text{ psi a})$ D F G H1300 mbar a $(18.9 \text{ psi a})$ $(3 \text{ bar a})$ F G G H25 bar a $(72.5 \text{ psi a})$ $(30 \text{ bar a})$ G HWetted parts materials Seal diaphragmProcess connectionStainless steelStainless steelA B HastelloyVersion as diaphragm seal <sup>2(3)(4)</sup> C Version as diaphragm seal <sup>2(3)(4)</sup> Process connection1• Connection shank G½B to EN 837-1 • Female thread ½-14 NPT0• Connection shank G½B to EN 837-1 • Oval flange made of stainless steel • Mounting thread 7/16-20 UNF to EN 61518 • Mounting thread M10 to DIN 19213 • Male thread ½-14 NPT6Non-wetted parts materials • Housing stainless steel precision casting3Version • Standard version • International version, English label inscriptions, documentation in 5 languages on CD1Explosion protection • "Intrinsic safety and explosion-proof enclosure and dust explosion protection (EEx a')^{e5} • "Explosion protection (EEx ia + EEx d')^{e5} • "Intrinsic safety and explosion-proof enclosure and dust explosion protection (EEx ia + EEx d' + Zone 1D/2D)^{e6} (not for DS III FF)B CWith AT EX, Type of protectoric: • "Intrinsic safety and explosion-proof (is + xp)^{e5})B CEtertical connection / cable entry • Screwed gland M20x1.5 • Screwed gland M20x1.5B CVithout (digital display hidden) • With visible digital indicator1Without (digital indicator • With visible digital indicator1 </td <td></td> <td></td> <td></td> <td></td>				
1300 mbar a(18.9 psi a) 5 bar aF G5 bar a(72.5 psi a) 30 bar a(435 psi a)Wetted parts materials Seal diaphragmProcess connectionStainless steelStainless steelHastelloyStainless steelHastelloyHastelloyVersion as diaphragm seal <sup>2)3(4)</sup> CProcess connectionCConnection shark G½B to EN 837-10• Connection shark G½B to EN 837-10• Connection shark G½B to EN 837-10• Connection gthread ½-14 NPT1• Mounting thread 1/2-14 NPT6• Mounting thread 1/2-14 NPT6• Mounting thread 1/2-14 NPT6• Male thread ½-14 NPT6• Male thread ½-14 NPT6Non-wetted parts materials • Housing made of die-cast aluminium • Housing made of die-cast aluminium • Housing stainless steel precision casting3• Standard version • Intrinsic safety (EEx ia)*1• WithoutNith ATEX, Type of protection: • "Intrinsic safety (EEx ia)*B• "Explosion-proof (EEx ia)*B• "Explosion protection (EEx ia + EEx d + Zone 1D/2D)*0 (not for DS III FF)B• With H + CSA, Type of protection: • "Intrinsic safety and explosion-proof (is + xp)*0NC• Screwed gland 1/2-14 NPTB• Screwed gland 1/2-14 NPTC• With Vithout (digital display hidden)1• Without (digital display hidden)1• Without (digital indicatorF	•	•		
5 bara       (72.5 psi a)       G         30 bara       (435 psi a)       H         Wetted parts materials       Seal diaphragm       Process connection         Stainless steel       Stainless steel       A         Hastelloy       Stainless steel       B         Hastelloy       Hastelloy       C         Version as diaphragm seal <sup>2/3/4/</sup> Y         Process connection       C         • Connection shank G½B to EN 837-1       0         • Connection shank G½B to EN 837-1       0         • Oval flange made of stainless steel       -         • Mounting thread <sup>7</sup> / <sub>16</sub> -20 UNF to EN 61518       2         • Mounting thread <sup>7/16-20</sup> UNF to EN 61518       2         • Male thread M20 x 1,5       5         • Male thread M20 x 1,5       5         • Male thread M2 x 1,4 NPT       6         Non-wetted parts materials       1         • Housing stainless steel precision casting       3         Version       1         • International version, English label inscriptions, documentation in 5 languages on CD       2         Explosion protection       *         • With ATEX, Type of protection:       *         • "Intrinsic safety and explosion-proof enclosure and dust explosion protection: <td></td> <td>( I )</td> <td></td> <td></td>		( I )		
30 bar a       (435 psi a)       H         Wetted parts materials       Seal diaphragm       Process connection         Stainless steel       Stainless steel       Hastelloy         Hastelloy       Hastelloy       Hastelloy         Version as diaphragm seal <sup>2)3)4)</sup> Y         Process connection       0         • Connection shank G½B to EN 837-1       0         • Connection shank G½B to EN 837-1       0         • Connection shank G½B to EN 837-1       0         • Oval flange made of stainless steel       -         • Mounting thread ½-14 NPT       1         • Oval flange made of stainless steel       -         • Mounting thread M10 to DIN 19213       3         • Male thread ½-14 NPT       5         • Male thread ½-14 NPT       6         Non-wetted parts materials       -         • Housing stainless steel precision casting       3         Version       -         • Standard version       -         • Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d) <sup>16</sup> • With ATEX, Type of protection:       -         • "Intrinsic safety and explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D) <sup>60</sup> (not for DS III FF)         • With FM + CSA, Type of protection:			-	
Wetted parts materials         Seal diaphragm       Process connection         Stainless steel       Stainless steel         Hastelloy       Stainless steel         Hastelloy       Hastelloy         Version as diaphragm seal <sup>(2)3)4)</sup> Y         Process connection       0         Connection shank G½B to EN 837-1       0         Female thread ½-14 NPT       1         • Oval flange made of stainless steel       - Mounting thread 7/ <sub>16</sub> -20 UNF to EN 61518         • Mounting thread M10 to DIN 19213       3         • Male thread M20 x 1,5       5         • Male thread M20 x 1,5       5         • Male thread ½-14 NPT       6         Non-wetted parts materials       0         • Housing made of die-cast aluminium       0         • Housing stainless steel precision casting       3         Version       • Standard version         • International version, English label inscriptions, documentation in 5 languages on CD       1         Explosion protection       • Tex nA/nL (zone 2)*         • "Intrinsic safety (Ex ia)*       • Explosion-proof (Ex x 0)*6)         • "Intrinsic safety, explosion-proof enclosure and cust explosion protection:       • International version, English label inscriptions, documentape diabaladi bab version (Ex x a)*6		,		
Seal diaphragm       Process connection         Stainless steel       Stainless steel         Hastelloy       Stainless steel         Hastelloy       Hastelloy         Version as diaphragm seal <sup>(2)3)4)</sup> Y         Process connection       C         • Connection shank G½B to EN 837-1       0         • Female thread ½-14 NPT       1         • Oval flange made of stainless steel       -         • Mounting thread ½-14 NPT       1         • Oval flange made of stainless steel       -         • Mounting thread ½-14 NPT       6         Non-wetted parts materials       -         • Housing made of die-cast aluminium       0         • Housing stainless steel precision casting       3         Version       -         • Standard version       1         • International version, English label inscriptions, documentation in 5 languages on CD       2         Explosion protection       -         • With ATEX, Type of protection:       -         • "Intrinsic safety (EEx ia)"       B         • "Explosion-proof (EEx d)*5)       B         • "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zon ED/2D)*0       R         • "Intrinsic safety, explosion-proof enclosure an				
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Hastelloy       Stainless steel       B         Hastelloy       Hastelloy         Version as diaphragm seal <sup>2/3/4/</sup> Y         Process connection       0         • Connection shank G½B to EN 837-1       0         • Female thread ½-14 NPT       1         • Oval flange made of stainless steel       1         • Mounting thread 7/ <sub>16</sub> -20 UNF to EN 61518       2         • Mounting thread M10 to DIN 19213       3         • Male thread ½-14 NPT       6         Non-wetted parts materials       •         • Housing made of die-cast aluminium       0         • Housing stainless steel precision casting       3         Version       3         • Standard version       1         • International version, English label inscriptions, documentation in 5 languages on CD       2         Explosion-proof (EEx d)*5       B         • "Intrinsic safety and explosion-proof enclosure and dust explosion protection (EEx ia + EEx d) + Zone 10/20)*6' (not for SI III FF)       B         • With FM + CSA, Type of protection:       • "Intrinsic safety, explosion-proof (is + x) <sup>r50</sup> NC         • "Intrinsic safety and explosion-proof (is + x) <sup>r50</sup> NC       C         • With FM + CSA, Type of protection:       • Thithinsic safety and explosion-proof (is + x) <sup>r50</sup> NC<			- <u>,</u>	
HastelloyHastelloyCVersion as diaphragm seal $(2)3/4)$ YProcess connection $(2)3/4)$ $(2)3/4)$ Process connection shank G½B to EN 837-1 $(0)$ Female thread ½-14 NPT $(1)$ Oval flange made of stainless steel $(1)$ Mounting thread M10 to DIN 19213 $(2)$ Male thread M20 x 1,5 $(3)$ Male thread $1/2$ -14 NPT $(6)$ Non-wetted parts materials $(1)$ Housing made of die-cast aluminium $(0)$ Housing stainless steel precision casting $(2)$ Version $(3)$ Standard version $(1)$ International version, English label inscriptions, documentation in 5 languages on CDExplosion protection $(2)$ Without $(2)$ Without $(2)$ Without $(2)$ Without $(2)$ Without $(2)$ Without $(2)$ With ATEX, Type of protection: $(1)$ Thirinsic safety and explosion-proof enclosure and dust explosion protection (EEx ia + EEx d)+ $(2)$ $(2)$ $(2)$ $(2)$ $(2)$ $(3)$ $(2)$ $(3)$ $(2)$ $(3)$ $(2)$ $(3)$ $(3)$ $(2)$ $(3)$ $(3)$ $(2)$ $(3)$ $(2)$ $(3)$ $(3)$ $(4)$ $(3)$ $(4)$ $(3)$ $(4)$ $(3)$ $(4)$ $(3)$ $(5)$ $(6)$ $(5)$ $(6)$ $(6)$ $(7)$				
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Process connection       • Connection shank G½B to EN 837-1       0         • Female thread ½-14 NPT       1         • Oval flange made of stainless steel       1         • Mounting thread <sup>7</sup> / <sub>16</sub> -20 UNF to EN 61518       2         • Mounting thread M10 to DIN 19213       3         • Male thread M20 x 1,5       5         • Male thread ½-14 NPT       6         Non-wetted parts materials       0         • Housing made of die-cast aluminium       0         • Housing stainless steel precision casting       3         Version       1         • Standard version, English label inscriptions, documentation in 5 languages on CD       2         Explosion protection       4         • With out       A         • With out       A         • With out       A         • With out       A         • With out       B         • "Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d)* <sup>6</sup> )       D         • "Intrinsic safety, explosion-proof (EEx ia + EEx d + Zone 10/2D)* <sup>6</sup> ) (not for DS III FF)       E         • With FM + CSA, Type of protection:       • Trinsic safety and explosion-proof (is + xp)* <sup>5</sup> )       B         • "Intrinsic safety and explosion-proof (is + xp)* <sup>5</sup> )       B       C         • With FM + CSA, T			v	
<ul> <li>Connection shank G½B to EN 837-1</li> <li>Female thread ½-14 NPT</li> <li>Oval flange made of stainless steel</li> <li>Mounting thread 7/<sub>16</sub>-20 UNF to EN 61518</li> <li>Mounting thread M10 to DIN 19213</li> <li>Male thread M20 x 1,5</li> <li>Male thread ½-14 NPT</li> <li>Non-wetted parts materials</li> <li>Housing stainless steel precision casting</li> <li>Housing stainless steel precision casting</li> <li>Version</li> <li>Standard version</li> <li>International version, English label inscriptions, documentation in 5 languages on CD</li> <li>Explosion protection</li> <li>Without</li> <li>With ATEX, Type of protection: <ul> <li>"Intrinsic safety (EEx ia)"</li> <li>"Explosion-proof (EEx d)<sup>r5)</sup></li> <li>"Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d)<sup>r6)</sup></li> <li>"Ex nA/nL (zone 2)"</li> <li>"Intrinsic safety and explosion-proof enclosure and dust explosion protection: <ul> <li>"Intrinsic safety and explosion-proof</li> <li>With FM + CSA, Type of protection:</li> <li>"Intrinsic safety and explosion-proof</li> <li>(is + xp)<sup>r5)</sup></li> </ul> </li> <li>Electrical connection / cable entry</li> <li>Screwed gland ½-14 NPT</li> <li>Plug M12 incl. mating connector<sup>7</sup>)</li> <li>Display</li> <li>Without (digital display hidden)</li> <li>With visible digital indicator</li> <li>With visible digital indicator</li> </ul></li></ul>				
<ul> <li>Female thread ½-14 NPT</li> <li>Oval flange made of stainless steel</li> <li>Mounting thread 7/<sub>16</sub>-20 UNF to EN 61518</li> <li>Mounting thread M10 to DIN 19213</li> <li>Male thread M20 x 1,5</li> <li>Male thread ½-14 NPT</li> <li>Mon-wetted parts materials</li> <li>Housing made of die-cast aluminium</li> <li>Housing stainless steel precision casting</li> <li>Housing stainless steel precision casting</li> <li>Standard version</li> <li>International version, English label inscriptions, documentation in 5 languages on CD</li> <li>Explosion protection</li> <li>Without</li> <li>With ATEX, Type of protection: <ul> <li>"Intrinsic safety (EEx a)"<sup>6</sup></li> <li>"Explosion-proof (EEx d)"<sup>5</sup></li> <li>"Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d)"<sup>6</sup></li> <li>"ExnA/nL (zone 2)"</li> <li>"Intrinsic safety and explosion-proof enclosure and dust explosion protection (EEx ia + EEx d)"<sup>6</sup></li> <li>With FM + CSA, Type of protection: <ul> <li>"Intrinsic safety and explosion-proof</li> <li>(Internatic aluministic safety and explosion-proof</li> <li>Screwed gland ½-14 NPT</li> </ul> </li> <li>Electrical connection / cable entry</li> <li>Screwed gland ½-14 NPT</li> <li>Plug M12 incl. mating connector<sup>7</sup></li> <li>Plug M12 incl. mating connector<sup>7</sup></li> <li>With visible digital indicator</li> <li>With visible digital indicator</li> <li>With visible digital indicator</li> </ul></li></ul>				
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- Mounting thread ${}^{7}$ / <sub>16</sub> -20 UNF to EN 61518 - Mounting thread M10 to DIN 19213 • Male thread M20 x 1,5 • Male thread ${}^{1}$ / <sub>2</sub> -14 NPT <b>Non-wetted parts materials</b> • Housing made of die-cast aluminium • Housing stainless steel precision casting <b>Version</b> • Standard version, English label inscriptions, documentation in 5 languages on CD <b>Explosion protection</b> • With ATEX, Type of protection: • "Intrinsic safety (EEx ia)" • "Explosion-proof (EEx d)" <sup>5</sup> ) • "Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d)" <sup>6</sup> ) • "Intrinsic safety explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)" <sup>6</sup> ) (not for DS III FF) • With FM + CSA, Type of protection: • "Intrinsic safety and explosion-proof (is + xp)" <sup>5</sup> ) <b>Electrical connection / cable entry</b> • Screwed gland M20x1.5 • Strewed gland M20x1.5 • Screwed gland M20x1.5 • Strewed Gland M20x1.5 • S				
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<ul> <li>Housing made of die-cast aluminium</li> <li>Housing stainless steel precision casting</li> <li>Version</li> <li>Standard version</li> <li>International version, English label inscriptions, documentation in 5 languages on CD</li> <li>Explosion protection</li> <li>Without</li> <li>With ATEX, Type of protection: <ul> <li>"Intrinsic safety (EEx ia)"</li> <li>"Explosion-proof (EEx d)"<sup>5</sup>)</li> <li>"Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d)"<sup>6</sup>)</li> <li>"Ex nA/nL (zone 2)"</li> <li>"Intrinsic safety, explosion-proof enclosure and dust explosion protection: <ul> <li>"Intrinsic safety and explosion-proof</li> <li>Explosion protection:</li> <li>"Intrinsic safety and explosion-proof</li> <li>KC</li> </ul> </li> <li>Electrical connection / cable entry</li> <li>Screwed gland M20x1.5</li> <li>Screwed gland M20x1.5</li> <li>Screwed gland M20x1.5</li> <li>Screwed gland M20x1.5</li> <li>Without (digital display hidden)</li> <li>With visible digital indicator</li> <li>With customer-specific digital indicator (setting</li> </ul></li></ul>			-	-
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documentation in 5 languages on CD         Explosion protection         • Without         • With ATEX, Type of protection:         • "Intrinsic safety (EEx ia)"         • "Explosion-proof (EEx d)" <sup>5</sup> )         • "Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d)" <sup>6</sup> )         • "Ex nA/nL (zone 2)"         • "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D) <sup>6</sup> ) (not for DS III FF)         • With FM + CSA, Type of protection:         • "Intrinsic safety and explosion-proof (is + xp)" <sup>5</sup> )         Electrical connection / cable entry         • Screwed gland M20x1.5         • Screwed gland ½-14 NPT         • Plug M12 incl. mating connector <sup>7</sup> )         Display         • Without (digital display hidden)         • With visible digital indicator         • With customer-specific digital indicator (setting				1
Explosion protection         • Without         • With ATEX, Type of protection:         • "Intrinsic safety (EEx ia)"         • "Explosion-proof (EEx d)" <sup>5</sup> )         • "Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d)" <sup>6</sup> )         • "Ex nA/nL (zone 2)"         • "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)" <sup>6</sup> ) (not for DS III FF)         • With FM + CSA, Type of protection:         • "Intrinsic safety and explosion-proof (is + xp)" <sup>5</sup> )         Electrical connection / cable entry         • Screwed gland M20x1.5         • Screwed gland ½-14 NPT         • Plug M12 incl. mating connector <sup>7</sup> )         Display         • Without (digital display hidden)         • With visible digital indicator         • With customer-specific digital indicator (setting				2
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<ul> <li>With ATEX, Type of protection: <ul> <li>"Intrinsic safety (EEx ia)"</li> <li>"Explosion-proof (EEx d)"<sup>5</sup>)</li> <li>"Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d)"<sup>6</sup>)</li> <li>"Ex nA/nL (zone 2)"</li> <li>"Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)"<sup>6</sup>) (not for DS III FF)</li> <li>With FM + CSA, Type of protection: <ul> <li>"Intrinsic safety and explosion-proof (is + xp)"<sup>5</sup>)</li> </ul> </li> <li>Electrical connection / cable entry</li> <li>Screwed gland M20x1.5</li> <li>Screwed gland ½-14 NPT</li> <li>Plug M12 incl. mating connector<sup>7</sup>)</li> <li>Display</li> <li>Without (digital display hidden)</li> <li>With visible digital indicator</li> <li>With customer-specific digital indicator (setting</li> </ul></li></ul>	•			۵
<ul> <li>"Intrinsic safety (EEx ia)"</li> <li>"Explosion-proof (EEx d)"<sup>5</sup>)</li> <li>"Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d)"<sup>6</sup>)</li> <li>"Ex nA/nL (zone 2)"</li> <li>"Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)"<sup>6</sup>) (not for DS III FF)</li> <li>With FM + CSA, Type of protection:         <ul> <li>"Intrinsic safety and explosion-proof (is + xp)"<sup>5</sup>)</li> </ul> </li> <li>Electrical connection / cable entry</li> <li>Screwed gland M20x1.5</li> <li>Screwed gland ½-14 NPT</li> <li>Plug M12 incl. mating connector<sup>7</sup>)</li> <li>F</li> <li>Display</li> <li>Without (digital display hidden)</li> <li>With visible digital indicator</li> <li>With customer-specific digital indicator (setting</li> </ul>		ptection.		^
<ul> <li>"Explosion-proof (EEx d)"<sup>5</sup>)</li> <li>"Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d)"<sup>6</sup>)</li> <li>"Ex nA/nL (zone 2)"</li> <li>"Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)"<sup>6</sup>) (not for DS III FF)</li> <li>With FM + CSA, Type of protection:         <ul> <li>"Intrinsic safety and explosion-proof (is + xp)"<sup>5</sup>)</li> </ul> </li> <li>Electrical connection / cable entry</li> <li>Screwed gland M20x1.5</li> <li>Screwed gland ½-14 NPT</li> <li>Plug M12 incl. mating connector<sup>7</sup>)</li> <li>Display</li> <li>Without (digital display hidden)</li> <li>With visible digital indicator</li> <li>With customer-specific digital indicator (setting</li> </ul>				в
<ul> <li>"Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d)<sup>*6</sup>)</li> <li>"Ex nA/nL (zone 2)"</li> <li>"Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)<sup>*6</sup>) (not for DS III FF)</li> <li>With FM + CSA, Type of protection:         <ul> <li>"Intrinsic safety and explosion-proof (is + xp)<sup>*5</sup>)</li> </ul> </li> <li>Electrical connection / cable entry         <ul> <li>Screwed gland M20x1.5</li> <li>Screwed gland ½-14 NPT</li> <li>Plug M12 incl. mating connector<sup>7</sup>)</li> <li>F</li> <li>Display                 <ul> <li>With visible digital indicator</li> <li>With customer-specific digital indicator (setting</li> <li>With customer-specific digital indicator (setting</li> <li>Tetra and an an an and an an an and an an an and an an</li></ul></li></ul></li></ul>				
(EEx ia + EEx d)" <sup>6)</sup> E         - "Ex nA/nL (zone 2)"       E         - "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)" <sup>6)</sup> (not for DS III FF)       R         • With FM + CSA, Type of protection:       - "Intrinsic safety and explosion-proof (is + xp)" <sup>5)</sup> NC         Electrical connection / cable entry       • Screwed gland M20x1.5       B         • Screwed gland ½-14 NPT       C         • Plug M12 incl. mating connector <sup>7)</sup> F         Display       • Without (digital display hidden)       1         • With visible digital indicator       6	- "Intrinsic safety and e	explosion-proof enclosure		Р
<ul> <li>"Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)"<sup>6)</sup> (not for DS III FF)</li> <li>With FM + CSA, Type of protection:         <ul> <li>"Intrinsic safety and explosion-proof (is + xp)"<sup>5)</sup></li> </ul> </li> <li>Electrical connection / cable entry         <ul> <li>Screwed gland M20x1.5</li> <li>Screwed gland 1/2-14 NPT</li> <li>Plug M12 incl. mating connector<sup>7)</sup></li> <li>F</li> <li>Display             <ul> <li>Without (digital display hidden)</li> <li>With visible digital indicator</li> <li>With customer-specific digital indicator (setting</li> <li>T</li> </ul> </li> </ul></li></ul>	(EEx ia + EEx d)" <sup>6)</sup>			
dust explosion protection (EEx ia + EEx d +         Zone 1D/2D)* <sup>6)</sup> (not for DS III FF)         • With FM + CSA, Type of protection:         - "Intrinsic safety and explosion-proof (is + xp)* <sup>5</sup> )         Electrical connection / cable entry         • Screwed gland M20x1.5         B         • Screwed gland ½-14 NPT         • Plug M12 incl. mating connector <sup>7</sup> )         Display         • Without (digital display hidden)         • With visible digital indicator         • With customer-specific digital indicator (setting	- "Ex nA/nL (zone 2)"			E
Zone 1D/2D) <sup>*6)</sup> (not for DS III FF) • With FM + CSA, Type of protection: - "Intrinsic safety and explosion-proof (is + xp) <sup>*5)</sup> Electrical connection / cable entry • Screwed gland M20x1.5 • Screwed gland M20x1.5 • Screwed gland <sup>1</sup> / <sub>2</sub> -14 NPT • Plug M12 incl. mating connector <sup>7)</sup> Display • Without (digital display hidden) • With visible digital indicator • With customer-specific digital indicator (setting 7				R
<ul> <li>With FM + CSA, Type of protection:         <ul> <li>"Intrinsic safety and explosion-proof (is + xp)"<sup>5</sup>)</li> </ul> </li> <li>Electrical connection / cable entry         <ul> <li>Screwed gland M20x1.5</li> <li>Screwed gland ½-14 NPT</li> <li>Plug M12 incl. mating connector<sup>7</sup>)</li> <li>F</li> </ul> </li> <li>Display         <ul> <li>Without (digital display hidden)</li> <li>With visible digital indicator</li> <li>With customer-specific digital indicator (setting</li> <li>T</li> </ul> </li> </ul>	dust explosion prote	CTION (EEX IA + EEX O +		
<ul> <li>"Intrinsic safety and explosion-proof (is + xp)"<sup>5</sup>)</li> <li>Electrical connection / cable entry</li> <li>Screwed gland M20x1.5</li> <li>Screwed gland ½-14 NPT</li> <li>Plug M12 incl. mating connector<sup>7</sup>)</li> <li>Display</li> <li>Without (digital display hidden)</li> <li>With visible digital indicator</li> <li>With customer-specific digital indicator (setting</li> </ul>				
(is + xp)*5)         Electrical connection / cable entry         • Screwed gland M20x1.5         • Screwed gland ½-14 NPT         • Plug M12 incl. mating connector <sup>7</sup> )         Display         • Without (digital display hidden)         • With visible digital indicator         • With customer-specific digital indicator (setting	• •	•		NC
<ul> <li>Screwed gland M20x1.5</li> <li>Screwed gland ½-14 NPT</li> <li>Plug M12 incl. mating connector<sup>7</sup>)</li> <li>Display</li> <li>Without (digital display hidden)</li> <li>With visible digital indicator</li> <li>With customer-specific digital indicator (setting</li> </ul>	$(is + xp)^{*5}$			
<ul> <li>Screwed gland M20x1.5</li> <li>Screwed gland ½-14 NPT</li> <li>Plug M12 incl. mating connector<sup>7</sup>)</li> <li>Display</li> <li>Without (digital display hidden)</li> <li>With visible digital indicator</li> <li>With customer-specific digital indicator (setting</li> </ul>		cable entry		
<ul> <li>Screwed gland ½-14 NPT</li> <li>Plug M12 incl. mating connector<sup>7</sup>)</li> <li>Display</li> <li>Without (digital display hidden)</li> <li>With visible digital indicator</li> <li>With customer-specific digital indicator (setting</li> </ul>				в
Display       •         • Without (digital display hidden)       1         • With visible digital indicator       6         • With customer-specific digital indicator (setting       7	• Screwed gland 1/2-14 N	NPT		С
Without (digital display hidden)     With visible digital indicator     With customer-specific digital indicator (setting     7				F
With visible digital indicator     With customer-specific digital indicator (setting     7	Display			
With customer-specific digital indicator (setting	Without (digital display	/ hidden)		1
With customer-specific digital indicator (setting	Ũ			6
	With customer-specific	digital indicator (setting		7
as specified, Order code "Y21" or required)	as specified, Urder co	ue r21 or required)		

Factory-mounting of shut-off valves and valve manifolds see page 2/142.

Included in delivery of the device:

Brief instructions (Leporello)

• CD-ROM with detailed documentation

- <sup>1)</sup> For oxygen application, add Order code E10.
- Version 7MF4233-1DY... only up to max. span 200 mbar a (2.9 psi a).
   When the manufacture's certificate M (calibration certificate) has to be ordered for transmitters with diaphragm seals, 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.
- Whe the acceptance test certificate 3.1 for transmitters with direct-connected diaphragm seals is ordered, this certificate must also be ordered with the corresponding seals.
- <sup>5)</sup> Without cable gland, with blanking plug.
- <sup>6)</sup> With enclosed cable gland EEx ia and blanking plug.
- 7) Not together with types of protection "Explosion-proof" or "Intrinsic safety and explosion-proof"
- F) Subject to export regulations AL: 91999, ECCN: N.

#### DS III series for absolute pressure (from gage pressure series)

		code		
Selection and Ordering data Further designs	0100	HART	PA	FF
Add "-Z" to Order No. and specify Order code.				
Pressure transmitter with mounting bra- cket made of:				
• Steel	A01	~	1	~
Stainless steel	A02	✓	✓	✓
Plug				
Han 7D (metal, gray)	A30	✓ ✓		
• Han 8U (instead of Han 7D)	A31	×,	,	
Cable sockets for M12 connectors (metal)	A50	v	•	v
Rating plate inscription (instead of German)				
• English	B11	✓	✓	✓
• French	B12	<b>√</b>	1	<b>√</b>
• Spanish • Italian	B13 B14	✓ ✓	√ √	1 1
English rating plate	B21	1	1	1
Pressure units in inH <sub>2</sub> O or psi	22.			
Quality inspection certificate (Factory calibration) to IEC 60770-2 <sup>1)</sup>	C11	~	•	~
Acceptance test certificate <sup>2)</sup> To EN 10204-3.1	C12	*	•	~
Factory certificate To EN 10204-2.2	C14	~	~	1
"Functional Safety (SIL)" certificate	C20	✓		
"PROFIsafe" certificate and protocol	C21		✓	
Setting of upper limit of output signal to 22.0 mA	D05	~		
Manufacturer's declaration acc. to NACE	D07	✓	✓	1
<b>Type of protection IP68</b> (not together with Han 7D / Han 8U plug, Pg 13.5 screwed gland)	D12	*	~	~
<b>Digital indicator alongside the input keys</b> (only together with the devices 7MF4233- 0A.6 orA.7-Z, Y21 or Y22 + Y01).	D27	*	1	1
Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flange	D37	*	~	~
Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")	E01	*	~	✓
Use on zone 0 (only together with type of protection "Intrinsic safety (EEx ia)")	E02	*	1	1
<b>Oxygen application</b> (max. 120 bar a (1740 psi a) at 60°C (140 °F) with oxygen measurement and inert liquid)	E10	*	1	~
Explosion-proof "Intrinsic safety" to INME- TRO (Brazil) (only for transmitter 7MF4B)	E25	*	~	~
Explosion-proof "Intrinsic safety" to NEPSI (China)	E55	~	1	~
(only for transmitter 7MF4B)		,	,	,
Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)	E56	~	V	v
Explosion-proof "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)	E57	*	1	1

Selection and Ordering data	Order	code		
Additional data		HART	PA	FF
Add "-Z" to Order No. and specify Order				
<b>Measuring range to be set</b> Specify in plain text (max. 5 digits): Y01: up to mbar, bar, kPa, MPa, psi	Y01	~		
Measuring point number (TAG No.) Max. 16 characters, specify in plain text: Y15:	Y15	*	~	*
Measuring point text Max. 27 characters, specify in plain text: Y16:	Y16	*	*	*
Entry of HART address (TAG) Max. 8 characters, specify in plain text: Y17:	Y17	*		
Setting of pressure indication in pressure units Specify in plain text (standard setting: mA): Y21: mbar, bar, kPa, MPa, psi, Note: The following pressure units can be selected: bar, mbar, mm $H_2O^*$ ), in $H_2O^*$ ), ft $H_2O^*$ ), mmHG, inHG, psi, Pa, kPa, MPa, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , Torr, ATM oder % *) ref. temperature 20 °C	Y21	*	*	*
Setting of pressure indication in non-pressure units Specify in plain text: Y22: up to I/min, m <sup>3</sup> /h, m, USgpm, (specification of measuring range in pressure units "YO1" is essential, unit with max. 5 characters)	Y22 + Y01	*	*	*
<b>Preset bus address</b> (possible between 1 and 126) Specify in plain text: Y25:	Y25		~	

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

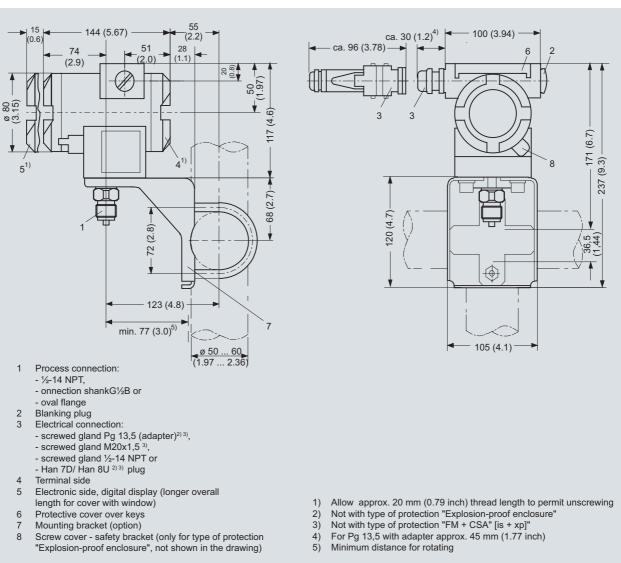
✓ = available

<sup>&</sup>lt;sup>1)</sup> When the manufacture's certificate M (calibration certificate) has to be ordered for transmitters with diaphragm seals, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.

<sup>2)</sup> Whe the acceptance test certificate 3.1 for transmitters with direct-connected diaphragm seals is ordered, this certificate must also be ordered with the corresponding seals.

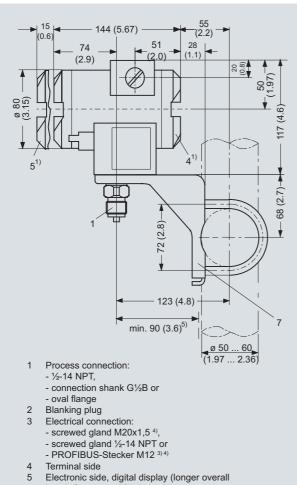
DS III series for absolute pressure (from gage pressure series)

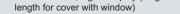
#### Dimensional drawings



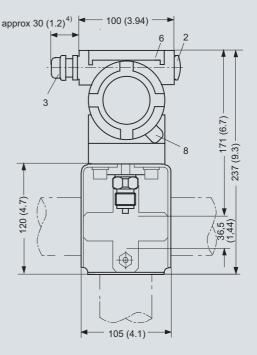
SITRANS P pressure transmitters, DS III HART series for absolute pressure, from the pressure series, dimensions in mm (inch)

DS III series for absolute pressure (from gage pressure series)





- 6 Protective cover over keys
- 7 Mounting bracket (option)
- 8 Screw cover safety bracket (only for type of protection "Explosion-proof enclosure", not shown in the drawing)



- 1) Allow approx. 20 mm (0.79 inch) thread length in addition
- 2) Minimum distance for rotating
- 3) Not with type of protection "Explosion-proof enclosure"
- 4) Not with type of protection "FM + CSA"

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

# SITRANS P measuring instruments for pressure Transmitters for gage, absolute and differential pressure, flow and level DS III series for absolute pressure (from differential pressure series)

#### Technical specifications

	HART		PROFIBUS PA or FOU	JNDATION Fieldbus	
Input					
Measured variable	Absolute pressure pre	ssure			
Spans (infinitely adjustable) or nominal measuring range and max. permissible working pressure	Span	Maximum working pres- sure	Nominal measuring range	Maximum working pres	
	8.3 250 mbar a (0.12 3.6 psi a)	32 bar a (464 psi a)	250 mbar a (3.6 psi a)	32 bar a (464 psi a)	
	43 1300 mbar a (0.62 18.9 psi a)	32 bar a (464 psi a)	1300 bar a (18.9 psi a)	32 bar a (464 psi a)	
	160 5000 mbar a (2.32 72.5 psi a)	32 bar a (464 psi a)	5 bar a (72.5 psi a)	32 bar a (464 psi a)	
	1 30 bar a (14.5 435 psi a)	160 bar a (2320 psi a)	30 bar a (435 psi a)	160 bar a (2320 psi a)	
	5.3 100 bar a (77 1450 psi a)	160 bar a (2320 psi a) (for connection thread M10 and <sup>7</sup> / <sub>16</sub> -20 UNF in the process flanges)	100 bar a (1450 psi a)	160 bar a (2320 psi a) (for connection thread M10 and <sup>7</sup> / <sub>16</sub> -20 UNF in the process flanges)	
Lower measuring limit		•	•	•	
<ul> <li>Measuring cell with silicone oil filling</li> </ul>	0 mbar a (0 psi a)				
Upper measuring limit	100% of max. span				
Output					
Output signal	4 20 mA	20 mA Digital PROFIBUS PA or FOUNDAT signal		or FOUNDATION Fieldbus	
<ul> <li>Lower limit (infinitely adjustable)</li> </ul>	3.55 mA, factory prese	et to 3.84 mA	-		
Upper limit (infinitely adjustable)	23 mA, factory preset to 22.0 mA	to 20.5 mA or optionally set	-		
Load			•		
Without HART communication	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.02$ $U_{\rm H}$ : Power supply in V	23 Α in Ω, /	-		
With HART communication	$\begin{array}{l} R_{\rm B} = 230 \ \ 500 \ \Omega \ {\rm (SIM} \\ R_{\rm B} = 230 \ \ 1100 \ \Omega \ {\rm (H} \end{array}$	MATIC PDM) or IART Communicator)	-		
Physical bus	-		IEC 61158-2		
With polarity reversal protection	-		Yes		
Accuracy	To EN 60770-1				
Reference conditions (All error data refer always refer to the set span)		tic, start-of-scale value 0 ba °C (77 °F)) r: Span ratio (r =		aphragm, silicone oil filling	
Error in measurement and fixed-point setting (including hysteresis and repeatability)					
Linear characteristic			≤ 0.1%		
- r ≤ 10	≤ 0.1%				
- 10 < r ≤ 30	≤ 0.2%				
Long-term drift (temperature change $\pm$ 30 °C ( $\pm$ 54 °F))	≤ (0.1 · r)%/year		≤ 0.1%/year		
Influence of ambient temperature			_		
• at -10 +60 °C (14 140 °F)	≤ (0.1 · r +0.2)%		≤ 0.3%		
• at -4010 °C and +60 +85 °C (-40 +14 °F and 140 185 °F)	≤ (0.1 · r + 0.15)%/10 K		≤ 0.25%/10 K		
Measured Value Resolution	-	- 3		3 · 10 <sup>-5</sup> of nominal measuring range	

# SITRANS P measuring instruments for pressure Transmitters for gage, absolute and differential pressure, flow and level DS III series for absolute pressure (from differential pressure series)

	HART	PROFIBUS PA or FOUNDATION Fieldbus
Rated operating conditions		
Degree of protection (to EN 60529)	IP65	
Process temperature		
Measuring cell with silicone oil filling	-40 +100 °C (-40 +212 °F)	
Measuring cell with inert filling liquid	-20 +100 °C (-4 +212 °F)	
In conjunction with dust explosion protec- tion	-20 +60 °C (-4 +140 °F)	
mbient conditions		
Ambient temperature		
- Digital indicators	-30 +85 °C (-22 +185 °F)	
Storage temperature	-50 +85 °C (-58 +185 °F)	
Climatic class		
- Condensation	Permissible	
Electromagnetic compatibility		
- Emitted interference and interference im- munity	To EN 61326 and NAMUR NE 21	
Design		
Veight (without options)	≈ 4.5 kg (≈ 9.9 lb)	
lousing material	Poor in copper die-cast aluminium, GD-AlSi12	or stainless steel precision casting, mat. No. 1.440
Vetted parts materials		
Seal diaphragm	Stainless steel, mat. No. 1.4404/316L or Hastel tantalum or gold	loy C276, mat. No. 2.4819, Monel, mat. No. 2.4360
Process flanges and sealing screw	Stainless steel, mat. No. 1.4408, Hastelloy C4,	mat. No. 2.4610 or Monel, mat. No. 2.4360
O-Ring	FPM (Viton) or optionally: PTFE, FEP, FEPM and	1 NBR
leasuring cell filling	Silicone oil or inert filling liquid (max. 160 bar (2	2320 psi a) with oxygen measurement)
Process connection	$^{1\!\!4}\mbox{-}18$ NPT and flange connection to DIN 19213 $^{7\!\!/}\mbox{-}16\mbox{-}20$ UNF to EN 61518	with mounting thread M10 to DIN 19213 or
Naterial of the mounting bracket		
Steel	Sheet steel, Mat. No. 1.0330, chrome-plated	
Stainless steel	Stainless steel, Mat. No. 1.4301 (SS304)	
Power supply $m{\textit{U}}_{\!ee}$		Supplied through bus
erminal voltage on transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically-safe mode	-
eparate 24 V power supply necessary	-	No
Bus voltage		•
Not Ex	-	932 V
With intrinsically-safe operation	-	924 V
Current consumption		
Basic current (max.)	-	12.5 mA
Startup current ≤ basic current	-	Yes
Max. current in event of fault	-	15.5 mA
ault disconnection electronics (FDE) avai- able	-	Yes

SITRANS P, DS III series for absolute press	ure (from differential pressure series)			
	HART	PROFIBUS PA or FOUNDATION Fieldbus		
Certificate and approvals		·		
Classification according to pressure equip- ment directive (DRGL 97/23/EC)	For gases of fluid group 1 and liquids of fluid gro graph 3 (sound engineering practice)	pup 1; complies with requirements of Article 3, para		
Explosion protection				
Intrinsic safety "i"	PTB 99 ATEX 2122			
- Identification	Ex II 1/2 G EEx ia/ib IIB/IIC T6			
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperature class -40 +70 °C (-40 +158 °F) temperature class -40 +60 °C (-40 +140 °F) temperature class	s T5;		
- Connection	To certified intrinsically-safe circuits with maximum values: $U_i = 30 \text{ V}, \ l_i = 100 \text{ mA},$ $P_i = 750 \text{ mW}; \ R_i = 300 \Omega$	FISCO supply unit: $U_o = 17.5$ V, $I_o = 380$ mA, $P_o = 5.32$ W Linear barrier: $U_o = 24$ V, $I_o = 250$ mA, $P_o = 1.2$ W		
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4  {\rm mH},  C_{\rm i} = 6  {\rm nF}$	$L_{\rm i} = 7 \mu {\rm H},  C_{\rm i} = 1.1 {\rm nF}$		
• Explosion-proof "d"	PTB 99 ATEX 1160	1		
- Identification	Ex II 1/2 G EEx d IIC T4/T6			
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperature class -40 +60 °C (-40 +140 °F) temperature class	T4; T6		
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC	To circuits with values: $U_{\rm H}$ = 9 32 V DC		
Dust explosion protection for zone 20	PTB 01 ATEX 2055			
- Identification	Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C			
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F)			
- Max.surface temperature	120 °C (248 °F)			
- Connection	To certified intrinsically-safe circuits with maximum values: $U_i = 30 \text{ V}, \ I_i = 100 \text{ mA},$ $P_i = 750 \text{ mW}, \ R_i = 300 \Omega$	FISCO supply unit: $U_o = 17.5$ V, $I_o = 380$ mA, $P_o = 5.32$ W Linear barrier: $U_o = 24$ V, $I_o = 250$ mA, $P_o = 1.2$ W		
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4  {\rm mH},  C_{\rm i} = 6  {\rm nF}$	$L_{\rm i} = 7 \ \mu {\rm H}, \ C_{\rm i} = 1.1 \ {\rm nF}$		
Dust explosion protection for zone 21/22	PTB 01 ATEX 2055	1		
- Identification	Ex II 2 D IP65 T 120 °C			
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC; $P_{\rm max}$ = 1.2 W	To circuits with values: $U_{\rm H}$ = 9 32 V DC; $P_{\rm max}$ = 1.2 W		
<ul> <li>Type of protection "n" (zone 2)</li> </ul>	TÜV 01 ATEX 1696 X	Planned		
- Identification	Ex II 3 G EEx nA L IIC T4/T5/T6	-		
<ul> <li>Explosion protection 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, GP E DIV 2, GP ABCD T4T6; CL II, DIV 2, GP FG; CL			
<ul> <li>Explosion protection to CSA</li> </ul>	Certificate of Compliance 1153651			
- Identification (XP/DIP) or (IS)	CL I, DIV 1, GP ABCD T4T6; CL II, DIV 1, GP E T4T6; CL II, DIV 2, GP FG; CL III	FG; CL III; Ex ia IIC T4T6; CL I, DIV 2, GP ABCD		

# SITRANS P measuring instruments for pressure Transmitters for gage, absolute and differential pressure, flow and level DS III series for absolute pressure

			ifferential pressure series)	
HART communication		Communication FOUNDATION Fieldbus		
HART communication	230 1100 Ω	Function blocks	3 function blocks analog input,	
Protocol	HART Version 5.x		1 function block PID	
Software for computer	SIMATIC PDM	<ul> <li>Analog input</li> </ul>		
PROFIBUS PA communication		<ul> <li>Adaptation to customer-speci- fic process variables</li> </ul>	Yes, linearly rising or falling cha- racteristic	
Simultaneous communication with	4	- Electrical damping T <sub>63</sub> , adjus- table	0 100 s	
master class 2 (max.) The address can be set using	Configuration tool or local opera-	- Simulation function	Output/input (can be locked within	
The address can be set using	tion (standard setting address 126)	- Failure mode	the device with a bridge) Can be parameterized (last good	
Cyclic data usage			value, substitute value, incorrect value)	
Output byte	5 (one measuring value) or 10 (two measuring values)	- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respec-	
Input byte	0, 1, or 2 (register operating mode and reset function for metering)	- Square-rooted characteristic	tively Yes	
Internal preprocessing		for flow measurement	165	
Device profile	PROFIBUS PA Profile for Process	• PID	Standard FF function block	
	Control Devices Version 3.0, Class B	<ul> <li>Physical block</li> </ul>	1 Resource block	
Function blocks	2	Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block	
<ul> <li>Analog input</li> </ul>			LCD	
<ul> <li>Adaptation to customer-speci- fic process variables</li> </ul>	Yes, linearly rising or falling cha- racteristic	Pressure transducer block     Con be cellibrated by explaining	Yee	
<ul> <li>Electrical damping T<sub>63</sub>, adjus- table</li> </ul>	0 100 s	<ul> <li>Can be calibrated by applying two pressures</li> </ul>	Yes	
- Simulation function	Input /Output	<ul> <li>Monitoring of sensor limits</li> <li>Simulation function: Measured pressure value, sensor temperature and electronics temperature</li> </ul>	Yes	
- Failure mode	Can be parameterized (last good value, substitute value, incorrect value)		Constant value or over paramete- rizable ramp function	
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respec- tively			
Register (totalizer)	Can be reset, preset, optional direction of counting, simulation function of register output			
- Failure mode	Can be parameterized (summation with last good value, continuous summation, summation with incor- rect value)			
- Limit monitoring	One upper and lower warning limit and one alarm limit respectively			
<ul> <li>Physical block</li> </ul>	1			
Transducer blocks	2			
<ul> <li>Pressure transducer block</li> </ul>				
<ul> <li>Can be calibrated by applying two pressures</li> </ul>	Yes			
- Monitoring of sensor limits	Yes			
<ul> <li>Specification of a container characteristic with</li> </ul>	Max. 30 nodes			
<ul> <li>Square-rooted characteristic for flow measurement</li> </ul>	Yes			
- Gradual volume suppression and implementation point of square-root extraction	Parameterizable			
<ul> <li>Simulation function for measu- red pressure value and sensor temperature</li> </ul>	Constant value or over paramete- rizable ramp function			

F

Order No.

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

Selection and Ordering data

Selection and Ordering	g data		Or	de	rΝ	lo.		
SITRANS P pressure t	ransmitters for absolute	F)	71	٨F	43	33	3	-
pressure, from the diff series DS III HART	erential pressure,		P		1	h	ľ	P
Measuring cell filling	Measuring cell							
Ciliaana ail	cleaning Standard							
Silicone oil	Standard		1					
Inert liquid <sup>1)</sup>	Grease-free		3					
Span								
8.3 250 mbar a	(0.12 3.63 psi a)	E)		D				
43 1300 mbar a	(0.62 18.9 psi a)	E)	F	F				
0.16 5 bar a	(2.32 72.5 psi a)	E)	C	G				
1 30 bar a	(14.5 435 psi a)			H				
5.3 100 bar a	(76.9 1450 psi a)		ł	ΚE				
Wetted parts materials	1							
Seal diaphragm	Parts of measuring cell							
Stainless steel	Stainless steel	-		A				
Hastelloy	Stainless steel			В				
Hastelloy	Hastelloy			c				
Tantalum	Tantalum			Ē				
Monel	Monel	E)		н				
Gold	Gold	-,		ï				
Version for diaphragm s				v				
Process connection	<b>T</b> 0							
	T with flange connection							
Sealing screw opposit								
- Mounting thread <sup>7</sup> / <sub>16</sub>					2			
<ul> <li>Mounting thread M1 (only for replacement</li> </ul>					0			
Vent on side of proces								
<ul> <li>Mounting thread <sup>7</sup>/<sub>16</sub></li> </ul>					6			
- Mounting thread M1					4			
(only for replacemen					7			
Non-wetted parts mate	· · · · · · · · · · · · · · · · · · ·	_						
Process flange screws	Electronics housing							
Stainless steel	Die-cast aluminium	-			2	,		
Stainless steel	Stainless steel precision				3			
	casting <sup>6)</sup>							
Version								
<ul> <li>Standard version</li> </ul>							1	
International version, I	English label inscriptions,						2	
documentation in 5 lar	nguages on CD							
Explosion protection								
Without							1	4
• With ATEX, Type of pro	otection:							
- "Intrinsic safety (EEx	ia)"						L.	в
- "Explosion-proof (EE	x d)" <sup>7)</sup>						I.	D
- "Intrinsic safety and e	explosion-proof enclosure							P
(EEx ia + EEx d)" <sup>8)</sup>								
- "Ex nA/nL (zone 2)"								E
<ul> <li>"Intrinsic safety, explored</li> </ul>	osion-proof enclosure and						1	R
Zone 1D/2D) <sup>*8)</sup>	ction (EEx ia + EEx d +							
• With FM + CSA, Type	of protection:							
								٩C
<ul> <li>"Intrinsic safety and (is + xp)"<sup>7)</sup></li> </ul>	explosion-proor							10
		_						
Electrical connection /								
Screwed gland Pg 13.     Screwed gland M20vt								A
Screwed gland M20x1								B
Screwed gland ½-14 I								C
<ul> <li>Han 7D plug (plastic h connector<sup>9)</sup></li> </ul>	iousing) inci. mating							D
								-

• Plug M12 (metal)<sup>10)</sup>

Selection and Ordering data	Order No.
SITRANS P pressure transmitters for absolute F) pressure, from the differential pressure, series DS III HART	7 M F 4 3 3 3 -
<ul> <li>Display</li> <li>Without (digital indicator hidden, setting: mA)</li> <li>With visible digital indicator</li> <li>With customer-specific digital indicator (setting as specified, Order code "Y21" or required)</li> </ul>	1 6 7
Power supply units see "SITRANS I power supply un amplifiers".	nits and isolation
Factory-mounting of shut-off valves and valve manit 2/142.	iolds see page
Included in delivery of the device: • Brief instructions (Leporello) • CD-ROM with detailed documentation • Sealing plug(s) or sealing screw(s) for the proces	s flanges(s)
<ol> <li>For oxygen applications, add Order code E10.</li> <li>Version 7MF4333-1DY only up to max. span 200 m</li> <li>When the manufacture's certificate M (calibration ce ordered for transmitters with diaphragm seals, it is m order this certificate exclusively with the diaphragm accuracy of the <u>total</u> combination is certified here.</li> <li>Whe the acceptance test certificate 3.1 for transmitter ted diaphragm seals is ordered, this certificate must the corresponding seals.</li> <li>Not for span "5.3 100 bar a (76.9 1450 psi a)". F valve in the process flange (see dimensional drawin Not together with Electrical connection "Screwed gla "Han7D plug".</li> <li>Without cable gland, with blanking plug</li> <li>Wott together with type of protection "Explosion-proor protection "Ex nA".</li> <li>Not together with types of protection "Explosion-proor and explosion-proof"</li> </ol>	rtificate) has to be ecommended only t seals. The measurin ers with direct-connet also be ordered wi Position of the top ve g). and Pg 13.5" and g " and and type of

regulations AL: 2B230, ECCN: N. F) Subject to export regulations AL: 91999, ECCN: N.

