Pressure Measurement

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

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Overview

	Application	Description		Software for parameterization
SITRANS P · Transmitters for basic requirements				
	Two or three-wire transmitters for measuring gauge and absolute pressure	**SITRANS P200** • Single-range transmitters for gauge and absolute pressure • Ceramic measuring cell • For general applications	1/5	–
		SITRANS P210 • Single-range transmitters for gauge pressure • Stainless steal measuring cell • For low-pressure applications	1/11	–
		SITRANS P220 • Single-range transmitters for gauge pressure • Stainless steel measuring cell, fully welded • For high-pressure applications and refrigeration technology	1/16	–
	Two or three-wire transmitter for measuring differential pressure	**SITRANS P250** • Compact single-range transmitters • Analog electronics • Available ex stock	1/22	–
	Two-wire transmitter for measuring hydrostatic levels	**SITRANS P MPS (submersible sensor)** • For measuring liquid levels in wells, tanks, channels, dams etc.	1/27	–
	Transmitters for gauge and absolute pressure for food, pharmaceuticals and biotechnology	**SITRANS P Compact** • Single-range transmitters in two-wire system • Hygiene-based design with various aseptic connections according to EHEDG, FDA and GMP recommendations.	1/32	–
SITRANS P · Transmitters with WirelessHART communication				
	Wireless transmitter with Wireless HART for measuring gauge and absolute pressure	**SITRANS P280** Wireless communication with WirelessHART Battery operation Parameterization using 3 buttons and SIMATIC PDM with HART modem or wireless with WirelessHART	1/41	SIMATIC PDM
SITRANS P · Transmitters for food, pharmaceuticals and biotechnology				
	Two-wire transmitters for measuring gauge and absolute pressure	**SITRANS P300** • Hygiene-based design according to EHEDG, 3A, FDA and GMP • Parameterization using 3 buttons and communication over HART, PROFIBUS PA or FOUNDATION Fieldbus • Standard process connection G½", ½-NPT and front-flush process connections available • Range adjustment 100 : 1	1/46	SIMATIC PDM
		Factory-mounting of valve manifolds on SITRANS P300 transmitters • Simplified assembly • With pressure test • Stainless steel valve manifolds	1/67	–

	Application	Description		Software for parameterization
SITRANS P · Transmitter for gauge pressure for the paper industry				
	Two-wire transmitters for measuring gauge pressure	**SITRANS P DS III and SITRANS P300 with PMC connection** • Range adjustment 100 : 1 • Process connections for the paper industry • Parameterization using 3 buttons and HART, PROFIBUS PA or FOUNDATION Fieldbus	1/69	SIMATIC PDM
SITRANS P · Transmitter for general requirements				
	Two-wire transmitters for measuring: • Gauge pressure, • Absolute pressure, • Differential pressure and • Flow or • Level	**SITRANS P DS III** Range adjustment: 100 : 1 Parameterization using: • 3 buttons and HART for SITRANS P DS III HART • 3 buttons and PROFIBUS PA for SITRANS P DS III PA series • 3 buttons and FOUNDATION Fieldbus for SITRANS P DS III FF series • Available ex stock	1/86	SIMATIC PDM
	Supplementary electronics for adaptation of two-wire transmitters for four-wire connections	Output: 0/4 ... 20 mA Power supply: 24 V AC/DC, 230 V AC	1/157	–
		Factory mounting of valve manifolds on gauge, absolute or differential pressure transmitters SITRANS P DS III • Simplified assembly • With pressure test • Stainless steel valve manifolds	1/165	–
SITRANS P - Transmitters for High Performance requirements				
	Two-wire transmitters for measuring: • Differential pressure • Volume flow • Mass flow • Level • Volume • Mass	**SITRANS P500** • Range adjustment: 200 :1 • High measuring accuracy • Very fast response time • Extremely good long-term stability Parameterization: • 3 buttons or HART	1/168	SIMATIC PDM
	Supplementary electronics for adaptation of two-wire transmitters for four-wire connections	Output: 0/4 ... 20 mA Power supply: 24 V AC/DC, 230 V AC	1/189	
		Factory-mounting of manifolds on differential pressure transmitters SITRANS P500 • Simplified assembly • With pressure test • Stainless steel valve manifolds	1/194	

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

Overview

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

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

Benefits

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

Application

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

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

Design

Device structure without explosion protection

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

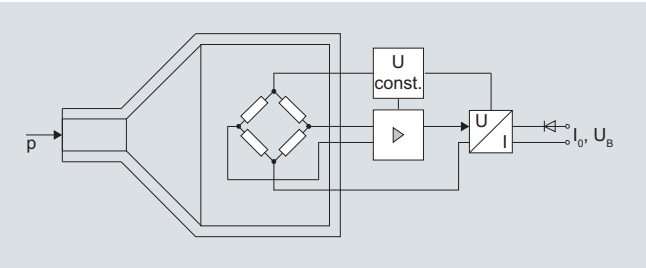
Device structure with explosion protection

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

Function

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

Mode of operation



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

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

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

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

SITRANS P200
for gauge and absolute pressure

Technical specifications

Application	
Gauge and absolute pressure measurement	Liquids, gases and vapors
Mode of operation	
Measuring principle	Piezo-resistive measuring cell (ceramic diaphragm)
Measured variable	Gauge and absolute pressure
Inputs	
Measuring range	
• Gauge pressure - Metric - US measuring range	 1 … 60 bar (15 … 870 psi) 15 … 1000 psi
• Absolute pressure - Metric - US measuring range	 0.6 … 16 bar a (10 … 232 psia) 10 … 300 psia
Output	
Current signal	4 ... 20 mA
• Load	$(U_B - 10\ V) / 0.02\ A$
• Auxiliary power U_B	DC 7 ... 33 V (10 ... 30 V for Ex)
Voltage signal	0 ... 10 V DC
• Load	≥ 10 kΩ
• Auxiliary power U_B	12 ... 33 V DC
• Power consumption	< 7 mA at 10 kΩ
Characteristic curve	Linear rising
Measuring accuracy	
Error in measurement at limit setting incl. hysteresis and reproducibility	• Typical: 0.25 % of full-scale value • Maximum: 0.5 % of full-scale value
Step response time T_{99}	< 5 ms
Long-term stability	
• Lower range value and measuring span	0.25 % of full-scale value/year
Influence of ambient temperature	
• Lower range value and measuring span	0.25 %/10 K of full-scale value
• Influence of power supply	0.005 %/V
Conditions of use	
Process temperature with gasket made of:	
• FPM (Standard)	-15 ... +125 °C (+5 ... +257 °F)
• Neoprene	-35 ... +100 °C (-31 ... +212 °F)
• Perbunan	-20 ... +100 °C (-4 ... +212 °F)
• EPDM	-40 ... +145 °C (-40 ... +293 °F), usable for drinking water
Ambient temperature	-25 ... +85 °C (-13 ... +185 °F)
Storage temperature	-50 ... +100 °C (-58 ... +212 °F)
Degree of protection (to EN 60529)	• IP 65 with connector per EN 175301-803-A • IP 67 with M12 connector • IP 67 with cable • IP 67 with cable quick screw connection
Electromagnetic compatibility	• acc. EN 61326-1/-2/-3 • acc. NAMUR NE21, only for ATEX versions and with a max. measuring deviation ≤ 1 %

Design	
Weight	Approx. 0.090 kg (0.198 lb)
Process connections	See dimension drawings
Electrical connections	• Connector per EN 175301-803-A Form A with cable inlet M16x1.5 or ½-14 NPT or Pg 11 • M12 connector • 2 or 3-wire (0.5 mm^2) cable (∅ ± 5.4 mm) • Quickon cable quick screw connection
Wetted parts materials	
• Measuring cell	Al_2O_3 - 96 %
• Process connection	Stainless steel, mat. No. 1.4404 (SST 316 L)
• Gasket	• FPM (Standard) • Neoprene • Perbunan • EPDM
Non-wetted parts materials	
• Enclosure	Stainless steel, mat. No. 1.4404 (SST 316 L)
• Rack	Plastic
• Cables	PVC
Certificates and approvals	
Classification according to pressure equipment directive (PED 97/23/EC)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)
Lloyd's Register of Shipping (LR)	12/20010
Germanischer Lloyd (GL)	GL19740 11 HH00
American Bureau of Shipping (ABS)	ABS_11_HG 789392_PDA
Bureau Veritas (BV)	BV 271007A0 BV
Det Norske Veritas (DNV)	A 12553
Drinking water approval (ACS)	ACS 11 ACC NY 055
GOST	GOST-R
Underwriters Laboratories (UL)	
• for USA and Canada	UL 20110217 - E34453
• worldwide	IEC UL DK 21845
Explosion protection	
Intrinsic safety "i" (only with current output)	Ex II 1/2 G Ex ia IIC T4 Ga/Gb Ex II 1/2 D Ex ia IIIC T125 °C Da/Db
EC type-examination certificate	SEV 10 ATEX 0146
Connection to certified intrinsically-safe resistive circuits with maximum values:	$U_i \leq 30\ V\ DC$; $I_i \leq 100\ mA$; $P_i \leq 0.75\ W$
Effective internal inductance and capacity for versions with plugs per EN 175301-803-A and M12	$L_i = 0\ nH$; $C_i = 0\ nF$

Selection and ordering data

Order No. 7MF1565 - ■■■■ - ■■■■ Order code ■■■

SITRANS P 200 pressure transmitters for pressure and absolute pressure for general applications
Characteristic curve deviation typ. 0.25 %
Wetted parts materials: Ceramic and stainless steel + sealing material
Non-wetted parts materials: stainless steel

Measuring range		Overload limit Min.		Overload limit Max.		Burst pressure			Order code
For gauge pressure									
0 ... 1 bar	(0 ... 14.5 psi)	-0.4 bar	(-5.8 psi)	2.5 bar	(36.26 psi)	> 2.5 bar	(> 36.3 psi)	▶	3BA
0 ... 1.6 bar	(0 ... 23.2 psi)	-0.4 bar	(-5.8 psi)	4 bar	(58.02 psi)	> 4 bar	(> 58.0 psi)	▶	3BB
0 ... 2.5 bar	(0 ... 36.3 psi)	-0.8 bar	(-11.6 psi)	6.25 bar	(90.65 psi)	> 6.25 bar	(> 90.7 psi)	▶	3BD
0 ... 4 bar	(0 ... 58.0 psi)	-0.8 bar	(-11.6 psi)	10 bar	(145 psi)	> 10 bar	(> 145 psi)	▶	3BE
0 ... 6 bar	(0 ... 87.0 psi)	-1 bar	(-14.5 psi)	15 bar	(217 psi)	> 15 bar	(> 217 psi)	▶	3BG
0 ... 10 bar	(0 ... 145 psi)	-1 bar	(-14.5 psi)	25 bar	(362 psi)	> 25 bar	(> 362 psi)	▶	3CA
0 ... 16 bar	(0 ... 232 psi)	-1 bar	(-14.5 psi)	40 bar	(580 psi)	> 40 bar	(> 580 psi)	▶	3CB
0 ... 25 bar	(0 ... 363 psi)	-1 bar	(-14.5 psi)	62.5 bar	(906 psi)	> 62.5 bar	(> 906 psi)	▶	3CD
0 ... 40 bar	(0 ... 580 psi)	-1 bar	(-14.5 psi)	100 bar	(1450 psi)	> 100 bar	(> 1450 psi)	▶	3CE
0 ... 60 bar	(0 ... 870 psi)	-1 bar	(-14.5 psi)	150 bar	(2175 psi)	> 150 bar	(> 2175 psi)	▶	3CG
Other version, add order code and plain text: Measuring range: ... up to... bar (psi)									9AA H1Y
For absolute pressure									
0 ... 0.6 bar a	(0 ... 8.7 psia)	0 bar a	(0 psia)	3 bar a	(43.51 psia)	> 2.5 bar a	(> 36.3 psia)		5AG
0 ... 1 bar a	(0 ... 14.5 psia)	0 bar a	(0 psia)	2.5 bar a	(36.26 psia)	> 2.5 bar a	(> 36.3 psia)	▶	5BA
0 ... 1.6 bar a	(0 ... 23.2 psia)	0 bar a	(0 psia)	4 bar a	(58.02 psia)	> 4 bar a	(> 58.0 psia)	▶	5BB
0 ... 2.5 bar a	(0 ... 36.3 psia)	0 bar a	(0 psia)	6.25 bar a	(90.65 psia)	> 6.25 bar a	(> 90.7 psia)	▶	5BD
0 ... 4 bar a	(0 ... 58.0 psia)	0 bar a	(0 psia)	10 bar a	(145 psia)	> 10 bar a	(> 145 psia)	▶	5BE
0 ... 6 bar a	(0 ... 87.0 psia)	0 bar a	(0 psia)	15 bar a	(217 psia)	> 15 bar a	(> 217 psia)	▶	5BG
0 ... 10 bar a	(0 ... 145 psi)	0 bar a	(0 psia)	25 bar a	(362 psia)	> 25 bar a	(> 362 psia)	▶	5CA
0 ... 16 bar a	(0 ... 232 psi)	0 bar a	(0 psia)	40 bar a	(580 psia)	> 40 bar a	(> 580 psia)	▶	5CB
Other version, add order code and plain text: Measuring range: ... up to ... mbar a (psia)									9AA H1Y
Measuring ranges for gauge pressure (only for US market)									
	(0 ... 15 psi)		(-5.8 psi)		(35 psi)		(> 35 psi)		4BB
	(3 ... 15 psi)		(-5.8 psi)		(35 psi)		(> 35 psi)		4BC
	(0 ... 20 psi)		(-5.8 psi)		(50 psi)		(> 50 psi)		4BD
	(0 ... 30 psi)		(-5.8 psi)		(80 psi)		(> 80 psi)		4BE
	(0 ... 60 psi)		(-11.5 psi)		(140 psi)		(> 140 psi)		4BF
	(0 ... 100 psi)		(-14.5 psi)		(200 psi)		(> 200 psi)		4BG
	(0 ... 150 psi)		(-14.5 psi)		(350 psi)		(> 350 psi)		4CA
	(0 ... 200 psi)		(-14.5 psi)		(550 psi)		(> 550 psi)		4CB
	(0 ... 300 psi)		(-14.5 psi)		(800 psi)		(> 800 psi)		4CD
	(0 ... 500 psi)		(-14.5 psi)		(1400 psi)		(> 1400 psi)		4CE
	(0 ... 750 psi)		(-14.5 psi)		(2000 psi)		(> 2000 psi)		4CF
	(0 ... 1000 psi)		(-14.5 psi)		(2000 psi)		(> 2000 psi)		4CG
Other version, add order code and plain text: Measuring range: ... up to ... psi									9AA H1Y
Measuring ranges for absolute pressure (only for US market)									
	(0 ... 10 psia)		(0 psia)		(35 psia)		(> 35 psia)		6AG
	(0 ... 15 psia)		(0 psia)		(35 psia)		(> 35 psia)		6BA
	(0 ... 20 psia)		(0 psia)		(50 psia)		(> 50 psia)		6BB
	(0 ... 30 psia)		(0 psia)		(80 psia)		(> 80 psia)		6BD
	(0 ... 60 psia)		(0 psia)		(140 psia)		(> 140 psia)		6BE
	(0 ... 100 psia)		(0 psia)		(200 psia)		(> 200 psia)		6BG
	(0 ... 150 psia)		(0 psia)		(350 psia)		(> 350 psia)		6CA
	(0 ... 200 psia)		(0 psia)		(550 psia)		(> 550 psia)		6CB
	(0 ... 300 psia)		(0 psia)		(800 psia)		(> 800 psia)		6CC
Other version, add order code and plain text: Measuring range: ... up to ... psia									9AA H1Y

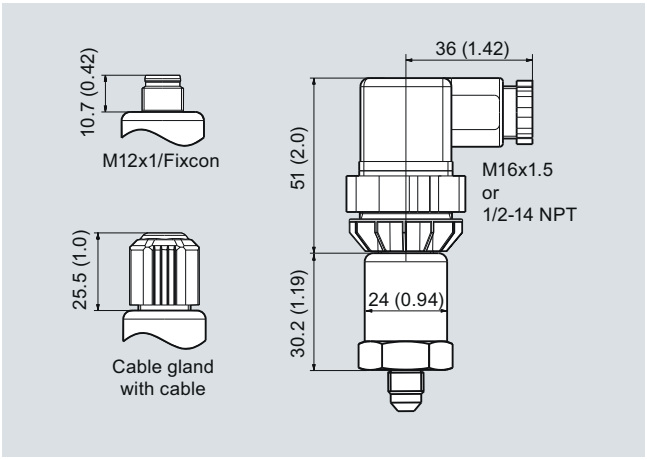
▶ Available ex stock

SITRANS P200
for gauge and absolute pressure

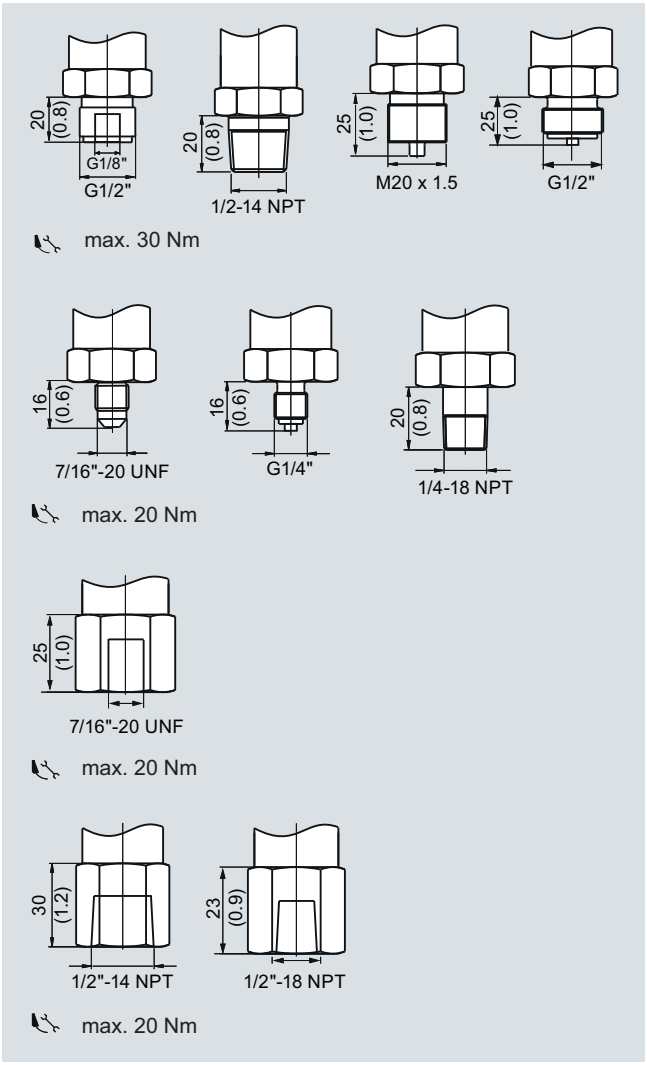
Selection and ordering data		Order No.	Order code
SITRANS P 200 pressure transmitters for pressure and absolute pressure for general applications Accuracy typ. 0.25 % Wetted parts materials: Ceramic and stainless steel + sealing material Non-wetted parts materials: stainless steel		**7MF1565 -**	**-**
Output signal			
4 ... 20 mA; two-wire system; power supply 7 ... 33 V DC (10 ... 30 V DC for ATEX versions)	►		**0**
0 ... 10 V; three-wire system; power supply 12 ... 33 V DC	►		**1 0**
Explosion protection (only 4 ... 20 mA)			
None	►		**0**
With explosion protection Ex ia IIC T4	►		**1**
Electrical connection			
Connector per DIN EN 175301-803-A, stuffing box thread M16 (with coupling)	►		**1**
Round connector M12 per DIN EN 60139-9 (not for gauge pressure ranges ≤ 16 bar)			**2**
Connection via fixed mounted cable, 2m (not for type of protection "Intrinsic safety i")			**0 3**
Quickon cable quick screw connection PG9 (not for type of protection "Intrinsic safety i")			**0 4**
Connector per DIN EN 175301-803-A, stuffing box thread 1/2"-14 NPT (with coupling)			**5**
Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling)			**6**
Special version			**9** **N 1 Y**
Process connection			
G½" male per EN 837-1 (½" BSP male) (standard for metric pressure ranges mbar, bar)	►		**A**
G½" male thread and G1/8" female thread			**B**
G¼" male per EN 837-1 (¼" BSP male)			**C**
7/16"-20 UNF male			**D**
¼"-18 NPT male (standard for pressure ranges inH_2O and psi)			**E**
¼"-18 NPT female			**F**
½"-14 NPT male			**G**
½"-14 NPT female			**H**
7/16"-20 UNF female			**J**
M20x1.5 male			**P**
Special version			**Z** **P 1 Y**
Sealing material between sensor and enclosure			
Viton (FPM, standard)	►		**A**
Neoprene (CR)			**B**
Perbunan (NBR)			**C**
EPDM			**D**
Special version			**Z** **Q 1 Y**
Version			
Standard version	►		**1**
Further designs			
Supplement the order no. with "**-Z**" and add order code.			
Manufacturer's test certificate M per IEC 60770-2 (calibration certificate) supplied		**C11**	
Oxygen application, oil and grease-free cleaning (only in conjunction with the sealing material Viton between sensor and enclosure and not with explosion portection version)		**E10**	

► Available ex stock

Dimensional drawings

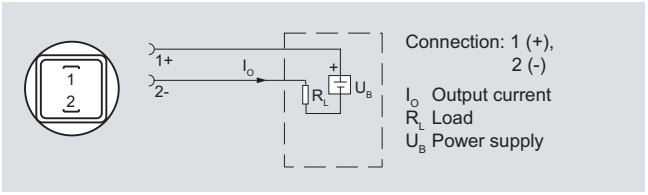


SITRANS P200, electrical connections, dimensions in mm (inch)

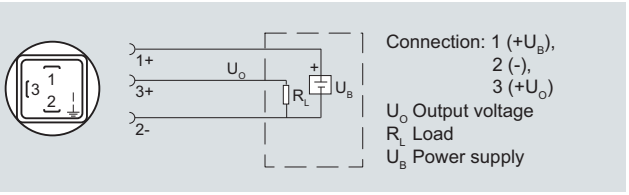


SITRANS P200, process connections, dimensions in mm (inch)

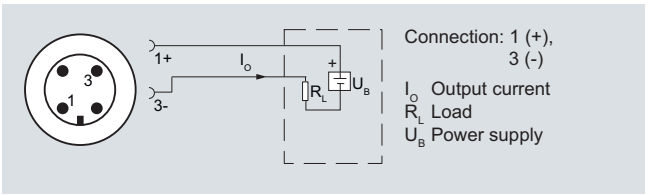
Schematics



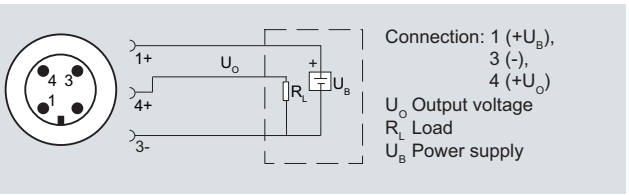
Connection with current output and connector per EN 175301



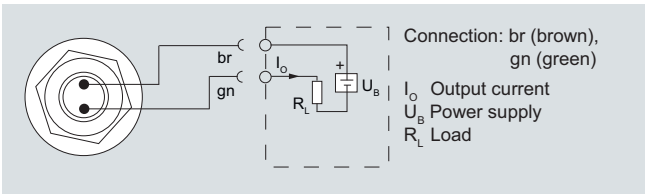
Connection with voltage output and connector per EN 175301



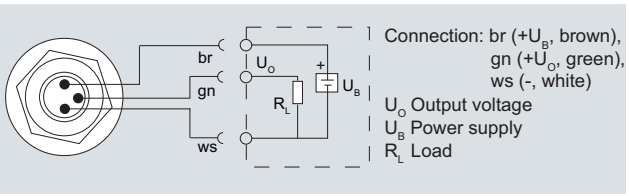
Connection with current output and connector M12x1



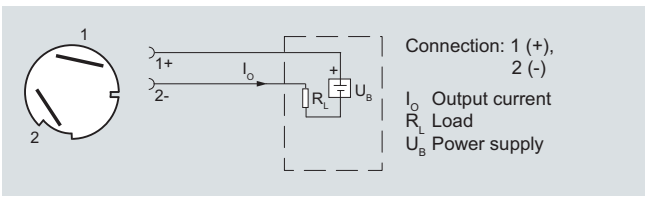
Connection with voltage output and connector M12x1



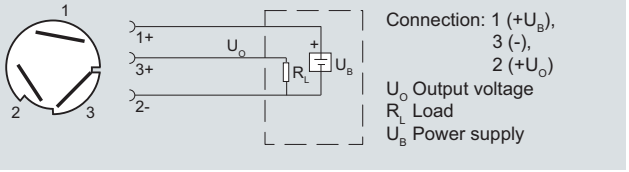
Connection with current output and cable



Connection with voltage output and cable



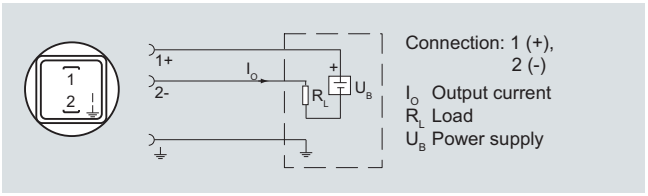
Connection with current output and Quickon cable quick screw connection



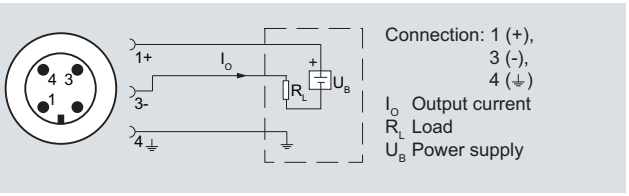
Connection with voltage output and Quickon cable quick screw connection

Version with explosion protection: 4 ... 20 mA

The grounding connection is conductively bonded to the transmitter enclosure



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



Connection with current output and connector M12x1 (Ex)

Overview

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

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

Benefits

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

Application

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

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

Design

Device structure without explosion protection

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

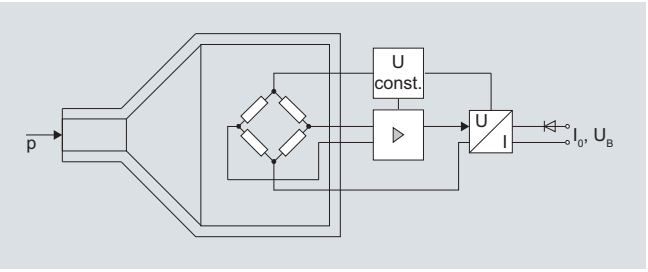
Device structure with explosion protection

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

Function

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

Mode of operation



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

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

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

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

SITRANS P210
for gauge pressure

Technical specifications

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

Design	
Weight	Approx. 0.090 kg (0.198 lb)
Process connections	See dimension drawings
Electrical connections	• Connector per EN 175301-803-A Form A with cable inlet M16x1.5 or ½-14 NPT or Pg 11 • M12 connector • 2 or 3-wire (0.5 mm^2) cable (∅ ± 5.4 mm) • Quickon cable quick screw connection
Wetted parts materials	
• Measuring cell	Stainless steel, mat.-No. 1.4435
• Process connection	Stainless steel, mat. No. 1.4404 (SST 316 L)
• Gasket	• FPM (Standard) • Neoprene • Perbunan • EPDM
Non-wetted parts materials	
• Enclosure	Stainless steel, mat. No. 1.4404 (SST 316 L)
• Rack	Plastic
• cables	PVC
Certificates and approvals	
Classification according to pressure equipment directive (PED 97/23/EC)	For gases of fluid group 1 and liquids of fluid group 1; meets requirements as per article 3, paragraph 3 (good engineering practice)
Lloyd's Register of Shipping (LR)	12/20010
Germanischer Lloyd (GL)	GL19740 11 HH00
American Bureau of Shipping (ABS)	ABS_11_HG 789392_PDA
Bureau Veritas (BV)	BV 271007A0 BV
Det Norske Veritas (DNV)	A 12553
Drinking water approval (ACS)	ACS 11 ACC NY 055
GOST	GOST-R
Underwriters Laboratories (UL)	
• for USA and Canada	UL 20110217 - E34453
• worldwide	IEC UL DK 21845
Explosion protection	
Intrinsic safety "i" (only with current output)	Ex II 1/2 G Ex ia IIC T4 Ga/Gb Ex II 1/2 D Ex ia IIIC T125 °C Da/Db
EC type-examination certificate	SEV 10 ATEX 0146
Connection to certified intrinsically-safe resistive circuits with maximum values:	U_i ≤ 30 V DC; I_i ≤ 100 mA; P_i ≤ 0.75 W
Effective internal inductance and capacity for versions with plugs per EN 175301-803-A and M12	L_i = 0 nH; C_i = 0 nF

Selection and ordering data

Order No. 7MF1566 - ■■■■ - ■■■■ Order code ■■■

SITRANS P 210 pressure transmitters for gauge pressure for low pressure applications
Accuracy typ. 0.25 %
Wetted parts materials: Stainless steel + sealing material
Non-wetted parts materials: stainless steel

Measuring range	Overload limit min.	Overload limit max.	Burst pressure		Order No.	Order code
For gauge pressure						
0...100 mbar (1.45 psi)	-400 mbar (-5.8 psi)	400 mbar (5.8 psi)	1 bar	(14.5 psi) ►	3AA	
0...160 mbar (2.32 psi)	-400 mbar (-5.8 psi)	400 mbar (5.8 psi)	1 bar	(14.5 psi) ►	3AB	
0...250 mbar (3.63 psi)	-800 mbar (-11.6 psi)	1000 mbar (14.5 psi)	2 bar	(29.0 psi) ►	3AC	
0...400 mbar (5.8 psi)	-800 mbar (-11.6 psi)	1000 mbar (14.5 psi)	2 bar	(29.0 psi) ►	3AD	
0...600 mbar (8.7 psi)	-1000 mbar (-14.5 psi)	2000 mbar (29.0 psi)	3 bar	(43.5 psi) ►	3AG	
Other version, add order code and plain text: Measuring range: ... up to ... mbar (psi)					9AA	H1Y

Output signal

4 ... 20 mA; two-wire system; power supply 7 ... 33 V DC (10 ... 30 V DC for ATEX versions)	►	0
0 ... 10 V; three-wire system; power supply 12 ... 33 V DC	►	10

Explosion protection (only 4 ... 20 mA)

None	►	0
With explosion protection Ex ia IIC T4	►	1

Electrical connection

Connector per DIN EN 175301-803-A, stuffing box thread M16 (with coupling)	►	1
Connection via fixed mounted cable, 2 m (not for type of protection "Intrinsic safety i")		03
Quickon cable quick screw connection PG9 (not for type of protection "Intrinsic safety i")		04
Connector per DIN EN 175301-803-A, stuffing box thread 1/2"-14 NPT (with coupling)		5
Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling)		6
Special version		9 N1Y

Process connection

G½" male per EN 837-1 (½" BSP male) (standard for metric pressure ranges mbar, bar)	►	A
G½" male thread and G1/8" female thread		B
G¼" male per EN 837-1 (¼" BSP male)		C
7/16"-20 UNF male		D
¼"-18 NPT male (standard for pressure ranges in H_2O and psi)		E
¼"-18 NPT female		F
½"-14 NPT male		G
½"-14 NPT female		H
7/16"-20 UNF female		J
M20x1.5 male		P
Special version		Z P1Y

Sealing material between sensor and enclosure

Viton (FPM, standard)	►	A
Neoprene (CR)		B
Perbunan (NBR)		C
EPDM		D
Special version		Z Q1Y

Version

Standard version	►	1

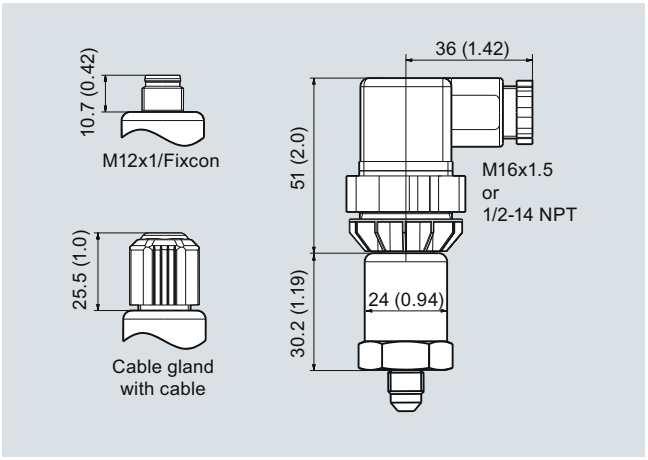
Further designs

Supplement the order no. with "**-Z**" and add order code.

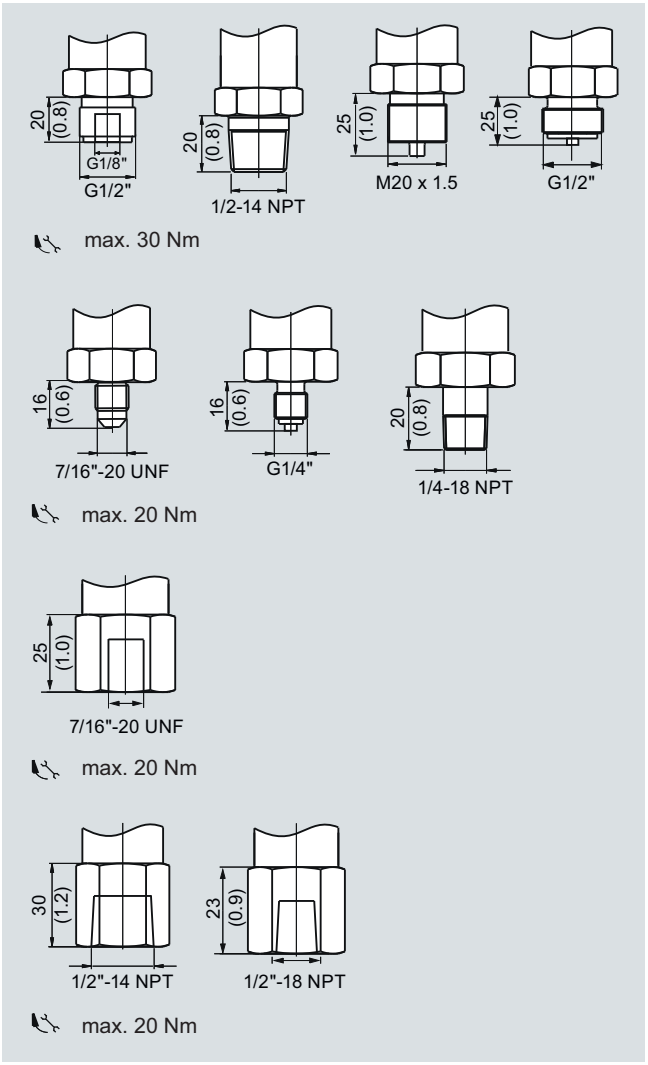
Manufacturer's test certificate M per IEC 60770-2 (calibration certificate) supplied	C11

► Available ex stock

Dimensional drawings

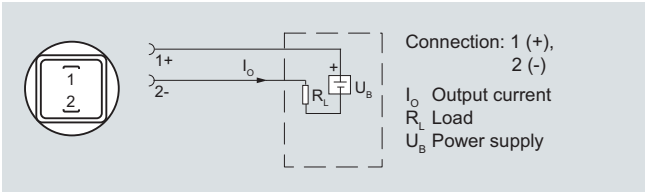


SITRANS P210, electrical connections, dimensions in mm (inch)

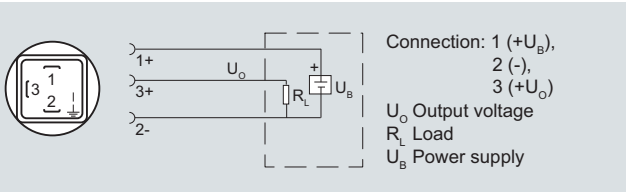


SITRANS P210, process connections, dimensions in mm (inch)

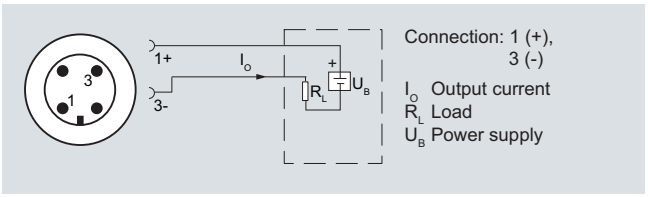
Schematics



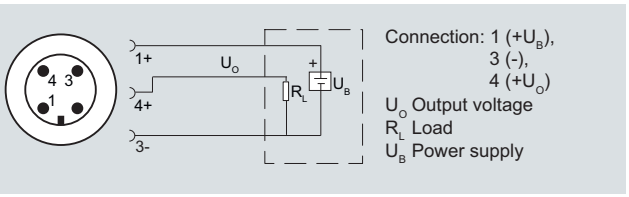
Connection with current output and connector per EN 175301



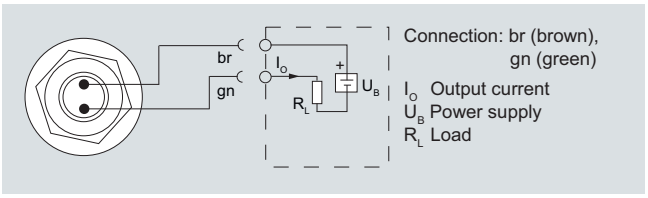
Connection with voltage output and connector per EN 175301



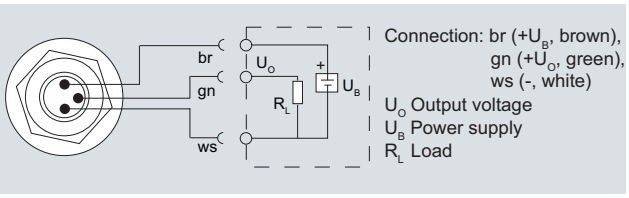
Connection with current output and connector M12x1



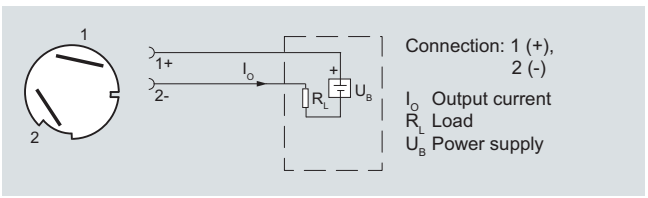
Connection with voltage output and connector M12x1



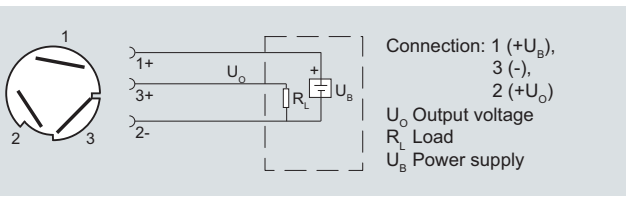
Connection with current output and cable



Connection with voltage output and cable



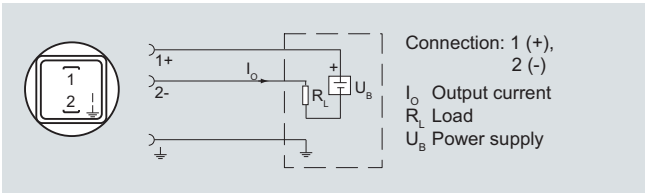
Connection with current output and Quickon cable quick screw connection



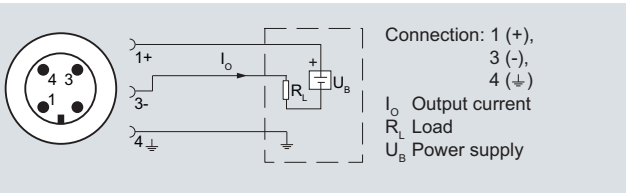
Connection with voltage output and Quickon cable quick screw connection

Version with explosion protection: 4 ... 20 mA

The grounding connection is conductively bonded to the transmitter enclosure



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



Connection with current output and connector M12x1 (Ex)

SITRANS P220
for gauge pressure

Overview

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

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

Benefits

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

Application

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

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

Design

Device structure without explosion protection

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

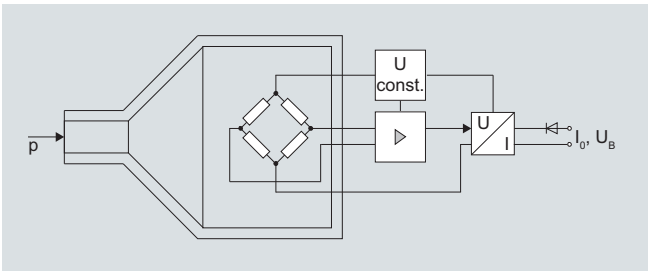
Device structure with explosion protection

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

Function

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

Mode of operation



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

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

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

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

Technical specifications

Application	
Gauge pressure measurement	Liquids, gases and vapors
Mode of operation	
Measuring principle	Piezoresistive measuring cell (stainless steel diaphragm)
Measured variable	Gauge pressure
Inputs	
Measuring range	
• Gauge pressure	
- Metric	2.5 … 600 bar (36 … 8700 psi)
- US measuring range	30… 8700 psi
Output	
Current signal	4 ... 20 mA
• Load	(U_B - 10 V) / 0.02 A
• Auxiliary power U_B	DC 7 ... 33 V (10 ... 30 V for Ex)
Voltage signal	0 ... 10 V DC
• Load	≥ 10 kΩ
• Auxiliary power U_B	12 ... 33 V DC
• Power consumption	< 7 mA at 10 kΩ
Characteristic curve	Linear rising
Measuring accuracy	
Error in measurement at limit setting incl. hysteresis and reproducibility	• Typical: 0.25 % of full-scale value • Maximum: 0.5 % of full-scale value
Step response time T_{99}	< 5 ms
Long-term stability	
• Lower range value and measuring span	0.25 % of full-scale value/year
Influence of ambient temperature	
• Lower range value and measuring span	0.25 %/10 K of full-scale value
• Influence of power supply	0.005 %/V
Conditions of use	
• Process temperature	-30 ... +120 °C (-22 ... +248 °F)
• Ambient temperature	-25 ... +85 °C (-13 ... +185 °F)
• Storage temperature	-50 ... +100 °C (-58 ... +212 °F)
• Degree of protection (to EN 60529)	• IP 65 with connector per EN 175301-803-A • IP 67 with M12 connector • IP 67 with cable • IP 67 with cable quick screw connection
Electromagnetic compatibility	• acc. EN 61326-1/-2/-3 • acc. NAMUR NE21, only for ATEX versions and with a max. measuring deviation ≤ 1 %

Design	
Weight	Approx. 0.090 kg (0.198 lb)
Process connections	See dimension drawings
Electrical connections	• Connector per EN 175301-803-A Form A with cable inlet M16x1.5 or ½-14 NPT or Pg 11 • M12 connector • 2 or 3-wire (0.5 mm^2) cable (∅ ± 5.4 mm) • Quickon cable quick screw connection
Wetted parts materials	
• Measuring cell	Stainless steel, mat.-No. 1.4016
• Process connection	Stainless steel, mat. No. 1.4404 (SST 316 L)
Non-wetted parts materials	
• Enclosure	Stainless steel, mat. No. 1.4404 (SST 316 L)
• Rack	Plastic
• cables	PVC
Certificates and approvals	
Classification according to pressure equipment directive (PED 97/23/EC)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)
Lloyd's Register of Shipping (LR)	12/20010
Germanischer Lloyd (GL)	GL19740 11 HH00
American Bureau of Shipping (ABS)	ABS_11_HG 789392_PDA
Bureau Veritas (BV)	BV 271007A0 BV
Det Norske Veritas (DNV)	A 12553
Drinking water approval (ACS)	ACS 11 ACC NY 055
GOST	GOST-R
Underwriters Laboratories (UL)	
• for USA and Canada	UL 20110217 - E34453
• worldwide	IEC UL DK 21845
Explosion protection	
Intrinsic safety "i" (only with current output)	Ex II 1/2 G Ex ia IIC T4 Ga/Gb Ex II 1/2 D Ex ia IIIC T125 °C Da/Db
EC type-examination certificate	SEV 10 ATEX 0146
Connection to certified intrinsically-safe resistive circuits with maximum values:	U_i ≤ 30 V DC; I_i ≤ 100 mA; P_i ≤ 0.75 W
Effective internal inductance and capacity for versions with plugs per EN 175301-803-A and M12	L_i = 0 nH; C_i = 0 nF

SITRANS P220
for gauge pressure

Selection and ordering data

Order No. 7MF1567- ■■■■■-■■A■ ■■■ Order code

SITRANS P 220 pressure transmitters for gauge pressure, high-pressure and refrigeration applications, fully-welded version
Accuracy typ. 0.25 %
Wetted parts materials: stainless steel
Non-wetted parts materials: stainless steel

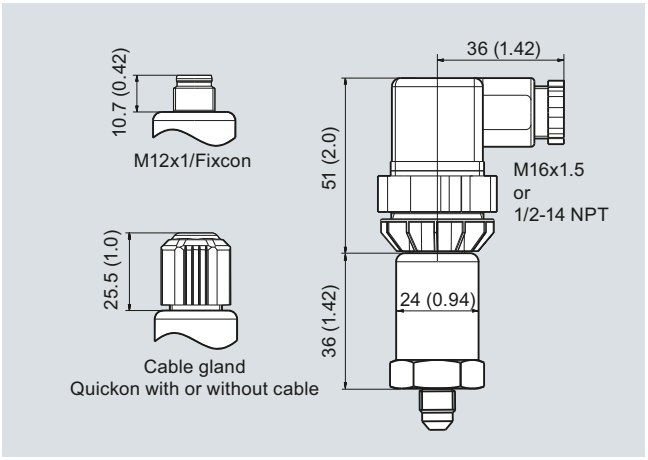
Measuring range		Overload limit Minimum		Overload limit Max.		Burst pressure			Order code
For gauge pressure									
0 ... 2.5 bar	(0 ... 36.3 psi)	-0.8 bar	(-11.6 psi)	6.25 bar	(90.7 psi)	25 bar	(363 psi)	▶	3BD
0 ... 4 bar	(0 ... 58 psi)	-0.8 bar	(-11.6 psi)	10 bar	(145 psi)	40 bar	(870 psi)	▶	3BE
0 ... 6 bar	(0 ... 87 psi)	-1 bar	(-14.5 psi)	15 bar	(217 psi)	60 bar	(522 psi)	▶	3BG
0 ... 10 bar	(0 ... 145 psi)	-1 bar	(-14.5 psi)	25 bar	(362 psi)	60 bar	(870 psi)	▶	3CA
0 ... 16 bar	(0 ... 232 psi)	-1 bar	(-14.5 psi)	40 bar	(580 psi)	96 bar	(1392 psi)	▶	3CB
0 ... 25 bar	(0 ... 363 psi)	-1 bar	(-14.5 psi)	62.5 bar	(906 psi)	150 bar	(2176 psi)	▶	3CD
0 ... 40 bar	(0 ... 580 psi)	-1 bar	(-14.5 psi)	100 bar	(1450 psi)	240 bar	(3481 psi)	▶	3CE
0 ... 60 bar	(0 ... 870 psi)	-1 bar	(-14.5 psi)	150 bar	(2175 psi)	360 bar	(5221 psi)	▶	3CG
0 ... 100 bar	(0 ... 1450 psi)	-1 bar	(-14.5 psi)	250 bar	(3625 psi)	600 bar	(8702 psi)	▶	3DA
0 ... 160 bar	(0 ... 2320 psi)	-1 bar	(-14.5 psi)	400 bar	(5801 psi)	960 bar	(13924 psi)	▶	3DB
0 ... 250 bar	(0 ... 3625 psi)	-1 bar	(-14.5 psi)	625 bar	(9064 psi)	1500 bar	(21756 psi)	▶	3DD
0 ... 400 bar	(0 ... 5801 psi)	-1 bar	(-14.5 psi)	1000 bar	(14503 psi)	2400 bar	(34809 psi)	▶	3DE
0 ... 600 bar	(0 ... 8702 psi)	-1 bar	(-14.5 psi)	1500 bar	(21755 psi)	2500 bar	(36260 psi)	▶	3DG
Other version, add order code and plain text: Measuring range: ... up to... bar (psi)									9AA H1Y
Measuring ranges for gauge pressure (only for US market)									
	(0 ... 30 psi)		(-5.8 psi)		(75 psi)		(360 psi)		4BE
	(0 ... 60 psi)		(-11.5 psi)		(150 psi)		(580 psi)		4BF
	(0 ... 100 psi)		(-14.5 psi)		(250 psi)		(580 psi)		4BG
	(0 ... 150 psi)		(-14.5 psi)		(375 psi)		(870 psi)		4CA
	(0 ... 200 psi)		(-14.5 psi)		(500 psi)		(1390 psi)		4CB
	(0 ... 300 psi)		(-14.5 psi)		(750 psi)		(2170 psi)		4CD
	(0 ... 500 psi)		(-14.5 psi)		(1250 psi)		(3480 psi)		4CE
	(0 ... 750 psi)		(-14.5 psi)		(1875 psi)		(5220 psi)		4CF
	(0 ... 1000 psi)		(-14.5 psi)		(2500 psi)		(5220 psi)		4CG
	(0 ... 1500 psi)		(-14.5 psi)		(3750 psi)		(8700 psi)		4DA
	(0 ... 2000 psi)		(-14.5 psi)		(5000 psi)		(13920 psi)		4DB
	(0 ... 3000 psi)		(-14.5 psi)		(7500 psi)		(21750 psi)		4DD
	(0 ... 5000 psi)		(-14.5 psi)		(12500 psi)		(34800 psi)		4DE
	(0 ... 6000 psi		(-14.5 psi)		(15000 psi)		(34800 psi)		4DF
	(0 ... 8700 psi)		(-14.5 psi)		(21000 psi)		(52200 psi)		4DG
Other version, add order code and plain text: Measuring range: ... up to ... psi									9AA H1Y
Output signal									
4 ... 20 mA; two-wire system; power supply 7 ... 33 V DC (10 ... 30 V DC for ATEX versions)								▶	0
0 ... 10 V; three-wire system; power supply 12 ... 33 V DC								▶	10
Explosion protection (only 4 ... 20 mA)									
None								▶	0
With explosion protection Ex ia IIC T4								▶	1
Electrical connection									
Connector per DIN EN 175301-803-A, stuffing box thread M16 (with coupling)								▶	1
Round connector M12 per DIN EN 60139-9 (not for gauge pressure ranges ≤ 16 bar)									2
Connection via fixed mounted cable, 2 m (not for type of protection "Intrinsic safety i")									03
Quickon cable quick screw connection PG9 (not for type of protection "Intrinsic safety i")									04
Connector per DIN EN 175301-803-A, stuffing box thread 1/2"-14 NPT (with coupling)									5
Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling)									6
Special version									9 N1Y

▶ Available ex stock

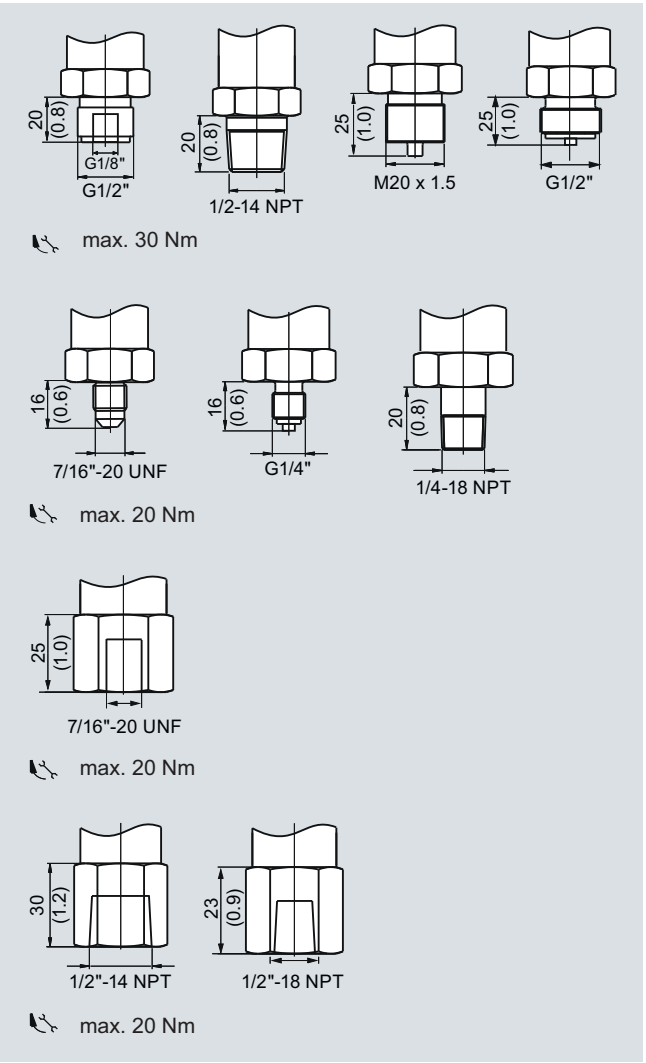
Selection and ordering data		Order No.	Order code
SITRANS P 220 pressure transmitters for gauge pressure, high-pressure and refrigeration applications, fully-welded version Accuracy typ. 0.25 % Wetted parts materials: stainless steel Non-wetted parts materials: stainless steel		**7MF1567 -** ■■■■■ **-** ■■ **A** ■	■■■
Process connection			
G½" male per EN 837-1 (½" BSP male) (standard for metric pressure ranges mbar, bar)	►		**A**
G½" male thread and G1/8" female thread			**B**
G¼" male per EN 837-1 (¼" BSP male)			**C**
7/16"-20 UNF male			**D**
¼"-18 NPT male (standard for pressure ranges in H_2O and psi)			**E**
¼"-18 NPT female (Only for measuring ranges ≤ 60 bar (870 psi))			**F**
½"-14 NPT male			**G**
½"-14 NPT female (Only for measuring ranges ≤ 60 bar (870 psi))			**H**
7/16"-20 UNF female			**J**
M20x1.5 male			**P**
Special version			**Z** **P 1 Y**
Version			
Standard version	►		**1**
Further designs			
Supplement the order no. with "**-Z**" and add order code.			
Manufacturer's test certificate M per IEC 60770-2 (calibration certificate) supplied		**C11**	
Oxygen application, oil and grease-free cleaning (Not in conjunction with explosion protection version)		**E10**	

► Available ex stock

Dimensional drawings

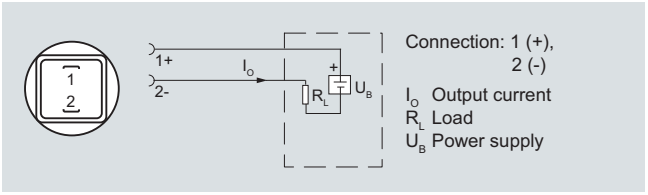


SITRANS P220, electrical connections, dimensions in mm (inch)

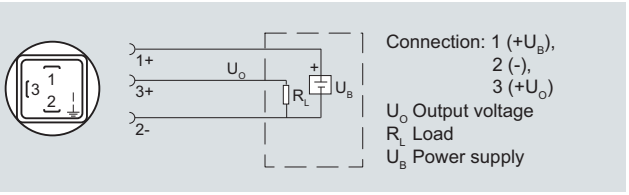


SITRANS P220, process connections, dimensions in mm (inch)

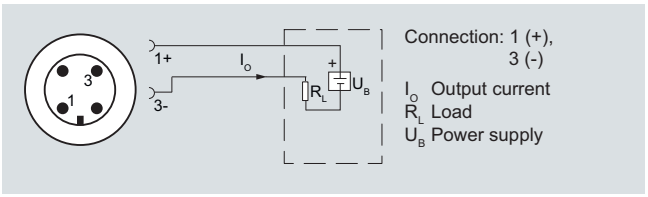
Schematics



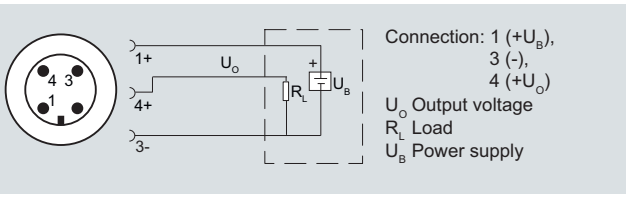
Connection with current output and connector per EN 175301



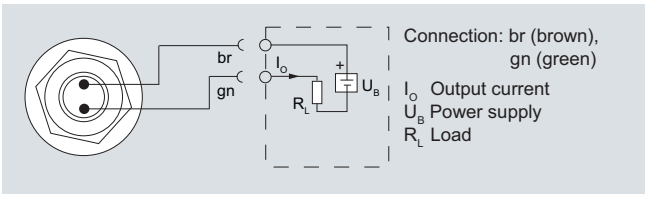
Connection with voltage output and connector per EN 175301



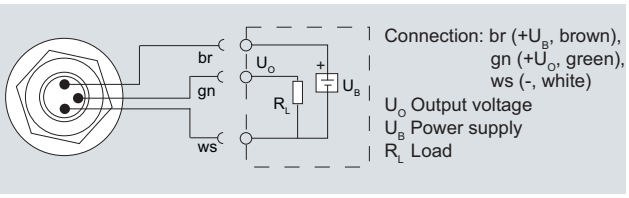
Connection with current output and connector M12x1



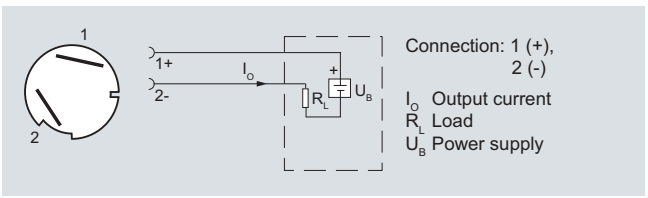
Connection with voltage output and connector M12x1



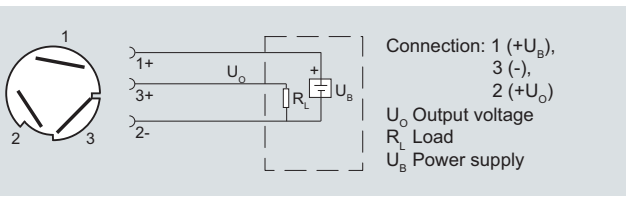
Connection with current output and cable



Connection with voltage output and cable



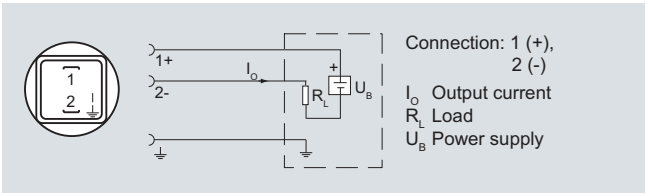
Connection with current output and cable quick screw connection Quickon



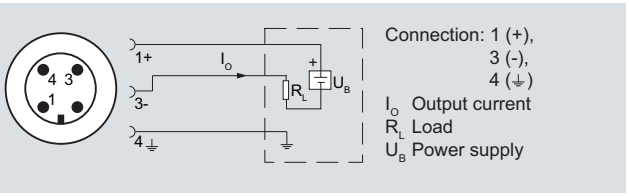
Connection with voltage output and cable quick screw connection Quickon

Version with explosion protection: 4 ... 20 mA

The grounding connection is conductively bonded to the transmitter enclosure



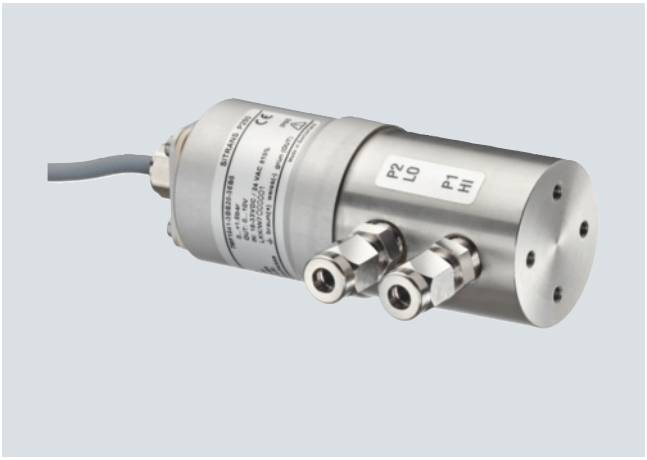
Connection with current output and connector per EN 175301 (Ex)



Connection with current output and connector M12x1 (Ex)

SITRANS P250
for differential pressure

Overview



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

Benefits

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

Application

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

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

Design

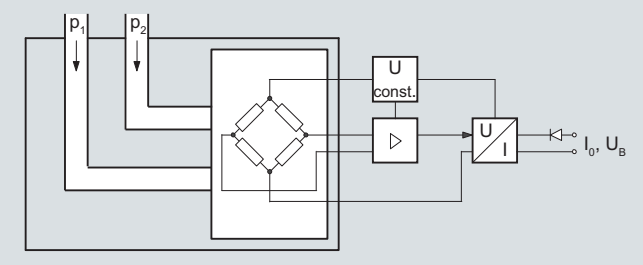
Main components:

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

Function

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

Mode of operation



SITRANS P250 pressure transmitter, function diagram

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

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

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

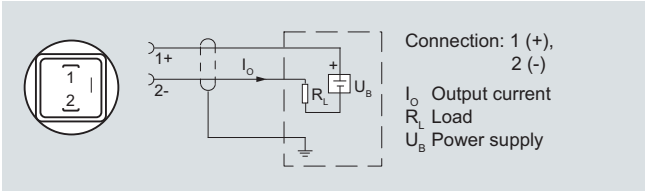
Technical specifications

SITRANS P250 differential pressure transmitter	
Application	
Differential pressure transmitter	Liquids and neutral gases
Mode of operation	
Measuring principle	Piezo-resistive measuring cell (ceramic diaphragm)
Input	
Measured variable	Differential pressure
Measuring range	0 ... 0.1 to 0 ... 25 bar (0 ... 1.45 to 0 ... 363 psi)
Operating pressure	≤ 25 bar at a differential pressure range > 6 bar ≤ 50 bar at a differential pressure range > 10 bar
Burst pressure	1.5 x operating pressure
Output	
Output signal	
• Current output signal	4 ... 20 mA
• Voltage output signal	0 ... 5 V DC and 0 ... 10 V DC
Load	
• 3-wire	> 10 kΩ
• 2-wire	≤ (U_H - 11 V) / 0.02 A
Measuring accuracy	
Error in measurement at limit setting incl. hysteresis and reproducibility	≤ 1 % of typical full-scale value, see "Measuring range" table"
Long-term stability acc. to IEC 60770	≤ 0.5 % of full-scale value/year
Influence of ambient temperature	
• Start of scale	≤ 0.6 % / 10 K of full-scale value (≤ 1.2 % / 10K for measuring cell 0 ... 0.1 bar (1.45 psi))
• Full-scale value	≤ 0.22 % /10 K of full-scale value (≤ 0.37 % / 10K for measuring cell 0 ... 0.1 bar (1.45 psi))
Dynamic behavior	Suitable for static and dynamic measurements
Step response time T_{99}	< 5 ms
Load variation	< 50 Hz

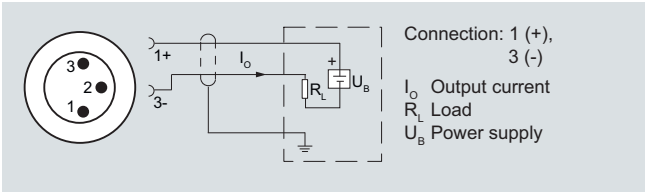
Rated conditions	
Ambient conditions	
• Temperature of medium	-15 ...+85 °C (5 ... 185 °F)
• Ambient temperature	-15 ...+85 °C (5 ... 185 °F)
• Storage temperature	-40 ...+85 °C (-40 ... +185 °F)
Degree of protection acc. to EN 60529	IP65
Mounting position	Any
Mounting	Mounting bracket, included in delivery
Design	
Weight	Approx. 430 g (approx. 0.95 lb)
Enclosure material	Stainless steel 1.4305/AISI 303
Electrical connection	• Plug EN 175301-803-A • Circular plug EN 60130-9 • Cable 1.5 m
Process connection	• Hose sleeve Ø 4 mm/6 mm • Pipe union Ø 6 mm/8 mm • Male thread 7/16-20 UNF, G1/8" • Female thread 1/8-27 NPT • (Standard), G1/8"
Wetted parts materials	
• Process connection	Stainless steel 1.4305/AISI 303, CuZn nickel-plated
• Diaphragm	Ceramic Al_2O_3 (96 %)
• Sealing material	FPM (standard), EPDM, NBR, MVQ, CR
Power supply U_H	
Terminal voltage on pressure transmitter	
• 2-wire, 4 ... 20 mA	11 ... 33 V DC
• 3-wire, 0 ... 5 V DC	11 ... 33 V DC/24 V AC ±15 %
• 3-wire, 0 ... 10 V DC	18 ... 33 V DC/24 V AC ±15 %
Current consumption at nominal pressure	
• 2-wire	< 20 mA
• 3-wire	< 5 mA
Protection against polarity reversal	Protected against short-circuit and polarity reversal. Each connection against the other with max. supply voltage.
Certificates and approvals	
Approval	CE conformity

Measuring range		Max. perm. operating pressure (on either side)	Burst pressure	Max. perm. operating pressure (on one side)	Accuracy
[bar]	[inH_2O]				
0 ... 0.1	0 ... 40.18	25 bar (363 psi)	37.5 bar (544 psi)	0.6 bar (241 inH_2O)	≤ 1.0 %
0 ... 0.2	0 ... 80.37	25 bar (363 psi)	37.5 bar (544 psi)	0.6 bar (241 inH_2O)	≤ 0.8 %
0 ... 0.25	0 ... 100.46	25 bar (363 psi)	37.5 bar (544 psi)	0.6 bar (241 inH_2O)	≤ 0.5 %
0 ... 0.3	0 ... 120.56	25 bar (363 psi)	37.5 bar (544 psi)	0.6 bar (241 inH_2O)	≤ 0.5 %
0 ... 0.4	0 ... 160.74	25 bar (363 psi)	37.5 bar (544 psi)	1.2 bar (482 inH_2O)	≤ 0.8 %
0 ... 0.5	0 ... 200.9	25 bar (363 psi)	37.5 bar (544 psi)	1.2 bar (482 inH_2O)	≤ 0.5 %
0 ... 0.6	0 ... 241.0	25 bar (363 psi)	37.5 bar (544 psi)	1.2 bar (482 inH_2O)	≤ 0.5 %
0 ... 1.0	0 ... 402.0	25 bar (363 psi)	37.5 bar (544 psi)	2 bar (804 inH_2O)	≤ 0.5 %
0 ... 1.6	0 ... 643.0	25 bar (363 psi)	37.5 bar (544 psi)	3.2 bar (1286 inH_2O)	≤ 0.5 %
0 ... 2.5	0 ... 1005	25 bar (363 psi)	37.5 bar (544 psi)	5 bar (2009 H_2O)	≤ 0.5 %
0 ... 4	0 ... 1607	25 bar (363 psi)	37.5 bar (544 psi)	8 bar (3215 inH_2O)	≤ 0.5 %
0 ... 6	0 ... 2411	25 bar (363 psi)	37.5 bar (544 psi)	12 bar (4822 inH_2O)	≤ 0.5 %
0 ... 10	0 ... 4019	50 bar (725 psi)	75 bar (1088 psi)	20 bar (8037 inH_2O)	≤ 0.5 %
0 ... 16	0 ... 6430	50 bar (725 psi)	75 bar (1088 psi)	32 bar (464 psi)	≤ 0.5 %
0 ... 25	0 ... 10046	50 bar (725 psi)	75 bar (1088 psi)	50 bar (725 psi)	≤ 0.5 %

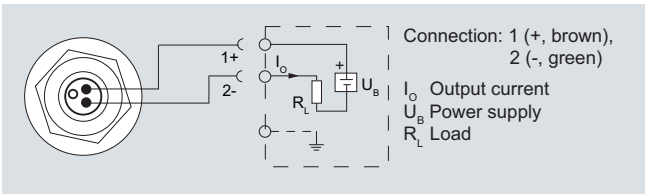
Schematics



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

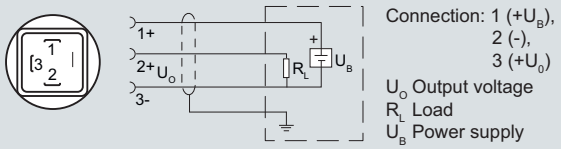


Connection with current output 4 ... 20 mA and round connector

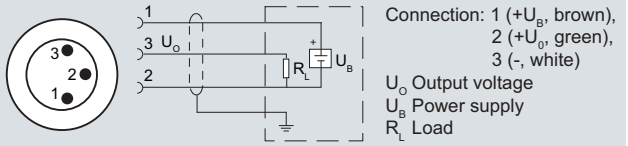


Connection with current output 4 ... 20 mA and permanently fixed cable

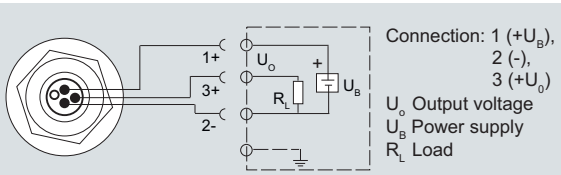
SITRANS P250
for differential pressure



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

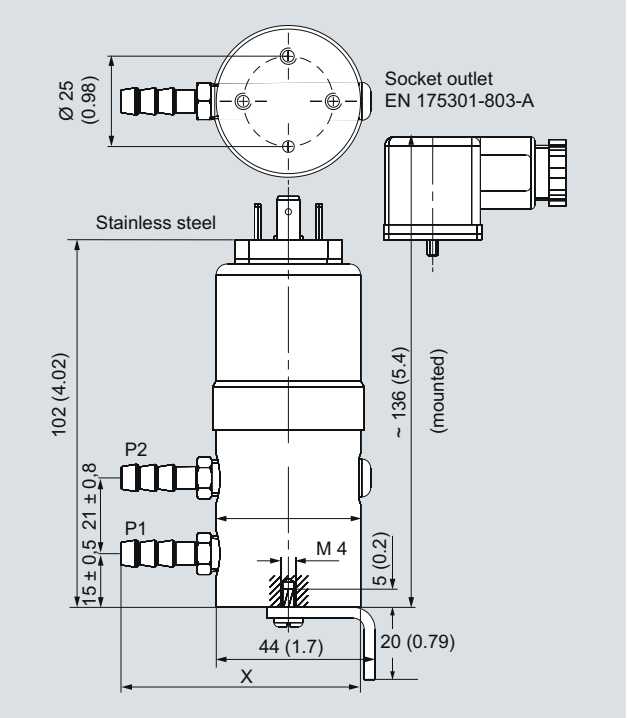


Connection with voltage output 0 ... 5 V DC (0 ... 10 V DC) and round connector

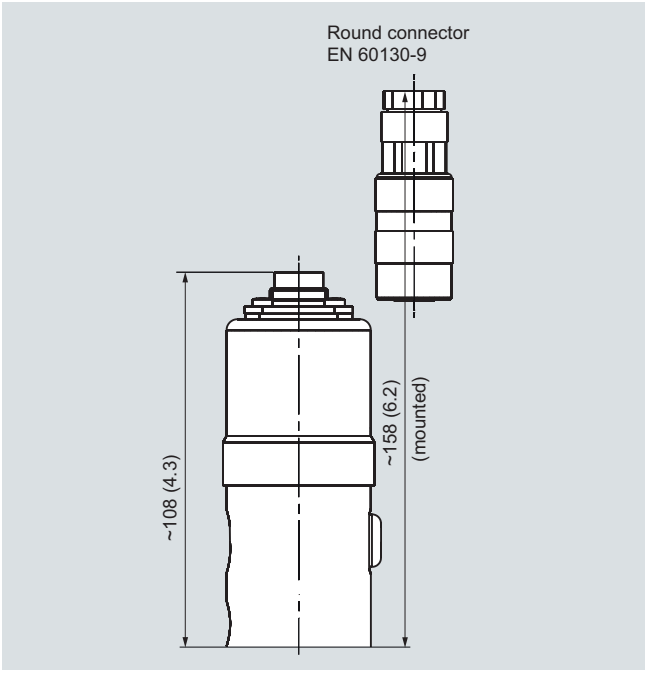


Connection with voltage output 0 ... 5 V DC (0 ... 10 V DC) and permanently fixed cable

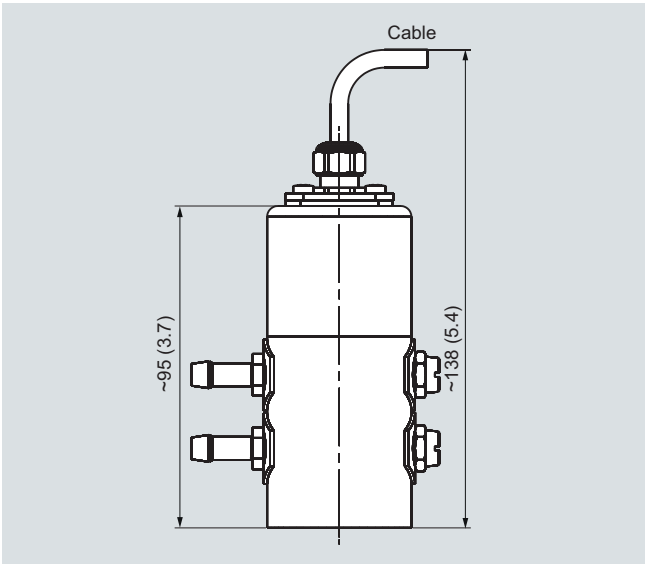
Dimensional drawings



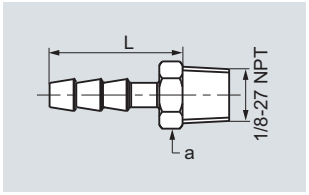
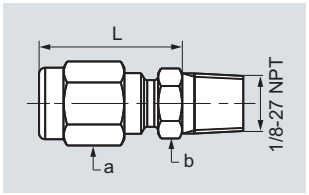
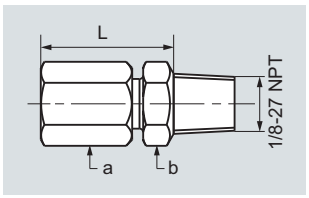
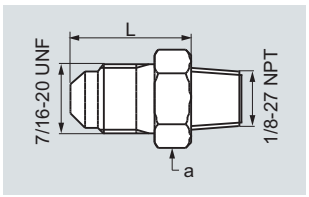
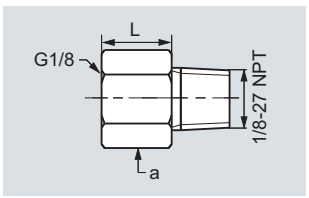
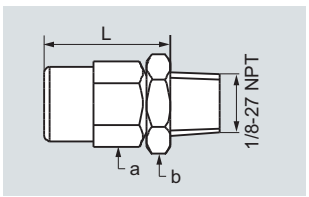
SITRANS P250 differential pressure transmitter with socket outlet to EN 175301-803-A, dimensions in mm (inch)



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



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

Process connections		∅		Width across flats	L		X	
		[mm]	[inch]		[mm]	[inch]	[mm]	[inch]
	Hose connection for hose (CuZn nickel-plated)	4	0.16	a = 10	20	0.79	61	2.40
		6	0.24	a = 10	25	0.99	66	2.60
	Pipe union with screw-in nipple for outer pipe (CuZn nickel-plated)	6	0.24	a = 10 b = 12	24	0.95	65	2.56
		8	0.32	a = 12 b = 14	25	0.99	66	2.60
	Pipe union with screw-in nipple for outer pipe (stainless steel 1.4305/AISI 303)	6	0.24	a = 10 b = 12	24	0.95	65	2.56
		8	0.32	a = 12 b = 14	26	1	67	2.64
	Male thread G1/8 7/16-20 UNF (CuZn nickel-plated)	-	-	a = 14	18	0.71	59	2.32
	Female thread G1/8 (stainless steel 1.4305/AISI 303)	-	-	a = 14	12	0.47	53	2
	Male thread G1/8 (CuZn nickel-plated)	-	-	a = 10 b = 12	20	0.79	61	2.40

SITRANS P250
for differential pressure

Selection and Ordering data		Order No.	Order code
SITRANS P 250 pressure transmitter for differential pressure Accuracy ≤ 1 %, wetted parts ceramic/stainless steel 1.4301, scope of delivery: transmitter, mounting bracket and instruction manual, without explosion protection		**7MF1641-**	**0 -** **0**
Measuring range			
0 ... 0.1 bar (0 ... 40.19 inH_2O)	►		**3AA**
0 ... 0.2 bar (0 ... 80.37 inH_2O)	►		**3AC**
0 ... 0.25 bar (0 ... 100.46 inH_2O)	►		**3AD**
0 ... 0.3 bar (0 ... 120.56 inH_2O)	►		**3AE**
0 ... 0.4 bar (0 ... 160.74 inH_2O)	►		**3AF**
0 ... 0.5 bar (0 ... 201.0 inH_2O)	►		**3AG**
0 ... 0.6 bar (0 ... 241.0 inH_2O)	►		**3AH**
0 ... 1.0 bar (0 ... 402.0 inH_2O)	►		**3BA**
0 ... 1.6 bar (0 ... 643.0 inH_2O)	►		**3BB**
0 ... 2.5 bar (0 ... 1005.0 inH_2O)	►		**3BD**
0 ... 4.0 bar (0 ... 1607.0 inH_2O)	►		**3BE**
0 ... 6.0 bar (0 ... 2411.0 inH_2O)	►		**3BG**
0 ... 10.0 bar (0 ... 4019.0 inH_2O)	►		**3CA**
0 ... 16.0 bar (0 ... 6430.0 inH_2O)	►		**3CB**
0 ... 25.0 bar (0 ... 10046 inH_2O)	►		**3CD**
Other version, add Order Code and plain text (Note: smallest possible span 100 mbar (40.19 inH_2O)			
Output signal			
4 ... 20 mA	►		**0**
0 ... 5 V DC			**1**
0 ... 10 V DC			**2**
Electrical connection			
Plug acc. to EN 175 301-803-A (suitable coupling included in scope of delivery)	►		**1**
Round connector acc. to EN 60139-9			**2**
Cable 1.5 m with cable gland			**3**
Process connection			
Without connections, female thread 1/8-27 NPT	►		**A**
Hose connection			
• CuZn nickel-plated, for hose ∅ 4 mm			**B**
• CuZn nickel-plated, for hose ∅ 6 mm			**C**
• PVDF, for hose ∅ 6 mm			**D**
Pipe union			
• CuZn nickel-plated, for pipe ∅ 6 mm			**E**
• Stainless steel 1.4304, for pipe ∅ 6 mm			**F**
• CuZn nickel-plated, for pipe ∅ 8 mm			**G**
• Stainless steel 1.4304, for pipe ∅ 8 mm			**H**
Male thread, 7/16-20 UNF (CuZn nickel-plated)			**L**
Adapter			
• Inner, G1/8 (stainless steel), for pipe ∅ 6 mm			**M**
• Outer, G1/8 (CuZn nickel-plated), with union nut, for pipe ∅ 6 mm			**N**
Sealing material			
Fluoro rubber (Viton/FPM)	►		**A**
Ethylene propylene diene monomer rubber (EPDM)			**B**
Nitrile butadiene rubber (NBR)			**C**
Silicone rubber (MVQ)			**D**
Neoprene (CR)			**E**
Further designs Please add "**-Z**" to Order No. and specify Order code(s).		Order Code	
Quality inspection certificate (factory calibration) to IEC 60770-2		**C11**	

► Available ex stock

Overview

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

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

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

Benefits

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

Application

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

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

Design

SITRANS P MPS pressure transmitters have a front-flush 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.

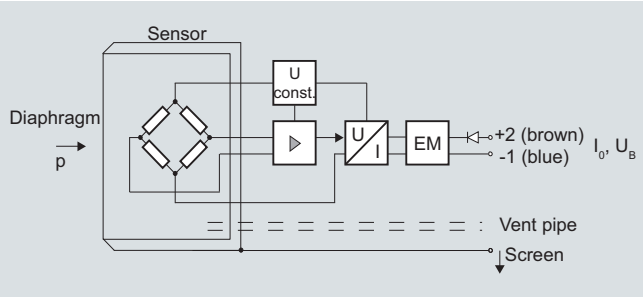
The diaphragm is protected against external influences by a protective cap.

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



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

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

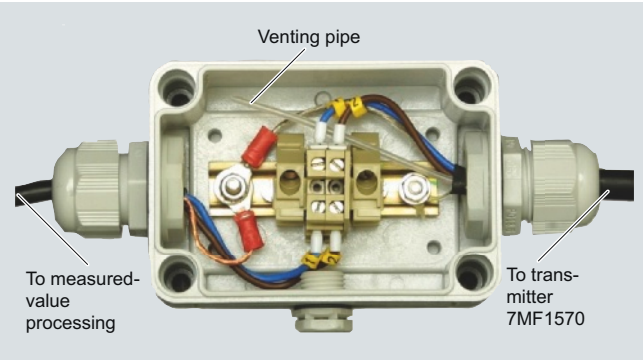
The hydrostatic pressure of the liquid column acts on the sensor diaphragm, and transmits the pressure to the piezo-resistive bridge in the sensor.

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

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

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

Integration



Junction box 7MF1570-8AA, opened

SITRANS P MPS (submersible sensor)
Transmitter for hydrostatic level

Measuring point setup, in principle

Technical specifications

SITRANS P MPS pressure measurement transmitter (submersible sensor)	
Mode of operation	
Measuring principle	piezo-resistive
Input	
Measured variable	Hydrostatic level
Measuring range	Maximum operating pressure
• 0 ... 2 mH_2O (0 ... 6 ftH_2O)	• 1.4 bar (20.3 psi) (corresponds to 14 mH_2O (42 ftH_2O))
• 0 ... 4 mH_2O (0 ... 12 ftH_2O)	• 1.4 bar (20.3 psi) (corresponds to 14 mH_2O (42 ftH_2O))
• 0 ... 5 mH_2O (0 ... 15 ftH_2O)	• 1.4 bar (20.3 psi) (corresponds to 14 mH_2O (42 ftH_2O))
• 0 ... 6 mH_2O (0 ... 18 ftH_2O)	• 3.0 bar (43.5 psi) (corresponds to 30 mH_2O (90 ftH_2O))
• 0 ... 10 mH_2O (0 ... 30 ftH_2O)	• 3.0 bar (43.5 psi) (corresponds to 30 mH_2O (90 ftH_2O))
• 0 ... 20 mH_2O (0 ... 60 ftH_2O)	• 5.0 bar (72.5 psi) (corresponds to 50 mH_2O (150 ftH_2O))
Output	
Output signal	4 ... 20 mA
Measuring accuracy	Acc. to IEC 60770-1
Error in measurement at limit setting incl. hysteresis and reproducibility	0.3 % of full-scale value (typical)
Influence of ambient temperature	
Zero and span	
• 1 ... 6 mH_2O (3 ... 18 ftH_2O)	0.45 %/10 K of full-scale value
• ≥ 6 mH_2O (≥ 18 ftH_2O)	0.3 %/10 K of full-scale value
Long-term stability	
Zero and span	
• 1 ... 6 mH_2O (3 ...18 ftH_2O)	0.25 % of full-scale value/year
• ≥ 6 mH_2O (≥ 18 ftH_2O)	0.2 % of full-scale value/year
Rated conditions	
Ambient conditions	
• Process temperature	-10 ... +80 °C (14 ... 176 °F)
• Storage temperature	-40 ... +100 °C (-40 ... +212 °F)
Degree of prot. to DIN EN 60529	IP68
Design	
Weight	
• Pressure transmitter	≈ 0.4 kg (≈ 0.88 lb)
• Cable	0.08 kg/m (≈ 0.054 lb/ft)
Electrical connection	Cable with 2 conductors with screen and vent pipe, strength cord (max. 300 N (67.44 lbf)
Material	
• Seal diaphragm	Stainl. steel, mat. no. 316L/316 Ti
• Enclosure	Stainl. steel, mat. no. 316L/316 Ti
• Gasket	Viton
• Connecting cable	Either PE/HFFR sheath (non-halogen) or FEP sheath
Power supply	
Terminal voltage on pressure transmitter U_B	10 ... 36 V DC
Certificates and approvals	
Germanischer Lloyd (GL)	GL 75360-09 HH
Bureau Veritas (BV)	BV 27101/A0 BV
Det Norske Veritas (DNV)	DNV A-12553
Drinking water approval (ACS)	ACS 11 ACC NY 014
Drinking water approval (WRAS)	WRAS 1111055
GOST	GOST-R, GOST FR.C.30.004.A/ 42376/1 und PPC 00-04 1505
The transmitter is not subject to the pressure equipment directive (PED 97/23/EC)	
Explosion protection	
• Intrinsic safety "i"	SEV 10 ATEX 0149
- Marking	II 1 G Ex ia IIC T4 Ga
Junction box	
Application	for connecting the transmitter cable
Design	
Weight	0.2 kg (0.44 lb)
Electrical connection	2 x 3-way (28 to 18 AWG)
Cable entry	2 x M20 x 1.5
Enclosure material	polycarbonate
Vent pipe for atmospheric pressure	
Screw for cable strength cord	
Rated conditions	
Degree of prot. to DIN EN 60529	IP65
Cable hanger	
Application	for mounting the transmitter
Design	
Weight	0.16 kg (0.35 lb)
Material	Galvanized steel, polyamide

Selection and Ordering data		Order No.	Order code
SITRANS P MPS pressure transmitter for gauge pressure (submersible sensor)		**7MF1570-** ■■	**A0** ■ ■■■
2-wire system			
Note: Junction box and cable hanger included in delivery			
With PE cable			
Measuring range	**Cable length L**		
0 ... 2 mH_2O	10 m ▶		**1C**
0 ... 4 mH_2O	10 m ▶		**1D**
0 ... 5 mH_2O	25 m ▶		**1B**
0 ... 6 mH_2O	25 m ▶		**1E**
0 ... 10 mH_2O	25 m ▶		**1F**
0 ... 20 mH_2O	25 m ▶		**1G**
0 ... 6 ftH_2O	32 ft		**1K**
0 ... 12 ftH_2O	32 ft		**1L**
0 ... 18 ftH_2O	82 ft		**1M**
0 ... 30 ftH_2O	82 ft		**1N**
0 ... 60 ftH_2O	82 ft		**1P**
Special cable lenght/Special measuring range[1] Please add „-Z“ to Order No. and specify Order code and plain text. Note: Indication of measuring range Y01 is always necessary.			**9A** **H..** **+** **Y01**
3 m			**H1A**
5 m			**H1B**
7 m			**H1C**
10 m			**H1D**
15 m			**H1E**
20 m			**H1F**
25 m			**H1G**
30 m			**H1H**
40 m			**H1J**
50 m			**H1K**
60 m			**H1L**
70 m			**H1M**
80 m			**H1N**
90 m			**H1P**
100 m			**H1Q**
125 m			**H1R**
150 m			**H1S**
175 m			**H1T**
200 m			**H1U**
225 m			**H1V**
250 m			**H1W**
275 m			**H1X**
300 m			**H2A**
350 m			**H2B**
400 m			**H2C**
450 m			**H2D**
500 m			**H2E**
550 m			**H2F**
600 m			**H2G**
650 m			**H2H**
700 m			**H2J**
750 m			**H2K**
800 m			**H2L**
850 m			**H2M**
900 m			**H2N**
950 m			**H2P**
1000 m			**H2Q**

Selection and Ordering data		Order No.	Order code
SITRANS P MPS pressure transmitter for gauge pressure (submersible sensor)		**7MF1570-** ■■	**A0** ■ ■■■
2-wire system			
Note: Junction box and cable hanger included in delivery			
With FEP cable			
Measuring range	**Cable length L**		
0 ... 2 mH_2O	10 m ▶		**5C**
0 ... 4 mH_2O	10 m ▶		**5D**
0 ... 5 mH_2O	25 m ▶		**5B**
0 ... 6 mH_2O	25 m ▶		**5E**
0 ... 10 mH_2O	25 m ▶		**5F**
0 ... 20 mH_2O	25 m ▶		**5G**
0 ... 6 ftH_2O	32 ft		**5K**
0 ... 12 ftH_2O	32 ft		**5L**
0 ... 18 ftH_2O	82 ft		**5M**
0 ... 30 ftH_2O	82 ft		**5N**
0 ... 60 ftH_2O	82 ft		**5P**
Special cable lenght/Special measuring range[1] Please add „-Z“ to Order No. and specify Order code and plain text. Note: Indication of measuring range Y01 is always necessary.			**9A** **H..** **+** **Y01**
3 m			**H5A**
5 m			**H5B**
7 m			**H5C**
10 m			**H5D**
15 m			**H5E**
20 m			**H5F**
25 m			**H5G**
30 m			**H5H**
40 m			**H5J**
50 m			**H5K**
60 m			**H5L**
70 m			**H5M**
80 m			**H5N**
90 m			**H5P**
100 m			**H5Q**
125 m			**H5R**
150 m			**H5S**
175 m			**H5T**
200 m			**H5U**
225 m			**H5V**
250 m			**H5W**
275 m			**H5X**
300 m			**H6A**
350 m			**H6B**
400 m			**H6C**
450 m			**H6D**
500 m			**H6E**
550 m			**H6F**
600 m			**H6G**
650 m			**H6H**
700 m			**H6J**
750 m			**H2K**
800 m			**H6L**
850 m			**H6M**
900 m			**H6N**
950 m			**H6P**
1000 m			**H6Q**

SITRANS P MPS (submersible sensor)
Transmitter for hydrostatic level

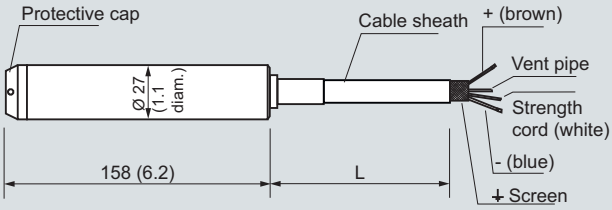
Selection and Ordering data	Order No.	Order code
SITRANS P MPS pressure transmitter for gauge pressure (submersible sensor) 2-wire system Note: Junction box and cable hanger included in delivery	**7MF1570-**	**A0**
Explosion protection		
• None ►		**1**
• with type of protection "intrinsic safety" (Ex II 1 G Ex ia IIC T4) ►		**2**
Approvals		
• with drinking water approval to WRAS and ACS		**6**
Further designs	Order code	
Quality inspection certificate (factory calibration) to IEC 60770-2, add „**-Z**“ to order no. and add order code.	**C11**	
Indication of measuring range (only at special cable lengths) in „... to ... mH_2O“ or „... to ... ftH_2O“	**Y01**	
Accessories (as spare part)	Order No.	
Junction box for connecting the transmitter cable	**7MF1570-8AA**	
Cable hanger for attachment of transmitter	**7MF1570-8AB**	

► Available ex stock

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

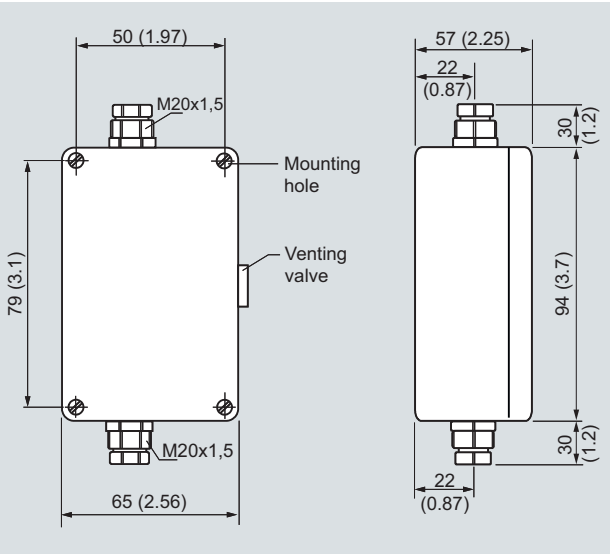
[1] Special measuring ranges of between 0 ... 1 mH_2O (0 ... 3 ftH_2O) and 0 ... 200 mH_2O (0 ... 656 ftH_2O) and special cable lengths of up to 1000 m (3281 ft) are possible. With Ex versions the max. custom cable length is 50 m (150 ft). The length of free hanging cable should not exceed 375 m (1230 ft).
Note: Due to mounting reasons it has to be considered that the cable always must be longer than the height of the liquid column to be measured.

Dimensional drawings

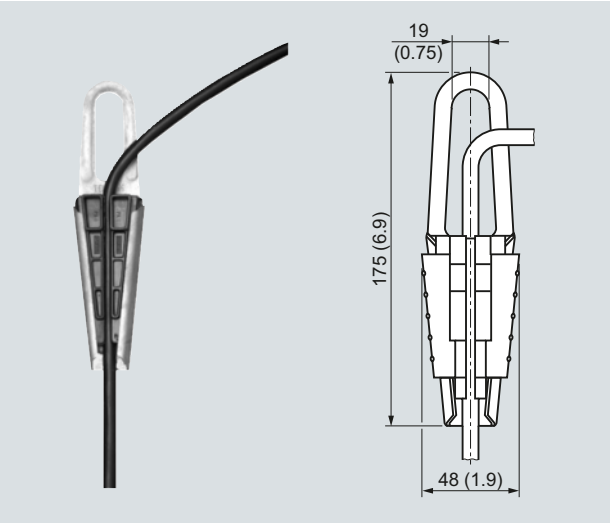


Cable sheath 8.3 (0.33) diam. (black or blue, PE/HFFR)
Flexible cable with 0.5 mm^2 (0.00078 $inch^2$) cross-section
Vent pipe 1 (0.04) diam. (inner diameter)
Protective cap with 4 x 3 diam. (4 x 0.12 diam.) holes (black, PA)

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



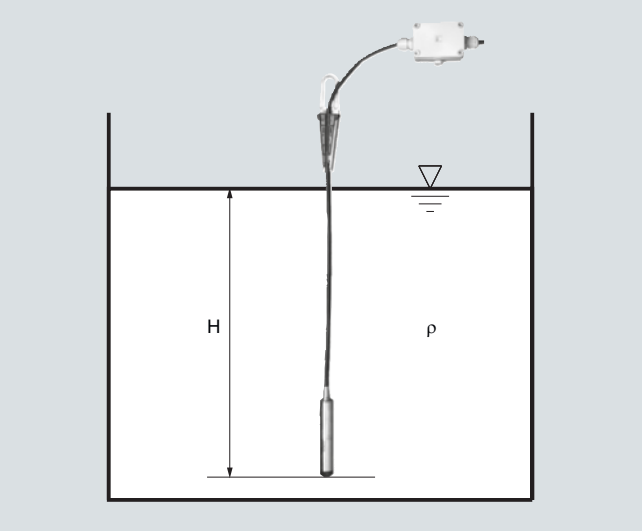
Junction box, dimensions in mm (inch)



Cable hanger, dimensions in mm (inch)

More information

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



Calculation of the measuring range:

p = ρ x g x H

with:

ρ = density of medium

g = local acceleration due to gravity

H = maximum level

Example:

Medium: Diesel fuel, ρ = 850 kg/m^3

Acceleration due to gravity: 9.81 m/s^2

Start-of-scale: 0 m

Maximum level: 6.2 m

Cable length: 7 m, FEP cable

Calculation:

p = 850 kg/m^3 x 9.81 m/s^2 x 6.2 m

p = 51698.7 N/m^2

p = 517 mbar

Transmitter to be ordered:

7MF1570-9AA02-Z, H5C + Y01

Y01: 0 ... 517 mbar

SITRANS P Compact
for gauge and absolute pressure

Overview

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

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

Particular value has been placed on a high surface quality. It is therefore possible, for example, to guarantee roughness values down to R_a = 0.4 µm (1.57 · 10^{-5} inch) in the wetted area (welded seam area R_a < 0.8 µm (3.15 · 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 °C (392 °F).

