SITRANS P measuring instruments for pressure

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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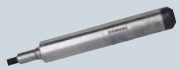
Overview

	Application	Description	Page	Software for Parameterization
SITRANS P – measuring instruments for pressure, absolute pressure, differential pressure, flow and level				
	Two- or three-wire transmitters for measuring gage and absolute pressure	**SITRANS P, Z series** Compact single-range transmitters Analog electronics Available ex stock	2/4	–
	Two- or three-wire transmitters for measuring differential pressure	**SITRANS P250** Compact single-range transmitters Analog electronics Available ex stock	2/12	–
	Two- or three-wire transmitters for measuring gage and absolute pressure	**SITRANS P, ZD series** Range adjustment: 5 : 1 Digital display Available ex stock	2/17	–
	Transmitters for gage and absolute pressure for food, pharmaceuticals and biotechnology	**SITRANS P Compact** Single-range transmitters in 2-wire system Hygiene-based design with various aseptic connections according to EHEDG, FDA and GMP recommendations.	2/21	–
	Two-wire transmitters for measuring gage and absolute pressure	**SITRANS P300** • Hygiene-based design according to EHEDG, FDA and GMP • Parameterization over 3 buttons or communication over HART, PROFIBUS PA or FOUNDATION Fieldbus • Standard process connection G½, ½-NPT and flush-mounted process connections available • Measuring range adjustment 100 : 1	2/28	SIMATIC PDM
	Two-wire transmitters for measuring gage pressure	**SITRANS P300 and DS III series with PMC connection for the paper industry** • Measuring range adjustment 100 : 1 • Process connections for the paper industry • Parameter assignment over 3 buttons and HART, PROFIBUS PA or FOUNDATION Fieldbus	2/47	SIMATIC PDM
	Two-wire transmitters for measuring: • Gage pressure, • Absolute pressure • Differential pressure and • Flow or • Level	**SITRANS P, DS III series** **SITRANS P, DS III PA series** **SITRANS P, DS III FF series** Range adjustment: 100 : 1 Parameterization using: • 3 keys and HART for DS III series • 3 keys and PROFIBUS-PA for DS III PA series • 3 buttons and FOUNDATION Fieldbus for DS III FF series • Available ex stock	2/63	SIMATIC PDM SIMATIC PDM
	Supplementary electronics for adaptation of two-wire transmitters for four-wire connections	Output: 0 or 4 to 20 mA Power supply: 24 V AC/DC, 230 V AC	2/134	–

	Application	Description	Page	Software for Parameterization
	2-wire transmitter for measuring hydrostatic levels	**SITRANS P, MPS series (submersible sensor)** For measuring liquid levels in wells, tanks, channels, dams etc.	2/146	–
	Remote seals for measuring viscous, corrosive or fibrous media (as well as media at extreme temperatures)	Remote seals in sandwich and flange designs Quick-release remote seals for the food industry Wide range of diaphragm materials and filling liquids available	2/150	–
	Shutting off the lines for the medium and differential 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	2/190	–

Z series for gage pressure

Overview

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

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

Benefits

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

Application

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

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

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

Design

The main components of the pressure transmitter are:

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

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

The process connection to DIN EN 837-1 is made of brass and has a male thread G½B or a female thread $G^1/_8B$.

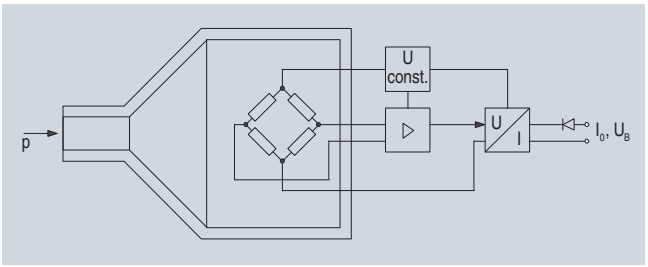
The electrical connection is made using a plug to DIN 43650 with a M16x1.5 cable inlet.

Function

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

The measuring cell is temperature-compensated.

Mode of operation



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

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

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

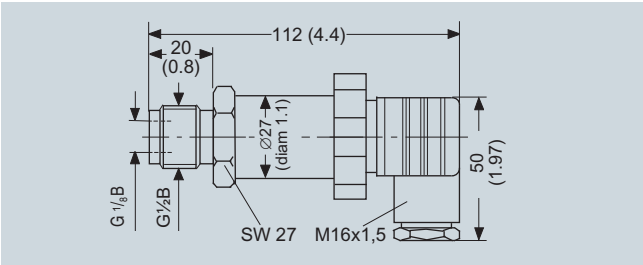
Technical specifications

SITRANS P pressure transmitter, Z series for gage pressure

Mode of operation	
Measuring principle	Thin-film strain gage
Input	
Measured variable	Realtive pressure
Measured range	0 to 16 bar g (0 to 232 psi g) or 0 to 25 bar g (0 to 363 psi g)
Output	
Current output signal	4 ... 20 mA
Measuring accuracy	To EN 60770-1
Error in measurement (at 25 °C (77 °F), including conformity error, hysteresis and repeatability)	0.5% of full-scale value-typical
Response time T_{99}	< 0.1 s
Long-term drift	
• Start of scale	0.3% of full-scale value/year - typical
• Measured span	0.3% of full-scale value/year - typical
Influence of ambient temperature	
• Start of scale	0.3%/10 K (0.3%/10 K) of full-scale value - typical
• Measured span	0.3%/10 K (0.3%/10 K) of full-scale value - typical
Rated conditions	
Medium conditions	
• Process temperature	-30 ... +120 °C (-22 ... +248 °F)
Degree of protection to EN 60529	IP65
Ambient conditions	
• Ambient temperature	-25 ... 85 °C (-13 ... +185 °F)
• Storage temperature	-50 ... 100 °C (-58 ... +212 °F)

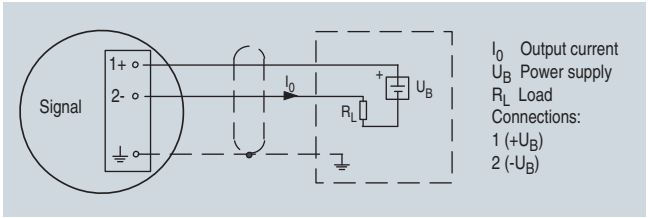
Design	
Weight	≈ 0.2 kg (≈ 0.44 lb)
Wetted parts materials	
• Measuring cell	Al_2O_3 - 96%
• Process connection	Brass, mat. No. 2.0402
• Gasket	Viton
Process connection	Male thread G½B female thread $G^1/_8B$
Power supply	
Terminal voltage on pressure transmitter	
• For current output	10 to 36 V DC
Certificate and approvals	
Classification according to pressure equipment directive (DRGL 97/23/EC)	For gases of fluid group 1 and liquids of fluid 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)

Dimensional drawings



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

Schematics



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

Selection and Ordering data

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

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

Z series for gage and absolute pressure

Overview

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

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

Benefits

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

Application

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

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

Design

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

Measuring range <1 bar (<14.5 psi)

Main components:

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

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

Measuring range ≥1 bar (≥14.5 psi)

Main components:

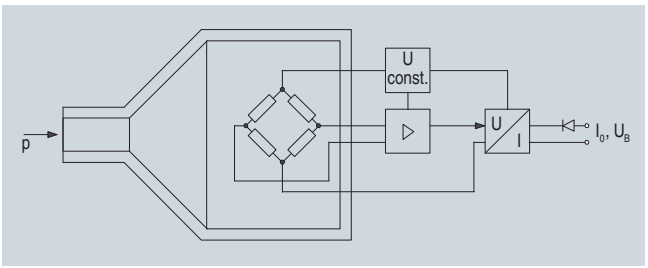
- Stainless steel housing with ceramic measuring cell and electronics module. The temperature-compensated ceramic measuring cell has a thin-film strain gage which is mounted on a ceramic diaphragm. The ceramic diaphragm can also be used for aggressive media.
- Process connection made of stainless steel in diverse designs (see Selection and Ordering data)
- Electrical connection made using a plug to DIN 43650 with the cable inlet M16 x 1.5, ½-14 NPT or round plug connector M12.

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

Function

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

Mode of operation



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

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

Measuring range <1 bar (<14.5 psi)

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

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

Measuring range ≥1 bar (≥14.5 psi)

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

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

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

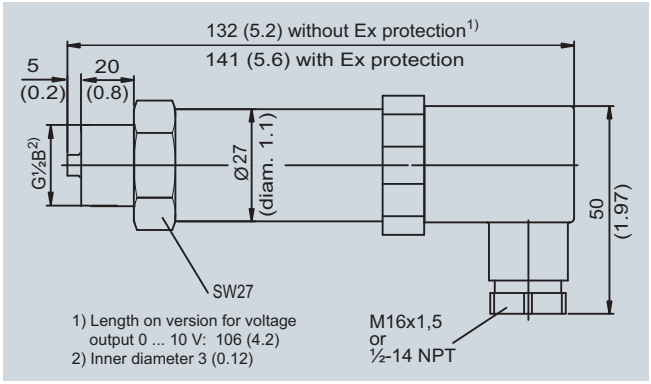
Technical specifications

SITRANS P pressure transmitters, Z series for gage pressure, absolute pressure and level

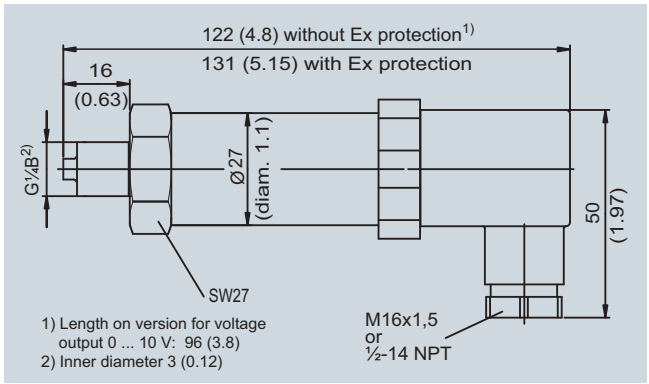
Mode of operation	
• Measuring range <1 bar (<14.5 psi)	Piezo-resistive
• Measuring range ≥1 bar (≥14.5 psi)	Thin-film strain gage
Input	
Measured variable	Gage and absolute pressure
Measured range	
• Pressure	
- Metric	0 ... 400 bar g (0 ... 5802 psi g)
- US measuring range	0 ... 6000 psi g
• Absolute pressure	
- Metric	0 ... 16 bar a (0 ... 232 psi a)
- US measuring range	0 ... 300 psi a
Output	
Output signal	
• Current output signal	4 ... 20 mA
• Voltage output signal (only measuring range ≥ 1 bar (14.5 psi))	0 ... 10 V DC
Accuracy	To EN 60770-1
Error in measurement (at 25 °C (77 °F), including conformity error, hysteresis and repeatability)	0.25% of full-scale value – typical
Response time T_{99}	< 0.1 s
Long-term drift	
• Start of scale	0.25% of full scale value/year
• Full-scale value	0.25% of full scale value/year
Influence of ambient temperature	
• Start of scale	0.25%/10 K (0.25%/10 K) of full-scale value
• Full-scale value	0.25%/10 K (0.25%/10 K) of full-scale value
Rated operating conditions	
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	IP65
Design	
Weight	≈ 0.25 kg (≈ 0.55 lb)
Wetted parts materials	
• Measuring cell	
- Measuring range <1 bar (<14.5 psi)	Stainless steel, 1.4571/316Ti
- Measuring range ≥1 bar (≥14.5 psi)	Al_2O_3 – 96%
• Process connection	Stainless steel, mat. No. 1.4571/316Ti
• Gasket	Viton
Process connection	See Selection and Ordering data

Power supply U_H	
Terminal voltage on pressure transmitter	
• For current output	10 ... 36 V DC
• For voltage output signal (only measuring range ≥ 1 bar (14.5 psi))	15 ... 36 V DC
Certificate and approvals	
Classification according to pressure equipment directive (DRGL 97/23/EC)	For gases of fluid group 1 and liquids of fluid 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)
Explosion protection	
• Intrinsic safety "i" (only with current output)	TÜV 02 ATEX 1953X
- Identification	Ex II 1/2G EEx ia IIC T4
• Intrinsic safety "T.I.I.S." (only with current output)	applied
Lloyds Register of Shipping	Certificate No. 03/30003

Dimensional drawings

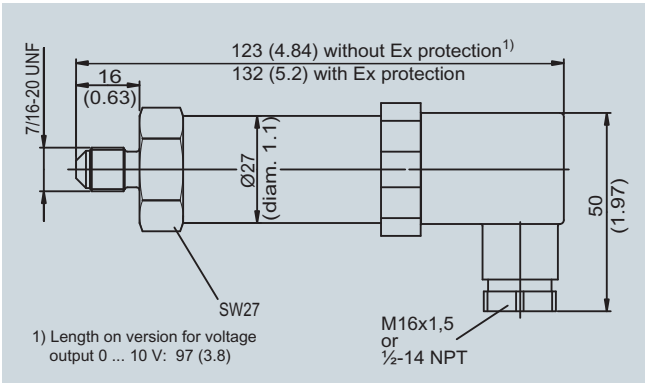


Pressure transmitter 7MF1564-... with process connection G½" male, dimensions in mm (inch)

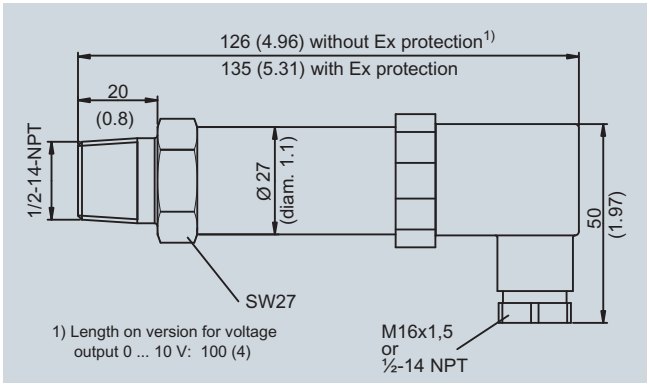


Pressure transmitter 7MF1564-... with process connection G¼" male, dimensions in mm (inch)

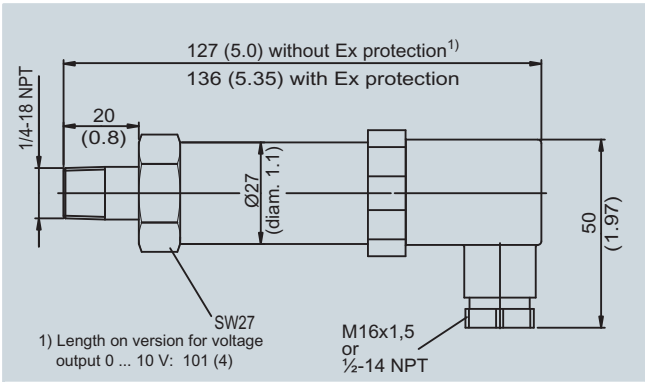
Z series for gage and absolute pressure



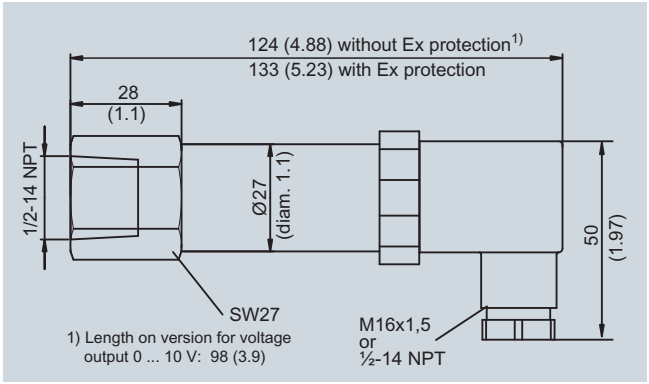
Pressure transmitter 7MF1564-... with process connection 7/16-20 UNF male, dimensions in mm (inch)



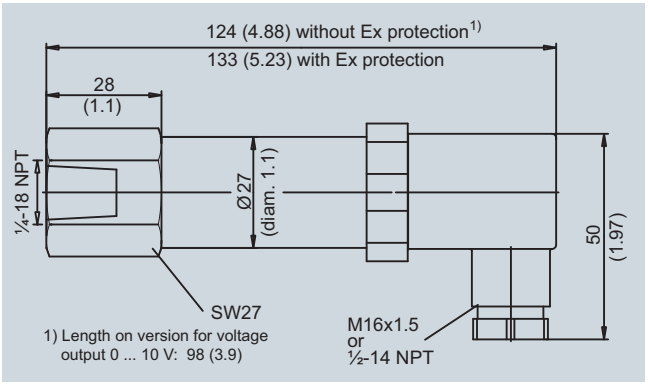
Pressure transmitter 7MF1564-... with process connection ½"-14 NPT male, dimensions in mm (inch)



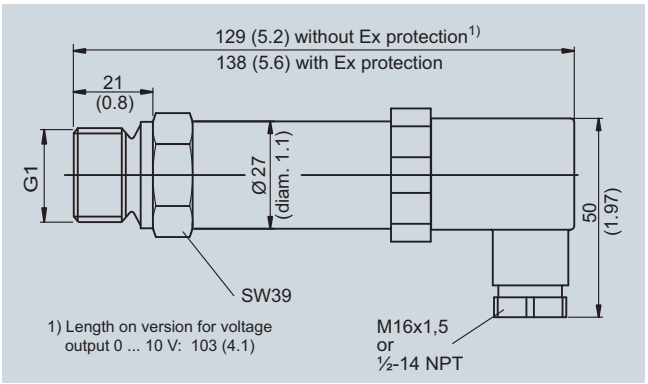
Pressure transmitter 7MF1564-... with process connection ¼"-18 NPT male, dimensions in mm (inch)



Pressure transmitter 7MF1564-... with process connection ½"-14 NPT female, dimensions in mm (inch)

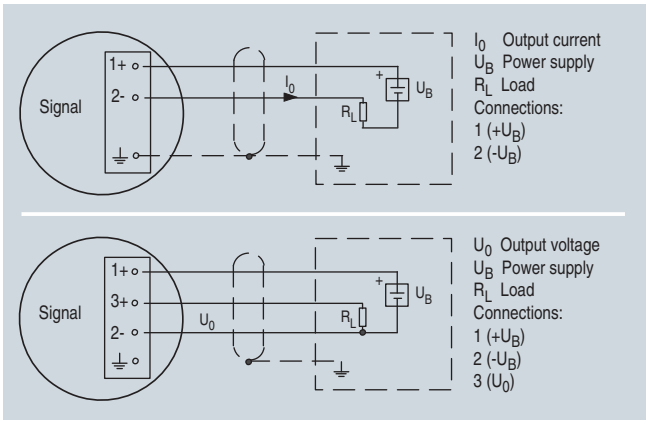


Pressure transmitter 7MF1564-... with process connection ¼"-18 NPT female, dimensions in mm (inch)



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

Schematics



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

Selection and Ordering data

SITRANS P pressure transmitters for pressure, series Z for gage and absolute pressure
2 or 3-wire system, rising characteristic curve

Order No. D) 7 MF 1 5 6 4 - ■■■■ - ■■■ 1 ■■■ Order code

Measuring range		perm. working pressure Min.		perm. working pressure Max.		Burst pressure			Order code
For gage pressure									
with metal measuring cell									
0 ... 100 mbar g	(0 ... 1.45 psi g)	-0,6 bar g	(-8.7 psi g)	0,6 bar g	(8.7 psi g)	1 bar g	(14.5 psi g)	▶	3 A A 0
0 ... 160 mbar g	(0 ... 2.32 psi g)	-0,6 bar g	(-8.7 psi g)	0,6 bar g	(8.7 psi g)	1 bar g	(14.5 psi g)	▶	3 A B 0
0 ... 250 mbar g	(0 ... 3.63 psi g)	-1 bar g	(-14.5 psi g)	1 bar g	(14.5 psi g)	1.7 bar g	(25 psi g)	▶	3 A C 0
0 ... 400 mbar g	(0 ... 5.80 psi g)	-1 bar g	(-14.5 psi g)	1 bar g	(14.5 psi g)	1.7 bar g	(25 psi g)	▶	3 A D 0
0 ... 600 mbar g	(0 ... 8.70 psi g)	-1 bar g	(-14.5 psi g)	3 bar g	(43.5 psi g)	5 bar g	(72 psi g)	▶	3 A G 0
Other version for measuring range < 1 bar (< 14.5 psi g), add Order code and plain text: measuring range: ... up to ... mbar g (psi g)[1]									9 A C 0 H 1 Y
with ceramic measuring cell									
0 ... 1 bar g	(0 ... 14.5 psi g)	-0,4 bar g	(-5.8 psi g)	2 bar g	(30 psi g)	5 bar g	(72 psi g)	▶	3 B A
0 ... 1.6 bar g	(0 ... 23.2 psi g)	-0,4 bar g	(-5.8 psi g)	3,2 bar g	(45 psi g)	5 bar g	(72 psi g)	▶	3 B B
0 ... 2.5 bar g	(0 ... 36.3 psi g)	-0,8 bar g	(-11.6 psi g)	5 bar g	(72 psi g)	12 bar g	(175 psi g)	▶	3 B D
0 ... 4 bar g	(0 ... 58.0 psi g)	-0,8 bar g	(-11.6 psi g)	8 bar g	(115 psi g)	12 bar g	(175 psi g)	▶	3 B E
0 ... 6 bar g	(0 ... 87.0 psi g)	-1 bar g	(-14.5 psi g)	12 bar g	(175 psi g)	25 bar g	(360 psi g)	▶	3 B G
0 ... 10 bar g	(0 ... 145 psi g)	-1 bar g	(-14.5 psi g)	20 bar g	(290 psi g)	50 bar g	(725 psi g)	▶	3 C A
0 ... 16 bar g	(0 ... 232 psi g)	-1 bar g	(-14.5 psi g)	32 bar g	(460 psi g)	50 bar g	(725 psi g)	▶	3 C B
0 ... 25 bar g	(0 ... 363 psi g)	-1 bar g	(-14.5 psi g)	50 bar g	(725 psi g)	120 bar g	(1750 psi g)	▶	3 C D
0 ... 40 bar g	(0 ... 580 psi g)	-1 bar g	(-14.5 psi g)	80 bar g	(1150 psi g)	120 bar g	(1750 psi g)	▶	3 C E
0 ... 60 bar g	(0 ... 870 psi g)	-1 bar g	(-14.5 psi g)	120 bar g	(1750 psi g)	250 bar g	(3600 psi g)	▶	3 C G
0 ... 100 bar g	(0 ... 1450 psi g)	-1 bar g	(-14.5 psi g)	200 bar g	(2900 psi g)	450 bar g	(6525 psi g)	▶	3 D A
0 ... 160 bar g	(0 ... 2320 psi g)	-1 bar g	(-14.5 psi g)	320 bar g	(4640 psi g)	450 bar g	(6525 psi g)	▶	3 D B
0 ... 250 bar g	(0 ... 3626 psi g)	-1 bar g	(-14.5 psi g)	500 bar g	(7250 psi g)	650 bar g	(9425 psi g)	▶	3 D D
0 ... 400 bar g	(0 ... 5802 psi g)	-1 bar g	(-14.5 psi g)	600 bar g	(8700 psi g)	650 bar g	(9425 psi g)	▶	3 D E
Other version for measuring range ≥ 1 bar g (≥ 14.5 psi g), add Order code and plain text: measuring range: ... up to... bar (psi g)[1]									9 A A H 1 Y
For absolute pressure									
0 ... 600 mbar a	(0 ... 8.7 psi a)	0 bar a	(0 psi a)	3 bar a	(43.5 psi a)	5 bar a	(72 psi a)	▶ J)	5 A G 0
0 ... 1 bar a	(0 ... 14.5 psi a)	0 bar a	(0 psi a)	2 bar a	(30 psi a)	5 bar a	(72 psi a)	▶ J)	5 B A
0 ... 1.6 bar a	(0 ... 23.2 psi a)	0 bar a	(0 psi a)	3,2 bar a	(45 psi a)	5 bar a	(72 psi a)	▶ J)	5 B B
0 ... 2.5 bar a	(0 ... 36.3 psi a)	0 bar a	(0 psi a)	5 bar a	(72 psi a)	12 bar a	(175 psi a)	▶ J)	5 B D
0 ... 4 bar a	(0 ... 58.0 psi a)	0 bar a	(0 psi a)	8 bar a	(115 psi a)	12 bar a	(175 psi a)	▶ J)	5 B E
0 ... 6 bar a	(0 ... 87.0 psi a)	0 bar a	(0 psi a)	12 bar a	(175 psi a)	25 bar a	(360 psi a)	▶ J)	5 B G
0 ... 10 bar a	(0 ... 145 psi)	0 bar a	(0 psi a)	20 bar a	(290 psi a)	50 bar a	(725 psi a)	▶ J)	5 C A
0 ... 16 bar a	(0 ... 232 psi)	0 bar a	(0 psi a)	32 bar a	(460 psi a)	50 bar a	(725 psi a)	▶ J)	5 C B
Other version for measuring range < 1 bar (< 14.5 psi a), add Order code and plain text: measuring range: ... up to ... mbar a (psi a)								J)	9 A B 0 H 1 Y

▶ Available ex stock

D) Subject to export regulations AL: N, ECCN: EAR99H.
J) Subject to export regulations AL: 9I999, ECCN: EAR99.

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

Please note:

- It is not possible to have a smaller span than the smallest span of the device of the entire device range.
- The value must not fall below the minimum permissible operating pressure of the special measuring range of the selected measuring cell.
- The required span of the device must lie between the smallest and the largest possible span of the entire device range.

Z series for gage and absolute pressure

Selection and Ordering data

SITRANS P pressure transmitters for pressure, series Z for pressure and absolute pressure
2 or 3-wire system, rising characteristic curve

Order No. D) 7 MF 1 5 6 4 - ■■■■■ - ■■■ 1 ■■■ Order code

Measuring range	Perm. working pressure min.	Perm. working pressure max.	Burst pressure		Order code
Measuring ranges for gage pressure (only for US market)					
(0 ... 10 psi g)	(-3 psi g)	(20 psi g)	(60 psi g)		4 B A
(0 ... 15 psi g)	(-6 psi g)	(30 psi g)	(72 psi g)		4 B B
(3 ... 15 psi g)	(-6 psi g)	(30 psi g)	(72 psi g)		4 B C
(0 ... 20 psi g)	(-6 psi g)	(40 psi g)	(72 psi g)		4 B D
(0 ... 30 psi g)	(-6 psi g)	(60 psi g)	(72 psi g)		4 B E
(0 ... 60 psi g)	(-11.5 psi g)	(120 psi g)	(175 psi g)		4 B F
(0 ... 100 psi g)	(-14.5 psi g)	(200 psi g)	(360 psi g)		4 B G
(0 ... 150 psi g)	(-14.5 psi g)	(300 psi g)	(725 psi g)		4 C A
(0 ... 200 psi g)	(-14.5 psi g)	(400 psi g)	(725 psi g)		4 C B
(0 ... 300 psi g)	(-14.5 psi g)	(600 psi g)	(1750 psi g)		4 C D
(0 ... 500 psi g)	(-14.5 psi g)	(1000 psi g)	(1750 psi g)		4 C E
(0 ... 750 psi g)	(-14.5 psi g)	(1500 psi g)	(3600 psi g)		4 C F
(0 ... 1000 psi g)	(-14.5 psi g)	(2000 psi g)	(3600 psi g)		4 C G
(0 ... 1500 psi g)	(-14.5 psi g)	(3000 psi g)	(6525 psi g)		4 D A
(0 ... 2000 psi g)	(-14.5 psi g)	(4000 psi g)	(6525 psi g)		4 D B
(0 ... 3000 psi g)	(-14.5 psi g)	(6000 psi g)	(9425 psi g)		4 D D
(0 ... 5000 psi g)	(-14.5 psi g)	(8700 psi g)	(9425 psi g)		4 D E
(0 ... 6000 psi g)	(-14.5 psi g)	(8700 psi g)	(9425 psi g)		4 D F
Other version, add Order code and plain text: Measuring range: ... up to ... psi g					9 B A H 1 Y
Measuring ranges for absolute pressure (only for US market)					
(0 ... 10 psi a)	(0 psi a)	(20 psi a)	(60 psi a)	J)	6 A G
(0 ... 15 psi a)	(0 psi a)	(30 psi a)	(72 psi a)	J)	6 B A
(0 ... 20 psi a)	(0 psi a)	(40 psi a)	(72 psi a)	J)	6 B B
(0 ... 30 psi a)	(0 psi a)	(60 psi a)	(72 psi a)	J)	6 B D
(0 ... 60 psi a)	(0 psi a)	(120 psi a)	(175 psi a)	J)	6 B E
(0 ... 100 psi a)	(0 psi a)	(200 psi a)	(360 psi a)	J)	6 B G
(0 ... 150 psi a)	(0 psi a)	(300 psi a)	(725 psi a)	J)	6 C A
(0 ... 200 psi a)	(0 psi a)	(400 psi a)	(725 psi a)	J)	6 C B
(0 ... 300 psi a)	(0 psi a)	(600 psi a)	(1725 psi a)	J)	6 C C
Other version, add Order code and plain text: Measuring range: ... up to ... psi a				J)	9 B B H 1 Y
Output signal					
4 ... 20 mA;C 2-wire system; power supply 10 ... 36 V DC				►	0
0 ... 10 V; 3-wire system; power supply 15 ... 36 V DC					1 0
Explosion protection					
Without				►	0
With explosion protection Ex II 1/2 G EEx ia IIC T4 (only for version 4 ... 20 mA; 2-wire system; power supply 10 ... 30 V DC)					1
With explosion protection "Intrinsic safety T.I.I.S." (available soon)					2
Electrical connection					
Plug to DIN 43650, Form A, cable inlet M16 x 1.5				►	1
Round connector M12, IP67					2
Plug to DIN 43650, cable inlet ½-14 NPT					3
Plug to DIN 43650, cable inlet Pg11					4
Cable gland Pg11 with 2 m PE cable, IP68					6
Special version (specify Order code and plain text)					9 N 1 Y

► Available ex stock

D) Subject to export regulations AL: N, ECCN: EAR99H.
J) Subject to export regulations AL: 9I999, ECCN: EAR99.

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

► Available ex stock D) Subject to export regulations AL: N, ECCN: EAR99H.

SITRANS P250 for differential pressure

Overview

SITRANS P250 transmitter for differential pressure

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

Benefits

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

Application

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

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

Design

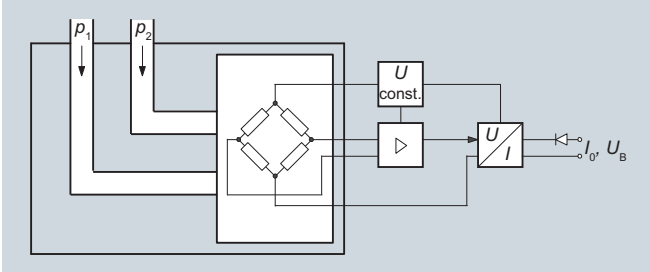
Main components:

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

Function

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

Mode of operation



SITRANS P250 pressure transmitter, function diagram

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

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

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

Technische Daten

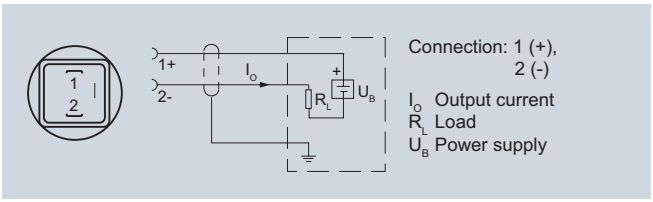
SITRANS P250 differential pressure transmitter

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 (363 psi) at a differential pressure range < 6 bar (87 psi) ≤ 50 bar (725 psi) at a differential pressure range > 10 bar (145 psi)
Burst pressure	1.5 x operating pressure
Output	
Output signal	
• Current output signal	4 ... 20 mA
• Voltage output signal	0 ... 5 V and 0 ... 10 V DC
Load	
3-wire	> 10 kΩ
2-wire	≤ (U_H - 11 V) / 0.02 A
Measuring accuracy	
Dynamic behavior (at 25°C (77°F), including conformity error, hysteresis and repeatability)	≤ 1 % of typical full-scale value, see "Measuring range" table
Long-term drift 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 %/10 K for measuring cell 0 ... 0.1 bar (1.45 psi))
• Full-scale value	≤ 0.22 %/10 K of full-scale value (≤ 0.37 %/10 K for measuring cell 0 ... 0.1 bar (1.45 psi))
Dynamic behavior	Suitable for static and dynamic measurements
Response time T_{99}	< 5 ms
Load variation	< 50 Hz

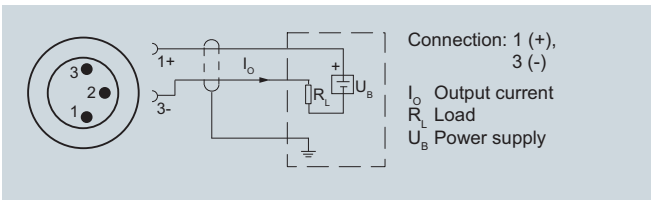
Conditions of use	
Ambient conditions	
• Temperature of medium	-15 ... +85 °C (5 ... 185 °F)
• Ambient temperature	-15 ... +85 °C (5 ... 185 °F)
• Storage temperature	-40 ... +85 °C (-40 ... +185 °F)
Degree of protection acc. to EN 60529	IP65
Mounting position	Any
Mounting	Mounting bracket, included 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	Stainless steel 1.4305/AISI 303, CuZn nickel-plated
• Process connection	Approx. 430 g (approx. 0.95 lb)
• 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. permissible operating pressure (on either side)	Burst pressure	Max. permissible operating pressure (on one side)	Accuracy
[bar]	[psi]				
0 ... 0.1	0 ... 1.45	25 bar (363 psi)	37,5 bar (544 psi)	0.6 bar (8.7 psi)	≤ 1,0 %
0 ... 0.2	0 ... 2.9	25 bar (363 psi)	37,5 bar (544 psi)	0.6 bar (8.7 psi)	≤ 1,0 %
0 ... 0.25	0 ... 3.63	25 bar (363 psi)	37,5 bar (544 psi)	0.6 bar (8.7 psi)	≤ 0,5 %
0 ... 0.3	0 ... 4.35	25 bar (363 psi)	37,5 bar (544 psi)	0.6 bar (8.7 psi)	≤ 0,5 %
0 ... 0.4	0 ... 5.8	25 bar (363 psi)	37,5 bar (544 psi)	1.2 bar (17.4 psi)	≤ 0,8 %
0 ... 0.5	0 ... 7.25	25 bar (363 psi)	37,5 bar (544 psi)	1.2 bar (17.4 psi)	≤ 0,5 %
0 ... 0.6	0 ... 8.7	25 bar (363 psi)	37,5 bar (544 psi)	1.2 bar (17.4 psi)	≤ 0,5 %
0 ... 1.0	0 ... 14.5	25 bar (363 psi)	37,5 bar (544 psi)	2 bar (29 psi)	≤ 0,5 %
0 ... 1.6	0 ... 23.2	25 bar (363 psi)	37,5 bar (544 psi)	3.2 bar (46.4 psi)	≤ 0,5 %
0 ... 2.5	0 ... 36.3	25 bar (363 psi)	37,5 bar (544 psi)	5 bar (72.5 psi)	≤ 0,5 %
0 ... 4	0 ... 58	25 bar (363 psi)	37,5 bar (544 psi)	8 bar (116 psi)	≤ 0,5 %
0 ... 6	0 ... 87	25 bar (363 psi)	37,5 bar (544 psi)	12 bar (174 psi)	≤ 0,5 %
0 ... 10	0 ... 145	50 bar (725 psi)	75 bar (1088 psi)	20 bar (290 psi)	≤ 0,5 %
0 ... 16	0 ... 232	50 bar (725 psi)	75 bar (1088 psi)	32 bar (464 psi)	≤ 0,5 %
0 ... 25	0 ... 363	50 bar (725 psi)	75 bar (1088 psi)	50 bar (725 psi)	≤ 0,5 %

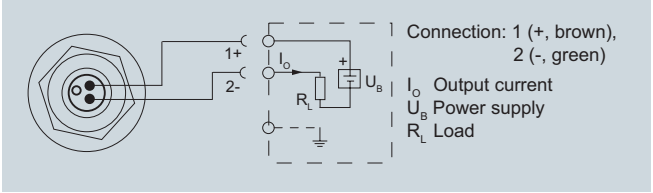
Schematics



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

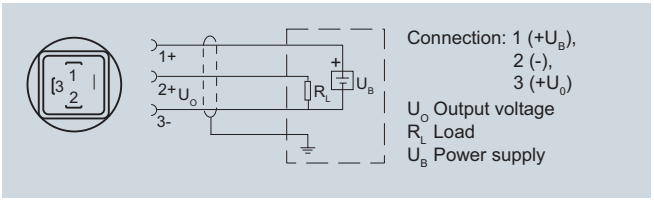


Connection with current output 4 ... 20 mA and round connector

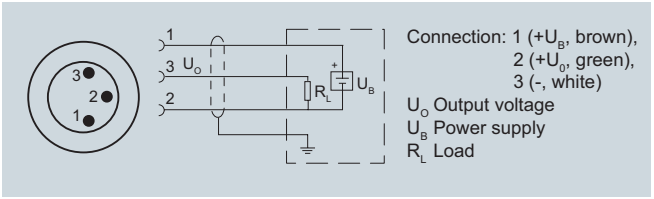


Connection with current output 4 ... 20 mA and permanently fixed cable

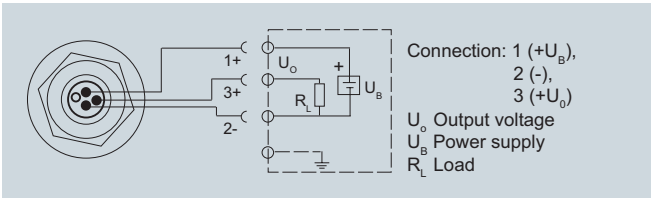
SITRANS P250 for differential pressure



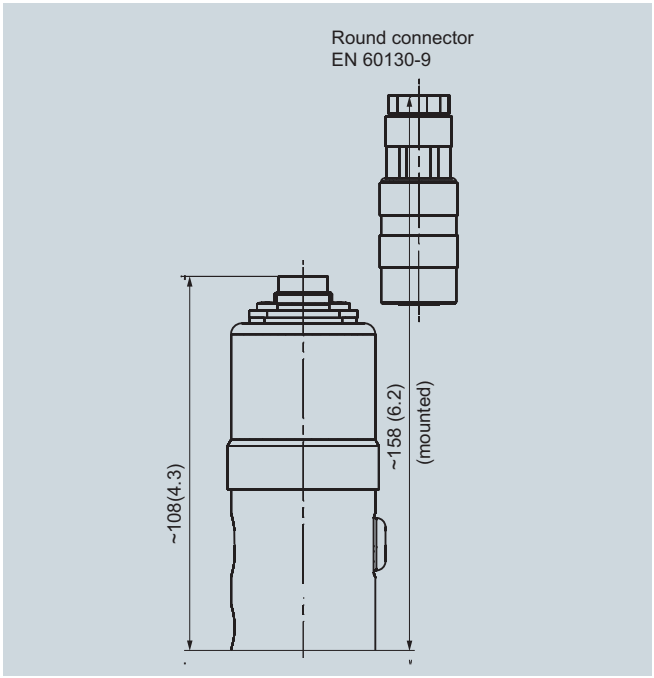
Connection with voltage output 0 ... 5 V DC (0 ... 10 V DC) and plug to EN 175301-803-A



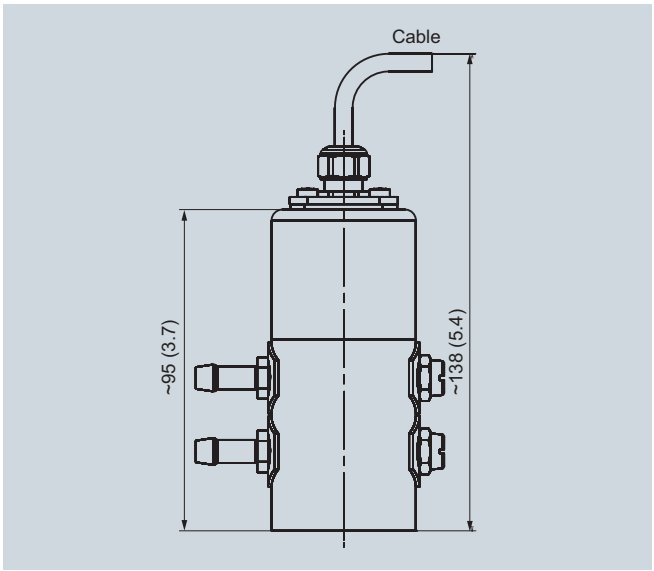
Connection with voltage output 0 ... 5 V DC (0 ... 10 V DC) and round connector



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

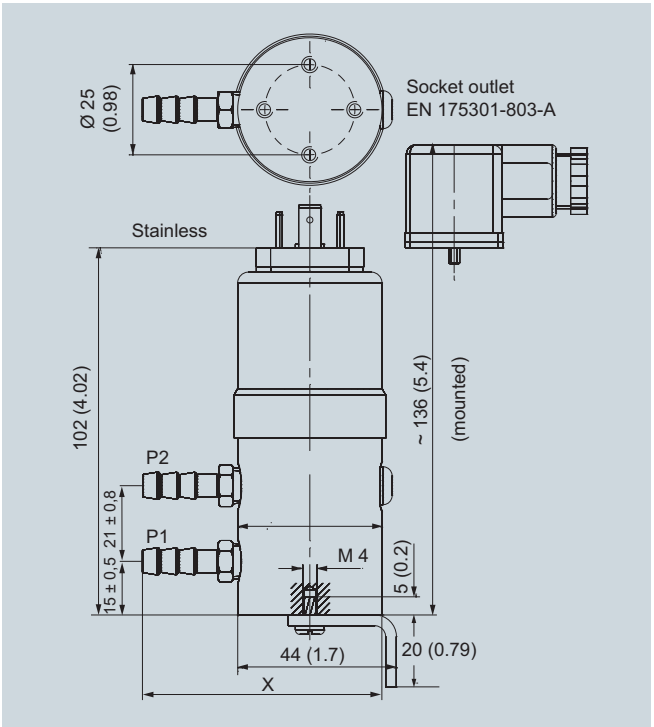


SITRANS P250 differential pressure transmitter with round connector to EN 60130-9, dimensions in mm (inch)

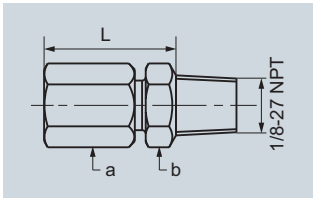
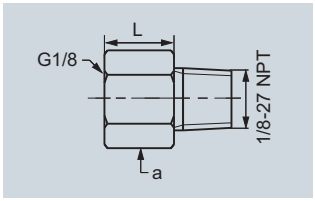
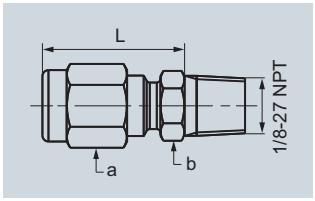
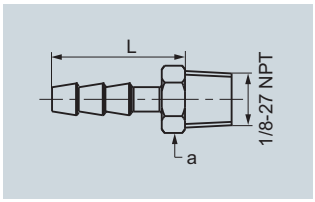
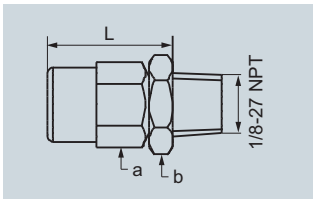
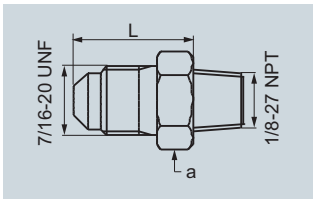


SITRANS P250 differential pressure transmitter with cable, dimensions in mm (inch)

Dimensional drawings



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

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

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 ... 1.45 psi)	►		**3AA**
0 ... 0.2 bar (0 ... 2.90 psi)	►		**3AC**
0 ... 0.25 bar (0 ... 3.63 psi)	►		**3AD**
0 ... 0.3 bar (0 ... 5.35 ps)	►		**3AE**
0 ... 0.4 bar (0 ... 5.80 psi)	►		**3AF**
0 ... 0.5 bar (0 ... 7.25 psi)	►		**3AG**
0 ... 0.6 bar (0 ... 8.70 psi)	►		**3AH**
0 ... 1.0 bar (0 ... 14.5 psi)	►		**3BA**
0 ... 1.6 bar (0 ... 23.2 psi)	►		**3BB**
0 ... 2.5 bar (0 ... 36.3 psi)	►		**3BD**
0 ... 4.0 bar (0 ... 58.0psi)	►		**3BE**
0 ... 6.0 bar (0 ... 87.0 psi)	►		**3BG**
0 ... 10.0 bar (0 ... 145 psi)	►		**3CA**
0 ... 16.0 bar (0 ... 232 psi)	►		**3CB**
0 ... 25.0 bar (0 ... 363 psi)	►		**3CD**
Output signal			
4 ... 20 mA	►		**0**
0 ... 5 V DC			**1**
0 ... 10 V DC			**2**
Electrical connection			
• Plug acc. to EN 175 301-803-A (suitable coupling included in scope of delivery)	►		**1**
• Round connector acc. to EN 60139-9			**2**
• Cable 1.5 m with cable gland			**3**
Process connection			
• Without connections, female thread 1/8-27 NPT	►		**A**
• Hose connection			
- CuZn nickel-plated, for hose Ø 4 mm			**B**
- CuZn nickel-plated, for hose Ø 6 mm			**C**
- PVDF, for hose Ø 6 mm			**D**
• Pipe union			
- CuZn nickel-plated, for pipe Ø 6 mm			**E**
- Stainless steel 1.4304, for pipe Ø 6 mm			**F**
- CuZn nickel-plated, for pipe Ø 8 mm			**G**
- Stainless steel 1.4304, for pipe Ø 8 mm			**H**
• Male thread, 7/16-20 UNF (CuZn nickel-plated)			**L**
• Adapter			
- Inner, G1/8 (stainless steel), for pipe Ø 6 mm			**M**
- Outer, with union nut, for pipe Ø 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**
Weitere Ausführungen Please add "-Z" to Order No. and specify Order code(s).		Kurzangabe	
Quality inspection certificate (Factory calibration) to IEC 60770-2 supplied		**C11**	

► Available ex stock

Overview

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

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

Benefits

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

Application

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

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

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

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

Design

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

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

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

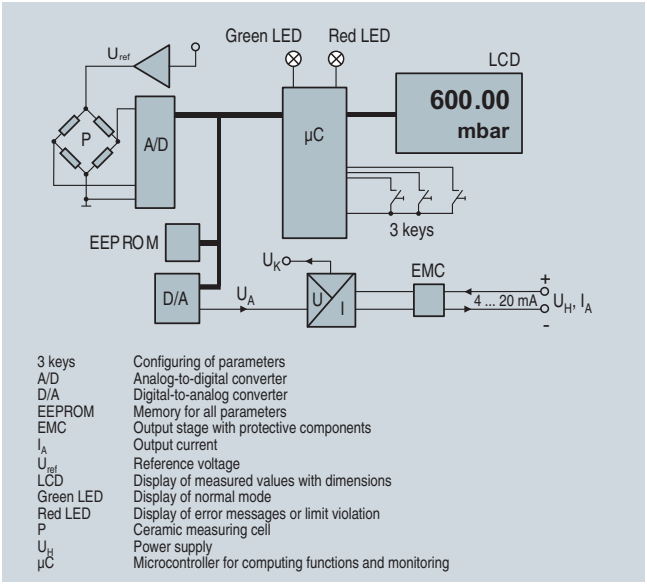
At the front of the housing is the 5-digit display behind a glass cover. Underneath the display are the 3 keys for parameterizing the pressure transmitter. Above the display are a green and a red LED for indicating the operating status.