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

Selection and Orderin	ng data	Orc	ler No.	Selection and Ordering data	Order No.
	transmitters for absolute fferential pressure series)			SITRANS P pressure transmitters for absolute pressure (from the differential pressure series)	
DS III PA series (PROF	FIBUS PA)	F) 7 M	F4334 -	DS III PA series (PROFIBUS PA)	) 7MF4334 -
DS III FF series (FOUN	,	<i>′</i>	F4335-	, ,	) 7 M F 4 3 3 5 -
	DATION TICIADAS)	·	-		, , , , , , , , , , , , , , , , , , ,
Measuring cell filling	Measuring cell			Display	
	cleaning			<ul> <li>Without (digital display hidden)</li> </ul>	
Silicone oil	Standard	1		<ul> <li>With visible digital indicator</li> </ul>	
Inert liquid <sup>1)</sup>	Grease-free	3		With customer-specific digital indicator (setting	
Nominal measuring ra				as specified, Order code "Y21" or required)	
250 mbar a		E) <b>D</b>		Factory-mounting of shut-off valves and valve mar	ifolds see page
1300 mbar a		E) <b>F</b>		2/142.	
5 bar a		E) <b>G</b>		Included in delivery of the device:	
30 bar a	(435 psi a)	н		<ul> <li>Brief instructions (Leporello)</li> <li>CD-ROM with detailed documentation</li> </ul>	
100 bar a	(1450 psi a)	K	E	<ul> <li>Sealing plug(s) or sealing screw(s) for the proce</li> </ul>	ss flanges(s)
Wetted parts material				<sup>1)</sup> For oxygen application, add Order code F10	0 ()
Seal diaphragm	Parts of measuring cell			<ol> <li>For oxygen application, add Order code E10.</li> <li>Version 7MF4334-1DY only up to max. span 200</li> </ol>	mhar a (2 9 nsi a)
Stainless steel	Stainless steel		Α	<sup>3)</sup> When the manufacture's certificate M (calibration of	ertificate) has to be
Hastelloy	Stainless steel		в	ordered for transmitters with diaphragm seals, it is	recommended only
Hastelloy	Hastelloy		с	order this certificate exclusively with the diaphragr	n seals. The measur
Tantalum	Tantalum		E	<ul> <li>accuracy of the <u>total</u> combination is certified here.</li> <li><sup>4)</sup> Whe the acceptance test certificate 3.1 for transmit</li> </ul>	ters with direct-con
Monel	Monel	E)	н	ted diaphragm seals is ordered, this certificate mu	
Gold	Gold		L	the corresponding seals.	
Version as diaphragm s	seal <sup>2)3)4)</sup>		Y	5) Not for nominal measuring range 100 bar a (1450 p vent valve in the process flange (see dimensional	
Process connection				<sup>6)</sup> Without cable gland, with blanking plug	urawing).
Female thread 1/4-18 NF	PT with flange connection			<ul> <li>With our cable gland, with blanking plag</li> <li>With enclosed cable gland EEx ia and blanking plag</li> </ul>	Iq
	ite process connection			<sup>8)</sup> Cannot be used together with the following types of	f protection:
	6-20 UNF to EN 61518		2	"Explosion-proof" and "Intrinsic safety and explosio	n-proof".
- Mounting thread M1	-		0	E) Combinations of the versions marked with E) are s	biect to the export
(only for replaceme			U	regulations AL: 2B230, ECCN: N.	
<ul> <li>Vent on side of proce</li> </ul>				F) Subject to export regulations AL: 91999, ECCN: N.	
	<sub>6</sub> -20 UNF to EN 61518		<u>^</u>		
- Mounting thread M1	-		6 4		
(only for replaceme			4		
Non-wetted parts mat	erials	-			
Process flange screws					
Stainless steel	Die-cast aluminium		2		
Stainless steel	Stainless steel precision casting		3		
Version	-				
<ul> <li>Standard version</li> </ul>			1		
<ul> <li>International version,</li> </ul>	English label inscriptions,		2		
documentation in 5 la					
Explosion protection					
Without			А		
• With ATEX, Type of pr	rotection:				
- "Intrinsic safety (EE)	x ia)"		в		
- "Explosion-proof (EE	·		D		
	explosion-proof enclosure		Р		
(EEx ia + EEx d)" <sup>7)</sup>					
- "Ex nA/nL (zone 2)"			Е		
	losion-proof enclosure and		B		
dust explosion prote	ection (EEx ia + EEx d +		"		
Zone 1D/2D)"7) (not					
<ul> <li>With FM + CSA, Type</li> </ul>					
- "Intrinsic safety and			NC		
(is + xp) <sup>*6)</sup>	4 I				
Electrical connection	/ cable entry	_			
<ul> <li>Screwed gland M20x</li> </ul>	•		в		
<ul> <li>Screwed gland 1/2-14</li> </ul>			C		
M12 Connector (meta			F		
- MILE CONTROLOT (THERE	any		r		

Selection and Ordering data

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

Selection and Ordering data	Order	code		
Further designs	order	HART	PA	FF
		AAAI	FA	FF
Add "-Z" to Order No. and specify Order code.				
Pressure transmitter with mounting bra- cket made of:				
Steel	A01	✓	✓	✓
Stainless steel	A02	✓	~	~
O-rings for process flanges				
(instead of FPM (Viton)) • PTFE (Teflon)	A20	~	~	1
<ul> <li>FEP (with silicone core, approved for food)</li> </ul>	A20	×	* *	¥
• FFPM (Kalrez, compound 4079)	A22	✓	~	✓
• NBR (Buna N)	A23	✓	~	✓
Plug				
Han 7D (metal, gray)	A30	✓ ✓		
Han 8U (instead of Han 7D)	A31	×		
Sealing screws 1/4-18 NPT, with valve in material of process	A40	✓	~	~
flanges				
Cable sockets for M12 connectors (metal)	A50	✓	1	×
Rating plate inscription				
(instead of German)	D44		,	
<ul><li>English</li><li>French</li></ul>	B11 B12	✓ ✓	✓ ✓	✓ ✓
• Spanish	B13	· ·	~	1
• Italian	B14	✓	✓	✓
English rating plate	B21	✓	✓	✓
Pressure units in inH <sub>2</sub> O or psi				
Quality inspection certificate (Factory calibration) to IEC 60770-2 <sup>1)</sup>	C11	1	~	*
Acceptance test certificate <sup>2)</sup> To EN 10204-3.1	C12	~	~	1
Factory certificate To EN 10204-2.2	C14	~	~	*
"Functional Safety (SIL)" certificate	C20	✓		
"PROFIsafe" certificate and protocol	C21		✓	
Setting of upper limit of output signal to 22.0 mA	D05	~		
Manufacturer's declaration acc. to NACE (only together with seal diaphragm made of Hastelloy and stainless steel)	D07	*	~	*
Type of protection IP68	D12	~	~	1
(not together with Han 7D/Han 8U plug, cable gland PG 13.5)				
Digital indicator alongside the input keys	D27	1	1	✓
(only together with the devices 7MF4333- 2A.6 orA.7-Z, Y21 or Y22 + Y01)				
Supplied with oval flange (1 item), PTFE packing and stainless steel screws in thread of process flange	D37	1	~	*
Use in or on zone 1D/2D	E01	1	~	1
(only together with type of protection "Intrinsic safety (EEx ia)")				
Use on zone 0	E02	✓	✓	✓
(only together with type of protection "Intrinsic safety (EEx ia)")				
Oxygen application	E10	1	1	1
(max. 120 bar a (1740 psi a) at 60°C (140 °F) with oxygen measurement and inert liquid)				
Explosion-proof "Intrinsic safety" to INME-	E25	×	~	1
TRO (Brazil) (only for transmitter 7MF4B)				
(Unity for transmitter / MF4B)				

FF HART PA Further designs Add "-Z" to Order No. and specify Order code Explosion-proof "Intrinsic safety" to NEPSI E55 √ 1 ~ (China) (only for transmitter 7MF4...-......B..) ✓ Explosion protection "Explosion-proof" to E56 ✓ NEPSI (China) (only for transmitter 7MF4...-........D...) Explosion-proof "Zone 2" to NEPSI (China) E57 ✓ ~ ~ (only for transmitter 7MF4...-........E...) ~ Interchanging of process connection side H01 ~ Vent on side for gas measurements H02 ~ **Process flange**  Hastelloy K01 ~ K02 √ √ Monel 1 Stainless steel with PVDF insert K04 max. PN 10 (MWP 145 psi), max. temperature of medium 90 °C (194 °F) For ½-14 NPT inner process connection on the side in the middle of the process flange, vent valve not possible Additional data Add "-Z" to Order No. and specify Order code. Y01 ~ Measuring range to be set Specify in plain text (max. 5 digits): Y01: ... up to ... mbar, bar, kPa, MPa, psi Measuring point number (TAG No.) Y15 ~ ~ ~ Max. 16 characters, specify in plain text: Y15: ..... Measuring point text Y16 Max. 27 characters, specify in plain text: Y16: ..... Entry of HART address (TAG) Y17 1 Max. 8 characters, specify in plain text: Y17: .... Setting of pressure indication in pressure Y21 ✓ ~ units Specify in plain text (standard setting: mA): Y21: mbar, bar, kPa, MPa, psi, ... Note The following pressure units can be selected: bar, mbar, mm  $H_2O^{*}$ , in $H_2O^{*}$ , ft $H_2O^{*}$ mmHG, inHG, psi, Pa, kPa, MPa, g/cm<sup>2</sup>, kg/cm<sup>2</sup>, Torr, ATM oder % ref. temperature 20 °C Setting of pressure indication in ~ Y22 + non-pressure units Y01 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) Preset bus address Y25 ~ (possible between 1 and 126) Specify in plain text: Y25: .....

Order code

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

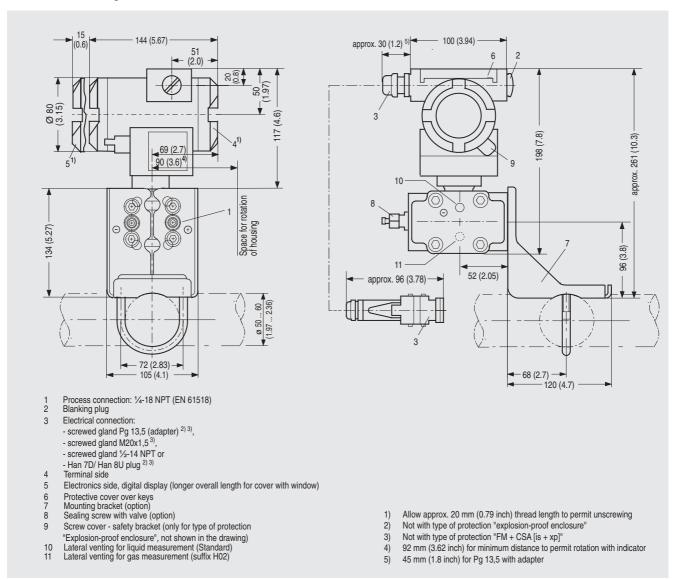
 $\checkmark$  = available

<sup>1)</sup> When the manufacture's certificate M (calibration certificate) has to be ordered for transmitters with diaphragm seals, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.

<sup>2)</sup> Whe the acceptance test certificate 3.1 for transmitters with direct-connected diaphragm seals is ordered, this certificate must also be ordered with the corresponding seals.

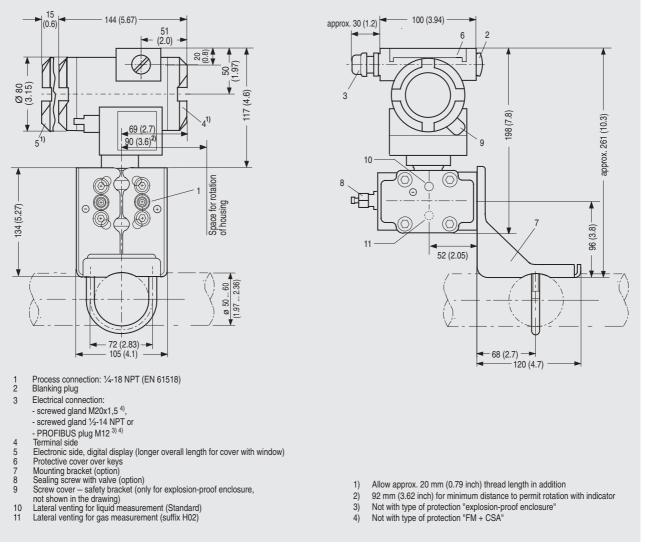
DS III series for absolute pressure (from differential pressure series)

#### Dimensional drawings



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

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



2

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

DS III series for differential pressure and flow

#### Technical specifications

i	essure and flow			
la mat	HART		PROFIBUS PA or FO	UNDATION Fieldbus
Input	Differential	fl		
Measured variable	Differential pressure and			
Spans (infinitely adjustable) or nominal measuring range and max. permissible working pressure	Span	Maximum working pres- sure	Nominal measuring range	Maximum working pres- sure
	1 20 mbar (0.4015 8.031 inH <sub>2</sub> O)	32 bar (464 psi)	20 mbar g (8.031 inH <sub>2</sub> O)	32 bar (464 psi)
	1 60 mbar (0.4015 24.09 inH <sub>2</sub> O)	160 bar (2320 psi)	60 mbar (24.09 inH <sub>2</sub> O)	160 bar (2320 psi)
	2.5 250 mbar (1.004 100.4 inH <sub>2</sub> O)		250 mbar (100.4 inH <sub>2</sub> O)	
	6 600 mbar (2.409 240.9 inH <sub>2</sub> O)		600 mbar (240.9 inH <sub>2</sub> O)	
	16 1600 mbar (6.424 642.4 inH <sub>2</sub> O)		1600 mbar (642.4 inH <sub>2</sub> O)	
	50 5000 mbar (20.08 2008 inH <sub>2</sub> O)		5 bar (2008 inH <sub>2</sub> O)	
	0.3 30 bar (4.35 435 psi)		30 bar (435 psi)	
	2.5 250 mbar (1.004 100.4 inH <sub>2</sub> O)	420 bar (6091 psi)	250 mbar (100.4 inH <sub>2</sub> O)	420 bar (6091 psi)
	6 600 mbar (2.409 240.9 inH <sub>2</sub> O)		600 mbar (240.9 inH <sub>2</sub> O)	
	16 1600 mbar (6.424 642.4 inH <sub>2</sub> O)		1600 mbar (642.4 inH <sub>2</sub> O)	
	50 5000 mbar (20.08 2008 inH <sub>2</sub> O)		5 bar (2008 inH <sub>2</sub> O)	
	0.3 30 bar (4.35 435 psi)		30 bar (435 psi)	
_ower measuring limit		1		I
Lower measuring innic				
ç	-100% of max. span (-33	% with 30 bar (435 psi) m	easuring cell or 30 mb	ar a (0.44 psi))
Measuring cell with silicone oil filling		% with 30 bar (435 psi) m oxygen version and inert f	0	
<ul> <li>Measuring cell with silicone oil filling</li> <li>Jpper measuring limit</li> </ul>			0	
Measuring cell with silicone oil filling     Jpper measuring limit     Dutput			illing liquid; max. 160 b	
Measuring cell with silicone oil filling     Jpper measuring limit     Dutput     Dutput signal	100% of max. span (for o	oxygen version and inert f	illing liquid; max. 160 b Digital PROFIBUS PA	par g (2320 psi g))
Measuring cell with silicone oil filling Jpper measuring limit <b>Dutput</b> Dutput signal Lower limit (infinitely adjustable)	100% of max. span (for o 4 20 mA 3.55 mA, factory preset f	oxygen version and inert f	illing liquid; max. 160 b Digital PROFIBUS PA	par g (2320 psi g))
Measuring cell with silicone oil filling     Jpper measuring limit     Dutput     Dutput signal     Lower limit (infinitely adjustable)     Upper limit (infinitely adjustable)	100% of max. span (for of 4 20 mA 3.55 mA, factory preset to 23 mA, factory preset to	oxygen version and inert f	illing liquid; max. 160 b Digital PROFIBUS PA	par g (2320 psi g))
Measuring cell with silicone oil filling     Jpper measuring limit     Dutput     Dutput signal     Lower limit (infinitely adjustable)     Upper limit (infinitely adjustable)	100% of max. span (for of 4 20 mA 3.55 mA, factory preset to 23 mA, factory preset to	oxygen version and inert f to 3.84 mA 20.5 mA or optionally set	illing liquid; max. 160 b Digital PROFIBUS PA	par g (2320 psi g))
Measuring cell with silicone oil filling     Jpper measuring limit  Dutput  Output signal      Lower limit (infinitely adjustable)      Upper limit (infinitely adjustable)  Load      Without HART communication	100% of max. span (for of 4 20 mA 3.55 mA, factory preset to 23 mA, factory preset to to 22.0 mA $R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.023$	oxygen version and inert f to 3.84 mA 20.5 mA or optionally set A in Ω, ATIC PDM) or	illing liquid; max. 160 b Digital PROFIBUS PA	par g (2320 psi g))
<ul> <li>Measuring cell with silicone oil filling</li> <li>Upper measuring limit</li> </ul> Dutput Dutput signal <ul> <li>Lower limit (infinitely adjustable)</li> <li>Upper limit (infinitely adjustable)</li> </ul> Load <ul> <li>Without HART communication</li> <li>With HART communication</li> </ul>	100% of max. span (for of 4 20 mA 3.55 mA, factory preset to 23 mA, factory preset to to 22.0 mA $R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.023$ $U_{\rm H}$ : Power supply in V $R_{\rm B} = 230 \dots 500 \Omega$ (SIMA	oxygen version and inert f to 3.84 mA 20.5 mA or optionally set A in Ω, ATIC PDM) or	illing liquid; max. 160 b Digital PROFIBUS PA	par g (2320 psi g))
Measuring cell with silicone oil filling     Jpper measuring limit     Dutput     Dutput signal     Lower limit (infinitely adjustable)     Upper limit (infinitely adjustable)     Load     Without HART communication     With HART communication Physical bus	100% of max. span (for of 4 20 mA 3.55 mA, factory preset to 23 mA, factory preset to to 22.0 mA $R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.023$ $U_{\rm H}$ : Power supply in V $R_{\rm B} = 230 \dots 500 \Omega$ (SIMA	oxygen version and inert f to 3.84 mA 20.5 mA or optionally set A in Ω, ATIC PDM) or	illing liquid; max. 160 b Digital PROFIBUS PA signal - -	par g (2320 psi g))
Measuring cell with silicone oil filling Upper measuring limit Output Output signal     Lower limit (infinitely adjustable)     Upper limit (infinitely adjustable) Load     Without HART communication     With HART communication Physical bus With polarity reversal protection	100% of max. span (for of 4 20 mA 3.55 mA, factory preset to 23 mA, factory preset to to 22.0 mA $R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.023$ $U_{\rm H}$ : Power supply in V $R_{\rm B} = 230 \dots 500 \Omega$ (SIMA	oxygen version and inert f to 3.84 mA 20.5 mA or optionally set A in Ω, ATIC PDM) or	illing liquid; max. 160 b Digital PROFIBUS PA signal - - - IEC 61158-2	par g (2320 psi g))
Measuring cell with silicone oil filling     Jpper measuring limit      Dutput      Dutput signal      Lower limit (infinitely adjustable)      Upper limit (infinitely adjustable)      Load      Without HART communication      With HART communication      Physical bus      With polarity reversal protection      Accuracy      Reference conditions     (All error data refer always refer to the set	100% of max. span (for α 4 20 mA 3.55 mA, factory preset to to 22.0 mA $R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.023$ $U_{\rm H}$ : Power supply in V $R_{\rm B} = 230 \dots 500 \Omega$ (SIM/ $R_{\rm B} = 230 \dots 1100 \Omega$ (HAI - - To EN 60770-1 Increasing characteristic	oxygen version and inert f to 3.84 mA 20.5 mA or optionally set A in Ω, ATIC PDM) or RT Communicator)	illing liquid; max. 160 b Digital PROFIBUS PA signal - - - IEC 61158-2 Yes	par g (2320 psi g))
Measuring cell with silicone oil filling     Jpper measuring limit     Dutput     Dutput signal     Lower limit (infinitely adjustable)     Upper limit (infinitely adjustable)     Load     Without HART communication     With HART communication     With HART communication     Physical bus     With polarity reversal protection     Accuracy     Reference conditions     All error data refer always refer to the set     span)     Error in measurement and fixed-point setting	100% of max. span (for α 4 20 mA 3.55 mA, factory preset to to 22.0 mA $R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.023$ $U_{\rm H}$ : Power supply in V $R_{\rm B} = 230 \dots 500 \Omega$ (SIM/ $R_{\rm B} = 230 \dots 1100 \Omega$ (HAI - - To EN 60770-1 Increasing characteristic	bxygen version and inert f to 3.84 mA 20.5 mA or optionally set A in Ω, ATIC PDM) or RT Communicator)	illing liquid; max. 160 b Digital PROFIBUS PA signal - - - IEC 61158-2 Yes	or FOUNDATION Fieldbus
Measuring cell with silicone oil filling     Jpper measuring limit     Dutput     Dutput     Dutput signal     Lower limit (infinitely adjustable)     Upper limit (infinitely adjustable)     coad     Without HART communication     With HART communication     With HART communication     With polarity reversal protection     Accuracy Reference conditions All error data refer always refer to the set     span) Error in measurement and fixed-point setting     including hysteresis and repeatability)	100% of max. span (for α 4 20 mA 3.55 mA, factory preset to to 22.0 mA $R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.023$ $U_{\rm H}$ : Power supply in V $R_{\rm B} = 230 \dots 500 \Omega$ (SIM/ $R_{\rm B} = 230 \dots 1100 \Omega$ (HAI - - To EN 60770-1 Increasing characteristic	bxygen version and inert f to 3.84 mA 20.5 mA or optionally set A in Ω, ATIC PDM) or RT Communicator)	illing liquid; max. 160 b Digital PROFIBUS PA signal - - - IEC 61158-2 Yes	or FOUNDATION Fieldbus
<ul> <li>Measuring cell with silicone oil filling Upper measuring limit</li> <li>Dutput</li> <li>Dutput signal</li> <li>Lower limit (infinitely adjustable)</li> <li>Upper limit (infinitely adjustable)</li> <li>upper limit (infinitely adjustable)</li> <li>coad</li> <li>Without HART communication</li> <li>With HART communication</li> <li>With HART communication</li> <li>Physical bus</li> <li>With polarity reversal protection</li> <li>Accuracy</li> <li>Reference conditions All error data refer always refer to the set span)</li> <li>Error in measurement and fixed-point setting including hysteresis and repeatability)</li> </ul>	100% of max. span (for α 4 20 mA 3.55 mA, factory preset to to 22.0 mA $R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.023$ $U_{\rm H}$ : Power supply in V $R_{\rm B} = 230 \dots 500 \Omega$ (SIM/ $R_{\rm B} = 230 \dots 1100 \Omega$ (HAI - - To EN 60770-1 Increasing characteristic	bxygen version and inert f to 3.84 mA 20.5 mA or optionally set A in Ω, ATIC PDM) or RT Communicator)	illing liquid; max. 160 b Digital PROFIBUS PA signal - - - IEC 61158-2 Yes r, stainless steel seal di max. span / set span)	or FOUNDATION Fieldbus
<ul> <li>Measuring cell with silicone oil filling</li> <li>Upper measuring limit</li> <li>Dutput</li> <li>Dutput signal</li> <li>Lower limit (infinitely adjustable)</li> <li>Upper limit (infinitely adjustable)</li> <li>Upper limit (infinitely adjustable)</li> <li>Load</li> <li>Without HART communication</li> <li>With HART communication</li> <li>Physical bus</li> <li>With polarity reversal protection</li> <li>Accuracy</li> <li>Reference conditions</li> <li>All error data refer always refer to the set span)</li> <li>Error in measurement and fixed-point setting including hysteresis and repeatability)</li> <li>Linear characteristic</li> </ul>	100% of max. span (for of 4 20 mA 3.55 mA, factory preset to to 22.0 mA $R_{\rm B} \leq (U_{\rm H} - 10.5 \text{ V})/0.023$ $U_{\rm H}$ : Power supply in V $R_{\rm B} = 230 \dots 500 \Omega$ (SIM/ $R_{\rm B} = 230 \dots 1100 \Omega$ (HAI - - To EN 60770-1 Increasing characteristic room temperature 25 °C	bxygen version and inert f to 3.84 mA 20.5 mA or optionally set A in Ω, ATIC PDM) or RT Communicator)	illing liquid; max. 160 b Digital PROFIBUS PA signal - - - IEC 61158-2 Yes r, stainless steel seal di max. span / set span)	or FOUNDATION Fieldbus
<ul> <li>Measuring cell with silicone oil filling Upper measuring limit</li> <li>Dutput</li> <li>Dutput signal</li> <li>Lower limit (infinitely adjustable)</li> <li>Upper limit (infinitely adjustable)</li> <li>Load</li> <li>Without HART communication</li> <li>With HART communication</li> <li>With HART communication</li> <li>Physical bus</li> <li>With polarity reversal protection</li> <li>Accuracy</li> <li>Reference conditions</li> <li>All error data refer always refer to the set span)</li> <li>Error in measurement and fixed-point setting including hysteresis and repeatability)</li> <li>Linear characteristic</li> <li>r ≤ 10</li> </ul>	100% of max. span (for α 4 20 mA 3.55 mA, factory preset to 23 mA, factory preset to to 22.0 mA $R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.023$ $U_{\rm H}$ : Power supply in V $R_{\rm B} = 230 \dots 500 \Omega$ (SIM/ $R_{\rm B} = 230 \dots 1100 \Omega$ (HAI - - To EN 60770-1 Increasing characteristic room temperature 25 °C $\le (0.0029 \cdot r + 0.071)\%$	bxygen version and inert f to 3.84 mA 20.5 mA or optionally set A in Ω, ATIC PDM) or RT Communicator)	illing liquid; max. 160 b Digital PROFIBUS PA signal - - - IEC 61158-2 Yes r, stainless steel seal di max. span / set span)	or FOUNDATION Fieldbus
• Measuring cell with silicone oil filling Upper measuring limit Dutput Dutput signal • Lower limit (infinitely adjustable) • Upper limit (infinitely adjustable) • Upper limit (infinitely adjustable) Load • Without HART communication • With HART communication Physical bus With polarity reversal protection Accuracy Reference conditions All error data refer always refer to the set span) Error in measurement and fixed-point setting including hysteresis and repeatability) • Linear characteristic - $r \le 10$ - $10 < r \le 30$ - $30 < r \le 100$	100% of max. span (for α 4 20 mA 3.55 mA, factory preset to to 22.0 mA $R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.023$ $U_{\rm H}$ : Power supply in V $R_{\rm B} = 230 \dots 500 \Omega$ (SIMA $R_{\rm B} = 230 \dots 500 \Omega$ (SIMA $R_{\rm B} = 230 \dots 1100 \Omega$ (HAI - - To EN 60770-1 Increasing characteristic room temperature 25 °C $\le (0.0029 \cdot r + 0.071)\%$	bxygen version and inert f to 3.84 mA 20.5 mA or optionally set A in Ω, ATIC PDM) or RT Communicator)	illing liquid; max. 160 b Digital PROFIBUS PA signal - - - IEC 61158-2 Yes r, stainless steel seal di max. span / set span)	or FOUNDATION Fieldbus
<ul> <li>Measuring cell with silicone oil filling Upper measuring limit</li> <li>Output</li> <li>Output signal</li> <li>Lower limit (infinitely adjustable)</li> <li>Upper limit (infinitely adjustable)</li> <li>Upper limit (infinitely adjustable)</li> <li>Load</li> <li>Without HART communication</li> <li>With HART communication</li> <li>Physical bus</li> <li>With polarity reversal protection</li> <li>Accuracy</li> <li>Reference conditions (All error data refer always refer to the set span)</li> <li>Error in measurement and fixed-point setting (including hysteresis and repeatability)</li> <li>Linear characteristic <ul> <li>r ≤ 10</li> <li>10 &lt; r ≤ 30</li> </ul> </li> </ul>	100% of max. span (for α 4 20 mA 3.55 mA, factory preset to to 22.0 mA $R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.023$ $U_{\rm H}$ : Power supply in V $R_{\rm B} = 230 \dots 500 \Omega$ (SIMA $R_{\rm B} = 230 \dots 500 \Omega$ (SIMA $R_{\rm B} = 230 \dots 1100 \Omega$ (HAI - - To EN 60770-1 Increasing characteristic room temperature 25 °C $\le (0.0029 \cdot r + 0.071)\%$	bxygen version and inert f to 3.84 mA 20.5 mA or optionally set A in Ω, ATIC PDM) or RT Communicator)	illing liquid; max. 160 b Digital PROFIBUS PA signal - - IEC 61158-2 Yes r, stainless steel seal di max. span / set span)	or FOUNDATION Fieldbus

DS III series for differential pressure and flow

SITRANS P, DS III series, for differential pressure and flow HART **PROFIBUS PA or FOUNDATION Fieldbus**  Square-root characteristic (flow 25 ... 50%) < 0.2≤ 0,2% - r ≤ 10 ≤ 0,4% - 10 < r ≤ 30 Long-term drift (temperature change ± 30 °C ≤ (0.25 · r)% every 5 years ≤ (0.25% every 5 years static pressure max. 70 bar g (1015 psi g) (± 54°F)) static pressure max. 70 bar g (1015 psi g) 20 mbar (0.29 psi)-measuring cell  $\leq$  (0.2 · r) per year ≤ 0.2 per year Influence of ambient temperature • at -10 ... +60 °C (14 ... 140 °F)  $\leq (0.08 \cdot r + 0.1)\%$ ≤ 0.3% • at -40 ... -10 °C and +60 ... +85 °C ≤ (0.1 · r + 0.15)%/10 K ≤ 0.25%/10 K (-40 ... +14 °F and 140 ... 185 °F) (Twice the value with 20-mbar (0.29 psi) measuring cell) Influence of static pressure on the zero point ≤ (0.15 · r)% per 100 bar (1450 psi) ≤ 0.15% je 100 bar (1450 psi) - 20 mbar (0.29 psi)-measuring cell ≤ 0.15% je 32 bar (464 psi) ≤ (0.15 · r)% per 32 bar (464 psi) ≤ 0.2% je 100 bar (1450 psi) • on the span - 20 mbar (0.29 psi)-measuring cell ≤ 0.2% je 32 bar (464 psi) Measured Value Resolution 3 · 10<sup>-5</sup> of nominal measuring range Rated operating conditions Degree of protection (to EN 60529) IP65 Process temperature · Measuring cell with silicone oil filling -40 ... +100 °C (-40 ... +212 °F) · Measuring cell with inert filling liquid -20 ... +100 °C (-4 ... +212 °F) · In conjunction with dust explosion protec--20 ... +60 °C (-4 ... +140 °F) tion Ambient conditions Ambient temperature - Digital indicators -30 ... +85 °C (-22 ... +185 °F) -50 ... +85 °C (-58 ... +185 °F) Storage temperature Climatic class - Condensation Permissible · Electromagnetic compatibility - Emitted interference and interference To EN 61326 and NAMUR NE 21 immunity Material of the mounting bracket Steel Sheet steel, Mat. No. 1.0330, chrome-plated Stainless steel Stainless steel, Mat. No. 1.4301 (SS304) Design Weight (without options) ≈ 4.5 kg (≈ 9.9 lb) Housing material Poor in copper die-cast aluminium, 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 Measuring cell filling Silicone oil or inert filling liquid (max. 160 bar (2320 psi g) with oxygen measurement) Process connection Female thread 1/4-18 NPT and flange connection with mounting thread M10 to DIN 19213 or 7/16-20 UNF to EN 61518

DS III series for differential pressure and flow

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

	HART	PROFIBUS PA or FOUNDATION Fieldbus
Power supply $U_{ m H}$		Supplied through bus
Terminal voltage on transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically-safe mode	-
Separate 24 V power supply necessary	-	No
Bus voltage		
• Not Ex	-	932 V
<ul> <li>With intrinsically-safe operation</li> </ul>	-	924 V
Current consumption		
Basic current (max.)	-	12.5 mA
<ul> <li>Startup current ≤ basic current</li> </ul>	-	Yes
Max. current in event of fault	-	15.5 mA
Fault disconnection electronics (FDE) avail.	-	Yes
	1	1

DS III series

for differential pressure and flow

	HART	PROFIBUS PA or FOUNDATION Fieldbus
Certificate and approvals		
Classification according to pressure equip- ment directive (DRGL 97/23/EC)		
PN 32/160 (MWP 464/2320 psi)	For gases of fluid group 1 and liquids of fluid grou graph 3 (sound engineering practice)	up 1; complies with requirements of Article 3, para
PN 420 (MWP 6092 psi)	For gases of fluid group 1 and liquids of fluid grou Article 3, paragraph 1 (appendix 1); assigned to TÜV Nord.	up 1; complies with basic safety requirements of category III, conformity evaluation module H by the
Explosion protection		
<ul> <li>Intrinsic safety "i"</li> </ul>	PTB 99 ATEX 2122	
- Identification	Ex II 1/2 G EEx ia/ib IIB/IIC T6	
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperature class -40 +70 °C (-40 +158 °F) temperature class -40 +60 °C (-40 +140 °F) temperature class	T5;
- Connection	To certified intrinsically-safe circuits with maximum values: $U_i = 30 \text{ V}, I_i = 100 \text{ mA},$ $P_i = 750 \text{ mW}; R_i = 300 \Omega$	FISCO supply unit: $U_0 = 17.5 \text{ V}$ , $I_0 = 380 \text{ mA}$ , $P_0 = 5.32 \text{ W}$ Linear barrier: $U_0 = 24 \text{ V}$ , $I_0 = 250 \text{ mA}$ , $P_0 = 1.2 \text{ W}$
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4  {\rm mH},  C_{\rm i} = 6  {\rm nF}$	$L_{\rm i} = 7 \mu{\rm H},  C_{\rm i} = 1.1 {\rm nF}$
<ul> <li>Explosion-proof "d"</li> </ul>	PTB 99 ATEX 1160	1
- Identification	Ex II 1/2 G EEx d IIC T4/T6	
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperature class -40 +60 °C (-40 +140 °F) temperature class	T4; 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	
- Identification	Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C	
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F)	
- Max.surface temperature	120 °C (248 °F)	
- Connection	To certified intrinsically-safe circuits with maximum values: $U_i = 30 \text{ V}, I_i = 100 \text{ mA},$ $P_i = 750 \text{ mW}, R_i = 300 \Omega$	FISCO supply unit: $U_0 = 17.5$ V, $I_0 = 380$ mA, $P_0 = 5.32$ W Linear barrier: $U_0 = 24$ V, $I_0 = 250$ mA, $P_0 = 1.2$ W
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4  \rm mH,  C_{\rm i} = 6  \rm nF$	$L_{\rm i} = 7 \mu{\rm H},  C_{\rm i} = 1.1 {\rm nF}$
Dust explosion protection for zone 21/22	PTB 01 ATEX 2055	
- Identification	Ex II 2 D IP65 T 120 °C	
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC; $P_{\rm max}$ = 1.2 W	To circuits with values: $U_{\rm H}$ = 9 32 V DC; $P_{\rm max}$ = 1.2 W
<ul> <li>Type of protection "n" (zone 2)</li> </ul>	TÜV 01 ATEX 1696 X	Planned
- Identification	Ex II 3 G EEx nA L IIC T4/T5/T6	-
<ul> <li>Explosion protection to FM</li> </ul>	Certificate of Compliance 3008490	1
- Identification (XP/DIP) or (IS); (NI)	CL I, DIV 1, GP ABCD T4T6; CL II, DIV 1, GP EI DIV 2, GP ABCD T4T6; CL II, DIV 2, GP FG; CL	
<ul> <li>Explosion protection to CSA</li> </ul>	Certificate of Compliance 1153651	
- Identification (XP/DIP) or (IS)	CL I, DIV 1, GP ABCD T4T6; CL II, DIV 1, GP EI T4T6; CL II, DIV 2, GP FG; CL III	FG; CL III; Ex ia IIC T4T6; CL I, DIV 2, GP ABCD

			DS III series
		for diff	erential pressure and flow
HART communication		Communication FOUNDATION Fi	eldbus
HART communication	230 1100 Ω	Function blocks	3 function blocks analog input,
Protocol	HART Version 5.x		1 function block PID
Software for computer	SIMATIC PDM	<ul> <li>Analog input</li> </ul>	
PROFIBUS PA communication		<ul> <li>Adaptation to customer-speci- fic process variables</li> </ul>	Yes, linearly rising or falling cha- racteristic
Simultaneous communication with master class 2 (max.)	4	- Electrical damping T <sub>63</sub> , adjus- table	0 100 s
The address can be set using	Configuration tool or local opera- tion (standard setting address	- Simulation function	Output/input (can be locked within the device with a bridge)
Cyclic data usage	126)	- Failure mode	Can be parameterized (last good value, substitute value, incorrect
Output byte	5 (one measuring value) or 10 (two measuring values)	- Limit monitoring	value) Yes, one upper and lower warning
Input byte	0, 1, or 2 (register operating mode and reset function for metering)		limit and one alarm limit respec- tively
Internal preprocessing	3,	<ul> <li>Square-rooted characteristic for flow measurement</li> </ul>	Yes
Device profile	PROFIBUS PA Profile for Process	• PID	Standard FF function block
	Control Devices Version 3.0, Class B	<ul> <li>Physical block</li> </ul>	1 Resource block
Function blocks	2	Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block
<ul> <li>Analog input</li> </ul>			LCD
<ul> <li>Adaptation to customer-speci- fic process variables</li> </ul>	Yes, linearly rising or falling cha- racteristic	<ul> <li>Pressure transducer block</li> <li>Can be calibrated by applying</li> </ul>	Yes
<ul> <li>Electrical damping T<sub>63</sub>, adjus- table</li> </ul>	0 100 s	two pressures	
- Simulation function	Input /Output	<ul> <li>Monitoring of sensor limits</li> <li>Simulation function: Measured</li> </ul>	Yes Constant value or over paramete-
- Failure mode	Can be parameterized (last good value, substitute value, incorrect value)	pressure value, sensor tempe- rature and electronics tempera- ture	rizable ramp function
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respec- tively		
Register (totalizer)	Can be reset, preset, optional direction of counting, simulation function of register output		
- Failure mode	Can be parameterized (summation with last good value, continuous summation, summation with incor- rect value)		
- Limit monitoring	One upper and lower warning limit and one alarm limit respectively		
Physical block	1		
Transducer blocks	2		
Pressure transducer block			
<ul> <li>Can be calibrated by applying two pressures</li> </ul>	Yes		
- Monitoring of sensor limits	Yes		
<ul> <li>Specification of a container characteristic with</li> </ul>	Max. 30 nodes		
<ul> <li>Square-rooted characteristic for flow measurement</li> </ul>	Yes		
<ul> <li>Gradual volume suppression and implementation point of square-root extraction</li> </ul>	Parameterizable		
<ul> <li>Simulation function for measu- red pressure value and sensor temperature</li> </ul>	Constant value or over paramete- rizable ramp function		

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## DS III series for differential pressure and flow

Selection and Ordering	j data		Orde	er I	No	).	
SITRANS P pressure tr	ansmitters for differen-		7 M F	4	4	3 :	3
tial pressure and flow, PN 32/160 (MWP 464/23						-	i
Measuring cell filling	Measuring cell cleaning						
Silicone oil	Standard		1				
Inert liquid <sup>1)</sup>	Grease-free		3				
Span							
PN 32 (MWP 464 psi)							
1 20 mbar <sup>2)</sup>	(0.4015 8.03 inH <sub>2</sub> O)	►	в				
PN 160 (MWP 2320 psi)	-						
1 60 mbar	(0.4015 24.09 inH <sub>2</sub> O)		с				
2.5 250 mbar	(1.004 100.4 inH <sub>2</sub> O)	►	D				
6 600 mbar	(2.409 240.9 inH <sub>2</sub> O)	►	E				
16 1600 mbar	(6.424 642.4 inH <sub>2</sub> O)	►	F				
50 5000 mbar	(20.08 2008 inH <sub>2</sub> O)	►	G				
0.3 30 bar	(4.35 435 psi)		н				
Wetted parts materials							
(stainless steel process							
Seal diaphragm	Parts of measuring cell	_					
Stainless steel	Stainless steel	►	A				
Hastelloy	Stainless steel		В				
Hastelloy	Hastelloy		С				
Tantalum <sup>3)</sup>	Tantalum		E				
Monel <sup>3)</sup> Gold <sup>3)</sup>	Monel		н				
Version for diaphragm s	Gold						
			. 1				
Process connection							
Female thread 1/4-18 NP	-						
<ul> <li>Sealing screw opposite</li> <li>Mounting thread <sup>7</sup>/<sub>16</sub></li> </ul>				2			
- Mounting thread M10				0			
(only for replacemen	t needs)			Ĩ			
• Vent on side of proces							
<ul> <li>Mounting thread <sup>7</sup>/<sub>16</sub></li> </ul>	-20 UNF to EN 61518			6			
- Mounting thread M10	) to DIN 19213			4			
(only for replacemen							
Non-wetted parts mate Process flange screws							
	5	-			_		
Stainless steel	Die-cast aluminium				2		
Stainless steel	Stainless steel precision casting <sup>6)</sup>				3		
Version	g						
Standard version							1
	nglish label inscriptions,						2
documentation in 5 lar							
Explosion protection						1	
Without							
• With ATEX, Type of pro							
<ul> <li>Intrinsic safety (EEx</li> </ul>							
- "Explosion-proof (EE							
<ul> <li>"Intrinsic safety and e enclosure (EEx ia + I</li> </ul>	explosion-proot						
- "Ex nA/nL (zone 2)"							
- "Intrinsic safety, expl	osion-proof enclosure						
and dust explosion p							
(EEx ia + EEx d + Zc	ne 1D/2D)" <sup>8)</sup>						
• With FM + CSA, Type	•						
<ul> <li>"Intrinsic safety and e (is 1 xp)"<sup>7</sup>)</li> </ul>	explosion-proof						
(is + xp)" <sup>7</sup> )							
Electrical connection /	-						
<ul> <li>Screwed gland Pg 13.</li> <li>Screwed gland M20x1</li> </ul>							
<ul> <li>Screwed gland M20x1</li> <li>Screwed gland ½-14 N</li> </ul>							
Han 7D plug (plastic h							
connector <sup>10)</sup>							
• M12 connectors (mota	1)10)						

33-		Order No.
	SITRANS P pressure transmitters for differen- tial pressure and flow, Series DS III HART PN 32/160 (MWP 464/2320 psi)	7 M F 4 4 3 3 -
	<ul> <li>Display</li> <li>without (digital indicator hidden, setting: mA)</li> <li>With visible digital indication</li> <li>With customer-specific digital indication (setting as specified, Order code "Y21" or required)</li> </ul>	1 6 7
	Available ex stock	
	Power supply units see "SITRANS I power supply un amplifiers".	nits and isolation
	Factory-mounting of shut-off valves and valve manif 2/142.	olds see page
	<ul> <li>Included in delivery of the device:</li> <li>Brief instructions (Leporello)</li> <li>CD-ROM with detailed documentation</li> <li>Sealing plug(s) or sealing screw(s) for the proces</li> </ul>	s flanges(s)
	<ol> <li>For oxygen application, add Order code E10.</li> <li>Not suitable for connection of remote seal. Position of the process flanges (see dimensional drawing).</li> <li>Only together with max. spans 250, 1600, 5000 and (100.4, 240.9, 2008 inH<sub>2</sub>O and 435 psi)</li> <li>When the manufacture's certificate M (calibration certificate for transmitters with diaphragm seals, it is nordered for transmitters with diaphragm seals, it is nordered for transmitters with diaphragm seals.</li> <li>Whe the acceptance test certificate 3.1 for transmitter ted diaphragm seals is ordered, this certificate must the corresponding seals.</li> <li>Not together with Electrical connection "Screwed gle "Han7D plug".</li> <li>Without cable gland, with blanking plug</li> <li>With enclosed cable gland EEx ia and blanking plug</li> <li>Not together with type of protection "Explosion-proof protection "Ex nA".</li> <li>Cannot be used together with the following types of "Explosion-proof" and "Intrinsic safety and explosion</li> </ol>	30000 mbar prtificate) has to be accommended only to seals. The measuring ers with direct-connect t also be ordered with and Pg 13.5" and " and and type of protection:
1		
2		
Δ		
AB		

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2/112

## DS III series for differential pressure and flow

	g data	Order No.	Selection and Ordering data	Order No.
SITRANS P pressure t for differential pressur PN 32/160 (MWP 464/2	re and flow		SITRANS P pressure transmitters for differential pressure and flow PN 32/160 (MWP 464/2320 psi)	
DS III PA series (PROF	IBUS PA)	7 M F 4 4 3 4 -	DS III PA series (PROFIBUS PA)	7 M F 4 4 3 4 -
DS III FF series (FOUN	•	7MF4435-	DS III FF series (FOUNDATION Fieldbus)	7 M F 4 4 3 5 -
	DATION TICIADAS)		Do III 11 Series (1 CONDATION Tieldbus)	-
Measuring cell filling	Measuring cell		Electrical connection / cable entry	
Silicone oil	<b>cleaning</b> Standard	1	Screwed gland M20x1.5	E
Inert liquid <sup>1)</sup>	Grease-free	3	<ul> <li>Screwed gland ½-14 NPT</li> <li>M12 connectors (metal)<sup>8)</sup></li> </ul>	
		_ •		_ '
Nominal measuring ra PN 32 (MWP 464 psi)	nge		Display	
20 mbar <sup>2)</sup>	(8.03 inH <sub>2</sub> O)	в	<ul><li>Without (digital display hidden)</li><li>With visible digital indication</li></ul>	
		-	With visible digital indication     With customer-specific digital indication (setting	
PN 160 (MWP 2320 psi) 60 mbar	) (24.09 inH₂O)	с	as specified, Order code "Y21" or required)	
250 mbar	(100.4 inH <sub>2</sub> O)	D	Included in delivery of the device:	
600 mbar	(240.9 inH <sub>2</sub> O)	E	Brief instructions (Leporello)	
1600 mbar	(642.4 inH <sub>2</sub> O)	F	CD-ROM with detailed documentation	
5 bar	(2008 inH <sub>2</sub> O)	G	<ul> <li>Sealing plug(s) or sealing screw(s) for the proce</li> </ul>	ss tianges(s)
30 bar	(435 psi)	H	<sup>1)</sup> For oxygen application, add Order code E10.	
Wetted parts materials	3		2) Not suitable for connection of remote seal. Position	of the top vent val
(stainless steel process			the process flanges (see dimensional drawing). <sup>3)</sup> Only together with max. spans 250, 1600, 5000 an	d 30000 mbar
Seal diaphragm	Parts of measuring cell		$(100.4, 240.9, 2008 \text{ inH}_{2}\text{O} \text{ and } 435 \text{ psi}).$	
Stainless steel	Stainless steel	A	4) When the manufacture's certificate M (calibration of ordered for trapamitters with displayare acala, it is	ertificate) has to b
Hastelloy	Stainless steel	В	ordered for transmitters with diaphragm seals, it is order this certificate exclusively with the diaphragr	
Hastelloy	Hastelloy	C	accuracy of the total combination is certified here.	
Tantalum <sup>3)</sup>	Tantalum	E	5) Whe the acceptance test certificate 3.1 for transmit	
Monel <sup>3)</sup>	Monel	н	ted diaphragm seals is ordered, this certificate mu the corresponding seals.	st also be ordered
Gold <sup>3)</sup>	Gold	L	<sup>6)</sup> Without cable gland, with blanking plug.	
Version as diaphragm s	eal <sup>4) 3)</sup>	Y	<ul> <li>With enclosed cable gland EEx ia and blanking plu</li> <li>Cannot be used together with the following types of</li> </ul>	
<ul> <li>Sealing screw opposit</li> <li>Mounting throad <sup>7</sup>/<sub>2</sub></li> </ul>				
<ul> <li>Mounting thread M1 (only for replacement</li> </ul>	nt needs) cess flanges <sup>2)</sup> <sub>3</sub> -20 UNF to EN 61518 0 to DIN 19213	2 0 6 4		
<ul> <li>Mounting thread M1 (only for replacement</li> <li>Venting on side of provide thread 7/16</li> <li>Mounting thread M1 (only for replacement</li> </ul>	0 to DIN 19213 ht needs) cess flanges <sup>2)</sup> 5 <sup>-</sup> 20 UNF to EN 61518 0 to DIN 19213 ht needs)	0		
<ul> <li>Mounting thread M1 (only for replacement</li> <li>Venting on side of provision of the side of the</li></ul>	0 to DIN 19213 ht needs) cess flanges <sup>2)</sup> <sub>5</sub> -20 UNF to EN 61518 0 to DIN 19213 ht needs) erials	0		
<ul> <li>Mounting thread M1 (only for replacement</li> <li>Venting on side of proplacement</li> <li>Mounting thread <sup>7</sup>/<sub>16</sub></li> <li>Mounting thread M1 (only for replacement</li> <li>Non-wetted parts mate</li> <li>Process flange screws</li> </ul>	0 to DIN 19213 ht needs) cess flanges <sup>2)</sup> <sub>5</sub> -20 UNF to EN 61518 0 to DIN 19213 ht needs) erials	0 6 4 -		
<ul> <li>Mounting thread M1 (only for replacement</li> <li>Venting on side of proplacement</li> <li>Mounting thread <sup>7</sup>/<sub>16</sub></li> <li>Mounting thread M1 (only for replacement</li> <li>Non-wetted parts mate</li> <li>Process flange screws</li> <li>Stainless steel</li> </ul>	0 to DIN 19213 ht needs) cess flanges <sup>2)</sup> s-20 UNF to EN 61518 0 to DIN 19213 ht needs) erials Electronics housing	0		
<ul> <li>Mounting thread M1 (only for replacemer</li> <li>Venting on side of pro</li> <li>Mounting thread <sup>7</sup>/<sub>16</sub></li> <li>Mounting thread M1 (only for replacemer</li> <li>Non-wetted parts mate</li> <li>Process flange screws</li> <li>Stainless steel</li> <li>Stainless steel</li> </ul>	0 to DIN 19213 at needs) cess flanges <sup>2)</sup> s-20 UNF to EN 61518 0 to DIN 19213 at needs) erials Electronics housing Die-cast aluminium Stainless steel precision	0 6 4 -		
<ul> <li>Mounting thread M1 (only for replacement</li> <li>Venting on side of pro</li> <li>Mounting thread <sup>7</sup>/<sub>16</sub></li> <li>Mounting thread M1 (only for replacement</li> <li>Non-wetted parts mate</li> <li>Process flange screws</li> <li>Stainless steel</li> <li>Stainless steel</li> <li>Version</li> <li>Standard version</li> </ul>	0 to DIN 19213 at needs) cess flanges <sup>2)</sup> <sub>3</sub> -20 UNF to EN 61518 0 to DIN 19213 at needs) erials Electronics housing Die-cast aluminium Stainless steel precision casting	0 6 4 - 2 3 - 1		
<ul> <li>Mounting thread M1 (only for replacement</li> <li>Venting on side of pro</li> <li>Mounting thread <sup>7</sup>/<sub>16</sub></li> <li>Mounting thread M1 (only for replacement</li> <li>Non-wetted parts mate</li> <li>Process flange screws</li> <li>Stainless steel</li> <li>Stainless steel</li> <li>Version</li> <li>Standard version</li> <li>International version, I</li> </ul>	0 to DIN 19213 at needs) cess flanges <sup>2)</sup> <sub>3</sub> -20 UNF to EN 61518 0 to DIN 19213 at needs) <b>Prials</b> Electronics housing Die-cast aluminium Stainless steel precision casting English label inscriptions,	0 6 4 		
<ul> <li>Mounting thread M1 (only for replacement</li> <li>Venting on side of pro- Mounting thread <sup>7</sup>/<sub>16</sub></li> <li>Mounting thread M1 (only for replacement</li> <li>Non-wetted parts mate</li> <li>Process flange screws</li> <li>Stainless steel</li> <li>Stainless steel</li> <li>Version</li> <li>International version, I documentation in 5 late</li> </ul>	0 to DIN 19213 at needs) cess flanges <sup>2)</sup> <sub>3</sub> -20 UNF to EN 61518 0 to DIN 19213 at needs) <b>Prials</b> Electronics housing Die-cast aluminium Stainless steel precision casting English label inscriptions,	0 6 4 - 2 3 - 1		
<ul> <li>Mounting thread M1 (only for replacement</li> <li>Venting on side of pro</li> <li>Mounting thread <sup>7</sup>/<sub>16</sub></li> <li>Mounting thread M1 (only for replacement</li> <li>Non-wetted parts mate</li> <li>Process flange screws</li> <li>Stainless steel</li> <li>Stainless steel</li> <li>Version</li> <li>International version, I documentation in 5 lai</li> <li>Explosion protection</li> </ul>	0 to DIN 19213 at needs) cess flanges <sup>2)</sup> <sub>3</sub> -20 UNF to EN 61518 0 to DIN 19213 at needs) <b>Prials</b> Electronics housing Die-cast aluminium Stainless steel precision casting English label inscriptions,	0 6 4 		
<ul> <li>Mounting thread M1 (only for replacement</li> <li>Venting on side of pro</li> <li>Mounting thread <sup>7</sup>/<sub>16</sub></li> <li>Mounting thread M1 (only for replacement</li> <li>Non-wetted parts mate</li> <li>Process flange screws</li> <li>Stainless steel</li> <li>Stainless steel</li> <li>Standard version</li> <li>International version, I documentation in 5 land</li> <li>Explosion protection</li> <li>Without</li> </ul>	0 to DIN 19213 at needs) cess flanges <sup>2)</sup> <sub>3</sub> -20 UNF to EN 61518 0 to DIN 19213 at needs) <b>Prials</b> Electronics housing Die-cast aluminium Stainless steel precision casting English label inscriptions, nguages on CD	0 6 4 - 2 3 - 1		
<ul> <li>Mounting thread M1 (only for replacement</li> <li>Venting on side of pro</li> <li>Mounting thread <sup>7</sup>/<sub>16</sub></li> <li>Mounting thread M1 (only for replacement</li> <li>Non-wetted parts mate</li> <li>Process flange screws</li> <li>Stainless steel</li> <li>Stainless steel</li> <li>Standard version</li> <li>International version, I documentation in 5 land</li> <li>Explosion protection</li> <li>Without</li> <li>With ATEX, Type of process</li> </ul>	0 to DIN 19213 at needs) cess flanges <sup>2)</sup> <sub>3</sub> -20 UNF to EN 61518 0 to DIN 19213 at needs) <b>Prials</b> Electronics housing Die-cast aluminium Stainless steel precision casting English label inscriptions, nguages on CD	0 6 4 2 3 3 2 3 4 2 3 4		
<ul> <li>Mounting thread M1 (only for replacement</li> <li>Venting on side of pro- Mounting thread <sup>7</sup>/<sub>16</sub></li> <li>Mounting thread M1 (only for replacement</li> <li>Non-wetted parts mate</li> <li>Process flange screws</li> <li>Stainless steel</li> <li>Stainless steel</li> <li>Standard version</li> <li>International version, I documentation in 5 land</li> <li>Explosion protection</li> <li>Without</li> <li>With ATEX, Type of pro- ended the steel</li> </ul>	0 to DIN 19213 at needs) cess flanges <sup>2)</sup> <sub>3</sub> -20 UNF to EN 61518 0 to DIN 19213 at needs) <b>Prials</b> Electronics housing Die-cast aluminium Stainless steel precision casting English label inscriptions, nguages on CD ptection: a)"	0 6 4 		
<ul> <li>Mounting thread M1 (only for replacement</li> <li>Venting on side of pro</li> <li>Mounting thread <sup>7</sup>/<sub>16</sub></li> <li>Mounting thread M1 (only for replacement</li> <li>Non-wetted parts mate</li> <li>Process flange screws</li> <li>Stainless steel</li> <li>Stainless steel</li> <li>Version</li> <li>International version, I documentation in 5 land</li> <li>Explosion protection</li> <li>Without</li> <li>With ATEX, Type of pro- "Intrinsic safety (EEx - "Explosion-proof (EEx)</li> </ul>	0 to DIN 19213 at needs) cess flanges <sup>2)</sup> <sub>5</sub> -20 UNF to EN 61518 0 to DIN 19213 at needs) <b>trials</b> Electronics housing Die-cast aluminium Stainless steel precision casting English label inscriptions, nguages on CD btection: ta)" ix d)" <sup>6</sup> )	0 6 4 2 3 - 2 3 2 3 4 2 4 8		
<ul> <li>Mounting thread M1 (only for replacement</li> <li>Venting on side of pro</li> <li>Mounting thread <sup>7</sup>/<sub>16</sub></li> <li>Mounting thread M1 (only for replacement</li> <li>Non-wetted parts mate</li> <li>Process flange screws</li> <li>Stainless steel</li> <li>Stainless steel</li> <li>Standard version</li> <li>International version, I documentation in 5 land</li> <li>Explosion protection</li> <li>Without</li> <li>With ATEX, Type of pro- "Intrinsic safety (EEx - "Explosion-proof (EE - "Intrinsic safety and</li> </ul>	0 to DIN 19213 at needs) cess flanges <sup>2)</sup> <sub>5</sub> -20 UNF to EN 61518 0 to DIN 19213 at needs) <b>trials</b> Electronics housing Die-cast aluminium Stainless steel precision casting English label inscriptions, nguages on CD otection: : ia)" ix d) <sup>-6</sup> explosion-proof	0 6 4 2 3 1 2 4 8 0		
<ul> <li>Mounting thread M1 (only for replacement</li> <li>Venting on side of pro</li> <li>Mounting thread <sup>7</sup>/<sub>16</sub></li> <li>Mounting thread M1 (only for replacement</li> <li>Non-wetted parts mate</li> <li>Process flange screws</li> <li>Stainless steel</li> <li>Stainless steel</li> <li>Version</li> <li>International version, I documentation in 5 land</li> <li>Explosion protection</li> <li>Without</li> <li>With ATEX, Type of pro- ultimistic safety (EEx - "Explosion-proof (EEx)</li> </ul>	0 to DIN 19213 at needs) cess flanges <sup>2)</sup> <sub>3</sub> -20 UNF to EN 61518 0 to DIN 19213 at needs) <b>trials</b> Electronics housing Die-cast aluminium Stainless steel precision casting English label inscriptions, nguages on CD btection: : ia)" ix d)" <sup>6</sup> ) explosion-proof EEx d)" <sup>7</sup> )	0 6 4 2 3 1 2 4 8 0		
<ul> <li>Mounting thread M1 (only for replacemer</li> <li>Venting on side of pro</li> <li>Mounting thread <sup>7</sup>/<sub>16</sub></li> <li>Mounting thread M1 (only for replacemer</li> <li>Non-wetted parts mate</li> <li>Process flange screws</li> <li>Stainless steel</li> <li>Stainless steel</li> <li>Standard version</li> <li>International version, I documentation in 5 lar</li> <li>Explosion protection</li> <li>Without</li> <li>With ATEX, Type of pro- "Intrinsic safety (EEx "Explosion-proof (EE "Intrinsic safety and enclosure (EEx ia + "n (Zone 2)" (planneed "Intrinsic safety, expl</li> </ul>	0 to DIN 19213 at needs) cess flanges <sup>2)</sup> 5 <sup>-20</sup> UNF to EN 61518 0 to DIN 19213 at needs) <b>Frials</b> Electronics housing Die-cast aluminium Stainless steel precision casting English label inscriptions, nguages on CD otection: : ia)" :x d)" <sup>6</sup> ) explosion-proof EEx d)" <sup>7)</sup> d) losion-proof enclosure	0 6 4 3 3 4 3 3 4 4 4 4 5 4 4 5 6 4 5 7 6 4 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7		
<ul> <li>Mounting thread M1 (only for replacemer</li> <li>Venting on side of pro</li> <li>Mounting thread <sup>7</sup>/<sub>16</sub></li> <li>Mounting thread M1 (only for replacemer</li> <li>Non-wetted parts mate</li> <li>Process flange screws</li> <li>Stainless steel</li> <li>Stainless steel</li> <li>Standard version</li> <li>International version, I documentation in 5 lar</li> <li>Explosion protection</li> <li>Without</li> <li>With ATEX, Type of pro- "Intrinsic safety (EEx "Explosion-proof (EE "Intrinsic safety and enclosure (EEx ia + "n (Zone 2)" (planneed "Intrinsic safety, expl</li> </ul>	0 to DIN 19213 at needs) cess flanges <sup>2)</sup> 5 <sup>-20</sup> UNF to EN 61518 0 to DIN 19213 at needs) <b>Frials</b> Electronics housing Die-cast aluminium Stainless steel precision casting English label inscriptions, nguages on CD otection: : ia)" :x d)" <sup>6</sup> ) explosion-proof EEx d)" <sup>7)</sup> d) losion-proof enclosure	0 6 4 2 3 3 - 2 3 4 2 4 4 2 4 4 5 6 4 7 7 6 4 7 7 7 7 7 7 7 7 7 7 7 7 7 7		
<ul> <li>Mounting thread M1 (only for replacement</li> <li>Venting on side of pro</li> <li>Mounting thread <sup>7</sup>/<sub>16</sub></li> <li>Mounting thread M1 (only for replacement</li> <li>Non-wetted parts mate</li> <li>Process flange screws</li> <li>Stainless steel</li> <li>Stainless steel</li> <li>Standard version</li> <li>International version, I documentation in 5 lar</li> <li>Explosion protection</li> <li>Without</li> <li>Without</li> <li>With ATEX, Type of pro- "Intrinsic safety (EEx - "Explosion-proof (EE - "Intrinsic safety and enclosure (EEx ia +</li> <li>"n (Zone 2)" (planneet - "Intrinsic safety, expl and dust explosion p EEx d + Zone 1D/2D</li> </ul>	0 to DIN 19213 at needs) cess flanges <sup>2)</sup> s-20 UNF to EN 61518 0 to DIN 19213 at needs) erials Electronics housing Die-cast aluminium Stainless steel precision casting English label inscriptions, nguages on CD btection: i a)" (x d)* <sup>6)</sup> explosion-proof EEx d)* <sup>77</sup> d) losion-proof enclosure protection (EEx ia + ))* <sup>71</sup> (not for DS III FF)	0 6 4 2 3 3 - 2 3 4 2 4 4 2 4 4 5 6 4 7 7 6 4 7 7 7 7 7 7 7 7 7 7 7 7 7 7		
<ul> <li>Mounting thread M1 (only for replacemer</li> <li>Venting on side of pro</li> <li>Mounting thread <sup>7</sup>/<sub>16</sub></li> <li>Mounting thread M1 (only for replacemer</li> <li>Non-wetted parts mate</li> <li>Process flange screws</li> <li>Stainless steel</li> <li>Stainless steel</li> <li>Standard version</li> <li>International version, I documentation in 5 lai</li> <li>Explosion protection</li> <li>Without</li> <li>With ATEX, Type of pro- "Intrinsic safety (EEx "Explosion-proof (EE "Intrinsic safety and enclosure (EEx ia + "n (Zone 2)" (planned "Intrinsic safety, expl</li> </ul>	0 to DIN 19213 at needs) cess flanges <sup>2)</sup> s-20 UNF to EN 61518 0 to DIN 19213 at needs) erials Electronics housing Die-cast aluminium Stainless steel precision casting English label inscriptions, nguages on CD btection: : ia)" ix d)" <sup>6)</sup> explosion-proof EEx d)" <sup>7)</sup> d) losion-proof enclosure protection (EEx ia + D)" <sup>7)</sup> (not for DS III FF) of protection:	0 6 4 2 3 3 - 2 3 4 2 4 4 2 4 4 5 6 4 7 7 6 4 7 7 7 7 7 7 7 7 7 7 7 7 7 7		

#### **DS III series**

#### for differential pressure and flow

Selection and Ordering data	Order	oodo			
Selection and Ordering data Further designs	Order	HART	PA	FF	
Add "-Z" to Order No. and specify Order code.					
Pressure transmitter with mounting bra- cket made of:					
• Steel	A01	✓	✓	1	
Stainless steel	A02	✓	~	1	
O-rings for process flanges (instead of FPM (Viton))					
PTFE (Teflon)	A20	✓	✓	1	
• FEP (with silicone core, approved for food)	A21	× ×	✓ ✓	1	
<ul> <li>FFPM (Kalrez, compound 4079)</li> <li>NBR (Buna N)</li> </ul>	A22 A23	✓ ✓	✓ ✓	✓ ✓	
Plug					
• Han 7D (metal, gray)	A30	1			
Han 8U (instead of Han 7D)	A31 A40	<b>1</b>	~	~	
Sealing screws 1/4-18 NPT, with valve in mat. of process flanges		v	v	v	
Cable sockets for M12 connectors (metal)	A50	✓	✓	✓	
Rating plate inscription (instead of German)					
English     French	B11 B12	✓ ✓	✓ ✓	✓ ✓	
• Spanish	B13	✓	✓	✓	
• Italian	B14	1	1	1	
English rating plate (calibration certificate) Pressure units in inH <sub>2</sub> O or psi	B21	~	~	~	
Quality inspection certificate (Factory calibration) to IEC 60770-2 <sup>1)</sup>	C11	~	~	1	
Acceptance test certificate <sup>2)</sup> To EN 10 204-3.1	C12	~	~	1	
Factory certificate To EN 10 204-2.2	C14	1	~	1	
"Functional Safety (SIL)" certificate	C20	1			
"PROFIsafe" certificate and protocol	C21		✓		
Setting of upper limit of output signal to 22.0 mA	D05	<b>~</b>			
Manufacturer's declaration acc. to NACE (only together with seal diaphragm made of Hastelloy and stainless steel)	D07	~	1	•	
<b>Type of protection IP68</b> (not together with 7D/ Han 8U plug, cable gland Pg 13.5)	D12	~	~	*	
<b>Digital indicator alongside the input keys</b> (only together with the devices 7MF4433- 2A.6 orA.7-Z, Y21 or Y22 + Y01)	D27	~	~	*	
Process flange screws made of Monel (max. nominal pressure PN20)	D34	1	~	~	
Supplied with oval flange set (2 items), PTFE packings and stainles steel screws in thread of process flanges	D37	~	1	~	
Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")	E01	~	1	1	
Use on zone 0 (only together with type of protection	E02	~	~	~	
"Intrinsic safety (EEx ia)")	FOC				
<b>TUV approval to AD/TRD</b> (only together with type of protection "Intrinsic safety (EEx ia)")	E06	Ý			
Overfilling safety device for flammable and non-flammable liquids (max. PN 32 (MVWP 464 psi), basic device with type of protection "Intrinsic safety (EEx ia)", to WHG and VbF, not together with measuring cell filling "inert liquid")	E08	~	~	•	

Selection and Ordering data	Order	code		
Further designs Add "-Z" to Order No. and specify Order code.		HART	PA	FF
Oxygen application (max. 120 bar (1740 psi) at 60°C (140 °F) with oxygen measurement and inert liquid)	E10	~	1	1
Explosion-proof "Intrinsic safety" to INME- TRO (Brazil) (only for transmitter 7MF4B)	E25	~	1	*
Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)	E55	*	1	*
Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)	E56	~	1	*
Explosion-proof "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)	E57	~	1	1
Interchanging of process connection side	H01	✓	✓	✓
Vent on side for gas measurements	H02	✓	✓	✓
Stainless steel process flanges for vertical differential pressure lines (not together with K01, K02 and K04) <sup>3)</sup>	H03	~	1	*
<ul> <li>Process flange</li> <li>Hastelloy</li> <li>Monel</li> <li>Stainless steel with PVDF insert max. PN 10 (MWP 145 psi), max. temperature of medium 90 °C (194 °F)</li> <li>For ½-14 NPT inner process connection on the side in the middle of the process flange, vent valve not possible</li> </ul>	K01 <sup>F)</sup> K02 <sup>F)</sup> K04	* * *	√ √ √	$\rightarrow$ $\rightarrow$ $\rightarrow$

✓ = available

1) When the manufacture's certificate M (calibration certificate) has to be ordered for transmitters with diaphragm seals, it is recommended only to order this certificate exclusively with the diaphragm seals, 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.
 Whe the acceptance test certificate 3.1 for transmitters with direct-connected diaphragm seals is ordered, this certificate must also be ordered with

the corresponding seals.