Benefits

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

Application

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

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

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

Design

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

Notes on operating the pressure transmitter

Compensation of internal atmospheric pressure

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

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

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

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

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

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

CE marking

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

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

Hazardous areas

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

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

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

Function

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

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

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

Technical specifications

Pressure transmitters for food, pharmaceuticals and biotechnology	
Mode of operation	
Measuring principle	piezo-resistive
Input	
Measured variable	gauge or absolute pressure
Measuring range	0 ... 160 mbar (0 ... 2.32 psi) ... 0 ... 40 bar (0 ... 580 psi)
Output	
Output signal	
• 2-wire system	4 ... 20 mA
• Three-wire system	0 ... 20 mA
Measuring accuracy	Acc. to IEC 60770-1
Error in measurement at limit setting incl. hysteresis and reproducibility	≤ 0.2 % of full-scale value
Adjustment accuracy	≤ ± 0.2 % of full-scale value
Step response time	< 20 ms
Influence of ambient temperature	
On the enclosure	
• Zero point	< 0.2 %/10 K of full-scale value
• Measuring span	< 0.2 %/10 K of full-scale value
On the process connection (remote seals)	Zero error (depends on design)
• Flange remote seal	
- DN 25 / 1"	4.8 mbar/10 K (0.069 psi/10 K)
- DN 32 / 1¼"	2.3 mbar/10 K (0.033 psi/10 K)
- DN 40 / 1½"	1.6 mbar/10 K (0.023 psi/10 K)
- DN 50 / 2"	0.6 mbar/10 K (0.009 psi/10 K)
• Clamp-on seal	
- DN 25 / 1"	9.5 mbar/10 K (0.14 psi/10 K)
- DN 32 / 1¼"	4.1 mbar/10 K (0.06 psi/10 K)
- DN 40 / 1½"	3.9 mbar/10 K (0.05 psi/10 K)
- DN 50 / 2"	3.9 mbar/10 K (0.05 psi/10 K)

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

Rated conditions	
Installation conditions	
• Mounting position	Any, vertical as standard
Ambient conditions	
• Ambient temperature	-10 ... +70 °C (14 ... 158 °F)
• Storage temperature	-10 ... +90 °C (14 ... 194 °F)
• Process temperature	Max. 200 °C (392 °F), depending on design
• Degree of protection (to EN 60529)	IP65, optional IP67
• Electromagnetic Compatibility	
- Emitted interference	To EN 50081 Part 1, issue 1993 (residential and industrial areas). The unit has no own emissions.
- Noise immunity to	EN 50082 Part 2, issue March 1995 (industrial areas)
Design	
Weight (without remote seal)	
• Field enclosure	≈ 460 G (≈ 1.01 (lb)
• Enclosure with plug	≈ 200 g (≈ 0.44 lb)
Enclosure	
• Designs	• Field housing IP65 or IP67, with screwed gland • Angled plug DIN 43650, IP65 • Cable connection, IP67 • Round plug connector M12, IP65
• Material	Stainless steel, mat. no. 1.4404/316L/1.4305
Material of union nut	Polyamide (with electrical connection using plug or cable)
	Electronics unit potted with silicone
	Internal ventilation for measuring ranges < 16 bar (< 232 psi), through housing thread or connection cable depending on design
Process connection	
• Versions	See ordering data
• Material of coupling	Stainless steel, mat. no. 1.4404/316L
Power supply	
Terminal voltage on transmitter	10 ... 30 V DC
Rated voltage	24 V DC
Certificates and approvals	
Classification according to pressure equipment directive (PED 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
Explosion protection	
• Intrinsic safety "i"	TÜV 03 ATEX 2099 X
- Marking	Ex II 2G Ex ib IIC T6

SITRANS P Compact for gauge and absolute pressure

Selection and Ordering data	Order No.	Ord. code
SITRANS P Compact pressure transmitters for pressure and absolute pressure with diaphragm flush at front	7MF8010-	
2-wire system Process temperature up to 140 °C (284 °F) Accuracy: 0.2 % of full-scale value Output 4 ... 20 mA	1 ■■■■ - ■■■■	■■■
Diaphragm seal with quick-release clamp		
Milk pipe union to DIN 11851 with slotted union nut		
• DN 25	AD	
• DN 32	AE	
• DN 40	AF	
• DN 50	AG	
• DN 65	AH	
Milk pipe union to DIN 11851 with threaded socket		
• DN 25	BD	
• DN 32	BE	
• DN 40	BF	
• DN 50	BG	
• DN 65	BH	
Clamp connection to DIN 32676		
• DN 25	CD	
• DN 40	CF	
• DN 50	CG	
Clamp connection to ISO 2852		
• 1 inch	DM	
• 1½ inch	DN	
• 2 inch	DP	
• 2½ inch	DQ	
IDF standard with slotted union nut		
• 1 inch	EM	
• 1½ inch	EN	
• 2 inch	EP	
IDF standard with threaded socket		
• 1 inch	FM	
• 1½ inch	FN	
• 2 inch	FP	
SMS standard with slotted union nut		
• 1 inch	GM	
• 1½ inch	GN	
• 2 inch	GP	
SMS standard with threaded socket		
• 1 inch	HM	
• 1½ inch	HN	
• 2 inch	HP	
DRD flange, without welding-type flange		
• DN 50, PN 40	JH	
Varivent connection (Tuchenhagen)		
• D = 50, for Varivent housing DN 25 and 1 inch	KF	
• D = 68, for Varivent housing DN 40 ... DN 125 and 1½ ... 6 inch	KL	
Special version (add Order code and plain text)	ZA	J1Y
Filling liquid		
Vegetable oil	1	
Medicinal white oil	2	
Food oil, FDA-listed	3	
Special version	9	L1Y
Output signal		
4 ... 20 mA	1	
Special version (add Order code and plain text)	9	M1Y

Selection and Ordering data	Order No.	Ord. code
SITRANS P Compact pressure transmitters for pressure and absolute pressure with diaphragm flush at front	7MF8010-	
2-wire system Process temperature up to 140 °C (284 °F) Accuracy: 0.2 % of full-scale value Output 4 ... 20 mA	1 ■■■■ - ■■■■	■■■
Diaphragm seal with aseptic connection		
Aseptic screwed gland to DIN 11864-1, form A, with slotted union nut		
• 1 inch	PM	
• 1½ inch	PN	
• 2 inch	PP	
• 2½ inch	PQ	
Aseptic screwed gland to DIN 11864-1, form A with threaded socket		
• 1 inch	QM	
• 1½ inch	QN	
• 2 inch	QP	
• 2½ inch	QQ	
Aseptic screwed NEUMO with slotted union nut[1]		
• DN 25	RD	
• DN 32	RE	
• DN 40	RF	
• DN 50	RG	
Aseptic screwed NEUMO with threaded socket[1]		
• DN 25	SD	
• DN 32	SE	
• DN 40	SF	
• DN 50	SG	
Aseptic screwed NEUMO with clamp connection, form R[1]		
• DN 25	TD	
• DN 32	TE	
• DN 40	TF	
• DN 50	TG	
Aseptic screwed NEUMO with clamp connection, form V[1]		
• DN 25	UD	
• DN 32	UE	
• DN 40	UF	
• DN 50	UG	
Male thread DIN 3852 Form A		
• G½", min. meas. span 1.6 bar (23.2 psi)	XA	
• G¾", min. meas. span 1 bar (14.5 psi)	XB	
• G1", min. meas. span 0.4 bar (5.8 psi)	XC	
• G1½", min. meas. span 0.25 bar (3.63 psi)	XD	
• G2", min. meas. span 0.16 bar (2.32 psi)	XE	
Special version (add Order code and plain text)	ZA	J1Y
Filling liquid		
Vegetable oil	1	
Medicinal white oil	2	
Food oil, FDA-listed	3	
Special version	9	L1Y
Output signal		
4 ... 20 mA	1	
Special version (add Order code and plain text)	9	M1Y

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

Selection and Ordering data		Order No.	Ord. code
SITRANS P Compact pressure transmitters for pressure and absolute pressure with diaphragm flush at front		**7MF8010-**	
2-wire system Process temperature up to 140 °C (284 °F) Accuracy: 0.2 % of full-scale value Output 4 ... 20 mA		**1** ■■■■ - ■■■■	■■■
Housing design (stainless steel mat. No. 1.4404/316L) / electr. connection			
Housing with angled plug to DIN 43650, IP65		**1**	
Housing with round plug M12, IP65, union nut made of polyamide		**2**	
Housing with round plug M12, IP65, union nut made of stainless steel		**3**	
Stainless steel field housing (small) with cable gland, IP65		**4**	
Stainless steel field housing (small) with cable gland, IP67 Internal ventilation for measuring ranges < 10 bar (< 145 psi)		**5**	
Measured range	**Overload pressure**		
0 ... 160 mbar (0 ... 2.32 psi)	2 bar (29 psi)	**BB**	
0 ... 250 mbar (0 ... 3.63 psi)	2 bar (29 psi)	**BC**	
0 ... 400 mbar (0 ... 5.8 psi)	6 bar (87 psi)	**BD**	
0 ... 600 mbar (0 ... 8.7 psi)	6 bar (87 psi)	**BE**	
0 ... 1 bar (0 ... 14.5 psi)	10 bar (145 psi)	**CA**	
0 ... 1.6 bar (0 ... 23.2 psi)	10 bar (145 psi)	**CB**	
0 ... 2.5 bar (0 ... 36.3 psi)	16 bar (232 psi)	**CC**	
0 ... 4 bar (0 ... 58 psi)	16 bar (232 psi)	**CD**	
0 ... 6 bar (0 ... 87 psi)	30 bar (435 psi)	**CE**	
0 ... 10 bar (0 ... 145 psi)	30 bar (435 psi)	**DA**	
0 ... 16 bar (0 ... 232 psi)	50 bar (725 psi)	**DB**	
0 ... 25 bar (0 ... 363 psi)	50 bar (725 psi)	**DC**	
0 ... 40 bar (0 ... 580 psi)	70 bar (1015 psi)	**DD**	
-160 ... 0 mbar (-2.32 ... 0 psi)	2 bar (29 psi)	**EB**	
-250 ... 0 bar (-3.73 ... 0 psi)	2 bar (29 psi)	**EC**	
-400 ... 0 bar (-5.8 ... 0 psi)	6 bar (87 psi)	**ED**	
-600 ... 0 bar (-8.7 ... 0 psi)	6 bar (87 psi)	**EE**	
-1 ... 0 bar (-14.5 ... 0 psi)	10 bar (145 psi)	**FA**	
-1 ... 0.6 bar (-14.5 ... 8.7 psi)	10 bar (145 psi)	**FB**	
-1 ... 1.5 bar (-14.5 ... 21.8 psi)	16 bar (232 psi)	**FC**	
-1 ... 3 bar (-14.5 ... 43.5 psi)	16 bar (232 psi)	**FD**	
-1 ... 5 bar (-14.5 ... 72.5 psi)	30 bar (435 psi)	**FE**	

Selection and Ordering data		Order No.	Ord. code
SITRANS P Compact pressure transmitters for pressure and absolute pressure with diaphragm flush at front		**7MF8010-**	
2-wire system Process temperature up to 140 °C (284 °F) Accuracy: 0.2 % of full-scale value Output 4 ... 20 mA		**1** ■■■■ - ■■■■	■■■
Measured range	**Overload pressure**		
(continued)			
-1 ... +9 bar (-14.5 ... +130.5 psi)	30 bar (435 psi)	**GA**	
-1 ... +15 bar (-14.5 ... +217.6 psi)	50 bar (725 psi)	**GB**	
0 ... 1 bar a (0 ... 14.5 psia)	10 bar a (145 psia)	**HA**	
0 ... 1.6 bar a (0 ... 23.2 psia)	10 bar a (145 psia)	**HB**	
0 ... 2.5 bar a (0 ... 36.3 psia)	16 bar a (232 psia)	**HC**	
0 ... 4 bar a (0 ... 58 psia)	16 bar a (232 psia)	**HD**	
0 ... 6 bar a (0 ... 87 psia)	30 bar a (435 psia)	**HE**	
0 ... 10 bar a (0 ... 145 psia)	30 bar a (435 psia)	**JA**	
Special version (add Order code and plain text)		**ZA**	**P1Y**
Explosion protection			
without		**1**	
with, to ATEX 100a, II 2 G, Ex ib IIC T6		**2**	
Further designs		Order code	
Please add "**-Z**" to Order No. and specify Order code			
Hygiene version Roughness of process connection: Foil R_a < 0.8 µm ($3.15 \cdot 10^{-8}$ inch); Welded seams R_a < 1.5 µm ($5.9 \cdot 10^{-8}$ inch)		**P01**	
Integral cooling element Process temperature max. 200 °C (392 °F) instead of 140 °C (284 °F)		**K01**	
Connections for pipe			
Pipes to DIN 11850		**R01**	
ISO pipes to DIN 2463		**R02**	
Pipes to O. D. Tubing "BS 4825 Part 1"		**R03**	
Certificates			
Quality inspection certificate (Factory calibration) to IEC 60770-2		**C11**	
Inspection certificate to EN 10204-3.1		**C12**	
Use of FDA-listed remote seal filling liquids certified by test report to EN 10204-2.2		**C17**	
Roughness depth measurement R_a certified by test report to EN 10204-3.1		**C18**	
Certification to EHEDG for clamp-on seals with aseptic screwed gland to DIN 11864		**C19**	

SITRANS P Compact for gauge and absolute pressure

Selection and Ordering data	Order No.	Ord. code
SITRANS P Compact pressure transmitters 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** ■■■■ - ■■■■	■■■
Clamp-on remote seal (screwed gland at both ends) with quick-release clamps		
Milk pipe union to DIN 11851 with threaded socket		
• DN 25	**AD**	
• DN 32	**AE**	
• DN 40	**AF**	
• DN 50	**AG**	
• DN 65	**AH**	
Clamp connection to DIN 32676		
• DN 25	**CD**	
• DN 32	**CE**	
• DN 40	**CF**	
• DN 50	**CG**	
• DN 65	**CH**	
Clamp connection to ISO 2852[1]		
• 1 inch	**DM**	
• 1½ inch	**DN**	
• 2 inch	**DP**	
• 2½ inch	**DQ**	
Special version (add Order code and plain text)	**ZA**	**J1Y**
Filling liquid		
Vegetable oil	**1**	
Medicinal white oil	**2**	
Food oil, FDA-listed	**3**	
Special version (add Order code and plain text)	**9**	**L1Y**
Output signal		
4 ... 20 mA	**1**	
Special version (add Order code and plain text)	**9**	**M1Y**

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

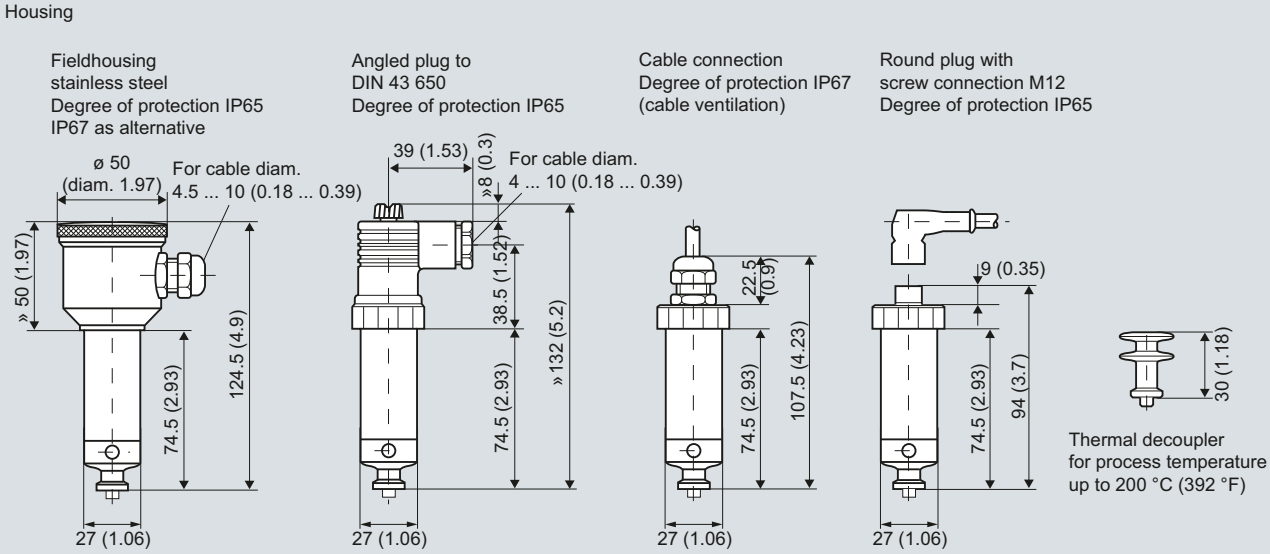
Selection and Ordering data	Order No.	Ord. code
SITRANS P Compact pressure transmitters for pressure and absolute pressure with clamp-on remote seal	**7MF8010-**	
2-wire system Process temperature up to 140 °C (284 °F) Accuracy: 0.2 % of full-scale value Output 4 ... 20 mA	**2** ■■■■ - ■■■■	■■■
Clamp-on seal with aseptic connection		
Aseptic screwed gland to DIN 11864-1, form A with threaded socket		
• 1 inch	**QM**	
• 1½ inch	**QN**	
• 2 inch	**QP**	
Aseptic screwed NEUMO with threaded socket[1]		
• DN 25	**SD**	
• DN 32	**SE**	
• DN 40	**SF**	
• DN 50	**SG**	
• DN 65	**SH**	
Aseptic screwed NEUMO with clamp connection, form R[1]		
• 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 SÜDMO with clamp connection W 601		
• 1 inch	**WM**	
• 1½ inch	**WN**	
• 2 inch	**WP**	
Special version (add Order code and plain text)	**ZA**	**J1Y**
Filling liquid		
Vegetable oil	**1**	
Medicinal white oil	**2**	
Food oil, FDA-listed	**3**	
Special version (add Order code and plain text)	**9**	**L1Y**
Output signal		
4 ... 20 mA	**1**	
Special version (add Order code and plain text)	**9**	**M1Y**

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

Selection and Ordering data	Order No.	Ord. code
SITRANS P Compact pressure transmitters 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 ■■■■ - ■■■■	■■■
Housing design (stainless steel mat. No. 1.4404/316L) / electr. connection		
Housing with angled plug to DIN 43650, IP65, union nut made of polyamide	1	
Housing with round plug M12, IP65, union nut made of polyamide	2	
Housing with round plug M12, IP65, union nut made of stainless steel	3	
Stainless steel field housing (small) with cable gland, IP65	4	
Stainless steel field housing (small) with cable gland, IP67 Internal ventilation for measuring ranges < 10 bar (< 145 psi)	5	
Measured range / **Overload pressure**		
0 ... 160 mbar (0 ... 2.32 psi) / 2 bar (29 psi)	BB	
0 ... 250 mbar (0 ... 3.63 psi) / 2 bar (29 psi)	BC	
0 ... 400 mbar (0 ... 5.8 psi) / 6 bar (87 psi)	BD	
0 ... 600 mbar (0 ... 8.7 psi) / 6 bar (87 psi)	BE	
0 ... 1 bar (0 ... 14.5 psi) / 10 bar (145 psi)	CA	
0 ... 1.6 bar (0 ... 23.2 psi) / 10 bar (145 psi)	CB	
0 ... 2.5 bar (0 ... 36.3 psi) / 16 bar (232 psi)	CC	
0 ... 4 bar (0 ... 58 psi) / 16 bar (232 psi)	CD	
0 ... 6 bar (0 ... 87 psi) / 30 bar (435 psi)	CE	
0 ... 10 bar (0 ... 145 psi) / 30 bar (435 psi)	DA	
0 ... 16 bar (0 ... 232 psi) / 50 bar (725 psi)	DB	
0 ... 25 bar (0 ... 363 psi) / 50 bar (725 psi)	DC	
0 ... 40 bar (0 ... 580 psi) / 70 bar (1015 psi)	DD	
-160 ... 0 mbar (-2.32 ... 0 psi) / 2 bar (29 psi)	EB	
-250 ... 0 bar (-3.73 ... 0 psi) / 2 bar (29 psi)	EC	
-400 ... 0 bar (-5.8 ... 0 psi) / 6 bar (87 psi)	ED	
-600 ... 0 bar (-8.7 ... 0 psi) / 6 bar (87 psi)	EE	
-1 ... 0 bar (-14.5 ... 0 psi) / 10 bar (145 psi)	FA	
-1 ... 0.6 bar (-14.5 ... 8.7 psi) / 10 bar (145 psi)	FB	
-1 ... 1.5 bar (-14.5 ... 21.8 psi) / 16 bar (232 psi)	FC	
-1 ... 3 bar (-14.5 ... 43.5 psi) / 16 bar (232 psi)	FD	
-1 ... 5 bar (-14.5 ... 72.5 psi) / 30 bar (435 psi)	FE	

Selection and Ordering data	Order No.	Ord. code
SITRANS P Compact pressure transmitters 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 ■■■■ - ■■■■	■■■
Measured range / **Overload pressure** (continued)		
-1 ... 9 bar (-14.5 ... 130.5 psi) / 30 bar (435 psi)	GA	
-1 ... 15 bar (-14.5 ... 217.6 psi) / 50 bar (725 psi)	GB	
0 ... 1 bar a (0 ... 14.5 psia) / 10 bar a (145 psia)	HA	
0 ... 1.6 bar a (0 ... 23.2 psia) / 10 bar a (145 psia)	HB	
0 ... 2.5 bar a (0 ... 36.3 psia) / 16 bar a (232 psia)	HC	
0 ... 4 bar a (0 ... 58 psia) / 16 bar a (232 psia)	HD	
0 ... 6 bar a (0 ... 87 psia) / 30 bar a (435 psia)	HE	
0 ... 10 bar a (0 ... 145 psia) / 30 bar a (435 psia)	JA	
Special version (add Order code and plain text)	ZA	P1Y
Explosion protection		
without	1	
with, to ATEX 100a, II 2 G, Ex ib IIC T6	2	
Further designs	Order code	
Please add "**-Z**" to Order No. and specify Order code		
Hygiene version Roughness of process connection: Foil R_a < 0.8 µm ($3.15 \cdot 10^{-8}$ inch); Welded seams R_a < 1.5 µm ($5.9 \cdot 10^{-8}$ inch)	**P01**	
Integral cooling element Process temperature max. 200 °C (392 °F) instead of 140 °C (284 °F)	**K01**	
Connections for pipe		
Pipes to DIN 11850	**R01**	
ISO pipes to ISO 2463	**R02**	
Pipes to O. D. Tubing "BS 4825 Part 1"	**R03**	
Certificates		
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	**C11**	
Inspection certificate to EN 10204-3.1	**C12**	
Use of FDA-listed remote seal filling liquids certified by test report to EN 10204-2.2	**C17**	
Roughness depth measurement R_a certified by test report to EN 10204-3.1	**C18**	
Certification to EHEDG for clamp-on seals with aseptic screwed gland to DIN 11864	**C19**	

Dimensional drawings

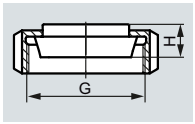


SITRANS P Compact, dimensions in mm (inch)

Process connections

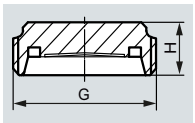
Diaphragm seal with quick-release clamp

Milk pipe union to DIN 11851 with slotted union nut



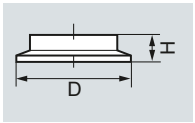
DN	PN	H mm (inch)	G
25	40	24 (0.95)	Rd. 52 x 1/6“
32	40	24 (0.95)	Rd. 58 x 1/6“
40	40	24 (0.95)	Rd. 65 x 1/6“
50	25	25.1 (0.99)	Rd. 78 x 1/6“
65	25	28.6 (1.13)	Rd. 95 x 1/6“

Milk pipe union to DIN 11851 with threaded socket



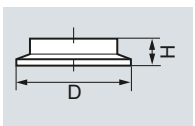
DN	PN	H mm (inch)	G
25	40	-	Rd. 52 x 1/6“
32	40	20 (0.79)	Rd. 58 x 1/6“
40	40	20 (0.79)	Rd. 65 x 1/6“
50	25	20 (0.79)	Rd. 78 x 1/6“
65	25	22 (0.87)	Rd. 95 x 1/6“

Clamp connection to DIN 32676



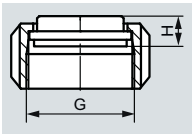
DN	PN	H mm (inch)	D mm (inch)
25	16	14 (0.55)	50.5 (2)
40	16	14 (0.55)	50.5 (2)
50	16	14 (0.55)	64 (2.52)

Clamp connection to ISO 2852



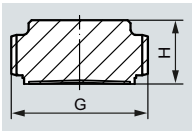
DN	PN	H mm (inch)	D mm (inch)
1“	16	14 (0.55)	50.5 (2)
1½“	16	12 (0.47)	50.5 (2)
2“	16	14 (0.55)	64 (2.52)
2½“	16	14 (0.55)	77.5 (3.05)

IDF standard with slotted union nut



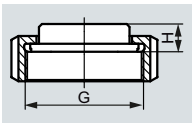
DN	PN	H mm (inch)	G inch (IDF thread)
1“	40	21 (0.83)	1“
1½“	40	13.5 (0.53)	1½“
2“	25	15 (0.59)	2“

IDF standard with threaded socket



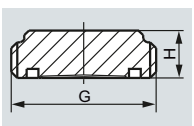
DN	PN	H mm (inch)	G inch (IDF thread)
1“	40	21 (0.83)	1“
1½“	40	13.5 (0.53)	1½“
2“	25	15 (0.59)	2“

SMS standard with slotted union nut



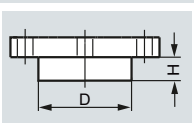
DN	PN	H mm (inch)	G
1“	40	16 (0.63)	Rd 40 x 1.6“
1½“	40	16 (0.63)	Rd 60 x 1.6“
2“	25	16 (0.63)	Rd 70 x 1.6“

SMS standard with threaded socket



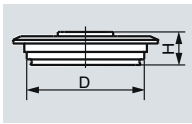
DN	PN	H mm (inch)	G
1“	40	16 (0.63)	Rd 40 x 1.6“
1½“	40	20 (0.79)	Rd 60 x 1.6“
2“	25	20 (0.79)	Rd 70 x 1.6“

DRD flange, without welding-type flange



DN	PN	H mm (inch)	D mm (inch)
50	40	16.7 (0.66)	65.5 (2.58)

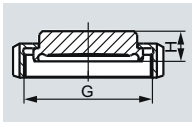
Varivent connection



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

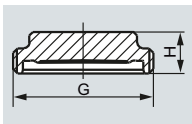
Diaphragm seal with aseptic connection

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



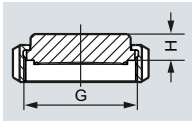
DN	PN	H mm (inch)	G
1“	40	20 (0.79)	Rd 52 x 1/6“
1½“	40	20 (0.79)	Rd 58 x 1/6“
2“	25	20 (0.79)	Rd 65 x 1/6“
2½“	25	20 (0.79)	Rd 78 x 1/6“

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



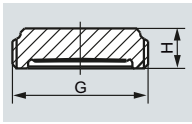
DN	PN	H mm (inch)	G
1“	40	15 (0.59)	Rd 52 x 1/6“
1½“	40	15 (0.59)	Rd 58 x 1/6“
2“	25	15 (0.59)	Rd 65 x 1/6“
2½“	25	15 (0.59)	Rd 78 x 1/6“

Aseptic screwed NEUMO BioConnect with slotted union nut



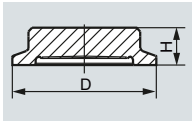
DN	PN	H mm (inch)	G
25	16	15 (0.59)	M 42 x 2
32	16	15 (0.59)	M 52 x 2
40	16	15 (0.59)	M 56 x 2
50	16	15 (0.59)	M 68 x 2

Aseptic screwed NEUMO BioConnect with threaded socket



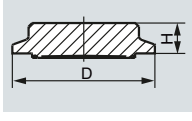
DN	PN	H mm (inch)	G
25	16	20 (0.79)	M 42 x 2
32	16	20 (0.79)	M 52 x 2
40	16	20 (0.79)	M 56 x 2
50	16	20 (0.79)	M 68 x 2

Aseptic screwed NEUMO BioConnect with clamp connection, form R



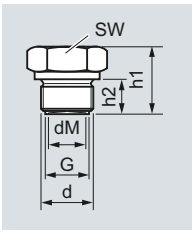
DN	PN	H mm (inch)	D mm (inch)
25	40	20 (0.79)	50.5 (2)
32	40	20 (0.79)	50.5 (2)
40	40	20 (0.79)	64 (2.52)
50	25	20 (0.79)	77.4 (3.05)

Aseptic screwed NEUMO BioConnect with clamp connection, form V



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

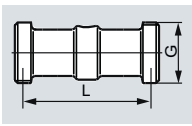
Male thread DIN 3852, form A



G	d mm (inch)	d_M mm (inch)	h_1 mm (inch)	h_2 mm (inch)	SW mm (inch)
G½A	26 (1.02)	17.5 (0.69)	27 (1.06)	14 (0.55)	27 (1.06)
G¾A	32 (1.26)	22.6 (0.89)	31 (1.22)	16 (0.63)	32 (1.26)
G1A	39 (1.54)	27 (1.06)	33 (1.30)	18 (0.71)	51 (2.01)
G1½A	55 (2.17)	40 (1.57)	40 (1.57)	22 (0.87)	55 (2.17)
G2A	68 (2.68)	51 (2.00)	42 (1.65)	24 (0.94)	70 (2.76)

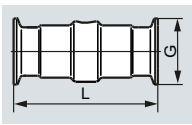
Clamp-on remote seal (screwed gland at both ends) with quick-release clamps

Milk pipe union to DIN 11851 with threaded socket



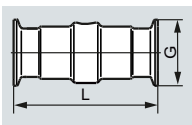
DN	PN	L mm (inch)	G
25	40	110 (4.33)	Rd 52 x 1/6“
32	40	110 (4.33)	Rd 58 x 1/6“
40	40	110 (4.33)	Rd 65 x 1/6“
50	25	110 (4.33)	Rd 78 x 1/6“
65	25	110 (4.33)	Rd 95 x 1/6“

Clamp connection to DIN 32676



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

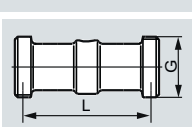
Clamp connection to ISO 2852



DN	PN	L mm (inch)	D mm (inch)
1“	16	110 (4.33)	50.5 (2)
1½“	16	110 (4.33)	50.5 (2)
2“	16	110 (4.33)	64 (2.52)
2½“	16	110 (4.33)	91 (3.58)

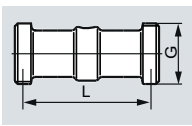
Clamp-on seal with aseptic connection

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



DN	PN	L mm (inch)	G
1“	40	110 (4.33)	Rd 52 x 1/6“
1½“	40	110 (4.33)	Rd 65 x 1/6“
2“	25	110 (4.33)	Rd 78 x 1/6“

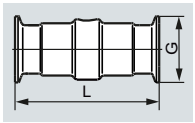
Aseptic screwed NEUMO BioConnect with threaded socket



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

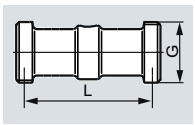
SITRANS P Compact
for gauge and absolute pressure

Aseptic screwed NEUMO BioConnect with clamp connection, form R



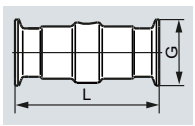
DN	PN	L mm (inch)	D mm (inch)
25	16	110 (4.33)	50.4 (2)
32	16	110 (4.33)	50.4 (2)
40	16	110 (4.33)	64 (2.52)
50	16	110 (4.33)	77.4 (3.05)

Aseptic screwed gland SÜDMO with threaded socket W 501



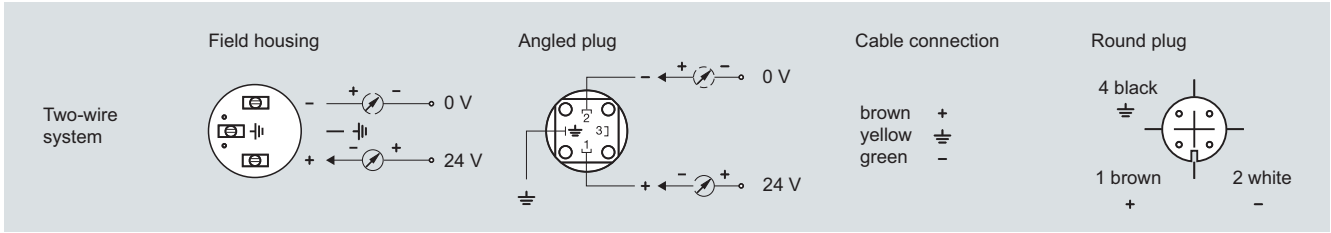
DN	PN	L mm (inch)	G
1“	25	110 (4.33)	Rd 44 x 1/6“
1½“	25	110 (4.33)	Rd 58 x 1/6“
2“	20	110 (4.33)	Rd 78 x 1/6“

Aseptic screwed gland SÜDMO with threaded socket W 601



DN	PN	L mm (inch)	D mm (inch)
1“	16	110 (4.33)	50.5 (2)
1½“	16	110 (4.33)	64 (2.52)
2“	16	110 (4.33)	77.5 (3.05)

Schematics



SITRANS P Compact, connection diagram

Overview

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

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

Benefits

The SITRANS P280 is a pressure transmitter that features Wireless HART as the standard communication interface.

Also available is a wired interface to connect a HART modem:

- Flexible pressure measurements
- Save costs on writing for difficult installation conditions. Wireless technology offers cost advantages in cases where extensive wiring cost would normally apply.
- It enables additional hitherto unfeasible measuring points, particularly for monitoring purposes.
- Easy installation on moveable equipment
- Enables cost-effective temporary measurements, for example for process optimizations.
- Optimum solution in addition to wired communication and new possibilities for system solutions in process automation

Application

The SITRANS P280 is a WirelessHART field device for measuring absolute and gauge pressure.

The measuring ranges for absolute and gauge pressure measurements are 0 to 1.6, 10, 50, 200 and 320 bar (0 to 23, 145, 725, 2900 and 4641 psi).

The sensor is integrated into the transmitter housing.

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

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

Design

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

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

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

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

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

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

Function

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

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

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

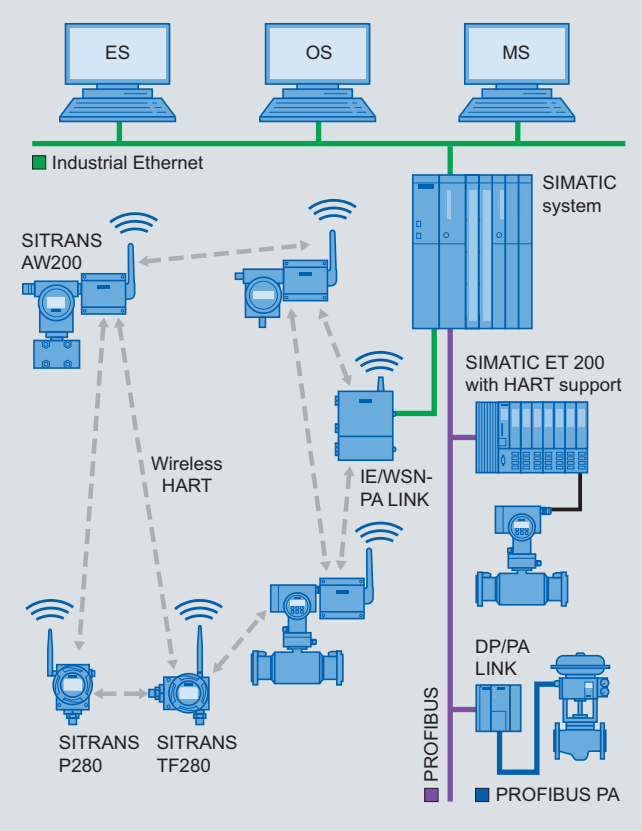
SITRANS P280
for gauge and absolute pressure

Integration

Connecting to SIMATIC PCS 7

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

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



Integration of a meshed network in SIMATIC PCS7

Configuration

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

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

Technical specifications

SITRANS P280 WirelessHART pressure transmitter	
Mode of operation	
Measuring principle	piezo-resistive
Measured variable	Gauge and absolute pressure
Gauge pressure input	
Measuring range	Overload limit/Bursting pressure
0 ... 1.6 bar (0 ... 23 psi)	4 bar (58 psi)
0 ... 10 bar (0 ... 145 psi)	20 bar (290 psi)
0 ... 50 bar (0 ... 725 psi)	100 bar (1450 psi)
0 ... 200 bar (0 ... 2900 psi)	400 bar (5801 psi)
0 ... 320 bar (0 ... 4641 psi)	640 bar (9282 psi)
Units	mbar, bar, m4H_2O, i4H_2O, atm, Torr, gcm^2, kgcm^2, Pa, kPa, Mpa, psi, mmHG, mmH_2O, ftH_2O, inHG, inH_2O
Absolute pressure input	
Measuring range	Overload limit/Bursting pressure
0 ... 1.6 bar a (0 ... 23 psia)	4 bar a (58 psia)
0 ... 10 bar a (0 ... 145 psia)	20 bar a (290 psia)
0 ... 50 bar a (0 ... 725 psia)	100 bar a (1450 psia)
0 ... 200 bar a (0 ... 2900 psia)	400 bar a (5801 psia)
0 ... 320 bar a (0 ... 4641 psia)	640 bar a (9282 psia)
Units	mbar, bar, m4H_2O, i4H_2O, atm, Torr, gcm^2, kgcm^2, Pa, kPa, MPa, psi, mmHG, mmH_2O, ftH_2O, inHG, inH_2O
Output	
Output signal	2.4 GHz Wireless signal with TSMP (Time Synchronized Mesh Protocol)
Measuring accuracy	as per IEC 60770-1
Error in measurement at limit setting incl. hysteresis and reproducibility	typ. 0.17 % of sensor's span max. 0.25 % of sensor's span
Long-term stability	max. ± 0.25 % of sensor/year span
Influence of ambient temperature	typ. 0.07 %/10K, max. 0.2 %/10 K of sensor's span
Rated conditions	
Ambient conditions	
• Ambient temperature	-40 ... +80 °C (-40 ... +176 °F) (in ambient temperatures below -20 °C (-4 °F) and above +70 °C (158 °F), readability of the display is limited.)
• Storage temperature	-40 ... +85 °C (-40 ... +185 °F)
• Relative humidity	< 95 %
Climatic class	4K4H in accordance with EN 60721-3-4(stationary use at locations not protected against weather)
Degree of protection	IP65/NEMA 4
Allowable media temperature	-40 ... 85 °C (-40 ... +185 °F)

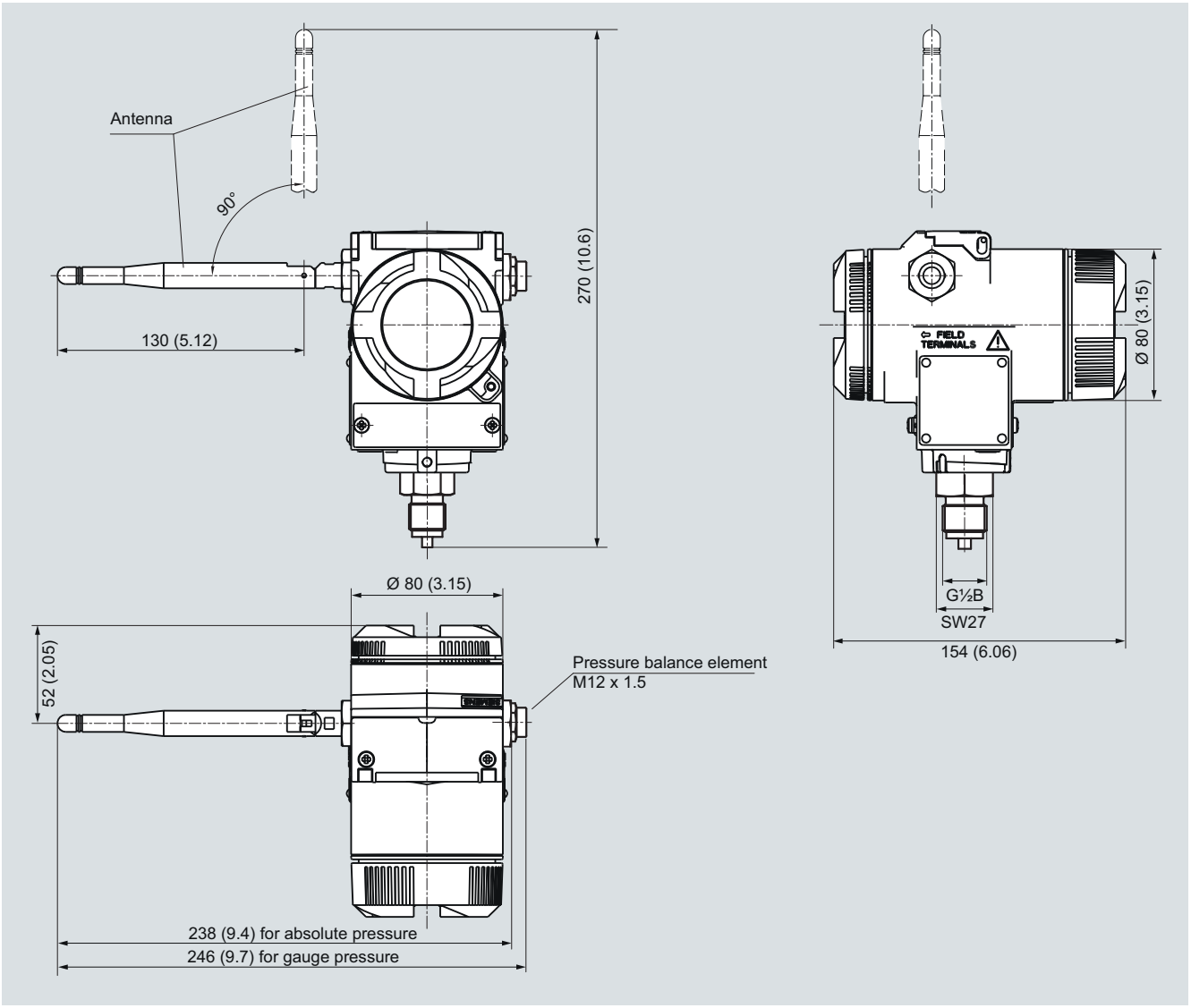
SITRANS P280
for gauge and absolute pressure

Design	
Enclosure material	low-copper die-cast aluminum, GD-AlSi12
Shock resistance	in accordance with DIN EN 60068-2-29 / 03.95
Resistance to vibration	in accordance with DIN EN 60068-2-6/ 12.07 20 ≤ f ≤ 2000 Hz 0.01 g^2/Hz
Weight	
• without battery	1.5 kg (3.31 lb)
• With battery	1.6 kg (3.53 lb)
Dimensions (W x H x D)	See Dimensional drawing
Process connection	• G½B male thread as per EN837-1 • ½-14 NPT
Sensor break	Is recognized
Displays and controls	
Display (with illumination)	
• Size of display	104 x 80 pixels
• Number of digits	adjustable
• Number of spaces after comma	adjustable
Setting options	• on site with 3 buttons • with SIMATIC PDM or HART-Communicator
Power supply	
Battery	3.6 V DC
Communication	
Radio	WirelessHART V7.1 conforming
Transmission frequency band	2.4 GHz (ISM-Band)
Transmission range under reference conditions	Up to 250 m (line of sight) in outside areas Up to 50 m (greatly dependent on obstacles) in inside areas
Communication interfaces	• HART communication with HART modem • WirelessHART
Certificates and approvals	
Wireless communication approvals	R&TTE FCC
Classification according to pressure equipment directive (PED 97/23/EC)	Gases: Fluid group 1 Liquids: Fluid group 1; meets requirements as per Section 3, Subsection 3 (sound engineering practice)

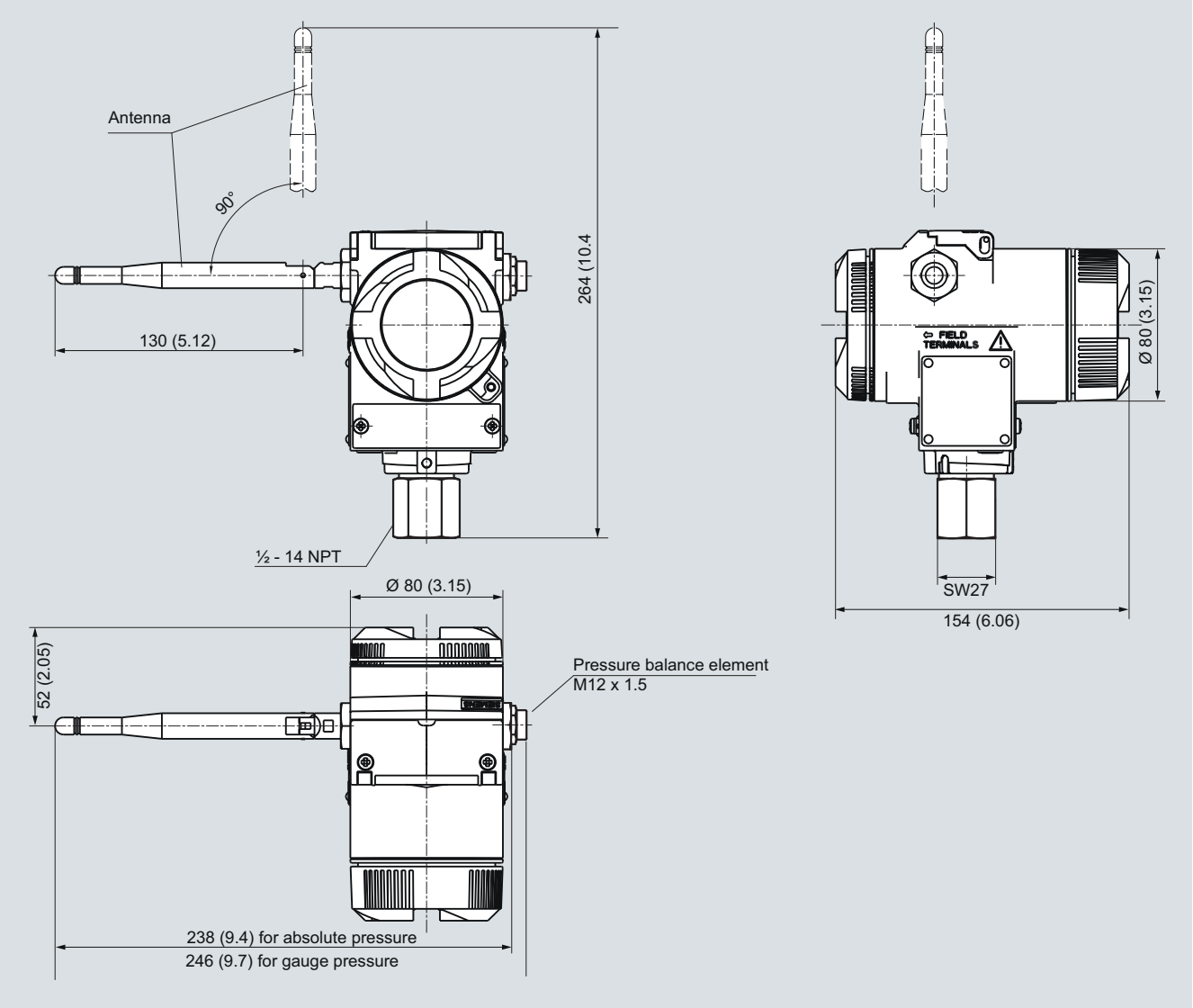
Selection and Ordering data		Order No.
SITRANS P280 WirelessHART pressure transmitter	▶	**7MP1120-**
(Required battery not included with delivery, see accessories)		**0**
Measuring cell filling		
Dry measuring cell		**0**
Measuring span		
Gauge pressure		
0 ... 1.6 bar (0 ... 23 psi)		**D**
0 ... 10 bar (0 ... 145 psi)		**E**
0 ... 50 bar (0 ... 725 psi)		**F**
0 ... 200 bar (0 ... 2900 psi)		**G**
0 ... 320 bar (0 ... 4641 psi)		**H**
Absolute pressure		
0 ... 1.6 bar a (0 ... 3 psia)		**M**
0 ... 10 bar a (0 ... 145 psia)		**N**
0 ... 50 bar a (0 ... 725 psia)		**P**
0 ... 200 bar a (0 ... 2900 psia)		**Q**
0 ... 320 bar a (0 ... 4641 psia)		**R**
Wetted parts		
Ceramic		**K**
Display		
Display, visible		**1**
Enclosure		
Die-cast aluminum		**1**
Process connection		
G½ as per EN 837-1		**0**
½-14 NPT		**1**
Explosion protection		
Without		**A**
Antenna		
Variable, attached to device		**A**
Further designs		Order code
Please add "**-Z**" to Order No. and specify Order code(s) and plain text.		
Stainless steel tag plate (measuring point description) max. 16 digits entered in plain text Y15:		**Y15**
Measuring point message max. 27 characters entered in plain text: Y16:		**Y16**
Accessories		Order No.
Lithium battery for SITRANS TF280/P280	▶	**7MP1990-0AA00**
Mounting bracket, steel		**7MF4997-1AC**
Mounting bracket, stainless steel	▶	**7MF4997-1AJ**
Cover, die-cast aluminum, without window		**7MF4997-1BB**
Cover, die-cast aluminum, with window	▶	**7MF4997-1BE**
IE/WSN-PA LINK		**see Sec. 7**
HART modem with RS232 interface	▶	**7MF4997-1DA**
HART modem with USB interface	▶	**7MF4997-1DB**
SIMATIC PDM		**see Sec. 8**

▶ Available ex stock

Dimensional drawings



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



SITRANS P280 WirelessHART pressure transmitter, process connection ½ - 14 NPT, dimensions in mm (inch)
The dimensional drawing of the mounting bracket see on page 1/164.

SITRANS P300
for gauge and absolute pressure

Overview

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

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

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

Benefits

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

Application

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

It can be used for the following measurement types:

- Gauge pressure
- Absolute pressure

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

- Level
- Volume
- Mass

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

Gauge pressure

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

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

Level

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

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

Absolute pressure

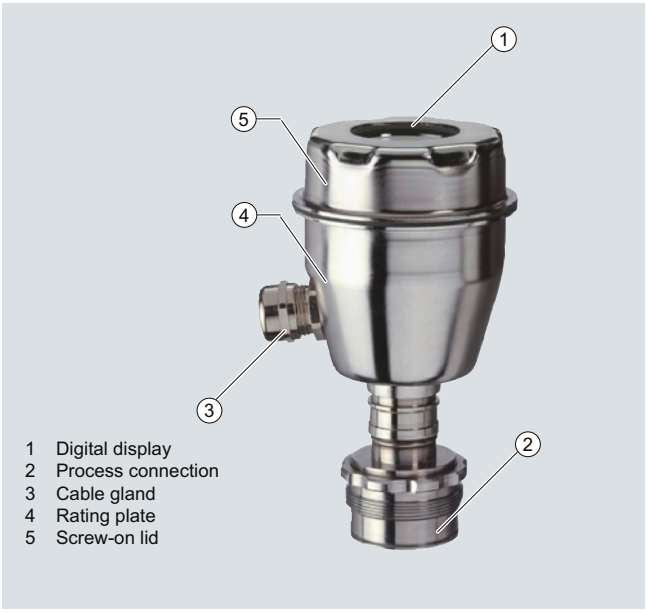
This variant measures the absolute pressure of aggressive, non-aggressive and hazardous gases, vapors and liquids.

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

Design

The device comprises:

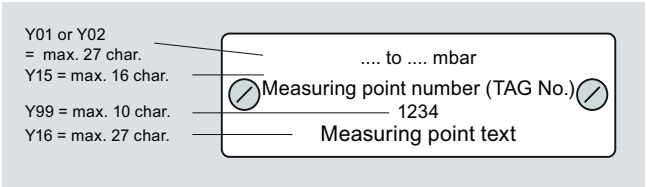
- Electronics
- Housing
- Measuring cell



Perspective view of SITRANS P300

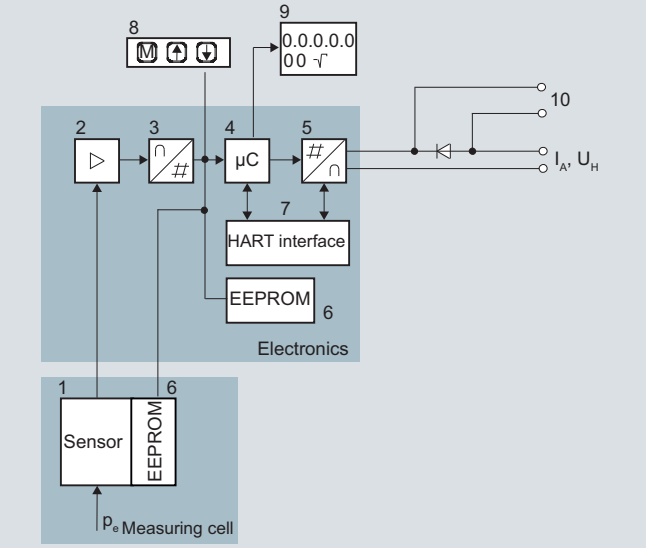
The housing has a screw-on lid (5) and, depending on the version, is with or without an inspection window. The electrical terminal housing, the buttons for operation of the device are located under this lid and, depending on the version, the display. The connections for the auxiliary power U_H and the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

Example of attached measuring points sign



Function

Operation of electronics with HART communication



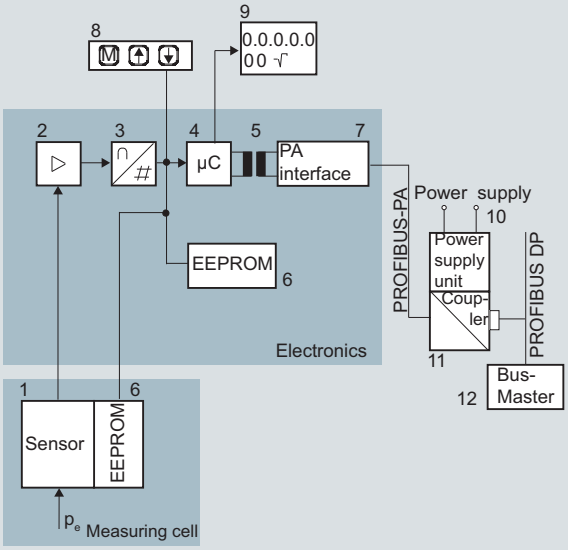
1 Measuring cell sensor
2 Instrument amplifier
3 Analog-to-digital converter
4 Microcontroller
5 Digital-to-analog converter
6 One non-volatile memory each in the measuring cell and electronics
7 HART interface
8 Three input keys (local operation)
9 Digital display
10 Diode circuit and connection for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

Function diagram of electronics

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

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

Operation of electronics with PROFIBUS PA communication



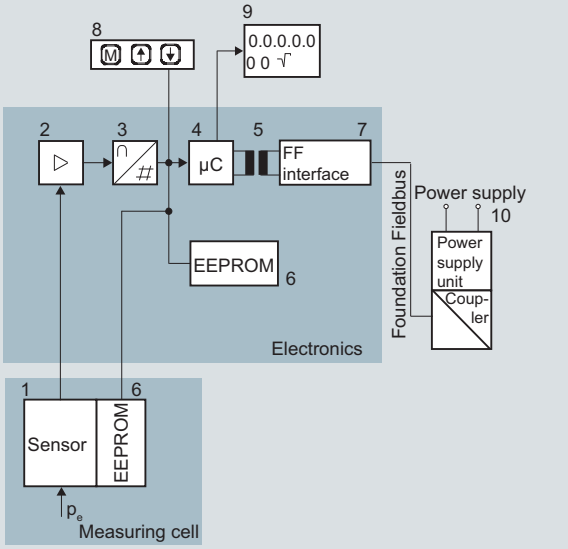
1 Measuring cell sensor
2 Instrument amplifier
3 Analog-to-digital converter
4 Microcontroller
5 Electrical isolation
6 One non-volatile memory each in the measuring cell and electronics
7 PROFIBUS-PA interface
8 Three input keys (local operation)
9 Digital display
10 Power supply
11 DP/PA coupler or link
12 Bus master
p_e Input variable

Function diagram of electronics

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

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

Operation of electronics with FOUNDATION Fieldbus communication



1 Measuring cell sensor
2 Instrument amplifier
3 Analog-to-digital converter
4 Microcontroller
5 Electrical isolation
6 One non-volatile memory each in the measuring cell and electronics
7 FF interface
8 Three input keys (local operation)
9 Digital display
10 Power supply
p_e Input variable

Function diagram of electronics

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

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

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

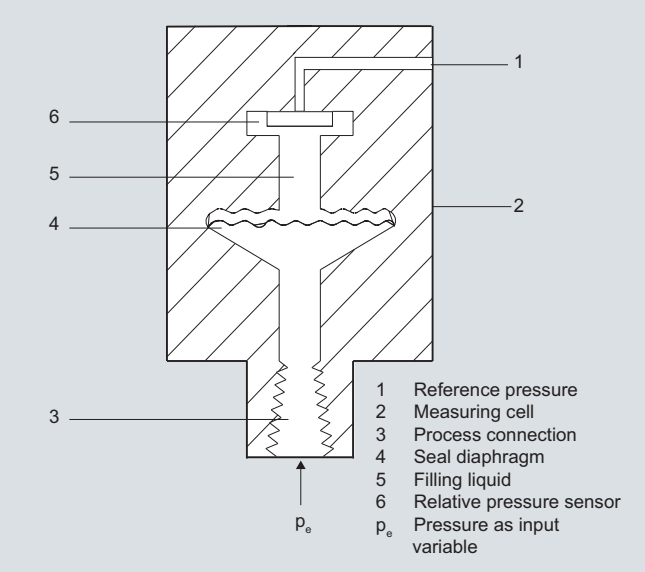
The results with status values and diagnostic values are transferred by cyclic data transmission on the FOUNDATION Fieldbus. Parameterization data and error messages are transferred by acyclic data transmission. Special software such as National Instruments Configurator is required for this.

Mode of operation of the measuring cells

The process connections available include the following:

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

Measuring cell for gauge pressure

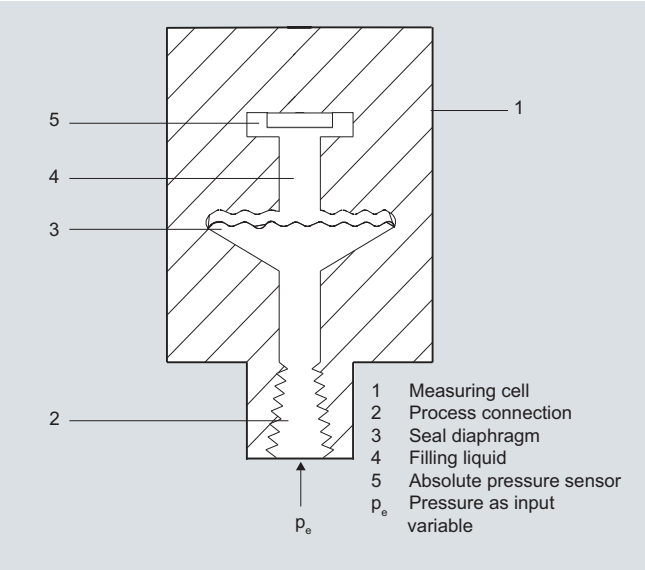


Measuring cell for gauge pressure, function diagram

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

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

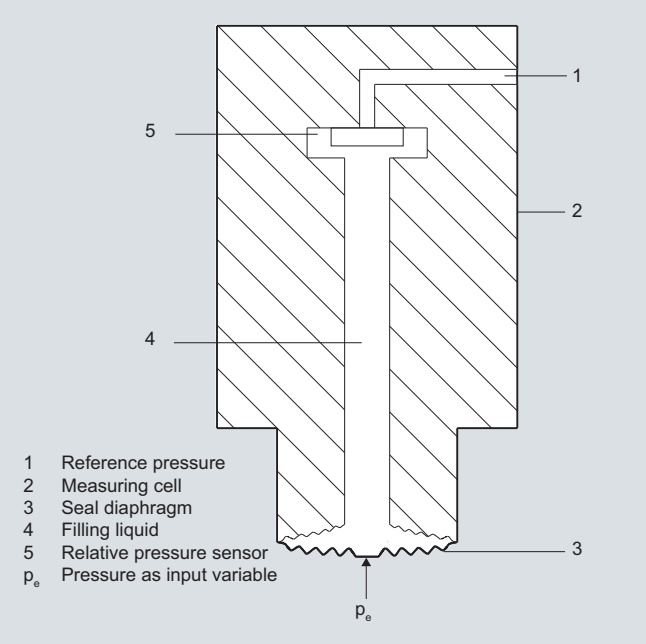
Measuring cell for absolute pressure



Measuring cell for absolute pressure, function diagram

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

Measuring cell for gauge pressure, front-flush diaphragm

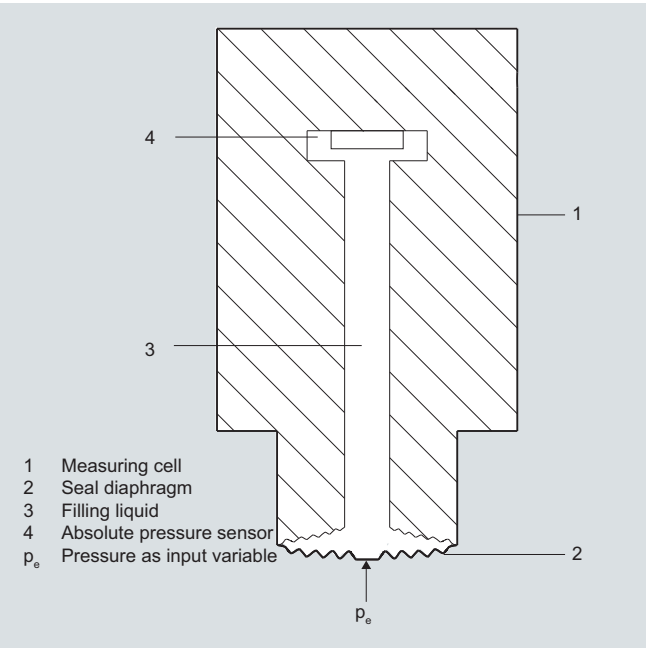


Measuring cell for gauge pressure, front-flush diaphragm, function diagram

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

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

Measuring cell for absolute pressure, front-flush diaphragm



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

SITRANS P300
for gauge and absolute pressure

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

Parameterization

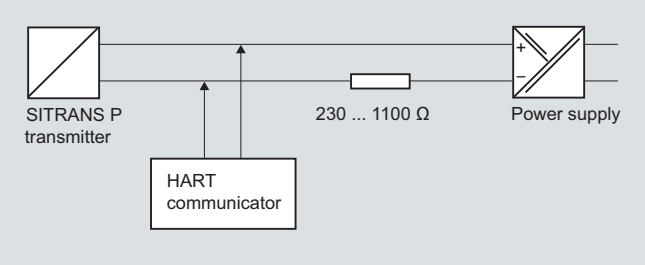
Depending on the version, there are a range of options for parameterizing the pressure transmitter and for setting or scanning the parameters.

Parameterization using the input buttons (local operation)

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

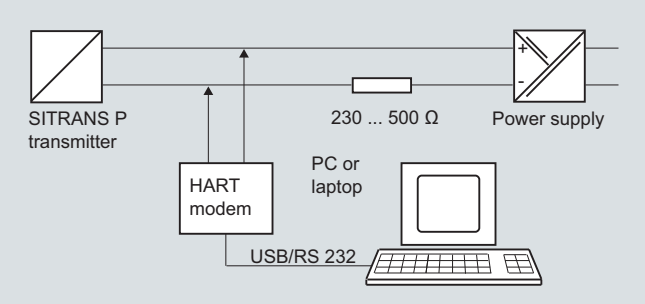
Parameterization using HART communication

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



Communication between a HART communicator and a pressure transmitter

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



HART communication between a PC communicator and a pressure transmitter

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

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

Adjustable parameters on SITRANS P300 with HART communication

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

[1)] Cancel apart from write protection

Diagnostic functions for SITRANS P300 with HART communication

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

Available physical units of display for SITRANS P300 with HART communication

Table style: Technical specifications 2

Physical variable	Physical dimensions
Pressure (setting can also be made in the factory)	Pa, MPa, kPa, bar, mbar, torr, atm, psi, g/cm^2, kg/cm^2, inH_2O, inH_2O (4 °C), mmH_2O, ftH_2O (20 °C), inHg, mmHg
Level (height data)	m, cm, mm, ft, in
Volume	m^3, dm^3, hl, yd^3, ft^3, in^3, US gallon, Imp. gallon, bushel, barrel, barrel liquid
Mass	g, kg, t, lb, Ston, Lton, oz
Temperature	K, °C, °F, °R
Miscellaneous	%, mA

Parameterization through PROFIBUS PA interface

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

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

Parameterization through FOUNDATION Fieldbus interface

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

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

Adjustable parameters for SITRANS P300 with PROFIBUS PA and FOUNDATION Fieldbus

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

Diagnostic functions for SITRANS P300 with PROFIBUS PA and FOUNDATION Fieldbus

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

Physical dimensions available for the display

Physical variable	Physical dimensions
Pressure (setting can also be made in the factory)	Mpa, kPa, Pa, bar, mbar, torr, atm, psi, g/cm^2, kg/cm^2, mmH_2O, mmH_2O (4 °C), inH_2O, inH_20 (4 °C), ftH_2O (20 °C), mmHg, inHg
Level (height data)	m, cm, mm, ft, in, yd
Mass	g, kg, t, lb, Ston, Lton, oz
Volume	m^3, dm^3, hl, yd^3, ft^3, in^3, US gallon, Imp. gallon, bushel, barrel, barrel liquid
volume flow	m^3/s, m^3/min, m^3/h, m^3/d, l/s, l/min, l/h, l/ d, Ml/d, ft^3/s, ft^3/min, ft^3/h, ft^3/d, US gallon/s, US gallon/min, US gallon/h, US gallon/d, bbl/s, bbl/min, bbl/h, bbl/d
Mass flow	g/s, g/min, g/h, g/d, kg/s, kg/min, kg/h, kg/d, t/s, t/min, t/h, /t/d, lb/s, lb/min, lb/h, lb/d, STon/s, STon/min, STon/h, STon/d, LTon/s, LTon/min, LTon/h, LTon/d
Total mass flow	t, kg, g, lb, oz, LTon, STon
Temperature	K, °C, °F, °R
Miscellaneous	%

Hygiene version

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

Technical specifications

SITRANS P300 for gauge and absolute pressure				
	HART		PROFIBUS PA and FOUNDATION Fieldbus	
Gauge pressure input				
Measured variable	Gauge pressure			
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span (min. ... max.)	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure
	0.01 ... 1 bar (0.15 ... 14.5 psi)	6 bar (87 psi)	1 bar (14.5 psi)	6 bar (87 psi)
	0.04 ... 4 bar (0.58 ... 58 psi)	10 bar (145 psi)	4 bar (58 psi)	10 bar (145 psi)
	0.16 ... 16 bar (2.3 ... 232 psi)	32 bar (464 psi)	16 bar (232 psi)	32 bar (464 psi)
	0.6 ... 63 bar (9.1 ... 914 psi)	100 bar (1450 psi)	63 bar (914 psi)	100 bar (1450 psi)
	1.6 ... 160 bar (23.2 ... 2321 psi)	250 bar (3626 psi)	160 bar (2321 psi)	250 bar (3626 psi)
	4.0 ... 400 bar (58 ... 5802 psi)	600 bar (8700 psi)	400 bar (5802 psi)	600 bar (8700 psi)
	Depending on the process connection, the span may differ from these values		Depending on the process connection, the nominal measuring range may differ from these values	
Lower measuring limit				
• Measuring cell with silicone oil	30 mbar a (0.44 psia)			
Upper measuring limit				
• Measuring cell with silicone oil	100% of max. span		100 % of the max. nominal measuring range	
Absolute pressure input				
Measured variable	Absolute pressure			
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span (min. ... max.)	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure
	8 ... 250 mbar a (0.12...3.63 psia)	6 bar a (87 psia)	250 mbar a (3.63 psia)	6 bar a (87 psia)
	43 ... 1300 mbar a (0.62...18.9 psia)	10 bar a (145 psia)	1.30 bar a (19 psia)	10 bar a (145 psia)
	0.16 ... 5 bar a (2.3 ... 73 psia)	30 bar a (435 psia)	5 bar a (73 psia)	30 bar a (435 psia)
	1 ... 30 bar a (14.5 ... 435 psia)	100 bar a (1450 psia)	30 bar a (435 psia)	100 bar a (1450 psia)
Lower measuring limit				
• Measuring cell with silicone oil	0 mbar a (0 psia)			
Upper measuring limit				
• Measuring cell with silicone oil	100 % of max. span		100 % of the max. nominal measuring range	
Input of gauge pressure, with front-flush diaphragm				
Measured variable	Gauge pressure, front-flush			
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span (min. ... max.)	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure
	0.01 ... 1 bar (0.15 ... 14.5 psi)	6 bar (87 psi)	1 bar (14.5 psi)	6 bar (87 psi)
	0.04 ... 4 bar (0.58 ... 58 psi)	10 bar (145 psi)	4 bar (58 psi)	10 bar (145 psi)
	0.16 ... 16 bar (2.32 ... 232 psi)	32 bar (464 psi)	16 bar (232 psi)	32 bar (464 psi)
	0.6 ... 63 bar (9.14 ... 914 psi)	100 bar (1450 psi)	63 bar (914 psi)	100 bar (1450 psi)
Lower measuring limit	100 mbar a (1.45 psia)			
Upper measuring limit				
• Measuring cell with silicone oil	100% of max. span		100 % of the max. nominal measuring range	

SITRANS P300 for gauge and absolute pressure	HART			PROFIBUS PA and FOUNDATION Fieldbus		
Input of absolute pressure, with front-flush diaphragm						
Measured variable	Absolute pressure, front-flush					
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span (min. ... max.)	Max. perm. test pressure		Nominal measuring range	Max. perm. test pressure	
	43 ... 1300 mbar a (0.62 ... 18.85 psia)	10 bar a (145 psia)		1300 mbar a (18.85 psia)	10 bar a (145 psia)	
	0.16 ... 5 bar a (2.32 ... 72.5 psi a)	30 bar a (435 psia)		5 bar a (72.5 psia)	30 bar a (435 psia)	
	1 ... 30 bar a (14.5 ... 435 psia)	100 bar a (1450 psia)		30 bar a (435 psia)	100 bar a (1450 psia)	
	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 values		
Lower measuring limit	0 bar a (0 psia)					
Upper measuring limit						
• Measuring cell with silicone oil	100% of max. span			100 % of the max. nominal measuring range		
Output						
Output signal	4 ... 20 mA			Digital PROFIBUS PA signal		
Physical bus	-			IEC 61158-2		
Protection against polarity reversal	Protected against short-circuit and polarity reversal. Each connection against the other with max. supply voltage.					
Electrical damping T_{63} (step width 0.1 s)	Set to 2 s (0 ... 100 s)					
Measuring accuracy	According to IEC 60770-1					
Reference conditions (All error data refer always refer to the set span)	Rising characteristic curve, start-of-scale value 0 bar, stainless steel seal diaphragm, measuring cell with silicone oil, room temperature 25 °C (77 °F), span ratio (r = max. span / set span)					
Error in measurement at limit setting incl. hysteresis and reproducibility						
	Gauge pressure	Absolute pressure	Absolute pressure, front-flush	Gauge pressure	Absolute pressure	Absolute pressure, front-flush
Linear characteristic				≤ 0.075 %	≤ 0.1 %	≤ 0.2 %
• r + 10	≤ (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) %	-	-			
Step response time T_{63}	approx. 0.2 s					
Long-term stability at ± 30 °C (± 54 °F)	≤ (0.25 · r) %/5 years	≤ (0.1 · r) %/year		≤ 0.25 %/5 years	≤ 0.1 %/year	
Influence of ambient temperature						
• at -10 ... +60 °C (14 ... 140 °F)	≤ (0.08· r + 0.1) % [1]		≤ (0.2 · r + 0 3) %	≤ 0.3 %		≤ 0.5 %
• at -40 ... -10 °C and +60 ... +85 °C (-40 ... 14 °F and 140 ... 185 °F)	≤ (0.1 · r + 0.15) %/10 K		≤ (0.2 · r + 0.3) %/10 K	≤ 0.25 %/10 K		≤ 0.5 %/10 K
Influence of the medium temperature (only with front-flush diaphragm)						
• Temperature difference between medium temperature and ambient temperature	3 mbar/10 K (0.04 psi/10 K)					

SITRANS P300 for gauge and absolute pressure	HART	PROFIBUS PA and FOUNDATION Fieldbus
Rated conditions		
Installation conditions		
Ambient temperature		Observe the temperature class in areas subject to explosion hazard.
• Measuring cell with silicone oil		-40 ... +85 °C (-40 ... +185 °F)
• Measuring cell with Neobee oil (FDA-compliant, with flush-mounted diaphragm)		-10 ... +85 °C (14 ... +185 °F)
• Measuring cell with inert liquid (not with front-flush diaphragm)		-20 ... +85 °C (-4 ... +185 °F)
• Display readable		-30 ... +85 °C (-22 ... +185 °F)
• Storage temperature		-50 ... +85 °C (-58 ... +185 °F) (for Neobee: -20 ... +85 °C (-4 ... +185 °F))
Climatic class		
Condensation		Relative humidity 0 ... 100 % Condensation permissible, suitable for use in the tropics
Degree of protection acc. to EN 60529		IP65, IP68, NEMA X, enclosure cleaning, resistant to lyes, steam to 150 °C (302 °F)
Electromagnetic Compatibility		
• Emitted interference and interference immunity		Acc. to EN 61326 and NAMUR NE 21
Medium conditions		
Temperature of medium		
• Measuring cell with silicone oil		-40 ... +100 °C (-40 ... +212 °F)
• Measuring cell with silicone oil (FDA-compliant, with flush-mounted diaphragm)		-40 ... +150 °C (-40 ... +302 °F)
• Measuring cell with Neobee oil "Measuring cell with Neobee oil (FDA-compliant, with flush-mounted diaphragm)		-10 ... +150 °C (-14 ... +302 °F)
• Measuring cell with silicone oil, with temperature decoupler (only for gauge pressure version with flush-mounted diaphragm)		-40 ... +200 °C (-40 ... +392 °F)
• Measuring cell with inert liquid		-20 ... +100 °C (-4 ... +212 °F)
• Measuring cell with high-temperature oil (only for gauge pressure version with flush-mounted diaphragm)		-10 ... +250 °C (14 ... 482 °F)
Design (standard version)		
Weight (without options)		Approx. 800 g (1.8 lb)
Enclosure material		Stainless steel, mat. no. 1.4301/304
Material of parts in contact with the medium		
• Connection shank		Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819
• Oval flange		Stainless steel, mat. no. 1.4404/316L
• Seal diaphragm		Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819
• Measuring cell filling		•Silicone oil •Inert filling liquid
Process connection		•G½B to EN 837-1 •Female thread ½-14 NPT •Oval flange PN 160 (MAWP 2320 psi) with fastening thread: $-^{7}/_{16}$ -20 UNF to IEC 61518 -M10 as per DIN 19213
Design (version with front-flush diaphragm)		
Weight (without options)		approx. 1 ... 13 kg (2.2 ... 29 lb)
Enclosure material		Stainless steel, mat. no. 1.4301/304
Material of parts in contact with the medium		
• Process connection		Stainless steel, mat. no. 1.4404/316L
• Seal diaphragm		Stainless steel, mat. no. 1.4404/316L
• Measuring cell filling		•Silicone oil •Inert filling liquid •FDA compliant fill fluid (Neobee oil)
Process connection		•Flanges as per EN and ASME •F&B and pharmaceutical flanges
Surface quality touched-by-media		R_a-values ≤ 0.8 µm (32 µ-inch)/welds $R_{a)}$ ≤ 1.6 µm (64 µ-inch) (Process connections acc. to 3A; R_a-values ≤ 0.8 µm (32 µ-inch)/welds R_a ≤ 0.8 µm (32 µ-inch)

SITRANS P300 for gauge and absolute pressure		
	HART	**PROFIBUS PA and FOUNDATION Fieldbus**
Power supply U_H		
Terminal voltage on transmitter	10.5 ... 42 V DC for intrinsically safe operation: 10.5 ... 30 V DC	Supplied through bus
Separate power supply	-	Not necessary
Bus voltage		
• Without Ex	-	9 ... 32 V
• With intrinsically-safe operation	-	9 ... 24 V
Current consumption		
• Max. basic current	-	12.5 mA
• Start-up current ≤ basic current	-	Yes
• Max. fault current in the event of a fault	-	15.5 mA
Fault disconnection electronics (FDE)	-	Available
Certificates and approvals		
Classification according to PED 97/23/EC	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of Article 3, paragraph 3 (sound engineering practice)	
Water, waste water	In preparation	
Explosion protection		
Intrinsic safety "i"	PTB 05 ATEX 2048	
• Marking	Ex II 1/2 G Ex 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 peak values: U_i = 30 V, I_i = 100 mA, P_i = 750 mW, R_i = 300 Ω	To certified intrinsically-safe circuits with peak values: FISCO supply unit: U_i = 17.5 V, I_i = 380 mA, P_i = 5.32 W Linear barrier: U_i = 24 V, I_i = 250 mA, P_i = 1.2 W
• Effective inner capacitance:	C_i = 6 nF	C_i = 1.1 nF
• Effective internal inductance:	L_i = 0.4 mH	L_i ≤ 7 µH
Explosion protection to FM for USA and Canada (cFM_{US})		
• Identification (DIP) or (IS); (NI)	Certificate of Compliance 3025099 CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4 ... T6; CL I, DIV 2, GP ABCD T4 ... T6; CL II, DIV 2, GP FG; CL III	
• Identification (DIP) or (IS)	Certificate of Compliance 3025099C CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC 4 ... T6; CL I, DIV 2, GP ABCD T4 ... T6; CL II, DIV 2, GP FG; CL III	
Dust explosion protection for zone 20/21/22	PTB 05 ATEX 2048	
• Marking	Ex II 1D Ex ia D 20 T 120 °C Ex II 2D Ex ib D 21 T 120 °C Ex II 3D Ex ib D 21 T 120 °C	
• Permissible ambient temperature		
- Temperature class T4	-40 ... +85 °C (-40 ... +185 °F) (in the case of mineral glass windows only -20 ... +85 °C (-4 ... +185 °F))	
- Temperature class T5	-40 ... +70 °C (-40 ... +158 °F) (in the case of mineral glass windows only-20 ... +70 °C (-4 ... +158 °F))	
- Temperature class T6	-40 ... +60 °C (-40 ... +140 °F) (in the case of mineral glass windows only -20 ... +60 °C (-4 ... +140 °F))	
• Connection	To certified intrinsically-safe circuits with peak values: U_i = 30 V, I_i = 100 mA, P_i = 750 mW	To certified intrinsically-safe circuits with peak values: U_i = 24 V, I_i = 380 mA, P_i = 5.32 mW
• Effective inner capacitance:	C_i = 6 nF	C_i = 5 nF
• Effective internal inductance:	L_i = 0.4 µH	L_i = 10 µH

SITRANS P300 for gauge and absolute pressure		
	HART	**PROFIBUS PA and FOUNDATION Fieldbus**
Type of protection Ex nA/nL/ic (Zone 2)	PTB 05 ATEX 2048	
• Marking	II 2/3 G Ex nA T4/T5/T6 II 2/3 G Ex nL IIB/IIC T4/T5/T6	
• Permissible ambient temperature		
- Temperature class T4	-40 ... +85 °C (-40 ... +185 °F) (in the case of mineral glass windows only -20 ... +85 °C (-4 ... +185 °F))	
- Temperature class T5	-40 ... +70 °C (-40 ... +158 °F) (in the case of mineral glass windows only -20 ... +70 °C (-4 ... +158 °F))	
- Temperature class T6	-40 ... +60 °C (-40 ... +140 °F) (in the case of mineral glass windows only -20 ... +60 °C (-4 ... +140 °F))	
• Ex nA/nL connection	To certified intrinsically-safe circuits with peak values: U_m = 45 V	To certified intrinsically-safe circuits with peak values: U_m = 32 V
• Ex ic connection	To certified intrinsically-safe circuits with peak values: U_i = 45 V	To certified intrinsically-safe circuits with peak values: U_i = 32 V
• Effective inner capacitance:	C_i = 6 nF	C_i = 5 nF
• Effective internal inductance:	L_i = 0.4 mH	L_i = 20 µH

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

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 or local operation
	(standard setting Address 126)
Cyclic data usage	
• Output byte	5 (one measured value) or
	10 (two measured values)
• Input byte	0.1 or 2 (totalizer mode and reset function for dosing)
• Internal preprocessing	
Device profile	PROFIBUS PA Profile for Process Control Devices Version 3.0, Class B
Function blocks	2
• Analog input	
- Adaptation to customer-specific process variables	Yes, linearly rising or falling characteristic
- Electrical damping adjustable	0 … 100 s
- Simulation function	Input /Output
- Failure function	parameterizable (last good value, substitute value, incorrect value)
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respectively
• Register (totalizer)	Can be reset, preset, optional direction of counting, simulation function of register output
- Failure mode	parameterizable (summation with last good value, continuous summation, summation with incorrect value)
- Limit monitoring	One upper and lower warning limit and one alarm limit respectively
• Physical block	1
Transducer blocks	2
• Pressure transducer block	
- Can be calibrated by applying two pressures	Yes
- Monitoring of sensor limits	Yes
- Specification of a container characteristic with	Max. 30 nodes
- Simulation function for measured pressure value and sensor temperature	Constant value or over parameterizable ramp function

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

SITRANS P300
for gauge and absolute pressure

Selection and Ordering data		Order No.
SITRANS P300 pressure transmitters for relative and absolute pressure, single-chamber measuring housing, rating plate inscription in English		
4 ... 20 mA/HART		**7MF8023-**
PROFIBUS PA		**7MF8024-**
FOUNDATION Fieldbus (FF)		**7MF8025-**
		■■■■■-■■■■
Measuring cell filling	**Measuring cell cleaning**	
Silicone oil	normal	1
Inert liquid	Cleanliness level 2 to DIN 25410	3
max. span (min. ... max.)		
0.01 ... 1 bar	(0.145 ... 14.5 psi)	B
0.04 ... 4 bar	(0.58 ... 58 psi)	C
0.16 ...16 bar	(2.32 ... 232 psi)	D
0.63 ... 63 bar	(9.14 ... 914 psi)	E
1.6 ... 160 bar	(23.2 ... 2320 psi)	F
4 ... 400 bar	(58 ... 5802 psi)	G
2.5 ... 250 mbar a	(0.04 ... 3.63 psia)	Q
13 ... 1300 mbar a	(0.19 ... 18.86 psia)	N
0.05 ... 5 bar a	(0.7 ... 72.5 psia)	T
0.3 ... 30 bar a	(4.35 ... 435 psia)	U
Wetted parts materials		
Seal diaphragm	Measuring cell	
Stainless steel	Stainless steel	A
Hastelloy	Stainless steel	B
Hastelloy	Hastelloy	C
Version for diaphragm seal[1) 2) 3) 4) 5)]		Y
Process connection		
• Connection shank G½B to EN 837-1		0
• Female thread ½-14 NPT		1
• Stainless steel oval flange with process connection female thread ¼-18 NPT [6)]		
- Mounting thread $^{7}/_{16}$-20 UNF to EN 61518		2
- Mounting thread M10 to DIN 19213		3
- Mounting thread M12 to DIN 19213		4
• Male thread M20 x 1.5		5
• Male thread ½ -14 NPT		6
Non-wetted parts materials		
• Stainless steel, deep-drawn and electrolytically polished		4
Version		
• Standard versions		1
Explosion protection		
• None		A
• With ATEX, Type of protection:		
- "Intrinsic safety (Ex ia)"		B
• Zone 20/21/22[7)]		C
• Ex nA/nL (Zone 2)[8)]		E
• with FM "intrinsic safety" (cFM_{US})		M
Electrical connection / cable entry		
• Screwed gland M20x1.5 (polyamide)[9)]		A
• Screwed gland M20x1.5 (metal)		B
• Screwed gland M20x1.5 (stainless steel)		C
• M12 connectors (metal), without cable socket)		F
• M12 connectors (stainless steel), without cable		G
• Screwed gland ½-14 NPT metal thread [10)]		H
• Screwed gland ½-14 NPT stainless steel thread		J

Selection and Ordering data	Order No.
SITRANS P300 pressure transmitters for relative and absolute pressure, single-chamber measuring housing, rating plate inscription in English	
4 ... 20 mA/HART	**7MF8023-**
PROFIBUS PA	**7MF8024-**
FOUNDATION Fieldbus (FF)	**7MF8025-**
	■■■■■-■■■■
Display	
• Without display, with keys, closed lid	1
• With display and keys, closed lid[11)]	2
• With display and keys, lid with Makrolon pane (setting on HART devices: mA, with PROFIBUS PA and FOUNDATION Fieldbus equipment: pressure units)[11)]	4
• With display and keys (setting acc. to specifications, Order Code "Y21" or "Y22" required), lid with Makrolon pane[11)]	5
• With display and keys, lid with glass pane (setting on HART devices: mA, with PROFIBUS and FOUNDATION Fieldbus equipment: pressure units)[11)]	6
• With display and keys (setting acc. to specifications, Order Code "Y21" or "Y22" required), lid with glass pane[11)]	7

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

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

1) When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.

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

3) The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF802.-..Y..-.... and 7MF4900-1...-.B

4) The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.

5) Remote seal for direct mounting only available in combination with process connection ½-14 NPT.

6) M10 fastening thread: Max. span 160 bar (2320 psi)
7/16-20 UNF and M12 fastening thread: Max. span 400 bar (5802 psi)

7) Only available together with electrical connection option A

8) Only available together with electrical connection options B, C, F or G.

9) Only together with HART electronics.

10) Without cable gland.

11) Display cannot be turned.

Selection and Ordering data		Order No.
SITRANS P300 pressure transmitters for relative and absolute pressure with front-flush membrane, single-chamber measuring housing, rating plate inscription in English		
4 ... 20 mA/HART		**7MF8123-**
PROFIBUS PA		**7MF8124-**
FOUNDATION Fieldbus (FF)		**7MF8125-**
		■■■■■-■■■■
Measuring cell filling	**Measuring cell cleaning**	
Silicone oil	normal	1
Inert liquid	Cleanliness level 2 to DIN 25410	3
FDA compliant fill fluid		
• Neobee oil	normal	4
max. span		
0.01 ... 1 bar	(0.15 ... 14.5 psi)	B
0.04 ... 4 bar	(0.58 ... 58 psi)	C
0.16 ... 16 bar	(2.32 ... 232 psi)	D
0.63 ... 63 bar	(9.14 ... 914 psi)	E
13 ... 1300 mbar a[1]	(0.19 ... 18.9 psia)[1]	S
0.05 ... 5 bar a[1]	(0.7 ... 72.5 psia)[1]	T
0.03 ... 30 bar a[1]	(4.35 ... 435 psia)[1]	U
Wetted parts materials		
Seal diaphragm	Measuring cell	
Stainless steel	Stainless steel	A
Hastelloy[2]	Stainless steel	B
Process connection		
• Flange version with Order Code M.., N.., R.. or Q.. (see "Further designs")		7
Non-wetted parts materials		
• Stainless steel, deep-drawn and electrolytically polished		4
Version		
• Standard versions		1
Explosion protection		
• None		A
• With ATEX, Type of protection:		
- "Intrinsic safety (Ex ia)"		B
• Zone 20/21/22[3]		C
• Ex nA/nL (Zone 2)[4]		E
• with FM "intrinsic safety" (cFM_{US})		M
Electrical connection / cable entry		
• Screwed gland M20x1.5 (polyamide) [5]		A
• Screwed gland M20x1.5 (metal)		B
• Screwed gland M20x1.5 (stainless steel)		C
• M12 connectors (without cable socket)		F
• M12 connectors (stainless steel), without cable socket)		G
• Screwed gland ½-14 NPT metal thread [6]		H
• Screwed gland ½-14 NPT stainless steel thread [6]		J

Selection and Ordering data	Order No.
SITRANS P300 pressure transmitters for relative and absolute pressure with front-flush membrane, single-chamber measuring housing, rating plate inscription in English	
4 ... 20 mA/HART	**7MF8123-**
PROFIBUS PA	**7MF8124-**
FOUNDATION Fieldbus (FF)	**7MF8125-**
	■■■■■-■■■■
Display	
• Without display, with keys, closed lid	1
• With display and keys, closed lid[7]	2
• With display and keys, lid with Makrolon pane (setting on HART devices: mA, with PROFIBUS PA and FOUNDATION Fieldbus equipment: pressure units)[7]	4
• With display and keys (setting acc. to specifications, Order Code "Y21" or "Y22" required), lid with Makrolon pane[7]	5
• With display and keys, lid with glass pane (setting on HART devices: mA, with PROFIBUS PA and FOUNDATION Fieldbus equipment: pressure units)[7]	6
• With display and keys (setting acc. to specifications, Order Code "Y21" or "Y22" required), lid with glass pane[7]	7

Power supply units see Chap. 7 "Supplementary Components"

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

1) Not with temperature decoupler P00 and P10, not for process connections R01, R02, R04, R10 and R11, and can only be ordered in conjunction with silicone oil.
2) Only available for flanges with options M.., N.. and Q..
3) Only together with electrical connection option A.
4) Only available together with electrical connection options B, C, F or G.
5) Only together with HART electronics.
6) Without cable gland.
7) Display cannot be turned.

SITRANS P300
for gauge and absolute pressure

Selection and Ordering data	Order code	HART	PA	FF
Further designs				
Add "**-Z**" to Order No. and specify Order Code.				
Pressure transmitter with mounting bracket (2 shackles, 4 nuts, 4 U-plates, 1 angle) made of: made completely of stainless steel, for wall or pipe mounting	**A02**	✓	✓	✓
Cable socket for M12 plug				
• Metal	**A50**		✓	✓
• Stainless steel	**A51**		✓	✓
Rating plate inscription (instead of English)				
• German	**B10**	✓	✓	✓
• French	**B12**	✓	✓	✓
• Spanish	**B13**	✓	✓	✓
• Italian	**B14**	✓	✓	✓
English rating plate Pressure units in in$H_2$0 and/or psi	**B21**	✓	✓	✓
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2[1]	**C11**	✓	✓	✓
Inspection certificate[2] Acc. to EN 10204-3.1	**C12**	✓	✓	✓
Factory certificate Acc. to EN 10204-2.2	**C14**	✓	✓	✓
Degree of protection IP65/IP68 (only for M20x1.5 and ½-14 NPT)	**D12**	✓	✓	✓
Degree of protection IP6k9k (only for M20x1.5)	**D46**	✓	✓	✓
Ex Approval IEC Ex (Ex ia) (only for transmitter 7MF8...-.....-.B..)	**E45**	✓	✓	✓
Ex Approval Ex ia/ib NEPSI	**E55**	✓	✓	✓
Only for SITRANS P300 with front-flush diaphragm (7MF81..-...)				
Flange to EN 1092-1, Form b1				
• DN 25, PN 40[3]	**M11**	✓	✓	✓
• DN 25, PN 100[4]	**M21**	✓	✓	✓
• DN 40, PN 40	**M13**	✓	✓	✓
• DN 40, PN 100	**M23**	✓	✓	✓
• DN 50, PN 16	**M04**	✓	✓	✓
• DN 50, PN 40	**M14**	✓	✓	✓
• DN 80, PN 16	**M06**	✓	✓	✓
• DN 80, PN 40	**M16**	✓	✓	✓
Flanges to ASME B16.5				
• 1", class 150[4]	**M40**	✓	✓	✓
• 1½", class 150	**M41**	✓	✓	✓
• 2", class 150	**M42**	✓	✓	✓
• 3", class 150	**M43**	✓	✓	✓
• 4", class 150	**M44**	✓	✓	✓
• 1", class 300[4]	**M45**	✓	✓	✓
• 1½", class 300	**M46**	✓	✓	✓
• 2", class 300	**M47**	✓	✓	✓
• 3", class 300	**M48**	✓	✓	✓
• 4", class 300	**M49**	✓	✓	✓
Threaded connector to DIN 3852-2, form A, thread to ISO 228				
• G ¾"-A, front-flush[4]	**R01**	✓	✓	✓
• G 1"-A, front-flush[4]	**R02**	✓	✓	✓
• G 2"-A, front-flush[4]	**R04**	✓	✓	✓
Tank connection[5] Sealing is included in delivery				
• TG 52/50, PN 40	**R10**	✓	✓	✓
• TG 52/150, PN 40	**R11**	✓	✓	✓

Selection and Ordering data	Order code	HART	PA	FF
Further designs				
Add "**-Z**" to Order No. and specify Order Code.				
Sanitary process connection according DIN 11851 (Dairy connection with slotted union nut) Certified to 3A[6]				
• DN 50, PN 25	**N04**	✓	✓	✓
• DN 80, PN 25	**N06**	✓	✓	✓
Tri-Clamp connection according DIN 32676/ISO 2852 Certified to 3A[6]				
• DN 50/2", PN 16	**N14**	✓	✓	✓
• DN 65/3", PN 10	**N15**	✓	✓	✓
Varivent connection Certified to 3A and EHEDG[6]				
• Type N = 68 for Varivent housing DN 40 ... 125 und 1½" ... 6", PN 40	**N28**	✓	✓	✓
Temperature decoupler up to 200 °C[7] for front-flush diaphragm version	**P00**	✓	✓	✓
Temperature decoupler up to 250 °C Measuring cell filling: High-temperature oil (Silicone oil)	**P10**	✓	✓	✓
Bio-Control sanitary process connection Certified to 3A and EHEDG[6]				
• DN 50, PN 16	**Q53**	✓	✓	✓
• DN 65, PN 16	**Q54**	✓	✓	✓
Sanitary process connection to DRD				
• DN 50, PN 40	**M32**	✓	✓	✓
SMS socket with union nut				
• 2"	**M67**	✓	✓	✓
• 2½"	**M68**	✓	✓	✓
• 3"	**M69**	✓	✓	✓
SMS threaded socket				
• 2"	**M73**	✓	✓	✓
• 2½"	**M74**	✓	✓	✓
• 3"	**M75**	✓	✓	✓
IDF socket with union nut ISO 2853				
• 2"	**M82**	✓	✓	✓
• 2½"	**M83**	✓	✓	✓
• 3"	**M84**	✓	✓	✓
IDF threaded socket ISO 2853				
• 2"	**M92**	✓	✓	✓
• 2½"	**M93**	✓	✓	✓
• 3"	**M94**	✓	✓	✓
Sanitary process connection to NEUMO Bio-Connect screw connection Certified to 3A and EHEDG[6]				
• DN 50, PN 16	**Q05**	✓	✓	✓
• DN 65, PN 16	**Q06**	✓	✓	✓
• DN 80, PN 16	**Q07**	✓	✓	✓
• DN 100, PN 16	**Q08**	✓	✓	✓
• DN 2", PN 16	**Q13**	✓	✓	✓
• DN 2½", PN 16	**Q14**	✓	✓	✓
• DN 3", PN 16	**Q15**	✓	✓	✓
• DN 4", PN 16	**Q16**	✓	✓	✓
Sanitary process connection to NEUMO Bio-Connect flange connection Certified to 3A and EHEDG[6]				
• DN 50, PN 16	**Q23**	✓	✓	✓
• DN 65, PN 16	**Q24**	✓	✓	✓
• DN 80, PN 16	**Q25**	✓	✓	✓
• DN 100, PN 16	**Q26**	✓	✓	✓
• DN 2", PN 16	**Q31**	✓	✓	✓
• DN 2½", PN 16	**Q32**	✓	✓	✓
• DN 3", PN 16	**Q33**	✓	✓	✓
• DN 4", PN 16	**Q34**	✓	✓	✓

Selection and Ordering data	Order code	HART	PA	FF
Further designs				
Add "**-Z**" to Order No. and specify Order Code.				
Sanitary process connection to NEUMO Bio-Connect clamp connection Certified to 3A and EHEDG[6]				
• DN 50, PN 16	**Q39**	✓	✓	✓
• DN 65, PN 10	**Q40**	✓	✓	✓
• DN 80, PN10	**Q41**	✓	✓	✓
• DN 100, PN 10	**Q42**	✓	✓	✓
• DN 2½", PN 16	**Q48**	✓	✓	✓
• DN 3", PN 10	**Q49**	✓	✓	✓
• DN 4", PN 10	**Q50**	✓	✓	✓
Sanitary process connection to NEUMO Bio-Connect S flange connection Certified to 3A and EHEDG				
• DN 50, PN 16	**Q63**	✓	✓	✓
• DN 65, PN 10	**Q64**	✓	✓	✓
• DN 80, PN 10	**Q65**	✓	✓	✓
• DN 100, PN 10	**Q66**	✓	✓	✓
• DN 2", PN 16	**Q72**	✓	✓	✓
• DN 2½", PN 10	**Q73**	✓	✓	✓
• DN 3", PN 10	**Q74**	✓	✓	✓
• DN 4", PN 10	**Q75**	✓	✓	✓
Aseptic threaded socket to DIN 11864-1 Form A Certified to 3A and EHEDG				
• DN 50, PN 25	**N33**	✓	✓	✓
• DN 65, PN 25	**N34**	✓	✓	✓
• DN 80, PN 25	**N35**	✓	✓	✓
• DN 100, PN 25	**N36**	✓	✓	✓
Aseptic flange with notch to DIN 11864-2 Form A Certified to 3A and EHEDG				
• DN 50, PN 16	**N43**	✓	✓	✓
• DN 65, PN 16	**N44**	✓	✓	✓
• DN 80, PN 16	**N45**	✓	✓	✓
• DN 100, PN 16	**N46**	✓	✓	✓
Aseptic flange with groove to DIN 11864-2 Form A Certified to 3A and EHEDG				
• DN 50, PN 16	**N43 + P11**	✓	✓	✓
• DN 65, PN 16	**N44 + P11**	✓	✓	✓
• DN 80, PN 16	**N45 + P11**	✓	✓	✓
• DN 100, PN 16	**N46 + P11**	✓	✓	✓
Aseptic clamp with groove to DIN 11864-3 FormA Certified to 3A and EHEDG				
• DN 50, PN 25	**N53**	✓	✓	✓
• DN 65, PN 25	**N54**	✓	✓	✓
• DN 80, PN 16	**N55**	✓	✓	✓
• DN 100, PN 16	**N56**	✓	✓	✓

Selection and Ordering data	Order code	HART	PA	FF
Additional data				
Please add "**-Z**" to Order No. and specify Order code(s) and plain text.				
Measuring range to be set Specify in plain text (max. 5 characters): Y01: ... up to ... mbar, bar, kPa, MPa, psi	**Y01**	✓		
Stainless steel tag plate (measuring point description) Max. 16 characters, specify in plain text: Y15:	**Y15**	✓	✓	✓
Measuring point text Max. 27 characters, specify in plain text: Y16:	**Y16**	✓	✓	✓
Entry of HART TAG Max. 8 characters, specify in plain text: Y17:	**Y17**	✓		
Setting of the display in pressure units Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi, ... Note: The following pressure units can be selected: bar, mbar, mm H_2O*), inH_2O*), ftH_2O*), mmHG, inHG, psi, Pa, kPa, MPa, g/cm^2, kg/cm^2, Torr, ATM or % *) ref. temperature 20 °C	**Y21**	✓	✓	✓
Setting of the display in non-pressure units[8] Specify in plain text: Y22: ..... up to ..... l, m^3, m, USg, ... (specification of measuring range in pressure units **"Y01"** is essential, unit with max. 5 characters)	**Y22 + Y01**	✓		
Preset bus address (possible between 1 ... 126) Specify in plain text: Y25:	**Y25**		✓	

Factory mounting of valve manifolds, see accessories.

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

✓ = available

Ordering example

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

1) When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.

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

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

4) Cannot be combined with order codes P00 and P10. Can only be ordered with silicone oil measuring cell filling.

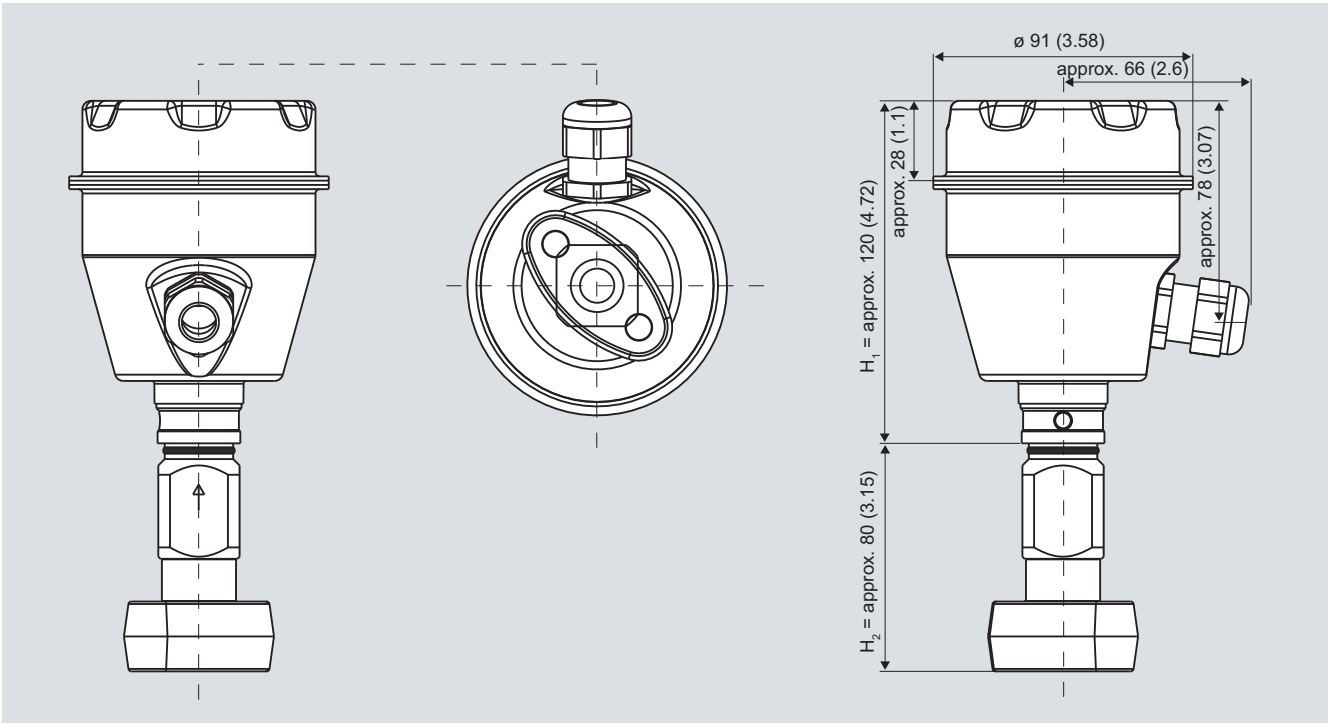
5) The weldable socket can be ordered under accessories.

6) 3A certification only if used in conjunction with 3A-compliant sealing rings.

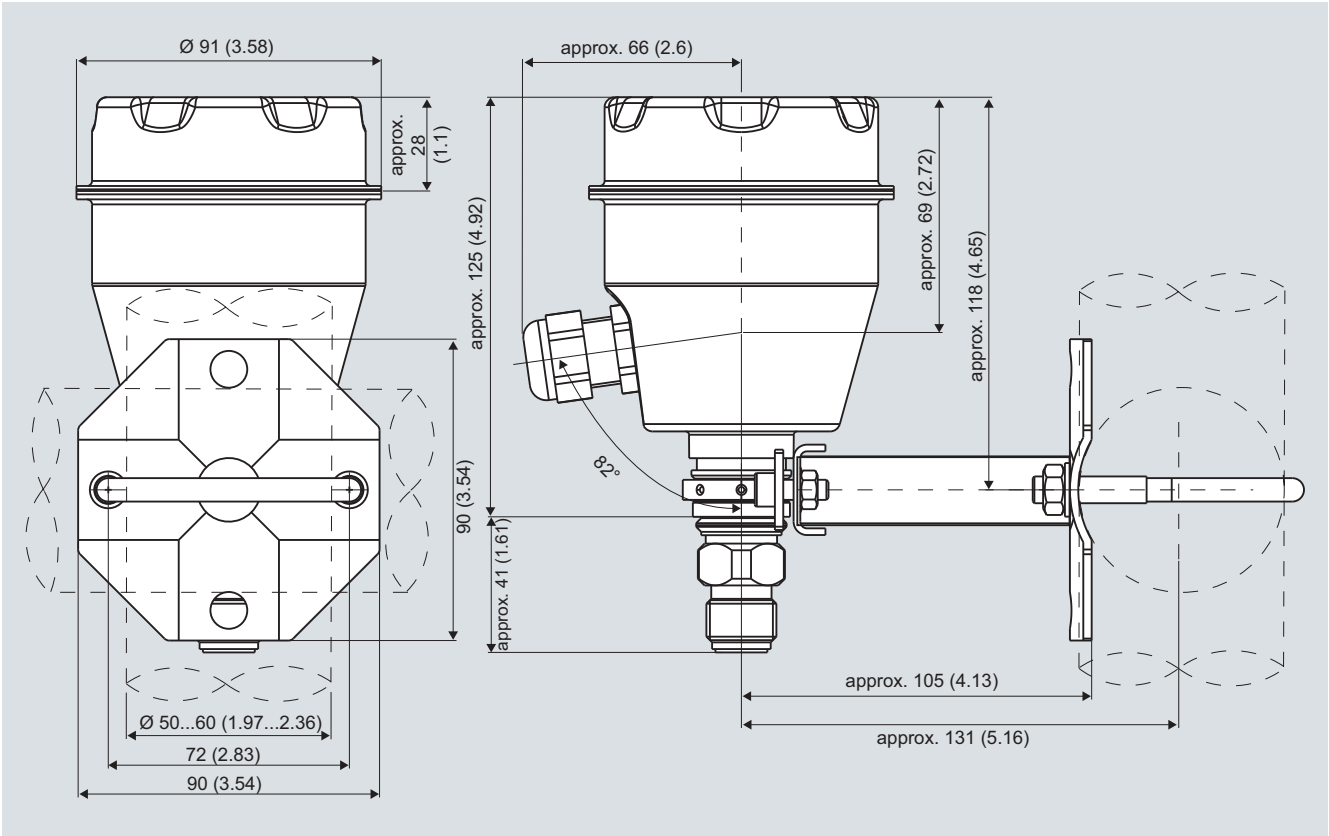
7) Certified to 3A.
The maximum permissible temperatures of the medium depend on the respective cell fillings.

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

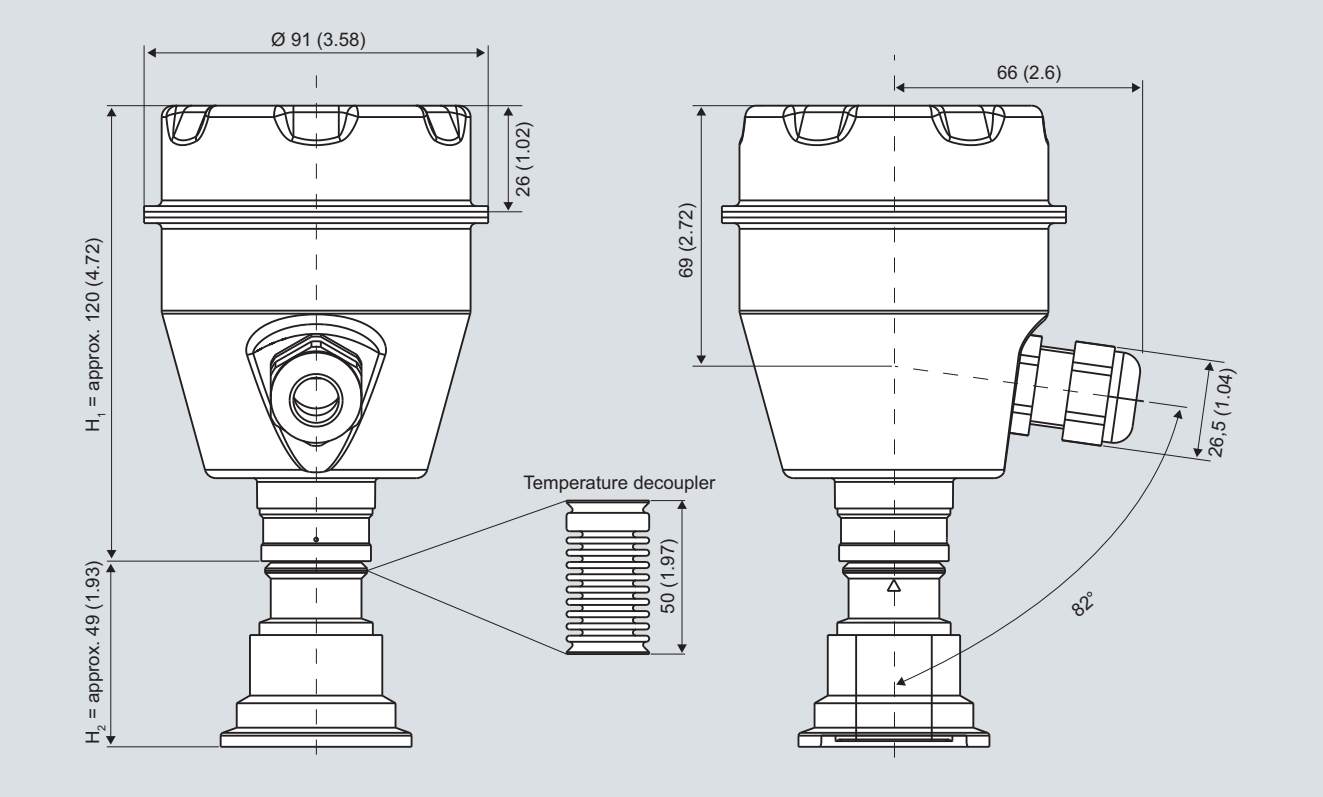
Dimensional drawings



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, front-flush, dimensions in mm (inch)

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

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

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

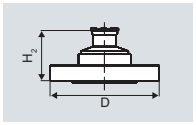
Only the height H_2 is indicated in the dimensions of the flanges.

SITRANS P300
for gauge and absolute pressure

Flanges as per EN and ASME

Flange to EN

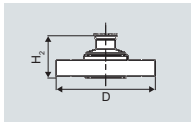
EN 1092-1



Order code	DN	PN	∅D	H_2
M11	25	40	115 mm (4.5“)	Approx. 52 mm (2“)
M21	25	100	140 mm (5.5“)	
M13	40	40	150 mm (5.9“)	
M23	40	100	170 mm (6.7“)	
M04	50	16	165 mm (6.5“)	
M14	50	40	165 mm (6.5“)	
M06	80	16	200 mm (7.9“)	
M16	80	40	200 mm (7.9“)	

Flanges to ASME

ASME B16.5

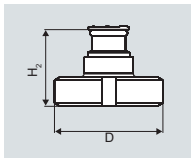


Order code	DN	PN	∅D	H_2
M40	1“	150	110 mm (4.3“)	Approx. 52 mm (2“)
M41	1“	300	125 mm (4.9“)	
M42	1½“	150	130 mm (5.1“)	
M43	1½“	300	155 mm (6.1“)	
M44	2“	150	150 mm (5.9“)	
M45	2“	300	165 mm (6.5“)	
M46	3“	150	190 mm (7.5“)	
M47	3“	300	210 mm (8.1“)	
M48	4“	150	230 mm (9.1“)	
M49	4“	300	255 mm (10.0“)	

NuG and pharmaceutical connections

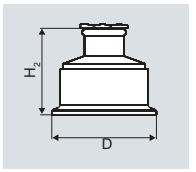
Connections to DIN

DIN 11851 (milk pipe union with slotted union nut)



Order code	DN	PN	∅D	H_2
N04	50	25	92 mm (3.6“)	Approx. 52 mm (2“)
N06	80	25	127 mm (5.0“)	

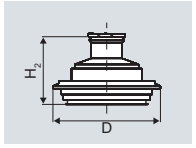
Tri-Clamp nach DIN 32676



Order code	DN	PN	∅D	H_2
N14	50	16	64 mm (2.5“)	Approx. 52 mm (2“)
N15	65	10	91 mm (3.6“)	

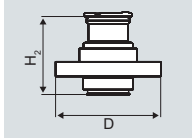
Other connections

Varivent connection



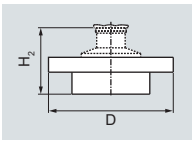
Order code	DN	PN	∅D	H_2
N28	40 ... 125	40	84 mm (3.3“)	Approx. 52 mm (2“)

Biocontrol connection



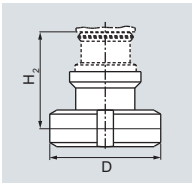
Order code	DN	PN	∅D	H_2
Q53	50	16	90 mm (3.5“)	Approx. 52 mm (2“)
Q54	65	16	120 mm (4.7“)	

Sanitary process connection to DRD



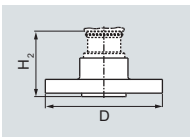
Order code	DN	PN	∅D	H_2
M32	50	40	105 mm (4.1“)	Approx. 52 mm (2“)

Sanitary process screw connection to NEUMO Bio-Connect



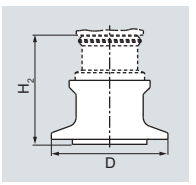
Order code	DN	PN	∅D	H_2
Q05	50	16	82 mm (3.2“)	Approx. 52 mm (2“)
Q06	65	16	105 mm (4.1“)	
Q07	80	16	115 mm (4.5“)	
Q08	100	16	145 mm (5.7“)	
Q13	2“	16	82 mm (3.2“)	
Q14	2½“	16	105 mm (4.1“)	
Q15	3“	16	105 mm (4.1“)	
Q16	4“	16	145 mm (5.7“)	

Sanitary process connection to NEUMO Bio-Connect flange connection



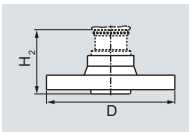
Order code	DN	PN	∅D	H_2
Q23	50	16	110 mm (4.3“)	Approx. 52 mm (2“)
Q24	65	16	140 mm (5.5“)	
Q25	80	16	150 mm (5.9“)	
Q26	100	16	175 mm (6.9“)	
Q31	2“	16	100 mm (3.9“)	
Q32	2½“	16	110 mm (4.3“)	
Q33	3“	16	140 mm (5.5“)	
Q34	4“	16	175 mm (6.9“)	

Sanitary process connection to NEUMO Bio-Connect clamp connection



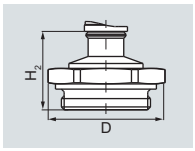
Order code	DN	PN	∅D	H_2
Q39	50	16	77.4 mm (3.0“)	Approx. 52 mm (2“)
Q40	65	10	90.9 mm (3.6“)	
Q41	80	10	106 mm (4.2“)	
Q42	100	10	119 mm (4.7“)	
Q48	2½“	16	77.4 mm (3.0“)	
Q49	3“	10	90.9 mm (3.6“)	
Q50	4“	10	119 mm (4.7“)	

Sanitary process connection to NEUMO Bio-Connect S flange connection



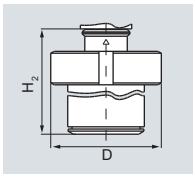
Order code	DN	PN	∅D	H_2
Q63	50	16	125 mm (4.9“)	Approx. 52 mm (2“)
Q64	65	10	145 mm (5.7“)	
Q65	80	10	155 mm (6.1“)	
Q66	100	10	180 mm (7.1“)	
Q72	2“	16	125 mm (4.9“)	
Q73	2½“	10	135 mm (5.3“)	
Q74	3“	10	145 mm (5.7“)	
Q75	4“	10	180 mm (7.1“)	

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



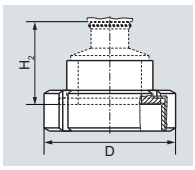
Order code	DN	PN	∅D	H_2
R01	¾“	60	37 mm (1.5“)	Approx. 45 mm (1.8“)
R02	1“	60	48 mm (1.9“)	Approx. 47 mm (1.9“)
R04	2“	60	78 mm (3.1“)	Approx. 52 mm (2“)

Tank connection TG 52/50 and TG52/150



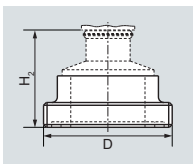
Order code	DN	PN	∅D	H_2
R10	25	40	63 mm (2.5“)	Approx. 63 mm (2.5“)
R11	25	40	63 mm (2.5“)	Approx. 170 mm (6.7“)

SMS socket with union nut



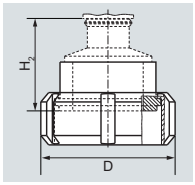
Order code	DN	PN	∅D	H_2
M67	2“	25	84 mm (3.3“)	Approx. 52 mm (2“)
M68	2½“	25	100 mm (3.9“)	
M69	3“	25	114 mm (4.5“)	

SMS threaded socket



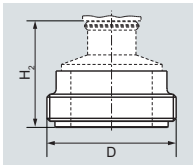
Order code	DN	PN	∅D	H_2
M73	2“	25	70 x 1/6 mm	Approx. 52 mm (2“)
M74	2½“	25	85 x 1/6 mm	
M75	3“	25	98 x 1/6 mm	

IDF socket with union nut



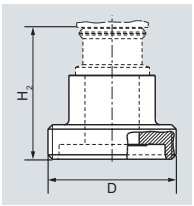
Order code	DN	PN	∅D	H_2
M82	2“	25	77 mm (3“)	Approx. 52 mm (2“)
M83	2½“	25	91 mm (3.6“)	
M84	3“	25	106 mm (4.2“)	

IDF threaded socket



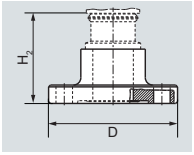
Order code	DN	PN	∅D	H_2
M92	2“	25	64 mm (2.5“)	Approx. 52 mm (2“)
M93	2½“	25	77.5 mm (3.1“)	
M94	3“	25	91 mm (3.6“)	

Aseptic threaded socket to DIN 11864-1 Form A



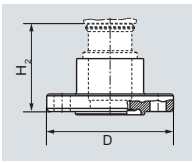
Order code	DN	PN	∅D	H_2
N33	50	25	78 x 1/6“	Approx. 52 mm (2“)
N34	65	25	95 x 1/6“	
N35	80	25	110 x ¼“	
N36	100	25	130 x ¼“	

Aseptic flange with notch to DIN 11864-2 Form A



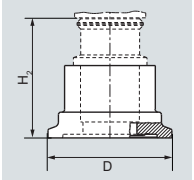
Order code	DN	PN	∅D	H_2
N43	50	16	94	Approx. 52 mm (2“)
N44	65	16	113	
N45	80	16	133	
N46	100	16	159	

Aseptic flange with groove to DIN 11864-2 Form A



Order code	DN	PN	∅D	H_2
N43 + P11	50	16	94	Approx. 52 mm (2“)
N44 + P11	65	16	113	
N45 + P11	80	16	133	
N46 + P11	100	16	159	

Aseptic clamp with groove to DIN 11864-3 Form A



Order code	DN	PN	∅D	H_2
N53	50	25	77.5	Approx. 52 mm (2“)
N54	65	25	91	
N55	80	16	106	
N56	100	16	130	

SITRANS P300
Accessories/Spare parts

Selection and Odering data	Order No.
Spare parts / Accessories	
Mounting bracket and fastening parts kit made of stainless steel	**7MF8997-1AA**
Lid without window gasket not included	**7MF8997-1BA**
Lid with glass window gasket not included	**7MF8997-1BD**
NBR enclosure sealing	**7MF8997-1BG**
Measuring point label unlabeled	**7MF8997-1CA**
Cable gland	
• metal	**7MF8997-1EA**
• plastic (blue)	**7MF8997-1EB**
Weldable sockets for PMC connection	
• PMC Style Standard: Thread 1½"	**7MF4997-2HA**
• PMC Style Minibolt: front-flush 1"	**7MF4997-2HB**
Gaskets for PMC connection (packing unit = 5 units)	
• PTFE seal for PMC Style Standard: Thread 1½"	**7MF4997-2HC**
• Gasket made of Viton for PMC Style Minibolt: front-flush 1"	**7MF4997-2HD**
Weldable socket for TG52/50 and TG52/150 connection	
• TG52/50 connection	**7MF4997-2HE**
• TG52/150 connection02	**7MF4997-2HF**
Seals for TG 52/50 and TG 52/150 made of silicone	**7MF4997-2HG**
Seals for flange connection with front-flush diaphragm Material FPM (Viton), 10 units	
• DN 25, PN 40 (M11)	**7MF4997-2HH**
• DN 25, PN 100 (M21)	**7MF4997-2HJ**
• 1", class 150 (M40)	**7MF4997-2HK**
• 1", class 300 (M45)	**7MF4997-2HL**

Selection and Odering data	Order No.
Operating Instructions[1]	
• for SITRANS P300 series with HART	
- German	**A5E00359580**
- English	**A5E00359579**
- French	**A5E00359578**
- Spanish	**A5E00359576**
- Italian	**A5E00359577**
- Leporello German/English	**A5E00359581**
• for SITRANS P300 series with PROFIBUS PA	
- German	**A5E00414587**
- English	**A5E00414588**
- French	**A5E00414589**
- Spanish	**A5E00414590**
- Italian	**A5E00414591**
- Leporello German/English	**A5E00414592**
Compact operating instructions The compact operating instructions are available in 21 EU languages on the product CD supplied with each transmitter. They can also be downloaded from the SITRANS P web page.	
Brief instructions (Leporello)	
• for SITRANS P300 with HART	
- German/English	**A5E00359581**
• for SITRANS P300 with PROFIBUS PA	
- German/English	**A5E00414592**
• for SITRANS P300 with FOUNDATION Fieldbus	
- German/English	**A5E01176733**
CD with SITRANS P documentation	
• German, English, French, Spanish, Italian including compact operating instructions in 21 EU languages	**A5E00090345**
Certificates (order only via SAP) instead of Internet download	
• hard copy (to order)	**A5E03252406**
• on CD (to order)	**A5E03252407**
HART modem	
• with RS232 interface ▶	**7MF4997-1DA**
• with USB interface ▶	**7MF4997-1DB**

▶ available ex stock

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

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

Overview

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

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

Design

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

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

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

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

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

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

Selection and Ordering data

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

Add **-Z** to the Order No. of the transmitter and add order codes	Order code
SITRANS P300 7MF802.-...1.-... With process connection female thread ½-14 NPT in-sealed with PTFE sealing tape Delivery incl. high-pressure test certified by test report to EN 10204-2.2	**T03**
Further designs:	
Delivery includes mounting brackets and mounting clips made of stainless steel (instead of the mounting bracket supplied with the transmitter)	**A02**
Supplied acceptance test certificate to EN 10204- 3.1 for transmitters and mounted valve manifold	**C12**

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

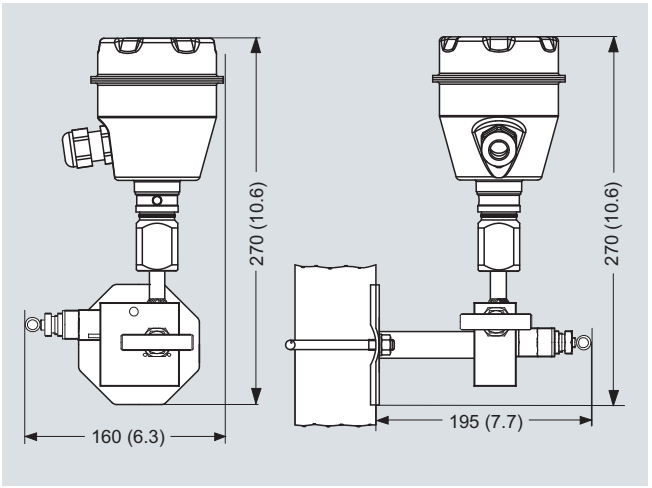
Add **-Z** to the Order No. of the transmitter and add order codes	Order code
SITRANS P300 7MF802.-...0.-... with process connection collar G½ A to EN 837-1 with gasket made of PTFE between valve manifold and transmitter	**T02**
Alternative sealing material:	
• Soft iron	**A70**
• Stainless steel, Mat. No. 14571	**A71**
• copper	**A72**
Delivery incl. high-pressure test certified by test report to EN 10204-2.2	
Further designs:	
Delivery includes mounting brackets and mounting clips made of stainless steel (instead of the mounting bracket supplied with the transmitter)	**A02**
Supplied acceptance test certificate to EN 10204- 3.1 for transmitters and mounted valve manifold	**C12**

SITRANS P300 - Factory-mounting of valve manifolds on transmitters

Dimensional drawings

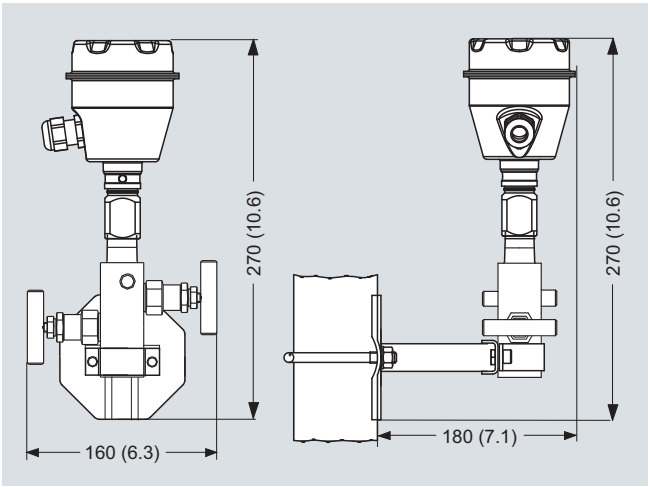
Valve manifolds mounted on SITRANS P300

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



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

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



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

Overview

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

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

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

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

Various versions of the pressure transmitters are available for measuring:

- Gauge pressure
- Level
- Mass level
- Volume level

Benefits

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

Application

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

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

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

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

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

SITRANS P, DS III series

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

Span (infinitely adjustable)

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

Nominal measuring range

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

SITRANS P300

Span (infinitely adjustable)

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

Nominal measuring range

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

1

Design

SITRANS P DS III

1 Plastic cover as access to the input keys
2 Screw cover with viewing pane
3 Digital display
4 Locking screw
5 Process connection
6 Screw cover with viewing pane
7 Rating plate
8 Inlet with cable gland

Device front view, SITRANS P DS III

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

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

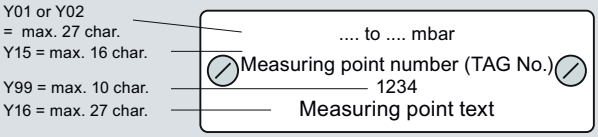
The approval label is located on the opposite side.