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

In the radial version (type A) the display is fitted in parallel with the process connection. The display can be rotated by up to ±120° relative to the process connection.

In the axial version (type B) the display is at right angles to the process connection. The display can be rotated by 360° relative to the process connection.

Function



3 keys	Configuring of parameters
A/D	Analog-to-digital converter
D/A	Digital-to-analog converter
EEPROM	Memory for all parameters
EMC	Output stage with protective components
I_A	Output current
U_{ref}	Reference voltage
LCD	Display of measured values with dimensions
Green LED	Display of normal mode
Red LED	Display of error messages or limit violation
P	Ceramic measuring cell
U_H	Power supply
µC	Microcontroller for computing functions and monitoring

SITRANS P pressure transmitters, ZD series, mode of operation

Mode of operation

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

The measuring cell is temperature-compensated.

Functions

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

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

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

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

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

ZD series for gage and absolute pressure

- Upper and lower current saturation limit
- Electrical damping

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

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

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

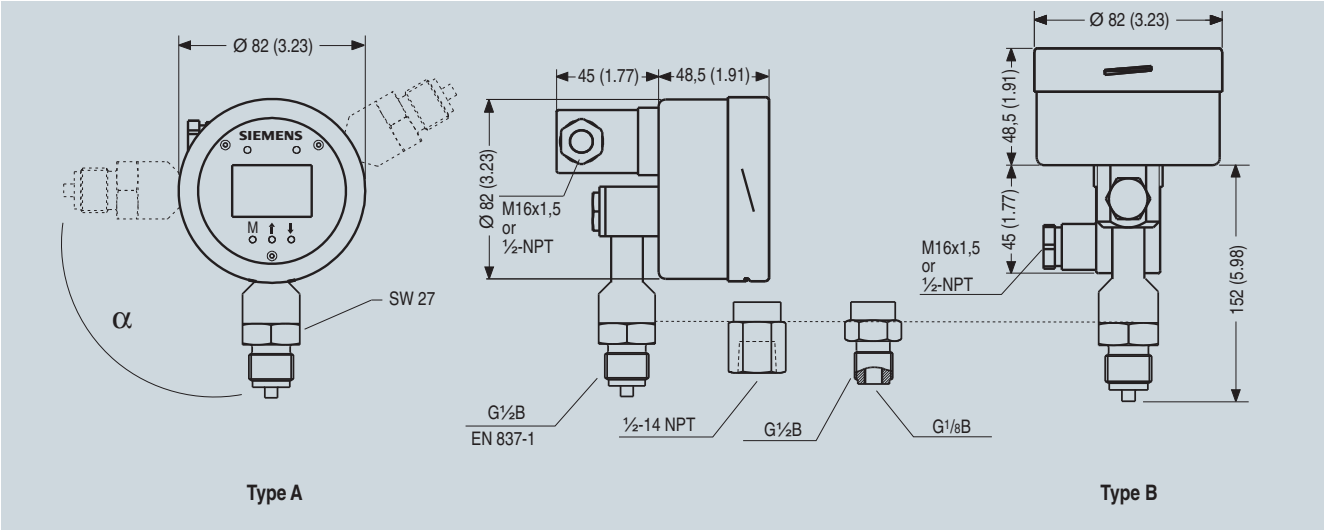
Technical specifications

SITRANS P pressure transmitters, ZD series

Mode of operation	
Measuring principle	Thin-film strain gage
Input	
Measured variable	Gage and absolute pressure
Measured range	Resolution
0 ... 2 bar (0 ... 29 psi)	0.6 mbar (0.008 psi)
0 ... 10 bar (0 ... 145 psi)	3 mbar (0.044 psi)
0 ... 50 bar (0 ... 725 psi)	15 mbar (0.218 psi)
0 ... 200 bar (0 ... 2900 psi)	60 mbar (0.9 psi)
0 ... 400 bar (0 ... 5800 psi)	120 mbar (1.8 psi)
Measured range	Overload limit
0 ... 2 bar (0 ... 29 psi)	5 bar (72.5 psi)
0 ... 10 bar (0 ... 145 psi)	25 bar (363 psi)
0 ... 50 bar (0 ... 725 psi)	120 bar (1740 psi)
0 ... 200 bar (0 ... 2900 psi)	500 bar (7250 psi)
0 ... 400 bar (0 ... 5800 psi)	600 bar (8700 psi)
Range adjustment (turndown)	5:1
Output	
Output signal	4 ... 20 mA
Lower current limit	min. 3.6 mA
Upper current limit	max. 23 mA
Output protected against	Reversed polarity, overvoltage and short-circuiting
Max. load	$R_B = (U_H - 12\ V) / 0.023\ A$
Voltage measurement	Linear rising
Measuring accuracy	To EN 60770-1
Error in measurement (including non-linearity, hysteresis and repeatability, at 25 °C (77 °F))	< 0.25% of full-scale value (typical), max. 0.5%
Adjustment time	< 100 ms
Long-term drift	0.25% of full scale value/year
Influence of ambient temperature	< ±0.25%/10 K (< ±0.25%/10 K) of full-scale value
Vibration influence	0.05%/g to 500 Hz in all directions (to IEC 68-2-64)
Power supply effect	< ±0.01%/V of full-scale value

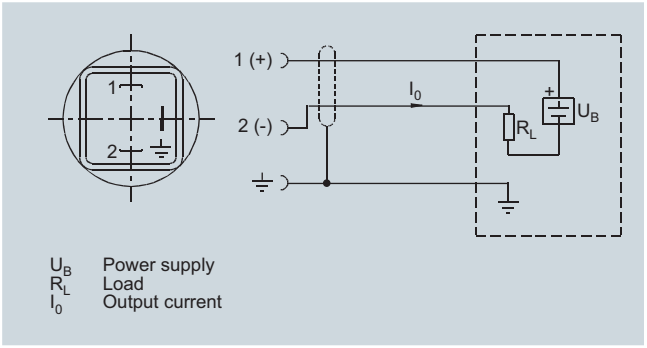
Rated conditions	
Ambient conditions	
• Ambient temperature	-25 ... +85 °C (-13 ... +185 °F)
• Storage temperature	-40 ... +85 °C (-40 ... +185 °F)
Medium conditions	
• Process temperature	-30 ... +100 °C (-22 ... +212 °F)
Degree of protection	IP65 to EN 60529
Electromagnetic compatibility	
• Emitted interference and interference immunity	To EN 61326/A1 appendix A (1998)
Displays and controls	
Display	LCD, max. 5 digits, digit height 9 mm
Decimal point	Freely parameterizable
Limit values	Freely parameterizable
Limit violation display	Red LED and message on LCD (↑ symbol /↓ symbol in case of limit violation in upward / downward direction)
Parameterization	With 3 keys
Units	mA or % or physical variable (default setting: bar)
	Other dimensions: mbar, kPa, MPa, mmH_20, mH_20, psi, inH_20, mmHg, kg/cm^2, torr, atm
Damping	Between 0.1 and 100 s (increment: 0.1 s) freely parameterizable
Design	
Weight	≈0.6 kg (≈1.32 lb)
Electrical connection	Using 2-pole plug connector with M16x1.5-Cable inlet to EN 175301-803A, plastic
Process connection	• Male thread G½B and female thread $G^1/_8B$
	• G½B to EN 837-1
	• Female thread: ½-14 NPT
Version of housing/process connection	• Radial (type A), can be swiveled by max. ±120° (α)
	• Axial (type B), can be swiveled by max. ±360°
Material	
Non-wetted parts materials	
• Field housing	Ø 80 mm (3.15 inch), stainless steel mat. No. 1.4016
• Cover	Stainless steel, mat. No. 1.4016 with glass
Wetted parts materials	
• Measuring cell	Al_2O_3
• Gasket	Viton
• Process connection	Stainless steel, mat. No. 1.4571/316Ti
Power supply	
Terminal voltage on pressure transmitter (U_H)	12 ... 30 V DC
Certificate and approvals	
Classification according to pressure equipment directive 97/23/EC	For gases of fluid group 1 and liquids of fluid 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)

Dimensional drawings



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

Schematics



SITRANS P pressure transmitters, ZD series, connection diagram

ZD series for gage and absolute pressure

Selection and Ordering data		Order No. Ord. Code
SITRANS P pressure transmitters, ZD series for gage and absolute pressure		7MF1580-
Conformity error 0.25%, range adjustment 1 : 5 (max. 1 : 10), housing and process connection made of stainless steel, membrane made of ceramic, 2-wire system, output 4 ... 20 mA		0
Input variable		
Gage pressure	▶	1
Absolute pressure	▶ F)	2
Measured range / **Span**		
0 ... 2 bar (0 ... 29 psi) / 0 ... 0.4 / 2 bar (0 ... 5.8 / 29 psi)	▶	D
0 ... 10 bar (0 ... 145 psi) / 0 ... 2 / 10 bar (0 ... 5.8 / 145 psi)	▶	E
0 ... 50 bar (0 ... 725 psi) / 0 ... 10 / 50 bar (0 ... 145 / 725 psi)	▶	F
0 ... 200 bar (0 ... 2900 psi) / 0 ... 40 / 200 bar (0 ... 580 / 2900 psi)	▶	G
0 ... 400 bar (0 ... 5800 psi) / 0 ... 80 / 400 bar (0 ... 1160 / 5800 psi)	▶	H
Other version (on request) add Order Code and plain text: Process connection:		Z J1Y
Process connection		
G½B male thread and $G^1/_8$B female thread	▶	A
G½B to EN 837-1	F)	B
Female thread ½-14 NPT	F)	C
G 1“ male thread	F)	M
Design		
Process connection vertically downwards, thread in connector M16x1.5	▶	1
Process connection horizontally to rear, thread in connector M16x1.5		2
Process connection vertically downwards, thread in connector ½"-14 NPT	▶	3
Process connection horizontally to rear, thread in connector ½"-14 NPT		4

Selection and Ordering data	Order Code
Further designs	
Please add "Z" to Order No. and specify Order code(s) and plain text.	
Quality inspection certificate (Factory calibration) to IEC 60770-2 supplied	**C11**
Factory certificate to EN 10204-2.2 supplied	**C14**
Oxygen application, oil and grease-free cleaned (only in conjunction with the sealing material Viton between sensor and enclosure and only in conjunction with measuring ranges >= 1 bar g and 1 bar abs)	**E10**
Sealing material FEP between sensor and housing, instead of Viton max. operating pressure 15 bar (218 psi), max. measuring temperature -10 ... +50 °C	**E20**
Additional data	
Please add "Z" to Order No. and specify Order code(s) and plain text.	
Measuring range to be set, specify in plain text: Y01: ... up to ... mbar, bar, kPa, MPa, psi	**Y01**
TAG number made of stainless steel	**Y15**
Accessories	Order No.
Quality inspection certificate (Factory calibration) to IEC 60770-2 supplied later, specify factory of transmitter.	**7MF1564-8CC11**

▶ Available ex stock

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

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 EEx [ib] IIC T6 to ATEX
- Easy and safe to clean

Application

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

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.

SITRANS P Compact for gage and absolute pressure

Function

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

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

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

Technical specifications

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

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

Rated conditions	
Installation conditions	
• Mounting position	Any, vertical as standard
Ambient conditions	
• Ambient temperature	-10 ... +70 °C (14 ... 158 °F)
• Storage temperature	-10 ... +90 °C (14 ... 194 °F)
• Process temperature	Max. 200 °C (392 °F), depends on design
• Degree of protection (to EN 60529)	IP65, optional IP67
• Electromagnetic compatibility	
- Emitted interference	To EN 50081 Part 1, issue 1993 (residential and industrial areas). The unit has no own emissions.
- Interference immunity to	EN 50082 Part 2, issue March 1995 (industrial areas)
Design	
Weight (without remote seal)	
• Field housing	≈ 460 g (≈ 1.01 lb)
• Housing with plug	≈ 200 g (≈ 0.44 lb)
Housing	
• Designs	• Field housing IP65 or IP67, with screwed gland • Angled plug DIN 43650, IP65 • Cable connection, IP67 • Round plug connector M12, IP65
• Material	Stainless steel, mat. No. 1.4404/1.4305
Material of union nut	Polyamide (with electrical 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
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
Explosion protection	
• Intrinsic safety "i"	TÜV 03 ATEX 2099 X
- Identification	Ex II 2G EEx ib IIC T6

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 (add Order code and plain text)	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	
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

SITRANS P Compact for gage 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 ■■■■ - ■■■■	■■■
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 g (0 ... 2.32 psi g) / 2 bar g (29 psi g)	B B	
0 ... 250 mbar g (0 ... 3.63 psi g) / 2 bar g (29 psi g)	B C	
0 ... 400 mbar g (0 ... 5.8 psi g) / 6 bar g (87 psi g)	B D	
0 ... 600 mbar g (0 ... 8.7 psi g) / 6 bar g (87 psi g)	B E	
0 ... 1 bar g (0 ... 14.5 psi g) / 10 bar g (145 psi g)	C A	
0 ... 1.6 bar g (0 ... 23.2 psi g) / 10 bar g (145 psi g)	C B	
0 ... 2.5 bar g (0 ... 36.3 psi g) / 16 bar g (232 psi g)	C C	
0 ... 4 bar g (0 ... 58 psi g) / 16 bar g (232 psi g)	C D	
0 ... 6 bar g (0 ... 87 psi g) / 30 bar g (435 psi g)	C E	
0 ... 10 bar g (0 ... 145 psi g) / 30 bar g (435 psi g)	D A	
0 ... 16 bar g (0 ... 232 psi g) / 50 bar g (725 psi g)	D B	
0 ... 25 bar g (0 ... 363 psi g) / 50 bar g (725 psi g)	D C	
0 ... 40 bar g (0 ... 580 psi g) / 70 bar g (1015 psi g)	D D	
-160 ... 0 mbar g (-2.32 ... 0 psi g) / 2 bar g (29 psi g)	E B	
-250 ... 0 bar g (-3.73 ... 0 psi g) / 2 bar g (29 psi g)	E C	
-400 ... 0 bar g (-5.8 ... 0 psi g) / 6 bar g (87 psi g)	E D	
-600 ... 0 bar g (-8.7 ... 0 psi g) / 6 bar g (87 psi g)	E E	
-1 ... 0 bar g (-14.5 ... 0 psi g) / 10 bar g (145 psi g)	F A	
-1 ... 0.6 bar g (-14.5 ... 8.7 psi g) / 10 bar g (145 psi g)	F B	
-1 ... 1.5 bar g (-14.5 ... 21.8 psi g) / 16 bar g (232 psi g)	F C	
-1 ... 3 bar g (-14.5 ... 43.5 psi g) / 16 bar g (232 psi g)	F D	
-1 ... 5 bar g (-14.5 ... 72.5 psi g) / 30 bar g (435 psi g)	F E	

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 g (-14.5 ... 130.5 psi g) / 30 bar g (435 psi g)	G A	
-1 ... 15 bar g (-14.5 ... 217.6 psi g) / 50 bar g (725 psi g)	G B	
0 ... 1 bar a (0 ... 14.5 psi a) / 10 bar a (145 psi a) F)	H A	
0 ... 1.6 bar a (0 ... 23.2 psi a) / 10 bar a (145 psi a) F)	H B	
0 ... 2.5 bar a (0 ... 36.3 psi a) / 16 bar a (232 psi a) F)	H C	
0 ... 4 bar a (0 ... 58 psi a) / 16 bar a (232 psi a) F)	H D	
0 ... 6 bar a (0 ... 87 psi a) / 30 bar a (435 psi a) F)	H E	
0 ... 10 bar a (0 ... 145 psi a) / 30 bar a (435 psi a) F)	J A	
Special version F) (add Order code and plain text)	Z A	P 1 Y
Explosion protection		
without	1	
with, to ATEX 100a, II 2 G, EEx 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**	
Acceptance test certificate to EN 10204-3.1	**C12**	
Use of FDA-listed remote seal filling liquids certified by factory certificate to EN 10204-2.2	**C17**	
Roughness depth measurement R_a certified by factory certificate to EN 10204-3.1	**C18**	
Certification to EHEDG for clamp-on seals with aseptic screwed gland to DIN 11864	**C19**	

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

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

SITRANS P Compact for gage and absolute pressure

2

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 g (0 ... 2.32 psi g) 2 bar g (29 psi g)	BB	
0 ... 250 mbar g (0 ... 3.63 psi g) 2 bar g (29 psi g)	BC	
0 ... 400 mbar g (0 ... 5.8 psi g) 6 bar g (87 psi g)	BD	
0 ... 600 mbar g (0 ... 8.7 psi g) 6 bar g (87 psi g)	BE	
0 ... 1 bar g (0 ... 14.5 psi g) 10 bar g (145 psi g)	CA	
0 ... 1.6 bar g (0 ... 23.2 psi g) 10 bar g (145 psi g)	CB	
0 ... 2.5 bar g (0 ... 36.3 psi g) 16 bar g (232 psi g)	CC	
0 ... 4 bar g (0 ... 58 psi g) 16 bar g (232 psi g)	CD	
0 ... 6 bar g (0 ... 87 psi g) 30 bar g (435 psi g)	CE	
0 ... 10 bar g (0 ... 145 psi g) 30 bar g (435 psi g)	DA	
0 ... 16 bar g (0 ... 232 psi g) 50 bar g (725 psi g)	DB	
0 ... 25 bar g (0 ... 363 psi g) 50 bar g (725 psi g)	DC	
0 ... 40 bar g (0 ... 580 psi g) 70 bar g (1015 psi g)	DD	
-160 ... 0 mbar g (-2.32 ... 0 psi g) 2 bar g (29 psi g)	EB	
-250 ... 0 bar g (-3.73 ... 0 psi g) 2 bar g (29 psi g)	EC	
-400 ... 0 bar g (-5.8 ... 0 psi g) 6 bar g (87 psi g)	ED	
-600 ... 0 bar g (-8.7 ... 0 psi g) 6 bar g (87 psi g)	EE	
-1 ... 0 bar g (-14.5 ... 0 psi g) 10 bar g (145 psi g)	FA	
-1 ... 0.6 bar g (-14.5 ... 8.7 psi g) 10 bar g (145 psi g)	FB	
-1 ... 1.5 bar g (-14.5 ... 21.8 psi g) 16 bar g (232 psi g)	FC	
-1 ... 3 bar g (-14.5 ... 43.5 psi g) 16 bar g (232 psi g)	FD	
-1 ... 5 bar g (-14.5 ... 72.5 psi g) 30 bar g (435 psi g)	FE	

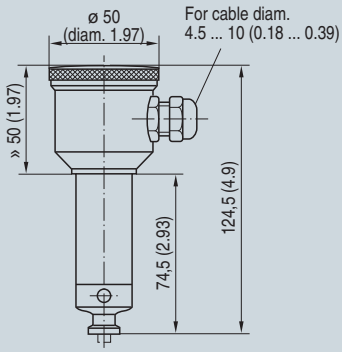
Selection and Ordering data	Order No.	Ord. code
SITRANS P Compact pressure transmitters for pressure and absolute pressure with clamp-on remote seal	7MF8010-	
2-wire system Process temperature up to 140 °C (284 °F) Accuracy: 0.2% of full-scale value Output 4 ... 20 mA	2 ■■■■ - ■■■■	■■■
Measured range **Overload pressure** (continued)		
-1 ... 9 bar g (-14.5 ... 130.5 psi g) 30 bar g (435 psi g)	GA	
-1 ... 15 bar g (-14.5 ... 217.6 psi g) 50 bar g (725 psi g)	GB	
0 ... 1 bar a (0 ... 14.5 psi a) 10 bar a (145 psi a) F)	HA	
0 ... 1.6 bar a (0 ... 23.2 psi a) 10 bar a (145 psi a) F)	HB	
0 ... 2.5 bar a (0 ... 36.3 psi a) 16 bar a (232 psi a) F)	HC	
0 ... 4 bar a (0 ... 58 psi a) 16 bar a (232 psi a) F)	HD	
0 ... 6 bar a (0 ... 87 psi a) 30 bar a (435 psi a) F)	HE	
0 ... 10 bar a (0 ... 145 psi a) 30 bar a (435 psi a) F)	JA	
Special version F) (add Order code and plain text)	ZA	P1Y
Explosion protection		
without	1	
with, to ATEX 100a, II 2 G, EEx 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 (Factory calibration) to IEC 60770-2	**C11**	
Acceptance test certificate to EN 10204-3.1	**C12**	
Use of FDA-listed remote seal filling liquids certified by factory certificate to EN 10204-2.2	**C17**	
Roughness depth measurement R_a certified by factory certificate to EN 10204-3.1	**C18**	
Certification to EHEDG for clamp-on seals with aseptic screwed gland to DIN 11864	**C19**	

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

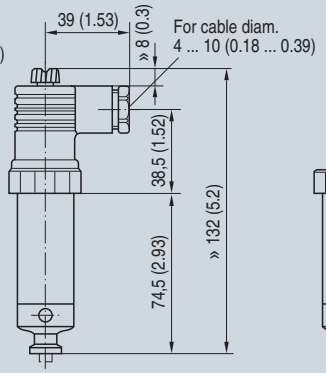
Dimensional drawings

Housing

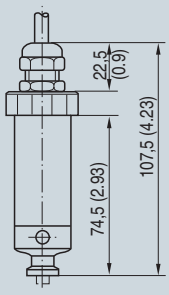
Fieldhousing
stainless steel
Degree of protection IP65
IP67 as alternative



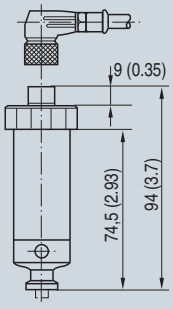
Angled plug to
DIN 43 650
Degree of protection IP65

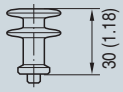


Cable connection
Degree of protection IP67
(cable ventilation)



Round plug with
screw connection M12
Degree of protection IP65





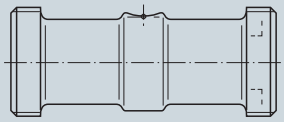
Thermal decoupler
for process temperature
up to 200 °C (392 °F)

Process connections

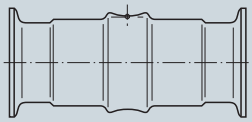
Standard

Food screwed gland
Union nut
to DIN 11 851
DN 25 ... 65

Clamp connection
to DIN 32 676
ISO 2852
DN 25 ... 65
1" ... 2½"

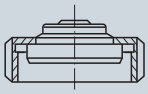


Pipe-screwed gland
(food)
Round thread
to DIN 11 851
DN 25 ... 65



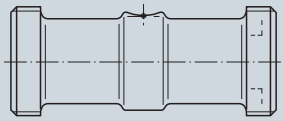
Pipe clamp connection
to DIN 32 676
DN 25 ... 100
to ISO 2853
1" ... 2½"

Aseptic

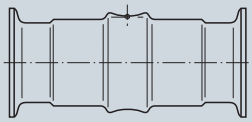


Aseptic screwed gland
Round thread
Neumo, Südmo, Guth
DIN 11 864-1
DN 25 ... 65
1" ... 2"

Clamp connection
Neumo, Südmo, Guth
DN 25 ... 50
1" ... 2"



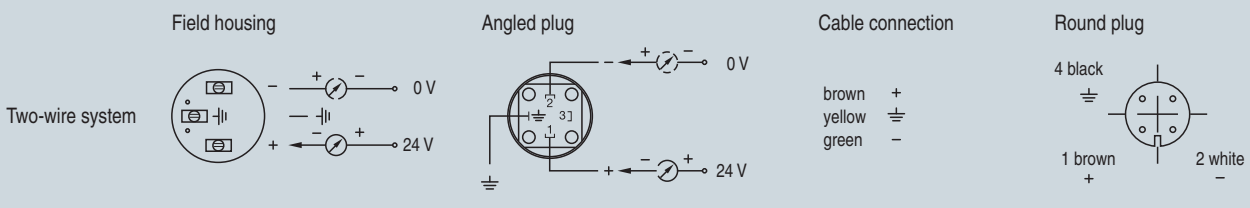
Pipe screwed gland (aseptic)
Round thread
DIN 11 864-1
Neumo, Südmo, Guth
DN 25 ... 65
1" ... 2"



Pipe clamp connection
Neumo, Südmo, Guth
DN 25 ... 65
1" ... 2"

SITRANS P, dimensions in mm (inch)

Schematics



SITRANS P Compact, connection diagram

SITRANS P300 for gage and absolute pressure

Overview

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

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

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

Benefits

- High quality and long life
- High reliability even under extreme chemical and mechanical loads
- Extensive diagnosis and simulation functions
- Minimum conformity error
- Small long-term drift
- Wetted parts made of high-grade materials (such as stainless steel, Hastelloy)
- Measuring range 8 mbar to 400 bar
- High measuring accuracy
- Parameterization over control keys and HART communication or PROFIBUS PA communication

Application

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

It can be used for the following measurement types:

- Gage pressure
- Absolute pressure

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

- Level
- Volume
- Mass

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

Gage pressure

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

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

Level

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

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

Absolute pressure

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

The smallest measuring span is 8 mbar a, the largest 30 bar a.

Design

The device comprises:

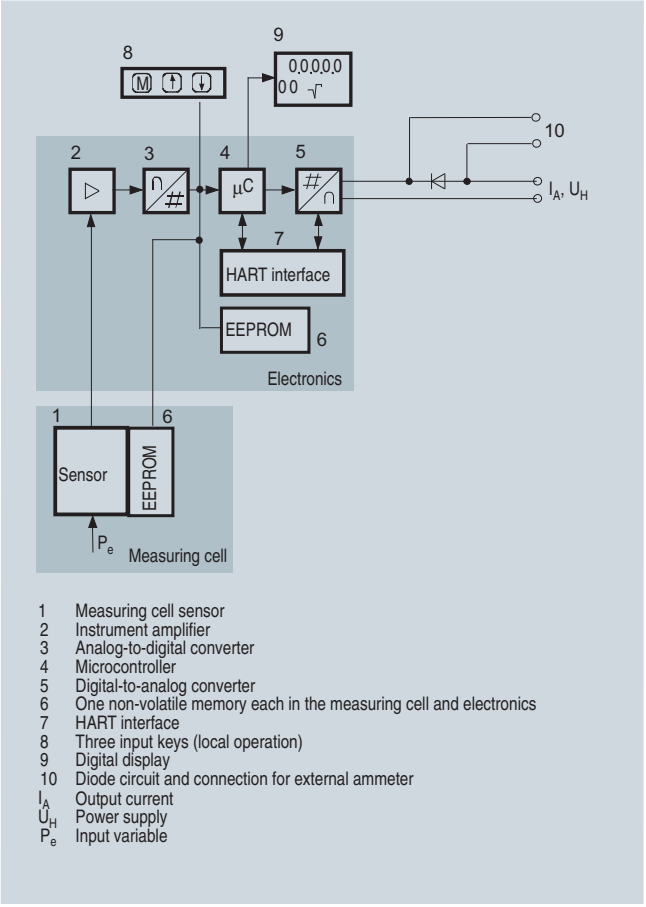
- Electronics
- Housing
- Measuring cell

Perspective view of the SITRANS P300

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

Function

Operation of the 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

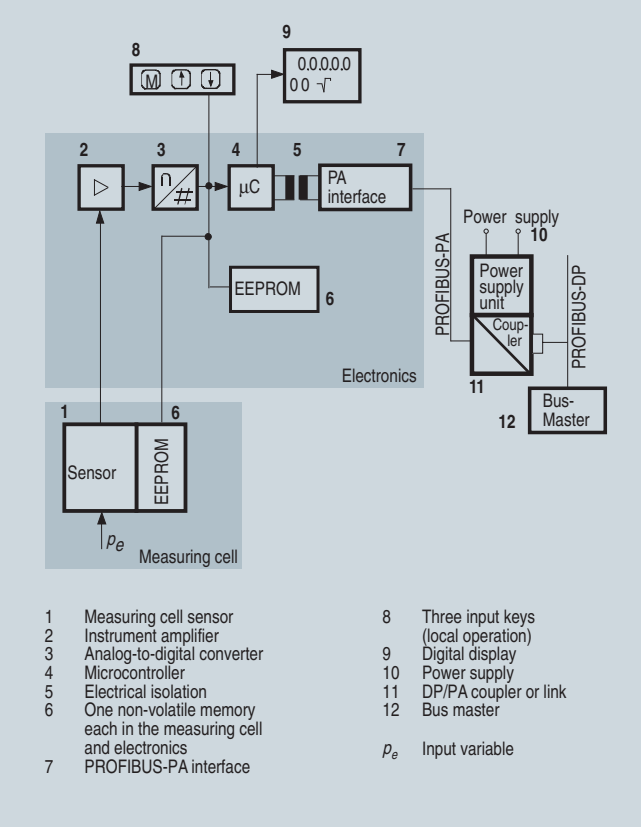
Function diagram of electronics

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 with regard to linearity and thermal characteristics. In a digital to analog converter (5) it is then converted into the output current of 4 to 20 mA. A diode circuit provides reverse voltage protection. You can make an uninterrupted current measurement with a low-ohm ammeter at the connection (10). The data specific to the measuring cell, the electronic data and parameter settings are stored in two non-volatile memories (6). The first memory is linked with the measuring cell, the second with the electronics.

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

SITRANS P300 for gage and absolute pressure

Operation of the electronics with PROFIBUS PA communication



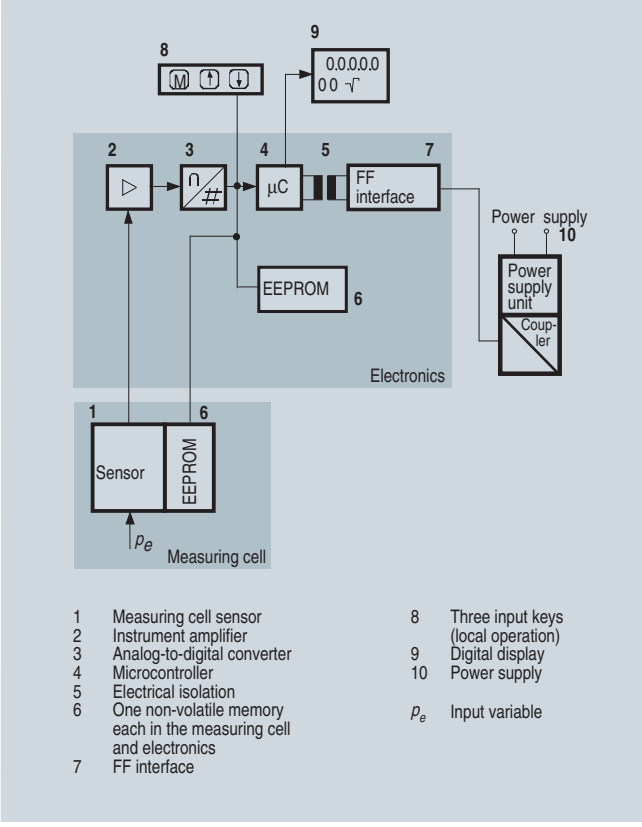
1	Measuring cell sensor	8	Three input keys (local operation)
2	Instrument amplifier	9	Digital display
3	Analog-to-digital converter	10	Power supply
4	Microcontroller	11	DP/PA coupler or link
5	Electrical isolation	12	Bus master
6	One non-volatile memory each in the measuring cell and electronics	p_e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

Function diagram of electronics

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

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

Mode of operation of the FOUNDATION Fieldbus electronics



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 instrument amplifier (2) and digitized in the analog-to-digital converter (3). The digital information is evaluated in the microcontroller, its linearity and temperature response corrected, and provided on the FOUNDATION Fieldbus through an electrically isolated FOUNDATION Fieldbus Interface (7).

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

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

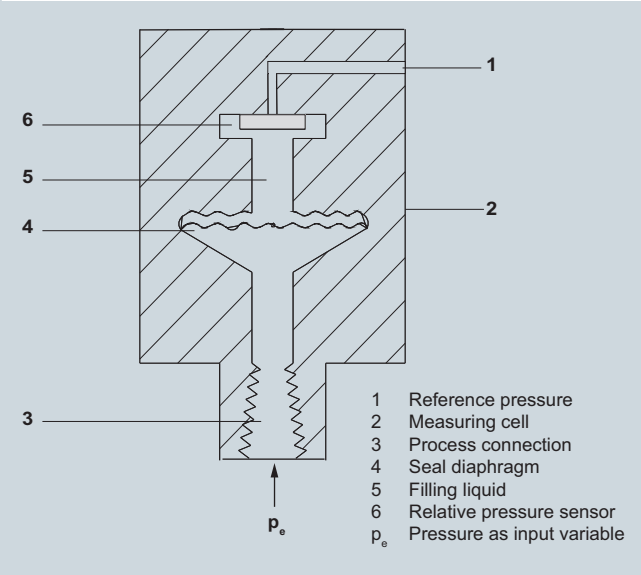
The results with status values and diagnostic values are transferred by cyclic data transmission on the FOUNDATION Fieldbus. Parameterization data and error messages are transferred by acyclic data transmission. Special software such as National Instruments Configurator is required for this.

Mode of operation of the measuring cells

The process connections available include the following:

- G½
- ½-14 NPT
- Front-flush diaphragm:
  - Flanges to EN
  - Flanges to ASME
  - NuG and pharmaceutical connections

Measuring cell for gage pressure

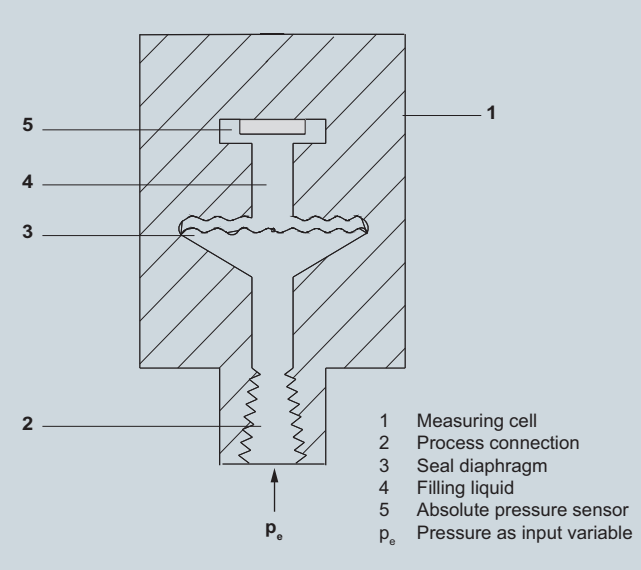


Measuring cell for gage pressure, function chart

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

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

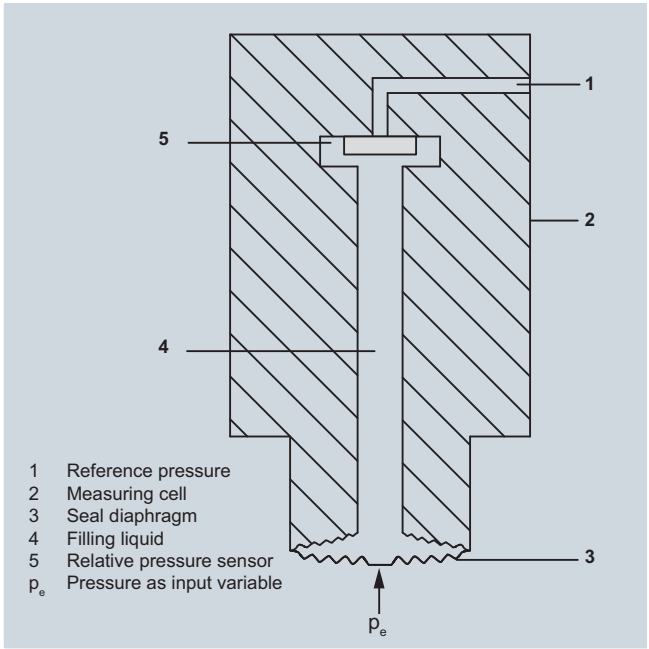
Measuring cell for absolute pressure



Measuring cell for absolute pressure, function chart

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

Measuring cell for gage pressure, front-flush diaphragm

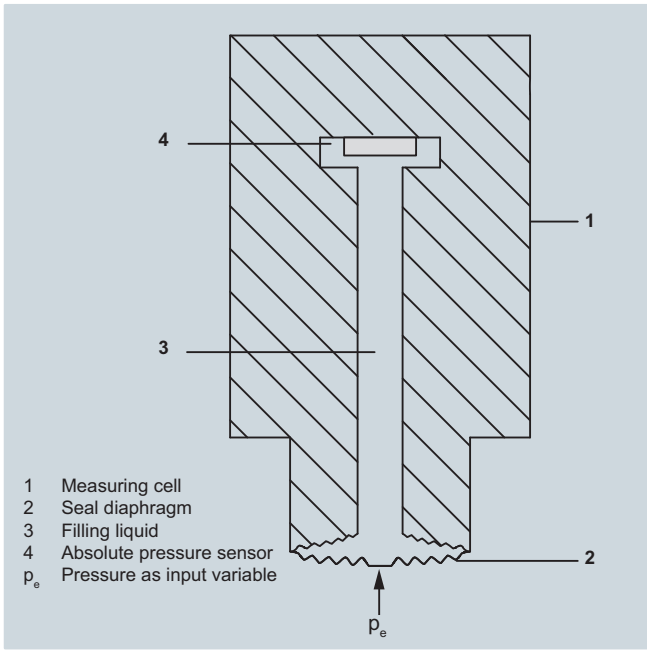


Measuring cell for gage pressure, front-flush diaphragm, function chart

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

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

Measuring cell for absolute pressure, front-flush diaphragm



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

SITRANS P300 for gage and absolute pressure

The input pressure (pe) 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 of SITRANS P300

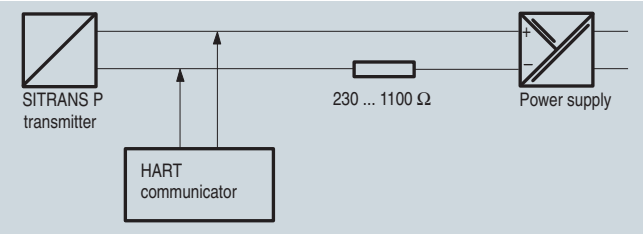
Depending on the version, there are a range of options for parameterizing the pressure transmitter and for setting or scanning the parameters.