3) Not suitable for connection of remote seal

Selection and Ordering data	Order	code		
Additional data		HART	PA	FI
Add "-Z" to Order No. and specify Order code.				
Measuring range to be set Specify in plain text:	Mad	,		
• With linear characteristic (max. 5 digits): Y01: up to mbar, bar, kPa, MPa, psi	Y01			
<ul> <li>With square-rooted characteristic (max. 5 di- gits):</li> <li>Y02: up to mbar, bar, kPa, MPa, psi</li> </ul>	Y02	-		
Measuring point number (TAG No.) Max. 16 char., specify in plain text: Y15:	Y15	~	~	~
Measuring point text Max. 27 char., specify in plain text: Y16:	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: mA): 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 oder % *) ref. temperature 20 °C				
Setting of pressure indicator in	Y22 <sup>1)</sup>	1		
<b>non-pressure units</b> Specify in plain text: Y22: up to l/min, m <sup>3</sup> /h, m, USgpm, (specification of measuring range in pressure units "Y01" or "V02" is essential, unit with max. 5 characters)	+ Y01 or Y02			
Preset bus address (possible between 1 and 126) Specify in plain text: Y25:	Y25		~	

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

✓ = available

 Not together with over-filling safety device for flammable and non-flammable liquids (Order code "E08") DS III series for differential pressure and flow

2

#### **DS III series**

#### for differential pressure and flow

Selection and Orderin	q data	Order No.
	ransmitters for differen-	7 M F 4 5 3 3 -
Measuring cell filling	Measuring cell cleaning	
Silicone oil	Standard	1
Span		
2.5 250 mbar	(1.004 100.4 inH <sub>2</sub> O)	D
6 600 mbar	(2.409 240.9 inH <sub>2</sub> O)	E
16 1600 mbar	(6.424 642.4 inH <sub>2</sub> O)	F
50 5000 mbar 0.3 30 bar	(20.08 2008 inH <sub>2</sub> O) (4.35 435 psi)	G H
	· · · ·	_ "
Wetted parts materials (stainless steel process		
Seal diaphragm	Parts of measuring cell	
Stainless steel	Stainless steel	Α
Hastelloy	Stainless steel	в
Gold <sup>1)</sup>	Gold	
Process connection		
	T with flange connection	
Sealing screw opposi		
<ul> <li>Mounting thread '/1</li> <li>Mounting thread M1</li> </ul>	6-20 UNF to EN 61518	3
(only for replacement		
· · ·	cess flanges. Position of	
	he process flanges (see	
dimensional drawing)	<sub>6</sub> -20 UNF to EN 61518	7
- Mounting thread M1		5
(only for replacement		
Non-wetted parts mate Process flange screws	erials Electronics housing	
Stainless steel	Die-cast aluminium	2
Stainless steel	Stainless steel precision casting <sup>2)</sup>	3
Version		
Standard version	English label inscriptions,	1
documentation in 5 la		2
Explosion protection	* •	
Without		Α
With ATEX, Type of pr		_
- "Intrinsic safety (EE>		В
- "Explosion-proof (EE		D
<ul> <li>"Intrinsic safety and enclosure (EEx ia +</li> </ul>		P
- "Ex nA/nL (zone 2)"		Е
	losion-proof enclosure	R
and dust explosion	protection (EEx ia +	
EEx d + Zone 1D/2E • With FM + CSA, Type		
- "Intrinsic safety and		NC
(is + xp) <sup>"3)</sup> , max PN		
Electrical connection		
<ul> <li>Screwed gland Pg 13</li> </ul>	.5 <sup>5)</sup>	A
<ul> <li>Screwed gland M20x</li> </ul>		В
Screwed gland <sup>1</sup> / <sub>2</sub> -14		A B C D
<ul> <li>Han 7D plug (plastic connector<sup>5)</sup></li> </ul>	nousing) incl. mating	D
M12 connectors (meta)	al) <sup>6)</sup>	F

7 M F 4 5 3 3 -
1
6
7

Power supply units see "SITRANS I power supply units and isolation amplifiers".

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

- $^{1)}_{\cdots}$  Not together with max. span 600 mbar (240.9 inH\_2O)
- <sup>2)</sup> Not together with Electrical connection "Screwed gland Pg 13.5" and "Han7D plug".
- <sup>3)</sup> Without cable gland, with blanking plug
- With enclosed cable gland EEx ia and blanking plug
   Not together with type of protection "Explosion-proof" and and type of protection "Ex nA".
- Cannot be used together with the following types of protection: "Explosion-proof" and "Intrinsic safety and explosion-proof".

DS III series for differential pressure and flow

for differen- I HART dbus) O) O) O) O) O) O) O) O) O) O) O) O) O)	Order No. 7 M F 4 5 3 4 - 7 M F 4 5 3 5 - 1 0 0 - E F G H H J	SITRANS P pressure transmitters for differential pressure and flow, Series DS III HART         PN 420 (MWP 6092 psi)         DS III PA (PROFIBUS PA) series         DS III FF series (FOUNDATION Fieldbus)         7 MF 4 5         Display         • With out (digital display hidden)         • With visible digital indicator         • With customer-specific digital indicator (setting as specified, Order code "Y21" or required)         Factory-mounting of shut-off valves and valve manifolds see 2/142.         Included in delivery of the device:         • Brief instructions (Leporello)         • CD-ROM with detailed documentation         • Sealing plug(s) or sealing screw(s) for the process flangest         1)         • Without cable gland, with blanking plug.         • With enclosed cable gland EEx ia and blanking plug.         • With enclosed cable gland EEx ia and blanking plug.	3 5 - - 1 6 7 page
C) C) C) C) C) asuring cell eel eel connection connection CN 61518 13	7 M F 4 5 3 5 - 1 0 0 - 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	DS III FF series (FOUNDATION Fieldbus)       7 M F 4 5         Display       •         • Without (digital display hidden)       •         • With visible digital indicator       •         • With customer-specific digital indicator (setting as specified, Order code "Y21" or required)       •         Factory-mounting of shut-off valves and valve manifolds see 2/142.       •         Included in delivery of the device:       •         Brief instructions (Leporello)       •         • CD-ROM with detailed documentation       •         • Sealing plug(s) or sealing screw(s) for the process flangest         1)       Not together with max. span 600 mbar (240.9 inH <sub>2</sub> O)         2)       Without cable gland, with blanking plug.         •       With enclosed cable gland EEx ia and blanking plug.         •       Not together with types of protection "Explosion-proof" and "Int	3 5 - - 1 6 7 page
C) C) C) C) C) asuring cell eel eel connection connection CN 61518 13	7 M F 4 5 3 5 - 1 0 0 - 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	<ul> <li>Display <ul> <li>Without (digital display hidden)</li> <li>With visible digital indicator</li> <li>With customer-specific digital indicator (setting as specified, Order code "Y21" or required)</li> </ul> </li> <li>Factory-mounting of shut-off valves and valve manifolds see 2/142. <ul> <li>Included in delivery of the device:</li> <li>Brief instructions (Leporello)</li> <li>CD-ROM with detailed documentation</li> <li>Sealing plug(s) or sealing screw(s) for the process flangest</li> </ul> </li> <li><sup>1)</sup> Not together with max. span 600 mbar (240.9 inH<sub>2</sub>O)</li> <li><sup>2)</sup> Without cable gland, with blanking plug.</li> <li><sup>3)</sup> With enclosed cable gland EEx ia and blanking plug.</li> </ul>	- 1 6 7 page
C) C) C) C) C) asuring cell eel eel connection connection CN 61518 13	D E F G H H	Display         • Without (digital display hidden)         • With visible digital indicator         • With visible digital indicator         • With customer-specific digital indicator (setting as specified, Order code "Y21" or required)         Factory-mounting of shut-off valves and valve manifolds see 2/142.         Included in delivery of the device:         • Brief instructions (Leporello)         • CD-ROM with detailed documentation         • Sealing plug(s) or sealing screw(s) for the process flangest         1) Not together with max. span 600 mbar (240.9 inH <sub>2</sub> O)         2) Without cable gland, with blanking plug.         • With eclosed cable gland EEx ia and blanking plug.         • Not together with types of protection "Explosion-proof" and "Int	1 6 7 page
D) D) asuring cell eel eel connection 5N 61518 13	D E F G H H	<ul> <li>Without (digital display hidden)</li> <li>With visible digital indicator</li> <li>With visible digital indicator</li> <li>With customer-specific digital indicator (setting as specified, Order code "Y21" or required)</li> <li>Factory-mounting of shut-off valves and valve manifolds see 2/142.</li> <li>Included in delivery of the device:</li> <li>Brief instructions (Leporello)</li> <li>CD-ROM with detailed documentation</li> <li>Sealing plug(s) or sealing screw(s) for the process flangest</li> <li><sup>1)</sup> Not together with max. span 600 mbar (240.9 inH<sub>2</sub>O)</li> <li><sup>2)</sup> Without cable gland, with blanking plug.</li> <li><sup>3)</sup> With enclosed cable gland EEx ia and blanking plug.</li> <li><sup>4)</sup> Not together with types of protection "Explosion-proof" and "Int</li> </ul>	6 7 page
D) D) asuring cell eel eel connection 5N 61518 13	E F G H - B L	<ul> <li>Without (digital display hidden)</li> <li>With visible digital indicator</li> <li>With visible digital indicator</li> <li>With customer-specific digital indicator (setting as specified, Order code "Y21" or required)</li> <li>Factory-mounting of shut-off valves and valve manifolds see 2/142.</li> <li>Included in delivery of the device:</li> <li>Brief instructions (Leporello)</li> <li>CD-ROM with detailed documentation</li> <li>Sealing plug(s) or sealing screw(s) for the process flangest</li> <li><sup>1)</sup> Not together with max. span 600 mbar (240.9 inH<sub>2</sub>O)</li> <li><sup>2)</sup> Without cable gland, with blanking plug.</li> <li><sup>3)</sup> With enclosed cable gland EEx ia and blanking plug.</li> <li><sup>4)</sup> Not together with types of protection "Explosion-proof" and "Int</li> </ul>	6 7 page
connection onnection N 61518	A B L	<ul> <li>2/142.</li> <li>Included in delivery of the device:</li> <li>Brief instructions (Leporello)</li> <li>CD-ROM with detailed documentation</li> <li>Sealing plug(s) or sealing screw(s) for the process flangest</li> <li><sup>1)</sup> Not together with max. span 600 mbar (240.9 inH<sub>2</sub>O)</li> <li><sup>2)</sup> Without cable gland, with blanking plug.</li> <li><sup>3)</sup> With enclosed cable gland EEx ia and blanking plug.</li> <li><sup>4)</sup> Not together with types of protection "Explosion-proof" and "Int</li> </ul>	
connection onnection N 61518	В L	<ul> <li>Brief instructions (Leporello)</li> <li>CD-ROM with detailed documentation</li> <li>Sealing plug(s) or sealing screw(s) for the process flangest</li> <li>Not together with max. span 600 mbar (240.9 inH<sub>2</sub>O)</li> <li>Without cable gland, with blanking plug.</li> <li>With enclosed cable gland EEx ia and blanking plug.</li> <li>Not together with types of protection "Explosion-proof" and "Int</li> </ul>	s)
connection onnection SN 61518 13	В L	<ol> <li>Not together with max. span 600 mbar (240.9 inH<sub>2</sub>O)</li> <li>Without cable gland, with blanking plug.</li> <li>With enclosed cable gland EEx ia and blanking plug.</li> <li>Not together with types of protection "Explosion-proof" and "Int</li> </ol>	- )
onnection EN 61518 13	- '	<ul> <li>With enclosed cable gland EEx ia and blanking plug.</li> <li>Not together with types of protection "Explosion-proof" and "Int</li> </ul>	
. Position of anges (see EN 61518 13	7 5		
housing iminium eel precision	2 3		
inscriptions,	1 2		
pof Ex ia + DS III FF) pof	A B D P E R NC		
	nclosure ix ia + S III FF)	A B D D Nof P R C S III FF)	A B B B D P B C A B D P B D D D D D D D D D D D D D

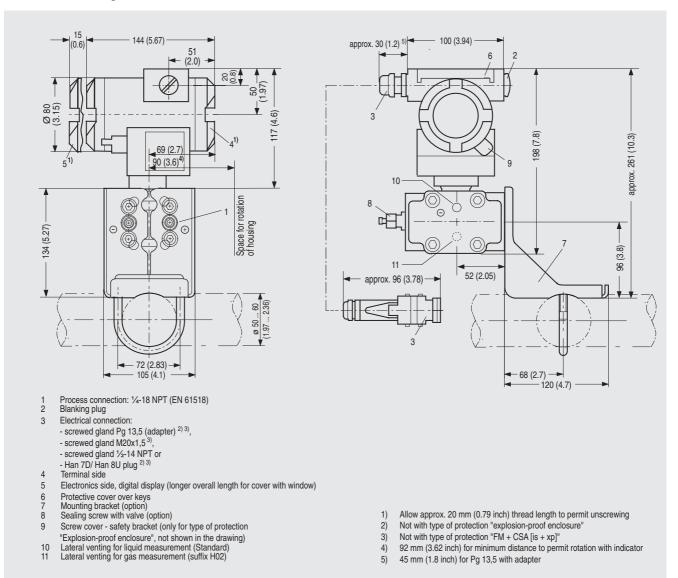
### DS III series

#### for differential pressure and flow

Selection and Ordering data	Order	code			Selection and Ordering data	Order of	code		
Further designs		HART	PA	FF	Further designs		HART	PA	FF
Add "-Z" to Order No. and specify Order code.					Add "-Z" to Order No. and specify Order code.				
Pressure transmitter with mounting bra- cket made of:					Explosion protection "Explosion-proof" to NEPSI (China)	E56	~	1	~
• Steel	A01	✓	<b>√</b>	1	(only for transmitter 7MF4D)				
Stainless steel	A02	1	~	1	Explosion-proof "Zone 2" to NEPSI (China)	E57	✓	✓	1
O-rings for process flanges (instead of FPM (Viton))					(only for transmitter 7MF4E) Interchanging of process connection side	H01	*	1	1
PTFE (Teflon)	A20	✓ ✓	✓ ✓	1		H03	· •	• •	
<ul> <li>FEP (with silicone core, approved for food)</li> <li>FFPM (Kalrez, compound 4079)</li> </ul>	A21 A22	✓ ✓	<b>↓</b>	✓ ✓	Stainless steel process flanges for vertical differential pressure lines	поз	•	•	Ť
• NBR (Buna N)	A23	✓	1	1	Additional data				
Plug					Add "-Z" to Order No. and specify Order				
• Han 7D (metal, gray)	A30	✓			code.				
Han 8U (instead of Han 7D)	A31	<b>*</b>			Measuring range to be set				
Sealing screws 1/4-18 NPT, with valve in material of process	A40	✓	~	1	<ul><li>Specify in plain text:</li><li>With linear characteristic (max. 5 digits):</li></ul>	Y01	1		
flanges					Y01: up to mbar, bar, kPa, MPa, psi	101	·		
Cable sockets for M12 connectors (metal)	A50	~	1	1	With square-rooted characteristic (max. 5 di-	Y02	✓		
Rating plate inscription					gits): Y02: up to mbar, bar, kPa, MPa, psi				
(instead of German)					Measuring point number (TAG No.)	Y15	✓	1	1
• English	B11	<b>1</b>	1	1	Max. 16 characters, specify in plain text:				
<ul><li>French</li><li>Spanish</li></ul>	B12 B13	✓ ✓	✓ ✓	✓ ✓	Y15:				
• Italian	B14	1	1	1	Measuring point text	Y16	~	~	1
English rating plate	B21	~	1	1	Max. 27 characters, specify in plain text: Y16:				
Pressure units in inH <sub>2</sub> O or psi					Entry of HART address (TAG)	Y17	✓		
Quality inspection certificate (Factory cali- bration) to IEC 60770-2	C11	1	~	~	Max. 8 characters, specify in plain text: Y17:				
Acceptance test certificate To EN 10204-3.1	C12	1	1	~	Setting of pressure indication in pressure units	Y21	~	~	1
Factory certificate To EN 10204-2.2	C14	~	~	~	Specify in plain text (standard setting: mA): Y21: mbar, bar, kPa, MPa, psi, Note:				
"Functional Safety (SIL)" certificate	C20	1			The following pressure units can be selected:				
"PROFIsafe" certificate and protocol	C21		~		bar, mbar, mm $H_2O^{*}$ , in $H_2O^{*}$ , ft $H_2O^{*}$ ,				
Setting of upper limit of output signal to 22.0 mA	D05	~			mmHG, inHG, psi, Pa, kPa, MPa, g/cm², kg/cm², Torr, ATM or % *) ref. temperature 20 °C				
Manufacturer's declaration acc. to NACE (only together with seal diaphragm made of Hastelloy and stainless steel)	D07	~	1	~	Setting of pressure indication in non-pressure units Specify in plain text:	Y22 + Y01 or Y02	~		
<b>Type of protection IP68</b> (not together with Han 7D / Han 8U plug, Pg 13.5 screwed gland)	D12	*	1	~	Y22: up to l/min, m <sup>3</sup> /h, m, USgpm, (specification of measuring range in pressure units "V01" or "Y02" is essential, unit with move 5 observation.				
Digital indicator alongside the input keys	D27	✓	1	~	max. 5 characters) Preset bus address	Y25		1	
(only together with the devices 7MF4533- 2A.6 orA.7-Z, Y21 or Y22 + Y01)	DLI		•	-	(possible between 1 and 126) Specify in plain text:	125		•	
Use in or on zone 1D/2D	E01	1	✓	1	Y25:				
(only together with type of protection "Intrinsic safety (EEx ia)")					Only "Y01", "Y21", "Y22", "Y25" and "D05" can b ✓ = available	be factor	y prese	et	
Use on zone 0	E02	1	✓	1					
(only together with type of protection "Intrinsic safety (EEx ia)")									
Explosion-proof "Intrinsic safety" to INME- TRO (Brazil)	E25	<b>~</b>	~	1					
(only for transmitter 7MF4B)									
Explosion-proof "Intrinsic safety" to NEPSI (China)	E55	<b>~</b>	~	1					
(only for transmitter 7MF4B)									

DS III series for differential pressure and flow

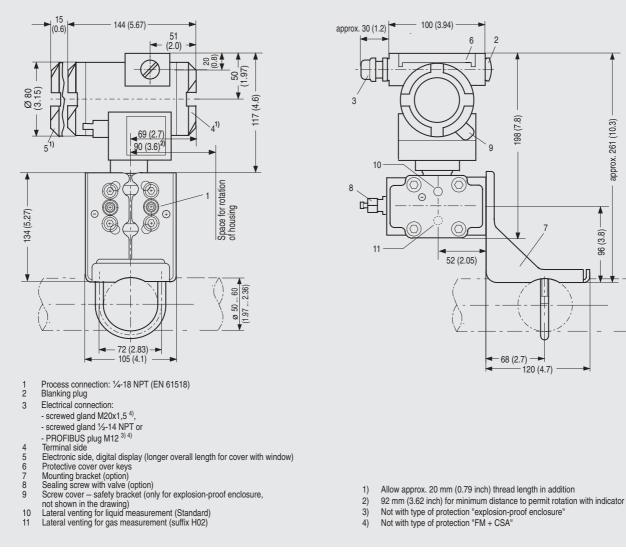
#### Dimensional drawings



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

**DS III series** 

for differential pressure and flow



approx. 261 (10.3)

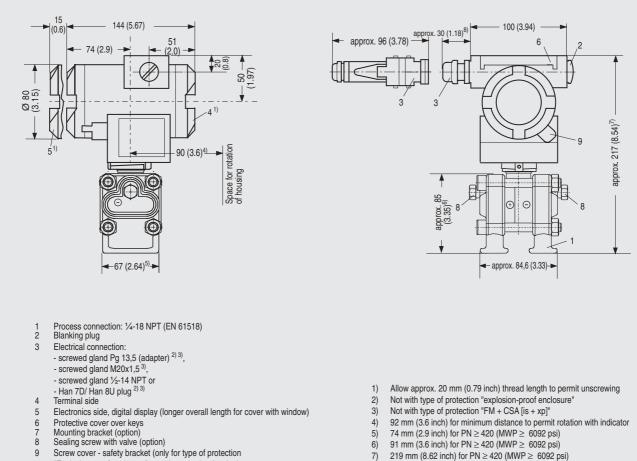
(3.8)

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

DS III series for differential pressure and flow

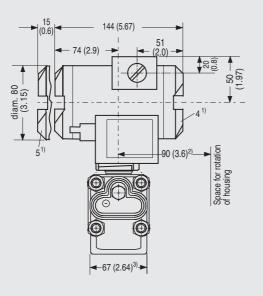


- "Explosion-proof enclosure", not shown in the drawing)
- 8) 45 mm (1.8 inch) for Pg 13,5 with adapter

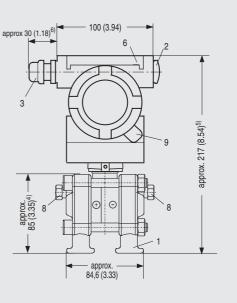
SITRANS P pressure transmitters, DS III HART series for differential pressure and flow, with process covers for vertical differential pressure lines, option "H03", dimensions in mm (inch)

**DS III series** 

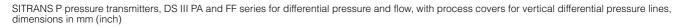
for differential pressure and flow



- Process connection 1/4-18 NPT (EN 61 518) 1
- 2 Blanking plug
- Electrical connection: 3 screwed gland M20x1.5,
- screwed gland 1/2-14 NPT or PROFIBUS plug M12
- 4 Terminal side
- Electronics side, digital display (longer overall length for cover with window) 5
- 6 Protective cover over keys
- 7 Mounting bracket (option)
- Sealing screw with valve (option) 8
- Screw cover safety bracket (only for explosion-proof enclosure, 9 not shown in the drawing)



- Allow approx. 20 mm (0.79 inch) thread length in addition 1)
- 2) 92 mm (3.6 inch) for minimum distance to permit rotation without indicator
- 74 mm (2.9 inch) for PN  $\ge$  420 (MWP  $\ge$  6092 psi) 3)
- 4) 91 mm (3.6 inch) for PN ≥ 420 (MWP ≥ 6092 psi)
- 5) 219 mm (8.62 inch) for PN ≥ 420 (MWP ≥ 6092 psi)
- 6) Approx. 45 mm (1.77 inch) for Pg 13.5 with adapter

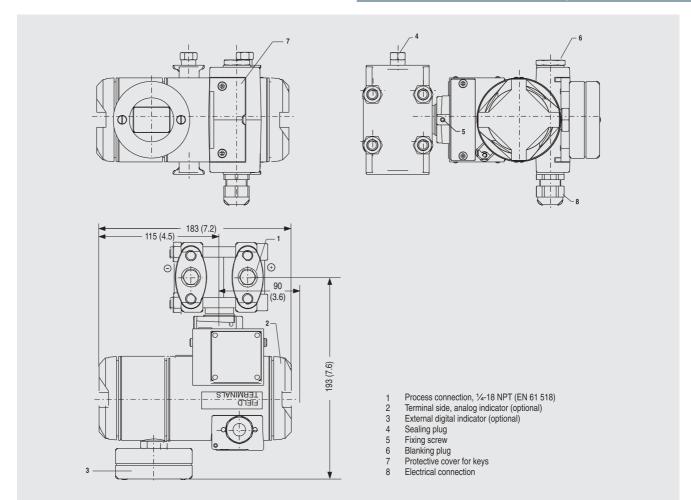




SITRANS P pressure transmitters, DS III series for differential pressure and flow, with process covers for vertical differential pressure lines

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DS III series for differential pressure and flow



SITRANS P pressure transmitters, DS III FF series for differential pressure and flow, with digital indicator beside control keys, for vertical differential pressure lines, dimensions in mm (inch)



SITRANS P pressure transmitters, DS III series for differential pressure and flow, with digital indicator beside control keys

DS III series for level

#### Technical specifications

#### SITRANS P, DS III series for level

	HART		PROFIBUS PA or FOUNDATION Fieldbus			
Input						
Measured variable	Level					
Spans (infinitely adjustable) or nominal measuring range and	Span	Maximum working pressure	Nominal measuring range	Maximum working pressure		
max. permissible working pressure	25 250 mbar g (0.36 3.63 psi g)	See "Mounting flange"	250 mbar g (3.63 psi g)	See "Mounting flange		
	25 600 mbar g (0.36 8.7 psi g)	See "Mounting flange"	600 mbar g (8.7 psi g)	See "Mounting flange		
	53 1600 mbar g (0.77 23.2 psi g)	See "Mounting flange"	1600 mbar g (23.2 psi g)	See "Mounting flange		
	160 5000 mbar g (2.32 72.5 psi g)	See "Mounting flange"	5000 mbar g (72.5 psi g)	See "Mounting flange		
Lower measuring limit						
<ul> <li>Measuring cell with silicone oil filling</li> </ul>	-100% of max. span or 3	30 mbar (0.435 psi a), de	pending on mounting fla	inge		
Upper measuring limit	100% of max. span		100% of the max. nomin	nal measuring range		
Output						
Output signal	4 20 mA		Digital PROFIBUS PA or signal	FOUNDATION Fieldbu		
<ul> <li>Lower limit (infinitely adjustable)</li> </ul>	3.55 mA, factory preset	to 3.84 mA	-			
<ul> <li>Upper limit (infinitely adjustable)</li> </ul>	23 mA, factory preset to set to 22.0 mA	20.5 mA or optionally	-			
Load						
<ul> <li>Without HART communication</li> </ul>	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.023$ $U_{\rm H}$ : Power supply in V	3 A in Ω,	-			
With HART communication	$R_{\rm B} = 230 \dots 500 \ \Omega \ {\rm (SIM}, R_{\rm B} = 230 \dots 1100 \ \Omega \ {\rm (HA})$		-			
Physical bus	-		IEC 61158-2			
With polarity reversal protection	-		Yes			
Accuracy	To EN 60770-1					
Reference conditions (All error data refer always refer to the set span)	Increasing characteristic ling, room temperature 2	c, start-of-scale value 0 k 25 °C (77 °F)) r: Span rat	par, stainless steel seal d io (r = max. span / set sp	iaphragm, silicone oil pan)		
Error in measurement and fixed-point setting (including hysteresis and repeatability)			1			
Linear characteristic			≤ 0,075%			
- r ≤ 10	≤ 0,15%					
- 10 < r ≤ 30	≤ 0,3%					
	≤ 0,3% ≤ (0.0075 · r + 0.075)%					
- 10 < r ≤ 30 - 30 < r ≤ 100 Long-term drift (temperature change ±30 °C (±54 °F))			≤ (0.25% every 5 years static pressure max. 70	bar g (1015 psi g)		
- $10 < r \le 30$ - $30 < r \le 100$ Long-term drift (temperature change $\pm 30$ °C ( $\pm 54$ °F)) Influence of ambient temperature	≤ (0.0075 · r + 0.075)% ≤ (0.25 · r)% every 5 yea			bar g (1015 psi g)		
<ul> <li>- 10 &lt; r ≤ 30</li> <li>- 30 &lt; r ≤ 100</li> <li>Long-term drift (temperature change ±30 °C (±54 °F))</li> <li>Influence of ambient temperature</li> <li>• at -10 +60 °C (14 140 °F)</li> </ul>	≤ (0.0075 · r + 0.075)% ≤ (0.25 · r)% every 5 yea static pressure max. 70		static pressure max. 70	bar g (1015 psi g)		
<ul> <li>10 &lt; r ≤ 30</li> <li>30 &lt; r ≤ 100</li> <li>Long-term drift (temperature change ±30 °C (±54 °F))</li> <li>Influence of ambient temperature</li> <li>at -10 +60 °C (14 140 °F)</li> <li>250-mbar (3.63 psi) measuring cell</li> </ul>	≤ (0.0075 · r + 0.075)% ≤ (0.25 · r)% every 5 yea static pressure max. 70 ≤ (0.5 · r + 0.2)% (0.4 instead of 0.2 with	bar g (1015 psi g)	státic pressure max. 70 ≤ 0,7%	bar g (1015 psi g)		
<ul> <li>- 10 &lt; r ≤ 30</li> <li>- 30 &lt; r ≤ 100</li> <li>Long-term drift (temperature change ±30 °C (±54 °F))</li> <li>Influence of ambient temperature</li> <li>• at -10 +60 °C (14 140 °F)</li> </ul>	≤ (0.0075 · r + 0.075)% ≤ (0.25 · r)% every 5 yea static pressure max. 70 ≤ (0.5 · r + 0.2)%	bar g (1015 psi g) 10 < r ≤ 30)	static pressure max. 70	bar g (1015 psi g)		
<ul> <li>10 &lt; r ≤ 30</li> <li>30 &lt; r ≤ 100</li> <li>Long-term drift (temperature change ±30 °C (±54 °F))</li> <li>Influence of ambient temperature</li> <li>at -10 +60 °C (14 140 °F)</li> <li>250-mbar (3.63 psi) measuring cell</li> <li>600-mbar (8.7 psi) measuring cell</li> <li>1600 and 5000 mbar (23.2 and 72.5 psi) measuring cells</li> </ul>	$\leq$ (0.0075 · r + 0.075)% $\leq$ (0.25 · r)% every 5 yea static pressure max. 70 $\leq$ (0.5 · r + 0.2)% (0.4 instead of 0.2 with $\leq$ (0.3 · r + 0.2)% (0.4 instead of 0.2 with	bar g (1015 psi g) 10 < r ≤ 30)	státic pressure max. 70 ≤ 0,7% ≤ 0,5%	bar g (1015 psi g)		
<ul> <li>10 &lt; r ≤ 30</li> <li>30 &lt; r ≤ 100</li> <li>Long-term drift (temperature change ±30 °C (±54 °F))</li> <li>Influence of ambient temperature</li> <li>at -10 +60 °C (14 140 °F)</li> <li>250-mbar (3.63 psi) measuring cell</li> <li>600-mbar (8.7 psi) measuring cell</li> <li>1600 and 5000 mbar (23.2 and 72.5 psi) measuring cells</li> <li>at -4010 °C and +60 +85 °C (-40 +14 °F and 140 185 °F)</li> </ul>	$\leq (0.0075 \cdot r + 0.075)\%$ $\leq (0.25 \cdot r)\% \text{ every 5 yeassing pressure max. 700}$ $\leq (0.5 \cdot r + 0.2)\%$ (0.4  instead of  0.2  with  1000  event 10000  event 1000000000000000000000000000000000000	bar g (1015 psi g) 10 < r ≤ 30) 10 < r ≤ 30) nstead of 0.2 with 10 < r	státic pressuré máx. 70 ≤ 0,7% ≤ 0,5% ≤ 0,45%	bar g (1015 psi g)		
<ul> <li>10 &lt; r ≤ 30</li> <li>30 &lt; r ≤ 100</li> <li>Long-term drift (temperature change ±30 °C (±54 °F))</li> <li>Influence of ambient temperature</li> <li>at -10 +60 °C (14 140 °F)</li> <li>250-mbar (3.63 psi) measuring cell</li> <li>600-mbar (8.7 psi) measuring cell</li> <li>1600 and 5000 mbar (23.2 and 72.5 psi) measuring cells</li> <li>at -4010 °C and +60 +85 °C (-40 +14 °F and 140 185 °F)</li> <li>250 mbar (3.63 psi) measuring cell</li> </ul>	$\leq (0.0075 \cdot r + 0.075)\%$ $\leq (0.25 \cdot r)\% \text{ every 5 yeastatic pressure max. 70}$ $\leq (0.5 \cdot r + 0.2)\%$ (0.4 instead of 0.2 with $\leq (0.3 \cdot r + 0.2)\%$ (0.4 instead of 0.2 with $\leq (0.25 \cdot r + 0.2)\% (0.4 \text{ instead of } 0.2 \text{ with} 10 < 0.2 \text{ or } 10 \text{ or } 1$	bar g (1015 psi g) $10 < r \le 30$ ) $10 < r \le 30$ ) nstead of 0.2 with $10 < r$ r $\le 30$	státic pressure max. 70 ≤ 0,7% ≤ 0,5%	bar g (1015 psi g)		
<ul> <li>10 &lt; r ≤ 30</li> <li>30 &lt; r ≤ 100</li> <li>Long-term drift (temperature change ±30 °C (±54 °F))</li> <li>Influence of ambient temperature</li> <li>at -10 +60 °C (14 140 °F)</li> <li>250-mbar (3.63 psi) measuring cell</li> <li>600-mbar (8.7 psi) measuring cell</li> <li>1600 and 5000 mbar (23.2 and 72.5 psi) measuring cells</li> <li>at -4010 °C and +60 +85 °C (-40 +14 °F and 140 185 °F)</li> </ul>	$\leq (0.0075 \cdot r + 0.075)\%$ $\leq (0.25 \cdot r)\% \text{ every 5 yeastatic pressure max. 7000}$ $\leq (0.5 \cdot r + 0.2)\%$ (0.4 instead of 0.2 with $r = (0.3 \cdot r + 0.2)\%$ (0.4 instead of 0.2 with $r = (0.25 \cdot r + 0.2)\%$ (0.4 in $\leq 300$ ) $\leq (0.25 \cdot r + 0.15)\%/10 \text{ K}$	bar g (1015 psi g) $10 < r \le 30$ ) $10 < r \le 30$ ) nstead of 0.2 with $10 < r$ $r \le 30$ $r \le 30$	státic pressuré máx. 70 ≤ 0,7% ≤ 0,5% ≤ 0,45%	bar g (1015 psi g)		

DS III series for level

2

#### SITRANS P, DS III series for level

	HART	PROFIBUS PA or FOUNDATION Fieldbus
Influence of static pressure		
• on the zero point		
- 250 mbar (3.63 psi) measuring cell	≤ (0.3 · r)% per nominal pressure	≤ 0.3% per nominal pressure
- 600 mbar (8.7 psi) measuring cell	≤ (0.15 · r)% per nominal pressure	≤ 0.15% per nominal pressure
- 1600 and 5000 mbar (23.2 and 72.5 psi) measuring cells	$\leq$ (0.1 · r)% per nominal pressure	≤ 0.1% per nominal pressure
• on the span	$\leq$ (0.1 · r)% per nominal pressure	≤ 0.1% per nominal pressure
Measured Value Resolution	-	3 · 10 <sup>-5</sup> of nominal measuring range
Rated operating conditions		
Degree of protection (to EN 60529)	IP65	
Process temperature	Note: Always take into account assignment of n missible working pressure of the respective flam	nax. permissible working temperature to max. per- ge connection!
<ul> <li>Measuring cell with silicone oil filling</li> </ul>	-40 +100 °C (-40 +212 °F)	
- High-pressure side	p <sub>abs</sub> ≥ 1bar: -40 +175 °C (-40 +347 °F) p <sub>abs</sub> ≥ 1bar: -40 +80 °C (-40 +176 °F)	
- Low-pressure side	-40 +100 °C (-40 +212 °F) -20 +60 °C (-4 +140 °F) in conjunction with	dust explosion protection
Ambient conditions		
Ambient temperature		
- Digital indicators	-30 +85 °C (-22 +185 °F)	
Storage temperature	-50 +85 °C (-58 +185 °F)	
Climatic class		
- Condensation	Permissible	
Electromagnetic compatibility		
- Emitted interference and interference immu- nity	To EN 61326 and NAMUR NE 21	
Design		
Weight (without options)		
<ul> <li>To EN (pressure transmitter with mounting flan- ge, without tube)</li> </ul>	≈ 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)	
Wetted parts materials	Poor in copper die-cast aluminium, GD-AlSi12 or	stainless steel precision casting, mat. No. 1.4408
Housing material		
High-pressure side		
<ul> <li>Seal diaphragm of mounting flange</li> </ul>	Stainless steel, mat. No. 1.4404/316L, Monel, m Hastelloy C276, mat. No. 2.4819, Hastelloy C4,	at. No. 2.4360, Hastelloy B2, mat. No. 2.4617, mat. No. 2.4610, tantalum, PTFE, ECTFE
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 connection $^{7/}_{\rm 16}\mbox{-}20$ UNF to EN 61518	with mounting thread M10 to DIN 19213 or
Power supply $oldsymbol{U}_{ec}$		Supplied through bus
Terminal voltage on transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically-safe mode	-
Separate 24 V power supply necessary	-	No
Bus voltage		
• Not Ex	-	932 V
With intrinsically-safe operation	-	924 V
Current consumption		
Basic current (max.)	-	12.5 mA
• Startup current $\leq$ basic current	-	Yes
Max. current in event of fault	-	15.5 mA
Fault disconnection electronics (FDE) available	-	Yes

DS III series for level

#### SITRANS P, DS III series for level

	HART	PROFIBUS PA or FOUNDATION Fieldbus
Certificate and approvals		
Classification according to pressure equipment directive (DRGL 97/23/EC)	For gases of fluid group 1 and liquids of fluid group aragraph 3 (sound engineering practice)	oup 1; complies with requirements of Article 3,
Explosion protection		
Intrinsic safety "i"	PTB 99 ATEX 2122	
- Identification	Ex II 1/2 G EEx ia/ib IIB/IIC T6	
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperature class -40 +70 °C (-40 +158 °F) temperature class -40 +60 °C (-40 +140 °F) temperature class	s T5;
- Connection	To certified intrinsically-safe circuits with maximum values: $U_i = 30 \text{ V}, I_i = 100 \text{ mA},$ $P_i = 750 \text{ mW}; P_i = 300 \Omega$	FISCO supply unit: $U_0 = 17.5 \text{ V}, I_0 = 380 \text{ mA}, P_0 = 5.32 \text{ W}$ Linear barrier: $U_0 = 24 \text{ V}, I_0 = 250 \text{ mA}, P_0 = 1.2 \text{ W}$
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{\rm i} = 7 \ \mu {\rm H}, \ C_{\rm i} = 1.1 \ {\rm nF}$
<ul> <li>Explosion-proof "d"</li> </ul>	PTB 99 ATEX 1160	
- Identification	Ex II 1/2 G EEx d IIC T4/T6	
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperature class -40 +60 °C (-40 +140 °F) temperature class	
- 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	
- Identification	Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C	
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F)	
- Max.surface temperature	120 °C (248 °F)	
- Connection	To certified intrinsically-safe circuits with maximum values: $U_i = 30 \text{ V}, I_i = 100 \text{ mA},$ $P_i = 750 \text{ mW}, R_i = 300 \Omega$	FISCO supply unit: $U_0 = 17.5 \text{ V}, I_0 = 380 \text{ mA}, P_0 = 5.32 \text{ W}$ Linear barrier: $U_0 = 24 \text{ V}, I_0 = 250 \text{ mA}, P_0 = 1.2 \text{ W}$
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4  {\rm mH},  C_{\rm i} = 6  {\rm nF}$	$L_{\rm i} = 7 \mu\text{H},  C_{\rm i} = 1.1 \text{nF}$
<ul> <li>Dust explosion protection for zone 21/22</li> </ul>	PTB 01 ATEX 2055	1
- Identification	Ex II 2 D IP65 T 120 °C	
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC; $P_{\rm max}$ = 1.2 W	To circuits with values: $U_{\rm H}$ = 9 32 V DC; $P_{\rm max}$ = 1.2 W
<ul> <li>Type of protection "n" (zone 2)</li> </ul>	TÜV 01 ATEX 1696 X	Planned
- Identification	Ex II 3 G EEx nA L IIC T4/T5/T6	-
<ul> <li>Explosion protection to FM</li> </ul>	Certificate of Compliance 3008490	1
- Identification (XP/DIP) or (IS); (NI)	CL I, DIV 1, GP ABCD T4T6; CL II, DIV 1, GP E DIV 2, GP ABCD T4T6; CL II, DIV 2, GP FG; C	
<ul> <li>Explosion protection to CSA</li> </ul>	Certificate of Compliance 1153651	
- Identification (XP/DIP) or (IS)	CL I, DIV 1, GP ABCD T4T6; CL II, DIV 1, GP E T4T6; CL II, DIV 2, GP FG; CL III	FG; CL III; Ex ia IIC T4T6; CL I, DIV 2, GP ABC

			for level		
HART communication		Communication FOUNDATION Fi	eldbus		
HART communication	230 1100 Ω	Function blocks	3 function blocks analog input,		
Protocol	HART Version 5.x		1 function block PID		
Software for computer	SIMATIC PDM	<ul> <li>Analog input</li> </ul>			
PROFIBUS PA communication		<ul> <li>Adaptation to customer-speci- fic process variables</li> </ul>	Yes, linearly rising or falling cha- racteristic		
Simultaneous communication with	4	<ul> <li>Electrical damping T<sub>63</sub>, adjus- table</li> </ul>	0 100 s		
master class 2 (max.)		- Simulation function	Output/input (can be locked within		
The address can be set using	Configuration tool or local opera- tion (standard setting address 126)		the device with a bridge)		
Cyclic data usage	120)	- Failure mode	Can be parameterized (last good value, substitute value, incorrect value)		
Output byte	5 (one measuring value) or	- Limit monitoring	Yes, one upper and lower warning		
Input byte	10 (two measuring values) 0, 1, or 2 (register operating mode		limit and one alarm limit respec- tively		
	and reset function for metering)	- Square-rooted characteristic	Yes		
Internal preprocessing		for flow measurement			
Device profile	PROFIBUS PA Profile for Process Control Devices Version 3.0,	• PID	Standard FF function block		
	Class B	<ul> <li>Physical block</li> </ul>	1 Resource block		
Function blocks	2	Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block		
<ul> <li>Analog input</li> </ul>			LCD		
<ul> <li>Adaptation to customer-speci- fic process variables</li> </ul>	Yes, linearly rising or falling cha- racteristic	<ul> <li>Pressure transducer block</li> <li>Can be calibrated by applying</li> </ul>	Yes		
<ul> <li>Electrical damping T<sub>63</sub>, adjus- table</li> </ul>	0 100 s	two pressures			
- Simulation function	Input /Output	- Monitoring of sensor limits	Yes		
- Failure mode	Can be parameterized (last good value, substitute value, incorrect value)	<ul> <li>Simulation function: Measured pressure value, sensor tempe- rature and electronics tempera- ture</li> </ul>	Constant value or over paramete- rizable ramp function		
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respec- tively	Mounting flange			
<ul> <li>Register (totalizer)</li> </ul>	Can be reset, preset, optional	Nom. diam.	Nom. press.		
,	direction of counting, simulation function of register output	• To EN 1092-1			
- Failure mode	Can be parameterized (summation	- DN 80	PN 40		
	with last good value, continuous summation, summation with incor-	- DN 100	PN16, PN40		
	rect value)	• To ASME B16.5			
- Limit monitoring	One upper and lower warning limit	- 3 inch	Class 150, class 300		
S	and one alarm limit respectively	- 4 inch	Class 150, class 300		
Physical block	1				
Transducer blocks	2				
<ul> <li>Pressure transducer block</li> <li>Can be calibrated by applying</li> </ul>	Yes				
two pressures	Vee				
- Monitoring of sensor limits	Yes				
<ul> <li>Specification of a container characteristic with</li> </ul>	Max. 30 nodes				
<ul> <li>Square-rooted characteristic for flow measurement</li> </ul>	Yes				
<ul> <li>Gradual volume suppression and implementation point of square-root extraction</li> </ul>	Parameterizable				
<ul> <li>Simulation function for measu- red pressure value and sensor temperature</li> </ul>	Constant value or over paramete- rizable ramp function				

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**DS III series** for level

Selection and Orderin	-	Order				
SITRANS P pressure series DS III HART	transmitters for level		7 M F 4 6 3 3 -			
Series DS III HART		Y				
Measuring cell filling	Measuring cell cleaning					
Silicone oil	Standard	1				
Span		_				
25 250 mbar	(0.363 3.63 psi)	D				
25 600 mbar	(0.363 8.70 psi)	E				
53 1600 mbar	(0.77 23.2 psi)	F				
0.16 5 bar	(2.32 72.5 psi)	G				
Process connection of	of low-pressure side					
	PT with flange connection					
<ul> <li>Mounting thread <sup>7</sup>/<sub>16</sub>-</li> </ul>		2	2			
Mounting thread M10		C	)			
(only for replacement		_				
Non-wetted parts mat						
Process flange screws	Electronics housing					
Stainless steel	Die-cast aluminium		2			
Stainless steel	Stainless steel precision casting <sup>1)</sup>		3			
Version						
<ul> <li>Standard version</li> </ul>			1			
<ul> <li>International version, documentation in 5 la</li> </ul>	English label inscriptions, anguages on CD		2			
Explosion protection						
Without			Α			
With ATEX, Type of pr						
- "Intrinsic safety (EE			В			
- "Explosion-proof (El			D			
<ul> <li>"Intrinsic safety and enclosure (EEx ia +</li> </ul>	Ex d) <sup>3)</sup>		۲			
- "Ex nA/nL (zone 2)"			Е			
	olosion-proof enclosure		B			
	protection (EEx ia +					
• With FM + CSA, Type						
<ul> <li>"Intrinsic safety and (is + xp)"<sup>2)</sup></li> </ul>	explosion-proof		NC			
Electrical connection	/ cable entry					
Screwed gland Pg 13	3.5 <sup>4)</sup>		A			
<ul> <li>Screwed gland M20x</li> </ul>			в			
<ul> <li>Screwed gland ½-14</li> </ul>			С			
<ul> <li>Han 7D plug (plastic connector<sup>4)</sup></li> </ul>			D			
<ul> <li>M12 connectors (met</li> </ul>	al) <sup>5)</sup>		F			
Display						
	tor hidden, setting: mA)		1			
<ul> <li>With visible digital ind</li> </ul>			6			
<ul> <li>With customer-specif</li> </ul>	ic digital indication (setting		7			

- 1) Not together with Electrical connection "Screwed gland Pg 13.5" and "Han7Ď plug".
- <sup>2)</sup> Without cable gland, with blanking plug.
- <sup>3)</sup> With enclosed cable gland EEx ia and blanking plug.
- 4) Not together with type of protection "Explosion-proof" and type of protection "Ex nA"
- 5) Not together with types of protection "Explosion-proof" or "Intrinsic safety and explosion-proof
- F) Subject to export regulations AL: 91999, ECCN: N.

Ordering information:

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

as specified, Order code "Y21" or required)

Ordering example:

7MF4633-1EY20-1AA1-Z
Y01
Y01: 80 to 143 mbar (1.16 to 2.1 psi)
7MF4912-3GE01

Power supply units see "SITRANS I power supply units and isolation amplifiers".