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

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

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

Example for an attached measuring point label



SITRANS P300

The device comprises:

- Electronics
- Housing
- Measuring cell

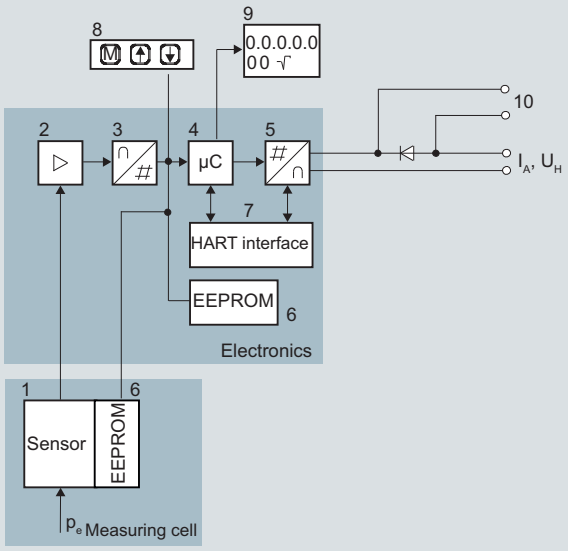
1 Digital display
2 Process connection
3 Cable gland
4 Rating plate
5 Screw-on lid

Perspective view of the SITRANS P300

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

Function

Operation of electronics with HART communication



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

Function diagram of electronics

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

The diode circuit (10) protects against incorrect polarity.

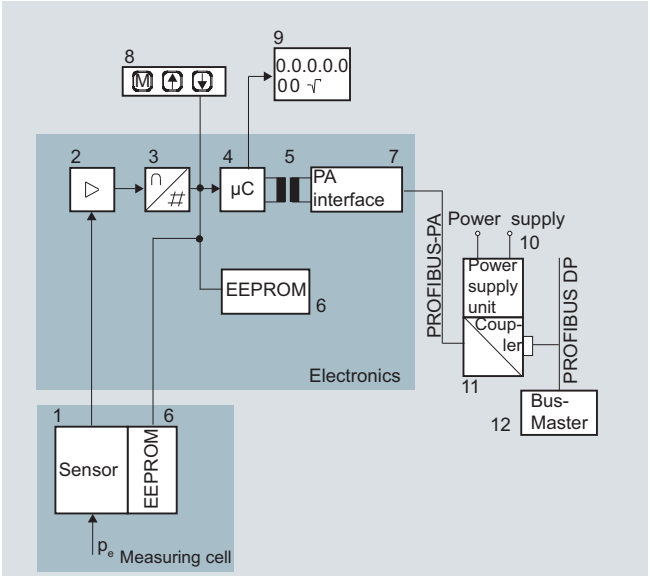
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The one memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced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

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

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

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

Operation of electronics with PROFIBUS PA communication



1 Measuring cell sensor
2 Instrument amplifier
3 Analog-to-digital converter
4 Microcontroller
5 Electrical isolation
6 One non-volatile memory each in the measuring cell and electronics
7 PROFIBUS-PA interface
8 Three input keys (local operation)
9 Digital display
10 Power supply
11 DP/PA coupler or link
12 Bus master
p_e Input variable

Function diagram of electronics

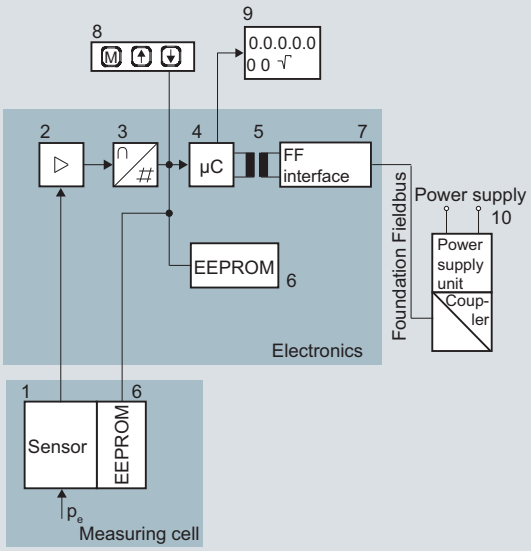
The bridge output voltage created by the sensor (1, Figure "Function diagram of electronics") is amplified by the measuring amplifier(2) and digitized in the analog-to-digital converter (3). The digital information is evaluated in the microcontroller, its linearity and temperature response corrected,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

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

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

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

Operation of electronics with FOUNDATION Fieldbus communication



1	Measuring cell sensor	8	Three input keys (local operation)
2	Instrument amplifier	9	Digital display
3	Analog-to-digital converter	10	Power supply
4	Microcontroller		
5	Electrical isolation		
6	One non-volatile memory each in the measuring cell and electronics	p_e	Input variable
7	FF interface		

Function diagram of electronics

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

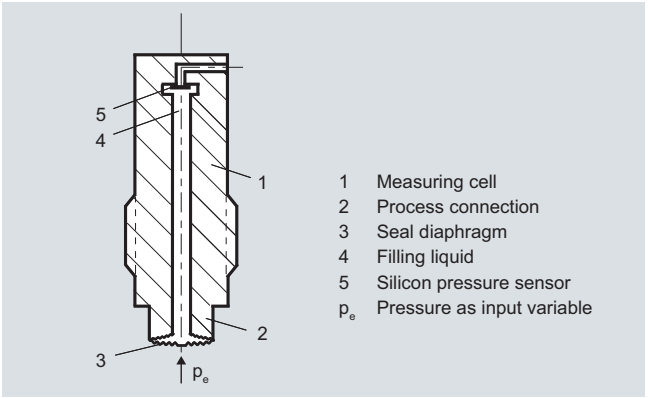
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The one memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced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

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

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

Mode of operation of the measuring cell

Measuring cell for gauge pressure with front-flush diaphragm



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

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

Parameterization

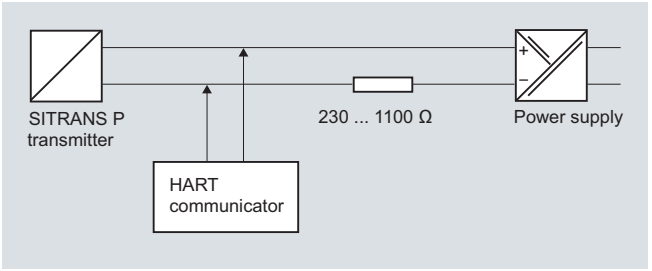
Depending on the version, there are a range of options for parameterizing the pressure transmitter and for setting or scanning the parameters.

Parameterization using the input buttons (local operation)

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

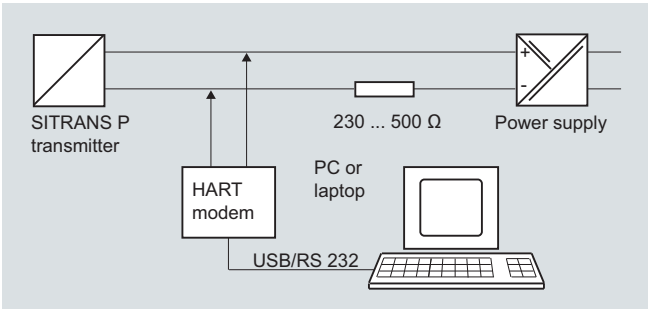
Parameterization using HART

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



Communication between a HART Communicator and a pressure transmitter

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



HART communication between a PC communicator and a pressure transmitter

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

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

Adjustable parameter DS III with HART and P300 with HART

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

[1)] Cancel apart from write protection

Diagnostic functions for DS III with HART and P300 with HART

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

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

Physical variable	Physical dimensions
Pressure (setting can also be made in the factory)	Pa, MPa, kPa, bar, mbar, torr, atm, psi, g/cm^2, kg/cm^2, inH$_2$O, inH$_2$O (4 °C), mmH$_2$O, ftH$_2$O (20 °C), inHg, mmHg
Level (height data)	m, cm, mm, ft, in
Volume	m^3, dm^3, hl, yd^3, ft^3, in^3, US gallon, Imp. gallon, bushel, barrel, barrel liquid
Mass	g, kg, t, lb, Ston, Lton, oz
Temperature	K, °C, °F, °R
Miscellaneous	%, mA

Parameterization through PROFIBUS PA interface

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

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

Parameterization through FOUNDATION Fieldbus interface

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

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

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

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

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

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

Physical dimensions available for the display

Physical variable	Physical dimensions
Pressure (setting can also be made in the factory)	MPa, hPa, kPa, Pa, bar, mbar, torr, atm, psi, g/cm^2, kg/cm^2, mmH$_2$O, mmH$_2$O (4 °C), inH$_2$O, inH$_2$0 (4 °C), ftH$_2$O, mmHg, inHg
Level (height data)	m, cm, mm, ft, in, yd
Mass	g, kg, t, lb, Ston, Lton, oz
Volume	m^3, dm^3, hl, yd^3, ft^3, in^3, US gallon, Imp. gallon, bushel, barrel, barrel liquid
Temperature	K, °C, °F, °R
Miscellaneous	%

Technical specifications

SITRANS P, DS III series for gauge pressure with PMC connection for the paper industry				
	HART		**PROFIBUS PA and FOUNDATION Fieldbus**	
Input				
Measured variable	Gauge pressure			
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span (min. ... max.)	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure
	0.01 ... 1 bar (0.15 ... 14.5 psi)	6 bar (87 psi)	1 bar (14.5 psi)	6 bar (87 psi)
	0.04 ... 4 bar (0.58 ... 58 psi)	10 bar (145 psi)	4 bar (58 psi)	10 bar (145 psi)
	0.16 ... 16 bar (2.32 ... 232 psi)	32 bar (464 psi)	16 bar (232 psi)	32 bar (464 psi)
Lower measuring limit				
• Measuring cell with silicone oil filling	100 mbar a(1.45 psia)			
Upper measuring limit	100% of max. span			
Output				
Output signal	4 ... 20 mA		Digital PROFIBUS PA and FOUNDATION Fieldbus signal	
• Lower limit (infinitely adjustable)	3.55 mA, factory preset to 3.84 mA		-	
• Upper limit (infinitely adjustable)	23 mA, factory preset to 20.5 mA or optionally set to 22.0 mA		-	
Load				
• Without HART communication	$R_B \leq (U_H - 10.5\ V)/0.023\ A$ in Ω, U_H: Power supply in V		-	
• With HART communication	R_B = 230 ... 500 Ω (SIMATIC PDM) or R_B = 230 ... 1100 Ω (HART Communicator)		-	
Physical bus	-		IEC 61158-2	
Protection against polarity reversal	Protected against short-circuit and polarity reversal. Each connection against the other with max. supply voltage.			
Electrical damping T_{63} (step width 0.1 s)	Set to 2 s (0 ... 100 s)			
Measuring accuracy	Acc. to IEC 60770-1			
Reference conditions (All error data refer always refer to the set span)	Increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil filling, room temperature 25 °C (77 °F)) r: Span ratio (r = max. span / set span)			
Error in measurement at limit setting incl. hysteresis and reproducibility				
• 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 stability (temperature change ± 30 °C (± 54 °F))				
1- to 4-bar measuring cell	≤ (0.25 · r) % per 5 years		≤ 0.25 % per 5 years	
16-bar measuring cell	≤ (0.125 · r) % per 5 years		≤ 0.125 % per 5 years	
Influence of ambient temperature				
• at -10 ... +60 °C (14 ... 140 °F)	≤ (0.08 · r + 0.1) %[1)]		≤ 0.3 %	
• at -40 ... -10 °C and +60 ... +85 °C (-40 ... +14 °F and 140 ... 185 °F)	≤ (0.1 · r + 0.15) %/10 K		≤ 0.25 %/10 K	
Influence of the medium temperature (only with front-flush diaphragm)				
• Temperature difference between medium temperature and ambient temperature	3 mbar/10 K (0.04 psi/10 K)			
Influence of mounting position	≤ 0.1 mbar (0.00145 psi) per 10° inclination			
Measured Value Resolution	-		$3 \cdot 10^{-5}$ of nominal measuring range	

SITRANS P, DS III series for gauge pressure with PMC connection for the paper industry		
	HART	**PROFIBUS PA and FOUNDATION Fieldbus**
Rated conditions		
Degree of protection to IEC 60529	IP65, IP68, NEMA 4X, enclosure cleaning, resistant to lyes, steam to 150 °C (302 °F)	
Temperature of medium	-40 ... +100 °C (-40 ... +212 °F)	
Ambient conditions		
• Ambient temperature	-20 ... +85 °C (-4 ... +185 °F)	
• Storage temperature	-50 ... +85 °C (-58 ... +185 °F)	
• Climatic class		
- Condensation	Relative humidity 0 ... 100 % Condensation permissible, suitable for use in the tropics	
• Electromagnetic Compatibility		
- Emitted interference and interference immunity	Acc. to EN 61326 and NAMUR NE 21	
Design		
Weight (without options)	≈ 1.5 kg (≈ 3.3 lb)	
Enclosure material	Low-copper die-cast aluminum, GD-AlSi12 or stainless steel precision casting, mat. no. 1.4408	
Wetted parts materials		
• Gasket (standard)	PTFE flat gasket	
• O-ring (minibolt)	FPM (Viton) or optionally: FFPM or NBR	
Measuring cell filling	Silicone oil or inert filling liquid	
Process connection (standard)	Flush-mounted, 1½", PMC Standard design	
Process connection (minibolt)	Flush-mounted, 1", minibolt design	
Power supply U_H		Supplied through bus
Terminal voltage on transmitter	10.5 ... 45 V DC 10.5 ... 30 V DC in intrinsically-safe mode	-
Separate 24 V power supply necessary	-	No
Bus voltage		
• Not Ex	-	9 ... 32 V
• With intrinsically-safe operation	-	9 ... 24 V
Current consumption		
• Basic current (max.)	-	12.5 mA
• Start-up current ≤ basic current	-	Yes
• Max. current in event of fault	-	15.5 mA
Fault disconnection electronics (FDE) available	-	Yes
Certificates and approvals		
Classification according to PED 97/23/EC	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)	

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

SITRANS P DS III with PMC connection

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 or local operation (standard setting address 126)
Cyclic data usage	
• Output byte	5 (one measured value) or 10 (two measured values)
• Input byte	0, 1, or 2 (register operating mode and reset function for metering)
Internal preprocessing	
Device profile	PROFIBUS PA Profile for Process Control Devices Version 3.0, Class B
Function blocks	2
• Analog input	
- Adaptation to customer-specific process variables	Yes, linearly rising or falling characteristic
- Electrical damping, adjustable	0 ... 100 s
- Simulation function	Input /Output
- Failure mode	parameterizable (last good value, substitute value, incorrect value)
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respectively
• Register (totalizer)	Can be reset, preset, optional direction of counting, simulation function of register output
- Failure mode	parameterizable (summation with last good value, continuous summation, summation with incorrect value)
- Limit monitoring	One upper and lower warning limit and one alarm limit respectively
• Physical block	1
Transducer blocks	2
• Pressure transducer block	
- Can be calibrated by applying two pressures	Yes
- Monitoring of sensor limits	Yes
- Specification of a container characteristic with	Max. 30 nodes
- Square-rooted characteristic for flow measurement	Yes
- Gradual volume suppression and implementation point of square-root extraction	Parameterizable
- Simulation function for measured pressure value and sensor temperature	Constant value or over parameterizable ramp function

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

Selection and Ordering data		Order No.
SITRANS P pressure transmitters for gauge pressure, with PMC connection series DS III with HART		**7MF4133-**
Measuring cell filling	**Measuring cell-cleaning**	
Silicone oil	normal	1
Inert liquid	grease-free to cleanliness level 2	3
Measuring span (min. ... max.)		
0.01 ... 1 bar[1]	(0.15 ... 14.5 psi)[1]	B
0.04 ... 4 bar	(0.58 ... 58 psi)	C
0.1.6 ... 16 bar	(2.32 ... 232 psi)	D
Wetted parts materials		
Seal diaphragm	Connection shank	
Hastelloy	Stainless steel	B
Process connection		
• PMC Style Standard: Thread 1½"		2
• PMC Style Minibolt: front-flush 1" (not with minimum span: 500 mbar (7.25 psi) - version "B")		3
Non-wetted parts materials		
• Housing made of die-cast aluminium		0
• Housing stainless steel precision casting		3
Version		
• Standard versions		1
• International version, English label inscriptions, documentation in 5 languages on CD (no order code selectable)		2
Explosion protection		
• None		A
Electrical connection / cable entry		
• Female thread M20 x 1.5		B
• Female thread ½-14 NPT		C
• M12 connectors (stainless steel)[2]		F
Display		
• Without display		0
• Without visible display (display concealed, setting: mA) ►		1
• With visible display		6
• With customer-specific display (setting as specified, Order Code "Y21" required)		7

► Available ex stock

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

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

[1] Only with "PMC Style Standard"process connection

[2] M12 delivered without cable socket

Selection and Ordering data		Order No.
SITRANS P pressure transmitter for gauge pressure, with PMC connection		
DS III with PROFIBUS PA (PA)		**7MF4134-**
DS III with FOUNDATION Fieldbus (FF)		**7MF4135-**
Measuring cell filling	**Measuring cell cleaning**	
Silicone oil	normal	1
Inert liquid	grease-free to cleanliness level 2	3
Nominal measuring range		
1 bar[1]	(14.5 psi)[1]	B
4 bar	(58 psi)	C
16 bar	(232 psi)	D
Wetted parts materials		
Seal diaphragm	Connection shank	
Hastelloy	Stainless steel	B
Process connection[2]		
• PMC Style Standard: Thread 1½"		2
• PMC Style Minibolt: front-flush 1" (minimum span: 500 mbar (7.25 psi), not available with 1-bar-measuring cell (Option B))		3
Non-wetted parts materials		
• Housing made of die-cast aluminium		0
• Housing stainless steel precision casting		3
Version		
• Standard versions		1
• International version, English label inscriptions, documentation in 5 languages on CD (no order code selectable)		2
Explosion protection		
• None		A
Electrical connection / cable entry		
• Screwed gland M20x1.5		B
• Screwed gland ½-14 NPT		C
• M12 connectors (stainless steel)[3]		F
Display		
• Without display		0
• Without visible display (display concealed, setting: mA) ►		1
• With visible display		6
• With customer-specific display (setting as specified, Order Code "Y21" required)		7

► Available ex stock

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

[1] Only with "PMC Style Standard"process connection

[2] Sealing is included in delivery.

[3] M12 delivered without cable socket

Transmitters for gauge pressure for the paper industry

SITRANS P DS III with PMC connection

Selection and Ordering data	Order code	HART	PA	FF
Further designs				
Add "**-Z**" to Order No. and specify Order Code.				
Plug				
• Angled	**A32**	✓		
• Han 8D (metal, gray)	**A33**	✓		
M12 cable sockets (metal)	**A50**	✓	✓	✓
Rating plate inscription (instead of German)				
• English	**B11**	✓	✓	✓
• French	**B12**	✓	✓	✓
• Spanish	**B13**	✓	✓	✓
• Italian	**B14**	✓	✓	✓
English rating plate Pressure units in inH_20 and/or psi	**B21**	✓	✓	✓
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	**C11**	✓	✓	✓
Inspection certificate Acc. to EN 10204-3.1	**C12**	✓	✓	✓
Factory certificate Acc. to EN 10204-2.2	**C14**	✓	✓	✓
"Functional safety (SIL2)" certificate acc. to IEC 61508	**C20**	✓		
"Functional safety (SIL2/3)" certificate acc. to IEC 61508	**C23**	✓		
Device passport Russia (For price request please contact the technical support www.siemens.com/automation/support-request)	**C99**	✓	✓	✓
Output signal can be set to upper limit of 22.0mA	**D05**	✓	✓	✓
Degree of protection IP65/IP68 (only for M20 x 1.5 and ½-14 NPT)	**D12**	✓	✓	✓
Export approval Korea	**E11**	✓	✓	✓
Mounting				
• Weldable sockets for standard 1½" threaded connection	**P01**	✓	✓	✓
• Weldable socket for minibolt connection 1" (incl. screw 5/16-18 UNC-2B and washer)	**P02**	✓	✓	✓

Selection and Ordering data	Order code	HART	PA	FF
Additional data				
Please add "**-Z**" to Order No. and specify Order code(s) and plain text.				
Measuring range to be set Specify in plain text (max. 5 characters): Y01: ... up to ... mbar, bar, kPa, MPa, psi	**Y01**	✓		
Stainless steel tag plate (measuring point description) Max. 16 characters, specify in plain text: Y15:	**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: bar): Y21: mbar, bar, kPa, MPa, psi, ... Note: The following pressure units can be selected: bar, mbar, mm H_2O*), inH_2O*), ftH_2O*), mmHG, inHG, psi, Pa, kPa, MPa, g/cm^2, kg/cm^2, Torr, ATM or % *) ref. temperature 20 °C	**Y21**	✓	✓	✓
Setting of pressure indication in non-pressure units[1] Specify in plain text: Y22: ..... up to ..... l, m^3, m, USg, ... (specification of measuring range in pressure units **"Y01"** is essential, unit with max. 5 characters)	**Y22 + Y01**	✓		
Preset bus address possible between 1 and 126 Max. 8 characters, specify in plain text: Y25:	**Y25**		✓	✓

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

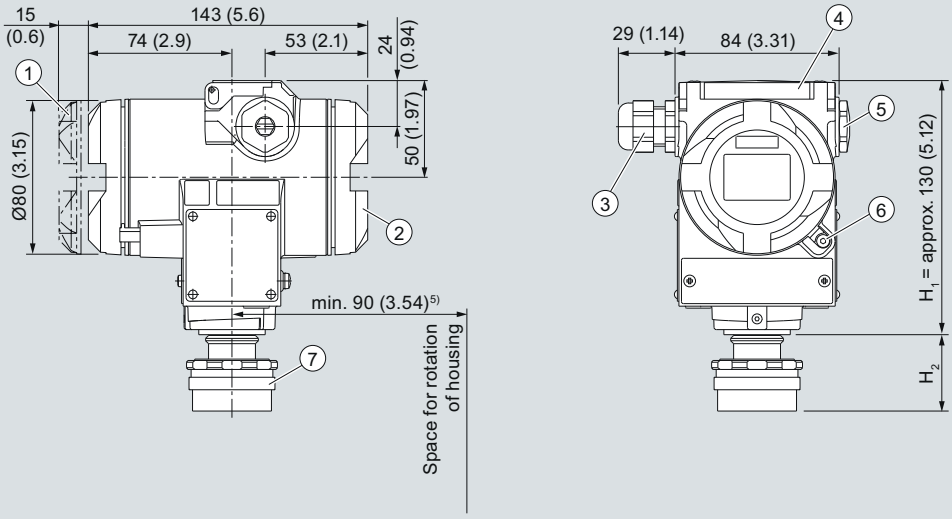
✓ = available

ordering example

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

[1] Preset values can only be changed over SIMATIC PDM.

Dimensional drawings



1. Electronic side, digital display (longer overall length for cover with window)[1]
2. Terminal side[1]
3. Electrical connection: Screwed gland M20 x 1,5 or screwed gland ½-14 NPT or M12 conector
4. Protective cover over keys
5. Blanking plug
6. Screw cover - safety bracket (only for type of protection "Explosion-proof enclosure", not shown in the drawing)
7. Process connection: PMC standard

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

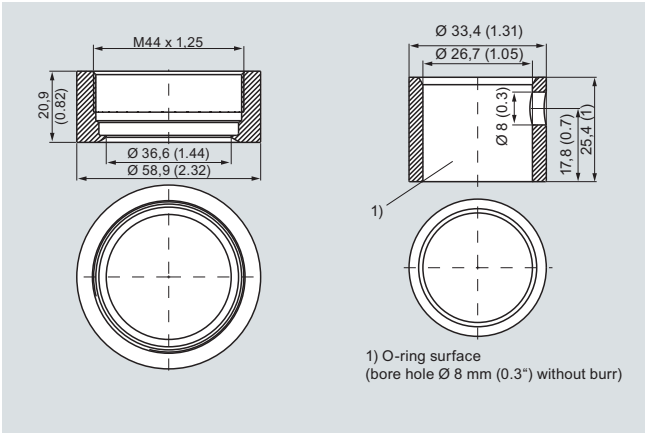
SITRANS P DS III pressure transmitters for gauge pressure, with PMC connection, dimensions in mm (inch)

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

H_1 = Height of the SITRANS P DS III up to a defined cross-section

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

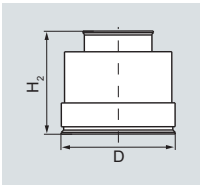
Only the height H_2 is indicated in the dimensions of the flanges.



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

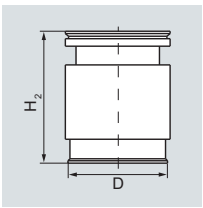
Material: Stainless steel, Mat. No. 1.4404/316L

PMC Style standard



DN	PN	∅D	H_2
		40.9 mm (1.6")	approx. 36.8 mm (1.4")

PMC Style minibolt



DN	PN	∅D	H_2
		26.3 mm (1.0")	approx. 33.1 mm (1.3")

Technical specifications

SITRANS P300 for gauge pressure with PMC connection for the paper industry				
	HART		**PROFIBUS PA and FOUNDATION Fieldbus**	
Input				
Measured variable	Gauge pressure (front-flush)			
Spans (infinitely adjustable) or nominal measuring range and max. pemissible test pressure	Span (min. ... max.)	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure
	0.01 ... 1 bar (0.15 ... 14.5 psi)	6 bar (87 psi)	1 bar (14.5 psi)	6 bar (87 psi)
	0.04 ... 4 bar (0.58 ... 58 psi)	10 bar (145 psi)	4 bar (58 psi)	10 bar (145 psi)
	0.16 ... 16 bar (2.3 ... 232 psi)	32 bar (464 psi)	16 bar (232 psi)	32 bar (464 psi)
	Depending on the process connection, the span may differ from these values		Depending on the process connection, the nominal measuring range may differ from these values	
Lower measuring limit				
• Measuring cell with silicone oil	100 mbar a (1.45 psia)			
Upper measuring limit				
• Measuring cell with silicone oil	100 % of max. span		100 % of the max. nominal measuring range	
Output				
Output signal	4 ... 20 mA		Digital PROFIBUS PA signal	
Physical bus	-		IEC 61158-2	
Protection against polarity reversal	Protected against short-circuit and polarity reversal. Each connection against the other with max. supply voltage.			
Electrical damping (step width 0.1 s)	Set to 2 s (0 ... 100 s)			
Measuring accuracy	Acc. to IEC 60770-1			
Reference conditions (All error data always refer to the set span)	Rising characteristic curve, start-of-scale value 0 bar, stainless steel seal diaphragm, measuring cell with silicone oil, room temperature 25 °C (77 °F), span ratio (r = max. span / set span)			
Error in measurement at limit setting incl. hysteresis and reproducibility				
Linear characteristic			≤ 0.075 %	
• r + 10	≤ (0.0029 · r + 0.071) %			
• 10 < r ≤ 30	≤ (0.0045 · r + 0.071) %			
• 30 < r ≤ 100	≤ (0.005 · r + 0.05) %			
Step response time T_{63}	approx. 2 s			
Long-term stability 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) %[1)]		≤ 0.3 %	
• at -40 ... -10 °C and 60 ... 85 °C (-40 ... 14 °F and 140 ... 185 °F)	≤ (0.1 · r + 0.15) %/10 K		≤ 0.25 %/10 K	
Influence of the medium temperature (only with front-flush diaphragm)				
• Temperature difference between medium temperature and ambient temperature	3 mbar/10 K (0.04 psi/10 K)			
Rated conditions				
Installation conditions				
Ambient temperature	Observe the temperature class in areas subject to explosion hazard.			
• Measuring cell with silicone oil	-40 ... +85 °C (-40 ... +185 °F)			
• Display readable	-30 ... +85 °C (-22 ... +185 °F)			
• Storage temperature	-50 ... +85 °C (-58 ... +185 °F)			
Climatic class				
Condensation	Relative humidity 0 ... 100 % Condensation permissible, suitable for use in the tropics			
Degree of protection acc. to EN 60529	IP65, IP68, NEMA 4X, enclosure cleaning, resistant to lyes, steam to 150 °C (302 °F)			
Electromagnetic Compatibility				
• Emitted interference and interference immunity	Acc. to EN 61326 and NAMUR NE 21			

SITRANS P300 for gauge pressure with PMC connection for the paper industry		
	HART	**PROFIBUS PA and FOUNDATION Fieldbus**
Medium conditions		
Temperature of medium		
• Measuring cell with silicone oil	-40 ... +100 °C (-40 ... +212 °F)	
Design		
Weight (without options)	Approx. 1 kg (2.2 lb)	
Enclosure material	Stainless steel, mat. no. 1.4301/304	
Material of parts in contact with the medium		
• Seal diaphragm	Hastelloy C276, mat. no. 2.4819	
• Measuring cell filling	Silicone oil	
Surface quality touched-by-media	Ra-values ≤ 0.8 µm (32 µ inch)/welds Ra ≤ 1.6 µm (64 µ inch)	
Power supply U_H		
Terminal voltage on transmitter	10.5 ... 42 V DC for intrinsically safe operation: 10.5 ... 30 V DC	Supplied through bus
Separate power supply	-	Not necessary
Bus voltage		
• Without Ex	-	9 ... 32 V
• With intrinsically-safe operation	-	9 ... 24 V
Current consumption		
• Max. basic current	-	12.5 mA
• Start-up current ≤ basic current	-	Yes
• Max. fault current in the event of a fault	-	15.5 mA
Fault disconnection electronics (FDE)	-	Available
Certificates and approvals		
Classification according to PED 97/23/EC	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of Article 3, paragraph 3 (sound engineering practice)	
Explosion protection		
Intrinsic safety "i"	PTB 05 ATEX 2048	
Marking	Ex II 1/2 G Ex 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 peak values: U_i = 30 V, I_i = 100 mA, P_i = 750 mW, R_i = 300 Ω	To certified intrinsically-safe circuits with peak values: FISCO supply unit: U_i = 17.5 V, I_i = 380 mA, P_i = 5.32 W Linear barrier: U_i = 24 V, I_i = 250 mA, P_i = 1.2 W
Effective inner capacitance:	C_i = 6 nF	C_i = 1.1 nF
Effective internal inductance:	L_i = 0.4 mH	L_i ≤ 7 µH
Explosion protection to FM for USA and Canada (cFM_{US})		
• Identification (DIP) or (IS); (NI)	Certificate of Compliance 3025099 CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4 ... T6; CL I, DIV 2, GP ABCD T4 ... T6; CL II, DIV 2, GP FG; CL III	
• Identification (DIP) or (IS)	Certificate of Compliance 3025099C CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC 4 ... T6; CL I, DIV 2, GP ABCD T4 ... T6; CL II, DIV 2, GP FG; CL III	

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

SITRANS P300 with PMC connection

HART communication	
HART	230 ... 1100 Ω
Protocol	HART Version 5.x
Software for computer	SIMATIC PDM
PROFIBUS PA communication	
Simultaneous communication with master class 2 (max.)	4
The address can be set using	Configuration tool Local operation (standard setting Address 126)
Cyclic data usage	
• Output byte	One measured value: 5 bytes Two measured values: 10 bytes
• Input byte	Register operating mode: 1 bytes Reset function due to metering. 1 bytes
Device profile	PROFIBUS PA Profile for Process Control Devices Version 3.0, Class B
Function blocks	2
• Analog input	
- Adaptation to customer-specific process variables	Linearly rising or falling characteristic
- Electrical damping	0 ... 100 s adjustable
- Simulation function	Input /Output
- Limit monitoring	One upper and lower warning limit and one alarm limit respectively
• Register (totalizer)	Can be reset and preset Optional direction of counting Simulation function of the register output
- Limit monitoring	One upper and lower warning limit and one alarm limit respectively
• Physical block	1
Transducer blocks	2
• Pressure transducer block	
- Monitoring of sensor limits	Yes
- Specification of a container characteristic with	Max. 31 nodes
- Characteristic curve	Linear
- Simulation function	Available
• Transducer block "Electronic temperature"	
Simulation function	Available

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

Selection and Ordering data		Order No.
SITRANS P300 pressure transmitters with PMC connection, single-chamber measuring housing, rating plate inscription in English		
with 4 ... 20 mA / HART		7MF8123-
with PROFIBUS PA		7MF8124-
with FOUNDATION Fieldbus (FF)		7MF8125-
Measuring cell filling	**Measuring cell cleaning**	
Silicone oil	normal	1
Inert liquid	Cleanliness level 2 to DIN 25410	3
Measuring span		
1 bar[1]	(14.5 psi)	B
4 bar	(58 psi)	C
16 bar	(232 psi)	D
Wetted parts materials		
Seal diaphragm	Measuring cell	
Hastelloy	Stainless steel	B
Process connection		
• PMC Style Standard: Thread 1½"		2
• PMC Style Minibolt: front-flush 1" (minimum span: 500 mbar (7.25 psi), not available with 1-bar-measuring cell (Option B))		3
Non-wetted parts materials		
• Stainless steel, deep-drawn and electrolytically polished		4
Version		
• Standard versions		1
Explosion protection		
• None		A
• With ATEX, Type of protection:		
- "Intrinsic safety (Ex ia)"		B
• Zone 20/21/22[2]		C
• Ex nA/nL (Zone 2)[3]		E
• With FM + CSA, Type of protection:		
- "Intrinsic Safe (is)" (planned)		M
Electrical connection/cable entry		
• Screwed gland M20 x .5 (polyamide)[4]		A
• Screwed gland M20 x 1.5 (metal)		B
• Screwed gland M20 x 1.5 (stainless steel)		C
• M12 connectors (without cable socket)		F
• M12 connectors (stainless steel), without cable socket)		G
• ½-14 NPT metal thread[5]		H
• ½-14 NPT stainless steel thread[5]		J

Selection and Ordering data	Order No.
SITRANS P300 pressure transmitters with PMC connection, single-chamber measuring housing, rating plate inscription in English	
with 4 ... 20 mA / HART	7MF8123-
with PROFIBUS PA	7MF8124-
with FOUNDATION Fieldbus (FF)	7MF8125-
Display	
• Without display, with keys, closed lid	1
• With display and keys, closed lid [6]	2
• With display and keys, lid with Makrolon pane (setting on HART devices: mA, with PROFIBUS PA and FOUNDATION Fieldbus equipment: pressure units)[6]	4
• With display and keys (setting acc. to specifications, Order Code "Y21" or "Y22" required), lid with Makrolon pane[6]	5
• With display and keys, lid with glass pane (setting on HART devices: mA, with PROFIBUS PA and FOUNDATION Fieldbus equipment: pressure unit)[6]	6
• With display (setting acc. to specifications, Order Code "Y21" or "Y22" required), lid with glass panel[6]	7

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

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

1) Only with "Standard" process connection
2) Not in conjunction with electrical connection option A.
3) Only available together with electrical connection options B, C, F or G.
4) Only together with HART electronics.
5) Without cable gland.
6) Display cannot be turned.

Transmitters for gauge pressure for the paper industry

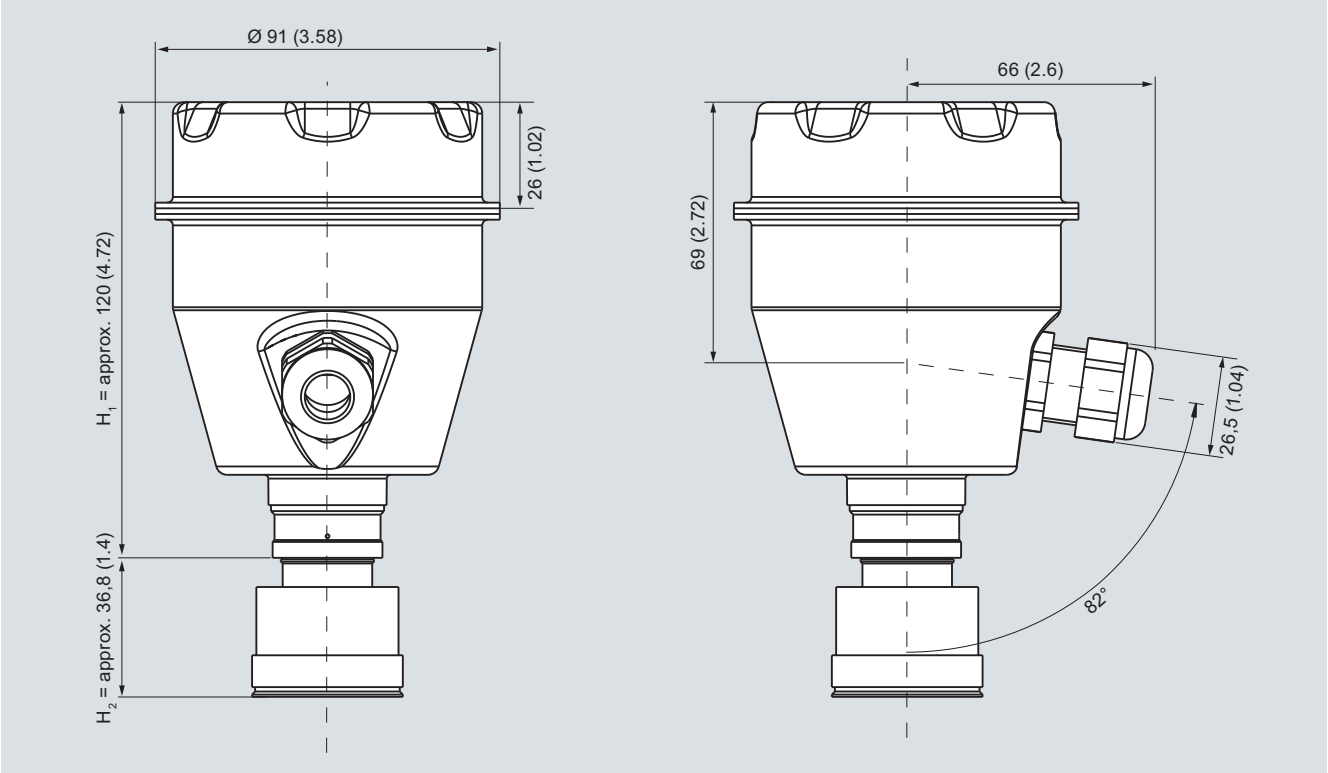
SITRANS P300 with PMC connection

Selection and Ordering data	Order code	HART	PA	FF
Further designs				
Add "**-Z**" to Order No. and specify Order Code.				
Cable socket for M12 plug				
• metal	**A50**		✓	✓
• Stainless steel	**A51**		✓	✓
Rating plate inscription (instead of English)				
• German	**B10**	✓	✓	✓
• French	**B12**	✓	✓	✓
• Spanish	**B13**	✓	✓	✓
• Italian	**B14**	✓	✓	✓
English rating plate Pressure units in inH_20 and/or psi	**B21**	✓	✓	✓
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	**C11**	✓	✓	✓
Inspection certificate Acc. to EN 10204-3.1	**C12**	✓	✓	✓
Factory certificate Acc. to EN 10204-2.2	**C14**	✓	✓	✓
Set output signal to upper limit of 22.0mA	**D05**	✓	✓	✓
Degree of protection IP65/IP68 (only for M20x1.5 and ½-14 NPT)	**D12**	✓	✓	✓
Mounting				
• Weldable sockets for standard 1½" threaded connection	**P01**	✓	✓	✓
• Weldable socket for minibolt connection 1" (incl. screw 5/16-18 UNC-2B and washer)	**P02**	✓	✓	✓
Additional data				
Please add "**-Z**" to Order No. and specify Order code(s) and plain text.				
Measuring range to be set Specify in plain text (max. 5 characters): Y01: ... up to ... mbar, bar, kPa, MPa, psi	**Y01**	✓		
Stainless steel tag plate (measuring point description) Max. 16 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 indication in pressure units Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi, ... Note: The following pressure units can be selected: bar, mbar, mm $H_2O^{*)}$, in$H_2O^{*)}$, ft$H_2O^{*)}$, mmHG, inHG, psi, Pa, kPa, MPa, g/cm^2, kg/cm^2, Torr, ATM or % *) ref. temperature 20 °C	**Y21**	✓	✓	✓
Setting of pressure indication in non-pressure units[5)] Specify in plain text: Y22: ..... up to ..... l, m^3, m, USg, ... (specification of measuring range in pressure units **"Y01"** is essential, unit with max. 5 characters)	**Y22 + Y01**	✓		
Preset bus address possible between 1 and 126 Specify in plain text: Y25:	**Y25**		✓	✓

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

✓ = available

Dimensional drawings



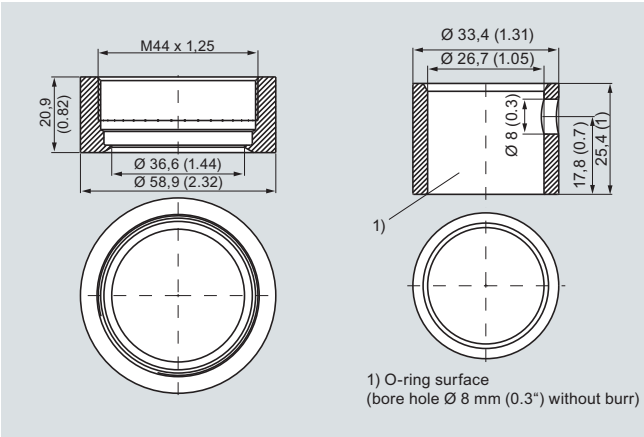
SITRANS P300 pressure transmitters for gauge pressure, with PMC connection, dimensions in mm (inch)

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

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

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

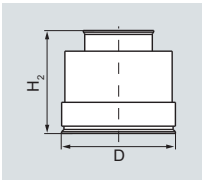
Only the height H_2 is indicated in the dimensions of the flanges.



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

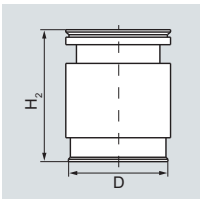
Material: Stainless steel, mat. No. 1.4404 / 316L

PMC Style Standard



DN	PN	∅D	H_2
		40.4 mm (1.6“)	Approx. 36.8 mm (1.4“)

PMC Style Mini bolt



DN	PN	∅D	H_2
		26.3 mm (1.0“)	Approx. 33.1 mm (1.3“)

SITRANS P DS III
Technical description

Overview

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

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

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

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

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

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

Benefits

- High quality and service life
- High reliability even under extreme chemical and mechanical loads
- For aggressive and non-aggressive gases, vapors and liquids
- Extensive diagnosis and simulation functions
- Separate replacement of measuring cell and electronics without recalibration
- Minimum conformity error
- Good long-term stability
- Wetted parts made of high-grade materials (e.g. stainless steel, Hastelloy, gold, Monel, tantalum)
- Infinitely adjustable span from 0.01 bar to 700 bar (0.15 psi to 10153 psi) for DS III with HART interface
- Nominal measuring range from 1 bar to 700 bar (14.5 psi to 10153 psi) for DS III with PROFIBUS PA and FOUNDATION Fieldbus interface
- High measuring accuracy
- Parameterization over control keys and HART or PROFIBUS PA, or FOUNDATION Fieldbus interface.

Application

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

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

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

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

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

Pressure transmitter for gauge pressure

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

Span (infinitely adjustable)
for DS III with HART: 0.01 bar to 700 bar (0.15 psi to 10153 psi)

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

Pressure transmitters for absolute pressure

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

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

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

There are two series:

- Gauge pressure series
- Differential pressure series

Pressure transmitters for differential pressure and flow

Measured variables:

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

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

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

Pressure transmitters for level

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

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

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

Nominal diameter of the mounting flange

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

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

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

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

Design

1 Plastic cover as access to the input keys
2 Screw cover with viewing pane
3 Digital display
4 Locking screw
5 Process connection
6 Screw cover with viewing pane
7 Rating plate
8 Inlet with cable gland

Front view

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

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

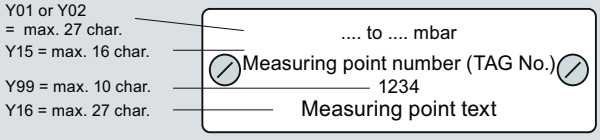
The approval label is located on the opposite side.

The housing is made of die-cast aluminium or stainless steel precision casting. A round cover (6) is screwed on at the front and rear of the housing. The front cover can be fitted with a viewing pane so that the measured values can be read directly on the display. The inlet (8) for the electrical connection is located either on the left or right side. The unused opening on the opposite side is sealed by a blanking plug. The protective earth connection is located on the rear of the housing.

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

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

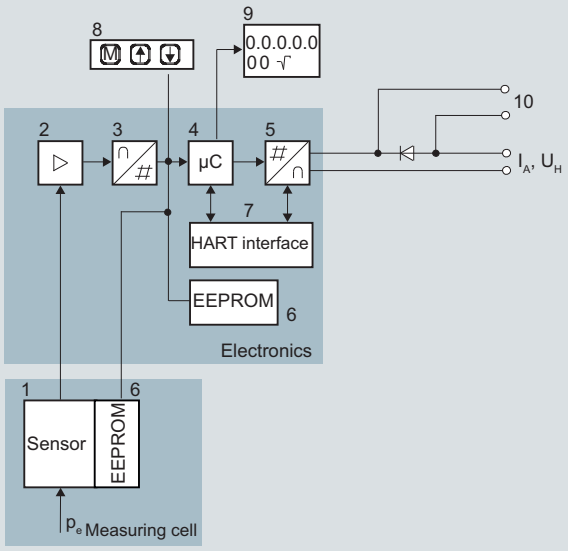
Example for an attached measuring point label



1

Function

Operation of electronics with HART communication



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

Function diagram of electronics

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

The diode circuit (10) protects against incorrect polarity.

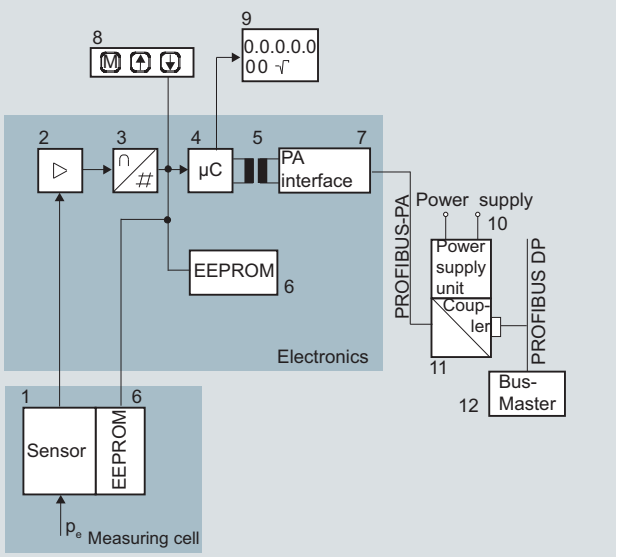
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The one memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced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

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

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

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

Operation of electronics with PROFIBUS PA communication



1 Measuring cell sensor
2 Instrument amplifier
3 Analog-to-digital converter
4 Microcontroller
5 Electrical isolation
6 One non-volatile memory each in the measuring cell and electronics
7 PROFIBUS-PA interface
8 Three input keys (local operation)
9 Digital display
10 Power supply
11 DP/PA coupler or link
12 Bus master
p_e Input variable

Function diagram of electronics

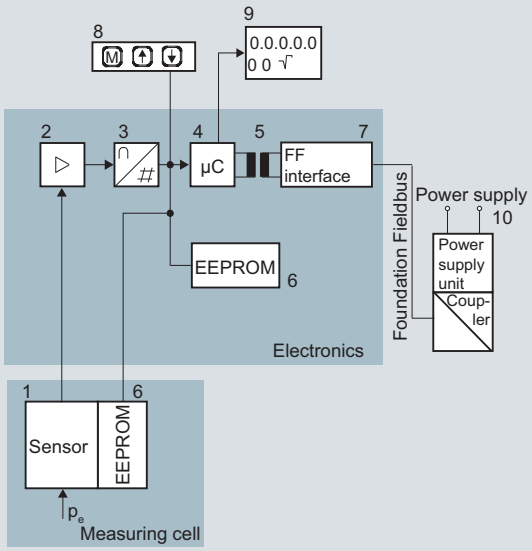
The bridge output voltage created by the sensor (1, Figure "Function diagram of the electronics") is amplified by the measuring amplifier (2) and digitized in the analog-to-digital converter (3). The digital information is evaluated in the microcontroller, its linearity and temperature response corrected,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

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

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

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

Operation of electronics with FOUNDATION Fieldbus communication



1	Measuring cell sensor	8	Three input keys (local operation)
2	Instrument amplifier	9	Digital display
3	Analog-to-digital converter	10	Power supply
4	Microcontroller		
5	Electrical isolation	p_e	Input variable
6	One non-volatile memory each in the measuring cell and electronics		
7	FF interface		

Function diagram of electronics

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

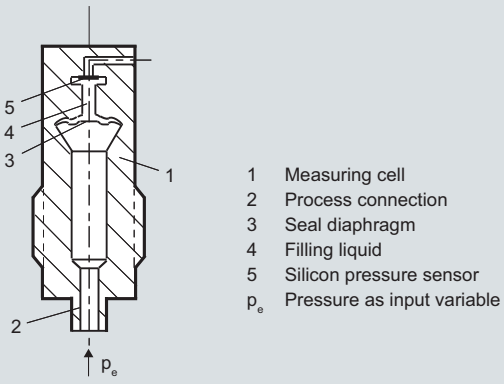
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The one memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced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

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

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

Mode of operation of the measuring cells

Measuring cell for gauge pressure

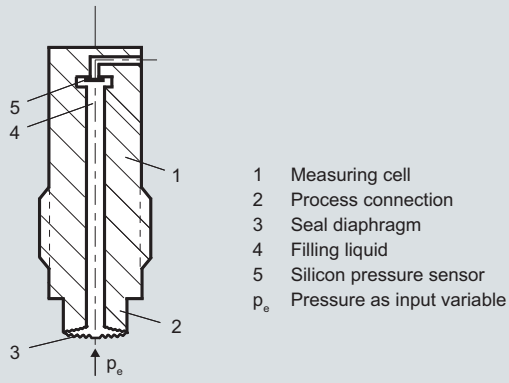


1	Measuring cell
2	Process connection
3	Seal diaphragm
4	Filling liquid
5	Silicon pressure sensor
p_e	Pressure as input variable

Measuring cell for gauge pressure, function diagram

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

Measuring cell for gauge pressure with front-flush diaphragm

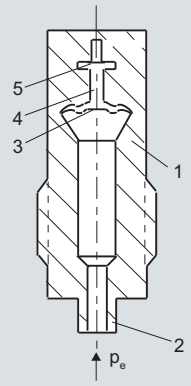


1	Measuring cell
2	Process connection
3	Seal diaphragm
4	Filling liquid
5	Silicon pressure sensor
p_e	Pressure as input variable

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

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

Measuring cell for absolute pressure from gauge pressure series

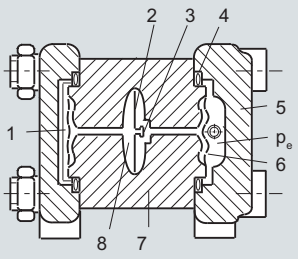


1 Measuring cell
2 Process connection
3 Seal diaphragm
4 Filling liquid
5 Silicon absolute pressure sensor
p_e Absolute pressure as input variable

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

Measuring cell for absolute pressure from differential pressure series



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

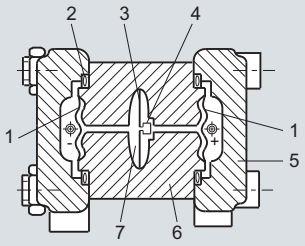
Measuring cell for absolute pressure from differential pressure series, function diagram

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

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

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

Measuring cell for differential pressure and flow



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

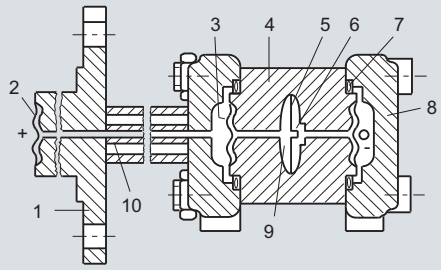
Measuring cell for differential pressure and flow, function diagram

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

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



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

Measuring cell for level, function diagram

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

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

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

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

Parameterization DS III

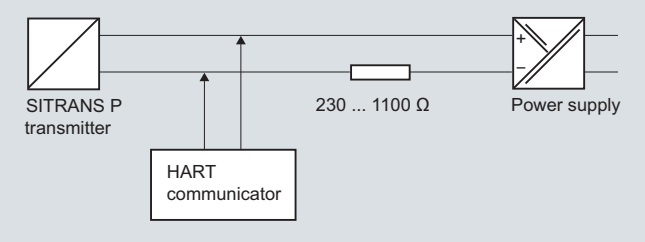
Depending on the version, there are a range of options for parameterizing the pressure transmitter and for setting or scanning the parameters.

Parameterization using the input buttons (local operation)

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

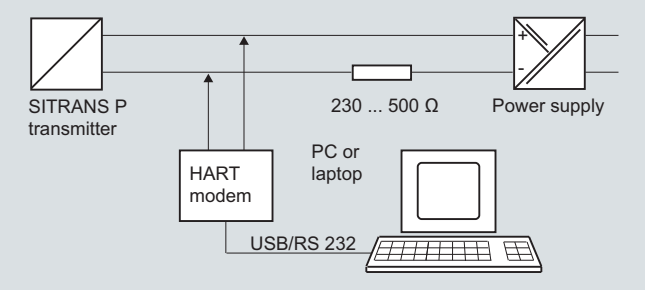
Parameterization using HART

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



Communication between a HART Communicator and a pressure transmitter

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



HART communication between a PC communicator and a pressure transmitter

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

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

Adjustable parameters, DS III with HART

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

1) Cancel apart from write protection
2) Only differential pressure

Diagnostic functions for DS III with HART

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

Available physical units of display for DS III with HART

Table style: Technical specifications 2

Physical variable	Physical dimensions
Pressure (setting can also be made in the factory)	Pa, MPa, kPa, bar, mbar, torr, atm, psi, g/cm^2, kg/cm^2, inH_2O, inH_2O (4 °C), mmH_2O, ftH_2O (20 °C), inHg, mmHg
Level (height data)	m, cm, mm, ft, in
Volume	m^3, dm^3, hl, yd^3, ft^3, in^3, US gallon, Imp. gallon, bushel, barrel, barrel liquid
Mass	g, kg, t, lb, Ston, Lton, oz
volume flow	m^3/d, m^3/h, m^3/s, l/min, l/s, ft^3/d, ft^3/min, ft^3/s, US gallon/min, US gallon/s
Mass flow	t/d, t/h, t/min, kg/d, kg/h, kg/min, kg/s, g/d, g/h, g/min, g/s, lb/d, lb/h, lb/min, lb/s, LTon/d, LTon/h, STon/d, STon/h, STon/min
Temperature	K, °C, °F, °R
Miscellaneous	%, mA

Parameterization through PROFIBUS PA interface

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

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

Parameterization through FOUNDATION Fieldbus interface

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

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

Adjustable parameters for DS III with PROFIBUS PA and FOUNDATION Fieldbus

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

Diagnostic functions for DS III with PROFIBUS PA and FOUNDATION Fieldbus

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

Physical dimensions available for the display

Physical variable	Physical dimensions
Pressure (setting can also be made in the factory)	MPa, kPa, Pa, bar, mbar, torr, atm, psi, g/cm^2, kg/cm^2, mmH_2O, mmH_2O (4 °C), inH_2O, inH_20 (4 °C), ftH_2O (20 °C), mmHg, inHg
Level (height data)	m, cm, mm, ft, in, yd
Volume	m^3, dm^3, hl, yd^3, ft^3, in^3, US gallon, Imp. gallon, bushel, barrel, barrel liquid
volume flow	m^3/s, m^3/min, m^3/h, m^3/d, l/s, l/min, l/h, l/d, Ml/d, ft^3/s, ft^3/min, ft^3/h, ft^3/d, US gallon/s, US gallon/min, US gallon/h, US gallon/d, bbl/s, bbl/min, bbl/h, bbl/d
Mass flow	g/s, g/min, g/h, g/d, kg/s, kg/min, kg/h, kg/d, t/s, t/min, t/h, /t/d, lb/s, lb/min, lb/h, lb/d, STon/s, STon/min, STon/h, STon/d, LTon/s, LTon/min, LTon/h, LTon/d
Total mass flow	t, kg, g, lb, oz, LTon, STon
Temperature	K, °C, °F, °R
Miscellaneous	%

Technical specifications

SITRANS P, DS III series for gauge pressure

	HART		PROFIBUS PA and FOUNDATION Fieldbus	
Input				
Measured variable	Gauge pressure			
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span (min. ... max.)	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure
	0.01 ... 1 bar (0.15 ... 14.5 psi)	6 bar (87 psi)	1 bar (14.5 psi)	6 bar (87 psi)
	0.04 ... 4 bar (0.58 ... 58 psi)	10 bar (145 psi)	4 bar (58 psi)	10 bar (145 psi)
	0.16 ... 16 bar (2.32 ... 232 psi)	32 bar (464 psi)	16 bar (232 psi)	32 bar (464 psi)
	0.6 ... 63 bar (9.14 ... 914 psi)	100 bar (1450 psi)	63 bar (914 psi)	100 bar (1450 psi)
	1.6 ... 160 bar (23.2 ... 2320 psi)	250 bar (3626 psi)	160 bar (2320 psi)	250 bar (3626 psi)
	4.0 ... 400 bar (58 ... 5802 psi)	600 bar (8700 psi)	400 bar (5802 psi)	600 bar (8700 psi)
	7.0 ... 700 bar (102 ... 10153 psi)	800 bar (11603 psi)	700 bar (10153 psi)	800 bar (11603 psi)
Lower measuring limit				
• Measuring cell with silicone oil filling	30 mbar a (0.44 psia)			
• Measuring cell with inert filling liquid	30 mbar a (0.44 psia)			
Upper measuring limit	100 % of max. span (for oxygen version and inert filling liquid; max. 120 bar (1740 psi))			
Output				
Output signal	4 ... 20 mA		Digital PROFIBUS PA and FOUNDATION Fieldbus signal	
• Lower limit (infinitely adjustable)	3.55 mA, factory preset to 3.84 mA		-	
• Upper limit (infinitely adjustable)	23 mA, factory preset to 20.5 mA or optionally set to 22.0 mA		-	
Load				
• Without HART	$R_B \leq (U_H - 10.5\ V)/0.023\ A$ in Ω, U_H: Power supply in V		-	
• With HART	R_B = 230 ... 500 Ω (SIMATIC PDM) or R_B = 230 ... 1100 Ω (HART Communicator)		-	
Physical bus	-		IEC 61158-2	
Protection against polarity reversal	Protected against short-circuit and polarity reversal. Each connection against the other with max. supply voltage.			
Electrical damping (step width 0.1 s)	Set to 2 s (0 ... 100 s)			
Measuring accuracy	Acc. to IEC 60770-1			
Reference conditions (All error data refer always refer to the set span)	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 at limit setting incl. hysteresis and reproducibility				
• 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 stability (temperature change ± 30 °C (± 54 °F))				
• 1 ... 4-bar measuring cell	≤ (0.25 · r) % per 5 years		≤ 0.25 % per 5 years	
• 16 ... 400-bar measuring cell	≤ (0.125 · r) % per 5 years		≤ 0.125 % per 5 years	
Influence of ambient temperature				
• at -10 ... +60 °C (14 ... 140 °F)	≤ (0.08 · r + 0.1) %[1] (at 700 bar: ≤ (0.1 · r + 0.2) %[2]		≤ 0.3 %	
• at -40 ... -10 °C and +60 ... +85 °C (-40 ... +14 °F and 140 ... 185 °F)	≤ (0.1 · r + 0.15) %/10 K		≤ 0.25 %/10 K	
Measured Value Resolution	-		$3 \cdot 10^{-5}$ of nominal measuring range	

SITRANS P, DS III series for gauge pressure	HART	PROFIBUS PA and FOUNDATION Fieldbus
Rated conditions		
Degree of protection (to EN 60529)	IP65 (optional IP65/IP68)	
Temperature of medium		
• Measuring cell with silicone oil filling	-40 ... +100 °C (-40 ... +212 °F)	
• Measuring cell with inert filling liquid	-20 ... +100 °C (-4 ... +212 °F)	
• In conjunction with dust explosion protection	-20 ... +60 °C (-4 ... +140 °F)	
Ambient conditions		
• Ambient temperature		
- Display readable	-30 ... +85 °C (-22 ... +185 °F)	
• Storage temperature	-50 ... +85 °C (-58 ... +185 °F)	
• Climatic class		
- Condensation	Relative humidity 0 ... 100 % Condensation permissible, suitable for use in the tropics	
• Electromagnetic Compatibility		
- Emitted interference and interference immunity	Acc. to EN 61326 and NAMUR NE 21	
Design		
Weight (without options)	≈ 1.5 kg (≈ 3.3 lb)	
Enclosure material	Low-copper die-cast aluminum, GD-AlSi 12 or stainless steel precision casting, mat. no. 1.4408	
Wetted parts materials		
• Connection shank	Stainless steel, mat. no. 1.4404/316L or Hastelloy C4, mat. no. 2.4610	
• Oval flange	Stainless steel, mat. no. 1.4404/316L	
• Seal diaphragm	Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819	
Measuring cell filling	Silicone oil or inert filling liquid (maximum value with oxygen measurement pressure 100 bar (1450 psi) at 60 °C (140 °F))	
Process connection	Connection shank G½B to DIN EN 837-1, female thread ½ -14 NPT or oval flange (PN 160 (MAWP 2320 psi)) to DIN 19213 with mounting thread M10 or $^{7}/_{16}$-20 UNF to EN 61518	
Material of mounting bracket		
Steel	Sheet-steel, Mat. No. 1.0330, chrome-plated	
Stainless steel	Sheet stainless steel, mat. no. 1.4301 (SS 304)	
Power supply U_H		Supplied through bus
Terminal voltage on transmitter	10.5 ... 45 V DC 10.5 ... 30 V DC in intrinsically-safe mode	-
Separate 24 V power supply necessary	-	No
Bus voltage		
• Not Ex	-	9 ... 32 V
• With intrinsically-safe operation	-	9 ... 24 V
Current consumption		
• Basic current (max.)	-	12.5 mA
• Start-up current ≤ basic current	-	Yes
• Max. current in event of fault	-	15.5 mA
Fault disconnection electronics (FDE) available	-	Yes

SITRANS P, DS III series for gauge pressure	HART	PROFIBUS PA and FOUNDATION Fieldbus
Certificates and approvals		
Classification according to PED 97/23/EC	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)	
Explosion protection		
• Intrinsic safety "i"	PTB 11 ATEX 2011 X	
- Marking	Ex II 1/2 G Ex ia/ib IIC T4/T5/T6 Ga/Gb	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +70 °C (-40 ... +158 °F) temperature class T5; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To certified intrinsically-safe circuits with peak values: U_i = 30 V, I_i = 100 mA, P_i = 750 mW; R_i = 300 Ω	FISCO supply unit: U_o = 17.5 V, I_o = 380 mA, P_o = 5.32 W Linear barrier: U_o = 24 V, I_o = 174 mA, P_o = 1 W
- Effective internal inductance/capacitance	L_i = 0.4 mH, C_i = 6 nF	L_i = 7 µH, C_i = 1.1 nF
• Explosion-proof "d"	PTB 99 ATEX 1160	
- Marking	Ex II 1/2 G Ex d IIC T4/T6 Gb	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To circuits with values: U_H = 10.5 ... 45 V DC	To circuits with values: U_H = 9 ... 32 V DC
• Dust explosion protection for zone 20	PTB 01 ATEX 2055	
- Marking	Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F)	
- Max. surface temperature	120 °C (248 °F)	
- Connection	To certified intrinsically-safe circuits with peak values: U_i = 30 V, I_i = 100 mA, P_i = 750 mW, R_i = 300 Ω	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 W
- Effective internal inductance/capacitance	L_i = 0.4 mH, C_i = 6 nF	L_i = 7 µH, C_i = 1.1 nF
• Dust explosion protection for zone 21/22	PTB 01 ATEX 2055	
- Marking	Ex II 2 D IP65 T 120 °C	
- Connection	To circuits with values: U_H = 10.5 ... 45 V DC; P_{max} = 1.2 W	To circuits with values: U_H = 9 ... 32 V DC; P_{max} = 1 W
• Type of protection "n" (zone 2)	PTB 11 ATEX 2011 X	
- Marking	Ex II 2/3 G Ex nA II T4/T5/T6 Gc Ex II 2/3 G Ex ic IIC T4/T5/T6 Gc	
- Connection (Ex nA)	U_m = 45 V	U_m = 32 V
- Connections (Ex ic)	To circuits with values: U_i = 45 V	FISCO supply unit ic: U_o = 17.5 V, I_o = 570 mA Linear barrier: U_o = 32 V, I_o = 132 mA, P_o = 1 W
- Effective internal inductance/capacitance	L_i = 0.4 mH, C_i = 6 nF	L_i = 7 µH, C_i = 1,1 nF
• Explosion protection acc. to FM	Certificate of Compliance 3008490	
- Identification (XP/DIP) or (IS); (NI)	CL I, DIV 1, GP ABCD 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	
• Explosion protection to CSA	Certificate of Compliance 1153651	
- Identification (XP/DIP) or (IS)	CL I, DIV 1, GP ABCD T4...T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4...T6; CL I, DIV 2, GP ABCD T4...T6; CL II, DIV 2, GP FG; CL III	

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

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

SITRANS P DS III for gauge pressure

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

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

Selection and Ordering data		Order No.
Pressure transmitter for gauge pressure, SITRANS P DS III with HART		**7MF4033 -**
Measuring cell filling	**Measuring cell cleaning**	
Silicone oil	normal	▶ 1
Inert liquid[1]	grease-free to cleanliness level 2	3
Measuring span (min. ... max.)		
0.01 ... 1 bar	(0.15 ... 14.5 psi)	▶ B
0.04 ... 4 bar	(0.58 ... 58 psi)	▶ C
0.16 ... 16 bar	(2.32 ... 232 psi)	▶ D
0.63 ... 63 bar	(9.14 ... 914 psi)	▶ E
1.6 ... 160 bar	(23.2 ... 2320 psi)	▶ F
4.0 ... 400 bar	(58.0 ... 5802 psi)	▶ G
7.0 ... 700 bar	(102.0 ...10153 psi)	▶ J
Wetted parts materials		
Seal diaphragm	Process connection	
Stainless steel	Stainless steel	▶ A
Hastelloy	Stainless steel	B
Hastelloy	Hastelloy	C
Version as diaphragm seal [2) 3) 4) 5)]		Y
Process connection		
• Connection shank G½B to EN 837-1		▶ 0
• Female thread ½-14 NPT		1
• Stainless steel oval flange with process connection female thread ¼-18 NPT		
- Mounting thread $^{7}/_{16}$-20 UNF to IEC 61518		2
- Mounting thread M10 to DIN 19213		3
- Mounting thread M12 to DIN 19213		4
• Male thread M20 x 1.5		5
• Male thread ½ -14 NPT		6
Non-wetted parts materials		
• Housing made of die-cast aluminium		▶ 0
• Housing stainless steel precision casting[6)]		3
Version		
• Standard versions		1
• International version, English label inscriptions, documentation in 5 languages on CD (no order code selectable)		▶ 2
Explosion protection		
• None		A
• With ATEX, Type of protection:		
- "Intrinsic safety (Ex ia)"		B
- "Explosion-proof (Ex d)"[7)]		D
- "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d)"[8)]		P
- "Ex nA/ic (Zone 2)"[9)]		E
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia + Ex d + Zone 1D/2D)"[8)]		▶ R
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX)		S
• With FM + CSA, Type of protection:		
- "Intrinsic Safe und Explosion Proof (is + xp)"[7)]		N C
Electrical connection / cable entry		
• Screwed gland Pg 13.5 (adapter)[10)]		A
• Screwed gland M20 x1 .5		▶ B
• Screwed gland ½-14 NPT		C
• Han 7D plug (plastic housing) incl. mating connector[10)]		D
• M12 connectors (stainless steel)[10)11)]		F

Selection and Ordering data	Order No.
Pressure transmitter for gauge pressure, SITRANS P DS III with HART	**7MF4033 -**
Display	
• Without display	0
• Without visible display (display concealed, setting: mA)	▶ 1
• With visible display, setting: mA	6
• with customer-specific display (setting as specified, Order Code "Y21" or "Y22" required)	7

▶ Available ex stock

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

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

1) For oxygen application, add Order code E10.

2) When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.

3) If the acceptance test certificate 3.1.is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.

4) The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF403.-..Y..-.... and 7MF4900-1...-.B

5) The standard measuring cell filling of configurations with remote seals (Y) is silicone oil.

6) Not in conjunction with Electrical connection "Screwed gland Pg 13.5" and "Han7D plug".

7) Without cable gland, with blanking plug

8) With enclosed cable gland Ex ia and blanking plug

9) Configurations with HAN and M12 connectors are only available in Ex ic.

10) Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".

11) M12 delivered without cable socket

SITRANS P DS III for gauge pressure

1

Selection and Ordering data		Order No.
Pressure transmitter for gauge pressure		
SITRANS P DS III with PROFIBUS PA (PA)		**7MF4034-**
SITRANS P DS III with FOUNDATION Fieldbus (FF)		**7MF4035-**
		■■■■■-■■■■
Measuring cell filling	**Measuring cell cleaning**	
Silicone oil	normal	1
Inert liquid[1]	grease-free to cleanliness level 2	3
Nominal measuring range		
1 bar	(14.5 psi)	B
4 bar	(58 psi)	C
16 bar	(232 psi)	D
63 bar	(914 psi)	E
160 bar	(2320 psi)	F
400 bar	(5802 psi)	G
700 bar	(10153 psi)	J
Wetted parts materials		
Seal diaphragm	Process connection	
Stainless steel	Stainless steel	A
Hastelloy	Stainless steel	B
Hastelloy	Hastelloy	C
Version as diaphragm seal [2) 3) 4) 5)]		Y
Process connection		
• Connection shank G½B to EN 837-1		0
• Female thread ½-14 NPT		1
• Stainless steel oval flange with process connection female thread ¼-18 NPT [6)]		
- Mounting thread $^{7}/_{16}$-20 UNF to IEC 61518		2
- Mounting thread M10 to DIN 19213		3
- Mounting thread M12 to DIN 19213		4
• Male thread M20 x 1.5		5
• Male thread ½ -14 NPT		6
Non-wetted parts materials		
• Housing made of die-cast aluminium		0
• Housing stainless steel precision casting		3
Version		
• Standard versions		1
• International version, English label inscriptions, documentation in 5 languages on CD (no order code selectable)		2
Explosion protection		
None		A
With ATEX, Type of protection:		
"Intrinsic safety (Ex ia)"		B
"Explosion-proof (Ex d)"[7)]		D
"Intrinsic safety and flameproof enclosure" (Ex ia + Ex d)"[8)]		P
"Ex nA/ic (Zone 2)"[9)]		E
"Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia + Ex d + Zone 1D/2D)"[8)] (not for DS III FF)		R
FM + CSA (is + ep) + Ex ia + Ex d (ATEX)		S
With FM + CSA, Type of protection:		
"Intrinsic Safe und Explosion Proof (is + xp)"[7)]		NC
Electrical connection/cable entry		
• Screwed gland M20 x 1.5		B
• Screwed gland ½-14 NPT		C
• M12 connectors (stainless steel)[10) 11) 12)]		F

Selection and Ordering data	Order No.
Pressure transmitter for gauge pressure	
SITRANS P DS III with PROFIBUS PA (PA)	**7MF4034-**
SITRANS P DS III with FOUNDATION Fieldbus (FF)	**7MF4035-**
	■■■■■-■■■■
Display	
• Without display	0
• Without visible display (display concealed, setting: bar) ▶	1
• With visible display	6
• with customer-specific display (setting as specified, Order Code "Y21" required)	7

▶ Available ex stock

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

1) For oxygen application, add Order code E10.

2) When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.

3) If the acceptance test certificate 3.1.is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.

4) The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF403.-..Y..-.... and 7MF4900-1...-.B

5) The standard measuring cell filling of configurations with remote seals (Y) is silicone oil.

6) M10 fastening thread: Max. span 160 bar (2320 psi)
7/16-20 UNF and M12 fastening thread: Max. span 400 bar (5802 psi)

7) Without cable gland, with blanking plug.

8) With enclosed cable gland Ex ia and blanking plug.

9) Configurations with HAN and M12 connectors are only available in Ex ic.

10) M12 delivered without cable socket

11) Not available with protection type "Ex d" bestellbar (Options D, P, N and R)

12) Not with protection types "Explosion-proof" and protection type „Ex nA", „Intrinsic safe" and „Explosion proof".

Selection and Ordering data	Order code	HART	PA	FF
Further designs Add "**-Z**" to Order No. and specify Order Code.				
Pressure transmitter with mounting bracket (2 shackles, 4 nuts, 4 U-plates, 1 angle) made of:				
• Steel	**A01**	✓	✓	✓
• Stainless steel	**A02**	✓	✓	✓
Plug				
• Han 7D (metal, gray)	**A30**	✓		
• Han 8U (instead of Han 7D)	**A31**	✓		
• Angled	**A32**	✓		
• Han 8D (metal, gray)	**A33**	✓		
Cable sockets for M12 connectors (stainless steel)	**A50**	✓	✓	✓
Rating plate inscription (instead of German)				
• English	**B11**	✓	✓	✓
• French	**B12**	✓	✓	✓
• Spanish	**B13**	✓	✓	✓
• Italian	**B14**	✓	✓	✓
English rating plate Pressure units in inH_20 and/or psi	**B21**	✓	✓	✓
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2[1]	**C11**	✓	✓	✓
Inspection certificate[2] Acc. to EN 10204-3.1	**C12**	✓	✓	✓
Factory certificate Acc. to EN 10204-2.2	**C14**	✓	✓	✓
"Functional safety (SIL2)" certificate to IEC 61508	**C20**	✓		
"Functional safety" certificate (PROFIsafe) and PROFIsafe protocol	**C21**		✓	
"Functional safety (SIL2/3)" certificate to IEC 61508	**C23**	✓		
Device passport Russia (For price request please contact the technical support www.siemens.com/automation/support-request)	**C99**	✓	✓	✓
Setting of upper limit of output signal to 22.0 mA	**D05**	✓		
Manufacturer's declaration acc. to NACE	**D07**	✓	✓	✓
Degree of protection IP65/IP68 (only for M20x1.5 and ½-14 NPT)	**D12**	✓	✓	✓
Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flange	**D37**	✓	✓	✓
Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety" (transmitter 7MF4...-.....-.B.. Ex ia)")	**E01**	✓	✓	✓
Oxygen application (In the case of oxygen measurement and inert liquid max. 100 bar (1450 psi) at 60°C (140 °F))	**E10**	✓	✓	✓
Export approval Korea	**E11**	✓	✓	✓
Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil) (only for transmitter 7MF4...-.....-.B..)	**E25**	✓	✓	✓
"Flameproof" explosion protection according to INMETRO (Brazil) (only for transmitter 7MF4...-.....-.D..)	**E26**	✓	✓	✓
Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil) (only for transmitter 7MF4...-.....-.P..)	**E28**	✓	✓	
Ex Approval IEC Ex (Ex ia) (only for transmitter 7MF4...-.....-.B..)	**E45**	✓	✓	✓
Ex Approval IEC Ex (Ex id) (only for transmitter 7MF4...-.....-.D..)	**E46**	✓	✓	✓

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

SITRANS P DS III for gauge pressure

Selection and Ordering data	Order code	HART	PA	FF
Additional data Please add "**-Z**" to Order No. and specify Order code(s) and plain text.				
Measuring range to be set Specify in plain text (max. 5 characters): Y01: ... up to ... mbar, bar, kPa, MPa, psi	**Y01**	✓		
Stainless steel tag plate (measuring point description) Max. 16 characters, specify in plain text: Y15:	**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: bar): Y21: mbar, bar, kPa, MPa, psi, ... Note: The following pressure units can be selected: bar, mbar, mm H_2O*), inH_2O*), ftH_2O*), mmHG, inHG, psi, Pa, kPa, MPa, g/cm^2, kg/cm^2, Torr, ATM or % *) ref. temperature 20 °C	**Y21**	✓	✓	✓
Setting of pressure indication in non-pressure units[3]) Specify in plain text: Y22: ..... up to ..... l/min, m^3/h, m, USgpm, ... (specification of measuring range in pressure units **"Y01"** is essential, unit with max. 5 characters)	**Y22 + Y01**	✓		
Preset bus address possible between 1 and 126 Specify in plain text: Y25:	**Y25**		✓	✓

Factory mounting of valve manifolds, see accessories.

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

✓ = available

ordering example

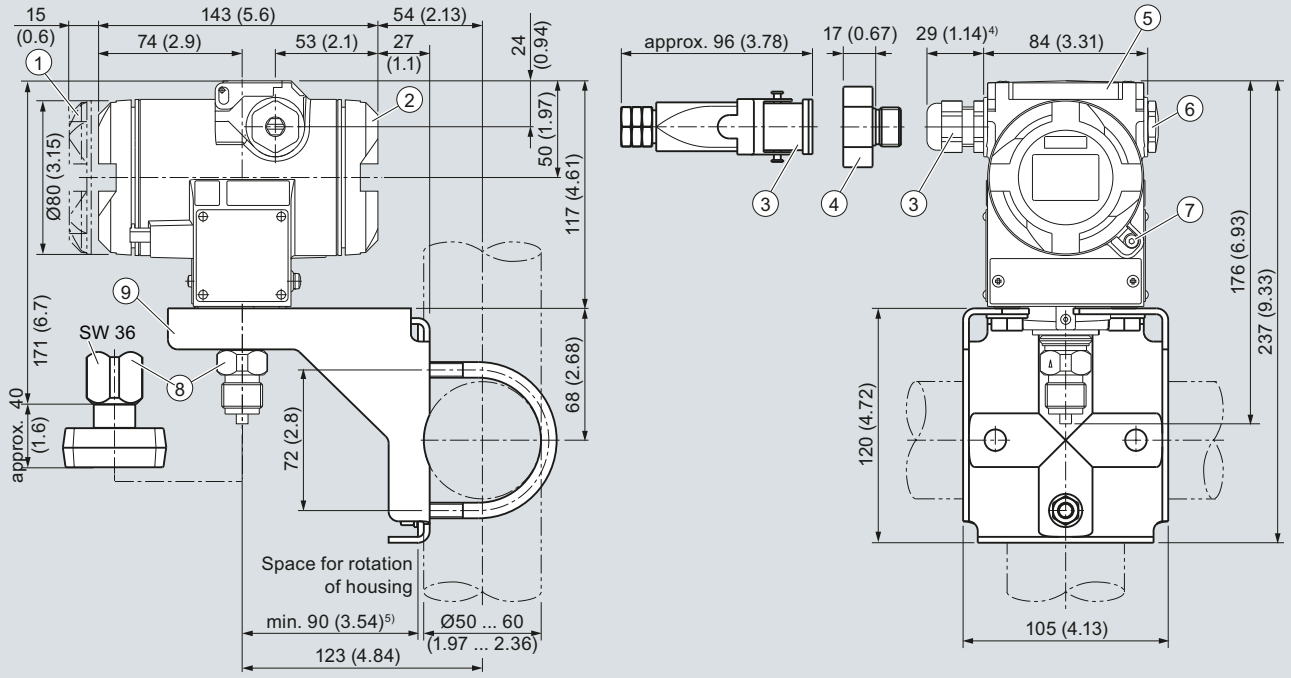
Item line:	7MF4033-1EA00-1AA7-Z
B line:	A01 + Y01 + Y21
C line:	Y01: 10 ... 20 bar (145 ... 290 psi)
C line:	Y21: bar (psi)

[1)] When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.

[2)] If the acceptance test certificate 3.1.is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.

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

Dimensional drawings



1. Electronic side, digital display (longer overall length for cover with window)[1]
2. Terminal side[1]
3. Electrical connection: Screwed gland Pg 13,5 (adapter)(Adapter)[2][3], Screwed gland M20 x 1,5 or Screwed gland ½-14 NPT or Han 7D/Han 8D[2][3] plug
4. Harting adapter
5. Protective cover over keys
6. Blanking plug
7. Screw cover - safety bracket (only for type of protection "Explosion-proof enclosure", not shown in the drawing)
8. Process connection: Connection shank G½B or Oval flange
9. Mounting bracket (option)

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

Technical specifications

SITRANS P DS III series for gauge and absolute pressure, with front-flush diaphragm				
	HART		**PROFIBUS PA and FOUNDATION Fieldbus**	
Input of gauge pressure, with front-flush diaphragm				
Measured variable	Gauge pressure, front-flush			
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span (min. ... max.)	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure
	0.01 ... 1 bar (0.15 ... 14.5 psi)	6 bar (87 psi)	1 bar (14.5 psi)	6 bar (87 psi)
	0.04 ... 4 bar (0.58 ... 58 psi)	10 bar (145 psi)	4 bar (58 psi)	10 bar (145 psi)
	0.16 ... 16 bar (2.32 ... 232 psi)	32 bar (464 psi)	16 bar (232 psi)	32 bar (464 psi)
	0.6 ... 63 bar (9.14 ... 914 psi)	100 bar (1450 psi)	63 bar (914 psi)	100 bar (1450 psi)
Lower measuring limit	100 mbar a (1.45 psia)			
Upper measuring limit	100 % of max. span		100 % of the max. nominal measuring range	
Input of absolute pressure, with front-flush diaphragm				
Measured variable	Absolute pressure, front-flush			
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span (min. ... max.)	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure
	43 ... 1300 mbar a (0.62 ... 18.85 psia)	10 bar a (145 psia)	1300 mbar a (18.85 psia)	10 bar a (145 psia)
	0.16 ... 5 bar a (2.32 ... 72.5 psia)	30 bar a (435 psia)	5 bar a (72.5 psia)	30 bar a (435 psia)
	1 ... 30 bar a (14.5 ... 435 psia)	100 bar a (1450 psia)	30 bar a (435 psia)	100 bar a (1450 psia)
Lower measuring limit	0 bar a (0 psia)			
Upper measuring limit	100 % of max. span		100 % of the max. nominal measuring range	
Output				
Output signal	4 ... 20 mA		Digital PROFIBUS PA and FOUNDATION Fieldbus signal	
• Lower limit (infinitely adjustable)	3.55 mA, factory preset to 3.84 mA		-	
• Upper limit (infinitely adjustable)	23 mA, factory preset to 20.5 mA or optionally set to 22.0 mA		-	
Load				
• Without HART	$R_B \leq (U_H - 10.5\ V)/0.023\ A$ in Ω, U_H: Power supply in V		-	
• With HART	R_B = 230 ... 500 Ω (SIMATIC PDM) or R_B = 230 ... 1100 Ω (HART Communicator)		-	
Physical bus	-		IEC 61158-2	
Protection against polarity reversal	Protected against short-circuit and polarity reversal. Each connection against the other with max. supply voltage.			
Electrical damping (step width 0.1 s)	Set to 2 s (0 ... 100 s)			
Measuring accuracy	Acc. to IEC 60770-1			
Reference conditions (All error data refer always refer to the set span)	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 at limit setting incl. hysteresis and reproducibility				
	Gauge pressure, front-flush	Absolute pressure, front-flush	Gauge pressure, front-flush	Absolute pressure, front-flush
• Linear characteristic			≤ 0.075 %	≤ 0.2 %
- r ≤ 10	≤ (0.0029 · r + 0.071) %	≤ 0.2 %		
- 10 < r ≤ 30	≤ (0.0045 · r + 0.071) %	≤ 0.4 %		
- 30 < r ≤ 100	≤ (0.005 · r + 0.05) %			
Long-term stability (temperature change ± 30 °C (± 54 °F))	≤ (0.25 · r) % per 5 years		≤ 0.25 % per 5 years	

SITRANS P DS III series for gauge and absolute pressure, with front-flush diaphragm				
	HART		PROFIBUS PA and FOUNDATION Fieldbus	
	Gauge pressure, front-flush	Absolute pressure, front-flush	Gauge pressure, front-flush	Absolute pressure, front-flush
Influence of ambient temperature				
• at -10 ... +60 °C (14 ... 140 °F)	≤ (0.1 · r + 0.2) %[1)]	≤ (0.2 · r + 0.3) %	≤ 0.3 %	≤ 0.5 %
• at -40 ... -10 °C and 60 ... 85 °C (-40 ... +14 °F and 140 ... 185 °F)	≤ (0.1 · r + 0.15) %/10 K	≤ (0.2 · r + 0.3) %/10 K	≤ 0.25 %/10 K	≤ 0.5 %/10 K
Influence of mounting position	0.1 mbar (0.04 inH_2O) per 10° inclination			
Measured Value Resolution	-		$3 \cdot 10^{-5}$ of nominal measuring range	
Influence of the medium temperature				
• Temperature difference between medium temperature and ambient temperature	3 mbar/10 K (0.04 psi/10 K)			
Rated conditions				
Installation conditions				
Ambient temperature	Observe the temperature class in areas subject to explosion hazard.			
• Measuring cell with silicone oil	-40 ... +85 °C (-40 ... +185 °F)			
• Measuring cell with Neobee oil (with front-flush diaphragm)	-10 ... +85 °C (14 ... +185 °F)			
• Measuring cell with inert liquid (not with front-flush diaphragm)	-20 ... +85 °C (-4 ... +185 °F)			
• Display readable	-30 ... +85 °C (-22 ... +185 °F)			
• Storage temperature	-50 ... +85 °C (-58 ... +185 °F) (in the case of Neobee: -20 ... +85 °C (-4 ... +185/°F))			
• Climatic class				
- Condensation	Relative humidity 0 ... 100 % Condensation permissible, suitable for use in the tropics			
Degree of protection (to IEC 60529)	IP65, IP68, NEMA 4X, enclosure cleaning, resistant to lyes, steam to 150 ° C (302 °F)			
• Electromagnetic Compatibility				
- Emitted interference and interference immunity	Acc. to EN 61326 and NAMUR NE 21			
Medium conditions	The max. medium temperature of the front-flush process connections is to be taken into account in accordance with the relevant connection standards (e. g. DIN 32676, DIN 11851 etc.).			
Temperature of medium				
• Measuring cell with silicone oil	-40 ... +100 °C (-40 ... +212 °F)			
• Measuring cell with silicone oil (with front-flush diaphragm)	-40 ... +150 °C (-40 ... +302 °F)			
• Measuring cell with Neobee oil (with front-flush diaphragm)	-10 ... +150 °C (14 ... 302 °F)			
• Measuring cell with silicone oil, with temperature decoupler (only for gauge pressure version with front-flush diaphragm)	-40 ... +200 °C (-40 ... +392 °F)			
• Measuring cell with inert filling liquid	-20 ... +100 °C (-4 ... +212 °F)			
• Measuring cell with high-temperature oil (only for gauge pressure version with front-flush diaphragm)	-10 ... +250 °C (14 ... 482 °F)			
Design				
Weight (without options)	≈ 1.5 kg (≈ 3.3 lb)			
Enclosure material	Low-copper die-cast aluminum, GD-AlSi12 or stainless steel precision casting, mat. no. 1.4408			
Wetted parts materials	Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819			
Measuring cell filling	Silicone oil or inert filling liquid			
Process connection	• Flanges as per EN and ASME • F&B and pharmaceutical flanges			
Surface quality touched-by-media	R_a-values ≤ 0.8 µm (32 µ-inch)/welds $R_{a)}$ ≤ 1.6 µm (64 µ-inch) (Process connections acc. to 3A; R_a-values ≤ 0.8 µm (32 µ-inch)/welds R_a) ≤ 0.8 µm (32 µ-inch)			
Power supply U_H			Supplied through bus	
Terminal voltage on transmitter	10.5 ... 45 V DC 10.5 ... 30 V DC in intrinsically-safe mode		-	
Separate 24 V power supply necessary	-		No	
Bus voltage				
• Not Ex	-		9 ... 32 V	
• With intrinsically-safe operation	-		9 ... 24 V	

SITRANS P DS III series for gauge and absolute pressure, with front-flush diaphragm		
	HART	**PROFIBUS PA and FOUNDATION Fieldbus**
Power supply U_H (continued)		Supplied through bus
Current consumption		
• Basic current (max.)	-	12.5 mA
• Start-up current ≤ basic current	-	Yes
• Max. current in event of fault	-	15.5 mA
Fault disconnection electronics (FDE) available	-	Yes
Certificates and approvals		
Classification according to PED 97/23/EC	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)	
Explosion protection		
• Intrinsic safety "i"	PTB 11 ATEX 2011 X	
- Marking	Ex II 1/2 G Ex ia/ib IIC T4/T5/T6 Ga/Gb	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +70 °C (-40 ... +158 °F) temperature class T5; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To certified intrinsically-safe circuits with peak values: U_i = 30 V, I_i = 100 mA, P_i = 750 mW; R_i = 300 Ω	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_i = 0.4 mH, C_i = 6 nF	L_i = 7 µH, C_i = 1.1 nF
• Explosion-proof "d"	PTB 99 ATEX 1160	
- Marking	Ex II 1/2 G Ex d IIC T4/T6 Gb	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To circuits with values: U_H = 10.5 ... 45 V DC	To circuits with values: U_H = 9 ... 32 V DC
• Dust explosion protection for zone 20	PTB 01 ATEX 2055	
- Marking	Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F)	
- Max. surface temperature	120 °C (248 °F)	
- Connection	To certified intrinsically-safe circuits with peak values: U_i = 30 V, I_i = 100 mA, P_i = 750 mW, R_i = 300 Ω	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 W
- Effective internal inductance/capacitance	L_i = 0.4 mH, C_i = 6 nF	L_i = 7 µH, C_i = 1.1 nF
• Dust explosion protection for zone 21/22	PTB 01 ATEX 2055	
- Marking	Ex II 2 D IP65 T 120 °C	
- Connection	To circuits with values: U_H = 10.5 ... 45 V DC; P_{max} = 1.2 W	To circuits with values: U_H = 9 ... 32 V DC; P_{max} = 1 W
• Type of protection "n" (zone 2)	PTB 11 ATEX 2011 X	
- Marking	Ex II 2/3 G Ex nA II T4/T5/T6 Gc Ex II 2/3 G Ex ic IIC T4/T5/T6 Gc	
- Connection (Ex nA)	U_m = 45 V	U_m = 32 V
- Connections (Ex ic)	To circuits with values: U_i = 45 V	FISCO supply unit ic: U_o = 17.5 V, I_o = 570 mA Linear barrier: U_o = 32 V, I_o = 132 mA, P_o = 1 W
- Effective internal inductance/capacitance	L_i = 0.4 mH, C_i = 6 nF	L_i = 7 µH, C_i = 1,1 nF
• Explosion protection acc. to FM	Certificate of Compliance 3008490	
- Identification (XP/DIP) or (IS); (NI)	CL I, DIV 1, GP ABCD 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	
• Explosion protection to CSA	Certificate of Compliance 1153651	
- Identification (XP/DIP) or (IS)	CL I, DIV 1, GP ABCD T4...T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4...T6; CL I, DIV 2, GP ABCD T4...T6; CL II, DIV 2, GP FG; CL III	

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

Hygiene version

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

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

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

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

1

Selection and Ordering data		Order No.
Pressure transmitter for gauge and absolute pressure, front-flush diaphragm, SITRANS P DS III HART		**7MF4133-**
Measuring cell filling	**Measuring cell cleaning**	
Silicone oil	normal	1
Inert liquid	grease-free to cleanliness level 2	3
FDA compliant fill fluid		
• Neobee oil	normal	4
Measuring span (min. ... max.)		
0.01 ... 1 bar	(0.15 ... 14.5 psi)	B
0.04 ... 4 bar	(0.58 ... 58 psi)	C
0.16 ... 16 bar	(2.32 ... 232 psi)	D
0.63 ... 63 bar	(9.14 ... 914 psi)	E
13 ... 1300 mbar a[1]	(0.62 ... 18.85 psia)[1]	S
0.05 ... 5 bar a[1]	(0.7 ... 72.5 psia)[1]	T
0.3 ... 30 bar a[1]	(4.35 ... 435 psia)[1]	U
Wetted parts materials		
Seal diaphragm	Connection shank	
Stainless steel	Stainless steel	A
Hastelloy[2]	Stainless steel	B
Process connection		
• Flange version with Order Code M.., N.., R.. or Q..		7
Non-wetted parts materials		
• Housing made of die-cast aluminium		0
• Housing stainless steel precision casting		3
Version		
• Standard versions		1
• International version, English label inscriptions, documentation in 5 languages on CD (no order code selectable)		2
Explosion protection		
• None		A
• With ATEX, Type of protection:		
- "Intrinsic safety (Ex ia)"		B
- "Explosion-proof (Ex d)" [3]		D
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX)		S
• With FM + CSA, Type of protection:		
- "Intrinsic Safe und Explosion Proof (is + xp)"[3] (Available soon)		N C
Electrical connection/cable entry		
• Inner thread M20 x 1.5		B
• Female thread ½-14 NPT		C
• M12 connectors (stainless steel)[4] [5] [6]		F
Display		
• Without display		0
► • Without visible display (display concealed, setting: mA)		1
• with visible display, setting: mA		6
• with customer-specific display (setting as specified, Order Code "Y21" or "Y22" required)		7

► Available ex stock

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

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

1) Not with temperature decoupler P00 and P10, not for process connections R02, R04, R10 and R11, and can only be ordered in conjunction with silicone oil.
2) Only available for flanges with options M.., N.. and Q..
3) Without cable gland, with blanking plug
4) M12 delivered without cable socket
5) Not available with protection type „Ex d“ (options D and N)
6) Not with protection types "Explosion-proof" and "Ex nA“, „Intrinsic safe“ and „Explosion proof“.

Selection and Ordering data		Order No.
Pressure transmitter P for gauge and absolute pressure, front-flush diaphragm:		
SITRANS P DS III with PROFIBUS PA (PA)		7MF4134-
SITRANS P DS III with FOUNDATION Fieldbus (FF)		7MF4135-
		■■■■■-■■■■
Measuring cell filling	**Measuring cell cleaning**	
Silicone oil	normal	1
Inert liquid	grease-free to cleanliness level 2	3
FDA compliant fill fluid		
• Neobee oil	normal	4
Nominal measuring range		
1 bar	(14.5 psi)	B
4 bar	(58 psi)	C
16 bar	(232 psi)	D
63 bar	(914 psi)	E
1300 mbar a[1]	(18.85 psia)[1]	S
5 bar a[1]	(72.5 psia)[1]	T
30 bar a[1]	(435 psia)[1]	U
Wetted parts materials		
Seal diaphragm	Connection shank	
Stainless steel	Stainless steel	A
Hastelloy[2]	Stainless steel	B
Process connection		
• Flange version with Order Code M.., N.., R.. or Q..		7
Non-wetted parts materials		
• Housing made of die-cast aluminium		0
• Housing stainless steel precision casting		3
Version		
• Standard versions		1
• International version, English label inscriptions, documentation in 5 languages on CD (no order code selectable)		2
Explosion protection		
• None		A
• With ATEX, Type of protection:		
- "Intrinsic safety (Ex ia)"		B
- "Explosion-proof (Ex d)"[3]		D
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX)		S
• With FM + CSA, Type of protection:		
- "Intrinsic Safe und Explosion Proof (is + xp)"[3] (Available soon)		N C
Electrical connection/cable entry		
• Screwed gland M20 x 1.5		B
• Screwed gland ½-14 NPT		C
• Han 7D plug (plastic housing) incl. mating connector[4]		D
• M12 connectors (stainless steel)[5] [6] [7]		F

Selection and Ordering data	Order No.
Pressure transmitter P for gauge and absolute pressure, front-flush diaphragm:	
SITRANS P DS III with PROFIBUS PA (PA)	7MF4134-
SITRANS P DS III with FOUNDATION Fieldbus (FF)	7MF4135-
	■■■■■-■■■■
Display	
• Without display	0
► • Without visible display (display concealed, setting: mA)	1
• With visible display	6
• With customer-specific display (setting as specified, Order Code "Y21" required)	7

► Available ex stock

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

1) Not with temperature decoupler P00 and P10, not for process connections R01, R02, R04, R10 and R11, and can only be ordered in conjunction with silicone oil.

2) Only available for flanges with options M.., N.. and Q..

3) Without cable gland, with blanking plug

4) Not in conjunction with types of protection "Explosion-proof" and "Ex ic", "Intrinsic safety" and "Explosion-proof".

5) M12 delivered without cable socket

6) Not available with protection type „Ex d“ (optionen D and N)

7) Not with protection types "Explosion-proof" and "Ex nA“, „Intrinsic safe“ and „Explosion proof“.

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

Selection and Ordering data	Order code	HART	PA	FF
Further designs Add "**-Z**" to Order No. and specify Order Code.				
Plug				
• Angled	**A32**	✓		
• Han 8D (metal, gray)	**A33**	✓		
Cable sockets for M12 connectors (stainless steel)	**A50**	✓	✓	✓
Rating plate inscription (instead of German)				
• English	**B11**	✓	✓	✓
• French	**B12**	✓	✓	✓
• Spanish	**B13**	✓	✓	✓
• Italian	**B14**	✓	✓	✓
English rating plate Pressure units in inH_20 and/or psi	**B21**	✓	✓	✓
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	**C11**	✓	✓	✓
Inspection certificate Acc. to EN 10204-3.1	**C12**	✓	✓	✓
Factory certificate Acc. to EN 10204-2.2	**C14**	✓	✓	✓
"Functional safety (SIL2)" certificate to IEC 61508	**C20**	✓		
"Functional safety" certificate (PROFIsafe) and PROFIsafe protocol	**C21**		✓	
"Functional safety (SIL2/3)" certificate to IEC 61508	**C23**	✓		
Device passport Russia (For price request please contact the technical support www.siemens.com/automation/support-request.)	**C99**	✓	✓	✓
Setting of upper limit of output signal to 22.0 mA	**D05**	✓		
Degree of protection IP65/IP68 (only for M20x1.5 and ½-14 NPT)	**D12**	✓	✓	✓
Oxygen application (In the case of oxygen measurement and inert liquid max. 100 bar (1450 psi) at 60°C (140 °F))	**E10**	✓	✓	✓
Export approval Korea	**E11**	✓	✓	✓
Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil) (only for transmitter 7MF4...-.....-.B..)	**E25**	✓	✓	✓
"Flameproof" explosion protection according to INMETRO (Brazil) (only for transmitter 7MF4...-.....-.D..)	**E26**	✓	✓	✓
Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil) (only for transmitter 7MF4...-.....-.P..)	**E28**	✓	✓	
Ex Approval IEC Ex (Ex ia) (only for transmitter 7MF4...-.....-.B..)	**E45**	✓	✓	✓
Ex Approval IEC Ex (Ex id) (only for transmitter 7MF4...-.....-.D..)	**E46**	✓	✓	✓
"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (only for transmitter 7MF4...-.....-.[B, D]..-Z + E11)	**E70**	✓	✓	✓
Two coats of lacquer on casing and cover (PU on epoxy)	**G10**	✓	✓	✓

Selection and Ordering data	Order code			
Flanges to EN 1092-1, Form b1				
• DN 25, PN 40[1)]	**M11**	✓	✓	✓
• DN 25, PN 100[1)]	**M21**	✓	✓	✓
• DN 40, PN 40	**M13**	✓	✓	✓
• DN 40, PN 100	**M23**	✓	✓	✓
• DN 50, PN 16	**M04**	✓	✓	✓
• DN 50, PN 40	**M14**	✓	✓	✓
• DN 80, PN 16	**M06**	✓	✓	✓
• DN 80, PN 40	**M16**	✓	✓	✓
Flanges to ASME B16.5				
• Stainless steel flange 1" class 150[1)]	**M40**	✓	✓	✓
• Stainless steel flange 1½" class 150	**M41**	✓	✓	✓
• Stainless steel flange 2" class 150	**M42**	✓	✓	✓
• Stainless steel flange 3" class 150	**M43**	✓	✓	✓
• Stainless steel flange 4" class 150	**M44**	✓	✓	✓
• Stainless steel flange 1" class 300[1)]	**M45**	✓	✓	✓
• Stainless steel flange 1½" class 300	**M46**	✓	✓	✓
• Stainless steel flange 2" class 300	**M47**	✓	✓	✓
• Stainless steel flange 3" class 300	**M48**	✓	✓	✓
• Stainless steel flange 4" class 300	**M49**	✓	✓	✓
Threaded connector to DIN 3852-2, form A, thread to ISO 228				
• G ¾"-A, front-flush[2)]	**R01**	✓	✓	✓
• G 1"-A, front-flush[2)]	**R02**	✓	✓	✓
• G 2"-A, front-flush[2)]	**R04**	✓	✓	✓
Tank connection[3)] Sealing is included in delivery				
• TG 52/50, PN 40	**R10**	✓	✓	✓
• TG 52/150, PN 40	**R11**	✓	✓	✓
Sanitary process connection according DIN 11851 (Dairy connection with slotted union nut)				
• DN 50, PN 25	**N04**	✓	✓	✓
• DN 80, PN 25	**N06**	✓	✓	✓
Tri-Clamp connection according DIN 32676/ISO 2852				
• DN 50/2", PN 16	**N14**	✓	✓	✓
• DN 65/3", PN 10	**N15**	✓	✓	✓
Varivent connection Certified to EHEDG				
• Type N = 68 for Varivent housing DN 40 ... 125 und 1½" ... 6", PN 40	**N28**	✓	✓	✓
Temperature decoupler up to 200 °C[4)] for version with front-flush diaphragm	**P00**	✓	✓	✓
Temperature decoupler up to 250 °C Measuring cell filling: High-temperature oil, only in conjunction with measuring cell filling silicone oil	**P10**	✓	✓	✓
Bio-Control sanitary process connection Certified to EHEDG				
• DN 50, PN 16	**Q53**	✓	✓	✓
• DN 65, PN 16	**Q54**	✓	✓	✓
Sanitary process connection to DRD				
• DN 50, PN 40	**M32**	✓	✓	✓
SMS socket with union nut				
• 2"	**M67**	✓	✓	✓
• 2½"	**M68**	✓	✓	✓
• 3"	**M69**	✓	✓	✓
SMS threaded socket				
• 2"	**M73**	✓	✓	✓
• 2½"	**M74**	✓	✓	✓
• 3"	**M75**	✓	✓	✓

Selection and Ordering data	Order code	HART	PA	FF
Further designs Add "**-Z**" to Order No. and specify Order Code.				
IDF socket with union nut ISO 2853				
• 2"	**M82**	✓	✓	✓
• 2½"	**M83**	✓	✓	✓
• 3"	**M84**	✓	✓	✓
IDF threaded socket ISO 2853				
• 2"	**M92**	✓	✓	✓
• 2½"	**M93**	✓	✓	✓
• 3"	**M94**	✓	✓	✓
Sanitary process connection to NEUMO Bio-Connect screw connection Certified to EHEDG				
• DN 50, PN 16	**Q05**	✓	✓	✓
• DN 65, PN 16	**Q06**	✓	✓	✓
• DN 80, PN 16	**Q07**	✓	✓	✓
• DN 100, PN 16	**Q08**	✓	✓	✓
• DN 2", PN 16	**Q13**	✓	✓	✓
• DN 2½", PN 16	**Q14**	✓	✓	✓
• DN 3", PN 16	**Q15**	✓	✓	✓
• DN 4", PN 16	**Q16**	✓	✓	✓
Sanitary process connection to NEUMO Bio-Connect flange connection Certified to EHEDG				
• DN 50, PN 16	**Q23**	✓	✓	✓
• DN 65, PN 16	**Q24**	✓	✓	✓
• DN 80, PN 16	**Q25**	✓	✓	✓
• DN 100, PN 16	**Q26**	✓	✓	✓
• DN 2", PN 16	**Q31**	✓	✓	✓
• DN 2½", PN 16	**Q32**	✓	✓	✓
• DN 3", PN 16	**Q33**	✓	✓	✓
• DN 4", PN 16	**Q34**	✓	✓	✓
Sanitary process connection to NEUMO Bio-Connect clamp connection Certified to EHEDG				
• DN 50, PN 16	**Q39**	✓	✓	✓
• DN 65, PN 10	**Q40**	✓	✓	✓
• DN 80, PN 10	**Q41**	✓	✓	✓
• DN 100, PN 10	**Q42**	✓	✓	✓
• DN 2½", PN 16	**Q48**	✓	✓	✓
• DN 3", PN 10	**Q49**	✓	✓	✓
• DN 4", PN 10	**Q50**	✓	✓	✓
Sanitary process connection to NEUMO Bio-Connect S flange connection Certified to EHEDG				
• DN 50, PN 16	**Q63**	✓	✓	✓
• DN 65, PN 10	**Q64**	✓	✓	✓
• DN 80, PN 10	**Q65**	✓	✓	✓
• DN 100, PN 10	**Q66**	✓	✓	✓
• DN 2", PN 16	**Q72**	✓	✓	✓
• DN 2½", PN 10	**Q73**	✓	✓	✓
• DN 3", PN 10	**Q74**	✓	✓	✓
• DN 4", PN 10	**Q75**	✓	✓	✓
Aseptic threaded socket to DIN 11864-1 Form A approved according to EHEDG				
• DN 50, PN 25	**N33**	✓	✓	✓
• DN 65, PN 25	**N34**	✓	✓	✓
• DN 80, PN 25	**N35**	✓	✓	✓
• DN 100, PN 25	**N36**	✓	✓	✓
Aseptic flange with notch to DIN 11864-2 Form A approved according to EHEDG				
• DN 50, PN 16	**N43**	✓	✓	✓
• DN 65, PN 16	**N44**	✓	✓	✓
• DN 80, PN 16	**N45**	✓	✓	✓
• DN 100, PN 16	**N46**	✓	✓	✓

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

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

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

3) The weldable socket can be ordered under accessories.

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

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

Selection and Ordering data	Order code			
Additional data		**HART**	**PA**	**FF**
Please add "**-Z**" to Order No. and specify Order code(s) and plain text.				
Measuring range to be set Specify in plain text (max. 5 characters): Y01: ... up to ... mbar, bar, kPa, MPa, psi	**Y01**	✓		
Stainless steel tag plate (measuring point description) Max. 16 characters, specify in plain text: Y15:	**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 indicator in pressure units Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi, ... Note: The following pressure units can be selected: bar, mbar, mm H_2O*), inH_2O*), ftH_2O*), mmHG, inHG, psi, Pa, kPa, MPa, g/cm^2, kg/cm^2, Torr, ATM or % *) ref. temperature 20 °C	**Y21**	✓	✓	✓
Setting of pressure indication in non-pressure units[1] Specify in plain text: Y22: ..... up to ..... l/min, m^3/h, m, USgpm, ... (specification of measuring range in pressure units "**Y01**" is essential, unit with max. 5 characters)	**Y22 + Y01**	✓		
Preset bus address possible between 1 and 126 Specify in plain text: Y25:	**Y25**		✓	✓

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

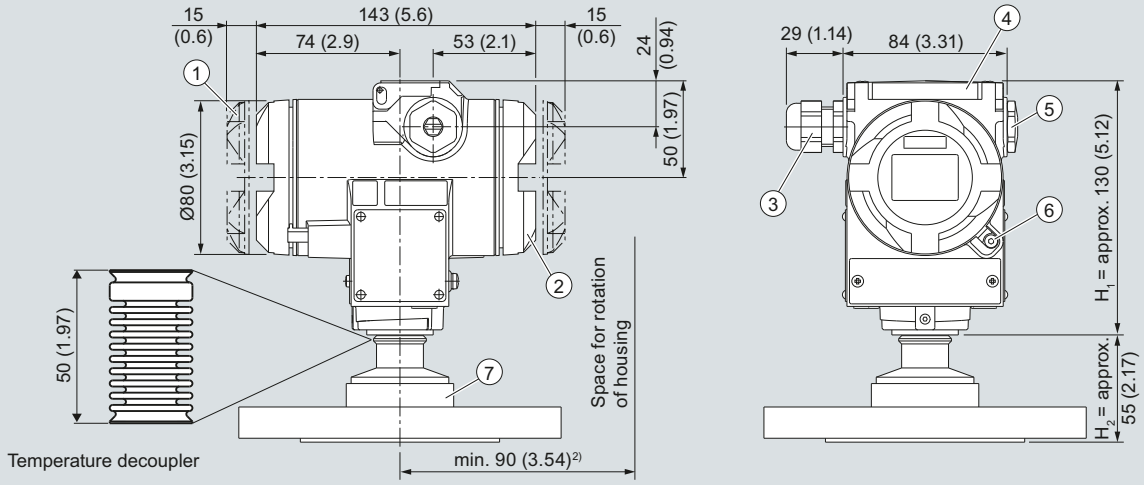
✓ = available

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)

[1] Preset values can only be changed over SIMATIC PDM.

Dimensional drawings



1. Electronic side, digital display (longer overall length for cover with window)[1)]
2. Terminal side[1)]
3. Electrical connection:
   Screwed gland M20 x 1,5 or screwed gland ½-14 NPT or M12 conector
4. Protective cover over keys
5. Blanking plug
6. Screw cover - safety bracket (only for type of protection "Explosion-proof enclosure", not shown in the drawing)
7. Process connection: see flange tables

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

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

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

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

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

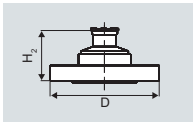
Only the height H_2 is indicated in the dimensions of the flanges.