Parameterization using the input keys (local operation)

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

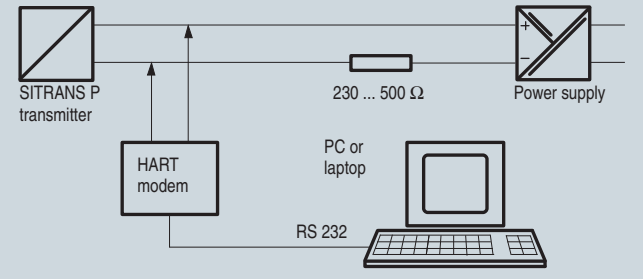
Parameterization using HART communication

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



Communication between a HART communicator and a pressure transmitter

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



HART communication between a PC communicator and a pressure transmitter

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

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

Adjustable parameters on SITRANS P300 with HART communication

Parameters	Input keys	HART 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 keys, write protection	x	x[1)]
Type of dimension and actual dimension	x	x
Input of characteristic		x
Freely-programmable LCD		x
Diagnostics 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

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 puts the DS III PA is in connection with a process control system, e.g. SIMATIC PSC 7. Communication is possible even in a potentially explosive environment.

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

Parameterization through FOUNDATION Fieldbus Interface

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

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

Adjustable parameters for P300 PA and FF

Parameters	Input keys (DS III HART)	PROFIBUS PA and FOUNDATION Fieldbus interface
Electrical damping	x	x
Zero adjustment (correction of position)	x	x
Key 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 P300 PA and FF

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

Physical dimensions available for the display

Physical variable	Physical dimensions
Pressure (setting can also be made in the factory)	MPa, kPa, Pa, bar, mbar, torr, atm, psi, g/cm^2, kg/cm^2, mmH_2O, mmH_2O (4 °C), inH_2O, in$H_2$0 (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	%

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.

SITRANS P300 for gage and absolute pressure

Technical specifications

SITRANS P300 for gage pressure and absolute pressure

	HART		PROFIBUS PA and FOUNDATION Fieldbus	
Gage pressure input				
Measured variable	Gage pressure			
Spans (infinitely adjustable) or nominal measuring range and max. pemissible test pressure	Span	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure
	0.01 ... 1 bar g (0.15 ... 14.5 psi g)	6 bar g (87 psi g)	1 bar g (14.5 psi g)	6 bar g (87 psi g)
	0.04 ... 4 bar g (0.58 ... 58 psi g)	10 bar g (145 psi g)	4 bar g (58 psi g)	10 bar g (145 psi g)
	0.16 ... 16 bar g (2.3 ... 232 psi g)	32 bar g (464 psi g)	16 bar g (232 psi g)	32 bar g (464 psi g)
	0.6 ... 63 bar g (9.1 ... 914 psi g)	100 bar g (1450 psi g)	63 bar g (914 psi g)	100 bar g (1450 psi g)
	1.6 ... 160 bar g (23.2 ... 2321 psi g)	250 bar g (3626 psi g)	160 bar g (2321 psi g)	250 bar g (3626 psi g)
	4.0 ... 400 bar g (58 ... 5802 psi g)	600 bar g (8700 psi g)	400 bar g (5802 psi g)	600 bar g (8700 psi g)
	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 psi a)			
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. pemissible test pressure	Span	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure
	8 ... 250 mbar a (0.12 ... 3.6 psi a)	6 bar a (87 psi a)	250 mbar a (3.6 psi a)	6 bar a (87 psi a)
	0.043 ... 1.30 bar a (0.62 ... 19 psi a)	10 bar a (145 psi a)	1.30 bar a (19 psi a)	10 bar a (145 psi a)
	0.16 ... 5 bar a (2.3 ... 73 psi a)	30 bar a (435 psi a)	5 bar a (73 psi a)	30 bar a (435 psi a)
	1 ... 30 bar a (14.5 ... 435 psi a)	100 bar a (1450 psi a)	30 bar a (435 psi a)	100 bar a (1450 psi a)
Lower measuring limit				
• Measuring cell with silicone oil	0 mbar a (0 psi a)			
Upper measuring limit				
• Measuring cell with silicone oil	100% of max. span		100% of the max. nominal measuring range	
Input of gage pressure, with front-flush diaphragm				
Measured variable	Gage pressure, front-flush			
Spans (infinitely adjustable) or nominal measuring range and max. pemissible test pressure	Span	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure
	0.01 ... 1 bar g (0.145 ... 14.5 psi g)	6 bar g (87 psi g)	1 bar g (14.5 psi g)	6 bar g (87 psi g)
	0.04 ... 4 bar g (0.58 ... 58 psi g)	10 bar g (145 psi g)	4 bar g (58 psi g)	10 bar g (145 psi g)
	0.16 ... 16 bar g (2.32 ... 232 psi g)	32 bar g (464 psi g)	16 bar g (232 psi g)	32 bar g (464 psi g)
	0.6 ... 63 bar g (9.14 ... 914 psi g)	100 bar g (1450 psi g)	63 bar g (914 psi g)	100 bar g (1450 psi g)
Lower measuring limit	-100 mbar g (-1.45 psi g)			
Upper measuring limit				
• Measuring cell with silicone oil	100% of max. span		100% of the max. nominal measuring range	

SITRANS P300 for gage pressure 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. pemissible test pressure	Span	Max. perm. test pressure		Nominal measuring range	Max. perm. test pressure	
	43 ... 1300 mbar a (0.62 ... 18.9 psi a)	10 bar a (145 psi a)		1300 mbar a (18.9 psi a)	10 bar a (145 psi a)	
	0.16 ... 5 bar a (2.32 ... 72.5 psi a)	30 bar a (435 psi a)		5 bar a (72,5 psi a)	30 bar a (435 psi a)	
	1 ... 30 bar a (14.5 ... 435 psi a)	100 bar a (1450 psi a)		30 bar a (435 psi a)	100 bar a (1450 psi a)	
	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 psi a)					
Upper measuring limit						
• Measuring cell with silicone oil	100% der max. Messspanne			100% des max. Nennmessbereichs		
Output						
Output signal	4 ... 20 mA			Digital PROFIBUS PA signal		
Physical bus	-			IEC 61158-2		
With polarity reversal protection	No			Yes		
Electrical damping T_{63} (step width 0.1 s)	Set to 0.1 s (0 ... 100 s)					
Accuracy	To EN 60770-1					
Reference conditions (All error data refer always refer to the set span)	Increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, measuring cell with silicone oil, room temperature 25 °C (77 °F), span ratio (r = max. span / set span)					
Measurement deviation with cut-off point setting, including hysteresis and repeatability.						
	Gage pressure	Absolute pressure	(Absolute pressure, front-flushed)	Gage pressure	Absolute pressure	(Absolute pressure, front-flushed)
Linear characteristic curve				≤ 0,075%	≤ 0,1%	≤ 0,2%
• r ≤ 10	≤ (0.0029 · r + 0.071)%	≤ 0,1%	≤ 0,2%			
• 10 < r ≤ 30	≤ (0.0045 · r + 0.071)%	≤ 0,2%	≤ 0,4%			
• 30 < r ≤ 100	≤ (0.005 · r + 0.05)%	-	-			
Settling time T_{63} without electrical damping	Approx. 0.2 s					
Long-term drift 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)	≤ (0.1 · r +0.2)%		≤ (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 gage and absolute pressure

SITRANS P300 for gage pressure and absolute pressure		
	HART	**PROFIBUS PA and FOUNDATION Fieldbus**
Rated operating conditions		
Installation conditions		
Ambient temperature	Observe the temperature class in areas subject to explosion hazard.	
• Measuring cell with silicone oil	-40 ... +85 °C (-40 ... +185 °F)	
• Measuring cell with Neobee oil (with front-flush diaphragm)	-10 ... +85 °C (14 ... +185 °F)	
• Measuring cell with inert liquid (not with front-flush diaphragm)	-20 ... +85 °C (-4 ... +185 °F)	
• Digital display	-30 ... +85 °C (-22 ... +185 °F)	
• Storage temperature	-50 ... +85 °C (-58 ... +185 °F) (with Neobee: -20 ... +85 °C (-4 ... +185 °F)	
Climatic class		
Condensation	Permissible	
Degree of protection to EN 60529	IP65, IP68, NEMA X, enclosure cleaning, resistant to lyes, steam to 150° C (302 °F)	
Electromagnetic compatibility		
• Emitted interference and interference immunity	To EN 61326 and NAMUR NE 21	
Medium conditions		
Process temperature		
• 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)	-40 ... +150 °C (-40 ... +302 °F)	
• Measuring cell with silicone oil, with temperature isolator (only with front-flush diaphragm)	-40 ... +200 °C (-40 ... +392 °F)	
• Measuring cell with inert liquid	-20 ... +100 °C (-4 ... +212 °F)	
• Measuring cell with high temperature oil	-10 ... +250 °C (14 ... +482 °F)	
Design (standard version)		
Weight (without options)	Approx. 800 g (1.8 lb)	
Housing material	Stainless steel, mat. No. 1.4301/304	
Material of parts in contact with the medium		
• Connection shank	Stainless steel, mat. No. 1.4404/316L or 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 DIN EN 837-1 • Female thread ½-14 NPT • Oval flange PN 160 (MWP 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)	
Housing material	Stainless steel, mat. No. 1.4301/304	
Material of parts in contact with the medium		
• Process connection	Stainless steel, mat. No. 1.4404/316L	
• Seal diaphragm	Stainless steel, mat. No. 1.4404/316L	
• Measuring cell filling	• Silicone oil • Inert filling liquid • FDA compliant fill fluid (Neobee oil)	
Process connection	• Flanges as per EN and ASME • F&B and pharmaceutical flanges	

SITRANS P300 for gage pressure 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 EEx	-	9 ... 32 V
• For intrinsically-safe operation	-	9 ... 24 V
Current consumption		
• Max. basic current	-	12.5 mA
• Startup current ≤ basic current	-	Yes
• Max. fault current in the event of a fault	-	15.5 mA
Fault disconnection electronics (FDE)	-	Available
Certificate and approvals		
Classification according to pressure 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)	
Water, waste water	Available soon	
Explosion protection		
Intrinsic safety "i"	PTB 05 ATEX 2048	
Identification	Ex II 1/2 G EEx ia/ib IIB/IIC T4, T5, T6	
Permissible ambient temperature		
• Temperature class T4	-40 ... +85 °C (-40 ... +185 °F)	
• Temperature class T5	-40 ... +70 °C (-40 ... +158 °F)	
• Temperature class T6	-40 ... +60 °C (-40 ... +140 °F)	
Connection	To certified intrinsically-safe circuits with maximum values: U_i = 30 V, I_i = 100 mA, P_i = 750 mW, R_i = 300 Ω	To certified intrinsically-safe circuits with maximum 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 inner inductance:	L_i = 0.4 mH	L_i ≤ 7 µH
Explosion protection to FM for USA and Canada (cFMUS)		
• 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	

SITRANS P300 for gage and absolute pressure

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 measuring value) or 10 (two measuring 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 T_{63} , adjustable	0 ... 100 s
- Simulation function	Input /Output
- Failure mode	Can be parameterized (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	Can be parameterized (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

Communication FOUNDATION Fieldbus	
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 T_{63} , adjustable	0 ... 100 s
- Simulation function	Output/input (can be locked within the device with a bridge)
- Failure mode	Can be parameterized (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 FF 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 for gage 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	Standard		1
Inert liquid	Cleanliness level 2 to DIN 25410		3
max. span			
0.01 ... 1 bar g	(0.145 ... 14.5 psi g)		B
0.04 ... 4 bar g	(0.58 ... 58 psi g)		C
0.16 ...16 bar g	(2.32 ... 232 psi g)		D
0.63 ... 63 bar g	(9.14 ... 914 psi g)		E
1.6 ... 160 bar g	(23.2 ... 2320 psi g)		F
4 ... 400 bar g	(58 ... 5800 psi g)		G
2.5 ... 25 mbar a	(0.036 ... 3.63 psi a)	F)	Q
13 ... 1300 mbar a	(0.19 ... 18.9 psi a)	F)	S
0.05 ... 5 bar a	(0.7 ... 72.5 psi a)	F)	T
0.3 ... 30 bar a	(4.35 ... 435 psi a)	F)	U
Wetted parts materials			
Seal diaphragm	Measuring cell		
Stainless steel	Stainless steel		A
Hastelloy	Stainless steel	F)	B
Hastelloy	Hastelloy	F)	C
Version for diaphragm seal [1) 2)]			Y
Process connection			
• G½B to EN 837-1			0
• ½-14 NPT			1
• Oval flange made of stainless steel			
- 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			
• St. steel, deep-drawn and electrolytically polished			4
Version			
• Standard version			1
Explosion protection			
• Without			A
• With ATEX, Type of protection:			
- "Intrinsic safety (EEx ia)"			B
• Zone 20/21/22[3)]			C
• Ex nA/nL (zone 2)[4)]			E
• With FM „Intrinsic safe“ (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 connector (metal, without cable socket)			F
• M12 connector (stainless steel, without cable socket)			G
• ½-14 NPT thread, metal [6)]			H
• ½-14 NPT thread, stainless steel[6)]			J

Selection and Ordering data	Order No.
SITRANS P300 pressure transmitters for gage 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[5)]	1
• With display and keys, closed lid	2
• With display and keys, lid with macrolon washer (setting on HART devices: mA, on PROFIBUS PA and FOUNDATION Fieldbus devices: pressure units)	4
• With display (setting acc. to specifications, Order code "Y21" or "Y22" required), lid with macrolon washer	5
• With display and keys, lid with glass pane (setting on HART devices: mA, on PROFIBUS and FOUNDATION Fieldbus devices: pressure units)	6
• With display (setting acc. to specifications, Order code "Y21" or "Y22" required), lid with glass pane	7

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

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

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

1) When the manufacture's certificate M (calibration certificate) has to be ordered for transmitters with diaphragm seals, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.
2) Whe the acceptance test certificate 3.1 for transmitters with direct-connected diaphragm seals is ordered, this certificate must also be ordered with the corresponding seals.
3) Can only be ordered in conjunction with electrical connection Option A.
4) Can only be ordered in conjunction with electrical connection Option B, C, F or G.
5) Only together with HART electronics.
6) Without cable gland.

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

SITRANS P300 for gage and absolute pressure

Selection and Ordering data		Order No.
SITRANS P300 pressure transmitters for gage and absolute pressure with front-flush membrane, single-chamber measuring housing, rating plate inscription in English		
4 ... 20 mA/HART	F)	**7MF8123-**
PROFIBUS PA	F)	**7MF8124-**
FOUNDATION Fieldbus (FF)	F)	**7MF8125-**

Measuring cell filling	**Measuring cell cleaning**	
Silicone oil	Standard	1
Inert liquid	Cleanliness level 2 to DIN 25410	3
FDA compliant fill fluid		
• Neobee oil	Standard	4
max. span		
0.01 ... 1 bar g	(0.15 ... 14.5 psi g)	B
0.04 ... 4 bar g	(0.58 ... 58 psi g)	C
0.16 ... 16 bar g	(2.32 ... 232 psi g)	D
0.63 ... 63 bar g	(9.14 ... 914 psi g)	E
13 ... 1300 mbar a[1)]	(0.19 ... 18.9 psi a)	S
0.05 ... 5 bar a[1)]	(0.7 ... 72.5 psi a)	T
0.03 ... 30 bar a[1)]	(4.35 ... 435 psi a)	U
Wetted parts materials		
Seal diaphragm	Measuring cell	
Stainless steel	Stainless steel	A
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 version		1
Explosion protection		
• Without		A
• With ATEX, Type of protection:		
- "Intrinsic safety (EEx ia)"		B
• Zone 20/21/22[2)]		C
• Ex nA/nL (zone 2)[3)]		E
• With FM „Intrinsic safe“ (cFM_{US})		M
Electrical connection / cable entry		
• Screwed gland M20x1.5 (Polyamide)[4)]		A
• Screwed gland M20x1.5 (metal)		B
• Screwed gland M20x1.5 (stainless steel)		C
• M12 connector (without cable socket)		F
• M12 connector (stainless steel, without cable socket)		G
• ½-14 NPT thread, metal[5)]		H
• ½-14 NPT thread, stainless steel[5)]		J

Selection and Ordering data		Order No.
SITRANS P300 pressure transmitters for gage and absolute pressure with front-flush membrane, single-chamber measuring housing, rating plate inscription in English		
4 ... 20 mA/HART	F)	**7MF8123-**
PROFIBUS PA	F)	**7MF8124-**
FOUNDATION Fieldbus (FF)	F)	**7MF8125-**

Display	
• Without display, with keys, closed lid[4)]	1
• With display and keys, closed lid	2
• With display and keys, lid with macrolon washer (setting on HART devices: mA, on PROFIBUS PA and FOUNDATION Fieldbus devices: pressure units)	4
• With display (setting acc. to specifications, Order code "Y21" or "Y22" required), lid with macrolon washer	5
• With display and keys, lid with glass pane (setting on HART devices: mA, on PROFIBUS PA and FOUNDATION Fieldbus devices: pressure units)	6
• With display (setting acc. to specifications, Order code "Y21" or "Y22" required), lid with glass pane	7

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

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

1) Not with temperature decoupler P00 and P10, not for process connections R02, R04, R10 and R11, and can only be ordered in conjunction with silicone oil.
2) Can only be ordered in conjunction with electrical connection Option A.
3) Can only be ordered in conjunction with electrical connection Option B, C, F or G.
4) Only together with HART electronics.
5) Without cable gland.

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

Selection and Ordering data	Order code	HART	PA	FF
Further designs Add "-Z" to Order No. and specify Order code.				
Mounting bracket 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 or psi	**B21**	✓	✓	✓
Quality inspection certificate (Factory calibration) to IEC 60770-2[1] to IEC 60770-2	**C11**	✓	✓	✓
Acceptance test certificate[2] to EN 10204-3.1	**C12**	✓	✓	✓
Factory certificate to EN 10204-2.2	**C14**	✓	✓	✓
Type of protection IP68	**D12**	✓	✓	✓
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[3]	**M21**	✓	✓	✓
• DN 40, PN 40	**M13**	✓	✓	✓
• DN 40, PN 100	**M23**	✓	✓	✓
• DN 50, PN 16	**M04**	✓	✓	✓
• DN 50, PN 40	**M14**	✓	✓	✓
• DN 80, PN 25	**M06**	✓	✓	✓
• DN 80, PN 40	**M16**	✓	✓	✓
Flanges to ASME B16.5				
• 1", class 150[3]	**M40**	✓	✓	✓
• 1½", class 150	**M41**	✓	✓	✓
• 2", class 150	**M42**	✓	✓	✓
• 3", class 150	**M43**	✓	✓	✓
• 4", class 150	**M44**	✓	✓	✓
• 1", class 300[3]	**M45**	✓	✓	✓
• 1½", class 300	**M46**	✓	✓	✓
• 2", class 300	**M47**	✓	✓	✓
• 3", class 300	**M48**	✓	✓	✓
Threaded connection acc. to DIN 3852-2, Form A				
• G ¾"-A, flush-mounted[4]	**R01**	✓	✓	✓
• G 1"-A, flush-mounted[4]	**R02**	✓	✓	✓
• G 2"-A, flush-mounted[4]	**R04**	✓	✓	✓
Tank connection[5] 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) 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**	✓	✓	✓

Selection and Ordering data	Order code	HART	PA	FF
Further designs Add "-Z" to Order No. and specify Order code.				
Varivent connection certified to 3A and EHEDG[3]				
• Type N = 68 for Varivent housing DN 40 ... 125 and 1½" ... 6", PN 40	**N28**	✓	✓	✓
Temperature decoupler up to 200 °C[7] 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 (Neumo) sanitary connection certified to 3A and EHEDG[3]				
• DN 50, PN 16	**Q53**	✓	✓	✓
• DN 65, PN 16	**Q54**	✓	✓	✓
Sanitary process connection to DRD				
• 65 mm, 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[3]				
• 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[3]				
• 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 3A and EHEDG[3]				
• 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**	✓	✓	✓

SITRANS P300 for gage and absolute pressure

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 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				
• DN 50, PN 25	**N33**	✓	✓	✓
• DN 65, PN 25	**N34**	✓	✓	✓
• DN 80, PN 25	**N35**	✓	✓	✓
• DN 100, PN 25	**N36**	✓	✓	✓
Aseptic flange with notch to DIN 11864-2 Form A				
• DN 50, PN 16	**N43**	✓	✓	✓
• DN 65, PN 16	**N44**	✓	✓	✓
• DN 80, PN 16	**N45**	✓	✓	✓
• DN 100, PN 16	**N46**	✓	✓	✓
Aseptic flange with groove to DIN 11864-2 Form A				
• DN 50, PN 16	**N43 + P11**	✓	✓	✓
• DN 65, PN 16	**N44 + P11**	✓	✓	✓
• DN 80, PN 16	**N45 + P11**	✓	✓	✓
• DN 100, PN 16	**N46 + P11**	✓	✓	✓
Aseptic clamp with groove to DIN 11864-3 Form A				
• DN 50, PN 25	**N53**	✓	✓	✓
• DN 65, PN 25	**N54**	✓	✓	✓
• DN 80, PN 16	**N55**	✓	✓	✓
• DN 100, PN 16	**N56**	✓	✓	✓

1) When the manufacture's certificate M (calibration certificate) has to be ordered for transmitters with diaphragm seals, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.
2) Whe the acceptance test certificate 3.1 for transmitters with direct-connected diaphragm seals is ordered, this certificate must also be ordered with the corresponding seals.
3) Special Viton seal included in delivery.
4) Lower measuring limit -100 mbar g (1.45 psi g).
5) The weldable socket can be ordered under accessories
6) Certified to 3A.
The maximum temperatures of the medium depend on the respective cell fillings.
7) 3A certification only if used in conjunction with 3A-compliant sealing rings.

Selection and Ordering data	Order code	HART	PA	FF
Additional data Add "-Z" to Order No. and specify Order code.				
Measuring range to be set Specify in plain text V (max. 5 digits): Y01: ... up to ... mbar, bar, kPa, MPa, psi	**Y01**	✓		
Measuring point number (TAG No.) Max. 16 characters, specify in plain text: Y15:	**Y15**	✓	✓	✓
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 pressure indication in pressure units Specify in plain text (standard setting: mA): Y21: mbar, bar, kPa, MPa, psi, ... Note: The following pressure units can be selected: bar, mbar, mm H_2O*), 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 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**		✓	✓

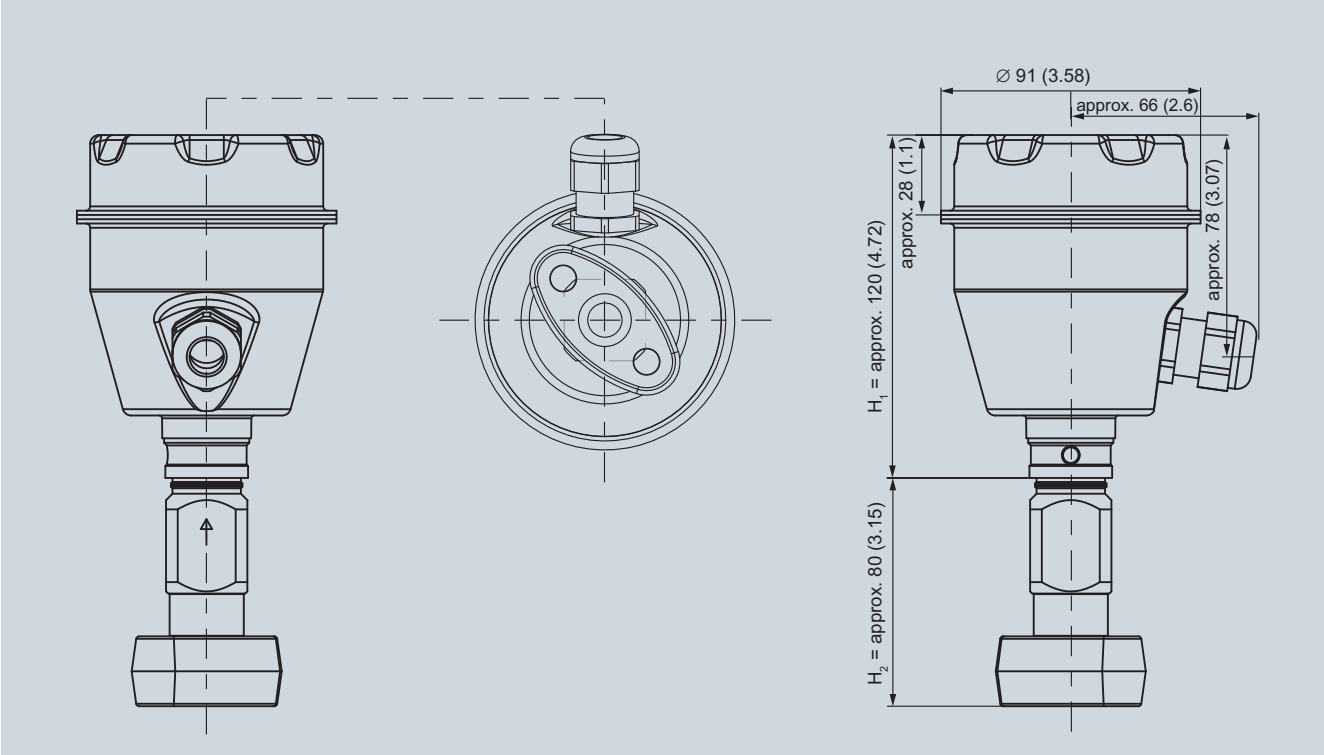
Only "Y01" and "Y21" can be factory preset

✓ = available

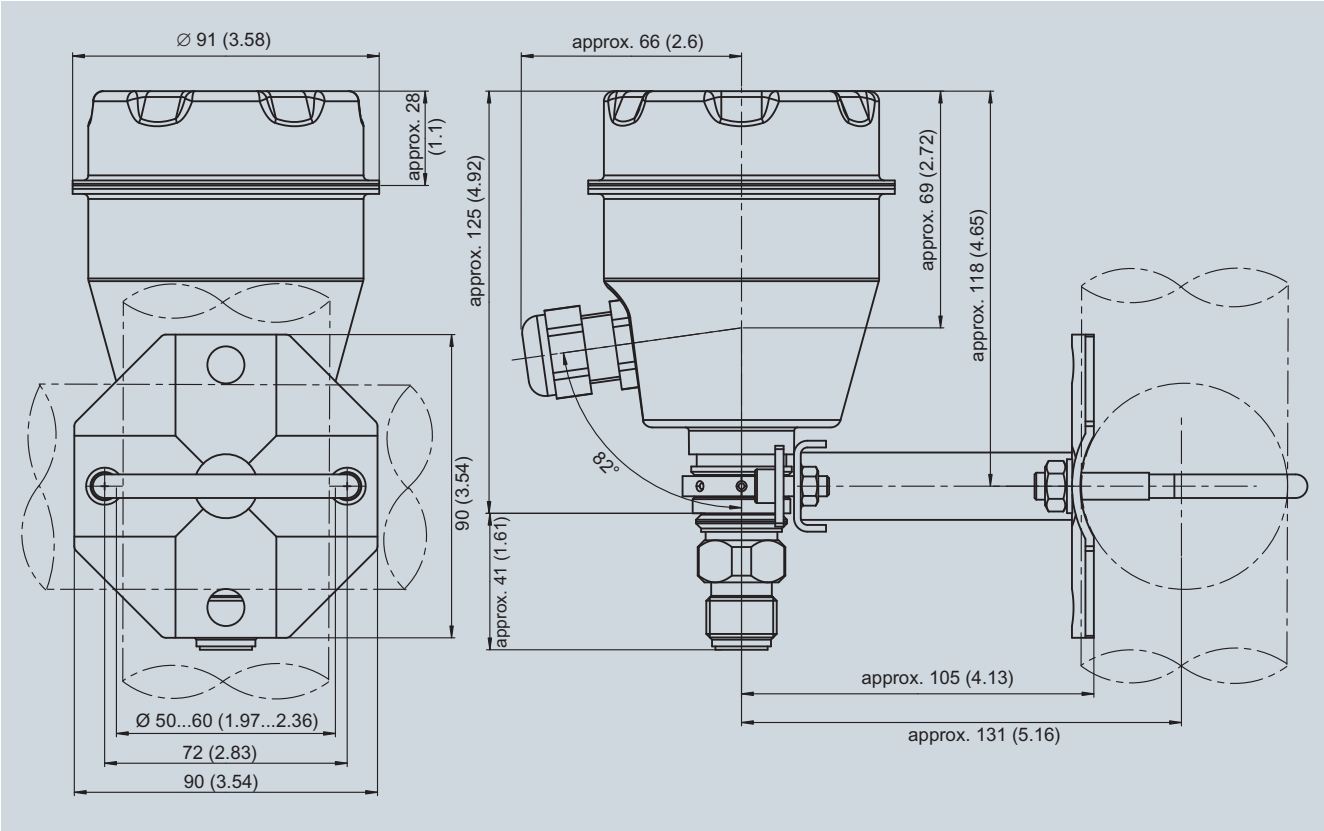
Ordering example

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

Dimensional drawings

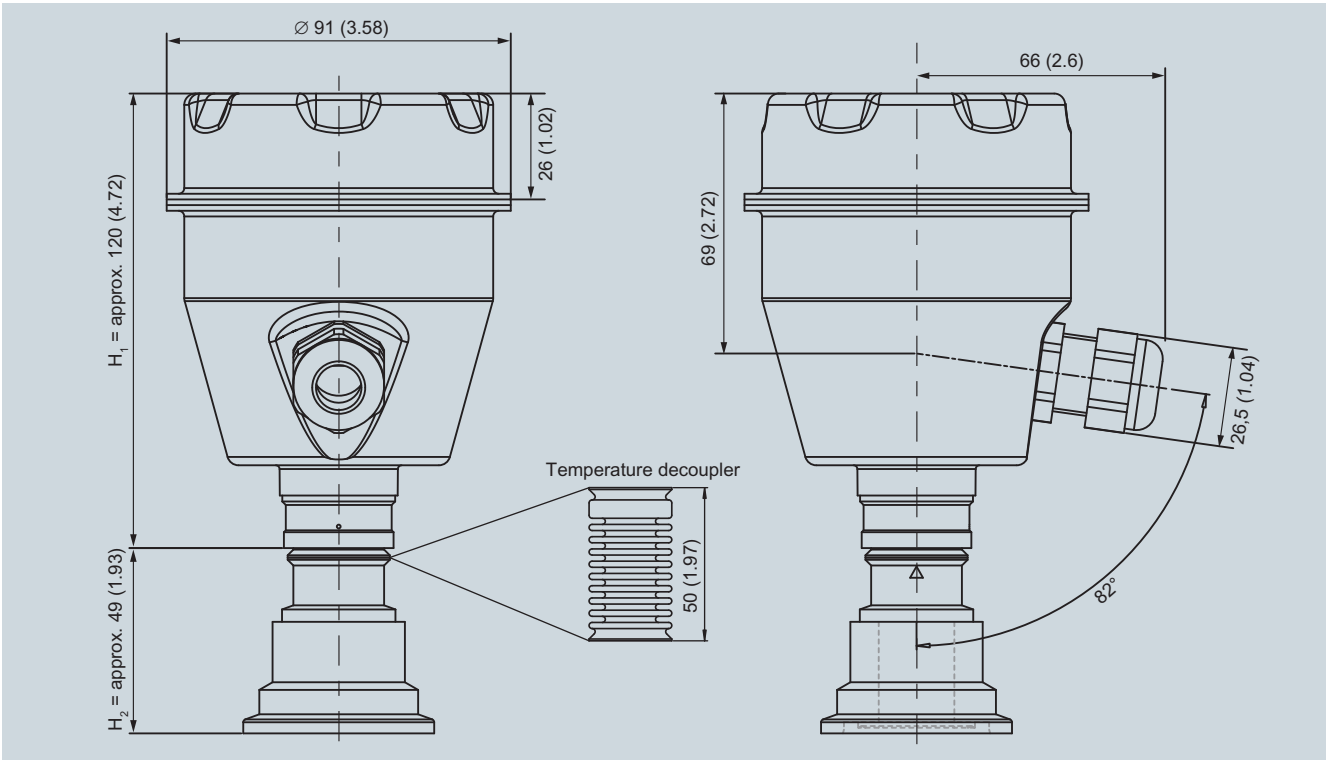


SITRANS P300, with oval flange, dimensions in mm (inch)



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

SITRANS P300 for gage and absolute pressure



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

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

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

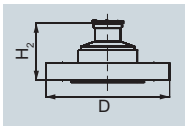
H_2 = Height of the flange up to this defined cross-section

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

Flanges to EN and ASME

Flanges to EN

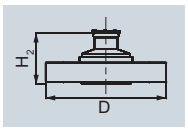
EN 1092-1



DN	PN	ØD	H_2
25	40	115 mm (4.5“)	Approx. 52 mm (2“)
25	100	140 mm (5.5“)	
40	40	150 mm (5.9“)	
40	100	170 mm (6.7“)	
50	16	165 mm (6.5“)	
50	40	165 mm (6.5“)	
80	16	200 mm (7.9“)	
80	40	200 mm (7.9“)	

Flanges to ASME

ASME B16.5

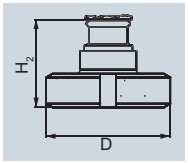


DN	class	ØD	H_2
1“	150	110 mm (4.3“)	Approx. 52 mm (2“)
1“	300	125 mm (4.9“)	
1½“	150	130 mm (5.1“)	
1½“	300	155 mm (6.1“)	
2“	150	150 mm (5.9“)	
2“	300	165 mm (6.5“)	
3“	150	190 mm (7.5“)	
3“	300	210 mm (8.1“)	
4“	150	230 mm (9.1“)	
4“	300	255 mm (10.0“)	

NuG and pharmaceutical connections

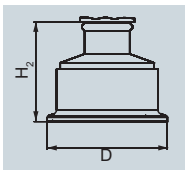
Connections to DIN

DIN 11851 (Dairy connection)



DN	PN	ØD	H_2
50	25	92 mm (3.6“)	Approx. 52 mm (2“)
80	25	127 mm (5.0“)	

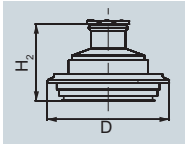
Tri-Clamp according DIN 32676



DN	PN	ØD	H_2
50	16	64 mm (2.5“)	Approx. 52 mm (2“)
65	16	91 mm (3.6“)	

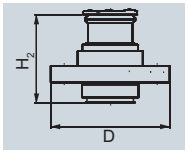
Other connections

Varivent connection



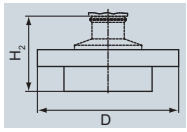
DN	PN	ØD	H_2
40 ... 125	40	84 mm (3.3“)	Approx. 52 mm (2“)

Bio-Control connection



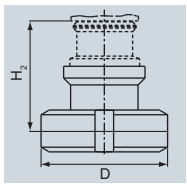
DN	PN	ØD	H_2
50	16	90 mm (3.5“)	Approx. 52 mm (2“)
65	16	120 mm (4.7“)	

Sanitary process connection to DRD



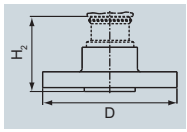
DN	PN	ØD	H_2
50	40	105 mm (4.1“)	Approx. 52 mm (2“)

Sanitary process screw connection to NEUMO Bio-Connect



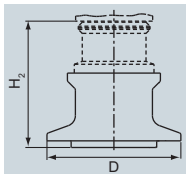
DN	PN	ØD	H_2
50	16	82 mm (3.2“)	Approx. 52 mm (2“)
65	16	105 mm (4.1“)	
80	16	115 mm (4.5“)	
100	16	145 mm (5.7“)	
2“	16	82 mm (3.2“)	
2½“	16	105 mm (4.1“)	
3“	16	105 mm (4.1“)	
4“	16	145 mm (5.7“)	

Sanitary connection to NEUMO Bio-Connect flange connection



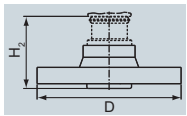
DN	PN	ØD	H_2
50	16	110 mm (4.3“)	Approx. 52 mm (2“)
65	16	140 mm (5.5“)	
80	16	150 mm (5.9“)	
100	16	175 mm (6.9“)	
2“	16	100 mm (3.9“)	
2½“	16	110 mm (4.3“)	
3“	16	140 mm (5.5“)	
4“	16	175 mm (6.9“)	

Sanitary connection to NEUMO Bio-Connect clamp connection



DN	PN	ØD	H_2
50	16	77,4 mm (3.0“)	Approx. 52 mm (2“)
65	10	90,9 mm (3.6“)	
80	10	106 mm (4.2“)	
100	10	119 mm (4.7“)	
2“	16	64 mm (2.5“)	
2½“	16	77,4 mm (3.0“)	
3“	10	90,9 mm (3.6“)	
4“	10	119 mm (4.7“)	

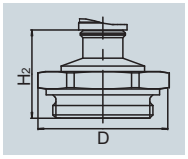
Sanitary connection to NEUMO Bio-Connect S flange connection



DN	PN	ØD	H_2
50	16	125 mm (4.9“)	Approx. 52 mm (2“)
65	10	145 mm (5.7“)	
80	10	155 mm (6.1“)	
100	10	180 mm (7.1“)	
2“	16	125 mm (4.9“)	
2½“	10	135 mm (5.3“)	
3“	10	145 mm (5.7“)	
4“	10	180 mm (7.1“)	

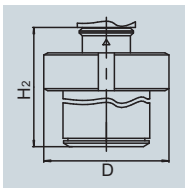
SITRANS P300 for gage and absolute pressure

Thread connection G¾“, G1“ and G2“ to DIN 3852



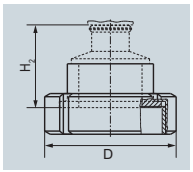
DN	PN	ØD	H_2
¾“	63	37 mm (1.5“)	Approx. 45 mm (1.8“)
1“	63	48 mm (1.9“)	Approx. 47 mm (1.9“)
2“	63	78 mm (3.1“)	Approx. 52 mm (2“)

Tank connection TG52/50 und TG52/150



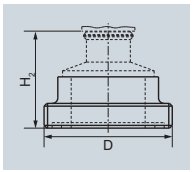
DN	PN	ØD	H_2
25	40	63 mm (2.5“)	Approx. 63 mm (2.5“)
25	40	63 mm (2.5“)	Approx.170 mm (6.7“)

SMS socket with union nut



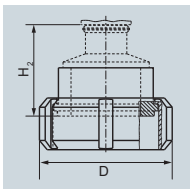
DN	PN	ØD	H_2
2“	25	84 mm (3.3“)	Approx. 52 mm (2.1“)
2½“	25	100 mm (3.9“)	
3“	25	114 mm (4.5“)	

SMS threaded socket



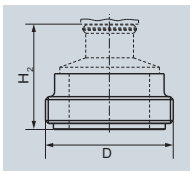
DN	PN	ØD	H_2
2“	25	70 x 1/6 mm	Approx. 52 mm (2.1“)
2½“	25	85 x 1/6 mm	
3“	25	98 x 1/6 mm	

IDF socket with union nut



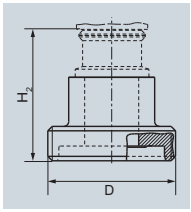
DN	PN	ØD	H_2
2“	25	77 mm (3“)	Approx. 52 mm (2.1“)
2½“	25	91 mm (3.6“)	
3“	25	106 mm (4.2“)	

IDF threaded socket



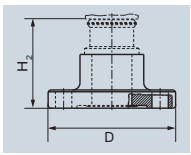
DN	PN	ØD	H_2
2“	25	64 mm (2.5“)	Approx. 52 mm (2.1“)
2½“	25	77,5 mm (3.1“)	
3“	25	91 mm (3.6“)	

Aseptic threaded socket to DIN 11864-1 Form A



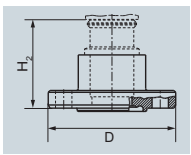
DN	PN	ØD	H_2
50	25	78 x 1/6“	Approx. 52 mm (2.1“)
65	25	95 x 1/6“	
80	25	110 x ¼“	
100	25	130 x ¼“	

Aseptic flange with notch to DIN 11864-2 Form A



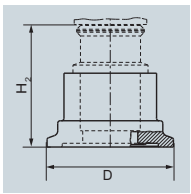
DN	PN	ØD	H_2
50	16	94	Approx. 52 mm (2.1“)
65	16	113	
80	16	133	
100	16	159	

Aseptic flange with groove to DIN 11864-2 Form A



DN	PN	ØD	H_2
50	16	94	Approx. 52 mm (2.1“)
65	16	113	
80	16	133	
100	16	159	

Aseptic clamp with groove to DIN 11864-3 Form A



DN	PN	ØD	H_2
50	25	77,5	Approx. 52 mm (2.1“)
65	25	91	
80	16	106	
100	16	130	

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

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

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

Various versions of the pressure transmitters are available for measuring:

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

Benefits

- High quality and long life
- High reliability even under extreme chemical and mechanical loads, e.g. abrasion.
- For aggressive and non-aggressive gases, vapors and liquids
- Extensive diagnosis and simulation functions
- Minimum conformity error
- Small long-term drift
- Wetted parts made of Hastelloy
- Infinitely adjustable spans from 30 mbar g to 16 bar g for DS III with HART interface
- Nominal measuring range from 1 mbar g to 16 bar g for DS III with PROFIBUS PA and FOUNDATION Fieldbus interface
- Infinitely adjustable spans from 30 mbar g to 16 bar g for SITRANS P300 with HART interface
- Nominal measuring range from 1 bar g to 16 bar g for SITRANS P300 with PROFIBUS PA interface
- High measuring accuracy
- Parameterization over control keys and HART communication, or over PROFIBUS PA or FOUNDATION Fieldbus interface (DS III only).