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

• CD-ROM with detailed documentation

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

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DS III series for le<u>vel</u>

					IOF I	evei
Selection and Ordering data	Order No.	Selection and Ordering data	Order	code		
SITRANS P pressure transmitter		Further designs		HART	PA	FF
for level DS III PA series (PROFIBUS PA)	7 M F 4 6 3 4 -	Add "-Z" to Order No. and specify Order code.				
DS III FF series (FOUNDATION Fieldbus)	7 M F 4 6 3 5 -	O-rings for process flanges on				
	1 Y -	low-pressure side (instead of FPM (Viton))				
Nominal measuring range		PTFE (Teflon)	A20	~	✓	1
250 mbar (3.63 psi)	D	• FEP (with silicone core, approved for food)	A21	✓	✓	✓
600 mbar (8.70 psi) 1600 mbar (23.2 psi)	E	• FFPM (Kalrez, compound 4079)	A22	✓	1	1
1600 mbar (23.2 psi) 5 bar (72.5 psi)	G	• NBR (Buna N)	A23	✓	~	~
Process connection of low-pressure side	-	Plug ● Han 7D (metal, gray)	A30	~		
Female thread 1/4-18 NPT with flange connection		Han 7D (instead of Han 7D)	A31	· •		
Mounting thread M10 to DIN 19213     (and a formula compared by 19213)	0	Sealing screws				
(only for replacement needs) • Mounting thread <sup>7</sup> / <sub>16</sub> -20 UNF to EN 61518	2	1/4-18 NPT, with valve in material of process	A40	✓	✓	1
Non-wetted parts materials		flanges				
Process flange screws Electronics housing		Cable sockets for M12 connectors (metal)	A50	✓	1	~
Stainless steel Die-cast aluminium	2	Rating plate inscription				
Stainless steel Stainless steel precision	3	(instead of German)	B11	1	1	1
casting		• English • French	B12	<b>↓</b>	¥.	<b>↓</b>
Version		• Spanish	B13	✓	✓	1
<ul><li>Standard version</li><li>International version, English label inscriptions,</li></ul>	1	• Italian	B14	✓	✓	1
documentation in 5 languages on CD	2	English rating plate	B21	✓	✓	1
Explosion protection		Pressure units in inH <sub>2</sub> O or psi				
<ul><li>Without</li><li>With ATEX, Type of protection:</li></ul>	А	Quality inspection certificate (Factory cali- bration) to IEC 60770-2	C11	~	~	1
- "Intrinsic safety (EEx ia)" - "Explosion-proof (EEx d)" <sup>1)</sup>	B	Acceptance test certificate To EN 10204-3.1	C12	1	1	1
<ul> <li>"Intrinsic safety and explosion-proof e nclosure (EEx ia + EEx d)"<sup>2)</sup></li> <li>"Ex nA/nL (zone2)"</li> </ul>	P	Factory certificate To EN 10204-2.2	C14	~	1	1
- "Intrinsic safety, explosion-proof enclosure	R	"Functional Safety (SIL)" certificate	C20	~		
and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)" <sup>2)</sup> (not for DS III FF)		"PROFIsafe" certificate and protocol	C21		1	
• With FM + CSA, Type of protection:		Setting of upper limit of output signal to	D05	~		
<ul> <li>"Intrinsic safety and explosion-proof (is + xp)"<sup>2)</sup></li> </ul>	NC	22.0 mA Type of protection IP68	D12	~	✓	~
Electrical connection / cable entry		(not together with PROFIBUS plug M12)				
Screwed gland M20x1.5	В	Supplied with oval flange	D37 <sup>F)</sup>	~	1	1
<ul> <li>Screwed gland ½-14 NPT</li> <li>Plug M12 incl. mating connector<sup>3)</sup></li> </ul>	C	(1 item), PTFE packing and stainless steel	031 /	•	•	•
		screws in thread of process flange				
<ul><li>Display</li><li>Without (digital display hidden)</li></ul>	1	Use on zone 1D / 2D	E01	✓	✓	1
With visible digital indication	6	(only together with type of protection "Intrinsic safety (EEx ia)")				
With customer-specific digital indication (setting as specified, Order code "Y21" or required)	7	Use on zone 0	E02	~	1	1
		(only together with type of protection	202			-
Ordering information: 1st order item: Pressure transmitter 7MF4634 2nd order item: Mounting flange 7MF4912		"Intrinsic safety (EEx ia)") Overfilling safety device for flammable	E08	~	✓	
Ordering example:		and non-flammable liquids				
Item line 1: 7MF4634-1EY20-1AA1 Item line 2: 7MF4912-3GE01		(max. PN 32 (MVWP 464 psi), basic device with type of protection "Intrinsic safety (EEx ia)")				
Included in delivery of the device: • Brief instructions (Leporello) • CD-ROM with detailed documentation		Explosion-proof "Intrinsic safety" to INME- TRO (Brazil)	E25	~	•	1
Sealing plug(s) or sealing screw(s) for the proces	s flanges(s)	(only for transmitter 7MF4B)				
<ol> <li>Without cable gland, with blanking plug.</li> <li>With enclosed cable gland EEx ia and blanking plu</li> </ol>	n	Explosion-proof "Intrinsic safety" to NEPSI (China)	E55	~	1	1
<sup>3)</sup> Not together with types of protection "Explosion-pro-	of" and "Intrinsic safety	(only for transmitter 7MF4B)			,	
and explosion-proof" F) Subject to export regulations AL: 91999, ECCN: N.		Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)	E56	~	~	~
		Explosion-proof "Zone 2" to NEPSI (China)	E57	~	1	~
		(only for transmitter 7MF4E)				

Interchanging of process connection side H01

1 1

## DS III series for level

Selection and Ordering data	Order	codo		
Additional data	Juer	HART	PA	FF
		TARI	PA	ГГ
Add "-Z" to Order No. and specify Order code.				
Measuring range to be set	Y01	~		
Specify in plain text (max. 5 digits): Y01: up to mbar, bar, kPa, MPa, psi				
Measuring point number (TAG No.) Max. 16 characters, specify in plain text: Y15:	Y15	~	*	1
Measuring point text Max. 27 characters, specify in plain text: Y16:	Y16	*	~	~
Entry of HART address (TAG)	Y17	✓		
Max. 8 characters, specify in plain text: Y17:				
Setting of pressure indicator in pressure units	Y21	~	~	~
Specify in plain text (standard setting: mA): Y21: mbar, bar, kPa, MPa, psi,				
Note: The following pressure units can be selected:				
bar, mbar, mm $H_2O^{*)}$ , in $H_2O^{*)}$ , ft $H_2O^{*)}$ , mmHG, inHG, psi, Pa, kPa, MPa, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , Torr, ATM or % *) ref. temperature 20 °C				
Setting of pressure indicator in	Y22 <sup>1)</sup>	✓		
non-pressure units	+ Y01			
Specify in plain text: Y22: up to l/min, m <sup>3</sup> /h, m, USgpm, (specification of measuring range in pressure units " <b>Y01</b> " is essential, unit with max. 5 characters)				
Preset bus address	Y25		1	
(possible between 1 and 126) Specify in plain text:				
Y25:				

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

✓ = available

 Not together with over-filling safety device for flammable and non-flammable liquids (Order code "E08")

Selection and Orderin	g data	Orde	er No.(	Ord. code
Mounting flange	•	7 M I	491	2 -
Directly mounted on the SITRANS P pressure tra for level, for DS III serie	ansmitter (converter part)	3	1	
Connection acc. to EN	1092-1			
<b>Nom. diam.</b> DN 80 DN 100	<b>Nom. press.</b> PN 40 PN 16 PN 40	D G H		
Connection acc. to AS	ME B16.5			
Nom. diam. 3 inch	Nom. press. Class 150 Class 300	Q R		
4 inch	Class 150 Class 300	T		
Other version, add Order code and plain te Nominal diameter:; N	ext:	z		J 1 Y
Wetted parts materials • Stainless steel 316L - Coated with PFA - Coated with PTFE - Coated with ECTFE <sup>1</sup>		Í	A D E 0	
Monel 400, mat. No. 2     Hastelloy B2, mat. No     Hastelloy C276, mat. I     Hastelloy C4, mat. No     Tantalum	. 2.4617 No. 2.4819	ł		
Other version, add Order code and plain te material of parts in cont Sealing face, see "Tech	act with the medium:		Z	К 1 Ү
Tube length				
<ul> <li>Without</li> <li>50 mm</li> <li>100 mm</li> <li>150 mm</li> <li>200 mm</li> </ul>	(1.97 inch) (3.94 inch) (5.90 inch) (7.87 inch)		0 1 2 3 4	
Other version: add Order code and plain te Tube length:	ext:		9	L 1 Y
Filling liquid • Silicone oil M5 • Silicone oil M50 • High-temperature oil • Halocarbon oil (for O <sub>2</sub> • Glycerin / water <sup>2)</sup> • Food oil (FDA-listed)	measurements)		1 2 3 4 6 7	
Other version, add Order code and plain te filling liquid:	ext:		9	M 1 Y

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

2) Not suitable for use in low-pressure range

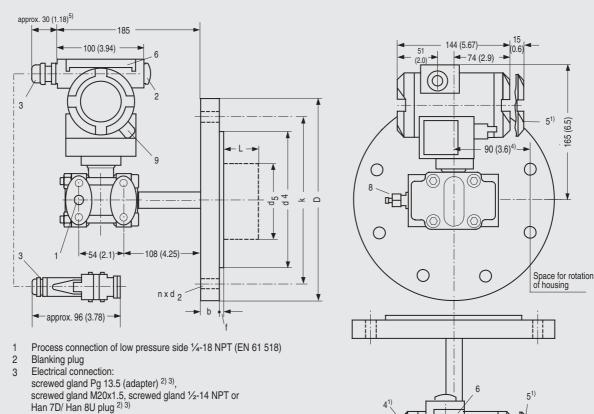
DS	<b>III</b> series
	for level

Selection and Ordering data	Order co	ode	
<i>Further designs</i> Add "-Z" to Order No. and specify Order code.		HART	PA and FF
Flame flashover lock-out For mounting on zone 0 (including documen- tation)	A01	1	<b>✓</b>
Quality inspection certificate (Factory cali- bration) to IEC 60770-2	C11	~	1
Acceptance test certificate To EN 10204-3.1	C12	~	1
Vacuum-proof design (for use in low-pressure range)	V04	1	1
Calculation of span of associated pressure transmitter	Y05	~	1
(enclose filled-in questionnaire with order) Note: suffix "Y01" required with pressure transmitter!			

✓ = available

DS III series for level

#### Dimensional drawings



- 4 Terminal side
- 5 Electronics side, digital display (longer overall length for cover with window)
- Protective cover over keys 6
- Sealing screw with valve (option) 8
- 9 Screw cover safety bracket (only for type of protection "Explosion-proof enclosure", not shown in the drawing)
- Allow approx. 20 mm (0.79 inch) thread length in addition 1)
- Not with type of protection "Explosion-proof enclosure" 2)
- Not with type of protection "FM + CSA [is + xp]" 3)
- 4) 92 mm (3.62 inch) for minimum distance to permit rotation without indicator

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

#### Connection to EN 1092-1

Nom. diam.	Nom. press.	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 80	PN 40	24	200	90	18	138	76	72 <sup>1)</sup>	2	160	8	0, 50, 100,
DN 100	PN 40	20	220	115	18	158	94	89	2	180	8	150 or 200
	PN 40	24	235	115	22	162	94	89	2	190	8	

#### Connection to ASME B16.5

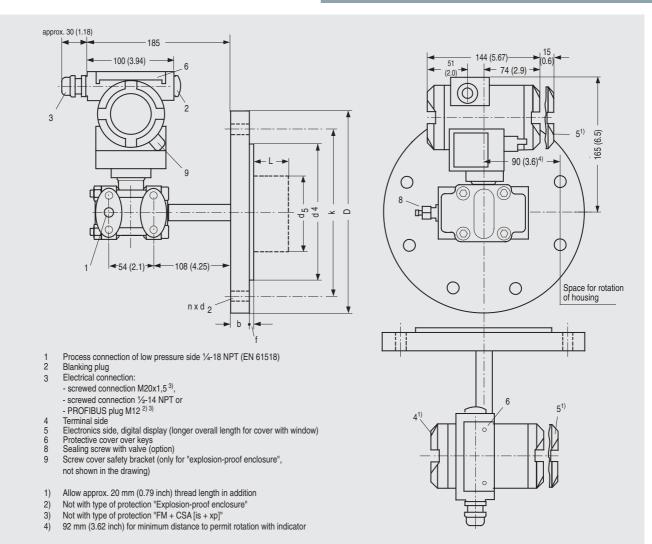
Nom. diam.	Nom. press.	b	D	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub>	f	k	n	L
	lb/sq.in.	inch	inch	inch	inch	inch	inch	inch	inch		inch
		(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)		(mm)
3 inch	150	0.94 (23.8)	7.5 (190.5)	0.75 (19.0)	5 (127)	3 (76)	2.81 <sup>1)</sup> (72)	0.06 (1.6)	6 (152.4)	4	0, 2, 3.94, 5.94 or 7.87 (0, 50, 100, 150 or 200)
	300	1.12 (28.6)	8.25 (209.5)	0.87 (22.2)	5 (127)	3 (76)	2.81 <sup>1)</sup> (72)	0.06 (1.6)	6.69 (168.3)	8	_
4 inch	150	0.94 (23.8)	9 (228.5)	0.75 (19.0)	6.19 (157.2)	3.69 (94)	3.5 (89)	0.06 (1.6)	7.5 (190.5)	8	_
	300	1.25 (31.7)	10 (254)	0.87 (22.2)	6.19 (157.2)	3.69 (94)	3.5 (89)	0.06 (1.6)	7.88 (200)	8	_

d: Internal diameter of gasket to DIN 2690 d<sub>M</sub>: Effective diaphragm diameter

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

(6.5)165

DS III series for level



SITRANS P pressure transmitters, DS III PA and FF series for level, including mounting flange, dimensions in mm (inch)

#### Connection to EN 1092-1

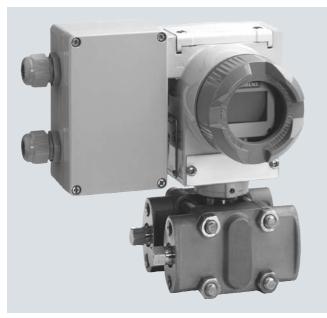
Nom. diam.	Nom. press.	b	D	d	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub>	f	k	n	L
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
DN 80	PN 40	24	200	90	18	138	76	72 <sup>1)</sup>	2	160	8	0, 50, 100
DN 100	PN 40	20	220	115	18	158	94	89	2	180	8	— 150 or 200
	PN 40	24	235	115	22	162	94	89	2	190	8	
Connection t	to ASME B16.5	5										
Nom. diam.	Nom. press.	b	D	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub>	f	k	n	L	
	lb/sq.in.	inch	inch	inch	inch	inch	inch	inch	inch		inch	
		(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)		(mm)	
3 inch	150	0.94 (23.8)	7.5 (190.5)	0.75 (19.0)	5 (127)	3 (76)	2.81 <sup>1)</sup> (72)	0.06 (1.6)	6 (152.4)	4	0, 2, 3.94, 5.94 or 7.87 (0, 50, 100, 150 or 200)	
	300	1.12 (28.6)	8.25 (209.5)	0.87 (22.2)	5 (127)	3 (76)	2.81 <sup>1)</sup> (72)	0.06 (1.6)	6.69 (168.3)	8	-	
4 inch	150	0.94 (23.8)	9 (228.5)	0.75 (19.0)	6.19 (157.2)	3.69 (94)	3.5 (89)	0.06 (1.6)	7.5 (190.5)	8	-	
	300	1.25 (31.7)	10 (254)	0.87 (22.2)	6.19 (157.2)	3.69 (94)	3.5 (89)	0.06 (1.6)	7.88 (200)	8	-	

d: Internal diameter of gasket to DIN 2690  $d_{M}{:}$  Effective diaphragm diameter

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

#### Supplementary electronics for 4-wire connection

#### Overview



SITRANS P pressure transmitter with supplementary electronics for 4wire connection

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

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

#### Note on ordering:

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

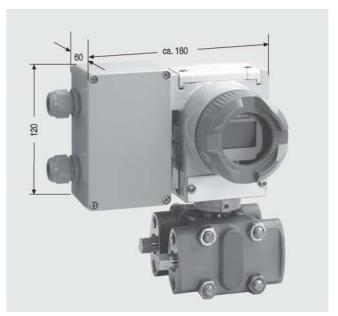
#### Technical specifications

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

#### Structural design

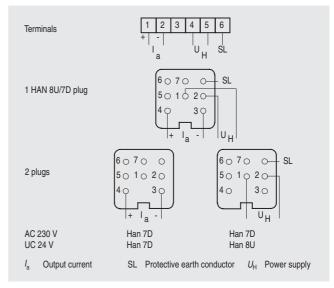
Dimensions (W x H x D) in mm (inch)	80 x 120 x 60 (3.15 x 4.72 x 2.36)
Electrical connection	Screw terminals (Pg 13.5 cable inlet) or Han 7D / Han 8U plug
Power supply	
Supply voltage	230 V AC (-10 +6%, 47 63 Hz, approx. 6 VA) or 24 V AC/DC (24 V AC ± 10%,
	47 63 Hz, approx. 3 VA)
Permissible ripple (within the speci- fied limits)	Approx. 2.5 V <sub>pp</sub>

#### Dimensional drawings



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

#### Schematics



Supplementary electronics for 4-wire connection, connection diagram

2

Supplementary electronics for 4-wire connection

Selection and	Order code		
Supplementary connection	V		
Order No. of the 7MF4.331/	e transmitter <b>\B.</b> add <b>"-Z"</b> and Order code.		
Power supply	Electrical connection		
24 V AC/DC	Terminals; 2 Pg screwed glands, to left	1	
	2 Han 7D/Han 8U plugs incl. mating connector, to left	3	
	1 Han 7D plug incl. mating connector, angled	5	
	Terminals; 1 Pg screwed gland, downwards	6	
	1 Han 8U plug incl. mating connector, downwards (observe arrangement of plug and differential pressure line)	9	
230 V AC	Terminals; 2 Pg screwed glands, to left	7	
	2 Han 7D plugs incl. mating connector, to left	8	
Output current			
0 20 mA		0	
4 20 mA		1	
Selection and	Ordering data	Order No.	
Accessories			
Instruction Ma	nual	A5E00322799	

#### Accessories / spare parts for SITRANS P P300 and DS III series

Selection and Ord	Order No.		
Replacement mea for SITRANS P, DS	7 M F 4 9 9 0 -		
•	ng Measuring cell cleaning		
Silicone oil	Standard	1	
Inert liquid	Grease-free	3	
Measured span			
0.01 1 bar g	(0.15 14.5 psi g)	b	
0.04 4 bar g	(0.58 58 psi g)	c	
0.16 16 bar g	(2.32 232 psi g)	d	
0.63 63 bar g	(9.14 914 psi g)	е	
1.6 160 bar g	(23.2 2320 psi g)	f	
4.0 400 bar g	(58.0 5802 psi g)	g	
Wetted parts mate	rials		
Seal diaphragm	Process connection		
Stainless steel	Stainless steel	а	
Hastelloy	Stainless steel	b	
Hastelloy	Hastelloy	c	
Process connection	on		
<ul> <li>Connection shank</li> </ul>	G <sup>1</sup> / <sub>2</sub> B to EN 837-1	0	
• Female thread 1/2-	14 NPT	1	
<ul> <li>Oval flange made</li> </ul>			
max. span 160 ba			
Ũ	d <sup>7</sup> / <sub>16</sub> -20 UNF to EN 61518	2	
- Mounting thread	M10 to DIN 19213	3	
Further designs	Order code		
Please add "-Z" to C Order code.	Order No. and specify		
Acceptance test c	ertificate	c12	
to EN 10204-3.1			

Selection and Order	ng data	Orde	er No.		
	Replacement measuring cell for absolute F)				
for SITRANS P, DS III,	ressure series) DS III PA and DS III FF series		0 - 0 D C 0		
• •	Measuring cell cleaning				
Silicone oil	Standard	1			
Inert liquid	Grease-free	3			
Measured span					
8.3 250 mbar a	(0.12 3.63 psi a)	D			
43 1300 mbar a	(0.62 18.9 psi a)	F			
0.16 5 bar a	(2.32 72.5 psi a)	G			
1 30 bar a	(14.5 435 psi a)	н			
Wetted parts materia	lls				
Seal diaphragm	Process connection				
Stainless steel	Stainless steel	a	1		
Hastelloy	Stainless steel	k	)		
Hastelloy	Hastelloy	c	;		
Process connection					
Connection shank G	1/2B to EN 837-1		0		
<ul> <li>Female thread ½-14</li> </ul>	NPT		1		
<ul> <li>Oval flange made or</li> </ul>					
max. span 160 bar (					
	16-20 UNF to EN 61518		2		
- Mounting thread N	110 to DIN 19213		3		
Further designs		Orde	er code		
Please add "-Z" to Ord Order code.					
Acceptance test cert to EN 10204-3.1	ificate	c12			

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

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Accessories / spare parts for SITRANS P P300 and DS III series

Selection and Orderi	ng data		Order No.
Spare parts / Access	ories		
Replacement measu	ring cell for absolute pres-	F)	7 M F 4 9 9 3 -
sure (from the different	ential pressure series) for		- 0 D C
	III PA and DS III FF series		
	Measuring cell cleaning		
Silicone oil	Standard		1
Inert liquid	Grease-free		3
Measured span			
8.3 250 mbar a	(0.12 3.63 psi a)	E)	
43 1300 mbar a	(0.62 18.9 psi a)	E)	F
0.16 5 bar a	(2.32 72.5 psi a)	E)	G
1 30 bar a	(14.5 435 psi a)		H Ke
5.3 100 bar a	(76.9 1450 psi a)		KE
Wetted parts materia			
Seal diaphragm	Parts of measuring cell	_	
Stainless steel	Stainless steel		a
Hastelloy	Stainless steel		b
Hastelloy	Hastelloy		C
Tantalum	Tantalum		e
Monel	Monel	E)	h
Gold	Gold		1
Process connection			
	IPT with flange connection		
0 11	site process connection		
- Mounting thread M	110 to DIN 19213		0
	( <sub>16</sub> -20 UNF to EN 61518		2
<ul> <li>Vent on side of proc</li> <li>Mounting thread M</li> </ul>			4
	/ <sub>16</sub> -20 UNF to EN 61518		6
			Ŭ
<ul> <li>Non-wetted parts ma</li> <li>Stainless steel proce</li> </ul>			2
Further designs Please add "-Z" to Ord Order code.	ler No. and specify		Order code
O-rings for process	langes		
(instead of FPM (Vitor	-		
<ul> <li>PTFE (Teflon)</li> </ul>			a20
	ore, approved for food)		a21
<ul> <li>FFPM (Kalrez, comp</li> </ul>	ound 4079)		a22
<ul> <li>NBR (Buna N)</li> </ul>			a23
Acceptance test cert	ificate		c12
to EN 10204-3.1			
Process connection	D16		
Remote seal flanges			d20
(not together with K01	, K02 and K04)		
Vent on side for gas	measurements		h02
Process flanges			
<ul> <li>without</li> </ul>			K00
<ul> <li>with process flange</li> </ul>	made of		
- Hastelloy			K01
- Monel			K02
- Stainless steel with			K04
max. PN 10 (MWP max, temperature	of medium 90 °C (194 °F)		

<sup>1)</sup> Not for span "5.3 ... 100 bar (76.9 ... 1450 psi)"

E) Combinations of the versions marked with E) are subject to the export regulations AL: 2B230, ECCN: N.

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

	P300 a	and	DS III series		
Selection and Orderir	ng data		Order No.		
Spare parts / Access	-				
Replacement measur pressure and PN 32/1 SITRANS P, DS III, DS	7 M F 4 9 9 4 -				
Measuring cell filling Silicone oil Inert liquid	Measuring cell cleaning Standard Grease-free		1		
Measured span PN 32 (MWP 464 psi) 1 20 mbar <sup>1)</sup>	(0.4015 8.03 inH <sub>2</sub> O)		Ь		
<u>PN 160 (MWP 2320 ps</u> 1 60 mbar 2.5 250 mbar 6 600 mbar 16 1600 mbar 50 5000 mbar 0.3 30 bar	i) (0.4015 24.09 inH <sub>2</sub> O) (1.004 100.4 inH <sub>2</sub> O) (2.409 240.9 inH <sub>2</sub> O) (6.424 642.4 inH <sub>2</sub> O) (20.08 2008 inH <sub>2</sub> O) (4.35 435 psi)		C D F G H		
Wetted parts material	s	_			
(stainless steel process	s flanges)				
Seal diaphragm	Parts of measuring cell				
Stainless steel Hastelloy Hastelloy Tantalum <sup>2)</sup> Monel <sup>2)</sup> Gold <sup>2)</sup>	Stainless steel Stainless steel Hastelloy Tantalum Monel Gold		A B C e h		
Process connection		-			
<ul> <li>Female thread ¼-18 N</li> <li>Sealing screw oppos</li> <li>Mounting thread M</li> <li>Mounting thread <sup>7</sup>/.</li> <li>Vent on side of proce</li> <li>Mounting thread M</li> <li>Mounting thread <sup>7</sup>/.</li> <li>Non-wetted parts mat Stainless steel process</li> </ul>	_	0 2 4 6 2			
Further designs Please add "-Z" to Orde	er No. and specify Order co	ode.	Order code		
O-rings for process fil (instead of FPM (Viton) • PTFE (Teflon) • FEP (with silicone coi • FFPM (Kalrez, compo • NBR (Buna N)	<b>anges</b> ) re, approved for food)	;	a20 a21 a22 a23		
Acceptance test certi to EN 10204-3.1	ficate		c12		
Remote seal flanges (not together with K01,	K02 and K04)		d20		
Vent on side for gas r	neasurements		h02		
Stainless steel procest differential pressure I (not together with K01,			H03		
Process flanges • without • with process flange r - Hastelloy - Monel	nade of		K00 K01 K02		

1) Not suitable for connection of remote seal

- Stainless steel with PVDF insert

max. PN 10 (MWP 145 psi)

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

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

max. temperature of medium 90 °C (194 °F)

K04

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### Accessories / spare parts for SITRANS P P300 and DS III series

Selection and Ordering	g data	Order No.		
Spare parts / Accesso	ries			
Replacement measurin pressure and PN 420 (I RANS P, DS III, DS III PA DS III FF series	7 M F 4 9 9 5 -			
Measuring cell filling Silicone oil	Measuring cell cleaning Standard	1		
Measured span 2.5 250 mbar 6 600 mbar 16 1600 mbar 50 5000 mbar 0.3 30 bar	(1.004 100.4 inH <sub>2</sub> O) (2.409 240.9 inH <sub>2</sub> O) (6.424 642.4 inH <sub>2</sub> O) (20.08 2008 inH <sub>2</sub> O) (4.35 435 psi)	D e F G H		
Wetted parts materials (stainless steel process				
Seal diaphragm	Parts of measuring cell			
Stainless steel Hastelloy Gold <sup>1)</sup>	A B I			
Process connection				
Female thread <sup>1</sup> / <sub>4</sub> -18 NP connection • Sealing screw opposit - Mounting thread M12 - Mounting thread <sup>7</sup> / <sub>16</sub> • Vent on side of proces - Mounting thread <sup>7</sup> / <sub>16</sub>	1 3 5 7			
Non-wetted parts mate     Stainless steel process		2		
Further designs		Order code		
Please add "-Z" to Order code.	r No. and specify Order			
O-rings for process fla (instead of FPM (Viton)) • PTFE (Teflon) • FEP (with silicone core • FFPM (Kalrez, compose • NBR (Buna N)	a20 a21 a22 a23			
Acceptance test certifi to EN 10204-3.1	c12			
Stainless steel process rential pressure lines	s flanges for vertical diffe-	H03		
without process flange	98	K00		
1) Not together with max	span 600 mbar (240.9 in $H_{2}O$ )			

1)	Not together with max.	span 600 mbar	(240.9 inH <sub>2</sub> O)
----	------------------------	---------------	----------------------------

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

Selection and Ordering data		Order No.		
Spare parts / Accesso	Spare parts / Accessories			
Replacement measuring cell for level for SITRANS P, DS III, DS III PA and DS III FF series		7 M F 4 9 9 6 -		
Measuring cell filling Silicone oil	Measuring cell cleaning Standard	1		
Rated measuring rang 250 mbar 600 mbar 1600 mbar 5 bar	(3.63 psi) (8.70 psi) (23.2 psi) (72.5 psi)	D e F G		
Wetted parts materials (stainless steel process Seal diaphragm				
Stainless steel	Stainless steel	A		
<ul> <li>Process connection of low-pressure side</li> <li>Female thread ¼-18 NPT with flange connection</li> <li>Sealing screw opposite process connection</li> <li>Mounting thread M10 to DIN 19213</li> <li>Mounting thread <sup>7</sup>/<sub>16</sub>-20 UNF to EN 61518</li> </ul>		0 2		
• Stainless steel proces	2			
<i>Further designs</i> Please add "-Z" to Order code.	r No. and specify Order	Order code		
O-rings for process fla (instead of FPM (Viton)) • PTFE (Teflon) • FEP (with silicone core • FFPM (Kalrez, compoi • NBR (Buna N) Acceptance test certifit to EN 10204-3.1 without process flange	e, approved for food) and 4079)	a20 a21 a22 a23 c12 k00		

Accessories / spare parts for SITRANS P P300 and DS III series

		P30	o and DS III series
Selection and Ordering data	Order No.	Selection and Ordering data	Order No.
Spare parts / Accessories		Sealing screws	
Mounting bracket and mounting parts for pressure transmitters DS III, DS III PA and DS III FF series		<ul><li>(1 set = 2 off) for process flange</li><li>made of stainless steel</li><li>made of Hastelloy</li></ul>	7MF4997-1CG F) 7MF4997-1CH
(7MF403C.) <u>for absolute pressure transmitters</u> DS III, DS III PA and DS III FF series (7MF423C.)		Screw plug with valve (1 set = 2 off) • made of stainless steel • made of Hastelloy	<ul> <li>7MF4997-1CP</li> <li>7MF4997-1CQ</li> </ul>
<ul><li>made of steel</li><li>made of stainless steel</li></ul>	7MF4997-1AB 7MF4997-1AH	Electronics • for DS III series	7MF4997-1DK
Mounting bracket and mounting parts		• for DS III PA series	7MF4997-1DL
for pressure transmitters DS III, DS III PA and DS III FF series		<ul> <li>for DS III FF series</li> <li>Connection board</li> </ul>	7MF4997-1DM
(7MF403A.,B. andD.) for absolute pressure transmitters DS III, DS III PA and DS III FF series (7ME422 A. P. and D.)		<ul><li>for DS III series</li><li>for DS III PA and DS III FF series</li></ul>	7MF4997-1DN 7MF4997-1DP
(7MF423A.,B. andD.) • Made of steel • Made of stainless steel	7MF4997-1AC 7MF4997-1AJ	O-rings for process flanges made of • FPM (Viton)	F) 7MF4997-2DA
Mounting bracket and mounting parts for differential pressure transmitters with flange thread M10		<ul> <li>PTFE (Teflon)</li> <li>FEP (with silicone core, approved for food)</li> <li>FFPM (Kalrez, compound 4079)</li> <li>NBR (Buna N)</li> </ul>	<ul> <li>F) 7MF4997-2DB</li> <li>F) 7MF4997-2DC</li> <li>F) 7MF4997-2DD</li> <li>F) 7MF4997-2DE</li> </ul>
DS III, DS III PA and DS III FF series (7MF433 and 7MF443) • made of steel	7MF4997-1AD	Weldable sockets for PMC connection for DS III and P300 series	
made of stainless steel	• 7MF4997-1AK	<ul> <li>PMC Style Standard: Thread 1½"</li> <li>PMC Style Mini bolt: front-flush 1"</li> </ul>	7MF4997-2HA F) 7MF4997-2HB
Mounting bracket and mounting parts for differential pressure transmitters with flange thread M12		Sealing rings for PMC connection (packing unit: 5 pcs) • Sealing ring made of PTFE for PMC Style	F) 7MF4997-2HC
DS III, DS III PA and DS III FF series (7MF453)		Standard: Thread 11/2"     Sealing ring made of Viton for PMC Style	F) <b>7MF4997-2HD</b>
<ul><li>made of steel</li><li>made of stainless steel</li></ul>	7MF4997-1AE 7MF4997-1AL	Minibolt: front-flush 1"	1) /MF4997-2ND
Mounting bracket and mounting parts for differential and absolute pressure trans- mitters with flange thread 7/16-20 UNE DS III, DS III PA and DS III FF series		Weldable socket for TG 52/50- and TG 52/150 connection for DS III and P300 series • TG 52/50 connection	7MF4997-2HE
(7MF433, 7MF443 and 7MF453) • made of steel	7MF4997-1AF	<ul> <li>TG 52/150 connection</li> <li>Seals for TG 52/50 and TG 52/150 made of</li> </ul>	7MF4997-2HF 7MF4997-2HG
<ul> <li>made of stainless steel</li> </ul>	7MF4997-1AM	silicone	
<b>Cover</b> Made of die-cast aluminium, including gasket, for DS III, DS III PA and DS III FF series		Seals for flange connection with flush- mounted diaphragm Material FPM (Viton), 10 units	
	<ul> <li>7MF4997-1BB</li> <li>7MF4997-1BE</li> </ul>	<ul> <li>DN 25, PN 40 (M11)</li> <li>DN 25, PN 100 (M21)</li> </ul>	<ul><li>F) 7MF4997-2HH</li><li>F) 7MF4997-2HJ</li></ul>
F	=)	<ul> <li>1", class 150 (M40)</li> <li>1", class 300 (M45)</li> </ul>	<ul> <li>F) 7MF4997-2HK</li> <li>F) 7MF4997-2HL</li> </ul>
<b>Cover</b> Made of stainless steel, including gasket, for DS III, DS III PA and DS III FF series		Mounting bracket and mounting parts for P300	,
	<ul> <li>7MF4997-1BC</li> <li>7MF4997-1BF</li> </ul>	Made of stainless steel	7MF8997-1AA
Digital indicator	,	Lid without window for P300 <ul> <li>Gasket not included</li> </ul>	7MF8997-1BA
Including mounting material for DS III, DS III PA and DS III FF series	7MF4997-1BR	Lid with glass window for P300 <ul> <li>Gasket not included</li> </ul>	7MF8997-1BD
Measuring-point label • without inscription (5 off)	7MF4997-1CA	NBR housing gasket for P300	7MF8997-1BG
<ul> <li>with four inscription (1 off)</li> <li>with inscription (1 off)</li> <li>Data according to Y01 or Y02, Y15 and Y16 (see "SITRANS P pressure transmitters")</li> </ul>	7MF4997-1CA 7MF4997-1CB-Z Y:	Measuring point label for P300 <ul> <li>Unlabeled</li> </ul>	7MF8997-1CA
Mounting screws	7MF4997-1CD	Cable gland for P300	7ME9007 1EA
for measuring-point label, earthing and con-		<ul><li>Metal</li><li>Plastic (blue)</li></ul>	7MF8997-1EA 7MF8997-1EB
nection terminals or for digital indicator (50 off)		Available ex stock	

Available ex stock

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

#### Accessories / spare parts for SITRANS P P300 and DS III series

Outputies and Outputies date	Onden Ne
Selection and Ordering data	Order No.
Instruction Manual <sup>1)</sup> • for P300 series with HART communication - German - English - French - Spanish - Italian - Leporello German/English • for P300 series with PROFIBUS PA communi- cation - German - English - French - Spanish	A5E00359580 A5E00359579 A5E00359578 A5E00359576 A5E00359577 A5E00359577 A5E00359581 A5E00414587 A5E00414588 A5E00414588 A5E00414589 A5E00414590
<ul> <li>Italian</li> <li>Leporello German/English</li> <li>for DS III series</li> <li>German</li> <li>English</li> <li>French</li> <li>Spanish</li> <li>Italian</li> <li>for DS III PA series</li> <li>German</li> <li>English</li> <li>French</li> <li>Spanish</li> <li>Italian</li> <li>for DS III FF series</li> <li>German</li> <li>English</li> <li>French (planned)</li> <li>Italian (planned)</li> </ul>	A5E00414591 A5E00414592 A5E00414592 A5E00414592 A5E00047092 A5E00053218 A5E00053219 A5E00053275 A5E00053276 A5E00053277 A5E00053277 A5E00053279 A5E00279627 A5E00279629 A5E00279630 A5E00279632 A5E00279631
<ul> <li>Brief instructions (Leporello)</li> <li>for DS III series, German, English</li> <li>for DS III PA series, German, English</li> <li>for DS III FF series, German, English</li> </ul>	A5E00047093 A5E00053274 A5E00282355 A5E00090345
Instruction Manual for replacement of electronics, measuring cell and connection board • German/English HART modem	A5E00078060
with RS232 interface     vith USB interface     D)     Supplementary electronics for 4-wire connec-	7MF4997-1DA 7MF4997-1DB see page 2/134

tion

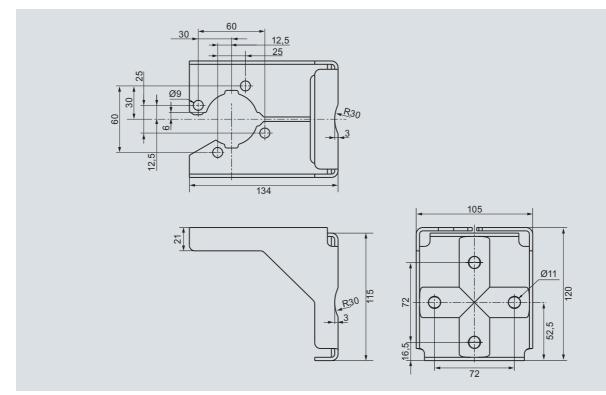
Available ex stock

Power supply units see "SITRANS I power supply units and input isolators".

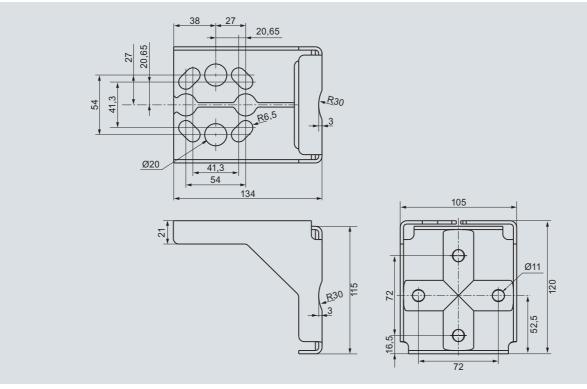
- 1) You can download the Instruction Manuals free-of-charge from the Internet site www.siemens.com/sitransp.
- D) Subject to export regulations AL: N, ECCN: EAR99H. G) Subject to export regulations AL: N, ECCN: 5D992B1.

Accessories / spare parts for SITRANS P P300 and DS III series

#### Dimensional drawings



Mounting bracket for SITRANS P gage and absolute pressure transmitter, DS III series Material of mounting bracket: Sheet-steel Mat. No. 1.0330, chrome-plated, or stainless steel Mat. No. 1.4301 (304)



Mounting bracket for SITRANS P differential pressure transmitter, DS III series, Material of mounting bracket: Sheet-steel Mat. No. 1.0330, chrome-plated, or stainless steel Mat. No. 1.4301 (304)

Factory-mounting of valve manifolds on **SITRANS P transmitters** 

#### Overview

SITRANS P transmitters

- P300 for relative and absolute pressure,
- 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 relative ٠ pressure and absolute pressure transmitters
- 7MF9411-5BA and 7MF9411-5CA valve manifolds for absolute pressure and differential pressure transmitters

#### Design

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

#### Selection and Ordering data

#### 7MF9011-4FA valve block on

rel	ative	and	absol	ute	pressure	transmitters
-----	-------	-----	-------	-----	----------	--------------

for the sol	Add -Z to the Order No. of the transmitter and add order codes.	Order code
	SITRANS P DSIII 7MF4031, 7MF4231 and SITRANS P300 7MF8021	T03
	With process connection female thread ½-14 NPT in-sealed with PTFE sealing strip	
	Delivery incl. high-pressure test certified by factory certificate to EN10204-2.2	
7MF9011-4EA va	lve block on	

#### relative and abs



solute pressure transmitters	
Add -Z to the Order No. of the transmitter and add order codes.	Order code
SITRANS P DSIII 7MF4030, 7MF4230 and SITRANS P300 7MF8020	T02
with process connection collar G1/2 A to EN837-1 with gasket made of PTFE between valve manifold and transmitter	
Alternative sealing material:	
• soft iron	A70
• stainless steel, Mat. No. 14571	A71
• copper	A72
Delivery incl. high-pressure test certified by factory certificate to EN10204-2.2	
Further designs:	
Delivery includes mounting brackets and mounting clips made of stainless steel (instead of the mounting bracket sup- plied with the transmitter)	A02
Supplied acceptance test certificate to EN 10204- 3.1 for transmitters and moun- ted valve manifold	C12
Oil and grease-free cleaning for oxygen operation	E10

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

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

Once installed, the complete unit is checked under pressure for leaks and is certified leak-proof with a factory certificate to EN 10204 - 2.2.

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

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

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

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

A CO	Add -Z to the Order No. of the transmitter and add order codes.	Order code
	SITRANS P DSIII 7MF433, 7MF443 and 7MF453 <sup>1)</sup>	
	mounted with gaskets made of PTFE and screws made of	
	<ul> <li>chromized steel</li> </ul>	U01
	<ul> <li>stainless steel</li> </ul>	U02
	Delivery incl. high-pressure test certified by factory certificate to EN10204-2.2	

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

	ive mannola on amerendal pressure da	Sinters
1	Add -Z to the Order No. of the transmitter and add order codes.	Order code
.6	SITRANS P DSIII 7MF443 und 7MF453 <sup>1)</sup>	
	mounted with gaskets made of PTFE and screws made of	
	chromized steel	U03
	stainless steel	U04
	Delivery incl. high-pressure test certified by factory certificate to EN10204-2.2	
	Further designs:	
	Delivery includes mounting bracket and mounting clips made of	
	• steel	A01
	<ul> <li>stainless steel</li> </ul>	A02
	(instead of the mounting bracket supplied with the transmitter)	
	Supplied acceptance test certificate to EN10204-3.1 for transmitters and mounted valve manifold	C12
	Oil and grease-free cleaning for oxygen operation	E10
71.45.45.0		

<sup>1)</sup> For 7MF453.-... transmitters, you require a 7/10-20 UNF connection thread in the process flange.

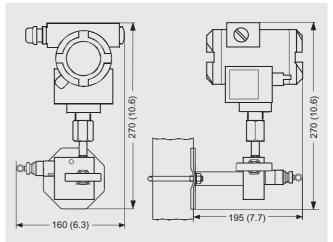
Factory-mounting of valve manifolds on SITRANS P transmitters

#### Dimensional drawings

Valve manifolds mounted on SITRANS P DS III



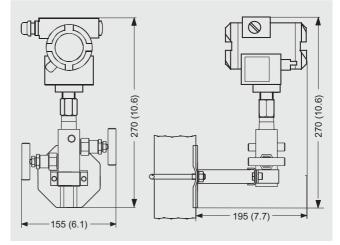
Valve manifold 7MF9011-4EA with mounted relative pressure and absolute pressure transmitters



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



Valve manifold 7MF9011-4FA with mounted relative pressure and absolute pressure transmitters



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

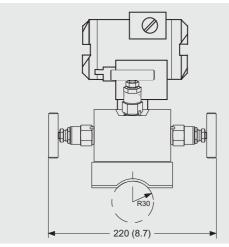
Factory-mounting of valve manifolds on SITRANS P transmitters

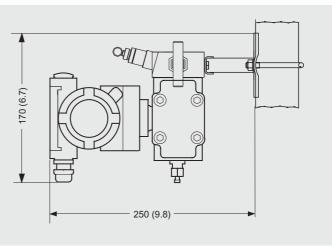


Valve manifold 7MF9411-5BA with mounted differential pressure transmitter

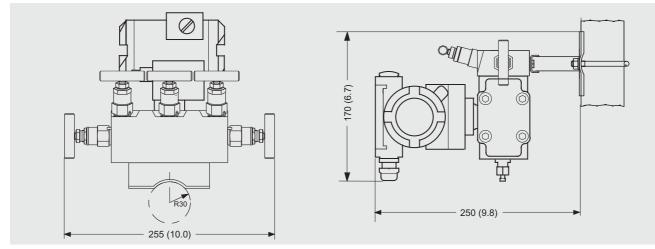


Valve manifold 7MF9411-5CA with mounted differential pressure transmitter





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



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

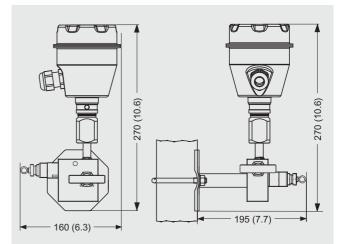
## SITRANS P measuring instruments for pressure SITRANS P Accessories

Factory-mounting of valve manifolds on SITRANS P transmitters

Valve manifolds mounted on SITRANS P300



Valve manifold 7MF9011-4EA with mounted relative pressure and absolute pressure transmitters



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



Valve manifold 7MF9011-4FA with mounted relative pressure and absolute pressure transmitters



Valve manifold 7MF9011-4FA with mounted relative pressure and absolute pressure transmitters, dimensions in mm

### SITRANS P measuring instruments for pressure Transmitters for hydrostatic level

#### MPS series (submersible sensor)

#### Overview



SITRANS P pressure transmitters, MPS series (submersible sensor)

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

The pressure transmitters of the MPS series are available for various measuring ranges and with explosion protection as an option.

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

#### Benefits

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

#### Application

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

- Oil and gas industries
- Shipbuilding
- Water supply

#### Design

SITRANS P pressure transmitters, MPS series, have a flushmounted piezo-resistive sensor with stainless steel diaphragm.

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

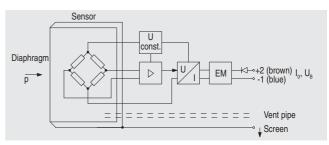
The diaphragm is protected against external influences by a protective cap.

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

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

#### Function

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



SITRANS P pressure transmitters, MPS series, mode of operation and wiring diagram

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

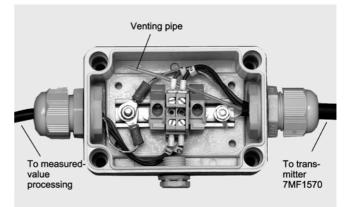
The hydrostatic pressure of the liquid column acts on the sensor diaphragm, and transmits the pressure to the piezo-resistive bridge in the sensor.

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

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

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

#### Integration



Junction box 7MF1570-8AA, opened

## SITRANS P measuring instruments for pressure Transmitters for hydrostatic level



Measuring point setup, in principle

#### Technical specifications

SITRANS P pressure transmitters,	MPS series (submersible sensor
Mode of operation	
Measuring principle	Piezo-resistive
Input	
Measured variable	Hydrostatic level
Measuring range	Maximum working pressure
• 0 2 mH <sub>2</sub> O (0 6 ftH <sub>2</sub> O)	<ul> <li>1.4 bar (20.3 psi) (corresponds to 14 mH<sub>2</sub>O (42 ftH<sub>2</sub>O))</li> </ul>
• 0 4 mH <sub>2</sub> O (0 12 ftH <sub>2</sub> O)	<ul> <li>1.4 bar (20.3 psi) (corresponds to 14 mH<sub>2</sub>O (42 ftH<sub>2</sub>O))</li> </ul>
• 0 5 mH <sub>2</sub> O (0 15 ftH <sub>2</sub> O)	<ul> <li>1.4 bar (20.3 psi) (corresponds to 14 mH<sub>2</sub>O (42 ftH<sub>2</sub>O))</li> </ul>
• 0 6 mH <sub>2</sub> O (0 18 ftH <sub>2</sub> O)	<ul> <li>3.0 bar (43.5 psi) (corresponds to 30 mH<sub>2</sub>O (90 ftH<sub>2</sub>O))</li> </ul>
• 0 10 mH <sub>2</sub> O (0 30 ftH <sub>2</sub> O)	<ul> <li>3.0 bar (43.5 psi) (corresponds to 30 mH<sub>2</sub>O (90 ftH<sub>2</sub>O))</li> </ul>
• 0 20 mH <sub>2</sub> O (0 60 ftH <sub>2</sub> O)	<ul> <li>6.0 bar (87.0 psi) (corresponds to 60 mH<sub>2</sub>O (180 ftH<sub>2</sub>O))</li> </ul>
Output	
Output signal	4 20 mA
Accuracy	To EN 60770-1
Error in measurement (including non-linearity, hysteresis and repea- tability, at 25 °C (77 °F))	0.3% of full-scale value (typical)
Influence of ambient temperature	
Zero and span	
• 1 6 mH <sub>2</sub> O (3 18 ftH <sub>2</sub> O)	0.45%/10 K of full-scale value
• ≥ 6 mH <sub>2</sub> O (≥ 18 ftH <sub>2</sub> O)	0.3%/10 K of full-scale value

Long-term stability	
Zero and span	
• 1 6 mH <sub>2</sub> O (3 18 ftH <sub>2</sub> O)	0,25% of full-scale value/year
• ≥ 6 mH <sub>2</sub> O (≥ 18 ftH <sub>2</sub> O)	0.2% of full-scale value/year
Rated operating conditions	
Ambient conditions	
Process temperature	-10 +80 °C (+14 +176 °F)
Storage temperature	-40 +100 °C (-40 +212 °F)
Degree of protection to DIN EN 60529	IP68
Design	
Weight	
<ul> <li>Pressure transmitters</li> </ul>	≈ 0.4 kg (≈ 0.88 lb)
• Cable	0.08 kg/m (≈ 0.054 lb/ft)
Electrical connection	Cable with 2 conductors with screen and vent pipe, strength cord (max. 300 N (67.44 lbf)
Material	
Seal diaphragm	Stainless steel, mat. No. 1.4571/316 Ti
• Casing	Stainless steel, mat. No. 1.4571/316 Ti
• Gasket	Viton
Connecting cable	Optionally PE/HFFR sheath (non-halogen) or FEP sheath
Power supply	
Terminal voltage on pressure transmitter ( $U_{\rm B}$ )	10 36 V DC
Certificate and approvals	
The transmitter is not subject to the p (DGRL 97/23/EC)	ressure equipment directive
Explosion protection	
<ul> <li>Intrinsic safety "i"</li> </ul>	TÜV 03 ATEX 2004X
- Identification	Ex II 1 G EEx ia IIC T4
Junction box	
Application	For connecting the transmitter cable
Design	
Weight	0.2 kg (0.44 lb)
Electrical connection	2 x 3-way (28 18 AWG)
Cable entry	2 x M20x1.5
Enclosure material	Polycarbonate
Vent pipe for atmospheric pressure	
Screw for cable strength cord	
Rated operating conditions	
Degree of protection to DIN EN 60529	IP54

Cable hanger	
Application	For mounting the transmitter
Design	
Weight	0.16 kg (0.35 lb)
Material	Galvanized steel, polyamide

#### MPS series (submersible sensor)

## SITRANS P measuring instruments for pressure Transmitters for hydrostatic level

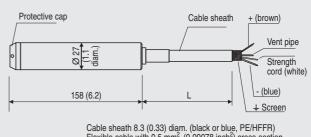
#### MPS series (submersible sensor)

SITRANS P pressure transmitters for pressure, MPS series (submer-	C)	7MF1570- A0	
sible sensor)			Protec
2-wire system			
Note: Junction box and cable hanger included in delivery			0
<b>Cable material</b> PE FEP		1 5	
Measuring range Cable length L			I
0 2 mH <sub>2</sub> O 10 m	►	С	
04 mH <sub>2</sub> O 10 m		D	
05 mH <sub>2</sub> O 25 m 06 mH <sub>2</sub> O 25 m	5	B	
$0 \dots 10 \text{ mH}_2\text{O}$ 25 m		È	SITRANS P
$0 \dots 20 \text{ mH}_2\text{O}$ 25 m		G	
0 6 ftH <sub>2</sub> O 32 ft		к	
$0 \dots 12 \text{ ftH}_2 O \qquad 32 \text{ ft}$		Ĩ	
$0 \dots 18 \text{ ftH}_2\text{O}$ 82 ft		M	
0 30 ftH <sub>2</sub> O 82 ft		N	
0 60 ftH <sub>2</sub> O 82 ft		Р	G
Special measuring range/Special cable	е	Z J 1 Y	
length <sup>1)</sup>			
Specify measuring range and cable length in plain text			
Explosion protection			(3.1)
		1	) 62
<ul> <li>without</li> <li>with, type of protection "Intrinsic safe</li> </ul>	5	2	
ty" (Ex II 1 G EEx ia IIC T4)		1	
• With approval for drinking water to WRAS and ACS	C)	6	
Further designs		Order code	
Quality inspection certificate (Factory		C11	
calibration) to IEC 60770-2, add "-Z" to			
Order No. and Order code.		0 1 11	
		Order No.	lupation be
Quality inspection certificate (Factory		7MF1564-8CC11	Junction bo
calibration) to IEC 60770-2 supplied later, specify factory no. of transmitter			
for this porpose.			
Accessories (as spare parts)			
Junction box		7MF1570-8AA	
for connecting the transmitter cable			
Cable hanger		7MF1570-8AB	
for mounting the pressure transmitter		WII IJ/U-OAD	1
			1
Available ex stock			
Power supply units see "SITRANS I pov			

Special measuring ranges between 0 ... 1 mH<sub>2</sub>O (0 ... 3 ftH<sub>2</sub>O) and 0 ... 200 mH<sub>2</sub>O (0 ... 656 ftH<sub>2</sub>O) and special cable lengths up to 1000 m (3281ft) are possible. With Ex versions the max.

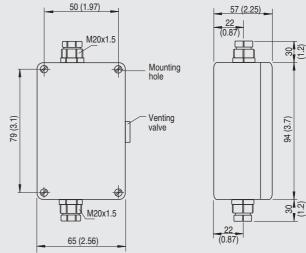
special cable length is 50 m (150 ft). The length of free-hanging cable should not exceed 375 m.

C) Subject to export regulations AL: N, ECCN: EAR99. D) Subject to export regulations AL: N, ECCN: EAR99H. Dimensional drawings

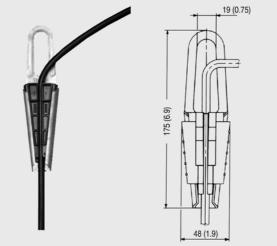


Cable sheath 8.3 (0.33) diam. (black or blue, PE/HFFR) Flexible cable with 0.5 mm<sup>2</sup> (0.00078 inch<sup>2</sup>) cross-section Vent pipe 1 (0.04) diam. (inner diameter) Protective cap with 4 x 3 diam. (4 x 0.12 diam.) holes (black, PA)

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



Junction box, dimensions in mm (inch)



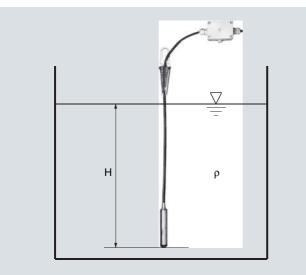
Cable hanger, dimensions in mm (inch)

1)

MPS series (submersible sensor)

#### More information

Determination of the measuring range in case of media with a density  $\neq$  1000 kg/m<sup>3</sup> (medium  $\neq$  water)



Calculation of the measuring range:

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

with:

 $\rho$  = density of medium

g = local acceleration due to gravity

H = maximum level

#### Example:

Medium: Diesel fuel = 850 kg/m<sup>3</sup> Acceleration due to gravity: 9.81 m/s<sup>2</sup> Start-of-scale : 0 m Maximum level: 6,2 m

#### Calculation:

 $p = 850 \text{ kg/m}^3 \times 9.81 \text{ m/s}^2 \times 6.2 \text{ m}$  $p = 51698.7 \text{ N/m}^2$ p = 517 mbar

Transmitter to be ordered:

#### 7MF1570-5ZA02-Z

J1Y: 0 ... 517 mbar; able length e.g. 8 m

#### **Technical description**

#### Overview

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

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

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

#### Note

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

#### Benefits

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

#### Application

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

Examples of such cases:

- The temperature of the medium is outside the limits specified for the pressure transmitter.
- The medium is corrosive and requires diaphragm materials which are not available for the pressure transmitter.
- The medium is highly viscous or contains solids which would Siemens FI 01 · 2009block the measuring chambers of the pressure transmitter.
- The medium may freeze in the measuring chambers or pulse line.
- The medium is heterogeneous or fibrous.
- The medium tends towards polymerization or crystallization.
- The process requires quick-release remote seals, as necessary e.g. in the food industry for fast cleaning.
- The process requires cleaning of the measuring point, e.g. in a batch process.

#### Design

A remote seal system consists of the following components.

- Pressure transmitter
- One or two remote seals
- Filling liquid
- Connection between pressure transmitter and remote seal (direct mounting or by means of capillary)

The volume in contact with the measured medium is terminated by a flat elastic diaphragm lying in a bed. Between the diaphragm and the pressure transmitter is the filling liquid.

In many cases, a capillary has to be connected between the remote seal and the pressure transmitter in order e.g. to minimize temperature effects on the latter when hot media are involved.

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

The remote seal can be optionally equipped with a projecting diaphragm (tube).

Remote seals of sandwich design are fitted with a dummy flange.

#### Designs

#### Diaphragm seal

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

The following types of diaphragm seals exist:



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

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



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

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



Quick-release diaphragm seal

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





Miniature diaphragm seal with diaphragm flush with front

• Miniature diaphragm seals

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

#### Clamp-on seal



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

With clamp-on seals, the pressure is first measured using a cylindrical diaphragm positioned in a pipe, and then transmitted to the pressure transmitter by means of the filling liquid.