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

Flanges as per EN and ASME

Flange to EN

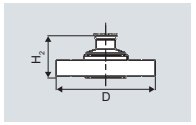
EN 1092-1



Order code	DN	PN	∅D	H_2
M11	25	40	115 mm (4.5“)	Approx. 52 mm (2“)
M21	25	100	140 mm (5.5“)	
M13	40	40	150 mm (5.9“)	
M23	40	100	170 mm (6.7“)	
M04	50	16	165 mm (6.5“)	
M14	50	40	165 mm (6.5“)	
M06	80	16	200 mm (7.9“)	
M16	80	40	200 mm (7.9“)	

Flanges to ASME

ASME B16.5

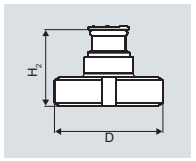


Order code	DN	PN	∅D	H_2
M40	1“	150	110 mm (4.3“)	Approx. 52 mm (2“)
M41	1“	300	125 mm (4.9“)	
M42	1½“	150	130 mm (5.1“)	
M43	1½“	300	155 mm (6.1“)	
M44	2“	150	150 mm (5.9“)	
M45	2“	300	165 mm (6.5“)	
M46	3“	150	190 mm (7.5“)	
M47	3“	300	210 mm (8.1“)	
M48	4“	150	230 mm (9.1“)	
M49	4“	300	255 mm (10.0“)	

NuG and pharmaceutical connections

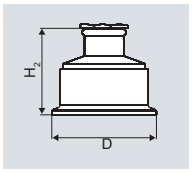
Connections to DIN

DIN 11851 (milk pipe union with slotted union nut)



Order code	DN	PN	∅D	H_2
N04	50	25	92 mm (3.6“)	Approx. 52 mm (2“)
N06	80	25	127 mm (5.0“)	

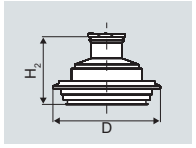
Tri-Clamp nach DIN 32676



Order code	DN	PN	∅D	H_2
N14	50	16	64 mm (2.5“)	Approx. 52 mm (2“)
N15	65	10	91 mm (3.6“)	

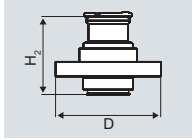
Other connections

Varivent connection



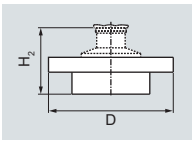
Order code	DN	PN	∅D	H_2
N28	40 ... 125	40	84 mm (3.3“)	Approx. 52 mm (2“)

Biocontrol connection



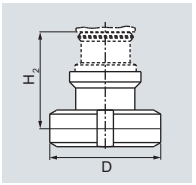
Order code	DN	PN	∅D	H_2
Q53	50	16	90 mm (3.5“)	Approx. 52 mm (2“)
Q54	65	16	120 mm (4.7“)	

Sanitary process connection to DRD



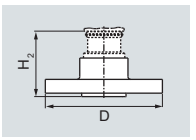
Order code	DN	PN	∅D	H_2
M32	50	40	105 mm (4.1“)	Approx. 52 mm (2“)

Sanitary process screw connection to NEUMO Bio-Connect



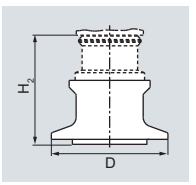
Order code	DN	PN	∅D	H_2
Q05	50	16	82 mm (3.2“)	Approx. 52 mm (2“)
Q06	65	16	105 mm (4.1“)	
Q07	80	16	115 mm (4.5“)	
Q08	100	16	145 mm (5.7“)	
Q13	2“	16	82 mm (3.2“)	
Q14	2½“	16	105 mm (4.1“)	
Q15	3“	16	105 mm (4.1“)	
Q16	4“	16	145 mm (5.7“)	

Sanitary process connection to NEUMO Bio-Connect flange connection



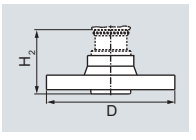
Order code	DN	PN	∅D	H_2
Q23	50	16	110 mm (4.3“)	Approx. 52 mm (2“)
Q24	65	16	140 mm (5.5“)	
Q25	80	16	150 mm (5.9“)	
Q26	100	16	175 mm (6.9“)	
Q31	2“	16	100 mm (3.9“)	
Q32	2½“	16	110 mm (4.3“)	
Q33	3“	16	140 mm (5.5“)	
Q34	4“	16	175 mm (6.9“)	

Sanitary process connection to NEUMO Bio-Connect clamp connection



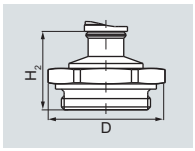
Order code	DN	PN	∅D	H_2
Q39	50	16	77.4 mm (3.0“)	Approx. 52 mm (2“)
Q40	65	10	90.9 mm (3.6“)	
Q41	80	10	106 mm (4.2“)	
Q42	100	10	119 mm (4.7“)	
Q48	2½“	16	77.4 mm (3.0“)	
Q49	3“	10	90.9 mm (3.6“)	
Q50	4“	10	119 mm (4.7“)	

Sanitary process connection to NEUMO Bio-Connect S flange connection



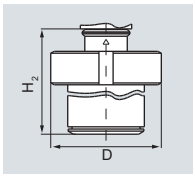
Order code	DN	PN	∅D	H_2
Q63	50	16	125 mm (4.9“)	Approx. 52 mm (2“)
Q64	65	10	145 mm (5.7“)	
Q65	80	10	155 mm (6.1“)	
Q66	100	10	180 mm (7.1“)	
Q72	2“	16	125 mm (4.9“)	
Q73	2½“	10	135 mm (5.3“)	
Q74	3“	10	145 mm (5.7“)	
Q75	4“	10	180 mm (7.1“)	

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



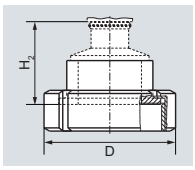
Order code	DN	PN	∅D	H_2
R01	¾“	60	37 mm (1.5“)	Approx. 45 mm (1.8“)
R02	1“	60	48 mm (1.9“)	Approx. 47 mm (1.9“)
R04	2“	60	78 mm (3.1“)	Approx. 52 mm (2“)

Tank connection TG 52/50 and TG52/150



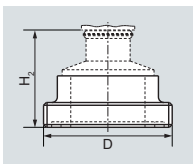
Order code	DN	PN	∅D	H_2
R10	25	40	63 mm (2.5“)	Approx. 63 mm (2.5“)
R11	25	40	63 mm (2.5“)	Approx. 170 mm (6.7“)

SMS socket with union nut



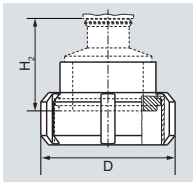
Order code	DN	PN	∅D	H_2
M67	2“	25	84 mm (3.3“)	Approx. 52 mm (2“)
M68	2½“	25	100 mm (3.9“)	
M69	3“	25	114 mm (4.5“)	

SMS threaded socket



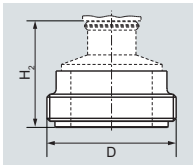
Order code	DN	PN	∅D	H_2
M73	2“	25	70 x 1/6 mm	Approx. 52 mm (2“)
M74	2½“	25	85 x 1/6 mm	
M75	3“	25	98 x 1/6 mm	

IDF socket with union nut



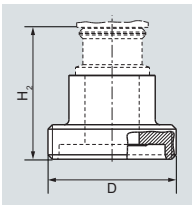
Order code	DN	PN	∅D	H_2
M82	2“	25	77 mm (3“)	Approx. 52 mm (2“)
M83	2½“	25	91 mm (3.6“)	
M84	3“	25	106 mm (4.2“)	

IDF threaded socket



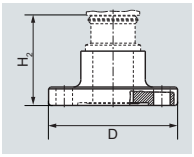
Order code	DN	PN	∅D	H_2
M92	2“	25	64 mm (2.5“)	Approx. 52 mm (2“)
M93	2½“	25	77.5 mm (3.1“)	
M94	3“	25	91 mm (3.6“)	

Aseptic threaded socket to DIN 11864-1 Form A



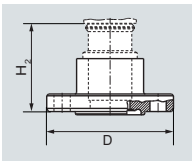
Order code	DN	PN	∅D	H_2
N33	50	25	78 x 1/6“	Approx. 52 mm (2“)
N34	65	25	95 x 1/6“	
N35	80	25	110 x ¼“	
N36	100	25	130 x ¼“	

Aseptic flange with notch to DIN 11864-2 Form A



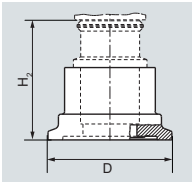
Order code	DN	PN	∅D	H_2
N43	50	16	94	Approx. 52 mm (2“)
N44	65	16	113	
N45	80	16	133	
N46	100	16	159	

Aseptic flange with groove to DIN 11864-2 Form A



Order code	DN	PN	∅D	H_2
N43 + P11	50	16	94	Approx. 52 mm (2“)
N44 + P11	65	16	113	
N45 + P11	80	16	133	
N46 + P11	100	16	159	

Aseptic clamp with groove to DIN 11864-3 Form A



Order code	DN	PN	∅D	H_2
N53	50	25	77.5	Approx. 52 mm (2“)
N54	65	25	91	
N55	80	16	106	
N56	100	16	130	

Technical specifications

SITRANS P DS III series for absolute pressure (from the gauge pressure series)				
	HART		**PROFIBUS PA and FOUNDATION Fieldbus**	
Input				
Measured variable	Absolute pressure			
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span (min. ... max.)	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure
	8.3 ... 250 mbar a (0.12 ... 3.62 psia)	6 bar a (87 psia)	250 mbar a (3.6 psia)	6 bar a (87 psia)
	43 ... 1300 mbar a (0.62 ... 18.85 psi a)	10 bar a (145 psia)	1300 mbar a (18.9 psi a)	10 bar a (145 psia)
	160 ... 5000 mbar a (2.32 ... 72.5 psia)	30 bar a (435 psia)	5 bar a (72.5 psia)	30 bar a (435 psia)
	1 ... 30 bar a (14.5 ... 435 psia)	100 bar a (1450 psia)	30 bar a (435 psia)	100 bar a (1450 psia)
Lower measuring limit				
• Measuring cell with silicone oil filling	0 mbar a (0 psia)			
Upper measuring limit	100 % of max. span			
Output				
Output signal	4 ... 20 mA		Digital PROFIBUS PA and FOUNDATION Fieldbus signal	
• Lower limit (infinitely adjustable)	3.55 mA, factory preset to 3.84 mA		-	
• Upper limit (infinitely adjustable)	23 mA, factory preset to 20.5 mA or optionally set to 22.0 mA		-	
Load				
• Without HART	$R_B \leq (U_H - 10.5\ V)/0.023\ A$ in Ω, U_H: Power supply in V		-	
• With HART	R_B = 230 ... 500 Ω (SIMATIC PDM) or R_B = 230 ... 1100 Ω (HART Communicator)		-	
Physical bus	-		IEC 61158-2	
Protection against polarity reversal	Protected against short-circuit and polarity reversal. Each connection against the other with max. supply voltage.			
Electrical damping (step width 0.1 s)	Set to 2 s (0 ... 100 s)			
Measuring accuracy	Acc. to IEC 60770-1			
Reference conditions (All error data refer always refer to the set span)	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 at limit setting incl. hysteresis and reproducibility				
• Linear characteristic			≤ 0.1 %	
- r ≤ 10	≤ 0.1 %			
- 10 < r ≤ 30	≤ 0.2 %			
Long-term stability (temperature change ± 30 °C (± 54 °F))	≤ (0.1 · r) %/year		≤ 0.1 %/year	
Influence of ambient temperature				
• at -10 ... +60 °C (14 ... 140 °F)	≤ (0.1 · r + 0.2) %[1)]		≤ 0.3 %	
• at -40 ... -10 °C and 60 ... 85 °C (-40 ... +14 °F and 140 ... 185 °F)	≤ (0.1 · r + 0.15) %/10 K		≤ 0.25 %/10 K	
Measured Value Resolution	-		$3 \cdot 10^{-5}$ of nominal measuring range	

SITRANS P DS III series for absolute pressure (from the gauge pressure series)		
	HART	**PROFIBUS PA and FOUNDATION Fieldbus**
Rated conditions		
Degree of protection (to IEC 60529)	IP65 (optional IP65/IP68)	
Temperature of medium		
• Measuring cell with silicone oil filling	-40 ... +100 °C (-40 ... +212 °F)	
• Measuring cell with inert filling liquid	-20 ... +100 °C (-4 ... +212 °F)	
• In conjunction with dust explosion protection	-20 ... +60 °C (-4 ... +140 °F)	
Ambient conditions		
• Ambient temperature		
- Display readable	-30 ... +85 °C (-22 ... +185 °F)	
• Storage temperature	-50 ... +85 °C (-58 ... +185 °F)	
• Climatic class		
- Condensation	Relative humidity 0 ... 100 % Condensation permissible, suitable for use in the tropics	
• Electromagnetic Compatibility		
- Emitted interference and interference immunity	Acc. to EN 61326 and NAMUR NE 21	
Design		
Weight (without options)	≈ 1.5 kg (≈ 3.3 lb)	
Enclosure material	Low-copper die-cast aluminum, GD-AlSi 12 or stainless steel precision casting, mat. no. 1.4408	
Wetted parts materials		
• Connection shank	Stainless steel, mat. no. 1.4404/316L or Hastelloy C4, mat. no. 2.4610	
• Oval flange	Stainless steel, mat. no. 1.4404/316L	
• Seal diaphragm	Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819	
Measuring cell filling	Silicone oil or inert filling liquid (maximum value with oxygen measurement pressure 100 bar (1450 psi) at 60 °C (140 °F))	
Process connection	Connection shank G½B to EN 837-1, female thread ½ -14 NPT or oval flange (PN 160 (MAWP 2320 psia)) to DIN 19213 with mounting thread M10 or $^{7}/_{16}$-20 UNF to IEC 61518	
Material of mounting bracket		
• Steel	Sheet-steel, Mat. No. 1.0330, chrome-plated	
• Stainless steel	Sheet stainless steel, mat. no. 1.4301 (SS 304)	
Power supply U_H		Supplied through bus
Terminal voltage on transmitter	10.5 ... 45 V DC 10.5 ... 30 V DC in intrinsically-safe mode	-
Separate 24 V power supply necessary	-	No
Bus voltage		
• Not Ex	-	9 ... 32 V
• With intrinsically-safe operation	-	9 ... 24 V
Current consumption		
• Basic current (max.)	-	12.5 mA
• Start-up current ≤ basic current	-	Yes
• Max. current in event of fault	-	15.5 mA
Fault disconnection electronics (FDE) available	-	Yes

SITRANS P DS III series for absolute pressure (from the gauge pressure series)	HART	PROFIBUS PA and FOUNDATION Fieldbus
Certificates and approvals		
Classification according to PED 97/23/EC	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)	
Explosion protection		
• Intrinsic safety "i"	PTB 11 ATEX 2011 X	
- Marking	Ex II 1/2 G Ex ia/ib IIC T4/T5/T6 Ga/Gb	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +70 °C (-40 ... +158 °F) temperature class T5; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To certified intrinsically-safe circuits with peak values: U_i = 30 V, I_i = 100 mA, P_i = 750 mW; R_i = 300 Ω	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_i = 0.4 mH, C_i = 6 nF	L_i = 7 µH, C_i = 1.1 nF
• Explosion-proof "d"	PTB 99 ATEX 1160	
- Marking	Ex II 1/2 G Ex d IIC T4/T6 Gb	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To circuits with values: U_H = 10.5 ... 45 V DC	To circuits with values: U_H = 9 ... 32 V DC
• Dust explosion protection for zone 20	PTB 01 ATEX 2055	
- Marking	Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F)	
- Max. surface temperature	120 °C (248 °F)	
- Connection	To certified intrinsically-safe circuits with peak values: U_i = 30 V, I_i = 100 mA, P_i = 750 mW, R_i = 300 Ω	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_i = 0.4 mH, C_i = 6 nF	L_i = 7 µH, C_i = 1.1 nF
• Dust explosion protection for zone 21/22	PTB 01 ATEX 2055	
- Marking	Ex II 2 D IP65 T 120 °C	
- Connection	To circuits with values: U_H = 10.5 ... 45 V DC; P_{max} = 1.2 W	To circuits with values: U_H = 9 ... 32 V DC; P_{max} = 1 W
• Type of protection "n" (zone 2)	PTB 11 ATEX 2011 X	
- Marking	Ex II 2/3 G Ex nA II T4/T5/T6 Gc Ex II 2/3 G Ex ic IIC T4/T5/T6 Gc	
- Connection (Ex nA)	U_m = 45 V	U_m = 32 V
- Connection (Ex ic)	To circuits with values: U_i = 45 V	FISCO supply unit ic: U_o = 17.5 V, I_o = 570 mA Linear barrier: U_o = 32 V, I_o = 132 mA, P_o = 1 W
- Effective internal inductance/capacitance	L_i = 0.4 mH, C_i = 6 nF	L_i = 7 µH, C_i = 1,1 nF
• Explosion protection acc. to FM	Certificate of Compliance 3008490	
- Identification (XP/DIP) or (IS); (NI)	CL I, DIV 1, GP ABCD 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	
• Explosion protection to CSA	Certificate of Compliance 1153651	
- Identification (XP/DIP) or (IS)	CL I, DIV 1, GP ABCD T4...T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4...T6; CL I, DIV 2, GP ABCD T4...T6; CL II, DIV 2, GP FG; CL III	

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

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

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

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

Selection and Ordering data		Order No.
Pressure transmitters for absolute pressure aus series pressure, SITRANS P DS III with HART		**7MF4233 -**
Measuring cell filling	**Measuring cell cleaning**	
Silicone oil	normal	1
Inert liquid[1]	grease-free to cleanliness level 2	3
Measuring span (min. ... max.)		
8.3 ... 250 mbar a	(0.12 ... 3.62 psia)	D
43 ... 1300 mbar a	(0.62 ... 18.85 psia)	F
0.16 ... 5 bar a	(2.32 ... 72.5 psia)	G
1 ... 30 bar a	(14.5 ... 435 psia)	H
Wetted parts materials		
Seal diaphragm	Process connection	
Stainless steel	Stainless steel	A
Hastelloy	Stainless steel	B
Hastelloy	Hastelloy	C
Version for diaphragm seal[2) 3) 4) 5) 6)]		Y
Process connection		
• Connection shank G½B to EN 837-1		0
• Female thread ½-14 NPT		1
• Stainless steel oval flange with process connection female thread ¼-18 NPT		
- Mounting thread $^{7}/_{16}$-20 UNF to EN 61518		2
- Mounting thread M10 to DIN 19213		3
- Mounting thread M12 to DIN 19213		4
• Male thread M20 x 1.5		5
• Male thread ½ -14 NPT		6
Non-wetted parts materials		
• Housing made of die-cast aluminium		0
• Housing stainless steel precision casting[7)]		3
Version		
• Standard versions		1
• International version, English label inscriptions, documentation in 5 languages on CD (no order code selectable)		2
Explosion protection		
• None		A
• With ATEX, Type of protection:		
- "Intrinsic safety (Ex ia)"		B
- "Explosion-proof (Ex d)"[8)]		D
- "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d)"[9)]		P
- "Ex nA/ic (Zone 2)"[10)]		E
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia+ Ex d + Zone 1D/2D)"[9)]		R
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX)		S
• With FM + CSA, Type of protection:		
- "Intrinsic Safe und Explosion Proof (is + xp)"[8)]		N C
Electrical connection/cable entry		
• Screwed gland Pg 13.5[11)]		A
• Screwed gland M20x1.5		B
• Screwed gland ½-14 NPT		C
• Han 7D plug (plastic housing) incl. mating connector[11)]		D
• M12 connectors (stainless steel) [12) 13) 14)]		F

Selection and Ordering data	Order No.
Pressure transmitters for absolute pressure aus series pressure, SITRANS P DS III with HART	**7MF4233 -**
Display	
• Without display	0
• Without visible display (display concealed, setting: mA) ►	1
• With visible display	6
• with customer-specific display (setting as specified, Order Code "Y21" or "Y22" required)	7

► Available ex stock

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

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

1) For oxygen application, add Order code E10.

2) Version 7MF4233-1DY... only up to max. span 200 mbar a (80 inH_2O a).

3) When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.If the acceptance test certificate 3.1.is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.

4) If the acceptance test certificate 3.1.is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.

5) The diaphragm seal is to be specified with a separate order number and must be included wiht the tranmitter order number, for example 7MF423.-..Y..-.... and 7MF4900-1...-.B

6) The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.

7) Not in conjunction with Electrical connection "Screwed gland Pg 13.5" and "Han7D plug".

8) Without cable gland, with blanking plug.

9) With enclosed cable gland Ex ia and blanking plug.

10) Configurations with HAN and M12 connectors are only available in Ex ic.

11) Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".

12) M12 delivered without cable socket

13) Not available with protection type "Ex d" (optiones D, P, N and R)

14) Not with protection types „Explosion-proof" and „Ex nA", „Intrinsic safe" and „Explosion proof".

Selection and Ordering data		Order No.
For absolute pressure (from the gauge pressure series)		
SITRANS P DS III with PROFIBUS PA (PA)		7MF4234-
SITRANS P DS III with FOUNDATION Fieldbus (FF)		7MF4235-
		■■■■■-■■■■
Measuring cell filling	**Measuring cell cleaning**	
Silicone oil	normal	1
Inert liquid [1]	grease-free to cleanliness level 2	3
Nominal measuring range		
250 mbar a	(3.62 psia)	D
1300 mbar a	(18.85 psia)	F
5 bar a	(72.5 psia)	G
30 bar a	(435 psia)	H
Wetted parts materials		
Seal diaphragm	Process connection	
Stainless steel	Stainless steel	A
Hastelloy	Stainless steel	B
Hastelloy	Hastelloy	C
Version as diaphragm seal [2] [3] [4] [5] [6]		Y
Process connection		
• Connection shank G½B to EN 837-1		0
• Female thread ½-14 NPT		1
• Stainless steel oval flange with process connection female thread ¼-18 NPT		
- Mounting thread $^{7}/_{16}$-20 UNF to IEC 61518		2
- Mounting thread M10 to DIN 19213		3
- Mounting thread M12 to DIN 19213		4
• Male thread M20 x 1.5		5
• Male thread ½ -14 NPT		6
Non-wetted parts materials		
• Housing made of die-cast aluminium		0
• Housing stainless steel precision casting		3
Version		
• Standard versions		1
• International version, English label inscriptions, documentation in 5 languages on CD (no order code selectable)		2
Explosion protection		
• None		A
• With ATEX, Type of protection:		
- "Intrinsic safety (Ex ia)"		B
- "Explosion-proof (Ex d)" [7]		D
- "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d)" [8]		P
- "Ex nA/ic (Zone 2)" [9]		E
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia + Ex d + Zone 1D/2D)" [8] (not for DS III FF)		R
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX)		S
• With FM + CSA, Type of protection:		
- "Intrinsic Safe und Explosion Proof (is + xp)" [7]		N C
Electrical connection/cable entry		
• Screwed gland M20 x 1.5		B
• Screwed gland ½-14 NPT		C
• M12 connectors (stainless steel) [10] [11]		F

Selection and Ordering data	Order No.
For absolute pressure (from the gauge pressure series)	
SITRANS P DS III with PROFIBUS PA (PA)	7MF4234-
SITRANS P DS III with FOUNDATION Fieldbus (FF)	7MF4235-
	■■■■■-■■■■
Display	
• Without display	0
• Without visible display (display concealed, setting: mA) ►	1
• With visible display	6
• with customer-specific display (setting as specified, Order Code "Y21" or "Y22" required)	7

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

[1] For oxygen application, add Order code E10.

[2] Version 7MF4233-1DY... only up to max. span 200 mbar a (2.9 psia).

[3] When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.

[4] If the acceptance test certificate 3.1.is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.

[5] The diaphragm seal is to be specified with a separate order number and must be included wiht the tranmitter order number, for example 7MF423.-..Y..-.... and 7MF4900-1...-.B

[6] The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.

[7] Without cable gland, with blanking plug.

[8] With enclosed cable gland Ex ia and blanking plug.

[9] Configurations with HAN and M12 connectors are only available in Ex ic.

[10] M12 delivered without cable socket

[11] Not with protection types „Explosion-proof" and „Ex nA", „Intrinsic safe" and „Explosion proof".

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

Selection and Ordering data	Order code	HART	PA	FF
Further designs				
Add "**-Z**" to Order No. and specify Order Code.				
Pressure transmitter with mounting bracket (2 shackles, 4 nuts, 4 U-plates, 1 angle) made of:				
• Steel	**A01**	✓	✓	✓
• Stainless steel	**A02**	✓	✓	✓
Plug				
• Han 7D (metal, gray)	**A30**	✓		
• Han 8U (instead of Han 7D)	**A31**	✓		
• Angled	**A32**	✓		
• Han 8D (metal, gray)	**A33**	✓		
Cable sockets for M12 connectors (stainless steel)	**A50**	✓	✓	✓
Rating plate inscription (instead of German)				
• English	**B11**	✓	✓	✓
• French	**B12**	✓	✓	✓
• Spanish	**B13**	✓	✓	✓
• Italian	**B14**	✓	✓	✓
English rating plate Pressure units in inH_20 and/or psi	**B21**	✓	✓	✓
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2[1]	**C11**	✓	✓	✓
Inspection certificate[2] Acc. to EN 10204-3.1	**C12**	✓	✓	✓
Factory certificate Acc. to EN 10204-2.2	**C14**	✓	✓	✓
"Functional safety (SIL2)" certificate to IEC 61508	**C20**	✓		
"Functional safety" certificate (PROFIsafe) and PROFIsafe protocol	**C21**		✓	
"Functional safety (SIL2/3)" certificate to IEC 61508	**C23**	✓		
Device passport Russia (For price request please contact the technical support www.siemens.com/automation/support-request)	**C99**	✓	✓	✓
Setting of upper limit of output signal to 22.0 mA	**D05**	✓		
Manufacturer's declaration acc. to NACE	**D07**	✓	✓	✓
Degree of protection IP65/IP68 (only for M20 x 1.5 and ½-14 NPT)	**D12**	✓	✓	✓
Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flange	**D37**	✓	✓	✓
Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety" (transmitter 7MF4...-.....-.B.. Ex ia)")	**E01**	✓	✓	✓
Oxygen application (In the case of oxygen measurement and inert liquid max. 100 bar (1450 psi) at 60°C (140 °F))	**E10**	✓	✓	✓
Export approval Korea	**E11**	✓	✓	✓
Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil) (only for transmitter 7MF4...-.....-.B..)	**E25**	✓	✓	✓
"Flameproof" explosion protection according to INMETRO (Brazil) (only for transmitter 7MF4...-.....-.D..)	**E26**	✓	✓	✓
Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil) (only for transmitter 7MF4...-.....-.P..)	**E28**	✓	✓	
Ex Approval IEC Ex (Ex ia) (only for transmitter 7MF4...-.....-.B..)	**E45**	✓	✓	✓
Ex Approval IEC Ex (Ex id) (only for transmitter 7MF4...-.....-.D..)	**E46**	✓	✓	✓
Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4...-.....-.B..)	**E55**	✓	✓	✓
Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4...-.....-.D..)	**E56**	✓	✓	✓
Explosion-proof "Zone 2" to NEPSI (China) (only for transmitter 7MF4...-.....-.E..)	**E57**	✓	✓	✓
"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (only for transmitter 7MF4...-.....-.[B, D]..-Z + E11)	**E70**	✓	✓	✓
Two coats of lacquer on casing and cover (PU on epoxy)	**G10**	✓	✓	✓

1) When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.

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

Selection and Ordering data	Order code			
Additional data				
Please add "**-Z**" to Order No. and specify Order code(s) and plain text.				
Measuring range to be set Specify in plain text (max. 5 characters): Y01: ... up to ... mbar, bar, kPa, MPa, psi	**Y01**	✓		
Stainless steel tag plate (measuring point description) Max. 16 characters, specify in plain text: Y15:	**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: bar): Y21: mbar, bar, kPa, MPa, psi, ... Note: The following pressure units can be selected: bar, mbar, mm H_2O*), inH_2O*), ftH_2O*), mmHG, inHG, psi, Pa, kPa, MPa, g/cm^2, kg/cm^2, Torr, ATM or % *) ref. temperature 20 °C	**Y21**	✓	✓	✓
Setting of pressure indication in non-pressure units [1] Specify in plain text: Y22: ..... up to ..... l/min, m^3/h, m, USgpm, ... (specification of measuring range in pressure units **"Y01"** is essential, unit with max. 5 characters)	**Y22 + Y01**	✓		
Preset bus address possible between 1 and 126 Specify in plain text: Y25:	**Y25**		✓	✓

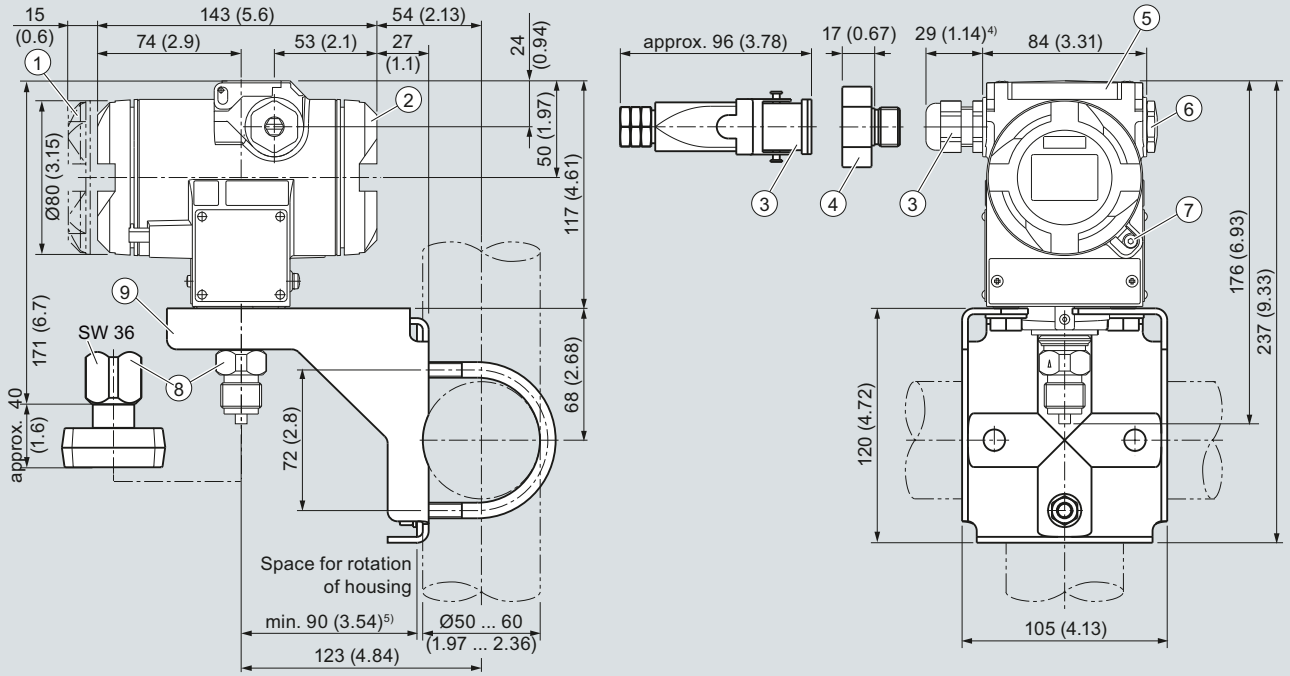
Factory mounting of valve manifolds, see accessories.

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

✓ = available

[1] Preset values can only be changed over SIMATIC PDM.

Dimensional drawings



1. Electronic side, digital display (longer overall length for cover with window)[1]
2. Terminal side[1]
3. Electrical connection: Screwed gland Pg 13,5 (adapter)(Adapter)[2][3], Screwed gland M20 x 1,5 or Screwed gland ½-14 NPT or Han 7D/Han 8D[2][3] plug
4. Harting adapter
5. Protective cover over keys
6. Blanking plug
7. Screw cover - safety bracket (only for type of protection "Explosion-proof enclosure", not shown in the drawing)
8. Process connection: Connection shank G½B or Oval flange
9. Mounting bracket (option)

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

Technical specifications

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

	HART		PROFIBUS PA and FOUNDATION Fieldbus	
Input				
Measured variable	Absolute pressure			
Spans (infinitely adjustable) or nominal measuring range and max. permissible operating pressure	Span (min. ... max.)	Maximum operating pressure	Nominal measuring range	Maximum operating pressure
	8.3 ... 250 mbar a (0.12 ... 3.62 psia)	32 bar a (464 psia)	250 mbar a (3.62 psia)	32 bar a (464 psia)
	43 ... 1300 mbar a (0.62 ... 18.85 psia)	32 bar a (464 psia)	1300 bar a (18.85 psia)	32 bar a (464 psia)
	160 ... 5000 mbar a (2.32 ... 72.52 psia)	32 bar a (464 psia)	5 bar a (72.5 psia)	32 bar a (464 psia)
	1 ... 30 bar a (14.5 ... 435 psia)	160 bar a (2320 psia)	30 bar a (435 psia)	160 bar a (2320 psia)
	5.3 ... 100 bar a (76.9 ... 1450 psia)	160 bar a (2320 psia) (for connection thread M10 and 7/16-20 UNF in the process flanges)	100 bar a (1450 psia)	160 bar a (2320 psia) (for connection thread M10 and 7/16-20 UNF in the process flanges)
Lower measuring limit				
• Measuring cell with silicone oil filling	0 mbar a (0 psia)			
Upper measuring limit	100 % of max. span			
Output				
Output signal	4 ... 20 mA		Digital PROFIBUS PA and FOUNDATION Fieldbus signal	
• Lower limit (infinitely adjustable)	3.55 mA, factory preset to 3.84 mA		-	
• Upper limit (infinitely adjustable)	23 mA, factory preset to 20.5 mA or optionally set to 22.0 mA		-	
Load				
• Without HART	$R_B \leq (U_H - 10.5\ V)/0.023\ A$ in Ω, U_H: Power supply in V		-	
• With HART	R_B = 230 ... 500 Ω (SIMATIC PDM) or R_B = 230 ... 1100 Ω (HART Communicator)		-	
Physical bus	-		IEC 61158-2	
Protection against polarity reversal	Protected against short-circuit and polarity reversal. Each connection against the other with max. supply voltage.			
Electrical damping (step width 0.1 s)	Set to 2 s (0 ... 100 s)			
Measuring accuracy	Acc. to IEC 60770-1			
Reference conditions (All error data refer always refer to the set span)	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 at limit setting incl. hysteresis and reproducibility				
• Linear characteristic			≤ 0.1 %	
- r ≤ 10	≤ 0.1 %			
- 10 < r ≤ 30	≤ 0.2 %			
Long-term stability (temperature change ± 30 °C (± 54 °F))	≤ (0.1 · r) %/year		≤ 0.1 %/year	
Influence of ambient temperature				
• at -10 ... +60 °C (14 ... 140 °F)	≤ (0.1 · r + 0.2) %[1)]		≤ 0.3 %	
• at -40 ... -10 °C and 60 ... 85 °C (-40 ... +14 °F and 140 ... 185 °F)	≤ (0.1 · r + 0.15) %/10 K		≤ 0.25 %/10 K	
Measured Value Resolution	-		$3 \cdot 10^{-5}$ of nominal measuring range	

SITRANS P, DS III for absolute pressure (from the differential pressure series)		
	HART	**PROFIBUS PA and FOUNDATION Fieldbus**
Rated conditions		
Degree of protection (to IEC 60529)	IP65 (optional IP65/IP68)	
Temperature of medium		
• Measuring cell with silicone oil filling	-40 ... +100 °C (-40 ... +212 °F)	
• Measuring cell with inert filling liquid	-20 ... +100 °C (-4 ... +212 °F)	
• In conjunction with dust explosion protection	-20 ... +60 °C (-4 ... +140 °F)	
Ambient conditions		
• Ambient temperature		
- Display readable	-30 ... +85 °C (-22 ... +185 °F)	
• Storage temperature	-50 ... +85 °C (-58 ... +185 °F)	
• Climatic class		
- Condensation	Relative humidity 0 ... 100 % Condensation permissible, suitable for use in the tropics	
• Electromagnetic Compatibility		
- Emitted interference and interference immunity	Acc. to EN 61326 and NAMUR NE 21	
Design		
Weight (without options)	≈ 4.5 kg (≈ 9.9 (lb)	
Enclosure material	Low-copper die-cast aluminum, GD-AlSi12 or stainless steel precision casting, mat. no. 1.4408	
Wetted parts materials		
• Seal diaphragm	Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819, Monel, mat. no. 2.4360, tantalum or gold	
• Process flanges and sealing screw	Stainless steel, mat. no. 1.4408, Hastelloy C4, mat. no. 2.4610 or Monel, mat. no. 2.4360	
• O-Ring	FPM (Viton) or optionally: PTFE, FEP, FEPM and NBR	
Measuring cell filling	Silicone oil or inert filling liquid (maximum value with oxigen measurement pressure 100 bar (1450 psi) at 60 °C (140 °F))	
Process connection	¼-18 NPT and flange connection with mounting thread M10 to DIN 19213 or $^{7}/_{16}$-20 UNF to IEC 61518	
Material of mounting bracket		
• Steel	Sheet-steel, Mat. No. 1.0330, chrome-plated	
• Stainless steel	Sheet stainless steel, mat. no. 1.4301 (SS 304)	
Power supply U_H		Supplied through bus
Terminal voltage on transmitter	10.5 ... 45 V DC 10.5 ... 30 V DC in intrinsically-safe mode	-
Separate 24 V power supply necessary	-	No
Bus voltage		
• Not Ex	-	9 ... 32 V
• With intrinsically-safe operation	-	9 ... 24 V
Current consumption		
• Basic current (max.)	-	12.5 mA
• Start-up current ≤ basic current	-	Yes
• Max. current in event of fault	-	15.5 mA
Fault disconnection electronics (FDE) available	-	Yes

SITRANS P, DS III for absolute pressure (from the differential pressure series)		
	HART	**PROFIBUS PA and FOUNDATION Fieldbus**
Certificates and approvals		
Classification according to PED 97/23/EC	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)	
Explosion protection		
• Intrinsic safety "i"	PTB 11 ATEX 2011 X	
- Marking	Ex II 1/2 G Ex ia/ib IIC T4/T5/T6 Ga/Gb	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +70 °C (-40 ... +158 °F) temperature class T5; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To certified intrinsically-safe circuits with peak values: U_i = 30 V, I_i = 100 mA, P_i = 750 mW; R_i = 300 Ω	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_i = 0.4 mH, C_i = 6 nF	L_i = 7 µH, C_i = 1.1 nF
• Explosion-proof "d"	PTB 99 ATEX 1160	
- Marking	Ex II 1/2 G Ex d IIC T4/T6 Gb	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To circuits with values: U_H = 10.5 ... 45 V DC	To circuits with values: U_H = 9 ... 32 V DC
• Dust explosion protection for zone 20	PTB 01 ATEX 2055	
- Marking	Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F)	
- Max. surface temperature	120 °C (248 °F)	
- Connection	To certified intrinsically-safe circuits with peak values: U_i = 30 V, I_i = 100 mA, P_i = 750 mW, R_i = 300 Ω	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_i = 0.4 mH, C_i = 6 nF	L_i = 7 µH, C_i = 1.1 nF
• Dust explosion protection for zone 21/22	PTB 01 ATEX 2055	
- Marking	Ex II 2 D IP65 T 120 °C	
- Connection	To circuits with values: U_H = 10.5 ... 45 V DC; P_{max} = 1.2 W	To circuits with values: U_H = 9 ... 32 V DC; P_{max} = 1 W
• Type of protection "n" (zone 2)	PTB 11 ATEX 2011 X	
- Marking	Ex II 2/3 G Ex nA II T4/T5/T6 Gc Ex II 2/3 G Ex ic IIC T4/T5/T6 Gc	
- Connection (Ex nA)	U_m = 45 V	U_m = 32 V
- Connection (Ex ic)	To circuits with values: U_i = 45 V	FISCO supply unit ic: U_o = 17.5 V, I_o = 570 mA Linear barrier: U_o = 32 V, I_o = 132 mA, P_o = 1 W
- Effective internal inductance/capacitance	L_i = 0.4 mH, C_i = 6 nF	L_i = 7 µH, C_i = 1.1 nF
• Explosion protection acc. to FM	Certificate of Compliance 3008490	
- Identification (XP/DIP) or (IS); (NI)	CL I, DIV 1, GP ABCD 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	
• Explosion protection to CSA	Certificate of Compliance 1153651	
- Identification (XP/DIP) or (IS)	CL I, DIV 1, GP ABCD T4...T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4...T6; CL I, DIV 2, GP ABCD T4...T6; CL II, DIV 2, GP FG; CL III	

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

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

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

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

Selection and Ordering data		Order No.
Pressure transmitters for absolute pressure from differential pressure series, SITRANS P DS III with HART		**7MF4333-**
Measuring cell filling	**Measuring cell cleaning**	
Silicone oil	normal	1
Inert liquid[1]	grease-free to cleanliness level 2	3
Measuring span (min. ... max.)		
8.3 ... 250 mbar a	(0.12 ... 3.62 psia)	D
43 ... 1300 mbar a	(0.62 ... 18.85 psia)	F
0.16 ... 5 bar a	(2.32 ... 72.5 psia)	G
1 ... 30 bar a	(14.5 ... 435 psia)	H
5.3 ... 100 bar a	(76.9 ... 1450 psia)	K E
Wetted parts materials		
Seal diaphragm	Parts of measuring cell	
Stainless steel	Stainless steel	A
Hastelloy	Stainless steel	B
Hastelloy	Hastelloy	C
Tantalum	Tantalum	E
Monel	Monel	H
Gold	Gold	L
Version for diaphragm seal[2) 3) 4) 5) 6)]		Y
Process connection		
Female thread ¼-18 NPT with flange connection		
• Sealing screw opposite process connection		
- Mounting thread $^{7}/_{16}$-20 UNF to EN 61518		2
- Mounting thread M10 to DIN 19213 (only for replacement requirement)		0
• Vent on side of process flange [7)]		
- Mounting thread $^{7}/_{16}$-20 UNF to EN 61518		6
- Mounting thread M10 to DIN 19213 (only for replacement requirement)		4
Non-wetted parts materials		
process flange screws	Electronics housing	
Stainless steel	Die-cast aluminum	2
Stainless steel	Stainless steel precision casting[8)]	3
Version		
• Standard versions		1
• International version, English label inscriptions, documentation in 5 languages on CD (no order code selectable)		2
Explosion protection		
• None		A
• With ATEX, Type of protection:		
- "Intrinsic safety (Ex ia)"		B
- "Explosion-proof (Ex d)"[9)]		D
- "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d)" [10)]		P
- "Ex nA/ic (Zone 2)"[11)]		E
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia+ Ex d + Zone 1D/2D)"[10)]		R
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX)		S
• With FM + CSA, Type of protection:		
- "Intrinsic Safe und Explosion Proof (is + xp)" [9)]		N C
Electrical connection/cable entry		
• Screwed gland Pg 13.5[12)]		A
• Screwed gland M20 x 1.5		B
• Screwed gland ½-14 NPT		C
• Han 7D plug (plastic housing) incl. mating connector[12)]		D
• M12 connectors (stainless steel)[12) 13)]		F

Selection and Ordering data	Order No.
Pressure transmitters for absolute pressure from differential pressure series, SITRANS P DS III with HART	**7MF4333-**
Display	
• Without display	0
• Without visible display (display concealed, setting: mA) ▶	1
• With visible display	6
• with customer-specific display (setting as specified, Order Code "Y21" or "Y22" required)	7

▶ Available ex stock

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

Included in delivery of the device:
- Brief instructions (Leporello)
- CD-ROM with detailed documentation
- Sealing plug(s) or sealing screw(s) for the process flanges(s)

1) For oxygen applications, add Order code E10.

2) Version 7MF4333-1DY... only up to max. span 200 mbar a (2.9 psia).

3) When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.

4) If the acceptance test certificate 3.1.is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.

5) The diaphragm seal is to be specified with a separate order number and must be included wiht the tranmitter order number, for example 7MF433.-..Y..-.... und 7MF4900-1...-.B

6) The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.

7) Not for span "5.3 ... 100 bar a (76.9 ... 1450 psia)". Position of the top vent valve in the process flange (see dimensional drawing).

8) Not in conjunction with Electrical connection "Screwed gland Pg 13.5" and "Han7D plug".

9) Without cable gland, with blanking plug

10) With enclosed cable gland Ex ia and blanking plug

11) Configurations with HAN and M12 connectors are only available in Ex ic.

12) Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".

13) M12 delivered without cable socket

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

Selection and Ordering data		Order No.
Pressure transmitter for absolute pressure from differential pressure series		
SITRANS P DS III with PROFIBUS PA (PA)		**7MF4334-**
SITRANS P DS III with FOUNDATION Fieldbus (FF)		**7MF4335-**
Measuring cell filling	**Measuring cell cleaning**	
Silicone oil	normal	1
Inert liquid[1]	grease-free to cleanliness level 2	3
Nominal measuring range		
250 mbar a	(3.62 psia)	D
1300 mbar a	(18.85 psia)	F
5 bar a	(72.5 psia)	G
30 bar a	(435 psia)	H
100 bar a	(1450 psia)	K E
Wetted parts materials		
Seal diaphragm	Parts of measuring cell	
Stainless steel	Stainless steel	A
Hastelloy	Stainless steel	B
Hastelloy	Hastelloy	C
Tantalum	Tantalum	E
Monel	Monel	H
Gold	Gold	L
Version as diaphragm seal [2) 3) 4) 5) 6)]		Y
Process connection		
Female thread ¼-18 NPT with flange connection		
• Sealing screw opposite process connection		
- Mounting thread $^{7}/_{16}$-20 UNF to IEC 61518		2
- Mounting thread M10 to DIN 19213 (only for replacement requirement)		0
• Vent on side of process flange [7)]		
- Mounting thread $^{7}/_{16}$-20 UNF to IEC 61518		6
- Mounting thread M10 to DIN 19213 (only for replacement requirement)		4
Non-wetted parts materials		
process flange screws	Electronics housing	
Stainless steel	Die-cast aluminum	2
Stainless steel	Stainless steel precision casting	3
Version		
• Standard versions		1
• International version, English label inscriptions, documentation in 5 languages on CD (no order code selectable)		2
Explosion protection		
• None		A
• With ATEX, Type of protection:		
- "Intrinsic safety (Ex ia)"		B
- "Explosion-proof (Ex d)"[8)]		D
- "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d)" [9)]		P
- "Ex nA/ic (Zone 2)"[10)]		E
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia + Ex d + Zone 1D/2D)"[9)] (not for DS III FF)		R
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX)		S
• With FM + CSA, Type of protection:		
- "Intrinsic Safe und Explosion Proof (is + xp)" [8)]		N C
Electrical connection/cable entry		
• Screwed gland M20 x 1.5		B
• Screwed gland ½-14 NPT		C
• M12 connectors (stainless steel)[11) 12) 13)]		F

Selection and Ordering data	Order No.
Pressure transmitter for absolute pressure from differential pressure series	
SITRANS P DS III with PROFIBUS PA (PA)	**7MF4334-**
SITRANS P DS III with FOUNDATION Fieldbus (FF)	**7MF4335-**
Display	
• Without display	0
• Without visible display (display concealed, setting: mA) ►	1
• With visible display	6
• With customer-specific display (setting as specified, Order Code "Y21" required)	7

Included in delivery of the device:
- Brief instructions (Leporello)
- CD-ROM with detailed documentation
- Sealing plug(s) or sealing screw(s) for the process flanges(s)

1) For oxygen application, add Order code E10.

2) Version 7MF4334-1DY... only up to max. span 200 mbar a (80 inH_2O a).

3) When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.

4) If the acceptance test certificate 3.1.is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.

5) The diaphragm seal is to be specified with a separate order number and must be included wiht the tranmitter order number, for example 7MF433.-..Y..-.... und 7MF4900-1...-.B

6) The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.

7) Not for nominal measuring range 100 bar a (1450 psia). Position of the top vent valve in the process flange (see dimensional drawing).

8) Without cable gland, with blanking plug

9) With enclosed cable gland Ex ia and blanking plug

10) Configurations with HAN and M12 connectors are only available in Ex ic.

11) M12 delivered without cable socket

12) Not available with protection type „Ex d“ (options D, P, N and R)

13) Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".

Selection and Ordering data	Order code	HART	PA	FF
Further designs Add "**-Z**" to Order No. and specify Order Code.				
Pressure transmitter with mounting bracket (2 shackles, 4 nuts, 4 U-plates, 1 angle) made of:				
• Steel	**A01**	✓	✓	✓
• Stainless steel	**A02**	✓	✓	✓
O-rings for process flanges (instead of FPM (Viton))				
• PTFE (Teflon)	**A20**	✓	✓	✓
• FEP (with silicone core, approved for food)	**A21**	✓	✓	✓
• FFPM (Kalrez, compound 4079)	**A22**	✓	✓	✓
• NBR (Buna N)	**A23**	✓	✓	✓
plug				
• Han 7D (metal, gray)	**A30**	✓		
• Han 8U (instead of Han 7D)	**A31**	✓		
• Angled	**A32**	✓		
• Han 8D (metal, gray)	**A33**	✓		
Sealing screw ¼-18 NPT, with valve in mat. of process flanges	**A40**	✓	✓	✓
Cable sockets for M12 connectors (stainless steel)	**A50**	✓	✓	✓
Rating plate inscription (instead of German)				
• English	**B11**	✓	✓	✓
• French	**B12**	✓	✓	✓
• Spanish	**B13**	✓	✓	✓
• Italian	**B14**	✓	✓	✓
English rating plate Pressure units in inH_20 and/or psi	**B21**	✓	✓	✓
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2[1]	**C11**	✓	✓	✓
Inspection certificate[2] Acc. to EN 10204-3.1	**C12**	✓	✓	✓
Factory certificate Acc. to EN 10204-2.2	**C14**	✓	✓	✓
"Functional safety (SIL2)" certificate to IEC 61508	**C20**	✓		
"Functional safety" certificate (PROFIsafe) and PROFIsafe protocol	**C21**		✓	
"Functional safety (SIL2/3)" certificate to IEC 61508	**C23**	✓		
Device passport Russia (For price request please contact the technical support www.siemens.com/automation/support-request)	**C99**	✓	✓	✓
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**	✓	✓	✓
Degree of protection IP65/IP68 (only for M20 x 1.5 and ½-14 NPT)	**D12**	✓	✓	✓
Supplied with oval flange (1 item), PTFE packing and screws in thread of process flange	**D37**	✓	✓	✓
Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety" (transmitter 7MF4...-.....-.B.. Ex ia)")	**E01**	✓	✓	✓
Oxygen application (In the case of oxygen measurement and inert liquid max. 100 bar (1450 psi) at 60°C (140 °F))	**E10**	✓	✓	✓
Export approval Korea	**E11**	✓	✓	✓

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

1) When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.

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

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

Selection and Ordering data	Order code	HART	PA	FF
Additional data				
Please add "**-Z**" to Order No. and specify Order code(s) and plain text.				
Measuring range to be set Specify in plain text (max. 5 characters): Y01: ... up to ... mbar, bar, kPa, MPa, psi	**Y01**	✓		
Stainless steel tag plate (measuring point description) Max. 16 characters, specify in plain text: Y15:	**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: bar): Y21: mbar, bar, kPa, MPa, psi, ... Note: The following pressure units can be selected: bar, mbar, mm H_2O*), inH_2O*), ftH_2O*), mmHG, inHG, psi, Pa, kPa, MPa, g/cm^2, kg/cm^2, Torr, ATM or % *) ref. temperature 20 °C	**Y21**	✓	✓	✓
Setting of pressure indication in non-pressure units[1] Specify in plain text: Y22: ..... up to ..... l/min, m^3/h, m, USgpm, ... (specification of measuring range in pressure units **"Y01"** is essential, unit with max. 5 characters)	**Y22 + Y01**	✓		
Preset bus address possible between 1 and 126 Specify in plain text: Y25:	**Y25**		✓	✓

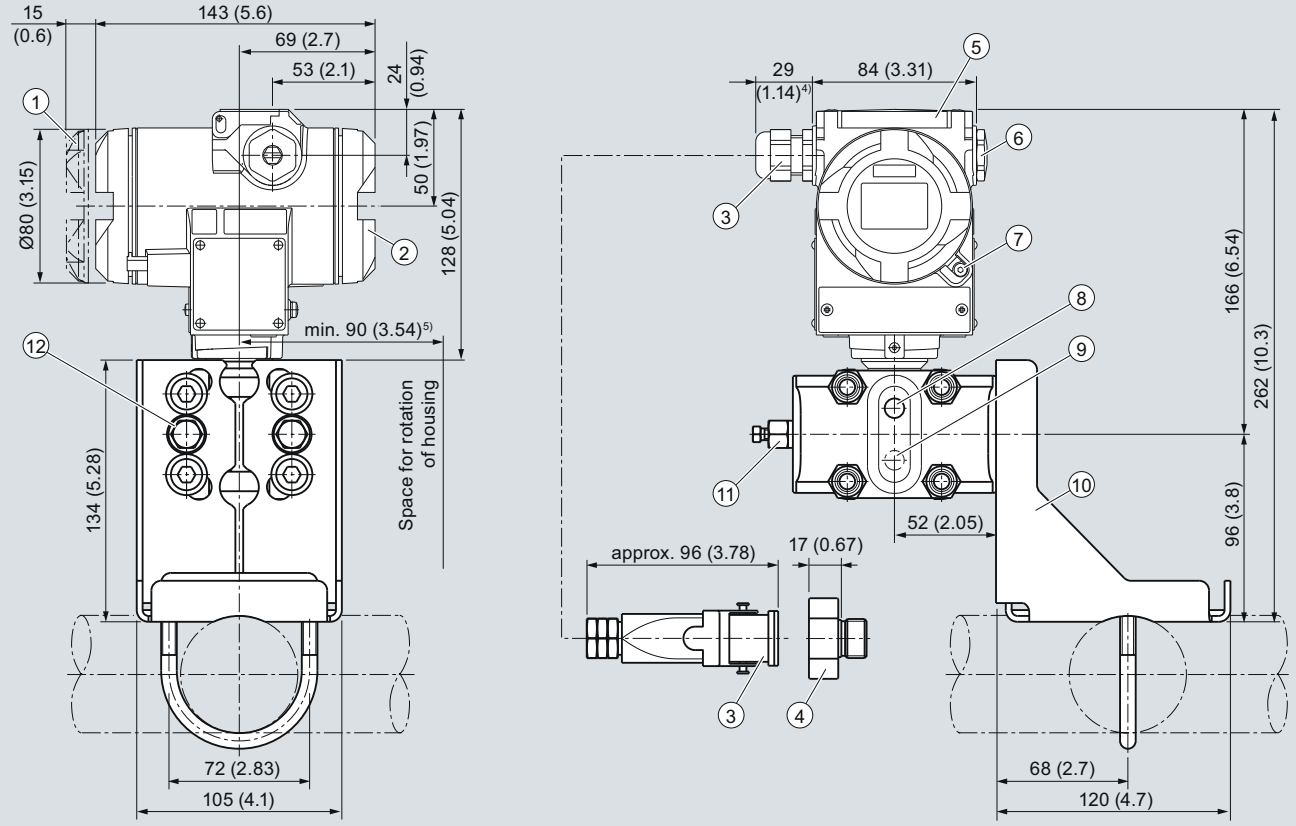
Factory mounting of valve manifolds, see accessories.

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

✓ = available

[1] Preset values can only be changed over SIMATIC PDM.

Dimensional drawings



1. Electronic side, digital display (longer overall length for cover with window)[1]
2. Terminal side[1]
3. Electrical connection: Screwed gland Pg 13,5 (adapter)(Adapter)[2] [3], Screwed gland M20 x 1,5 or Screwed gland ½-14 NPT or Han 7D/ Han 8D[2] [3] plug
4. Harting adapter
5. Protective cover over keys
6. Blanking plug
7. Screw cover - safety bracket (only for type of protection "Explosion-proof enclosure", not shown in the drawing)
8. Lateral venting for liquid measurement (Standard)
9. Lateral venting for gas measurement (suffix H02)
10. Mounting bracket (option)
11. Sealing screw with valve (option)
12. Process connection: ¼-18 NPT (IEC 61518)

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

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

Technical specifications

SITRANS P, DS III for differential pressure and flow	HART		PROFIBUS PA and FOUNDATION Fieldbus	
Input				
Measured variable	Differential pressure and flow			
Spans (infinitely adjustable) or nominal measuring range and max. permissible operating pressure	Span (min. ... max.)	Maximum operating pressure	Nominal measuring range	Maximum operating pressure
	1 ... 20 mbar (0.4 ... 8 inH_2O)	32 bar (464 psi)	20 mbar (8 inH_2O)	32 bar (464 psi)
	1 ... 60 mbar (0.4 ... 24 inH_2O)	160 bar (2320 psi)	60 mbar (24 inH_2O)	160 bar (2320 psi)
	2.5 ... 250 mbar (1 ... 100 inH_2O)		250 mbar (100 inH_2O)	
	6 ... 600 mbar (2.4 ... 240 inH_2O)		600 mbar (240 inH_2O)	
	16 ... 1600 mbar (6.4 ... 642 inH_2O)		1600 mbar (642 inH_2O)	
	50 ... 5000 mbar (20 ... 2000 inH_2O)		5 bar (2000 inH_2O)	
	0.3 ... 30 bar (4.35 ... 435 psi)		30 bar (435 psi)	
	2.5 ... 250 mbar (1 ... 100 inH_2O)	420 bar (6091 psi)	250 mbar (100 inH_2O)	420 bar (6091 psi)
	6 ... 600 mbar (2.4 ... 240 inH_2O)		600 mbar (240 inH_2O)	
	16 ... 1600 mbar (6.4 ... 642 inH_2O)		1600 mbar (642 inH_2O)	
	50 ... 5000 mbar (20 ... 2000 inH_2O)		5 bar (2000 inH_2O)	
	0.3 ... 30 bar (4.35 ... 435 psi)		30 bar (435 psi)	
Lower measuring limit				
• Measuring cell with silicone oil filling	-100 % of max. span (-33 % with 30 bar (435 psi) measuring cell or 30 mbar a (0.44 psia))			
Upper measuring limit	100 % of max. span (for oxygen version and inert filling liquid; max. 120 bar (1740 psi))			
Output				
Output signal	4 ... 20 mA		Digital PROFIBUS PA and FOUNDATION Fieldbus signal	
• Lower limit (infinitely adjustable)	3.55 mA, factory preset to 3.84 mA		-	
• Upper limit (infinitely adjustable)	23 mA, factory preset to 20.5 mA or optionally set to 22.0 mA		-	
Load				
• Without HART	$R_B \leq (U_H - 10.5\ V)/0.023\ A$ in Ω, U_H: Power supply in V		-	
• With HART	R_B = 230 ... 500 Ω (SIMATIC PDM) or R_B = 230 ... 1100 Ω (HART Communicator)		-	
Physical bus	-		IEC 61158-2	
Protection against polarity reversal	Protected against short-circuit and polarity reversal. Each connection against the other with max. supply voltage.			
Electrical damping (step width 0.1 s)	Set to 2 s (0 ... 100 s)			
Measuring accuracy	Acc. to IEC 60770-1			
Reference conditions (All error data refer always refer to the set span)	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 at limit setting incl. hysteresis and reproducibility				
• 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) %			
• Square-rooted characteristic (flow > 50 %)			≤ 0.1 %	
- r ≤ 10	≤ 0.1 %			
- 10 < r ≤ 30	≤ 0.2 %			

SITRANS P, DS III for differential pressure and flow		
	HART	**PROFIBUS PA and FOUNDATION Fieldbus**
• Square-rooted characteristic (flow > 25 ... 50 %)		≤ 0.2
- r ≤ 10	≤ 0.2 %	
- 10 < r ≤ 30	≤ 0.4 %	
Long-term stability (temperature change ± 30 °C (± 54 °F))	≤ (0.25 · r)% every 5 years static pressure max. 70 bar (1015 psi)	≤ 0.25 % every 5 years static pressure max. 70 bar (1015 psi)
• 20 mbar (0.29 psi)-measuring cell	≤ (0.2 · r) per year	≤ 0.2 per year
• 250, 600, 1600 and 5000 mbar (0.29, 0.87, 2.32 and 7.25 psi) -measuring cell	≤ (0.125 · r) per 5 years	≤ 0.125 per 5 years
Influence of ambient temperature		
• at -10 ... +60 °C (14 ... 140 °F)	≤ (0.08 · r + 0.1) %[1)]	≤ 0.3 %
• at -40 ... -10 °C and 60 ... 85 °C (-40 ... +14 °F and 140 ... 185 °F)	≤ (0.1 · r + 0.15) %/10 K (Twice the value with 20-mbar (0.29 psi) measuring cell)	≤ 0.25 %/10 K
Influence of static pressure		
• on the zero point (PKN)	≤ (0.15 · r)% per 70 bar (1015 psi)	≤ 0.15 % per 70 bar (1015 psi)
- 20 mbar (0.29 psi)-measuring cell	≤ (0.15 · r)% per 32 bar (464 psi)	≤ 0.15 % per 32 bar (464 psi)
• on the span (PKS)	≤ 0.14 % per 70 bar (1015 psi)	-
- 20 mbar (0.29 psi)-measuring cell	≤ 0.2 % per 32 bar (464 psi)	-
Measured Value Resolution	-	$3 \cdot 10^{-5}$ of nominal measuring range
Rated conditions		
Degree of protection (to EN 60529)	IP65 (optional IP65/IP68)	
Temperature of medium		
• Measuring cell with silicone oil filling	-40 ... +100 °C (-40 ... +212 °F)	
• Measuring cell with inert filling liquid	-20 ... +100 °C (-4 ... +212 °F)	
• In conjunction with dust explosion protection	-20 ... +60 °C (-4 ... +140 °F)	
Ambient conditions		
• Ambient temperature		
- Display readable	-30 ... +85 °C (-22 ... +185 °F)	
• Storage temperature	-50 ... +85 °C (-58 ... +185 °F)	
• Climatic class		
- Condensation	Relative humidity 0 ... 100 % Condensation permissible, suitable for use in the tropics	
• Electromagnetic Compatibility		
- Emitted interference and interference immunity	Acc. to EN 61326 and NAMUR NE 21	
Design		
Weight (without options)	≈ 4.5 kg (≈ 9.9 (lb)	
Enclosure material	Low-copper die-cast aluminum, GD-AlSi12 or stainless steel precision casting, mat. no. 1.4408	
Wetted parts materials		
• Seal diaphragm	Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819, Monel, mat. no. 2.4360, tantalum or gold	
Measuring cell filling	Silicone oil or inert filling liquid (maximum value with oxygen measurement pressure 100 bar (1450 psi) at 60 °C (140 °F))	
Process connection	Female thread ¼-18 NPT and flange connection with mounting thread M10 to DIN 19213 or $^{7}/_{16}$-20 UNF to IEC 61518	
Material of mounting bracket		
• Steel	Sheet-steel, Mat. No. 1.0330, chrome-plated	
• Stainless steel	Sheet stainless steel, mat. no. 1.4301 (SS 304)	
Power supply U_H		Supplied through bus
Terminal voltage on transmitter	10.5 ... 45 V DC 10.5 ... 30 V DC in intrinsically-safe mode	-
Separate 24 V power supply necessary	-	No
Bus voltage		
• Not Ex	-	9 ... 32 V
• With intrinsically-safe operation	-	9 ... 24 V

SITRANS P, DS III for differential pressure and flow		
	HART	**PROFIBUS PA and FOUNDATION Fieldbus**
Power supply U_H (Continuation)		
Current consumption		
• Basic current (max.)	-	12.5 mA
• Start-up current ≤ basic current	-	Yes
• Max. current in event of fault	-	15.5 mA
Fault disconnection electronics (FDE) available	-	Yes
Certificates and approvals		
Classification according to PED 97/23/EC		
PN 32/160 (MAWP 464/2320 psi)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)	
PN 420 (MAWP 6092 psi)	For gases of fluid group 1 and liquids of fluid group 1; complies with basic safety requirements of Article 3, paragraph 1 (appendix 1); assigned to category III, conformity evaluation module H by the TÜV Nord.	
Explosion protection		
• Intrinsic safety "i"	PTB 11 ATEX 2011 X	
- Marking	Ex II 1/2 G Ex ia/ib IIC T4/T5/T6 Ga/Gb	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +70 °C (-40 ... +158 °F) temperature class T5; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To certified intrinsically-safe circuits with peak values: U_i = 30 V, I_i = 100 mA, P_i = 750 mW; R_i = 300 Ω	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_i = 0.4 mH, C_i = 6 nF	L_i = 7 µH, C_i = 1.1 nF
• Explosion-proof "d"	PTB 99 ATEX 1160	
- Marking	Ex II 1/2 G Ex d IIC T4/T6 Gb	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To circuits with values: U_H = 10.5 ... 45 V DC	To circuits with values: U_H = 9 ... 32 V DC
• Dust explosion protection for zone 20	PTB 01 ATEX 2055	
- Marking	Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F)	
- Max. surface temperature	120 °C (248 °F)	
- Connection	To certified intrinsically-safe circuits with peak values: U_i = 30 V, I_i = 100 mA, P_i = 750 mW, R_i = 300 Ω	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 W
- Effective internal inductance/capacitance	L_i = 0.4 mH, C_i = 6 nF	L_i = 7 µH, C_i = 1.1 nF
• Dust explosion protection for zone 21/22	PTB 01 ATEX 2055	
- Marking	Ex II 2 D IP65 T 120 °C	
- Connection	To circuits with values: U_H = 10.5 ... 45 V DC; P_{max} = 1.2 W	To circuits with values: U_H = 9 ... 32 V DC; P_{max} = 1 W
• Type of protection "n" (zone 2)	PTB 11 ATEX 2011 X	
- Marking	Ex II 2/3 G Ex nA II T4/T5/T6 Gc Ex II 2/3 G Ex ic IIC T4/T5/T6 Gc	
- Connection (Ex nA)	U_m = 45 V	U_m = 32 V
- Connection (Ex ic)	To circuits with values: U_i = 45 V	FISCO supply unit ic: U_o = 17.5 V, I_o = 570 mA Linear barrier: U_o = 32 V, I_o = 132 mA, P_o = 1 W
- Effective internal inductance/capacitance	L_i = 0.4 mH, C_i = 6 nF	L_i = 7 µH, C_i = 1,1 nF
• Explosion protection acc. to FM	Certificate of Compliance 3008490	
- Identification (XP/DIP) or (IS); (NI)	CL I, DIV 1, GP ABCD 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	
• Explosion protection to CSA	Certificate of Compliance 1153651	
- Identification (XP/DIP) or (IS)	CL I, DIV 1, GP ABCD T4...T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4...T6; CL I, DIV 2, GP ABCD T4...T6; CL II, DIV 2, GP FG; CL III	

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

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

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

SITRANS P DS III for differential pressure and flow

Selection and Ordering data			Order No.
SITRANS P DS III with HART pressure transmitters for differential pressure and flow, PN 32/160 (MAWP 464/2320 psi)			7MF4433 -
Measuring cell filling	**Measuring cell cleaning**		
Silicone oil	normal	▶	1
Inert liquid[1]	grease-free to cleanliness level 2		3
Measuring span (min. ... max.)			
PN 32 (MAWP 464 psi)			
1 ... 20 mbar[2]	(0.4015 ... 8.03 inH_2O)	▶	B
PN 160 (MAWP 2320 psi)			
1 ... 60 mbar	(0.4015 ... 24.09 inH_2O)	▶	C
2,5 ... 250 mbar	(1.004 ... 100.4 inH_2O)	▶	D
6 ... 600 mbar	(2.409 ... 240.9 inH_2O)	▶	E
16 ... 1600 mbar	(6.424 ... 642.4 inH_2O)	▶	F
50 ... 5000 mbar	(20.08 ... 2008 inH_2O)	▶	G
0,3 ... 30 bar	(4.35 ... 435 psi)	▶	H
Wetted parts materials			
(stainless steel process flanges)			
Seal diaphragm	Parts of measuring cell		
Stainless steel	Stainless steel	▶	A
Hastelloy	Stainless steel		B
Hastelloy	Hastelloy		C
Tantalum[3]	Tantalum		E
Monel[3]	Monel		H
Gold[3]	Gold		L
Version for diaphragm seal[4] [5] [6] [7]			Y
Process connection			
Female thread ¼-18 NPT with flange connection			
• Sealing screw opposite process connection			
- Mounting thread $^7/_{16}$-20 UNF to IEC 61518		▶	2
- Mounting thread M10 to DIN 19213 (only for replacement requirement)			0
• Vent on side of process flange [2]			
- Mounting thread $^7/_{16}$-20 UNF to IEC 61518			6
- Mounting thread M10 to DIN 19213 (only for replacement requirement)			4
Non-wetted parts materials			
process flange screws	Electronics housing		
Stainless steel	Die-cast aluminum	▶	2
Stainless steel	Stainless steel precision casting[8]		3
Version			
• Standard versions			1
• International version, English label inscriptions, documentation in 5 languages on CD (no order code selectable)		▶	2
Explosion protection			
• None			A
• With ATEX, Type of protection:			
- "Intrinsic safety (Ex ia)"			B
- "Explosion-proof (Ex d)"[9]			D
- "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d)"[10]			P
- "Ex nA/ic (Zone 2)"[11]			E
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia+ Ex d + Zone 1D/2D)"[10]		▶	R
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX)			S
• With FM + CSA, Type of protection:			
- "Intrinsic Safe und Explosion Proof (is + xp)"[9]			N C

Selection and Ordering data		Order No.
SITRANS P DS III with HART pressure transmitters for differential pressure and flow, PN 32/160 (MAWP 464/2320 psi)		7MF4433 -
Electrical connection/cable entry		
• Screwed gland Pg 13.5[12]		A
• Screwed gland M20 x 1.5	▶	B
• Screwed gland ½-14 NPT		C
• Han 7D plug (plastic housing) incl. mating connector[12] [13]		D
• M12 connectors (stainless steel)[12] [14]		F
Display		
• Without display		0
• Without visible display (display concealed, setting: mA)	▶	1
• With visible display		6
• with customer-specific display (setting as specified, Order Code "Y21" or "Y22" required)		7

▶ Available ex stock

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

Included in delivery of the device:
- Brief instructions (Leporello)
- CD-ROM with detailed documentation
- Sealing plug(s) or sealing screw(s) for the process flanges(s)

1) For oxygen application, add Order code E10.

2) Not suitable for connection of remote seal. Position of the top vent valve in the process flange (see dimensional drawing).

3) Not in conjunction with max. span 20 and 60 mbar (8.03 und 24.09 inH_2O))

4) When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.

5) If the acceptance test certificate 3.1.is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.

6) The diaphragm seal is to be specified with a separate order number and must be included wiht the tranmitter order number, for example 7MF443.-..Y..-..... und 7MF4900-1...-.B

7) The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.

8) Not in conjunction with Electrical connection "Screwed gland Pg 13.5" and "Han7D plug".

9) Without cable gland, with blanking plug

10) With enclosed cable gland Ex ia and blanking plug

11) Configurations with HAN and M12 connectors are only available in Ex ic.

12) Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".

13) Permissible only for crimp-contact of conductor cross-section 1 mm^2

14) M12 delivered without cable socket. Not available with protection type "Explosion-proof".

Selection and Ordering data		Order No.
Pressure transmitters for differential pressure and flow PN 32/160 (MAWP 464/2320 psi)		
SITRANS P DS III with PROFIBUS PA (PA)		7MF4434-
SITRANS P DS III with FOUNDATION Fieldbus (FF)		7MF4435-
		■■■■■-■■■■
Measuring cell filling	**Measuring cell cleaning**	
Silicone oil	normal	1
Inert liquid[1]	grease-free to cleanliness level 2	3
Nominal measuring range		
PN 32 (MAWP 464 psi)		
20 mbar [2]	(8.03 inH_2O)	B
PN 160 (MAWP 2320 psi)		
60 mbar	(24.09 inH_2O)	C
250 mbar	(100.4 inH_2O)	D
600 mbar	(240.9 inH_2O)	E
1600 mbar	(642.4 inH_2O)	F
5 bar	(2008 inH_2O)	G
30 bar	(435 psi)	H
Wetted parts materials		
(stainless steel process flanges)		
Seal diaphragm	Parts of measuring cell	
Stainless steel	Stainless steel	A
Hastelloy	Stainless steel	B
Hastelloy	Hastelloy	C
Tantalum [3]	Tantalum	E
Monel[3]	Monel	H
Gold [3]	Gold	L
Version as diaphragm seal [4] [5] [6] [7]		Y
Process connection		
Female thread ¼-18 NPT with flange connection		
• Sealing screw opposite process connection		
- Mounting thread $^7/_{16}$-20 UNF to IEC 61518 ▶		2
- Mounting thread M10 to DIN 19213 (only for replacement requirement)		0
• Venting on side of process flanges[2]		
- Mounting thread $^7/_{16}$-20 UNF to IEC 61518		6
- Mounting thread M10 to DIN 19213 (only for replacement requirement)		4
Non-wetted parts materials		
process flange screws	Electronics housing	
Stainless steel	Die-cast aluminum	2
Stainless steel	Stainless steel precision casting	3
Version		
• Standard versions		1
• International version, English label inscriptions, documentation in 5 languages on CD (no order code selectable) ▶		2
Explosion protection		
• None		A
• With ATEX, Type of protection:		
- "Intrinsic safety (Ex ia)"		B
- "Explosion-proof (Ex d)"[8]		D
- "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d)"[9]		P
- "Ex nA/ic (Zone 2)" [10]		E
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia + Ex d + Zone 1D/2D)"[9] (not for DS III FF)		R
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX)		S
• With FM + CSA, Type of protection:		
- "Intrinsic Safe und Explosion Proof (is + xp)"[8]		NC

Selection and Ordering data	Order No.
Pressure transmitters for differential pressure and flow PN 32/160 (MAWP 464/2320 psi)	
SITRANS P DS III with PROFIBUS PA (PA)	7MF4434-
SITRANS P DS III with FOUNDATION Fieldbus (FF)	7MF4435-
	■■■■■-■■■■
Electrical connection/cable entry	
• Screwed gland M20 x 1.5	B
• Screwed gland ½-14 NPT	C
• M12 connectors (stainless steel)[11] [12] [13]	F
Display	
• Without display	0
• Without visible display (display concealed, setting: mA) ▶	1
• With visible display	6
• With customer-specific display (setting as specified, Order Code "Y21" required)	7

▶ Available ex stock

Included in delivery of the device:
- Brief instructions (Leporello)
- CD-ROM with detailed documentation
- Sealing plug(s) or sealing screw(s) for the process flanges(s)

[1] For oxygen application, add Order code E10.

[2] Not suitable for connection of remote seal. Position of the top vent valve in the process flange (see dimensional drawing).

[3] Not in conjunction with max. span 20 and 60 mbar (8.03 und 24.09 inH_2O))

[4] When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.

[5] If the acceptance test certificate 3.1.is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.

[6] The diaphragm seal is to be specified with a separate order number and must be included wiht the tranmitter order number, for example 7MF443.-..Y..-.... und 7MF4900-1...-.B

[7] The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.

[8] Without cable gland, with blanking plug.

[9] With enclosed cable gland Ex ia and blanking plug.

[10] Configurations with HAN and M12 connectors are only available in Ex ic.

[11] M12 delivered without cable socket

[12] Not available with protection type „Ex d" (options D, P, N and R)

[13] Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".

SITRANS P DS III for differential pressure and flow

Selection and Ordering data	Order code	HART	PA	FF
Further designs Add "**-Z**" to Order No. and specify Order Code.				
Pressure transmitter with mounting bracket (2 shackles, 4 nuts, 4 U-plates, 1 angle) made of:				
• Steel	**A01**	✓	✓	✓
• Stainless steel	**A02**	✓	✓	✓
O-rings for process flanges (instead of FPM (Viton))				
• PTFE (Teflon)	**A20**	✓	✓	✓
• FEP (with silicone core, approved for food)	**A21**	✓	✓	✓
• FFPM (Kalrez, compound 4079)	**A22**	✓	✓	✓
• NBR (Buna N)	**A23**	✓	✓	✓
plug				
• Han 7D (metal, gray)	**A30**	✓		
• Han 8U (instead of Han 7D)	**A31**	✓		
• Angled	**A32**	✓		
• Han 8D (metal, gray)	**A33**	✓		
Sealing screws (2 unit(s)) ¼-18 NPT, with valve in mat. of process flanges	**A40**	✓	✓	✓
Cable sockets for M12 connectors (stainless steel)	**A50**	✓	✓	✓
Rating plate inscription (instead of German)				
• English	**B11**	✓	✓	✓
• French	**B12**	✓	✓	✓
• Spanish	**B13**	✓	✓	✓
• Italian	**B14**	✓	✓	✓
English rating plate Pressure units in inH_2O and/or psi	**B21**	✓	✓	✓
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2[1]	**C11**	✓	✓	✓
Inspection certificate[2] to EN 10204-3.1	**C12**	✓	✓	✓
Factory certificate to EN 10204-2.2	**C14**	✓	✓	✓
"Functional safety (SIL2)" certificate to IEC 61508	**C20**	✓		
"Functional safety" certificate (PROFIsafe) and PROFIsafe protocol	**C21**		✓	
"Functional safety (SIL2/3)" certificate to IEC 61508	**C23**	✓		
Device passport Russia (For price request please contact the technical support www.siemens.com/automation/support-request)	**C99**	✓	✓	✓
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**	✓	✓	✓
Degree of protection IP65/IP68 (only for M20 x 1.5 and ½-14 NPT)	**D12**	✓	✓	✓
Process flange screws made of Monel (max. nominal pressure PN20)	**D34**	✓	✓	✓
Supplied with oval flange set (2 items), PTFE packings and screws in thread of process flanges	**D37**	✓	✓	✓
Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety" (transmitter 7MF4...-.....-.B.. Ex ia)")	**E01**	✓	✓	✓
TÜV approval to AD/TRD (only together with type of protection "Intrinsic safety (Ex ia)")	**E06**	✓		

Selection and Ordering data	Order code	HART	PA	FF
Further designs Add "**-Z**" to Order No. and specify Order Code.				
Overfilling safety device for flammable and non-flammable liquids (max. PN 32 (MAWP 464 psi), basic device with type of protection "Intrinsic safety (Ex ia)", to WHG and VbF, not together with measuring cell filling "inert liquid")	**E08**	✓		
Oxygen application (In the case of oxygen measurement and inert liquid max. 100 bar (1450 psi) at 60°C (140 °F))	**E10**	✓	✓	✓
Export approval Korea	**E11**	✓	✓	✓
Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil) (only for transmitter 7MF4...-.....-.B..)	**E25**	✓	✓	✓
"Flameproof" explosion protection according to INMETRO (Brazil) (only for transmitter 7MF4...-.....-.D..)	**E26**	✓	✓	✓
Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil) (only for transmitter 7MF4...-.....-.P..)	**E28**	✓	✓	
Ex Approval IEC Ex (Ex ia) (only for transmitter 7MF4...-.....-.B..)	**E45**	✓	✓	✓
Ex Approval IEC Ex (Ex id) (only for transmitter 7MF4...-.....-.D..)	**E46**	✓	✓	✓
Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4...-.....-.B..)	**E55**	✓	✓	✓
Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4...-.....-.D..)	**E56**	✓	✓	✓
Explosion-proof "Zone 2" to NEPSI (China) (only for transmitter 7MF4...-.....-.E..)	**E57**	✓	✓	✓
"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (only for transmitter 7MF4...-.....-.[B, D]..-Z + E11)	**E70**	✓	✓	✓
Two coats of lacquer on casing and cover (PU on epoxy)	**G10**	✓	✓	✓
Interchanging of process connection side	**H01**	✓	✓	✓
Vent on side for gas measurements	**H02**	✓	✓	✓
Stainless steel process flanges for vertical differential pressure lines (not together with K01, K02 and K04)[3]	**H03**	✓	✓	✓
Process flange				
• Hastelloy	**K01**	✓	✓	✓
• Monel	**K02**	✓	✓	✓
• Stainless steel with PVDF insert max. PN 10 (MAWP 145 psi), max. temperature of medium 90 °C (194 °F) For ½-14 NPT inner process connection on the side in the middle of the process flange, vent valve not possible	**K04**	✓	✓	✓

Factory mounting of valve manifolds, see accessories.

Supplementary electronics for 4-wire connection, see accessories.

✓ = available

[1] When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.

[2] If the acceptance test certificate 3.1.is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.

[3] Not suitable for connection of remote seal

Selection and Ordering data	Order code	HART	PA	FF
Additional data Please add "**-Z**" to Order No. and specify Order code(s) and plain text.				
Measuring range to be set Specify in plain text:				
• in the case of linear characteristic curve (max. 5 characters): Y01: ... up to ... mbar, bar, kPa, MPa, psi	**Y01**	✓		
• in the case of square rooted characteristic (max. 5 characters): Y02: ... up to ... mbar, bar, kPa, MPa, psi	**Y02**	✓		
Stainless steel tag plate (measuring point description) 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 Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi, ... Note: The following pressure units can be selected: bar, mbar, mm H_2O*), inH_2O*), ftH_2O*), mmHG, inHG, psi, Pa, kPa, MPa, g/cm^2, kg/cm^2, Torr, ATM or % *) ref. temperature 20 °C	**Y21**	✓	✓	✓
Setting of pressure indicator in non-pressure units[1] Specify in plain text: Y22: ..... up to ..... l/min, m^3/h, m, USgpm, ... (specification of measuring range in pressure units "Y01" or "Y02" is essential, unit with max. 5 characters)	**Y22**[2] + **Y01** *or* **Y02**	✓		
Preset bus address possible between 1 and 126 Specify in plain text: Y25:	**Y25**		✓	✓

Factory mounting of valve manifolds, see accessories.

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

✓ = available

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

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

SITRANS P DS III for differential pressure and flow

Selection and Ordering data		Order No. 7MF4533-
SITRANS P DS III with HART pressure transmitters for differential pressure and flow, PN 420 (MAWP 6092 psi)		
Measuring cell filling	**Measuring cell cleaning**	
Silicone oil	normal	1
Measuring span (min. ... max.)		
2.5 ... 250 mbar	(1.004 ... 100.4 inH_2O)	D
6 ... 600 mbar	(2.409 ... 240.9 inH_2O)	E
16 ... 1600 mbar	(6.424 ... 642.4 inH_2O)	F
50 ... 5000 mbar	(20.08 ... 2008 inH_2O)	G
0.3 ... 30 bar	(4.35 ... 435 psi)	H
Wetted parts materials (stainless steel process flanges)		
Seal diaphragm	Parts of measuring cell	
Stainless steel	Stainless steel	A
Hastelloy	Stainless steel	B
Gold[1]	Gold	L
Ausführung als Membrandruckmittler [2) 3) 4) 5)]		Y
Process connection		
Female thread ¼-18 NPT with flange connection		
• Sealing screw opposite process connection		
- Mounting thread $^7/_{16}$-20 UNF to IEC 61518 ▶		3
- Mounting thread M12 to DIN 19213 (only for replacement requirement)		1
• Venting on side of process flanges, location of vent valve at top of process flanges (see dimensional drawing)		
- Mounting thread $^7/_{16}$-20 UNF to IEC 61518		7
- Mounting thread M12 to DIN 19213 (only for replacement requirement)		5
Non-wetted parts materials		
process flange screws	Electronics housing	
Stainless steel	Die-cast aluminum	2
Stainless steel	Stainless steel precision casting[6)]	3
Version		
• Standard versions		1
• International version, English label inscriptions, documentation in 5 languages on CD (no order code selectable) ▶		2
Explosion protection		
• None		A
• With ATEX, Type of protection:		
- "Intrinsic safety (Ex ia)"		B
- "Explosion-proof (Ex d)"[7)]		D
- "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d)"[8)]		P
- "Ex nA/ic (Zone 2)"[9)]		E
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia+ Ex d + Zone 1D/2D)"[8)]		R
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX)		S
• With FM + CSA, Type of protection:		
- "Intrinsic safety and explosion-proof (is + xp)" [7)], max PN 360		N C
Electrical connection/cable entry		
• Screwed gland Pg 13.5[10)]		A
• Screwed gland M20x1.5		B
• Screwed gland ½-14 NPT		C
• Han 7D plug (plastic housing) incl. mating connector[10)11)]		D
• M12 connectors (stainless steel)[12) 13) 14)]		F

Selection and Ordering data		Order No. 7MF4533-
SITRANS P DS III with HART pressure transmitters for differential pressure and flow, PN 420 (MAWP 6092 psi)		
Display		
• Without display		0
• Without visible display (display concealed, setting: mA) ▶		1
• With visible display		6
• with customer-specific display (setting as specified, Order Code "Y21" or "Y22" required)		7

▶ Available ex stock

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

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

1) Not in conjunction with max. span 600 mbar (240.9 inH_2O)

2) When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.

3) If the acceptance test certificate 3.1.is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.

4) The diaphragm seal is to be specified with a separate order number and must be included wiht the tranmitter order number, for example 7MF453.-..Y..-.... und 7MF4900-1....-.B

5) The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.

6) Not in conjunction with Electrical connection "Screwed gland Pg 13.5" and "Han7D plug".

7) Without cable gland, with blanking plug

8) With enclosed cable gland Ex ia and blanking plug

9) Configurations with HAN and M12 connectors are only available in Ex ic.

10) Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".

11) Permissible only for crimp-contact of conductor cross-section 1 mm^2

12) M12 delivered without cable socket

13) Not available with protection type „Ex d“ (options D, P, N and R)

14) Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".

Selection and Ordering data		Order No.
Pressure transmitters for differential pressure and flow, PN 420 (MAWP 6092 psi)		
SITRANS P DS III with PROFIBUS PA (PA)		7MF4534-
SITRANS P DS III with FOUNDATION Fieldbus (FF)		7MF4535-
		1 ■■■■-■■■■
Nominal measuring range		
250 mbar	(100.4 inH_2O)	D
600 mbar	(240.9 inH_2O)	E
1600 mbar	(642.4 inH_2O)	F
5 bar	(2008 inH_2O)	G
30 bar	(435 psi)	H
Wetted parts materials		
(stainless steel process flanges)		
Seal diaphragm	Parts of measuring cell	
Stainless steel	Stainless steel	A
Hastelloy	Stainless steel	B
Gold [1]	Gold	L
Ausführung als Membrandruckmittler [2) 3) 4) 5)]		Y
Process connection		
Female thread ¼-18 NPT with flange connection		
• Sealing screw opposite process connection		
- Mounting thread $^7/_{16}$-20 UNF to IEC 61518 ▶		3
- Mounting thread M12 to DIN 19213 (only for replacement requirement)		1
• Venting on side of process flanges, location of vent valve at top of process flanges (see dimensional drawing).		
- Mounting thread $^7/_{16}$-20 UNF to IEC 61518		7
- Mounting thread M12 to DIN 19213 (only for replacement requirement)		5
Non-wetted parts materials		
Process flange screws	Electronics housing	
Stainless steel	Die-cast aluminum	2
Stainless steel	Stainless steel precision casting	3
Version		
• Standard versions		1
• International version, English label inscriptions, documentation in 5 languages on CD (no order code selectable) ▶		2
Explosion protection		
• None		A
• With ATEX, Type of protection:		
- "Intrinsic safety (Ex ia)"		B
- "Explosion-proof (Ex d)" [6)]		D
- "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d)" [7)]		P
- "Ex nA/ic (Zone 2)" [8)]		E
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia + Ex d + Zone 1D/2D)" [7)] (not for DS III FF)		R
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX)		S
• With FM + CSA, Type of protection:		
- "Intrinsic safety and explosion-proof (is + xp)" [6)], max PN 360		NC
Electrical connection/cable entry		
• Screwed gland M20 x 1.5		B
• Screwed gland ½-14 NPT		C
• M12 connectors (stainless steel) [9) 10) 11)]		F

Selection and Ordering data		Order No.
Pressure transmitters for differential pressure and flow, PN 420 (MAWP 6092 psi)		
SITRANS P DS III with PROFIBUS PA (PA)		7MF4534-
SITRANS P DS III with FOUNDATION Fieldbus (FF)		7MF4535-
		1 ■■■■-■■■■
Display		
• Without (display hidden)		0
• Without visible display (display concealed, setting: mA) ▶		1
• With visible display		6
• With customer-specific display (setting as specified, Order Code "Y21" required)		7

▶ Available ex stock

Included in delivery of the device:
- Brief instructions (Leporello)
- CD-ROM with detailed documentation
- Sealing plug(s) or sealing screw(s) for the process flanges(s)

1) Not in conjunction with max. span 600 mbar (240.9 inH_2O)

2) When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.

3) If the acceptance test certificate 3.1.is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.

4) The diaphragm seal is to be specified with a separate order number and must be included wiht the tranmitter order number, for example 7MF453.-..Y..-.... und 7MF4900-1....-.B

5) The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.

6) Without cable gland, with blanking plug.

7) With enclosed cable gland Ex ia and blanking plug.

8) Configurations with HAN and M12 connectors are only available in Ex ic.

9) M12 delivered without cable socket

10) Not available with protection type „Ex d“ (options D, P, N and R)

11) Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".

SITRANS P DS III for differential pressure and flow

Selection and Ordering data	Order code	HART	PA	FF
Further designs Add "**-Z**" to Order No. and specify Order Code.				
Pressure transmitter with mounting bracket (2 shackles, 4 nuts, 4 U-plates, 1 angle) made of:				
• Steel	**A01**	✓	✓	✓
• Stainless steel	**A02**	✓	✓	✓
O-rings for process flanges (instead of FPM (Viton))				
• PTFE (Teflon)	**A20**	✓	✓	✓
• FEP (with silicone core, approved for food)	**A21**	✓	✓	✓
• FFPM (Kalrez, compound 4079)	**A22**	✓	✓	✓
• NBR (Buna N)	**A23**	✓	✓	✓
Plug				
• Han 7D (metal, gray)	**A30**	✓		
• Han 8U (instead of Han 7D)	**A31**	✓		
• Angled	**A32**	✓		
• Han 8D (metal, gray)	**A33**	✓		
Sealing screws (2 unit(s)) ¼-18 NPT, with valve in mat. of process flanges	**A40**	✓	✓	✓
Cable sockets for M12 conn. (stainless steel)	**A50**	✓	✓	✓
Rating plate inscription (instead of German)				
• English	**B11**	✓	✓	✓
• French	**B12**	✓	✓	✓
• Spanish	**B13**	✓	✓	✓
• Italian	**B14**	✓	✓	✓
English rating plate Pressure units in inH_2O and/or psi	**B21**	✓	✓	✓
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	**C11**	✓	✓	✓
Inspection certificate Acc. to EN 10204-3.1	**C12**	✓	✓	✓
Factory certificate Acc. to EN 10204-2.2	**C14**	✓	✓	✓
"Functional safety (SIL2)" certificate to IEC 61508	**C20**	✓		
"Functional safety" certificate (PROFIsafe) and PROFIsafe protocol	**C21**		✓	
"Functional safety (SIL2/3)" certificate to IEC 61508	**C23**	✓		
Device passport Russia (For price request please contact the technical support www.siemens.com/automation/support-request)	**C99**	✓	✓	✓
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**	✓	✓	✓
Degree of protection IP65/IP68 (only for M20 x 1.5 and ½-14 NPT)	**D12**	✓	✓	✓
Nom. press. rating PN 500 (MAWP 7250 psi) (Only for measuring cell 600 mbar ... 30 bar (240 inH_2O ... 435 psi), SIL- und Ex-options not possible))[1]	**D56**	✓		
Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety" (transmitter 7MF4...-.....-.B.. Ex ia)")	**E01**	✓	✓	✓
Export approval Korea	**E11**	✓	✓	✓
Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil) (only for transmitter 7MF4...-.....-.B..)	**E25**	✓	✓	✓
"Flameproof" explosion protection according to INMETRO (Brazil) (only for transmitter 7MF4...-.....-.D..)	**E26**	✓	✓	✓

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

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

Selection and Ordering data	Order code			
Additional data				
Please add "**-Z**" to Order No. and specify Order code(s) and plain text.				
Measuring range to be set Specify in plain text: • in the case of linear characteristic curve (max. 5 characters): Y01: ... up to ... mbar, bar, kPa, MPa, psi	**Y01**	✓		
• in the case of square rooted characteristic (max. 5 characters): Y02: ... up to ... mbar, bar, kPa, MPa, psi	**Y02**	✓		
Stainless steel tag plate (measuring point description) 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 indication in pressure units Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi, ... Note: The following pressure units can be selected: bar, mbar, mm H_2O*), inH_2O*), ftH_2O*), mmHG, inHG, psi, Pa, kPa, MPa, g/cm^2, kg/cm^2, Torr, ATM or % *) ref. temperature 20 °C	**Y21**	✓	✓	✓
Setting of pressure indication in non-pressure units[1] Specify in plain text: Y22: ..... up to ..... l/min, m^3/h, m, USgpm, ... (specification of measuring range in pressure units "Y01" or "Y02" is essential, unit with max. 5 characters)	**Y22 + Y01** *or* **Y02**	✓		
Preset bus address possible between 1 and 126 Specify in plain text: Y25:	**Y25**		✓	✓

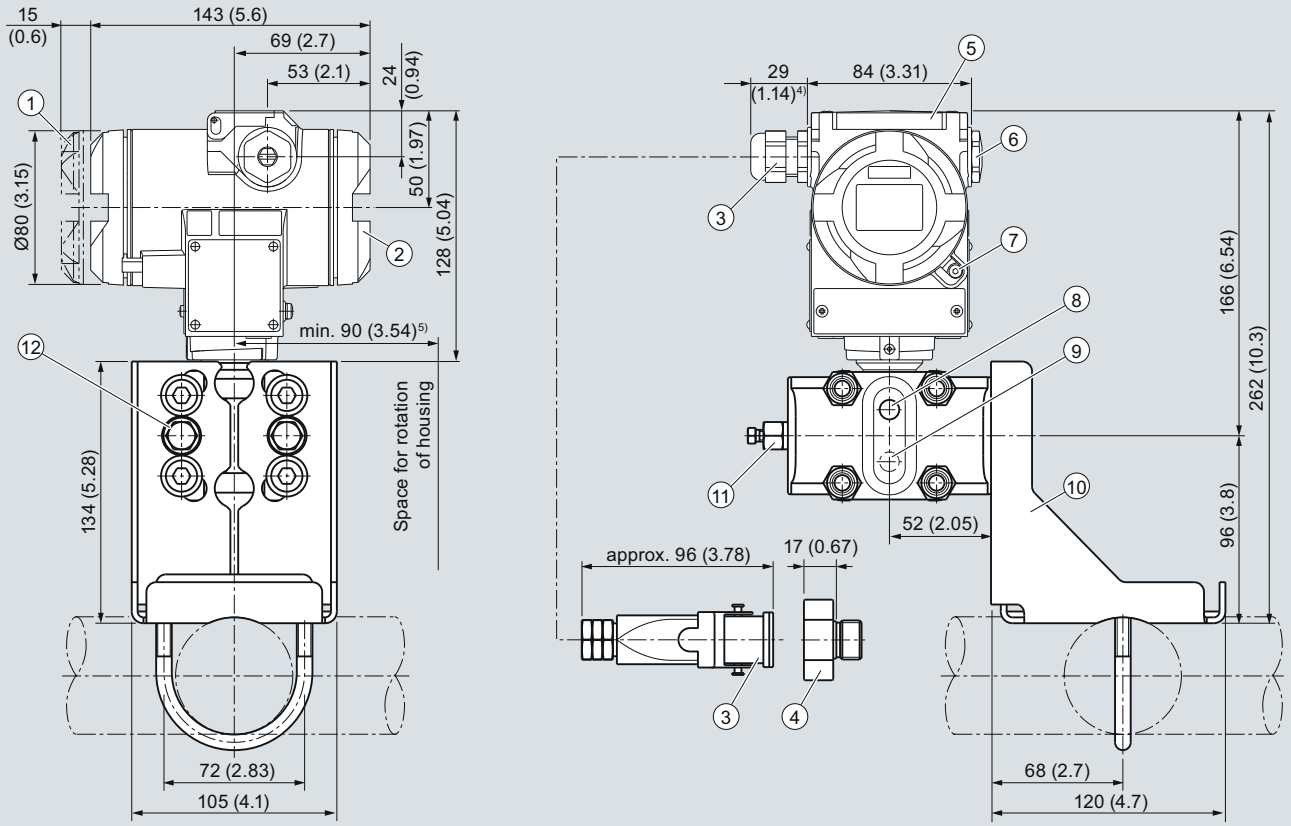
Factory mounting of valve manifolds, see accessories.

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

✓ = available

[1] Preset values can only be changed over SIMATIC PDM.

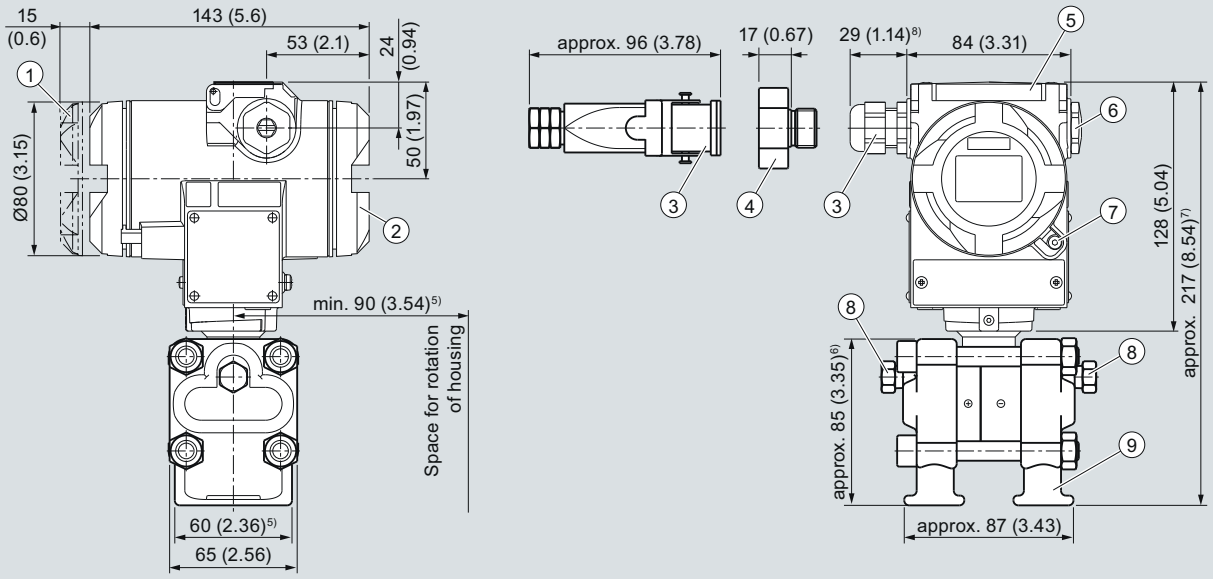
Dimensional drawings



1. Electronic side, digital display (longer overall length for cover with window)[1]
2. Terminal side[1]
3. Electrical connection: Screwed gland Pg 13,5 (adapter)(Adapter)[2] [3], Screwed gland M20 x 1,5 or Screwed gland ½-14 NPT or Han 7D/ Han 8D[2] [3] plug
4. Harting adapter
5. Protective cover over keys
6. Blanking plug
7. Screw cover - safety bracket (only for type of protection "Explosion-proof enclosure", not shown in the drawing)
8. Lateral venting for liquid measurement (Standard)
9. Lateral venting for gas measurement (suffix H02)
10. Mounting bracket (option)
11. Sealing screw with valve (option)
12. Process connection: ¼-18 NPT (IEC 61518)

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

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



1. Electronic side, digital display (longer overall length for cover with window)[1]
2. Terminal side[1]
3. Electrical connection: Screwed gland Pg 13,5 (adapter)(Adapter)[2][3], Screwed gland M20 x 1,5 or Screwed gland ½-14 NPT or Han 7D/ Han 8D[2][3] plug
4. Harting adapter
5. Protective cover over keys
6. Blanking plug
7. Screw cover - safety bracket (only for type of protection "Explosion-proof enclosure", not shown in the drawing)
8. Sealing screw with valve (option)
9. Process connection: ¼-18 NPT (IEC 61518)

1) Allow approx. 20 mm (0.79 inch) thread length to permit unscrewing
2) Not with type of protection "Explosion-proof enclosure"
3) Not with type of protection "FM + CSA" [IS + XP]"
4) 92 mm (3.6 inch) for minimum distance to permit rotation with indicator
5) 74 mm (2.9 inch) for PN ≥ 420 (MAWP ≥ 6092 psi)
6) 91 mm (3.6 inch) for PN ≥ 420 (MAWP ≥ 6092 psi)
7) 219 mm (8.62 inch) for PN ≥ 420 (MAWP ≥ 6092 psi)
8) For Pg 13,5 with adapter approx. 45 mm (1.77 inch)

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

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

Technical specifications

SITRANS P DS III for level	HART		PROFIBUS PA or FOUNDATION Fieldbus	
Input				
Measured variable	Level			
Spans (infinitely adjustable) or nominal measuring range and max. permissible operating pressure	Span (min. ... max.)	Maximum operating pressure	Nominal measuring range	Maximum operating pressure
	25 ... 250 mbar (10 ... 100 inH_2O)	See "Mounting flange"	250 mbar (100 inH_2O)	See "Mounting flange"
	25 ... 600 mbar (10 ... 240 inH_2O)	See "Mounting flange"	600 mbar (240 inH_2O)	See "Mounting flange"
	53 ... 1600 mbar (21 ... 642 inH_2O)	See "Mounting flange"	1600 mbar (642 inH_2O)	See "Mounting flange"
	160 ... 5000 mbar (64 ... 2000 inH_2O)	See "Mounting flange"	5 bar (2000 inH_2O)	See "Mounting flange"
Lower measuring limit				
• Measuring cell with silicone oil filling	-100 % of max. span or 500 mbar a (7.25 psia) Also available as vacuum-resistant remote seal: 30 mbar a (0.44 psi a)			
Upper measuring limit	100 % of max. span		100 % of the max. nominal measuring range	
Output				
Output signal	4 ... 20 mA		Digital PROFIBUS PA and FOUNDATION Fieldbus signal	
• Lower limit (infinitely adjustable)	3.55 mA, factory preset to 3.84 mA		-	
• Upper limit (infinitely adjustable)	23 mA, factory preset to 20.5 mA or optionally set to 22.0 mA		-	
Load				
• Without HART	$R_B \leq (U_H - 10.5\ V)/0.023\ A$ in Ω, U_H: Power supply in V		-	
• With HART	R_B = 230 ... 500 Ω (SIMATIC PDM) or R_B = 230 ... 1100 Ω (HART Communicator)		-	
Physical bus	-		IEC 61158-2	
Protection against polarity reversal	Protected against short-circuit and polarity reversal. Each connection against the other with max. supply voltage.			
Electrical damping (step width 0.1 s)	Set to 2 s (0 ... 100 s)			
Measuring accuracy	Acc. to IEC 60770-1			
Reference conditions (All error data refer always refer to the set span)	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 at limit setting incl. hysteresis and reproducibility				
• Linear characteristic			≤ 0.15 %	
- r ≤ 10	≤ 0.15 %			
- 10 < r ≤ 30	≤ 0.3 %			
- 30 < r ≤ 100	≤ (0.0075 · r + 0.075) %			
Long-term stability (temperature change ± 30 °C (± 54 °F))	≤ (0.25 · r)% every 5 years static pressure max. 70 bar (1015 psi)		≤ 0.25 % every 5 years static pressure max. 70 bar (1015 psi)	
Influence of ambient temperature				
• at -10 ... +60 °C (14 ... 140 °F)				
- 250 mbar- (100 inH_2O)-measuring cell	≤ (0.5 · r + 0.2) %[1) 4)]		≤ 0.7 %	
- 600 mbar- (240 inH_2O)-measuring cell	≤ (0.3 · r + 0.2) %[2) 4)]		≤ 0.5 %	
- 1600 and 5000 mbar- (642 and 2000 inH_2O)-measuring cell	≤ (0.25 · r + 0.2) %[3) 4)]		≤ 0.45 %	
• at -40 ... -10 °C and 60 ... 85 °C (-40 ... +14 °F and 140 ... 185 °F)				
- 250 mbar- (100 inH_2O)-measuring cell	≤ (0.25 · r + 0.15) %/10 K doubled values at 10 < r ≤ 30		≤ 0.4 %/10 K	
- 600 mbar- (240 inH_2O)-measuring cell	≤ (0.15 · r + 0.15) %/10 K doubled values at 10 < r ≤ 30		≤ 0.3 %/10 K	
- 1600 and 5000 mbar- (642 and 2000 inH_2O)-measuring cell	≤ (0.12 · r + 0.15) %/10 K double values at 10 < r ≤ 30		≤ 0.27 %/10 K	

SITRANS P DS III for level	HART	PROFIBUS PA or FOUNDATION Fieldbus
Influence of static pressure		
• on the zero point		
- 250 mbar- (100 inH_2O)-measuring cell	≤ (0.3 · r) % per nominal pressure	≤ 0.3 % per nominal pressure
- 600 mbar- (240 inH_2O)-measuring cell	≤ (0.15 · r) % per nominal pressure	≤ 0.15 % per nominal pressure
- 1600 and 5000 mbar- (642 and 2000 inH_2O)-measuring cell	≤ (0.1 · r) % per nominal pressure	≤ 0.1 % per nominal pressure
• on the span	≤ (0.1 · r) % per nominal pressure	≤ 0.1 % per nominal pressure
Measured Value Resolution	-	3 · 10^{-5} of nominal measuring range
Rated conditions		
Degree of protection to IEC 60529	IP65 (optional IP65/IP68)	
Temperature of medium	**Note:** Always take into account assignment of max. permissible operating temperature to max. permissible operating pressure of the respective flange connection!	
• Measuring cell with silicone oil filling	-40 ... +100[5] °C (-40 ... +212[5] °F)	
- High-pressure side	p_{abs} ≥ 1 bar: -40 ... +175 °C (-40 ... +347 °F) p_{abs} < 1 bar: -40 ... +80 °C (-40 ... +176 °F)	
- Low-pressure side	-40 ... +100 °C (-40 ... +212 °F) -20 ... +60 °C (-4 ... +140 °F) in conjunction with dust explosion protection	
Ambient conditions		
• Ambient temperature		
- -Display readable	-30 ... +85 °C (-22 ... +185 °F)	
• Storage temperature	-50 ... +85 °C (-58 ... +185 °F)	
• Climatic class		
- Condensation	Relative humidity 0 ... 100 % Condensation permissible, suitable for use in the tropics	
• Electromagnetic Compatibility		
- Emitted interference and interference immunity	Acc. to EN 61326 and NAMUR NE 21	
Design		
Weight (without options)		
To EN (pressure transmitter with mounting flange, without tube)	≈ 11 ... 13 kg (≈ 24.2 ... 28.7 (lb)	
To ASME (pressure transmitter with mounting flange, without tube)	≈ 11 ... 18 kg (≈ 24.2 ... 39.7 lb)	
Enclosure material	Low-copper die-cast aluminum, GD-AlSi12 or stainless steel precision casting, mat. no. 1.4408	
Wetted parts materials		
High-pressure side		
• Seal diaphragm of mounting flange	Stainless steel, mat. no. 1.4404/316L, Monel, mat. no. 2.4360, Hastelloy B2, mat. no. 2.4617, Hastelloy C276, mat. no. 2.4819, Hastelloy C4, mat. no. 2.4610, tantalum, PTFE, ETCFE, stainless steel Duplex, mat. no. 1.4462	
Measuring cell filling	Silicone oil	
Process connection		
• High-pressure side	Flange to EN and ASME	
• Low-pressure side	Female thread ¼-18 NPT and flange connection with mounting thread M10 to DIN 19213 or $^{7}/_{16}$-20 UNF to EN 61518	
Power supply U_H		Supplied through bus
Terminal voltage on transmitter	10.5 ... 45 V DC 10.5 ... 30 V DC in intrinsically-safe mode	-
Separate 24 V power supply necessary	-	No
Bus voltage		
• Not Ex	-	9 ... 32 V
• With intrinsically-safe operation	-	9 ... 24 V
Current consumption		
• Basic current (max.)	-	12.5 mA
• Start-up current ≤ basic current	-	Yes
• Max. current in event of fault	-	15.5 mA
Fault disconnection electronics (FDE) available	-	Yes

SITRANS P DS III for level	HART	PROFIBUS PA or FOUNDATION Fieldbus
Certificates and approvals		
Classification according to PED 97/23/EC	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)	
Explosion protection		
• Intrinsic safety "i"	PTB 11 ATEX 2011 X	
- Marking	Ex II 1/2 G Ex ia/ib IIC T4/T5/T6 Ga/Gb	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +70 °C (-40 ... +158 °F) temperature class T5; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To certified intrinsically-safe circuits with peak values: U_i = 30 V, I_i = 100 mA, P_i = 750 mW; R_i = 300 Ω	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_i = 0.4 mH, C_i = 6 nF	L_i = 7 µH, C_i = 1.1 nF
• Explosion-proof "d"	PTB 99 ATEX 1160	
- Marking	Ex II 1/2 G Ex d IIC T4/T6 Gb	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To circuits with values: U_H = 10.5 ... 45 V DC	To circuits with values: U_H = 9 ... 32 V DC
• Dust explosion protection for zone 20	PTB 01 ATEX 2055	
- Marking	Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F)	
- Max. surface temperature	120 °C (248 °F)	
- Connection	To certified intrinsically-safe circuits with peak values: U_i = 30 V, I_i = 100 mA, P_i = 750 mW, R_i = 300 Ω	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_i = 0.4 mH, C_i = 6 nF	L_i = 7 µH, C_i = 1.1 nF
• Dust explosion protection for zone 21/22	PTB 01 ATEX 2055	
- Marking	Ex II 2 D IP65 T 120 °C	
- Connection	To circuits with values: U_H = 10.5 ... 45 V DC; P_{max} = 1.2 W	To circuits with values: U_H = 9 ... 32 V DC; P_{max} = 1 W
• Type of protection "n" (zone 2)	PTB 11 ATEX 2011 X	
- Marking	Ex II 2/3 G Ex nA II T4/T5/T6 Gc Ex II 2/3 G Ex ic IIC T4/T5/T6 Gc	
- Connection (Ex nA)	U_m = 45 V	U_m = 32 V
- Connection (Ex ic)	To circuits with values: U_i = 45 V	FISCO supply unit ic: U_o = 17.5 V, I_o = 570 mA Linear barrier: U_o = 32 V, I_o = 132 mA, P_o = 1 W
- Effective internal inductance/capacitance	L_i = 0.4 mH, C_i = 6 nF	L_i = 7 µH, C_i = 1,1 nF
• Explosion protection acc. to FM	Certificate of Compliance 3008490	
- Identification (XP/DIP) or (IS); (NI)	CL I, DIV 1, GP ABCD 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	
• Explosion protection to CSA	Certificate of Compliance 1153651	
- Identification (XP/DIP) or (IS)	CL I, DIV 1, GP ABCD T4...T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4...T6; CL I, DIV 2, GP ABCD T4...T6; CL II, DIV 2, GP FG; CL III	

1) Conversion of temperature error per 28 °C. Valid for temperature range -3 ... +53 °C < (0.4 · r + 0.16) % / 28 °C (50 °F).
2) Conversion of temperature error per 28 °C. Valid for temperature range -3 ... +53 °C < (0.24 · r + 0.16) % / 28 °C (50 °F).
3) Conversion of temperature error per 28 °C. Valid for temperature range -3 ... +53 °C < (0.2 · r + 0.16) % / 28 °C (50 °F).
4) 0.32 instead of 0.16 at 10 < r < 30
5) This value may be increased if the process connection is sufficiently insulated.