Application

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

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

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

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

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

SITRANS P, DS III series

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

Span (infinitely adjustable)

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

Nominal measuring range

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

SITRANS P300

Span (infinitely adjustable)

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

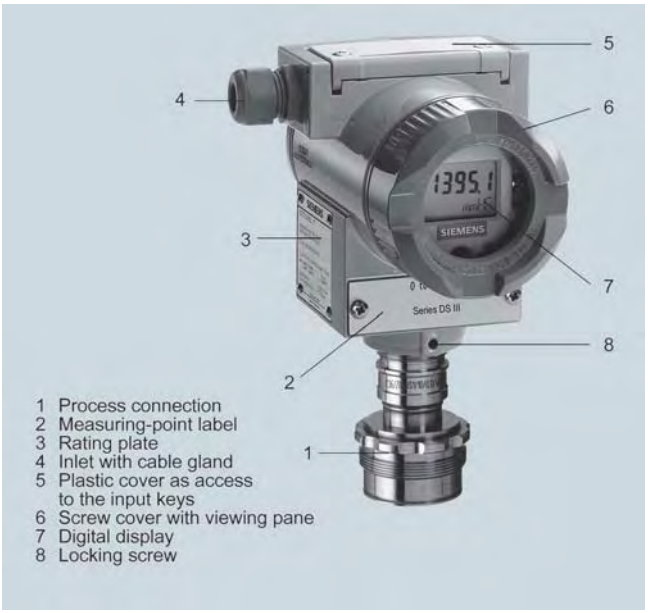
Nominal measuring range

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

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

Design

SITRANS P, DS III series



Device front view, SITRANS P DS III

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

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

The approval label is located on the opposite side.

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

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

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

SITRANS P300

The device comprises:

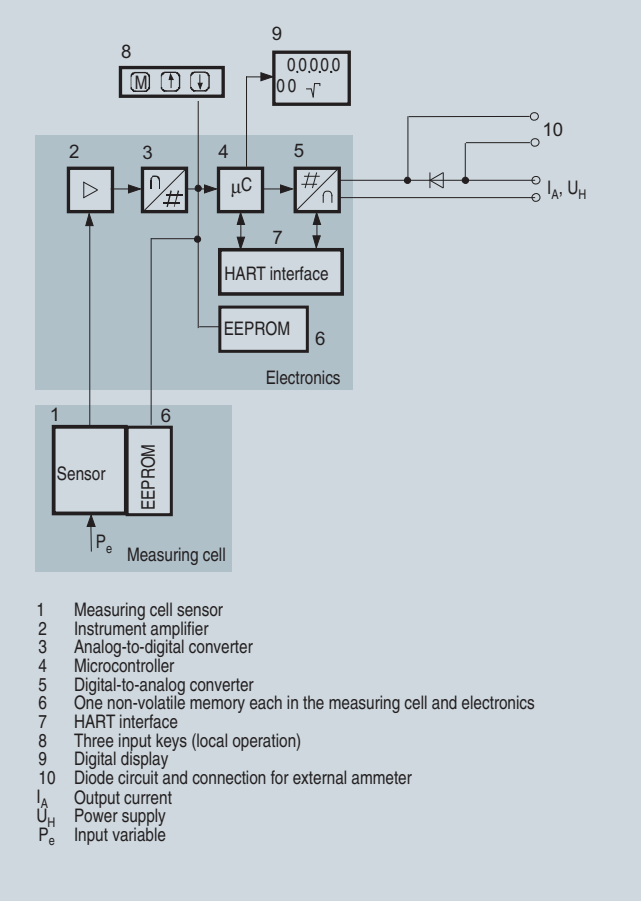
- Electronics
- Housing
- Measuring cell

Perspective view of the SITRANS P300

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

Function

Operation of the electronics with PROFIBUS PA 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 instrument amplifier (2) and digitized in the analog-to-digital converter (3). The digital information is evaluated in a microcontroller, its linearity and temperature response corrected, and converted in a digital-to-analog converter (5) into an output current of 4 to 20 mA.

The diode circuit (10) protects against incorrect polarity.

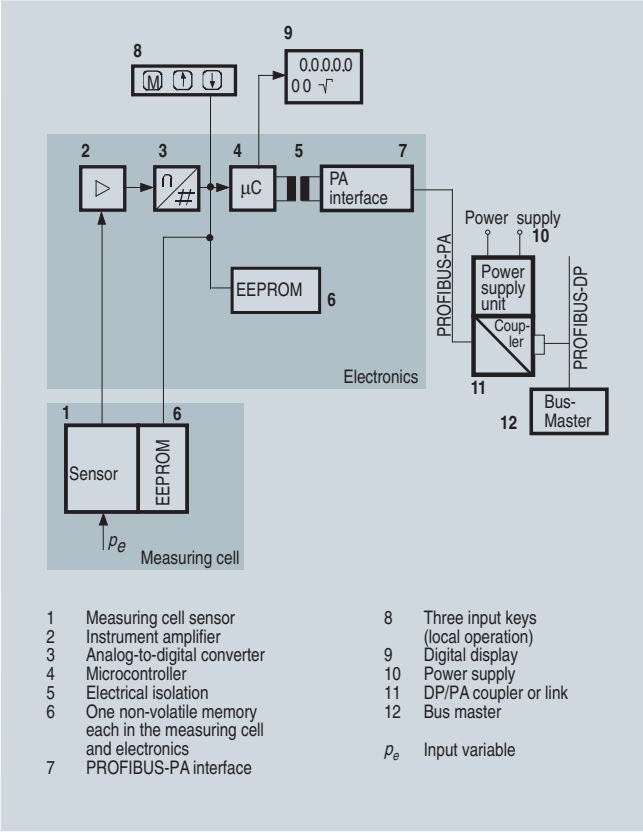
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The one memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced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

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

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

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

Operation of the 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 instrument amplifier (2) and digitized in the analog-to-digital converter (3). The digital information is evaluated in the microcontroller, its linearity and temperature response corrected, and provided on the PROFIBUS PA through an electrically isolated PA interface (7).

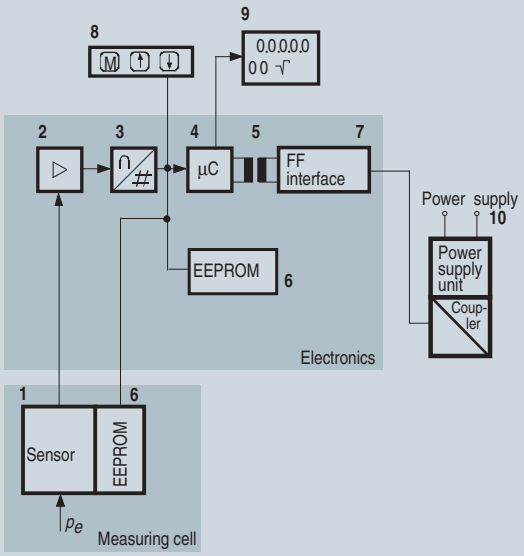
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The first memory is linked with the measuring cell, the second with the electronics. This modular design means that the electronics and the measuring cell can be replaced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

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

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

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

Mode of operation of the FOUNDATION Fieldbus electronics



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 instrument amplifier (2) and digitized in the analog-to-digital converter (3). The digital information is evaluated in the microcontroller, its linearity and temperature response corrected, and provided on the FOUNDATION Fieldbus through an electrically isolated FOUNDATION Fieldbus Interface (7).

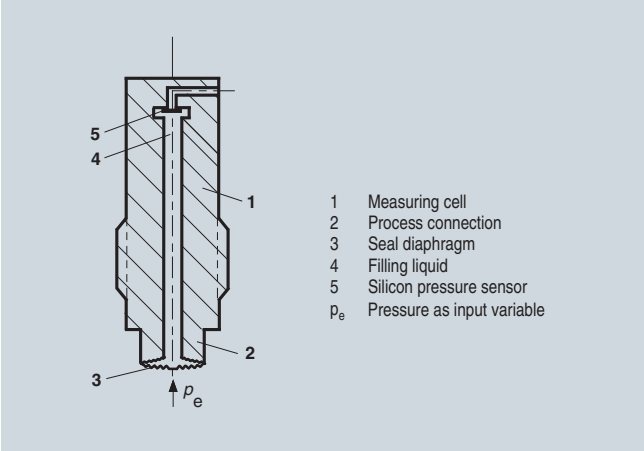
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The one memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced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

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

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

Mode of operation of the measuring cell

Measuring cell for gage pressure with front-flush diaphragm



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

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

Parameterization

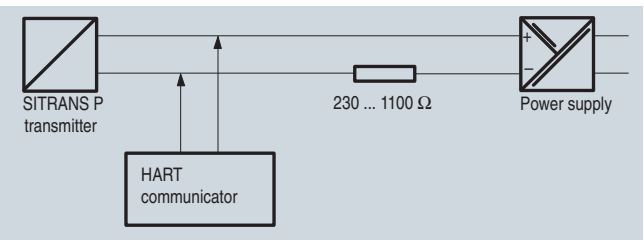
Depending on the version, there are a range of options for parameterizing the pressure transmitter and for setting or scanning the parameters.

Parameterization using the input keys (local operation)

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

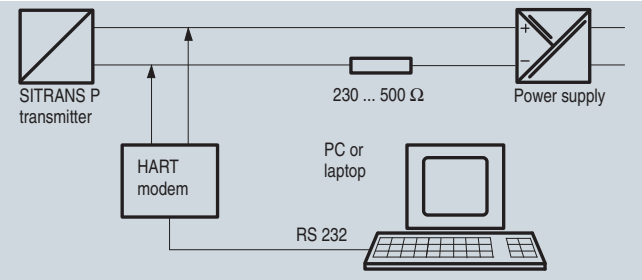
Parameterization using HART communication

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



Communication between a HART communicator and a pressure transmitter

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



HART communication between a PC communicator and a pressure transmitter

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

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

Adjustable parameter DS III HART and P300 HART

Parameters	Input keys	HART 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 keys, 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
Diagnostics functions		x

1) Cancel apart from write protection

Diagnostic functions for DS III HART and P300 HART

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

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

Physical variable	Physical dimensions
Pressure (setting can also be made in the factory)	Pa, MPa, kPa, bar, mbar, torr, atm, psi, g/cm^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 puts the DS III PA is in connection with a process control system, e.g. SIMATIC PSC 7. Communication is possible even in a potentially explosive environment.

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

Parameterization through FOUNDATION Fieldbus Interface

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

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

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

Adjustable parameters	Input keys	PROFIBUS PA and FOUNDATION Fieldbus interface
Electrical damping	x	x
Zero adjustment (correction of position)	x	x
Key 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 PA and FF and P300 PA and FF

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

Physical dimensions available for the display

Physical variable	Physical dimensions
Pressure (setting can also be made in the factory)	MPa, kPa, Pa, bar, mbar, torr, atm, psi, g/cm^2, kg/cm^2, mmH$_2$O, mmH$_2$O (4 °C), inH$_2$O, inH$_2$0 (4 °C), ftH$_2$O (20 °C), mmHg, inHg
Level (height data)	m, cm, mm, ft, in, yd
Mass	g, kg, t, lb, Ston, Lton, oz
Volume	m^3, dm^3, hl, yd^3, ft^3, in^3, US gallon, Imp, gallon, bushel, barrel, barrel liquid
Temperature	K, °C, °F, °R
Miscellaneous	%

DS III series with PMC connection

Technical specifications

SITRANS P, DS III series for gage pressure with PMC connection for the paper industry

	HART		PROFIBUS PA or FOUNDATION Fieldbus	
Input				
Measured variable	Gage pressure			
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure
	0.01 ... 1 bar g (0.145 ... 14.5 psi g)	6 bar g (87 psi g)	1 bar g (14.5 psi g)	6 bar g (87 psi g)
	0.04 ... 4 bar g (0.58 ... 58 psi g)	10 bar g (145 psi g)	4 bar g (58 psi g)	10 bar g (145 psi g)
	0.16 ... 16 bar g (2.32 ... 232 psi g)	32 bar g (464 psi g)	16 bar g (232 psi g)	32 bar g (464 psi g)
Lower measuring limit				
• Measuring cell with silicone oil filling	100 mbar a (1.45 psi a)			
Upper measuring limit	100% of max. span			
Output				
Output signal	4 ... 20 mA		Digital PROFIBUS PA or FOUNDATION Fieldbus 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	
With polarity reversal protection	-		Yes	
Accuracy	To EN 60770-1			
Reference conditions (All error data refer always refer to the set span)	Increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil filling, room temperature 25 °C (77 °F) r: Span ratio (r = max. span/set span)			
Error in measurement and fixed-point setting (including hysteresis and repeatability)				
• Linear characteristic			≤ 0,075%	
- r ≤ 10	≤ (0.0029 · r + 0.071)%			
- 10 < r ≤ 30	≤ (0.0045 · r + 0.071)%			
- 30 < r ≤ 100	≤ (0.005 · r + 0.05)%			
Long-term drift (temperature change ± 30 °C (± 54 °F))	≤ (0.25 · r)% every 5 years		≤ 0.25% every 5 years	
Influence of ambient temperature				
• at -10 ... +60 °C (14 ... 140 °F)	≤ (0.08 · r + 0.1)%		≤ 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 medium temperature				
• Temperature difference between medium temperature and ambient temperature	3 mbar/10 K (0.04 psi/10 K)			
Influence of mounting position	≤ 0.1 mbar g (0.00145 psi g) per 10° inclination			
Measured Value Resolution	-		$3 \cdot 10^{-5}$ of nominal measuring range	

SITRANS P, DS III series for gage pressure with PMC connection for the paper industry		
	HART	**PROFIBUS PA or FOUNDATION Fieldbus**
Rated operating conditions		
Degree of protection (to EN 60529)	IP65, IP68, NEMA X, enclosure cleaning, resistant to lyes, steam to 150° C (302 °F)	
Process temperature	-20 ... +100 °C (-4 ... +212 °F)	
Ambient conditions		
• Ambient temperature	-20 ... +85 °C (-4 ... +185 °F)	
• Storage temperature	-50 ... +85 °C (-58 ... +185 °F)	
• Climatic class		
- Condensation	Permissible	
• Electromagnetic compatibility		
- Emitted interference and interference immunity	To EN 61326 and NAMUR NE 21	
Design		
Weight (without options)	≈ 1.5 kg (≈ 3.3 lb)	
Housing material	Poor in copper die-cast aluminium, GD-AlSi12 or stainless steel precision casting, mat. No. 1.4408	
Wetted parts materials	Stainless steel	
• Gasket (standard)	PTFE flat gasket	
• O-ring (minibolt)	FPM (Viton) or optionally: FFPM or NBR	
Measuring cell filling	Silicone oil or inert filling liquid	
Process connection (standard)	Front-flush, 1½", PMC Standard design	
Process connection (minibolt)	Front-flush, 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
• Startup current ≤ basic current	-	Yes
• Max. current in event of fault	-	15.5 mA
Fault disconnection electronics (FDE) available	-	Yes
Certificate and approvals		
Classification according to pressure equipment directive (DRGL 97/23/EC)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of Article 3, paragraph 3 (sound engineering practice)	

DS III series with PMC connection

SITRANS P, DS III series for gage pressure with PMC connection for the paper industry	
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 measuring value) or 10 (two measuring 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 T_{63} , adjustable	0 ... 100 s
- Simulation function	Input /Output
- Failure mode	Can be parameterized (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	Can be parameterized (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

Communication FOUNDATION Fieldbus	
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 T_{63} , adjustable	0 ... 100 s
- Simulation function	Output/input (can be locked within the device with a bridge)
- Failure mode	Can be parameterized (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 FF 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 gage pressure, with PMC connection series DS III HART		7MF4133-
Measuring cell filling	**Measuring cell cleaning**	
Silicone oil	Standard	1
Inert liquid	Grease-free	3
Span		
0.01 ... 1 bar g[1)]	(0.15 ... 14.5 psi g)[1)]	B
0.04 ... 4 bar g	(0.58 ... 58 psi g)	C
0.16 ... 16 bar g	(2.32 ... 232 psi g)	D
Wetted parts materials		
Seal diaphragm	Connection shank	
Hastelloy	Stainless steel	B
Process connection		
• PMC Style Standard: Thread 1½"		2
• PMC Style Mini bolt: 1" front-flush (min. span: 500 mbar (7.25 psi), can not be ordered with mit 1-bar (14.5 psi) measuring cell (Option B))		3
Non-wetted parts materials		
• Housing made of die-cast aluminum		0
• Housing stainless steel precision casting		3
Version		
• Standard version		1
• International version, English label inscriptions, documentation in 5 languages on CD		2
Explosion protection		
• None		A
Electrical connection / cable entry		
• Female thread M20x1.5		B
• Female thread ½-14 NPT		C
• M12 connectors (metal)		F
Display		
• Without indicator		0
• Without visible digital indicator (digital indicator ▶ hidden, setting: mA)		1
• With visible digital indication, setting: mA		6
• With customer-specific digital indication (setting as specified, Order code "Y21" or "Y22" required)		7

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

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

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

Selection and Ordering data		Order No.
SITRANS P pressure transmitter for gage pressure, with PMC connection		
DS III PA (PROFIBUS PA) series		7MF4134-
DS III FF series (FOUNDATION Fieldbus)		7MF4135-
Measuring cell filling	**Measuring cell cleaning**	
Silicone oil	Standard	1
Inert liquid	Grease-free	3
Nominal measuring range		
1 bar g[1)]	(14.5 psi g)[1)]	B
4 bar g	(58 psi g)	C
16 bar g	(232 psi g)	D
Wetted parts materials		
Seal diaphragm	Connection shank	
Hastelloy	Stainless steel	B
Process connection		
• PMC Style Standard: front-flush 1½"		2
• PMC Style Mini bolt: front-flush 1" (min. span: 500 mbar (7.25 psi), can not be ordered with mit 1-bar (14.5 psi) measuring cell (Option B))		3
Non-wetted parts materials		
• Housing made of die-cast aluminum		0
• Housing stainless steel precision casting		3
Version		
• Standard version		1
• International version, English label inscriptions, documentation in 5 languages on CD		2
Explosion protection		
• None		A
Electrical connection / cable inlet		
• Screwed gland M20x1.5		B
• Screwed gland ½-14 NPT		C
• M12 connectors (metal)		F
Display		
• Without indicator		0
• Without visible digital indicator (digital indicator ▶ hidden, setting: mA)		1
• With visible digital display		6
• With customer-specific digital display (setting as specified, Order code "Y21" or required)		7

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

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

DS III series with PMC connection

Selection and Ordering data	Order code	HART	PA	FF
Further designs				
Add "-Z" to Order No. and specify Order code.				
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 or psi	**B21**	✓	✓	✓
Quality inspection certificate (Factory calibration) to IEC 60770-2	**C11**	✓	✓	✓
Acceptance test certificate To EN 10204-3.1	**C12**	✓	✓	✓
Factory certificate To EN 10204-2.2	**C14**	✓	✓	✓
Output signal can be set to upper limit of 22.0 mA	**D05**	✓	✓	✓
Mounting				
• Weldable sockets for standard 1½" threaded connection	**P01**	✓	✓	✓
• Weldable socket for mini bolt connection 1" (incl. screw 5/16-18 UNC-2B and washer)	**P02**	✓	✓	✓

Selection and Ordering data	Order code	HART	PA	FF
Additional data				
Add "-Z" to Order No. and specify Order code.				
Measuring range to be set Specify in plain text (max. 5 digits): Y01: ... up to ... mbar, bar, kPa, MPa, psi	**Y01**	✓		
Measuring point number (TAG No.) Max. 16 characters, specify in plain text: Y15:	**Y15**	✓	✓	✓
Measuring point text Max. 27 characters, specify in plain text: Y16:	**Y16**	✓	✓	✓
Entry of HART address (TAG) Max. 8 characters, specify in plain text: Y17:	**Y17**	✓		
Setting of pressure indication in pressure units Specify in plain text (standard setting: mA): Y21: mbar, bar, kPa, MPa, psi, ... Note: The following pressure units can be selected: bar, mbar, mm $H_2O^{*)}$, in$H_2O^{*)}$, ft$H_2O^{*)}$, mmHG, inHG, psi, Pa, kPa, MPa, g/cm^2, kg/cm^2, Torr, ATM or % *) ref. temperature 20 °C	**Y21**	✓	✓	✓
Setting of pressure indication in non-pressure units 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 Max. 8 characters, specify in plain text: Y25:	**Y25**		✓	✓

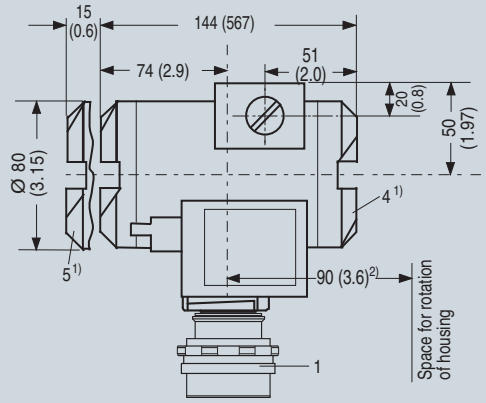
Only "Y01" and "Y21" can be factory preset

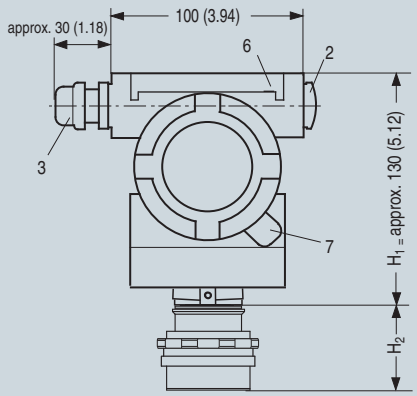
✓ = available

Ordering example

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

Dimensional drawings





1 Process connection: PMC standard
2 Blanking plug
3 Electrical connection:
- screwed gland M20x1,5
- screwed gland ½-14 NPT
4 Terminal side
5 Electronics side, digital display (longer overall length for cover with window)
6 Protective cover over keys
7 Screw cover safety bracket (only for explosion-proof enclosure, not shown in the drawing)

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

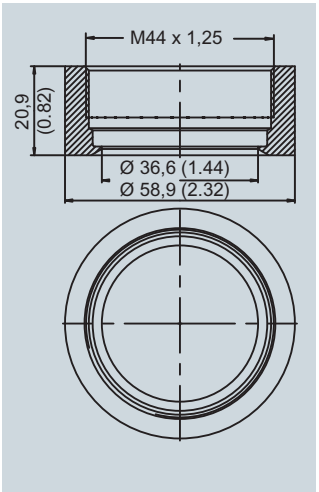
SITRANS P DS III pressure transmitters for gage pressure, with PMC connection, dimensions in mm (inch)

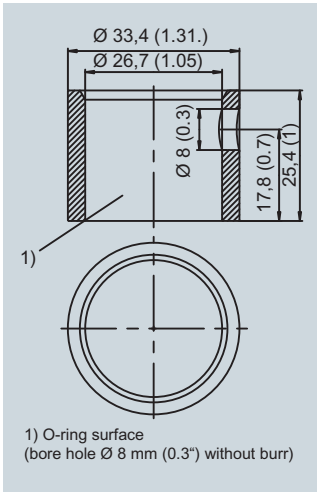
The diagram shows a SITRANS P DS III with an example of a flange. In this drawing the height is subdivided into H_1 and H_2.

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 H2 is indicated in the dimensions of the flanges.

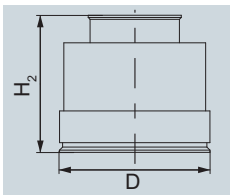




PMC Style standard (left) and PMC Style minibolt (right) weldable sockets, dimensions in mm (inch)

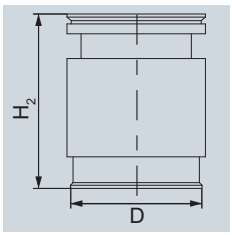
Material: Stainless steel, mat. No. 1.4404 / 316L

PMC Style standard



DN	PN	ØD	H_2
		40.9 mm (1.6")	Approx. 36.8 mm (1.4")

PMC Style minibolt



DN	PN	ØD	H_2
		26.3 mm (1.0")	Approx. 33.1 mm (1.3")

SITRANS P300 with PMC connection

Technical specifications

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

	HART		PROFIBUS PA	
Input				
Measured variable	Gage pressure (flush-mounted)			
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure
	0.01 ... 1 bar g (0.15 ... 14.5 psi g)	6 bar g (87 psi g)	1 bar g (14.5 psi g)	6 bar g (87 psi g)
	0.04 ... 4 bar g (0.58 ... 58 psi g)	10 bar g (145 psi g)	4 bar g (58 psi g)	10 bar g (145 psi g)
	0.16 ... 16 bar g (2.3 ... 232 psi g)	32 bar g (464 psi g)	16 bar g (232 psi g)	32 bar g (464 psi g)
	Depending on the 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 psi a)			
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	
With polarity reversal protection	No		Yes	
Electrical damping T_{63} (step width 0.1 s)	Set to 0.1 s (0 ... 100 s)			
Accuracy	To EN 60770-1			
Reference conditions (All error data refer always refer to the set span)	Increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, measuring cell with silicone oil, room temperature 25 °C (77 °F), span ratio (r = max. span/set span)			
Measurement deviation with cut-off point setting, including hysteresis and repeatability.				
Linear characteristic curve			≤ 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)%			
Settling time T_{63} without electrical damping	Approx. 0.2 s			
Long-term drift at ±30 °C (±54 °F)	≤ (0.25 · r)%/5 years		≤ 0.25%/5 years	
Influence of ambient temperature				
• at -10 ... +60 °C (14 ... 140 °F)	≤ (0.1 · r + 0.2)%		≤ 0,3%	
• at -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 operating conditions				
Installation conditions				
Ambient temperature	Observe the temperature class in areas subject to explosion hazard.			
• Measuring cell with silicone oil	-40 ... +85 °C (-40 ... +185 °F)			
• Digital display	-30 ... +85 °C (-22 ... +185 °F)			
• Storage temperature	-50 ... +85 °C (-58 ... +185 °F)			
Climatic class				
Condensation	Permissible			
Degree of protection to EN 60529	IP65, IP68, NEMA X, enclosure cleaning, resistant to lyes, steam to 150° C (302 °F)			
Electromagnetic compatibility				
• Emitted interference and interfer. immunity	To EN 61326 and NAMUR NE 21			

SITRANS P300 for gage pressure with PMC connection for the paper industry		
	HART	**PROFIBUS PA**
Medium conditions		
Process temperature		
• Measuring cell with silicone oil	-40 ... +100 °C (-40 ... +212 °F)	
Design		
Weight (without options)	Approx. 1 kg (2.2 lb)	
Housing material	Stainless steel, mat. No. 1.4301/304	
Material of parts in contact with the medium		
• Seal diaphragm	Hastelloy C276, mat. No. 2.4819	
• Measuring cell filling	Silicone oil	
Power supply 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 EEx	-	9 ... 32 V
• For intrinsically-safe operation	-	9 ... 24 V
Current consumption		
• Max. basic current	-	12.5 mA
• Startup current ≤ basic current	-	Yes
• Max. fault current in the event of a fault	-	15.5 mA
Fault disconnection electronics (FDE)	-	Available
Certificate and approvals		
Classification according to pressure 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)	
Explosion protection		
Intrinsic safety "i"	PTB 05 ATEX 2048	
Identification	Ex II 1/2 G EEx ia/ib IIB/IIC T4, T5, T6	
Permissible ambient temperature		
• Temperature class T4	-40 ... +85 °C (-40 ... +185 °F)	
• Temperature class T5	-40 ... +70 °C (-40 ... +158 °F)	
• Temperature class T6	-40 ... +60 °C (-40 ... +140 °F)	
Connection	To certified intrinsically-safe circuits with maximum values: U_i = 30 V, I_i = 100 mA, P_i = 750 mW, R_i = 300 Ω	To certified intrinsically-safe circuits with maximum 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 inner 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	

SITRANS P300 with PMC connection

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

HART communication

HART communication	230 ... 1100 Ω
Protocol	HART Version 5.x
Software for computer	SIMATIC PDM

PROFIBUS PA communication

Simultaneous communication with master class 2 (max.)	4
The address can be set using	configuration tool Local operation (standard setting Address 126)
Cyclic data usage	
• Output byte	One measuring value: 5 bytes Two measuring values: 10 bytes
• Input byte	Register operating mode: 1 bytes Reset function due to metering. 1 bytes
Device profile	PROFIBUS PA Profile for Process Control Devices Version 3.0, Class B
Function blocks	2
• Analog input	
- Adaptation to customer-specific process variables	Linearly rising or falling characteristic
- Electrical damping T_{63}	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	Linear
- Simulation function	Available
• Transducer block "Electronic temperature"	
- Simulation function	Available

Communication FOUNDATION Fieldbus

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 T_{63} , adjustable	0 ... 100 s
- Simulation function	Output/input (can be locked within the device with a bridge)
- Failure mode	Can be parameterized (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 FF 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		
4 ... 20 mA/HART		F) 7MF8123 -
PROFIBUS PA		F) 7MF8124 -
FOUNDATION Fieldbus (FF)		F) 7MF8125 -
		■■■■■ - ■■■■
Measuring cell filling	**Measuring cell cleaning**	
Silicone oil	Standard	1
Inert liquid	Cleanliness level 2 to DIN 25410	3
Span		
1 bar g	(14.5 psi g)	B
4 bar g	(58 psi g)	C
16 bar g	(232 psi g)	D
Wetted parts materials		
Seal diaphragm	Measuring cell	
Hastelloy	Stainless steel	B
Process connection		
• PMC Style Standard: Thread 1½"		2
• PMC Style Mini bolt: 1" front-flush (min. span: 500 mbar (7.25 psi), can not be ordered with mit 1-bar (14.5 psi) measuring cell (Option B))		3
Non-wetted parts materials		
• Stainless steel, deep-drawn and electrolytically polished		4
Version		
• Standard version		1
Explosion protection		
• None		A
• With ATEX, Type of protection:		
- "Intrinsic safety (EEx ia)"		B
• Zone 20/21/22[1]		C
• Ex nA/nL (zone 2)[2]		E
• With FM + CSA, Type of protection:		
- "Intrinsic Safe (is)" (planned)		M
Electrical connection / cable entry		
• Screwed gland M20x1.5 (Polyamide)[3]		A
• Screwed gland M20x1.5 (metal)		B
• Screwed gland M20x1.5 (stainless steel)		C
• M12 connector (without cable socket)		F
• M12 connector (stainless steel, without cable socket)		G
• ½-14 NPT thread, metal[4]		H
• ½-14 NPT thread, stainless steel[4]		J
Display		
• Without display, with keys, closed lid[3]		1
• With display and keys, closed lid		2
• With display and keys, lid with glass pane (setting on HART devices: mA, on PROFIBUS PA and FOUNDATION Fieldbus devices: pressure unit)		6
• With display (setting acc. to specifications, Order code "Y21" or "Y22" required), lid with glass pane		7

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

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

1) Can only be ordered in conjunction with electrical connection Option A.
2) Can only be ordered in conjunction with electrical connection Option B, C, F or G.
3) Only together with HART electronics.
4) Without cable gland.

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

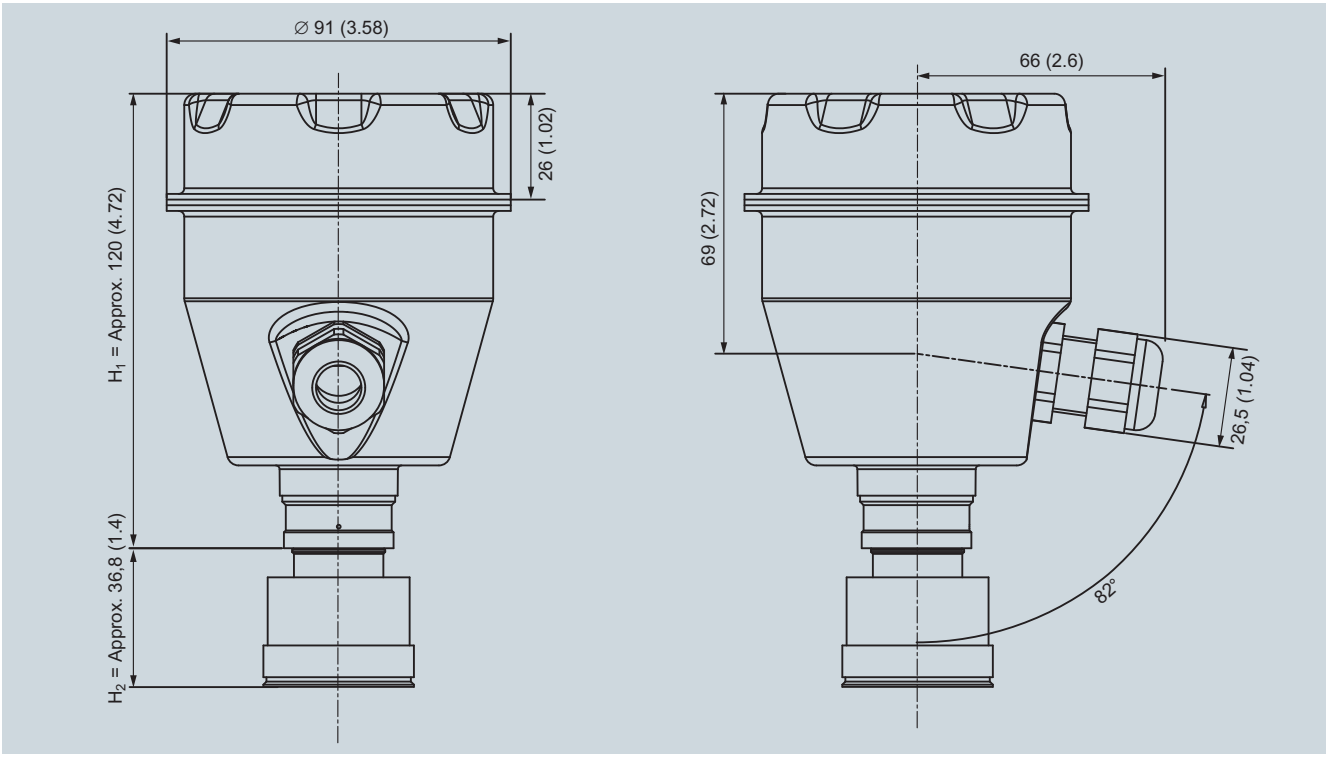
Selection and Ordering data	Order code	HART	PA	FF
Further designs				
Add "-Z" to Order No. and specify Order code.				
Cable socket for M12 plug				
• Metal	**A50**		✓	✓
• Stainless steel	**A51**		✓	✓
Rating plate inscription (instead of English)				
• German	**B10**	✓	✓	✓
• French	**B12**	✓	✓	✓
• Spanish	**B13**	✓	✓	✓
• Italian	**B14**	✓	✓	✓
English rating plate Pressure units in inH_2O or psi	**B21**	✓	✓	✓
Quality inspection certificate (Factory calibration) to IEC 60770-2	**C11**	✓	✓	✓
Acceptance test certificate To EN 10204-3.1	**C12**	✓	✓	✓
Factory certificate To EN 10204-2.2	**C14**	✓	✓	✓
Set output signal to upper limit of 22.0 mA	**D05**	✓	✓	✓
Type of protection IP68	**D12**	✓	✓	✓
Mounting				
• Weldable sockets for standard 1½" threaded connection	**P01**	✓	✓	✓
• Weldable socket for mini bolt connection 1" (incl. screw 5/16-18 UNC-2B and washer)	**P02**	✓	✓	✓
Additional data				
Add "-Z" to Order No. and specify Order code.				
Measuring range to be set Specify in plain text (max. 5 digits): Y01: ... up to ... mbar, bar, kPa, MPa, psi	**Y01**	✓		
Measuring point number (TAG No.) Max. 16 characters, specify in plain text: Y15:	**Y15**	✓	✓	✓
Measuring point text Max. 27 characters, specify in plain text: Y16:	**Y16**	✓	✓	✓
Entry of HART address (TAG) Max. 8 characters, specify in plain text: Y17:	**Y17**	✓		
Setting of pressure indication in pressure units Specify in plain text (standard setting: mA): Y21: mbar, bar, kPa, MPa, psi, ... Note: The following pressure units can be selected: bar, mbar, mm H_2O*), inH_2O*), ftH_2O*), mmHG, inHG, psi, Pa, kPa, MPa, g/cm², kg/cm², Torr, ATM or % *) ref. temperature 20 °C	**Y21**	✓	✓	✓
Setting of pressure indication in non-pressure units Specify in plain text: Y22: ..... up to ..... l, m³, m, USg, ... (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	**Y22 + Y01**	✓		
Preset bus address Specify in plain text: Y25:	**Y25**		✓	✓

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

✓ = available

SITRANS P300 with PMC connection

Dimensional drawings



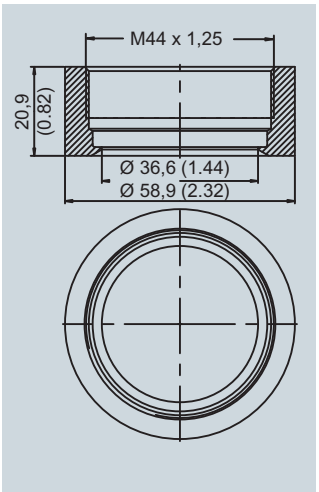
SITRANS P300 pressure transmitters for gage pressure, with PMC connection, dimensions in mm (inch)

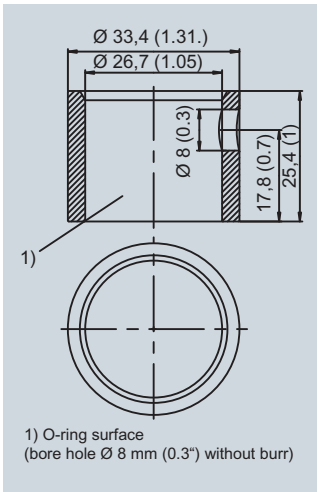
The diagram shows a SITRANS P300 with an example of a flange. In this drawing the height is subdivided into H_1 and H_2.

H_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 H2 is indicated in the dimensions of the flanges.

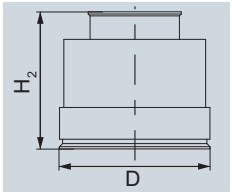




PMC Style Standard (left) and PMC Style Minibolt (right) weldable sockets, dimensions in mm (inch)

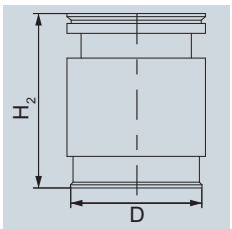
Material: Stainless steel, mat. No. 1.4404 / 316L

PMC Style Standard



DN	PN	ØD	H_2
		40.4 mm (1.6")	Approx. 36.8 mm (1.4")

PMC Style Minibolt



DN	PN	ØD	H_2
		26.3 mm (1.0")	Approx. 33.1 mm (1.3")

Overview

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

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

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

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

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

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

Benefits

- High quality and long life
- High reliability even under extreme chemical and mechanical loads
- For aggressive and non-aggressive gases, vapors and liquids
- Extensive diagnosis and simulation functions
- Separate replacement of measuring cell and electronics without recalibration
- Minimum conformity error
- Small long-term drift
- Wetted parts made of high-grade materials (e.g. stainless steel, Hastelloy, gold, Monel, tantalum)
- Infinitely adjustable span from 0.01 mbar to 400 mbar for DS III with HART communication
- Nominal measuring range from 1 to 400 bar for DS III PA (PROFIBUS PA) and FF (FOUNDATION Fieldbus)
- High measuring accuracy
- Parameterization over control keys and HART communication, PROFIBUS PA communication or FOUNDATION Fieldbus interface.

Application

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

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

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

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

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

DS III, DS III PA and DS III FF series
Technical description

Pressure transmitter for gage pressure

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

Pressure transmitters for absolute pressure

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

Pressure transmitters for differential pressure and flow

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

Pressure transmitters for level

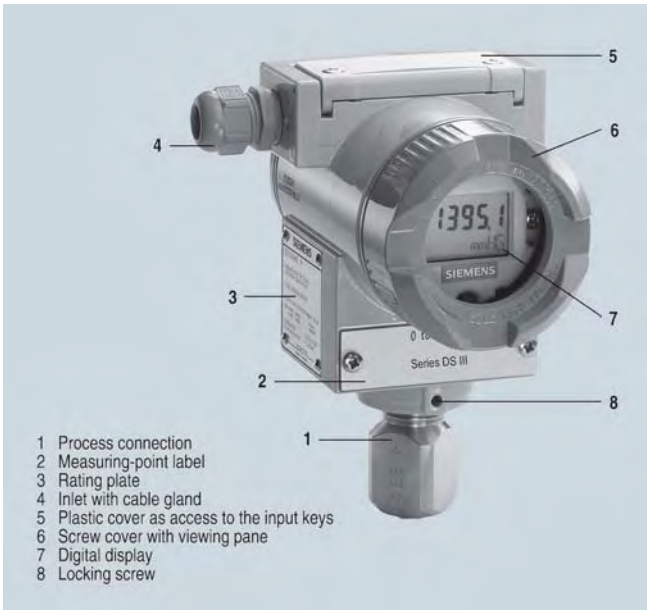
- Measured variable: Level of aggressive and non-aggressive liquids in open and closed vessels.
- Span (infinitely adjustable)
  for DS III HART: 25 mbar ... 5 bar (0.363 ... 72.5 psi)
- Nominal measuring range
  for DS III PA and FF: 250 mbar ... 5 bar (3.63 ... 72.5 psi)
- Nominal diameter of the mounting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

In the case of level measurements in open containers, the 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



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

The approval label is located on the opposite side.

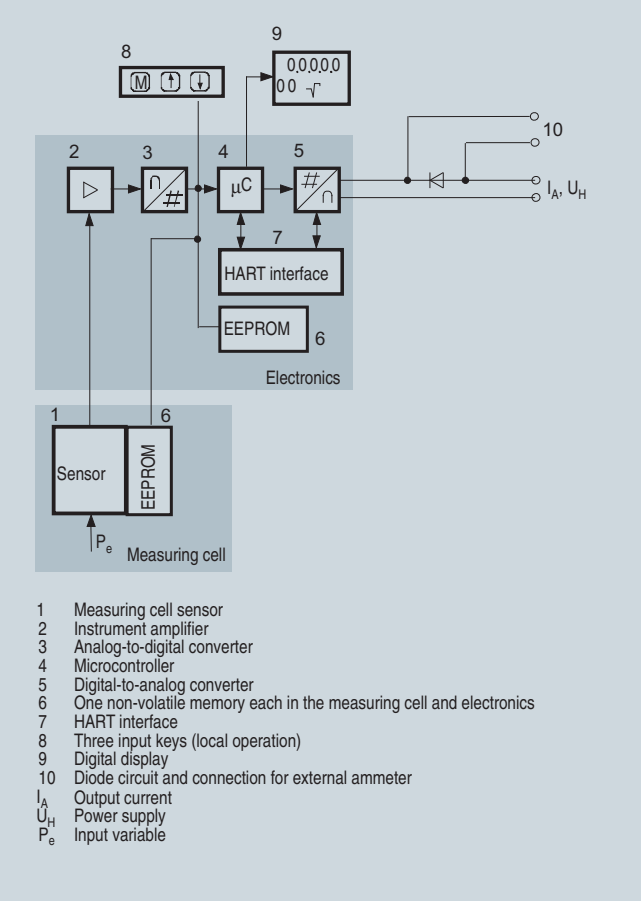
The housing is made of die-cast aluminium or stainless steel precision casting. A round cover is screwed on at the front and rear of the housing. The front cover (6) can be fitted with a viewing pane so that the measured values can be read directly on the digital display. The inlet (4) for the electrical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

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

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

Function

Operation of the electronics with PROFIBUS PA 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 the electronics

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

The diode circuit (10) protects against incorrect polarity.