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

The following types of clamp-on seals exist:

- Quick-release clamp-on seals, e.g. to DIN 11851, SMS standard, IDF standard, APV/RJT standard, clamp connection etc. The quick-release facility attached to the remote seal enables the seal to be removed quickly for cleaning purposes.
- Clamp-on seals for flanging to EN or ASME.
- · Clamp-on seals with customer-specific process connections.

#### Note:

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

#### Function

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

#### Transmission response

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

- Temperature error
- Adjustment time

#### **Temperature error**

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

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

The temperature error is dependent on the following variables:

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

#### Diaphragm rigidity

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

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

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

- Diaphragm thickness
- Diaphragm material
- · Coatings if present

#### Filling liquid

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

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

#### Note:

When operating in the low-pressure range, also during commissioning, it is recommended to use a vacuum-proof remote seal (see Selection and Ordering data).

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

#### **Technical description**

#### Response time

The response time is dependent on the following factors:

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

#### Recommendations

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

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

#### Note

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

Other versions can be:

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

Please contact your Siemens Regional Office for more information.

2

**Technical description** 

#### Technical specifications

Temperature error Diaphragm seals

Temperature errors of diaphragm seals when connected to pressure transmitters for pressure, absolute pressure, differential pressure (single-sided) and level

	Nominal diameter/ design	Diaphragm diameter		Temperature error of remote seal		Temperature capillary	Temperature error of capillary		Temperature error of process flange/connec- tion spigot		Recommended min. spans (guidance values, observe temp. error)	
		mm	(inch)	mbar/ 10 K	(psi/ 10 K)	mbar/ (10 K · m <sub>Kap</sub> )	(psi/ (10 K · m <sub>Kap)</sub> )	mbar/ 10 K	(psi/ 10 K)	mbar	(psi)	
Sandwich	DN 50 without tube	59	(2.32)	1.5	(0.022)	2	(0.029)	2	(0.029)	200	(2.90)	
design or with flange to	DN 50 with tube	48	(1.89)	5	(0.073)	10	(0.145)	10	(0.145)	500	(7.25)	
EN 1092-1	DN 80 without tube	89	(3.50)	0.2	(0.003)	0.2	(0.003)	0.2	(0.003)	100	(1.45)	
	DN 80 with tube	72	(2.83)	1	(0.015)	1	(1.015)	1	(1.015)	250	(3.63)	
	DN 100 without tube	89	(3.50)	0.4	(0.006)	0.4	(0.006)	0.4	(0.006)	100	(1.45)	
	DN 100 with tube	89	(3.50)	0.4	(0.006)	0.4	(0.006)	0.4	(0.006)	100	(1.45)	
	DN 125 without tube	124	(4.88)	0.2	(0.003)	0.1	(0.002)	0.1	(0.002)	20	(0.29)	
	DN 125 with tube	124	(4.88)	0.2	(0.003)	0.1	(0.002)	0.1	(0.002)	20	(0.29)	
Sandwich	2 inch without tube	59	(2.32)	1.5	(0.022)	2	(0.029)	2	(0.029)	200	(2.90)	
design or with	2 inch with tube	48	(1.89)	5	(0.073)	10	(0.145)	10	(0.145)	500	(7.25)	
flange to ASME B16.5	3 inch without tube	89	(3.50)	0.2	(0.003)	0.2	(0.003)	0.2	(0.003)	100	(1.45)	
	3 inch with tube	72	(2.83)	1	(0.015)	1	(1.015)	1	(1.015)	250	(3.63)	
	4 inch without tube	89	(3.50)	0.4	(0.006)	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	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)	1	(0.015)	1	(0.015)	1	(0.015)	250	(3.63)	
Clamp connec-	1½ inch	32	(1.26)	8	(0.116)	25	(0.363)	25	(0.363)	4000	(58)	
.1011	2 inch	40	(1.57)	4	(0.058)	10	(0.145)	10	(0.145)	2000	(29)	
	2½ inch	59	(2.32)	3	(0.044)	5	(0.073)	5	(0.073)	500	(7.25)	
	3 inch	72	(2.83)	1	(0.015)	1	(0.015)	1	(0.015)	250	(3.63)	
Viniature dia- ohragm seal	G1B	25	(0.98)	20	(0.290)	60	(0.870)	60	(0.870)	6000	(87)	
unayin seal	G1½B	40	(1.57)	4	(0.058)	10	(0.145)	10	(0.145)	2000	(29)	
	G2B	52	(2.05)	4	(0.058)	5	(0.073)	5	(0.073)	500	(7.25)	

#### Remarks:

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

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

• Values apply to stainless steel as the diaphragm material.

#### **Technical description**

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

	Nominal diameter/ design	Diaphı diame			mperature error Temperature error of remote seal capillary		error of	Temper of proce flange/c tion spi	ess connec-	Recommended min. spans (guidance values, observe temperature error)	
		mm	(inch)	mbar/ 10 K	(psi/ 10 K)	mbar/ (10 K · m <sub>Kap</sub> )	(psi/ (10 K · m <sub>Kap</sub> ))	mbar/ 10 K	(psi/ 10 K)	mbar	(psi)
Sandwich	DN 50 without tube	59	(2.32)	0.3	(0.0043)	0.3	(0.0045)	0.3	(0.0045)	250	(3.626)
design or with flange to	DN 50 with tube	48	(1.89)	1.26	(0.018)	1.7	(0.025)	1.7	(0.025)	250	(3.626)
EN 1092-1	DN 80 without tube	89	(3.50)	0.05	(0.001)	0.05	(0.001)	0.05	(0.0007)	50	(0.725)
	DN 80 with tube	72	(2.83)	0.24	(0.004)	0.17	(0.003)	0.17	(0.003)	100	(1.45)
	DN 100 without tube	89	(3.50)	0.1	(0.002)	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 ASME	2 inch with tube	48	(1.89)	1.26	(0.018)	1.7	(0.025)	1.7	(0.025)	250	(3.626)
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)	0.1	(0.002)	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	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	21/2 inch	59	(2.32)	0.7	(0.010)	0.67	(0.010)	0.67	(0.010)	250	(3.626)
	3 inch	72	(2.83)	0.24	(0.004)	0.17	(0.003)	0.17	(0.003)	100	(1.450)

#### Remarks:

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

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

• Values apply to stainless steel as the diaphragm material.

#### **Technical description**

#### Temperature error Clamp-on seals

Temperature errors of clamp-on seals when connected to pressure transmitters for pressure and absolute pressure, and with singlesided connection to pressure transmitters for differential pressure

Nominal diameter/ design	Temperature error of remote seal		Temperature capillary	Temperature error of capillary		Temperature error of pro- cess flange/connection spigot		Recommended min. spans (guidance values, observe temperature error)	
	mbar/10 K	(psi/10 K)	mbar/10 K	(psi/10 K)	mbar/10 K	(psi/10 K)	mbar	(psi)	
DN 25 (1 inch)	6.0	(0.0870)	8.5	(0.123)	8.5	(0.123)	1000	(14.5)	
DN 40 (1½ inch)	4.5	(0.065)	4.5	(0.065)	4.5	(0.065)	250	(3.63)	
DN 50 (2 inch)	4.0	(0.058)	3.0	(0.044)	3.0	(0.044)	100	(1.45)	
DN 80 (3 inch)	9.5	(0.138)	5.0	(0.073)	5.0	(0.073)	100	(1.45)	
DN 100 (4 inch)	8.0	(0.012)	3.0	(0.044)	3.0	(0.044)	100	(1.45)	

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

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

Remarks:

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

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

• Values apply to stainless steel as the diaphragm material.

• Diaphragm thickness 0.05 mm (0.002 inch) for DN 25/DN 40/DN 50 and 0.1 mm (0.004 inch) for DN 80/DN 100

#### **Technical description**

#### Calculation of the temperature error

The following equation is used to calculate the temperature error:

$dp = (\vartheta_{RS} - \vartheta_{Cal})$	$f_{RS} + (\vartheta_{Cap} - \vartheta_{Cal}) \cdot I_{Cap} \cdot f_{Cap} + (\vartheta_{TR} - \vartheta_{Cal}) \cdot f_{PF}$
dp	Additional temperature error (mbar)
$\vartheta_{\text{RS}}$	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 flan- ges of the pressure transmitter

#### Example of temperature error calculation

#### **Existing conditions**

SITRANS P pressure transmitter for differential pressure, 250 mbar, set to 0 100 mbar, with DN 80 remote seal diaphragms without tube, dia- phragm made of stainless steel, mat. No. 1.4404/316L	f <sub>RS</sub> = 0.1 mbar/10 K (0.0014 psi/10 K)
Capillary length	l <sub>Cap</sub> = 6 m (19.7 ft)
Capillaries fitted on both sides	f <sub>Cap</sub> = 0.07 mbar/(10 K ⋅ m <sub>Cap</sub> ) (0.001 psi/(10 K ⋅ m <sub>Cap</sub> ))
Filling liquid silicone M5	f <sub>PF</sub> = 0.07 mbar/10 K (0.001 psi/10 K)
Process temperature	ϑ <sub>RS</sub> = 100 °C (212 °F)
Temperature on the capillaries	$\vartheta_{Cap} = 50 \ ^{\circ}C \ (122 \ ^{\circ}F)$
Temperature on pressure transmit- ter	ϑ <sub>TR</sub> = 50 °C (122 °F)
Calibration temperature	$\vartheta_{Cal} = 20 \ ^{\circ}C \ (68 \ ^{\circ}F)$

#### Required

Additional temperature error of remote seals

Calculation	
in mbar	

dp = (100 °C – 20 °C) · 0.1 mbar/10 K + (50 °C – 20 °C) · 6 m · 0.07 mbar/(10 K · m) + (50 °C – 20 °C) · 0.07 mbar/10 K

dp

dp = 0.8 mbar + 1.26 mbar + 0.21 mbar

#### in psi

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

#### Result

#### Note

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

The transmission response of the respective transmitter is  $\underline{\text{not}}$  included in this consideration.

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

#### Dependence of temperature error on diaphragm material

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

Diaphragm material	Change in temperature error of remote seal
	Increase in values by
Stainless steel	See previous tables
Hastelloy C4, mat. No. 2.4610	50%
Hastelloy C276, mat. No. 2.4819	50%
Monel 400, mat. No. 2.4360	60%
Tantalum	50%
Titanium	50%
PTFE coating on stainless steel dia- phragm	80%
ECTFE coating or PFA coating on stainless steel diaphragm	100%
Gold coating on stainless steel dia- phragm	40%

#### Maximum temperature of medium

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

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

#### Maximum capillary length for diaphragm seals (guidance values)

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

#### **Technical description**

#### **Response times**

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

The listed values must be multiplied by the respective length of the capillary, or with transmitters for differential pressure and flow by the total length of both capillaries. The response times are independent of the set span within the range of the respective transmitter. The response times are of insignificant importance for spans above 10 bar (145 psi). The response times of the pressure transmitters are not considered in the table.

Filling liquid	Density			erature pillary	Response	time in s/m (s	/ft) with max.	span of pres	sure transmitt	er
	kg/dm <sup>3</sup>	(lb/in <sup>3</sup> )	°C	(°F)	250 mbar	(3.63 psi)	600 mbar	(8.7 psi)	1600 mbar	(23.2 psi)
Silicone oil M5	0.914	(0.033)	+60	(140)	0.06	(0.018)	0.02	(0.006)	0.01	(0.003)
			+20	(68)	0.11	(0.034)	0.02	(0.006)	0.02	(0.006)
			- 20	(-4)	0.3	(0.091)	0.12	(0.037)	0.05	(0.015)
Silicone oil M50	0.966	(0.035)	+60	(140)	0.6	(0.183)	0.25	(0.076)	0.09	(0.027)
			+20	(68)	0.61	(0.186)	0.26	(0.079)	0.1	(0.030)
			- 20	(-4)	1.69	(0.515)	0.71	(0.216)	0.27	(0.082)
High-temperature oil	1.070	(0.039)	+60	(140)	0.14	(0.043)	0.06	(0.018)	0.02	(0.006)
			+20	(68)	0.65	(0.198)	0.27	(0.082)	0.1	(0.030)
			-10	(14)	3.96	(1.207)	1.65	(0.503)	0.62	(0.189)
Halocarbon oil	1.968	(0.071)	+60	(140)	0.07	(0.021)	0.03	(0.009)	0.01	(0.003)
			+20	(68)	0.29	(0.088)	0.12	(0.037)	0.05	(0.015)
			- 20	(-4)	2.88	(0.878)	1.2	(0.366)	0.45	(0.137)
Food oil (FDA listed)	0.920	(0.033)	+60	(140)	0.75	(0.229)	0.33	(0.101)	0.17	(0.052)
			+20	(68)	4	(1.220)	1.75	(0.534)	0.67	(0.204)
			- 20	(-4)	20	(6.100)	8.5	(2.593)	3.25	(0.991)
Glycerin/water	1.220	(0.044)	+60	(140)	0.13	(0.040)	0.05	(0.015)	0.02	(0.006)
			+20	(68)	0.76	(0.232)	0.32	(0.098)	0.12	(0.037)
			0	(32)	9.72	(2.963)	4.05	(1.234)	1.51	(0.460)

#### Technical data of filling liquids

When selecting the filling liquid, check that it is suitable with respect to the permissible temperature of the medium and the process pressure. Also check the compatibility of the filling liquid with the measured medium. For example, only physiologically harmless filling liquids may be used in the food industry.

Oxygen and chlorine are special cases of measured medium. The liquid must not react with either of these two media or a leaking remote seal may lead to an explosion or fire.

Filling liquid	Digit in Order No.	Permissible	e temperature o	f medium													Coefficient of expan- sion		
		p <sub>abs</sub> < 1 bar	(p <sub>abs</sub> < 14.5 psi)	p <sub>abs</sub> > 1 bar	(p <sub>abs</sub> > 14.5 psi)														
		°C	(°F)	°C	(°F)	kg/dm <sup>3</sup>	(lb/in <sup>3</sup> )	m²/s⋅10 <sup>6</sup>	(ft <sup>2</sup> /s·10 <sup>6</sup> )	1/°C	(1/°F)								
Silicone oil M5	1	-60 +80	(-76 +176)	-90 +180	(-130 +356)	0.914	(0.03)	4	(43)	0.00108	(0.00060)								
Silicone oil M50	2	-40 +150	(-40 +302)	-40 +250	(-40 +482)	0.96	(0.03)	50	(538)	0.00104	(0.00058)								
High-tempera- ture oil	3	-10 +200	(+14 +392)	-10 +350	(+14 +662)	1.07	(0.04)	39	(420)	0.00080	(0.00044)								
Halocarbon oil	4	-40 +80	(-40 +176)	-40 +175	(-40 +347)	1.968	(0.07)	14	(151)	0.00086	(0.00048)								
Glycerin/water	6	Not pos- sible	Not possible	-10 +120	(+14 +248)	1.22	(0.04)	88	(947)	0.00050	(0.00028)								
Food oil (FDA listed)	7	-20 +160	(-4 +320)	-20 +200	(-4 +392)	0.92	(0.03)	10	(107)	0.00080	(0.00044)								

# SITRANS P measuring instruments for pressure Diaphragm seals of sandwich design For gage, absolute, differential pressure and flow with flexible capillary

#### Overview



Diaphragm seals of sandwich design

Technical specifications			
Diaphragm seals of sandwich desi	ign	Maximum pressure	See above and the technical data
Nominal diameter	Nominal pressure	<b>-</b> 1 1 1	of the pressure transmitters
• DN 50	PN 16 PN 100	Tube length	Without tube as standard (tube available on request)
• DN 80	PN 16 PN 100	Capillary	
• DN 100	PN 16 PN 100	• Length	Max. 10 m (32.8 ft), longer
• DN 125	PN 16 PN 100		lengths on request
• 2 inch	Class 150 class 2500	<ul> <li>Internal diameter</li> </ul>	max. 2 mm (0.079 inch)
• 3 inch	Class 150 class 2500	Minimum bending radius	150 mm (5.9 inch)
• 4 inch	Class 150 class 2500	Filling liquid	Silicone oil M5
• 5 inch	Class 150 class 2500		Silicone oil M50
Sealing face			High-temperature oil
• For stainless steel, mat. No.	To EN 1092-1, form B1 or		Halocarbon oil (for measuring $O_2$ )
1.4404/216L	ASME B16.5 RF 125 250 AA		Food oil (FDA listed)
For the other materials	To EN 1092-1, form B2 or ASME B16.5 RFSF		Glycerine/water (not suitable for use in low-pressure range)
Materials		Permissible ambient temperature	Dependent on the pressure trans- mitter and the filling liquid of the
Main body	Stainless steel 316L		remote seal
Wetted parts	Stainless steel 316L		More information can be found in the technical data of the pressure
	Without foil		transmitters and in the section
	<ul> <li>PTFE (for vacuum on request)</li> </ul>		"Technical data of filling liquid" in the Technical description to the
	<ul> <li>ECTFE (for vacuum on request)</li> </ul>		remote seals
	<ul> <li>PFA (for vacuum on request)</li> </ul>	Weight	Approx. 4 kg (8.82 lb)
	Monel 400, mat. No. 2.4360	Certificate and approvals	
	Hastelloy C276, mat. No. 2.4819	Classification according to pressure	For gases of fluid group 1 and
	Hastelloy C4, mat. No. 2.4610	equipment directive (DRGL 97/23/EC)	liquids of fluid group 1; complies with requirements of article 3,
	Tantalum	,	paragraph 3 (sound engineering
• Capillary	Stainless steel, mat. No. 1.4571/316Ti		practice)
Sheath	Spiral hose made of stainless steel, mat. No. 1.4301/316		
Sealing material in the process flan- ges			
• For pressure transmitters, absolute pressure transmitters and low-pressure applications	Copper		
<ul> <li>For other applications</li> </ul>	Viton		

# SITRANS P measuring instruments for pressure Diaphragm seals of sandwich design For gage, absolute, differential pressure and flow with flexible capillary

Colorities and Ordening data	Order Ne	Ord and a	Coloction and Orderi	un data	
Selection and Ordering data	Order No.	Ora.code	Selection and Orderi	ng data	Order No. Ord.code
Diaphragm seal Sandwich-type design, with flexible capillary connected to a SITRANS P transmitter (order separately):				n, with flexible capillary NS P transmitter (order	
for pressure 7MF403 and 7MF423 together with Order code "V01" (vacuum-proof design) and 7MF802 <sup>1</sup> ; Scope of delivery (1 off)	<sup>. D)</sup> 7MF4900	) -	for pressure 7MF403	and 7MF423 together (vacuum-proof design) ff)	7 M F 4 9 0 0 -
for absolute pressure 7MF433■; Scope of delivery (1 off)	D) 7 M F 4 9 0 1	I -	for absolute pressure Scope of delivery (1 o		7 M F 4 9 0 1 -
for differential pressure and flow 7MF443 ; scope of delivery 2 off	D) 7MF4903	3 -	for differential press scope of delivery 2 off	ure and flow 7MF443∎; f	7 M F 4 9 0 3 -
	1	В			1 - B
Nominal diameter and nominal pressure			Length of capillary <sup>2)</sup>		
• DN 50 PN 16 100	Α		• 1.0 m	(3.28 ft)	2
(recommended only for pressure transmitters			• 1.6 m	(5.25 ft)	3
for pressure)			• 2.5 m	(8.20 ft)	4
• DN 80 PN 16 100	В		• 4.0 m	(13.1 ft)	5
• DN 100 PN 16 100	С		• 6.0 m	(19.7 ft)	6
• DN 125 PN 16 100	D		• 8.0 m	(26.25 ft)	7
• 2 inch Class 150 2500	Е		• 10.0 m	(32.8 ft)	8
(recommended only for pressure transmitters for pressure)			Other version Add Order code and p	plain text:	9 N 1 y
• 3 inch Class 150 2500	н		Length of capillary:		
• 4 inch Class 150 2500	L		1) With 7ME802 and t	he measuring cells Q, S, T a	nd LL also order the
• 5 inch Class 150 2500	N		vacuum-tight versior	٦.	
Smooth sealing face to EN 1092-1, form B1 or to ASME B16.5 RF 125 250 AA			<ul> <li><sup>2)</sup> Max. capillary length</li> <li>D) Subject to export reg</li> </ul>	n, see section "Technical des gulations AL: N, ECCN: EAR	cription". 99H.
Other version	z	J 1 Y			
Add Order code and plain text:					
Nominal diameter:; Nominal pressure: Sealing face: see "Technical data"			Selection and Orderi	ng data	Order code
	_		Further designs		
Wetted parts materials			Please add "-Z" to Ord	ler No. and specify Order of	code.
Stainless steel 316L					
- without foil	A		Spark arrestor		u al la au
- with PTFE coating	E 0		documentation)	mounting on zone 0 (inclu	laing
<ul> <li>with ECTFE coating<sup>2)</sup></li> </ul>	F		Pressure and absolu		A01
<ul> <li>with PFA coating</li> </ul>	D		<ul> <li>for differential pressu</li> </ul>		A02
<ul> <li>Monel 400, mat. No. 2.4360</li> </ul>	G				
<ul> <li>Hastelloy C276, mat. No. 2.4819</li> </ul>	J		Quality inspection ce IEC 60770-2	ertificate (Factory calibrat	ion) to C11
<ul> <li>Hastelloy C4, mat. No. 2.4610</li> </ul>	U		IEC 00//0-2		
Tantalum	к		Acceptance test cert		C12
Other version	z	K 1 Y	to EN 10204, section 3	3.1	
Add Order code and plain text:			Vacuum-proof desig	n	
Wetted parts materials:			for use in low-pressure	e range for transmitters for	
Tube length			Pressure	<b>J</b>	V01
<ul> <li>without tube</li> </ul>	0		<ul> <li>For differential press</li> </ul>	sure transmitters	V03
Other version:	9	L 1 Y		of associated pressure	Y05
Add Order code and plain text:			transmitter	of associated pressure	100
Tube length:	_		Enclose filled-in quest	ionnaire with order	
Filling liquid					
Silicone oil M5	1				
Silicone oil M50	2				
<ul> <li>High-temperature oil</li> </ul>	2 3				
Halocarbon oil (for measuring O <sub>2</sub> )	4				
• Glycerin/water <sup>3)</sup>	6				
Food oil (FDA listed)	7				
Other version	9	M1Y			
Add Order code and plain text:					
Filling liquid:					
<sup>1)</sup> With 7MF802 and the measuring cells Q, S, T a	and U also order	the			

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

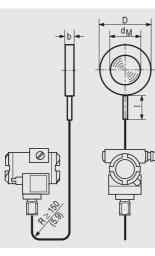
<sup>3)</sup>Not suitable for use in low-pressure range.

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## SITRANS P measuring instruments for pressure Diaphragm seals of sandwich design

For gage, absolute, differential pressure and flow with flexible capillary

#### Dimensional drawings



#### Connection to EN 1092-1

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

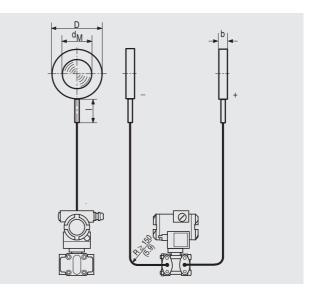
#### **Connection to ASME B16.5**

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

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

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

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



#### Connection to EN 1092-1

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

#### **Connection to ASME B16.5**

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

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

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

Diaphragm seals of sandwich design (without flange) with flexible capillary for connection to SITRANS P pressure transmitters for absolute pressure or differential pressure and flow, dimensions in mm (inch)

## SITRANS P measuring instruments for pressure Diaphragm seals of flange design

For gage, absolute, differential pressure and flow with flexible capillary

#### Overview



Diaphragm seals of flange design

I

Diaphragm seals of flange design	with flexible capillary	Sealing material in the process flan-		
Nominal diameter	Nominal pressure	ges		
• DN 50 (recommendable only for pressure transmitters for pressure)	PN 10 PN 40, PN 100	<ul> <li>For pressure transmitters, absolute pressure transmitters and low- pressure applications</li> </ul>	Copper	
• DN 80	PN 10 PN 40, PN 100	<ul> <li>For other applications</li> </ul>	Viton	
• DN 100	PN 16, PN 40	Maximum pressure	See above and the technical data	
• DN 125	PN 16, PN 40		of the pressure transmitter	
• 2 inch (recommendable only for pressure transmitters for pressure)	Class 150, class 300, class 600, class 1500	Tube length	Without tube as standard (tube available on request)	
• 3 inch	Class 150, class 300, class 600	Capillary		
• 4 inch	Class 150, class 300, class 400	• Length	Max. 10 m (32.8 ft), longer	
• 5 inch	Class 150, class 300, class 400	<ul> <li>Internal diameter</li> </ul>	lengths on request	
Sealing face			2 mm (0.079 inch)	
<ul> <li>For stainless steel, mat. No. 1.4404/316L</li> </ul>	To EN 1092-1, form B1 or ASMR B16.5 RF 125 250 AA	Minimum bending radius     Filling liquid	150 mm (5.9 inch)	
• For the other materials	To EN 1092-1, form B2 or ASME B16.5 RFSF	(for remote seals of sandwich and flange design)	Silicone oil M5	
Mada di ala	ASIVIE B 16.5 RFSF		Silicone oil M50	
Materials	Stainland staal 210		High-temperature oil	
Main body	Stainless steel 316L Stainless steel 316L		Halocarbon oil (for measuring $O_2$ )	
Wetted parts	Without foil		Food oil (FDA listed)	
	PTFE (for vacuum on request)		Glycerine/water (not for use in low-pressure range)	
	<ul> <li>ECTFE (for vacuum on request)</li> </ul>	Permissible ambient temperature	Dependent on the pressure trans-	
	<ul> <li>PFA (for vacuum on request)</li> </ul>		mitter and the filling liquid of the remote seal	
	Monel 400, mat. No. 2.4360		More information can be found in	
	Hastelloy C276, mat. No. 2.4819		the technical data of the pressure transmitters and in the section	
	Hastelloy C4, mat. No. 2.4610		"Technical data of filling liquid" in	
	Tantalum		the Technical description to the remote seals	
Capillary	Stainless steel, mat. No. 1.4571/316Ti	Weight	Approx. 4 kg (8.82 lb)	
Sheath	Spiral hose made of stainless	Certificate and approvals		
	steel, mat. No. 1.4404/316L	Classification according to pressure equipment directive	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 2	

(DRGL 97/23/EC)

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

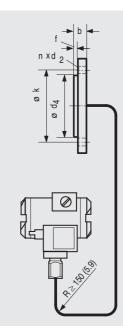
# SITRANS P measuring instruments for pressure Diaphragm seals of flange design For gage, absolute, differential pressure and flow with flexible capillary

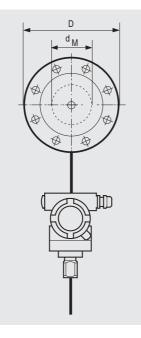
	dering data	Order No. (	Ord. code	Selection and Ordering data	Order No. Ord	d. co
Diaphragm seal				Diaphragm seal		
Flange design, wit to a pressure trans SITRANS P (order				Flange design, with flexible capillary, connected to a pressure transmitter SITRANS P (order separately):		
for pressure 7MF with Order code "\ and 7MF802 <sup>1</sup> ; scope of delivery:	403 and 7MF423 together /01" (vacuum-proof design) 1 off	D) 7MF492(	) -	for pressure 7MF403 and 7MF423 together D) with Order code "V01" (vacuum-proof design) and 7MF802 <sup>1</sup> ); scope of delivery: 1 off	7 M F 4 9 2 0 -	
for absolute pres scope of delivery:		D) 7MF4921	۱-	for absolute pressure 7MF433 ; D) scope of delivery: 1 off	7 M F 4 9 2 1 -	
for differential pressure of delivery:	essure and flow 7MF443 ; 2 off	D) 7MF4923	3 -	for differential pressure and flow 7MF443. D) scope of delivery: 2 off	7 M F 4 9 2 3 -	
		1	в		1 - B	
	r and nominal pressure			Filling liquid		
• DN 50	PN 10 40	Α		• Silicone oil M5	1	
	PN 100	В		<ul> <li>Silicone oil M50</li> </ul>	2	
	nded only for pressure			<ul> <li>High-temperature oil</li> </ul>	3	
transmitters for pre	essure)			<ul> <li>Halocarbon oil (for measuring O<sub>2</sub>)</li> </ul>	4	
• DN 80	PN 10 40	D		• Glycerin/water <sup>3)</sup>	6	
	PN 100	E		Food oil (FDA listed)	7	
				Other version	9	M
DN 100	PN 16	G		Add Order code and plain text:		
	PN 40	н		Filling liquid:		
DN 125	PN 16	J		Length of capillary <sup>4)</sup>		
	PN 40	к		• 1.0 m (3.28 ft)	2	
• 2 inch	Class 150			• 1.6 m (5.25 ft)	3	
		L.		• 2.5 m (8.20 ft)	4	
	Class 300	M		· · · · · · · · · · · · · · · · · · ·	4	
	Class 600	N		• 4.0 m (13.1 ft)	5	
	Class 1500	Р		• 6.0 m (19.7 ft)		
	ided only for pressure			• 8.0 m (26.25 ft)	7	
transmitters for pre	·			• 10.0 m (32.8 ft)	8	
• 3 inch	Class 150	Q		Other version Add Order code and plain text:	9	N
	Class 300	R		Add Lirder code and plain text.		
	01 000					
	Class 600	S		Length of capillary:		
• 4 inch	Class 600 Class 150	S T			U also order the	
• 4 inch				Length of capillary: <sup>1)</sup> With 7MF802 and the measuring cells Q, S, T and vacuum-tight version.	U also order the	Э
• 4 inch	Class 150 Class 300	TU		Length of capillary: <sup>1)</sup> With 7MF802 and the measuring cells Q, S, T and vacuum-tight version. <sup>2)</sup> For vacuum on request.	U also order the	9
	Class 150 Class 300 Class 400	T U V		Length of capillary: <sup>1)</sup> With 7MF802 and the measuring cells Q, S, T and vacuum-tight version. <sup>2)</sup> For vacuum on request. <sup>3)</sup> Not suitable for use in low-pressure range.		e
	Class 150 Class 300 Class 400 Class 150	T U V W		Length of capillary: <sup>1)</sup> With 7MF802 and the measuring cells Q, S, T and vacuum-tight version. <sup>2)</sup> For vacuum on request. <sup>3)</sup> Not suitable for use in low-pressure range. <sup>4)</sup> Max. capillary length, see section "Technical description"	otion".	9
• 4 inch • 5 inch	Class 150 Class 300 Class 400 Class 150 Class 300	T U V W X		Length of capillary: <sup>1)</sup> With 7MF802 and the measuring cells Q, S, T and vacuum-tight version. <sup>2)</sup> For vacuum on request. <sup>3)</sup> Not suitable for use in low-pressure range.	otion".	9
• 5 inch Smooth sealing fa	Class 150 Class 300 Class 400 Class 150 Class 300 Class 400 ce to EN 1092-1, form B1 or	T U V W		Length of capillary: <sup>1)</sup> With 7MF802 and the measuring cells Q, S, T and vacuum-tight version. <sup>2)</sup> For vacuum on request. <sup>3)</sup> Not suitable for use in low-pressure range. <sup>4)</sup> Max. capillary length, see section "Technical description"	otion".	
• 5 inch Smooth sealing fa to ASME B16.5 RF	Class 150 Class 300 Class 400 Class 150 Class 300 Class 400 ce to EN 1092-1, form B1 or	T U V W X Y		Length of capillary: <sup>1)</sup> With 7MF802 and the measuring cells Q, S, T and vacuum-tight version. <sup>2)</sup> For vacuum on request. <sup>3)</sup> Not suitable for use in low-pressure range. <sup>4)</sup> Max. capillary length, see section "Technical descrip D) Subject to export regulations AL: N, ECCN: EAR99 Selection and Ordering data Further designs	otion". IH. Order	
<ul> <li>5 inch</li> <li>Smooth sealing fa to ASME B16.5 RF</li> <li>Other version</li> </ul>	Class 150 Class 300 Class 400 Class 150 Class 300 Class 400 ce to EN 1092-1, form B1 or = 125 250 AA	T U V W X	J 1 Y	Length of capillary: <sup>1)</sup> With 7MF802 and the measuring cells Q, S, T and vacuum-tight version. <sup>2)</sup> For vacuum on request. <sup>3)</sup> Not suitable for use in low-pressure range. <sup>4)</sup> Max. capillary length, see section "Technical descrip D) Subject to export regulations AL: N, ECCN: EAR99 <b>Selection and Ordering data Further designs</b> Please add "-Z" to Order No. and specify Order com	otion". IH. Order	
• 5 inch Smooth sealing fa to ASME B16.5 RF Other version Add Order code a	Class 150 Class 300 Class 400 Class 50 Class 300 Class 400 ce to EN 1092-1, form B1 or 125 250 AA	T U V W X Y	J 1 Y	Length of capillary: <sup>1)</sup> With 7MF802 and the measuring cells Q, S, T and vacuum-tight version. <sup>2)</sup> For vacuum on request. <sup>3)</sup> Not suitable for use in low-pressure range. <sup>4)</sup> Max. capillary length, see section "Technical descrip D) Subject to export regulations AL: N, ECCN: EAR99 <b>Selection and Ordering data</b> <i>Further designs</i> Please add "-Z" to Order No. and specify Order co	otion". IH. Order	
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<ul> <li>5 inch</li> <li>5 inch sealing fa to ASME B16.5 RF</li> <li>Other version</li> <li>Add Order code a</li> <li>Nominal diameter:</li> <li>Sealing face: See</li> <li>Wetted parts mat</li> <li>Stainless steel 3</li> <li>without foil</li> </ul>	Class 150 Class 300 Class 400 Class 150 Class 300 Class 300 Class 400 ce to EN 1092-1, form B1 or = 125 250 AA and plain text: :; Nominal pressure: "Technical data"	T U V W X Y Z	J 1 Y	Length of capillary: <sup>1)</sup> With 7MF802 and the measuring cells Q, S, T and I vacuum-tight version. <sup>2)</sup> For vacuum on request. <sup>3)</sup> Not suitable for use in low-pressure range. <sup>4)</sup> Max. capillary length, see section "Technical descripted by D) Subject to export regulations AL: N, ECCN: EAR99 <b>Selection and Ordering data</b> <i>Further designs</i> Please add "-Z" to Order No. and specify Order con <b>Spark arrestor</b> With spark arrestor for mounting on zone 0 (includ documentation) for transmitters for • pressure and absolute pressure • differential pressure <b>Quality inspection certificate (Factory calibration</b> )	otion". IH. Ide. Ing A01 A02	
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<ul> <li>5 inch</li> <li>Smooth sealing fa to ASME B16.5 RF</li> <li>Other version</li> <li>Add Order code a</li> <li>Nominal diameter:</li> <li>Sealing face: See</li> <li>Wetted parts mat</li> <li>Stainless steel 3 <ul> <li>without foil</li> <li>with PTFE coat</li> <li>with PFA coatir</li> </ul> </li> </ul>	Class 150 Class 300 Class 400 Class 150 Class 300 Class 300 Class 400 ce to EN 1092-1, form B1 or = 125 250 AA and plain text: :; Nominal pressure: "Technical data" terials 16L ting ating <sup>2)</sup> ng	T U V W X Y Z Z E O F D	J1Y	Length of capillary: <sup>1)</sup> With 7MF802 and the measuring cells Q, S, T and y vacuum-tight version. <sup>2)</sup> For vacuum on request. <sup>3)</sup> Not suitable for use in low-pressure range. <sup>4)</sup> Max. capillary length, see section "Technical description") Subject to export regulations AL: N, ECCN: EAR99 <b>Selection and Ordering data Further designs</b> Please add "-Z" to Order No. and specify Order constrained and "-Z" to Order No. and specify Order constrained "-Z" to Order No. and specify Order constrained and specify Order constrained and the spark arrestor for mounting on zone 0 (include documentation) for transmitters for • pressure and absolute pressure • differential pressure <b>Guality inspection certificate (Factory calibration IEC 60770-2</b>	otion". HI. Order ing A01 A02 C11	
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<ul> <li>5 inch</li> <li>Smooth sealing fa to ASME B16.5 RF</li> <li>Other version</li> <li>Add Order code a</li> <li>Nominal diameter:</li> <li>Sealing face: See</li> <li>Wetted parts mat</li> <li>Stainless steel 3 <ul> <li>without foil</li> <li>with PTFE coat</li> <li>with ECTFE co</li> <li>with PFA coatir</li> </ul> </li> <li>Monel 400, mat.</li> <li>Hastelloy C276,</li> </ul>	Class 150 Class 300 Class 400 Class 50 Class 300 Class 300 Class 400 ce to EN 1092-1, form B1 or = 125 250 AA and plain text: :; Nominal pressure: "Technical data" terials 16L ting ating <sup>2)</sup> ng No. 2.4360 mat. No. 2.4819	T U V W X Y Z Z E O F D G J U	J1Y	Length of capillary: <sup>1)</sup> With 7MF802 and the measuring cells Q, S, T and I vacuum-tight version. <sup>2)</sup> For vacuum on request. <sup>3)</sup> Not suitable for use in low-pressure range. <sup>4)</sup> Max. capillary length, see section "Technical description") Subject to export regulations AL: N, ECCN: EAR99 <b>Selection and Ordering data</b> <i>Further designs</i> Please add "-Z" to Order No. and specify Order constrained and absolute pressure <b>Spark arrestor</b> With spark arrestor for mounting on zone 0 (include documentation) for transmitters for • pressure and absolute pressure • differential pressure <b>Quality inspection certificate (Factory calibration IEC 60770-2 Acceptance test certificate</b> to EN 10204, section 3.1 <b>Vacuum-proof design</b> for use in low-pressure range for transmitters for	otion". HI. Order ing ing A01 A02 C11 C12	
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<ul> <li>5 inch</li> <li>Smooth sealing fa to ASME B16.5 RF</li> <li>Other version</li> <li>Add Order code a</li> <li>Nominal diameter:</li> <li>Sealing face: See</li> <li>Wetted parts matt</li> <li>Stainless steel 3 <ul> <li>without foil</li> <li>with PTFE coat</li> <li>with ECTFE co</li> </ul> </li> </ul>	Class 150 Class 300 Class 400 Class 400 Class 300 Class 400 ce to EN 1092-1, form B1 or = 125 250 AA and plain text: :; Nominal pressure: "Technical data" terials 16L ting ating <sup>2</sup> ) ng No. 2.4360 mat. No. 2.4819 at. No. 2.4610 and plain text:	T U V W X Y Z Z E O F D G J U K		Length of capillary: <sup>1)</sup> With 7MF802 and the measuring cells Q, S, T and I vacuum-tight version. <sup>2)</sup> For vacuum on request. <sup>3)</sup> Not suitable for use in low-pressure range. <sup>4)</sup> Max. capillary length, see section "Technical descripted by by by beet to export regulations AL: N, ECCN: EAR99 <b>Selection and Ordering data</b> <i>Further designs</i> Please add "-Z" to Order No. and specify Order compares and absolute pressure With spark arrestor for mounting on zone 0 (include documentation) for transmitters for pressure and absolute pressure <b>Guality inspection certificate (Factory calibration IEC 60770-2 Acceptance test certificate</b> to EN 10204, section 3.1 <b>Vacuum-proof design</b> for use in low-pressure range for transmitters for pressure differential pressure differential pressure differential pressure Calculation of span of associated pressure	otion". HI. Order ode. ing A01 A02 C11 C12 V01 V03	
<ul> <li>5 inch</li> <li>Smooth sealing fa to ASME B16.5 RF</li> <li>Other version</li> <li>Add Order code a</li> <li>Nominal diameter:</li> <li>Sealing face: See</li> <li>Wetted parts mat</li> <li>Stainless steel 3 <ul> <li>without foil</li> <li>with PTFE coat</li> <li>with PTFE coat</li> <li>with PTFE coat</li> <li>with PTFE coat</li> <li>With PTFA coatir</li> </ul> </li> <li>Monel 400, mat.</li> <li>Hastelloy C276,</li> <li>Hastelloy C4, mat</li> <li>Tantalum</li> <li>Other version</li> <li>Add Order code a</li> <li>Wetted parts mate</li> </ul>	Class 150 Class 300 Class 400 Class 400 Class 300 Class 400 ce to EN 1092-1, form B1 or = 125 250 AA and plain text: :; Nominal pressure: "Technical data" terials 16L ting ating <sup>2</sup> ) ng No. 2.4360 mat. No. 2.4819 at. No. 2.4610 and plain text:	T U V W X Y Z Z E O F D G J U K		Length of capillary: <sup>1)</sup> With 7MF802 and the measuring cells Q, S, T and I vacuum-tight version. <sup>2)</sup> For vacuum on request. <sup>3)</sup> Not suitable for use in low-pressure range. <sup>4)</sup> Max. capillary length, see section "Technical descripted by D) Subject to export regulations AL: N, ECCN: EAR99 <b>Selection and Ordering data</b> <i>Further designs</i> Please add "-Z" to Order No. and specify Order cod <b>Spark arrestor</b> With spark arrestor for mounting on zone 0 (include documentation) for transmitters for • pressure and absolute pressure • differential pressure <b>Quality inspection certificate (Factory calibration IEC 60770-2 Acceptance test certificate</b> to EN 10204, section 3.1 <b>Vacuum-proof design</b> for use in low-pressure range for transmitters for • pressure • differential pressure • differential pressure Calculation of span of associated pressure transmitter	otion". HI. Order ode. ing A01 A02 C11 C12 V01 V03	
<ul> <li>5 inch</li> <li>Smooth sealing fa to ASME B16.5 RF</li> <li>Other version</li> <li>Add Order code a</li> <li>Nominal diameter:</li> <li>Sealing face: See</li> <li>Wetted parts mat</li> <li>Stainless steel 3 <ul> <li>without foil</li> <li>with PTFE coat</li> <li>with PTFE coat</li> <li>with PTFE coat</li> <li>with PTFE coat</li> <li>Wonel 400, mat.</li> </ul> </li> <li>Hastelloy C276,</li> <li>Hastelloy C4, mat</li> <li>Tantalum</li> <li>Other version</li> <li>Add Order code a</li> <li>Wetted parts mate</li> </ul>	Class 150 Class 300 Class 400 Class 400 Class 300 Class 400 ce to EN 1092-1, form B1 or = 125 250 AA and plain text: :; Nominal pressure: "Technical data" terials 16L ting ating <sup>2</sup> ) ng No. 2.4360 mat. No. 2.4819 at. No. 2.4610 and plain text:	T U V W X Y Z Z Z G J U K Z		Length of capillary: <sup>1)</sup> With 7MF802 and the measuring cells Q, S, T and I vacuum-tight version. <sup>2)</sup> For vacuum on request. <sup>3)</sup> Not suitable for use in low-pressure range. <sup>4)</sup> Max. capillary length, see section "Technical descripted by D) Subject to export regulations AL: N, ECCN: EAR99 <b>Selection and Ordering data</b> <i>Further designs</i> Please add "-Z" to Order No. and specify Order cod <b>Spark arrestor</b> With spark arrestor for mounting on zone 0 (include documentation) for transmitters for • pressure and absolute pressure • differential pressure <b>Quality inspection certificate (Factory calibration IEC 60770-2 Acceptance test certificate</b> to EN 10204, section 3.1 <b>Vacuum-proof design</b> for use in low-pressure range for transmitters for • pressure • differential pressure • differential pressure Calculation of span of associated pressure transmitter	otion". HI. Order ode. ing A01 A02 C11 C12 V01 V03	
<ul> <li>5 inch</li> <li>Smooth sealing fa to ASME B16.5 RF</li> <li>Other version</li> <li>Add Order code a</li> <li>Nominal diameter:</li> <li>Sealing face: See</li> <li>Wetted parts mat</li> <li>Stainless steel 3 <ul> <li>without foil</li> <li>with PTFE coat</li> <li>Wonel 400, mat.</li> </ul> </li> <li>Hastelloy C276,</li> <li>Hastelloy C4, mat</li> <li>Tantalum</li> <li>Other version</li> <li>Add Order code a</li> <li>Wetted parts mate</li> </ul>	Class 150 Class 300 Class 400 Class 150 Class 300 Class 400 ce to EN 1092-1, form B1 or = 125 250 AA and plain text: :; Nominal pressure: "Technical data" terials 16L ting ating <sup>2)</sup> ng No. 2.4360 mat. No. 2.4819 at. No. 2.4610 and plain text: erials:	T U V W X Y Z Z Z G J U K Z	К 1 У	Length of capillary: <sup>1)</sup> With 7MF802 and the measuring cells Q, S, T and I vacuum-tight version. <sup>2)</sup> For vacuum on request. <sup>3)</sup> Not suitable for use in low-pressure range. <sup>4)</sup> Max. capillary length, see section "Technical descripted by D) Subject to export regulations AL: N, ECCN: EAR99 <b>Selection and Ordering data</b> <i>Further designs</i> Please add "-Z" to Order No. and specify Order cod <b>Spark arrestor</b> With spark arrestor for mounting on zone 0 (include documentation) for transmitters for • pressure and absolute pressure • differential pressure <b>Quality inspection certificate (Factory calibration IEC 60770-2 Acceptance test certificate</b> to EN 10204, section 3.1 <b>Vacuum-proof design</b> for use in low-pressure range for transmitters for • pressure • differential pressure • differential pressure Calculation of span of associated pressure transmitter	otion". HI. Order ode. ing A01 A02 C11 C12 V01 V03	

## SITRANS P measuring instruments for pressure Diaphragm seals of flange design

For gage, absolute, differential pressure and flow with flexible capillary

#### Dimensional drawings





#### Connection to EN 1092-1

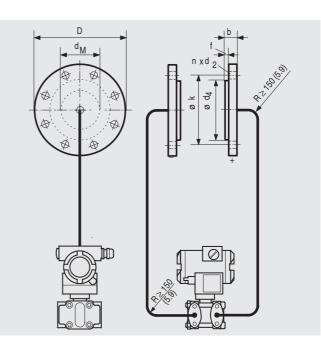
Nom. diam.	Nom. press.	<b>b</b> mm	D mm	d <sub>2</sub> mm	d <sub>4</sub> mm	d <sub>M</sub> mm	<b>f</b> mm	<b>k</b> mm	n
DN 50	PN 40	20	165	18	102	59	2	125	4
	PN 100	28	195	26	102	59	2	145	4
DN 80	PN 40	24	200	18	138	89	2	160	8
	PN 100	32	230	26	138	89	2	180	8
DN 100	PN 16	20	220	18	158	89	2	180	8
	PN 40	24	235	22	162	89	2	190	8
DN 125	PN 16	22	250	18	188	124	2	210	8
	PN 40	26	270	26	188	124	2	220	8

#### **Connection to ASME B16.5**

Nom. diam.	Nom. press.	b	D	d <sub>2</sub>	d <sub>4</sub>	d <sub>M</sub>	f	k	n
	lb/sq.in.	mm	mm	mm	mm	mm	mm	mm	
		(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	
2 inch	150	20	150	20	92	59	1.6	120.5	4
		(0.79)	(5.80)	(0.79)	(3.62)	(2.32)	(0.06)	(4.74)	
	300	22.5	165	20	92	59	1.6	127	8
		(0.89)	(6.50)	(0.79)	(3.62)	(2.32)	(0.06)	(5)	
	600	32	165	20	92	59	1.6	127	8
		(1.26)	(6.50)	(0.79)	(3.62)	(2.32)	(0.06)	(5)	
3 inch	150	24	190	20	127	89	1.6	152.5	4
		(0.96)	(7.48)	(0.79)	(5)	(3.50)	(0.06)	(6)	
	300	29	210	22	127	89	1.6	168.5	8
		(1.14)	(8.27)	(0.87)	(5)	(3.50)	(0.06)	(6.63)	
	400	38.5	210	22	127	89	6.4	168.5	8
		(1.52)	(8.27)	(0.87)	(5)	(3.50)	(0.25)	(6.63)	
4 inch	150	24	230	20	158	89	1.6	190.5	4
		(0.95)	(9.06)	(0.79)	(6.22)	(3.50)	(0.06)	(7.5)	
	300	32	255	22	158	89	1.6	200	8
		(1.26)	(10.04)	(0.87)	(6.22)	(3.50)	(0.06)	(7.87)	
	400	41.5	255	26	158	89	6.4	200	8
		(1.62)	(10.04)	(1.02)	(6.22)	(3.50)	(0.25)	(7.87)	
5 inch	150	24	255	22	186	124	2	216	4
		(0.94)	(10.04)	(0.87)	(7.32)	(4.88)	(0.08)	(8.50)	
	300	35	280	22	186	124	2	235	8
		(1.38)	(11.02)	(0.87)	(7.32)	(4.88)	(0.08)	(9.25)	
	400	45.5	280	26	186	124	7	235	8
		(1.79)	(11.02)	(1.02)	(7.32)	(4.88)	(0.28)	(9.25)	

d: Inside diameter of gasket according to EN 1092-1 / ASME B16.5  $d_M$ : Effective diaphragm diameter Diaphragm seals of flange design with flexible capillary for connection to the second sec

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



#### Connection to EN 1092-1

Nom. diam.	Nom. press.	<b>b</b> mm	D mm	d <sub>2</sub> mm	d <sub>4</sub> mm	d <sub>M</sub> mm	<b>f</b> mm	<b>k</b> mm	n
DN 80	PN 40	24	200	18	138	89	2	160	8
	PN 100	32	230	26	138	89	2	180	8
DN 100	PN 16	20	220	18	158	89	2	180	8
	PN 40	24	235	22	162	89	2	190	8
DN 125	PN 16	22	250	18	188	124	2	210	8
	PN 40	26	270	26	188	124	2	220	8

#### **Connection to ASME B16.5**

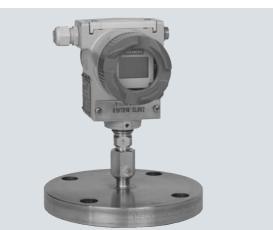
Nom. diam.	Nom. press.	b	D	d <sub>2</sub>	d <sub>4</sub>	d <sub>M</sub>	f	k	n
	lb/sq.in.	mm	mm	mm	mm	mm	mm	mm	
		(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	
3 inch	150	24	190	20	127	89	1.6	152.5	4
		(0.96)	(7.48)	(0.79)	(5)	(3.50)	(0.06)	(6)	
	300	29	210	22	127	89	1.6	168.5	8
		(1.14)	(8.27)	(0.87)	(5)	(3.50)	(0.06)	(6.63)	
	600	38.5	210	22	127	89	6.4	168.5	8
		(1.52)	(8.27)	(0.87)	(5)	(3.50)	(0.25)	(6.63)	
4 inch	150	24	230	20	158	89	1.6	190.5	4
		(0.95)	(9.06)	(0.79)	(6.22)	(3.50)	(0.06)	(7.5)	
	300	32	255	22	158	89	1.6	200	8
		(1.26)	(10.04)	(0.87)	(6.22)	(3.50)	(0.06)	(7.87)	
	400	41.5	255	26	158	89	6.4	200	8
		(1.62)	(10.04)	(1.02)	(6.22)	(3.50)	(0.25)	(7.87)	
5 inch	150	24	255	22	186	124	2	216	4
		(0.94)	(10.04)	(0.87)	(7.32)	(4.88)	(0.08)	(8.50)	
	300	35	280	22	186	124	2	235	8
		(1.38)	(11.02)	(0.87)	(7.32)	(4.88)	(0.08)	(9.25)	
	400	45.5	280	26	186	124	7	235	8
		(1.79)	(11.02)	(1.02)	(7.32)	(4.88)	(0.28)	(9.25)	

d: Inside diameter of gasket according to EN 1092-1 / ASME B16.5 d<sub>M</sub>: Effective diaphragm diameter

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

# SITRANS P measuring instruments for pressure Diaphragm seals of flange design For gage and absolute pressure, directly fitted on transmitter

#### Overview



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

#### Technical specifications

Diaphragm seals (flange design)						
sure, directly fitted on a transmitt						
Nominal diameter	Nominal pressure					
• DN 50	PN 40, PN 100					
• DN 80	PN 40, PN 100					
• DN 100	PN 16, PN 40					
• 2 inch	Class 150, class 300, class 600, class 1500					
• 3 inch	Class 150, class 300, class 600					
• 4 inch	Class 150, class 300, class 400					
Sealing face						
<ul> <li>For stainless steel, mat. No. 1.4404/316L</li> </ul>	To EN 1092-1, form B1 or ASME B16.5 RF 125 250 AA					
• For the other materials	Smooth to EN 1092-1, form B2 or ASME B16.5 RFSF					
Materials						
• Main body	Stainless steel 316L					
Wetted parts	Stainless steel 316L					
	Without foil					
	<ul> <li>PTFE (for vacuum on request)</li> </ul>					
	<ul> <li>ECTFE (for vacuum on request)</li> </ul>					
	<ul> <li>PFA (for vacuum on request)</li> </ul>					
	Monel 400, mat. No. 2.4360					
	Hastelloy C276, mat. No. 2.4819					
	Hastelloy C4, mat. No. 2.4610					
	Tantalum					
Capillary	Stainless steel, 1.4571/316Ti					
Sealing material on the process connection	Copper					
Maximum pressure	See above and the technical data of the transmitter					
Tube length	Without tube					
	• 50 mm (1.97 inch)					
	• 100 mm (3.94 inch)					
	• 150 mm (5.91 inch)					
	• 200 mm (7.87 inch)					

## Capillary

1 ,	
• Length	Max. 10 m (32.8 ft), longer lengths on request
Internal diameter	2 mm (0.079 inch)
<ul> <li>Minimum bending radius</li> </ul>	150 mm (5.9 inch)
Filling liquid	• Silicone oil M5
	• Silicone oil M50
	<ul> <li>High-temperature oil</li> </ul>
	<ul> <li>Halocarbon oil (for measuring O<sub>2</sub>)</li> </ul>
	<ul> <li>Food oil (FDA listed)</li> </ul>
	<ul> <li>Glycerine/water (not suitable for use in low-pressure range)</li> </ul>
Max. recommended process temperature	170 °C (338 °F)
Permissible ambient temperature	Dependent on the pressure trans- mitter and the filling liquid of the remote seal.
	More information can be found in the technical data of the pressure transmitters and in the section "Technical data of filling liquid" in the Technical description to the remote seals.
Weight	Approx. 4 kg (8.82 lb)
Certificate and approvals	
Classification according to prossure	For gasos of fluid group 1 and

Classification according to pressure equipment directive (DRGL 97/23/EC) For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)

## SITRANS P measuring instruments for pressure Diaphragm seals of flange design

## For gage and absolute pressure, directly fitted on transmitter

Selection and Orderi	na data	C	rde	er No. Oi	rd code
Diaphragm seal				4910-	
Directly fitted to a pres SITRANS P for pressu 7MF423 together with (vacuum-proof design be ordered separately	re 7MF403■ and n Order code "V01" ) and 7MF802■ <sup>1)</sup> ; must				
Process connection					
<ul> <li>Vertical (pressure tra</li> <li>Horizontal</li> </ul>	insmitter upright)	2			
		_ '			
<ul><li>Nominal diameter an</li><li>DN 50</li></ul>	PN 40		Α		
BITOO	PN 100		В		
• DN 80	PN 40 PN 100		D E		
• DN 100	PN 16 PN 40		G H		
• 2 inch	Class 150 Class 300 Class 600 Class 1500		L M N P		
• 3 inch	Class 150 Class 300 Class 600		Q R S		
• 4 inch	Class 150 Class 300 Class 400		T U V		
	DIN 1092-01, form B1 of 125 250 AA or RFSF	r			
Other version Add Order code and p Nominal diameter:;			z		J 1 Y
Wetted parts materia	ls				
<ul> <li>Stainless steel 316L</li> <li>without foil</li> </ul>			A		
- with PTFE coating				0	
- with ECTFE coating	g <sup>2)</sup>		F		
- with PFA coating	0.4260				
<ul> <li>Monel 400, mat. No.</li> <li>Hastelloy C276, mat</li> </ul>			G		
Hastelloy C4, mat. N	o. 2.4610		u	J	
Tantalum     Other version			K		K 1 Y
Other version Add Order code and p Wetted parts materials			z		K I I
Tube length					
<ul> <li>Without tube</li> <li>50 mm</li> </ul>	• (1.97 inch)			0	
• 100 mm	• (3.94 inch)			2	
• 150 mm	• (5.90 inch)			3	
• 200 mm Other version:	• (7.87 inch)			4 9	L 1 Y
Add Order code and p Tube length:	blain text:			5	

Selection and Ordering data	Order No. Ord.code
Diaphragm seal	D) 7MF4910-
Directly fitted to a pressure transmitter SITRANS P for pressure 7MF403 and 7MF423 together with Order code "V01" (vacuum-proof design) and 7MF802 <sup>1</sup> ; must be ordered separately	
Filling liquid • Silicone oil M5	
Silicone oil M50	2
High-temperature oil	3
<ul> <li>Halocarbon oil (for measuring O<sub>2</sub>)</li> </ul>	4
<ul> <li>Glycerin/water<sup>3)</sup></li> </ul>	6
<ul> <li>Food oil (FDA listed)</li> </ul>	7
Other version Add Order code and plain text: Filling liquid:	9 M 1 Y

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

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

<sup>3)</sup>Not suitable for use in low-pressure range. D) Subject to export regulations AL: N, ECCN: EAR99H.