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

FOUNDATION Fieldbus communication	
Function blocks	3 function blocks analog input, 1 function block PID
• Analog input	
- Adaptation to customer-specific process variables	Yes, linearly rising or falling characteristic
- Electrical damping, adjustable	0 ... 100 s
- Simulation function	Output/input (can be locked within the device with a bridge)
- Failure mode	parameterizable (last good value, substitute value, incorrect value)
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respectively
- Square-rooted characteristic for flow measurement	Yes
• PID	Standard FOUNDATION Fieldbus function block
• Physical block	1 resource block
Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block LCD
• Pressure transducer block	
- Can be calibrated by applying two pressures	Yes
- Monitoring of sensor limits	Yes
- Simulation function: Measured pressure value, sensor temperature and electronics temperature	Constant value or over parameterizable ramp function
Mounting flange	
Nominal diameter	Nominal pressure
• Acc. to EN 1092-1	
- DN 80	PN 40
- DN100	PN16, PN40
• To ASME B16.5	
- 3 inch	Class 150, class 300
- 4 inch	Class 150, class 300

SITRANS P DS III for level

1

Selection and Ordering data		Order No.
Pressure transmitter for level, SITRANS P DS III with HART		7MF4633-
		■■Y■■-■■■■
Measuring cell filling	**Measuring cell cleaning**	
Silicone oil	normal	1
Measuring span (min. ... max.)		
25 ... 250 mbar	(10 ... 100 inH_2O)	D
25 ... 600 mbar	(10 ... 240 inH_2O)	E
53 ... 1600 mbar	(21 ... 642 inH_2O)	F
0.16 ... 5 bar	(64.3 ... 2000 inH_2O)	G
Process connection of low-pressure side		
Female thread ¼-18 NPT with flange connection		
• Mounting thread $^7/_{16}$-20 UNF to IEC 61518		2
• Mounting thread M10 to DIN 19213 (only for replacement requirement)		0
Non-wetted parts materials		
process flange screws	Electronics housing	
Stainless steel	Die-cast aluminum	2
Stainless steel	Stainless steel precision casting[1]	3
Version		
• Standard versions		1
• International version, English label inscriptions, documentation in 5 languages on CD (no order code selectable)		2
Explosion protection		
• None		A
• With ATEX, Type of protection:		
- "Intrinsic safety (Ex ia)"		B
- "Explosion-proof (Ex d)"[2]		D
- "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d)"[3]		P
- "Ex nA/ic (Zone 2)" [4]		E
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia+ Ex d + Zone 1D/2D)"[3]		R
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX)		S
• With FM + CSA, Type of protection:		
- "Intrinsic Safe und Explosion Proof (is + xp)"[1]		NC
Electrical connection/cable entry		
• Screwed gland Pg 13.5[5]		A
• Screwed gland M20x1.5		B
• Screwed gland ½-14 NPT		C
• Han 7D plug (plastic housing) incl. mating connector[5]		D
• M12 connectors (stainless steel) [5] [6] [7]		F
Display		
• Without display		0
• Without visible display (display concealed, setting: mA)	►	1
• With visible display		6
• With customer-specific display (setting as specified, Order Code "Y21" or "Y22" required)		7

► Available ex stock

Ordering information

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

ordering example

Item line 1:	7MF4633-1EY20-1AA1-Z
B line:	Y01
C line:	Y01: 80 to 143 mbar (1.16 to 2.1 psi)
Item line 2:	7MF4912-3GE01

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

Included in delivery of the device:
- Brief instructions (Leporello)
- CD-ROM with detailed documentation
- Sealing plug(s) or sealing screw(s) for the process flanges(s)

1) Not in conjunction with electrical connection "Screwed gland Pg 13.5" and "Han7D plug".
2) Without cable gland, with blanking plug.
3) With enclosed cable gland Ex ia and blanking plug.
4) Configurations with HAN and M12 connectors are only available in Ex nL.
5) Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".
6) M12 delivered without cable socket
7) Not available with protection type „Ex d“ (optiones D, P, N and R)

Selection and Ordering data		Order No.
Pressure transmitters for level		
SITRANS P DS III with PROFIBUS PA (PA)		7MF4634-
SITRANS P DS III with FOUNDATION Fieldbus (FF)		7MF4635-
		1 ■ Y ■■ - ■■■■
Nominal measuring range		
250 mbar	(100 inH_2O)	D
600 mbar	(240 inH_2O)	E
1600 mbar	(642 inH_2O)	F
5 bar	(2000 inH_2O)	G
Process connection of low-pressure side		
Female thread ¼-18 NPT with flange connection		
• Mounting thread $^7/_{16}$-20 UNF to IEC 61518		2
• Mounting thread M10 to DIN 19213 (only for replacement requirement)		0
Non-wetted parts materials		
process flange screws	Electronics housing	
Stainless steel	Die-cast aluminum	2
Stainless steel	Stainless steel precision casting	3
Version		
• Standard versions		1
• International version, English label inscriptions, documentation in 5 languages on CD (no order code selectable)		2
Explosion protection		
• None		A
• With ATEX, Type of protection:		
- "Intrinsic safety (Ex ia)"		B
- "Explosion-proof (Ex d)"[1]		D
- "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d)"[2]		P
- "Ex nA/ic (Zone 2)" [3]		E
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia + Ex d + Zone 1D/2D)"[2] (not for DS III FF)		R
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX)		S
• With FM + CSA, Type of protection:		
- "Intrinsic Safe und Explosion Proof (is + xp)"[1]		N C
Electrical connection/cable entry		
• Screwed gland M20 x 1.5		B
• Screwed gland ½-14 NPT		C
• M12 connectors (stainless steel)[4] [5]		F
Display		
• Without display		0
• Without visible display (display concealed, setting: mA)	▶	1
• With visible display		6
• With customer-specific display (setting as specified, Order Code "Y21" required)		7

▶ Available ex stock

Ordering information

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

ordering example

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

Included in delivery of the device:
- Brief instructions (Leporello)
- CD-ROM with detailed documentation
- Sealing plug(s) or sealing screw(s) for the process flanges(s)

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

SITRANS P DS III for level

Selection and Ordering data	Order code	HART	PA	FF
Further designs				
Add "**-Z**" to Order No. and specify Order Code.				
O-rings for process flanges on low-pressure side (instead of FPM (Viton))				
• PTFE (Teflon)	**A20**	✓	✓	✓
• FEP (with silicone core, approved for food)	**A21**	✓	✓	✓
• FFPM (Kalrez, compound 4079)	**A22**	✓	✓	✓
• NBR (Buna N)	**A23**	✓	✓	✓
Plug				
• Han 7D (metal, gray)	**A30**	✓		
• Han 8U (instead of Han 7D)	**A31**	✓		
• Angled	**A32**	✓		
• Han 8D (metal, gray)	**A33**	✓		
Sealing screw ¼-18 NPT, with valve in mat. of process flanges	**A40**	✓	✓	✓
Cable sockets for M12 connectors (stainless steel)	**A50**	✓	✓	✓
Rating plate inscription (instead of German)				
• English	**B11**	✓	✓	✓
• French	**B12**	✓	✓	✓
• Spanish	**B13**	✓	✓	✓
• Italian	**B14**	✓	✓	✓
English rating plate Pressure units in inH_20 and/or psi	**B21**	✓	✓	✓
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	**C11**	✓	✓	✓
Inspection certificate Acc. to EN 10204-3.1	**C12**	✓	✓	✓
Factory certificate Acc. to EN 10204-2.2	**C14**	✓	✓	✓
"Functional safety (SIL2)" certificate to IEC 61508	**C20**	✓		
"Functional safety" certificate (PROFIsafe) and PROFIsafe protocol	**C21**		✓	
"Functional safety (SIL2/3)" certificate to IEC 61508	**C23**	✓		
Device passport Russia (For price request please contact the technical support www.siemens.com/automation/support-request)	**C99**	✓	✓	✓
Setting of upper limit of output signal to 22.0 mA	**D05**	✓		
Degree of protection IP65/IP68 (only for M20x1.5 and ½-14 NPT)	**D12**	✓	✓	✓
Supplied with oval flange (1 item), PTFE packing and screws in thread of process flange	**D37**	✓	✓	✓
Use on zone 1D / 2D (only together with type of protection "Intrinsic safety" (transmitter 7MF4...-.....-.B.. Ex ia)")	**E01**	✓	✓	✓
Overfilling safety device for flammable and non-flammable liquids (max. PN 32 (MAWP 464 psi), basic device with type of protection "Intrinsic safety (Ex ia)", to WHG and VbF, not together with measuring cell filling "inert liquid")	**E08**	✓		
Export approval Korea	**E11**	✓	✓	✓
Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil) (only for transmitter 7MF4...-.....-.B..)	**E25**	✓	✓	✓
"Flameproof" explosion protection according to INMETRO (Brazil) (only for transmitter 7MF4...-.....-.D..)	**E26**	✓	✓	✓

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

Selection and Ordering data	Order code			
Additional data				
Please add "**-Z**" to Order No. and specify Order code(s) and plain text.				
Measuring range to be set Specify in plain text (max. 5 characters): Y01: ... up to ... mbar, bar, kPa, MPa, psi	**Y01**	✓		
Stainless steel tag plate (measuring point description) Max. 16 characters, specify in plain text: Y15:	**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 indicator in pressure units Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi, ... Note: The following pressure units can be selected: bar, mbar, mm H_2O[*)], inH_2O[*)], ftH_2O[*)], mmHG, inHG, psi, Pa, kPa, MPa, g/cm^2, kg/cm^2, Torr, ATM or % [*)] ref. temperature 20 °C	**Y21**	✓	✓	✓
Setting of pressure indicator in non-pressure units [2)] Specify in plain text: Y22: ..... up to ..... l/min, m^3/h, m, USgpm, ... (specification of measuring range in pressure units "**Y01**" is essential, unit with max. 5 characters)	**Y22[1)] + Y01**	✓		
Preset bus address possible between 1 and 126 Specify in plain text: Y25:	**Y25**		✓	✓

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

✓ = available

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

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

SITRANS P DS III for level

Selection and Ordering data		Order No.						
Mounting flange		7 M F 4 9 1 2						
Directly mounted on the SITRANS P pressure transmitter (converter part) for level, for DS III series		3 ■ ■ ■ ■					■ ■ ■	
Connection to EN 1092-1								
Nominal diameter	**Nominal pressure**							
DN 50	PN 40		A					
	PN 100		B					
DN 80	PN 40		D					
DN 100	PN 16		G					
	PN 40		H					
Connection to ASME B16.5								
Nominal diameter	**Nominal pressure**							
2 inch	class 150		L					
	class 300		M					
	class 400/600		N					
	class 900/1500		P					
3 inch	Class 150		Q					
	Class 300		R					
4 inch	Class 150		T					
	Class 300		U					
Other version, add Order Code and plain text: Nominal diameter: ...; Nominal press.: ...			Z				J 1 Y	
Wetted parts materials								
• Stainless steel 316L				A				
- Coated with PFA				D				
- Coated with PTFE				E	0			
• Coated with ECTFE[1]				F				
• Monel 400, mat. no. 2.4360				G				
• Hastelloy B2, mat. no. 2.4617				H				
• Hastelloy C276, mat. no. 2.4819				J				
• Hastelloy C4, mat. no. 2.4610				U				
• Tantalum				K				
• Duplex 2205, mat. no. 1.4462				Q				
• Duplex 2205, mat. no. 1.4462, incl. main body				R				
Tube length								
• None					0			
• 50 mm	(1.97 inch)				1			
• 100 mm	(3,94 inch)				2			
• 150 mm	(5.90 inch)				3			
• 200 mm	(7.87 inch)				4			
Other version: add Order Code and plain text: material of parts in contact with medium: ....., tubus length:				Z	8		K 1 Y	
Filling liquid								
• Silicone oil M5						1		
• Silicone oil M50						2		
• High-temperature oil						3		
• Halocarbon oil (for O_2-measurement)						4		
• Glycerin/water[2]						6		
• Food oil (FDA-listed)						7		
Other version, add Order Code and plain text: filling liquid: ...						9	M 1 Y	

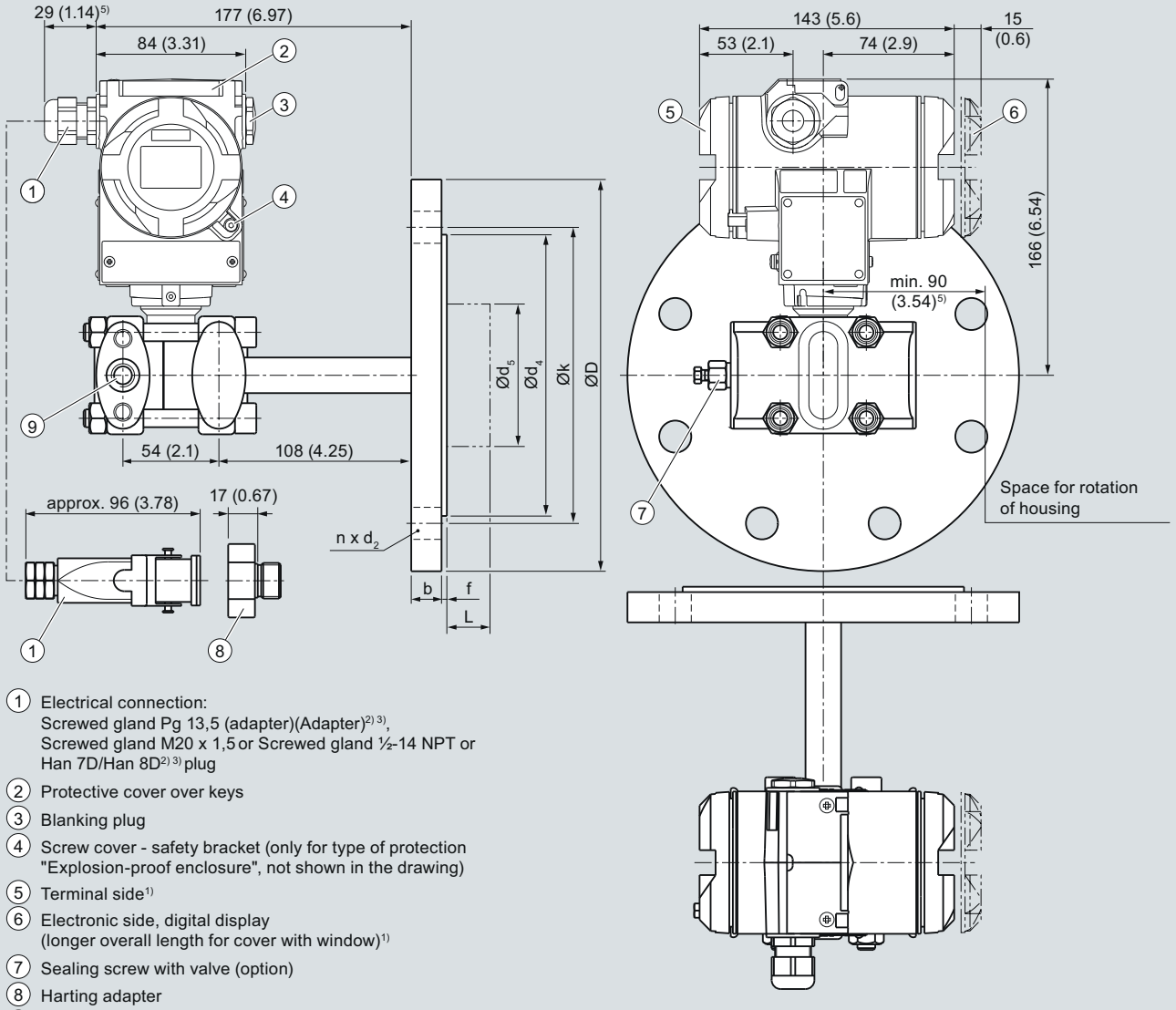
[1] For vacuum on request

[2] Not suitable for use in low-pressure range

Selection and Ordering data	Order code			
		HART	**PA**	**FF**
Further designs				
Add "**-Z**" to Order No. and specify Order Code.				
Spark arrester	**A01**	✓	✓	
For mounting on zone 0 (including documentation)				
Certificate to EN 10204-2.2	**C10**			
For certification of oil - and grease-free cleaned and packed version for oxygen and summer applications in which only inert filling liquid may be used. (Only in conjunction with halocarbon oil fill fluid)				
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	**C11**	✓	✓	
Inspection certificate	**C12**	✓	✓	
Acc. to EN 10204-3.1				
"Functional safety (SIL2)" certificate to IEC 61508	**C20**	✓		
(only for conjunction with the order code "C20" in the case of SITRANS P DS III transmitter)				
"Functional safety (SIL2/3)" certificate to IEC 61508	**C23**	✓		
(only for conjunction with the order code "C23" in the case of SITRANS P DS III transmitter)				
NACE MR-0175-certified	**D07**	✓	✓	
incl. acceptance test cerificate 3.1 to EN 10204				
Vacuum-proof design	**V04**	✓	✓	
(for use in low-pressure range)				
Note: suffix "Y01" required with pressure transmitter!				

✓ = available

Dimensional drawings



1. Electrical connection:
   Screwed gland Pg 13,5 (adapter)(Adapter)[2) 3)],
   Screwed gland M20 x 1,5 or Screwed gland ½-14 NPT or
   Han 7D/Han 8D[2) 3)] plug
2. Protective cover over keys
3. Blanking plug
4. Screw cover - safety bracket (only for type of protection "Explosion-proof enclosure", not shown in the drawing)
5. Terminal side[1)]
6. Electronic side, digital display
   (longer overall length for cover with window)[1)]
7. Sealing screw with valve (option)
8. Harting adapter
9. Process connection of low pressure side ¼-18 NPT (IEC 61518)

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

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

Connection to EN 1092-1

Nominal diameter	Nominal pressure	b	D	d	d_2	d_4	d_5	d_M	f	k	n	L
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
DN 50	PN 40	20	165	90	18	102	48.3	45[1]	2	125	8	0, 50, 100, 150 oder 200
	PN 100	28	195	90	26	102	48.3	45[1]	2	145	8	
DN 80	PN 40	24	200	90	18	138	76	72[2]	2	160	8	
	PN 100	32	230	90	26	138	76	72[2]	2	180	8	
DN 100	PN 10/16	20	220	115	18	158	94	89	2	180	8	
	PN 25/40	24	235	115	22	162	94	89	2	190	8	

Connection to ASME B16.5

Nominal diameter	Nominal pressure	b	D	d_2	d_4	d_5	d_M	f	k	n	L
	lb./sq.in	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)		inch (mm)
2 inch	150	0.77 (19,5)	5.91 (150)	0.79 (20)	3.62 (92)	1.9 (48.3)	1.77[1] (45)	0.08 (2)	4.74 (120.5)	4	0, 2, 3.94, 5.94 oder 7.87 (0, 50, 100, 150 oder 200)
	300	0.89 (22.7)	6.5 (165)	0.79 (20)	3.62 (92)	1.9 (48.3)	1.77[1] (45)	0.08 (2)	5 (127)	8	
	400/600	1.28 (32.4)	6.5 (165)	0.79 (20)	3.62 (92)	1.9 (48.3)	1.77[1] (45)	0.28 (7)	5 (127)	8	
	900/1500	1.78 (45.1)	8.46 (215)	1.02 (26)	5 (127)	1.9 (48.3)	1.77[1] (45)	0.28 (7)	6.5 (165)	8	
3 inch	150	0.96 (24.3)	7.48 (190)	0.79 (20)	5 (127)	3 (76)	2.83[2] (72)	0.08 (2)	6 (152.5)	4	
	300	1.14 (29)	8.27 (210)	0.87 (22)	5 (127)	3 (76)	2.83[2] (72)	0.08 (2)	6.63 (168.5)	8	
	600	1.53 (38.8)	8.27 (210)	0.87 (22)	5 (127)	3 (76)	2.83[2] (72)	0.28 (7)	6.63 (168.5)	8	
4 inch	150	0.96 (24.3)	9.06 (230)	0.79 (20)	6.22 (158)	3.69 (94)	3.5 (89)	0.08 (2)	7.5 (190.5)	8	
	300	1.27 (32.2)	10.04 (255)	0.87 (22)	6.22 (158)	3.69 (94)	3.5 (89)	0.08 (2)	7.87 (200)	8	
	400	1.65 (42)	10.04 (255)	1.02 (26)	6.22 (158)	3.69 (94)	3.5 (89)	0.28 (7)	7.87 (200)	8	

d: Internal diameter of gasket to DIN 2690
d_M: Effective diaphragm diameter

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

[2] 89 mm = 3½ inch with tube length L=0.

SITRANS P DS III
Supplementary electronics for 4-wire connection

Overview

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

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

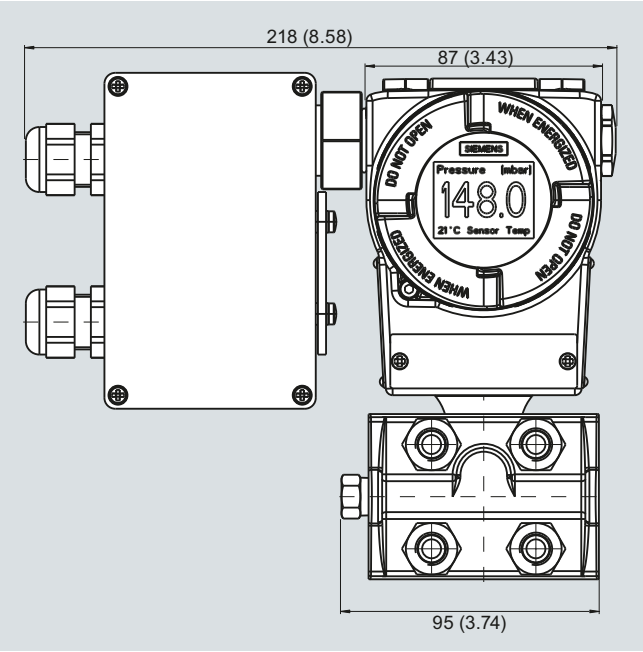
Note on ordering:

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

Technical specifications

SITRANS P, supplementary electronics for 4-wire connection	
Output	
Output signal	0 ... 20 mA or 4 ... 20 mA
Load	Max. 750 Ω
Voltage measurement	Linear (square-rooting in transmitter if necessary)
Electrical isolation	Between power supply and input/ output
Measuring accuracy	acc. to IEC 60770-1
Measurement deviation (in addition to transmitter)	≤ 0.15 % of set span
Influence of ambient temperature	≤ 0.1 % per 10 K
Power supply effect	≤ 0.1 % per 10 % change in voltage or frequency
Load effect	≤ 0.1 % per 100 % change
Rated conditions	
Ambient temperature	-20 ... +80 °C (-4 ... +176 °F)
Storage temperature	-50 ... +85 °C (-58 ... +185 °F)
Degree of protection	IP54 to IEC 60529
Electromagnetic compatibility (EMC)	EN 50081, EN 50082
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 specified limits)	Approx. 2.5 V_{pp}

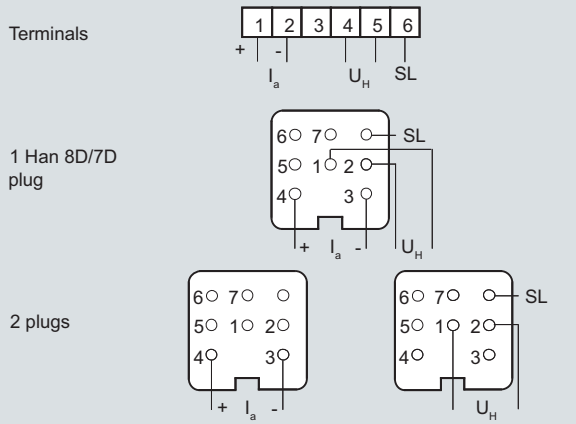
Dimensional drawings



SITRANS P pressure transmitters with supplementary electronics for four-wire connection, dimension drawing, dimensions in mm

SITRANS P DS III
Supplementary electronics for 4-wire connection

Schematics



Supplementary electronics for 4-wire connection, connection diagram

Selection and Ordering data

		Order code
Supplementary electronics for 4-wire connection		**V** ■■
Order No. of the transmitter **7MF4.33-.....-.AB.** add **"-Z"** 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**
Accessories		
Instruction Manual German/English		**A5E00322799**

Selection and Ordering data		Order No.
Replacement measuring cell for pressure for SITRANS P DS III		**7MF4990 - ■■■■ 0 - 0DB0**
Measuring cell filling	**Measuring cell cleaning**	
Silicone oil	Normal	1
Inert liquid	grease-free to cleanliness level 2	3
Measured span (min. ... max.)		
0.01 ... 1 bar	(0.15 ... 14.5 psi)	B
0.04 ... 4 bar	(0.6 ... 58 psi)	C
0.16 ... 16 bar	(2.32 ... 232 psi)	D
0.63 ... 63 bar	(9.14 ... 914 psi)	E
1.6 ... 160 bar	(23.2 ... 2320 psi)	F
4.0 ... 400 bar	(58.0 ... 5802 psi)	G
7.0 ... 700 bar	(102.0 ... 10153 psi)	J
Wetted parts materials		
Seal diaphragm	Process connection	
Stainless steel	Stainless steel	A
Hastelloy	Stainless steel	B
Hastelloy	Hastelloy	C
Process connection		
• Connection shank G½B to EN 837-1		0
• Female thread ½-14 NPT		1
• Oval flange made of stainless steel, max. span 160 bar (2320 psi)		
- Mounting thread $^{7}/_{16}$-20 UNF to IEC 61518		2
- Mounting thread M10 to DIN 19213		3
Further designs		Order code
Please add "**-Z**" to Order No. and specify Order code.		
Inspection certificate to EN 10204-3.1		**C12**

Selection and Ordering data		Order No.
Replacement measuring cell for absolute pressure for SITRANS P DS III (from the pressure series)		**7MF4992 - ■■■■ 0 - 0DC0**
Measuring cell filling	**Measuring cell cleaning**	
Silicone oil	Normal	1
Inert liquid	grease-free to cleanliness level 2	3
Measured span (min. ... max.)		
8.3 ... 250 mbar a	(0.12 ... 3.62 psia)	D
43 ... 1300 mbar a	(0.62 ... 18.85 psia)	F
0.16 ... 5 bar a	(2.32 ... 72.5 psia)	G
1 ... 30 bar a	(14.5 ... 435 psia)	H
Wetted parts materials		
Seal diaphragm	Process connection	
Stainless steel	Stainless steel	A
Hastelloy	Stainless steel	B
Hastelloy	Hastelloy	C
Process connection		
• Connection shank G½B to EN 837-1		0
• Female thread ½-14 NPT		1
• Oval flange made of stainless steel, max. span 160 bar (2320 psi)		
- Mounting thread $^{7}/_{16}$-20 UNF to IEC 61518		2
- Mounting thread M10 to DIN 19213		3
Further designs		Order code
Please add "**-Z**" to Order No. and specify Order code.		
Inspection certificate to EN 10204-3.1		**C12**

1

Selection and Ordering data — Order No.

Replacement measuring cell for absolute pressure (from the differential pressure series) for SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus series — **7MF4993 - ■■■■■ - 0DC0**

Measuring cell filling	Measuring cell cleaning	
Silicone oil	Normal	1
Inert liquid	grease-free to cleanliness level 2	3

Measured span (min. ... max.)		
8.3 ... 250 mbar a	(0.12 ... 3.62 psia)	D
43 ... 1300 mbar a	(0.62 ... 18.85 psia)	F
0.16 ... 5 bar a	(2.32 ... 72.5 psia)	G
1 ... 30 bar a	(14.5 ... 435 psia)	H
5.3 ... 100 bar a	(76.9 ... 1450 psia)	K E

Wetted parts materials		
Seal diaphragm	Parts of measuring cell	
Stainless steel	Stainless steel	A
Hastelloy	Stainless steel	B
Hastelloy	Hastelloy	C
Tantalum	Tantalum	E
Monel	Monel	H
Gold	Gold	L

Process connection
Female thread ¼-18 NPT with flange connection
- Sealing screw opposite process connection
  - Mounting thread M10 to DIN 19213 — 0
  - Mounting thread $^{7}/_{16}$-20 UNF to IEC 61518 — 2
- Vent on side of process flange[1)]
  - Mounting thread M10 to DIN 19213 — 4
  - Mounting thread $^{7}/_{16}$-20 UNF to IEC 61518 — 6

Non-wetted parts materials
- Stainless steel process flange screws — 2

Further designs — Order code
Please add "**-Z**" to Order No. and specify Order code.

	Order code
O-rings for process flanges (instead of FPM (Viton))	
• PTFE (Teflon)	A20
• FEP (with silicone core, approved for food)	A21
• FFPM (Kalrez, compound 4079)	A22
• NBR (Buna N)	A23
Inspection certificate to EN 10204-3.1	C12
Process connection G½B	D16
Remote seal flanges (not together with K01, K02 and K04)	D20
Vent on side for gas measurements	H02
Process flanges	
• without	K00
• with process flange made of	
- Hastelloy	K01
- Monel	K02
- Stainless steel with PVDF insert max. PN 10 (MAWP 145 psi) max.temperature of medium 90 °C (194 °F) For ½-14 NPT inner process connection on the side in the middle of the process flange, vent valve not possible	K04

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

Selection and Ordering data — Order No.

Replacement measuring cell for differential pressure and PN 32/160 (MAWP 464/2320 psi) for SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus series — **7MF4994 - ■■■■■ - 0DC0**

Measuring cell filling	Measuring cell cleaning	
Silicone oil	Normal	1
Inert liquid	grease-free to cleanliness level 2	3

Measured span (min. ... max.)		
PN 32 (MAWP 464 psi)		
1 ... 20 mbar[1)]	(0.4 ... 8 inH_2O)	B
PN 160 (MAWP 2320 psi)		
1 ... 60 mbar	(0.4 ... 24 inH_2O)	C
2.5 ... 250 mbar	(1 ... 100 inH_2O)	D
6 ... 600 mbar	(2.4 ... 240 inH_2O)	E
16 ... 1600 mbar	(6.4 ... 642 inH_2O)	F
50 ... 5000 mbar	(20 ... 2000 inH_2O)	G
0.3 ... 30 bar	(4.35 ... 435 psi)	H

Wetted parts materials
(stainless steel process flanges)

Seal diaphragm	Parts of measuring cell	
Stainless steel	Stainless steel	A
Hastelloy	Stainless steel	B
Hastelloy	Hastelloy	C
Tantalum[2)]	Tantalum	E
Monel[2)]	Monel	H
Gold[2)]	Gold	L

Process connection
Female thread ¼-18 NPT with flange connection
- Sealing screw opposite process connection
  - Mounting thread M10 to DIN 19213 — 0
  - Mounting thread $^{7}/_{16}$-20 UNF to IEC 61518 — 2
- Vent on side of process flange
  - Mounting thread M10 to DIN 19213 — 4
  - Mounting thread $^{7}/_{16}$-20 UNF to IEC 61518 — 6

Non-wetted parts materials
Stainless steel process flange screws — 2

Further designs — Order code
Please add "**-Z**" to Order No. and specify Order code.

	Order code
O-rings for process flanges (instead of FPM (Viton))	
• PTFE (Teflon)	A20
• FEP (with silicone core, approved for food)	A21
• FFPM (Kalrez, compound 4079)	A22
• NBR (Buna N)	A23
Inspection certificate to EN 10204-3.1	C12
Remote seal flanges (not together with K01, K02 and K04)	D20
Vent on side for gas measurements	H02
Stainless steel process flanges for vertical differential pressure lines (not together with K01, K02 and K04)	H03
Process flanges	
• without	K00
• with process flange made of	
- Hastelloy	K01
- Monel	K02
- Stainless steel with PVDF insert max. PN 10 (MAWP 145 psi) 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	K04

1) Not suitable for connection of remote seal
2) Only together with max. spans 250, 1600, 5000 and 30000 mbar (100 inH_2O, 642 inH_2O, 2000 inH_2O und 435 psi).

Selection and Ordering data		Order No.
Replacement measuring cell for differential pressure and PN 420 (MAWP 6092 psi) for SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus series		**7MF4995-** ■■■■■ **-0DC0**
Measuring cell filling	**Measuring cell cleaning**	
Silicone oil	Normal	**1**
Measured span (min. ... max.)		
2.5 ... 250 mbar	(1 ... 100 inH_2O)	**D**
6 ... 600 mbar	(2.4 ... 240 inH_2O)	**E**
16 ... 1600 mbar	(6.4 ... 642 inH_2O)	**F**
50 ... 5000 mbar	(20 ... 2000 inH_2O)	**G**
0.3 ... 30 bar	(4.35 ... 435 psi)	**H**
Wetted parts materials (stainless steel process flanges)		
Seal diaphragm	Parts of measuring cell	
Stainless steel	Stainless steel	**A**
Hastelloy	Stainless steel	**B**
Gold[1)]	Gold	**L**
Process connection		
Female thread ¼-18 NPT with flange connection		
• Sealing screw opposite process connection		
- Mounting thread M12 to DIN 19213		**1**
- Mounting thread $^7/_{16}$-20 UNF to IEC 61518		**3**
• Vent on side of process flange		
- Mounting thread M12 to DIN 19213		**5**
- Mounting thread $^7/_{16}$-20 UNF to IEC 61518		**7**
Non-wetted parts materials		
• Stainless steel process flange screws		**2**
Further designs		Order code
Please add "**-Z**" to Order No. and specify Order code.		
O-rings for process flanges (instead of FPM (Viton))		
• PTFE (Teflon)		**A20**
• FEP (with silicone core, approved for food)		**A21**
• FFPM (Kalrez, compound 4079)		**A22**
• NBR (Buna N)		**A23**
Inspection certificate to EN 10204-3.1		**C12**
Stainless steel process flanges for vertical differential pressure lines		**H03**
without process flanges		**K00**

1) Not together with max. span 600 mbar (240.9 inH_2O)

SITRANS P DS III
Accessories/Spare Parts

Selection and Odering data	Order No.
Spare parts/Accessories	
Mounting bracket and fastening parts for pressure transmitters SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus (7MF403.-.....-..C.) For absolute pressure transmitters SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus (7MF423.-.....-..C.)	
• made of steel	**7MF4997-1AB**
• made of stainless steel	**7MF4997-1AH**
Mounting bracket and fastening parts for pressure transmitters SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus (7MF403-.....-..A., -..B., ..D. and ..F.) For absolute pressure transmitters SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus 7MF423-.....-..A., -..B., ..D. and ..F.)	
• made of steel	**7MF4997-1AC**
• made of stainless steel ▶	**7MF4997-1AJ**
Mounting and fastening brackets For differential pressure transmitters with flange thread M10 SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus (7MF433.-... and 7MF443.-...)	
• made of steel	**7MF4997-1AD**
• made of stainless steel ▶	**7MF4997-1AK**
Mounting and fastening brackets For differential pressure transmitters with flange thread M12 SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus (7MF453.-...)	
• made of steel	**7MF4997-1AE**
• made of stainless steel	**7MF4997-1AL**
Mounting and fastening brackets For differential and absolute pressure transmitters with flange thread 7/16 -20 UNF SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus (7MF433.-..., 7MF443.-... and 7MF453.-...)	
• made of steel	**7MF4997-1AF**
• made of stainless steel	**7MF4997-1AM**
Cover made of die-cast aluminum, including gasket, for SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus	
• without window	**7MF4997-1BB**
• with window ▶	**7MF4997-1BE**
Cover made of stainless steel, including gasket, for SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus	
• without window	**7MF4997-1BC**
• with window	**7MF4997-1BF**
Digital indicator Including mounting material for SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus	**7MF4997-1BR**
Measuring point label	
• without inscription (5 units)	**7MF4997-1CA**
• Printed (1 unit) Data according to Y01 or Y02, Y15, Y16 and Y99 (see "Pressure transmitters")	**7MF4997-1CB-Z** **Y..: .....**

Selection and Odering data	Order No.
Mounting screws For measuring point label, grounding and connection terminals or for display (50 units)	**7MF4997-1CD**
Sealing screws (1 set = 2 units) for process flange	
• made of stainless steel	**7MF4997-1CG**
• made of Hastelloy	**7MF4997-1CH**
Sealing screws with vent valve Complete (1 set = 2 units)	
• made of stainless steel ▶	**7MF4997-1CP**
• made of Hastelloy	**7MF4997-1CQ**
Electronics	
• for SITRANS P DS III with HART	**7MF4997-1DK**
• for SITRANS P DS III with PROFIBUS PA	**7MF4997-1DL**
• for SITRANS P DS III with FOUNDATION Fieldbus	**7MF4997-1DM**
Connection board	
• for SITRANS P DS III	**7MF4997-1DN**
• for SITRANS P DS III PROFIBUS PA and FOUNDATION Fieldbus	**7MF4997-1DP**
O-rings for process flanges made of:	
• FPM (Viton)	**7MF4997-2DA**
• PTFE (Teflon)	**7MF4997-2DB**
• FEP (with silicone core, approved for food)	**7MF4997-2DC**
• FFPM (Kalrez, compound 4079)	**7MF4997-2DD**
• NBR (Buna N)	**7MF4997-2DE**
Sealing ring for process connection	**see "Fittings"**
Weldable sockets for PMC connection	
• PMC Style Standard: Thread 1½"	**7MF4997-2HA**
• PMC Style Minibolt: front-flush 1"	**7MF4997-2HB**
Gaskets for PMC connection (packing unit = 5 units)	
• PTFE seal for PMC Style Standard: Thread 1½"	**7MF4997-2HC**
• Gasket made of Viton for PMC Style Minibolt: front-flush 1"	**7MF4997-2HD**
Weldable socket for TG52/50 and TG52/150 connection	
• TG52/50 connection	**7MF4997-2HE**
• TG52/150 connection	**7MF4997-2HF**
Seals for TG 52/50 and TG 52/150 made of silicone	**7MF4997-2HG**
Seals for flange connection with front-flush diaphragm Material FPM (Viton), 10 units	
• DN 25, PN 40 (M11)	**7MF4997-2HH**
• DN 25, PN 100 (M21)	**7MF4997-2HJ**
• 1", class 150 (M40)	**7MF4997-2HK**
• 1", class 300 (M45)	**7MF4997-2HL**

▶ available ex stock

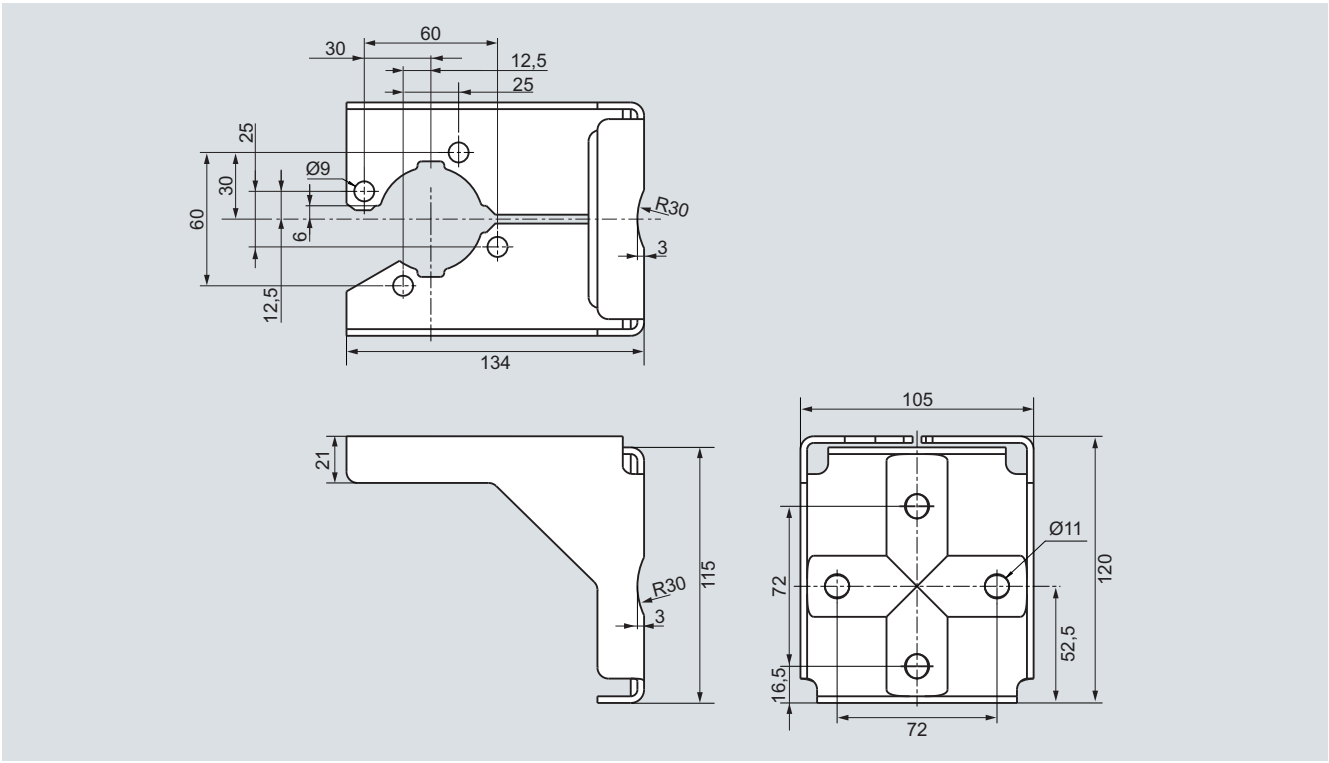
Selection and Odering data	Order No.
Operating Instructions[1]	
• for SITRANS DS III with HART	
- German	**A5E00047090**
- English	**A5E00047092**
- French	**A5E00053218**
- Spanish	**A5E00053219**
- Italian	**A5E00053220**
• for SITRANS DS III with PROFIBUS PA	
- German	**A5E00053275**
- English	**A5E00053276**
- French	**A5E00053277**
- Spanish	**A5E00053278**
- Italian	**A5E00053279**
• for SITRANS DS III with FOUNDATION Fieldbus	
- German	**A5E00279629**
- English	**A5E00279627**
Compact operating instructions The compact operating instructions are available in 21 EU languages on the product CD supplied with each transmitter. They can also be downloaded from the SITRANS P web page.	
Brief instruction (Leporello)	
German, English	
• for SITRANS DS III with HART	**A5E00047093**
- German, English	
• for SITRANS DS III with PROFIBUS PA	**A5E00053274**
- German, English	
• for SITRANS DS III with FOUNDATION Fieldbus	**A5E00282355**
- German, English	
CD with SITRANS P documentation German, English, French, Spanish, Italian incl. compact operating instructions in 21 EU languages	**A5E00090345**
Certificates (order only via SAP)	
instead of Internet download	
• hard copy (to order)	**A5E03252406**
• on CD (to order)	**A5E03252407**
Operating Instructions for replacement of electronics, measuring cell and connection board (only available from the Internet)[1]	**A5E00078060**
HART modem	
• with RS232 interface ►	**7MF4997-1DA**
• with USB interface ►	**7MF4997-1DB**
Supplementary electronics for 4-wire connection	**See page 1/157**

► available ex stock

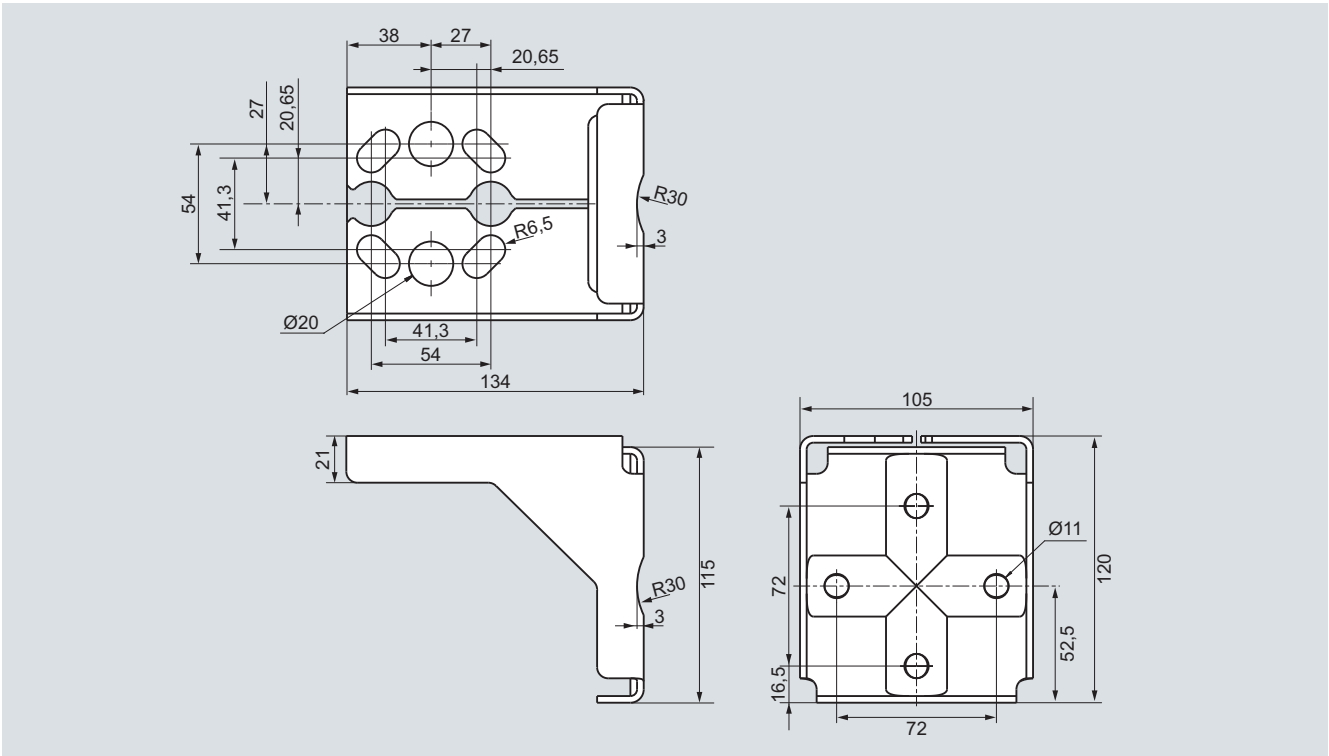
Power supply units see Chap. 7 "Supplementary Components".

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

Dimensional drawings



Mounting bracket for SITRANS P DS III and SITRANS P280 gauge and absolute pressure-transmitters, dimensions in mm
mounting bracket material: Sheet-steel Mat. No. 1.0330, chrome-plated, or stainless steel Mat. No. 1.4301 (304)



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

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

Overview

SITRANS P transmitters

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

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

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

Design

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

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

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

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

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

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

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

Selection and Ordering data

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

Add **-Z** to the Order No. of the transmitter and add order codes	Order code
SITRANS P DSIII 7MF403.-...1.-..., 7MF423.-...1.-... With process connection female thread ½-14 NPT in-sealed with PTFE sealing tape Delivery incl. high-pressure test certified by test report to EN10204-2.2	**T03**
Further designs:	
Delivery includes mounting brackets and mounting clips made of stainless steel (instead of the mounting bracket supplied with the transmitter)	**A02**
Supplied acceptance test certificate to EN 10204- 3.1 for transmitters and mounted valve manifold	**C12**

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

Add **-Z** to the Order No. of the transmitter and add order codes	Order code
SITRANS P DSIII 7MF403.-...0.-..., 7MF423.-...0.-... with process connection collar G1/2 A to EN 837-1 with gasket made of PTFE between valve manifold and transmitter	**T02**
Alternative sealing material:	
• Soft iron	**A70**
• Stainless steel, Mat. No. 14571	**A71**
• copper	**A72**
Delivery incl. high-pressure test certified by test report to EN 10204-2.2	
Further designs:	
Delivery includes mounting brackets and mounting clips made of stainless steel (instead of the mounting bracket supplied with the transmitter)	**A02**
Supplied acceptance test certificate to EN 10204- 3.1 for transmitters and mounted valve manifold	**C12**

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

Add **-Z** to the Order No. of the transmitter and add order codes	Order code
SITRANS P DSIII 7MF433.-..., 7MF443.-… and 7MF453.-… [1] mounted with gaskets made of PTFE and screws made of	
• chromized steel	**U01**
• made of stainless steel	**U02**
Delivery incl. high-pressure test certified by test report to EN 10204-2.2	
Further designs:	
Delivery includes mounting bracket and mounting clips made of	
• Steel	**A01**
• Stainless steel	**A02**
(instead of the mounting bracket supplied with the transmitter)	
Supplied acceptance test certificate to EN 10204-3.1 for transmitters and mounted valve manifold	**C12**

7MF9411-5CA
valve manifold on differential pressure transmitters

Add **-Z** to the Order No. of the transmitter and add order codes	Order code
SITRANS P DSIII 7MF443.-... and 7MF453.-…1 [1] mounted with gaskets made of PTFE and screws made of	
• chromized steel	**U03**
• Stainless steel	**U04**
Delivery incl. high-pressure test certified by test report to EN 10204-2.2	
Further designs:	
Delivery includes mounting bracket and mounting clips made of	
• Steel	**A01**
• Stainless steel	**A02**
(instead of the mounting bracket supplied with the transmitter)	
Supplied acceptance test certificate to EN 10204-3.1 for transmitters and mounted valve manifold	**C12**

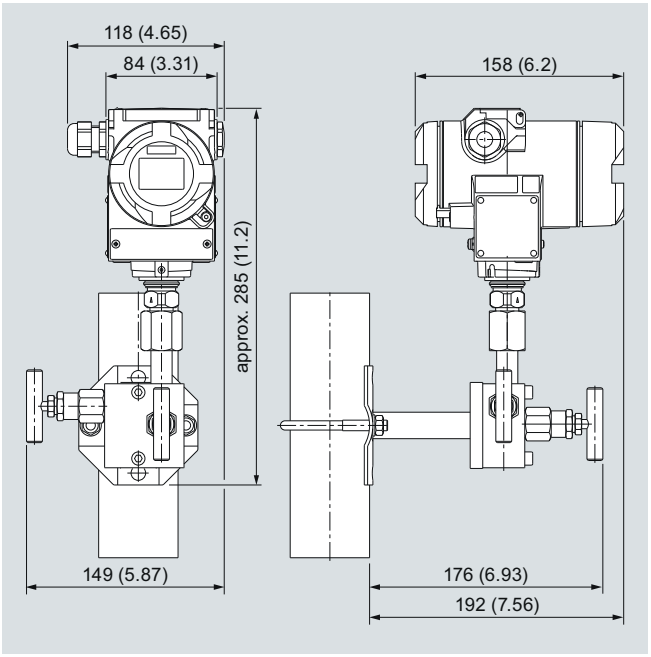
[1] For 7MF453.-... transmitters, you require a 7/10-20 UNF connection thread in the process flange

Dimensional drawings

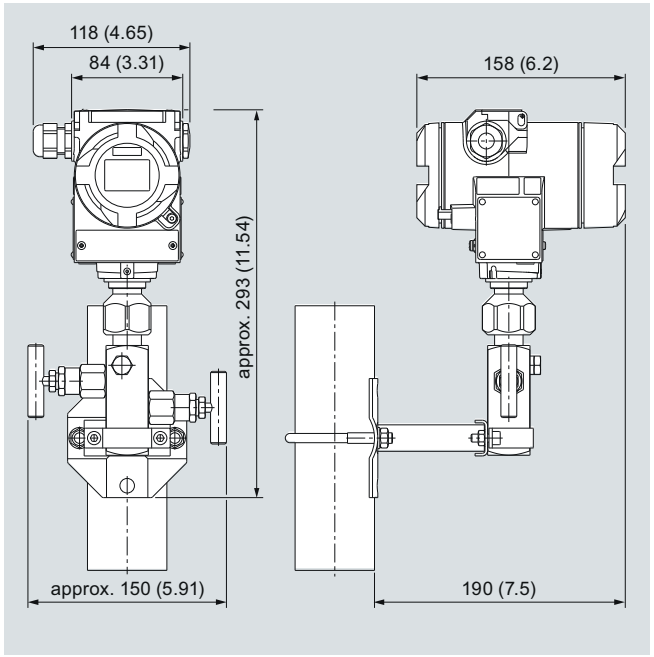
Valve manifolds mounted on SITRANS P DS III

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

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

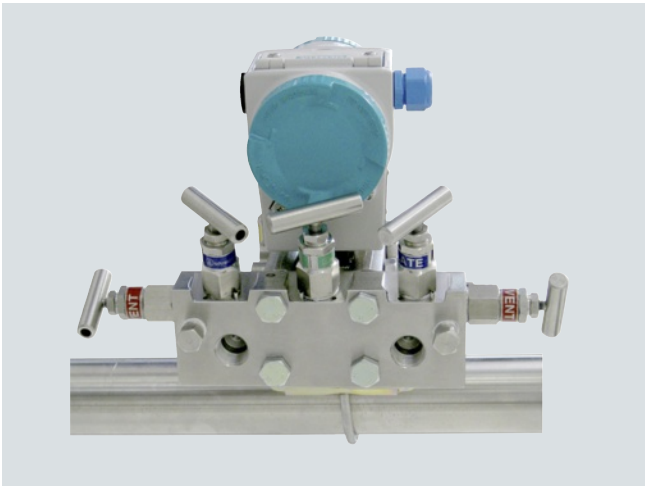


7MF9011-4EA valve manifold with mounted gauge pressure and absolute pressure transmitters, dimensions in mm (inch)

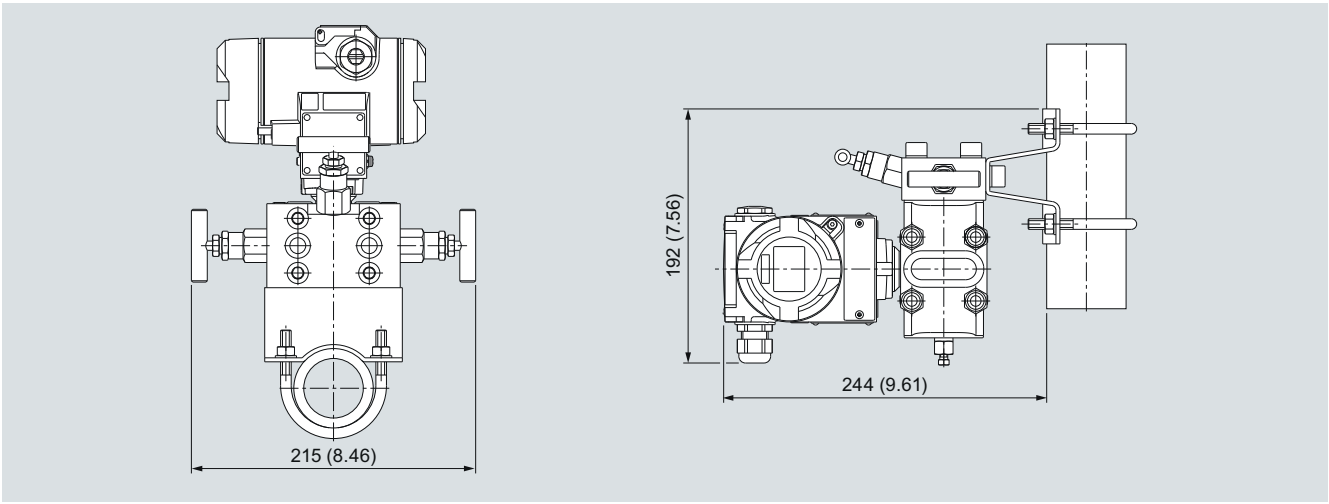


7MF9011-4FA valve manifold with mounted gauge pressure and absolute pressure transmitters, dimensions in mm (inch)

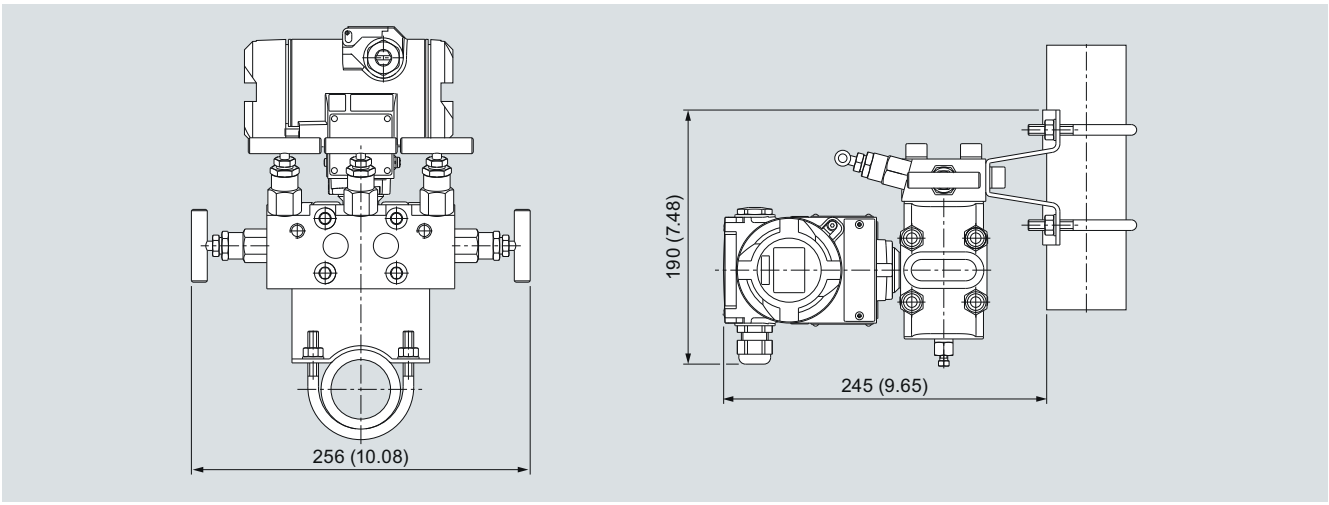
7MF9411-5BA valve manifold with mounted differential pressure transmitter



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



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



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

SITRANS P500
Technical description

Overview

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

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

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

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

The SITRANS P500 pressure transmitters can be configured to measure:

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

Benefits

- High measuring accuracy
- Very fast response time
- Extremely good long-term stability
- High reliability even under extreme chemical and mechanical loads
- For aggressive and non-aggressive gases, vapors and liquids
- Extensive diagnosis and simulation functions which can be used both on site as well as via HART.
- Optional separate replacement of measuring cell and electronics without recalibration.
- Extremely low conformity error values
- Infinitely adjustable spans of 1.25 to 1250 mbar (0.018 to 18 psi)
- Extremely good total performance and conformity error values with no loss of performance up to a turndown of 10 guaranteed.
- Additional integrated sensor for static pressure
- Parameterization via on-site control keys or HART
- Short process flanges nable space-saving installation.

Application

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

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

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

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

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

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

Pressure transmitters for differential pressure and flow

- Measured variables:
  - Differential pressure
  - Small positive or negative pressure
  - Flow q ~ √Δp (together with a primary element (see Chapter "Flow Meters"))
- Span (freely adjustable)
  for SITRANS P500 HART: 1.25 to 1250 mbar (0.5 to 502 inH_2O)

Pressure transmitters for level

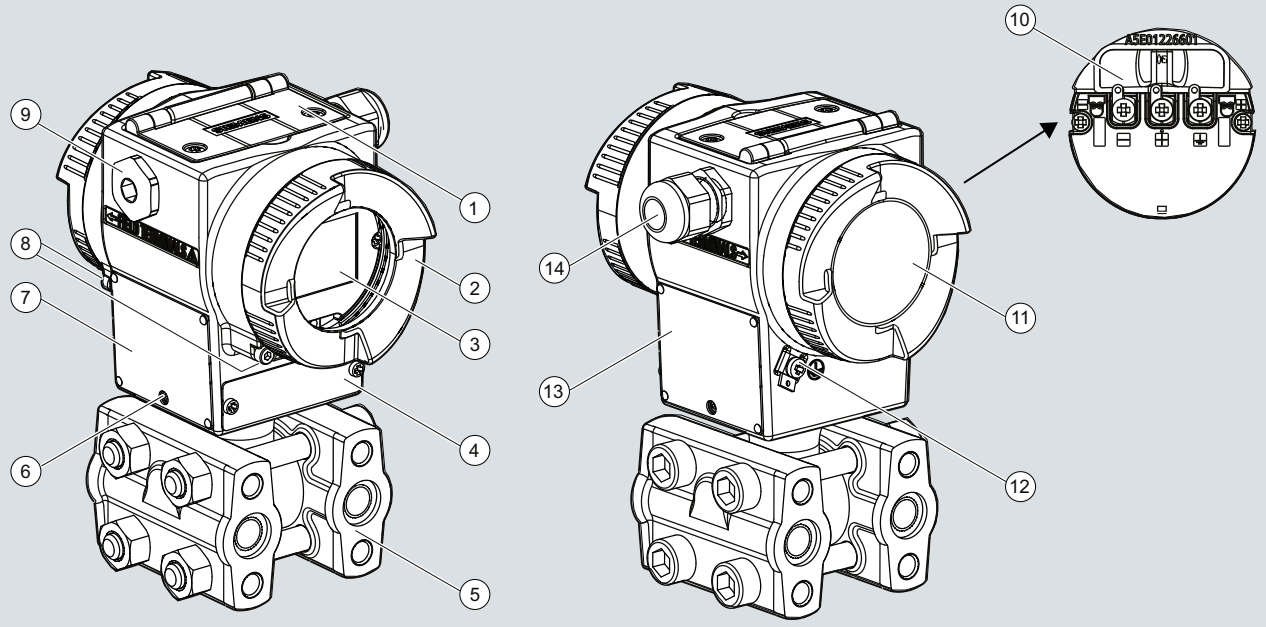
- Measured variable: Level of aggressive and non-aggressive liquids in open and closed vessels.
- Span (freely adjustable)
  for SITRANS P500: 1.25 to 1250 mbar (0.5 to 502 inH_2O)
- Nominal diameter of the mounting flange
  - DN 50 / PN 40
  - DN 80 / PN 40
  - DN 100/ PN 16, PN 40
  - 2 inch/class 150, class 300
  - 3 inch/class 150, class 300
  - 4 inch/ class 150, class 300
  - customized special version

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

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

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

Design



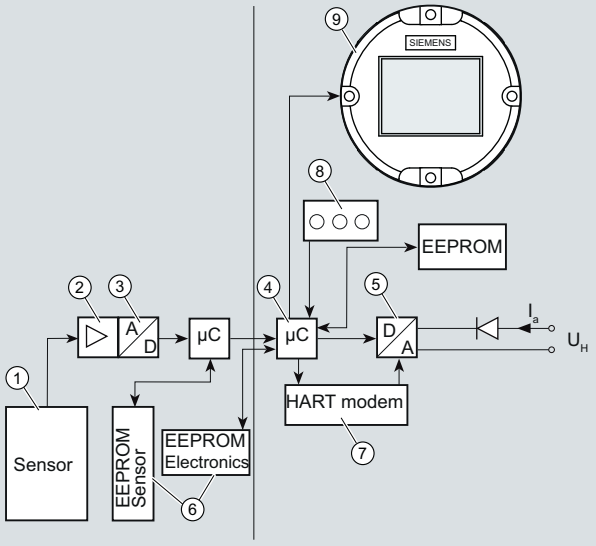
1 Cover for the pushbuttons
2 Cover, optionally with window
3 Display (optional)
4 TAG plate
5 Process flange with process connection
6 Lock screws (on two sides) for the measuring cell
7 Approval plate
8 Safety catch
9 Blanking plug
10 Terminal compartment
11 Cover for terminal compartment
12 PE/ground terminal
13 Nameplate
14 Cable inlet, optionally with cable gland or plug-in connection

View of transmitter

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

Function

Operation of electronics with HART communication



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

Function diagram of electronics

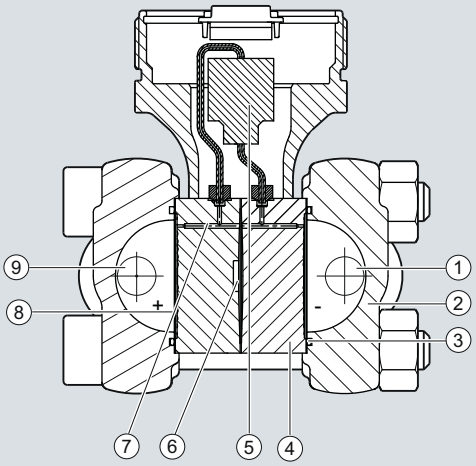
- The input pressure is converted into an electrical signal by the sensor.
- This signal is amplified by the measuring amplifier and digitalized in an analog-to-digital converter.
- The digital signal is analyzed in a microcontroller and corrected according to linearity and thermal characteristics.
-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

Operation

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

Mode of operation of the measuring cells

Measuring cell for differential pressure and flow

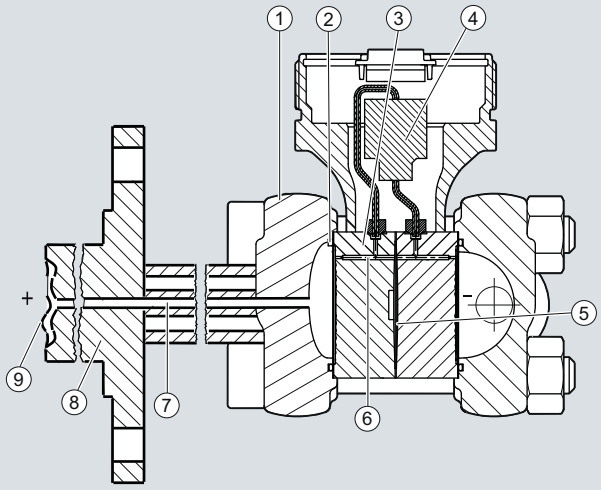


1 Input pressure P-
2 Process flange with process connection
3 O-Ring
4 Measuring cell body
5 Silicon pressure sensor
6 Overload diaphragm
7 Filling liquid
8 Seal diaphragm
9 Input pressure P+

Measuring cell for differential pressure and flow, function diagram

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

Measuring cell for level



1 Process flange with process connection
2 O-Ring
3 Measuring cell body
4 Silicon pressure sensor
5 Overload diaphragm
6 Filling liquid of the measuring cell
7 Capillary tube with filling liquid of the mounting flange
8 Flange with optional tube
9 Seal diaphragm for mounting flange

Measuring cell for level, function diagram

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

Configuration of SITRANS P500 HART

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

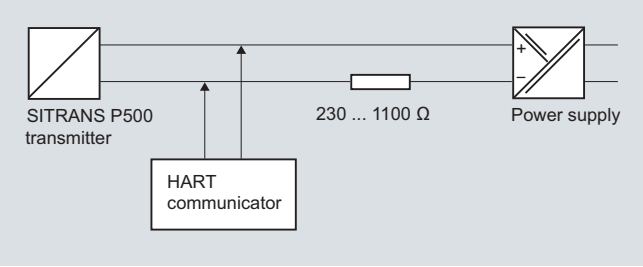
Configuration using the pushbuttons (local operation)

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

It is possible to retrofit a display. See accessories.

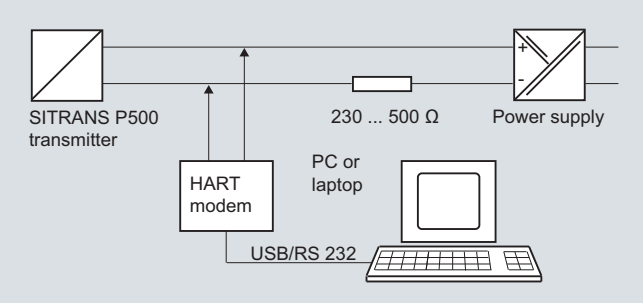
Configuration using HART

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



Communication between a HART Communicator and a pressure transmitter

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



HART communication between a PC communicator and a pressure transmitter

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

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

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

SITRANS P500 configuration options

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

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

SITRANS P500 diagnostic functions

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

SITRANS P500
Technical description

Physical dimensions available for the SITRANS P500 HART display

Physical variable	Physical dimensions
Pressure (setting can also be made in the factory)	Pa, MPa, kPa, bar, mbar, torr, atm, psi, g/cm^2, kg/cm^2, mmH_2O (4 °C), inH_2O (4 °C), inH_2O (20 °C), mmH_2O, mmH_2O (4 °C), ftH_2O (20 °C), inHg, mmHg, hPA
Level	m, cm, mm, ft, in
Volume	m^3, dm^3, hl, yd^3, ft^3, in^3, gallon, Imp. gallon, bushel, barrel, barrel liquid, l; Norm (standard) l; Norm (standard) m^3, Norm (standard) feet^3
Mass	g, kg, t (metric), lb, Ston, Lton, oz
Volume flow	m^3/d, m^3/h, m^3/s, l/min, l/s, ft^3/d, ft^3/min, ft^3/s, US gallon/min, gallon/s, l/h, milL/d, gallon/d, gallon/h, milgallon/d, Imp.gallon/s, Imp.gallon/m, Imp.gallon/h, Imp.gallon/d, Norm (standard) m^3/h, Norm (standard) l/h, Norm (standard) ft^3/h, Norm (standard) ft^3/m, barrel liquid/s, barrel liquid/m, barrel liquid/h
Mass flow	t/d, t/h, t/min, kg/d, kg/h, kg/min, kg/s, g/h, g/min, g/s, lb/d, lb/min, lb/s, LTon/d, LTon/h, STon/d, STon/h, STon/min
Temperature	K, °C, °F, °R
Miscellaneous	%, mA

Technical specifications

Input		
Measured variable	Differential pressure and flow	
Span (infinitely adjustable)	Span (min. ... max.)	Maximum operating pressure (static pressure)
	1.25 ... 250 mbar (0.5 ... 100 inH_2O)	160 bar (2320 psi)
	6.25 ... 1250 mbar (2.5 ... 500 inH_2O)	
Lower range limit		
• Measuring cell with silicone oil filling	-100 % of max. span and/or 30 mbar a (0.44 psia)	
Upper range limit	100 % of max. span	
Start of scale	Between measuring limits (freely adjustable)	
Output		
Output current signal	4 ... 20 mA	
• Lower current limit (freely adjustable)	3.55 mA, factory setting 3.8 mA	
• Upper current limit (freely adjustable)	23 mA, factory setting 20.5 mA	
• Ripple (without HART communication)	I_{pp} ≤ 0.4 % of max. output current	
• adjustable damping	0... 100 s in steps of 0.1 s, factory-seting: 2 s	
• current transmitter	3.55 ... 23 mA	
• Failure signal	adjustable within limits: • Lower: 3.55 … 3.7 mA (factory setting 3.6 mA • Upper: 21.0 … 23 mA (factory setting 22.8 mA	
Load		
• Without HART communication	$R_B \leq (U_H - 10.5\ V)/0.023\ A$ in Ω, U_H : Power supply in V	
• With HART communication		
- HART Communicator	R_B = 230 ... 1100 Ω	
- HART modem	R_B = 230 ... 500 Ω	
Characteristic curve	Linearly rising, linearly falling, square rooted characteristic rising, bidirectional square rooted characteristic and user-specific	
Measuring accuracy		
Reference conditions (in accordance with IEC 60770-1)	• Rising characteristic curve • Start of scale 0 bar • Stainless steel seal diaphragm • Measuring cell with silicone oil filling • Room temperature (25 °C (77 °F))	
Error in measurement at limit setting incl. hysteresis and reproducibility r: Span ratio (r: Span ratio (r = max. span / set span))		
Linear characteristic		
• r ≤ 10	≤ 0.03 %	
• r> 10	≤ (0.003· r) %	
Square-rooted characteristic		
• Flow > 50%		
- r ≤ 10	≤ 0.03 %	
- r > 10	≤ (0.003· r) %	
• Flow 25 % … 50 %		
- r ≤ 10	≤ 0.06 %	
- r > 10	≤ (0.006 · r) %	
Influence of ambient temperature per 28° C	≤ (0.01 · r + 0.035) %/28 °C (50 °F)	
Influence of static pressure		
• On the zero point (PKN)[1)]	≤ 0.007 % per 70 bar	
• On the span (PKS)	≤ 0.03 % per 70 bar	
Total accuracy (Total Performance)[2)]		
Linear characteristic		
• r + 5	≤ 0.09 %	
• 5 < r ≤ 10	≤ 0.14 %	
Square-rooted characteristic		
• Flow > 50 %		
- r + 5	≤ 0.09 %	
- 5 < r ≤ 10	≤ 0.14 %	
• Flow 25 % … 50 %		
- r + 5	≤ 0.18 %	
- 5 < r ≤ 10	≤ 0.28 %	
Step response time T_{63} without electrical damping	≤ 88 ms	
Long-term stability	≤ (0.05 · r) % per 5 years ≤ (0.08 · r) % per 10 years	
Influence of power supply	≤ 0.005 %/1 V	
Rated conditions		
Mounting position	Any	
Ambient conditions		
• Ambient temperature (Note: Observe the temperature class in areas subject to explosion hazard.)		
- Total device	-40 ... +85 °C (-40 ... +185 °F)	
- Readable display	-20 ... +85 °C (-4 ... +185 °F)	
- Storage temperature	-50 ... +90 °C (-58 ... +194 °F)	
Climatic class		
• Condensation	Relative humidity 0 … 100 % (condensation permissible)	
Degree of protection (to IEC 60529)	IP66/IP 68 and NEMA 4X (with corresponding cable gland)	
Electromagnetic Compatibility		
• Emitted interference and interference immunity	Acc. to EN 61326 and NAMUR NE 21	
Permissible pressures	According to 97/23/EC pressure equipment directive	
Temperature of medium		
• Measuring cell with silicone oil filling	-40 ... +125 °C (-40 ... +257 °F)	

SITRANS P500
for differential pressure and flow

Design	
Weight (without options)	Approx. 3.3 kg (7.3 lb)
Material of parts in contact with the medium	
• Seal diaphragm	Stainless steel, mat. no. 1.4404/316L, Hastelloy C276, Monel 400
• Process connection and sealing screw	PN 160: stainless steel, mat.-No. 1.4404/316L
• Sealing material in the process connections	
- O-Ring	• Standard: Viton (FKM (FPM)) • Optional: NBR, PTFE (virginal), PTFE (glass fiber-reinforced), FFPM (Kalrez), Graphite
Material of parts not in contact with media	
Electronics housing	• Low copper die-cast aluminum AC-AlSi12 (Fe) or AC-AlSi 10 Mg (Fe) to DIN EN 1706 • Lacquer on polyurethane base, optional epoxy-based primer • Stainless steel name plates (mat. no. 1.4404/316L)
Process connection screws	Stainless steel, mat. no. 1.4404/316L
Mounting bracket	Steel or stainless steel mat. no. 1.4301
Measuring cell filling	Silicone oil
Process connection	¼-18 NPT female thread and flange connection with M10 to DIN 19213 or 7/16-20 UNF mounting thread to IEC 61518
Electrical connection	• Screw terminals • Cable entry via the following screwed glands: - M20 x 1.5 - ½-14 NPT - Han 7D/Han 8D connector - M12 plug
Displays and controls	
Pushbuttons	3 for local programming directly on transmitter
Display	• With or without integrated display • Cover with or without window
Auxiliary power supply	
Terminal voltage on transmitter	• DC 10.6 ... 44 V • With intrinsically-safe operation DC 10.6 ... 30 V

Certificates and approvals	
Classification according to PED 97/23/EC	
• PN 160 (MAWP 2320 psi)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)
Explosion protection	
Explosion protection for Europe (to ATEX)	
• Intrinsic safety "i"	PTB 09 ATEX 2004 X
- Marking	Ex II 1/2 G Ex ia/ib IIC T4
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F)
- Connection	To certified intrinsically-safe circuits with peak values: U_i = 30 V, I_i = 100 mA, P_i = 750 mW; R_i = 300 Ω
- Effective internal inductance:	L_i = 400 µH
- Effective inner capacitance:	C_i = 6 nF
• Explosion-proof "d"	BVS 09 ATEX E 027
- Marking	Ex II 1/2 G Ex 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_m = DC 10.5 ... 45 V
• Dust explosion protection for zone 20	PTB 09 ATEX 2004 X
- Marking	Ex II 1 D Ex iaD 20 T 120 °C
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F)
- Max. surface temperature	120 °C (248 °F)
- Connection	To certified intrinsically-safe circuits with peak values: U_i = 30 V, I_i = 100 mA, P_i = 750 mW, R_i = 300 Ω
- Effective internal inductance:	L_i = 400 µH
- Effective inner capacitance:	C_i = 6 nF
• Dust explosion protection for zone 21/22	BVS 09 ATEX E 027
- Marking	Ex II 2 D Ex tD A21 IP68 T120 °C Ex ia D21
- Connection	To circuits with values: U_m = 10.5 ... 45 V DC; P_{max} = 1.2 W
• Type of protection "n" (zone 2)	PTB 09 ATEX 2004 X
- Marking	Ex II 3 G Ex nA II T4/T6 Ex II 2/3 G Ex ib/nL IIC T4/T6 Ex II 2/3 G Ex ib/ic IIC T4/T6
- "nA" connection	U_m = 45 V DC
- "nL, ic" connection	U_i = 45 V
- Effective internal inductance:	L_i = 400 µH
- Effective inner capacitance:	C_i = 6 nF

Explosion protection for USA (to FM)	
Certificate of Compliance	No. 3033013
• Identification (XP/DIP) or (IS)	XP CL I, DIV 1, GP ABCDEFG T4 / T6 DIP CL II, III, DIV1, GP EFG T4/T6 IS CL I, II, III, DIV1, GP ABCDEFG T4 CL I, Zone 0, AEx ia IIC T4 CL I, Zone 1, AEx ib IIC T4
- Permissible Ambient Temperature	T_a = T4: -40 ... +85 °C (-40 ... +185 °F) T_a = T6: -40 ... +60 °C (-40 ... +140 °F)
- Entity parameters	According to "control drawing": A5E02189134N U_m = 30 V, I_m = 100 mA, P_i = 750 mW, L_i = 400µH , Ci = 6 nF
• Marking (NI/NO)	NI CL I, DIV 2, GP ABCD T4/T6 NI CL I, Zone 2, GP IIC T4/T6 S CL II, III, GPFG T4/T6 NI CL I, DIV 2, GP ABCD T4/T6, NIFW NI CL I, Zone 2, GP IIC T4/T6, NIFW NI CLII, III, DIV 2, GP FG T4/T6, NIFW
- Permissible Ambient Temperature	T_a = T4: -40 ... +85 °C (-40 ... +185 °F) T_a = T6: -40 ... +60 °C (-40 ... +140 °F)
- (NI/S) parameters	According to "control drawing": A5E02189134N U_m = 45 V, L_i = 400 µH, C_i = 6 nF,
Explosion protection for Canada (to $_C$CSA$_{US}$)	
Certificate of Compliance	No. 2280963
• Marking (XP/DIP)	CL I, DIV 1, GP ABCD T4 /T6; CL II, DIV 1, GP EFG T4/T6
- Permissible ambient temperature	T_a = T4: -40 ... +85 °C (-40 ... +185 °F) T_a = T6: -40 ... +60 °C (-40 ... +140 °F)
- Entity parameters	According to "control drawing": A5E02189134N U_m = 45 V
• Marking (ia/ib)	CL I, Ex ia/Ex ib IIC, T4 CL II, III, Ex ia/Ex ib, GP EFG, T4 CL I, AEx ia/AEx ib IIC, T4 CL II, III, AEx ia/ AEx ib, GP EFG, T4
- Permissible ambient temperature	T_a = T4: -40 ... +85 °C (-40 ... +185 °F)
- Entity parameters	U_i = 30 V, I_i = 100 mA, P_i = 750 mW, R_i = 300 Ω , L_i = 400 µH, C_i = 6 nF
• Marking (NI/n)	CL I, DIV 2, GP ABCD T4/T6 CL II, III, DIV 2, GP FG T4/T6 Ex nA IIC T4/T6 AEx nA IIC T4/T6 Ex nL IIC T4/T6 AEx nL IIC T4/T6
- Permissible ambient temperature	T_a = T4: -40 ... +85 °C (-40 ... +185 °F) T_a = T6: -40 ... +60 °C (-40 ... +140 °F)
- NI/nA parameters	According to "control drawing": A5E02189134N U_m = 45 V
- nL parameters	According to "control drawing": A5E02189134N U_i = 45 V, I_i = 100 mA, L_i = 400 µH, C_i = 6 nF

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

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

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

HART communication	
Load with connection of	
• HART communicator	R_B = 230 ... 1100 Ω
• HART modem	R_B = 230 ... 500 Ω
Cable	2 wire shielded: ≤ 3.0 km (1.86 miles), multiwire shielded: ≤ 1.5 km (0.93 miles)
Protocol	HART Version 6.0
PC/laptop requirements	IBM compatible, RAM > 32 MByte, hard disk > 70 MByte, depending on modem type: RS 232-interface or USB connection, VGA graphics
Software for computer	SIMATIC PDM 6.0

Selection and Ordering data			Order No.
Pressure transmitters for differential pressure and flow, SITRANS P500 HART, PN 160 (MAWP 2320 psi)			**7 M F 5 4 ■ ■ - ■ ■ ■ ■ 0**
Enclosure		**Thread for cable gland**	
Die-cast aluminum, dual compartment		M20x1.5	**0**
Die-cast aluminum, dual compartment		½-14 NPT	**1**
Output			
4 ... 20 mA, HART			**3**
Measuring cell filling	**Measuring cell cleaning**		
Silicone oil	normal		**1**
Measuring span			
1.25 ... 250 mbar	(0.5 ... 100.4 inH_2O)		**D**
6.25 ... 1250 mbar	(2.5 ... 502 inH_2O)		**E**
Wetted parts materials (stainless steel process flanges)			
Seal diaphragm	Process connection		
Stainless steel 1.4404/316L	Stainless steel 1.4404/316L		**A**
Hastelloy C276	Stainless steel 1.4404/316L		**B**
Monel 400	Stainless steel 1.4404/316L		**C**
Process connection			
Female thread ¼-18 NPT			
• Sealing screw opposite process connection			
- Mounting thread 7/16 - 20 UNF according to EN 61518			**0**
- Mounting thread M10 to DIN 19213			**1**
• Vent on side of process flange[1)]			
- Mounting thread 7/16 - 20 UNF according to EN 61518			**4**
- Mounting thread M10 to DIN 19213			**5**

1) Not in conjunction with remote seals

Selection and Ordering data	Order code
Further designs Add "**-Z**" to Order No. and specify Order Code.	
Attachments	
Mounting bracket made of steel	**A01**
Mounting bracket made of stainless steel	**A02**
Display (Standard: no display, cover closed)	
With display and blanking cover	**A10**
With display and glass cover	**A11**
Special casing / cover version	
Two coats of lacquer on casing, cover (PU on epoxy)	**A20**
Electrical connection and cable entry (Standard: no cable gland, only dust protection caps)	
Cable gland made of plastic (IP66/68)[4]	**A50**
Cable glands made of metal (IP66/68)	**A51**
Cable glands made of stainless steel (IP66/68)	**A52**
M12 connectors without cable socket (IP66/67)[4]	**A60**
M12 connectors complete with cable socket (IP66/67)[4]	**A61**
Han 7D connectors, plastic, straight (with cable socket) (IP65)[4]	**A71**
Han 7D connectors, plastic, angled (with cable socket) (IP65)[4]	**A72**
Han 7D connectors, metal enclosure, straight (with cable socket) (IP65)[4]	**A73**
Han 7D connectors, metal enclosure, angled (with cable socket) (IP65)[4]	**A74**
Han 8D connectors, plastic, straight (with cable socket) (IP65)[4][8]	**A75**
Han 8D connectors, plastic, angled (with cable socket) (IP65)[4][8]	**A76**
Han 8D connectors, metal enclosure, straight (with cable socket) (IP65)[4][8]	**A77**
Han 8D connectors, metal enclosure, angled (with cable socket) (IP65)[4][8]	**A78**
PG 13.5 adapters[4]	**A82**
Language for labels, leporellos, menu language default [9] (instead of English as standard)	
German	**B10**
French	**B12**
Spanish	**B13**
Italian	**B14**
Chinese	**B15**
Russian	**B16**
Japanese	**B17**
English with units psi/inH_2O/°F	**B21**
Special version: Supplementary menu languages (Standard: English, German, French, Spanish, Italian)	
Asia language package (in addition: Chinese, Japanese, Russian)	**B80**
Certificates (available online for downloading)[1]	
Quality inspection certificate (Five-step factory calibration) according to IEC 60770-2[2]	**C11**
Acceptance test certificate according to EN 10204-3.1[3]	**C12**

Selection and Ordering data	Order code
Further designs Add "**-Z**" to Order No. and specify Order Code.	
Degree of protection approvals: Ex ia/ib (intrinsic safety)	
Ex ia/ib protection (ATEX) (T4)	**E00**
Ex IS protection (FM) (T4)	**E01**
Ex IS protection ($_C$CSA$_{US}$) (T4)	**E02**
Ex ia/ib protection (NEPSI) (T4)	**E06**
Degree of protection approvals: Ex d (flameproof)	
Ex d explosion-proof (ATEX)(T4/T6)	**E20**
Ex XP explosion-proof and DIP (FM)(T4/T6)	**E21**
Ex XP explosion-proof and DIP ($_C$CSA$_{US}$)(T4/T6)	**E22**
Ex d explosion-proof (NEPSI)(T4/T6)	**E26**
Degree of protection approvals: n/NI	
Zone 2 (nA, nL, ic) (ATEX) (T4/T6)	**E40**
Div2 NI, Div2 NI-field wiring (FM) (T4/T6)	**E41**
Zone 2 (nA, nL), Div2 NI ($_C$CSA$_{US}$) (T4/T6)	**E42**
Zone 2 (nA, nL) (NEPSI) (T4/T6)	**E46**
Degree of protection approvals: Dust Zone 20/21/22	
Use in Zone 21/22 (Ex tD) (ATEX)	**E60**
Use in Zone 20/21/22 (Ex iaD) (ATEX)	**E61**
Use in Zone 21/22 (Ex DIP) (NEPSI)	**E66**
Degree of protection approvals: Combinations	
IS protection and XP and DIP (FM)	**E71**
IS protection and XP and DIP ($_C$CSA$_{US}$)	**E72**
IS protection and XP and DIP (FM/$_C$CSA$_{US}$)	**E73**
Supplementary approvals/degree of protection	
Dual Seal approval[5]	**E85**
Special process connection versions (diff. pressure)	
Side vents for gas measurements[7]	**L32**
Swap process connection: high-pressure side at front	**L33**
Process flanges, O-rings, special material **Standard: Viton (FKM (FPM)**	
Process connection sealing rings made of PTFE (Teflon), virginal	**L60**
Process connection sealing rings made of PTFE (Teflon), glass fiber-reinforced	**L61**
Process connection sealing rings made of FFPM (Kalrez)	**L62**
Process connection sealing rings made of NBR	**L63**
Process connection sealing rings made of graphite	**L64**
Drain/Vent valve (1 set = 2 units)	
2 ventilation valves ¼- 18 NPT, in material of process flanges)	**L80**
Remote seals	
Transmitters with connection of remote seal[6] (For premounted valve manifolds see page 1/194)	**V00**

1) Enclosed in print or as CD: see page 1/192.

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

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

4) Not together with types of protection "Explosion-proof", "Ex nA" and "Intrinsic safety and explosion-proof"

5) Only in conjunction with FM and/or $_C$CSA$_{US}$

6) Please select a remote seal separately. Also refer to the information under 2). Remote seals see page 2/197.

7) Only in conjunction with process connection "Vent on side".

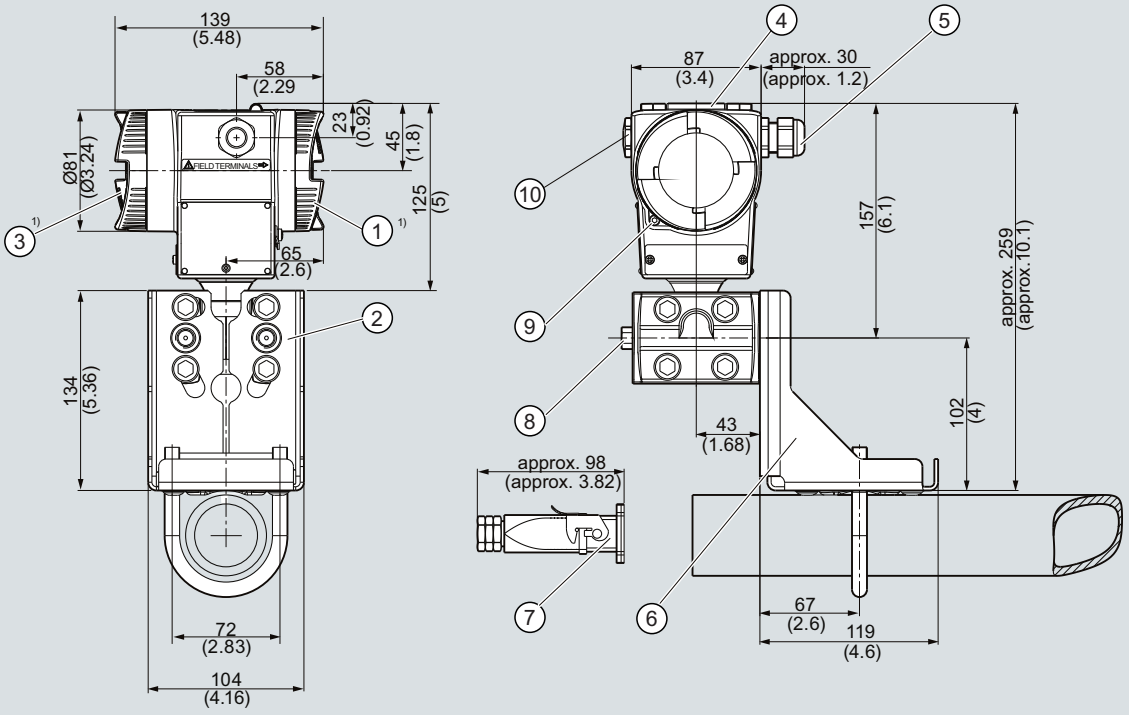
8) The Han 8D plug is identical with the former Han 8U version.

9) For option B15, B16 and B17 the menu language default is english. Otherwise the Option B80 (Asia language package) is necessary.

SITRANS P500
for differential pressure and flow

Selection and Ordering data	Order code
Additional data Please add "**-Z**" to Order No. and specify Order code(s) and plain text.	
Measuring range to be set Specify in plain text:	
• In the case of linear characteristic curve (max. 5 characters): Y01: ... up to ... mbar, bar, kPa, MPa, psi	**Y01**
• In the case of square rooted characteristic (max. 5 characters): Y02: ... up to ... mbar, bar, kPa, MPa, psi	**Y02**
Measuring point number and measuring point identifier (only standard ASCII character set) Specify in plain text:	
Measuring point number (TAG No.), max. 16 characters Y15:	**Y15**
Measuring point text (max. 27 char.) Y16:	**Y16**
Entry of HART address (TAG), max. 32 characters Y17:	**Y17**
Setting of pressure indication in pressure units Specify in plain text (standard setting: mbar) Y21: bar, kPa, MPa, psi, ...	**Y21**
Note: The following pressure units are selectable: bar, mbar, mm H_2O*), in H_2O*), ftH_2O*), mmHG, inHG, psi, Pa, kPa, MPa, g/cm^2, kg/cm^2, Torr, ATM, % or mA *) Reference temperature 20 °C	
Setting of pressure indication in non-pressure units Specify in plain text: Y22: ... up to ... l/min, m^3/h, m, USgpm, ... (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	**Y22 + Y01 or Y02**
Customer-specific settings	
Damping setting (range: 0 ... 100 s) (Standard setting: 2 s)	**Y30**

Dimensional drawings



1 Terminal side
2 Process connection: ¼-18 NPT (EN61518)
3 Electronics side, digital display
4 Protective cover for the pushbuttons
5 Cable entry:
- Screwed gland M20 x 1.5[3)]
- Screwed gland ½-14 NPT
- Han 7D/Han 8D connector[2)3)]
- M12 connector

6 Mounting bracket (optional)
7 Electrical connection:
- Han 7D/Han 8D connector/socket[2)3)]

8 Vent valve (optional)
9 Safety catch
10 Blanking plug

1) Allow approx. 20 mm (0.79 inch) additional thread length to permit unscrewing

2) Not with type of protection "Explosion-proof"
3) Not with type of protection "FM + $_{C}$CSA$_{US}$ [IS + XP]"

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

Technical specifications

Input		
Measured variable	Level	
Span (infinitely adjustable)	Span (min. ... max.)	Maximum operating pressure
	1.25 ... 250 mbar (0.5 … 100 inH_2O)	See "Mounting flange"
	6.25 ... 1250 mbar (2.5 … 500 inH_2O)	
Lower range limit		
• Measuring cell with silicone oil filling	-100 % of max. span or 500 mbar a (7.25 psia) vacuum resistance Also available as vacuum-resistant remote seal: 30 mbar a (0.44 psia)	
Upper range limit	100% of max. span	
Start of scale	Between measuring limits (freely adjustable)	
Output		
Output current signal	4 ... 20 mA	
• Lower current limit (freely adjustable)	3.55 mA, factory setting 3.8 mA	
• Upper current limit (freely adjustable)	23 mA, factory setting 20.5 mA	
• Ripple (without HART communication)	I_{pp} ≤ 0.4 of max. output current	
• adjustable damping	0... 100 s in steps of 0.1 s, factory setting 2 s	
• current transmitter	3.55 ... 23 mA	
• Failure signal	Adjustable within limits: • Lower: 3.55 … 3.7 mA (factory setting 3.6 mA) • Upper: 21.0 … 23 mA (factory setting 22.8 mA)	
Load		
• Without HART communication	$R_B \leq (U_H - 10.5\ V)/0.023\ A$ in Ω, U_H : Power supply in V	
• With HART communication		
- HART Communicator	R_B = 230 ... 1100 Ω	
- HART modem	R_B = 230 ... 500 Ω	
Characteristic curve	Linearly rising or linearly falling and user-specific	
Measuring accuracy		
Reference conditions (in accordance with IEC 60770-1)	• Rising characteristic curve • Start of scale 0 bar • Stainless steel seal diaphragm • Measuring cell with silicone oil filling • Room temperature (25 °C (77 °F))	
Error in measurement at limit setting incl. hysteresis and reproducibility r: Span ratio (r = max. span / set span)		
• Linear characteristic		
- r ≤ 10	≤ 0.03 %	
- r > 10	≤ (0.003 · r) %	
Long-term stability	≤ (0.05 · r) % per 5 years	
	≤ (0.08 · r) % per 10 years	
Influence of ambient temperature per 28 °C[1)]	≤ (0.01 · r + 0.035) % / 28 °C	
Influence of static pressure		
• On the zero point (PKN)[2)]	≤ (0.007 · r) % per 70 bar	
• on the span (PKS)	≤ 0.03 % per 70 bar	
Influence of power supply	≤ 0.005 %/1 V	
Rated conditions		
Mounting position	Defined by flange	
Ambient conditions		
• Ambient temperature (Note: Observe the temperature class in areas subject to explosion hazard.)		
- total device	-40 ... +85 °C (-40 ... +185 °F)	
- Readable display	-20 ... +85 °C (-4 ... +185 °F)	
- Storage temperature	-50 ... +90 °C (-58 ... +194 °F)	
Climatic class		
• Condensation	Relative humidity 0 … 100 % (condensation permissible)	
Degree of protection to IEC 60529	IP66/IP68 and NEMA 4X (with corresponding cable gland)	
Electromagnetic Compatibility		
• Emitted interference and interference immunity	Acc. to EN 61326 and NAMUR NE 21	
Permissible pressures	According to 97/23/EC pressure equipment directive	
Medium temperature of high-pressure side		
• Measuring cell with silicone oil filling		
- $p_{abs} \geq 1$ bar	-40 ... +175[3)] °C (-40 ... +347[3)] °F)	
- $p_{abs} < 1$ bar	-40 ... +80 °C (-40 ... +176 °F)	
Design		
Weight		
• To EN (pressure transmitter with mounting flange, without tube)	approx. 9.8 … 11.8 kg (21.6… 26.0 (lb)	
• To ASME (pressure transmitter with mounting flange, without tube)	approx. 9.8 … 16.8 kg (21.6 … 37.0 lb)	
Material of wetted parts at the high-pressure side		
• Seal diaphragm of mounting flange	Stainless steel 1.4404/316L, Hastelloy C276, mat. no. 2.4819, Monel 400, mat. no. 2.4360, Tantal, PFA auf Edelstahl 1.4404/316L, PTFE auf Edelstahl 1.4404/316L	
• Sealing face	Smooth to EN 1092-1, Form b1 and/or ASME B16.5 RF 125 … 250 AA for stainless steel316L, EN1092-1 Form B2 and/or ASME B16.5 RFSF in the case of other materials	
• Sealing material in the process connection		
- O-Ring	• Standard: Viton (FKM (FPM)) • Optional: NBR, PTFE (virginal), PTFE (glas fiber-reinforced), FFPM (Kalrez), Graphite	
- For vacuum application of mounting flange	copper	

Material of wetted parts at the low-pressure side	
• Seal diaphragm	Stainless steel, mat. no. 1.4404/316L, Hastelloy C276, Monel 400
• Process connection and sealing screw	• Stainless steel, mat. no. 1.4404/316L
• Sealing material in the process connection	
- O-Ring	• Standard: Viton (FKM (FPM)) • Optional: NBR, PTFE (virginal), PTFE (glas fiber-reinforced), FFPM (Kalrez), Graphite
Material of parts not in contact with media	
Electronics housing	• Low copper die-cast aluminum AC-AlSi12 (Fe) or AC-AlSi 10 Mg (Fe) to DIN EN 1706 • Lacquer on polyurethane base, optional epoxy-based primer • Stainless steel serial plate
Process connection screws	Stainless steel
Measuring cell filling	Silicone oil
• Liquid mounting flange	Silicone oil or other material
Process connection	
• High-pressure side	Flange to EN and ASME
• Low-pressure side	¼-18 NPT female thread and flange connection with M10 to DIN 19213 or 7/16-20 UNF mounting thread to IEC 61518
Electrical connection	• Screw terminals • Cable entry via the following screwed glands: - M20 x 1.5 - ½-14 NPT - Han 7D/Han 8D connector - M12 plug
Displays and controls	
Push buttons	3; for operation directly on the device
Display	• With or without integrated display • Cover with or without window
Auxiliary power supply	
Terminal voltage on transmitter	• DC 10.6 ... 44 V • With intrinsically-safe operation DC 10.6 ... 30 V
Certificates and approvals	
Classification according to PED 97/23/EC	
• PN 160 (MAWP 2320 psi)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)
Explosion protection	
Explosion protection for Europe (to ATEX)	
• Intrinsic safety "i"	PTB 09 ATEX 2004 X
- Marking	Ex II 1/2 G Ex ia/ib IIC T4
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F)
- Connection	To certified intrinsically-safe circuits with peak values: U_i = 30 V, I_i = 100 mA, P_i = 750 mW; R_i = 300 Ω
- Effective internal inductance:	L_i = 400 µH
- Effective inner capacitance:	C_i = 6 nF
• Explosion-proof "d"	BVS 09 ATEX E 027
- Marking	Ex II 1/2 G Ex 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_m = DC 10.5 ... 45 V
• Dust explosion protection for zone 20	PTB 09 ATEX 2004 X
- Marking	Ex II 1 D Ex iaD 20 T 120 °C
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F)
- Max. surface temperature	120 °C (248 °F)
- Connection	To certified intrinsically-safe circuits with peak values: U_i = 30 V, I_i = 100 mA, P_i = 750 mW, R_i = 300 Ω
- Effective internal inductance:	L_i = 400 µH
- Effective inner capacitance:	C_i = 6 nF
• Dust explosion protection for zone 21/22	BVS 09 ATEX E 027
- Marking	Ex II 2 D Ex tD A21 IP68 T120 °C Ex ia D21
- Connection	To circuits with values: U_H = 10.5 ... 45 V DC; P_{max} = 1.2 W
• Type of protection "n" (zone 2)	PTB 09 ATEX 2004 X
- Marking	Ex II 3 G Ex nA II T4/T6 Ex II 2/3 G Ex ib/nL IIC T4/T6 Ex II 2/3 G Ex ib/ic IIC T4/T6
- "nA" connection	U_m = 45 V DC
- "nL, ic" connection	U_i = 45 V
- Effective internal inductance	L_i = 400 µH
- Effective inner capacitance	C_i = 6 nF
Explosion protection for USA (to FM)	
Certificate of Compliance	No. 3033013
• Identification (XP/DIP) or (IS)	XP CL I, DIV 1, GP ABCDEFG T4 / T6 DIP CL II, III, DIV1, GP EFG T4/T6 IS CL I, II, III, DIV1, GP ABCDEFG T4 CL I, Zone 0, AEx ia IIC T4 CL I, Zone 1, AEX ib IIC T4
- Permissible Ambient Temperature	T_a = T4: -40 ... +85 °C (-40 ... +185 °F) T_a = T6: -40 ... +60 °C (-40 ... +140 °F)
- Entity parameters	According to "control drawing": A5E02189134N U_m = 30 V, I_m = 100 mA, P_i = 750 mW, L_i = 400 µH , C_i = 6 nF
• Marking (NI/NO)	NI CL I, DIV 2, GP ABCD T4/T6 NI CL I, Zone 2, GP IIC T4/T6 S CL II, III, GPFG T4/T6 NI CL I, DIV 2, GP ABCD T4/T6, NIFW NI CL I, Zone 2, GP IIC T4/T6, NIFW NI CLII, III, DIV 2, GP FG T4/T6, NIFW
- Permissible Ambient Temperature	T_a = T4: -40 ... +85 °C (-40 ... +185 °F) T_a = T6: -40 ... +60 °C (-40 ... +140 °F)
- (NI/S) parameters	According to "control drawing": A5E02189134N U_m = 45 V, L_i = 400 µH, Ci = 6 nF

SITRANS P500 for level

Explosion protection for Canada	
(to $_{C}CSA_{US}$)	
Certificate of Compliance	No. 2280963
• Marking (XP/DIP)	CL I, DIV 1, GP ABCD T4 /T6; CL II, DIV 1, GP EFG T4/T6
- Permissible Ambient Temperature	T_a = T4: -40 ... +85 °C (-40 ... +185 °F) T_a = T6: -40 ... +60 °C (-40 ... +140 °F)
- Entity parameters	According to "control drawing": A5E02189134N, U_m = 45 V
• Marking (ia/ib)	CL I, Ex ia/Ex ib IIC, T4 CL II, III, Ex ia/Ex ib, GP EFG, T4 CL I, AEx ia/AEx ib IIC, T4 CL II, III, AEx ia/ AEx ib, GP EFG, T4
- Permissible Ambient Temperature	T_a = T4: -40 ... +85 °C (-40 ... +185 °F)
- Entity parameters	U_i = 30 V, I_i = 100 mA, P_i = 750 mW, R_i = 300 Ω , L_i = 400 µH, C_i = 6 nF
• Marking (NI/n)	CL I, DIV2, GP ABCD T4/T6 CL II, III, DIV2, GP FG T4/T6 Ex nA IIC T4/T6 AEx nA IIC T4/T6 Ex nL IIC T4/T6 AEx nL IIC T4/T6
- Permissible Ambient Temperature	T_a = T4: -40 ... +85 °C (-40 ... +185 °F) T_a = T6: -40 ... +60 °C (-40 ... +140 °F)
- NI/nA parameters	According to "control drawing": A5E02189134N, U_m = 45 V
- nL parameters	According to "control drawing": A5E02189134N, U_i = 45 V, I_i = 100 mA, L_i = 400 µH, C_i = 6 nF
Explosion protection for China (acc. to NEPSI)	
• Intrinsic safety "i"	GYJ111111X
- Marking	Ex ia/ib IIB/IIC T4
- Permissible ambient temperature	40 ... +85 °C (-40 ... +185 °F)
- Connection	To certified intrinsically-safe circuits with maximum values: U_i = 30 V I_i = 100 mA, P_i = 750 mW
- Effective internal induc-	L_i = 400 mH
- Effective inner capaci-	C_i = 6 nF
• Explosion-proof "d"	GYJ111112
- Marking	Ex dia IIC T4/T6
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +60 °C (-40 ... +140 °F) temperature class T6
- Connection	To circuits with values: U_m = DC 10.5 ... 45 V
• Dust explosion protection for zone 21/22	GYJ111112
- Marking	DIP A21 TA,T120 °C IP68 D21
- Connection	To circuits with values: U_m = DC 10.5 ... 45 V
• Type of protection "n" (zone	GYJ111111X
- Marking	Ex nL IIB/IIC T4/T6 Ex nA II T4/T6
- Connection	U_i = 45 V DC
- Effective internal induc-	L_i = 400 mH
- Effective inner capaci-	C_i = 6 nF

1) Only relevant for the pressure transmitter. The temperature error of the remote seal must calculated separately.
2) If the Type "D" measuring cell is used, the error should be increased by a factor of 5. This error can be reduced to 0 by a means of a zero adjustment
3) This value may be increased if the process connection is sufficiently insulated.

HART communication	
Load with connection of	
• HART Communicator	R_B = 230 ... 1100 Ω
• HART modem	R_B = 230 ... 500 Ω
Cable	2 wire shielded: ≤ 3.0 km (1.86 miles), multiwire shielded: ≤ 1.5 km (0.93 miles)
Protocol	HART Version 6.0
PC/laptop requirements	IBM compatible, RAM > 32 MByte, hard disk > 70 MByte, depending on modem type: RS 232-interface or USB connection, VGA graphics
Software for computer	SIMATIC PDM 6.0

Selection and Ordering data			Order No.	Order code
Pressure transmitters for level, SITRANS P500 HART			7MF56 ■■ - ■■■■ 0 - ■■■■	■■■
Enclosure		**Thread for cable gland**		
Die-cast aluminum, dual compartment		M20x1.5	0	
Die-cast aluminum, dual compartment		½-14 NPT	1	
Output				
4 ... 20 mA, HART			3	
Measuring cell filling	**Measuring cell cleaning**			
Silicone oil	normal		1	
Measuring span (min. ... max.)				
1.25 ... 250 mbar	(0.5 ... 100.4 inH_2O)		D	
6.25 ... 1250 mbar	(2.5 ... 502 inH_2O)		E	
Wetted parts of the low-pressure side (stainless steel process flanges)				
Seal diaphragm	Process connection			
Stainless steel 1.4404/316L	Stainless steel 1.4404/316L		A	
Hastelloy C276	Stainless steel 1.4404/316L		B	
Monel 400	Stainless steel 1.4404/316L		C	
Process connection of low-pressure side				
Female thread ¼-18 NPT				
• Sealing screw opposite process connection				
- Mounting thread 7/16 - 20 UNF according to IEC 61518			0	
- Mounting thread M10 to DIN 19213			1	
• Vent on side of process flange				
- Mounting thread 7/16 - 20 UNF according to IEC 61518			4	
- Mounting thread M10 to DIN 19213			5	
Wetted parts materials (high-pressure side)				
Stainless steel 1.4404/316L			0	
Hastelloy C276 mat. no. 2.4819			1	
Monel 400 mat. no. 2.4360			2	
Tantalum			3	
PFA coated on stainless steel			4	
PTFE on stainless steel 1.4404/316L (not in combination with an extension)			6	A
Other version Add order code and plain text: Material: ... ; Extension length: ...			9	Y	N 1 Y
Process connection on high-pressure side: Extension length				
None				A
50 mm (1.97 inch)				B
100 mm (3.94 inch)				C
150 mm (5.90 inch)				D
200 mm (7.87 inch)				E
Other version: See option "9" for "Wetted parts materials"				
Process connection on high-pressure side: Nominal diameter/Nominal pressure				
DN 50, PN 40[6)]				B
DN 80, PN 40				D
DN 100, PN 16				G
DN 100, PN 40				H
2", class 150[6)]				L
2", class 300[6)]				M
3", class 150				Q
3", class 300				R
4", class 150				T
4", class 300				U
Other version, add Order Code and plain text: Nominal diameter: ... ; Nominal pressure: ...				Z	Q 1 Y

SITRANS P500 for level

Selection and Ordering data	Order No.		Order code
Pressure transmitters for level, SITRANS P500 HART	**7MF56 - 0 -**		
Process connection on high-pressure side: Filling liquid			
Silicone oil M5		**0**	
Silicone oil M50		**1**	
High-temperature oil		**2**	
Halocarbon (for oxygen measurement)		**3**	
FDA compliant oil		**4**	
Glycerin/water		**5**	
Other version, add Order Code and plain text: Filling liquid: ...		**9**	**R1Y**

Selection and Ordering data	Order code
Further designs Add "**-Z**" to Order No. and specify Order Code.	
Display (Standard: no display, cover closed)	
With display and blanking cover	**A10**
With display and glass cover	**A11**
Special version: cover/casing	
Two coats of lacquer on casing, cover (PU on epoxy)	**A20**
Electrical connection and cable entry (Standard: no cable gland, only dust protection caps)	
Cable gland made of plastic (IP66/68)[4]	**A50**
Cable glands made of metal (IP66/68)	**A51**
Cable glands made of stainless steel (IP66/68)	**A52**
M12 connectors without cable socket (IP66/67)[4]	**A60**
M12 connectors, cable socket (IP66/67)[4]	**A61**
Han 7D connectors, plastic, straight (with cable socket) (IP65)[4]	**A71**
Han 7D connectors, plastic, angled (with cable socket) (IP65)[4]	**A72**
Han 7D connectors, metal enclosure, straight (with cable socket) (IP65)[4]	**A73**
Han 7D connectors, metal enclosure, angled (with cable socket) (IP65)[4]	**A74**
Han 8D connectors, plastic, straight (with cable socket) (IP65)[4][7]	**A75**
Han 8D connectors, plastic, angled (with cable socket) (IP65)[4][7]	**A76**
Han 8D connectors, metal enclosure, straight (with cable socket) (IP65)[4][7]	**A77**
Han 8D connectors, metal enclosure, angled (with cable socket) (IP65)[4][7]	**A78**
PG 13.5 adapters[4]	**A82**
Language for labels, leporellos and menu language default[8] (instead of English as standard)	
German	**B10**
French	**B12**
Spanish	**B13**
Italian	**B14**
Chinese	**B15**
Russian	**B16**
Japanese	**B17**
English with units: psi/inH_2O	**B21**
Special version: Supplementary menu languages (Standard: English, German, French, Spanish, Italian)	
Asia language package (in addition: Chinese, Japanese, Russian)	**B80**
Certificates (available online for downloading)[1]	
Quality inspection certificate (Five-step factory calibration) according to IEC 60770-2[2]	**C11**
Acceptance test certificate according to EN 10204-3.1[3]	**C12**
Degree of protection approvals: Ex ia/ib (intrinsic safety)	
Ex ia/ib protection (ATEX) (T4)	**E00**
Ex IS protection (FM) (T4)	**E01**
Ex IS protection ($_C$CSA$_{US}$) (T4)	**E02**
Ex ia/ib protection (NEPSI) (T4)	**E06**

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

1) Enclosed in print or as CD: see page 1/192.