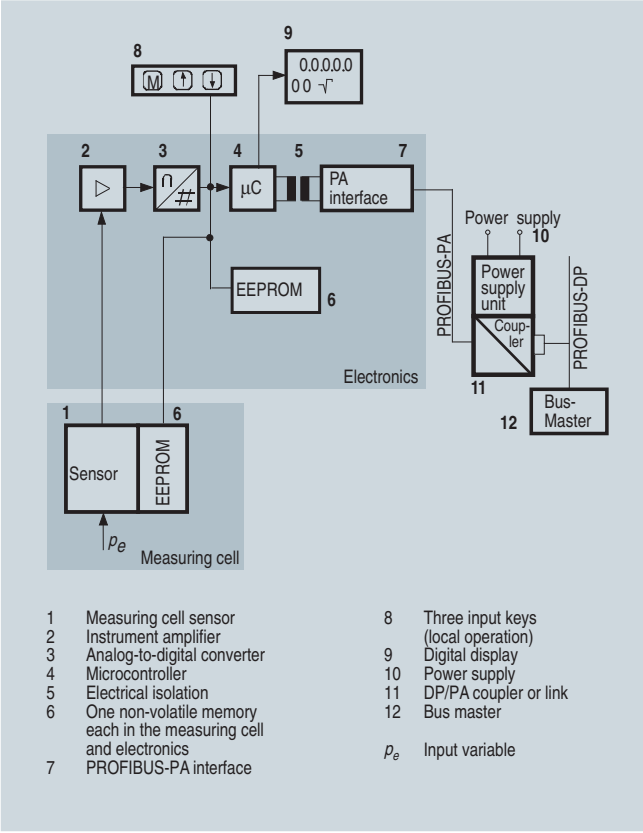
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The one memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced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

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

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

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

Operation of the 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 the electronics

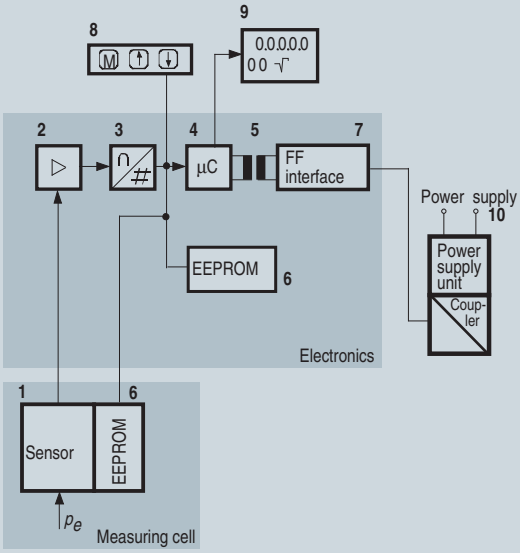
The bridge output voltage created by the sensor (1, Figure "Function diagram of the electronics") is amplified by the instrument amplifier (2) and digitized in the analog-to-digital converter (3). The digital information is evaluated in the microcontroller, its linearity and temperature response corrected,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

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

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

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

Mode of operation of the FOUNDATION Fieldbus electronics



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	p_e	Input variable
5	Electrical isolation		
6	One non-volatile memory each in the measuring cell and electronics		
7	FF interface		

Function diagram of the electronics

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

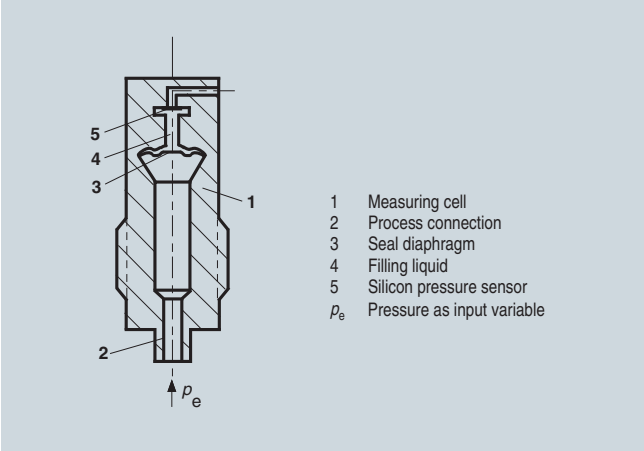
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The one memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced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

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

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

Mode of operation of the measuring cells

Measuring cell for gage pressure

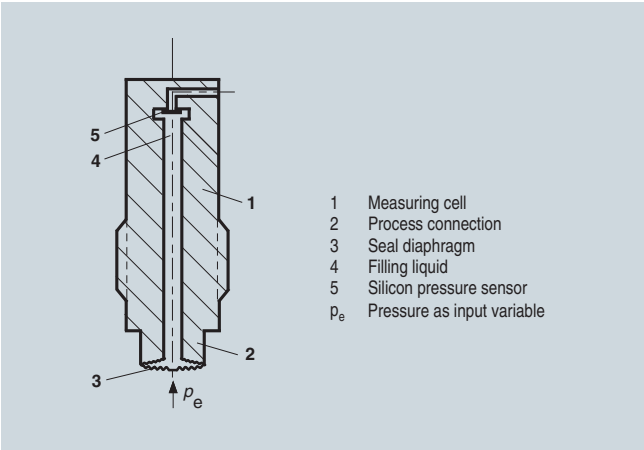


1	Measuring cell
2	Process connection
3	Seal diaphragm
4	Filling liquid
5	Silicon pressure sensor
p_e	Pressure as input variable

Measuring cell for gage pressure, function diagram

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

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

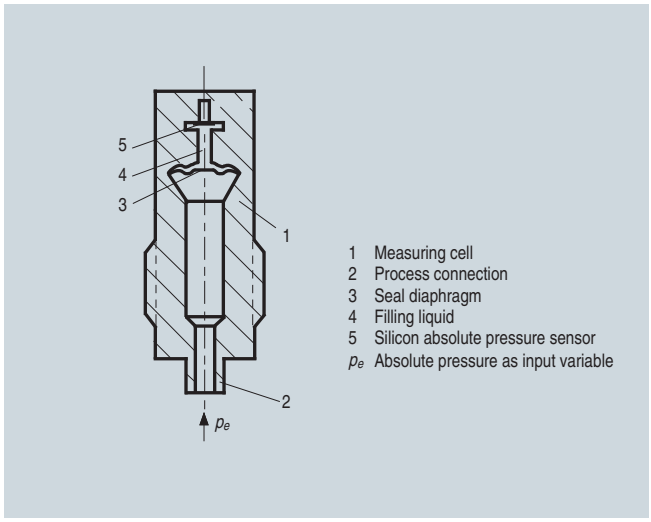


1	Measuring cell
2	Process connection
3	Seal diaphragm
4	Filling liquid
5	Silicon pressure sensor
p_e	Pressure as input variable

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

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

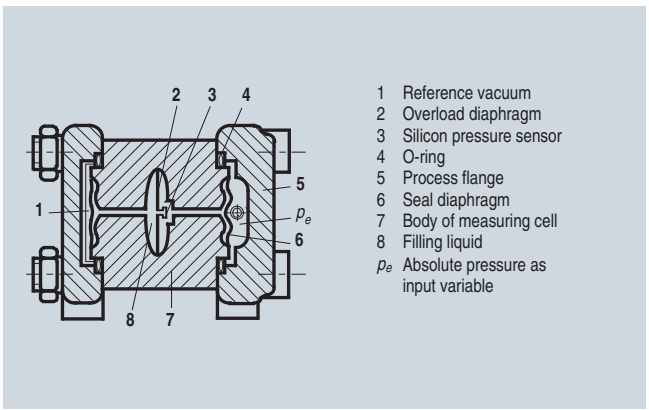
Measuring cell for absolute pressure from gage pressure series



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

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

Measuring cell for absolute pressure from differential pressure series



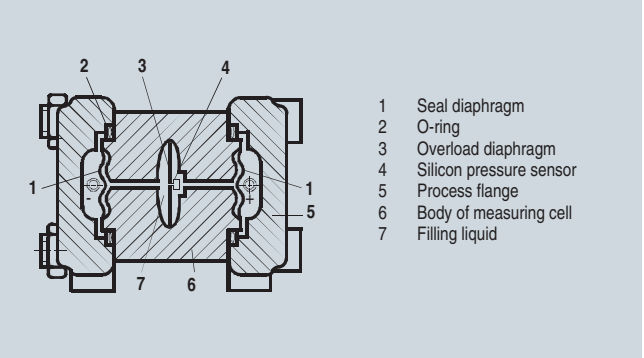
Measuring cell for absolute pressure from differential pressure series, function diagram

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

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

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

Measuring cell for differential pressure and flow



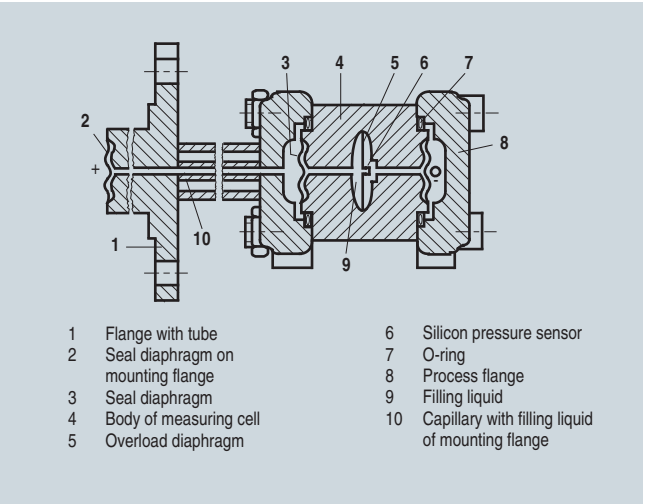
Measuring cell for differential pressure and flow, function diagram

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

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

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

Measuring cell for level



Measuring cell for level, function diagram

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

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

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

An overload diaphragm is installed to provide protection from overloads. If the measuring limits are exceeded, the overload diaphragm (2) is flexed until the seal diaphragm rests on the body

of the measuring cell (7), thus protecting the silicon pressure sensor from overloads.

Parameterization DS III

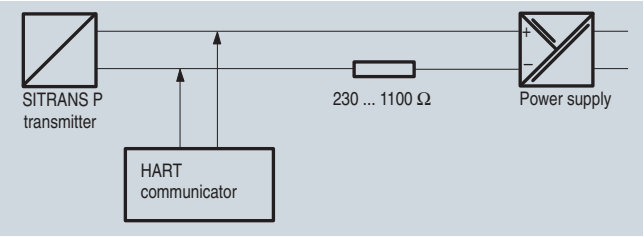
Depending on the version, there are a range of options for parameterizing the pressure transmitter and for setting or scanning the parameters.

Parameterization using the input keys (local operation)

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

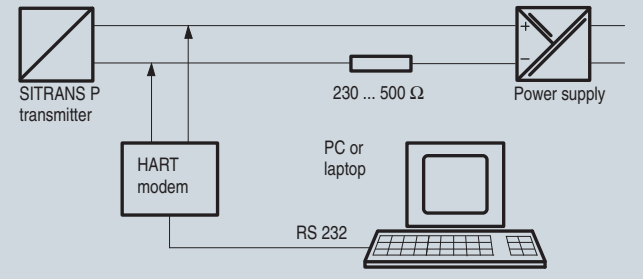
Parameterization using HART communication

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



Communication between a HART communicator and a pressure transm.

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



HART communication between a PC communicator and a pressure transmitter

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

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

Adjustable parameters, DS III HART

Parameters	Input keys (DS III HART)	HART 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 keys, 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
Diagnostics functions		x

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

Diagnostic functions for DS III HART

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

Available physical units of display for DS III HART

Table style: Technical specifications 2

Physical variable	Physical dimensions
Pressure (setting can also be made in the factory)	Pa, MPa, kPa, bar, mbar, torr, atm, psi, g/cm^2, kg/cm^2, inH_2O, inH_2O (4 °C), mmH_2O, ftH_2O (20 °C), in$H$g, 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. The PROFIBUS puts the DS III PA is in connection with a process control system, e.g. SIMATIC PSC 7. Communication is possible even in a potentially explosive environment.

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

Parameterization through FOUNDATION Fieldbus Interface

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

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

Adjustable parameters for DS III PA and FF

Parameters	Input keys (DS III HART)	PROFIBUS PA and FOUNDATION Fieldbus interface
Electrical damping	x	x
Zero adjustment (correction of position)	x	x
Key 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 PA and FF

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

Physical dimensions available for the display

Physical variable	Physical dimensions
Pressure (setting can also be made in the factory)	MPa, kPa, Pa, bar, mbar, torr, atm, psi, g/cm^2, kg/cm^2, mmH_2O, mmH_2O (4 °C), inH_2O, in$H_2$0 (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	%

DS III series for gage pressure

Technical specifications

SITRANS P, DS III series for gage pressure

	HART		PROFIBUS PA or FOUNDATION Fieldbus	
Input				
Measured variable	Gage pressure			
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure
	0.01 ... 1 bar g (0.145 ... 14.5 psi g)	6 bar g (87 psi g)	1 bar g (14.5 psi g)	6 bar g (87 psi g)
	0.04 ... 4 bar g (0.58 ... 58 psi g)	10 bar g (145 psi g)	4 bar g (58 psi g)	10 bar g (145 psi g)
	0.16 ... 16 bar g (2.23 ... 232 psi g)	32 bar g (464 psi g)	16 bar g (232 psi g)	32 bar g (464 psi g)
	0.6 ... 63 bar g (9.14 ... 914 psi g)	100 bar g (1450 psi g)	63 bar g (914 psi g)	100 bar g (1450 psi g)
	1.6 ... 160 bar g (23.2 ... 2320 psi g)	250 bar g (3626 psi g)	160 bar g (2320 psi g)	250 bar g (3626 psi g)
	4.0 ... 400 bar g (58 ... 5802 psi g)	600 bar g (8700 psi g)	400 bar g (5802 psi g)	600 bar g (8700 psi g)
	7.0 ... 700 bar g (102 ... 10153 psi g)	800 bar g (11603 psi g)	700 bar g (10153 psi g)	800 bar g (11603 psi g)
Lower measuring limit				
• Measuring cell with silicone oil filling	30 mbar a (0.435 psi a)			
• Measuring cell with inert filling liquid	30 mbar a (0.435 psi a)			
Upper measuring limit	100% of max. span (max. 160 bar g (2320 psi g) with oxygen measurement and inert liquid)			
Output				
Output signal	4 ... 20 mA		Digital PROFIBUS PA or 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	
With polarity reversal protection	-		Yes	
Accuracy	To EN 60770-1			
Reference conditions (All error data refer always refer to the set span)	Increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil filling, room temperature 25 °C (77 °F)) r: Span ratio (r = max. span/set span)			
Error in measurement and fixed-point setting (including hysteresis and repeatability)				
• Linear characteristic			≤ 0,075%	
- r ≤ 10	≤ (0.0029 · r + 0.071)%			
- 10 < r ≤ 30	≤ (0.0045 · r + 0.071)%			
- 30 < r ≤ 100	≤ (0.005 · r + 0.05)%			
Long-term drift (temperature change ±30 °C (±54 °F))	≤ (0.25 · r)% every 5 years		≤ 0.25% every 5 years	
Influence of ambient temperature				
• at -10 ... +60 °C (14 ... 140 °F)	≤ (0.08 · r + 0.1)% (at 700 bar: ≤ (0.1 · r + 0.2)%)		≤ 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 gage pressure		
	HART	**PROFIBUS PA or FOUNDATION Fieldbus**
Rated operating conditions		
Degree of protection (to EN 60529)	IP65	
Process temperature		
• Measuring cell with silicone oil filling	-40 ... +100 °C (-40 ... +212 °F)	
• Measuring cell with inert filling liquid	-20 ... +100 °C (-4 ... +212 °F)	
• In conjunction with dust explosion protection	-20 ... +60 °C (-4 ... +140 °F)	
Ambient conditions		
• Ambient temperature		
- Digital indicators	-30 ... +85 °C (-22 ... +185 °F)	
• Storage temperature	-50 ... +85 °C (-58 ... +185 °F)	
• Climatic class		
- Condensation	Permissible	
• Electromagnetic compatibility		
- Emitted interference and interference immunity	To EN 61326 and NAMUR NE 21	
Design		
Weight (without options)	≈ 1.5 kg (≈ 3.3 lb)	
Housing material	Poor in copper die-cast aluminium, GD-AlSi12 or stainless steel precision casting, mat. No. 1.4408	
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 (max. 160 bar (2320 psi g) with oxygen measurement)	
Process connection	Connection shank G½A to DIN EN 837-1, female thread ½ -14 NPT or oval flange (PN 160 (MWP 2320 psi g)) to DIN 19213 with mounting thread M10 or $^{7}/_{16}$-20 UNF to EN 61518	
Material of the mounting bracket		
• Steel	Sheet steel, Mat. No. 1.0330, chrome-plated	
• Stainless steel	Stainless steel, Mat. No. 1.4301 (SS304)	
Power supply 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
• Startup current ≤ basic current	-	Yes
• Max. current in event of fault	-	15.5 mA
Fault disconnection electronics (FDE) available	-	Yes

DS III series for gage pressure

SITRANS P, DS III series for gage pressure

	HART	PROFIBUS PA or FOUNDATION Fieldbus
Certificate and approvals		
Classification according to pressure 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)	
Explosion protection		
• Intrinsic safety "i"	PTB 99 ATEX 2122	
- Identification	Ex II 1/2 G EEx ia/ib IIB/IIC T6	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +70 °C (-40 ... +158 °F) temperature class T5; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To certified intrinsically-safe circuits with maximum values: U_i = 30 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	
- Identification	Ex II 1/2 G EEx d IIC T4/T6	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To circuits with values: U_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	
- Identification	Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F)	
- Max.surface temperature	120 °C (248 °F)	
- Connection	To certified intrinsically-safe circuits with maximum values: U_i = 30 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	
- Identification	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} = 1.2 W
• Type of protection "n" (zone 2)	TÜV 01 ATEX 1696 X	Planned
- Identification	Ex II 3 G EEx nA L IIC T4/T5/T6	-
• Explosion protection 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	

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 measuring value) or 10 (two measuring 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 T_{63} , adjustable	0 ... 100 s
- Simulation function	Input /Output
- Failure mode	Can be parameterized (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	Can be parameterized (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

Communication FOUNDATION Fieldbus

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 T_{63} , adjustable	0 ... 100 s
- Simulation function	Output/input (can be locked within the device with a bridge)
- Failure mode	Can be parameterized (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 FF 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

DS III series for gage pressure

2

Selection and Ordering data			Order No. 7MF4033-
SITRANS P pressure transmitters for gage pressure, series DS III HART			
Measuring cell filling	**Measuring cell cleaning**		
Silicone oil	Standard	▶	1
Inert liquid[1]	Grease-free		3
Span			
0.01 ... 1 bar g	(0.15 ... 14.5 psi g)	▶	B
0.04 ... 4 bar g	(0.58 ... 58 psi g)	▶	C
0.16 ... 16 bar g	(2.32 ... 232 psi g)	▶	D
0.63 ... 63 bar g	(9.14 ... 914 psi g)	▶	E
1.6 ... 160 bar g	(23.2 ... 2320 psi g)	▶	F
4.0 ... 400 bar g	(58.0 ... 5802 psi g)	▶	G
7,0 ... 700 bar g	(102.0 ...10153 psi g)	▶	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)]			Y
Process connection			
• Connection shank G½B to EN 837-1		▶	0
• Female thread ½-14 NPT			1
• Oval flange made of stainless steel			
- 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[4)]			3
Version			
• Standard version			1
• International version, English label inscriptions, documentation in 5 languages on CD		▶	2
Explosion protection			
• Without			A
• With ATEX, Type of protection:			
- "Intrinsic safety (EEx ia)"			B
- "Explosion-proof (EEx d)"[5)]			D
- "Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d)"[6)]			P
- "Ex nA/nL (zone 2)"			E
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)"[6)]		▶	R
• With FM + CSA, Type of protection:			
- "Intrinsic safety and explosion-proof (is + xp)"[5)]			NC
Electrical connection / cable entry			
• Screwed gland Pg 13.5 (adapter)[7)]			A
• Screwed gland M20x1.5		▶	B
• Screwed gland ½-14 NPT			C
• Han 7D plug (plastic housing) incl. mating connector[7)]			D
• M12 connector (metal)[8)]			F

Selection and Ordering data	Order No. 7MF4033-
SITRANS P pressure transmitters for gage pressure, series DS III HART	
Display	
• Without indicator	0
• Without visible digital indicator (digital indicator hidden, setting: mA) ▶	1
• With visible digital indicator, setting: mA	6
• with customer-specific digital indicator (setting as specified, Order code "Y21" or "Y22" required)	7

▶ Available ex stock

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

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

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

1) For oxygen application, add Order code E10.
2) When the manufacture's certificate M (calibration certificate) has to be ordered for transmitters with diaphragm seals, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.
3) Whe the acceptance test certificate 3.1 for transmitters with direct-connected diaphragm seals is ordered, this certificate must also be ordered with the corresponding seals.
4) Not together with Electrical connection „Screwed gland Pg 13.5“ and „Han7D plug“.
5) Without cable gland, with blanking plug
6) With enclosed cable gland EEx ia and blanking plug
7) Not together with type of protection "Explosion-proof" and type of protection "Ex nA".
8) Cannot be used together with the following types of protection: "Explosion-proof" and "Intrinsic safety and explosion-proof"

Selection and Ordering data		Order No.
SITRANS P pressure transmitters for gage pressure		
DS III PA (PROFIBUS PA) series		7MF4034 -
DS III FF series (FOUNDATION Fieldbus)		7MF4035 -
		■■■■■ - ■■■■
Measuring cell filling	**Measuring cell cleaning**	
Silicone oil	Standard	1
Inert liquid[1]	Grease-free	3
Nominal measuring range		
1 bar g	(14.5 psi g)	B
4 bar g	(58 psi g)	C
16 bar g	(232 psi g)	D
63 bar g	(914 psi g)	E
160 bar g	(2320 psi g)	F
400 bar g	(5802 psi g)	G
700 bar g	(10153 psi g)	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)]		Y
Process connection		
• Connection shank G½A to EN 837-1		0
• Female thread ½-14 NPT		1
• Oval flange made of stainless steel		
- Mounting thread $^{7}/_{16}$-20 UNF to EN 61518		2
- Mounting thread M10 to DIN 19213		3
- Mounting thread M12 nach 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 version		1
• International version, English label inscriptions, documentation in 5 languages on CD		2
Explosion protection		
• Without		A
• With ATEX, Type of protection:		
- "Intrinsic safety (EEx ia)"		B
- "Explosion-proof (EEx d)"[4)]		D
- "Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d)"[5)]		P
- "Ex nA/nL (zone 2)"		E
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)"[6)] (not for DS III FF)		R
• With FM + CSA, Type of protection:		
- "Intrinsic safety and explosion-proof (is + xp)"[5)]		NC
Electrical connection / cable entry		
• Screwed gland M20x1.5		B
• Screwed gland ½-14 NPT		C
• Plug M12 (metal)[6)]		F

Selection and Ordering data	Order No.
SITRANS P pressure transmitters for gage pressure	
DS III PA (PROFIBUS PA) series	7MF4034 -
DS III FF series (FOUNDATION Fieldbus)	7MF4035 -
	■■■■■ - ■■■■
Display	
• Without indicator	0
• Without visible digital indicator (digital indicator ► hidden, setting: mA)	1
• With visible digital indicator	6
• With customer-specific digital indicator (setting as specified, Order code "Y21" or required)	7

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

The device is delivered together with brief instructions (Leporello) and a CD-ROM containing detailed documentation.

1) For oxygen application, add Order code E10.
2) When the manufacture's certificate M (calibration certificate) has to be ordered for transmitters with diaphragm seals, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.
3) Whe the acceptance test certificate 3.1 for transmitters with direct-connected diaphragm seals is ordered, this certificate must also be ordered with the corresponding seals.
4) Without cable gland, with blanking plug.
5) With enclosed cable gland EEx ia and blanking plug.
6) Cannot be used together with the following types of protection: "Explosion-proof" and "Intrinsic safety and explosion-proof"

DS III series for gage 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 made of:				
• Steel	**A01**	✓	✓	✓
• Stainless steel	**A02**	✓	✓	✓
Plug				
• Han 7D (metal, gray)	**A30**	✓		
• Han 8U (instead of Han 7D)	**A31**	✓		
Cable sockets for M12 connectors (metal)	**A50**	✓	✓	✓
Rating plate inscription (instead of German)				
• English	**B11**	✓	✓	✓
• French	**B12**	✓	✓	✓
• Spanish	**B13**	✓	✓	✓
• Italian	**B14**	✓	✓	✓
English rating plate Pressure units in inH_2O or psi	**B21**	✓	✓	✓
Quality inspection certificate (Factory calibration) to IEC 60770-2[1]	**C11**	✓	✓	✓
Acceptance test certificate[2] To EN 10204-3.1	**C12**	✓	✓	✓
Factory certificate To EN 10204-2.2	**C14**	✓	✓	✓
"Functional Safety (SIL)" certificate	**C20**	✓		
"PROFIsafe" certificate and protocol	**C21**		✓	
Setting of upper limit of output signal to 22.0 mA	**D05**	✓		
Manufacturer's declaration acc. to NACE	**D07**	✓	✓	✓
Type of protection IP68 (not together with 7D/ Han 8U plug, cable gland Pg 13.5)	**D12**	✓	✓	✓
Digital indicator alongside the input keys (only together with the devices 7MF4033-….0-.A.6 or -.A.7-Z, Y21 or Y22 + Y01)	**D27**	✓	✓	✓
Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flange	**D37**	✓	✓	✓
Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")	**E01**	✓	✓	✓
Use on zone 0 (only together with type of protection "Intrinsic safety (EEx ia)")	**E02**	✓	✓	✓
Oxygen application (max. 120 bar g (1740 psi g) at 60°C (140 °F) for oxygen measurement and inert liquid)	**E10**	✓	✓	✓
Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4...-.....-.B..)	**E25**	✓	✓	✓
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**	✓	✓	✓

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

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

Selection and Ordering data	Order code	HART	PA	FF
Additional data Add "-Z" to Order No. and specify Order code.				
Measuring range to be set Specify in plain text (max. 5 digits): Y01: ... up to ... mbar, bar, kPa, MPa, psi	**Y01**	✓		
Measuring point number (TAG No.) Max. 16 characters, specify in plain text: Y15:	**Y15**	✓	✓	✓
Measuring point text Max. 27 characters, specify in plain text: Y16:	**Y16**	✓	✓	✓
Entry of HART address (TAG) Max. 8 characters, specify in plain text: Y17:	**Y17**	✓		
Setting of pressure indication in pressure units Specify in plain text (standard setting: mA): Y21: mbar, bar, kPa, MPa, psi, ... Note: The following pressure units can be selected: bar, mbar, mm H_2O*), inH_2O*), ftH_2O*), mmHG, inHG, psi, Pa, kPa, MPa, g/cm^2, kg/cm^2, Torr, ATM oder % *) ref. temperature 20 °C	**Y21**	✓	✓	✓
Setting of pressure indication in non-pressure units Specify in plain text: Y22: ..... up to ..... l/min, m^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**		✓	

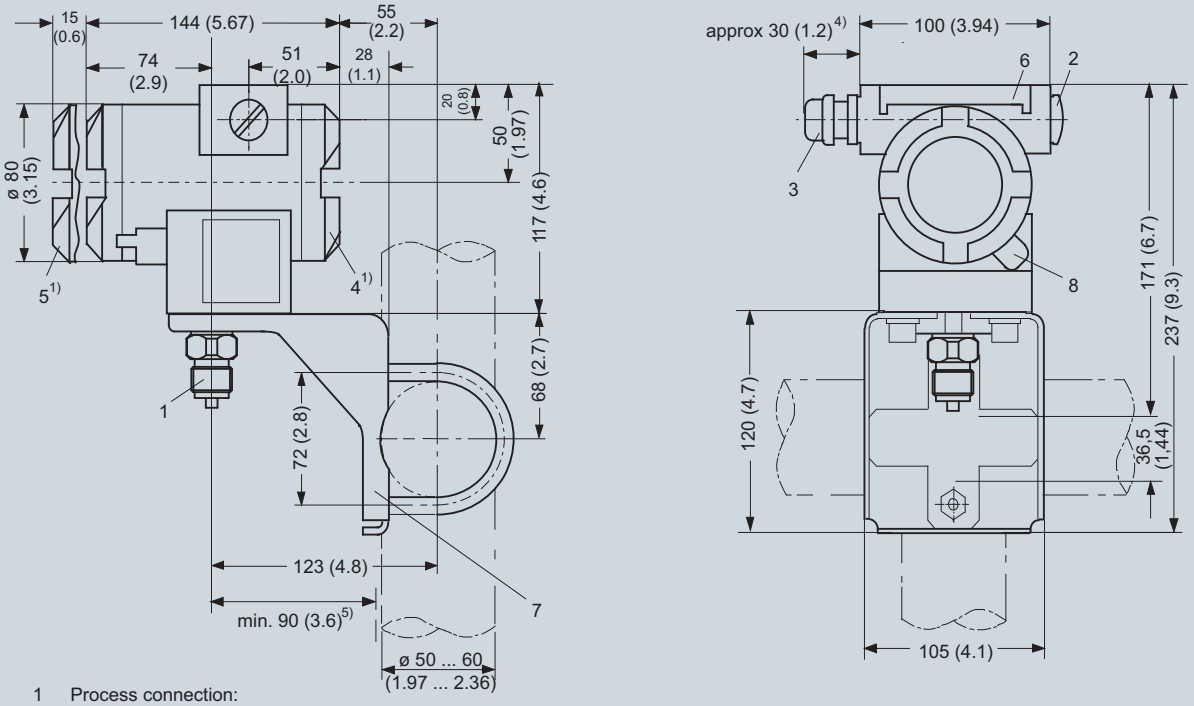
Only "Y01", "Y21", "Y22", "Y25" and "D05" can be factory preset

✓ = 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)

Dimensional drawings



1 Process connection:
- ½-14 NPT,
- connection shank G½B or
- oval flange

2 Blanking plug

3 Electrical connection:
- screwed gland M20x1,5 [4],
- screwed gland ½-14 NPT or
- PROFIBUS-Stecker M12 [3] [4]

4 Terminal side

5 Electronic side, digital display (longer overall length for cover with window)

6 Protective cover over keys

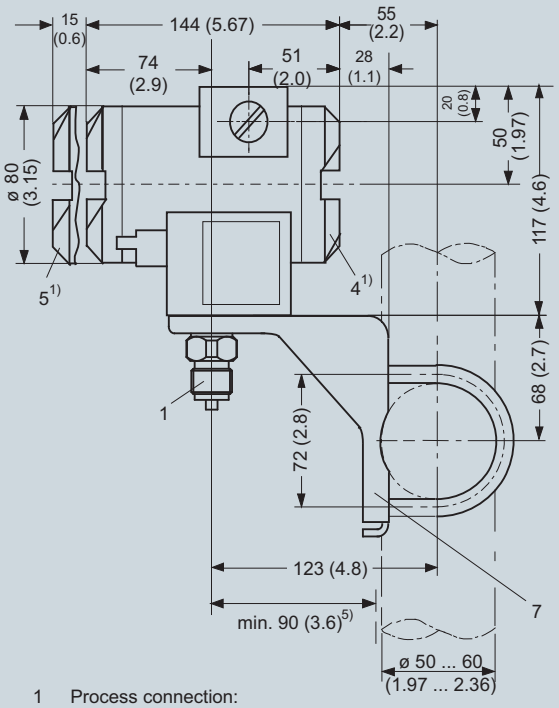
7 Mounting bracket (option)

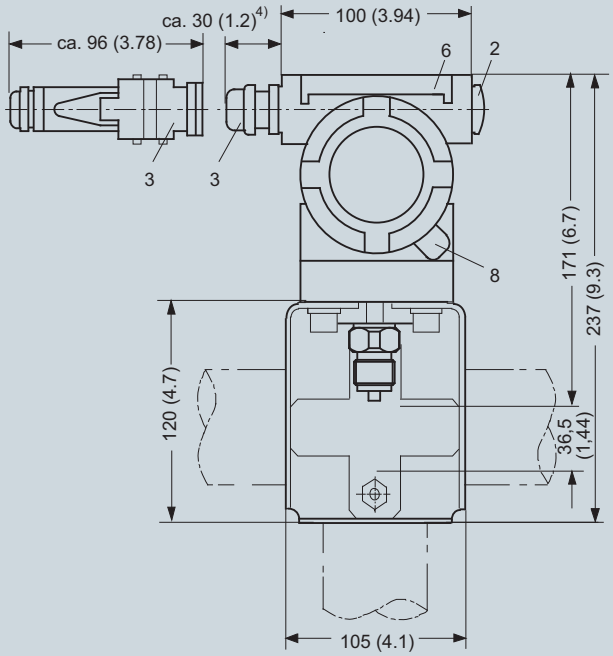
8 Screw cover - safety bracket (only for type of protection "Explosion-proof enclosure", not shown in the drawing)

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

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

DS III series
for gage pressure





1 Process connection:
- ½-14 NPT,
- onnection shankG½B or
- oval flange

2 Blanking plug

3 Electrical connection:
- screwed gland Pg 13,5 (adapter) 2) 3),
- screwed gland M20x1,5 3),
- screwed gland ½-14 NPT or
- Han 7D/ Han 8U 2) 3) plug

4 Terminal side

5 Electronic side, digital display (longer overall length for cover with window)

6 Protective cover over keys

7 Mounting bracket (option)

8 Screw cover - safety bracket (only for type of protection "Explosion-proof enclosure", not shown in the drawing)

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

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

Technical specifications

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

	HART		PROFIBUS PA or FOUNDATION Fieldbus	
Input gage pressure, with front-flush diaphragm				
Measured variable	Gage pressure, flush-mounted			
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure
	0.01 ... 1 bar g (0.145 ... 14.5 psi g)	6 bar g (87 psi g)	1 bar g (14.5 psi g)	6 bar g (87 psi g)
	0.04 ... 4 bar g (0.58 ... 58 psi g)	10 bar g (145 psi g)	4 bar g (58 psi g)	10 bar g (145 psi g)
	0.16 ... 16 bar g (2.23 ... 232 psi g)	32 bar g (464 psi g)	16 bar g (232 psi g)	32 bar g (464 psi g)
	0.6 ... 63 bar g (9.14 ... 914 psi g)	100 bar g (1450 psi g)	63 bar g (914 psi g)	100 bar g (1450 psi g)
Lower measuring limit	-100 mbar a (-1.45 psi a)			
Upper measuring limit	100% of max. span		100% of nominal measuring range	
Input absolute pressure, with front-flush diaphragm				
Measured variable	Absolute pressure, flush-mounted			
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure
	43 ... 1300 mbar a (0.62 ... 18.9 psi a)	10 bar a (145 psi a)	1300 mbar a (18.9 psi a)	10 bar a (145 psi a)
	0,16 ... 5 bar a (2.32 ... 72,5 psi a)	30 bar a (435 psi a)	5 bar a (72,5 psi a)	30 bar a (435 psi a)
	1 ... 30 bar a (14.5 ... 435 psi a)	100 bar a (1450 psi a)	30 bar a (435 psi a)	100 bar a (1450 psi a)
	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 psi a)			
Upper measuring limit	100% of max. span		100% of nominal measuring range	
Output				
Output signal	4 ... 20 mA		Digital PROFIBUS PA or 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	
With polarity reversal protection	-		Yes	
Accuracy	To EN 60770-1			
Reference conditions (All error data refer always refer to the set span)	Increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil filling, room temperature 25 °C (77 °F)) r: Span ratio (r = max. span/set span)			
Error in measurement and fixed-point setting (including hysteresis and repeatability)				
	Gage pressure, front-flushed	Absolute pressure, front-flushed	Gage pressure, front-flushed	Absolute pressure, front-flushed
• Linear characteristic			≤ 0,075%	≤ 0,2%
- r ≤ 10	≤ (0.0029 · r + 0.071)%	≤ 0,2%		
- 10 < r ≤ 30	≤ (0.0045 · r + 0.071)%	≤ 0,4%		
- 30 < r ≤ 100	≤ (0.005 · r + 0.05)%	-		
Long-term drift (temperature change ±30 °C (±54 °F))	≤ (0.25 · r)% every 5 years		≤ 0.25% every 5 years	

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

SITRANS P, DS III series for gage and absolute pressure, with front-flush diaphragm				
	HART		**PROFIBUS PA or FOUNDATION Fieldbus**	
Influence of ambient temperature				
• at -10 ... +60 °C (14 ... 140 °F)	≤ (0.1 · r + 0.2)%	≤ (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 g (0.00145 psi g) per 10° inclination			
Measured Value Resolution	-		3 · 10^{-5} of nominal measuring range	
Influence of the medium temperature (only with front-flush diaphragm)				
• Temperature difference between medium temperature and ambient temperature	3 mbar/10 K (0.04 psi/10 K)			
Rated operating conditions				
Installation conditions				
Ambient temperature	Observe the temperature class in areas subject to explosion hazard.			
• Measuring cell with silicone oil	-40 ... +85 °C (-40 ... +185 °F)			
• Measuring cell with Neobee oil (with front-flush diaphragm)	-10 ... +85 °C (14 ... +185 °F)			
• Measuring cell with inert liquid (not with front-flush diaphragm)	-20 ... +85 °C (-4 ... +185 °F)			
• Digital display	-30 ... +85 °C (-22 ... +185 °F)			
• Storage temperature	-50 ... +85 °C (-58 ... +185 °F) (with Neobee: -20 ... +85 °C (-4 ... +185 °F)			
Climatic class				
Condensation	Permissible			
Degree of protection to EN 60529	IP65, IP68, NEMA X, enclosure cleaning, resistant to lyes, steam to 150° C (302 °F)			
Electromagnetic compatibility				
• Emitted interference and interference immunity	To EN 61326 and NAMUR NE 21			
Medium conditions				
Process temperature				
• 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)	-40 ... +150 °C (-40 ... +302 °F)			
• Measuring cell with silicone oil, with temperature isolator (only with front-flush diaphragm)	-40 ... +200 °C (-40 ... +392 °F)			
• Measuring cell with inert liquid	-20 ... +100 °C (-4 ... +212 °F)			
• Measuring cell with high temperature oil	-10 ... +250 °C (14 ... +482 °F)			
Design				
Weight (without options)	≈ 1.5 kg (≈ 3.3 lb)			
Housing material	Poor in copper die-cast aluminium, GD-AlSi12 or stainless steel precision casting, mat. No. 1.4408			
Wetted parts materials	Stainless steel, mat. No. 1.4404/316L			
Measuring cell filling	Silicone oil or inert filling liquid			

SITRANS P, DS III series for gage and absolute pressure, with front-flush diaphragm		
	HART	**PROFIBUS PA or FOUNDATION Fieldbus**
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
• Startup current ≤ basic current	-	Yes
• Max. current in event of fault	-	15.5 mA
Fault disconnection electronics (FDE) available	-	Yes
Certificate and approvals		
Classification according to pressure equipment directive (DRGL 97/23/EC)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of Article 3, paragraph 3 (sound engineering practice)	
Explosion protection		
• Intrinsic safety "i"	PTB 99 ATEX 2122	
- Identification	Ex II 1/2 G EEx ia/ib IIB/IIC T6	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +70 °C (-40 ... +158 °F) temperature class T5; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To certified intrinsically-safe circuits with maximum values: U_i = 30 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	
- Identification	Ex II 1/2 G EEx d IIC T4/T6	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To circuits with values: U_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	
- Identification	Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F)	
- Max.surface temperature	120 °C (248 °F)	
- Connection	To certified intrinsically-safe circuits with maximum values: U_i = 30 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	
- Identification	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} = 1.2 W
• Type of protection "n" (zone 2)	TÜV 01 ATEX 1696 X	Planned
- Identification	Ex II 3 G EEx nA L IIC T4/T5/T6	-
• Explosion protection 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	

Hygiene version

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

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

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 measuring value) or 10 (two measuring 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 T_{63} , adjustable	0 ... 100 s
- Simulation function	Input /Output
- Failure mode	Can be parameterized (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	Can be parameterized (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

Communication FOUNDATION Fieldbus

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 T_{63} , adjustable	0 ... 100 s
- Simulation function	Output/input (can be locked within the device with a bridge)
- Failure mode	Can be parameterized (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 FF 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

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

Selection and Ordering data		Order No.
SITRANS P pressure transmitters for gage and absolute pressure, front-flush membrane, series DS III HART	F)	7 M F 4 1 3 3 -
Measuring cell filling	**Measuring cell cleaning**	
Silicone oil	Standard	1
Inert liquid	Grease-free	3
FDA compliant fill fluid		
• Neobee oil	Standard	4
Span		
0.01 ... 1 bar g[1]	(0.15 ... 14.5 psi g)[1]	B
0.04 ... 4 bar g	(0.58 ... 58 psi g)	C
0.16 ... 16 bar g	(2.32 ... 232 psi g)	D
0.63 ... 63 bar g	(9.14 ... 914 psi g)	E
13 ... 1300 mbar a[2]	(0.19 ... 18.9 psi a)[2]	S
0.05 ... 5 bar a[2]	(0.7 ... 72.5 psi a)[2]	T
3 ... 30 bar a[2]	(43.5 ... 435 psi a)[2]	U
Wetted parts materials		
Seal diaphragm	Connection shank	
Stainless steel	Stainless steel	A
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 version		1
• International version, English label inscriptions, documentation in 5 languages on CD		2
Explosion protection		
• Without		A
• With ATEX, Type of protection:		
- "Intrinsic safety (EEx ia)"		B
- "Explosion-proof (EEx d)"[3]		D
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)"[4]		R
• With FM + CSA, Type of protection:		
- "Intrinsic safety and explosion-proof (is + xp)"[3] (available soon)		N C
Electrical connection / cable entry		
• Inner thread M20x1.5		B
• Female thread ½-14 NPT		C
• M12 connectors (metal)[5]		F
Display		
• Without indicator		0
• Without visible digital indicator (digital indicator ▶ hidden, setting: mA)		1
• With visible digital indication, setting: mA		6
• With customer-specific digital indication (setting as specified, Order code "Y21" or "Y22" required)		7

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

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

1) Only with "Standard" process connection
2) Not with temperature decoupler P00 and P10, not for process connections R02, R04, R10 and R11, and can only be ordered in conjunction with silicone oil.
3) Without cable gland, with blanking plug.
4) With enclosed cable gland EEx ia and blanking plug.
5) Cannot be used together with the following types of protection: "Explosion-proof" and "Intrinsic safety and explosion-proof"

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

Selection and Ordering data		Order No.
SITRANS P pressure transmitters for gage pressure, front-flush membrane		
DS III PA series (PROFIBUS PA)	F)	7 M F 4 1 3 4 -
DS III FF series (FOUNDATION Fieldbus)	F)	7 M F 4 1 3 5 -
Measuring cell filling	**Measuring cell cleaning**	
Silicone oil	Standard	1
Inert liquid	Grease-free	3
FDA compliant fill fluid		
• Neobee oil	Standard	4
Nominal measuring range		
1 bar g[1]	(14.5 psi g)[1]	B
4 bar g	(58 psi g)	C
16 bar g	(232 psi g)	D
63 bar g	(914 psi g)	E
1300 mbar a[2]	(18.9 psi a)[2]	S
5 bar a[2]	(72.5 psi a)[2]	T
30 bar a[2]	(435 psi a)[2]	U
Wetted parts materials		
Seal diaphragm	Connection shank	
Stainless steel	Stainless steel	A
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 version		1
• International version, English label inscriptions, documentation in 5 languages on CD		2
Explosion protection		
• Without		A
• With ATEX, Type of protection:		
- "Intrinsic safety (EEx ia)"		B
- "Explosion-proof (EEx d)"[3]		D
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)"[4]		R
• With FM + CSA, Type of protection:		
- "Intrinsic safety and explosion-proof (is + xp)"[3] (available soon)		N C
Electrical connection / cable entry		
• Screwed gland M20x1.5		B
• Screwed gland ½-14 NPT		C
• M12 connectors (metal) [5]		F
Display		
• Without indicator		0
• Without visible digital indicator (digital indicator ▶ hidden, setting: mA)		1
• With visible digital display		6
• With customer-specific digital display (setting as specified, Order code "Y21" or required)		7

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

1) Only with "Standard" process connection
2) Not with temperature decoupler P00 and P10, not for process connections R02, R04, R10 and R11, and can only be ordered in conjunction with silicone oil.
3) Without cable gland, with blanking plug.
4) With enclosed cable gland EEx ia and blanking plug.
5) Cannot be used together with the following types of protection: "Explosion-proof" and "Intrinsic safety and explosion-proof"

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

DS III series for gage and 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.				
Cable sockets for M12 connectors (metal)	**A50**	✓	✓	✓
Rating plate inscription (instead of German)				
• English	**B11**	✓	✓	✓
• French	**B12**	✓	✓	✓
• Spanish	**B13**	✓	✓	✓
• Italian	**B14**	✓	✓	✓
English rating plate Pressure units in inH_2O or psi	**B21**	✓	✓	✓
Quality inspection certificate (Factory calibration) to IEC 60770-2	**C11**	✓	✓	✓
Acceptance test certificate To EN 10204-3.1	**C12**	✓	✓	✓
Factory certificate To EN 10204-2.2	**C14**	✓	✓	✓
"PROFIsafe" certificate and protocol	**C21**		✓	
Flanges to EN 1092-1				
• 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 connection acc. to DIN 3852-2, Form A				
• G ¾", flush-mounted[2)]	**R01**	✓	✓	✓
• G 1", flush-mounted[2)]	**R02**	✓	✓	✓
• G 2", flush-mounted[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)				
• 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 and 1½" ... 6", PN 40	**N28**	✓	✓	✓

Selection and Ordering data	Order code	HART	PA	FF
Further designs				
Add "-Z" to Order No. and specify Order code.				
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 (Neumo) sanitary connection certified to EHEDG				
• DN 50, PN 16	**Q53**	✓	✓	✓
• DN 65, PN 16	**Q54**	✓	✓	✓
Sanitary process connection to DRD				
• 65 mm, 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 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**	✓	✓	✓

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 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				
• DN 50, PN 25	**N33**	✓	✓	✓
• DN 65, PN 25	**N34**	✓	✓	✓
• DN 80, PN 25	**N35**	✓	✓	✓
• DN 100, PN 25	**N36**	✓	✓	✓
Aseptic flange with notch to DIN 11864-2 Form A				
• DN 50, PN 16	**N43**	✓	✓	✓
• DN 65, PN 16	**N44**	✓	✓	✓
• DN 80, PN 16	**N45**	✓	✓	✓
• DN 100, PN 16	**N46**	✓	✓	✓
Aseptic flange with groove to DIN 11864-2 Form A				
• DN 50, PN 16	**N43 + P11**	✓	✓	✓
• DN 65, PN 16	**N44 + P11**	✓	✓	✓
• DN 80, PN 16	**N45 + P11**	✓	✓	✓
• DN 100, PN 16	**N46 + P11**	✓	✓	✓
Aseptic clamp with groove to DIN 11864-3 Form A				
• DN 50, PN 25	**N53**	✓	✓	✓
• DN 65, PN 25	**N54**	✓	✓	✓
• DN 80, PN 16	**N55**	✓	✓	✓
• DN 100, PN 16	**N56**	✓	✓	✓

1) Special Viton seal included in delivery.
2) Lower measuring limit -100 mbar g (1.45 psi g).
3) The weldable socket can be ordered under accessories
4) The maximum temperatures of the medium depend on the respective cell fillings.