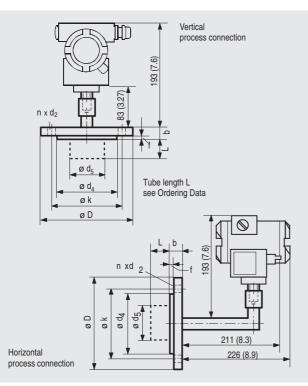
Selection and Ordering data	Order code
Further designs	
Please add "-Z" to Order No. and specify Order code.	
<b>Spark arrestor</b> With spark arrestor for mounting on zone 0 (including documentation) for transmitters for pressure and absolute pressure	A01
Quality inspection certificate (Factory calibration) to IEC 60770-2 to IEC 60770-2	C11
Acceptance test certificate to EN 10204, section 3.1	C12
Vacuum-proof design for use in low-pressure range for transmitters for pressure	V01
Calculation of span of associated pressure transmitter	Y05
Enclose filled-in questionnaire with order	

lose filled-in questionnaire with order

## SITRANS P measuring instruments for pressure Diaphragm seals of flange design

For gage and absolute pressure, directly fitted on transmitter

#### Dimensional drawings



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

#### Connection to EN 1092-1

Nom. diam.	Nom pres		D	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub>	f	k	n
		m	m mn	n mm	mm	mm	mm	mm	mm	
DN 50	PN 4	10 20	D 165	5 18	102	48.3	59	2	125	4
	PN 1	100 2	3 198	5 26	102	48.3	59	2	145	4
DN 80	PN 4	10 24	4 200	D 18	138	76	89	2	160	8
	PN 1	100 3	2 230	26	138	76	89	2	180	8
DN 10	0 PN 1	16 2	) 220	) 18	158	94	89	2	180	8
	PN 4	10 2-	4 235	5 22	162	94	89	2	190	8
Conn	ection	to A	SME B	16.5						
Nom. diam.	Nom. press.	b	D	d <sub>2</sub>	d <sub>4</sub>	$d_5$	d <sub>M</sub>	f	k	r
	lb/	mm	mm	mm	mm	mm	mm	mm	mm	
	sq.in.	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	I
2 inch	150	20	150	20	92	48.3	59	1.6	120.5	4
		(0.79)	(5.91)	(0.79)	(3.62)	(1.9)	(2.32)	(0.06)	(4.74)	)
	300	22.5	165	20	92	48.3	59	1.6	127	8
		(0.89)	(6.5)	(0.79)	(3.62)	(1.9)	(2.32)	(0.06)	(5)	
	600	32	165	20	92	48.3	59	6.4	127	8
		(1.26)	(6.5)	(0.79)	(3.62)	(1.9)	(2.32)	(0.25)	(5)	
	1500	45	215	26	92	48.3	59	6.4	165	8
		(1.77)	(8.46)	(1.02)	(3.62)	(1.9)	(2.32)	(0.25)	(6.5)	
3 inch	150	24	190	20	127	76	89	1.6	152.5	4
		(0.95)	(7.48)	(0.79)	(5)	(3)	(3.50)	(0.06)	(6)	
	300	29	210	22	127	76	89	1.6	168.5	8
		(1.14)	(8.27)	(0.87)	(5)	(3)	(3.50)	(0.06)	(6.63)	)
	600	38.5	210	22	127	76	89	6.4	168.5	8
		(1.52)	(8.27)	(0.87)	(5)	(3)	(3.50)	(0.25)	(6.63)	)
4 inch	150	24	230	20	158	94	89	1.6	190.5	8
		(0.95)	(9.06)	(0.79)	(6.22)	(3.69)	(3.50)	(0.06)	(7.5)	
	300	32	255	22	158	94	89	1.6	200	8
		(1.26)	(10.04)	(0.79)	(6.22)	(3.69)	(3.50)	(0.06)	(7.87)	)
	400	41.5	255	26	158	94	89	6.4	200	8
		(1.62)	(10.04)	(1.02)	(6.22)	(3.69)	(3.50)	(0.25)	(7.87)	)

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

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

# SITRANS P measuring instruments for pressure Diaphragm seals of flange design For differential pressure,

fixed connection and with capillary

#### Overview



Diaphragm seals of flange design for pressure transmitters for differential pressure, fixed connection and with flexible capillary

#### Technical specifications

Maximum pressure

Technical specifications						
Diaphragm seals of flange design f ferential pressure, fixed connection	for pressure transmitters for dif- n and with flexible capillary					
Nominal diameter	Nominal pressure					
• DN 80	PN 40					
• DN 100	PN 16, PN 40					
• 3 inch	Class 150, class 300					
• 4 inch	Class 150, class 300					
Sealing face						
• For stainless steel, mat. No. 1.4404/316L	To EN 1092-1, form B1 or ASME B16.5 RF 125 250 AA					
For the other materials	To EN 1092-1, form B2 or ASME B16.5 RFSF					
Materials						
• Main body	Stainless steel 316L					
Wetted parts	Stainless steel 316L					
	Without foil					
	<ul> <li>PTFE (for vacuum on request)</li> </ul>					
	• ECTFE (for vacuum on request)					
	<ul> <li>PFA (for vacuum on request)</li> </ul>					
	Monel 400, mat. No. 2.4360					
	Hastelloy C276, mat. No. 2.4819					
	Hastelloy C4, mat. No. 2.4610					
	Tantalum					
Capillary	Stainless steel, mat. No. 1.4571/316Ti					
• Sheath	Spiral hose made of stainless steel, mat. No. 1.4301/316					
Sealing material in the process flan- ges						
• For pressure transmitters, absolute pressure transmitters and low-pressure applications	Copper					
<ul> <li>For other applications</li> </ul>	Viton					

See above and the technical data of the pressure transmitter

Tube length	Without tube
	50 mm (1.97 inch)
	100 mm (3.94 inch)
	150 mm (5.91 inch)
	200 mm (7.87 inch)
Capillary	
Length	Max. 10 m (32.8 ft), longer lengths on request
<ul> <li>Internal diameter</li> </ul>	2 mm (0.079 inch)
<ul> <li>Minimum bending radius</li> </ul>	150 mm (5.9 inch)
Filling liquid	Silicone oil M5
	Silicone oil M50
	High-temperature oil
	Halocarbon oil (for measuring O2)
	Food oil (FDA listed)
	Glycerine/water (not suitable for use in low-pressure range)
Max. recommended process temperature	170 °C (338 °F)
Permissible ambient temperature	Dependent on the pressure trans- mitter and the filling liquid of the remote seal
	More information can be found in the technical data of the pressure transmitters and in the section "Technical data of filling liquid" in the Technical description to the remote seals
Weight	Approx. 4 kg (8.82 lb)
Certificate and approvals	
Classification according to pressure equipment directive (DRGL 97/23/EC)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 3,

97/23/EC)

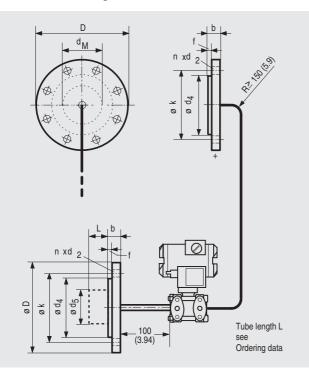
paragraph 3 (sound engineering practice)

# SITRANS P measuring instruments for pressure Diaphragm seals of flange design For differential pressure, fixed connection and with capillary

Selection and Orderin	ng data	Order No. C	Ord. code	Selection and Ordering data	Order No. Ord. co	de
Diaphragm seal	C	D) 7MF4913	-	Diaphragm seal D)	7 M F 4 9 1 3 -	
ged remote seal with of capillary to low-pres	n tube as option) for n-pressure side and flan- out tube, fitted by means ssure side of SITRANS P e, DS III series (7MF443)	1	B	Mounting flange (with tube as option) for direct mounting to high-pressure side and flan- ged remote seal without tube, fitted by means of capillary to low-pressure side of SITRANS P for differential pressure, DS III series (7MF443)	1 - B	
Flange, connection to Nom. diam. • DN 80 • DN 100	<b>DEN 1092-1</b> Nom. press. PN 40 PN 16 PN 40	D G H		Length of capillary <sup>3</sup> )           • 1.0 m         (3.28 ft)           • 1.6 m         (5.25 ft)           • 2.5 m         (8.20 ft)           • 4.0 m         (13.1 ft)	2 3 4 5	
Flange, connection to Nom. diam.	o ASME B16.5 Nom. press.			• 6.0 m (19.7 ft) • 8.0 m (26.25 ft)	6 7	
• 3 inch • 4 inch	Class 150 Class 300 Class 150	Q R T		• 10.0 m (32.8 ft) Other version Add Order code and plain text: Length of capillary:	8 9 N 1	ly
Other version Add Order code and p Flange:, Nominal dia pressure:		U Z	J 1 Y	<ol> <li><sup>1)</sup>For vacuum on request.</li> <li><sup>2)</sup>Not suitable for use in low-pressure range.</li> <li><sup>3)</sup>Max. capillary length, see section "Technical descript D) Subject to export regulations AL: N, ECCN: EAR99H</li> </ol>		
Wetted parts material				Selection and Ordering data	Order code	e
	EN 1092-1, form B1 or RF 125 250 AA or RFSF			Further designs		
Stainless steel 316L				Please add "-Z" to Order No. and specify Order cod	de.	
<ul> <li>without foil</li> <li>with PTFE coating</li> <li>with ECTFE coating</li> </ul>	, 1)	A E O F		Spark arrestor With spark arrestor for mounting on zone 0 (includi documentation)	<b>A02</b> ng	
- with PFA coating		D G		Quality inspection certificate (Factory calibration	n) to C11	
<ul> <li>Monel 400, mat. No.</li> <li>Hastelloy C276, mat.</li> <li>Hastelloy C4, mat. No.</li> </ul>	No. 2.4819	JU		Acceptance test certificate to EN 10204, section 3.1	C12	
Tantalum     Other version		к z	K 1 Y	Vacuum-proof design for use in low-pressure range	V03	
Add Order code and p Wetted parts materials				Calculation of span of associated pressure transmitter	Y05	
Tube length (for mounting flange or • Without tube • 50 mm • 100 mm • 150 mm • 200 mm Other version: Add Order code and p Tube length:	(1.97 inch) (3.94 inch) (5.90 inch) (7.87 inch)	0 1 2 3 4 9	L1Y	Enclose filled-in questionnaire with order		
Filling liquid • Silicone oil M5 • Silicone oil M50 • High-temperature oil • Halocarbon oil (for m • Glycerin/water <sup>2)</sup> • Food oil (FDA listed) Other version Add Order code and p Filling liquid:	easuring O <sub>2</sub> )	1 2 3 4 6 7 9	M 1 Y			

## SITRANS P measuring instruments for pressure Diaphragm seals of flange design

#### Dimensional drawings



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

## For differential pressure, fixed connection and with capillary

#### Connection to EN 1092-1

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

#### **Connection to ASME B16.5**

Nom. diam.	Nom. press.	b	D	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub>	f	k	n
	lb/	mm	mm	mm	mm	mm	mm	mm	mm	
	sq.in.	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	
3 inch	150	24	190	20	127	76	89	1,6	152,5	4
		(0.96)	(7.48)	(0.79)	(5)	(3)	(3.50)	(0.06)	(6)	
	300	29	210	22	127	76	89	1,6	168,5	8
		(1.14)	(8.27)	(0.87)	(5)	(3)	(3.50)	(0.06)	(6.63)	
4 inch	150	24	230	20	158	94	89	1,6	190,5	4
		(0.95)	(9.06)	(0.79)	(6.22)	(3.69)	(3.50)	(0.06)	(7)	
	300	32	255	22	158	94	89	1,6	200	8
		(1.26)	(10.04)	(0.87)	(6.22)	(3.69)	(3.50)	(0.06)	(7.87)	

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

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

## SITRANS P measuring instruments for pressure Quick-release diaphragm seals

For gage, absolute and differential pressure

#### 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: MK II, DS III, DS III PA, DS III FF
- For differential pressure and flow: DS III, DS III PA, DS III FF

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

Technical specifications	Technical specifications							
Quick-release diaphragm seal								
Connection, nominal diameter	Nominal pressure							
For pressure								
• To DIN 11851 with slotted union	nut							
- DN 25	PN 40							
- DN 32	PN 40							
- DN 40	PN 40							
- DN 50	PN 25							
- DN 65	PN 25							
- DN 80	PN 25							
• To DIN 11851 with threaded soc	ket							
- DN 25	PN 40							
- DN 32	PN 40							
- DN 40	PN 40							
- DN 50	PN 25							

- DN 65	PN 25
- DN 80	PN 25
<ul> <li>Clamp connection</li> </ul>	
- 1½ inch	PN 40
- 2 inch	PN 40
- 2½ inch	PN 25
- 3 inch	PN 25
For differential pressure and flow	
To DIN 11851 with slotted union nu	t
- DN 50	PN 25
- DN 65	PN 25
- DN 80	PN 25
To DIN 11851 with threaded socker	t
- DN 50	PN 25
- DN 65	PN 25
- DN 80	PN 25
Clamp connection	
- 2 inch	PN 40
- 2½ inch	PN 25
- 3 inch	PN 25
Sealing face	
• For stainless steel, mat. No. 1.4404/316L	To EN 1092-1, form B1 or ASME B 16.5RF 125 250 AA
For the other materials	To EN 1092-1, form B2 or ASME B16.5 RFSF
Materials	
Main body	Stainless steel 316L
Wetted parts	Stainless steel 316L
Capillary	Stainless steel, mat.
	No. 1.4571/316Ti
Sheath	Spiral hose made of stainless steel, mat. No. 1.4301/316
Maximum pressure	See above and the technical data of the pressure transmitter
Tube length	Without tube
Capillary	
• Length	Max. 10 m (32.8 ft), longer lengths on request
<ul> <li>Internal diameter</li> </ul>	2 mm (0.079 inch)
Minimum bending radius	150 mm (5.9 inch)
Filling liquid	Food oil (FDA listed)
	Glycerin/water (not suitable for use in low-pressure range)
Permissible ambient temperature	Dependent on the pressure trans mitter and the filling liquid of the remote seal
	More information can be found in the technical data of the pressure transmitters and in the section "Technical data of filling liquid" in the Technical description to the remote seals
Weight	Approx. 4 kg (8.82 lb)
Certificates and approvals	E (0.1)

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

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

## SITRANS P measuring instruments for pressure Quick-release diaphragm seals

#### For gage, absolute and differential pressure

				-	
Selection and Ordering data	Order No. Ord	d. code	Selection and Ordering data	Order No. (	
Quick-release diaphragm seal	D) 7MF4940-		Quick-release diaphragm seal	D)7MF494	
for SITRANS P pressure transmitters for pressure 7MF403 and 7MF423 together Order code "V01" (vacuum-proof design) a 7MF80211, must be ordered separately Filling liquid: Food oil (FDA listed) Material: Stainless steel, mat. No. 1.4435	with nd	I	for SITRANS P pressure transmitters for pres- sure for differential pressure and flow, type 7MF443; order separately Filling liquid: Food oil (FDA listed) Material: Stainless steel, mat. No. 1.4435 Delivery unit: 2 off	A 0 -	B
Nom. diam. Nom. press.			Nom. diam. Nom. press.		
Connection to DIN 11851 with slotted unio			Connection to DIN 11851 with slotted union nut		
- DN 25 PN 40	1 B		- DN 50 PN 25	1 E	
- DN 32 PN 40 - DN 40 PN 40	1 C 1 D		- DN 65 PN 25 - DN 80 PN 25	1 F 1 G	
- DN 40 PN 40 - DN 50 PN 25	16		Connection to DIN 11851 with threaded	10	
- DN 65 PN 25	16		socket		
- DN 80 PN 25	1 G		- DN 50 PN 25	2 E	
Connection to DIN 11851 with screw necl	KS		- DN 65 PN 25	2 F	
- DN 25 PN 40	2 B		- DN 80 PN 25	2 G	
- DN 32 PN 40	2 C		Clamp connection		
- DN 40 PN 40	2 D		- 2 inch PN 40	4 M	
- DN 50 PN 25	2 E		- 2½ inch PN 40 - 3 inch PN 40	4 N 4 P	
- DN 65 PN 25	2 F			4 P	
- DN 80 PN 25 • Clamp connection	2 G		Other version Add Order codes and plain text:		
- 1½ inch PN 40	4 L		Nominal diameter:	9	H 1 Y
- 2 inch PN 40	4 M		Nominal pressure:	z	J1Y
- 2½ inch PN 40	4 N		Filling liquid		
- 3 inch PN 40	4 P		• Glycerin/water <sup>1)</sup>	6	
Other version Add Order codes and plain text:			Food oil (FDA listed)     Other version	7 9	M 1 Y
Nominal diameter:	9	H1Y	Add Order code and plain text: Filling liquid:		
Nominal pressure:	Z	J 1 Y	Connection to transmitter	_	
Filling liquid	c .				
<ul> <li>Glycerin/water<sup>2)</sup></li> <li>Food oil (FDA listed)</li> </ul>	6 7		through capillary, Length: <sup>2)</sup> • 1.0 m (3.28 ft)		
Other version	9	M 1 Y	• 1.0 m (3.28 ft) • 1.6 m (5.25 ft)		2 3
Add Order code and plain text:			• 2.5 m (8.20 ft)		4
Filling liquid:			• 4.0 m (13.1 ft)	(	5
Connection to pressure transmitter			• 6.0 m (19.7 ft)		6
• direct	0		• 8.0 m (26.25 ft)		7
through capillary, length: <sup>3)</sup>			• 10.0 m (32.8 ft)		8 9 N.1 v
• 1.0 m (3.28 ft)	2		Other version Add Order code and plain text:		9 N 1 y
• 1.6 m (5.25 ft)	3		Length of capillary:		
• 2.5 m (8.20 ft) • 4.0 m (13.1 ft)	4 5		Further designs	Order code	9
• 6.0 m (19.7 ft)	6		Please add "-Z" to Order No. and specify Order		
• 8.0 m (26.25 ft)	6 7		code.		
• 10.0 m (32.8 ft)	8		Quality inspection certificate (Factory calib-	C11	
Other version	9	N 1 y	ration) to IEC 60770-2	••••	
Add Order code and plain text: Length of capillary:			Acceptance test certificate	C12	
Further designs	Order code		to EN 10204, section 3.1		
Please add "-Z" to Order No. and specify O code.	rder		Vacuum-proof design for use in low-pressure range	V03	
Quality inspection certificate (Factory ca	llib- C11				
ration) to IEC 60770-2 Acceptance test certificate	C12		<ul> <li><sup>1)</sup>Not suitable for use in low-pressure range.</li> <li><sup>2)</sup>Max. capillary length, see section "Technical desc</li> </ul>	ription"	
to EN 10204, section 3.1			D) Subject to export regulations AL: N, ECCN: EAR	99H.	
Vacuum-proof design	V01				
for use in low-pressure range					

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

<sup>2)</sup>Not suitable for use in low-pressure range.

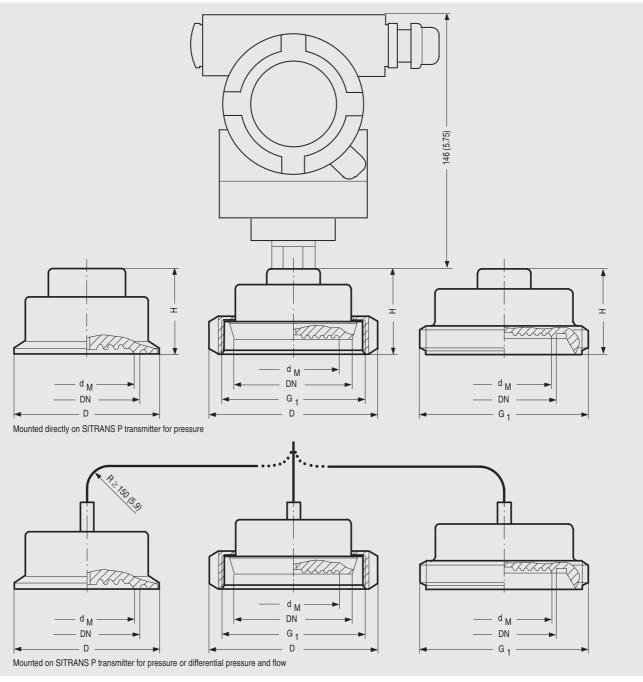
<sup>3)</sup>Max. capillary length, see section "Technical description"

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

## SITRANS P measuring instruments for pressure Quick-release diaphragm seals

For gage, absolute and differential pressure

#### Dimensional drawings



#### Clamp connection (left)

DN	Ød	м	ØD		н	
(1½ inch)	32	(1.26)	50,5	(2)	35	(1.38)
(2 inch)	40	(1.57)	64	(2.52)	35	(1.38)
(2½ inch)	52	(2.05)	77,5	(3.05)	35	(1.38)
(3 inch)	72	(2.83)	91	(3.58)	35	(1.38)

Connection to DIN 11851 with slotted union nut (center)

	( -	, ,		
DN	Ø d <sub>M</sub>	ØD	Н	G <sub>1</sub>
25	25	63	36	Rd 52x1/6
32	32	70	36	Rd 52x1/6
40	40	78	36	Rd 65x1/6
50	52	112	36	Rd 78x1/6
65	65	112	36	Rd 95x1/6
80	72	127	36	Rd 110x1/6
25	25	63	36	Rd 52x1/6

Connection to DIN 11851 with threaded socket (right)

DN	Ø d <sub>M</sub>	Н	G <sub>1</sub>
25	25	36	Rd 52x1/6
32	32	36	Rd 52x1/6
40	40	36	Rd 65x1/6
50	52	36	Rd 78x1/6
65	65	36	Rd 95x1/6
80	72	36	Rd 110x1/6

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

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

## **SITRANS P** measuring instruments for pressure Miniature diaphragm seal

#### For gage and absolute pressure

#### Overview



Miniature diaphragm seals

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

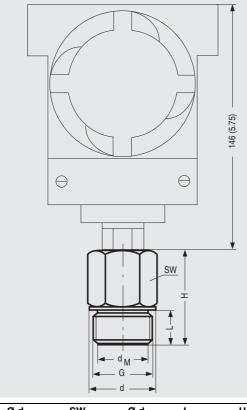
• P300, DS III, DS III PA, DS III FF

Suitable for high pressures, contaminated, fibrous and viscous media in the chemical, paper, food and drink industries.

#### Design

- Flush-mounted diaphragm
- No dead spaces ٠
- · Fixed threaded stems

#### Dimensional drawings



G	øα <sub>M</sub>		SW		Ød		L		н	
	mm	(inch)	mm	(inch)	mm	(inch)	mm	(inch)	mm	(inch)
G1B	25	(0.98)	41	(1.61)	39	(1.53)	28	(1.1)	56	(2.21)
G11⁄2B	40	(1.57)	55	(2.17)	60	(2.36)	30	(1.18)	50	(1.97)
G2B	50	(1.97)	60	(2.36)	70	(2.76)	30	(1.18)	63	(2.48)

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

Miniature diaphragm seal, dimensions in mm (inch)

Technical specifications	
Miniature diaphragm seals	
Span with • G1B • G1½B • G2B	> 6 bar (> 87 psi) > 2 bar (> 29 psi) > 600 mbar (> 8.7 psi)
Filling liquid	Silicone oil M5 or food oil (FDA listed)
Material • Main body • Diaphragm	Stainl. steel mat No. 1.4404/316L Stainl. steel mat No. 1.4404/316L
Maximum pressure	100% of nominal pressure of pressure transmitter, up to maximum of PN 400 (5802 psi) (depending on the seal used)
Temperature of use	Same as pressure transmitter
Temperature range of medium	Same as pressure transmitter
Max. recommended process temperature	150 °C (302 °F)
Weight • G1B • G1½B • G2B	Approx. 0.3 kg (approx. 0.66 lb) Approx. 0.5 kg (approx. 1.10 lb) Approx. 0.8 kg (approx. 1.76 lb)

Classification according to pressure equipment directive (DRGL 97/23/EC) For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)

7 M F 4 9 6 1 0 0	9 0 -
c	
-	
-	
D	
-	
_	
	J 1 Y
2	JIY
Α	
z	K 1 Y
1	
7	
9	М1у
	1

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

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

Selection and Ordering data	Order code
Further designs Please add "-Z" to Order No. and specify Order code.	
Quality inspection certificate (Factory calibration) to IEC 60770-2	C11
Acceptance test certificate to EN 10204, section 3.1	C12
Vacuum-proof design for use in low-pressure range	V01

## SITRANS P measuring instruments for pressure Flushing rings

#### For diaphragm seals

#### Overview

2



Flushing ring

Flushing rings are required for flange-mounted and sandwichtype remote seals (Order No. 7MF4900 ... 7MF4923) if the danger exists that the process conditions and the geometry of the connection could cause the medium to form deposits or blockages.

The flushing ring is clamped between the process flange and the remote seal.

Deposits can be flushed away from the diaphragm through the holes in the side, or the pressure volume can be vented. Different nominal diameters and forms permit adaptation to the respective process flange.

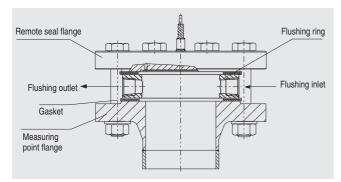
#### **Process connection**

For flanges to EN and ASME: DN 50, 80, 100, 125; PN 16 ... 100 or DN 2 inch, 3 inch, 4 inch, 5 inch; Class 150 ... 600

#### Standard design

Material: CrNi-Stahl, mat. No. 1.4404/316L Sealing faces and flushing holes: See Selection and Ordering data

#### Design



Installation example

Flushing ring for remote seals of	of sandwich and flange design	
Nominal diameter	Nominal pressure	
• DN 50	PN 16 PN 100	
• DN 80	PN 16 PN 100	
• DN 100	PN 16 PN 100	
• DN 125	PN 16 PN 100	
• 2 inch	Class 150 class 600	
• 3 inch	Class 150 class 600	
• 4 inch	Class 150 class 600	
• 5 inch	Class 150 class 600	
Sealing face		
• To EN 1092-1	Form B1	
	Form B2	
	Form D/Form D	
	Form C/Form C	
	Form C/Form C	
	Form E	
	Form F	
• To ASME B16.5	RF 125 250 AA	
	RFSF	
	RJT ring groove	
Flushing holes (2 off), female	• G1⁄4	
thread:	• G1⁄2	
	• 1/4-18 NPT	
	• 1⁄2-14 NPT	
Material	Stainless steel 1.4404/316L	

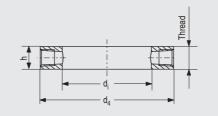
## SITRANS P measuring instruments for pressure Flushing rings

#### For diaphragm seals

Selection and Orderin	q data	Order	No. Ord	. code
Flushing ring	0	D) 7MF4		
for remote seals 7MF49	00 to 7MF4923	1		
Nom. diam. • DN 50 • DN 80 • DN 100 • DN 125 • 2 inch • 3 inch • 4 inch • 5 inch Other version Add Order code and pl Nominal diameter:; N		A B C D G H J K Z		J 1 Y
Sealing face • EN 1092-1 - Form B1 - Form B2 - Form C/Form C - Form D/Form D - Form E - Form F • ASME B16.5 - RF 125 250 AA - RFSF - RJT ring groove Other version Add Order code and pl Sealing face:	ain text:	A C D E F G H M Q R Z		K 1 Y
Flushing holes (2 off) • Female thread G <sup>1</sup> / <sub>4</sub> • Female thread G <sup>1</sup> / <sub>2</sub> • Female thread <sup>1</sup> / <sub>4</sub> -18 N • Female thread <sup>1</sup> / <sub>2</sub> -14 N Material • Stainless steel 316L		1 2 3 4	0	
Other version Add Order code and pl Material:	ain text:		9	M 1 y
Selection and Orderin	g data		Order	code
Further designs Please add "-Z" to Orde	r No. and specify Order	code.		
Acceptance test certif to EN 10204, section 3.			C12	
D) Cubicat to overant race				

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

### 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	$d_4$		di		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

### SITRANS P measuring instruments for pressure Clamp-on seals of flange design

For gage pressure, differential pressure and flow

#### Overview



#### Clamp-on seals for flange-mounting

The clamp-on seal is completely integrated in the process line. It is particularly suitable for flowing and highly viscous media.

The clamp-on remote seal consists of a cylindrical jacket into which a thin-walled pipe is welded. It is clamped directly between two flanges in the pipeline.

#### Design

- Clamp-on seals for flange-mounting (flange design) to EN/ASME for SITRANS P pressure transmitters
  - For pressure: P300, DS III, DS III PA and DS III FF series
     For differential pressure and flow: DS III, DS III PA and DS III FF
- Sealing face to EN 1092-1 or ASME B16.5
- Connection to the transmitter directly or by means of a flexible capillary (max. 10 m long)
- See Technical data for details of materials used for the wetted parts
- Material used for the capillary, the guard sleeve, the seal's main body and the measuring cell: Stainless steel, mat.-No. 1.4571
- Filling liquid: Silicone oil, high-temperature oil, halocarbon oil, food oil (FDA listed) or glycerin/water (not suitable for uses in low-pressure range)

#### Function

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

#### Note:

When operating in the low-pressure range, also during commissioning, it is recommended to use a vacuum-proof remote seal (see Selection and Ordering data).

Clampon socio for ficano movertie	99		
Clamp-on seals for flange-mountin	-		
Nominal diameter	Nominal pressure		
• DN 25	PN 6 PN 100		
• DN 40	PN 6 PN 100		
• DN 50	PN 6 PN 100		
• DN 80	PN 6 PN 100		
• DN 100	PN 6 PN 100		
• 1 inch	Class 150 class 2500		
• 1½ inch	Class 150 class 2500		
• 2 inch	Class 150 class 2500		
• 3 inch	Class 150 class 2500		
• 4 inch	Class 150 class 2500		
Process connection	Flange to EN 1092-1 or ASME B 16.5		
Sealing face	To EN 1092-1, form B1 or to ASME B16.5 RF 125 250 A or RFSF		
Materials			
• Main body	Stainless steel 1.4404/316L		
• Diaphragm	Stainless steel 1.4404/316L		
Wetted parts	Stainless steel 1.4404/316L		
	Without foil		
	<ul> <li>ECTFE coating</li> </ul>		
	<ul> <li>PFA coating (for vacuum on re quest)</li> </ul>		
	Monel 400, mat. No. 2.4360		
	Hastelloy C276, mat. No. 2.4819		
	Hastelloy C4, mat. No. 2.4610		
	Tantalum		
• Capillary	Stainless steel, mat. No. 1.4571/316Ti		
• Sheath	Spiral hose made of stainless steel, mat. No. 1.4301/316		
Capillary			
• Length	Max. 10 m (32.8 ft)		
Internal diameter	2 mm (0.079 inch)		
<ul> <li>Minimum bending radius</li> </ul>	150 mm (5.9 inch)		
Filling liquid	Silicone oil M5		
	Silicone oil M50		
	High-temperature oil		
	Halocarbon oil		
	Food oil (FDA listed)		
	Glycerin/water (not suitable for uses in low-pressure range)		
Permissible ambient temperature	See pressure transmitters, see fi ling liquid		

Classification according to pressure equipment directive (DRGL 97/23/EC) For gases of fluid group 1 and liquids of fluid group 1; complies with the requirements of article 3, paragraph 1 (appendix 1); assigned to category III, conformity evaluation module H by the TÜV Nord

## SITRANS P measuring instruments for pressure Clamp-on seals of flange design

Selection and Orderi	•	Orde	r No	. Ord	. C	00	de
Clamp-on seal for fla SITRANS P pressure							
for pressure 7MF403 and 7MF42 code "V01" (vacuum-p 7MF802 1); must be c of delivery: 1 off	))7MF	498	B O -				
	; order separately, scope ); Material: Completely of o. 1.4404/316L; DEN 1092-1 or ASME EN 1092-1, form B1,	)) 7 M F		_			
		1	•	- в	_		
Nominal diameter an	-						
<ul> <li>DN 25</li> <li>DN 40</li> <li>DN 50</li> <li>DN 80</li> <li>DN 100</li> </ul>	PN 6 100 PN 6 100 PN 6 100 PN 6 100 PN 6 100	B D E G H					
<ul> <li>1 inch</li> <li>1½ inch</li> <li>2 inch</li> <li>3 inch</li> <li>4 inch</li> </ul>	Class 150 2500 Class 150 2500 Class 150 2500 Class 150 2500 Class 150 2500	L M P Q					
Other version Add Order code and y Nominal diameter:;	Nominal pressure:	z			J	1	Y
Wetted parts materia • Stainless steel 316L - Without foil - With PFA coating - With ECTFE coatin • Monel 400, mat. No. • Hastelloy C276, mat	g <sup>2)</sup> 2.4360 . No. 2.4819	A D F G J					
Hastelloy C4, mat. N     Tantalum     Other version     Add Order code and p     Wetted parts materials	olain text:	U K Z			к	1	Y
Filling liquid							
<ul> <li>Silicone oil M5</li> </ul>			1				
<ul> <li>Silicone oil M50</li> </ul>			2				
<ul> <li>High-temperature oi</li> </ul>	l		3				
<ul> <li>Halocarbon oil (for n</li> </ul>	neasuring O <sub>2</sub> )		4				
<ul> <li>Glycerin/water<sup>3)</sup></li> </ul>			6				
<ul> <li>Food oil (FDA listed)</li> </ul>			7				
Other version Add Order code and p	plain text:		9		М	1	Y
Filling liquid:		_					
Connection to transr	nitter						
<ul> <li>direct (only for 7MF4</li> </ul>				0			
through capillary, leng							
• 1.0 m	(3.28 ft)			2			
• 1.6 m	(5.25 ft)			3			
• 2.5 m	(8.20 ft)			4			
• 4.0 m	(13.1 ft)			5			
• 6.0 m	(19.7 ft)			6			
• 8.0 m	(26.25 ft)			7			
• 10.0 m	(32.8 ft)			8			
Other version Add Order code and Length of capillary:	olain text:			9	N	1	У
1) 14/14 71/15000							

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

<sup>4)</sup> Max. capillary length, see section "Technical description"

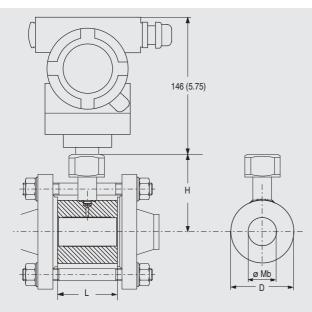
For gage pressure, differential pressure and flow

Selection and Ordering data	Order code
Further designs Please add "-Z" to Order No. and specify Order code.	
Spark arrestor	
With spark arrestor for mounting on zone 0 (including documentation)	
<ul> <li>Pressure and absolute pressure</li> </ul>	A01
<ul> <li>for differential pressure transmitters</li> </ul>	A02
Quality inspection certificate (Factory calibration) to IEC 60770-2	C11
Acceptance test certificate	C12
To EN 10204, section 3.1	
Vacuum-proof design	V01
For use in low-pressure range	
Calculation of span of associated pressure trans- mitter	Y05
Enclose filled-in questionnaire with order Note:	
Suffix "Y01" required with pressure transmitter!	
D) Subject to export regulations AL: N, ECCN: EAR99H.	

## SITRANS P measuring instruments for pressure Clamp-on seals of flange design

#### For gage pressure, differential pressure and flow

#### Dimensional drawings

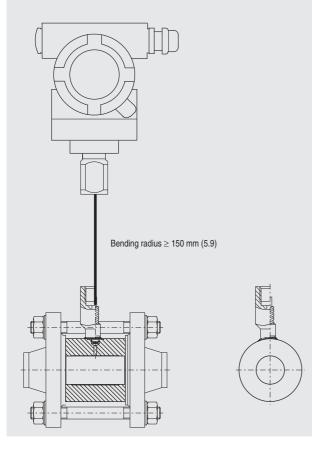


Connection to EN 1092-1								
DN	PN	D	Mb	L	н			
mm	bar	mm	mm	mm	mm			
25	6 100	63	28,5	60	78.5			
40	6 100	85	43	60	89.5			
50	6 100	95	54.5	60	92.5			
80	6 100	130	82.5	60	112			
100	6 100	150	107	60	122			

#### **Connection to ASME B16.5**

DN	Class	D	Mb	L	Н
(inch)		mm	mm	mm	mm
		(inch)	(inch)	(inch)	(inch)
1	150 2500	63	28.5	60	78.5
		(2.48)	(1.12)	(2.36)	(3.1)
11/2	150 2500	85	43	60	86
		(3.35)	(1.69)	(2.36)	(3.4)
2	150 2500	95	54.5	60	94.5
		(3.74)	(2.15)	(2.36)	(3.72)
3	150 2500	130	82.5	60	112
		(5.12)	(3.25)	(2.36)	(4.4)
4	150 2500	150	107	60	122
		(5.9)	(4.21)	(2.36)	(4.8)

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



## SITRANS P measuring instruments for pressure Quick-release clamp-on seals

#### For pressure and absolute pressure

#### Function

The measured pressure is transferred from the diaphragm, mounted on the inner circumference of the clamp-on seal, to the filling liquid and then passes through the capillary to the measuring chamber of the pressure transmitter. The interior of the clamp-on 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

Clamp-on seals of quick-release	design for pre	essure	
Connection	Nominal	Nominal	
	diameter	pressure	
<ul> <li>To DIN 11851 with threaded socket</li> </ul>	DN 25	PN 40	
	DN 40	PN 40	
	DN 50	PN 25	
	DN 65	PN 25	
	DN 80	PN 25	
	DN 100	PN 25	
<ul> <li>Clamp connection</li> </ul>	1½ inch	PN 40	
	2 inch	PN 40	
	2½ inch	PN 40	
	3 inch	PN 40	
Material			
Main body	Stainless stee	el 1.4404/316L	
• Diaphragm	Stainless stee	el 1.4404/316L	
Capillary			
• Length	Max. 10 m (3	2.8 ft)	
<ul> <li>Internal diameter</li> </ul>	2 mm (0.079	inch)	
<ul> <li>Minimum bending radius</li> </ul>	150 mm (5.9	inch)	
Filling liquid	• Food oil (FE	DA listed)	
		ater (not suitable for pressure range)	
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 data of filling liquid" in the Technical data of section to the remote seals		
Weight	Approx. 4 kg	(approx. 8.82 lb)	

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

For gases of fluid group 1 and liquids of fluid group 1; complies with the requirements of article 3, paragraph 1 (appendix 1); assigned to category III, conformity evaluation module H by the TÜV Nord

#### Overview



Quick-release clamp-on seals, to DIN 11851 with threaded socket



Quick-release clamp-on seals, with clamp connection

Quick-release clamp-on seals for pressure are available for the following SITRANS P pressure transmitter series:

- P300
- DS III
- DS III PA
- DS III FF

#### Application

The quick-release clamp-on seal is a special design for flowing media and high-viscosity media. Since it is completely integrated in the process pipe, no turbulences, dead volumes or other obstructions to the flow occur. The measured medium flows unhindered through the clamp-on seal and results in self-cleaning of the measuring chamber. Furthermore, the clamp-on seal can be cleaned by a pig.

#### Design

The quick-release clamp is available in two versions:

- DIN 11851 with threaded socket
- · Clamp connection

The clamp-on seal is connected to the pressure transmitter either directly or by way of a capillary.

## SITRANS P measuring instruments for pressure Quick-release clamp-on seals

#### For pressure and absolute pressure

Selection and Ordering data			Order No. Ord. code						
Quick-release clamp-on seal		D)	7 M F 4					-	
for SITRANS P press pressure 7MF403 and 7MF42 code "V01" (vacuum- 7MF802 1); must be separately Filling liquid: Food oi Material: Stainless st	23 together with Order proof design) and ordered I (FDA listed)		A 0	-	В				
Nom. diam.	Nom. press.								
<ul> <li>DN 25</li> <li>DN 40</li> <li>DN 50</li> <li>DN 65</li> <li>DN 80</li> <li>DN 100</li> <li>Clamp connection</li> <li>1½ inch</li> <li>2 inch</li> </ul>	11851 with screw necks PN 40 PN 40 PN 25 PN 25 PN 25 PN 25 PN 25 PN 25		2 B 2 D 2 E 2 F 2 G 2 h 4 L						
- 2 inch - 2½ inch - 3 inch	PN 40 PN 40 PN 40		4 M 4 N 4 P						
Other version Add Order codes an Nominal diameter: Nominal pressure:			9 Z				1 \ 1 \		
Filling liquid • Glycerin/water <sup>2)</sup> • Food oil (FDA listed Other version Add Order code and Filling liquid:	,			6 7 9		M	11	Y	
Connection to trans	mitter				0				
<ul> <li>Direct</li> <li>Through capillary, ler</li> <li>1.0 m</li> <li>1.6 m</li> <li>2.5 m</li> <li>4.0 m</li> <li>6.0 m</li> <li>8.0 m</li> <li>10.0 m</li> <li>Other version</li> <li>Add Order code and</li> <li>Length of capillary:</li> </ul>	(3.28 ft) (5.25 ft) (8.20 ft) (13.1 ft) (19.7 ft) (26.25 ft) (32.8 ft) plain text:				2 3 4 5 6 7 8 9	N	1 y	y	

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

<sup>2)</sup>Not suitable for use in low-pressure range.

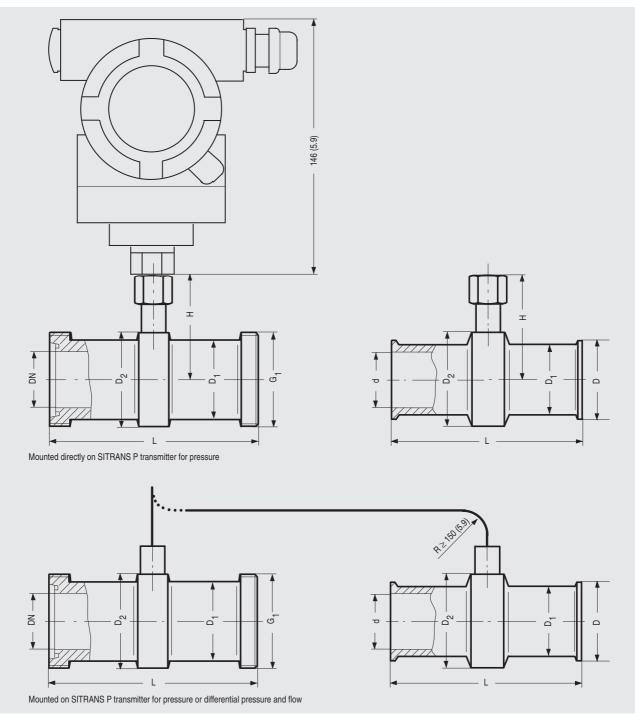
<sup>3)</sup>Max. capillary length, see section "Technical description" D) Subject to export regulations AL: N, ECCN: EAR99H.

Selection and Ordering data	Order code		
Further designs Please add "-Z" to Order No. and specify Order code.			
Quality inspection certificate (Factory calibration) to IEC 60770-2	C11		
Acceptance test certificate to EN 10204, section 3.1	C12		
Vacuum-proof design for use in low-pressure range	V01		

# SITRANS P measuring instruments for pressure Quick-release clamp-on seals

For pressure and absolute pressure

# Dimensional drawings



Connection to DIN 11851 with screw necks					
DN	Ø D <sub>1</sub>	$Ø D_2$	н	L	G <sub>1</sub>
25	38	52	68	128	Rd 52x1/6
40	55	65	74.5	160	Rd 65x1/6
50	68	78	81	170	Rd 78x1/6
65	85	95	89.5	182	Rd 95x1/6
80	110	110	97	182	Rd 110x1/4
100	130	130	107	182	Rd 110x1/4

Clam	np con	nectio	on for p	oipes t	to BS 4	1825/3	3 and o	o.D. t	ubes		
d		$\rm Ø~D_1$		$O D_2$		Н		L		D	
mm	(inch)	mm	(inch)	mm	(inch)	mm	(inch)	mm	(inch)	mm	(inch)
22.2	(1)	38	(1.5)	50	(1.97)	67	(2.64)	114	(4.49)	50.5	(1.98)
34.9	(1½)	43	(1.69)	65	(2.56)	74.5	(2.93)	146	(5.75)	50.5	(1.98)
47.6	(2)	56	(2.2)	75	(2.95)	79.5	(3.13)	156	(6.14)	64	(2.52)
60.3	(21/2)	68	(2.68)	77	(3.03)	80.5	(3.17)	156	(6.14)	77.5	(3.05)
73.0	(3)	82	(3.23)	91	(3.58)	87.5	(3.44)	156	(6.14)	91	(3.58)

Quick-release clamp-on seal, dimensions in mm (inch)

#### Measuring setups

#### Overview

This section shows examples of typical measuring setups for using SITRANS P pressure transmitters with and without remote seals.

Equations for calculating start of scale and full scale are provided for each example.

Questionnaires are included to help you select the right combination of remote seal and pressure transmitter.

#### Installation

Remote seals of sandwich design are fitted between the connection flange of the measuring point and a dummy flange. Remote seals of flange design are fitted directly on the connection flange of the measuring point. The respective pressure rating of the dummy flange or the flanged remote seal must be observed.

The pressure transmitter should be installed below the connection flange (and below the lower connection flange in the case of differential pressure transmitters). This arrangement <u>must</u> be used in the low-pressure range.

When measuring at pressures above atmospheric, the pressure transmitter can also be installed above the connection flange.

The capillaries between the remote seal and the pressure transmitter should be as short as possible to obtain a good transmission response.

#### Offset of measuring range

If there is a difference in height between the two connection flanges when measuring with two remote seals, an additional differential pressure will result from the oil filling of the remote seal capillaries. This results in a measuring range offset which has to be taken into account when you set the pressure transmitter.

An offset in the measuring range also occurs when combining a remote seal with a transmitter if the remote seal is not installed at the same height as the transmitter.

#### Pressure transmitter output

If the level, separation layer or density increase in closed vessels, the differential pressure and hence the output signal of the pressure transmitter also increase.

For an inverted relationship between the differential pressure and the output signal, the start-of-scale and full-scale values of the SITRANS P must be interchanged.

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

#### Influence of ambient temperature

Temperature differences between the individual capillaries and between the individual remote seals should be avoided.

Temperature variations in the area of the measuring setup cause a change in volume of the filling liquid and hence measuring errors.

#### Notes

- For the separation layer measurement, the separation layer has to be positioned between the two spigots. Also you must make sure that the level in the container is always above the top spigot.
- When measuring density, make sure that the level of the medium remains constant. The level should be above the top spigot.

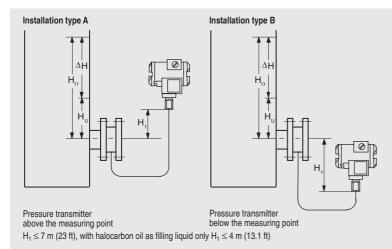
#### Possible combinations of pressure transmitters and remote seals

Type of installation	Pressure transmit- ters	Remote seals
A/B	7MF4033 7MF4034 7MF4035 7MF8023 7MF8024 7MF8025	7MF4900 7MF4910 7MF4920
$C_1$ and $C_2$	7MF4233 7MF4234 7MF4235	7MF4900 7MF4910 7MF4920
		(vacuum-proof design in each case)
	7MF4333 7MF4334 7MF4335	7MF4901 7MF4921
D	7MF4433 7MF4434 7MF4435	7MF4903 7MF4923
E	7MF4433 7MF4434 7MF4435	7MF4913
G, H and J	7MF4433 7MF4434 7MF4435	7MF4903 7MF4923

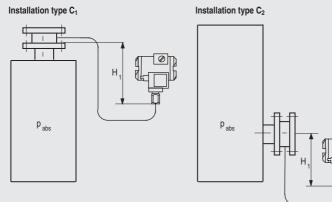
# Measuring setups with remote seals

# Dimensional drawings

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

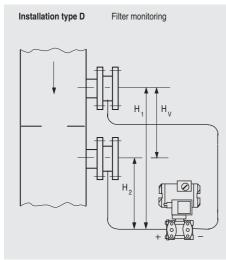


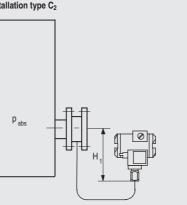
#### Types of installation for absolute level measurements (closed vessels)



Pressure transmitter for absolute pressure always below the measuring point:  $H_1 \ge 200 \text{ mm}$  (7.9 inch)

# Type of installation for differential pressure and flow measurements





# Installation type A

Start-of-scale:	$p_{MA} = \rho_{FL} \cdot g \cdot H_U - \rho_{Oil} \cdot g \cdot H_1$
Full-scale:	$p_{ME} = \rho_{FL} \cdot g \cdot H_0 - \rho_{Oil} \cdot g \cdot H_1$
Installation typ	e B
Start-of-scale:	$p_{MA} = \rho_{FL} \cdot g \cdot H_U + \rho_{Oil} \cdot g \cdot H_1$
Full-scale:	$p_{ME} = \rho_{FL} \cdot g \cdot H_{O} + \rho_{Oil} \cdot g \cdot H_{1}$
Legend	
р <sub>МА</sub>	Start-of-scale value to be set
P <sub>ME</sub>	Full-scale value to be set
$\rho_{\text{FL}}$	Density of medium in vessel
$\rho_{\text{Oil}}$	Density of filling oil in the capillary to the remote seal
g	Local acceleration due to gravity
Η <sub>U</sub>	Start-of-scale value
Ho	Full-scale value
H	Distance between vessel flange and pressure trans.

# Installation type C1 and C2

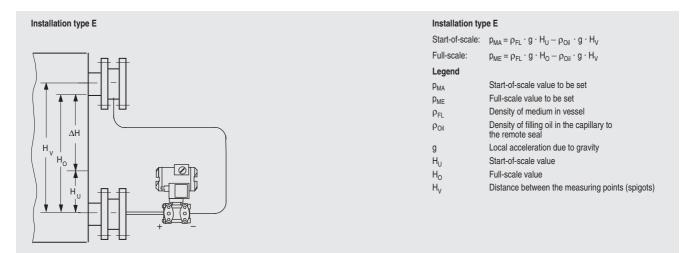
Start-of-scale:	$p_{MA} = p_{START} + \rho_{Oil} \cdot g \cdot H_1$				
Full-scale:	$p_{ME} = p_{END} + \rho_{Oil} \cdot g \cdot H_1$				
Legend					
p <sub>MA</sub>	Start-of-scale value to be set				
P <sub>ME</sub>	Full-scale value to be set				
P <sub>START</sub>	Start-of-scale value				
P <sub>END</sub>	Full-scale value				
Poil	Density of filling oil in the capillary to the remote seal				
g	Local acceleration due to gravity				
H <sub>1</sub>	Distance between vessel flange and pressure trans.				

Installation typ	e D
Start-of-scale:	$p_{MA} = p_{START} - \rho_{Oil} \cdot g \cdot H_V$
Full-scale:	$p_{\text{ME}} = p_{\text{END}} - \rho_{\text{Oil}} \cdot g \cdot H_{\text{V}}$
Legend	
P <sub>MA</sub>	Start-of-scale value to be set
P <sub>ME</sub>	Full-scale value to be set
P <sub>START</sub>	Start-of-scale value
P <sub>END</sub>	Full-scale value
$\rho_{\text{Oil}}$	Density of filling oil in the capillary to the remote seal
g	Local acceleration due to gravity
H <sub>V</sub>	Distance between the measuring points (spigots)

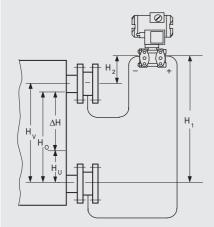
# SITRANS P measuring instruments for pressure Remote seals

## Measuring setups with remote seals

Types of installation for level measurements (closed vessels)



Installation type G



Pressure transmitter for differential pressure above the upper measuring point, no vacuum

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

## Installation type G, H and J

H <sub>1</sub>

Installation type H

below the lower measuring point

Start-of-scale value to be set

Density of medium in vessel

Density of filling oil in the capillary to the remote seal

Full-scale value to be set

Legend

 $\mathbf{p}_{\mathsf{MA}}$ 

 $\mathsf{p}_{\mathsf{ME}}$ 

 $\rho_{\text{FL}}$ 

 $\rho_{\text{Oil}}$ 

Installation type J

between the measuring points, no vacuum

 $H_2 \leq 7$  m (23 ft), with halocarbon oil as filling liquid only  $H_2 \leq 4$  m (13.1 ft)

- Local acceleration due to gravity
- Start-of-scale value

g

Η<sub>U</sub>

Ho

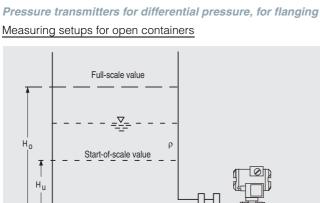
 $H_{V}$ 

- Full-scale value
  - Distance between the measuring points (spigots)

## Measuring setups without remote seals

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 me-dium remains constant. The level should be above the top spigot



• For the separation layer measurement, the separation layer

has to be positioned between the two spigots.