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

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

4) Not together with types of protection "Explosion-proof", "Ex nA" and "Intrinsic safety and explosion-proof"

5) Only in conjunction with FM and/or $_C$CSA$_{US}$

6) Not recommended for Measuring span "D"

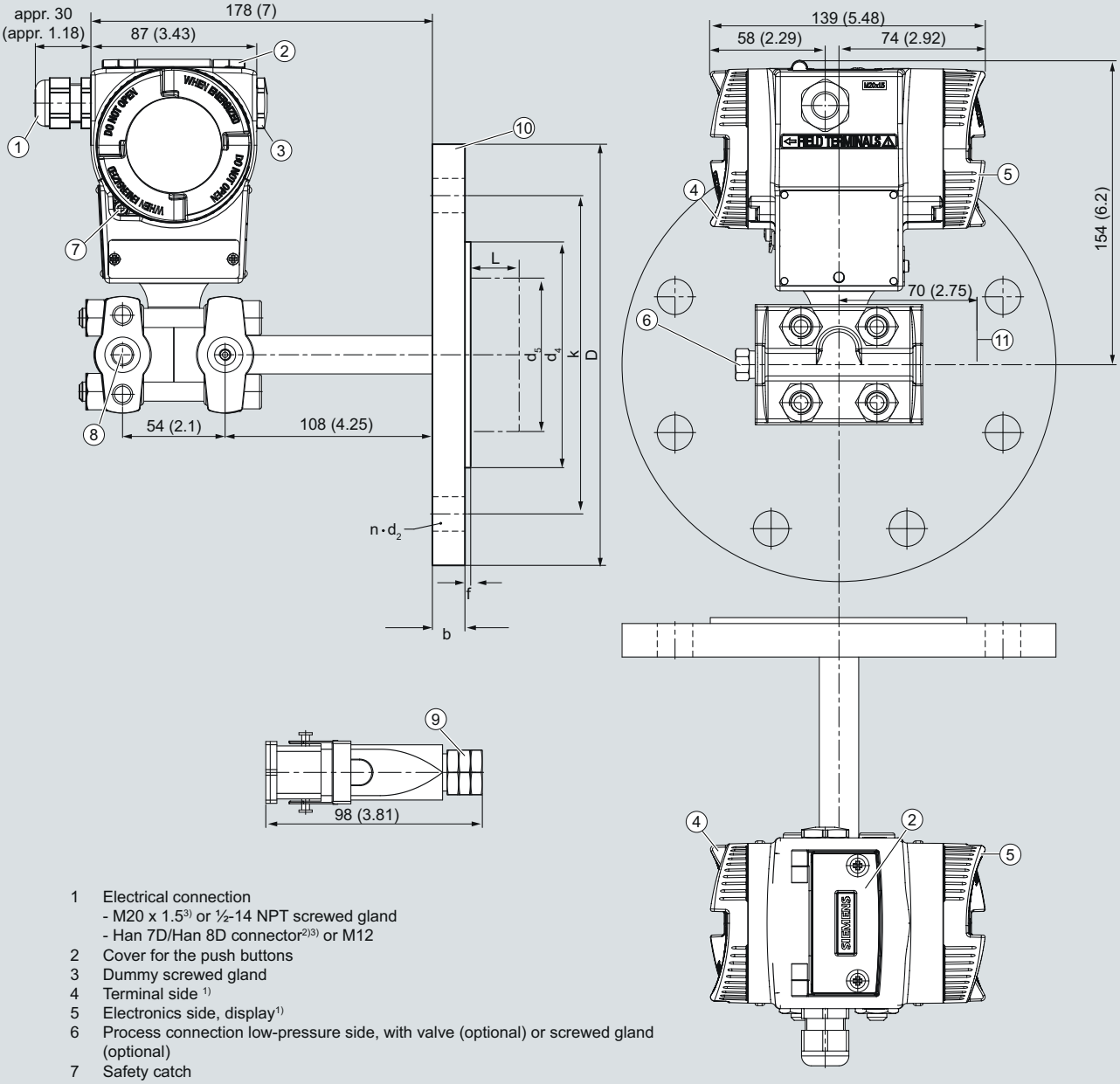
7) The Han 8D plug is identical with the former Han 8U version.

8) For option B15, B16 and B17 the menu language default is english. Otherwise the Option B80 (Asia language package) is necessary.

SITRANS P500 for level

Selection and ordering data	Order code
Additional data Please add "**-Z**" to Order No. and specify Order code(s) and plain text.	
Measuring range to be set Specify in plain text:	
Linear characteristic curve (max. 5 characters): Y01: ... up to ... mbar, kPa, MPa, psi	**Y01**
Measuring point number and measuring point identifier (only standard ASCII character set) Specify in plain text:	
Measuring point number (TAG No.), max. 16 characters Y15:	**Y15**
Measuring point text (max. 27 char.) Y16:	**Y16**
Entry of HART address (TAG), max. 32 characters Y17:	**Y17**
Setting of pressure indication in pressure units Specify in plain text (standard setting: mbar) Y21: bar, kPa, MPa, psi, ... Note: The following pressure units are selectable: bar, mbar, mm H_2O*), in H_2O*), ftH_2O*), mmHG, inHG, psi, Pa, kPa, MPa, g/cm^2, kg/cm^2, Torr, ATM, % or mA *) Reference temperature 20 °C	**Y21**
Setting of pressure indication in non-pressure units Specify in plain text: Y22: ... up to ... l/min, m^3/h, m, USgpm, ... (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	**Y22 +** **Y01**
Customer-specific settings	
Damping setting (range: 0 ... 100 s) (Standard setting: 2 s)	**Y30**

Dimensional drawings



1 Electrical connection
- M20 x 1.5[3] or ½-14 NPT screwed gland
- Han 7D/Han 8D connector[2)3)] or M12

2 Cover for the push buttons
3 Dummy screwed gland
4 Terminal side [1)]
5 Electronics side, display[1)]
6 Process connection low-pressure side, with valve (optional) or screwed gland (optional)
7 Safety catch
(only for type of protection "Explosion-proof"; not shown in the diagram)
8 Process connection: low-pressure side ¼-18NPT (IEC 61518)
9 Electrical connection:
- Han 7D/Han 8D connector/socket[2)3)]

10 Mounting flange according to EN 1092-1 or ASME B16.5
11 Clearance for turning the casing

[1)] Allow approx. 20 mm (0.79 inch) additional thread length
[2)] Not with type of protection "Explosion-proof"
[3)] Not with type of protection "FM + $_{C}CSA_{US}$ [IS + XP]"

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

Connection to EN 1092-1

Nominal diameter	Nominal pressure	b	D	d	d_2	d_4	d_5	d_M	f	k	n	L
		mm	mm	mm	mm	mm	mm	mm	mm	mm		mm
DN50	PN 40	20	165	61	18	102	48.3	45[1)]	2	125	4	0, 50, 100, 150 or 200
DN 80	PN 40	24	200	90	18	138	76	72[2)]	2	160	8	
DN 100	PN 16	20	220	115	18	158	94	89	2	180	8	
	PN 40	24	235	115	22	162	94	89	2	190	8	

Connection to ASME B16.5

Nominal diameter	Nominal pressure	b	D	d_2	d_4	d_5	d_M	f	k	n	L
	lb/sq.in.	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)		inch (mm)
2 inch	Class 150	0.77 (19.5)	5.91 (150)	0.75(19.0)	3.62(92)	1.9(48.3)	1.77 (45)[1)]	0.079 (2.0)	4.75 (120.7)	4	0, 2, 3.94, 5.94 or 7.87 (0, 50, 100, 150 or 200)
	Class 300	0.89 (22.7)	6.49(165)	0.75(19.0)	3.62(92)	1.9(48.3)	1.77 (45)[1)]	0.079 (2.0)	5.0 (127)	8	
3 inch	Class 150	0.96 (24.3)	7.5 (190.5)	0.75 (19.0)	5 (127)	3.0 (76)	2.83 (72)[2)]	0.079 (2.0)	6 (152.4)	4	
	Class 300	1.14 (29.0)	8.27 (210)	0.87 (22.2)	5 (127)	3.0 (76)	2.83 (72)[2)]	0.079 (2.0)	6.69 (168.3)	8	
4 inch	Class 150	0.96 (24.3)	9.06 (230)	0.75 (19.0)	6.19 (157.2)	3.69 (94)	3.5 (89)	0.079 (2.0)	7.5 (190.5)	8	
	Class 300	1.27 (32.2)	10.04 (255)	0.87 (22.2)	6.19 (157.2)	3.69 (94)	3.5 (89)	0.079 (2.0)	7.88 (200)	8	

Explanations of tables:

d: Internal diameter of gasket to DIN 2690

d_M: Effective diaphragm diameter

d_5: Diameter of extension

f: Milling edge

L: Extension length

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

2) 89 mm = 3½ inch with tube length L=0.

Overview

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

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

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

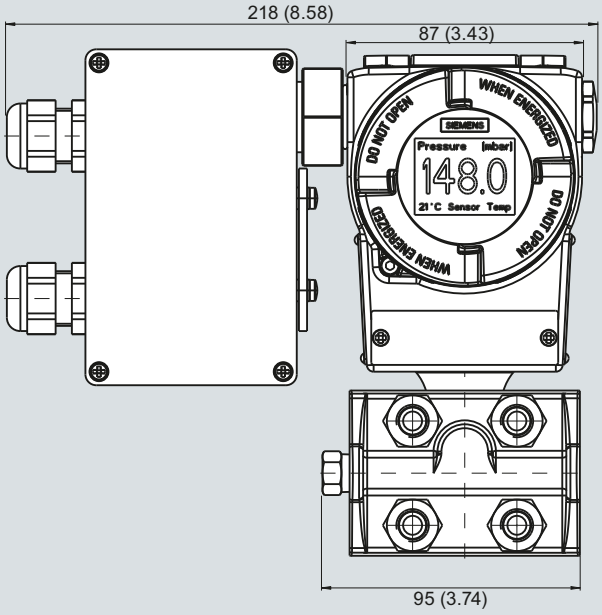
Note on ordering:

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

Technical specifications

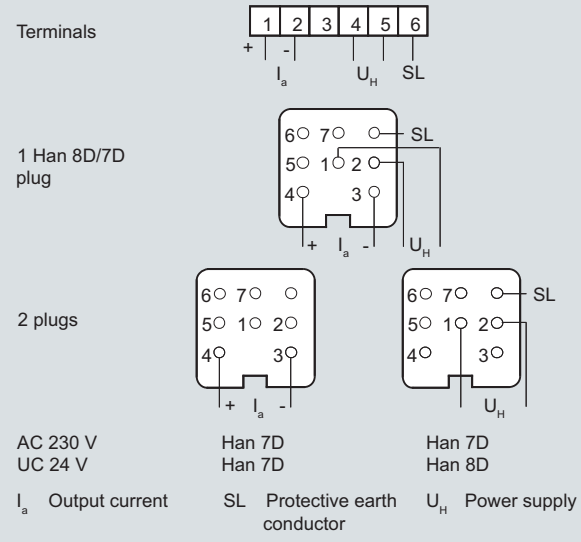
Output	
Output signal	0 ... 20 mA or 4 ... 20 mA
Load	Max. 750 Ω
Voltage measurement	Linear (square-rooting in transmitter if necessary)
Electrical isolation	Between power supply and input/output
Measuring accuracy	According to IEC 60770-1
Conformity error (in addition to transmitter)	≤ 0.15 % of set span
Influence of ambient temperature	≤ 0.1 % per 10 K
Power supply effect	≤ 0.1 % per 10 % change in voltage or frequency
Load effect	≤ 0.1 % per 100 % change
Rated conditions	
Ambient temperature	-20 ... +80 °C (-4 ... +176 °F)
Storage temperature	-50 ... +85 °C (-58 ... +185 °F)
Degree of protection	IP54 to IEC 60529
Electromagnetic compatibility (EMC)	EN 50081, EN 50082
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 8D 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 specified limits)	Approx. 2.5 V_{pp}

Dimensional drawings



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

Schematics



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

SITRANS P500
Supplementary electronics for 4-wire connection

Selection and Ordering data		Order code
Supplementary electronics for 4-wire connection Order No. of the transmitter **7MF54..-.....-....** or **7MF56..-.....-....** add **"-Z"** and Order code.		**V** ■■
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**
Accessories		Order No.
Instruction Manual German/English		**A5E00322799**

Selection and ordering data		Order No.
Replacement measuring cells for differential pressure SITRANS P pressure transmitters for differential pressure and flow, P500 HART PN 160 series (MAWP 2320 psi)		**7MF5994-** ■■■■**1**
Measuring cell filling	**Measuring cell cleaning**	
Silicone oil	normal	**1**
Measuring span (min. ... max.)		
1.25 ... 250 mbar	(0.5 ... 100.4 inH_2O)	**D**
6.25 ... 1250 mbar	(2.5 ... 502 inH_2O)	**E**
Wetted parts materials (stainless steel process flanges)		
Seal diaphragm	Parts of measuring cell	
Stainless steel 1.4404/316L	Stainless steel 1.4404/316L	**A**
Hastelloy C276	Stainless steel1.4404/316L	**B**
Monel 400	Stainless steel1.4404/316L	**C**
Process connection		
Female thread ¼-18 NPT		
• Sealing screw opposite process connection		
- Mounting thread $^7/_{16}$-20 UNF to IEC 61518		**0**
- Mounting thread M10 to DIN 19213		**1**
• Vent on side of process flange		
- Mounting thread $^7/_{16}$-20 UNF to IEC 61518		**4**
- Mounting thread M10 to DIN 19213		**5**
Further designs		Order code
Add "-Z" to Order No. and specify Order Code.		
Acceptance test certificate Acc. to EN 10204-3.1		**C12**
Without process flanges		**K00**
Vent on side for gas measurements[1)]		**L32**
Process flanges, O-ring, special material Standard: Viton (FKM (FPM))		
Process connection sealing rings made of PTFE (Teflon), virginal		**L60**
Process connection sealing rings made of PTFE (Teflon), glass fiber-reinforced		**L61**
Process connection sealing rings made of FFPM (Kalrez)		**L62**
Process flanges, O-rings made of NBR		**L63**
Process flanges, O-rings made of graphite		**L64**

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

Selection and Ordering data

	Order No.
Mounting brackets	
For differential pressure transmitters with flange thread M10 (7MF54..-…10 and 7MF54..-…50)	
• Made of steel	**7MF5987-1AA**
• Made of stainless steel ▶	**7MF5987-1AD**
Mounting brackets	
for differential pressure transmitter with flange thread 7/16-20 UNF (7MF54..-…00 and 7MF54..-…40)	
• Made of steel	**7MF5987-1AC**
• Made of stainless steel	**7MF5987-1AF**
Cover	
Made of die-cast aluminum, including O-ring	
• Without window	**7MF5987-1BE**
• With window ▶	**7MF5987-1BF**
Digital indicator Including mounting material	**7MF5987-1BR**
TAG plate (incl. fastening material)	
Without inscription (5 pcs.)	**7MF5987-1CA**
Printed (1 pc.) Data according to Y01 or Y02, Y15 and Y16 (see "SITRANS P transmitters")	**7MF5987-1CB-Z Y..: .....**
Mounting screws	
For TAG plate, grounding and connection terminals and securing and locking screws (30 units)	**7MF5987-1CC**
Sealing plugs for process flange (1 set = 2 units)	
• Made of stainless steel	**7MF4997-1CG**
• Made of Hastelloy	**7MF4997-1CH**
Vent valve Complete (1 set = 2 units)	
• Made of stainless steel ▶	**7MF4997-1CP**
• Made of Hastelloy	**7MF4997-1CQ**
Electronics module	
HART, intrinsically safe Ex ia for installation in transmitter casing (observe warranty conditions)	**7MF5987-1DC**
Connection board (incl. fastening material)	
HART, intrinsically safe Ex ia for installation in transmitter casing (observe warranty conditions)	**7MF5987-1DM**
O-rings for process flanges made of:	
• Viton (FKM (FPM)) (10 pcs.)	**7MF5987-2DA**
• NBR (Buna N) (10 pcs.)	**7MF5987-2DE**
Push buttons assembly (incl. fastening material)	**7MF5987-2AF**
For replacement of operating keys for on-site operation of the transmitter	
Sealing ring for	
• Process connection	**See catalog FI01, "Fittings"**
• NBR sealing ring for screw cover (10 pcs.)	**7MF4997-2EA**
• NBR sealing ring for interface measuring cell/housing (10 pcs.)	**7MF5987-2EB**

Selection and Ordering data

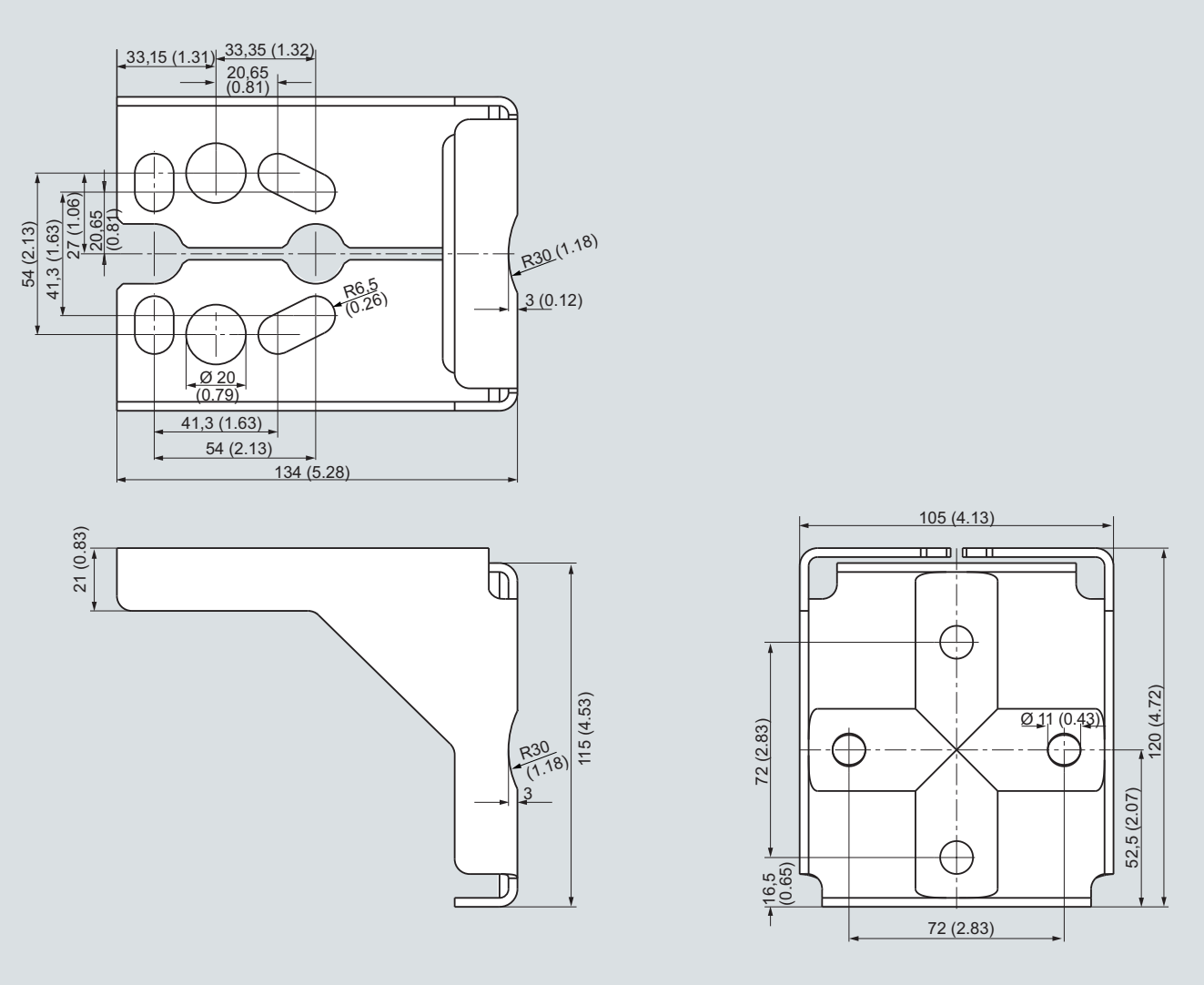
	Order No.
Operating Instructions[1]	
German	**A5E02344527**
English	**A5E02344528**
French	**A5E02344529**
Italian	**A5E02344530**
Spanish	**A5E02344531**
Compact operating instructions[1]	
English, German, Spanish, French, Italian, Dutch	**A5E02344532**
English, Estonian, Latviaan, Lithuanian, Polish,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

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

▶ Available ex stock.

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

Dimensional drawings



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

SITRANS P500 Factory-mounting of valve manifolds on transmitters

Overview

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

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

Design

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

Once installed, the complete unit is checked under pressure for leaks (compressed air 6 bar (2411 inH_2O)) and is certified leak-proof with a test report to EN 10204 - 2.2.

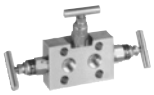
All manifolds should preferably be secured with the respective mounting brackets. The transmitters are mounted on the manifold and not on the unit itself.

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

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

Selection and ordering Data

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



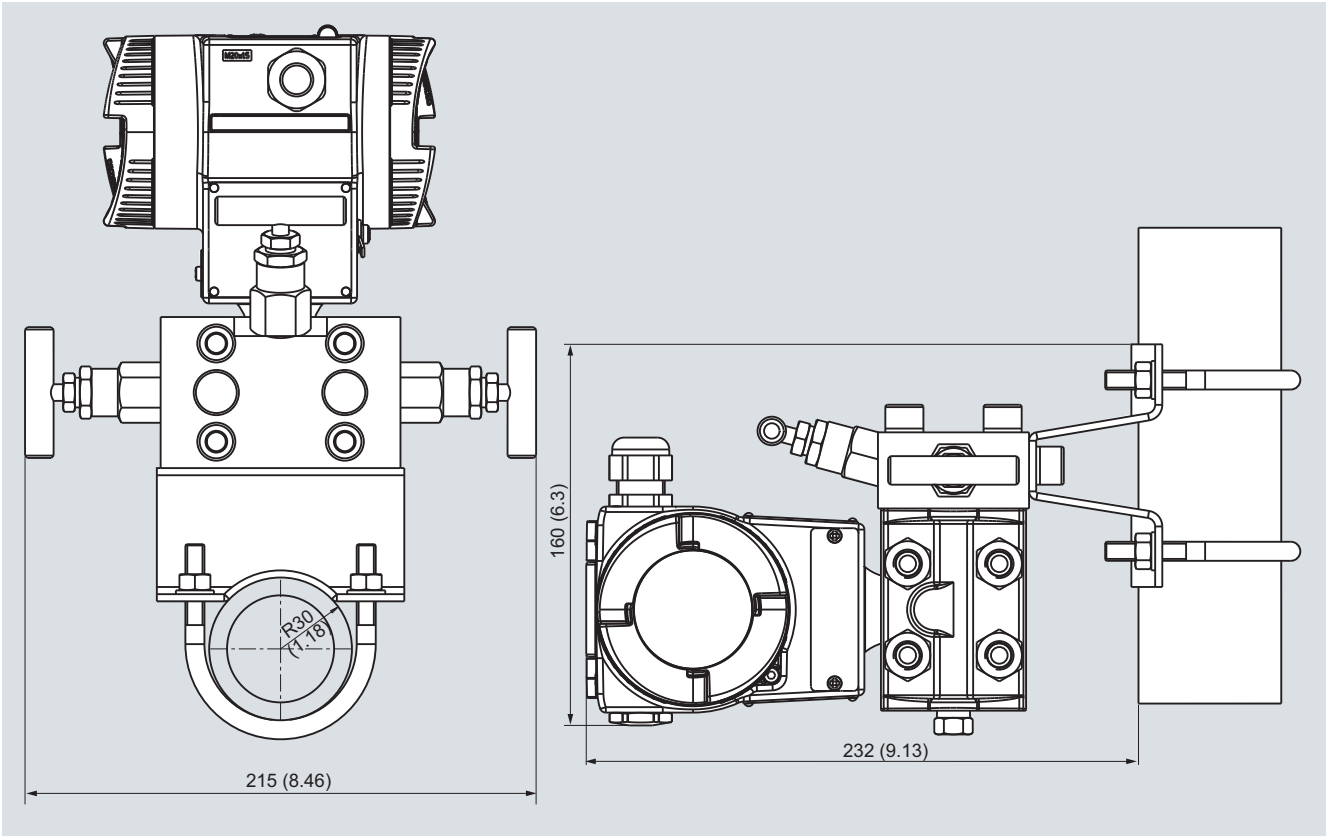
Add -Z to the Order No. of the transmitter and add order codes	Order Code
SITRANS P500 7MF54..-...	
mounted with gaskets made of PTFE and screws made of	
• Chromized steel	**U01**
• Stainless steel	**U02**
Delivery incl. high-pressure test certified by factory certificate to EN10204-2.2	
Further designs: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

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

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

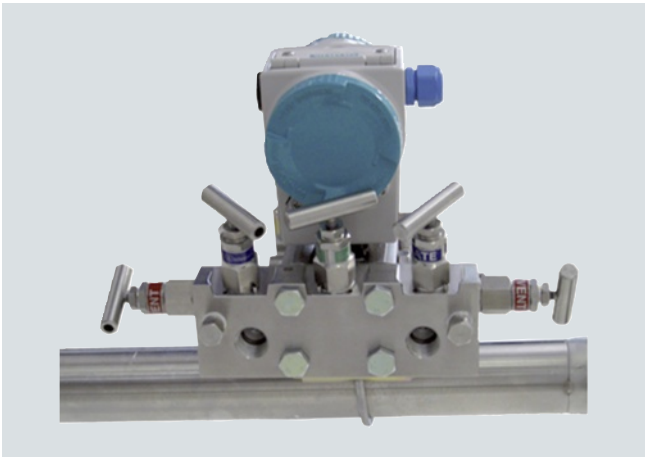
Dimensional drawings

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

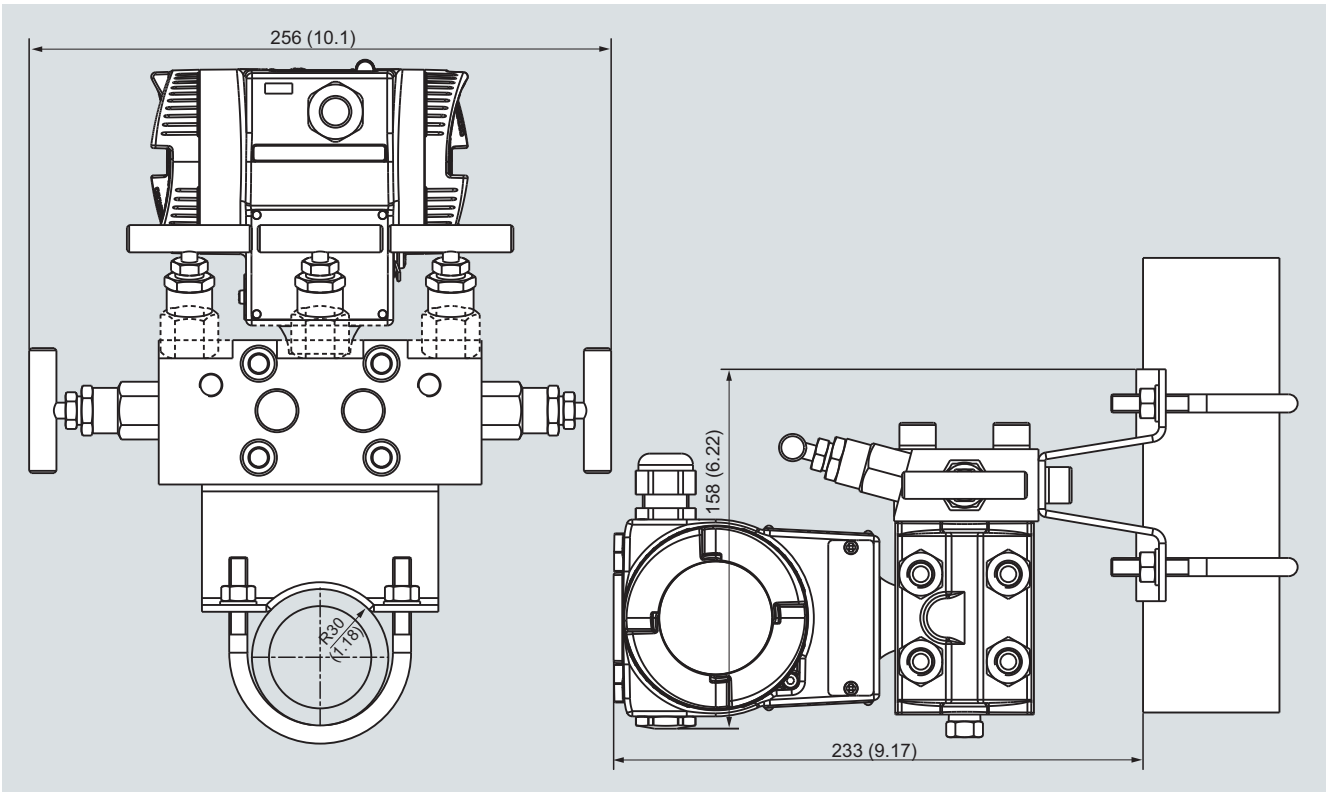


Manifold 7MF9411-5BA with attached SITRANS P500 pressure transmitter for differential pressure and flow, measurements in mm (inch)

SITRANS P500 Factory-mounting of valve manifolds on transmitters



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



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

Overview

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

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

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

Note

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

Benefits

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

Application

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

Examples of such cases:

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

Design

A remote seal system consists of the following components.

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

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

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

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

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

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

Designs

Diaphragm seal

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

The following types of diaphragm seals exist:

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

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

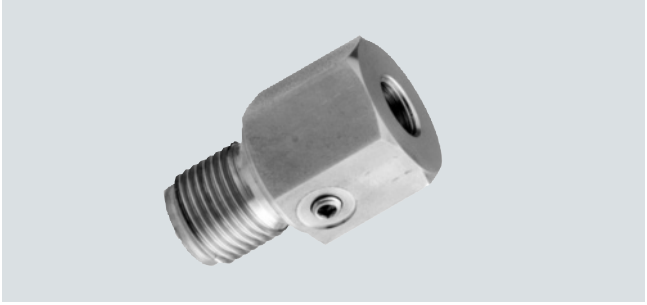
Diaphragm seal of flange design without (left) and with a projecting diaphragm (tube)

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

Quick-release diaphragm seal

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

Technical description

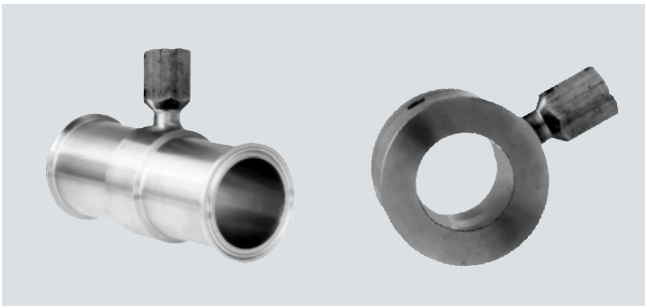


Miniature diaphragm seal with diaphragm flush with front

- Miniature diaphragm seals

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

Clamp-on seal



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

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

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

The following types of clamp-on seals exist:

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

Note:

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

Function

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

Transmission response

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

- Temperature error
- Adjustment time

Temperature error

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

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

The temperature error is dependent on the following variables:

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

Diaphragm rigidity

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

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

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

- Diaphragm thickness
- Diaphragm material
- Coatings if present

Filling liquid

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

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

Note:

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

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

Response time

The response time is dependent on the following factors:

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

Recommendations

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

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

Note

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

Other versions can be:

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

Please contact your local Siemens office for further information.

Technical description

1

Technical specifications

Temperature error Diaphragm seals

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

	Nominal diameter/ design	Diaphragm diameter		Temperature error of remote seal		Temperature error of capillary		Temperature error of process flange/connection spigot		Recommended min. spans (guidance values, observe temp. error)	
		mm	(inch)	mbar/ 10 K	(psi/ 10 K)	mbar/ (10 K · m_{Kap})	(psi/ (10 K · m_{Kap}))	mbar/ 10 K	(psi/ 10 K)	mbar	(psi)
Sandwich design or with flange to EN 1092-1	DN 50 without tube	59	(2.32)	1.5	(0.022)	2	(0.029)	2	(0.029)	200	(2.90)
	DN 50 with tube	45	(1.89)	5	(0.073)	10	(0.145)	10	(0.145)	500	(7.25)
	DN 80 without tube	89	(3.50)	0.2	(0.003)	0.2	(0.003)	0.2	(0.003)	100	(1.45)
	DN 80 with tube	72	(2.83)	1	(0.015)	1	(1.015)	1	(1.015)	250	(3.63)
	DN 100 without tube	89	(3.50)	0.2	(0.003)	0.4	(0.006)	0.4	(0.006)	100	(1.45)
	DN 100 with tube	89	(3.50)	0.4	(0.006)	0.4	(0.006)	0.4	(0.006)	100	(1.45)
	DN 125 without tube	124	(4.88)	0.2	(0.003)	0.1	(0.002)	0.1	(0.002)	20	(0.29)
	DN 125 with tube	124	(4.88)	0.2	(0.003)	0.1	(0.002)	0.1	(0.002)	20	(0.29)
Sandwich design or with flange to ASME B16.5	2 inch without tube	59	(2.32)	1.5	(0.022)	2	(0.029)	2	(0.029)	200	(2.90)
	2 inch with tube	45	(1.89)	5	(0.073)	10	(0.145)	10	(0.145)	500	(7.25)
	3 inch without tube	89	(3.50)	0.2	(0.003)	0.2	(0.003)	0.2	(0.003)	100	(1.45)
	3 inch with tube	72	(2.83)	1	(0.015)	1	(1.015)	1	(1.015)	250	(3.63)
	4 inch without tube	89	(3.50)	0.2	(0.003)	0.4	(0.006)	0.4	(0.006)	100	(1.45)
	4 inch with tube	89	(3.50)	0.4	(0.006)	0.4	(0.006)	0.4	(0.006)	100	(1.45)
	5 inch without tube	124	(4.88)	0.2	(0.003)	0.1	(0.002)	0.1	(0.002)	20	(0.29)
	5 inch with tube	124	(4.88)	0.2	(0.003)	0.1	(0.002)	0.1	(0.002)	20	(0.29)
Remote seal with union nut to DIN 11851	DN 25	25	(0.98)	20	(0.290)	60	(0.870)	60	(0.870)	6000	(87)
	DN 32	32	(1.26)	8	(0.116)	25	(0.363)	25	(0.363)	4000	(58)
	DN 40	40	(1.57)	4	(0.058)	10	(0.145)	10	(0.145)	2000	(29)
	DN 50	52	(2.05)	4	(0.058)	5	(0.073)	5	(0.073)	500	(7.25)
	DN 65	59	(2.32)	3	(0.044)	4	(0.058)	4	(0.058)	500	(7.25)
	DN 80	72	(2.83)	1	(0.015)	1	(0.015)	1	(0.015)	250	(3.63)
Remote seal, screwed gland design	DN 50	52	(2.05)	4	(0.058)	5	(0.073)	5	(0.073)	500	(7.25)
Remote seal with threaded socket to DIN 11851	DN 25	25	(0.98)	20	(0.290)	60	(0.870)	60	(0.870)	6000	(87)
	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)
Clamp connection	1½ inch	32	(1.26)	8	(0.116)	25	(0.363)	25	(0.363)	4000	(58)
	2 inch	40	(1.57)	4	(0.058)	10	(0.145)	10	(0.145)	2000	(29)
	2½ inch	59	(2.32)	3	(0.044)	5	(0.073)	5	(0.073)	500	(7.25)
	3 inch	72	(2.83)	1	(0.015)	1	(0.015)	1	(0.015)	250	(3.63)
Miniature diaphragm seal	G1B	25	(0.98)	20	(0.290)	60	(0.870)	60	(0.870)	6000	(87)
	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.

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

	Nominal diameter/ design	Diaphragm diameter		Temperature error of remote seal		Temperature error of capillary		Temperature error of process flange/connection spigot		Recommended min. spans (guidance values, observe temperature error)	
		mm	(inch)	mbar/ 10 K	(psi/ 10 K)	mbar/ (10 K · m_{Kap})	(psi/ (10 K · m_{Kap}))	mbar/ 10 K	(psi/ 10 K)	mbar	(psi)
Sandwich design or with flange to EN 1092-1	DN 50 without tube	59	(2.32)	0.3	(0.0043)	0.3	(0.0045)	0.3	(0.0045)	250	(3.626)
	DN 50 with tube	45	(1.89)	1.26	(0.018)	1.7	(0.025)	1.7	(0.025)	250	(3.626)
	DN 80 without tube	89	(3.50)	0.05	(0.001)	0.05	(0.001)	0.05	(0.0007)	50	(0.725)
	DN 80 with tube	72	(2.83)	0.24	(0.004)	0.17	(0.003)	0.17	(0.003)	100	(1.45)
	DN 100 without tube	89	(3.50)	0.05	(0.001)	0.07	(0.001)	0.07	(0.001)	50	(0.725)
	DN 100 with tube	89	(3.50)	0.1	(0.002)	0.07	(0.001)	0.07	(0.001)	50	(0.725)
	DN 125 without tube	124	(4.88)	0.05	(0.001)	0.03	(0.0004)	0.03	(0.0004)	20	(0.29)
	DN 125 with tube	124	(4.88)	0.05	(0.001)	0.03	(0.0004)	0.03	(0.0004)	20	(0.29)
Sandwich design with flange to ASME B16.5	2 inch without tube	59	(2.32)	0.3	(0.0043)	0.3	(0.0043)	0.3	(0.0045)	250	(3.626)
	2 inch with tube	45	(1.89)	1.26	(0.018)	1.7	(0.025)	1.7	(0.025)	250	(3.626)
	3 inch without tube	89	(3.50)	0.05	(0.001)	0.05	(0.0007)	0.05	(0.0007)	50	(0.725)
	3 inch with tube	72	(2.83)	0.24	(0.004)	0.17	(0.003)	0.17	(0.003)	100	(1.45)
	4 inch without tube	89	(3.50)	0.05	(0.001)	0.07	(0.001)	0.07	(0.001)	50	(0.725)
	4 inch with tube	89	(3.50)	0.1	(0.002)	0.07	(0.001)	0.07	(0.001)	50	(0.725)
	5 inch without tube	124	(4.88)	0.05	(0.001)	0.03	(0.0004)	0.03	(0.0004)	20	(0.29)
	5 inch with tube	124	(4.88)	0.05	(0.001)	0.03	(0.0004)	0.03	(0.0004)	20	(0.29)
Remote seal, screwed gland design	DN 50	52	(2.05)	1	(0.015)	0.83	(0.012)	0.83	(0.012)	250	(3.626)
Remote seal with union nut to DIN 11851	DN 50	52	(2.05)	1	(0.015)	0.83	(0.012)	0.83	(0.012)	250	(3.626)
	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 with threaded socket to DIN 11851	DN 50	52	(2.05)	1	(0.015)	0.83	(0.012)	0.83	(0.012)	250	(3.626)
	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)
Clamp connection	2 inch	40	(1.57)	1	(0.015)	2.5	(0.036)	2.5	(0.036)	2000	(29.01)
	2½ inch	59	(2.32)	0.7	(0.010)	0.67	(0.010)	0.67	(0.010)	250	(3.626)
	3 inch	72	(2.83)	0.24	(0.004)	0.17	(0.003)	0.17	(0.003)	100	(1.450)

Remarks:

- Values apply for the filling liquids silicone oil M5, silicone oil M50, high-temperature oil, halocarbon oil and food oil (FDA listed)
- Half the values apply to glycerin/water mixture as the filling liquid
- Values apply to stainless steel as the diaphragm material.

Technical description

Temperature error Clamp-on seals

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

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

Remarks:

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

Calculation of the temperature error

The following equation is used to calculate the temperature error:

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

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

Example of temperature error calculation

Existing conditions:

SITRANS P pressure transmitter for differential pressure, 250 mbar, set to 0 ... 100 mbar, with DN 100 remote seal diaphragms without tube, diaphragm made of stainless steel, mat. No. 1.4404/316L	f_{RS} = 0.05 mbar/10 K (0.039 inH_2O/10 K)
Capillary length	l_{Cap} = 6 m (19.7 ft)
Capillaries fitted on both sides	f_{Cap} = 0.07 mbar/(10 K · m_{Cap}) (0.028 inH_2O/(10 K · m_{Cap}))
Filling liquid silicone M5	f_{PF} = 0.07 mbar/10 K (0.028 inH_2O/10 K)
Process temperature	ϑ_{RS} = 100 °C (212 °F)
Temperature on the capillaries	ϑ_{Cap} = 50 °C (122 °F)
Temperature on pressure transmitter	ϑ_{TR} = 50 °C (122 °F)
Calibration temperature	ϑ_{Cal} = 20 °C (68 °F)

Required:

Additional temperature error of remote seals: dp

Calculation:

in mbar

dp = (100 °C – 20 °C) · 0.05 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 = 0.4 mbar + 1.26 mbar + 0.21 mbar

in inH_2O

dp = (212 °F - 68 °F) · 0.039 inH_2O/10 K + (112 °F - 68 °F) · 19.7 ft · 0.028 inH_2O/(10 K · 3.28 ft) + (112 °F - 68 °F) · (0.028 inH_2O/10 K)

dp = 0.16 inH_2O + 0.51 inH_2O + 0.08 inH_2O

Result:

dp = 1.87 mbar (0.75 inH_2O)
(corresponds to 2.27% of set span)

Note

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

The transmission response of the respective transmitter is not included in this consideration.
It must be calculated separately, and the resulting error added to the error determined above from connection of the remote seal.

Dependence of temperature error on diaphragm material

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

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

Maximum temperature of medium

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

Material	p_{abs} < 1 bar (402 inH_2O)		p_{abs} > 1 bar (402 inH_2O)	
	°C	(°F)	°C	(°F)
Stainless steel, 316L	200	(392)	400	(662)
PTFE coating	200	(392)	260	(500)
ECTFE coating	100	(212)	150	(302)
PFA coating	200	(392)	260	(500)
Hastelloy C4, mat. No. 2.4610	200	(392)	260	(500)
Hastelloy C276, mat. No. 2.4819	200	(392)	400	(662)
Monel 400, mat. No. 2.4360	200	(392)	400	(662)
Tantalum	200	(392)	300	(572)

Maximum capillary length for diaphragm seals (guidance values)

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

Technical description

Response times

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

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

The response times are independent of the set span within the range of the respective transmitter. The response times are of insignificant importance for spans above 10 bar (145 psi). The response times of the pressure transmitters are not considered in the table.

Filling liquid	Density		Temperature on capillary		Response time in s/m (s/ft) with max. span of pressure transmitter					
	kg/dm³	(lb/in³)	°C	(°F)	250 mbar	(101 inH_2O)	600 mbar	(241 inH_2O)	1600 mbar	(643 inH_2O)
Silicone oil M5	0.914	(0.033)	+60	(140)	0.06	(0.018)	0.02	(0.006)	0.01	(0.003)
			+20	(68)	0.11	(0.034)	0.02	(0.006)	0.02	(0.006)
			- 20	(-4)	0.3	(0.091)	0.12	(0.037)	0.05	(0.015)
Silicone oil M50	0.966	(0.035)	+60	(140)	0.6	(0.183)	0.25	(0.076)	0.09	(0.027)
			+20	(68)	0.61	(0.186)	0.26	(0.079)	0.1	(0.030)
			- 20	(-4)	1.69	(0.515)	0.71	(0.216)	0.27	(0.082)
High-temperature oil	1.070	(0.039)	+60	(140)	0.14	(0.043)	0.06	(0.018)	0.02	(0.006)
			+20	(68)	0.65	(0.198)	0.27	(0.082)	0.1	(0.030)
			-10	(14)	3.96	(1.207)	1.65	(0.503)	0.62	(0.189)
Halocarbon oil	1.968	(0.071)	+60	(140)	0.07	(0.021)	0.03	(0.009)	0.01	(0.003)
			+20	(68)	0.29	(0.088)	0.12	(0.037)	0.05	(0.015)
			- 20	(-4)	2.88	(0.878)	1.2	(0.366)	0.45	(0.137)
Food oil (FDA listed)	0.920	(0.033)	+60	(140)	0.75	(0.229)	0.33	(0.101)	0.17	(0.052)
			+20	(68)	4	(1.220)	1.75	(0.534)	0.67	(0.204)
			- 20	(-4)	20	(6.100)	8.5	(2.593)	3.25	(0.991)
Glycerin/water	1.220	(0.044)	+60	(140)	0.13	(0.040)	0.05	(0.015)	0.02	(0.006)
			+20	(68)	0.76	(0.232)	0.32	(0.098)	0.12	(0.037)
			0	(32)	9.72	(2.963)	4.05	(1.234)	1.51	(0.460)

Technical data of filling liquids

When selecting the filling liquid, check that it is suitable with respect to the permissible temperature of the medium and the process pressure.

Also check the compatibility of the filling liquid with the measured medium. For example, only physiologically harmless filling liquids may be used in the food industry.

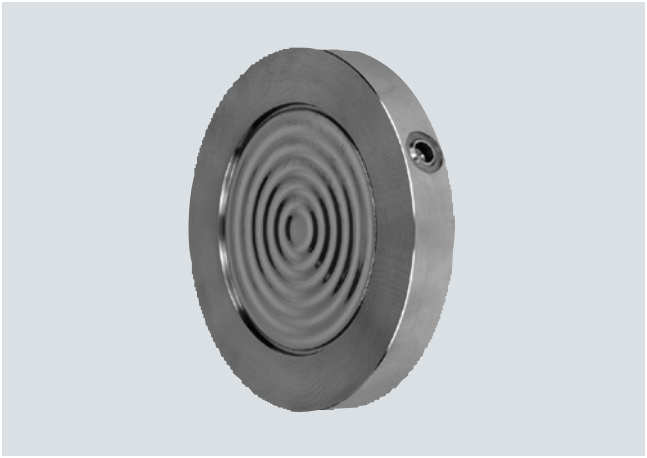
Oxygen and chlorine are special cases of measured medium. The liquid must not react with either of these two media or a leaking remote seal may lead to an explosion or fire.

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

Filling liquid	Digit in Order No.	Permissible temperature of medium				Density at 20 °C (68 °F)		Viscosity at 20 °C (68 °F)		Coefficient of expansion	
		p_{abs} < 1 bar	(p_{abs} < 402 inH_2O)	p_{abs} > 1 bar	(p_{abs} > 402 inH_2O)						
		°C	(°F)	°C	(°F)	kg/dm³	(lb/in³)	m²/s·10⁶	(ft²/s·10⁶)	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-temperature oil	3	-10 ... +200	(+14 ... +392)	-20 ... +400	(-4 ... +752)	1.07	(0.04)	57	(613)	0.00080	(0.00044)
Halocarbon oil	4 [1)]	-40 ... +80	(-40 ... +176)	-40 ... +175	(-40 ... +347)	1.968	(0.07)	14	(151)	0.00086	(0.00048)
Glycerin/water	6	Not possible	Not possible	-10 ... +120	(+14 ... +248)	1.22	(0.04)	88	(947)	0.00050	(0.00028)
Food oil (FDA listed)	7	-20 ... +160	(-4 ... +320)	-20 ... +200	(-4 ... +392)	0.92	(0.03)	10	(107)	0.00080	(0.00044)

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

Overview



Diaphragm seals of sandwich design

Technical specifications

Diaphragm seals of sandwich design	
Nominal diameter	Nominal pressure
• DN 50	PN 16 ... PN 400
• DN 80	PN 16 ... PN 400
• DN 100	PN 16 ... PN 400
• DN 125	PN 16 ... PN 400
• 2 inch	Class 150 ... class 2500
• 3 inch	Class 150 ... class 2500
• 4 inch	Class 150 ... class 2500
• 5 inch	Class 150 ... class 2500
Sealing face	
• For stainless steel, mat. No. 1.4404/316L	To EN 1092-1, form B1 or ASME B16.5 RF 125 ... 250 AA
• For the other materials	To EN 1092-1, form B2 or ASME B16.5 RFSF
Materials	
• Main body	Stainless steel mat. no. 1.4404/316L
• Wetted parts	Stainless steel mat. no. 1.4404/316L
	• Without coating
	• PTFE coating (for vacuum on request)
	• ECTFE coating (for vacuum on request)
	• PFA coating (for vacuum on request)
	Monel 400, mat. No. 2.4360
	Hastelloy C276, mat. No. 2.4819
	Hastelloy C4, mat. No. 2.4610
	Tantalum
	Duplex 2205, mat. no. 1.4462
• Capillary	Stainless steel, mat. No. 1.4571/316Ti
• Sheath	Spiral hose made of stainless steel, mat. No. 1.4301/316

Sealing material in the process flanges	
• For pressure transmitters, absolute pressure transmitters and low-pressure applications	Copper
• For other applications	Viton
Maximum pressure	See above and the technical data of the pressure transmitters
Tube length	Without tube as standard (tube available on request)
Capillary	
• Length	Max. 10 m (32.8 ft), longer lengths on request
• Internal diameter	max. 2 mm (0.079 inch)
• Minimum bending radius	150 mm (5.9 inch)
Filling liquid	Silicone oil M5
	Silicone oil M50
	High-temperature oil
	Halocarbon oil (for measuring O_2)
	Food oil (FDA listed)
	Glycerine/water (not suitable for use in low-pressure range)
Permissible ambient temperature	Dependent on the pressure transmitter and the filling liquid of the remote seal
	More information can be found in the technical data of the pressure transmitters and in the section "Technical data of filling liquid" in the Technical description to the remote seals
Weight	Approx. 4 kg (8.82 lb)
Certificate and approvals	
Classification according to pressure equipment directive (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)

Remote seals for transmitters and pressure gauges

Diaphragm seals of sandwich design with flexible capillary

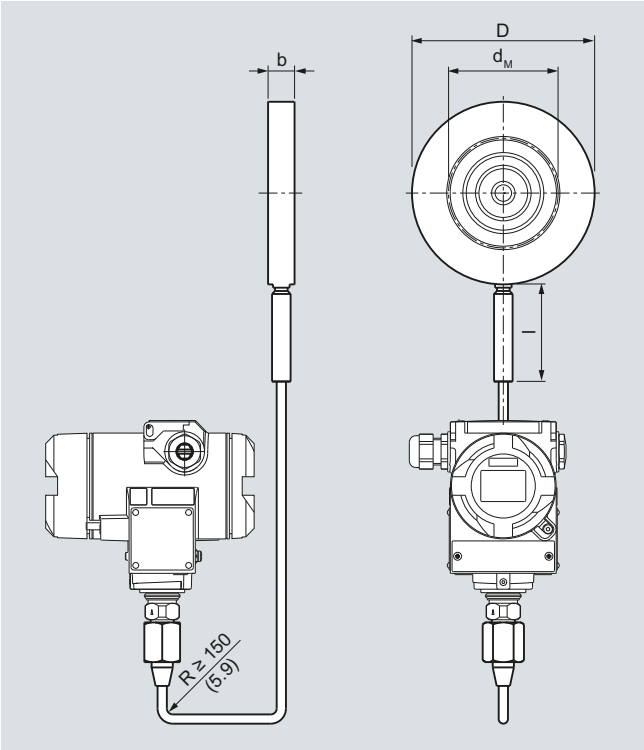
Selection and Ordering data		Order No.	Ord.code
Diaphragm seal			
Sandwich-type design, with flexible capillary connected to a SITRANS P transmitter (order separately):			
for pressure 7MF403.-... and 7MF423.-... together with Order code "V01" (vacuum-proof design) and 7MF802.-...[1]; Scope of delivery (1 off)		**7MF4900-**	
for absolute pressure 7MF433.-...; Scope of delivery (1 off)		**7MF4901-**	
for differential pressure and flow 7MF443.-... and 7MF54..-...; scope of delivery 2 off		**7MF4903-**	
		1 ■■■■ - ■B	**■■■**
Nominal diameter and nominal pressure			
• DN 50	PN 16 ... 400	**A**	
(recommended only for pressure transmitters for pressure)			
• DN 80	PN 16 ... 400	**B**	
• DN 100	PN 16 ... 400	**C**	
• DN 125	PN 16 ... 400	**D**	
• 2 inch	Class 150 ... 2500	**E**	
(recommended only for pressure transmitters for pressure)			
• 3 inch	Class 150 ... 2500	**H**	
• 4 inch	Class 150 ... 2500	**L**	
• 5 inch	Class 150 ... 2500	**N**	
Smooth sealing face to EN 1092-1, form B1 or to ASME B16.5 RF 125 ... 250 AA			
Other version Add Order code and plain text: Nominal diameter: ...; Nominal pressure: ... Sealing face: see "Technical data"		**Z**	**J1Y**
Wetted parts materials			
• Stainless steel 316L			
- without coating		**A**	
- with PTFE coating[2]		**E0**	
- with ECTFE coating [2) 3)]		**F**	
- with PFA coating [2)]		**D**	
• Monel 400, mat. No. 2.4360		**G**	
• Hastelloy C276, mat. No. 2.4819		**J**	
• Hastelloy C4, mat. No. 2.4610		**U**	
• Tantalum		**K**	
• Duplex 2205, mat. no. 1.4462		**Q**	
• Duplex 2205, mat. no. 1.4462, incl. main body		**R**	
Other version Add Order code and plain text: Wetted parts materials: ...		**Z**	**K1Y**
Tube length			
• without tube		**0**	
Other version: Add Order code and plain text: Tube length: ...		**9**	**L1Y**
Filling liquid			
• Silicone oil M5		**1**	
• Silicone oil M50		**2**	
• High-temperature oil		**3**	
• Halocarbon oil (for measuring O_2)[4]		**4**	
• Glycerin/water[5]		**6**	
• Food oil (FDA listed)l		**7**	
Other version Add Order code and plain text: Filling liquid: ...		**9**	**M1Y**

1) With 7MF802.-... and the measuring cells Q, S, T and U also order the vacuum-tight version.
2) Only possible up to max. PN 100.
3) For vacuum on request
4) Oil- and grease- free cleaning to DIN 25410, level 2 and packaging included in the scope of delivery.
5) Not suitable for use in low-pressure range.

Selection and Ordering data		Order No.	Ord.code
Diaphragm seal			
Sandwich-type design, with flexible capillary connected to a SITRANS P transmitter (order separately):			
for pressure 7MF403.-...and 7MF423.-... together with Order code "V01" (vacuum-proof design) and 7MF802.-...[1]; Scope of delivery (1 off)		**7MF4900-**	
for absolute pressure 7MF433.-...; Scope of delivery (1 off)		**7MF4901-**	
for differential pressure and flow 7MF443.-... and 7MF54..-...; scope of delivery 2 off		**7MF4903-**	
		1 ■■■■ - ■B	**■■■**
Length of capillary[2]			
• 1.0 m	(3.28 ft)	**2**	
• 1.6 m	(5.25 ft)	**3**	
• 2.5 m	(8.20 ft)	**4**	
• 4.0 m	(13.1 ft)	**5**	
• 6.0 m	(19.7 ft)	**6**	
• 8.0 m	(26.25 ft)	**7**	
• 10.0 m	(32.8 ft)	**8**	
Other version Add Order code and plain text: Length of capillary: ...		**9**	**N1Y**
Further designs		Order code	
Please add "**-Z**" to Order No. and specify Order code.			
Spark arrestor			
With spark arrestor for mounting on zone 0 (including documentation)			
• Pressure and absolute pressure		**A01**	
• for differential pressure transmitters		**A02**	
Certificate to EN 10204-2.2		**E10**	
For certification of oil - and grease-free cleaned and packed version for oxygen and summer applications in which only inert filling liquid may be used. (Only in conjunction with halocarbon oil fill fluid)			
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2		**C11**	
Inspection certificate		**C12**	
to EN 10204, section 3.1			
Functional safety certificate ("SIL 2") to IEC 61508		**C20**	
(Only in conjunction with the order code "C20" in the case of SITRANS P DSIII transmitter)			
Functional safety certificate ("SIL 2/3") to IEC 61508		**C23**	
(Only in conjunction with the order code "C23" in the case of SITRANS P DSIII transmitter)			
NACE MR-0175-certified		**D07**	
incl. acceptance test certificate 3.1 to EN 10204			
Vacuum-proof design			
for use in low-pressure range for transmitters for			
• Pressure		**V01**	
• For differential pressure transmitters		**V03**	

1) With 7MF802.-... and the measuring cells Q, S, T and U also order the vacuum-tight version.
2) Max. capillary length, see section "Technical description".

Dimensional drawings



Diaphragm seals of sandwich design with flexible capillary for connection to SITRANS P pressure transmitters for pressure, dimensions in mm (inch)

Connection to EN 1092-1

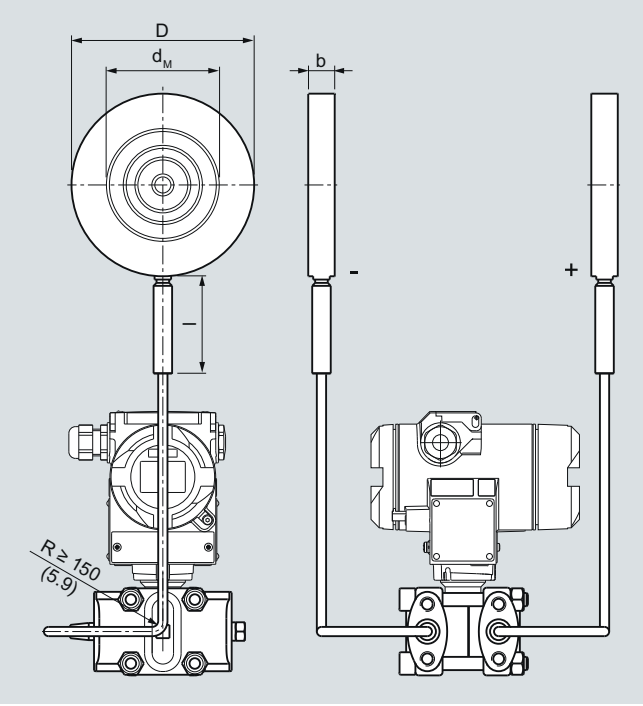
Nom. diam.	Nom. press.	b	D	d_M	l
		mm	mm	mm	mm
DN 50	PN 16 ... PN 400	20	102	59	100
DN 80		20	138	89	100
DN 100		20	158	89	100
DN 125		22	188	124	100

Connection to ASME B16.5

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

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

d_M: Effective diaphragm diameter



Diaphragm seals of sandwich design (without flange) with flexible capillary for connection to SITRANS P pressure transmitters for absolute pressure or differential pressure and flow, dimensions in mm (inch)

Connection to EN 1092-1

Nom. diam.	Nom. press.	b	D	d_M	l
		mm	mm	mm	mm
DN 50	PN 16 ... PN 400	20	102	59	100
DN 80		20	138	89	100
DN 100		20	158	89	100
DN 125		22	188	124	100

Connection to ASME B16.5

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

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

d_M: Effective diaphragm diameter

Diaphragm seals of flange design with flexible capillary

Overview

Diaphragm seals of flange design

Technical specifications

Diaphragm seals of flange design with flexible capillary	
Nominal diameter	Nominal pressure
• DN 50 (recommendable only for pressure transmitters for pressure)	PN 10 ... PN 40, PN 100
• DN 80	PN 10 ... PN 40, PN 100
• DN 100	PN 10/16, PN 25/40
• DN 125	PN 16, PN 40
• 2 inch (recommendable only for pressure transmitters for pressure)	class 150, class 300, class 400/600, class 900/1500
• 3 inch	Class 150, class 300, class 600
• 4 inch	Class 150, class 300, class 400
• 5 inch	Class 150, class 300, class 400
Sealing face	
• For stainless steel, mat. No. 1.4404/316L	To EN 1092-1, form B1 or ASMR B16.5 RF 125 ... 250 AA
• For the other materials	To EN 1092-1, form B2 or ASME B16.5 RFSF
Materials	
• Main body	Stainless steel mat. no. 1.4404/316L
• Wetted parts	Stainless steel mat. no. 1.4404/316L
	• Without coating
	• PTFE coating (for vacuum on request)
	• ECTFE coating (for vacuum on request)
	• PFA coating (for vacuum on request)
	Monel 400, mat. No. 2.4360
	Hastelloy C276, mat. No. 2.4819
	Hastelloy C4, mat. No. 2.4610
	Tantalum
	Duplex 2205, mat. no. 1.4462
• Capillary	Stainless steel, mat. No. 1.4571/316Ti
• Sheath	Spiral hose made of stainless steel, mat. No. 1.4404/316L
Sealing material in the process flanges	
• For pressure transmitters, absolute pressure transmitters and low-pressure applications	Copper
• For other applications	Viton
Maximum pressure	See above and the technical data of the pressure transmitter
Tube length	Without tube as standard (tube available on request)
Capillary	
• Length	Max. 10 m (32.8 ft), longer lengths on request
• Internal diameter	2 mm (0.079 inch)
• Minimum bending radius	150 mm (5.9 inch)
Filling liquid	
(for remote seals of sandwich and flange design)	Silicone oil M5
	Silicone oil M50
	High-temperature oil
	Halocarbon oil (for measuring O_2)
	Food oil (FDA listed)
	Glycerine/water (not for use in low-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 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, paragraph 3 (sound engineering practice)

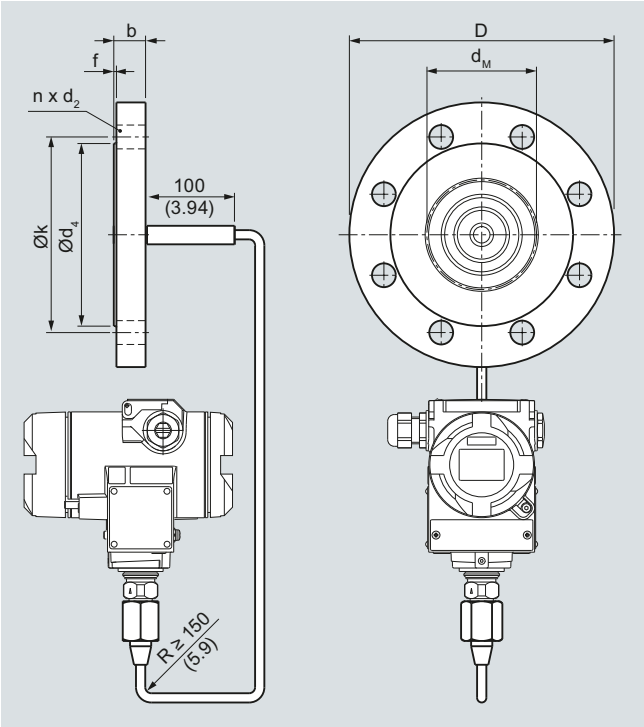
Selection and Ordering data		Order No. Ord. code
Diaphragm seal		
Flange design, with flexible capillary, connected to a pressure transmitter SITRANS P (order separately):		
for pressure 7MF403.-... and 7MF423.-... together with Order code "V01" (vacuum-proof design) and 7MF802.-...[1]; scope of delivery: 1 off		**7MF4920-**
for absolute pressure 7MF433.-...; scope of delivery: 1 off		**7MF4921-**
for differential pressure and flow 7MF443.-... and 7MF54..-...; scope of delivery: 2 off		**7MF4923-**
		1 ■■■■ - ■B ■■■
Nominal diameter and nominal pressure		
• DN 50	PN 10 ... 40	**A**
	PN 100	**B**
(DN 50 recommended only for pressure transmitters for pressure)		
• DN 80	PN 10 ... 40	**D**
	PN 100	**E**
• DN 100	PN 10/16	**G**
	PN 25/40	**H**
• DN 125	PN 16	**J**
	PN 40	**K**
• 2 inch	Class 150	**L**
	Class 300	**M**
	class 400/600	**N**
	class 900/1500	**P**
(2 inch recommended only for pressure transmitters for pressure)		
• 3 inch	Class 150	**Q**
	Class 300	**R**
	Class 600	**S**
• 4 inch	Class 150	**T**
	Class 300	**U**
	Class 400	**V**
• 5 inch	Class 150	**W**
	Class 300	**X**
	Class 400	**Y**
Smooth sealing face to EN 1092-1, form B1 or to ASME B16.5 RF 125 ... 250 AA		
Other version Add Order code and plain text: Nominal diameter: ...; Nominal pressure: ... Sealing face: See "Technical data"		**Z** **J 1 Y**
Wetted parts materials		
• Stainless steel 316L		
- without coating		**A**
- with PTFE coating		**E 0**
- with ECTFE coating[2]		**F**
- with PFA coating		**D**
• Monel 400, mat. No. 2.4360		**G**
• Hastelloy C276, mat. No. 2.4819		**J**
• Hastelloy C4, mat. No. 2.4610		**U**
• Tantalum		**K**
• Duplex 2205, mat. no. 1.4462		**Q**
• Duplex 2205, mat. no. 1.4462, incl. main body		**R**
Other version Add Order code and plain text: Wetted parts materials: ...		**Z** **K 1 Y**
Tube length		
• without tube		**0**
Other version: Add Order code and plain text: Tube length: ...		**9** **L 1 Y**

Selection and Ordering data		Order No. Ord. code
Diaphragm seal		
Flange design, with flexible capillary, connected to a pressure transmitter SITRANS P (order separately):		
for pressure 7MF403.-... and 7MF423.-... together with Order code "V01" (vacuum-proof design) and 7MF802.-...[1]; scope of delivery: 1 off		**7MF4920-**
for absolute pressure 7MF433.-...; scope of delivery: 1 off		**7MF4921-**
for differential pressure and flow 7MF443.-... and 7MF54..-...; scope of delivery: 2 off		**7MF4923-**
		1 ■■■■ - ■B ■■■
Filling liquid		
• Silicone oil M5		**1**
• Silicone oil M50		**2**
• High-temperature oil		**3**
• Halocarbon oil (for measuring O_2)[3]		**4**
• Glycerin/water[4]		**6**
• Food oil (FDA listed)		**7**
Other version Add Order code and plain text: Filling liquid: ...		**9** **M 1 Y**
Length of capillary[5]		
• 1.0 m	(3.28 ft)	**2**
• 1.6 m	(5.25 ft)	**3**
• 2.5 m	(8.20 ft)	**4**
• 4.0 m	(13.1 ft)	**5**
• 6.0 m	(19.7 ft)	**6**
• 8.0 m	(26.25 ft)	**7**
• 10.0 m	(32.8 ft)	**8**
Other version: Add Order code and plain text: Length of capillary: ...		**9** **N 1 Y**
Further designs Please add "**-Z**" to Order No. and specify Order code.		Order code
Spark arrestor With spark arrestor for mounting on zone 0 (including documentation) for transmitters for		
• pressure and absolute pressure		**A01**
• differential pressure		**A02**
Certificate to EN 10204-2.2 For certification of oil - and grease-free cleaned and packed version for oxygen and summer applications in which only inert filling liquid may be used. (Only in conjunction with halocarbon oil fill fluid)		**E10**
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2		**C11**
Inspection certificate to EN 10204, section 3.1		**C12**
Functional safety certificate ("SIL 2") to IEC 61508 (Only in conjunction with the order code "C20" in the case of SITRANS P DSIII transmitter)		**C20**
Functional safety certificate ("SIL 2/3") to IEC 61508 (Only in conjunction with the order code "C23" in the case of SITRANS P DSIII transmitter)		**C23**
NACE MR-0175-certified incl. acceptance test certificate 3.1 to EN 10204		**D07**
Vacuum-proof design for use in low-pressure range for transmitters for		
• pressure		**V01**
• differential pressure		**V03**

1) With 7MF802.-... and the measuring cells Q, S, T and U also order the vacuum-tight version.
2) For vacuum on request.
3) Oil- and grease- free cleaning to DIN 25410, level 2 and packaging included in the scope of delivery.
4) Not suitable for use in low-pressure range.
5) Max. capillary length, see section "Technical description".

Diaphragm seals of flange design with flexible capillary

Dimensional drawings



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

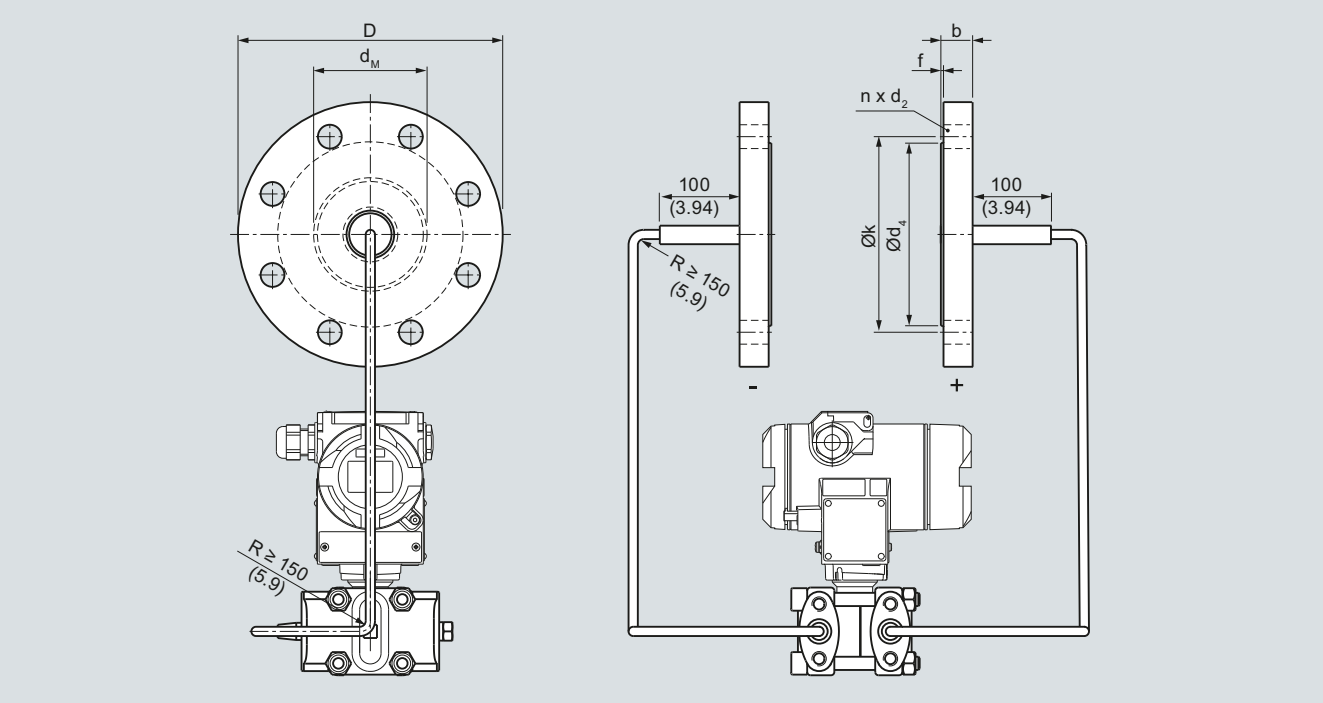
Connection to EN 1092-1

Nom. diam.	Nom. press.	b mm	D mm	d_2 mm	d_4 mm	d_M mm	f mm	k mm	n
DN 50	PN 40	20	165	18	102	59	2	125	4
	PN 100	28	195	26	102	59	2	145	4
DN 80	PN 40	24	200	18	138	89	2	160	8
	PN 100	32	230	26	138	89	2	180	8
DN 100	PN 10/16	20	220	18	158	89	2	180	8
	PN 25/40	24	235	22	162	89	2	190	8
DN 125	PN 16	22	250	18	188	124	2	210	8
	PN 40	26	270	26	188	124	2	220	8

Connection to ASME B16.5

Nom. diam.	Nom. press.	b	D	d_2	d_4	d_M	f	k	n
	lb/sq.in.	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	
2 inch	150	19.5 (0.77)	150 (5.80)	20 (0.79)	92 (3.62)	59 (2.32)	2 (0.08)	120.5 (4.74)	4
	300	22.7 (0.89)	165 (6.50)	20 (0.79)	92 (3.62)	59 (2.32)	2 (0.08)	127 (5)	8
	400/600	32.4 (1.28)	165 (6.50)	20 (0.79)	92 (3.62)	59 (2.32)	2 (0.08)	127 (5)	8
	900/1500	45.1 (1.78)	215 (8.46)	26 (1.02)	92 (3.62)	59 (2.32)	7 (0.28)	165 (6.5)	8
3 inch	150	24.3 (0.96)	190 (7.48)	20 (0.79)	127 (5)	89 (3.50)	2 (0.08)	152.5 (6)	4
	300	29 (1.14)	210 (8.27)	22 (0.87)	127 (5)	89 (3.50)	2 (0.08)	168.5 (6.63)	8
	600	38.8 (1.53)	210 (8.27)	22 (0.87)	127 (5)	89 (3.50)	7 (0.28)	168.5 (6.63)	8
4 inch	150	24.3 (0.96)	230 (9.06)	20 (0.79)	158 (6.22)	89 (3.50)	2 (0.08)	190.5 (7.5)	4
	300	32.2 (1.27)	255 (10.04)	22 (0.87)	158 (6.22)	89 (3.50)	2 (0.08)	200 (7.87)	8
	400	42 (1.65)	255 (10.04)	26 (1.02)	158 (6.22)	89 (3.50)	7 (0.28)	200 (7.87)	8
5 inch	150	24.3 (0.96)	255 (10.04)	22 (0.87)	186 (7.32)	124 (4.88)	2 (0.08)	216 (8.50)	4
	300	35.8 (1.41)	280 (11.02)	22 (0.87)	186 (7.32)	124 (4.88)	2 (0.08)	235 (9.25)	8
	400	45.1 (1.79)	280 (11.02)	26 (1.02)	186 (7.32)	124 (4.88)	7 (0.28)	235 (9.25)	8

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

Connection to EN 1092-1

Nom. diam.	Nom. press.	b mm	D mm	d_2 mm	d_4 mm	d_M mm	f mm	k mm	n
DN 80	PN 40	24	200	18	138	89	2	160	8
	PN 100	32	230	26	138	89	2	180	8
DN 100	PN 10/16	20	220	18	158	89	2	180	8
	PN 25/40	24	235	22	162	89	2	190	8
DN 125	PN 16	22	250	18	188	124	2	210	8
	PN 40	26	270	26	188	124	2	220	8

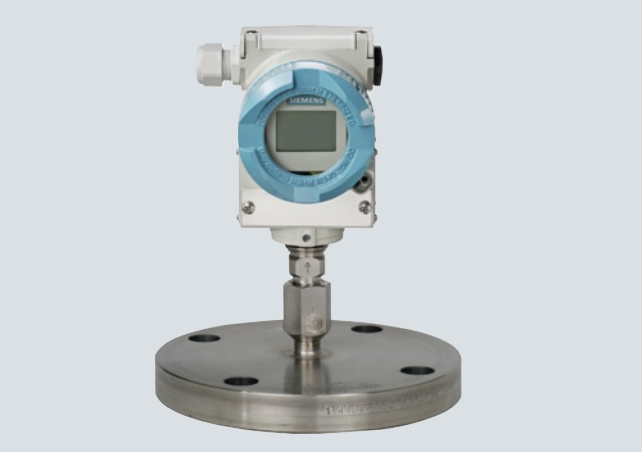
Connection to ASME B16.5

Nom. diam.	Nom. press.	b	D	d_2	d_4	d_M	f	k	n
	lb/sq.in.	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	
3 inch	150	24.3 (0.96)	190 (7.48)	20 (0.79)	127 (5)	89 (3.50)	2 (0.08)	152.5 (6)	4
	300	29 (1.14)	210 (8.27)	22 (0.87)	127 (5)	89 (3.50)	2 (0.08)	168.5 (6.63)	8
	600	38.8 (1.52)	210 (8.27)	22 (0.87)	127 (5)	89 (3.50)	7 (0.28)	168.5 (6.63)	8
4 inch	150	24.3 (0.96)	230 (9.06)	20 (0.79)	158 (6.22)	89 (3.50)	2 (0.08)	190.5 (7.5)	4
	300	32.2 (1.27)	255 (10.04)	22 (0.87)	158 (6.22)	89 (3.50)	2 (0.08)	200 (7.87)	8
	400	42 (1.65)	255 (10.04)	26 (1.02)	158 (6.22)	89 (3.50)	7 (0.28)	200 (7.87)	8
5 inch	150	24.3 (0.96)	255 (10.04)	22 (0.87)	186 (7.32)	124 (4.88)	2 (0.08)	216 (8.50)	4
	300	35.8 (1.41)	280 (11.02)	22 (0.87)	186 (7.32)	124 (4.88)	2 (0.08)	235 (9.25)	8
	400	45.1 (1.79)	280 (11.02)	26 (1.02)	186 (7.32)	124 (4.88)	7 (0.28)	235 (9.25)	8

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

Diaphragm seals of flange design directly fitted on transmitter

Overview



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

Technical specifications

Diaphragm seals (flange design) for pressure and absolute pressure, directly fitted on a transmitter	
Nominal diameter	Nominal pressure
• DN 50	PN 40, PN 100
• DN 80	PN 40, PN 100
• DN 100	PN 10/16, PN 25/40
• 2 inch	class 150, class 300, class 400/600, class 900/1500
• 3 inch	Class 150, class 300, class 600
• 4 inch	Class 150, class 300, class 400
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	Smooth to EN 1092-1, form B2 or ASME B16.5 RFSF
Materials	
• Main body	Stainless steel mat. no. 1.4404/316L
• Wetted parts	Stainless steel mat. no. 1.4404/316L
	• Without coating
	• PTFE coating (for vacuum on request)
	• ECTFE coating (for vacuum on request)
	• PFA coating (for vacuum on request)
	Monel 400, mat. No. 2.4360
	Hastelloy C276, mat. No. 2.4819
	Hastelloy C4, mat. No. 2.4610
	Tantalum
	Duplex 2205, mat. no. 1.4462
• Capillary	Stainless steel, 1.4571/316Ti
• Sealing material at the transmitter 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	
• Length	Max. 10 m (32.8 ft), longer lengths on request
• Internal diameter	2 mm (0.079 inch)
• Minimum bending radius	150 mm (5.9 inch)
Filling liquid	• Silicone oil M5
	• Silicone oil M50
	• High-temperature oil
	• Halocarbon oil (for measuring O_2)
	• Food oil (FDA listed)
	• Glycerine/water (not suitable for use in low-pressure range)
Max. recommended process temperature	170 °C (338 °F)
Permissible ambient temperature	Dependent on the pressure transmitter and the filling liquid of the remote seal. More information can be found in the technical data of the pressure transmitters and in the section "Technical data of filling liquid" in the Technical description to the remote seals.
Weight	Approx. 4 kg (8.82 lb)
Certificate and approvals	
Classification according to pressure equipment directive (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)

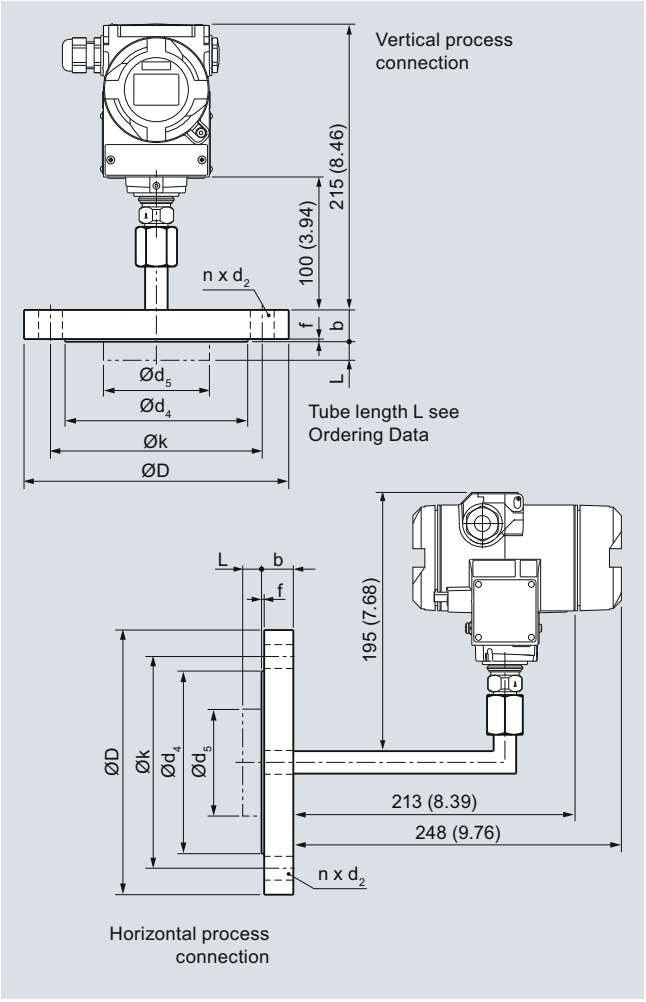
Selection and Ordering data	Order No. Ord.code
Diaphragm seal	**7MF4910-**
Directly fitted to a pressure transmitter SITRANS P for pressure 7MF403.-... and 7MF423.-... together with Order code "V01" (vacuum-proof design) and 7MF802.-...[1]; must be ordered separately	
Process connection	
• Vertical (pressure transmitter upright)	0
• Horizontal	2
Nominal diameter and nominal pressure	
• DN 50 PN 40	A
PN 100	B
• DN 80 PN 40	D
PN 100	E
• DN 100 PN 10/16	G
PN 25/40	H
• 2 inch Class 150	L
Class 300	M
class 400/600	N
class 900/1500	P
• 3 inch Class 150	Q
Class 300	R
Class 600	S
• 4 inch Class 150	T
Class 300	U
Class 400	V
Smooth sealing face to DIN 1092-01, form B1 or B2, or to ASME B16.5 125 ... 250 AA or RFSF	
Other version Add Order code and plain text: Nominal diameter: ...; Nominal pressure: ...	Z J1Y
Wetted parts materials	
• Stainless steel 316L	
- without coating	A
- with PTFE coating	E0
- with ECTFE coating[2]	F
- with PFA coating	D
• Monel 400, mat. No. 2.4360	G
• Hastelloy C276, mat. No. 2.4819	J
• Hastelloy C4, mat. No. 2.4610	U
• Tantalum	K
• Duplex 2205, W.-Nr. 1.4462	Q
• Duplex 2205, W.-Nr. 1.4462, incl. main body	R
Tube length	
• Without tube	0
• 50 mm • (1.97 inch)	1
• 100 mm • (3.94 inch)	2
• 150 mm • (5.90 inch)	3
• 200 mm • (7.87 inch)	4
Other version: Add Order code and plain text: Wetted parts materials: ..., Tube length: ...	Z8 K1Y

Selection and Ordering data	Order No. Ord.code
Diaphragm seal	**7MF4910-**
Directly fitted to a pressure transmitter SITRANS P for pressure 7MF403.-... and 7MF423.-... together with Order code "V01" (vacuum-proof design) and 7MF802.-...[1]; must be ordered separately	
Filling liquid	
• Silicone oil M5	1
• Silicone oil M50	2
• High-temperature oil	3
• Halocarbon oil (for measuring O_2)[3]	4
• Glycerin/water[4]	6
• Food oil (FDA listed)	7
Other version Add Order code and plain text: Filling liquid: ...	9 M1Y
Further designs	Order code
Please add "**-Z**" to Order No. and specify Order code.	
Spark arrestor With spark arrestor for mounting on zone 0 (including documentation) for transmitters for gauge pressure and absolute pressure	**A01**
Certificate to EN 10204-2.2 For certification of oil - and grease-free cleaned and packed version for oxygen and summer applications in which only inert filling liquid may be used. (Only in conjunction with halocarbon oil fill fluid)	**E10**
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	**C11**
Inspection certificate to EN 10204, section 3.1	**C12**
Functional safety certificate ("SIL 2") to IEC 61508 (Only in conjunction with the order code "C20" in the case of SITRANS P DSIII transmitter)	**C20**
Functional safety certificate ("SIL 2/3") to IEC 61508 (Only in conjunction with the order code "C23" in the case of SITRANS P DSIII transmitter)	**C23**
NACE MR-0175-certified incl. acceptance test certificate 3.1 to EN 10204	**D07**
Vacuum-proof design for use in low-pressure range for transmitters for gauge pressure	**V01**

1) With 7MF802.-... and the measuring cells Q, S, T and U also order the vacuum-tight version.
2) For vacuum on request.
3) Oil- and grease- free cleaning to DIN 25410, level 2 and packaging included in the scope of delivery.
4) Not suitable for use in low-pressure range.

Diaphragm seals of flange design directly fitted on transmitter

Dimensional drawings



Diaphragm seals of flange design, direct connection to a SITRANS P pressure transmitter (process connection vertical (top) and horizontal (bottom)), dimensions in mm (inch)

Connection to EN 1092-1

Nom. diam.	Nom. press.	b	D	d_2	d_4	d_5	d_M	f	k	n
		mm	mm	mm	mm	mm	mm	mm	mm	
DN 50	PN 40	20	165	18	102	48.3	45[1)]	2	125	4
	PN 100	28	195	26	102	48.3	45[1)]	2	145	4
DN 80	PN 40	24	200	18	138	76	72[1)]	2	160	8
	PN 100	32	230	26	138	76	72[1)]	2	180	8
DN 100	PN 10/16	20	220	18	158	94	89-2	2	180	8
	PN 25/40	24	235	22	162	94	89	2	190	8

Connection to ASME B16.5

Nom. diam.	Nom. press.	b	D	d_2	d_4	d_5	d_M	f	k	n
	lb/ sq.in.	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	
2 inch	150	19.5	150	20	92	48.3	45[1)]	2	120.5	4
		(0.77)	(5.91)	(0.79)	(3.62)	(1.9)	(1.77)[1)]	(0.08)	(4.74)	
	300	22.7	165	20	92	48.3	45[1)]	2	127	8
		(0.89)	(6.5)	(0.79)	(3.62)	(1.9)	(1.77)[1)]	(0.08)	(5)	
	400/ 600	32.4	165	20	92	48.3	45[1)]	7	127	8
		(1.28)	(6.5)	(0.79)	(3.62)	(1.9)	(1.77)[1)]	(0.28)	(5)	
	900/ 1500	45.1	215	26	92	48.3	45[1)]	7	165	8
		(1.78)	(8.46)	(1.02)	(3.62)	(1.9)	(1.77)[1)]	(0.28)	(6.5)	
3 inch	150	24.3	190	20	127	76	72[2)]	2	152.5	4
		(0.96)	(7.48)	(0.79)	(5)	(3)	(2.83)[2)]	(0.08)	(6)	
	300	29	210	22	127	76	72[2)]	2	168.5	8
		(1.14)	(8.27)	(0.87)	(5)	(3)	(2.83)[2)]	(0.08)	(6.63)	
	600	38.8	210	22	127	76	72[2)]	7	168.5	8
		(1.53)	(8.27)	(0.87)	(5)	(3)	(2.83)[2)]	(0.28)	(6.63)	
4 inch	150	24.3	230	20	158	94	89	2	190.5	8
		(0.96)	(9.06)	(0.79)	(6.22)	(3.69)	(3.50)	(0.08)	(7.5)	
	300	32.2	255	22	158	94	89	2	200	8
		(1.27)	(10.04)	(0.79)	(6.22)	(3.69)	(3.50)	(0.08)	(7.87)	
	400	42	255	26	158	94	89	7	200	8
		(1.65)	(10.04)	(1.02)	(6.22)	(3.69)	(3.50)	(0.28)	(7.87)	

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

d_M: Effective diaphragm diameter

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

[2)] 89 mm = 3½ inch with tube length L = 0

Overview

Diaphragm seals of screwed design for pressure transmitters for differential pressure, fixed connection and with flexible capillary

Technical specifications

Diaphragm seals of screwed design for pressure transmitters for differential pressure, fixed connection and with flexible capillary

Nominal diameter	Nominal pressure
• DN 50	PN 40, PN 100
• DN 80	PN 40
• DN 100	PN 10/16, PN 25/40
• 2 inch	class 150, class 300, class 400/600, class 900/1500
• 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 mat. no. 1.4404/316L
• Wetted parts	Stainless steel mat. no. 1.4404/316L
	• Without coating
	• PTFE coating (for vacuum on request)
	• ECTFE coating (for vacuum on request)
	• PFA coating (for vacuum on request)
	Monel 400, mat. No. 2.4360
	Hastelloy C276, mat. No. 2.4819
	Hastelloy C4, mat. No. 2.4610
	Tantalum
	Duplex 2205, mat. no. 1.4462
• Capillary	Stainless steel, mat. No. 1.4571/316Ti
• Sheath	Spiral hose made of stainless steel, mat. No. 1.4301/316
Sealing material in the process flanges	
• For pressure transmitters, absolute pressure transmitters and low-pressure applications	Copper
• For other applications	Viton
Maximum pressure	See above and the technical data of the pressure transmitter
Tube length	Without tube
	50 mm (1.97 inch)
	100 mm (3.94 inch)
	150 mm (5.91 inch)
	200 mm (7.87 inch)
Capillary	
• Length	Max. 10 m (32.8 ft), longer lengths on request
• Internal diameter	2 mm (0.079 inch)
• Minimum bending radius	150 mm (5.9 inch)
Filling liquid	Silicone oil M5
	Silicone oil M50
	High-temperature oil
	Halocarbon oil (for measuring O_2)
	Food oil (FDA listed)
	Glycerine/water (not suitable for use in low-pressure range)
Max. recommended process temperature	170 °C (338 °F)
Permissible ambient temperature	Dependent on the pressure transmitter and the filling liquid of the remote seal
	More information can be found in the technical data of the pressure transmitters and in the section "Technical data of filling liquid" in the Technical description to the remote seals
Weight	Approx. 4 kg (8.82 lb)
Certificate and approvals	
Classification according to pressure equipment directive (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)

Remote seals for transmitters and pressure gauges

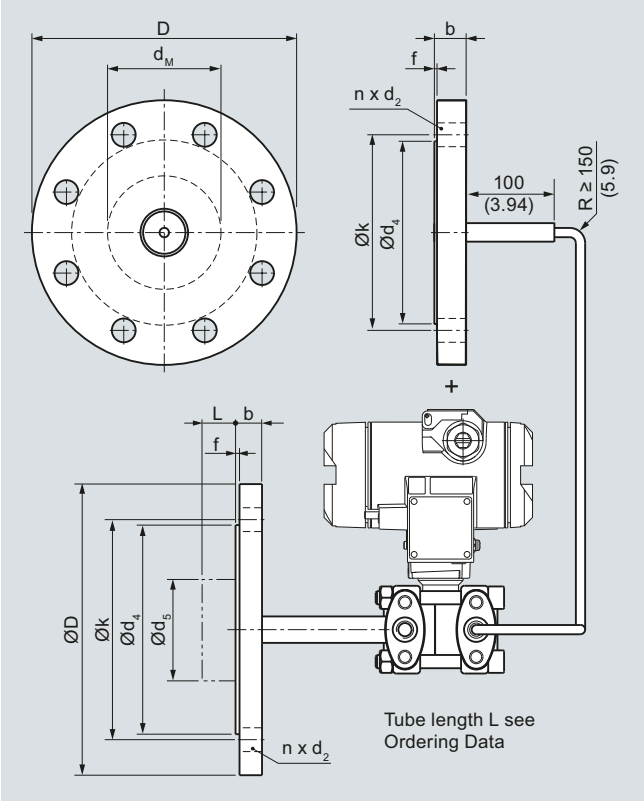
Diaphragm seals of flange design fixed connection and with capillary

Selection and Ordering data		Order No. Ord. code									
Diaphragm seal		**7MF4913-**									
Mounting flange (with tube as option) for direct mounting to high-pressure side **and flanged remote seal without tube**, fitted by means of capillary to low-pressure side of SITRANS P for differential pressure, DS III series (7MF443.-...) and SITRANS P500 (7MF54..-...)		**1** ■■■■ **-** ■ **B** ■■■									
Flange, connection to EN 1092-1											
Nom. diam.	**Nom. press.**										
• DN 50	PN 40		**A**								
	PN 100		**B**								
• DN 80	PN 40		**D**								
• DN 100	PN 10/16		**G**								
	PN 25/40		**H**								
Flange, connection to ASME B16.5											
Nom. diam.	**Nom. press.**										
• 2 inch	class 150		**L**								
	class 300		**M**								
	class 400/600		**N**								
	class 900/1500		**P**								
• 3 inch	Class 150		**Q**								
	Class 300		**R**								
• 4 inch	Class 150		**T**								
	Class 300		**U**								
Other version Add Order code and plain text: Flange: ..., Nominal diameter: ...; Nominal pressure: ...			**Z**							**J 1 Y**	
Wetted parts materials											
Smooth sealing face to EN 1092-1, form B1 or B2, or to ASME B16.5 RF 125 ... 250 AA or RFSF											
• Stainless steel 316L											
- without coating			**A**								
- with PTFE coating			**E**	**0**							
- with ECTFE coating[1]			**F**								
- with PFA coating			**D**								
• Monel 400, mat. No. 2.4360			**G**								
• Hastelloy C276, mat. No. 2.4819			**J**								
• Hastelloy C4, mat. No. 2.4610			**U**								
• Tantalum			**K**								
• Duplex, mat. no. 1.4462			**Q**								
• Duplex, mat. no. 1.4462, incl. main body			**R**								
Tube length											
(for mounting flange on high-pressure side)											
• Without tube				**0**							
• 50 mm	(1.97 inch)			**1**							
• 100 mm	(3.94 inch)			**2**							
• 150 mm	(5.90 inch)			**3**							
• 200 mm	(7.87 inch)			**4**							
Other version: Add Order code and plain text: Wetted parts materials: ....., Tube length: ...				**Z**	**8**					**K 1 Y**	
Filling liquid											
• Silicone oil M5					**1**						
• Silicone oil M50					**2**						
• High-temperature oil					**3**						
• Halocarbon oil (for measuring O_2)[2]					**4**						
• Glycerin/water[3]					**6**						
• Food oil (FDA listed)					**7**						
Other version Add Order code and plain text: Filling liquid: ...					**9**					**M 1 Y**	

Selection and Ordering data		Order No. Ord. code									
Diaphragm seal		**7MF4913-**									
Mounting flange (with tube as option) for direct mounting to high-pressure side **and flanged remote seal without tube**, fitted by means of capillary to low-pressure side of SITRANS P for differential pressure, DS III series (7MF443.-...) and SITRANS P500 (7MF54..-...)		**1** ■■■■ **-** ■ **B** ■■■									
Length of capillary[4]											
• 1.0 m	(3.28 ft)					**2**					
• 1.6 m	(5.25 ft)					**3**					
• 2.5 m	(8.20 ft)					**4**					
• 4.0 m	(13.1 ft)					**5**					
• 6.0 m	(19.7 ft)					**6**					
• 8.0 m	(26.25 ft)					**7**					
• 10.0 m	(32.8 ft)					**8**					
Other version Add Order code and plain text: Length of capillary: ...						**9**				**N 1 Y**	
Further designs		Order code									
Please add "**-Z**" to Order No. and specify Order code.											
Spark arrestor With spark arrestor for mounting on zone 0 (including documentation)		**A02**									
Certificate to EN 10204-2.2 For certification of oil - and grease-free cleaned and packed version for oxygen and summer applications in which only inert filling liquid may be used. (Only in conjunction with halocarbon oil fill fluid)		**E10**									
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2		**C11**									
Inspection certificate to EN 10204, section 3.1		**C12**									
Functional safety certificate ("SIL 2") to IEC 61508 (Only in conjunction with the order code "C20" in the case of SITRANS P DSIII transmitter)		**C20**									
Functional safety certificate ("SIL 2/3") to IEC 61508 (Only in conjunction with the order code "C23" in the case of SITRANS P DSIII transmitter)		**C23**									
NACE MR-0175-certified incl. acceptance test certificate 3.1 to EN 10204		**D07**									
Vacuum-proof design for use in low-pressure range		**V03**									

1) For vacuum on request.
2) Oil- and grease- free cleaning to DIN 25410, level 2 and packaging included in the scope of delivery.
3) Not suitable for use in low-pressure range.
4) Max. capillary length, see section "Technical description".

Dimensional drawings



Diaphragm seals of screwed design with flexible capillary, fixed connection, for connection to a SITRANS P pressure transmitter for differential pressure, dimensions in mm (inch)

Connection to EN 1092-1

Nom. diam.	Nom. press.	b	D	d_2	d_4	d_5	d_M	f	k	n
		mm	mm	mm	mm	mm	mm	mm	mm	
DN 50	PN 40	20	165	18	102	48.3	45[1]	2	125	4
	PN 100	28	195	26	102	48.3	45[1]	2	145	4
DN 80	PN 40	24	200	18	138	76	72[2]	2	160	8
	PN 100	32	230	26	138	76	72[2]	2	180	8
DN 100	PN 10/16	20	220	18	158	94	89	2	180	8
	PN 25/40	24	235	22	162	94	89	2	190	8

Connection to ASME B16.5

Nom. diam.	Nom. press.	b	D	d_2	d_4	d_5	d_M	f	k	n
	lb/ sq.in.	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	
2 inch	150	19.5	150	20	92	48.3	45[1]	2	120.5	4
		(0.77)	(5.91)	(0.79)	(3.62)	(1.9)	(1.77)[1]	(0.08)	(4.74)	
	300	22.7	165	20	92	48.3	45[1]	2	127	8
		(0.89)	(6.5)	(0.79)	(3.62)	(1.9)	(1.77)[1]	(0.08)	(5)	
	400/ 600	32.4	165	20	92	48.3	45[1]	7	127	8
		(1.28)	(6.5)	(0.79)	(3.62)	(1.9)	(1.77)[1]	(0.28)	(5)	
	900/ 1500	45.1	215	26	92	48.3	45[1]	7	165	8
		(1.78)	(8.46)	(1.02)	(3.62)	(1.9)	(1.77)[1]	(0.28)	(6.5)	
3 inch	150	24.3	190	20	127	76	72[2]	2	152.5	4
		(0.96)	(7.48)	(0.79)	(5)	(3)	(2.83)[2]	(0.08)	(6)	
	300	29	210	22	127	76	72[2]	2	168.5	8
		(1.14)	(8.27)	(0.87)	(5)	(3)	(2.83)[2]	(0.08)	(6.63)	
4 inch	150	24.3	230	20	158	94	89	2	190.5	8
		(0.96)	(9.06)	(0.79)	(6.22)	(3.69)	(3.50)	(0.08)	(7.5)	
	300	32.2	255	22	158	94	89	2	200	8
		(1.27)	(10.04)	(0.79)	(6.22)	(3.69)	(3.50)	(0.08)	(7.87)	

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

d_M: Effective diaphragm diameter

[1] 59 mm = 2.32 inch with tube length L = 0

[2] 89 mm = 3½ inch with tube length L = 0

Diaphragm seal, screwed design directly mounted or/and with capillary

Overview

Diaphragm seal, screwed gland design with inside diaphragm for gauge, absolute and differential pressure for direct mounting

Technical specifications

Diaphragm seal, screwed gland with inside diaphragm	
Process connection	Nominal pressure
• Male thread G½B to EN 837-1	PN 100, PN 250
• External thread ½-14“ NPT-M	PN 100, PN 250
• open measurement flange	
- DN 25	PN 10 ... PN 40
- 1 inch	class 150, class 300
Sealing face for open measurement flange	
• For stainless steel, mat. no. 1.4404/316L	To EN 1092-1, form B1 or ASME B16.5 RF 125 ... 250 AA
Materials	
• Lower section (in the case of process connection thread)	Stainless steel, Mat. no. 1.4404/316L
• Diaphragm	Stainless steel, Mat. no. 1.4404/316L
	• No coating
	• With PTFE coating
	Monel 400, mat. no. 2.4360
	Hastelloy C276, mat. no. 2.4819
	Hastelloy C4, mat. no. 2.4610
	Tantal
• Top section (process connection in the case of an open measurement flange)	Stainless steel, mat. no. 1.4404/316L
• Capillary	Stainless steel 1.4571/316Ti
• Sealing material on the process connection	Viton or copper (in the case of vacuum-free version)
• Sealing material between top and bottom section	Viton (FKM) (standard) Teflon (PTFE) metal spring ring (silver-coated)

Capillary	
• Length	Max. 10 m (32.8 ft)
• Internal diameter	2 mm (0.079 inch)
• Minimum bending radius	150 mm (5.9 inch)
Filling liquid	• Silicone oil M5
	• Silicone oil M50
	• High-temperature oil
	• Halocarbon oil (for measuring O_2)
	• Food oil (FDA listed)
Max. recommended process temperature	170 °C (338 °F)
Permissible ambient temperature	Dependent on the pressure transmitter and the filling liquid of the remote seal More information can be found in the technical specifications of the pressure transmitters and in the section "Technical data of filling liquid" in the introduction to the remote seals
Weight	Approx. 1.5 kg (3.3 lb)
Certificates and approvals	
Classification according to pressure equipment directive (PED 97/23/EC)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)

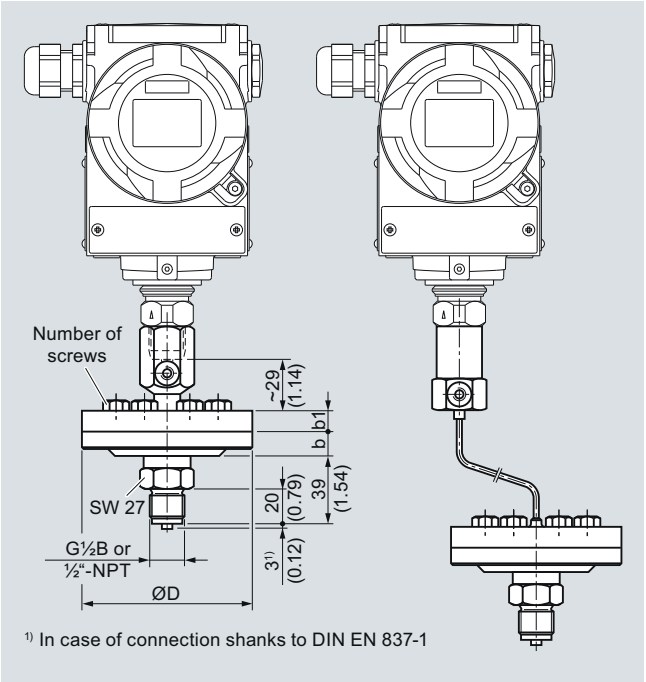
Selection and Ordering data	Order No.Order Code
Remote seal, screwed gland with inside diaphragm	
Mounted on SITRANS P pressure transmitter for	**7MF4930-**
• **gauge pressure** 7MF403.-... and SITRANS P300, 7MF802.-...	
• **absolute pressure** 7MF423.-... and SITRANS P300, 7MF802.-...	
In conjunction with order code "V01" (vacuum-proof design)	
Mounted on either side of SITRANS P pressure transmitter for	**7MF4933-**
• **differential pressure** 7MF443.-... and 7MF54..-...	
	-B
Type	
• no flushing hole	**1**
• with flushing hole 1x 1/8 NPT unsealed (only with process connection 316L)	**2**
Other version, add Order Code and plain text: Version: ...	**9** **H1Y**
Process connection version	
Lower flange material / **Process connection** / **Nominal diameter and pressure level**	
316L/1.4404 / Thread / G½B/PN100	**B**
316L/1.4404 / Thread / G½B/PN250	**C**
316L/1.4404 / Thread / ½NPT-M/PN100	**E**
316L/1.4404 / Thread / ½NPT-M/PN250	**F**
316L/1.4404 / Thread / ½NPT-F/PN100	**H**
316L/1.4404 / Thread / ½NPT-F/PN250	**J**
316L/1.4404 / open measurement flange / DN 25/ PN 10 ... 40	**N**
316L/1.4404 / open measurement flange / 1"/Class 150	**P**
316L/1.4404 / open measurement flange / 1"/Class 300	**Q**
PTFE / Thread / G½B/PN100	**T**
PTFE / open measurement flange / DN 25/ PN 10 ... 40	**U**
PTFE / open measurement flange / 1"/Class 150	**V**
PTFE / open measurement flange / 1"/Class 300	**c**
Other version, add Order Code and plain text: Lower flange material: ...; Process connection: ...; Nominal diameter/pressure level: ...	**Z** **J1Y**
Diaphragm material	
Stainless steel 316L	**A**
316L stainless steel with PTFE film	**E**
Hastelloy C276	**J**
Hastelloy C4	**U**
Tantalum	**K**
Other version, add Order Code and plain text: Diaphragm material: ...	**Z** **K1Y**
Sealing material between top and bottom section	
FKM (standard with diaphragm and 316L process connection)	**1**
PTFE (standard with custom material with max. 260 °C)	**2**
Metal C- circlip, silver coated for >260 °C) incl. high temperature-resistant screwed gland	**3**

Selection and Ordering data	Order No.Order Code
Remote seal, screwed gland with inside diaphragm	
Mounted on SITRANS P pressure transmitter for	**7MF4930-**
• **gauge pressure** 7MF403.-... and SITRANS P300, 7MF802.-...	
• **absolute pressure** 7MF423.-... and SITRANS P300, 7MF802.-...	
In conjunction with order code "V01" (vacuum-proof design)	
Mounted on either side of SITRANS P pressure transmitter for	**7MF4933-**
• **differential pressure** 7MF443.-... and 7MF54..-...	
	-B
Filling liquid	
• Silicone oil M5	**1**
• Silicone oil M50	**2**
• High-temperature oil	**3**
• Halocarbon oil (for measuring O_2)[1]	**4**
• Food oil (FDA-listed)	**7**
Other version, add Order Code and plain text: filling liquid: ...	**9** **M1Y**
Capillary length	
• none, direct mounting	**0**
• none, direct mounting with cooling element (not in conjunction with transmitter for differential pressure)	**1**
• 1 m	**2**
• 1.6 m	**3**
• 2.5 m	**4**
• 4 m	**5**
• 6 m	**6**
• 8 m	**7**
• 10 m	**8**
Other version, add Order Code and plain text: Capillary length: ...	**9** **N1Y**
Further designs	Order code
Add "**-Z**" to Order No. and specify Order Code.	
Certificate to EN 10204-2.2 For certification of oil - and grease-free cleaned and packed version for oxygen and summer applications in which only inert filling liquid may be used. (Only in conjunction with halocarbon oil fill fluid)	**E10**
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	**C11**
Inspection certificate to EN 10204, section 3.1	**C12**
Functional safety certificate ("SIL 2") to IEC 61508 (Only in conjunction with the order code "C20" in the case of SITRANS P DSIII transmitter)	**C20**
Functional safety certificate ("SIL 2/3") to IEC 61508 (Only in conjunction with the order code "C23" in the case of SITRANS P DSIII transmitter)	**C23**
NACE MR-0175-certified incl. acceptance test certificate 3.1 to EN 10204	**D07**
Vacuum-proof design for use in low-pressure range for tranmitters for	
• gauge pressure	**V01**
• differential pressure	**V03**

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

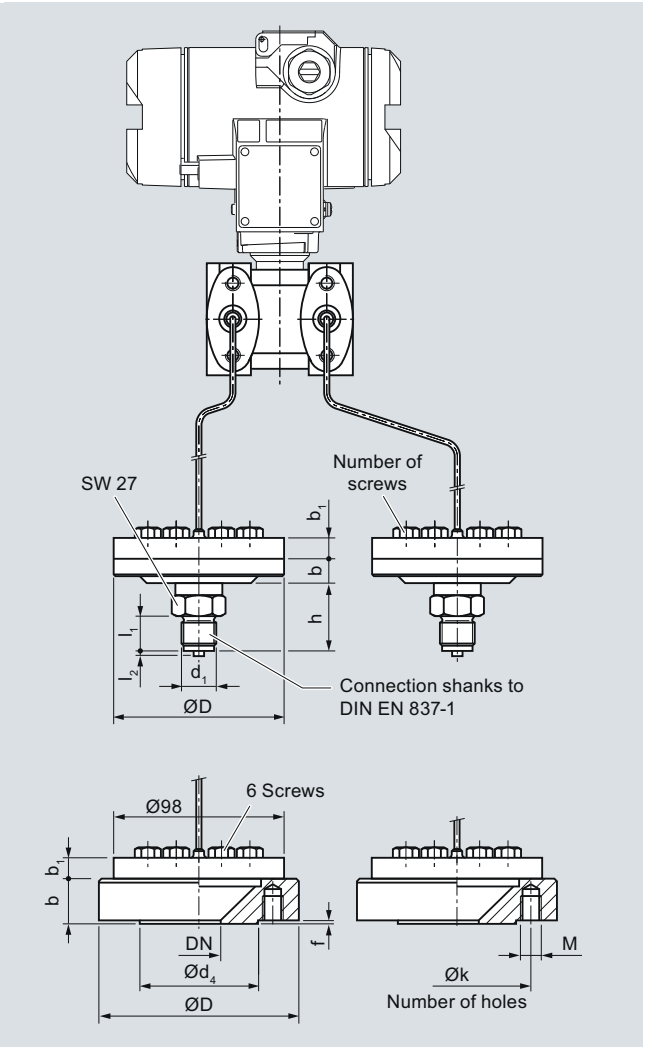
Diaphragm seal, screwed design directly mounted or/and with capillary

Dimensional drawings



Diaphragm seal, screwed gland with inside diaphragm, for gauge and absolute pressure, direct and attached directly to the transmitter with with capillaries, dimensions in mm (inch)

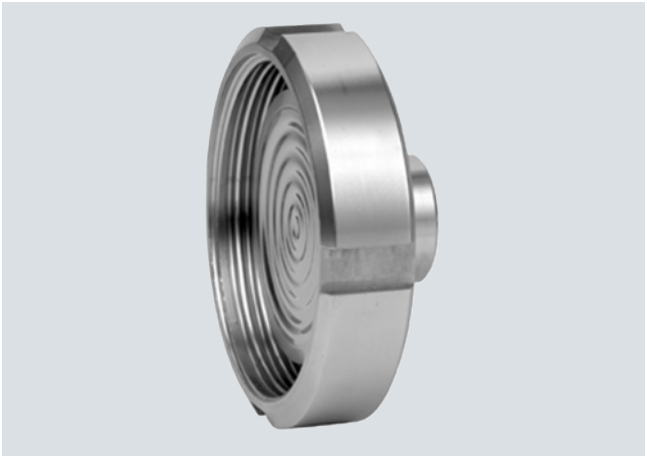
Range	D mm	b mm	b_1 mm	Number of screws
bis 100 bar	98	14	16	6
bis 250 bar	98	14	20	12



Diaphragm seal, screwed gland with inside diaphragm, for differential pressure, direct and attached directly to the transmitter with with capillaries, dimensions in mm (inch)

Nominal diameter	Nominal pressure	D mm	d_4 mm	k mm	M	Number of holes	b mm	b_1 mm	f mm
DN 25	PN 10 ... 40	115	68	85	M12	4	26	12	2
1 inch	150 lb/sq.in	108	50.8	79.2	M12	4	22	12	1.6
1 inch	300 lb/sq.in	124	50.8	88.9	M16	4	22	12	1.6

Overview



Quick-release diaphragm seals, to DIN 11851 with slotted union nut

Quick-release diaphragm seals, with clamp connection

Quick-release diaphragm seals are available for the following SITRANS P pressure transmitter series:

- For pressure: P300, DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus
- For differential pressure and flow: P500, DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus
- The quick-release remote seals are common designs in the food industry. Their design means that the measured medium cannot accumulate in dead volumes. The quick-release clamp present on the remote seal means that quick dismounting is possible for cleaning.