Selection and Ordering data	Order code	HART	PA	FF
Additional data				
Add "-Z" to Order No. and specify Order code.				
Measuring range to be set	**Y01**	✓		
Specify in plain text (max. 5 digits): Y01: ... up to ... mbar, bar, kPa, MPa, psi				
Measuring point number (TAG No.)	**Y15**	✓	✓	✓
Max. 16 characters, specify in plain text: Y15:				
Measuring point text	**Y16**	✓	✓	✓
Max. 27 characters, specify in plain text: Y16:				
Setting of pressure indicator in pressure units	**Y21**	✓	✓	✓
Specify in plain text (standard setting: mA): Y21: mbar, bar, kPa, MPa, psi, ... Note: The following pressure units can be selected: bar, mbar, mm H_2O*), inH_2O*), ftH_2O*), mmHG, inHG, psi, Pa, kPa, MPa, g/cm^2, kg/cm^2, Torr, ATM oder % *) ref. temperature 20 °C				
Preset bus address	**Y25**		✓	
(possible between 1 and 126) Specify in plain text: Y25:				

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

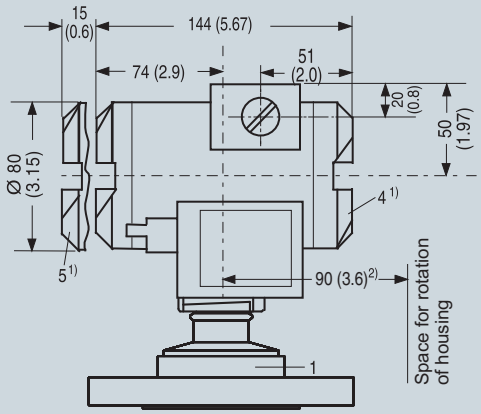
✓ = available

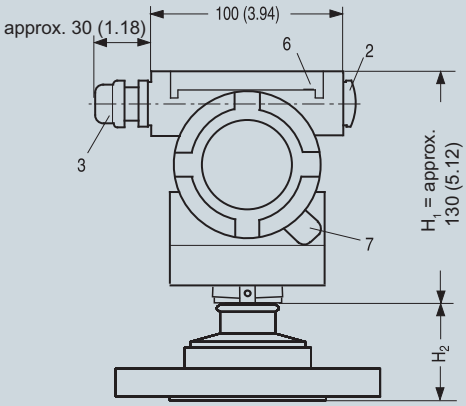
Ordering example

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

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

Dimensional drawings





1 Process connection: see flange tables
2 Blanking plug
3 Electrical connection:
- screwed gland M20x1.5
- screwed gland ½-14 NPT
4 Terminal side
5 Electronics side, digital display (longer overall length for cover with window)
6 Protective cover over keys
7 Screw cover safety bracket (only for explosion-proof enclosure, not shown in the drawing)

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

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

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

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

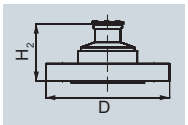
H_2 = Height of the flange up to this defined cross-section

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

Flanges to EN and ASME

Flanges to EN

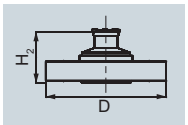
EN 1092-1



DN	PN	ØD	H_2
25	40	115 mm (4.5“)	Approx. 52 mm (2“)
25	100	140 mm (5.5“)	
40	40	150 mm (5.9“)	
40	100	170 mm (6.7“)	
50	16	165 mm (6.5“)	
50	40	165 mm (6.5“)	
80	16	200 mm (7.9“)	
80	40	200 mm (7.9“)	

Flanges to ASME

ASME B16.5

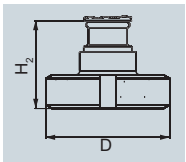


DN	class	ØD	H_2
1“	150	110 mm (4.3“)	Approx. 52 mm (2“)
1“	300	125 mm (4.9“)	
1½“	150	130 mm (5.1“)	
1½“	300	155 mm (6.1“)	
2“	150	150 mm (5.9“)	
2“	300	165 mm (6.5“)	
3“	150	190 mm (7.5“)	
3“	300	210 mm (8.1“)	
4“	150	230 mm (9.1“)	
4“	300	255 mm (10.0“)	

NuG and pharmaceutical connections

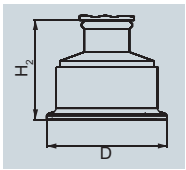
Connections to DIN

DIN 11851 (Dairy connection)



DN	PN	ØD	H_2
50	25	92 mm (3.6“)	Approx. 52 mm (2“)
80	25	127 mm (5.0“)	

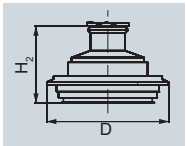
Tri-Clamp according DIN 32676



DN	PN	ØD	H_2
50	16	64 mm (2.5“)	Approx. 52 mm (2“)
65	16	91 mm (3.6“)	

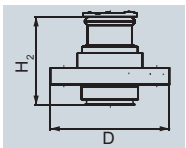
Other connections

Varivent connection



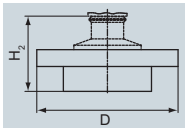
DN	PN	ØD	H_2
40 ... 125	40	84 mm (3.3“)	Approx. 52 mm (2“)

Bio-Control connection



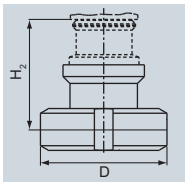
DN	PN	ØD	H_2
50	16	90 mm (3.5“)	Approx. 52 mm (2“)
65	16	120 mm (4.7“)	

Sanitary process connection to DRD



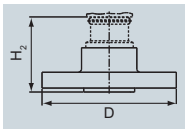
DN	PN	ØD	H_2
50	40	105 mm (4.1“)	Approx. 52 mm (2“)

Sanitary process screw connection to NEUMO Bio-Connect



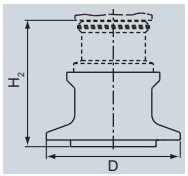
DN	PN	ØD	H_2
50	16	82 mm (3.2“)	Approx. 52 mm (2“)
65	16	105 mm (4.1“)	
80	16	115 mm (4.5“)	
100	16	145 mm (5.7“)	
2“	16	82 mm (3.2“)	
2½“	16	105 mm (4.1“)	
3“	16	105 mm (4.1“)	
4“	16	145 mm (5.7“)	

Sanitary connection to NEUMO Bio-Connect flange connection



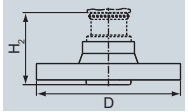
DN	PN	ØD	H_2
50	16	110 mm (4.3“)	Approx. 52 mm (2“)
65	16	140 mm (5.5“)	
80	16	150 mm (5.9“)	
100	16	175 mm (6.9“)	
2“	16	100 mm (3.9“)	
2½“	16	110 mm (4.3“)	
3“	16	140 mm (5.5“)	
4“	16	175 mm (6.9“)	

Sanitary connection to NEUMO Bio-Connect clamp connection



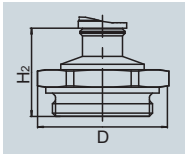
DN	PN	ØD	H_2
50	16	77,4 mm (3.0“)	Approx. 52 mm (2“)
65	10	90,9 mm (3.6“)	
80	10	106 mm (4.2“)	
100	10	119 mm (4.7“)	
2“	16	64 mm (2.5“)	
2½“	16	77,4 mm (3.0“)	
3“	10	90,9 mm (3.6“)	
4“	10	119 mm (4.7“)	

Sanitary connection to NEUMO Bio-Connect S flange connection



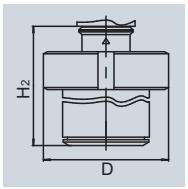
DN	PN	ØD	H_2
50	16	125 mm (4.9“)	Approx. 52 mm (2“)
65	10	145 mm (5.7“)	
80	10	155 mm (6.1“)	
100	10	180 mm (7.1“)	
2“	16	125 mm (4.9“)	
2½“	10	135 mm (5.3“)	
3“	10	145 mm (5.7“)	
4“	10	180 mm (7.1“)	

Thread connection G¾“, G1“ and G2“ to DIN 3852



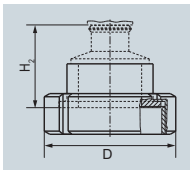
DN	PN	ØD	H_2
¾“	63	37 mm (1.5“)	Approx. 45 mm (1.8“)
1“	63	48 mm (1.9“)	Approx. 47 mm (1.9“)
2“	63	78 mm (3.1“)	Approx. 52 mm (2“)

Tank connection TG52/50 and TG52/150



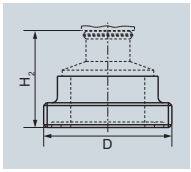
DN	PN	ØD	H_2
25	40	63 mm (2.5“)	Approx. 63 mm (2.5“)
25	40	63 mm (2.5“)	Approx. 170 mm (6.7“)

SMS socket with union nut



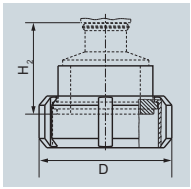
DN	PN	ØD	H_2
2“	25	84 mm (3.3“)	Approx. 52 mm (2.1“)
2½“	25	100 mm (3.9“)	
3“	25	114 mm (4.5“)	

SMS threaded socket



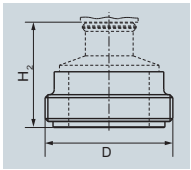
DN	PN	ØD	H_2
2“	25	70 x 1/6 mm	Approx. 52 mm (2.1“)
2½“	25	85 x 1/6 mm	
3“	25	98 x 1/6 mm	

IDF socket with union nut



DN	PN	ØD	H_2
2“	25	77 mm (3“)	Approx. 52 mm (2.1“)
2½“	25	91 mm (3.6“)	
3“	25	106 mm (4.2“)	

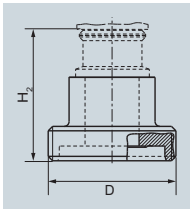
IDF threaded socket



DN	PN	ØD	H_2
2“	25	64 mm (2.5“)	Approx. 52 mm (2.1“)
2½“	25	77.5 mm (3.1“)	
3“	25	91 mm (3.6“)	

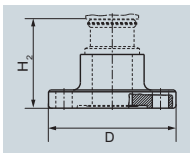
DS III series for gage and absolute pressure, with front-flush diaphragm

Aseptic threaded socket to DIN 11864-1 Form A



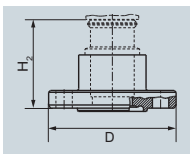
DN	PN	ØD	H_2
50	25	78 x 1/6“	Approx. 52 mm (2.1“)
65	25	95 x 1/6“	
80	25	110 x ¼“	
100	25	130 x ¼“	

Aseptic flange with notch to DIN 11864-2 Form A



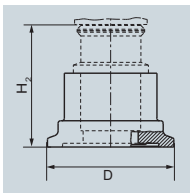
DN	PN	ØD	H_2
50	16	94	Approx. 52 mm (2.1“)
65	16	113	
80	16	133	
100	16	159	

Aseptic flange with groove to DIN 11864-2 Form A



DN	PN	ØD	H_2
50	16	94	Approx. 52 mm (2.1“)
65	16	113	
80	16	133	
100	16	159	

Aseptic clamp with groove to DIN 11864-3 Form A



DN	PN	ØD	H_2
50	25	77,5	Approx. 52 mm (2.1“)
65	25	91	
80	16	106	
100	16	130	

Technical specifications

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

	HART		PROFIBUS PA or FOUNDATION Fieldbus	
Input				
Measured variable	Absolute pressure			
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure
	8.3 ... 250 mbar a (0.12 ... 3.6 psi a)	6 bar a (87 psi a)	250 mbar a (3.6 psi a)	6 bar a (87 psi a)
	43 ... 1300 mbar a (0.62 ... 18.9 psi a)	10 bar a (145 psi a)	1300 mbar a (18.9 psi a)	10 bar a (145 psi a)
	160 ... 5000 mbar a (2.32 ... 72.5 psi a)	30 bar a (435 psi a)	5 bar a (72.5 psi a)	30 bar a (435 psi a)
	1 ... 30 bar a (14.5 ... 435 psi a)	100 bar a (1450 psi a)	30 bar a (435 psi a)	100 bar a (1450 psi a)
Lower measuring limit				
• Measuring cell with silicone oil filling	0 mbar a (0 psi a)			
Upper measuring limit	100% of max. span			
Output				
Output signal	4 ... 20 mA		Digital PROFIBUS PA or 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	
With polarity reversal protection	-		Yes	
Accuracy	To EN 60770-1			
Reference conditions (All error data refer always refer to the set span)	Increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil filling, room temperature 25 °C (77 °F)) r: Span ratio (r = max. span / set span)			
Error in measurement and fixed-point setting (including hysteresis and repeatability)				
• Linear characteristic			≤ 0.1%	
- r ≤ 10	≤ 0.1%			
- 10 < r ≤ 30	≤ 0.2%			
Long-term drift (temperature change ±30 °C (±54 °F))	≤ (0.1 · r)%/year		≤ 0.1%/year	
Influence of ambient temperature				
• at -10 ... +60 °C (14 ... 140 °F)	≤ (0.1 · r +0.2)%		≤ 0,3%	
• at -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	

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

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

	HART	PROFIBUS PA or FOUNDATION Fieldbus
Rated operating conditions		
Degree of protection (to EN 60529)	IP65	
Process temperature		
• Measuring cell with silicone oil filling	-40 ... +100 °C (-40 ... +212 °F)	
• Measuring cell with inert filling liquid	-20 ... +100 °C (-4 ... +212 °F)	
• In conjunction with dust explosion protection	-20 ... +60 °C (-4 ... +140 °F)	
Ambient conditions		
• Ambient temperature		
- Digital indicators	-30 ... +85 °C (-22 ... +185 °F)	
• Storage temperature	-50 ... +85 °C (-58 ... +185 °F)	
• Climatic class		
- Condensation	Permissible	
• Electromagnetic compatibility		
- Emitted interference and interference immunity	To EN 61326 and NAMUR NE 21	
Design		
Weight (without options)	≈ 1.5 kg (≈ 3.3 lb)	
Housing material	Poor in copper die-cast aluminium, GD-AlSi12 or stainless steel precision casting, mat. No. 1.4408	
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 (max. 160 bar a (2320 psi a) with oxygen measurement)	
Process connection	Connection shank G½A to DIN EN 837-1, female thread ½ -14 NPT or oval flange (PN 160 (MWP 2320 psi a)) to DIN 19213 with mounting thread M10 or $^{7}/_{16}$-20 UNF to EN 61518	
Material of the mounting bracket		
• Steel	Sheet steel, Mat. No. 1.0330, chrome-plated	
• Stainless steel	Stainless steel, Mat. No. 1.4301 (SS304)	
Power supply 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
• Startup 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 gage pressure series)

	HART	PROFIBUS PA or FOUNDATION Fieldbus
Certificate and approvals		
Classification according to pressure equipment directive (DRGL 97/23/EC)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of Article 3, paragraph 3 (sound engineering practice)	
Explosion protection		
• Intrinsic safety "i"	PTB 99 ATEX 2122	
- Identification	Ex II 1/2 G EEx ia/ib IIB/IIC T6	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +70 °C (-40 ... +158 °F) temperature class T5; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To certified intrinsically-safe circuits with maximum values: U_i = 30 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	
- Identification	Ex II 1/2 G EEx d IIC T4/T6	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To circuits with values: U_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	
- Identification	Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F)	
- Max.surface temperature	120 °C (248 °F)	
- Connection	To certified intrinsically-safe circuits with maximum values: U_i = 30 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	
- Identification	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} = 1.2 W
• Type of protection "n" (zone 2)	TÜV 01 ATEX 1696 X	Planned
- Identification	Ex II 3 G EEx nA L IIC T4/T5/T6	-
• Explosion protection 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	

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

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 measuring value) or 10 (two measuring 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 T_{63} , adjustable	0 ... 100 s
- Simulation function	Input /Output
- Failure mode	Can be parameterized (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	Can be parameterized (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

Communication FOUNDATION Fieldbus

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 T_{63} , adjustable	0 ... 100 s
- Simulation function	Output/input (can be locked within the device with a bridge)
- Failure mode	Can be parameterized (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 FF 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 absolute pressure, from the pressure series DS III HART F)		**7MF4233-**
Measuring cell filling	**Measuring cell cleaning**	
Silicone oil	Standard	1
Inert liquid[1]	Grease-free	3
Span		
8.3 ... 250 mbar a	(0.12 ... 3.63 psi a)	D
43 ... 1300 mbar a	(0.62 ... 18.9 psi a)	F
0.16 ... 5 bar a	(2.32 ... 72.5 psi a)	G
1 ... 30 bar a	(14.5 ... 435 psi a)	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)]		Y
Process connection		
• Connection shank G½B to EN 837-1		0
• Female thread ½-14 NPT		1
• Oval flange made of stainless steel		
- Mounting thread $^{7}/_{16}$-20 UNF to EN 61518		2
- Mounting thread M10 to DIN 19213		3
• Male thread M20 x 1,5		5
• Male thread ½-14 NPT		6
Non-wetted parts materials		
• Housing made of die-cast aluminium		0
• Housing stainless steel precision casting[5)]		3
Version		
• Standard version		1
• International version, English label inscriptions, documentation in 5 languages on CD		2
Explosion protection		
• Without		A
• With ATEX, Type of protection:		
- "Intrinsic safety (EEx ia)"		B
- "Explosion-proof (EEx d)"[6)]		D
- "Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d)"[7)]		P
- "Ex nA/nL (zone 2)"		E
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)"[7)]		R
• With FM + CSA, Type of protection:		
- "Intrinsic safety and explosion-proof (is + xp)"[6)]		N C
Electrical connection / cable entry		
• Screwed gland Pg 13.5[8)]		A
• Screwed gland M20x1.5		B
• Screwed gland ½-14 NPT		C
• Han 7D plug (plastic housing) incl. mating connector[8)]		D
• Plug M12 (metal)[9)]		F

Selection and Ordering data	Order No.
SITRANS P pressure transmitters for absolute pressure, from the pressure series DS III HART F)	**7MF4233-**
Display	
• Without indicator	0
• Without visible digital indicator (digital indicator hidden, setting: mA)	1
• With visible digital indicator	6
• With customer-specific digital indicator (setting as specified, Order code "Y21" or required)	7

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

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

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

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

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

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

Selection and Ordering data		Order No.											
SITRANS P pressure transmitters for absolute pressure (from the gage pressure series)													
DS III PA series (PROFIBUS PA)	F)	7	M	F	4	2	3	4	-				
DS III FF series (FOUNDATION Fieldbus)	F)	7	M	F	4	2	3	5	-				
Measuring cell filling / **Measuring cell cleaning**													
Silicone oil / Standard		1											
Inert liquid[1] / Grease-free		3											
Nominal measuring range													
250 mbar a (3.63 psi a)			D										
1300 mbar a (18.9 psi a)			F										
5 bar a (72.5 psi a)			G										
30 bar a (435 psi a)			H										
Wetted parts materials													
Seal diaphragm / Process connection													
Stainless steel / Stainless steel			A										
Hastelloy / Stainless steel			B										
Hastelloy / Hastelloy			C										
Version as diaphragm seal[2)3)4)]			Y										
Process connection													
• Connection shank G½B to EN 837-1				0									
• Female thread ½-14 NPT				1									
• Oval flange made of stainless steel													
- Mounting thread $^{7}/_{16}$-20 UNF to EN 61518				2									
- Mounting thread M10 to DIN 19213				3									
• Male thread M20 x 1,5				5									
• Male thread ½-14 NPT				6									
Non-wetted parts materials													
• Housing made of die-cast aluminium					0								
• Housing stainless steel precision casting					3								
Version													
• Standard version						1							
• International version, English label inscriptions, documentation in 5 languages on CD						2							
Explosion protection													
• Without							A						
• With ATEX, Type of protection:													
- "Intrinsic safety (EEx ia)"							B						
- "Explosion-proof (EEx d)"[5)]							D						
- "Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d)"[6)]							P						
- "Ex nA/nL (zone 2)"							E						
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)"[6)] (not for DS III FF)							R						
• With FM + CSA, Type of protection:													
- "Intrinsic safety and explosion-proof (is + xp)"[5)]							N	C					
Electrical connection / cable entry													
• Screwed gland M20x1.5								B					
• Screwed gland ½-14 NPT								C					
• Plug M12 incl. mating connector[7)]								F					

Selection and Ordering data		Order No.											
SITRANS P pressure transmitters for absolute pressure (from the gage pressure series)													
DS III PA series (PROFIBUS PA)	F)	7	M	F	4	2	3	4	-				
DS III FF series (FOUNDATION Fieldbus)	F)	7	M	F	4	2	3	5	-				
Display													
• Without indicator												0	
• Without visible digital indicator (digital indicator ▶ hidden, setting: mA)												1	
• With visible digital indicator												6	
• With customer-specific digital indicator (setting as specified, Order code "Y21" or required)												7	

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

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

1) For oxygen application, add Order code E10.
2) Version 7MF4233-1DY... only up to max. span 200 mbar a (2.9 psi a).
3) When the manufacture's certificate M (calibration certificate) has to be ordered for transmitters with diaphragm seals, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.
4) Whe the acceptance test certificate 3.1 for transmitters with direct-connected diaphragm seals is ordered, this certificate must also be ordered with the corresponding seals.
5) Without cable gland, with blanking plug.
6) With enclosed cable gland EEx ia and blanking plug.
7) Not together with types of protection "Explosion-proof" or "Intrinsic safety and explosion-proof"

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

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 made of:				
• Steel	**A01**	✓	✓	✓
• Stainless steel	**A02**	✓	✓	✓
Plug				
• Han 7D (metal, gray)	**A30**	✓		
• Han 8U (instead of Han 7D)	**A31**	✓		
Cable sockets for M12 connectors (metal)	**A50**	✓	✓	✓
Rating plate inscription (instead of German)				
• English	**B11**	✓	✓	✓
• French	**B12**	✓	✓	✓
• Spanish	**B13**	✓	✓	✓
• Italian	**B14**	✓	✓	✓
English rating plate Pressure units in inH_2O or psi	**B21**	✓	✓	✓
Quality inspection certificate (Factory calibration) to IEC 60770-2 [1]	**C11**	✓	✓	✓
Acceptance test certificate [2] To EN 10204-3.1	**C12**	✓	✓	✓
Factory certificate To EN 10204-2.2	**C14**	✓	✓	✓
"Functional Safety (SIL)" certificate	**C20**	✓		
"PROFIsafe" certificate and protocol	**C21**		✓	
Setting of upper limit of output signal to 22.0 mA	**D05**	✓		
Manufacturer's declaration acc. to NACE	**D07**	✓	✓	✓
Type of protection IP68 (not together with Han 7D / Han 8U plug, Pg 13.5 screwed gland)	**D12**	✓	✓	✓
Digital indicator alongside the input keys (only together with the devices 7MF4233-….0-.A.6 or -.A.7-Z, Y21 or Y22 + Y01).	**D27**	✓	✓	✓
Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flange	**D37**	✓	✓	✓
Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")	**E01**	✓	✓	✓
Use on zone 0 (only together with type of protection "Intrinsic safety (EEx ia)")	**E02**	✓	✓	✓
Oxygen application (max. 120 bar a (1740 psi a) at 60 °C (140 °F) with oxygen measurement and inert liquid)	**E10**	✓	✓	✓
Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4...-.....-.B..)	**E25**	✓	✓	✓
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**	✓	✓	✓

Selection and Ordering data	Order code	HART	PA	FF
Additional data				
Add "-Z" to Order No. and specify Order code.				
Measuring range to be set Specify in plain text (max. 5 digits): Y01: ... up to ... mbar, bar, kPa, MPa, psi	**Y01**	✓		
Measuring point number (TAG No.) Max. 16 characters, specify in plain text: Y15:	**Y15**	✓	✓	✓
Measuring point text Max. 27 characters, specify in plain text: Y16:	**Y16**	✓	✓	✓
Entry of HART address (TAG) Max. 8 characters, specify in plain text: Y17:	**Y17**	✓		
Setting of pressure indication in pressure units Specify in plain text (standard setting: mA): Y21: mbar, bar, kPa, MPa, psi, ... Note: The following pressure units can be selected: bar, mbar, mm H_2O*), inH_2O*), ftH_2O*), mmHG, inHG, psi, Pa, kPa, MPa, g/cm^2, kg/cm^2, Torr, ATM oder % *) ref. temperature 20 °C	**Y21**	✓	✓	✓
Setting of pressure indication in non-pressure units Specify in plain text: Y22: ..... up to ..... l/min, m^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", "Y21", "Y22", "Y25" and "D05" can be factory preset

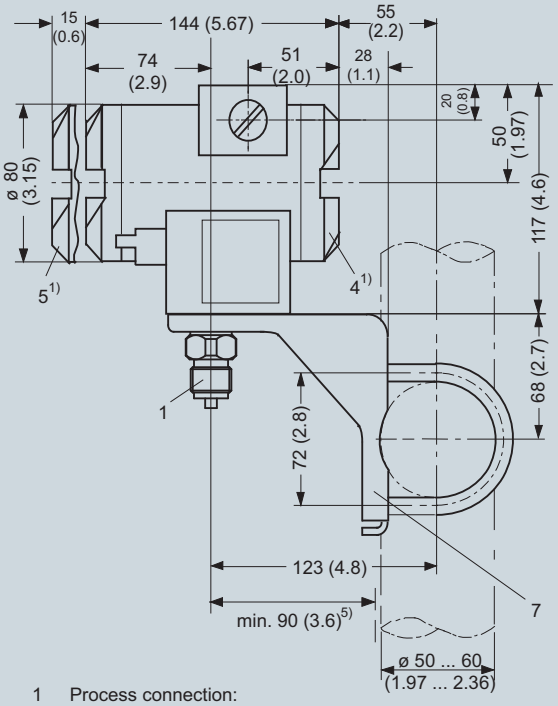
✓ = available

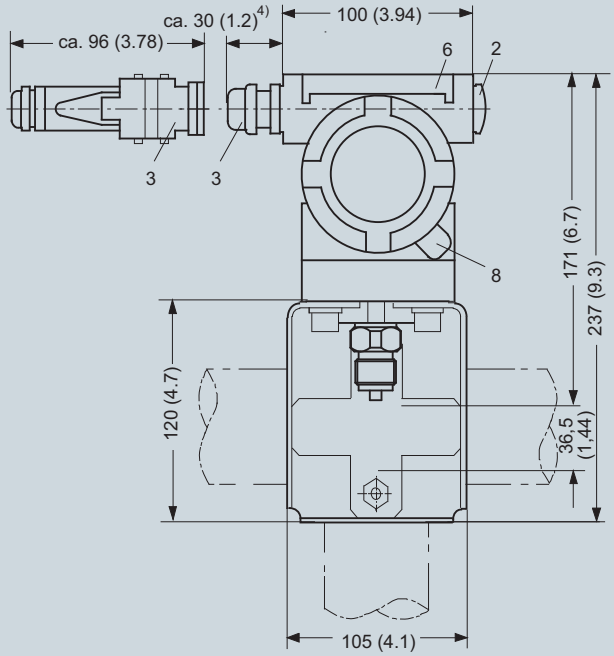
1) When the manufacture's certificate M (calibration certificate) has to be ordered for transmitters with diaphragm seals, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.

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

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

Dimensional drawings





1 Process connection:
- ½-14 NPT,
- onnection shankG½B or
- oval flange

2 Blanking plug

3 Electrical connection:
- screwed gland Pg 13,5 (adapter)[2) 3)],
- screwed gland M20x1,5 [3)],
- screwed gland ½-14 NPT or
- Han 7D/ Han 8U [2) 3)] plug

4 Terminal side

5 Electronic side, digital display (longer overall length for cover with window)

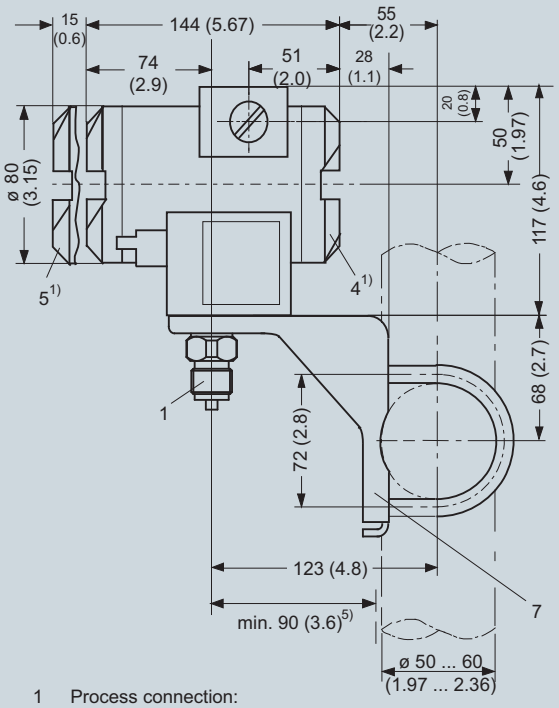
6 Protective cover over keys

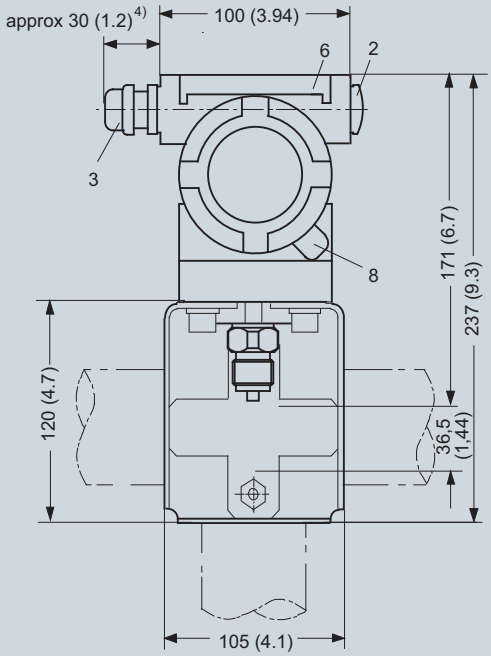
7 Mounting bracket (option)

8 Screw cover - safety bracket (only for type of protection "Explosion-proof enclosure", not shown in the drawing)

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

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





1 Process connection:
- ½-14 NPT,
- connection shank G½B or
- oval flange

2 Blanking plug

3 Electrical connection:
- screwed gland M20x1,5 4),
- screwed gland ½-14 NPT or
- PROFIBUS-Stecker M12 3) 4)

4 Terminal side

5 Electronic side, digital display (longer overall length for cover with window)

6 Protective cover over keys

7 Mounting bracket (option)

8 Screw cover - safety bracket (only for type of protection "Explosion-proof enclosure", not shown in the drawing)

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

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

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

Technical specifications

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

	HART		PROFIBUS PA or FOUNDATION Fieldbus	
Input				
Measured variable	Absolute pressure pressure			
Spans (infinitely adjustable) or nominal measuring range and max. permissible working pressure	Span	Maximum working pressure	Nominal measuring range	Maximum working pressure
	8.3 ... 250 mbar a (0.12 ... 3.6 psi a)	32 bar a (464 psi a)	250 mbar a (3.6 psi a)	32 bar a (464 psi a)
	43 ... 1300 mbar a (0.62 ... 18.9 psi a)	32 bar a (464 psi a)	1300 bar a (18.9 psi a)	32 bar a (464 psi a)
	160 ... 5000 mbar a (2.32 ... 72.5 psi a)	32 bar a (464 psi a)	5 bar a (72.5 psi a)	32 bar a (464 psi a)
	1 ... 30 bar a (14.5 ... 435 psi a)	160 bar a (2320 psi a)	30 bar a (435 psi a)	160 bar a (2320 psi a)
	5.3 ... 100 bar a (77 ... 1450 psi a)	160 bar a (2320 psi a) (for connection thread M10 and $^{7}/_{16}$-20 UNF in the process flanges)	100 bar a (1450 psi a)	160 bar a (2320 psi a) (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 psi a)			
Upper measuring limit	100% of max. span			
Output				
Output signal	4 ... 20 mA		Digital PROFIBUS PA or 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	
With polarity reversal protection	-		Yes	
Accuracy	To EN 60770-1			
Reference conditions (All error data refer always refer to the set span)	Increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil filling, room temperature 25 °C (77 °F)) r: Span ratio (r = max. span / set span)			
Error in measurement and fixed-point setting (including hysteresis and repeatability)				
• Linear characteristic			≤ 0.1%	
- r ≤ 10	≤ 0.1%			
- 10 < r ≤ 30	≤ 0.2%			
Long-term drift (temperature change ± 30 °C (± 54 °F))	≤ (0.1 · r)%/year		≤ 0.1%/year	
Influence of ambient temperature				
• at -10 ... +60 °C (14 ... 140 °F)	≤ (0.1 · r +0.2)%		≤ 0.3%	
• at -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 differential pressure series)		
	HART	**PROFIBUS PA or FOUNDATION Fieldbus**
Rated operating conditions		
Degree of protection (to EN 60529)	IP65	
Process temperature		
• Measuring cell with silicone oil filling	-40 ... +100 °C (-40 ... +212 °F)	
• Measuring cell with inert filling liquid	-20 ... +100 °C (-4 ... +212 °F)	
• In conjunction with dust explosion protection	-20 ... +60 °C (-4 ... +140 °F)	
Ambient conditions		
• Ambient temperature		
- Digital indicators	-30 ... +85 °C (-22 ... +185 °F)	
• Storage temperature	-50 ... +85 °C (-58 ... +185 °F)	
• Climatic class		
- Condensation	Permissible	
• Electromagnetic compatibility		
- Emitted interference and interference immunity	To EN 61326 and NAMUR NE 21	
Design		
Weight (without options)	≈ 4.5 kg (≈ 9.9 lb)	
Housing material	Poor in copper die-cast aluminium, GD-AlSi12 or stainless steel precision casting, mat. No. 1.4408	
Wetted parts materials		
• Seal diaphragm	Stainless steel, mat. No. 1.4404/316L or Hastelloy C276, mat. No. 2.4819, Monel, mat. No. 2.4360, tantalum or gold	
• 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 (max. 160 bar (2320 psi a) with oxygen measurement)	
Process connection	¼-18 NPT and flange connection to DIN 19213 with mounting thread M10 to DIN 19213 or 7/16-20 UNF to EN 61518	
Material of the mounting bracket		
• Steel	Sheet steel, Mat. No. 1.0330, chrome-plated	
• Stainless steel	Stainless steel, Mat. No. 1.4301 (SS304)	
Power supply 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
• Startup current ≤ basic current	-	Yes
• Max. current in event of fault	-	15.5 mA
Fault disconnection electronics (FDE) available	-	Yes

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

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

	HART	PROFIBUS PA or FOUNDATION Fieldbus
Certificate and approvals		
Classification according to pressure equipment directive (DRGL 97/23/EC)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of Article 3, paragraph 3 (sound engineering practice)	
Explosion protection		
• Intrinsic safety "i"	PTB 99 ATEX 2122	
- Identification	Ex II 1/2 G EEx ia/ib IIB/IIC T6	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +70 °C (-40 ... +158 °F) temperature class T5; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To certified intrinsically-safe circuits with maximum values: U_i = 30 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	
- Identification	Ex II 1/2 G EEx d IIC T4/T6	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To circuits with values: U_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	
- Identification	Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F)	
- Max.surface temperature	120 °C (248 °F)	
- Connection	To certified intrinsically-safe circuits with maximum values: U_i = 30 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	
- Identification	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} = 1.2 W
• Type of protection "n" (zone 2)	TÜV 01 ATEX 1696 X	Planned
- Identification	Ex II 3 G EEx nA L IIC T4/T5/T6	-
• Explosion protection 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	

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 measuring value) or 10 (two measuring 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 T_{63} , adjustable	0 ... 100 s
- Simulation function	Input /Output
- Failure mode	Can be parameterized (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	Can be parameterized (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

Communication FOUNDATION Fieldbus

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 T_{63} , adjustable	0 ... 100 s
- Simulation function	Output/input (can be locked within the device with a bridge)
- Failure mode	Can be parameterized (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 FF 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

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

Selection and Ordering data			Order No.
SITRANS P pressure transmitters for absolute pressure, from the differential pressure, series DS III HART		F)	7MF4333-
Measuring cell filling	**Measuring cell cleaning**		
Silicone oil	Standard		1
Inert liquid[1]	Grease-free		3
Span			
8.3 ... 250 mbar a	(0.12 ... 3.63 psi a)	E)	D
43 ... 1300 mbar a	(0.62 ... 18.9 psi a)	E)	F
0.16 ... 5 bar a	(2.32 ... 72.5 psi a)	E)	G
1 ... 30 bar a	(14.5 ... 435 psi a)		H
5.3 ... 100 bar a	(76.9 ... 1450 psi a)		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	E)	H
Gold	Gold		L
Version for diaphragm seal[2)3)4)]			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 needs)			0
• Vent on side of process flange[5)]			
- Mounting thread $^{7}/_{16}$-20 UNF to EN 61518			6
- Mounting thread M10 to DIN 19213 (only for replacement needs)			4
Non-wetted parts materials			
Process flange screws	Electronics housing		
Stainless steel	Die-cast aluminium		2
Stainless steel	Stainless steel precision casting[6)]		3
Version			
• Standard version			1
• International version, English label inscriptions, documentation in 5 languages on CD			2
Explosion protection			
• Without			A
• With ATEX, Type of protection:			
- "Intrinsic safety (EEx ia)"			B
- "Explosion-proof (EEx d)"[7)]			D
- "Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d)" [8)]			P
- "Ex nA/nL (zone 2)"			E
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)"[8)]			R
• With FM + CSA, Type of protection:			
- "Intrinsic safety and explosion-proof (is + xp)"[7)]			N C
Electrical connection / cable entry			
• Screwed gland Pg 13.5[9)]			A
• Screwed gland M20x1.5			B
• Screwed gland ½-14 NPT			C
• Han 7D plug (plastic housing) incl. mating connector[9)]			D
• Plug M12 (metal)[10)]			F

Selection and Ordering data		Order No.
SITRANS P pressure transmitters for absolute pressure, from the differential pressure, series DS III HART	F)	7MF4333-
Display		
• Without indicator		0
• Without visible digital indicator (digital indicator ▶ hidden, setting: mA)		1
• With visible digital indicator		6
• With customer-specific digital indicator (setting as specified, Order code "Y21" or required)		7

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

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

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

1) For oxygen applications, add Order code E10.
2) Version 7MF4333-1DY... only up to max. span 200 mbar a (2.9 psi a).
3) When the manufacture's certificate M (calibration certificate) has to be ordered for transmitters with diaphragm seals, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.
4) Whe the acceptance test certificate 3.1 for transmitters with direct-connected diaphragm seals is ordered, this certificate must also be ordered with the corresponding seals.
5) Not for span "5.3 ... 100 bar a (76.9 ... 1450 psi a)". Position of the top vent valve in the process flange (see dimensional drawing).
6) Not together with Electrical connection „Screwed gland Pg 13.5" and „Han7D plug".
7) Without cable gland, with blanking plug
8) With enclosed cable gland EEx ia and blanking plug
9) Not together with type of protection "Explosion-proof" and and type of protection "Ex nA".
10) Not together with types of protection "Explosion-proof" or "Intrinsic safety and explosion-proof"

E) Combinations of the versions marked with E) are subject to the export regulations AL: 2B230, ECCN: N.
F) Subject to export regulations AL: 9I999, ECCN: N.