Overview

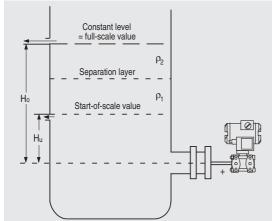
Notes

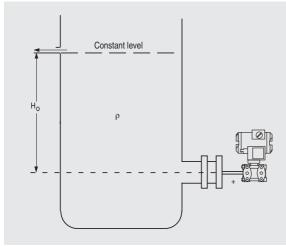
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Dimensional drawings

#### Level measurement

Start-of-scale:	$p_{MA} = \rho \cdot g \cdot H_{U}$
Full-scale:	$p_{ME} = \rho \cdot g \cdot H_{O}$
Legend	
p <sub>MA</sub>	Start-of-scale value to be set
P <sub>ME</sub>	Full-scale value to be set
ρ	Density of medium in vessel
g	Local acceleration due to gravit
Η <sub>U</sub>	Start-of-scale value
Ho	Full-scale value





#### Separation layer measurement

Start-of-scale: Full-scale:	$\begin{split} p_{MA} &= g \cdot (H_U \cdot \rho_1 + (H_O - H_U) \cdot \rho_2) \\ p_{ME} &= \rho_1 \cdot g \cdot H_O \end{split}$
Legend	
P <sub>MA</sub>	Start-of-scale value to be set
P <sub>ME</sub>	Full-scale value to be set
ρ <sub>1</sub>	Density of heavier liquid
ρ2	Density of lighter liquid
g	Local acceleration due to gravity
Η <sub>U</sub>	Start-of-scale value
H <sub>o</sub>	Full-scale value

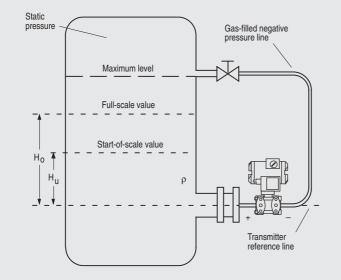
#### **Density measurement**

Start-of-scale:	$p_{MA} = \rho_{MIN} \cdot g \cdot H_O$
Full-scale:	$p_{ME} = \rho_{MAX} \cdot g \cdot H_O$
Legende	
р <sub>МА</sub>	Start-of-scale value to be set
P <sub>ME</sub>	Full-scale value to be set
ρ <sub>MIN</sub>	Minimum density of medium in vessel
ρ <sub>MAX</sub>	Maximum density of medium in vessel
g	Local acceleration due to gravity
H <sub>o</sub>	Full-scale value in m

# SITRANS P measuring instruments for pressure Remote seals

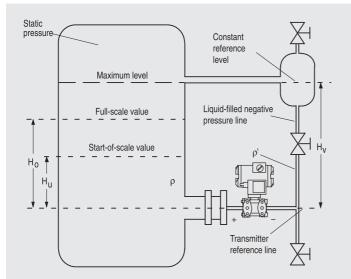
# Measuring setups without remote seals

# Measuring setups for closed containers



# Level measurement, Version 1

Start-of-scale:	$\Delta p_{MA} = \rho \cdot g \cdot H_{U}$
Full-scale:	$\Delta p_{ME} = \rho \cdot g \cdot H_{O}$
Legend	
$\Delta p_{MA}$	Start-of-scale value to be set
$\Delta p_{ME}$	Full-scale value to be set
ρ	Density of medium in vessel
g	Local acceleration due to gravity
Η <sub>U</sub>	Start-of-scale value
Ho	Full-scale value

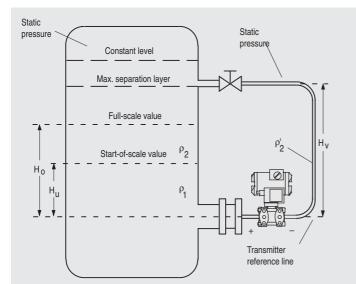


#### Level measurement, Version 2

Start-of-scale:	Am m (11 - 11 - 1)
Start-of-scale:	$\Delta p_{MA} = g \cdot (H_U \cdot \rho - H_V \cdot \rho')$
Full-scale:	$\Delta p_{ME} = g \cdot (H_O \cdot \rho - H_V \cdot \rho')$
Legend	
$\Delta p_{MA}$	Start-of-scale value to be set
$\Delta p_{ME}$	Full-scale value to be set
ρ	Density of medium in vessel
ρ'	Density of liquid in the negative pressure line (corresponding to the temperature existing there)
g	Local acceleration due to gravity
Η <sub>U</sub>	Start-of-scale value
Ho	Full-scale value
H <sub>V</sub>	Distance between the measuring points (spigots)

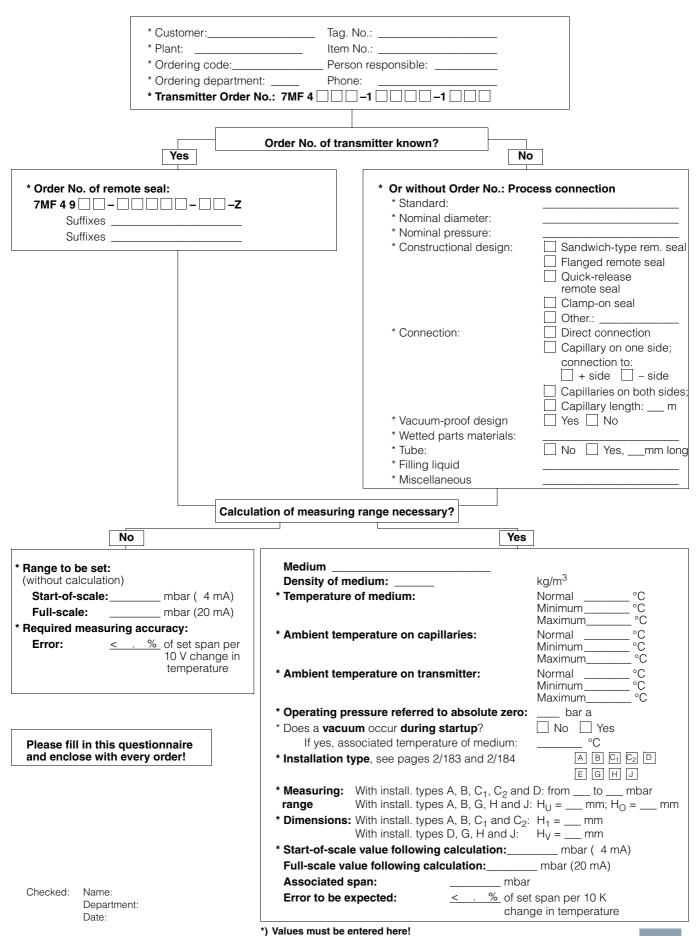
# Separation layer measurement

Start-of-scale:	$\Delta \boldsymbol{p}_{MA} = \boldsymbol{g} \cdot (\boldsymbol{H}_U \cdot \boldsymbol{\rho}_1 + (\boldsymbol{H}_O - \boldsymbol{H}_U) \cdot \boldsymbol{\rho}_2 - \boldsymbol{H}_V \cdot \boldsymbol{\rho}_2')$
Full-scale:	$\Delta p_{ME} = g \cdot (H_O \cdot \rho_1 - H_V \cdot \rho'_2)$
Legend	
$\Delta p_{MA}$	Start-of-scale value to be set
$\Delta p_{ME}$	Full-scale value to be set
$\rho_1$	Density of heavier liquid with separation layer in vessel
ρ <sub>2</sub>	Density of lighter liquid with separation layer
$\rho'_2$	Density of liquid in the negative pressure line (corresponding to the temperature existing there)
g	Local acceleration due to gravity
Η <sub>U</sub>	Start-of-scale value
Н <sub>о</sub>	Full-scale value
H <sub>v</sub>	Distance between the measuring points (spigots)



# SIEMENS

# Checking of transmitter/remote seal combinations



Questionnaire

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Siemens FI 01 · 2009 2/187

# SIEMENS

# Questionnaire for hydrostatic level measurements

Order date:	±×±,−
Processing date:	~ ~ ~
Ordering code (customer):	
Ordering code (supplier):	
Customer reference:	
Measuring point:	=>>=====
Position:	
Dimensions:	į
Pressure: 🗌 bar	
Temperature: K C	
Measuring range:  Cm	
Order No. of transmitter <sup>1)</sup> :	
_7_M_F_4	
Y01	

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

The calibration data are determined in addition.

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

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

Please mark type of boiler with a cross:	Closed <sup>1)</sup>		
	Open or not under pres	ssure <sup>2)</sup>	
Medium			
Licensed boiler pressure (absolute)			_ bar
Operating pressure (absolute)	Lowest		_ bar
	Normal <sup>3)</sup>		_ bar
	Highest		_ bar
Temperature of reference column (cold)			_ K
Distance between measuring points (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 bottopoint if different from $\mathrm{H}_\mathrm{V}$	om measuring		_ m
Please mark pressure correction of level	with a cross: No Yes <sup>4</sup>	L)	

<sup>1)</sup> Reference line filled with condensation! Falling differential pressure with increasing level.

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

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

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

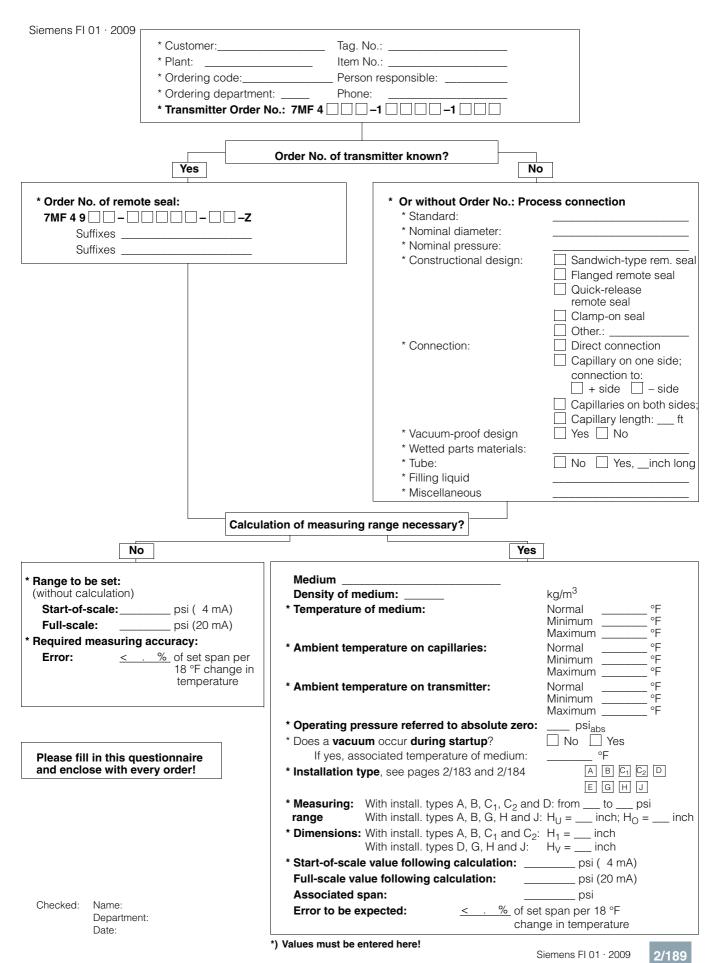
<sup>4)</sup> If a pressure correction of the level is required, the measuring range must be the same as the distance between the measuring points, and the transmitter is designed for the calculation pressure of 1 bar (absolute).

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



# Questionnaire (suitable for US market)

# Checking of transmitter/remote seal combinations



# SITRANS P measuring instruments for pressure Fittings

## **Technical description**

#### Overview

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

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

The measuring instruments can be screwed onto the shut-off fittings right at the end when all piping has been completed.

If an instrument has to be removed for maintenance, the fittings and pipes remain as they are. It is only necessary to close the valves – the instrument can then be removed, and refitted following maintenance.

# Classification according to pressure equipment directive (DGRL 97/23/EC):

For gases of fluid group 1 and liquids of fluid group 1; compliance with requirements of article 3, paragraph 3 (sound engineering practice). Siemens FI 01  $\cdot$  2009

#### New standard DIN EN 61518

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

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

#### Material acceptance test certificate to EN 10204-3.1

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

# Pressure transmitters with shut-off fittings - mounting examples

SITRANS P transmitter for gage 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)

# SITRANS P measuring instruments for pressure Fittings

# Selection aid

# Selection of available shut-off valves

Selection of available shut-o						
Transmitters	Shut-off valves for general applications	Page		Shut-off valves for spe- cial applications	Page	
Relative and absolute pres- sure transmitters with process connection G½" male thread e.g. • SITRANS P, Z series 7MF1564A • SITRANS P300	Shut-off valves/double shut- off valves to DIN 16270, DIN 16271 and DIN 16272	2/193		Double shut-off valve DN 5 for crossover ½-NPT-F to G½ nipple connection 7MF9011-4EA	2/196	a le
7MF8020 • SITRANS P DS III series 7MF4030 and 7MF4230				2-spindle valve manifold DN 5 for installation in pro- tective boxes 7MF9412-1B	2/216	No.
				2-way valve manifolds, DN 5, forged version 7MF9401-2J. and 7MF9401-2K.	2/198	
Relative and absolute pres- sure transmitter with G½"-14 NPT female thread • e.g. • SITRANS P Z series 7MF1564H • SITRANS P 300 7MF050 10	Double shut-off valve DN 5 7MF9011-4FA and 7MF9011-4GA	2/196		Double shut-off valve DN 5 for process connec- tion ½-NPT 7MF9011-4DA	2/196	
7MF8021 • SITRANS P DS III series 7MF4031 and 7MF4231						
Absolute pressure transmitter with process connection to IEC 61518 e.g. • SITRANS P DS III series 7MF433	2-spindle valve manifold DN 5 7MF9411-5A.	5 2/201	المع من في في ال	2-spindle valve manifold DN 5 for installation in pro- tective boxes 7MF9412-1C.	2/216	
				2-way valve manifolds, DN 5, forged version 7MF9401-2E. and 7MF9401-2F.	2/198	0-0-0

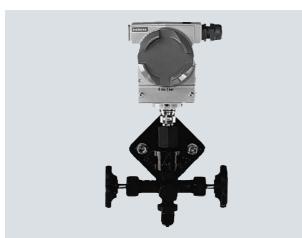
# SITRANS P measuring instruments for pressure Fittings

# Selection aid

Transmitters	Shut-off valves for general applications	Page		Shut-off valves for spe- cial applications	Page	
Differential pressure transmit- ter with process connection to IEC 61518 e.g. • SITRANS P DS III series 7MF443 and 7MF453	For 3/5-spindle valve manifold DN 5 7MF9411-5B. and 7MF9411-5C.	2/201	Har is an	3-way valve manifolds, DN 5, forged version 7MF9410-1	2/206	
			1	5-way valve manifolds, DN 5, forged version 7MF9410-3	2/206	
	PN 100 multiway cocks 7MF9004	2/204		3-way valve manifolds, DN 8, forged version 7MF9416-1 and 7MF9416-2	2/209	
			THE REAL	Valve manifold combina- tion DN 5/DN 8 for vapor measurement 7MF9416-6	2/212	p.d.
				Valve manifold combina- tion DN 8 for vapor measu- rement 7MF9416-4	2/214	
				3- and 5-spindle valve manifolds for DN 5 for installation in protective boxes 7MF9412-1D. and 7MF9412-1E.	2/216	1. 3°
						He P. H
				3- and 5-spindle valve manifolds for vertical diffe- rential pressure lines 7MF9413-1	2/220	
				Low-pressure multiway cock 7MF9004-4	2/223	

# Shut-off valves to <u>DIN 16270, DIN 16271</u> and DIN 16272

Overview



Transmitter for pressure with double shut-off valve 7MF9401-...

The shut-off valves for pressure gages are used to shut off the line of the measured medium when dealing with aggressive and non-aggressive gases, vapors and liquids.

## Design

A water trap must be connected upstream of the shut-off valve in the case of temperatures of the medium above 120 °C. The shut-off valves form B have a shaft with which they can be secured on an instrument bracket. An adapter is therefore not required to secure these valves. The vent/test connection can be shut off separately with the double shut-off valves DN 5. This permits checking of the zero on the pressure gage. In addition, the characteristic of the pressure gage can be checked using an external pressure source.

Selection and Orderi	Order No.		
Shut-off valves, form			
without test collar, cor without certificate			
Material Valve housing			
CW614N (CuZn39Pb3)250 bar F (mat. No. 2.0402)			7MF9401-7AA
P250GH (mat. No. 1.0460)	400 bar	F)	7MF9401-7AB
X 6 CrNiMoTi 17 12 2 400 bar F (mat. No. 1.4571/316Ti)		F)	7MF9401-7AC
Shut-off valves, form	B, DIN 16271		
with test collar, conne- without certificate			
Material Valve housing	Maximum permissible working pressure		

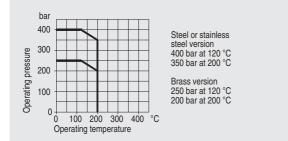
Valve housing	working pressure		
CW614N (CuZn39Pb3 (mat. No. 2.0402)	)250 bar	F)	7MF9401-7BA
P250GH (mat. No. 1.0460)	400 bar	F)	7MF9401-7BB
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti		F)	7MF9401-7BC

Selection and Orderi	Selection and Ordering data			
Shut-off valves, form	B, DIN 16270			
without test collar, pipe 12 S DIN EN ISO 8484	without test collar, pipe union with ferrule 12 S DIN EN ISO 8484-1, without certificate			
Material Valve housing	Maximum permissible working pressure			
P250GH (mat. No. 1.0460)	400 bar	7MF9401-8AB		
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti		7MF9401-8AC		
Shut-off valves, form	B, DIN 16271			
with test collar, pipe ur 12 S DIN EN ISO 8484				
Material Valve housing	Maximum permissible working pressure			
P250GH (mat. No. 1.0460)	400 bar	7MF9401-8BB		
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti		7MF9401-8BC		
Double shut-off valve	es, form B, DIN 16272			
with test collar, connect without certificate	ction shank,			
Material Valve housing	Maximum permissible working pressure			
CW614N (CuZn39Pb3 (mat. No. 2.0402)	)250 bar	7MF9401-7DA		
P250GH (mat. No. 1.0460)	400 bar	7MF9401-7DB		
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti		7MF9401-7DC		
Double shut-off valve	es, form B, DIN 16272			
with test collar, pipe ur 12 S DIN EN ISO 8484				
Material Valve housing	Maximum permissible working pressure			
P250GH (mat. No. 1.0460)	400 bar	7MF9401-8DB		
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti		7MF9401-8DC		
Accessories				
Factory test certificate	7MF9000-8AB			
Material acceptance to EN 10204-3.1	est certificate	7MF9000-8AD		

Instrument bracket, see page 2/197.

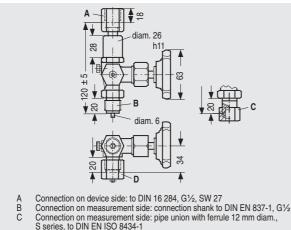
Shut-off valves to DIN 16270, DIN 16271 and DIN 16272

#### Characteristic curves



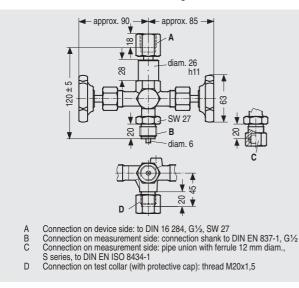
Permissible operating pressure as a function of the permissible operating temperature

## Dimensional drawings



D Connection on test collar (with sealing cap): thread M20x1,5

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



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

# Angle adapter

# Dimensional drawings

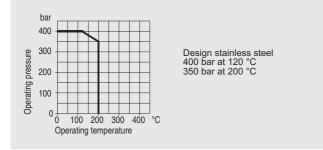


P300 pressure transmitter with shut-off valve and angle adapter

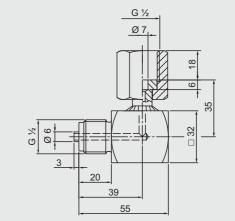
The angle adapter enables pressure transmitters with top displays to be read from the front.

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

#### Characteristic curves



Permissible operating overpressure as a function of the permissible operating temperature



Angle adapter, dimensions in mm

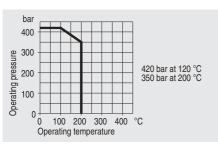
# **Double shut-off valves**

## Overview

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

- Sleeve-collar •
- Sleeve-sleeve ٠
- Sleeve-nipple
- · Collar-collar

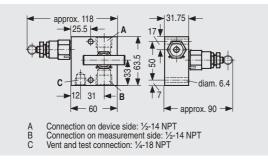
### **Characteristic curves**



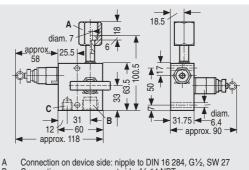
Permissible operating pressure as a function of the permissible operating temperature

Selection and Ordering data	Order No.
Double shut-off valves DN 5	
Material: X 6 CrNiMoTi 17 13 2 (mat. No. 1.4404/316L), max. permissible working pressure 420 bar;	
Sleeve-sleeve	7MF9011-4DA
Sleeve-nipple connection	7MF9011-4EA
• Sleeve-collar	7MF9011-4FA
• Collar-collar	7MF9011-4GA
Accessories	
Factory test certificate EN 10204-2.2	7MF9000-8AB
Material acceptance test certificate EN 10204-3.1	7MF9000-8AD

#### **Dimensional drawings**

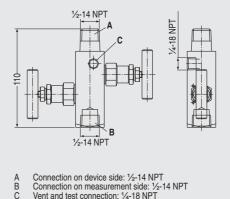


Double shut-off valve DN 5 (sleeve-sleeve) 7MF9011-4DA, dimensions in mm



Connection on device side: nipple to DIN 16 284, G1/2, SW 27 Connection on measurement side: 1/2-14 NPT Vent and test connection: 1/4-18 NPT В С

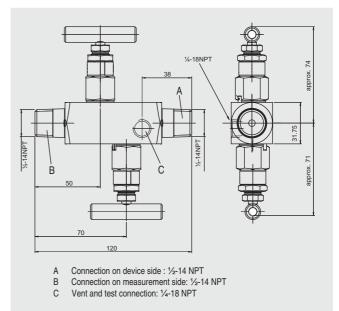
Double shut-off valve DN 5 (sleeve-nipple) 7MF9011-4EA, dimensions in mm



Connection on measurement side: 1/2-14 NPT

Vent and test connection: 1/4-18 NPT

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



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

2

# Accessories for / double shut-off valves

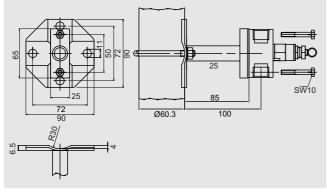
M56340-A0079

		snut-off valves / dou	ble snut-off valves	
Overview		Overview		
The mounting set is suitable for the dou 7MF9011-4.A and for wall, rack and pip		The instrument brackets are needed to mount the following uni <ul> <li>Pressure gages with threaded connection at the bottom</li> </ul>		
Selection and Ordering data	Order No.	<ul> <li>Shut-off valves to DIN 16270, DIN 1627</li> </ul>		
Mounting set for shut-off valves		(7MF9401-7 and 7MF9401-8)		
• 7MF9011-4DA und -4EA	7MF9011-8AB	Selection and Ordering data	Order No.	
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		Instrument bracket, form H, DIN 16281 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	
• 7MF9011-4FA und -4GA	7MF9011-8AC	Instrument bracket, form A, DIN 16281		
made of stainless steel, scope of delivery: 1x mounting bracket, 2x hexagon screws M6x10, 1x mounting clip,		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	

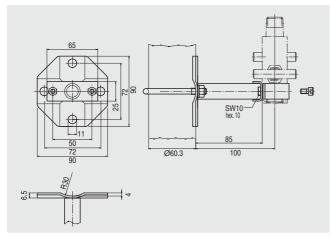
2x hexagon nuts 8.4 to DIN EN 24032

# Dimensional drawings

2x washers 8.4 to DIN 125;



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



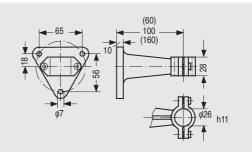
Mounting bracket (7MF9011-8AC) for shut-off valves 7MF9011-4FA and 7MF9011-4GA for wall, rack or pipe mounting, dimensions in mm

Screw-type bracket cover

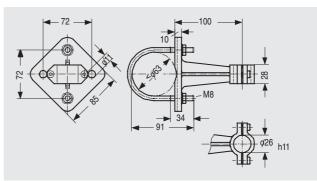
## Instrument bracket, form A, DIN 16281

made of annealed cast iron, galvanized and primed with pipe clamp for mouting on a pipe (horizotal/vertical) Screw-type bracket cover

# 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

# 2-way valve manifolds DN 5

# Overview



The two-way valve manifold DN 5 (7MF9401-2..) is used to shut off and vent the line with the measured medium, and to test the connected pressure gage or transmitter.

#### Benefits

- Available for aggressive and non-aggressive liquids and gases
- Two connection versions available
  - For flanging to pressure transmitters
  - With nipple for connection of pressure gages and pressure transmitters for pressure
- Max. working pressure 420 bar, with version for oxygen max. 100 bar

#### Application

The 2-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

The 2-way valve manifold DN 5 has 3 connections:

- A process connection (pipe union with ferrule Ø 12 mm)
- A connection for a pressure gage (flange or nipple)
- A test connection (thread G<sup>3</sup>/<sub>8</sub>)

The 2-fold valve manifold DN 5 also has an operating valve and a test valve, each with an internal spindle thread.

#### Materials used

2-way valve manifold DN 5 for flanging to pressure transmitters

	For non-aggressive li gases	For aggressive liquids and gases		
Component	Material	Mat. No.	Material	Mat. No.
Housing	P250GH	1.0460	X 6	1.4571/
Head parts	C 35	1.0501	- CrNiMoTi 17 12 2	31611
Spindles	X 12 CrMoS 17	1.4104	-	
Cones	X 35 CrMo 17 harde- ned and tempered	1.4122	_	
Valve seats	X 6 CrNiMoTi 17 12 2	1.4571/316Ti	-	
Packings	PTFE	-	PTFE	-

## Function

The characteristic of the pressure measuring instrument or pressure transmitter can be tested through the test connection.

A pressure gage for local display can be connected to the test connection.

The two-way valve manifold DN 5 can be used in addition to shut off and vent the line with the measured medium.

### Accessories

Accessory set for 2-way valve manifold DN 5 for flanging

- A31: 2 screws  $^{7}\!/_{16}$ -20 UNF x  $2^{1}\!/_{8}$  inch to ASME B18.3, 1 flat gasket
- A34: 2 screws  $^{7}\!/_{16}$  -20 UNF x  $2^{1}\!/_{8}$  inch to ASME B18.3, 1 O-ring (FPM 90)
- A11: 2 screws M10x55 to DIN EN 4762, 2 washers, 1 flat gasket
- A15 (suitable for oxygen): 2 screws M10x55 to DIN EN 4762, 2 washers, 1 flat gasket
- A16: 2 screws M10x55 to DIN EN 4762, 2 washers, 1 flat gasket (FPM 90)

Note: M10 screws only permissible up to PN 160!

Washers Ø 10.5 to DIN 125

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

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

#### 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.  $\varnothing$  60.3 mm

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

• S12: (only in combination with versions for aggressive liquids and gases): Suitable for oxygen

Selection and Ordering data	Order No.	
2-way valve manifold DN 5	7 M F 9 4 0 1 -	
for flanging to pressure transmitters, max. working pressure 420 bar, weight 1.85 kg (order accessory set and mounting plate with Order code), without certificate		
<ul> <li>for non-aggressive liquids and gases</li> </ul>	2 e	
<ul> <li>for aggressive liquids and gases</li> </ul>	2 f	
for fitting to pressure gages or pressure trans- mitters for pressure, with nipple connection to DIN 16284, max. working pressure 420 bar, weight 1.8 kg (order mounting plate with Order code) <sup>1)</sup>		
<ul> <li>for non-aggressive liquids and gases</li> </ul>	2 J	
• for aggressive liquids and gases 2		
Accessories		
Factory test certificate EN 10204-2.2	7MF9000-8AB	
Material acceptance test certificate EN 10204-3.1	7MF9000-8AD	

<sup>1)</sup>For suitable seals, see page 2/228.

Selection and Ordering data	Order code	Order No.
Further designs <sup>1)</sup>		
Please add "-Z" to Order No. and specify Order code.		
Accessory set to EN		
(required for flanging, weight 0.2 kg)		
2x screws ${}^{7/}$ <sub>16</sub> -20 UNF x 2 ${}^{1}/_{8}$ inch to ASME B18.3; chromized steel 1x gasket made of PTFE, max. permissible 420 bar, 80 °C	A31	7MF9001-5CC
2x screws $^{7}/_{16}$ -20 UNF x 2 $^{1}/_{8}$ inch to ASME B18.3; chromized steel 1x O-ring to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar, 120 °C	A34	7MF9401-5AA
Accessory set to DIN <sup>2)</sup>		
(required for flanging <sup>3)</sup> , weight 0.2 kg)		
2x screws M10x55 to DIN EN ISO 4762; chromized steel 2x washers Ø 10.5 to DIN 125; 1x gaskets made of PTFE, max. permissible 420 bar, 80 °C		
<ul> <li>Standard design</li> </ul>	A11	7MF9001-6AD
<ul> <li>Version for oxygen</li> </ul>	A15	7MF9001-6AE
2x screws M10x55 to DIN EN ISO 4762; chromized steel 2x washers Ø 10.5 mm to DIN 125; 1x O-ring to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar, 120 °C	A16	7MF9001-6AF
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,	M12	7MF9006-6GA
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)		
Valve manifold 100 bar		
Suitable for oxygen, only for 7MF9401-2F. and 7MF9401-2K.	S12	

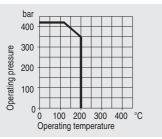
2-way valve manifolds DN 5

<sup>1</sup>)When ordering accessory set or mounting together with the 2-way valve manifold, please use Order code; otherwise use Order No.
 <sup>2</sup>)Flange connections to DIN 19213 only permissible up to PN 160!

<sup>3)</sup>Only required for versions 7MF9401-2E. und -2F.

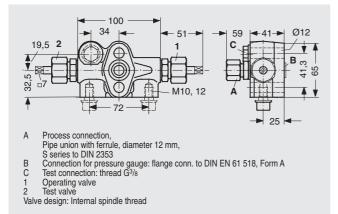
2-way valve manifolds DN 5

# Characteristic curves

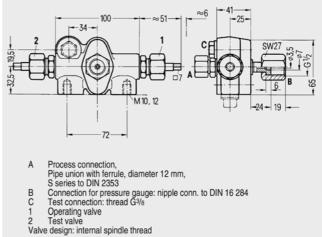


2-way valve manifold DN 5, permissible working pressure as a function of the permissible working temperature

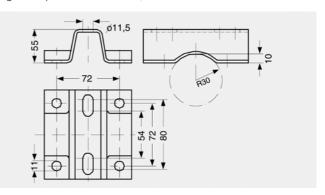
### Dimensional drawings



2-way valve manifold DN 5 (7MF9401-2E/-2F) for flanging, dimensions in mm

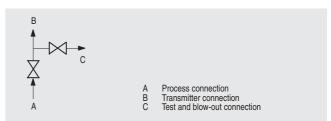


2-way valve manifold DN 5 (7MF9401-2J/-2K) for connection to pressure gages and pressure transmitters, dimensions in mm



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

# Schematics



Connection diagram of the 2-way valve manifolds

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



The 2-spindle, 3-spindle and 5-spindle valve manifolds 7MF9411-5.. are for pressure transmitters for absolute pressure or differential pressure.

The valve manifolds are used to shut off the differential pressure lines and to check the pressure transmitter zero.

The 2-spindle and the 5-spindle valve manifold enable in addition venting on the transmitter side and checking of the pressure transmitter characteristic.

## Benefits

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

#### Application

The spindle valve manifolds DN 5 are designed for liquids and gases  $% \left( {{{\rm{DN}}}_{\rm{B}}} \right)$ 

Each is available in a version for oxygen on request

## Design

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

The valves have an external spindle thread.

#### Materials used

Component	Material	Mat. No.
Housing	X 2 CrNiMo 17 13 2	1.4404/316L
Cones	X 6 CrNiMoTi 17 12 2	1.4571/316Ti
Spindles	X 2 CrNiMo 18 10	1.4404/316L
Head parts	X 5 CrNiMo 18 10	1.4401/316
Packings	PTFE	-

# Function

Functions of all valve manifolds:

- Shutting off the differential pressure lines
- Checking the pressure transmitter zero

Additional functions of the 2-spindle and 5-spindle valve manifolds through the vent and test connection:

- Venting on the transmitter side
- Checking the pressure transmitter characteristic

Selection and Ordering data Order No.			
Valve manifolds DN 5	7 M F 9 4 1 1 - 🗖 A		
for liquids and gases, for flanging to pressure transmitters for absolute and differential pressure, max. working pressure 420 bar (order accessory set with Order code), without certificate			
<ul> <li>2-spindle valve manifold</li> </ul>	5 A		
<ul> <li>3-spindle valve manifold</li> </ul>	5 B		
<ul> <li>5-spindle valve manifold</li> </ul>	5 C		
Accessories			
Factory test certificate EN 10204-2.2	7MF9000-8AB		
Material acceptance test certificate EN 10204-3.1	7MF9000-8AD		

Selection and Ordering data	Order code	Order No.
Further designs <sup>1)</sup>		
Please add "-Z" to Order No. and specify Order code.		
Accessory set to EN		
(connection between valve manifold and pressure transmitter)		
for valve manifold 7MF9411-5A.		
2x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 1 <sup>3</sup> / <sub>4</sub> inch to ASME B18.2.1; chromized steel 1x gasket made of PTFE, max. permissible 420 bar, 80 °C	K35	7MF9411-7DB
2x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 1¾ inch to ASME B18.2.1; <b>stainless</b> <b>steel</b>	K45	7MF9411-7DC
1x gasket made of PTFE, max. permissible 420 bar, 80 °C		
for valve manifold 7MF9411-5B. and -5C.		
4x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 1 <sup>3</sup> / <sub>4</sub> inch to ASME B18.2.1; chromized steel 2x flat gaskets made of PTFE, max. permissible 420 bar, 80 °C	K36	7MF9411-5DB
4x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 1¾ inch to ASME B18.2.1; <b>stainless</b> <b>steel</b>	K46	7MF9411-5DC
2x flat gaskets made of PTFE, max. permissible 420 bar, 80 °C		
Accessory set to DIN <sup>2)</sup>		
(connection between valve manifold and pressure transmitter)		
for valve manifold 7MF9411-5A.		
2x screws M10x45 to DIN EN 24014; chromized steel 2x washers Ø 10.5 mm to DIN 125; 1x gasket made of PTFE, max. permissible 420 bar, 80 °C	K15	7MF9411-7BB
2x screws M10x45 to DIN EN 24014; stainless steel 2x washers Ø 10.5 mm to DIN 125, stainless steel; 1x gasket made of PTFE, max. permissible 420 bar, 80 °C	K25	7MF9411-7BC

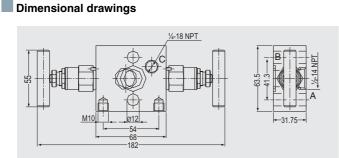
# 2-, 3- and 5-spindle valve manifolds DN 5

Selection and Ordering data	Order code	Order No.	Accessories
Further designs <sup>1)</sup>			Accessory set for 2-, 3- and 5-spindle valve manifolds
Please add "-Z" to Order No. and specify Order code.			2-spindle valve manifold DN 5
for valve manifolds 7MF9411-5B. and -5C.			<ul> <li>K35: 2 screws <sup>7</sup>/<sub>16</sub>-20 UNF x 1<sup>3</sup>/<sub>4</sub> inch to ASME B18.2.1, 1 flat gasket</li> </ul>
4x screws M10x45 to DIN EN 24014; chromized steel	K16	7MF9411-6BB	<ul> <li>K15: 2 screws M10x45 to DIN EN 24014, 2 washers, 1 flat gasket</li> </ul>
4x washers Ø 10.5 mm to DIN 125; 2x flat gaskets made of PTFE,			3-spindle and 5-way valve manifold DN 5
max. permissible 420 bar, 80 °C Flange connection with M10 screws only permissible up to PN 160.			<ul> <li>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</li> </ul>
4x screws M10x45 to DIN EN 24014; stainless steel	K26	7MF9411-6BC	<ul> <li>K16: 4 screws M10x45 to DIN EN 24014, 4 washers, 2 flat gaskets</li> </ul>
4x washers Ø 10.5 mm to DIN 125, stainless steel;			Washers Ø 10.5 to DIN 125
2x flat gaskets made of PTFE,			Flat gaskets made of PTFE, max. 420 bar, 80 °C
max. permissible 420 bar, 80 °C Flange connection with M10 screws only permissible up to PN 160.			<b>Note</b> : Flange connection with M10 screws only permissible up to PN 160!
Mounting plate			Mounting plate
<ul> <li>for valve manifold, made of electrogalvanized sheet-steel</li> </ul>			Made of electrogalvanized sheet-steel
<ul> <li>for wall mounting or for securing on rack (72 mm grid), weight 0.5 kg</li> </ul>	M11	7MF9006-6EA	<ul> <li>M11: For wall mounting or for securing on rack (72 mm grid) Scope of delivery:</li> <li>1 mounting plate with bolts for mounting on valve manifold</li> </ul>
Scope of delivery: 1 mounting plate with bolts for mounting on valve manifold - for pipe mounting, weight 0.7 kg Scope of delivery: 1x mounting plate M11, 2x pipe	M12	7MF9006-6GA	<ul> <li>M12: For pipe mounting Scope of delivery:</li> <li>1 mounting plate M11</li> <li>2 pipe brackets with nuts and washers for pipes with max. Ø 60.3 mm</li> </ul>
brackets with nuts and washers (for pipe with max. $Ø$ 60.3 mm)			Valve manifold 100 bar, suitable for oxygen
• for valve manifold, made of			<ul> <li>S12: For 2-way valve manifold</li> </ul>
stainless steel - for wall mounting or for securing	M21	7MF9006-6EC	S13: For 3-way valve manifold
on rack (72 mm grid), weight 0.5 kg Scope of delivery:	WIZ 1	7Mi 9000-02C	S13: For 5-way valve manifold  Characteristic curves
1 mounting plate with bolts for			
mounting on valve manifold - for pipe mounting, weight 0.7 kg Scope of delivery: 1x mounting plate M11, 2x pipe brackets with nuts and washers (for pipe with max. Ø 60.3 mm)	M22	7MF9006-6GC	bar 400 300 200 100
Valve manifold 100 bar			
Suitable for oxygen	S12		
<ul><li>for 7MF9411-5A.</li><li>for 7MF9411-5B.</li></ul>	S12 S13		0 0 100 200 300 400 °C
• for 7MF9411-5C.	S14		Operating temperature

<sup>1</sup>/When ordering accessory set or mounting together with the valve manifolds, please use Order code; otherwise use Order No.
 <sup>2</sup>)Flange connections to DIN 19213 only permissible up to 160!

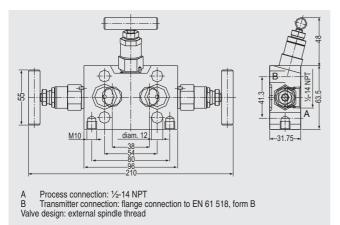
Valve manifolds PN 5 (7MF9411-5..), permissible working pressure as a function of the permissible working temperature

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

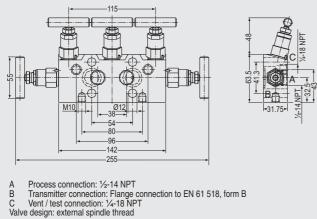


Process connection: ½-14 NPT Transmitter connection: Flange connection to EN 61 518, form B Vent / test connection: ¼-18 NPT A Process connection: ½-14 NPT B Transmitter connection: Flange ( C Vent / test connection: ½-18 NP Valve design: external spindle thread

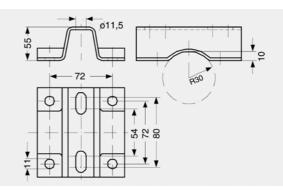
2-spindle valve manifold DN 5 (7MF9411-5A.), dimensions in mm



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

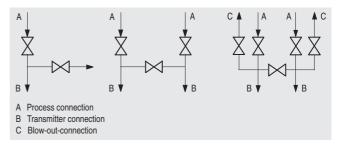


5-spindle valve manifold DN 5 (7MF9411-5C.), dimensions in mm



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

## Schematics



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

# Multiway cocks PN 100

# Overview



Multiway cock PN 100 (7MF9004-1P.) for differential pressure transmitters The multiway cock PN 100 can be flanged to pressure transmitters for differential pressure.

## Benefits

- Version available for aggressive liquids, gases and vapors
- Robust design
- · Oil-free and grease-free version possible
- One-hand operation

#### Application

The PN 100 multiway cock is available in versions for aggressive and non-aggressive liquids, gases and vapors.

## Design

The multiway cock can be flanged with four screws to pressure transmitters for differential pressure.

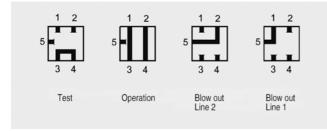
The PN 100 has 2 process connections and one blow-out connection. A steel version of the multiway cock is available for nonaggressive media, and a stainless steel version for aggressive media. The housing is forged in one piece. The switching lever is removable.

Sealing can be improved during operation.

**Note**: An accessory set is always required for flanging of the multiway cock to a differential pressure transmitter.

#### Function

- · Shutting off the differential pressure lines
- Blowing out the differential pressure lines
- · Testing the pressure transmitter zero



Cock positions; the symbols are printed on the cock

## Technical specifications

Multiway cocks PN 100			
Measured medium	Water, non-aggres- sive liquids and gases	Aggressive liquids, gases and vapors	
Material	P250GH, mat. No.: 1.0460	X 6 CrNiMoTi 17 12 2, mat. No. 1.4571/316Ti	
Connections	Steel, for pipe Ø 12 mm, L series	Stainless steel, for pipe Ø 12 mm, L series	
Process connection	2 bulkhead glands		
Connection for blo- wing out	Pipe union with ferrule		
Max. permissible wor- king temperature	200 °C		
Max. permissible wor- king pressure	100 bar (up to max. 60	°C)	
Weight	2.5 kg		

Selection and Ordering data	Order No.		
Multiway cock PN 100	7 M F 9 0 0 4 - A		
for flanging to pressure transmitters, weight 2.5 kg (without accessory set), without certificate			
for water and non-aggressive gases and vapors	1 p		
for aggressive liquids, gases and vapors	1 Q		
Accessories			
Factory test certificate EN 10204-2.2	7MF9000-8AB		
Material acceptance test certificate EN 10204-3.1	7MF9000-8AD		

Selection and Ordering data	Order code	Order No.
Further designs <sup>1)</sup> Please add "-Z" to Order No. and specify Order code.		
Accessory set to EN (required for flanging, weight 0.2 kg) 4x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 1 inch to ASME B18.2.1; chromized steel 2x gaskets made of PTFE, max. permissible temperature 80 °C	L31	F) <b>7MF9004-5CC</b>
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		
<ul> <li>Standard design</li> </ul>	L11	7MF9004-6AD
<ul> <li>Version for oxygen (together with Order code S11</li> </ul>	L15	7MF9004-6AE
Multiway cock in oil-free and gre- ase-free design Max. PN 63 (instead of PN 100), BAM-tested lubricant, gasket sui- table for oxygen measurement (only	S11	
with Order No. 7MF9004–1Q.Z)		
Mounting bracket Required for wall mounting or for securing on rack (72 mm grid), made of electrogalvanized sheet-	M13	7MF9004-6AA

made of electrogalvanized steel, weight 0.85 kg

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

## Accessories

#### Accessory set for multiway cock PN 100

- L31: 4 screws <sup>7</sup>/<sub>16</sub>-20 UNF x 1 inch, 2 flat gaskets
- L11: 4 screws M10x25 to DIN EN 24017, 4 washers, 2 flat gaskets
- L15 (suitable for oxygen): 4 screws M10x25 to DIN EN 24017, 4 washers, 2 flat gaskets

## Washers Ø 10.5 to DIN 125

Flat gaskets made of PTFE, max. permissible temperature 80 °C

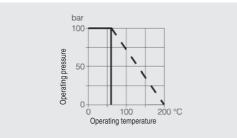
#### Multiway cock in oil-free and grease-free design

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

#### Mounting brackets

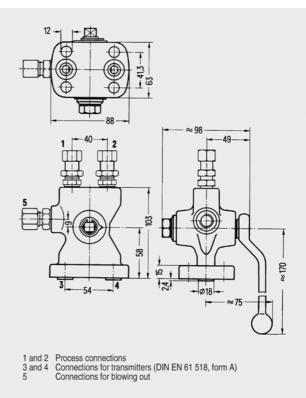
 M13: Required for wall mounting or for securing on rack (72 mm grid); made of electrogalvanized sheet-steel

#### Characteristic curves



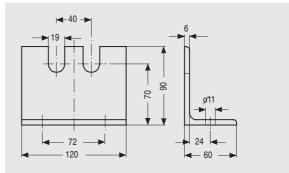
Multiway cock PN 100, permissible operating pressure as a function of the permissible operating temperature

# Dimensional drawings



Multiway cocks PN 100

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



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

3-way and 5-way valve manifolds DN 5

# Overview



The three-spindle and five-spindle valve manifolds DN 5 (7MF9410-1../-3..) are used to shut off the differential pressure lines and to check the transmitter zero.

In addition, the five-way valve manifold permits blowing out of the differential pressure lines.

## Benefits

- Available for aggressive and non-aggressive liquids and gases
- Max. working pressure 420 bar, with version for oxygen max. 100 bar

## Application

The 3-way and 5-way valve manifolds are available in versions for aggressive and non-aggressive liquids and gases.

Mounting plates are available for wall mounting, for securing to mounting racks or for pipe mounting.

### Design

The process connection of the 3-way and 5-way valve manifolds is a pipe union with ferrule.

Both valve manifolds have 2 flange connections for connecting a pressure transmitter.

In addition, the five-way valve manifold has 2 blow-out connections.

Depending on the version the valve manifold has either 3 or 5 valves, each with an internal spindle thread.

#### Materials used

	For non-aggressive liquic gases	For aggre liquids an gases		
Component	Material	Mat. No.	Material	Mat. No.
Housing	P250GH	1.0460	X 6	1.4571/
Head parts	C 35	1.0501	CrNiMoTi 17 12 2	31611
Spindles	X 12 CrMoS 17	1.4104	-	
Cones	X 35 CrMo 17 hardened and tempered	1.4122	-	
Valve seats	X 6 CrNiMoTi 17 12 2	1.4571/ 316Ti	-	
Packings	PTFE	-	PTFE	-

# Function

- Shutting off the differential pressure lines
- Checking the pressure transmitter zero
- In addition, the five-way valve manifold permits blowing out of the differential pressure lines.

Selection and Ordering data	Order No.		
3-way valve manifold DN 5	7 M F 9 4 1 0 - A		
for flanging to pressure transmitters for diffe- rential pressure, process connection: Pipe union with ferrule, max. working pressure 420 bar, weight 2.9 kg (order accessory set and mounting plate with Order code), without certificate			
<ul> <li>for non-aggressive liquids and gases</li> </ul>	1 e		
<ul> <li>for aggressive liquids and gases</li> </ul>	1 f		
<b>5-way valve manifold DN 5</b> for flanging to pressure transmitters for diffe- rential pressure, process connection: Pipe union with ferrule, max. working pressure 420 bar, weight 4.4 kg (order accessory set and mounting plate with Order code), without certificate			
<ul> <li>for non-aggressive liquids and gases</li> </ul>	3 e		
<ul> <li>for aggressive liquids and gases</li> </ul>	3 f		
Accessories			
Factory test certificate EN 10204-2.2	7MF9000-8AB		
Material acceptance test certificate EN 10204-3.1	7MF9000-8AD		

			5-way and 5-way valve mannolus DN 5
Selection and Ordering data	Order code	Order No.	Accessories
Further designs <sup>1)</sup>			
Please add "-Z" to Order No. and specify Order code.			Accessory set for 3-way and 5-way valve manifold DN 5 for flanging
Accessory set to EN			<ul> <li>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</li> </ul>
(required for flanging, weight 0.2 kg)			<ul> <li>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,</li> </ul>
4x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 2 <sup>1</sup> / <sub>8</sub> inch to ASME B18.2; chromized	B31	F) 7MF9010-5CC	2 O-rings (FPM 90)
steel			<ul> <li>B11: 4 screws M10x55 to DIN EN 24014, 4 washers, 2 flat gaskets</li> </ul>
2x flat gaskets made of PTFE, max. permissible 420 bar, 80 °C			<ul> <li>B15 (suitable for oxygen): 4 screws M10x55 to DIN EN 24014, 4 washers, 2 flat gaskets</li> </ul>
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	B34	7MF9410-5CA	<ul> <li>B16: 4 screws M10x55 to DIN EN 24014, 4 washers, 2 O-rings (FPM 90)</li> </ul>
2x O-rings to DIN 3771,			
20 x 2.65 - S - FPM90, max. permiss- ble 420 bar, 120 °C			Washers Ø 10.5 to DIN 125
Accessory set to DIN <sup>2)</sup>			Flat gaskets made of PTFE, max. 420 bar, 80 °C
(required for flanging, weight 0.2 kg)			O-ring to DIN 3771, 20 x 2.65 – S – FPM90, max. 420 bar, 120 °C
4x screws M10x55 to DIN EN 24014;			Note: M10 screws only permissible up to PN 160!
chromized steel 4x washers Ø 10.5 mm to DIN 125;			Mounting plate
2x flat gaskets made of PTFE,			Made of electrogalvanized sheet-steel
max. permissible 420 bar, 80 °C			<ul> <li>M11: For wall mounting or for securing on rack (72 mm grid)</li> </ul>
<ul> <li>Standard design</li> </ul>	B11	7MF9010-6AD	Scope of delivery:
<ul> <li>Version for oxygen</li> </ul>	B15	7MF9010-6AE	<ul> <li>1 mounting plate 7MF9006-6EA with bolts for mounting on valve manifold</li> </ul>
4x screws M10x55 to DIN EN 24014; chromized steel	B16	7MF9010-6CC	M12: For pipe mounting
4x washers Ø 10.5 mm to DIN 125;			Scope of delivery:
2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permiss-			- 1 mounting plate M11
ble 420 bar, 120 °C			<ul> <li>2 pipe brackets with nuts and washers for pipes with max.</li> <li>Ø 60.3 mm</li> </ul>
Mounting plate			Valve manifold 100 bar, suitable for oxygen
for valve manifold, made of electrogalvanized sheet-steel			
for wall mounting or for securing on	M11	7MF9006-6EA	S12: Only in combination with versions for aggressive liquids and gases
rack (72 mm grid), weight 0.5 kg Scope of delivery:			
1 mounting plate with bolts for			
mounting on valve manifold			
for pipe mounting, weight 0.7 kg Scope of delivery:	M12	7MF9006-6GA	
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		

<sup>1</sup>)When ordering accessory set or mounting together with the valve manifolds, please use Order code; otherwise use Order No. <sup>2</sup>)Flange connections to DIN 19213 only permissible up to PN 160!

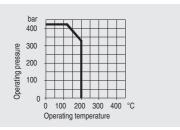
F)Subject to export regulations AL: 91999, ECCN: N.

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

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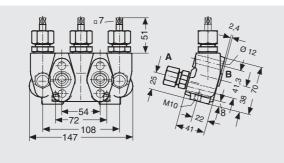
3-way and 5-way valve manifolds DN 5

# Characteristic curves



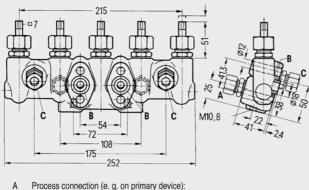
Permissible operating pressure as a function of the permissible operating temperature

#### **Dimensional drawings**



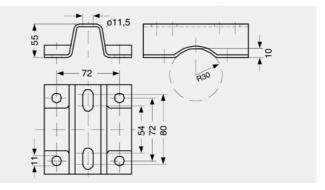
- Process connection (e.g. on primary device): Pipe union with ferrule, diameter 12 mm, S series to DIN 2353 A В Transmitter connection Flange connection to EN 61 518, form A Valve design: internal spindle thread

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



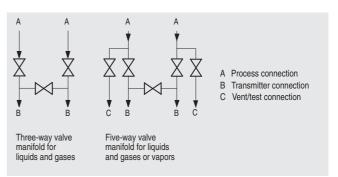
- Process connection (e. g. on primary device): Pipe union with ferrule, diameter 12 mm, S series to DIN 2353 Transmitter connection:
- В
- Flange connection to EN 61 518, form A С
- Blow-out connection: Pipe union with ferrule, diameter 12 mm, S series to DIN 2353 Valve design: internal spindle thread





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

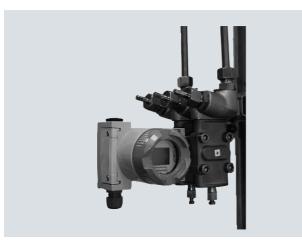
### Schematics



3-way and 5-way valve manifolds, connections

# 3-way valve manifold DN 8

## Overview



The 3-way valve manifold DN 8 (7MF9416-1../-2..) is for pressure transmitters for differential pressure. It is used to shut off and blow out differential pressure lines and to test the pressure transmitter zero.

In the designs with a test connection, a test device can be connected to test the pressure transmitter characteristic.

#### Benefits

- · For aggressive and non-aggressive liquids and gases
- The maximum working pressure is 420 bar.

#### Application

The 3-way valve manifold is available in versions for aggressive and non-aggressive liquids and gases.

Mounting plates are available for wall mounting, for securing to mounting racks or for pipe mounting.

### Design

For the process connection on the version for non-aggressive media it is possible to choose between a pipe union with ferrule and welding pins.

The version for aggressive media always has a pipe union with 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 aggressive liquids and gases	
Component	Material	Mat. No.	Material	Mat. No.
Housing	P250GH	1.0460	X 6	1.4571/
Head parts	C 35	1.0501	CrNiMoTi 17 12 2	31611
Spindles	X 12 CrMoS 17	1.4104	-	
Cones	X 35 CrMo 17 harde- ned and tempered	1.4122	-	
Valve seats	X 6 CrNiMoTi 17 12 2	1.4571/316Ti	-	
Packings	PTFE	-	PTFE	-

#### Function

The 3-way valve manifold DN 8 performs two functions as standard:

- Shutting off the differential pressure lines
- · Checking the pressure transmitter zero

All versions are also available with a test connection, to which a test device for checking the pressure transmitter characteristic can be connected.

Selection and Ordering data	Order No.
3-way valve manifold DN 8	7 M F 9 4 1 6 - A
for flanging to pressure transmitters for diffe- rential pressure, max. working pressure 420 bar, (order accessory set and mounting plate with Order code), without certificate	
for non-aggressive liquids and gases procedss connection: Pipe union with ferrule	
<ul> <li>without test connection</li> </ul>	1 b
<ul> <li>with test connection</li> </ul>	1 c
for non-aggressive liquids and gases procedss connection: Welding pin $\varnothing$ 14 x 2.5	
<ul> <li>without test connection</li> </ul>	2 c
<ul> <li>with test connection</li> </ul>	2 d
for aggressive liquids and gases process connection: Pipe union with ferrule	
<ul> <li>without test connection</li> </ul>	1 d
<ul> <li>with test connection</li> </ul>	1 e
Accessories	
Factory test certificate EN 10204-2.2	7MF9000-8AB
Material acceptance test certificate EN 10204-3.1	7MF9000-8AD

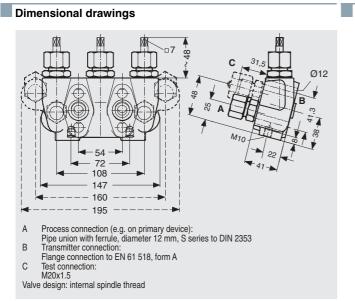
# 3-way valve manifold DN 8

Selection and Ordering data	Order code	Order No.	Accessories
Further designs <sup>1)</sup>			Accessory set for 3-way valve manifold DN 8 for flanging
Please add "-Z" to Order No. and specify Order code.			<ul> <li>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</li> </ul>
Accessory set to EN (required for flanging, weight 0.2 kg)			<ul> <li>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)</li> </ul>
4x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 2 <sup>1</sup> / <sub>8</sub> inch to ASME B18.2; chromized	B31	F) 7MF9010-5CC	B11: 4 screws M10x55 to DIN EN 24014, 4 washers, 2 flat gaskets
steel 2x flat gaskets made of PTFE, max. permissible 420 bar, 80 °C			<ul> <li>B16: 4 screws M10x55 to DIN EN 24014, 4 washers, 2 O-rings (FPM 90)</li> </ul>
4x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 2 <sup>1</sup> / <sub>8</sub> inch to ASME B18.2; chromized	B34	7MF9410-5CA	Washers Ø 10.5 to DIN 125
2 '/ <sub>8</sub> inch to ASME B18.2; chromized steel			Flat gaskets made of PTFE, max. 420 bar, 80 °C
2x O-rings to DIN 3771,			O-ring to DIN 3771, 20 x 2.65 – S – FPM90, max. 420 bar, 120 °C
20 x 2.65 - S - FPM90, max. permiss- ble 420 bar, 120 °C			Note: M10 screws only permissible up to PN 160!
Accessory set to DIN <sup>2)</sup>			Mounting plate
(required for flanging, weight 0.2 kg)			
4x screws M10x55 to DIN EN 24014; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x flat gaskets made of PTFE, max. permissible 420 bar, 80 °C	B11	7MF9010-6AD	<ul> <li>Made of electrogalvanized sheet-steel</li> <li>M11: For wall mounting or for securing on rack (72 mm grid) Scope of delivery:</li> <li>1 mounting plate with bolts for mounting on valve manifold</li> </ul>
4x screws M10x55 to DIN EN 24014; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permiss- ble 420 bar, 120 °C	B16	7MF9010-6CC	<ul> <li>M12: For pipe mounting Scope of delivery:</li> <li>1 mounting plate M11</li> <li>2 pipe brackets with nuts and washers for pipes with max. Ø 60.3 mm</li> </ul>
Mounting plate			Characteristic curves
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	bar 400 Bigginado Bigginad
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	3-way valve manifold DN 8, permissible working pressure as a function

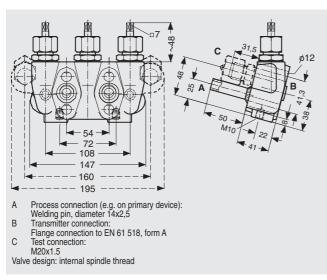
When ordering accessory set or mounting together with the valve manifold, please use Order code; otherwise use Order No.
 <sup>2)</sup>Flange connections to DIN 19213 only permissible up to PN 160!