Technical specifications

Quick-release diaphragm seal	
Connection, nominal diameter	Nominal pressure
For pressure	
• To DIN 11851 with slotted union nut	
- DN 25	PN 40
- DN 32	PN 40
- DN 40	PN 40
- DN 50	PN 25
- DN 65	PN 25
- DN 80	PN 25
• To DIN 11851 with threaded socket	
- DN 25	PN 40
- DN 32	PN 40
- DN 40	PN 40
- DN 50	PN 25
- DN 65	PN 25
- DN 80	PN 25
• Clamp connection	
- 1½ inch	PN 16
- 2 inch	PN 16
- 2½ inch	PN 16
- 3 inch	PN 10
For differential pressure and flow	
• To DIN 11851 with slotted union nut	
- DN 50	PN 25
- DN 65	PN 25
- DN 80	PN 25
• To DIN 11851 with threaded socket	
- DN 50	PN 25
- DN 65	PN 25
- DN 80	PN 25
• Clamp connection	
- 2 inch	PN 16
- 2½ inch	PN 16
- 3 inch	PN 10
Sealing 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
• Internal diameter	2 mm (0.079 inch)
• Minimum bending radius	150 mm (5.9 inch)
Filling liquid	Food oil (FDA listed)
	Glycerin/water (not suitable for use in low-pressure range)
Permissible ambient temperature	Dependent on the pressure transmitter and the filling liquid of the remote seal
	More information can be found in the technical data of the pressure transmitters and in the section "Technical data of filling liquid" in the Technical description to the remote seals
Weight	Approx. 4 kg (8.82 lb)
Certificates and approvals	
Classification according to pressure equipment directive (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)
EHEDG	Complies with EHEDG recommendations

Quick-release diaphragm seals

Selection and Ordering data		Order No. Ord. code
Quick-release diaphragm seal		**7MF4940-**
for SITRANS P pressure transmitters for pressure 7MF403.-... and 7MF423.-... together with Order code "V01" (vacuum-proof design) and 7MF802.-...[1]; must be ordered separately Filling liquid: Food oil (FDA listed) Material: Stainless steel, mat. No. 1.4435		**A0 - B**
Nom. diam.	**Nom. press.**	
• Connection to DIN 11851 with slotted union nut		
- DN 25	PN 40	**1B**
- DN 32	PN 40	**1C**
- DN 40	PN 40	**1D**
- DN 50	PN 25	**1E**
- DN 65	PN 25	**1F**
- DN 80	PN 25	**1G**
• Connection to DIN 11851 with screw necks		
- DN 25	PN 40	**2B**
- DN 32	PN 40	**2C**
- DN 40	PN 40	**2D**
- DN 50	PN 25	**2E**
- DN 65	PN 25	**2F**
- DN 80	PN 25	**2G**
• Tri-Clamp connection to DIN 32676/ISO 2852		
- DN 40/1½ inch	PN 16	**4L**
- DN 50/2 inch	PN 16	**4M**
- DN 65/2½ inch	PN 16	**4N**
- DN 80/3 inch	PN 10	**4P**
Other version Add Order codes and plain text: Process connection: ..., Nominal diameter: ...; Nominal pressure: ...		**9A** **H1Y**
Filling liquid		
• Glycerin/water[2]		**6**
• Food oil (FDA listed)		**7**
Other version Add Order code and plain text: Filling liquid: ...		**9** **M1Y**
Connection to pressure transmitter		
• direct		**0**
through capillary, length:[3]		
• 1.0 m	(3.28 ft)	**2**
• 1.6 m	(5.25 ft)	**3**
• 2.5 m	(8.20 ft)	**4**
• 4.0 m	(13.1 ft)	**5**
• 6.0 m	(19.7 ft)	**6**
• 8.0 m	(26.25 ft)	**7**
• 10.0 m	(32.8 ft)	**8**
Other version Add Order code and plain text: Length of capillary: ...		**9** **N1Y**

Selection and Ordering data	Order No. Ord. code
Quick-release diaphragm seal	**7MF4940-**
for SITRANS P pressure transmitters for pressure 7MF403.-... and 7MF423.-... together with Order code "V01" (vacuum-proof design) and 7MF802.-...[1]; must be ordered separately Filling liquid: Food oil (FDA listed) Material: Stainless steel, mat. No. 1.4435	**A0 - B**
Further designs	Order code
Please add "**-Z**" to Order No. and specify Order code.	
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	**C11**
Inspection certificate to EN 10204, section 3.1	**C12**
Functional safety certificate ("SIL 2") to IEC 61508 (Only in conjunction with the order code "C20" in the case of SITRANS P DSIII transmitter)	**C20**
Functional safety certificate ("SIL 2/3") to IEC 61508 (Only in conjunction with the order code "C23" in the case of SITRANS P DSIII transmitter)	**C23**
Vacuum-proof design for use in low-pressure range	**V01**

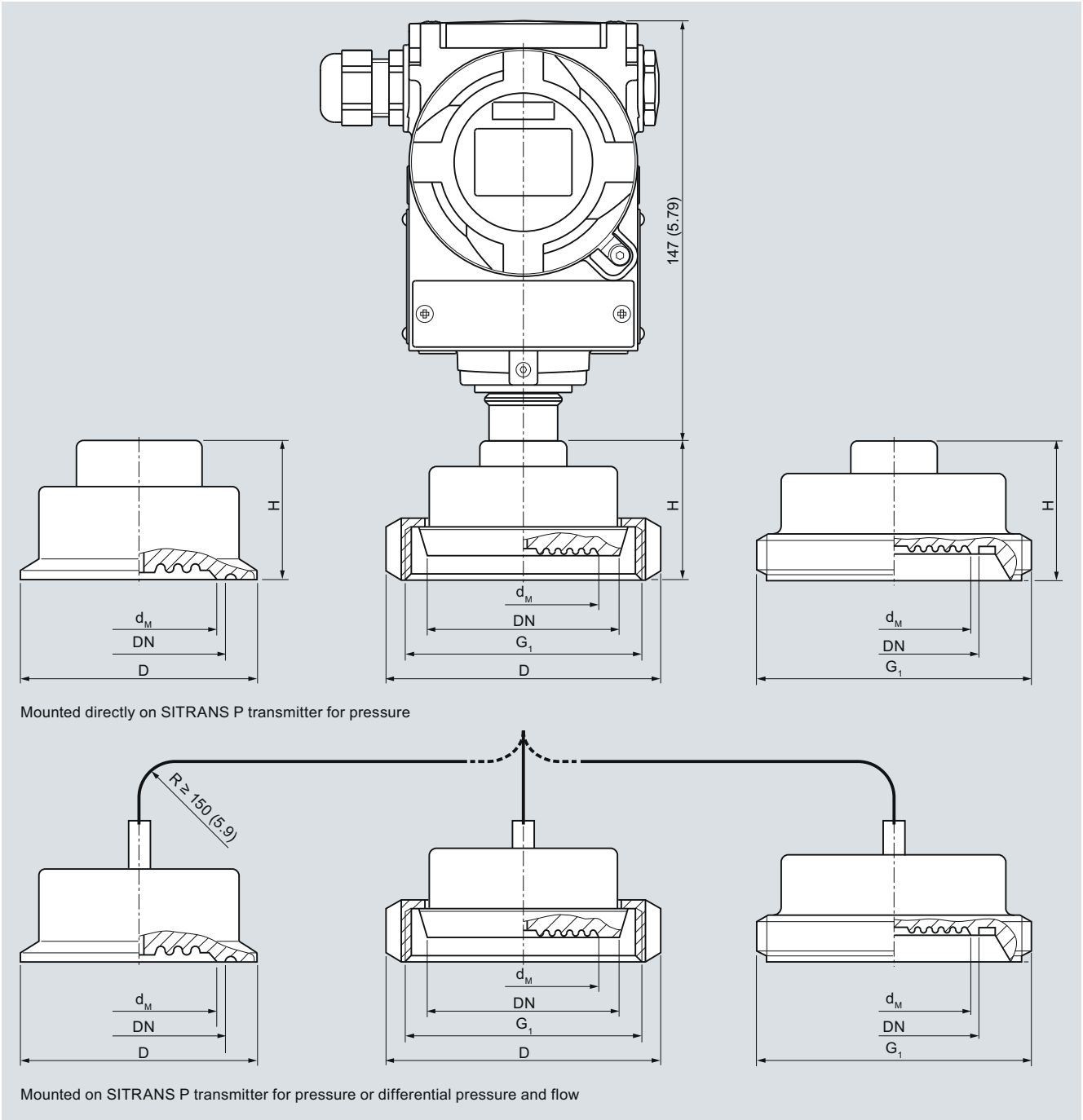
1) With 7MF802.-... and the measuring cells Q, S, T and U also order the vacuum-tight version.
2) Not suitable for use in low-pressure range.
3) Max. capillary length, see section "Technical description"

Selection and Ordering data		Order No. Ord. code
Quick-release diaphragm seal		**7 M F 4 9 4 3 -**
for SITRANS P pressure transmitters for pressure for differential pressure and flow, type 7MF443.-... and 7MF54..-...; 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.**	
• Connection to DIN 11851 with slotted union nut		
- DN 50	PN 25	**1 E**
- DN 65	PN 25	**1 F**
- DN 80	PN 25	**1 G**
• Connection to DIN 11851 with threaded socket		
- DN 50	PN 25	**2 E**
- DN 65	PN 25	**2 F**
- DN 80	PN 25	**2 G**
• Tri-Clamp connection to DIN 32676/ ISO 2852		
- DN 50/2 inch	PN 16	**4 M**
- DN 65/2½ inch	PN 16	**4 N**
- DN 80/3 inch	PN 10	**4 P**
Other version Add Order codes and plain text: Process connection: ..., Nominal diameter: ...; Nominal pressure: ...		**9 A** **H 1 Y**
Filling liquid		
• Glycerin/water[1]		**6**
• Food oil (FDA listed)		**7**
Other version Add Order code and plain text: Filling liquid: ...		**9** **M 1 Y**
Connection to transmitter		
through capillary, Length:[2]		
• 1.0 m	(3.28 ft)	**2**
• 1.6 m	(5.25 ft)	**3**
• 2.5 m	(8.20 ft)	**4**
• 4.0 m	(13.1 ft)	**5**
• 6.0 m	(19.7 ft)	**6**
• 8.0 m	(26.25 ft)	**7**
• 10.0 m	(32.8 ft)	**8**
Other version Add Order code and plain text: Length of capillary: ...		**9** **N 1 Y**
Further designs		Order code
Please add "**-Z**" to Order No. and specify Order code.		
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2		**C11**
Inspection certificate to EN 10204, section 3.1		**C12**
Functional safety certificate ("SIL 2") to IEC 61508 (Only in conjunction with the order code "C20" in the case of SITRANS P DSIII transmitter)		**C20**
Functional safety certificate ("SIL 2/3") to IEC 61508 (Only in conjunction with the order code "C23" in the case of SITRANS P DSIII transmitter)		**C23**
Vacuum-proof design for use in low-pressure range		**V03**

[1] Not suitable for use in low-pressure range.
[2] Max. capillary length, see section "Technical description"

Quick-release diaphragm seals

Dimensional drawings



Clamp connection (left)

DN	Ø d_M		Ø D		H	
40 (1½ inch)	32	(1.26)	50.5	(2)	35	(1.38)
50 (2 inch)	40	(1.57)	64	(2.52)	35	(1.38)
65 (2½ inch)	52	(2.05)	77.5	(3.05)	35	(1.38)
80 (3 inch)	72	(2.83)	91	(3.58)	35	(1.38)

Connection to DIN 11851 with slotted union nut (center)

DN	Ø d_M	Ø D	H	G_1
25	25	63	36	Rd 52x1/6
32	32	70	36	Rd 52x1/6
40	40	78	36	Rd 65x1/6
50	52	112	36	Rd 78x1/6
65	65	112	36	Rd 95x1/6
80	72	127	36	Rd 110x1/6
25	25	63	36	Rd 52x1/6

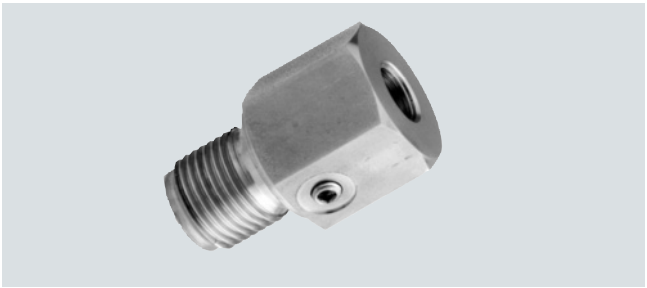
Connection to DIN 11851 with threaded socket (right)

DN	Ø d_M	H	G_1
25	25	36	Rd 52x1/6
32	32	36	Rd 52x1/6
40	40	36	Rd 65x1/6
50	52	36	Rd 78x1/6
65	65	36	Rd 95x1/6
80	72	36	Rd 110x1/6

d_M Effective diaphragm diameter

Quick-release diaphragm seal, dimensions in mm (inch)

Overview



Miniature diaphragm seals

The miniature diaphragm seals are available for the following SITRANS P pressure transmitter series for pressure:

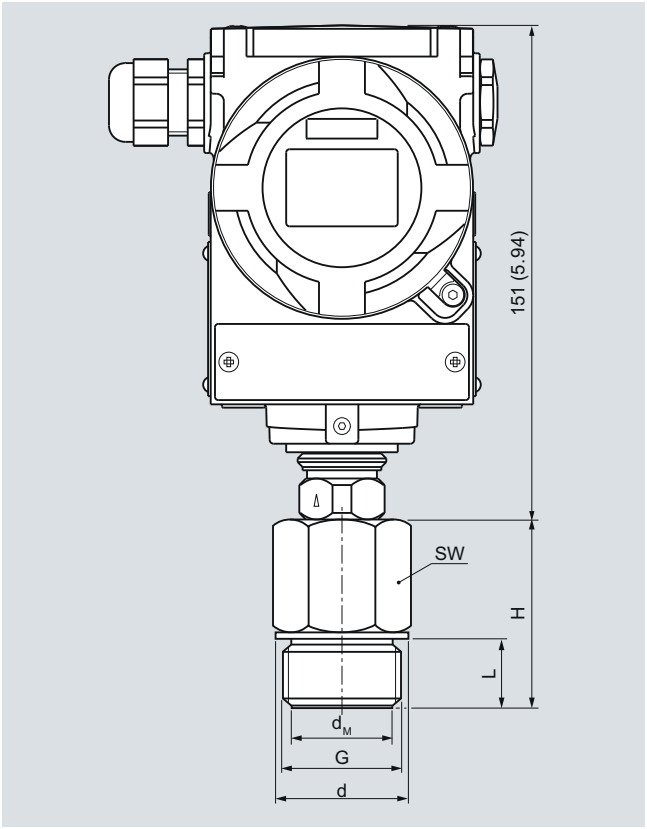
- P300, DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus

Suitable for high pressures, contaminated, fibrous and viscous media in the chemical, paper, food and drink industries.

Design

- Flush-mounted diaphragm
- No dead spaces
- Fixed threaded stems

Dimensional drawings



Miniature diaphragm seal, dimensions in mm (inch)

G	Ø d_M		SW		Ø d		L		H	
	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)
G1½B	40	(1.57)	55	(2.17)	60	(2.36)	30	(1.18)	50	(1.97)
G2B	50	(1.97)	60	(2.36)	70	(2.76)	30	(1.18)	63	(2.48)

G	Ø d_M		SW		L		H	
	mm	(inch)	mm	(inch)	mm	(inch)	mm	(inch)
1“-NPT	27	(1.06)	41	(1.61)	25	(0.98)	40	(1.57)
1½“-NPT	34	(1.34)	55	(2.17)	26	(1.02)	45	(1.77)
2“-NPT	46	(1.81)	65	(2.56)	26	(1.02)	45	(1.77)

d_M: Effective diaphragm diameter

Technical specifications

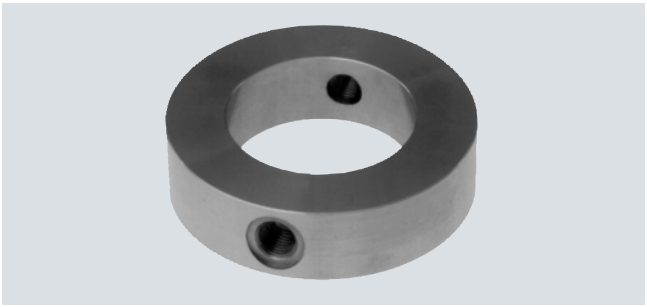
Miniature diaphragm seals	
Span with	
• G1B and 1“-NPT	> 6 bar (> 87 psi)
• G1½B and 1½“-NPT	> 2 bar (> 29 psi)
• G2B and 2“-NPT	> 600 mbar (> 8.7 psi)
Filling liquid	Silicone oil M5 or food oil (FDA listed)
Material	
• Main body	Stainl. steel mat No. 1.4404/ 316L
• Diaphragm	Stainl. steel mat No. 1.4404 / 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 and 1“-NPT	Approx. 0.3 kg (approx. 0.66 lb)
• G1½B and 1½“-NPT	Approx. 0.5 kg (approx. 1.10 lb)
• G2B and 2“-NPT	Approx. 0.8 kg (approx. 1.76 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, paragraph 3 (sound engineering practice)

Miniature diaphragm seals

Selection and Ordering data	Order No. Ord. code
Miniature diaphragm seals	**7 M F 4 9 6 0 -**
directly fitted to SITRANS P pressure transmitters for pressure; type, 7MF403.-... and 7MF423.-... together with Order code "V01" (vacuum-proof design) and 7MF802.-...[1]; must be ordered separately Material: Stainless steel, mat. No. 1.4404/316L Nominal pressure, see "Pressure transmitters"	**1** ■ ■ **0** ■ ■ ■ ■
Process connection	
• G1B	**C**
• G1½B	**D**
• G2B	**E**
• 1" - NPT	**K**
• 1½" - NPT	**L**
• 2" - NPT	**M**
Other version, add Order code and plain text: Process connection: ...	**Z** **J 1 Y**
Wetted parts materials	
• Stainless steel 316L	**A**
Other version, add Order code and plain text: Wetted parts materials: ...	**Z** **K 1 Y**
Filling liquid	
• Silicone oil M5	**1**
• Food oil (FDA listed)	**7**
Other version, add Order code and plain text: Filling liquid: ...	**9** **M 1 Y**
Further designs Please add "**-Z**" to Order No. and specify Order code.	Order code
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	**C11**
Inspection certificate to EN 10204, section 3.1	**C12**
Functional safety certificate ("SIL 2") to IEC 61508 (Only in conjunction with the order code "C20" in the case of SITRANS P DSIII transmitter)	**C20**
Functional safety certificate ("SIL 2/3") to IEC 61508 (Only in conjunction with the order code "C23" in the case of SITRANS P DSIII transmitter)	**C23**
NACE MR-0175-certified incl. acceptance test certificate 3.1 to EN 10204	**D07**
Vacuum-proof design for use in low-pressure range	**V01**

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

Overview



Flushing ring

Flushing rings are required for flange-mounted and sandwich-type remote seals (Order No. 7MF4900 ... 7MF4923) if the danger exists that the process conditions and the geometry of the connection could cause the medium to form deposits or blockages.

The flushing ring is clamped between the process flange and the remote seal.

Deposits can be flushed away from the diaphragm through the holes in the side, or the pressure volume can be vented. Different nominal diameters and forms permit adaptation to the respective process flange.

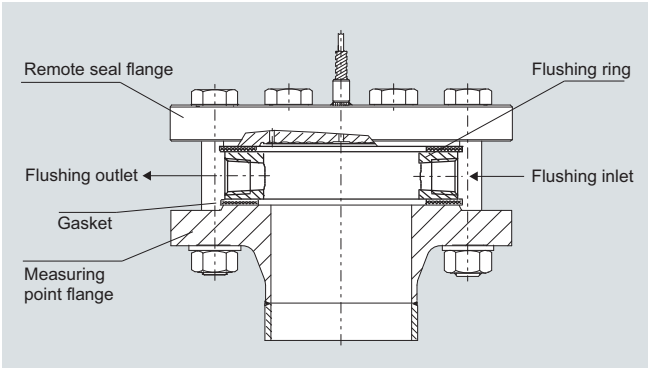
Process connection

For flanges to EN and ASME:
DN 50, 80, 100, 125; PN 16 ... 100 or
DN 2 inch, 3 inch, 4 inch, 5 inch; Class 150 ... 600

Standard design

Material: CrNi-Stahl, mat. No. 1.4404/316L
Sealing faces and flushing holes: See Selection and Ordering data

Design



Installation example

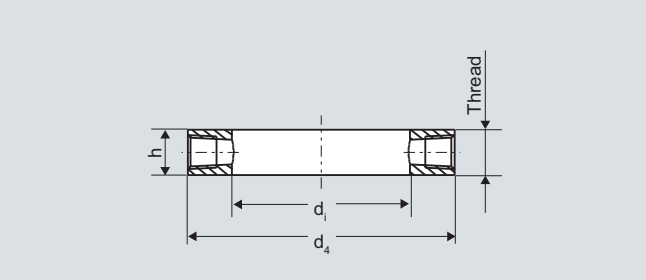
Technical specifications

Flushing ring for remote seals of sandwich and flange design	
Nominal diameter	Nominal pressure
• DN 50	PN 16 ... PN 100
• DN 80	PN 16 ... PN 100
• DN 100	PN 16 ... PN 100
• DN 125	PN 16 ... PN 100
• 2 inch	Class 150 ... class 600
• 3 inch	Class 150 ... class 600
• 4 inch	Class 150 ... class 600
• 5 inch	Class 150 ... class 600
Sealing face	
• To EN 1092-1	Form B1
	Form B2
	Form D/Form D
	Form C/Form C
	Form C/Form C
	Form E
	Form F
• To ASME B16.5	RF 125 ... 250 AA
	RFSF
	RJT ring groove
Flushing holes (2 off), female thread	• G¼
	• G½
	• ¼-18 NPT
	• ½-14 NPT
Material	Stainless steel 1.4404/316L

Flushing rings for diaphragm seals

Selection and Ordering data		Order No. Ord. code						
Flushing ring		**7MF4925-**						
for remote seals 7MF4900 to 7MF4923		**1**	■	■	■	■	■	■
Nom. diam.	**Nom. press.**							
• DN 50	PN 16 ... PN 100	**A**						
• DN 80	PN 16 ... PN 100	**B**						
• DN 100	PN 16 ... PN 100	**C**						
• DN 125	PN 16 ... PN 100	**D**						
• 2 inch	Class 150 ... 600	**G**						
• 3 inch	Class 150 ... 600	**H**						
• 4 inch	Class 150 ... 600	**J**						
• 5 inch	Class 150 ... 600	**K**						
Other version Add Order code and plain text: Nominal diameter: ...; Nominal pressure: ...		**Z**					**J 1 Y**	
Sealing face								
• EN 1092-1								
- Form B1			**A**					
- Form B2			**C**					
- Form C/Form C			**D**					
- Form D/Form C			**E**					
- Form D/Form D			**F**					
- Form E			**G**					
- Form F			**H**					
• ASME B16.5								
- RF 125 ... 250 AA			**M**					
- RFSF			**Q**					
- RJT ring groove			**R**					
Other version Add Order code and plain text: Sealing face: ...			**Z**				**K 1 Y**	
Flushing holes (2 off)								
• Female thread G¼				**1**				
• Female thread G½				**2**				
• Female thread ¼-18 NPT				**3**				
• Female thread ½-14 NPT				**4**				
Material								
• Stainless steel 316L					**0**			
Other version Add Order code and plain text: Material: ...					**9**		**M 1 Y**	
Further designs Please add "**-Z**" to Order No. and specify Order code.		Order code						
Inspection certificate to EN 10204, section 3.1		**C12**						

Dimensional drawings



Flushing ring, dimension drawing

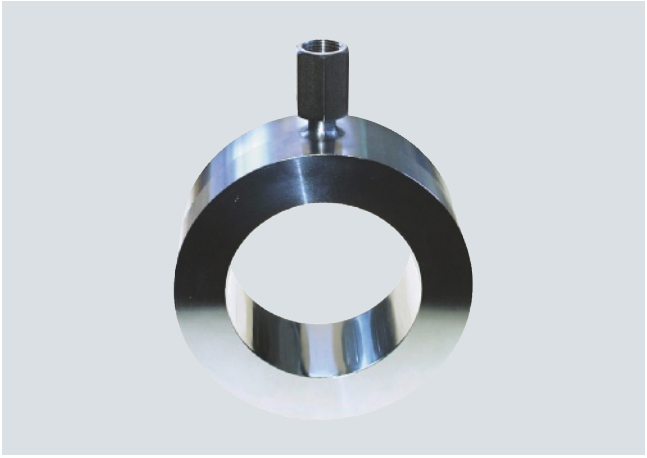
Connection to EN 1092-1

DN (mm)	PN (bar)	d_4 (mm)	d_i (mm)	h (mm)	Weight (kg)
50	16 ... 100	102	62	30	1.10
80	16 ... 100	138	92	30	1.90
100	16 ... 100	162	92	30	3.15
125	16 ... 100	188	126	30	3.50

Connection to ASME B 16.5

DN	Class	d_4		d_i		h		Weight	
inch		mm	(in.)	mm	(in.)	mm	(in.)	kg	(lb)
2	150 ... 600	92	(3.62)	62	(2.44)	30	(1.18)	0.60	(1.32)
3	150 ... 600	127	(5)	92	(3.62)	30	(1.18)	1.05	(2.31)
4	150 ... 600	157	(6.18)	92	(3.62)	30	(1.18)	2.85	(6.28)
5	150 ... 600	185.5	(7.3)	126	(4.96)	30	(1.18)	3.30	(7.28)

Overview



Inline seals for flange-mounting

The inline seal is completely integrated in the process line. It is particularly suitable for flowing and highly viscous media.

The inline remote seal consists of a cylindrical jacket into which a thin-walled pipe is welded. It is clamped directly between two flanges in the pipeline.

Design

- Inline seals for flange-mounting (flange design) to EN/ASME for SITRANS P pressure transmitters
  - For pressure: P300, DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus
  - For differential pressure and flow: DS III with HART, DS III with PROFIBUS PA, DS III with FOUNDATION Fieldbus and P500
- Sealing face to EN 1092-1 or ASME B16.5
- Connection to the transmitter directly or by means of a flexible capillary (max. 10 m long)
- See Technical data for details of materials used for the wetted parts
- Material used for the capillary, the guard sleeve, the seal's main body and the measuring cell: Stainless steel, mat.-No. 1.4571
- Filling liquid: Silicone oil, high-temperature oil, halocarbon oil, food oil (FDA listed) or glycerin/water (not suitable for uses in low-pressure range)

Function

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

Note:

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

Technical specifications

Inline seals for flange-mounting	
Nominal diameter	Nominal pressure
• DN 25	PN 6 ... PN 100
• DN 40	PN 6 ... PN 100
• DN 50	PN 6 ... PN 100
• DN 80	PN 6 ... PN 100
• DN 100	PN 6 ... PN 100
• 1 inch	Class 150 ... class 2500
• 1½ inch	Class 150 ... class 2500
• 2 inch	Class 150 ... class 2500
• 3 inch	Class 150 ... class 2500
• 4 inch	Class 150 ... class 2500
Process connection	Flange to EN 1092-1 or ASME B 16.5
Sealing face	To EN 1092-1, form B1 or to ASME B16.5 RF 125 ... 250 A or RFSF
Materials	
• Main body	Stainless steel 1.4404/316L
• Diaphragm	Stainless steel 1.4404/316L
• Wetted parts	Stainless steel 1.4404/316L
	• Without coating
	• ECTFE coating
	• PFA coating (for vacuum on request)
	Monel 400, mat. No. 2.4360
	Hastelloy C276, mat. No. 2.4819
	Hastelloy C4, mat. No. 2.4610
	Tantalum
• Capillary	Stainless steel, mat. No. 1.4571/316Ti
• Sheath	Spiral hose made of stainless steel, mat. No. 1.4301/316
Capillary	
• Length	Max. 10 m (32.8 ft)
• Internal diameter	2 mm (0.079 inch)
• Minimum bending radius	150 mm (5.9 inch)
Filling liquid	Silicone oil M5
	Silicone oil M50
	High-temperature oil
	Halocarbon oil
	Food oil (FDA listed)
	Glycerin/water (not suitable for uses in low-pressure range)
Permissible ambient temperature	See pressure transmitters, see filling liquid
Weight	Approx. 4 kg (8.82 lb)
Certificates and approvals	
Classification according to pressure equipment directive (DRGL 97/23/EC)	For gases of fluid group 1 and 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

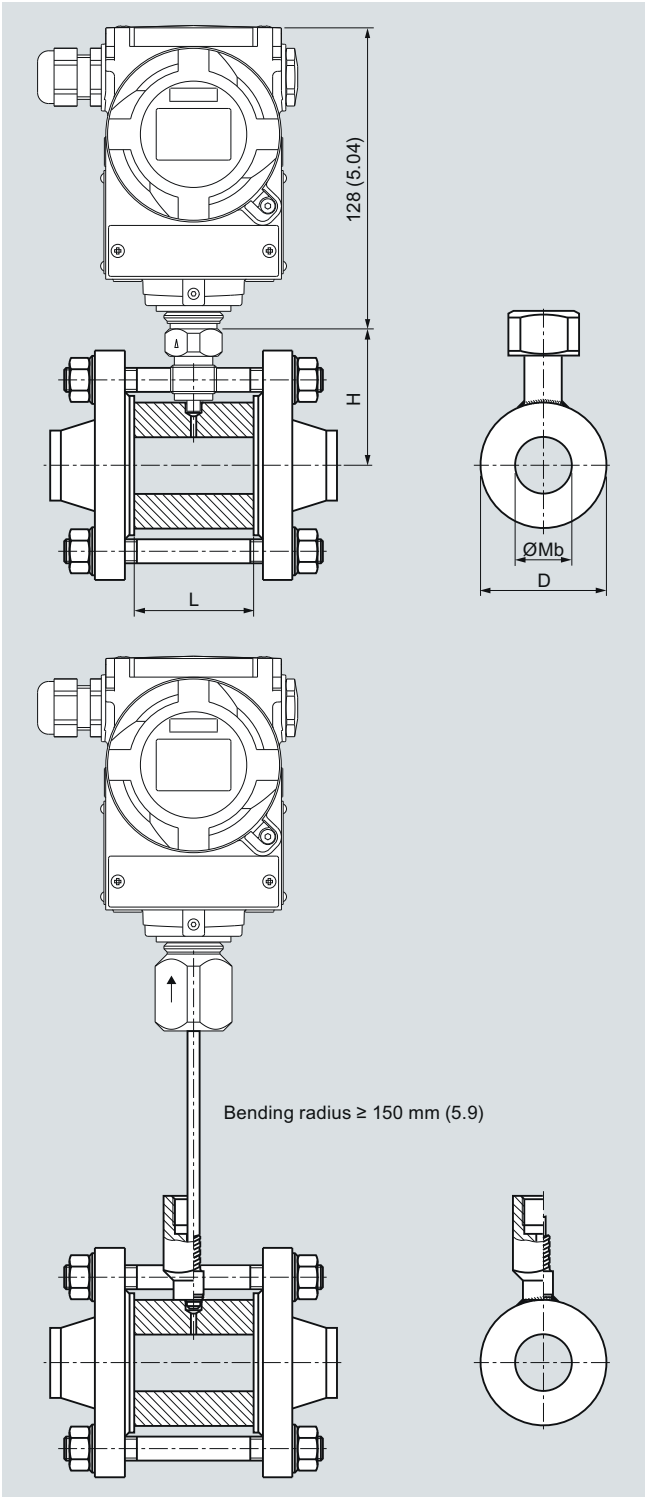
Inline seals for flange-mounting

Selection and Ordering data		Order No. Ord. code
Inline seal for flange-mounting for SITRANS P pressure transmitters		
for gauge pressure 7MF403.-... and 7MF423.-... together with Order code "V01" (vacuum-proof design) and 7MF802.-...[1]; must be ordered separately, scope of delivery: 1 off		**7MF4980-**
for differential pressure and flow 7MF4433 or 7MF54..-...; order separately, scope of delivery: 1 pair (set); Material: Completely of stainless steel, mat. No. 1.4404/316L; Process connection to EN 1092-1 or ASME B16.5; sealing face to EN 1092-1, form B1, or to ASME B16.5 RF 125 ... 250 AA		**7MF4983-**
		1 0 - B
Nominal diameter and nominal pressure		
• DN 25	PN 6 ... 100	**B**
• DN 40	PN 6 ... 100	**D**
• DN 50	PN 6 ... 100	**E**
• DN 80	PN 6 ... 100	**G**
• DN 100	PN 6 ... 100	**H**
• 1 inch	Class 150 ... 2500	**L**
• 1½ inch	Class 150 ... 2500	**M**
• 2 inch	Class 150 ... 2500	**N**
• 3 inch	Class 150 ... 2500	**P**
• 4 inch	Class 150 ... 2500	**Q**
Other version Add Order code and plain text: Nominal diameter: ...; Nominal pressure: ...		**Z** **J 1 Y**
Wetted parts materials		
• Stainless steel 316L		
- Without coating		**A**
- With PFA coating		**D**
- With ECTFE coating[2]		**F**
• Monel 400, mat. No. 2.4360		**G**
• Hastelloy C276, mat. No. 2.4819		**J**
• Hastelloy C4, mat. No. 2.4610		**U**
• Tantalum		**K**
Other version Add Order code and plain text: Wetted parts materials: ...		**Z** **K 1 Y**
Filling liquid		
• Silicone oil M5		**1**
• Silicone oil M50		**2**
• High-temperature oil		**3**
• Halocarbon oil (for measuring O_2)[3]		**4**
• Glycerin/water[4]		**6**
• Food oil (FDA listed)		**7**
Other version Add Order code and plain text: Filling liquid: ...		**9** **M 1 Y**

Selection and Ordering data		Order No. Ord. code
Inline seal for flange-mounting for SITRANS P pressure transmitters		
for gauge pressure 7MF403.-... and 7MF423.-... together with Order code "V01" (vacuum-proof design) and 7MF802.-...[1]; must be ordered separately, scope of delivery: 1 off		**7MF4980-**
for differential pressure and flow 7MF4433 or 7MF54..-...; order separately, scope of delivery: 1 pair (set); Material: Completely of stainless steel, mat. No. 1.4404/316L; Process connection to EN 1092-1 or ASME B16.5; sealing face to EN 1092-1, form B1, or to ASME B16.5 RF 125 ... 250 AA		**7MF4983-**
		1 0 - B
Connection to transmitter		
• direct (only for 7MF4980)		**0**
through capillary, length:[5]		
• 1.0 m	(3.28 ft)	**2**
• 1.6 m	(5.25 ft)	**3**
• 2.5 m	(8.20 ft)	**4**
• 4.0 m	(13.1 ft)	**5**
• 6.0 m	(19.7 ft)	**6**
• 8.0 m	(26.25 ft)	**7**
• 10.0 m	(32.8 ft)	**8**
Other version Add Order code and plain text: Length of capillary: ...		**9** **N 1 Y**
Further designs		Order code
Please add "**-Z**" to Order No. and specify Order code.		
Spark arrestor With spark arrestor for mounting on zone 0 (including documentation)		
• Pressure and absolute pressure		**A01**
• for differential pressure transmitters		**A02**
Certificate to EN 10204-2.2 For certification of oil - and grease-free cleaned and packed version for oxygen and summer applications in which only inert filling liquid may be used. (Only in conjunction with halocarbon oil fill fluid)		**E10**
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2		**C11**
Inspection certificate to EN 10204, section 3.1		**C12**
Functional safety certificate ("SIL 2") to IEC 61508 (Only in conjunction with the order code "C20" in the case of SITRANS P DSIII transmitter)		**C20**
Functional safety certificate ("SIL 2/3") to IEC 61508 (Only in conjunction with the order code "C23" in the case of SITRANS P DSIII transmitter)		**C23**
NACE MR-0175-certified incl. acceptance test certificate 3.1 to EN 10204		**D07**
Vacuum-proof design for use in low-pressure range		
• for transmitters for gauge pressure		**V01**
• for transmitters for differential pressure		**V03**
Note: Suffix "Y01" required with pressure transmitter		

1) With 7MF802.-... and the measuring cells Q, S, T and U also order the vacuum-tight version.
2) For vacuum on request.
3) Oil- and grease- free cleaning to DIN 25410, level 2 and packaging included in the scope of delivery.
4) Not suitable for use in low-pressure range.
5) Max. capillary length, see section "Technical description"

Dimensional drawings



Inline seal for flange-mounting, connected to SITRANS P pressure transmitter, dimensions in mm (inch)

Connection to EN 1092-1

DN mm	PN bar	D mm	Mb mm	L mm	H 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 (inch)	Class	D mm (inch)	Mb mm (inch)	L mm (inch)	H mm (inch)
1	150 ... 2500	63 (2.48)	28.5 (1.12)	60 (2.36)	78.5 (3.1)
1½	150 ... 2500	85 (3.35)	43 (1.69)	60 (2.36)	86 (3.4)
2	150 ... 2500	95 (3.74)	54.5 (2.15)	60 (2.36)	94.5 (3.72)
3	150 ... 2500	130 (5.12)	82.5 (3.25)	60 (2.36)	112 (4.4)
4	150 ... 2500	150 (5.9)	107 (4.21)	60 (2.36)	122 (4.8)

Quick-release inline seals

Overview

Quick-release inline seals, to DIN 11851 with threaded socket

Quick-release inline seals, with clamp connection

Quick-release inline seals for pressure are available for the following SITRANS P pressure transmitter series:

- P300
- DS III with HART
- DS III with PROFIBUS PA
- DS III with FOUNDATION Fieldbus

Application

The quick-release inline seal is a special design for flowing media and high-viscosity media. Since it is completely integrated in the process pipe, no turbulences, dead volumes or other obstructions to the flow occur. The measured medium flows unhindered through the inline seal and results in self-cleaning of the measuring chamber. Furthermore, the inline seal can be cleaned by a pig.

Design

The quick-release clamp is available in two versions:

- DIN 11851 with threaded socket
- Clamp connection

The inline seal is connected to the pressure transmitter either directly or by way of a capillary.

Function

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

Note:

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

Technical specifications

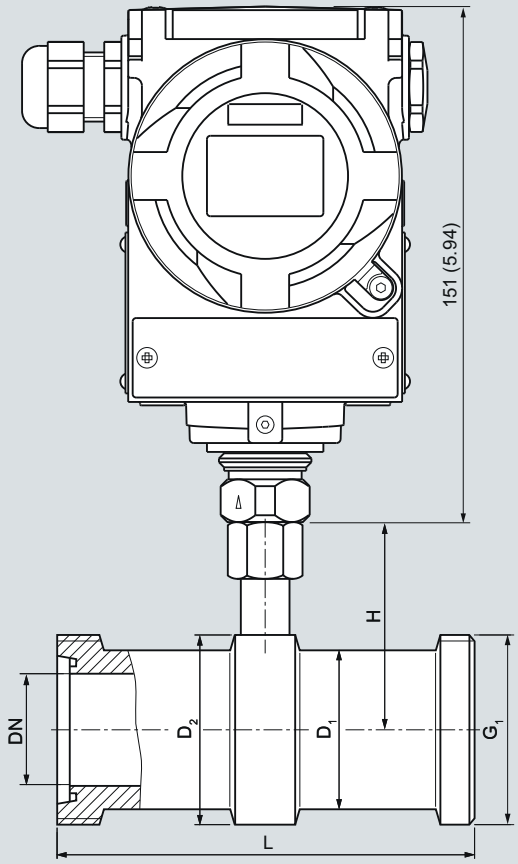
Inline seals of quick-release design for pressure		
Connection	Nominal diameter	Nominal pressure
• To DIN 11851 with threaded socket	DN 25	PN 40
	DN 40	PN 40
	DN 50	PN 25
	DN 65	PN 25
	DN 80	PN 25
	DN 100	PN 25
• Clamp connection	1½ inch	PN 40
	2 inch	PN 40
	2½ inch	PN 40
	3 inch	PN 40
Material		
• Main body	Stainless steel 1.4404/316L	
• Diaphragm	Stainless steel 1.4404/316L	
Capillary		
• Length	Max. 10 m (32.8 ft)	
• Internal diameter	2 mm (0.079 inch)	
• Minimum bending radius	150 mm (5.9 inch)	
Filling liquid	• Food oil (FDA listed)	
	• Glycerin/water (not suitable for use in low-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 description to the remote seals	
Weight	Approx. 4 kg (approx. 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 the requirements of article 3, paragraph 1 (appendix 1); assigned to category III, conformity evaluation module H by the TÜV Nord	
EHEDG	Complies with EHEDG recommendations	

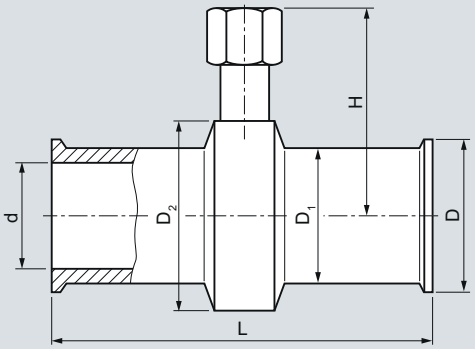
Selection and Ordering data		Order No. Ord. code
Quick-release inline seal		**7MF4950-**
for SITRANS P pressure transmitters for pressure 7MF403.-... and 7MF423.-... together with Order code "V01" (vacuum-proof design) and 7MF802.-...[1]; must be ordered separately Filling liquid: Food oil (FDA listed) Material: Stainless steel 316L		■■**A0**■-■**B**■■■
Nom. diam.	**Nom. press.**	
• Connection to DIN 11851 with screw necks		
- DN 25	PN 40	**2B**
- DN 40	PN 40	**2D**
- DN 50	PN 25	**2E**
- DN 65	PN 25	**2F**
- DN 80	PN 25	**2G**
- DN 100	PN 25	**2H**
• Clamp connection		
- 1½ inch	PN 16	**4L**
- 2 inch	PN 16	**4M**
- 2½ inch	PN 16	**4N**
- 3 inch	PN 10	**4P**
Other version Add Order codes and plain text: Process connection: ..., Nominal diameter: ...; Nominal pressure: ...		**9A** **H1Y**
Filling liquid		
• Glycerin/water[2]		**6**
• Food oil (FDA listed)		**7**
Other version Add Order code and plain text: Filling liquid: ...		**9** **M1Y**
Connection to transmitter		
• Direct		**0**
Through capillary, length:[3]		
• 1.0 m	(3.28 ft)	**2**
• 1.6 m	(5.25 ft)	**3**
• 2.5 m	(8.20 ft)	**4**
• 4.0 m	(13.1 ft)	**5**
• 6.0 m	(19.7 ft)	**6**
• 8.0 m	(26.25 ft)	**7**
• 10.0 m	(32.8 ft)	**8**
Other version Add Order code and plain text: Length of capillary: ...		**9** **N1Y**
Further designs		Order code
Please add "**-Z**" to Order No. and specify Order code.		
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2		**C11**
Inspection certificate to EN 10204, section 3.1		**C12**
Functional safety certificate ("SIL 2") to IEC 61508 (Only in conjunction with the order code "C20" in the case of SITRANS P DSIII transmitter)		**C20**
Functional safety certificate ("SIL 2/3") to IEC 61508 (Only in conjunction with the order code "C23" in the case of SITRANS P DSIII transmitter)		**C23**
Vacuum-proof design for use in low-pressure range		**V01**

1) With 7MF802.-... and the measuring cells Q, S, T and U also order the vacuum-tight version.
2) Not suitable for use in low-pressure range.
3) Max. capillary length, see section "Technical description"

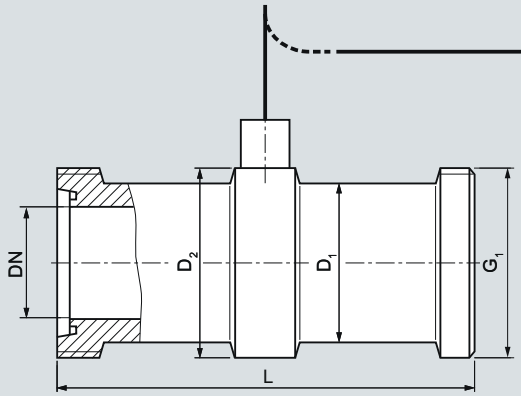
Quick-release inline seals

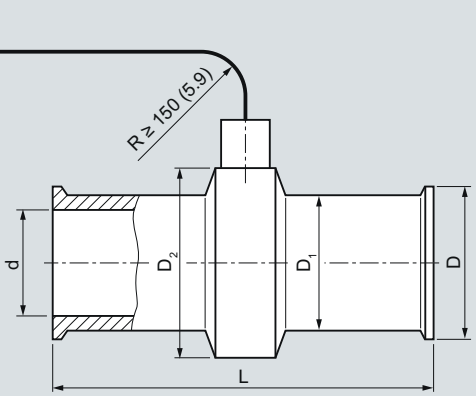
Dimensional drawings





Mounted directly on SITRANS P transmitter for pressure





Mounted on SITRANS P transmitter for pressure or differential pressure and flow

Connection to DIN 11851 with screw necks

DN	Ø D_1	Ø D_2	H	L	G_1
25	38	52	68	128	Rd 52x1/6
40	55	65	74.5	160	Rd 65x1/6
50	68	78	81	170	Rd 78x1/6
65	85	95	89.5	182	Rd 95x1/6
80	110	110	97	182	Rd 110x1/4
100	130	130	107	182	Rd 110x1/4

Clamp connection for pipes to BS 4825/3 and o.D. tubes

d		Ø D_1		Ø D_2		H		L		D	
mm	(inch)	mm	(inch)	mm	(inch)	mm	(inch)	mm	(inch)	mm	(inch)
22.2	(1)	38	(1.5)	50	(1.97)	67	(2.64)	114	(4.49)	50.5	(1.98)
34.9	(1½)	43	(1.69)	65	(2.56)	74.5	(2.93)	146	(5.75)	50.5	(1.98)
47.6	(2)	56	(2.2)	75	(2.95)	79.5	(3.13)	156	(6.14)	64	(2.52)
60.3	(2½)	68	(2.68)	77	(3.03)	80.5	(3.17)	156	(6.14)	77.5	(3.05)
73.0	(3)	82	(3.23)	91	(3.58)	87.5	(3.44)	156	(6.14)	91	(3.58)

Quick-release inline seal, dimensions in mm (inch)

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 must 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.

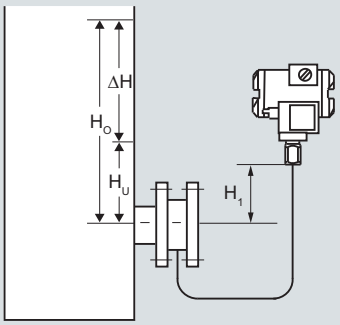
Possible combinations of pressure transmitters and remote seals

Type of installation	Pressure transmitters	Remote seals
A/B	7MF4033 7MF4034 7MF4035 7MF8023 7MF8024 7MF8025	7MF4900 7MF4910 7MF4920
C_1 and C_2	7MF4233 7MF4234 7MF4235	7MF4900 7MF4910 7MF4920 (vacuum-proof design in each case)
	7MF4333 7MF4334 7MF4335	7MF4901 7MF4921
D	7MF4433 7MF4434 7MF4435 7MF5403 7MF5413	7MF4903 7MF4923
E	7MF4433 7MF4434 7MF4435 7MF5403 7MF5413	7MF4913
G, H and J	7MF4433 7MF4434 7MF4435 7MF5403 7MF5413	7MF4903 7MF4923

Dimensional drawings

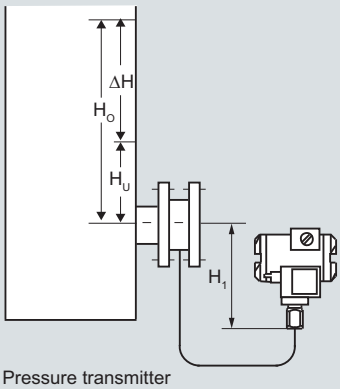
Types of installation for pressure and level measurements (open vessels)

Installation type A



Pressure transmitter above the measuring point

Installation type B



Pressure transmitter below the measuring point

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

Installation type A

Start-of-scale: $p_{MA} = \rho_{FL} \cdot g \cdot H_U - \rho_{Oil} \cdot g \cdot H_1$

Full-scale: $p_{ME} = \rho_{FL} \cdot g \cdot H_O - \rho_{Oil} \cdot g \cdot H_1$

Installation type B

Start-of-scale: $p_{MA} = \rho_{FL} \cdot g \cdot H_U + \rho_{Oil} \cdot g \cdot H_1$

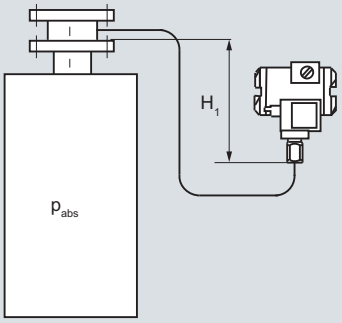
Full-scale: $p_{ME} = \rho_{FL} \cdot g \cdot H_O + \rho_{Oil} \cdot g \cdot H_1$

Legend

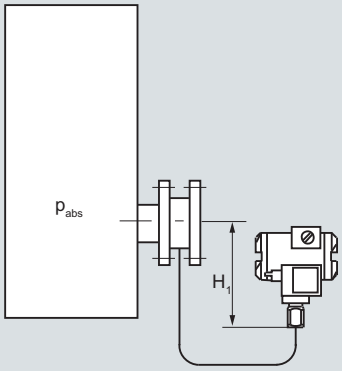
p_{MA}	Start-of-scale value to be set
p_{ME}	Full-scale value to be set
ρ_{FL}	Density of medium in vessel
ρ_{Oil}	Density of filling oil in the capillary to the remote seal
g	Local acceleration due to gravity
H_U	Start-of-scale value
H_O	Full-scale value
H_1	Distance between vessel flange and pressure trans.

Types of installation for absolute level measurements (closed vessels)

Installation type C_1



Installation type C_2



Pressure transmitter for absolute pressure always below the measuring point: $H_1 \geq 200$ mm (7.9 inch)

Installation type C_1 and C_2

Start-of-scale: $p_{MA} = p_{START} + \rho_{Oil} \cdot g \cdot H_1$

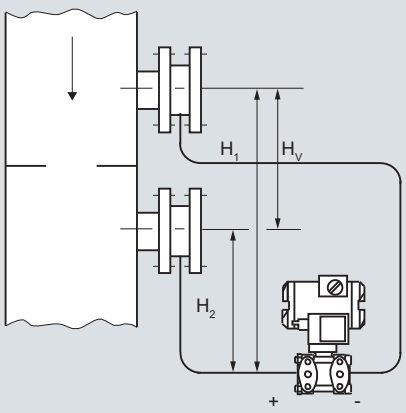
Full-scale: $p_{ME} = p_{END} + \rho_{Oil} \cdot g \cdot H_1$

Legend

p_{MA}	Start-of-scale value to be set
p_{ME}	Full-scale value to be set
p_{START}	Start-of-scale value
p_{END}	Full-scale value
ρ_{Oil}	Density of filling oil in the capillary to the remote seal
g	Local acceleration due to gravity
H_1	Distance between vessel flange and pressure trans.

Type of installation for differential pressure and flow measurements

Installation type D Filter monitoring



Installation type D

Start-of-scale: $p_{MA} = p_{START} - \rho_{Oil} \cdot g \cdot H_V$

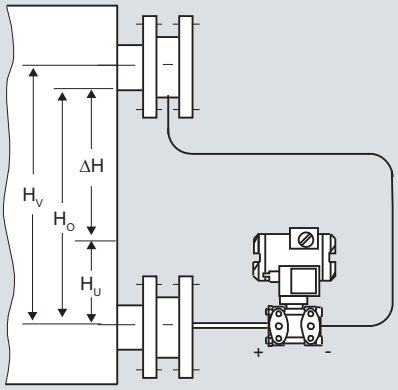
Full-scale: $p_{ME} = p_{END} - \rho_{Oil} \cdot g \cdot H_V$

Legend

p_{MA}	Start-of-scale value to be set
p_{ME}	Full-scale value to be set
p_{START}	Start-of-scale value
p_{END}	Full-scale value
ρ_{Oil}	Density of filling oil in the capillary to the remote seal
g	Local acceleration due to gravity
H_V	Distance between the measuring points (spigots)

Types of installation for level measurements (closed vessels)

Installation type E



Installation type E

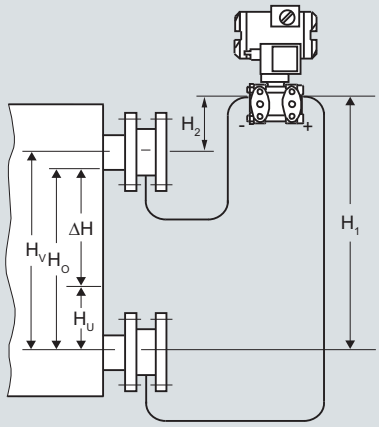
Start-of-scale: $p_{MA} = \rho_{FL} \cdot g \cdot H_U - \rho_{Oil} \cdot g \cdot H_V$

Full-scale: $p_{ME} = \rho_{FL} \cdot g \cdot H_O - \rho_{Oil} \cdot g \cdot H_V$

Legend

p_{MA}	Start-of-scale value to be set
p_{ME}	Full-scale value to be set
ρ_{FL}	Density of medium in vessel
ρ_{Oil}	Density of filling oil in the capillary to the remote seal
g	Local acceleration due to gravity
H_U	Start-of-scale value
H_O	Full-scale value
H_V	Distance between the measuring points (spigots)

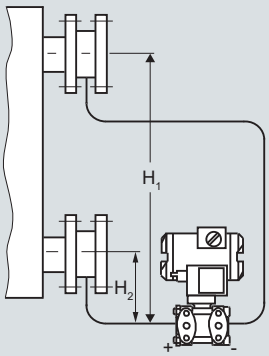
Installation type G



Pressure transmitter for differential pressure above the upper measuring point, no vacuum

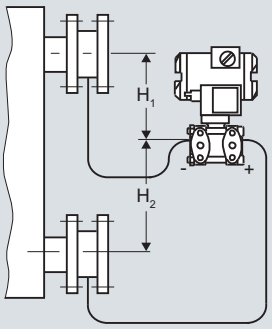
$H_1 \leq 7$ m (23 ft), with halocarbon oil as filling liquid only $H_1 \leq 4$ m (13.1 ft)

Installation type H



below the lower measuring point

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)

Installation type G, H and J

Start-of-scale: $p_{MA} = \rho_{FL} \cdot g \cdot H_U - \rho_{Oil} \cdot g \cdot H_V$

Full-scale: $p_{ME} = \rho_{FL} \cdot g \cdot H_O - \rho_{Oil} \cdot g \cdot H_V$

Legend

p_{MA}	Start-of-scale value to be set
p_{ME}	Full-scale value to be set
ρ_{FL}	Density of medium in vessel
ρ_{Oil}	Density of filling oil in the capillary to the remote seal
g	Local acceleration due to gravity
H_U	Start-of-scale value
H_O	Full-scale value
H_V	Distance between the measuring points (spigots)

Measuring setups without remote seals

Overview

Notes

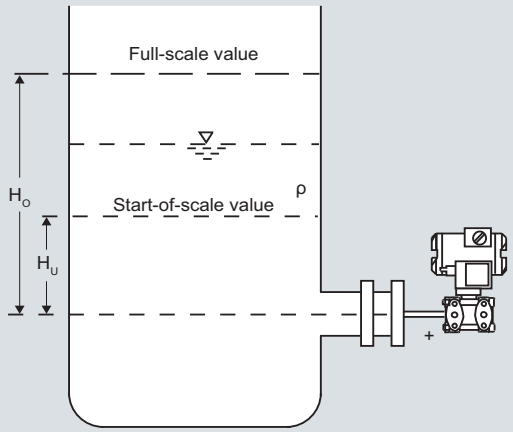
- For the separation layer measurement, the separation layer has to be positioned between the two spigots.

  Also you must make sure that the level in the container is always above the top spigot.
- When measuring density, make sure that the level of the medium remains constant. The level should be above the top spigot

Dimensional drawings

Pressure transmitters for differential pressure, for flanging

Measuring setups for open containers



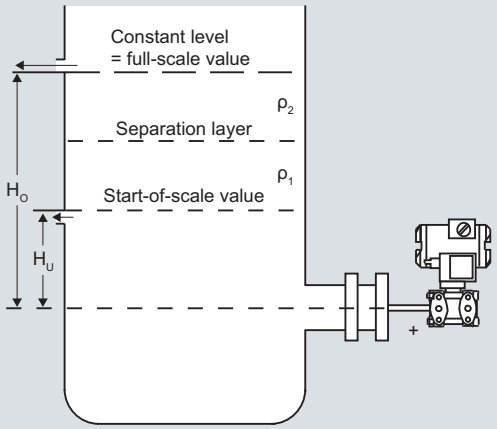
Level measurement

Start-of-scale: $p_{MA} = \rho \cdot g \cdot H_U$

Full-scale: $p_{ME} = \rho \cdot g \cdot H_O$

Legend

p_{MA}	Start-of-scale value to be set
p_{ME}	Full-scale value to be set
ρ	Density of medium in vessel
g	Local acceleration due to gravity
H_U	Start-of-scale value
H_O	Full-scale value



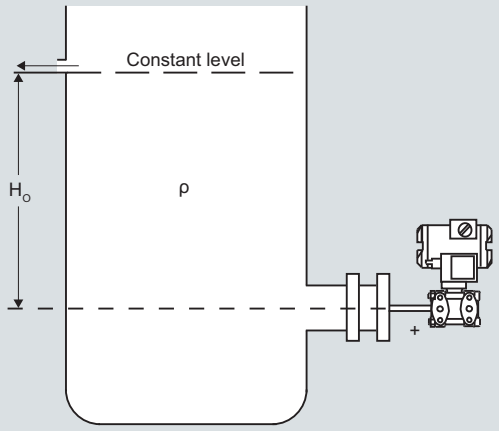
Separation layer measurement

Start-of-scale: $p_{MA} = g \cdot (H_U \cdot \rho_1 + (H_O - H_U) \cdot \rho_2)$

Full-scale: $p_{ME} = \rho_1 \cdot g \cdot H_O$

Legend

p_{MA}	Start-of-scale value to be set
p_{ME}	Full-scale value to be set
ρ_1	Density of heavier liquid
ρ_2	Density of lighter liquid
g	Local acceleration due to gravity
H_U	Start-of-scale value
H_O	Full-scale value



Density measurement

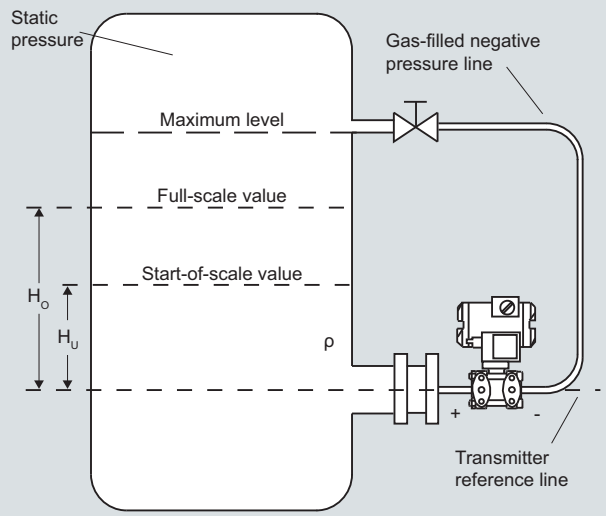
Start-of-scale: $p_{MA} = \rho_{MIN} \cdot g \cdot H_O$

Full-scale: $p_{ME} = \rho_{MAX} \cdot g \cdot H_O$

Legende

p_{MA}	Start-of-scale value to be set
p_{ME}	Full-scale value to be set
ρ_{MIN}	Minimum density of medium in vessel
ρ_{MAX}	Maximum density of medium in vessel
g	Local acceleration due to gravity
H_O	Full-scale value in m

Measuring setups for closed containers



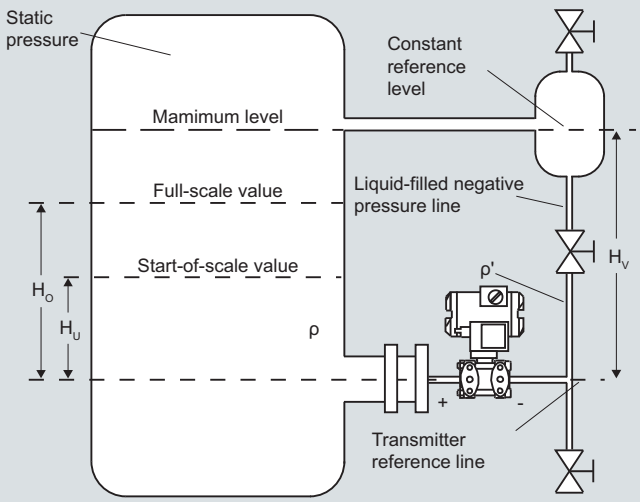
Level measurement, Version 1

Start-of-scale: $\Delta p_{MA} = \rho \cdot g \cdot H_U$

Full-scale: $\Delta pME = \rho \cdot g \cdot H_O$

Legend

Δp_{MA}	Start-of-scale value to be set
Δp_{ME}	Full-scale value to be set
ρ	Density of medium in vessel
g	Local acceleration due to gravity
H_U	Start-of-scale value
H_O	Full-scale value



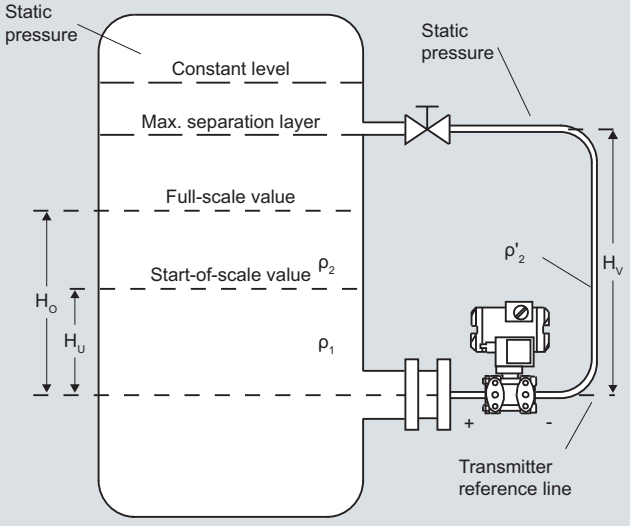
Level measurement, Version 2

Start-of-scale: $\Delta p_{MA} = g \cdot (H_U \cdot \rho - H_V \cdot \rho')$

Full-scale: $\Delta p_{ME} = g \cdot (H_O \cdot \rho - H_V \cdot \rho')$

Legend

Δp_{MA}	Start-of-scale value to be set
Δp_{ME}	Full-scale value to be set
ρ	Density of medium in vessel
ρ'	Density of liquid in the negative pressure line (corresponding to the temperature existing there)
g	Local acceleration due to gravity
H_U	Start-of-scale value
H_O	Full-scale value
H_V	Distance between the measuring points (spigots)



Separation layer measurement

Start-of-scale: $\Delta p_{MA} = g \cdot (H_U \cdot \rho_1 + (H_O - H_U) \cdot \rho_2 - H_V \cdot \rho'_2)$

Full-scale: $\Delta p_{ME} = g \cdot (H_O \cdot \rho_1 - H_V \cdot \rho'_2)$

Legend

Δp_{MA}	Start-of-scale value to be set
Δp_{ME}	Full-scale value to be set
ρ_1	Density of heavier liquid with separation layer in vessel
ρ_2	Density of lighter liquid with separation layer
ρ'_2	Density of liquid in the negative pressure line (corresponding to the temperature existing there)
g	Local acceleration due to gravity
H_U	Start-of-scale value
H_O	Full-scale value
H_V	Distance between the measuring points (spigots)

SIEMENS

Questionnaire

Checking of transmitter/remote seal combinations

1

* Customer:_____ Tag. No.: _____
* Plant: _____ Item No.: _____
* Ordering code:_____ Person responsible: _____
* Ordering department: _____ Phone: _____
*** Transmitter Order No. SITRANS P DSIII/P300: 7MF ☐☐☐ –1 ☐ Y ☐☐ –1 ☐☐☐**
*** Transmitter Order No. SITRANS P500: 7MF5 ☐☐☐ – ☐☐☐☐ 0 –Z V00**

Order No. of diaphragm seal known?

Yes

*** Order No. of remote seal:**
7MF 4 9 ☐☐ – ☐☐☐☐☐ – ☐☐ –Z
Suffixes _____
Suffixes _____

No

*** Or without Order No.: Process connection**
* Standard: _____
* Nominal diameter: _____
* Nominal pressure: _____
* Constructional design:
☐ Sandwich-type rem. seal
☐ Flanged remote seal
☐ Quick-release remote seal
☐ Clamp-on seal
☐ Other.: _____
* Connection:
☐ Direct connection
☐ Capillary on one side; connection to: ☐ + side ☐ – side
☐ Capillaries on both sides;
☐ Capillary length: ___ m
* Vacuum-proof design ☐ Yes ☐ No
* Wetted parts materials: _____
* Tube: ☐ No ☐ Yes, ___mm long
* Filling liquid _____
* Miscellaneous _____

Calculation of measuring range necessary?

No

*** Range to be set:**
(without calculation)
Start-of-scale:_____ mbar (4 mA)
Full-scale: _____ mbar (20 mA)
*** Required measuring accuracy:**
Error: < . % of set span per 10 V change in temperature

Please fill in this questionnaire and enclose with every order!

Yes

Medium _____
Density of medium: _____ kg/m³
*** Temperature of medium:** Normal _____ °C
Minimum_____ °C
Maximum_____ °C
*** Ambient temperature on capillaries:** Normal _____ °C
Minimum_____ °C
Maximum_____ °C
*** Ambient temperature on transmitter:** Normal _____ °C
Minimum_____ °C
Maximum_____ °C
*** Operating pressure referred to absolute zero:** ____ bar a
* Does a **vacuum** occur **during startup**? ☐ No ☐ Yes
If yes, associated temperature of medium: _____ °C
*** Installation type**, see pages 1/236 and 1/237 A B C_1 C_2 D E G H J
*** Measuring range:** With install. types A, B, C_1, C_2 and D: from ___ to ___ mbar
With install. types A, B, G, H and J: H_U = ___ mm; H_O = ___ mm
*** Dimensions:** With install. types A, B, C_1 and C_2: H_1 = ___ mm
With install. types D, G, H and J: H_V = ___ mm
*** Start-of-scale value following calculation:**_____ mbar (4 mA)
Full-scale value following calculation:_____ mbar (20 mA)
Associated span: _____ mbar
Error to be expected: < . % of set span per 10 K change in temperature

Checked: Name:
Department:
Date:

***) Values must be entered here!**

SIEMENS

Questionnaire
for hydrostatic level measurements

Order date: _____

Processing date: _____

Ordering code (customer): _____

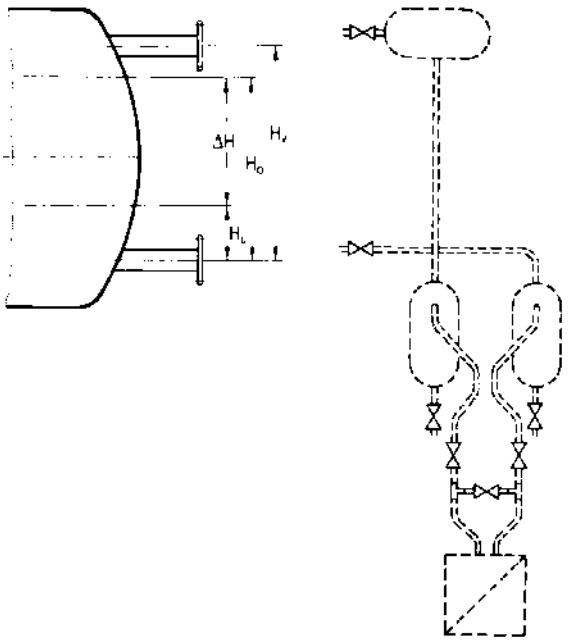
Ordering code (supplier): _____

Customer reference: _____

Measuring point: _____

Position: _____

Dimensions: _____



Pressure: ☐ bar

Temperature: ☐ K ☐ °C

Measuring range: ☐ cm ☐ m
(please mark with cross)

Order No. of transmitter SITRANS P DS III/P300[1]:

7 M F 4 _ _ _ _ _ – _ _ _ _ _ _ _ – _ _ _ _ _ _ _ –Z

Y01

Order No. of transmitter SITRANS P500[1]:

7 M F 5 _ _ _ _ – _ _ _ _ _ _ _ 0

The different pressures and temperatures (densities) in the vessel and in the reference column result in an offset in the start-of-scale and full-scale values.
The calibration data are determined in addition.
It is also checked whether – as a result of the range offset – the ordered transmitter is suitable for this measurement.

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

Please mark type of boiler with a cross:	Closed[1]	☐
	Open or not under pressure[2]	☐
Medium _____		
Licensed boiler pressure (absolute)		_____ bar
Operating pressure (absolute)	Lowest	_____ bar
	Normal[3]	_____ bar
	Highest	_____ bar
Temperature of reference column (cold)		_____ K
Distance between measuring points (dimension according to sketch) H_V =		_____ m
Measuring range[4] = start-of-scale value to full-scale value		
	Start-of-scale value	H_U = _____ m
	Full-scale value	H_O = _____ m
Position of equalizing vessel above bottom measuring point if different from H_V		_____ m
Please mark pressure correction of level with a cross:	No	☐
	Yes[4]	☐

1) Reference line filled with condensation! Falling differential pressure with increasing level.
2) Reference line without gas or filled with gas (air). Rising differential pressure with increasing level.
3) If not specified otherwise, this value is assumed as the calculation pressure of the level meter.
The input signal (differential pressure) depends on the density (pressure and temperature).
The influence is practically negligible for a lowest liquid level of 20 to 30% of the distance between the measuring points.
4) If a pressure correction of the level is required, the **measuring range must be the same as the distance between the measuring points**, and the transmitter is designed for the calculation pressure of 1 bar (absolute).
Pressure correction means: the static pressure and the temperature are measured separately and calculated by a correction computer or measured-value computer.

SIEMENS

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

1

* Customer:_____ Tag. No.: _____
* Plant: _____ Item No.: _____
* Ordering code:_____ Person responsible: _____
* Ordering department: _____ Phone: _____
*** Transmitter Order No. SITRANS P DS III/P300: 7MF ☐☐☐☐ –1 ☐Y ☐☐ –1 ☐☐☐**
*** Transmitter Order No. SITRANS P500: 7MF5 ☐☐☐ – ☐☐☐☐ 0 –Z V00**

Order No. of diaphragm seal known?

Yes

*** Order No. of remote seal:**
7MF 4 9 ☐☐ – ☐☐☐☐☐ – ☐☐ –Z
Suffixes _____
Suffixes _____

No

*** Or without Order No.: Process connection**
* Standard: _____
* Nominal diameter: _____
* Nominal pressure: _____
* Constructional design:
☐ Sandwich-type rem. seal
☐ Flanged remote seal
☐ Quick-release remote seal
☐ Clamp-on seal
☐ Other.: _____
* Connection:
☐ Direct connection
☐ Capillary on one side; connection to: ☐ + side ☐ – side
☐ Capillaries on both sides;
☐ Capillary length: ___ ft
* Vacuum-proof design ☐ Yes ☐ No
* Wetted parts materials: _____
* Tube: ☐ No ☐ Yes, __inch long
* Filling liquid _____
* Miscellaneous _____

Calculation of measuring range necessary?

No

*** Range to be set:**
(without calculation)
Start-of-scale:_____ psi (4 mA)
Full-scale: _____ psi (20 mA)
*** Required measuring accuracy:**
Error: < . % of set span per 18 °F change in temperature

Please fill in this questionnaire and enclose with every order!

Yes

Medium _____
Density of medium: _____ kg/m^3
*** Temperature of medium:** Normal _____ °F; Minimum _____ °F; Maximum _____ °F
*** Ambient temperature on capillaries:** Normal _____ °F; Minimum _____ °F; Maximum _____ °F
*** Ambient temperature on transmitter:** Normal _____ °F; Minimum _____ °F; Maximum _____ °F
*** Operating pressure referred to absolute zero:** ____ psi$_{abs}$
* Does a **vacuum** occur **during startup**? ☐ No ☐ Yes
If yes, associated temperature of medium: _____ °F
*** Installation type**, see pages 1/236 and 1/237 ☐A ☐B ☐C_1 ☐C_2 ☐D ☐E ☐G ☐H ☐J
*** Measuring range:** With install. types A, B, C_1, C_2 and D: from ___ to ___ psi
With install. types A, B, G, H and J: H_U = ___ inch; H_O = ___ inch
*** Dimensions:** With install. types A, B, C_1 and C_2: H_1 = ___ inch
With install. types D, G, H and J: H_V = ___ inch
*** Start-of-scale value following calculation:** _____ psi (4 mA)
Full-scale value following calculation: _____ psi (20 mA)
Associated span: _____ psi
Error to be expected: < . % of set span per 18 °F change in temperature

Checked: Name:
Department:
Date:

***) Values must be entered here!**

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 shut-off 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).

New standard IEC 61518

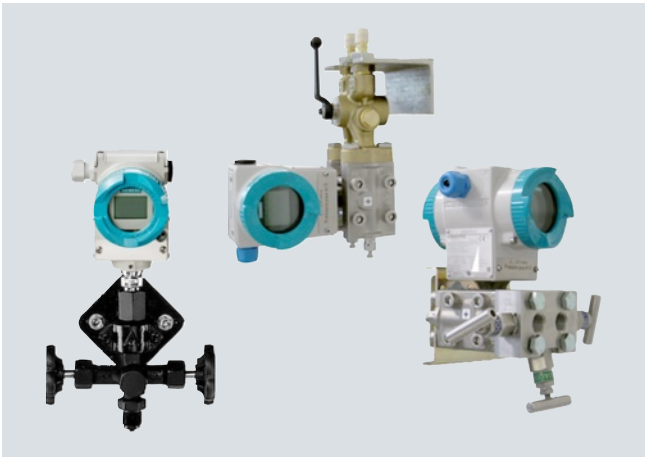
The flange connection between transmitter and valve manifold was modified in the new standard IEC 61518. The only connection thread approved for use in the process flanges of the pressure transmitter is $^{7}/_{16}$-20 UNF.

The valve manifolds for M12 screws, including the accessory sets, have therefore been deleted.

Material acceptance test certificate to EN 10204-3.1

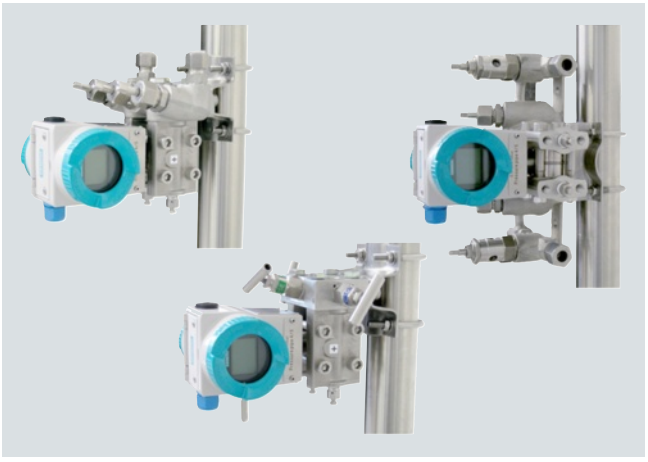
If a material acceptance test certificate to EN 10204-3.1 is required when ordering valve manifolds or shut-off fittings, please note that a single certificate is sufficient for each ordered item type. This means that you will only be charged for one certificate in the cost calculations.

Pressure transmitters with shut-off fittings - mounting examples



SITRANS P transmitter for gauge pressure with double shut-off valve, SITRANS P pressure transmitter with multiway cock or 3-spindle valve manifold

SITRANS P pressure transmitter for differential pressure, mounted in protective box (available on request)

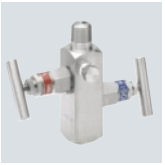
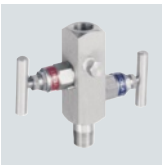
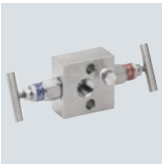


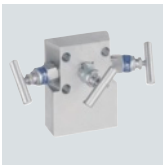
SITRANS P transmitter for differential pressure with 3-way valve manifold, 3-spindle valve manifold or valve manifold combination DN 5/DN 8

SITRANS P pressure transmitter mounted on valve combination "Mono-flange" for direct connection to flanges (available on request)

Selection aid

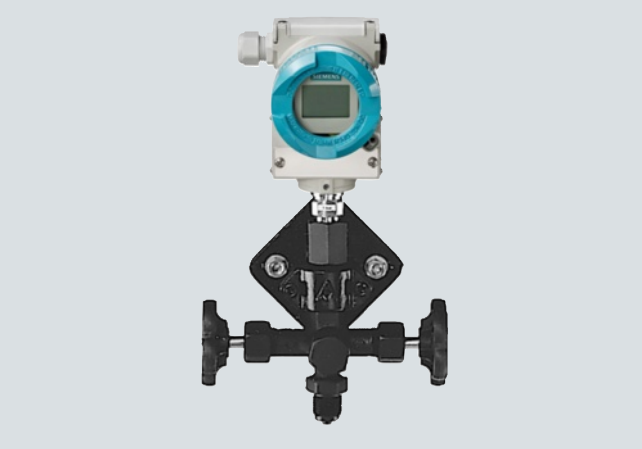
Selection of available shut-off valves

Transmitters	Shut-off valves for general applications	Page		Shut-off valves for special applications	Page	
Relative and absolute pressure transmitters with process connection G½" male thread e.g. • SITRANS P200 7MF1565-... • SITRANS P210 7MF1566-... • SITRANS P220 7MF1567-... • SITRANS P300 7MF802.-...0.-.... • SITRANS P DS III series 7MF403.-...0.-.... and 7MF423.-...0.-....	Shut-off valves/double shut-off valves to DIN 16270, DIN 16271 and DIN 16272	1/246		Double shut-off valve DN 5 for crossover ½-NPT-F to G½ nipple connection 7MF9011-4EA	1/249	
				2-spindle valve manifold DN 5 for installation in protective boxes 7MF9412-1B	1/266	
Relative and absolute pressure transmitter with ½"-14 NPT female thread e.g. • SITRANS P200 7MF1565-... • SITRANS P210 7MF1566-... • SITRANS P220 7MF1567-... • SITRANS P300 7MF802.-...1.-.... • SITRANS P DS III series 7MF403.-...1.-.... and 7MF423.-...1.-....	Double shut-off valve DN 5 7MF9011-4FA and 7MF9011-4GA	1/249	 7MF9011-4FA  7MF9011-4GA	Double shut-off valve DN 5 for process connection ½-NPT 7MF9011-4DA	1/249	
Absolute pressure transmitter with process connection to IEC 61518 e.g. • SITRANS P DS III series 7MF433.-...	2-spindle valve manifold DN 5 7MF9411-5A.	1/251		2-spindle valve manifold DN 5 for installation in protective boxes 7MF9412-1C.	1/266	

Transmitters	Shut-off valves for general applications	Page		Shut-off valves for special applications	Page	
Differential pressure transmitter with process connection to IEC 61518 e.g. SITRANS P DS III series 7MF443.-... and 7MF453.-... SITRANS P500 7MF54..-...	For 3/5-spindle valve manifold DN 5 7MF9411-5B. and 7MF9411-5C.	1/251		3-way valve manifolds, DN 5, forged version 7MF9410-1..	1/256	
				5-way valve manifolds, DN 5, forged version 7MF9410-3..	1/256	
	PN 100 multiway cocks 7MF9004-...	1/254		3-way valve manifolds, DN 8, forged version 7MF9416-1.. and 7MF9416-2..	1/259	
				Valve manifold combination DN 5/DN 8 for vapor measurement 7MF9416-6..	1/262	
				Valve manifold combination DN 8 for vapor measurement 7MF9416-4..	1/264	
				3- and 5-spindle valve manifolds for DN 5 for installation in protective boxes 7MF9412-1D. and 7MF9412-1E.	1/266	 
				3- and 5-spindle valve manifolds for vertical differential pressure lines 7MF9413-1..	1/270	
				Low-pressure multiway cock 7MF9004-4..	1/273	

Shut-off valves to DIN 16270, DIN 16271 and DIN 16272

Overview



Transmitter for pressure with double shut-off valve 7MF9401-...

The shut-off valves for pressure gauges are used to shut off the line of the measured medium when dealing with aggressive and non-aggressive gases, vapors and liquids.

Design

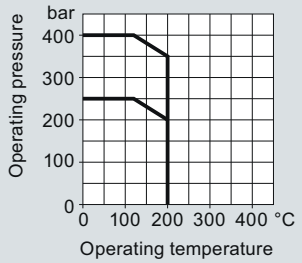
A water trap must be connected upstream of the shut-off valve in the case of temperatures of the medium above 120 °C. The shut-off valves form B have a shaft with which they can be secured on an instrument bracket. An adapter is therefore not required to secure these valves. The vent/test connection can be shut off separately with the double shut-off valves DN 5. This permits checking of the zero on the pressure gauge. In addition, the characteristic of the pressure gauge can be checked using an external pressure source.

Selection and Ordering data		Order No.
Shut-off valves, form B, DIN 16270		
without test collar, connection shank, without certificate		
Material Valve housing	Maximum permissible working pressure	
CW614N (CuZn39Pb3) (mat. No. 2.0402)	250 bar (3626 psi)	**7MF9401-7AA**
P250GH (mat. No. 1.0460)	400 bar (5800 psi)	**7MF9401-7AB**
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)	400 bar (5800 psi)	**7MF9401-7AC**
Shut-off valves, form B, DIN 16271		
with test collar, connection shank, without certificate		
Material Valve housing	Maximum permissible working pressure	
CW614N (CuZn39Pb3) (mat. No. 2.0402)	250 bar (3626 psi)	**7MF9401-7BA**
P250GH (mat. No. 1.0460)	400 bar (5800 psi)	**7MF9401-7BB**
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)	400 bar (5800 psi)	**7MF9401-7BC**

Selection and Ordering data		Order No.
Shut-off valves, form B, DIN 16270		
without test collar, pipe union with ferrule 12 S DIN EN ISO 8434-1, without certificate		
Material Valve housing	Maximum permissible working pressure	
P250GH (mat. No. 1.0460)	400 bar (5800 psi)	**7MF9401-8AB**
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)	400 bar (5800 psi)	**7MF9401-8AC**
Shut-off valves, form B, DIN 16271		
with test collar, pipe union with ferrule 12 S DIN EN ISO 8434-1, without certificate		
Material Valve housing	Maximum permissible working pressure	
P250GH (mat. No. 1.0460)	400 bar (5800 psi)	**7MF9401-8BB**
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)	400 bar (5800 psi)	**7MF9401-8BC**
Double shut-off valves, form B, DIN 16272		
with test collar, connection shank, without certificate		
Material Valve housing	Maximum permissible working pressure	
CW614N (CuZn39Pb3) (mat. No. 2.0402)	250 bar (3626 psi)	**7MF9401-7DA**
P250GH (mat. No. 1.0460)	400 bar (5800 psi)	**7MF9401-7DB**
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)	400 bar (5800 psi)	**7MF9401-7DC**
Double shut-off valves, form B, DIN 16272		
with test collar, pipe union with ferrule 12 S DIN EN ISO 8434-1, without certificate		
Material Valve housing	Maximum permissible working pressure	
P250GH (mat. No. 1.0460)	400 bar (5800 psi)	**7MF9401-8DB**
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)	400 bar (5800 psi)	**7MF9401-8DC**
Accessories		
Factory test certificate EN 10204–2.2		**7MF9000-8AB**
Material acceptance test certificate EN 10204-3.1		**7MF9000-8AD**

Instrument bracket, see page 1/250.

Characteristic curves

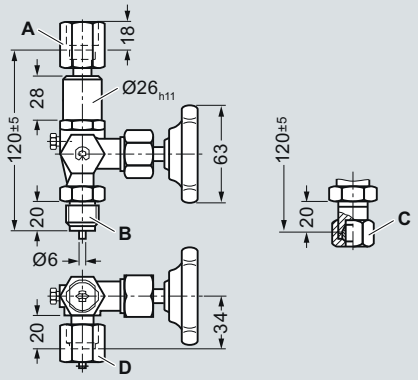


Steel or stainless steel version
400 bar (5800 psi) at 120 °C (248 °F)
350 bar (5076 psi) at 200 °C (392 °F)

Brass version
250 bar (3626 psi) at 120 °C (248 °F)
200 bar (2901 psi) at 200 °C (392 °F)

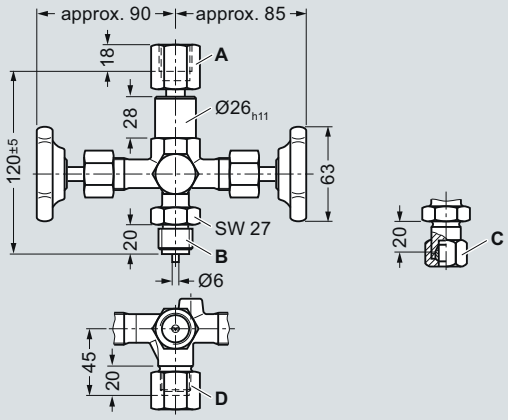
Permissible operating pressure as a function of the permissible operating temperature

Dimensional drawings



A Connection on device side: to DIN 16284, G½, SW 27
B Connection on measurement side: connection shank to DIN EN 837-1, G½
C Connection on measurement side: pipe union with ferrule 12 mm diameter, S series, to DIN EN ISO 8434-1
D Connection on test collar (with sealing cap): thread M20 x 1,5

Shut-off valve, form B, dimension drawing, dimensions in mm



A Connection on device side: to DIN 16284, G½, SW 27
B Connection on measurement side: connection shank to DIN EN 837-1, G½
C Connection on measurement side: pipe union with ferrule 12 mm diameter, S series, to DIN EN ISO 8434-1
D Connection on test collar (with sealing cap): thread M20 x 1,5

Double shut-off valve, form B, dimension drawing, dimensions in mm

Angle adapter

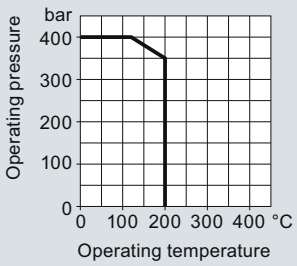
Overview

P300 pressure transmitter with shut-off valve and angle adapter

The angle adapter enables pressure transmitters with top displays to be read from the front.

Selection and Ordering data	Order No.
Angle adapters	**7MF9401-7WA**
Material: X 12 CrNiMoTi 17 12 2 (mat. No. 1.45714/316Ti), max. permissible operating pressure 400 bar (5800 psi)	
Accessories	
Factory test certificate EN 10204–2.2	**7MF9000-8AB**
Material acceptance test certificate EN 10204-3.1	**7MF9000-8AD**

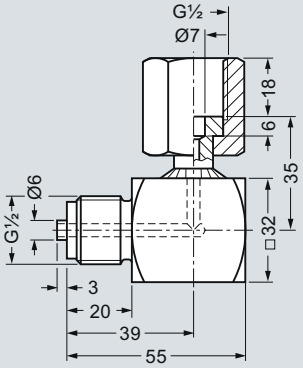
Characteristic curves



Stainless steel version
400 bar (5800 psi) at 120 °C (248 °F)
350 bar (5076 psi) at 200 °C (392 °F)

Permissible operating overpressure as a function of the permissible operating temperature

Dimensional drawings



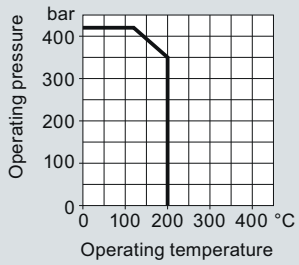
Angle adapter, dimensions in mm

Overview

The double shut-off valves DN 5 are suitable for pressure gauges and pressure transmitters and available in 4 versions:

- Sleeve-collar
- Sleeve-sleeve
- Sleeve-nipple
- Collar-collar

Characteristic curves

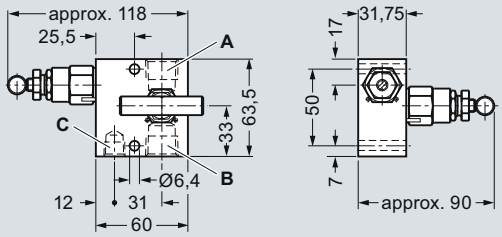


420 bar (6092 psi) at 120 °C (248 °F)
350 bar (5076 psi) at 200 °C (392 °F)

Permissible operating pressure as a function of the permissible operating temperature

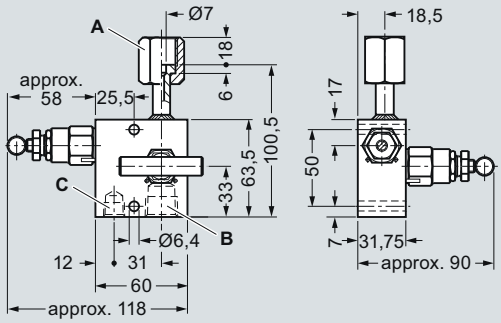
Selection and Ordering data	Order No.
Double shut-off valves DN 5	
Material: X 6 CrNiMoTi 17 13 2 (mat. No. 1.4404/316L), max. permissible working pressure 420 bar (6092 psi);	
• Sleeve-sleeve	**7MF9011-4DA**
• Sleeve-nipple connection	**7MF9011-4EA**
• Sleeve-collar	**7MF9011-4FA**
• Collar-collar	**7MF9011-4GA**
Accessories	
Factory test certificate EN 10204–2.2	**7MF9000-8AB**
Material acceptance test certificate EN 10204-3.1	**7MF9000-8AD**
Further designs	Order code
Add "**-Z**" to Order No. and specify Order Code.	
Oil- and grease-free cleaning for oxygen applications, max. pressure PN 100 (1450 psi) and max. temperature 60 °C (140 °F)	**S12**
NACE MR-0175-certified	**D07**
incl. acceptance test certificate 3.1 to EN 10204	

Dimensional drawings



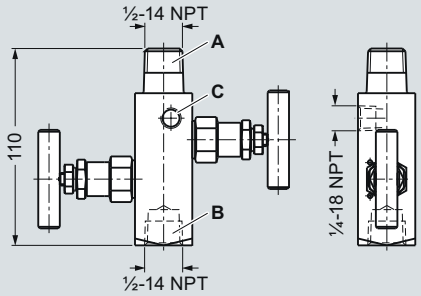
A Connection on device side : ½-14 NPT
B Connection on measurement side: ½-14 NPT
C Vent and test connection: ¼-18 NPT

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



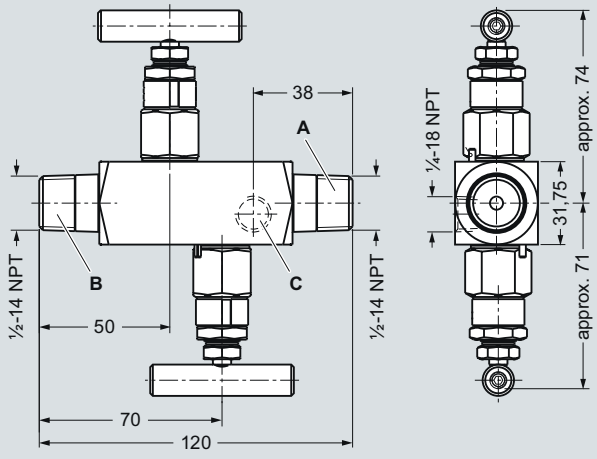
A Connection on device side: nipple to DIN 16284, G½, SW 27
B Connection on measurement side: ½-14 NPT
C Vent and test connection: ¼-18 NPT

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



A Connection on device side : ½-14 NPT
B Connection on measurement side: ½-14 NPT
C Vent and test connection: ¼-18 NPT

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



A Connection on device side : ½-14 NPT
B Connection on measurement side: ½-14 NPT
C Vent and test connection: ¼-18 NPT

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

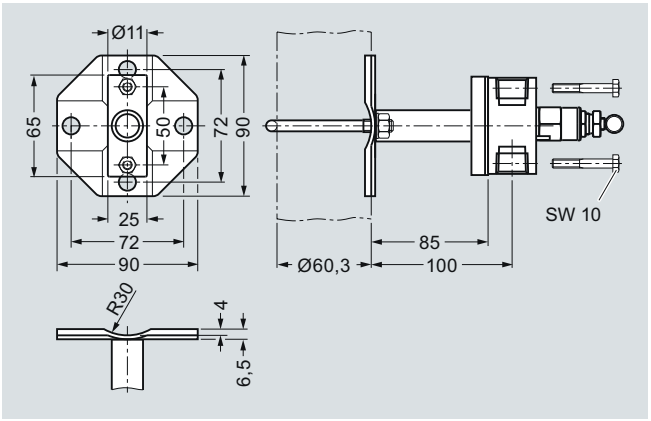
Accessories for shut-off valves/double shut-off valves

Overview

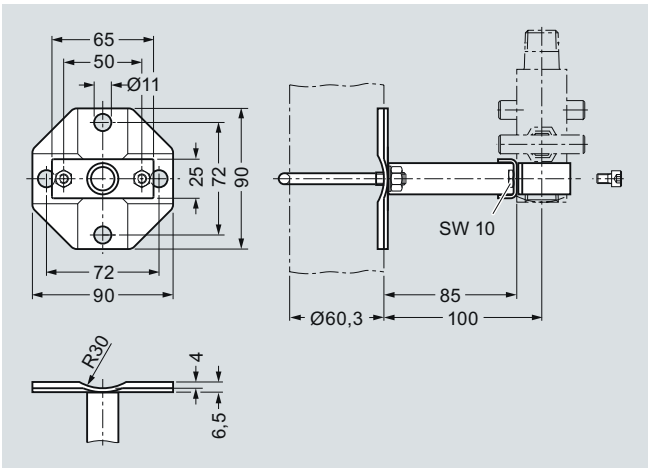
The mounting set is suitable for the double shut-off valves 7MF9011-4.A and for wall, rack and pipe mounting.

Selection and Ordering data	Order No.
Mounting set for shut-off valves	
• 7MF9011-4DA und -4EA made of stainless steel, scope of delivery: 1x mounting bracket, 2x hexagon screws M6x40, 1x mounting clip, 2x washers 8.4 to DIN 125; 2x hexagon nuts 8.4 to DIN EN 24032	**7MF9011-8AB**
• 7MF9011-4FA und -4GA made of stainless steel, scope of delivery: 1x mounting bracket, 2x hexagon screws M6x10, 1x mounting clip, 2x washers 8.4 to DIN 125; 2x hexagon nuts 8.4 to DIN EN 24032	**7MF9011-8AC**

Dimensional drawings



Mounting bracket (7MF9011-8AB) for shut-off valves 7MF9011-4DA and 7MF9011-4EA for wall, rack or pipe mounting, dimensions in mm



Mounting bracket (7MF9011-8AC) for shut-off valves 7MF9011-4FA and 7MF9011-4GA for wall, rack or pipe mounting, dimensions in mm

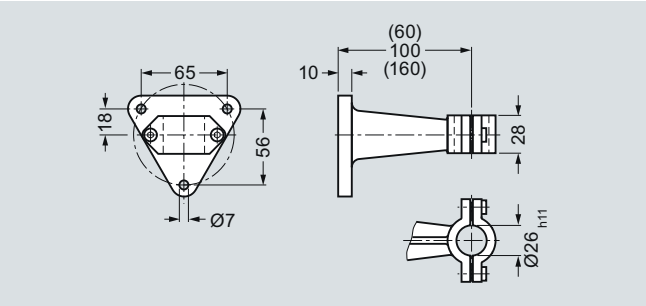
Overview

The instrument brackets are needed to mount the following units:

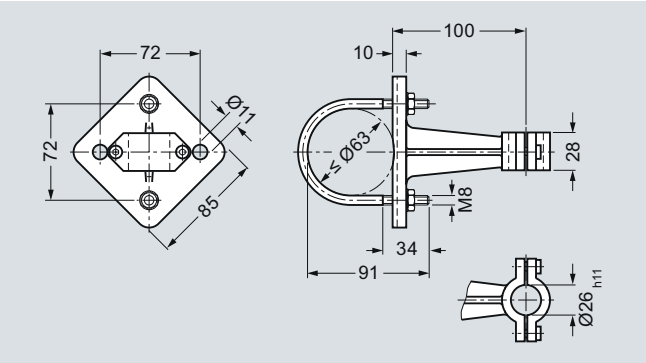
- Pressure gauges with threaded connection at the bottom
- Shut-off valves to DIN 16270, DIN 16271 and DIN 16272 (7MF9401-7.. and 7MF9401-8..)

Selection and Ordering data	Order No.
Instrument bracket, form H, DIN 16281	
(e.g. for gauge) made of aluminium alloy, painted black, **for wall mounting**, screw-type bracket cover	
• Projection length 60 mm	**M56340-A0046**
• Projection length 100 mm	**M56340-A0047**
Instrument bracket, form A, DIN 16281	
(e.g. for transmitter) made of annealed cast iron, galvanized and primed **for mounting on a wall** or rack or or on a sectional rail (horizontal/vertical); Screw-type bracket cover	**M56340-A0053**
Instrument bracket, form A, DIN 16281	
(e.g. for transmitter) made of annealed cast iron, galvanized and primed with pipe clamp for **wall and pipe mounting** (horizotal/vertical) Screw-type bracket cover	**M56340-A0079**

Dimensional drawings



Instrument bracket form H, for wall mounting, M56340-A0046/-A0047, dimensions in mm



Instrument bracket form A, wall or pipe mounting, M56340-A0053/-A0079, dimensions in mm

Overview

The 2-spindle, 3-spindle and 5-spindle valve manifolds 7MF9411-5.. are for pressure transmitters for absolute pressure or differential pressure.

The valve manifolds are used to shut off the differential pressure lines and to check the pressure transmitter zero.

The 2-spindle and the 5-spindle valve manifold enable in addition venting on the transmitter side and checking of the pressure transmitter characteristic.

Benefits

- Max. working pressure 420 bar (6092 psi)
- Each available in version for oxygen

Application

The spindle valve manifolds DN 5 are designed for liquids and gases.

Each is available in a version for oxygen on request.

Design

All versions of the valve manifolds have a process connection ½-14 NPT. The connection for the pressure transmitter is always designed as a flange connection to IEC 61518, form B . The 2-spindle and the 5-spindle valve manifold have in addition a vent and test connection ¼-18 NPT.

The valves have an external spindle thread.

Materials used

Component	Material	Mat. No.
Housing	X 2 CrNiMo 17 13 2	1.4404/316L
Cones	X 6 CrNiMoTi 17 12 2	1.4571/316Ti
Spindles	X 2 CrNiMo 18 10	1.4404/316L
Head parts	X 5 CrNiMo 18 10	1.4401/316
Packings	PTFE	-

Function

Functions of all valve manifolds:

- Shutting off the differential pressure lines
- Checking the pressure transmitter zero

Additional functions of the 2-spindle and 5-spindle valve manifolds through the vent and test connection:

- Venting on the transmitter side
- Checking the pressure transmitter characteristic

Selection and Ordering data	Order No.
Valve manifolds DN 5 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	**7MF9411-■■A**
• 2-spindle valve manifold	**5A**
• 3-spindle valve manifold	**5B**
• 5-spindle valve manifold	**5C**
Accessories	
Factory test certificate EN 10204–2.2	**7MF9000-8AB**
Material acceptance test certificate EN 10204-3.1	**7MF9000-8AD**

Selection and Ordering data	Order code	Order No.
Further designs[1]		
Please add "**-Z**" to Order No. and specify Order code.		
Accessory set to EN (connection between valve manifold and pressure transmitter)		
for valve manifold 7MF9411-5A.		
2x screws $^{7}/_{16}$-20 UNF x 1¾ inch to ASME B18.2.1; chromized steel 1x gasket made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)	**K35**	**7MF9411-7DB**
2x screws $^{7}/_{16}$-20 UNF x 1¾ inch to ASME B18.2.1; **stainless steel** 1x gasket made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)	**K45**	**7MF9411-7DC**
for valve manifold 7MF9411-5B. and -5C.		
4x screws $^{7}/_{16}$-20 UNF x 1¾ inch to ASME B18.2.1; chromized steel 2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)	**K36**	**7MF9411-5DB**
4x screws $^{7}/_{16}$-20 UNF x 1¾ inch to ASME B18.2.1; **stainless steel** 2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)	**K46**	**7MF9411-5DC**
Accessory set to DIN[2] (connection between valve manifold and pressure transmitter)		
for valve manifold 7MF9411-5A.		
2x screws M10x45 to DIN EN 24014; chromized steel 2x washers Ø 10.5 mm to DIN 125; 1x gasket made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)	**K15**	**7MF9411-7BB**
2x screws M10x45 to DIN EN 24014; **stainless steel** 2x washers Ø 10.5 mm to DIN 125, **stainless steel**; 1x gasket made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)	**K25**	**7MF9411-7BC**

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

Selection and Ordering data	Order code	Order No.
Further designs[1]		
Please add "**-Z**" to Order No. and specify Order code.		
for valve manifolds 7MF9411-5B. and -5C.		
4x screws M10x45 to DIN EN 24014; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F) Flange connection with M10 screws only permissible up to PN 160.	**K16**	**7MF9411-6BB**
4x screws M10x45 to DIN EN 24014; **stainless steel** 4x washers Ø 10.5 mm to DIN 125, **stainless steel**; 2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F) Flange connection with M10 screws only permissible up to PN 160.	**K26**	**7MF9411-6BC**
Mounting plate		
• for valve manifold, made of electrogalvanized sheet-steel		
- **for wall mounting** or for securing on rack (72 mm grid), weight 0.5 kg Scope of delivery: 1 mounting plate with bolts for mounting on valve manifold	**M11**	**7MF9006-6EA**
- **for pipe mounting,** weight 0.7 kg Scope of delivery: 1x mounting plate M11, 2x pipe brackets with nuts and washers (for pipe with max. Ø 60.3 mm) and fastening screws for mounting on valve manifold	**M12**	**7MF9006-6GA**
• for valve manifold, made of **stainless 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	**M21**	**7MF9006-6EC**
- **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**
Valve manifold 100 bar		
Oil- and grease-free cleaning for oxygen applications, max. pressure PN 100 (1450 psi) and max. temperature 60 °C (140 °F)		
• for 7MF9411-5A.	**S12**	
• for 7MF9411-5B.	**S13**	
• for 7MF9411-5C.	**S14**	
NACE MR-0175-certified	**D07**	
incl. acceptance test certificate 3.1 to EN 10204		

1) When ordering accessory set or mounting together with the valve manifolds, please use Order code; otherwise use Order No.
2) Flange connections to DIN 19213 only permissible up to PN 160 (2321 psi)!

Accessories

Accessory set for 2-, 3- and 5-spindle valve manifolds

2-spindle valve manifold DN 5

- K35: 2 screws $^{7}/_{16}$-20 UNF x 1¾ inch to ASME B18.2.1, 1 flat gasket
- K15: 2 screws M10x45 to DIN EN 24014, 2 washers, 1 flat gasket

3-spindle and 5-way valve manifold DN 5

- K36: 4 screws $^{7}/_{16}$-20 UNF x 1¾ inch to ASME B18.2.1, 2 flat gaskets
- K16: 4 screws M10x45 to DIN EN 24014, 4 washers, 2 flat gaskets

Washers Ø 10.5 to DIN 125

Flat gaskets made of PTFE, max. 420 bar (6092 psi), 80 °C (176 °F)

Note: Flange connection with M10 screws only permissible up to PN 160!

Mounting plate

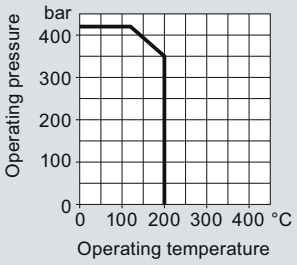
Made of electrogalvanized sheet-steel

- M11: For wall mounting or for securing on rack (72 mm grid)
  Scope of delivery:
  - 1 mounting plate with bolts for mounting on valve manifold
- M12: For pipe mounting
  Scope of delivery:
  - 1 mounting plate M11
  - 2 pipe brackets with nuts and washers for pipes with max. Ø 60.3 mm

Valve manifold 100 bar, suitable for oxygen

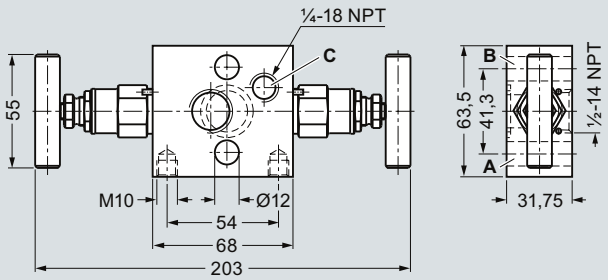
- S12: For 2-way valve manifold
- S13: For 3-way valve manifold
- S14: For 5-way valve manifold

Characteristic curves



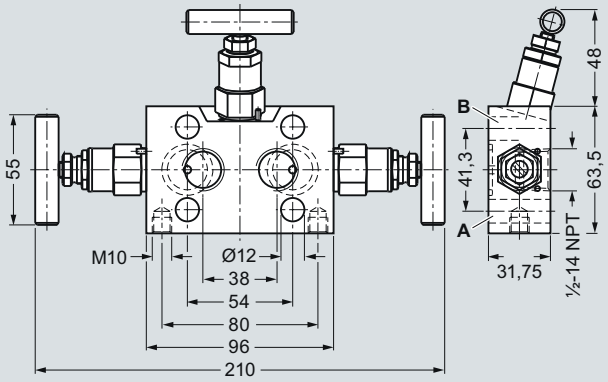
Valve manifolds PN 5 (7MF9411-5..), permissible working pressure as a function of the permissible working temperature

Dimensional drawings



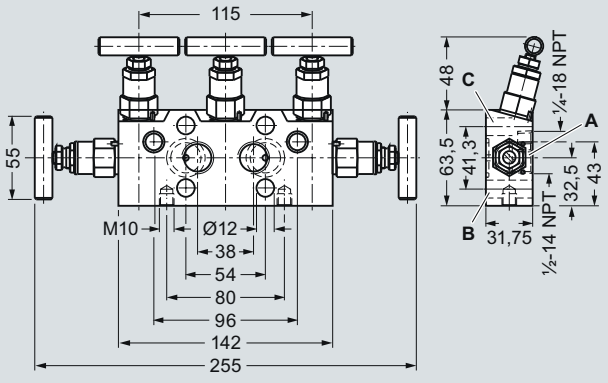
A Process connection: ½-14 NPT
B Transmitter connection: Flange connection to EN 61518, form B
C Vent / test connection: ¼-18 NPT
Valve design: external spindle thread

2-spindle valve manifold DN 5 (7MF9411-5A.), dimensions in mm



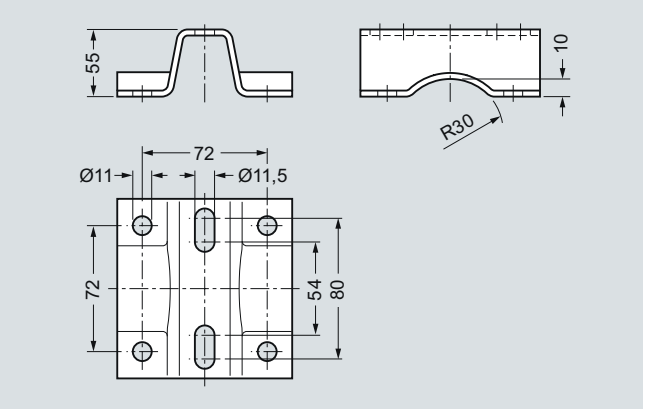
A Process connection: ½-14 NPT
B Transmitter connection: Flange connection to EN 61518, form B
Valve design: external spindle thread

3-spindle valve manifold DN 5 (7MF9411-5B.), dimensions in mm



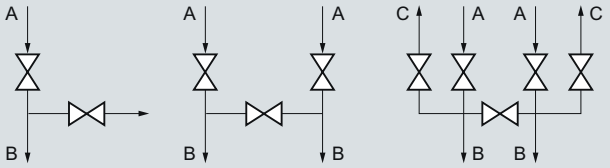
A Process connection: ½-14 NPT
B Transmitter connection: Flange connection to EN 61518, form B
C Vent / test connection: ¼-18 NPT
Valve design: external spindle thread

5-spindle valve manifold DN 5 (7MF9411-5C.), dimensions in mm



Mounting plate 7MF9006-6.. (M11, M12) for valve manifold, dimensions in mm

Schematics



A Process connection
B Transmitter connection
C Blow-out and test connection

2-spindle, 3-spindle and 5-spindle valve manifold DN 5, connections

Multiway cocks PN 100

Overview

Multiway cock PN 100 (1450 psi) (7MF9004-1P.) for differential pressure transmitters

The multiway cock PN 100 (1450 psi) can be flanged to pressure transmitters for differential pressure.

Benefits

- Version available for aggressive liquids, gases and vapors
- Robust design
- Oil-free and grease-free version possible
- One-hand operation

Application

The PN 100 (1450 psi) multiway cock is available in versions for aggressive and non-aggressive liquids, gases and vapors.

Design

The multiway cock can be flanged with four screws to pressure transmitters for differential pressure.

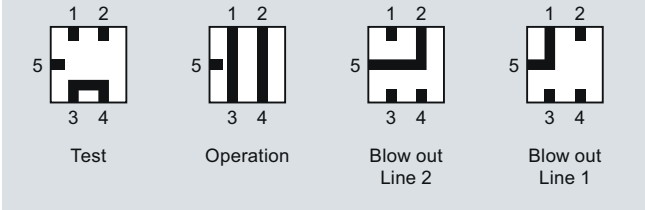
The PN 100 (1450 psi) has 2 process connections and one blow-out connection. A steel version of the multiway cock is available for non-aggressive media, and a stainless steel version for aggressive media. The housing is forged in one piece. The switching lever is removable.

Sealing can be improved during operation.

Note: An accessory set is always required for flanging of the multiway cock to a differential pressure transmitter.