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

Selection and Ordering data			Order No.
SITRANS P pressure transmitters for absolute pressure (from the differential pressure series)			
DS III PA series (PROFIBUS PA)		F)	7MF4334-
DS III FF series (FOUNDATION Fieldbus)		F)	7MF4335-
Measuring cell filling	**Measuring cell cleaning**		
Silicone oil	Standard		1
Inert liquid[1]	Grease-free		3
Nominal measuring range			
250 mbar a	(3.63 psi a)	E)	D
1300 mbar a	(18.9 psi a)	E)	F
5 bar a	(72.5 psi a)	E)	G
30 bar a	(435 psi a)		H
100 bar a	(1450 psi a)		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	E)	H
Gold	Gold		L
Version as diaphragm seal[2)3)4)]			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 needs)			0
• Vent on side of process flange[5)]			
- Mounting thread $^{7}/_{16}$-20 UNF to EN 61518			6
- Mounting thread M10 to DIN 19213 (only for replacement needs)			4
Non-wetted parts materials			
Process flange screws	Electronics housing		
Stainless steel	Die-cast aluminium		2
Stainless steel	Stainless steel precision casting		3
Version			
• Standard version			1
• International version, English label inscriptions, documentation in 5 languages on CD			2
Explosion protection			
• Without			A
• With ATEX, Type of protection:			
- "Intrinsic safety (EEx ia)"			B
- "Explosion-proof (EEx d)"[6)]			D
- "Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d)"[7)]			P
- "Ex nA/nL (zone 2)"			E
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)"[7)] (not for DS III FF)			R
• With FM + CSA, Type of protection:			
- "Intrinsic safety and explosion-proof (is + xp)"[6)]			N C
Electrical connection / cable entry			
• Screwed gland M20x1.5			B
• Screwed gland ½-14 NPT			C
• M12 Connector (metall)[8)]			F

Selection and Ordering data		Order No.
SITRANS P pressure transmitters for absolute pressure (from the differential pressure series)		
DS III PA series (PROFIBUS PA)	F)	7MF4334-
DS III FF series (FOUNDATION Fieldbus)	F)	7MF4335-
Display		
• Without indicator		0
• Without visible digital indicator (digital indicator hidden, setting: mA)		1
• With visible digital indicator		6
• With customer-specific digital indicator (setting as specified, Order code "Y21" or required)		7

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

Included in delivery of the device:
- Brief instructions (Leporello)
- CD-ROM with detailed documentation
- 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 (2.9 psi a).
3) When the manufacture's certificate M (calibration certificate) has to be ordered for transmitters with diaphragm seals, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.
4) Whe the acceptance test certificate 3.1 for transmitters with direct-connected diaphragm seals is ordered, this certificate must also be ordered with the corresponding seals.
5) Not for nominal measuring range 100 bar a (1450 psi a). Position of the top vent valve in the process flange (see dimensional drawing).
6) Without cable gland, with blanking plug
7) With enclosed cable gland EEx ia and blanking plug
8) Cannot be used together with the following types of protection: "Explosion-proof" and "Intrinsic safety and explosion-proof".

E) Combinations of the versions marked with E) are subject to the export regulations AL: 2B230, ECCN: N.
F) Subject to export regulations AL: 9I999, ECCN: N.

DS III series for absolute pressure (from differential 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 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**	✓		
Sealing screws ¼-18 NPT, with valve in material of process flanges	**A40**	✓	✓	✓
Cable sockets for M12 connectors (metal)	**A50**	✓	✓	✓
Rating plate inscription (instead of German)				
• English	**B11**	✓	✓	✓
• French	**B12**	✓	✓	✓
• Spanish	**B13**	✓	✓	✓
• Italian	**B14**	✓	✓	✓
English rating plate Pressure units in inH_2O or psi	**B21**	✓	✓	✓
Quality inspection certificate (Factory calibration) to IEC 60770-2 [1]	**C11**	✓	✓	✓
Acceptance test certificate[2] To EN 10204-3.1	**C12**	✓	✓	✓
Factory certificate To EN 10204-2.2	**C14**	✓	✓	✓
"Functional Safety (SIL)" certificate	**C20**	✓		
"PROFIsafe" certificate and protocol	**C21**		✓	
Setting of upper limit of output signal to 22.0 mA	**D05**	✓		
Manufacturer's declaration acc. to NACE (only together with seal diaphragm made of Hastelloy and stainless steel)	**D07**	✓	✓	✓
Type of protection IP68 (not together with Han 7D/Han 8U plug, cable gland PG 13.5)	**D12**	✓	✓	✓
Digital indicator alongside the input keys (only together with the devices 7MF4333-….2-.A.6 or -.A.7-Z, Y21 or Y22 + Y01)	**D27**	✓	✓	✓
Supplied with oval flange (1 item), PTFE packing and stainless steel screws in thread of process flange	**D37**[F)]	✓	✓	✓
Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")	**E01**	✓	✓	✓
Use on zone 0 (only together with type of protection "Intrinsic safety (EEx ia)")	**E02**	✓	✓	✓
Oxygen application (max. 120 bar a (1740 psi a) at 60°C (140 °F) with oxygen measurement and inert liquid)	**E10**	✓	✓	✓
Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4...-.....-.B..)	**E25**	✓	✓	✓

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) (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**	✓	✓	✓
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 (MWP 145 psi), max. temperature of medium 90 °C (194 °F) For ½-14 NPT inner process connection on the side in the middle of the process flange, vent valve not possible	**K04**	✓	✓	✓
Additional data				
Add "-Z" to Order No. and specify Order code.				
Measuring range to be set Specify in plain text (max. 5 digits): Y01: ... up to ... mbar, bar, kPa, MPa, psi	**Y01**	✓		
Measuring point number (TAG No.) Max. 16 characters, specify in plain text: Y15:	**Y15**	✓	✓	✓
Measuring point text Max. 27 characters, specify in plain text: Y16:	**Y16**	✓	✓	✓
Entry of HART address (TAG) Max. 8 characters, specify in plain text: Y17:	**Y17**	✓		
Setting of pressure indication in pressure units Specify in plain text (standard setting: mA): Y21: mbar, bar, kPa, MPa, psi, ... Note: The following pressure units can be selected: bar, mbar, mm H_2O*), inH_2O*), ftH_2O*), mmHG, inHG, psi, Pa, kPa, MPa, g/cm², kg/cm², Torr, ATM oder % *) ref. temperature 20 °C	**Y21**	✓	✓	✓
Setting of pressure indication in non-pressure units Specify in plain text: Y22: ..... up to ..... l/min, m³/h, m, USgpm, ... (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	**Y22 + Y01**	✓		
Preset bus address (possible between 1 and 126) Specify in plain text: Y25:	**Y25**		✓	

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

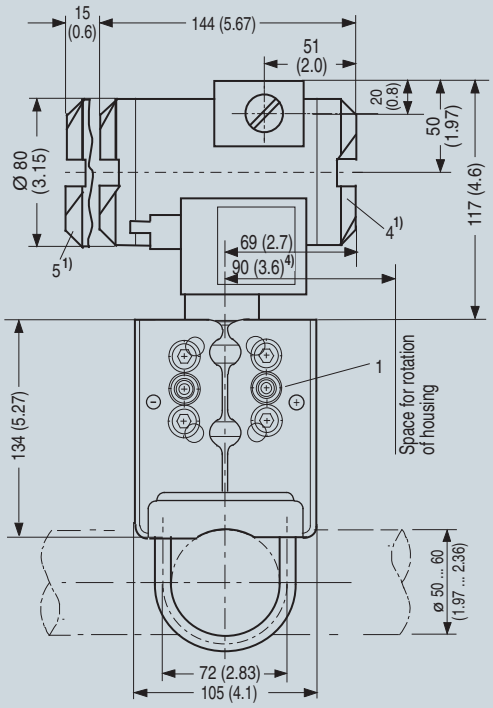
✓ = available

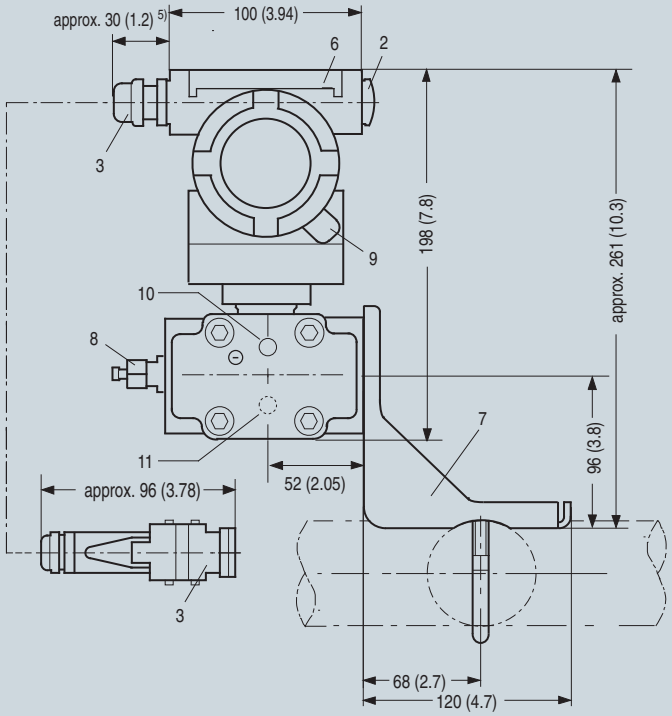
1) When the manufacture's certificate M (calibration certificate) has to be ordered for transmitters with diaphragm seals, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.

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

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

Dimensional drawings



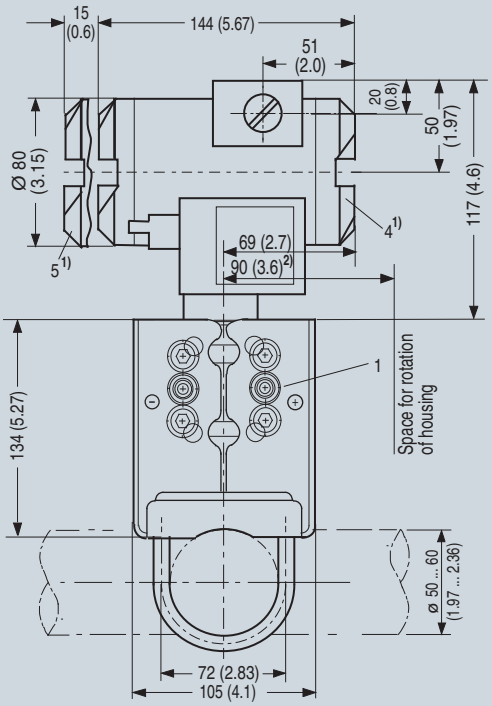


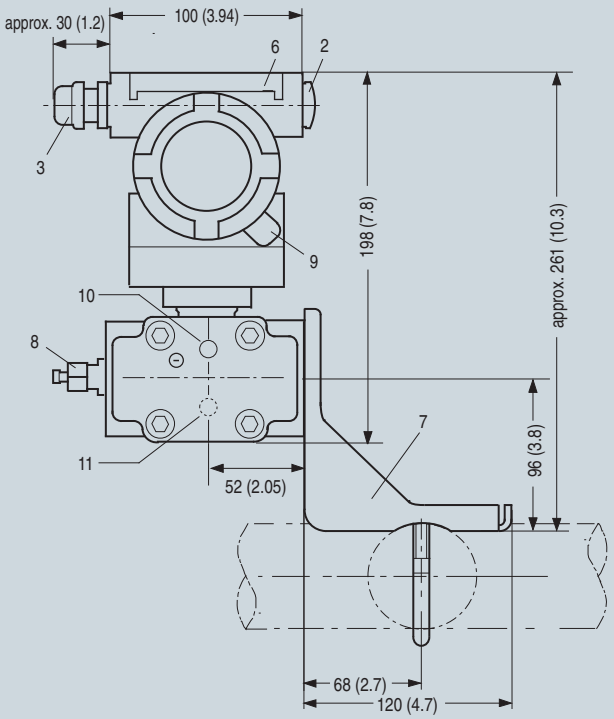
1 Process connection: ¼-18 NPT (EN 61518)
2 Blanking plug
3 Electrical connection:
- screwed gland Pg 13,5 (adapter) 2) 3),
- screwed gland M20x1,5 3),
- screwed gland ½-14 NPT or
- Han 7D/ Han 8U plug 2) 3)
4 Terminal side
5 Electronics side, digital display (longer overall length for cover with window)
6 Protective cover over keys
7 Mounting bracket (option)
8 Sealing screw with valve (option)
9 Screw cover - safety bracket (only for type of protection "Explosion-proof enclosure", not shown in the drawing)
10 Lateral venting for liquid measurement (Standard)
11 Lateral venting for gas measurement (suffix H02)

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) 45 mm (1.8 inch) for Pg 13,5 with adapter

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

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





1 Process connection: ¼-18 NPT (EN 61518)
2 Blanking plug
3 Electrical connection:
- screwed gland M20x1,5 4),
- screwed gland ½-14 NPT or
- PROFIBUS plug M12 3) 4)
4 Terminal side
5 Electronic side, digital display (longer overall length for cover with window)
6 Protective cover over keys
7 Mounting bracket (option)
8 Sealing screw with valve (option)
9 Screw cover – safety bracket (only for explosion-proof enclosure, not shown in the drawing)
10 Lateral venting for liquid measurement (Standard)
11 Lateral venting for gas measurement (suffix H02)

1) Allow approx. 20 mm (0.79 inch) thread length in addition
2) 92 mm (3.62 inch) for minimum distance to permit rotation with indicator
3) Not with type of protection "explosion-proof enclosure"
4) Not with type of protection "FM + CSA"

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

Technical specifications

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

	HART		PROFIBUS PA or FOUNDATION Fieldbus	
Input				
Measured variable	Differential pressure and flow			
Spans (infinitely adjustable) or nominal measuring range and max. permissible working pressure	Span	Maximum working pressure	Nominal measuring range	Maximum working pressure
	1 ... 20 mbar (0.4015 ... 8.031 inH_2O)	32 bar (464 psi)	20 mbar g (8.031 inH_2O)	32 bar (464 psi)
	1 ... 60 mbar (0.4015 ... 24.09 inH_2O)	160 bar (2320 psi)	60 mbar (24.09 inH_2O)	160 bar (2320 psi)
	2.5 ... 250 mbar (1.004 ... 100.4 inH_2O)		250 mbar (100.4 inH_2O)	
	6 ... 600 mbar (2.409 ... 240.9 inH_2O)		600 mbar (240.9 inH_2O)	
	16 ... 1600 mbar (6.424 ... 642.4 inH_2O)		1600 mbar (642.4 inH_2O)	
	50 ... 5000 mbar (20.08 ... 2008 inH_2O)		5 bar (2008 inH_2O)	
	0.3 ... 30 bar (4.35 ... 435 psi)		30 bar (435 psi)	
	2.5 ... 250 mbar (1.004 ... 100.4 inH_2O)	420 bar (6091 psi)	250 mbar (100.4 inH_2O)	420 bar (6091 psi)
	6 ... 600 mbar (2.409 ... 240.9 inH_2O)		600 mbar (240.9 inH_2O)	
	16 ... 1600 mbar (6.424 ... 642.4 inH_2O)		1600 mbar (642.4 inH_2O)	
	50 ... 5000 mbar (20.08 ... 2008 inH_2O)		5 bar (2008 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 psi))			
Upper measuring limit	100% of max. span (for oxygen version and inert filling liquid; max. 160 bar g (2320 psi g))			
Output				
Output signal	4 ... 20 mA		Digital PROFIBUS PA or 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	
With polarity reversal protection	-		Yes	
Accuracy	To EN 60770-1			
Reference conditions (All error data refer always refer to the set span)	Increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil filling, room temperature 25 °C (77 °F)) r: Span ratio (r = max. span / set span)			
Error in measurement and fixed-point setting (including hysteresis and repeatability)				
• Linear characteristic			≤ 0,075%	
- r ≤ 10	≤ (0.0029 · r + 0.071)%			
- 10 < r ≤ 30	≤ (0.0045 · r + 0.071)%			
- 30 < r ≤ 100	≤ (0.005 · r + 0.05)%			
• Square-root characteristic (flow > 50%)			≤ 0,1%	
- r ≤ 10	≤ 0,1%			
- 10 < r ≤ 30	≤ 0,2%			

DS III series for differential pressure and flow

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

	HART	PROFIBUS PA or FOUNDATION Fieldbus
• Square-root characteristic (flow 25 ... 50%)		≤ 0,2
- r ≤ 10	≤ 0,2%	-
- 10 < r ≤ 30	≤ 0,4%	-
Long-term drift (temperature change ± 30 °C (± 54 °F))	≤ (0.25 · r)% every 5 years static pressure max. 70 bar g (1015 psi g)	≤ (0.25% every 5 years static pressure max. 70 bar g (1015 psi g)
• 20 mbar (0.29 psi)-measuring cell	≤ (0.2 · r) per year	≤ 0.2 per year
Influence of ambient temperature		
• at -10 ... +60 °C (14 ... 140 °F)	≤ (0.08 · r + 0.1)%	≤ 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	≤ (0.15 · r)% per 100 bar (1450 psi)	≤ 0.15% je 100 bar (1450 psi)
- 20 mbar (0.29 psi)-measuring cell	≤ (0.15 · r)% per 32 bar (464 psi)	≤ 0.15% je 32 bar (464 psi)
• on the span	≤ 0.2% je 100 bar (1450 psi)	-
- 20 mbar (0.29 psi)-measuring cell	≤ 0.2% je 32 bar (464 psi)	-
Measured Value Resolution	-	3 · 10^{-5} of nominal measuring range
Rated operating conditions		
Degree of protection (to EN 60529)	IP65	
Process temperature		
• Measuring cell with silicone oil filling	-40 ... +100 °C (-40 ... +212 °F)	
• Measuring cell with inert filling liquid	-20 ... +100 °C (-4 ... +212 °F)	
• In conjunction with dust explosion protection	-20 ... +60 °C (-4 ... +140 °F)	
Ambient conditions		
• Ambient temperature		
- Digital indicators	-30 ... +85 °C (-22 ... +185 °F)	
• Storage temperature	-50 ... +85 °C (-58 ... +185 °F)	
• Climatic class		
- Condensation	Permissible	
• Electromagnetic compatibility		
- Emitted interference and interference immunity	To EN 61326 and NAMUR NE 21	
Material of the mounting bracket		
• Steel	Sheet steel, Mat. No. 1.0330, chrome-plated	
• Stainless steel	Stainless steel, Mat. No. 1.4301 (SS304)	
Design		
Weight (without options)	≈ 4.5 kg (≈ 9.9 lb)	
Housing material	Poor in copper die-cast aluminium, GD-AlSi12 or stainless steel precision casting, mat. No. 1.4408	
Wetted parts materials		
• Seal diaphragm	Stainless steel, mat. No. 1.4404/316L or Hastelloy C276, mat. No. 2.4819, Monel, mat. No. 2.4360, tantalum or gold	
Measuring cell filling	Silicone oil or inert filling liquid (max. 160 bar (2320 psi g) with oxygen measurement)	
Process connection	Female thread ¼-18 NPT and flange connection with mounting thread M10 to DIN 19213 or $^{7}/_{16}$-20 UNF to EN 61518	

SITRANS P, DS III series, for differential pressure and flow		
	HART	**PROFIBUS PA or FOUNDATION Fieldbus**
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
• Startup current ≤ basic current	-	Yes
• Max. current in event of fault	-	15.5 mA
Fault disconnection electronics (FDE) avail.	-	Yes

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

	HART	PROFIBUS PA or FOUNDATION Fieldbus
Certificate and approvals		
Classification according to pressure equipment directive (DRGL 97/23/EC)		
PN 32/160 (MWP 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 (MWP 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 99 ATEX 2122	
- Identification	Ex II 1/2 G EEx ia/ib IIB/IIC T6	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +70 °C (-40 ... +158 °F) temperature class T5; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To certified intrinsically-safe circuits with maximum values: U_i = 30 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	
- Identification	Ex II 1/2 G EEx d IIC T4/T6	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To circuits with values: U_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	
- Identification	Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F)	
- Max.surface temperature	120 °C (248 °F)	
- Connection	To certified intrinsically-safe circuits with maximum values: U_i = 30 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	
- Identification	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} = 1.2 W
• Type of protection "n" (zone 2)	TÜV 01 ATEX 1696 X	Planned
- Identification	Ex II 3 G EEx nA L IIC T4/T5/T6	-
• Explosion protection 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	

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 measuring value) or 10 (two measuring 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 T_{63} , adjustable	0 ... 100 s
- Simulation function	Input /Output
- Failure mode	Can be parameterized (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	Can be parameterized (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

Communication FOUNDATION Fieldbus

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 T_{63} , adjustable	0 ... 100 s
- Simulation function	Output/input (can be locked within the device with a bridge)
- Failure mode	Can be parameterized (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 FF 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

DS III series for differential pressure and flow

Selection and Ordering data			Order No.
SITRANS P pressure transmitters for differential pressure and flow, Series DS III HART PN 32/160 (MWP 464/2320 psi)			7MF4433 -
Measuring cell filling	**Measuring cell cleaning**		
Silicone oil	Standard	▶	1
Inert liquid[1]	Grease-free		3
Span			
PN 32 (MWP 464 psi)			
1 ... 20 mbar[2]	(0.4015 ... 8.03 inH$_2$O)	▶	B
PN 160 (MWP 2320 psi)			
1 ... 60 mbar	(0.4015 ... 24.09 inH$_2$O)	▶	C
2.5 ... 250 mbar	(1.004 ... 100.4 inH$_2$O)	▶	D
6 ... 600 mbar	(2.409 ... 240.9 inH$_2$O)	▶	E
16 ... 1600 mbar	(6.424 ... 642.4 inH$_2$O)	▶	F
50 ... 5000 mbar	(20.08 ... 2008 inH$_2$O)	▶	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]			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 needs)		▶	0
• Vent on side of process flange[2]			
- Mounting thread $^7/_{16}$-20 UNF to EN 61518			6
- Mounting thread M10 to DIN 19213 (only for replacement needs)			4
Non-wetted parts materials			
Process flange screws	Electronics housing		
Stainless steel	Die-cast aluminium	▶	2
Stainless steel	Stainless steel precision casting[6]		3
Version			
• Standard version			1
• International version, English label inscriptions, documentation in 5 languages on CD		▶	2
Explosion protection			
• Without			A
• With ATEX, Type of protection:			
- "Intrinsic safety (EEx ia)"			B
- "Explosion-proof (EEx d)"[7]			D
- "Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d)"[8]			P
- "Ex nA/nL (zone 2)"			E
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)"[8]		▶	R
• With FM + CSA, Type of protection:			
- "Intrinsic safety and explosion-proof (is + xp)"[7]			N C
Electrical connection / cable entry			
• Screwed gland Pg 13.5[9]			A
• Screwed gland M20x1.5		▶	B
• Screwed gland ½-14 NPT			C
• Han 7D plug (plastic housing) incl. mating connector[10]			D
• M12 connectors (metal)[10]			F

Selection and Ordering data		Order No.
SITRANS P pressure transmitters for differential pressure and flow, Series DS III HART PN 32/160 (MWP 464/2320 psi)		7MF4433 -
Display		
• Without indicator		0
• Without visible digital indicator (digital indicator hidden, setting: mA)	▶	1
• With visible digital indication		6
• With customer-specific digital indication (setting as specified, Order code "Y21" or required)		7

▶ Available ex stock

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

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

Included in delivery of the device:
- Brief instructions (Leporello)
- CD-ROM with detailed documentation
- 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 flanges (see dimensional drawing).
3) Only together with max. spans 250, 1600, 5000 and 30000 mbar (100.4, 240.9, 2008 inH$_2$O and 435 psi)
4) When the manufacture's certificate M (calibration certificate) has to be ordered for transmitters with diaphragm seals, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.
5) Whe the acceptance test certificate 3.1 for transmitters with direct-connected diaphragm seals is ordered, this certificate must also be ordered with the corresponding seals.
6) Not together with Electrical connection „Screwed gland Pg 13.5" and „Han7D plug".
7) Without cable gland, with blanking plug
8) With enclosed cable gland EEx ia and blanking plug
9) Not together with type of protection "Explosion-proof" and and type of protection "Ex nA".
10) Cannot be used together with the following types of protection: "Explosion-proof" and "Intrinsic safety and explosion-proof"

Selection and Ordering data		Order No.									
SITRANS P pressure transmitters for differential pressure and flow PN 32/160 (MWP 464/2320 psi)											
DS III PA series (PROFIBUS PA)		7	M	F	4	4	3	4	-		
DS III FF series (FOUNDATION Fieldbus)		7	M	F	4	4	3	5	-		
		■	■	■	■	■	-	■	■	■	■
Measuring cell filling	**Measuring cell cleaning**										
Silicone oil	Standard	1									
Inert liquid[1]	Grease-free	3									
Nominal measuring range											
PN 32 (MWP 464 psi)											
20 mbar[2]	(8.03 inH_2O)		B								
PN 160 (MWP 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]				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 needs)					0						
• Venting on side of process flanges[2]											
- Mounting thread $^7/_{16}$-20 UNF to EN 61518					6						
- Mounting thread M10 to DIN 19213 (only for replacement needs)					4						
Non-wetted parts materials											
Process flange screws	Electronics housing										
Stainless steel	Die-cast aluminium					2					
Stainless steel	Stainless steel precision casting					3					
Version											
• Standard version								1			
• International version, English label inscriptions, documentation in 5 languages on CD								2			
Explosion protection											
• Without									A		
• With ATEX, Type of protection:											
- "Intrinsic safety (EEx ia)"									B		
- "Explosion-proof (EEx d)"[6]									D		
- "Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d)"[7]									P		
- "n (Zone 2)" (planned)									E		
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)"[7] (not for DS III FF)									R		
• With FM + CSA, Type of protection:											
- "Intrinsic safety and explosion-proof (is + xp)"[6]									N	C	

Selection and Ordering data	Order No.										
SITRANS P pressure transmitters for differential pressure and flow PN 32/160 (MWP 464/2320 psi)											
DS III PA series (PROFIBUS PA)	7	M	F	4	4	3	4	-			
DS III FF series (FOUNDATION Fieldbus)	7	M	F	4	4	3	5	-			
	■	■	■	■	■	-	■	■	■	■	
Electrical connection / cable entry											
• Screwed gland M20x1.5									B		
• Screwed gland ½-14 NPT									C		
• M12 connectors (metal)[8]									F		
Display											
• Without indicator										0	
• Without visible digital indicator (digital indicator ▶ hidden, setting: mA)										1	
• With visible digital indication										6	
• With customer-specific digital indication (setting as specified, Order code "Y21" or required)										7	

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

Included in delivery of the device:
- Brief instructions (Leporello)
- CD-ROM with detailed documentation
- 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 flanges (see dimensional drawing).
3) Only together with max. spans 250, 1600, 5000 and 30000 mbar (100.4, 240.9, 2008 inH_2O and 435 psi).
4) When the manufacture's certificate M (calibration certificate) has to be ordered for transmitters with diaphragm seals, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.
5) Whe the acceptance test certificate 3.1 for transmitters with direct-connected diaphragm seals is ordered, this certificate must also be ordered with the corresponding seals.
6) Without cable gland, with blanking plug.
7) With enclosed cable gland EEx ia and blanking plug.
8) Cannot be used together with the following types of protection: "Explosion-proof" and "Intrinsic safety and explosion-proof".

DS III series for differential pressure and flow

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 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**	✓		
Sealing screws ¼-18 NPT, with valve in mat. of process flanges	**A40**	✓	✓	✓
Cable sockets for M12 connectors (metal)	**A50**	✓	✓	✓
Rating plate inscription (instead of German)				
• English	**B11**	✓	✓	✓
• French	**B12**	✓	✓	✓
• Spanish	**B13**	✓	✓	✓
• Italian	**B14**	✓	✓	✓
English rating plate (calibration certificate) Pressure units in inH_2O or psi	**B21**	✓	✓	✓
Quality inspection certificate (Factory calibration) to IEC 60770-2 [1]	**C11**	✓	✓	✓
Acceptance test certificate[2] To EN 10 204-3.1	**C12**	✓	✓	✓
Factory certificate To EN 10 204-2.2	**C14**	✓	✓	✓
"Functional Safety (SIL)" certificate	**C20**	✓		
"PROFIsafe" certificate and protocol	**C21**		✓	
Setting of upper limit of output signal to 22.0 mA	**D05**	✓		
Manufacturer's declaration acc. to NACE (only together with seal diaphragm made of Hastelloy and stainless steel)	**D07**	✓	✓	✓
Type of protection IP68 (not together with 7D/ Han 8U plug, cable gland Pg 13.5)	**D12**	✓	✓	✓
Digital indicator alongside the input keys (only together with the devices 7MF4433-….2-.A.6 or -.A.7-Z, Y21 or Y22 + Y01)	**D27**	✓	✓	✓
Process flange screws made of Monel (max. nominal pressure PN20)	**D34**	✓	✓	✓
Supplied with oval flange set (2 items), PTFE packings and stainles steel screws in thread of process flanges	**D37**	✓	✓	✓
Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")	**E01**	✓	✓	✓
Use on zone 0 (only together with type of protection "Intrinsic safety (EEx ia)")	**E02**	✓	✓	✓
TÜV approval to AD/TRD (only together with type of protection "Intrinsic safety (EEx ia)")	**E06**	✓		
Overfilling safety device for flammable and non-flammable liquids (max. PN 32 (MVWP 464 psi), basic device with type of protection "Intrinsic safety (EEx ia)", to WHG and VbF, not together with measuring cell filling "inert liquid")	**E08**	✓	✓	✓

Selection and Ordering data	Order code	HART	PA	FF
Further designs Add "-Z" to Order No. and specify Order code.				
Oxygen application (max. 120 bar (1740 psi) at 60°C (140 °F) with oxygen measurement and inert liquid)	**E10**	✓	✓	✓
Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4...-.....-.B..)	**E25**	✓	✓	✓
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**	✓	✓	✓
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 (MWP 145 psi), max. temperature of medium 90 °C (194 °F) For ½-14 NPT inner process connection on the side in the middle of the process flange, vent valve not possible	**K04**	✓	✓	✓

✓ = available

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

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

3) Not suitable for connection of remote seal

Selection and Ordering data	Order code	HART	PA	FF
Additional data				
Add "-Z" to Order No. and specify Order code.				
Measuring range to be set Specify in plain text: • With linear characteristic (max. 5 digits): Y01: ... up to ... mbar, bar, kPa, MPa, psi	**Y01**	✓		
• With square-rooted characteristic (max. 5 digits): Y02: ... up to ... mbar, bar, kPa, MPa, psi	**Y02**	✓		
Measuring point number (TAG No.) Max. 16 char., specify in plain text: Y15:	**Y15**	✓	✓	✓
Measuring point text Max. 27 char., specify in plain text: Y16:	**Y16**	✓	✓	✓
Entry of HART address (TAG) Max. 8 char., specify in plain text: Y17:	**Y17**	✓		
Setting of pressure indicator in pressure units Specify in plain text (standard setting: mA): Y21: mbar, bar, kPa, MPa, psi, ... Note: The following pressure units can be selected: bar, mbar, mm H_2O*), inH_2O*), ftH_2O*), mmHG, inHG, psi, Pa, kPa, MPa, g/cm^2, kg/cm^2, Torr, ATM oder % *) ref. temperature 20 °C	**Y21**	✓	✓	✓
Setting of pressure indicator 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" or "Y02" is essential, unit with max. 5 characters)	**Y22**[1] **+ Y01** *or* **Y02**	✓		
Preset bus address (possible between 1 and 126) Specify in plain text: Y25:	**Y25**		✓	

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

✓ = available

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

DS III series
for differential pressure and flow

Selection and Ordering data		Order No. 7MF4533-
SITRANS P pressure transmitters for differential pressure and flow, Series DS III HART PN 420 (MWP 6092 psi)		
Measuring cell filling	**Measuring cell cleaning**	
Silicone oil	Standard	1
Span		
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
Process connection		
Female thread ¼-18 NPT with flange connection		
• Sealing screw opposite process connection		
- Mounting thread $^7/_{16}$-20 UNF to EN 61518		3
- Mounting thread M12 to DIN 19213 (only for replacement needs)		1
• Venting on side of process flanges. Position of the top vent valve in the process flanges (see dimensional drawing).		
- Mounting thread $^7/_{16}$-20 UNF to EN 61518		7
- Mounting thread M12 to DIN 19213 (only for replacement needs)		5
Non-wetted parts materials		
Process flange screws	Electronics housing	
Stainless steel	Die-cast aluminium	2
Stainless steel	Stainless steel precision casting[2]	3
Version		
• Standard version		1
• International version, English label inscriptions, documentation in 5 languages on CD		2
Explosion protection		
• Without		A
• With ATEX, Type of protection:		
- "Intrinsic safety (EEx ia)"		B
- "Explosion-proof (EEx d)"[3]		D
- "Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d)"[4]		P
- "Ex nA/nL (zone 2)"		E
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)"[4]		R
• With FM + CSA, Type of protection:		
- "Intrinsic safety and explosion-proof (is + xp)"[3], max PN 360		N C
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 (metal)[6]		F

Selection and Ordering data	Order No. 7MF4533-
SITRANS P pressure transmitters for differential pressure and flow, Series DS III HART PN 420 (MWP 6092 psi)	
Display	
• Without indicator	0
• Without visible digital indicator (digital indicator ▶ hidden, setting: mA)	1
• With visible digital indication	6
• With customer-specific digital indication (setting as specified, Order code "Y21" or required)	7

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

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

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

1) Not together with max. span 600 mbar (240.9 inH_2O)
2) Not together with Electrical connection „Screwed gland Pg 13.5“ and „Han7D plug“.
3) Without cable gland, with blanking plug
4) With enclosed cable gland EEx ia and blanking plug
5) Not together with type of protection "Explosion-proof" and and type of protection "Ex nA".
6) Cannot be used together with the following types of protection: "Explosion-proof" and "Intrinsic safety and explosion-proof".

Selection and Ordering data		Order No.
SITRANS P pressure transmitters for differential pressure and flow, Series DS III HART PN 420 (MWP 6092 psi)		
DS III PA (PROFIBUS PA) series		7MF4534-
DS III FF series (FOUNDATION Fieldbus)		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
Process connection		
Female thread ¼-18 NPT with flange connection		
• Sealing screw opposite process connection		
- Mounting thread $^7/_{16}$-20 UNF to EN 61518		3
- Mounting thread M12 to DIN 19213 (only for replacement needs)		1
• Venting on side of process flanges. Position of the top vent valve in the process flanges (see dimensional drawing).		
- Mounting thread $^7/_{16}$-20 UNF to EN 61518		7
- Mounting thread M12 to DIN 19213 (only for replacement needs)		5
Non-wetted parts materials		
Process flange screws	Electronics housing	
Stainless steel	Die-cast aluminium	2
Stainless steel	Stainless steel precision casting	3
Version		
• Standard version		1
• International version, English label inscriptions, documentation in 5 languages on CD		2
Explosion protection		
• Without		A
• With ATEX, Type of protection:		
- "Intrinsic safety (EEx ia)"		B
- "Explosion-proof (EEx d)"[2]		D
- "Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d)"[3]		P
- "Ex nA/nL (zone 2)"		E
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)"[3] (not for DS III FF)		R
• With FM + CSA, Type of protection:		
- "Intrinsic safety and explosion-proof (is + xp)"[2], max PN 360		NC
Electrical connection / cable entry		
• Screwed gland M20x1.5		B
• Screwed gland ½-14 NPT		C
• Plug M12 incl. mating connector[4]		F

Selection and Ordering data	Order No.
SITRANS P pressure transmitters for differential pressure and flow, Series DS III HART PN 420 (MWP 6092 psi)	
DS III PA (PROFIBUS PA) series	7MF4534-
DS III FF series (FOUNDATION Fieldbus)	7MF4535-
	1 ■■■■-■■■■
Display	
• Without indicator	0
• Without visible digital indicator (digital indicator ▶ hidden, setting: mA)	1
• With visible digital indicator	6
• With customer-specific digital indicator (setting as specified, Order code "Y21" or required)	7

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

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

1) Not together with max. span 600 mbar (240.9 inH_2O)
2) Without cable gland, with blanking plug.
3) With enclosed cable gland EEx ia and blanking plug.
4) Not together with types of protection "Explosion-proof" and "Intrinsic safety and explosion-proof"

DS III series for differential pressure and flow

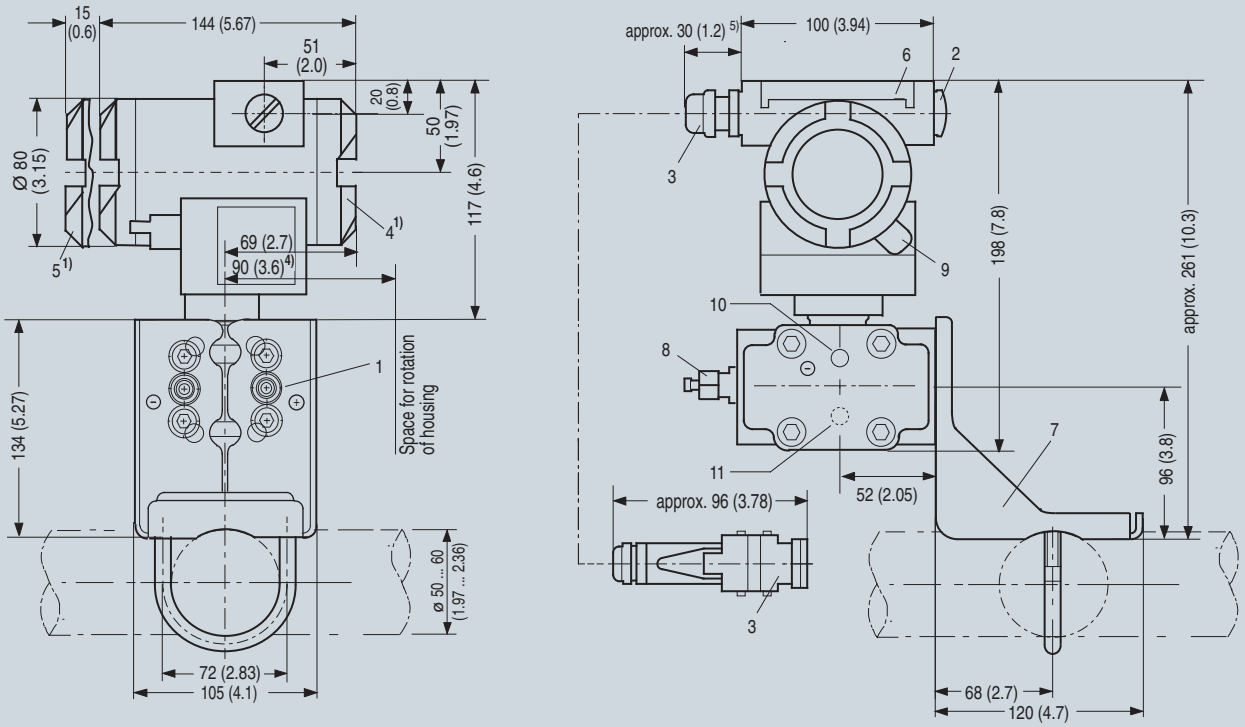
Selection and Ordering data	Order code	HART	PA	FF
Further designs				
Add "-Z" to Order No. and specify Order code.				
Pressure transmitter with mounting bracket made of:				
• Steel	**A01**	✓	✓	✓
• Stainless steel	**A02**	✓	✓	✓
O-rings for process flanges (instead of FPM (Viton))				
• PTFE (Teflon)	**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**	✓		
Sealing screws ¼-18 NPT, with valve in material of process flanges	**A40**	✓	✓	✓
Cable sockets for M12 connectors (metal)	**A50**	✓	✓	✓
Rating plate inscription (instead of German)				
• English	**B11**	✓	✓	✓
• French	**B12**	✓	✓	✓
• Spanish	**B13**	✓	✓	✓
• Italian	**B14**	✓	✓	✓
English rating plate Pressure units in inH_2O or psi	**B21**	✓	✓	✓
Quality inspection certificate (Factory calibration) to IEC 60770-2	**C11**	✓	✓	✓
Acceptance test certificate To EN 10204-3.1	**C12**	✓	✓	✓
Factory certificate To EN 10204-2.2	**C14**	✓	✓	✓
"Functional Safety (SIL)" certificate	**C20**	✓		
"PROFIsafe" certificate and protocol	**C21**		✓	
Setting of upper limit of output signal to 22.0 mA	**D05**	✓		
Manufacturer's declaration acc. to NACE (only together with seal diaphragm made of Hastelloy and stainless steel)	**D07**	✓	✓	✓
Type of protection IP68 (not together with Han 7D / Han 8U plug, Pg 13.5 screwed gland)	**D12**	✓	✓	✓
Digital indicator alongside the input keys (only together with the devices 7MF4533-….2-.A.6 or -.A.7-Z, Y21 or Y22 + Y01)	**D27**	✓	✓	✓
Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")	**E01**	✓	✓	✓
Use on zone 0 (only together with type of protection "Intrinsic safety (EEx ia)")	**E02**	✓	✓	✓
Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4...-.....-.B..)	**E25**	✓	✓	✓
Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4...-.....-.B..)	**E55**	✓	✓	✓