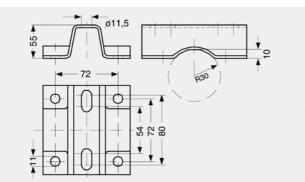
F)Subject to export regulations AL: 91999, ECCN: N.

of the permissible working temperature



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

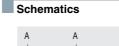


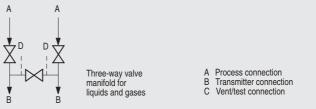


3-way valve manifold DN 8 (7MF9416-2..) with welding pin, dimensions in  $\rm mm$ 

Mounting plate 7MF9006-6.. (M11, M12) for valve manifold, dimensions in  $\ensuremath{\mathsf{mm}}$ 

# 3-way valve manifold DN 8





3-way valve manifold DN 8, connections

Valve manifold combination DN 5/DN 8

# Overview



The valve manifold combination DN 5/DN 8 (7MF9416-6..) is for pressure transmitters for differential pressure.

The combination is used to shut off and blow out differential pressure lines and to test the pressure transmitter zero.

In the designs with a test connection, a test device can be connected to test the pressure transmitter characteristic.

#### **Benefits**

Max. working pressure 420 bar

#### Application

The valve manifold combination DN 5/DN 8 is designed for vapors.

#### Design

The valve manifold combination DN 5/DN 8 has a process connection with welding pins.

The connection for the pressure transmitter is designed as as flange connection, while the blow-out connection is designed as a pipe union with ferrule.

The manifold valves have an internal spindle thread, while the blow-out valves have an external spindle thread.

The optional test connections are M20x1.5.

#### Materials used

	Valve manifo	ld DN 5	Blow-out val	ves DN 8
Component	Material	Mat. No.	Material	Mat. No.
Housing	P250GH	1.0460	16 Mo 3	1.5415
Head parts	C 35	1.0501	21 CrMo V 57	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 har- dened and tempered	1.4122
Valve seats	X 6 CrNiMoTi	1.4571/316Ti	X 20 Cr 13	1.4021
Packings	PTFE	-	Pure gra- phite	-
Welding pins	-	-	16 Mo 3	1.5415

# Function

EN 10204-3.1

- Shutting off the differential pressure lines
- Blowing out the differential pressure lines
- Checking the pressure transmitter zero

As an option it is possible to order a version with a test connection, to which a test device for checking the transmitter characteristic can be connected.

Selection and Ordering data	Order No.	
Valve manifold combination DN 5/DN 8 for vapors	7 M F 9 4 1 6 - 6 A	
for flanging to pressure transmitters for diffe- rential pressure, max. working pressure 420 bar, also available in stainless steel on request (order accessory set with Order code), without certificate		
<ul> <li>without test connection</li> </ul>	с	
• with test connection M20 $\times$ 1.5	d	
Accessories		
Factory test certificate EN 10204-2.2	7MF9000-8AB	
Material acceptance test certificate	7MF9000-8AD	

Selection and Ordering data	Order code	Order No.
Further designs <sup>1)</sup>		
Please add "-Z" to Order No. and specify Order code.		
Accessory set to EN (required for flanging, weight 0.2 kg)		
4x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 2 <sup>1</sup> / <sub>8</sub> inch to ASME B18.2; chromized steel 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar, 120 °C	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. permiss- ble 420 bar, 120 °C Flange connection to DIN 19213 only permissible up to PN 160!	B16	7MF9010-6CC

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

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

Dimensional drawings

## Valve manifold combination DN 5/DN 8

# Accessories

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

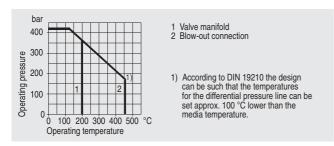
- B34: 4 screws <sup>7</sup>/<sub>16</sub>-20 UNF x 2<sup>1</sup>/<sub>8</sub> inch to ASME B18.2.1, 2 O-rings (FPM 90)
- B16: 4 screws M10x55 to DIN EN 24014, 4 washers, 2 O-rings (FPM 90)

Washers Ø 10.5 to DIN 125

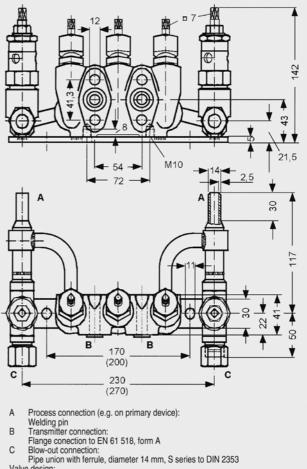
O-ring to DIN 3771, 20 x 2.65 - S – FPM90, max. 420 bar, 120  $^\circ\mathrm{C}$ 

Note: M10 screws only permissible up to PN 160!

### Characteristic curves



Permissible operating pressure as a function of the permissible operating temperature

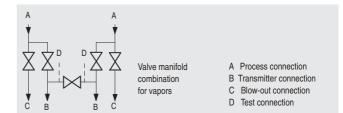


Valve design:

Manifold valves: internal spindle thread Blow-out valves: external spinde thread

Valve manifold combination DN 5/DN 8 (7MF9416-6C.), dimensions in mm (deviating dimensions for 7MF9416-6D. shown in brackets)

## Schematics



Valve manifold combination DN 5/DN 8, connections

# Valve manifold combination DN 8

# Overview



The valve manifold combination DN 8 (7MF9416-4..) is for pressure transmitters for differential pressure.

It is used to shut off and blow out the differential pressure lines and to check the pressure transmitter zero.

In the designs with a test connection, a test device can be connected to check the pressure transmitter characteristic.

#### **Benefits**

• Max. working pressure 420 bar

#### 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		Valve manifold Blow-out valves		ves
Component	Material	Mat. No.	Material	Mat. No.	
Housing	P250GH	1.0460	16 Mo 3	1.5415	
Head parts	C 35	1.0501	21 CrMo V 57	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 har- dened and tempered	1.4122	
Valve seats	X 6 CrNiMoTi	1.4571/316Ti	X 20 Cr 13	1.4021	
Packings	PTFE	-	Pure gra- phite	-	
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.

		<b>a</b> 1 1/	
Selection and Ordering data Valve manifold combination DN 8 fo	r	Order No. <b>7MF9416</b>	6 - 🗖 🗛
vapors for flanging to pressure transmitters fo rential pressure, with mounting plate, r working pressure 420 bar, also availab stainless steel on request (order acces set with Order code), without certificat	nax. ble in ssory		
<ul> <li>without test connection</li> </ul>			4 c
• with test connection M20 $\times$ 1.5			4 d
Accessories			
Factory test certificate EN 10204–2.2		7MF9000-8	AB
Material acceptance test certificate EN 10204-3.1		7MF9000-8	AD
Selection and Ordering data	Order c	ode Orde	ər No.
Further designs <sup>1)</sup>			
Please add "-Z" to Order No. and specify Order code.			
Accessory set to EN (required for flanging, weight 0.2 kg)			
4x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 2 <sup>1</sup> / <sub>8</sub> inch to ASME B18.2; chromized steel 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar, 120 °C	B34	7MF	9410-5CA
Accessory set to DIN <sup>2)</sup> (required for flanging, weight 0.2 kg)			
4x screws M10x55 to DIN EN 24014; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar, 120 °C Flange connection to DIN 19 213 only permissible up to PN 160!	B16	7MF	9010-6CC
1)			

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

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

#### Accessories

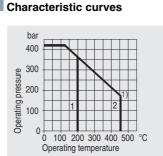
Accessory set for valve manifold combination DN 8 for flanging

- B34: 4 screws  $^{7}\!/_{16}\text{-}20$  UNF x  $2^{1}\!/_{8}$  inch to ASME B 18.2.1, 2 O-rings (FPM 90)
- B16: 4 screws M10x55 to DIN EN 24014, 4 washers, 2 O-rings (FPM 90)

Washers Ø 10.5 to DIN 125

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

Note: M10 screws only permissible up to PN 160!



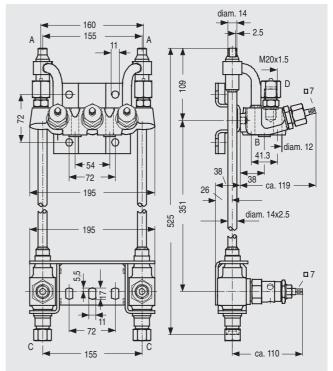
# Valve manifold combination DN 8



- 2 Blow-out connection
- 1) According to DIN 19210 the design can be such that the temperatures for the differential pressure line can be set approx. 100 °C lower than the media temperature.

Permissible operating pressure as a function of the permissible operating temperature

# Dimensional drawings

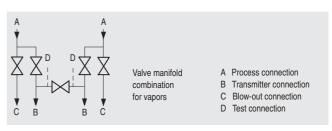


- Process connection (e.g. on primary device): А
- Welding pin В Transmitter connection:
- Flange connection to EN 61 518, form A
- С Blow-out connection:
- Pipe union with ferrule, diameter 14 mm, S series to DIN 2353 Test connection (only with Order No. 7MF9416-4D.): M20x1.5
- С
- Valve design:

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

2-, 3- and 5-spindle valve manifolds for installing in protective boxes

## Overview



The two-spindle, three-spindle and five-spindle valve manifolds (7MF9412-1..) are used to shut off the differential pressure lines and to check the transmitter zero.

The five-spindle valve manifold permits venting on the transmitter side and checking of the transmitter characteristic.

These valve manifolds are preferentially used when mounting in protective boxes. In addition, they can also be used for wall, frame or pipe mounting together with the mounting bracket.

Transmitters of the DS series can be operated and read from the front when using these valve manifolds.

#### Application

The valve manifolds DN 5 are designed for liquids and vapors and for installing in protective boxes.

Each is available in a version for oxygen on request

#### Design

All versions of the spindle manifolds have a process connection  $\frac{1}{2}\text{-}14~\text{NPT}.$ 

The connection for the pressure transmitter is always designed as a flange connection to EN 61518, Form A.

The 2-spindle and the 5-spindle valve manifold have in addition a vent and test connection  $1\!\!\!/_4\text{--}18$  NPT.

The valves have an external spindle thread.

#### Materials used

Components	Material	Mat. No.
Housing	X 2 CrNiMo 17 13 2	1.4404/316L
Cones	X 6 CrNiMoTi 17 12 2	1.4571/316Ti
Spindles	X 2 CrNiMo 18 10	1.4404/316L
Head parts	X 5 CrNiMo 18 10	1.4401/316
Packings	PTFE	-

# Functions

Functions of all valve manifolds:

Shutting off the differential pressure lines

• Checking the pressure transmitter zero

Additional functions of the 2-spindle and 5-spindle valve manifolds through the vent and test connection:

- Venting on the transmitter side
- · Checking the pressure transmitter characteristic

Selection and Ordering data	Order No.
Valve manifolds DN 5 for mounting in protective boxes	7 M F 9 4 1 2 - A
for liquids and gases for flanging to pressure transmitters for absolute and differential pressure Material: stainless steel, mat. No: 1.4404/316L max. working pressure 420 bar (order accessory set with Order code), without certificate	
$\bullet$ 2-spindle valve manifold with rotatng sleeve $G^{1\!\!/_2}$	1 b
<ul> <li>2-spindle valve manifold with flange connection</li> </ul>	1 c
3-spindle valve manifold	1 d
<ul> <li>5-spindle valve manifold</li> </ul>	1 e
Accessories	
Fratewatert contificate FNI 40004-0.0	

Factory test certificate EN 10204–2.2**7MF9000-8AB**Material acceptance test certificate**7MF9000-8AD**EN 10204-3.1**7MF9000-8AD** 

Selection and Ordering data	Order code	Order No.
Further designs <sup>1)</sup>		
Please add "-Z" to Order No. and specify Order code.		
Accessory set to EN		
(connection between valve manifold and pressure transmitter)		
for valve manifold 7MF9412-1C.		
2x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 2 inch to ASME B18.2.1; chromized steel 1x O-ring to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar, 120 °C	f32	7MF9412-6CA
2x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 2 inch to ASME B18.2.1; chromized steel 1x gasket made of PTFE, max. permissible 420 bar, 80 °C <sup>2</sup> )	f35	7MF9412-6DA
for valve manifold 7MF9412-1D and -1E.		
4x screws $^{7}$ / <sub>16</sub> -20 UNF x 2 inch to ASME B18.2.1; chromized steel 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar, 120 °C <sup>2</sup> )	f34	7MF9412-6GA
4x screws $^{7}$ / <sub>16</sub> -20 UNF x 2 inch to ASME B18.2.1; chromized steel 2x flat gaskets made of PTFE, max. permissible 420 bar, 80 °C <sup>2</sup> )	f36	7MF9412-6HA

2-, 3- and 5-spindle valve manifolds for installing in protective boxes

Selection and Ordering data	Order code	Order No.	Accessories
Further designs <sup>1)</sup>			Accessory set for 2-, 3- and 5-spindle valve manifolds (Con-
Please add "-Z" to Order No. and specify Order code.			nection between manifold and transmitter)
Accessory set to DIN			2-spindle valve manifold DN 5 with flange connection
(connection between valve manifold and pressure transmitter) for valve manifold 7MF9412–1C.			<ul> <li>F32: 2 screws 7/16 20 UNF x 2 inch to ASME B 18.2.1, 1 O Ring (FPM90)</li> </ul>
2x screws M10x50 to DIN EN 24014;	f12	7MF9412-6AA	<ul> <li>F35: 2 screws 7/16 20 UNF x 2 inch to ASME B 18.2.1, 1 flat-gasket</li> </ul>
chromized steel 2x washers Ø 10.5 mm to DIN 125; 1x O-ring to DIN 3771,			<ul> <li>F12: 2 screws M10x50 to DIN EN 24014, 2 washers, 1 O-ring (FPM90)</li> </ul>
20 x 2.65 - S - FPM90, max. permissble 420 bar, 120 $^\circ\text{C}^{2)}$			<ul> <li>F15: 2 screws M10x50 toDIN EN 24014, 2 washers, 1 flat gasket</li> </ul>
2x screws M10x50 to DIN EN 24014;	f15	7MF9412-6BA	3-spindle and 5-way valve manifold DN 5
chromized steel 2x washers Ø 10.5 mm to DIN 125; 1x gasket made of PTFE,			<ul> <li>F34: 4 screws 7/16 20 UNF x 2 inch toASME B 18.2.1, 2 O-rings (FPM90)</li> </ul>
max. permissible 420 bar, 80 °C <sup>2)</sup> for valve manifold 7MF9412–1D and -1E.			<ul> <li>F36: 4 screws 7/16 20 UNF x 2 inch toASME B 18.2.1, 2 flat-gaskets</li> </ul>
4x screws M10x50 to DIN EN 24014;	f14	7MF9412-6EA	<ul> <li>F14: 4 screws M10x50 toDIN EN 24014, 4 washers, 2 O-rings (FPM90)</li> </ul>
chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x O-rings to DIN 3771,			<ul> <li>F16: 4 screws M10x50 toDIN EN 24014, 4 washers, 2 flat-gaskets</li> </ul>
20 x 2.65 - S - FPM90, max. permiss- ble 420 bar, 120 °C <sup>2)</sup>			Washers Ø 10,5 to DIN 125
4x screws M10x50 to DIN EN 24014;	f16	7MF9412-6FA	Flat-gaskets made of PTFE, max. 420 bar, 80 °C
chromized steel 4x washers Ø 10.5 mm to DIN 125;			O-ring to DIN 3771, 20 x 2,65 - S - FPM90; max.420 bar, 120 °C
2x flat gaskets made of PTFE, max. permissible 420 bar, 80 °C <sup>2)</sup>			Note:
Mounting bracket			Flange connections with M10 screws only permissible up to PN 160!
required for wall mounting or for securing to mounting rack, with bolts for mounting on valve manifold			Mounting bracket for wall mounting or for securing to moun- ting rack
<ul> <li>for valve manifolds 7MF9412-1B. and -1C.</li> </ul>	M14	7MF9006-6LA	With bolds for mounting on valve manifold
<ul> <li>for valve manifold 7MF9412-1D.</li> </ul>	M17	7MF9006-6NA	M14: For 2-spindle valve manifold DN 5
• for valve manifold 7MF9412-1E.	M18	7MF9006-6PA	M17: For 3-spindle valve manifold DN 5     M10: For 5-spindle valve manifold DN 5
Mounting clip			M18: For 5-spindle valve manifold DN 5
2 off, to secure mounting bracket to pipe	M16	7MF9006-6KA	<ul> <li>Mounting clips (2 off)</li> <li>M16: For securing the mounting brackets M14, M17 and M18</li> </ul>
Valve manifold 100 bar			to pipe
suitable for oxygen			Valve manifold 100 bar, suitable for oxygen
<ul> <li>for valve manifolds 7MF9412-1B. and -1C.</li> </ul>	S12		<ul> <li>S12: For 2-spindle valve manifold DN 5</li> <li>S13: For 3-spindle valve manifold DN 5</li> </ul>
• for valve manifold 7MF9412-1D.	S13		S14: For 5-spindle valve manifold DN 5
• for valve manifold 7MF9412-1E.	S14		Characteristic curves

bar 400 300

200

Operating pressure

 When ordering accessory set or mounting together with the valve manifolds, please use Order code; otherwise use Order No.
 <sup>2)</sup>Flange connections with M10 screws only permissible up to PN 160!

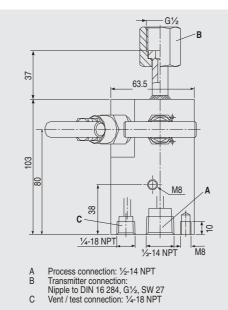
Permissible operating pressure as a function of the permissible operating temperature

0 100 200 300 400 °C Operating temperature

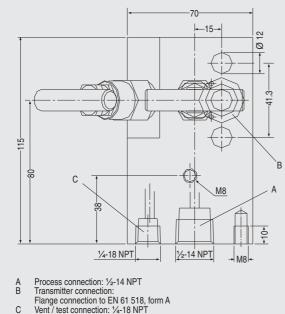
420 bar at 120 °C 350 bar at 200 °C

2-, 3- and 5-spindle valve manifolds for installing in protective boxes

#### Dimensional drawings

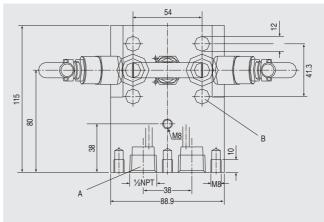


2-spindle valve manifold DN 5 (7MF9412-1B..) with rotating sleeve, dimensions in mm



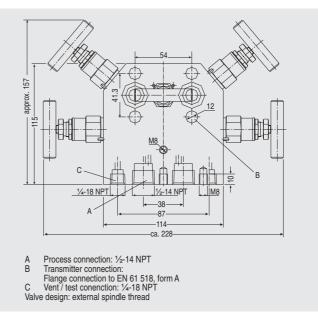
- C Vent / test connection: 1/4-18 NP Valve design: external spindle thread
- valve design. external spindle tritead





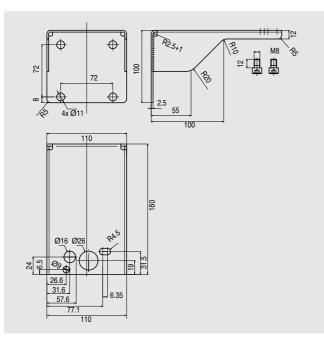
A Process connection: ½-14 NPT B Transmitter connection: Flange connection EN 61 518, form A Valve design: external spindle thread

3-spindle valve manifold DN 5 (7MF9412-1D..), dimensions in mm

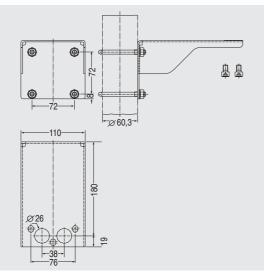


5-spindle valve manifold DN 5 (7MF9412-1E..), dimensions in mm

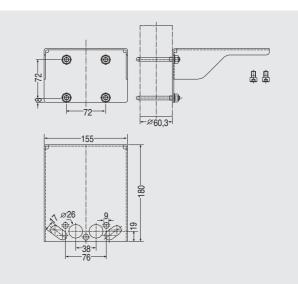
## SITRANS P measuring instruments for pressure Fittings - Shut-off valves for differential pressure transmitters 2-, 3- and 5-spindle valve manifolds



Mounting bracket (7MF9006-6LA)/(M14) for 2-spindle valve manifolds, dimensions in mm



Mounting bracket (7MF9006-6NA)/(M17) for 3-spindle valve manifolds, dimensions in  $\rm mm$ 



for installing in protective boxes

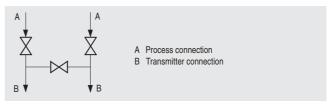
Mounting bracket (7MF9006-6PA)/(M18) for 5-spindle valve manifolds, dimensions in mm

#### Schematics

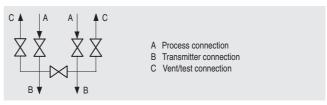


- A Process connection
- B Connection for pressure gauge or trans-
- mitter for pressure or absolute pressure
- C Vent/test connection

2-spindle valve manifold DN 5 (with rotating sleeve  $G\!\not\!\!/_2$  or flange connection), connections



3-spindle valve manifold DN 5, connections



5-spindle valve manifold DN 5, connections

3- and 5-spindle valve manifolds for vertical angular differential pressure lines

#### Overview



These 3-spindle and 5-spindle valve manifolds 7MF9413-1.. were developed specially for vertical differential pressure lines.

The valve manifolds are used to shut off the differential pressure lines and to check the pressure transmitter zero.

The 5-spindle valve manifold permits venting on the transmitter side and checking of the pressure transmitter characteristic.

#### Benefits

- · For vertical differential pressure lines
- Max. operating pressure 420 bar
- Transmitters of the DS series can be operated and read from the front.

#### Application

The 3-spindle and 5-spindle valve manifolds for vertical differential pressure lines are for liquids and gases. The valve manifolds are flanged on the pressure transmitter.

#### Design

All versions of the spindle valve manifolds have a process connection  $^{1\!\!/_2-14}$  NPT.

The connection for the pressure transmitter is always designed as a flange connection to EN 61518, form B .

The 2-spindle and the 5-spindle valve manifold have in addition a vent and test connection  $1\!\!\!/_4\text{--}18$  NPT.

#### Materials used:

Component	Material	Mat. No.
Housing	X 2 CrNiMo 17 13 2	1.4404/316L
Cones	X 6 CrNiMoTi 17 12 2	1.4571/316Ti
Spindles	X 2 CrNiMo 18 10	1.4404/316L
Head parts	X 5 CrNiMo 18 10	1.4401/316
Packings	PTFE	-

#### Function

Functions of all valve manifolds:

- · Shutting off the differential pressure lines
- Checking the pressure transmitter zero

Additional functions of the 2-spindle and 5-spindle valve manifolds through the vent and test connection:

- Venting on the transmitter side
- · Checking the pressure transmitter characteristic

Selection and Ordering data		Order No.
Valve manifolds for vertical different pressure lines for liquids and gases for flanging to pressure transmitters fo lute and differential pressure Material: stainless steel, mat. No: 1.44 max. working pressure 420 bar	r abso-	7 M F 9 4 1 3 - 🗖 A
(order accessory set with Order code) without certificate	,	
<ul> <li>3-spindle valve manifold</li> </ul>		1 d
<ul> <li>5-spindle valve manifold</li> </ul>		1 e
Accessories		
Factory test certificate EN 10204-2.2		7MF9000-8AB
Material acceptance test certificate EN 10204-3.1		7MF9000-8AD
Selection and Ordering data	Order co	de Order No.
Further designs <sup>1)</sup>		
Please add "-Z" to Order No. and specify Order code.		
Accessory set to EN (connection between valve manifold and pressure transmitter)		
4x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 1 <sup>3</sup> ⁄ <sub>4</sub> inch to ASME B18.2.1; chromi- zed steel 2x flat gaskets made of PTFE, max. permissible 420 bar, 80 °C	K36	7MF9411-5DB
Accessory set to DIN <sup>2)</sup> (connection between valve manifold and pressure transmitter)		
4x screws M10x45 to DIN EN 24014; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x flat gaskets made of PTFE, max. permissible 420 bar, 80 °C Flange connection with M10 screws only permissible up to PN 160.	K16	7MF9411-6BB
Mounting bracket required for wall mounting or for securing to mounting rack, with bolts for mounting on valve manifold		
• for valve manifold 7MF9413-1D.	M17	7MF9006-6NA
• for valve manifold 7MF9413-1E.	M18	7MF9006-6PA
required <b>for mounting on 2" stand- pipe</b> , with bolts for mounting on valve manifold		
• for valve manifold 7MF9413-1D.	M19	7MF9006-6QA
Mounting clip		
2 off, to secure mounting bracket to pipe	M16	7MF9006-6KA
Valve manifold 100 bar suitable for oxygen		
<ul> <li>for valve manifold 7MF9413-1D.</li> <li>for valve manifold 7MF9413-1E.</li> </ul>	S13 S14	

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

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

3- and 5-spindle valve manifolds for vertical angular differential pressure lines

#### Accessories

Accessory set (connection between manifold and transmitter)

- K36: 4 screws  $^{7}\!/_{16}\text{-}20$  UNF x 134 inch to ASME B18.2.1, 2 flat gaskets
- K16: 4 screws M10x45 to DIN EN 24014, 4 washers, 2 flat gaskets

Washers Ø 10.5 to DIN 125

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

**Note**: Flange connection with M10 screws only permissible up to PN 160!

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

With bolts for mounting on valve manifold

- M17: For 3-spindle valve manifold
- M18: For 5-spindle valve manifold

Mounting bracket for mounting on 2" standpipe

With bolts for mounting on valve manifold

• M19: For 3-spindle valve manifold

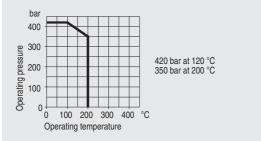
Mounting clips (2 off)

For securing the mounting brackets M17, M18 and M19 to pipe

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

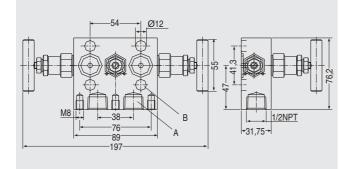
- For 3-spindle valve manifold
- For 5-spindle valve manifold

#### Characteristic curves

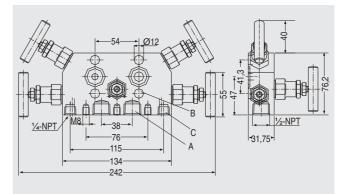


Permissible operating pressure as a function of the permissible operating temperature

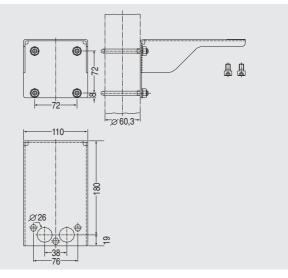
#### Dimensional drawings



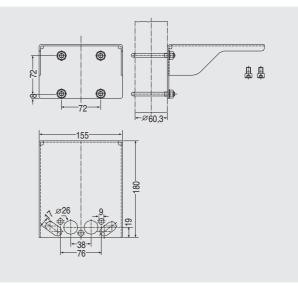
 $\ensuremath{\mathsf{3-spindle}}$  value manifold 7MF9413-1D. for vertical differential pressure lines, dimensions in mm



5-spindle valve manifold 7MF9413-1E. for vertical differential pressure lines, dimensions in mm

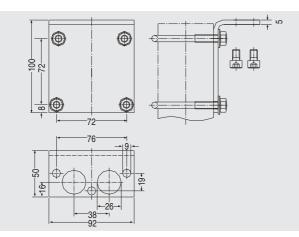


Mounting bracket (7MF9006-6NA)/(M17) for 3-spindle valve manifolds, dimensions in  $\rm mm$ 



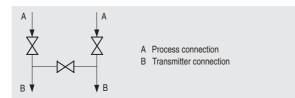
Mounting bracket (7MF9006-6PA)/(M18) for 5-spindle valve manifolds, dimensions in mm

3- and 5-spindle valve manifolds for vertical angular differential pressure lines

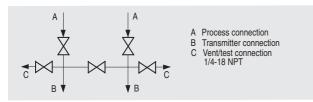


Mounting bracket (7MF9006-6QA)/(M19) for 3-spindle and 5-spindle valve manifolds, dimensions in mm

#### Schematics



3-spindle valve manifold for vertical differential pressure lines, connections



5-spindle valve manifold for vertical differential pressure lines, connections

#### Low-pressure multiway cock



The low-pressure multiway cock 7MF9004-4CA/-4DA can be flanged to pressure transmitters for differential pressure.

#### Benefits

- · Robust design
- · For liquids and gases
- One-hand operation

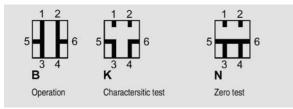
#### Design

The multiway cock has 2 process connections and 2 test connections, which are available in 2 versions (with sealing screws  $G^3/_8$  or quick-release couplings). The housing is made of hot-pressed brass CuZn39Pb3, CW 614N. Test connections with sealing screws or with self-sealing quick-release couplings.

Note: An accessory set is always required for flanging of the multiway cock to a differential pressure transmitter.

#### Function

- Shutting off the differential pressure lines
- · Testing the pressure transmitter zero
- · Testing the pressure transmitter characteristic



Cock positions; the symbols are printed on the cock

Selection and Ordering data		Order	No.
<b>Low-pressure multiway cock</b> for liquids and gases, for flanging to pi transmitters, max. working pressure 25 max. working temperature 60 °C (up to 80 °C for a short time), weight 1 (without accessory set)	bar,		
Test connections		-	
2x sealing screws G <sup>3</sup> / <sub>8</sub>		7MF90	04-4CA
2x quick-release couplings		7MF90	04-4DA
Selection and Ordering data	Order c	ode	Order No.
Further designs <sup>1)</sup>			
Please add "-Z" to Order No. and specify Order code.			
Accessory set to EN (required for flanging, weight 0.2 kg)			
4x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 1 inch to ASME B18.2.1; chromized steel 2x gaskets made of PTFE, max. permissible temperature 80 °C	L31		7MF9004-5CC
Accessory set to DIN (required for flanging, weight 0.2 kg) 4x screws M10x25 to DIN EN 24017; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x gaskets made of PTFE, max. permissible temperature 80 °C			
Standard design	L11		7MF9004-6AD
Version for oxygen	L15		7MF9004-6AE
Multiway cock in oil-free and grease-free design BAM-tested lubricant, gasket suitable for oxygen	S11		
Mounting bracket required 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 Order No.

#### Accessories

Accessory set for low-pressure multiway cock

- 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
- L31: 4 screws <sup>7</sup>/<sub>16</sub>-20 UNF x 1 inch, 2 flat gaskets

Washers Ø 10.5 to DIN 125

Flat gaskets made of PTFE, max. permissible temperature 80 °C

Multiway cock in oil-free and grease-free design

• S11: BAM-tested lubricant, gasket suitable for oxygen

Mounting brackets

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

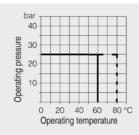
#### Low-pressure multiway cock

#### Options

Test connections

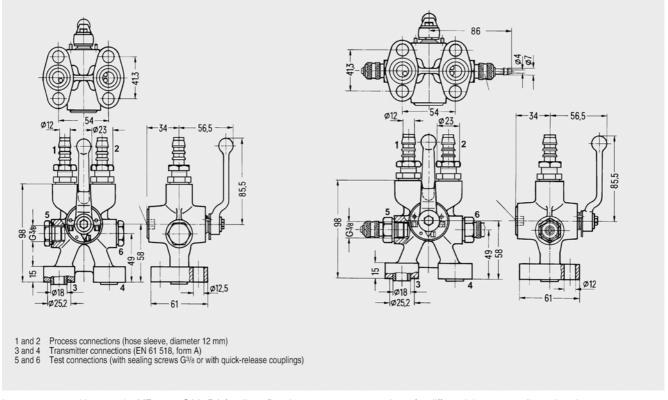
- 2 sealing screws G<sup>3</sup>/<sub>8</sub>
- 2 quick-release couplings

#### Characteristic curves

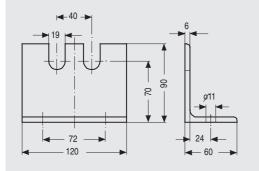


Low-pressure multiway cock, permissible operating pressure as a function of the permissible operating temperature

#### Dimensional drawings



Low-pressure multiway cock 7MF9004-4CA/-4DA for direct flanging to pressure transmitters for differential pressure, dimensions in mm



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

#### Overview



The oval flange 7MF9408-2C. for pressure transmitters for absolute pressure and differential pressure has a ½-14 NPT female thread and is designed for max. operating pressure 400 bar.

#### Accessories

- + E34: 2 screws  $^{7}\!/_{16}\text{-}20$  UNF x 1½ inch to ASME B18.3, 1 O-ring (FPM 90)
- E13: 2 screws M10x40 to DIN EN 4762, 2 washers, 1 O-ring (FPM 90)
- E36: 2 screws  $^7/_{16}\text{-}20$  UNF x 1½ inch to ASME B18.2.1, 1 flat gasket
- E16: 2 screws M10x40 to DIN EN ISO 4762, 2 washers, 1 flat gasket

Washers Ø 10.5 to DIN 125

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

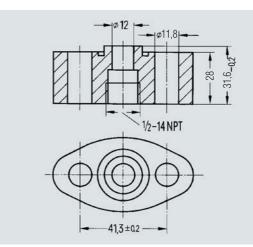
O-ring to DIN 3771, 20 x 2.65 - S - FPM90, max. 420 bar, 120 °C

Note: M10 screws only permissible up to PN 160!

			Oval flange
Selection and Ordering data		Orde	r No
Oval flange with female thread ½-14 NPT, max. wor pressure 420 bar, flange connection to DIN EN 61518, form A	king	ordo	
Material			
P250GH, mat. No.: 1.0460		7MF9	408-2CE
X 2 CrNiMo 17 13 2, mat. No. 1.4404/3	16L	7MF9	9408-2CL
Selection and Ordering data	Order co	ode	Order No.
Further designs			
Please add "-Z" to Order No. and specify Order code.			
Accessory set to EN <sup>1)</sup>			
2x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 1½ inch to ASME B 18.2.3; chromi- zed steel 1x flat gasket made of PTFE, max. permissible 420 bar, 80 °C	E36		7MF9408-5DA
2x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 1½ inch to ASME B 18.2.3; chromi- zed steel 1x O-ring to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar, 120 °C	E34		7MF9408-5CA
Accessory set to DIN <sup>1)</sup>			-
2x screws M10x40 to DIN EN ISO 4762; chromized steel 2x washers Ø 10.5 mm to DIN 125; 1x O-ring to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar, 120 °C <sup>2)</sup>	E13		7MF9408-6AA
2x screws M10x40 to DIN EN ISO 4762; chromized steel 2x washers Ø 10.5 mm to DIN 125; 1x flat gasket made of PTFE, max. permissible 420 bar, 80 °C <sup>2)</sup>	E16		7MF9408-6BA

 When ordering accessory set together with the oval flange, please use Order code; otherwise use Order No.
 Flange connections with M10 screws only permissible up to PN 160!

#### Dimensional drawings



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

Oval flange

#### Adapters, connection glands

#### 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

2

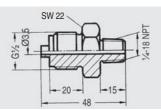
The connection pieces are made of X 6 CrNiMoTi 17 12 2, mat. No. 1.4571 and available in 3 versions

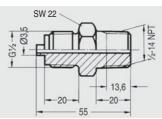
- Thread 1/4-18 NPT and connection shank G1/2 to DIN EN 837-1
- Thread ½-14 NPT and connection shank G½ to DIN EN 837-1
- Thread 1/2-14 NPT and thread 1/2-14 NPT

Selection and Ordering data		Order No.
Adapter		
(weight 0.2 kg)		
with thread 1/4-18 NPT – $G^{1/2}$	F)	7MF9001-1AA
with thread 1/2-14 NPT – $G^{1/2}$	F)	7MF9001-1CA
with thread 1/2-14 NPT - 1/2-14 NPT	F)	7MF9001-1DA
with thread 1/2-14 NPT - M20 x 1.5	F)	7MF9001-1EA

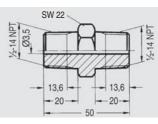
F)Subject to export regulations AL: 91999, ECCN: N.

#### Dimensional drawings

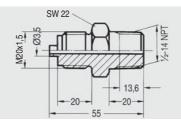




Connection piece with thread  $\frac{1}{2}$  --14 NPT and connection shank  $G\frac{1}{2}$  7MF9001-1CA, dimensions in mm

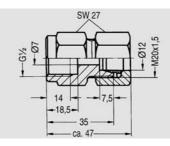


Connection piece with thread  $\frac{1}{2}$  -14 NPT and thread  $\frac{1}{2}$  -14 NPT 7MF9001-1DA, dimensions in mm



Connection piece with thread  $\rlap{l}{2}\mbox{-14}$  NPT and thread M20 x 1.5 7MF9001-1EA, dimensions in mm

#### Dimensional drawings



Connection gland 7MF9008-1G., dimensions in mm

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
- For oxygen only up to PN 250

,0 ,					
Selection and Ordering data		Order No.			
Connection screwed for pipelines (weight 0.2 kg)	gland				
Material	Design				
11SMn30 (mat. No. 1.0715)	Standard	7MF9008-1GA			
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316T		7MF9008-1GB			
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316T		7MF9008-1GC			

Dimensional drawings

#### Connection parts G 1/2

#### Overview

Connection parts  $G\!\not\!\!\!/_2$  for pressure gages and shut-off fittings are available in 3 versions:

- Nipple connection
- Clamping sleeve
- Collar connection piece

#### Selection and Ordering data

Adapters G<sup>1</sup>/<sub>2</sub> for pressure gages and shut-off fittings

#### Nipple connection

G1/2 to DIN 16284 (union nut with nipple and gasket); max. working pressure 400 bar; weight 0.1 kg; connection: G<sup>1</sup>/<sub>2</sub> to DIN EN 837-1; Female thread G<sup>1</sup>/<sub>2</sub> Material Mat. No. M56340-A0001 CW 614N CuZn39Pb3 Union nut M56340-A0002 1.0715 9 SMn 28 k Nipple: RSt 37-2 1 0037 M56340-A0003 Union nut X 8 CrNiS 18 9 1.4305 Nipple: X 6 CrNiMoTi 17 12 2 1.4571/316Ti

#### Nipple connection

Material

Union nut X 8 CrNiS 18 9

**Clamping sleeve** 

Nipple:

Material

CuZn39Pb3

9 SMn 28 k

Material

CuZn39Pb3 9 SMn 28 k

Collar-adapter

Male thread: G1/2, G1/2

M20 x 1.5 to DIN 16284 (union nut with nipple and gasket); max. working pressure 400 bar; weight 0.1 kg; connection: G $^{1/}_{2}$  to DIN EN 837-1; Female thread G $^{1/}_{2}$ 

X 6 CrNiMoTi 17 12 2 1.4571/316Ti

G<sup>1</sup>/<sub>2</sub> to DIN 16283; max. working pressure 400 bar; weight 0.1 kg; Connections: G<sup>1</sup>/<sub>2</sub> to DIN EN 837-1; Female thread: G<sup>1</sup>/<sub>2</sub> right-hand G<sup>1</sup>/<sub>2</sub> left-hand

max. working pressure; weight 0.1 kg; Connections: G<sup>1</sup>/<sub>2</sub> to DIN EN 837-1;

Mat. No.

1.4305

Mat. No.

CW614N

1.0715

Mat. No. CW614N

1.0715

M56340-A0008

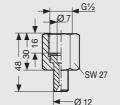
M56340-A0004

M56340-A0005

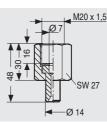
M56340-A0006

M56340-A0007

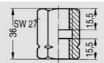
Order No.



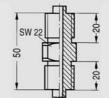
Nipple connection (G) M56340-A0001 to -A0003, dimensions in mm



Nipple connection (M20 x 1.5) M56340-A0008, dimensions in mm



Clamping sleeve M56340-A0004/-A0005, dimensions in mm



Collar connection piece M56340-A0006/-A0007, dimensions in mm

Water traps, Sealing rings to EN 837-1	
--	--

#### Overview

Water traps protect pressure gages and shut-off fittings from heating up (e.g. by steam) by the water column produced by the water trap.

The max. working temperature is 120 °C at 160 bar or 400 °C at **Dimensional drawings** 104 bar. If the temperature of the measured medium is higher, a sufficiently long line has to be connected upstream of the trap to enable heat dissipation.

#### Design

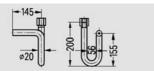
The water traps are available in U shape (type B) or circular shape (type D) to DIN 16282. They have a weld-on end  $\emptyset$  20 mm  $\times$  2.6 mm on the measurement side. The connection on the device side is a clamping sleeve G<sup>1</sup>/<sub>2</sub> to DIN 16283.

The water traps are made of steel (P250GH) or stainless steel (X 6 CrNiMoTi 17 12 2)

Water traps are designed as standard for max. operating temperature 120 °C at max. operating pressure 160 bar (400 °C at 104 bar). Water traps for higher operating pressures and temperatures are available on request.

Selection and Orderi	Order No.	
Water traps for pressure gages an max. working tempera max. working pressure and 104 bar), weight (		
Water trap B to DIN 1	-	
Material	Mat. No.	
P235GH	1.0345	M56340-A0043
X 6 CrNiMoTi 17 12 2 1.4571/316Ti		M56340-A0061
Water trap D to DIN 1	6282	-
Material	Mat. No.	
P235GH	1.0345	M56340-A0045
X 6 CrNiMoTi 17 12 2	1.4571/316Ti	M56340-A0063

#### Dimensional drawings



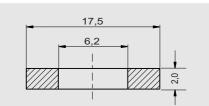
Water traps, type B, M56340-A0043/-A0061, dimensions in mm



Water traps, type D, M56340-A0045/-A0063, dimensions in mm

#### Overview

The sealing rings to EN 837-1 are required to seal measuring instruments for pressure with the process connection G<sup>1</sup>/<sub>2</sub>B.



Sealing ring 7MF9007-7A. to EN 837-1, dimensions in mm

Selection and Ordering data		Order No.
Sealing ring to EN 837-1 for thread G <sup>1</sup> / <sub>2</sub> made of (packing unit 100 pcs)		
• copper	F)	7MF9007-7AA
• soft iron	F)	7MF9007-7AB
• stainless steel, matNo. 1.4571	F)	7MF9007-7AC
• PTFE	F)	7MF9007-7AD

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

#### Overview

The pressure surge reducer protects the pressure gage against damage, premature wear and tear and inaccurate/fluctuating indications.

#### Application

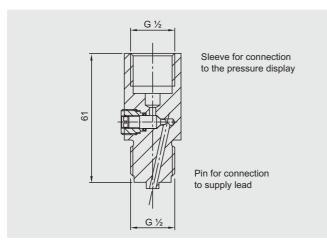
The pressure reducer is used when pulsations occur in the measured medium (e.g. in slow-running vapor engines, piston pumps and compressors), or if drastic fluctuations are likely to occur in the measured medium (e.g. in hydraulic presses and tensile testing machines).

#### Design

- Enclosure made of brass or stainless steel
- Adjustable nozzle
- Sleeve for connection to the measuring instrument
- · Pin for connection to supply lead

Selection an	d Ordering data		Order No.
Pressure sur Weight appro			
Material	Full-scale value	Weight approx. in kg	
Brass	250 bar	0.21	M56340-A54
Stainless steel	600 bar	0.21	M56340-A59

#### Dimensional drawings



Pressure surge reducer, dimensions in mm

#### **Primary shut-off valves**

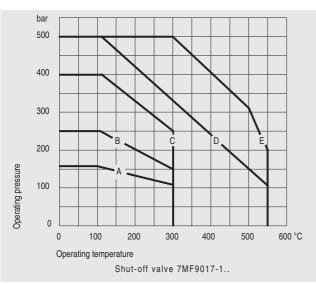
#### Overview

Primary shut-off valves are available in the following versions:

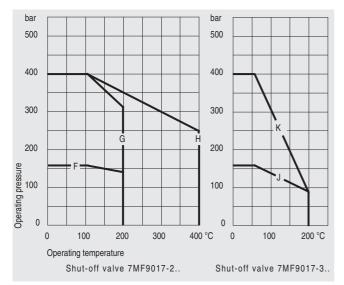
- · For non-corrosive liquids, gases and vapors
- For corrosive liquids and gases
- Grease-free for oxygen

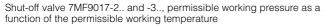
The shut-off valves are available in various materials and with various connections (see Selection and Ordering data)

#### **Characteristic curves**

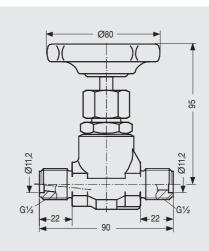


Shut-off valve 7MF9017-1.., permissible working pressure as a function of the permissible working temperature

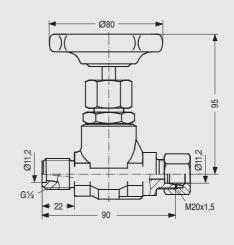




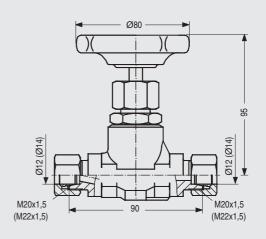
#### Dimensional drawings



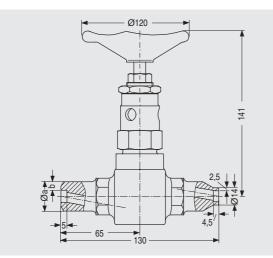
Shut-off valve 7MF9017-1A., dimensions in mm



Shut-off valve 7MF9017-1B. and -2B., dimensions in mm



Shut-off valves 7MF9017-1C., -1D. and -2C., dimensions in mm



Primary	/ shut-off	valve
i innu y		vuive

ØAxb	7MF9017-
14 mm x 2.5 mm	1F. and 1G.
21.3 mm x 6.3 mm	1H. and 2H.
24 mm x 7.1 mm	1J., 1K. and 2J.

Shut-off valves 7MF9017-, dimensions in mm

Primary :	shut-off va	Ives, without certificate					
Max. working pressure	Charac- teristic <sup>1)</sup>	Material	Mat. No.	Spindle thread	Connections Approx weight		Order No.
Shut-off	valve for n	on-aggressive liquids	gases an	d vapors			7 M F 9 0 1 7 - 1 A
160 bar	А	P250GH	1.0460	Internal	Threaded socket G½ form R, DIN 19207	0.8	а
160 bar	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	b
400 bar	С	P250GH	1.0460	Internal	Pipe union with ferrule for pipe Ø 12 mm, S series	1	c
400 bar	С	P250GH	1.0460	Internal	Pipe union with ferrule for pipe Ø 14 mm, S series	1	d
500 bar	D	16 Mo 3	1.5415	External	Welding sleeves Ø 14 mm × 2.5 mm	1.6	f
500 bar	E	11 CrMo 9 10	1.7383	External	Welding sleeves Ø 14 mm × 2.5 mm	1.6	g
500 bar	D	16 Mo 3	1.5415	External	Welding sleeves Ø 21.3 mm $\times$ 6.3 mm and Ø 14 mm $\times$ 2.5 mm	1.6	h
500 bar	D	16 Mo 3	1.5415	External	Welding sleeves Ø 24 mm $\times$ 7.1 mm and Ø 14 mm $\times$ 2.5 mm	1.6	j
500 bar	E	11 CrMo 9 10	1.7383	External	Welding sleeves Ø 24 mm $\times$ 7.1 mm and Ø 14 mm $\times$ 2.5 mm	1.6	k
Shut-off	valve for a	ggressive liquids and	gases				7 M F 9 0 1 7 - 2 A
160 bar	F	X 6 CrNiMoTi 17 12 2	1.4571/ 316Ti	Internal	Threaded socket $G\frac{1}{2}$ form R, DIN 19207 DIN 19207 and pipe union with ferrule for pipe Ø 12 mm, S series	0.8	b
400 bar	G	X 6 CrNiMoTi 17 12 2	1.4571/ 316Ti	Internal	Pipe union with ferrule for pipe Ø 12 mm, S series	1	c
400 bar	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	h
400 bar	Н	X 6 CrNiMoTi 17 12 2	1.4571/ 316Ti	External	Welding sleeves Ø 24 mm $\times$ 7.1 mm and Ø 14 mm $\times$ 2.5 mm	1.6	j
Accesso	ries						
Factory te	est certifica	te EN 10204-2.2					7MF9000-8AB
Material a	acceptance	e test certificate EN 1020	04-3.1				7MF9000-8AD

<sup>1)</sup>See Figure "Permissible working pressure as a function of the permissible working temperature"

#### **Compensation vessels**

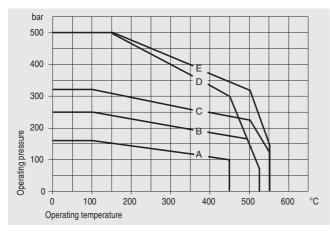
#### Overview

The compensation vessels prevent the level difference which occurs with pressure changes in the pressure lines and which falsifies the measurement.

According to DIN 19211, the temperature in the compensation vessel must be assumed to be 50 K less than the steam temperature in the pipe when calculating the wall thicknesses. This is because the temperature in the compensation vessel during operation can only rise up to the saturated steam temperature.

A material acceptance test certificate A to EN 10204-3.1 is available for the materials from which the compensation vessels are made.

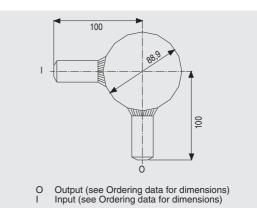
#### Characteristic curves



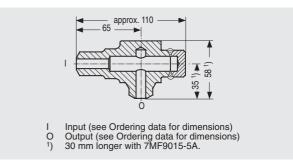
Permissible operating pressure as a function of the permissible operating temperature

#### Selection and Ordering data

#### Dimensional drawings



Compensation vessel 7MF9015-1.., dimensions in mm



Compensation vessel 7MF9015-5.., dimensions in mm

Max.		<b>el,</b> without certificate istic <sup>1)</sup> Material	Mat. No.	Connections		Approx.	Approx.	Order No.
working pressure	Character		Wat. NO.	Input	Output	contents cm <sup>3</sup>	weight kg	order No.
								7 M F 9 0 1 5 -
160 bar	А	16 Mo 3	1.5415	Threaded socket G½, form R, DIN 19207	Threaded socket G½, form V, DIN 19207	250	0.8	1 a
250 bar	В	16 Mo 3	1.5415	Welding sleeve Ø 21 mm × 6.3 mm	Welding sleeve $\emptyset$ 21.3 mm × 6.3 mm	250	0.8	1 b
250 bar	В	16 Mo 3	1.5415	Welding sleeve Ø 24 mm × 7.1 mm	Welding sleeve $\emptyset$ 24 mm $\times$ 7.1 mm	250	1	1 c
250 bar	С	11 CrMo 9 10	1.7383	Welding sleeve Ø 24 mm × 7.1 mm	Welding sleeve $\emptyset$ 24 mm $\times$ 7.1 mm	250	1	1 d
250 bar	В	16 Mo 3	1.5415	Welding sleeve Ø 33.7 mm × 4.5 mm	Welding sleeve Ø 24 mm × 7.1 mm	250	0.7	1 e
160 bar	А	16 Mo 3	1.5415	Threaded socket G½, form R, DIN 19207	Threaded socket G½, form V, DIN 19207	20	1.6	5 a
500 bar	D	16 Mo 3	1.5415	Welding sleeve Ø 21 mm × 6.3 mm	Welding sleeve $\emptyset$ 21.3 mm × 6.3 mm	20	1.6	5 b
500 bar	D	16 Mo 3	1.5415	Welding sleeve Ø 24 mm × 7.1 mm	Welding sleeve Ø 24 mm × 7.1 mm	20	1.6	5 c
500 bar	E	11 CrMo 9 10	1.7383	Welding sleeve Ø 24 mm × 7.1 mm	Welding sleeve Ø 24 mm × 7.1 mm	20	1.6	5 d
Accesso	ries							
actory te	est certificate	e EN 10204-2.2						7MF9000-8AB
Material a	icceptance t	test certificate EN 10	204-3.1					7MF9000-8AD

<sup>1)</sup>See Figure "Permissible working pressure as a function of the permissible working temperature"

#### **Connection parts**

#### Overview

Connection parts are available in the following versions:

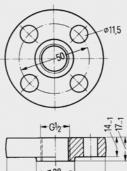
- Threaded flange pair G1/2 with stainless steel gasket
- Nipple G1/2 form V to DIN 19207
- Union nut G1/2 made of C 35 to DIN 16284
- Gasket B1/2 (grooved) to DIN 19207

All connection parts are also available grease-free for oxygen.

Selection and Ordering data		Order No.
Threaded flange pair G½		
<ul> <li>with stainless steel gasket</li> </ul>		7MF9007-4CA
<ul> <li>grease-free for oxygen, with stainless steel gasket</li> </ul>		7MF9007-4DA
Scope of delivery:		
2x threaded flanges G½ to DIN 19207; material: P250GH (mat. No. 1.0460)		
4x hexagon screws M10x45 to DIN EN 24014; Material: C35E (mat. No. 1.1181)		
4x hexagon screws M10x50 to DIN EN 24032		
1x gasket G½ (7MF9007-6BA) grooved, to DIN 19207; Material: X 6 CrNiMoTi 17 12 2 (mat. No. 14571/316Ti)		
Only for 7MF9007-4CA!		
1x gasket G½ (7MF9k007-6CA), grease-free for oxygen, grooved, to DIN 19207; Material: X 6 CrNiMoTi 17 12 2 (mat. No. 14571/316Ti)		
Only for 7MF9007-4DA!		
Nipple G½		
to DIN 19207		
<ul> <li>Material: 16 Mo 3 (mat. No. 1.5415)</li> </ul>		7MF9007-4KA
• grease-free for oxygen, Material: X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)		7MF9007-4LA
Union nut G½		
to DIN 16284		
• Material: C35E (mat. No. 1.1181)		7MF9007-4MA
• grease-free for oxygen, Material: X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)		7MF9007-4NA
Gasket G½		
to DIN 19207, grooved		
• Material: X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)	F)	7MF9007-6BA
• grease-free for oxygen, Material: X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)	F)	7MF9007-6CA

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

### Dimensional drawings



MF9007-4CA/-4DA, dimensions in mm



07-4KA/-4LA, dimensions in mm

9007-4MA/-4NA, dimensions in mm

BA/-6CA, dimensions in mm

## SITRANS P measuring instruments for pressure