Function

- Shutting off the differential pressure lines
- Blowing out the differential pressure lines
- Testing the pressure transmitter zero



Cock positions; the symbols are printed on the cock

Technical specifications

Multiway cocks PN 100		
Measured medium	**Water, non-aggressive liquids and gases**	**Aggressive liquids, gases and vapors**
Material	P250GH, mat. No.: 1.0460	X 6 CrNiMoTi 17 12 2, mat. No. 1.4571/316Ti
Connections	Steel, for pipe Ø 12 mm, L series	Stainless steel, for pipe Ø 12 mm, L series
• Process connection • Connection for blowing out	2 bulkhead glands Pipe union with ferrule	
Max. permissible working temperature	200 °C (392 °F)	
Max. permissible working pressure	100 bar (1450 psi) (up to max. 60 °C (140 °F))	
Weight	2.5 kg	

Selection and Ordering data	Order No.
Multiway cock PN 100 (1450 psi) for flanging to pressure transmitters, weight 2.5 kg (without accessory set), without certificate	**7MF9004 - ■■ A**
For water and non-aggressive gases and vapors	**1P**
For aggressive liquids, gases and vapors	**1Q**
Accessories	
Factory test certificate EN 10204–2.2	**7MF9000-8AB**
Material acceptance test certificate EN 10204-3.1	**7MF9000-8AD**

Selection and Ordering data	Order code	Order No.
Further designs[1] Please add "**-Z**" to Order No. and specify Order code.		
Accessory set to EN (required for flanging, weight 0.2 kg) 4x screws $^{7}/_{16}$-20 UNF x 1 inch to ASME B18.2.1; chromized steel 2x gaskets made of PTFE, max. permissible temperature 80 °C (176 °F)	**L31**	**7MF9004-5CC**
Accessory set to DIN (required for flanging, weight 0.2 kg) 4x screws M10x25 to DIN EN 24017; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x gaskets made of PTFE, max. permissible temperature 80 °C (176 °F)		
• Standard design • Version for oxygen (together with Order code S11	**L11** **L15**	**7MF9004-6AD** **7MF9004-6AE**
Multiway cock in oil-free and grease-free design Oil- and grease-free cleaning for oxygen applications, max. pressure PN 100 (1450 psi) and max. temperature 60 °C (140 °F), BAM-tested lubricant, gasket suitable for oxygen measurement (only with Order No. 7MF9004–1Q.Z)	**S11**	
Mounting bracket Required **for wall mounting** or for securing on rack (72 mm grid), made of electrogalvanized sheet-steel, weight 0.85 kg	**M13**	**7MF9004-6AA**
NACE MR-0175-certified incl. acceptance test certificate 3.1 to EN 10204 (only available for version 7MF9004-1QA)	**D07**	

[1] 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 $^{7}/_{16}$-20 UNF x 1 inch, 2 flat gaskets
- L11: 4 screws M10x25 to DIN EN 24017, 4 washers, 2 flat gaskets
- L15 (suitable for oxygen): 4 screws M10x25 to DIN EN 24017, 4 washers, 2 flat gaskets

Washers Ø 10.5 to DIN 125

Flat gaskets made of PTFE, max. permissible temperature 80 °C (176 °F)

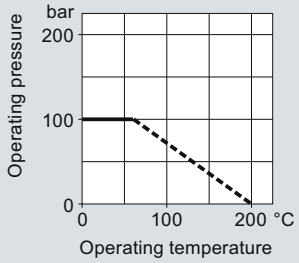
Multiway cock in oil-free and grease-free design

- S11 (only for aggressive liquids, gases and vapors (7MF9004-1Q.)): Max. PN 63 (914 psi) (instead of PN 100 (1450 psi)), BAM-tested lubricant, gasket suitable for oxygen

Mounting brackets

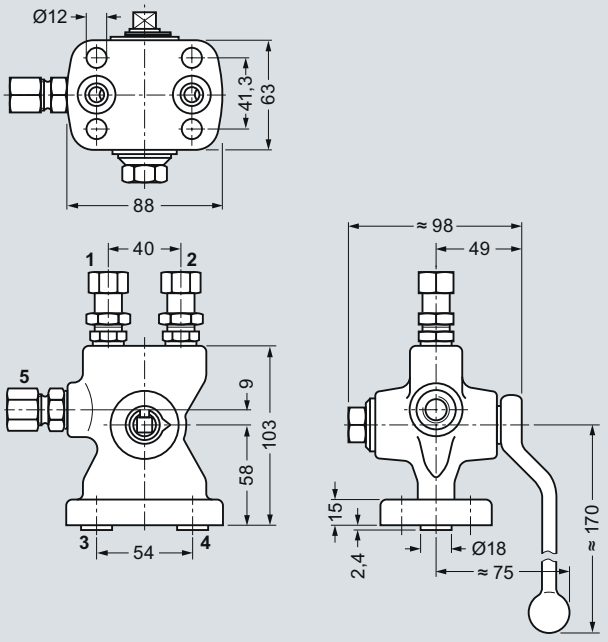
- M13: Required for wall mounting or for securing on rack (72 mm grid); made of electrogalvanized sheet-steel

Characteristic curves



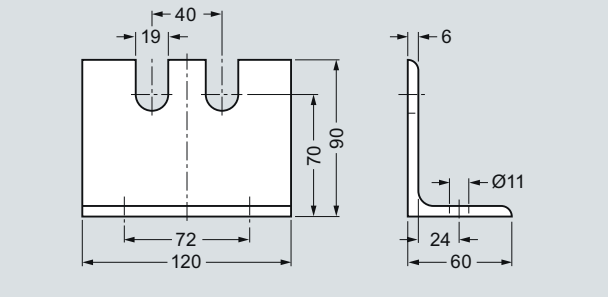
Multiway cock PN 100 (1450 psi), permissible operating pressure as a function of the permissible operating temperature

Dimensional drawings



1 and 2 Process connections
3 and 4 Connections for transmitter (DIN EN 61518, form A)
5 Connections for blowing out

Multiway cock 7MF9004-1P. for flanging to pressure transmitters for differential pressure, dimensions in mm



Mounting bracket 7MF9004-6AA (M13), dimensions in mm

3-way and 5-way valve manifolds DN 5

Overview

The three-spindle and five-spindle valve manifolds DN 5 (7MF9410-1../-3..) are used to shut off the differential pressure lines and to check the transmitter zero.

In addition, the five-way valve manifold permits blowing out of the differential pressure lines.

Benefits

- Available for aggressive and non-aggressive liquids and gases
- Max. working pressure 420 bar (6092 psi), with version for oxygen max. 100 bar (1450 psi)

Application

The 3-way and 5-way valve manifolds are available in versions for aggressive and non-aggressive liquids and gases.

Mounting plates are available for wall mounting, for securing to mounting racks or for pipe mounting.

Design

The process connection of the 3-way and 5-way valve manifolds is a pipe union with ferrule.

Both valve manifolds have 2 flange connections for connecting a pressure transmitter.

In addition, the five-way valve manifold has 2 blow-out connections.

Depending on the version the valve manifold has either 3 or 5 valves, each with an internal spindle thread.

Materials used

	For non-aggressive liquids and gases		For aggressive liquids and gases	
Component	**Material**	**Mat. No.**	**Material**	**Mat. No.**
Housing	P250GH	1.0460	X 6 CrNiMoTi 17 12 2	1.4571/ 316Ti
Head parts	C 35	1.0501		
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

Selection and Ordering data	Order No.
3-way valve manifold DN 5 For flanging to pressure transmitters for differential pressure, process connection: Pipe union with ferrule, max. working pressure 420 bar (6092 psi), weight 2.9 kg (order accessory set and mounting plate with Order code), without certificate	**7MF9410-■■A**
• for non-aggressive liquids and gases	**1E**
• for aggressive liquids and gases	**1F**
5-way valve manifold DN 5 For flanging to pressure transmitters for differential pressure, process connection: Pipe union with ferrule, max. working pressure 420 bar (6092 psi), weight 4.4 kg (order accessory set and mounting plate with Order code), without certificate	
• for non-aggressive liquids and gases	**3E**
• for aggressive liquids and gases	**3F**
Accessories	
Factory test certificate EN 10204–2.2	**7MF9000-8AB**
Material acceptance test certificate EN 10204-3.1	**7MF9000-8AD**

Selection and Ordering data	Order code	Order No.
Further designs[1]		
Please add "**-Z**" to Order No. and specify Order code.		
Accessory set to EN		
(required for flanging, weight 0.2 kg)		
4x screws $^{7}/_{16}$-20 UNF x $2^{1}/_{8}$ inch to ASME B18.2; chromized steel 2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)	**B31**	**7MF9010-5CC**
4x screws $^{7}/_{16}$-20 UNF x $2^{1}/_{8}$ inch to ASME B18.2; chromized steel 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F)	**B34**	**7MF9410-5CA**
Accessory set to DIN[2]		
(required for flanging, weight 0.2 kg)		
4x screws M10x55 to DIN EN 24014; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)		
• Standard design	**B11**	**7MF9010-6AD**
• Version for oxygen	**B15**	**7MF9010-6AE**
4x screws M10x55 to DIN EN 24014; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F)	**B16**	**7MF9010-6CC**
Mounting plate		
for valve manifold, made of electrogalvanized sheet-steel		
for wall mounting or for securing on rack (72 mm grid), weight 0.5 kg Scope of delivery: 1 mounting plate with bolts for mounting on valve manifold	**M11**	**7MF9006-6EA**
for pipe mounting, weight 0.7 kg 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**
Valve manifold 100 bar		
suitable for oxygen		
for 7MF9410-1F	**S13**	
for 7MF9410-3F	**S14**	
NACE MR-0175-certified	**D07**	
incl. acceptance test certificate 3.1 to EN 10204 (only available for version 7MF9410-1FA and -3FA)		

1) When ordering accessory set or mounting together with the valve manifolds, please use Order code; otherwise use Order No.
2) Flange connections to DIN 19213 only permissible up to PN 160 (2321 psi)

Accessories

Accessory set for 3-way and 5-way valve manifold DN 5 for flanging

- B31: 4 screws $^{7}/_{16}$-20 UNF x $2^{1}/_{8}$ inch to ASME B18.2.1, 2 flat gaskets
- B34: 4 screws $^{7}/_{16}$-20 UNF x $2^{1}/_{8}$ inch to ASME B18.2.1, 2 O-rings (FPM 90)
- B11: 4 screws M10x55 to DIN EN 24014, 4 washers, 2 flat gaskets
- B15 (suitable for oxygen): 4 screws M10x55 to DIN EN 24014, 4 washers, 2 flat gaskets
- B16: 4 screws M10x55 to DIN EN 24014, 4 washers, 2 O-rings (FPM 90)

Washers Ø 10.5 to DIN 125

Flat gaskets made of PTFE, max. 420 bar (6092 psi), 80 °C (176 °F)

O-ring to DIN 3771, 20 x 2.65 – S – FPM90, max. 420 bar (6092 psi), 120 °C (248 °F)

Note: M10 screws only permissible up to PN 160 (2320 psi)!

Mounting plate

Made of electrogalvanized sheet-steel

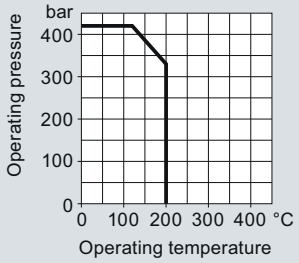
- M11: For wall mounting or for securing on rack (72 mm grid)
  Scope of delivery:
  - 1 mounting plate 7MF9006-6EA with bolts for mounting on valve manifold
- M12: For pipe mounting
  Scope of delivery:
  - 1 mounting plate M11
  - 2 pipe brackets with nuts and washers for pipes with max. Ø 60.3 mm

Valve manifold 100 bar, suitable for oxygen

S12: Only in combination with versions for aggressive liquids and gases

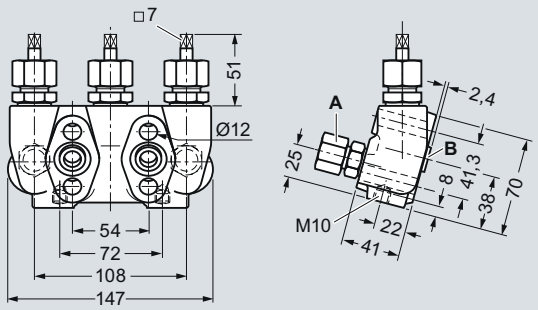
3-way and 5-way valve manifolds DN 5

Characteristic curves



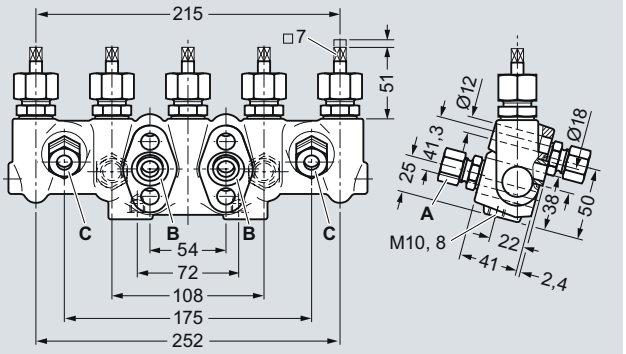
Permissible operating pressure as a function of the permissible operating temperature

Dimensional drawings



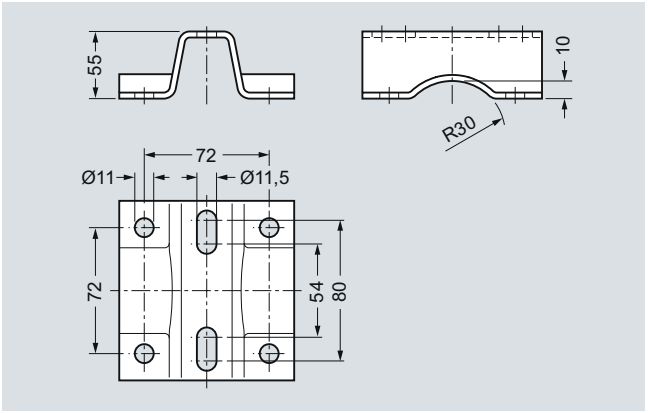
A Process connection (e.g. on primary device): Pipe union with ferrule, diameter 12 mm, S series to DIN 2353
B Transmitter connection: Flange connection to EN 61518, form A
Valve design: internal spindle thread

3-way valve manifold DN 5 (7MF9410-1..), dimensions in mm



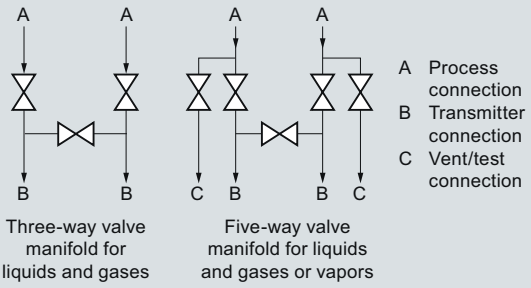
A Process connection (e.g. on primary device): Pipe union with ferrule, diameter 12 mm, S series to DIN 2353
B Transmitter connection: Flange connection to EN 61518, form A
C Blow-out connection: Pipe union with ferrule, diameter 12 mm, S series to DIN 2353
Valve design: internal spindle thread

5-way valve manifold DN 5 (7MF9410-3..), dimensions in mm



Mounting plate 7MF9006-6.. (M11, M12) for valve manifold, dimensions in mm

Schematics



3-way and 5-way valve manifolds, connections

Overview

The 3-way valve manifold DN 8 (7MF9416-1../-2..) is for pressure transmitters for differential pressure. It is used to shut off and blow out differential pressure lines and to test the pressure transmitter zero.

In the designs with a test connection, a test device can be connected to test the pressure transmitter characteristic.

Benefits

- For aggressive and non-aggressive liquids and gases
- The maximum working pressure is 420 bar (6092 psi).

Application

The 3-way valve manifold is available in versions for aggressive and non-aggressive liquids and gases.

Mounting plates are available for wall mounting, for securing to mounting racks or for pipe mounting.

Design

For the process connection on the version for non-aggressive media it is possible to choose between a pipe union with ferrule and welding pins.

The version for aggressive media always has a pipe union with ferrule.

Both versions are available optionally with a test connection M20x1.5.

The valves have an internal spindle thread.

Materials used

	For non-aggressive liquids and gases		**For aggressive liquids and gases**	
Component	Material	Mat. No.	Material	Mat. No.
Housing	P250GH	1.0460	X 6 CrNiMoTi 17 12 2	1.4571/ 316Ti
Head parts	C 35	1.0501		
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

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	**7MF9416-■■A**
For flanging to pressure transmitters for differential pressure, max. working pressure 420 bar (6092 psi), (order accessory set and mounting plate with Order code), without certificate	
For non-aggressive liquids and gases procedss connection: Pipe union with ferrule Ø 12 mm	
• without test connection	**1B**
• with test connection	**1C**
For non-aggressive liquids and gases procedss connection: Welding pin Ø 14 x 2.5	
• without test connection	**2C**
• with test connection	**2D**
For aggressive liquids and gases process connection: Pipe union with ferrule Ø 12 mm	
• without test connection	**1D**
• with test connection	**1E**
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.
Further designs[1]		
Please add "**-Z**" to Order No. and specify Order code.		
Accessory set to EN		
(required for flanging, weight 0.2 kg)		
4x screws $^{7}/_{16}$-20 UNF x $2^{1}/_{8}$ inch to ASME B18.2; chromized steel 2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)	**B31**	**7MF9010-5CC**
4x screws $^{7}/_{16}$-20 UNF x $2^{1}/_{8}$ inch to ASME B18.2; chromized steel 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permissible 420 bar (6092 psi), 120 °C (248 °F)	**B34**	**7MF9410-5CA**
Accessory set to DIN[2]		
(required for flanging, weight 0.2 kg)		
4x screws M10x55 to DIN EN 24014; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)	**B11**	**7MF9010-6AD**
4x screws M10x55 to DIN EN 24014; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permissible 420 bar (6092 psi), 120 °C (248 °F)	**B16**	**7MF9010-6CC**
Mounting plate		
For valve manifold, made of electrogalvanized sheet-steel		
for wall mounting or for securing on rack (72 mm grid), weight 0.5 kg Scope of delivery: 1 mounting plate with bolts for mounting on valve manifold	**M11**	**7MF9006-6EA**
for pipe mounting, weight 0.7 kg Scope of delivery: 1x mounting plate M11, 2x pipe brackets with nuts and washers (for pipe with max. Ø 60.3 mm)	**M12**	**7MF9006-6GA**
NACE MR-0175-certified	**D07**	
incl. acceptance test certificate 3.1 to EN 10204 (only available for version 7MF9416-1DA and -1EA)		

1) When ordering accessory set or mounting together with the valve manifold, please use Order code; otherwise use Order No.
2) Flange connections to DIN 19213 only permissible up to PN 160 (2321 psi)!

Accessories

Accessory set for 3-way valve manifold DN 8 for flanging

- B31: 4 screws $^{7}/_{16}$-20 UNF x $2^{1}/_{8}$ inch to ASME B18.2.1, 2 flat gaskets
- B34: 4 screws $^{7}/_{16}$-20 UNF x $2^{1}/_{8}$ inch to ASME B18.2.1, 2 O-rings (FPM 90)
- B11: 4 screws M10x55 to DIN EN 24014, 4 washers, 2 flat gaskets
- B16: 4 screws M10x55 to DIN EN 24014, 4 washers, 2 O-rings (FPM 90)

Washers Ø 10.5 to DIN 125

Flat gaskets made of PTFE, max. 420 bar (6092 psi), 80 °C (176 °F)

O-ring to DIN 3771, 20 x 2.65 – S – FPM90, max. 420 bar (6092 psi), 120 °C (248 °F)

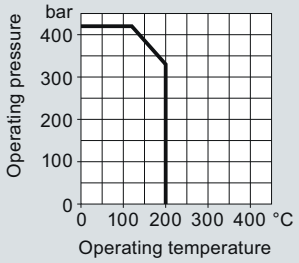
Note: M10 screws only permissible up to PN 160 (2320 psi)!

Mounting plate

Made of electrogalvanized sheet-steel

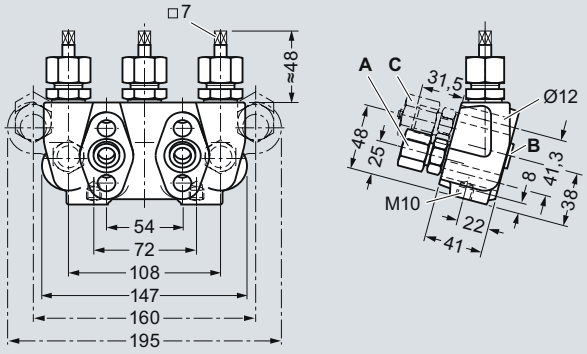
- M11: For wall mounting or for securing on rack (72 mm grid)
  Scope of delivery:
  - 1 mounting plate with bolts for mounting on valve manifold
- M12: For pipe mounting
  Scope of delivery:
  - 1 mounting plate M11
  - 2 pipe brackets with nuts and washers for pipes with max. Ø 60.3 mm

Characteristic curves



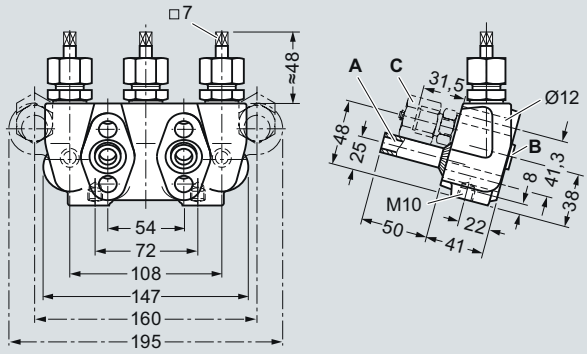
3-way valve manifold DN 8, permissible working pressure as a function of the permissible working temperature

Dimensional drawings



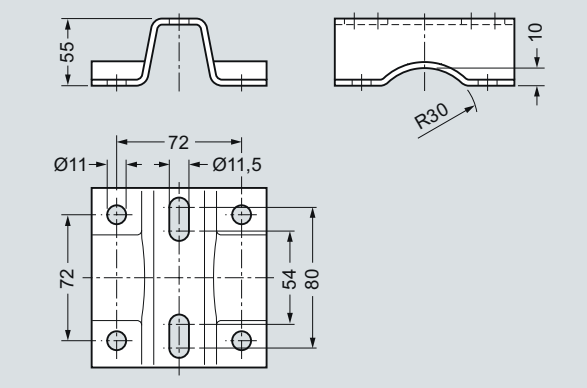
A Process connection (e.g. on primary device): Pipe union with ferrule, diameter 12 mm, S series to DIN 2353
B Transmitter connection: Flange connection to EN 61518, form A
C Test connection: M20 x 1,5
Valve design: internal spindle thread

3-way valve manifold DN 8 (7MF9416-1..) with pipe union, dimensions in mm



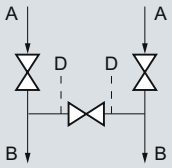
A Process connection (e.g. on primary device): Welding pin, diameter 14 x 2,5
B Transmitter connection: Flange connection to EN 61518, form A
C Test connection: M20 x 1,5
Valve design: internal spindle thread

3-way valve manifold DN 8 (7MF9416-2..) with welding pin, dimensions in mm



Mounting plate 7MF9006-6.. (M11, M12) for valve manifold, dimensions in mm

Schematics



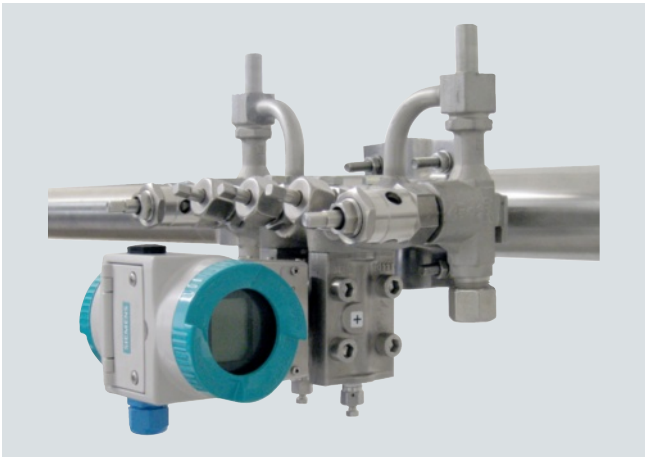
A Process connection
B Transmitter connection
D Vent/test connection

Three-way valve manifold for liquids and gases

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 (6092 psi)

Application

The valve manifold combination DN 5/DN 8 is designed for vapors.

Design

The valve manifold combination DN 5/DN 8 has a process connection with welding pins.

The connection for the pressure transmitter is designed as as flange connection, while the blow-out connection is designed as a pipe union with ferrule.

The manifold valves have an internal spindle thread, while the blow-out valves have an external spindle thread.

The optional test connections are M20x1.5.

Materials used

	Valve manifold DN 5		Blow-out valves DN 8	
Component	**Material**	**Mat. No.**	**Material**	**Mat. No.**
Housing	P250GH	1.0460	16 Mo 3	1.5415
Head parts	C 35	1.0501	21 CrMo V57	1.7709
Spindles	X 12 CrMoS 17	1.4104	X 20 Cr 13	1.4021
Cones	X 35 CrMo 17	1.4122	X 35 CrMo 17 hardened and tempered	1.4122
Valve seats	X 6 CrNiMoTi	1.4571/316Ti	X 20 Cr 13	1.4021
Packings	PTFE	-	Pure graphite	-
Welding pins	-	-	16 Mo 3	1.5415

Function

- Shutting off the differential pressure lines
- Blowing out the differential pressure lines
- Checking the pressure transmitter zero

As an option it is possible to order a version with a test connection, to which a test device for checking the transmitter characteristic can be connected.

Selection and Ordering data	Order No.
Valve manifold combination DN 5/DN 8 for vapors	**7MF9416-6 ■ A**
For flanging to pressure transmitters for differential pressure, max. working pressure 420 bar (6092 psi), also available in stainless steel on request (order accessory set with Order code), without certificate	
• without test connection	**C**
• with test connection M20 × 1.5	**D**
Accessories	
Factory test certificate EN 10204–2.2	**7MF9000-8AB**
Material acceptance test certificate EN 10204-3.1	**7MF9000-8AD**

Selection and Ordering data	Order code	Order No.
Further designs[1]		
Please add "**-Z**" to Order No. and specify Order code.		
Accessory set to EN (required for flanging, weight 0.2 kg)		
4x screws $^{7}/_{16}$-20 UNF x $2^{1}/_{8}$ inch to ASME B18.2; chromized steel 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F)	**B34**	**7MF9410-5CA**
Accessory set to DIN[2] (required for flanging, weight 0.2 kg)		
4x screws M10x55 to DIN EN 24014; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F);Flange connection to DIN 19213 only permissible up to PN 160!	**B16**	**7MF9010-6CC**

[1] When ordering accessory set together with the valve manifold combination, please use Order code; otherwise use Order No.

[2] Flange connections to DIN 19213 only permissible up to PN 160 (2321 psi)

Accessories

Accessory set for valve manifold combination DN 5/DN 8 for flanging

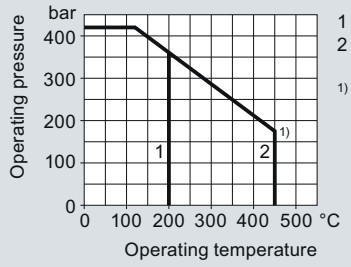
- B34: 4 screws $^{7}/_{16}$-20 UNF x $2^{1}/_{8}$ inch to ASME B18.2.1, 2 O-rings (FPM 90)
- B16: 4 screws M10x55 to DIN EN 24014, 4 washers, 2 O-rings (FPM 90)

Washers Ø 10.5 to DIN 125

O-ring to DIN 3771, 20 x 2.65 - S – FPM90, max. 420 bar (6092 psi), 120 °C (248 °F)

Note: M10 screws only permissible up to PN 160 (2321 psi)!

Characteristic curves

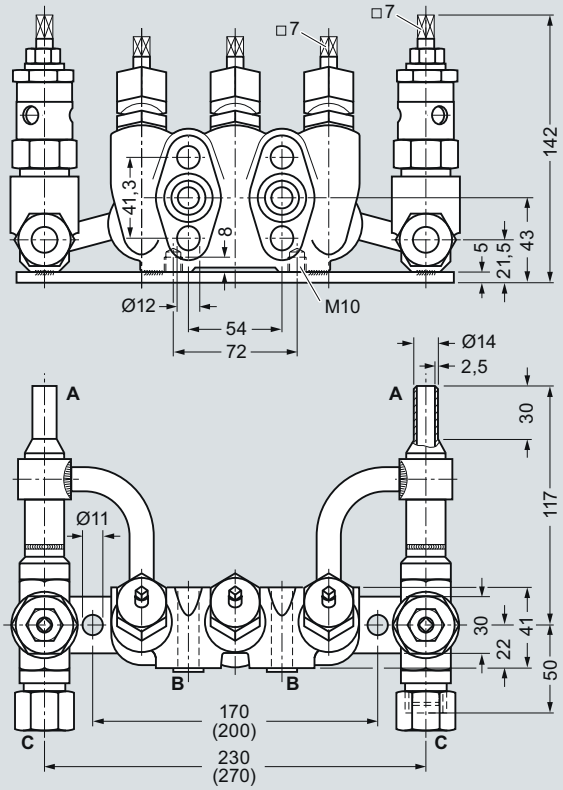


1 Valve manifold
2 Blow-out connection

1) According to DIN 19210 the design can be such that the temperatures for the differential pressure line can be set approx. 100 °C (212 °F) lower than the media temperature.

Permissible operating pressure as a function of the permissible operating temperature

Dimensional drawings

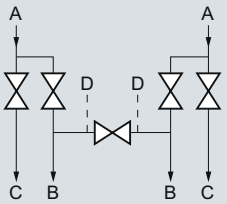


A Process connection (e.g. on primary device): Welding pin
B Transmitter connection: Flange connection to EN 61518, form A
C Blow-out connection: Pipe union with ferrule, diameter 14 mm, S series to DIN 2353

Valve design:
- Manifold valves: internal spindle thread
- Blow-out valves: external spindle thread

Valve manifold combination DN 5/DN 8 (7MF9416-6C.), dimensions in mm (deviating dimensions for 7MF9416-6D. shown in brackets)

Schematics



A Process connection
B Transmitter connection
C Blow-out connection
D Test connection

Valve manifold combination for vapors

Valve manifold combination DN 5/DN 8, connections

Valve manifold combination DN 8

Overview

The valve manifold combination DN 8 (7MF9416-4..) is for pressure transmitters for differential pressure.

It is used to shut off and blow out the differential pressure lines and to check the pressure transmitter zero.

In the designs with a test connection, a test device can be connected to check the pressure transmitter characteristic.

Benefits

- Max. working pressure 420 bar (6092 psi)

Application

The valve manifold combination DN 8 is designed for vapors.

Design

The valve manifold combination DN 8 has a process connection with welding pins.

The connection for the pressure transmitter is designed as as flange connection, while the blow-out connection is designed as a pipe union with ferrule.

The manifold valves have an internal spindle thread, while the blow-out valves have an external spindle thread.

The optional test connection is M20x1.5.

The valve manifold combination DN 8 is supplied with a mounting plate.

Materials used

	Valve manifold		Blow-out valves	
Component	**Material**	**Mat. No.**	**Material**	**Mat. No.**
Housing	P250GH	1.0460	16 Mo 3	1.5415
Head parts	C 35	1.0501	21 CrMo V57	1.7709
Spindles	X 12 CrMoS 17	1.4104	X 20 Cr 13	1.4021
Cones	X 35 CrMo 17	1.4122	X 35 CrMo 17 hardened and tempered	1.4122
Valve seats	X 6 CrNiMoTi	1.4571/316Ti	X 20 Cr 13	1.4021
Packings	PTFE	-	Pure graphite	-
Welding pins	-	-	16 Mo 3	1.5415

Function

- Shutting off the differential pressure lines
- Blowing out the differential pressure lines
- Checking the pressure transmitter zero

As an option it is possible to order a version with a test connection, to which a test device for checking the pressure transmitter characteristic can be connected.

Selection and Ordering data	Order No.
Valve manifold combination DN 8 for vapors for flanging to pressure transmitters for differential pressure, with mounting plate, max. working pressure 420 bar (6092 psi), also available in stainless steel on request (order accessory set with Order code), without certificate	**7 M F 9 4 1 6 - ■ ■ A**
• without test connection	**4 C**
• with test connection M20 × 1.5	**4 D**
Accessories	
Factory test certificate EN 10204–2.2	**7MF9000-8AB**
Material acceptance test certificate EN 10204-3.1	**7MF9000-8AD**

Selection and Ordering data	Order code	Order No.
Further designs[1]		
Please add "**-Z**" to Order No. and specify Order code.		
Accessory set to EN (required for flanging, weight 0.2 kg) 4x screws $^{7}/_{16}$-20 UNF x $2^{1}/_{8}$ inch to ASME B18.2; chromized steel 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F)	**B34**	**7MF9410-5CA**
Accessory set to DIN[2] (required for flanging, weight 0.2 kg) 4x screws M10x55 to DIN EN 24014; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F) Flange connection to DIN 19 213 only permissible up to PN 160!	**B16**	**7MF9010-6CC**

1) When ordering accessory set together with the valve manifold combination, please use Order code; otherwise use Order No.
2) Flange connections to DIN 19213 only permissible up to PN 160 (2321 psi)

Accessories

Accessory set for valve manifold combination DN 8 for flanging

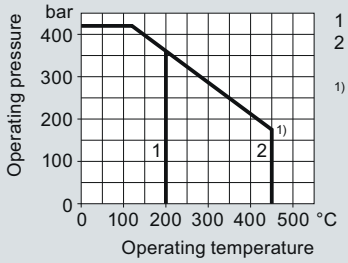
- B34: 4 screws $^{7}/_{16}$-20 UNF x $2^{1}/_{8}$ inch to ASME B 18.2.1, 2 O-rings (FPM 90)
- B16: 4 screws M10x55 to DIN EN 24014, 4 washers, 2 O-rings (FPM 90)

Washers Ø 10.5 to DIN 125

O-ring to DIN 3771, 20 x 2.65 – S – FPM90, max. 420 bar (6092 psi), 120 °C (248 °F)

Note: M10 screws only permissible up to PN 160 (2321 psi)!

Characteristic curves

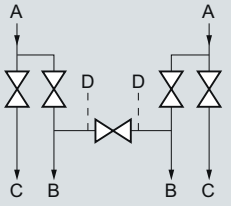


1 Valve manifold
2 Blow-out connection

1) According to DIN 19210 the design can be such that the temperatures for the differential pressure line can be set approx. 100 °C (212 °F) lower than the media temperature.

Permissible operating pressure as a function of the permissible operating temperature

Schematics

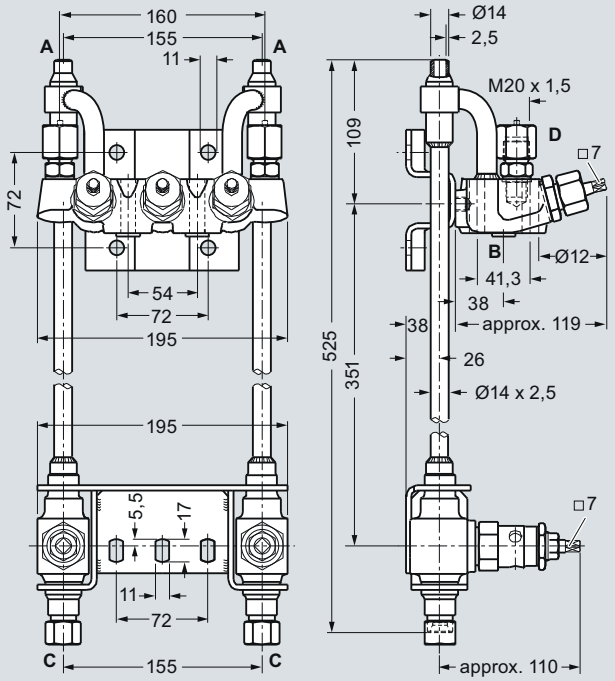


A Process connection
B Transmitter connection
C Blow-out connection
D Test connection

Valve manifold combination for vapors

Valve manifold combination DN 8, connections

Dimensional drawings

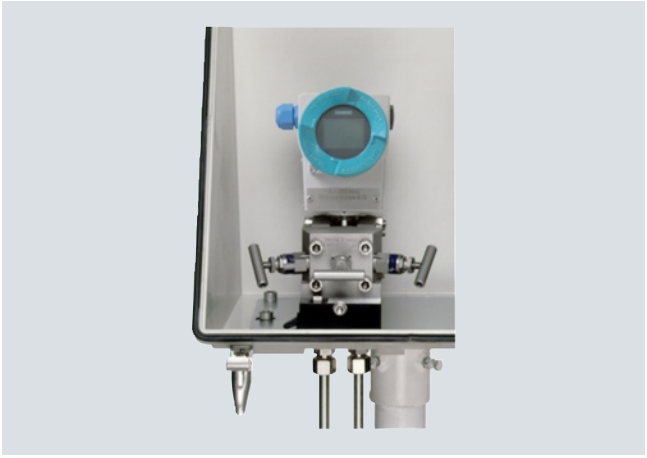


A Process connection (e.g. on primary device): Welding pin
B Transmitter connection: Flange connection to EN 61518, form A
C Blow-out connection: Pipe union with ferrule, diameter 14 mm, S series to DIN 2353
D Test connection (only with Order No. 7MF9416-4D.): M20 x 1,5
Valve design:
- Manifold valves: internal spindle thread
- Blow-out valves: external spindle thread

Valve manifold combination DN 8 (7MF9416-4..), dimensions in mm

2-, 3- and 5-spindle valve manifolds for installing in protective boxes

Overview



The 2-spindle, 3-spindle and 5-spindle valve manifolds (7MF9412-1..) are used to shut off the differential pressure lines and to check the transmitter zero.

The five-spindle valve manifold permits venting on the transmitter side and checking of the transmitter characteristic.

These valve manifolds are preferentially used when mounting in protective boxes. In addition, they can also be used for wall, frame or pipe mounting together with the mounting bracket.

Transmitters of the DS series can be operated and read from the front when using these valve manifolds.

Application

The valve manifolds DN 5 are designed for liquids and vapors and for installing in protective boxes.

Each is available in a version for oxygen on request

Design

All versions of the spindle manifolds have a process connection ½-14 NPT.

The connection for the pressure transmitter is always designed as a flange connection to IEC 61518, Form A.

The 2-spindle and the 5-spindle valve manifold have in addition a vent and test connection ¼-18 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

Selection and Ordering data	Order No.
Valve manifolds DN 5 for mounting in protective boxes for liquids and gases for flanging to pressure transmitters for absolute and differential pressure Material: stainless steel, mat. No: 1.4404/316L max. working pressure 420 bar (6092 psi) (order accessory set with Order code), without certificate	**7MF9412-▪▪A**
• 2-spindle valve manifold with rotatng sleeve G½	**1B**
• 2-spindle valve manifold with flange connection	**1C**
• 3-spindle valve manifold	**1D**
• 5-spindle valve manifold	**1E**
Accessories	
Factory test certificate EN 10204–2.2	**7MF9000-8AB**
Material acceptance test certificate EN 10204-3.1	**7MF9000-8AD**

Selection and Ordering data	Order code	Order No.
Further designs[1]		
Please add "**-Z**" to Order No. and specify Order code.		
Accessory set to EN (connection between valve manifold and pressure transmitter)		
<u>for valve manifold 7MF9412–1C.</u>		
2x screws $^{7}/_{16}$-20 UNF x 2 inch to ASME B18.2.1; chromized steel 1x O-ring to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F)	**F32**	**7MF9412-6CA**
2x screws $^{7}/_{16}$-20 UNF x 2 inch to ASME B18.2.1; chromized steel 1x gasket made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)[2]	**F35**	**7MF9412-6DA**
<u>for valve manifold 7MF9412–1D and -1E.</u>		
4x screws $^{7}/_{16}$-20 UNF x 2 inch to ASME B18.2.1; chromized steel 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F)[2]	**F34**	**7MF9412-6GA**
4x screws $^{7}/_{16}$-20 UNF x 2 inch to ASME B18.2.1; chromized steel 2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)[2]	**F36**	**7MF9412-6HA**

Selection and Ordering data	Order code	Order No.
Further designs[1]		
Please add "**-Z**" to Order No. and specify Order code.		
Accessory set to DIN (connection between valve manifold and pressure transmitter)		
For valve manifold 7MF9412–1C.		
2x screws M10x50 to DIN EN 24014; chromized steel 2x washers Ø 10.5 mm to DIN 125; 1x O-ring to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F)[2]	**F12**	**7MF9412-6AA**
2x screws M10x50 to DIN EN 24014; chromized steel 2x washers Ø 10.5 mm to DIN 125; 1x gasket made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)[2]	**F15**	**7MF9412-6BA**
For valve manifold 7MF9412–1D and -1E.		
4x screws M10x50 to DIN EN 24014; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F)[2]	**F14**	**7MF9412-6EA**
4x screws M10x50 to DIN EN 24014; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)[2]	**F16**	**7MF9412-6FA**
Mounting bracket required for wall mounting or for securing to mounting rack, with bolts for mounting on valve manifold		
• for valve manifolds 7MF9412-1B. and -1C.	**M14**	**7MF9006-6LA**
• for valve manifold 7MF9412-1D.	**M17**	**7MF9006-6NA**
• for valve manifold 7MF9412-1E.	**M18**	**7MF9006-6PA**
Mounting clip 2 off, to secure mounting bracket to pipe	**M16**	**7MF9006-6KA**
Valve manifold 100 bar Oil- and grease-free cleaning for oxygen applications, max. pressure PN 100 (1450 psi) and max. temperature 60 °C (140 °F)		
• for valve manifolds 7MF9412-1B. and -1C.	**S12**	
• for valve manifold 7MF9412-1D.	**S13**	
• for valve manifold 7MF9412-1E.	**S14**	
NACE MR-0175-certified incl. acceptance test certificate 3.1 to EN 10204	**D07**	

1) When ordering accessory set or mounting together with the valve manifolds, please use Order code; otherwise use Order No.
2) Flange connections with M10 screws only permissible up to PN 160 (2321 psi)!

Accessories

Accessory set for 2-, 3- and 5-spindle valve manifolds (Connection between manifold and transmitter)

2-spindle valve manifold DN 5 with flange connection

- F32: 2 screws 7/16 20 UNF x 2 inch to ASME B 18.2.1, 1 O Ring (FPM90)
- F35: 2 screws 7/16 20 UNF x 2 inch to ASME B 18.2.1, 1 flat-gasket
- F12: 2 screws M10x50 to DIN EN 24014, 2 washers, 1 O-ring (FPM90)
- F15: 2 screws M10x50 to DIN EN 24014, 2 washers, 1 flat gasket

3-spindle and 5-way valve manifold DN 5

- F34: 4 screws 7/16 20 UNF x 2 inch toASME B 18.2.1, 2 O-rings (FPM90)
- F36: 4 screws 7/16 20 UNF x 2 inch toASME B 18.2.1, 2 flat-gaskets
- F14: 4 screws M10x50 to DIN EN 24014, 4 washers, 2 O-rings (FPM90)
- F16: 4 screws M10x50 to DIN EN 24014, 4 washers, 2 flat-gaskets

Washers Ø 10,5 to DIN 125

Flat-gaskets made of PTFE, max. 420 bar (6092 psi), 80 °C (176 °F)

O-ring to DIN 3771, 20 x 2,65 - S - FPM90; max.420 bar (6092 psi), 120 °C (248 °F)

Note:
Flange connections with M10 screws only permissible up to PN 160 (2321 psi)!

Mounting bracket for wall mounting or for securing to mounting rack

With bolds for mounting on valve manifold

- M14: For 2-spindle valve manifold DN 5
- M17: For 3-spindle valve manifold DN 5
- M18: For 5-spindle valve manifold DN 5

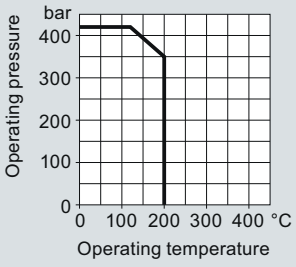
Mounting clips (2 off)

- M16: For securing the mounting brackets M14, M17 and M18 to pipe

Valve manifold 100 bar, suitable for oxygen

- S12: For 2-spindle valve manifold DN 5
- S13: For 3-spindle valve manifold DN 5
- S14: For 5-spindle valve manifold DN 5

Characteristic curves

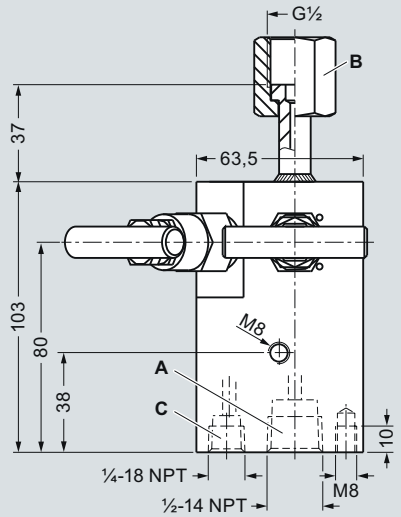


420 bar (6092 psi) at 120 °C (248 °F)
350 bar (5076 psi) at 200 °C (392 °F)

Permissible operating pressure as a function of the permissible operating temperature

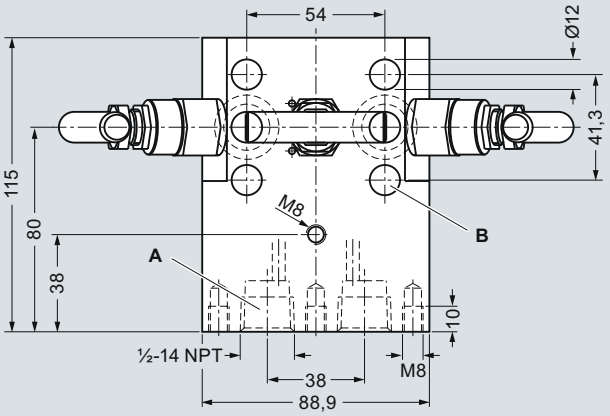
2-, 3- and 5-spindle valve manifolds for installing in protective boxes

Dimensional drawings



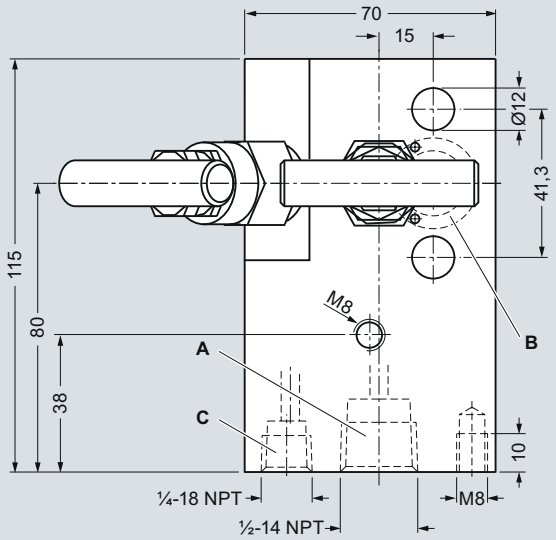
A Process connection: ½-14 NPT
B Transmitter connection: Nipple to DIN 16284, G½, SW 27
C Vent / test connection: ¼-18 NPT

2-spindle valve manifold DN 5 (7MF9412-1B..) with rotating sleeve, dimensions in mm



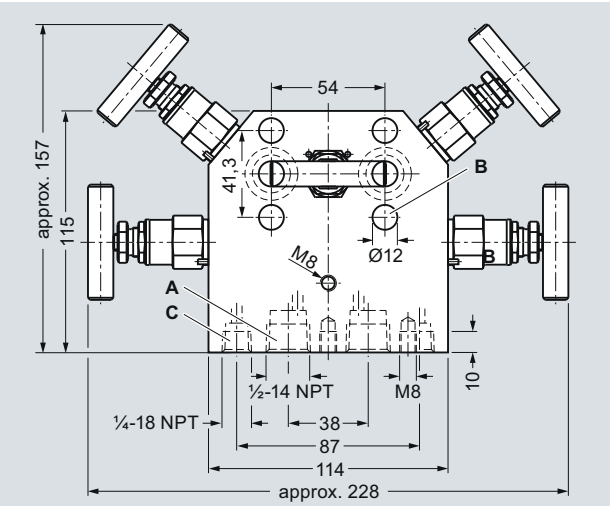
A Process connection: ½-14 NPT
B Transmitter connection: Flange connection EN 61518, form A
Valve design: external spindle thread

3-spindle valve manifold DN 5 (7MF9412-1D..), dimensions in mm



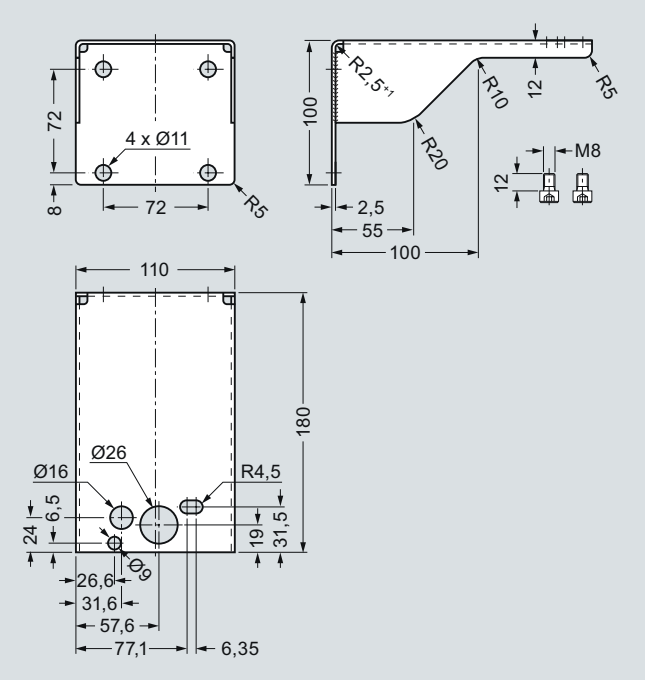
A Process connection: ½-14 NPT
B Transmitter connection: Flange connection to EN 61518, form A
C Vent / test connection: ¼-18 NPT
Valve design: external spindle thread

2-spindle valve manifold DN 5 (7MF9412-1C..), dimensions in mm

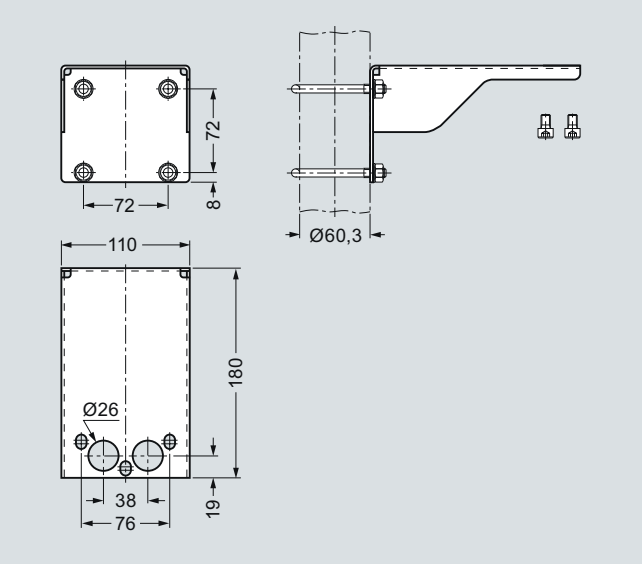


A Process connection: ½-14 NPT
B Transmitter connection: Flange connection to EN 61518, form A
C Vent / test connection: ¼-18 NPT
Valve design: external spindle thread

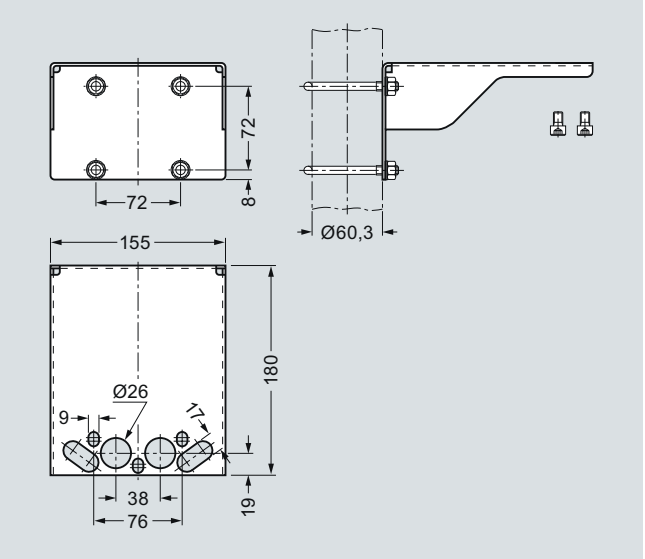
5-spindle valve manifold DN 5 (7MF9412-1E..), dimensions in mm



Mounting bracket (7MF9006-6LA)/(M14) for 2-spindle valve manifolds, dimensions in mm

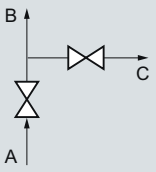


Mounting bracket (7MF9006-6NA)/(M17) for 3-spindle valve manifolds, dimensions in mm



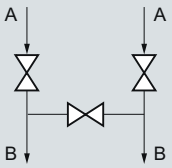
Mounting bracket (7MF9006-6PA)/(M18) for 5-spindle valve manifolds, dimensions in mm

Schematics



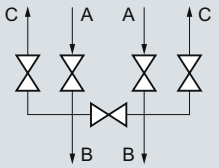
A Process connection
B Connection for pressure gauge or transmitter for pressure or absolute pressure
C Vent/test connection

2-spindle valve manifold DN 5 (with rotating sleeve G½ or flange connection), connections



A Process connection
B Transmitter connection

3-spindle valve manifold DN 5, connections



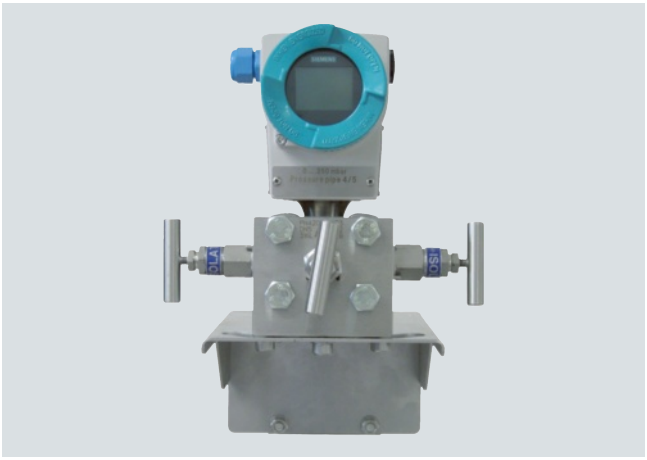
A Process connection
B Transmitter connection
C Vent/test connection

5-spindle valve manifold DN 5, connections

Fitttings - Shut-off valves for differential pressure transmitters

3- and 5-spindle valve manifolds for vertical angular differential pressure lines

Overview



These 3-spindle and 5-spindle valve manifolds 7MF9413-1.. were developed specially for vertical differential pressure lines.

The valve manifolds are used to shut off the differential pressure lines and to check the pressure transmitter zero.

The 5-spindle valve manifold permits venting on the transmitter side and checking of the pressure transmitter characteristic.

Benefits

- For vertical differential pressure lines
- Max. operating pressure 420 bar (6092 psi)
- Transmitters of the DS series can be operated and read from the front.

Application

The 3-spindle and 5-spindle valve manifolds for vertical differential pressure lines are for liquids and gases. The valve manifolds are flanged on the pressure transmitter.

Design

All versions of the spindle valve manifolds have a process connection ½-14 NPT.

The connection for the pressure transmitter is always designed as a flange connection to IEC 61518, form B .

The 2-spindle and the 5-spindle valve manifold have in addition a vent and test connection ¼-18 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 differential pressure lines for liquids and gases for flanging to pressure transmitters for absolute and differential pressure Material: stainless steel, mat. No: 1.4404/316L max. working pressure 420 bar (6092 psi) (order accessory set with Order code), without certificate	**7 M F 9 4 1 3 - ■ ■ A**
• 3-spindle valve manifold	**1 D**
• 5-spindle valve manifold	**1 E**
Accessories	
Factory test certificate EN 10204–2.2	**7MF9000-8AB**
Material acceptance test certificate EN 10204-3.1	**7MF9000-8AD**

Selection and Ordering data	Order code	Order No.
Further designs[1]		
Please add "**-Z**" to Order No. and specify Order code.		
Accessory set to EN (connection between valve manifold and pressure transmitter)		
4x screws $^{7}/_{16}$-20 UNF x 1¾ inch to ASME B18.2.1; chromized steel 2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)	**K36**	**7MF9411-5DB**
Accessory set to DIN[2] (connection between valve manifold and pressure transmitter)		
4x screws M10x45 to DIN EN 24014; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F); Flange connection with M10 screws only permissible up to PN 160 (2321 psi).	**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 **for mounting on 2" standpipe**, with bolts for mounting on valve manifold		
• for valve manifold 7MF9413-1D.	**M19**	**7MF9006-6QA**
Mounting clip		
2 off, to secure mounting bracket to pipe	**M16**	**7MF9006-6KA**
Valve manifold 100 bar (1450 psi) suitable for oxygen		
• for valve manifold 7MF9413-1D.	**S13**	
• for valve manifold 7MF9413-1E.	**S14**	
NACE MR-0175-certified incl. acceptance test certificate 3.1 to EN 10204	**D07**	

[1] When ordering accessory set or mounting together with the multiway cock, please use Order code; otherwise use Order No.

[2] Flange connections to DIN 19213 only permissible up to PN 160 (2321 psi)!

Accessories

Accessory set (connection between manifold and transmitter)

- K36: 4 screws $^{7}/_{16}$-20 UNF x 1¾ inch to ASME B18.2.1, 2 flat gaskets
- K16: 4 screws M10x45 to DIN EN 24014, 4 washers, 2 flat gaskets

Washers Ø 10.5 to DIN 125

Flat gaskets made of PTFE, max. 420 bar (6092 psi), 80 °C (176 °F)

Note: Flange connection with M10 screws only permissible up to PN 160 (2321 psi)!

Mounting bracket for wall mounting or for securing to mounting rack

With bolts for mounting on valve manifold

- M17: For 3-spindle valve manifold
- M18: For 5-spindle valve manifold

Mounting bracket for mounting on 2" standpipe

With bolts for mounting on valve manifold

- M19: For 3-spindle valve manifold

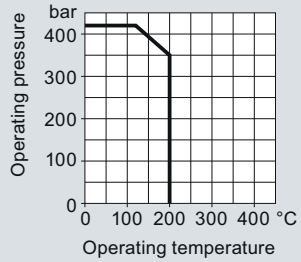
Mounting clips (2 off)

For securing the mounting brackets M17, M18 and M19 to pipe

Valve manifold 100 bar, suitable for oxygen

- For 3-spindle valve manifold
- For 5-spindle valve manifold

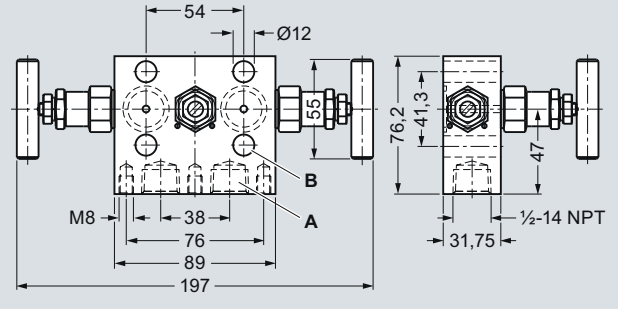
Characteristic curves



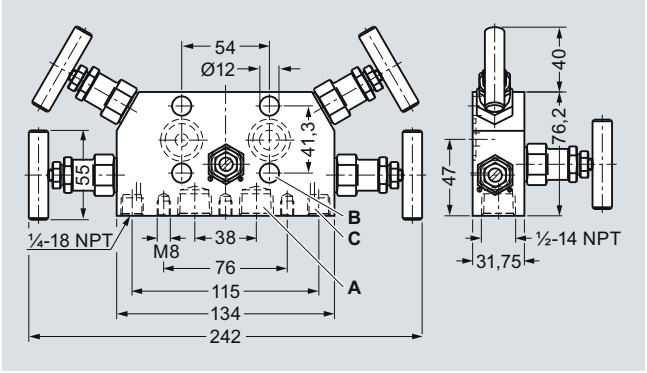
420 bar (6092 psi) at 120 °C (248 °F)
350 bar (5076 psi) at 200 °C (392 °F)

Permissible operating pressure as a function of the permissible operating temperature

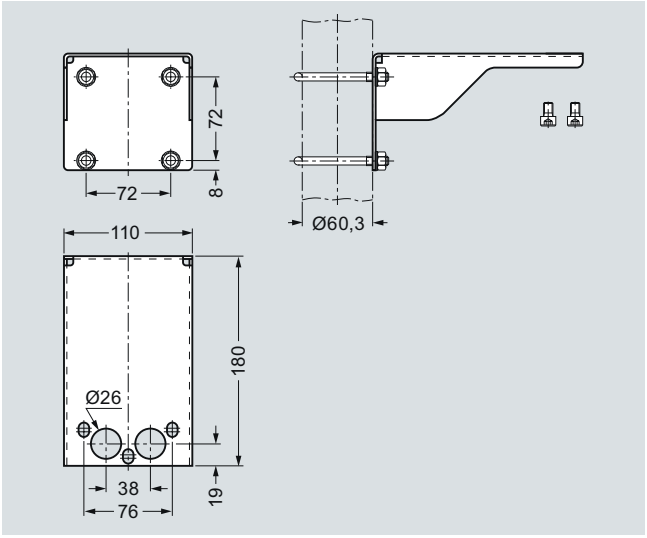
Dimensional drawings



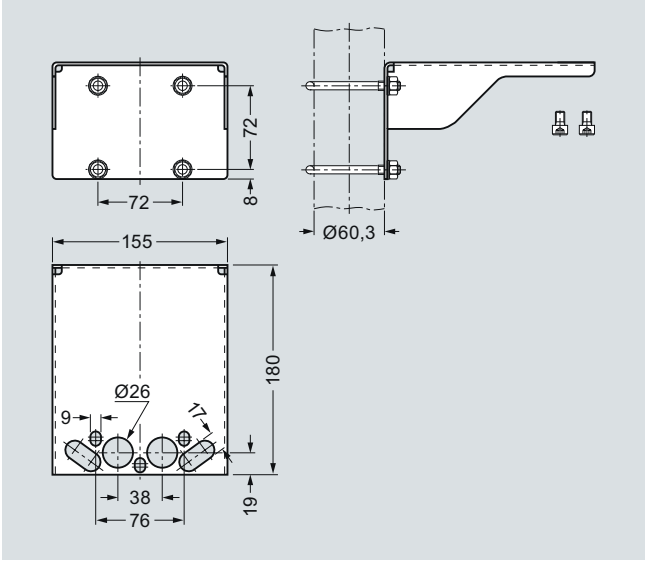
3-spindle valve manifold 7MF9413-1D. for vertical differential pressure lines, dimensions in mm



5-spindle valve manifold 7MF9413-1E. for vertical differential pressure lines, dimensions in mm

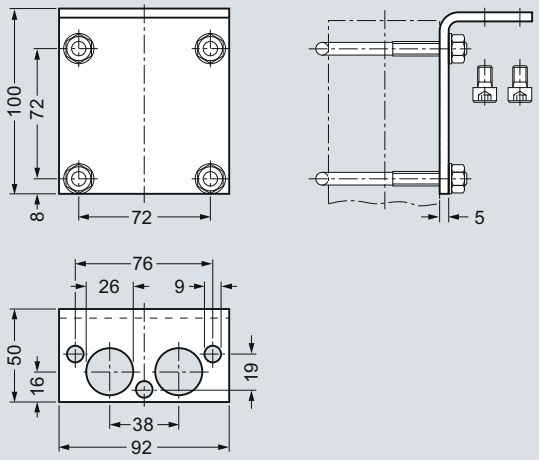


Mounting bracket (7MF9006-6NA)/(M17) for 3-spindle valve manifolds, dimensions in mm



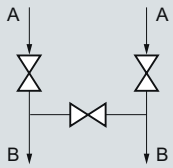
Mounting bracket (7MF9006-6PA)/(M18) for 5-spindle valve manifolds, dimensions in mm

3- and 5-spindle valve manifolds for vertical angular differential pressure lines



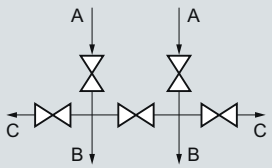
Mounting bracket (7MF9006-6QA)/(M19) for 3-spindle valve manifolds, dimensions in mm

Schematics



A Process connection
B Transmitter connection

3-spindle valve manifold for vertical differential pressure lines, connections



A Process connection
B Transmitter connection
C Vent/test connection 1/4-18 NPT

5-spindle valve manifold for vertical differential pressure lines, connections

Overview

The low-pressure multiway cock 7MF9004-4CA/-4DA can be flanged to pressure transmitters for differential pressure.

Benefits

- Robust design
- For liquids and gases
- One-hand operation

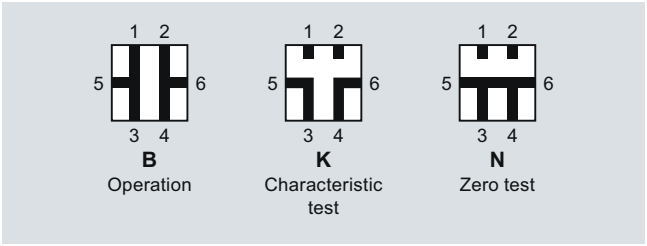
Design

The multiway cock has 2 process connections and 2 test connections, which are available in 2 versions (with sealing screws $G^3/_8$ or quick-release couplings). The housing is made of 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.
Low-pressure multiway cock for liquids and gases, for flanging to pressure transmitters, max. working pressure 25 bar (363 psi), max. working temperature 60 °C (140 °F) (up to 80 °C (176 °F) for a short time), weight 1.75 kg (without accessory set)	
Test connections	
2x sealing screws $G^3/_8$	**7MF9004-4CA**
2x quick-release couplings	**7MF9004-4DA**
Accessories	
Test report to EN 10204-3.1	**7MF9000-8AB**
Material acceptance test certificate to EN 10204-3.1	**7MF9000-8AD**

Selection and Ordering data	Order code	Order No.
Further designs[1] Please add "**-Z**" to Order No. and specify Order code.		
Accessory set to EN (required for flanging, weight 0.2 kg)		
4x screws $^7/_{16}$-20 UNF x 1 inch to ASME B18.2.1; chromized steel 2x gaskets made of PTFE, max. permissible temperature 80 °C (176 °F)	**L31**	**7MF9004-5CC**
Accessory set to DIN (required for flanging, weight 0.2 kg)		
4x screws M10x25 to DIN EN 24017; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x gaskets made of PTFE, max. permissible temperature 80 °C (176 °F)		
• Standard design	**L11**	**7MF9004-6AD**
• Version for oxygen	**L15**	**7MF9004-6AE**
Multiway cock in oil-free and grease-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**

[1] When ordering accessory set or mounting together with the multiway cock, please use Order code; otherwise use Order No.

Low-pressure multiway cock

Accessories

Accessory set for low-pressure multiway cock

- L31: 4 screws $^{7}/_{16}$-20 UNF x 1 inch, 2 flat gaskets
- L11: 4 screws M10x25 to DIN EN 24017, 4 washers, 2 flat gaskets
- L15 (suitable for oxygen): 4 screws M10x25 to DIN EN 24017, 4 washers, 2 flat gaskets

Washers Ø 10.5 to DIN 125

Flat gaskets made of PTFE, max. permissible temperature 80 °C (176 °F)

Multiway cock in oil-free and grease-free design

- S11: BAM-tested lubricant, gasket suitable for oxygen

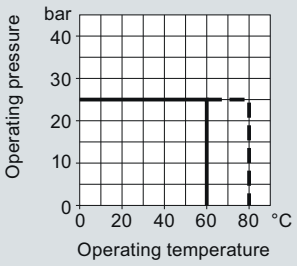
Mounting brackets

- M13: Required for wall mounting or for securing on rack (72 mm grid); made of electrogalvanized sheet-steel

Options

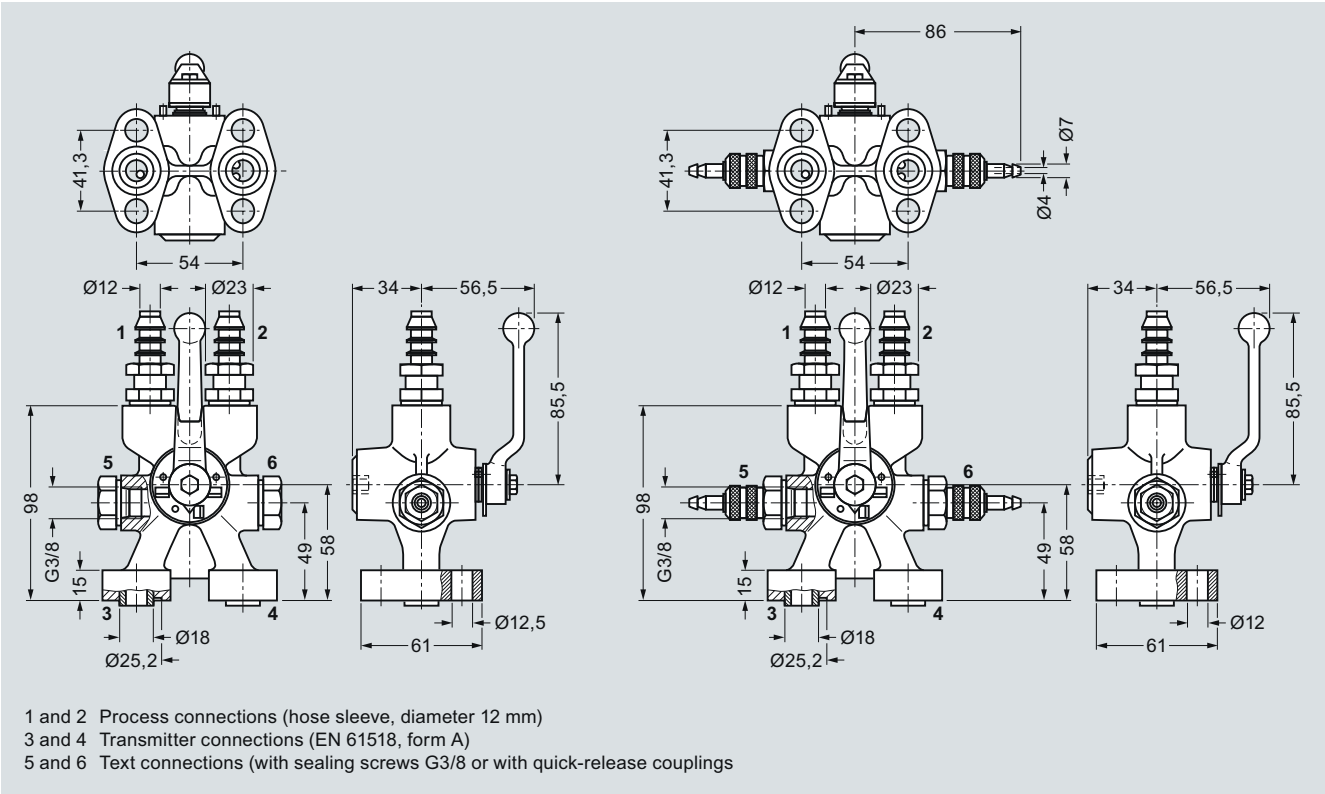
Test connections
- 2 sealing screws $G^{3}/_{8}$
- 2 quick-release couplings

Characteristic curves



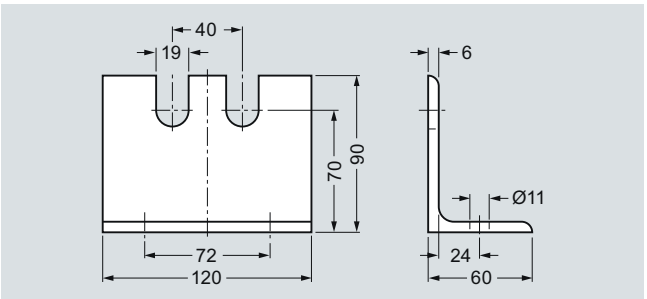
Low-pressure multiway cock, permissible operating pressure as a function of the permissible operating temperature

Dimensional drawings



1 and 2 Process connections (hose sleeve, diameter 12 mm)
3 and 4 Transmitter connections (EN 61518, form A)
5 and 6 Text connections (with sealing screws G3/8 or with quick-release couplings

Low-pressure multiway cock 7MF9004-4CA/-4DA for direct flanging to pressure transmitters for differential pressure, dimensions in mm



Mounting bracket 7MF9004-6AA (M13), dimensions in mm

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 (5800 psi).

Accessories

Accessory set for oval flange

- E36: 2 screws $^{7}/_{16}$-20 UNF x 1½ inch to ASME B18.2.1, 1 flat gasket
- E34: 2 screws $^{7}/_{16}$-20 UNF x 1½ inch to ASME B18.3, 1 O-ring (FPM 90)
- E13: 2 screws M10x40 to DIN EN 4762, 2 washers, 1 O-ring (FPM 90)
- E16: 2 screws M10x40 to DIN EN ISO 4762, 2 washers, 1 flat gasket

Washers Ø 10.5 to DIN 125

Flat gaskets made of PTFE, max. 420 bar (6092 psi), 80 °C (176 °F)

O-ring to DIN 3771, 20 x 2.65 – S – FPM90, max. 420 bar (6092 psi), 120 °C (248 °F)

Note: M10 screws only permissible up to PN 160 (2321 psi)!

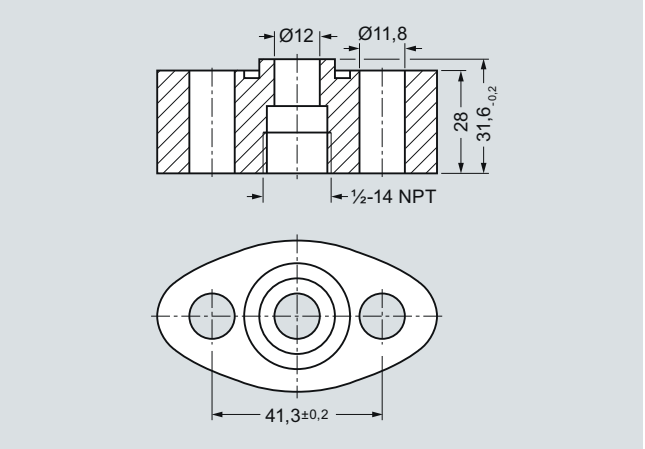
Selection and Ordering data	Order No.
Oval flange with female thread ½-14 NPT, max. working pressure 420 bar (6092 psi), flange connection to IEC 61518, form A	
Material	
P250GH, mat. No.: 1.0460	**7MF9408-2CE**
X 2 CrNiMo 17 13 2, mat. No. 1.4404/316L	**7MF9408-2CL**

Selection and Ordering data	Order code	Order No.
Further designs[1] Please add "**-Z**" to Order No. and specify Order code.		
Accessory set to EN		
2x screws $^{7}/_{16}$-20 UNF x 1½ inch to ASME B 18.2.3; chromized steel 1x flat gasket made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)	**E36**	**7MF9408-5DA**
2x screws $^{7}/_{16}$-20 UNF x 1½ inch to ASME B 18.2.3; chromized steel 1x O-ring to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F)	**E34**	**7MF9408-5CA**
Accessory set to DIN		
2x screws M10x40 to DIN EN ISO 4762; chromized steel 2x washers Ø 10.5 mm to DIN 125; 1x O-ring to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F)[2]	**E13**	**7MF9408-6AA**
2x screws M10x40 to DIN EN ISO 4762; chromized steel 2x washers Ø 10.5 mm to DIN 125; 1x flat gasket made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)[2]	**E16**	**7MF9408-6BA**
NACE MR-0175-certified incl. acceptance test certificate 3.1 to EN 10204	**D07**	

[1] When ordering accessory set together with the oval flange, please use Order code; otherwise use Order No.

[2] Flange connections with M10 screws only permissible up to PN 160 (2321 psi)

Dimensional drawings



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

1

Adapters

Overview

Adapters enable e.g. a transition from medium connections with NPT thread to shut-off valves to DIN 16270 ... 16272 or pipes in conjunction with a connection gland (e.g. 7MF9008).

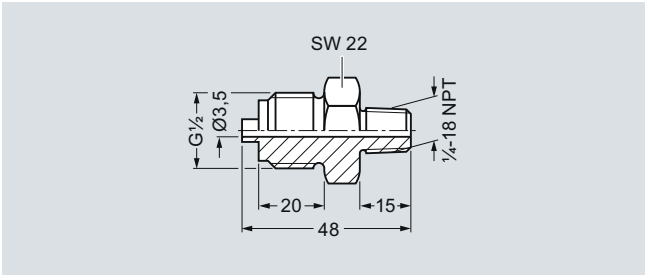
Design

The connection pieces are made of X 6 CrNiMoTi 17 12 2, mat. No. 1.4571 and available in 3 versions

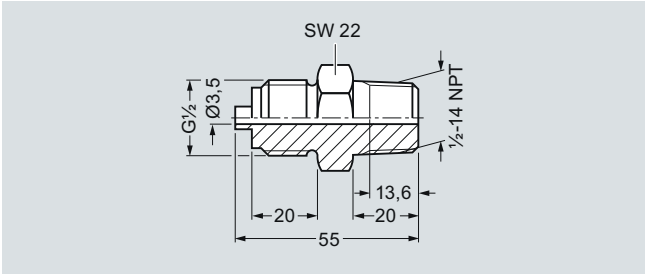
- Thread ¼-18 NPT and connection shank G½ to DIN EN 837-1
- Thread ½-14 NPT and connection shank G½ to DIN EN 837-1
- Thread ½-14 NPT and thread ½-14 NPT

Selection and Ordering data	Order No.
Adapter	
(weight 0.2 kg)	
with thread ¼-18 NPT – G½	**7MF9001-1AA**
with thread ½-14 NPT – G½	**7MF9001-1CA**
with thread ½-14 NPT – ½-14 NPT	**7MF9001-1DA**
with thread ½-14 NPT – M20 x 1.5	**7MF9001-1EA**
with pipe union with ferrule 12 S, ∅ 12 mm – ½-14 NPT	
• 9 SMnPb 28, mat. No. 1.0718	**7MF9008-1CA**
• X 6 CrNiMoTi 17 122, mat. No. 1.4571	**7MF9008-1CB**
with pipe union with ferrule 14 S, ∅ 14 mm – ½-14 NPT	
• 9 SMnPb 28, mat. No. 1.0718	**7MF9008-1CC**
• X 6 CrNiMoTi 17 122, mat. No. 1.4571	**7MF9008-1CD**

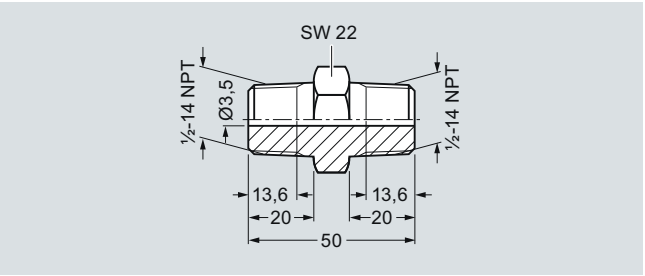
Dimensional drawings



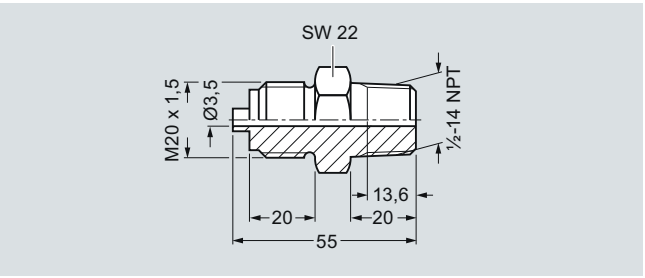
Connection piece with thread ¼-18 NPT and connection shank G½ (7MF9001-1AA), dimensions in mm



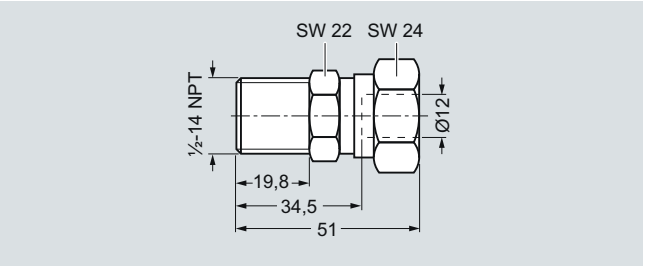
Connection piece with thread ½-14 NPT and connection shank G½ (7MF9001-1CA), dimensions in mm



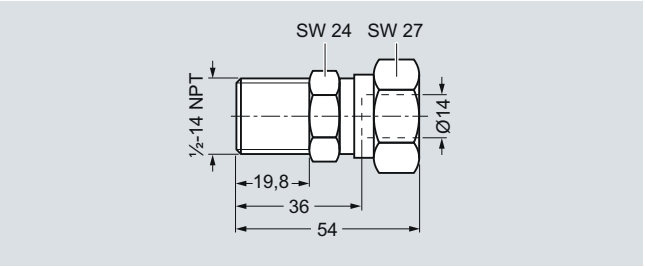
Connection piece with thread ½-14 NPT and thread ½-14 NPT (7MF9001-1DA), dimensions in mm



Connection piece with thread ½-14 NPT and connection shank M20 x 1.5 (7MF9001-1EA), dimensions in mm



Connection piece with pipe union with ferrule 12 S, ∅ 12 mm and thread ½-14 NPT (7MF9008-1CA and -1CB), dimensions in mm



Connection piece with pipe union with ferrule 14 S, ∅ 14 mm and thread ½-14 NPT (7MF9008-1CC and -1CD), dimensions in mm

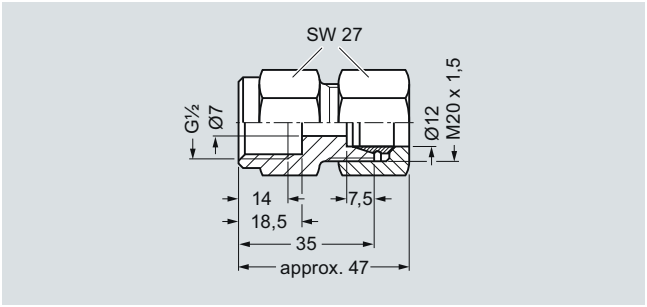
Overview

Connection glands to connect medium or differential pressure lines to collars G½ to DIN EN 837-1

- For rated pressures up to PN 630 (9137psi)
- For oxygen only up to PN 250 (3626 psi)

Selection and Ordering data		Order No.
Connection screwed gland for pipelines (weight 0.2 kg)		
Material	Design	
11SMn30 (mat. No. 1.0715)	Standard	**7MF9008-1GA**
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)	Standard	**7MF9008-1GB**
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)	Grease-free	**7MF9008-1GC**

Dimensional drawings



Connection gland 7MF9008-1G., dimensions in mm

1

Connection parts G 1/2

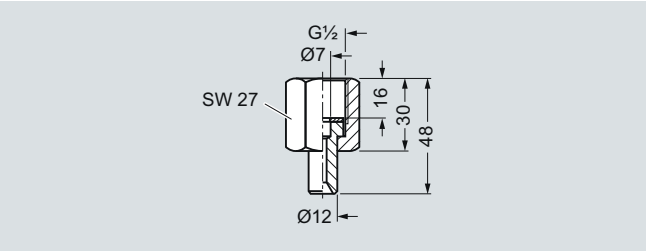
Overview

Connection parts G½ for pressure gauges and shut-off fittings are available in 3 versions:

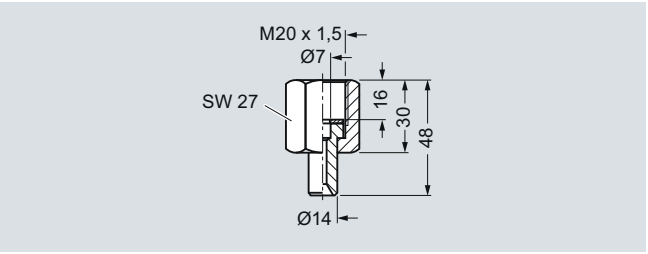
- Nipple connection
- Clamping sleeve
- Collar connection piece

Selection and Ordering data		Order No.
Adapters G½ for pressure gauges and shut-off fittings		
Nipple connection G½ to DIN 16284 (union nut with nipple and gasket); max. working pressure 400 bar (5802 psi); weight 0.1 kg; connection: G½ to DIN EN 837-1; Female thread G½		
Material	Mat. No.	
CuZn39Pb3	CW 614N	**M56340-A0001**
Union nut 9 SMn 28 k	1.0715	**M56340-A0002**
Nipple: RSt 37-2	1.0037	
Union nut X 8 CrNiS 18 9	1.4305	**M56340-A0003**
Nipple: X 6 CrNiMoTi 17 12 2	1.4571/316Ti	
Nipple connection M20 x 1.5 to DIN 16284 (union nut with nipple and gasket); max. working pressure 400 bar (5802 psi); weight 0.1 kg; connection: G½ to DIN EN 837-1; Female thread G½		
Material	Mat. No.	
Union nut X 8 CrNiS 18 9	1.4305	**M56340-A0008**
Nipple: X 6 CrNiMoTi 17 12 2	1.4571/316Ti	
Clamping sleeve G½ to DIN 16283; max. working pressure 400 bar (5802 psi); weight 0.1 kg; Connections: G½ to DIN EN 837-1; Female thread: G½ right-hand G½ left-hand		
Material	Mat. No.	
CuZn39Pb3	CW614N	**M56340-A0004**
9 SMn 28 k	1.0715	**M56340-A0005**
Collar-adapter max. working pressure; weight 0.1 kg; Connections: G½ to DIN EN 837-1; Male thread: G½, G½		
Material	Mat. No.	
CuZn39Pb3	CW614N	**M56340-A0006**
9 SMn 28 k	1.0715	**M56340-A0007**

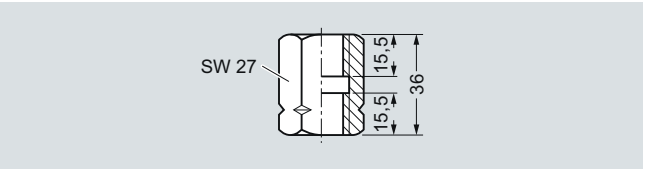
Dimensional drawings



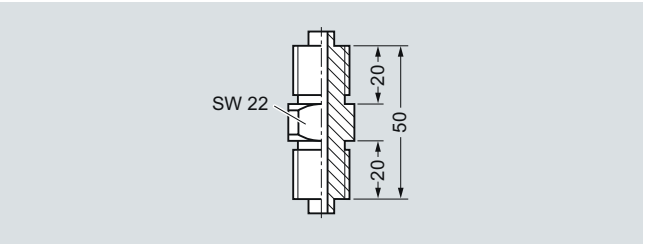
Nipple connection G½ (M56340-A0001 to -A0003), dimensions in mm



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

Overview

Water traps protect pressure gauges and shut-off fittings from heating up (e.g. by steam) by the water column produced by the water trap.

The max. working temperature is 120 °C (248 °F) at 100 bar (1450 psi), 300 °C (572 °F) at 80 bar (1160 psi) or 400 °C (752 °F) at 63 bar (914 psi). If the temperature of the measured medium is higher, a sufficiently long line has to be connected upstream of the trap to enable heat dissipation.

Design

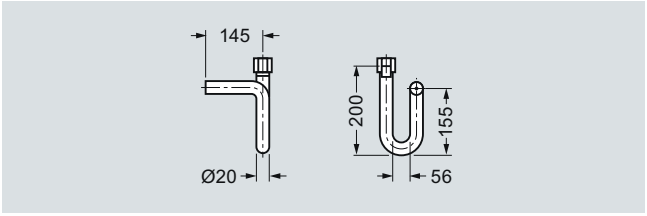
The water traps are available in U shape (type B) or circular shape (type D) to DIN 16282. They have a weld-on end Ø 20 mm × 2.6 mm on the measurement side. The connection on the device side is a clamping sleeve G½ to DIN 16283.

The water traps are made of steel (P250GH) or stainless steel (X 6 CrNiMoTi 17 12 2)

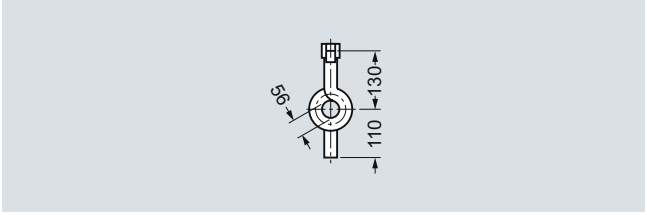
Water traps are designed as standard for max. operating temperature 120 °C (248 °F) at max. operating pressure 100 bar (1450 psi) (300 °C (572 °F) at 80 bar (1160 psi), 400 °C (752 °F) at 63 bar (914 psi). Water traps for higher operating pressures and temperatures are available on request.

Selection and Ordering data		Order No.
Water traps for pressure gauges and pressure transmitters, max. working temperature 120 °C (248 °F), max. working pressure 100 bar (1450 psi) (or 300 °C (572 °F) at 80 bar (1160 psi), or 400 °C (752 °F) at 63 bar (914 psi)), weight 0.7 kg		
Water trap B to DIN 16282		
Material	Mat. No.	
P235GH	1.0345	**M56340-A0043**
X 6 CrNiMoTi 17 12 2	1.4571/316Ti	**M56340-A0061**
Water trap D to DIN 16282		
Material	Mat. No.	
P235GH	1.0345	**M56340-A0045**
X 6 CrNiMoTi 17 12 2	1.4571/316Ti	**M56340-A0063**

Dimensional drawings



Water traps, type B, M56340-A0043/-A0061, dimensions in mm

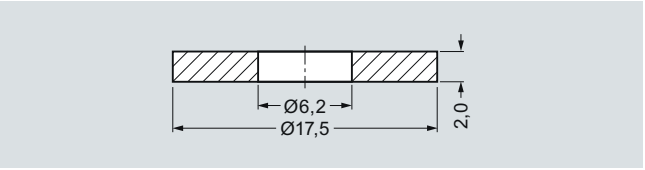


Water traps, type D, M56340-A0045/-A0063, dimensions in mm

Overview

The sealing rings to EN 837-1 are required to seal measuring instruments for pressure with the process connection G½B.

Dimensional drawings



Sealing ring 7MF9007-7A. to EN 837-1, dimensions in mm

Selection and Ordering data	Order No.
Sealing ring to EN 837-1 for thread G½ made of (packing unit 100 pcs)	
• Copper	**7MF9007-7AA**
• Soft iron	**7MF9007-7AB**
• Stainless steel, mat.-No. 1.4571	**7MF9007-7AC**
• PTFE	**7MF9007-7AD**
Accessories	
Test report to EN 10204-3.1	**7MF9000-8AB**
Material acceptance test certificate to EN 10204-3.1	**7MF9000-8AD**

1

Pressure surge reducers

Overview

The pressure surge reducer protects the pressure gauge against damage, premature wear and tear and inaccurate/fluctuating indications.

Application

The pressure reducer is used when pulsations occur in the measured medium (e.g. in slow-running vapor engines, piston pumps and compressors), or if drastic fluctuations are likely to occur in the measured medium (e.g. in hydraulic presses and tensile testing machines).

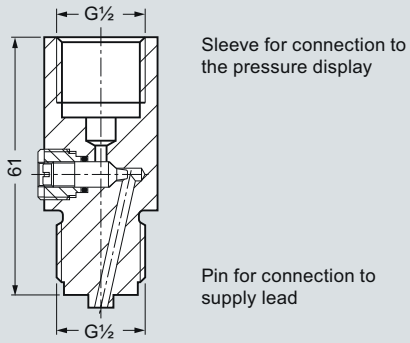
Design

- Enclosure made of brass or stainless steel (mat. no. 1.4571)
- Adjustable nozzle
- Sleeve for connection to the measuring instrument
- Pin for connection to supply lead

Selection and Ordering data

Selection and Ordering data			Order No.
Pressure surge reducer Weight approx. 0.21 kg			
Material	Full-scale value	Weight approx. in kg	
Brass	250 bar (3626 psi)	0.21	**M56340-A54**
Stainless steel	600 bar (8702 psi)	0.21	**M56340-A59**

Dimensional drawings



Pressure surge reducer, dimensions in mm

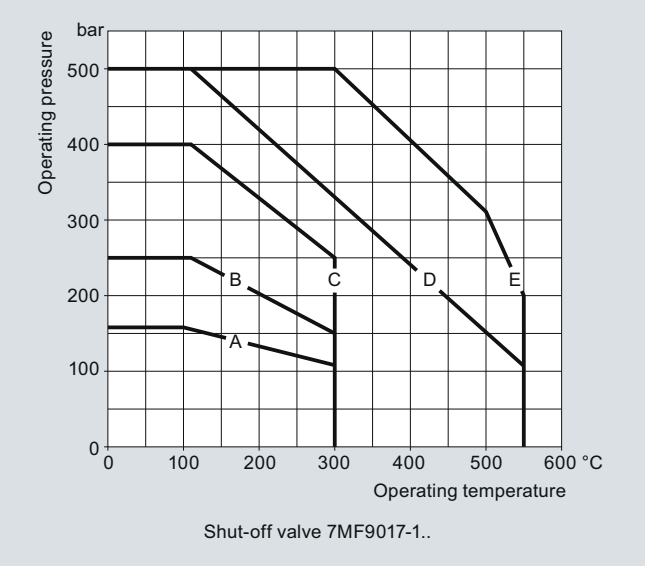
Overview

Primary shut-off valves are available in the following versions:

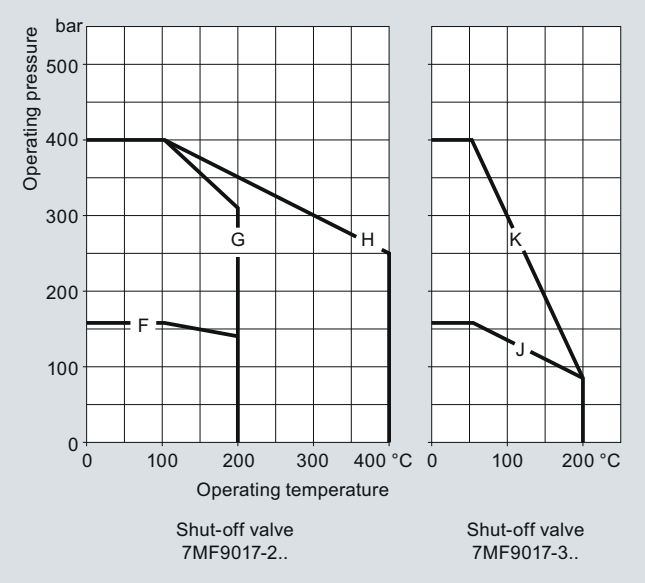
- For non-corrosive liquids, gases and vapors
- For corrosive liquids and gases
- Grease-free for oxygen

The shut-off valves are available in various materials and with various connections (see Selection and Ordering data)

Characteristic curves

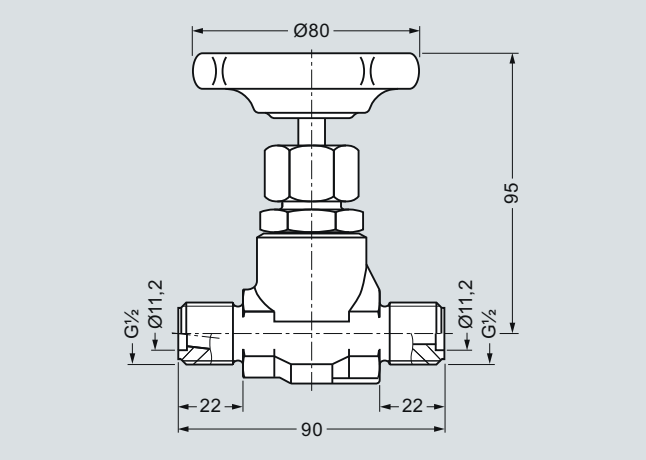


Shut-off valve 7MF9017-1.., permissible working pressure as a function of the permissible working temperature

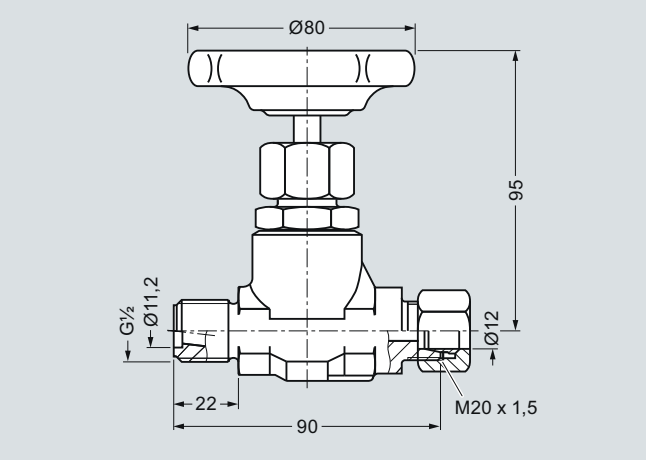


Shut-off valve 7MF9017-2.. and -3.., permissible working pressure as a function of the permissible working temperature

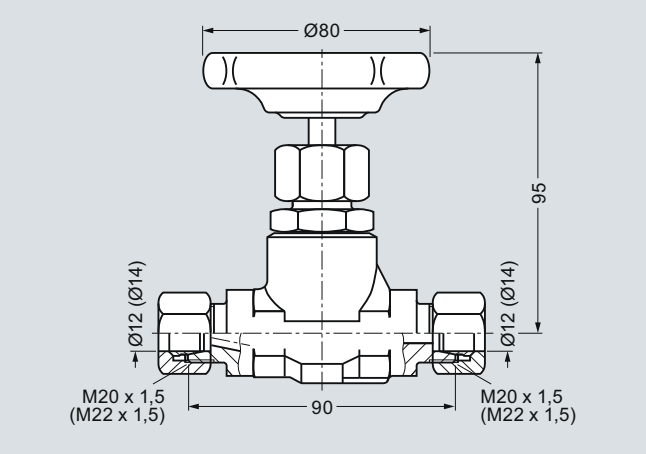
Dimensional drawings



Shut-off valve 7MF9017–1A., dimensions in mm

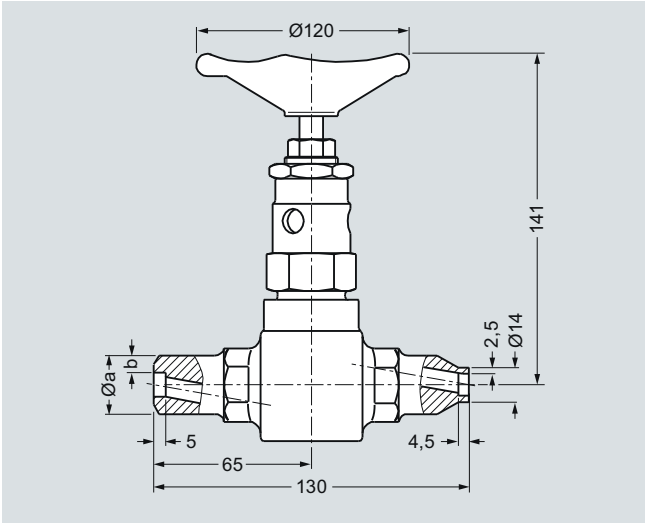


Shut-off valve 7MF9017-1B. and -2B., dimensions in mm



Shut-off valves 7MF9017-1C., -1D. and -2C., dimensions in mm

Primary shut-off valves



Shut-off valves 7MF9017-, dimensions in mm

Ø A x b	7MF9017-
14 mm x 2.5 mm	1F. and 1G.
21.3 mm x 6.3 mm	1H. and 2H.
24 mm x 7.1 mm	1J., 1K. and 2J.

Selection and Ordering data

Primary shut-off valves, without certificate

Max. working pressure	Charac-teristic[1)]	Material	Mat. No.	Spindle thread	Connections	Approx. weight kg	Order No.
Shut-off valve for non-aggressive liquids, gases and vapors							**7MF9017-1** ■ **A**
160 bar (2321 psi)	A	P250GH	1.0460	Internal	Threaded socket G½ form R, DIN 19207	0.8	**A**
160 bar (2321 psi)	A	P250GH	1.0460	Internal	Threaded socket G½ form R, DIN 19207 DIN 19207 and pipe union with ferrule for pipe Ø 12 mm, S series	0.8	**B**
400 bar (5800 psi)	C	P250GH	1.0460	Internal	Pipe union with ferrule for pipe Ø 12 mm, S series	1	**C**
400 bar (5800 psi)	C	P250GH	1.0460	Internal	Pipe union with ferrule for pipe Ø 14 mm, S series	1	**D**
500 bar (7252 psi)	D	16 Mo 3	1.5415	External	Welding sleeves Ø 14 mm × 2.5 mm	1.6	**F**
500 bar (7252 psi)	E	11 CrMo 9 10	1.7383	External	Welding sleeves Ø 14 mm × 2.5 mm	1.6	**G**
500 bar (7252 psi)	D	16 Mo 3	1.5415	External	Welding sleeves Ø 21.3 mm × 6.3 mm and Ø 14 mm × 2.5 mm	1.6	**H**
500 bar (7252 psi)	D	16 Mo 3	1.5415	External	Welding sleeves Ø 24 mm × 7.1 mm and Ø 14 mm × 2.5 mm	1.6	**J**
500 bar (7252 psi)	E	11 CrMo 9 10	1.7383	External	Welding sleeves Ø 24 mm × 7.1 mm and Ø 14 mm × 2.5 mm	1.6	**K**
Shut-off valve for aggressive liquids and gases							**7MF9017-2** ■ **A**
160 bar (2321psi)	F	X 6 CrNiMoTi 17 12 2	1.4571/ 316Ti	Internal	Threaded socket G½ form R, DIN 19207 DIN 19207 and pipe union with ferrule for pipe Ø 12 mm, S series	0.8	**B**
400 bar (5800 psi)	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 (5800 psi)	H	X 6 CrNiMoTi 17 12 2	1.4571/ 316Ti	External	Welding sleeves Ø 21.3 mm × 6.3 mm and Ø 14 mm × 2.5 mm	1.6	**H**
400 bar (5800 psi)	H	X 6 CrNiMoTi 17 12 2	1.4571/ 316Ti	External	Welding sleeves Ø 24 mm × 7.1 mm and Ø 14 mm × 2.5 mm	1.6	**J**

Accessories

Factory test certificate EN 10204–2.2	**7MF9000-8AB**
Material acceptance test certificate EN 10204-3.1	**7MF9000-8AD**

[1)] See Figure "Permissible working pressure as a function of the permissible working temperature"

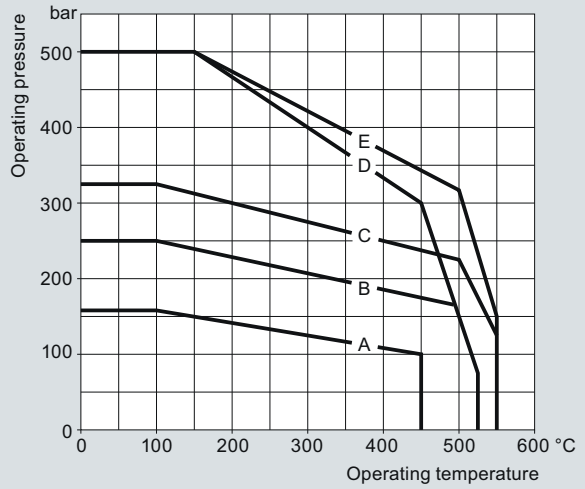
Overview

The compensation vessels prevent the level difference which occurs with pressure changes in the pressure lines and which falsifies the measurement.

According to DIN 19211, the temperature in the compensation vessel must be assumed to be 50 K less than the steam temperature in the pipe when calculating the wall thicknesses. This is because the temperature in the compensation vessel during operation can only rise up to the saturated steam temperature.

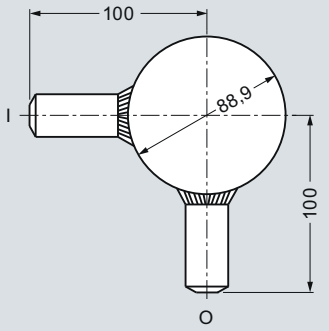
A material acceptance test certificate A to EN 10204-3.1 is available for the materials from which the compensation vessels are made.

Characteristic curves



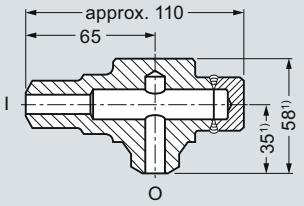
Permissible operating pressure as a function of the permissible operating temperature

Dimensional drawings



I Input (see Ordering data for dimensions)
O Output (see Ordering data for dimensions)

Compensation vessel 7MF9015-1.., dimensions in mm



I Input (see Ordering data for dimensions)
O Output (see Ordering data for dimensions)
1) 30 mm longer with 7MF9015-5A.

Compensation vessel 7MF9015-5.., dimensions in mm

Selection and Ordering data

Compensation vessel, without certificate

Max. working pressure	Characteristic 1)	Material	Mat. No.	Connections Input	Output	Approx. contents cm³	Approx. weight kg	Order No. 7MF9015- ■■ A
160 bar (2321 psi)	A	16 Mo 3	1.5415	Threaded socket G½, form R, DIN 19207	Threaded socket G½, form V, DIN 19207	250	0.8	1 A
250 bar (3626 psi)	B	16 Mo 3	1.5415	Welding sleeve Ø 21.3 mm × 6.3 mm	Welding sleeve Ø 21.3 mm × 6.3 mm	250	0.8	1 B
250 bar (3626 psi)	B	16 Mo 3	1.5415	Welding sleeve Ø 24 mm × 7.1 mm	Welding sleeve Ø 24 mm × 7.1 mm	250	1	1 C
250 bar (3626 psi)	B	11 CrMo 9 10	1.7383	Welding sleeve Ø 24 mm × 7.1 mm	Welding sleeve Ø 24 mm × 7.1 mm	250	1	1 D
250 bar (3626 psi)	B	16 Mo 3	1.5415	Welding sleeve Ø 33.7 mm × 4.5 mm	Welding sleeve Ø 24 mm × 7.1 mm	250	0.7	1 E
160 bar (2321 psi)	A	16 Mo 3	1.5415	Threaded socket G½, form R, DIN 19207	Threaded socket G½, form V, DIN 19207	20	1.6	5 A
500 bar (7252 psi)	D	16 Mo 3	1.5415	Welding sleeve Ø 21.3 mm × 6.3 mm	Welding sleeve Ø 21.3 mm × 6.3 mm	20	1.6	5 B
500 bar (7252 psi)	D	16 Mo 3	1.5415	Welding sleeve Ø 24 mm × 7.1 mm	Welding sleeve Ø 24 mm × 7.1 mm	20	1.6	5 C
500 bar (7252 psi)	E	11 CrMo 9 10	1.7383	Welding sleeve Ø 24 mm × 7.1 mm	Welding sleeve Ø 24 mm × 7.1 mm	20	1.6	5 D

Accessories

Factory test certificate EN 10204–2.2	**7MF9000-8AB**
Material acceptance test certificate EN 10204-3.1	**7MF9000-8AD**

1) See Figure "Permissible working pressure as a function of the permissible working temperature"

Connection parts

Overview

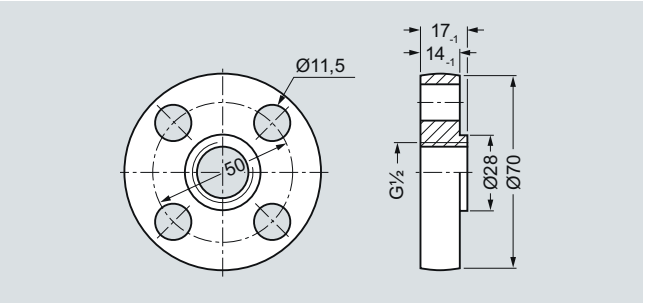
Connection parts are available in the following versions:

- Threaded flange pair G½ with stainless steel gasket
- Nipple G½ form V to DIN 19207
- Union nut G½ made of C 35 to DIN 16284
- Gasket B½ (grooved) to DIN 19207

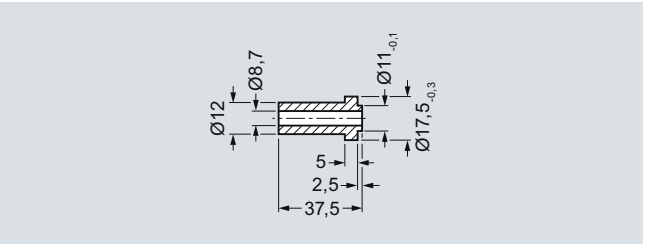
All connection parts are also available grease-free for oxygen.

Selection and Ordering data	Order No.
Threaded flange pair G½	
• with stainless steel gasket	**7MF9007-4CA**
• grease-free for oxygen, with stainless steel gasket	**7MF9007-4DA**
Scope of delivery:	
2x threaded flanges G½ to DIN 19207; material: P250GH (mat. No. 1.0460)	
4x hexagon screws M10x45 to DIN EN 24014; Material: C35E (mat. No. 1.1181)	
4x hexagon screws M10x50 to DIN EN 24032	
1x gasket G½ (7MF9007-6BA) grooved, to DIN 19207; Material: X 6 CrNiMoTi 17 12 2 (mat. No. 14571/316Ti)	
Only for 7MF9007-4CA!	
1x gasket G½ (7MF9k007-6CA), grease-free for oxygen, grooved, to DIN 19207; Material: X 6 CrNiMoTi 17 12 2 (mat. No. 14571/316Ti)	
Only for 7MF9007-4DA!	
Nipple G½	
to DIN 19207	
• Material: 16 Mo 3 (mat. No. 1.5415)	**7MF9007-4KA**
• grease-free for oxygen, Material: X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)	**7MF9007-4LA**
Union nut 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)	**7MF9007-6BA**
• grease-free for oxygen, Material: X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)	**7MF9007-6CA**

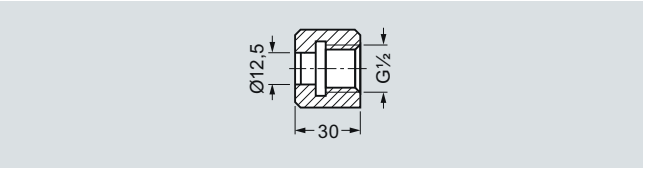
Dimensional drawings



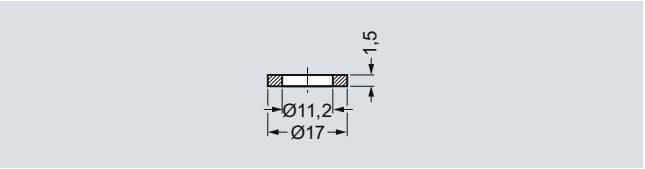
Threaded flange 7MF9007-4CA/-4DA, dimensions in mm



Nipple G½ 7MF9007-4KA/-4LA, dimensions in mm



Union nut G½ 7MF9007-4MA/-4NA, dimensions in mm



Gasket 7MF9007-6BA/-6CA, dimensions in mm