Selection and Ordering data	Order code	HART	PA	FF
Further designs				
Add "-Z" to Order No. and specify Order code.				
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**	✓	✓	✓
Interchanging of process connection side	**H01**	✓	✓	✓
Stainless steel process flanges for vertical differential pressure lines	**H03**	✓	✓	✓
Additional data				
Add "-Z" to Order No. and specify Order code.				
Measuring range to be set Specify in plain text:				
• With linear characteristic (max. 5 digits): Y01: ... up to ... mbar, bar, kPa, MPa, psi	**Y01**	✓		
• With square-rooted characteristic (max. 5 digits): Y02: ... up to ... mbar, bar, kPa, MPa, psi	**Y02**	✓		
Measuring point number (TAG No.) Max. 16 characters, specify in plain text: Y15:	**Y15**	✓	✓	✓
Measuring point text Max. 27 characters, specify in plain text: Y16:	**Y16**	✓	✓	✓
Entry of HART address (TAG) Max. 8 characters, specify in plain text: Y17:	**Y17**	✓		
Setting of pressure indication in pressure units Specify in plain text (standard setting: mA): Y21: mbar, bar, kPa, MPa, psi, ... Note: The following pressure units can be selected: bar, mbar, mm H_2O*), 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 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**		✓	

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

✓ = available

Dimensional drawings

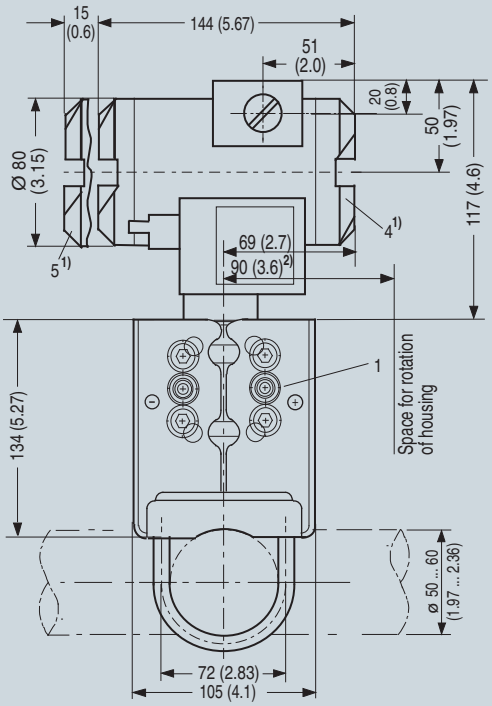


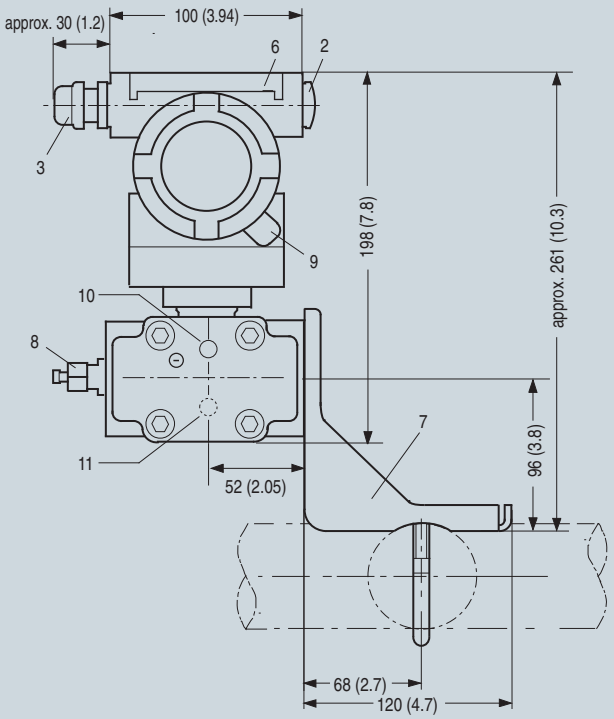
1 Process connection: ¼-18 NPT (EN 61518)
2 Blanking plug
3 Electrical connection:
- screwed gland Pg 13,5 (adapter) 2) 3),
- screwed gland M20x1,5 3),
- screwed gland ½-14 NPT or
- Han 7D/ Han 8U plug 2) 3)
4 Terminal side
5 Electronics side, digital display (longer overall length for cover with window)
6 Protective cover over keys
7 Mounting bracket (option)
8 Sealing screw with valve (option)
9 Screw cover - safety bracket (only for type of protection "Explosion-proof enclosure", not shown in the drawing)
10 Lateral venting for liquid measurement (Standard)
11 Lateral venting for gas measurement (suffix H02)

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) 45 mm (1.8 inch) for Pg 13,5 with adapter

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

DS III series
for differential pressure and flow

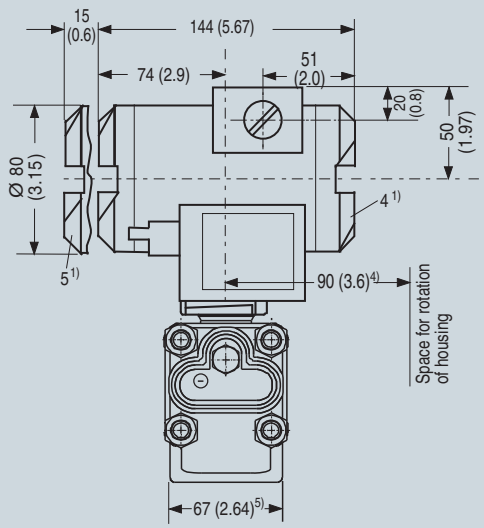


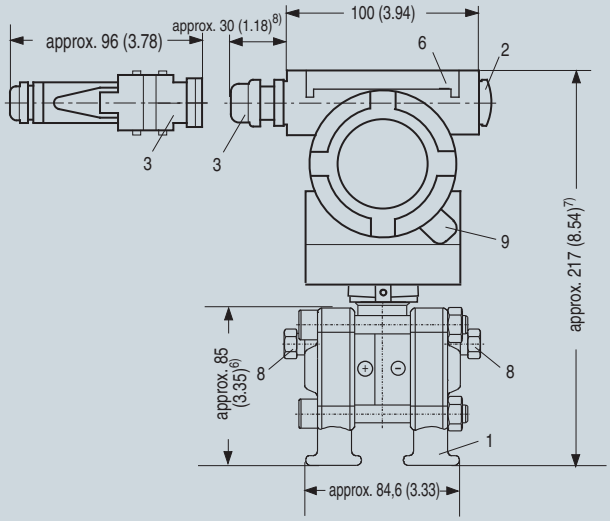


1 Process connection: ¼-18 NPT (EN 61518)
2 Blanking plug
3 Electrical connection:
- screwed gland M20x1,5 4),
- screwed gland ½-14 NPT or
- PROFIBUS plug M12 3) 4)
4 Terminal side
5 Electronic side, digital display (longer overall length for cover with window)
6 Protective cover over keys
7 Mounting bracket (option)
8 Sealing screw with valve (option)
9 Screw cover – safety bracket (only for explosion-proof enclosure, not shown in the drawing)
10 Lateral venting for liquid measurement (Standard)
11 Lateral venting for gas measurement (suffix H02)

1) Allow approx. 20 mm (0.79 inch) thread length in addition
2) 92 mm (3.62 inch) for minimum distance to permit rotation with indicator
3) Not with type of protection "explosion-proof enclosure"
4) Not with type of protection "FM + CSA"

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



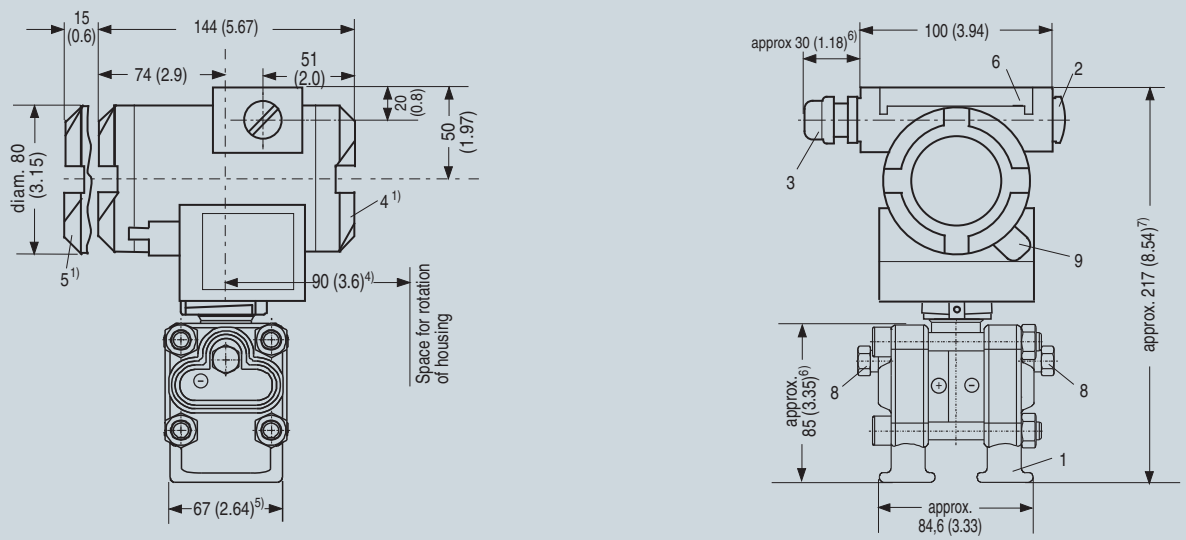


1 Process connection: ¼-18 NPT (EN 61518)
2 Blanking plug
3 Electrical connection:
- screwed gland Pg 13,5 (adapter) 2) 3),
- screwed gland M20x1,5 3),
- screwed gland ½-14 NPT or
- Han 7D/ Han 8U plug 2) 3)
4 Terminal side
5 Electronics side, digital display (longer overall length for cover with window)
6 Protective cover over keys
7 Mounting bracket (option)
8 Sealing screw with valve (option)
9 Screw cover - safety bracket (only for type of protection "Explosion-proof enclosure", not shown in the drawing)

1) Allow approx. 20 mm (0.79 inch) thread length to permit unscrewing
2) Not with type of protection "explosion-proof enclosure"
3) Not with type of protection "FM + CSA [is + xp]"
4) 92 mm (3.6 inch) for minimum distance to permit rotation with indicator
5) 74 mm (2.9 inch) for PN ≥ 420 (MWP ≥ 6092 psi)
6) 91 mm (3.6 inch) for PN ≥ 420 (MWP ≥ 6092 psi)
7) 219 mm (8.62 inch) for PN ≥ 420 (MWP ≥ 6092 psi)
8) 45 mm (1.8 inch) for Pg 13,5 with adapter

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

DS III series
for differential pressure and flow

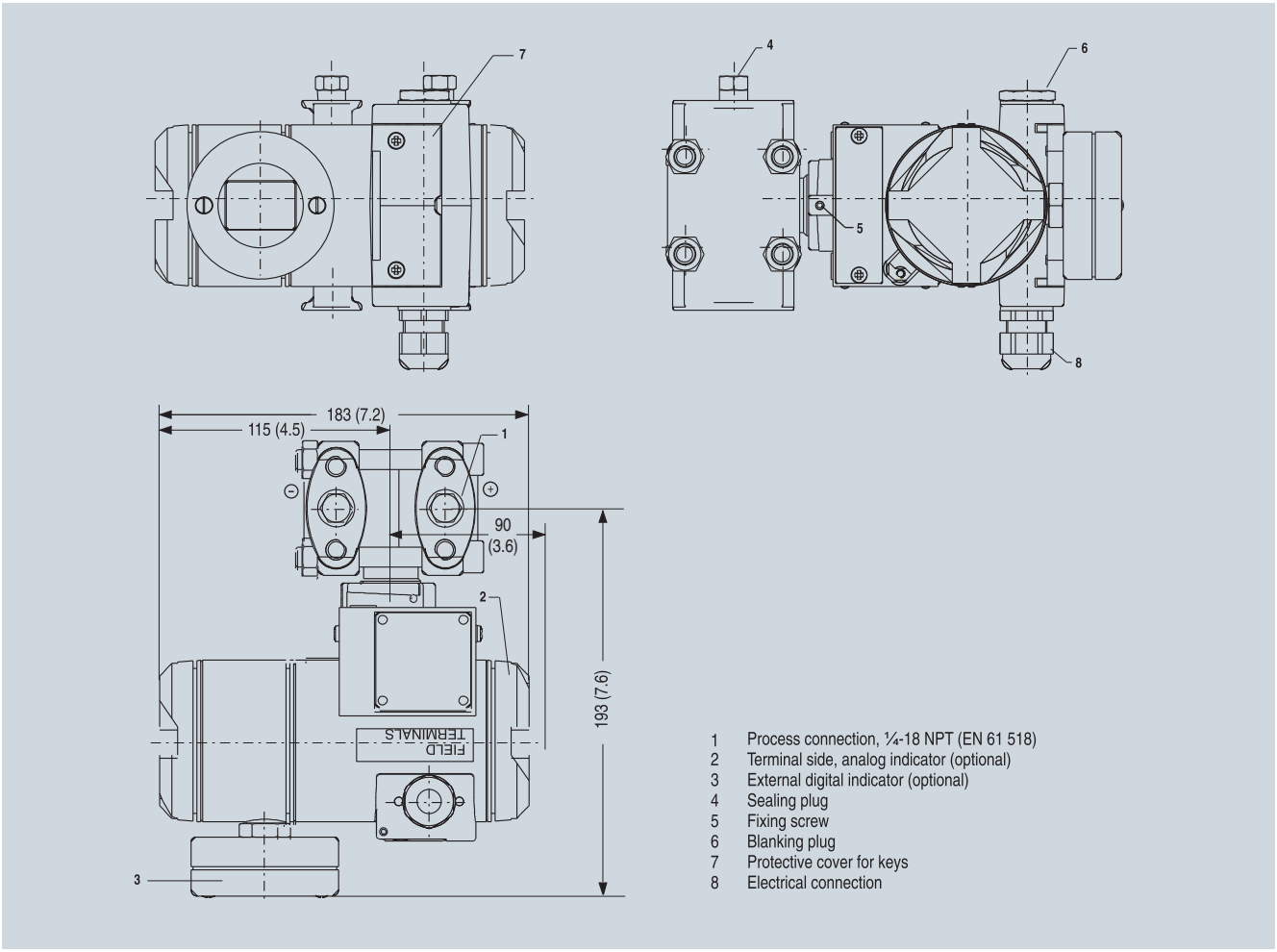


1 Process connection ¼-18 NPT (EN 61 518)
2 Blanking plug
3 Electrical connection:
screwed gland M20x1.5 3),
screwed gland ½-14 NPT or
PROFIBUS plug M12 2) 3)
4 Terminal side
5 Electronics side, digital display (longer overall length for cover with window)
6 Protective cover over keys
7 Mounting bracket (option)
8 Sealing screw with valve (option)
9 Screw cover safety bracket (only for explosion-proof enclosure, not shown in the drawing)

1) Allow approx. 20 mm (0.79 inch) thread length in addition
2) Not with type protection "explosion-proof enclosure"
3) Not with type protection "FM + CSA [is + xp]"
4) 92 mm (3.6 inch) for minimum distance to permit rotation without indicator
5) 74 mm (2.9 inch) for PN ≥ 420 (MWP ≥ 6092 psi)
6) 91 mm (3.6 inch) for PN ≥ 420 (MWP ≥ 6092 psi)
7) 219 mm (8.62 inch) for PN ≥ 420 (MWP ≥ 6092 psi)

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

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



SITRANS P pressure transmitters, DS III FF series for differential pressure and flow, with digital indicator beside control keys, for vertical differential pressure lines, option „D27“, dimensions in mm (inch)

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

DS III series for level

Technical specifications

SITRANS P, DS III series for level

	HART		PROFIBUS PA or FOUNDATION Fieldbus	
Input				
Measured variable	Level			
Spans (infinitely adjustable) or nominal measuring range and max. permissible working pressure	Span	Maximum working pressure	Nominal measuring range	Maximum working pressure
	25 ... 250 mbar g (0.36 ... 3.63 psi g)	See "Mounting flange"	250 mbar g (3.63 psi g)	See "Mounting flange"
	25 ... 600 mbar g (0.36 ... 8.7 psi g)	See "Mounting flange"	600 mbar g (8.7 psi g)	See "Mounting flange"
	53 ... 1600 mbar g (0.77 ... 23.2 psi g)	See "Mounting flange"	1600 mbar g (23.2 psi g)	See "Mounting flange"
	160 ... 5000 mbar g (2.32 ... 72.5 psi g)	See "Mounting flange"	5000 mbar g (72.5 psi g)	See "Mounting flange"
Lower measuring limit				
• Measuring cell with silicone oil filling	-100% of max. span or 30 mbar (0.435 psi a), depending on mounting flange			
Upper measuring limit	100% of max. span		100% of the max. nominal measuring range	
Output				
Output signal	4 ... 20 mA		Digital PROFIBUS PA or 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	
With polarity reversal protection	-		Yes	
Accuracy	To EN 60770-1			
Reference conditions (All error data refer always refer to the set span)	Increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil filling, room temperature 25 °C (77 °F)) r: Span ratio (r = max. span / set span)			
Error in measurement and fixed-point setting (including hysteresis and repeatability)				
• Linear characteristic			≤ 0.075%	
- r ≤ 10	≤ 0.15%			
- 10 < r ≤ 30	≤ 0.3%			
- 30 < r ≤ 100	≤ (0.0075 · r + 0.075)%			
Long-term drift (temperature change ±30 °C (±54 °F))	≤ (0.25 · r)% every 5 years static pressure max. 70 bar g (1015 psi g)		≤ (0.25% every 5 years static pressure max. 70 bar g (1015 psi g)	
Influence of ambient temperature				
• at -10 ... +60 °C (14 ... 140 °F)				
- 250 mbar (3.63 psi) measuring cell	≤ (0.5 · r + 0.2)% (0.4 instead of 0.2 with 10 < r ≤ 30)		≤ 0,7%	
- 600 mbar (8.7 psi) measuring cell	≤ (0.3 · r + 0.2)% (0.4 instead of 0.2 with 10 < r ≤ 30)		≤ 0,5%	
- 1600 and 5000 mbar (23.2 and 72.5 psi) measuring cells	≤ (0.25 · r + 0.2)% (0.4 instead of 0.2 with 10 < r ≤ 30)		≤ 0,45%	
• at -40 ... -10 °C and +60 ... +85 °C (-40 ... +14 °F and 140 ... 185 °F)				
- 250 mbar (3.63 psi) measuring cell	≤ (0.25 · r +0.15)%/10 K double values with 10 < r ≤ 30		≤ 0.4%/10 K	
- 600 mbar (8.7 psi) measuring cell	≤ (0.15 · r +0.15)%/10 K double values with 10 < r ≤ 30		≤ 0.3%/10 K	
- 1600 and 5000 mbar (23.2 and 72.5 psi) measuring cells	≤ (0.12 · r +0.15)%/10 K double values with 10 < r ≤ 30		≤ 0.27%/10 K	

SITRANS P, DS III series for level		
	HART	**PROFIBUS PA or FOUNDATION Fieldbus**
Influence of static pressure		
• on the zero point		
- 250 mbar (3.63 psi) measuring cell	≤ (0.3 · r)% per nominal pressure	≤ 0.3% per nominal pressure
- 600 mbar (8.7 psi) measuring cell	≤ (0.15 · r)% per nominal pressure	≤ 0.15% per nominal pressure
- 1600 and 5000 mbar (23.2 and 72.5 psi) measuring cells	≤ (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	-	$3 \cdot 10^{-5}$ of nominal measuring range
Rated operating conditions		
Degree of protection (to EN 60529)	IP65	
Process temperature	**Note:** Always take into account assignment of max. permissible working temperature to max. permissible working pressure of the respective flange connection!	
• Measuring cell with silicone oil filling	-40 ... +100 °C (-40 ... +212 °F)	
- High-pressure side	p_{abs} ≥ 1bar: -40 ... +175 °C (-40 ... +347 °F) p_{abs} ≥ 1bar: -40 ... +80 °C (-40 ... +176 °F)	
- Low-pressure side	-40 ... +100 °C (-40 ... +212 °F) -20 ... +60 °C (-4 ... +140 °F) in conjunction with dust explosion protection	
Ambient conditions		
• Ambient temperature		
- Digital indicators	-30 ... +85 °C (-22 ... +185 °F)	
• Storage temperature	-50 ... +85 °C (-58 ... +185 °F)	
• Climatic class		
- Condensation	Permissible	
• Electromagnetic compatibility		
- Emitted interference and interference immunity	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)	
Wetted parts materials	Poor in copper die-cast aluminium, GD-AlSi12 or stainless steel precision casting, mat. No. 1.4408	
Housing material		
High-pressure side		
• 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, ECTFE	
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
• Startup 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 level

	HART	PROFIBUS PA or FOUNDATION Fieldbus
Certificate and approvals		
Classification according to pressure equipment directive (DRGL 97/23/EC)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of Article 3, paragraph 3 (sound engineering practice)	
Explosion protection		
• Intrinsic safety "i"	PTB 99 ATEX 2122	
- Identification	Ex II 1/2 G EEx ia/ib IIB/IIC T6	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +70 °C (-40 ... +158 °F) temperature class T5; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To certified intrinsically-safe circuits with maximum values: U_i = 30 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	
- Identification	Ex II 1/2 G EEx d IIC T4/T6	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To circuits with values: U_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	
- Identification	Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F)	
- Max.surface temperature	120 °C (248 °F)	
- Connection	To certified intrinsically-safe circuits with maximum values: U_i = 30 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	
- Identification	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} = 1.2 W
• Type of protection "n" (zone 2)	TÜV 01 ATEX 1696 X	Planned
- Identification	Ex II 3 G EEx nA L IIC T4/T5/T6	-
• Explosion protection 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	

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 measuring value) or 10 (two measuring 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 T_{63} , adjustable	0 ... 100 s
- Simulation function	Input /Output
- Failure mode	Can be parameterized (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	Can be parameterized (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

Communication FOUNDATION Fieldbus

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 T_{63} , adjustable	0 ... 100 s
- Simulation function	Output/input (can be locked within the device with a bridge)
- Failure mode	Can be parameterized (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 FF 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

Nom. diam.	Nom. press.
• To EN 1092-1	
- DN 80	PN 40
- DN 100	PN16, PN40
• To ASME B16.5	
- 3 inch	Class 150, class 300
- 4 inch	Class 150, class 300

DS III series for level

Selection and Ordering data		Order No. 7MF4633-
SITRANS P pressure transmitters for level series DS III HART		■■Y■■-■■■■
Measuring cell filling	**Measuring cell cleaning**	
Silicone oil	Standard	1
Span		
25 ... 250 mbar	(0.363 ... 3.63 psi)	D
25 ... 600 mbar	(0.363 ... 8.70 psi)	E
53 ... 1600 mbar	(0.77 ... 23.2 psi)	F
0.16 ... 5 bar	(2.32 ... 72.5 psi)	G
Process connection of low-pressure side		
Female thread ¼-18 NPT with flange connection		
• Mounting thread $^{7}/_{16}$-20 UNF to EN 61518		2
• Mounting thread M10 to DIN 19213 (only for replacement needs)		0
Non-wetted parts materials		
Process flange screws	Electronics housing	
Stainless steel	Die-cast aluminium	2
Stainless steel	Stainless steel precision casting[1]	3
Version		
• Standard version		1
• International version, English label inscriptions, documentation in 5 languages on CD		2
Explosion protection		
• Without		A
• With ATEX, Type of protection:		
- "Intrinsic safety (EEx ia)"		B
- "Explosion-proof (EEx d)"[2]		D
- "Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d)"[3]		P
- "Ex nA/nL (zone 2)"		E
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)"[3]		R
• With FM + CSA, Type of protection:		
- "Intrinsic safety and explosion-proof (is + xp)"[1]		N C
Electrical connection / cable entry		
• Screwed gland Pg 13.5[4]		A
• Screwed gland M20x1.5		B
• Screwed gland ½-14 NPT		C
• Han 7D plug (plastic housing) incl. mating connector[4]		D
• M12 connectors (metal)[5]		F
Display		
• Without indicator		0
• Without visible digital indicator (digital indicator ▶ hidden, setting: mA)		1
• With visible digital indication		6
• With customer-specific digital indication (setting as specified, Order code "Y21" or required)		7

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 "SITRANS I power supply units and isolation amplifiers".

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

1) Not together with Electrical connection „Screwed gland Pg 13.5“ and „Han7D plug“.
2) Without cable gland, with blanking plug.
3) With enclosed cable gland EEx ia and blanking plug.
4) Not together with type of protection "Explosion-proof" and type of protection "Ex nA".
5) Not together with types of protection "Explosion-proof" or "Intrinsic safety and explosion-proof"

Selection and Ordering data		Order No.
SITRANS P pressure transmitter for level		
DS III PA series (PROFIBUS PA)		7MF4634-
DS III FF series (FOUNDATION Fieldbus)		7MF4635-
		1 ■ Y ■■ - ■■■■
Nominal measuring range		
250 mbar	(3.63 psi)	D
600 mbar	(8.70 psi)	E
1600 mbar	(23.2 psi)	F
5 bar	(72.5 psi)	G
Process connection of low-pressure side		
Female thread ¼-18 NPT with flange connection		
• Mounting thread M10 to DIN 19213 (only for replacement needs)		0
• Mounting thread $^{7}/_{16}$-20 UNF to EN 61518		2
Non-wetted parts materials		
Process flange screws	Electronics housing	
Stainless steel	Die-cast aluminium	2
Stainless steel	Stainless steel precision casting	3
Version		
• Standard version		1
• International version, English label inscriptions, documentation in 5 languages on CD		2
Explosion protection		
• Without		A
• With ATEX, Type of protection:		
- "Intrinsic safety (EEx ia)"		B
- "Explosion-proof (EEx d)"[1]		D
- "Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d)"[2]		P
- "Ex nA/nL (zone2)"		E
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)"[2] (not for DS III FF)		R
• With FM + CSA, Type of protection:		
- "Intrinsic safety and explosion-proof (is + xp)"[1]		N C
Electrical connection / cable entry		
• Screwed gland M20x1.5		B
• Screwed gland ½-14 NPT		C
• Plug M12 incl. mating connector[3]		F
Display		
• Without indicator		0
• Without visible digital indicator (digital indicator ▶ hidden, setting: mA)		1
• With visible digital indication		6
• With customer-specific digital indication (setting as specified, Order code "Y21" or required)		7

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 EEx ia and blanking plug.
3) Not together with types of protection "Explosion-proof" and "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.				
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**	✓		
Sealing screws ¼-18 NPT, with valve in material of process flanges	**A40**	✓	✓	✓
Cable sockets for M12 connectors (metal)	**A50**	✓	✓	✓
Rating plate inscription (instead of German)				
• English	**B11**	✓	✓	✓
• French	**B12**	✓	✓	✓
• Spanish	**B13**	✓	✓	✓
• Italian	**B14**	✓	✓	✓
English rating plate Pressure units in inH_2O or psi	**B21**	✓	✓	✓
Quality inspection certificate (Factory calibration) to IEC 60770-2	**C11**	✓	✓	✓
Acceptance test certificate To EN 10204-3.1	**C12**	✓	✓	✓
Factory certificate To EN 10204-2.2	**C14**	✓	✓	✓
"Functional Safety (SIL)" certificate	**C20**	✓		
"PROFIsafe" certificate and protocol	**C21**		✓	
Setting of upper limit of output signal to 22.0 mA	**D05**	✓		
Type of protection IP68 (not together with PROFIBUS plug M12)	**D12**	✓	✓	✓
Supplied with oval flange (1 item), PTFE packing and stainless steel screws in thread of process flange	**D37**	✓	✓	✓
Use on zone 1D / 2D (only together with type of protection "Intrinsic safety (EEx ia)")	**E01**	✓	✓	✓
Use on zone 0 (only together with type of protection "Intrinsic safety (EEx ia)")	**E02**	✓	✓	✓
Overfilling safety device for flammable and non-flammable liquids (max. PN 32 (MVWP 464 psi), basic device with type of protection "Intrinsic safety (EEx ia)")	**E08**	✓	✓	
Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4...-.....-.B..)	**E25**	✓	✓	✓
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**	✓	✓	✓
Interchanging of process connection side	**H01**	✓	✓	✓

DS III series for level

Selection and Ordering data	Order code	HART	PA	FF
Additional data				
Add "-Z" to Order No. and specify Order code.				
Measuring range to be set Specify in plain text (max. 5 digits): Y01: ... up to ... mbar, bar, kPa, MPa, psi	**Y01**	✓		
Measuring point number (TAG No.) Max. 16 characters, specify in plain text: Y15:	**Y15**	✓	✓	✓
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: mA): 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 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", "Y21", "Y22", "Y25" and "D05" can be factory preset

✓ = available

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

Selection and Ordering data		Order No.Ord. code
Mounting flange		**7MF4912-**
Directly mounted on the SITRANS P pressure transmitter (converter part) for level, for DS III series		**3**
Connection acc. to EN 1092-1		
Nom. diam.	**Nom. press.**	
DN 80	PN 40	**D**
DN 100	PN 16	**G**
	PN 40	**H**
Connection acc. to ASME B16.5		
Nom. diam.	**Nom. press.**	
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 pressure: ...		**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**
Other version, add Order code and plain text: material of parts in contact with the medium: ... Sealing face, see "Technical specifications"		**Z** **K 1 Y**
Tube length		
• Without		**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: Tube length: ...		**9** **L 1 Y**
Filling liquid		
• Silicone oil M5		**1**
• Silicone oil M50		**2**
• High-temperature oil		**3**
• Halocarbon oil (for O_2 measurements)		**4**
• Glycerin / water[2]		**6**
• Food oil (FDA-listed)		**7**
Other version, add Order code and plain text: filling liquid: ...		**9** **M 1 Y**

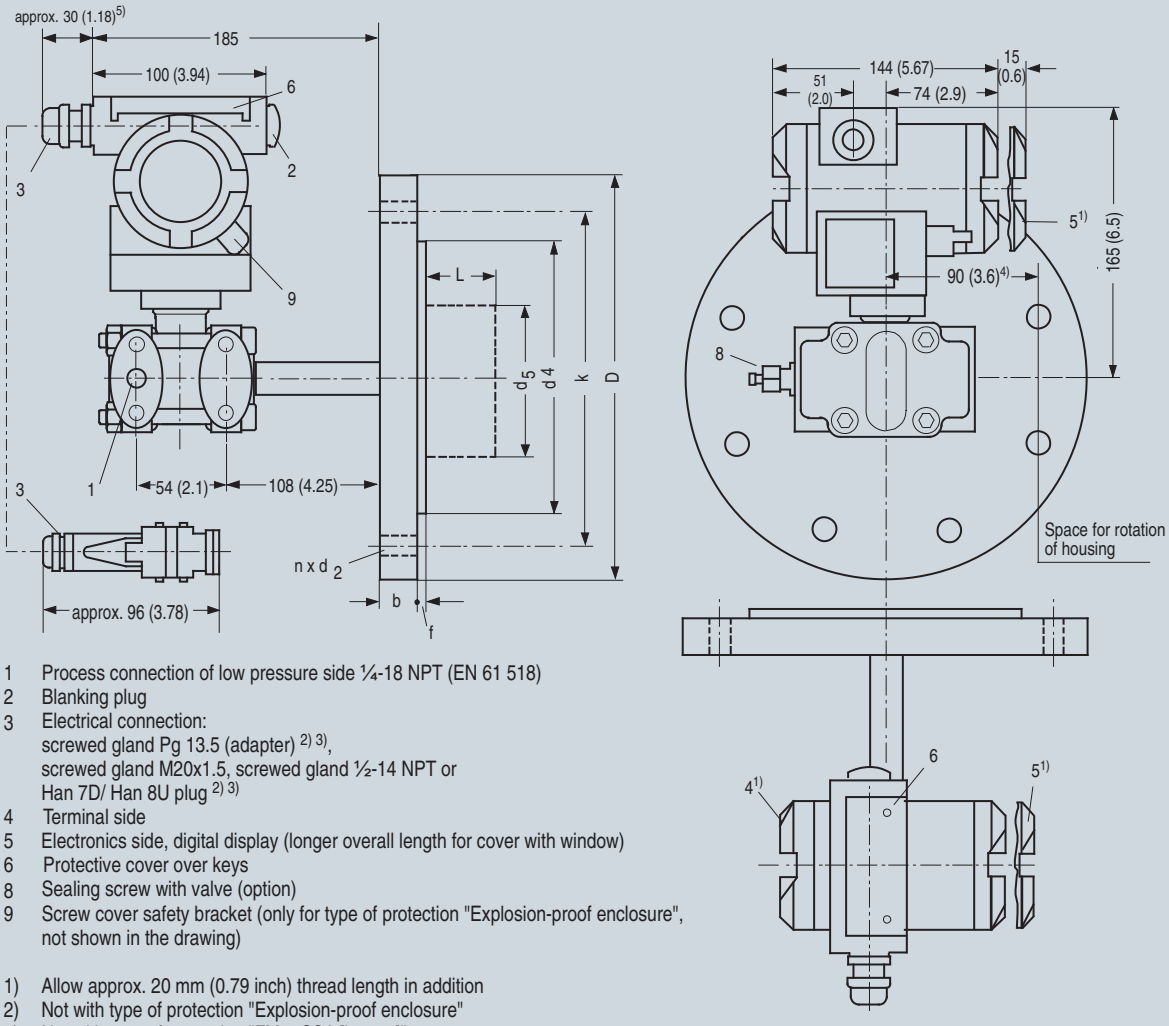
1) For vacuum on request
2) Not suitable for use in low-pressure range

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

✓ = available

2

Dimensional drawings



1 Process connection of low pressure side ¼-18 NPT (EN 61 518)
2 Blanking plug
3 Electrical connection:
screwed gland Pg 13.5 (adapter) 2) 3),
screwed gland M20x1.5, screwed gland ½-14 NPT or
Han 7D/ Han 8U plug 2) 3)
4 Terminal side
5 Electronics side, digital display (longer overall length for cover with window)
6 Protective cover over keys
8 Sealing screw with valve (option)
9 Screw cover safety bracket (only for type of protection "Explosion-proof enclosure", not shown in the drawing)

1) Allow approx. 20 mm (0.79 inch) thread length in addition
2) 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 without indicator
5) Approx. 45 mm (1.77 inch) for Pg 13.5 with adapter

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

Connection to EN 1092-1

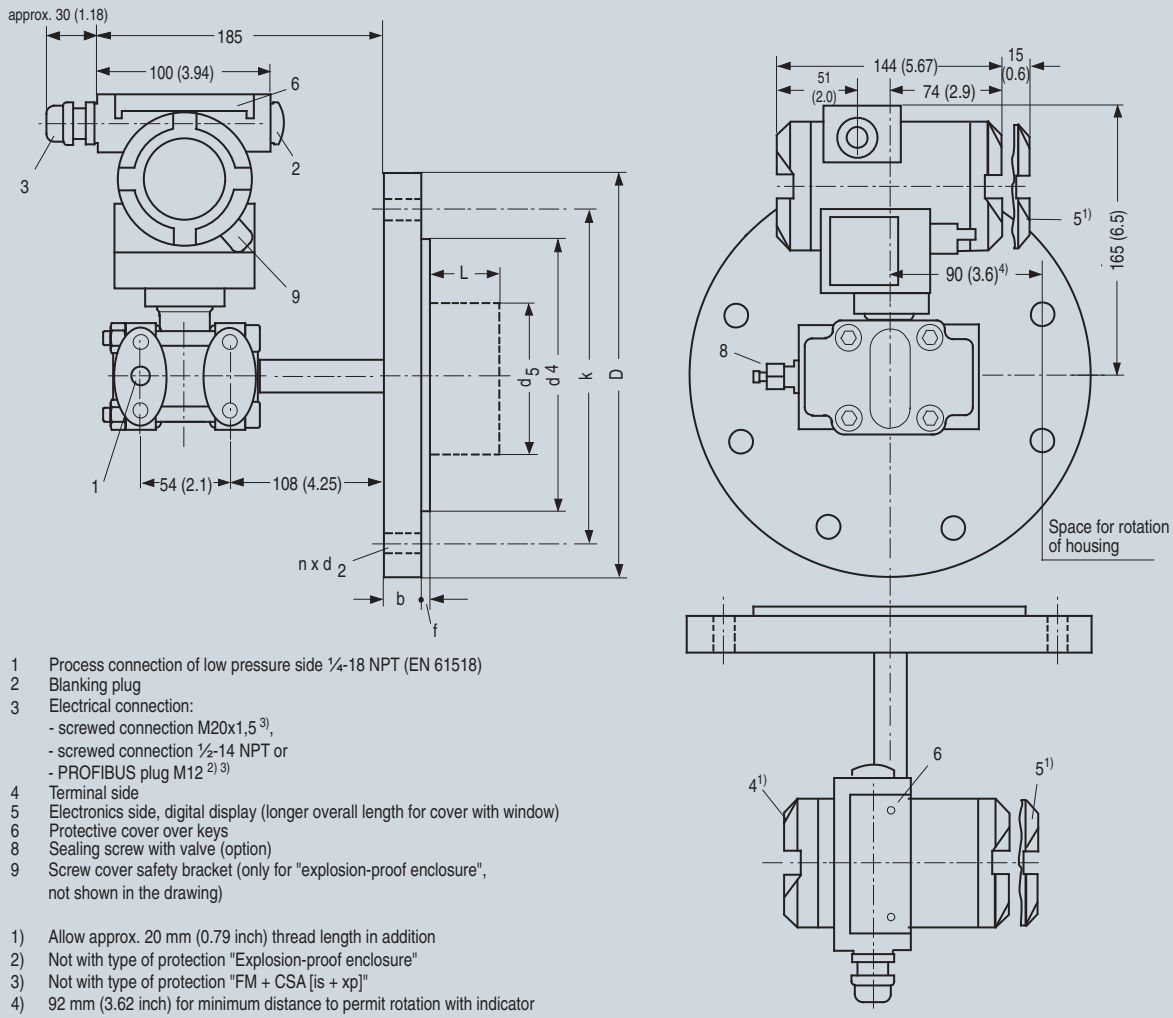
Nom. diam.	Nom. press.	b	D	d	d_2	d_4	d_5	d_M	f	k	n	L
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
DN 80	PN 40	24	200	90	18	138	76	72 1)	2	160	8	0, 50, 100, 150 or 200
DN 100	PN 40	20	220	115	18	158	94	89	2	180	8	
	PN 40	24	235	115	22	162	94	89	2	190	8	

Connection to ASME B16.5

Nom. diam.	Nom. press.	b	D	d_2	d_4	d_5	d_M	f	k	n	L
	lb/sq.in.	inch	inch	inch	inch	inch	inch	inch	inch		inch
		(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)		(mm)
3 inch	150	0.94 (23.8)	7.5 (190.5)	0.75 (19.0)	5 (127)	3 (76)	2.81 1) (72)	0.06 (1.6)	6 (152.4)	4	0, 2, 3.94, 5.94 or 7.87 (0, 50, 100, 150 or 200)
	300	1.12 (28.6)	8.25 (209.5)	0.87 (22.2)	5 (127)	3 (76)	2.81 1) (72)	0.06 (1.6)	6.69 (168.3)	8	
4 inch	150	0.94 (23.8)	9 (228.5)	0.75 (19.0)	6.19 (157.2)	3.69 (94)	3.5 (89)	0.06 (1.6)	7.5 (190.5)	8	
	300	1.25 (31.7)	10 (254)	0.87 (22.2)	6.19 (157.2)	3.69 (94)	3.5 (89)	0.06 (1.6)	7.88 (200)	8	

d: Internal diameter of gasket to DIN 2690
d_M: Effective diaphragm diameter

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



1 Process connection of low pressure side ¼-18 NPT (EN 61518)
2 Blanking plug
3 Electrical connection:
- screwed connection M20x1,5 3),
- screwed connection ½-14 NPT or
- PROFIBUS plug M12 2) 3)
4 Terminal side
5 Electronics side, digital display (longer overall length for cover with window)
6 Protective cover over keys
8 Sealing screw with valve (option)
9 Screw cover safety bracket (only for "explosion-proof enclosure", not shown in the drawing)

1) Allow approx. 20 mm (0.79 inch) thread length in addition
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

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

Connection to EN 1092-1

Nom. diam.	Nom. press.	b	D	d	d_2	d_4	d_5	d_M	f	k	n	L
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
DN 80	PN 40	24	200	90	18	138	76	72 1)	2	160	8	0, 50, 100, 150 or 200
DN 100	PN 40	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

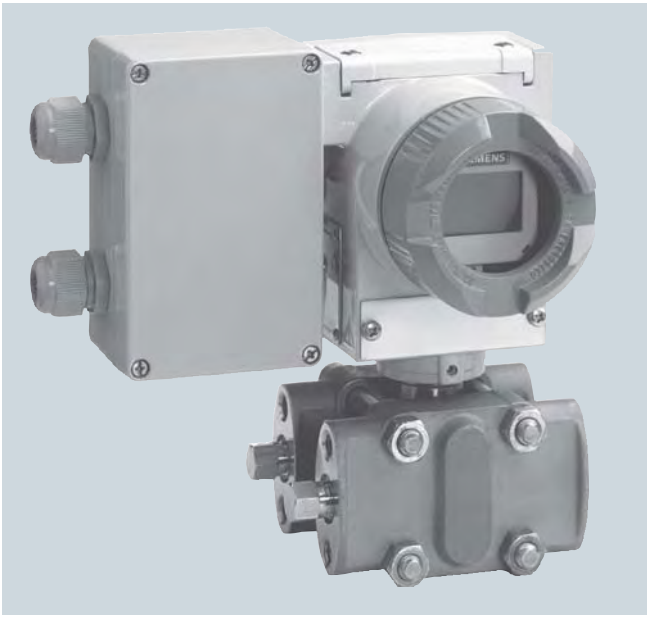
Nom. diam.	Nom. press.	b	D	d_2	d_4	d_5	d_M	f	k	n	L
	lb/sq.in.	inch	inch	inch	inch	inch	inch	inch	inch		inch
		(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)		(mm)
3 inch	150	0.94 (23.8)	7.5 (190.5)	0.75 (19.0)	5 (127)	3 (76)	2.81 1) (72)	0.06 (1.6)	6 (152.4)	4	0, 2, 3.94, 5.94 or 7.87 (0, 50, 100, 150 or 200)
	300	1.12 (28.6)	8.25 (209.5)	0.87 (22.2)	5 (127)	3 (76)	2.81 1) (72)	0.06 (1.6)	6.69 (168.3)	8	
4 inch	150	0.94 (23.8)	9 (228.5)	0.75 (19.0)	6.19 (157.2)	3.69 (94)	3.5 (89)	0.06 (1.6)	7.5 (190.5)	8	
	300	1.25 (31.7)	10 (254)	0.87 (22.2)	6.19 (157.2)	3.69 (94)	3.5 (89)	0.06 (1.6)	7.88 (200)	8	

d: Internal diameter of gasket to DIN 2690
d_M: Effective diaphragm diameter

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

Supplementary electronics for 4-wire connection

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 DS III HART 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.

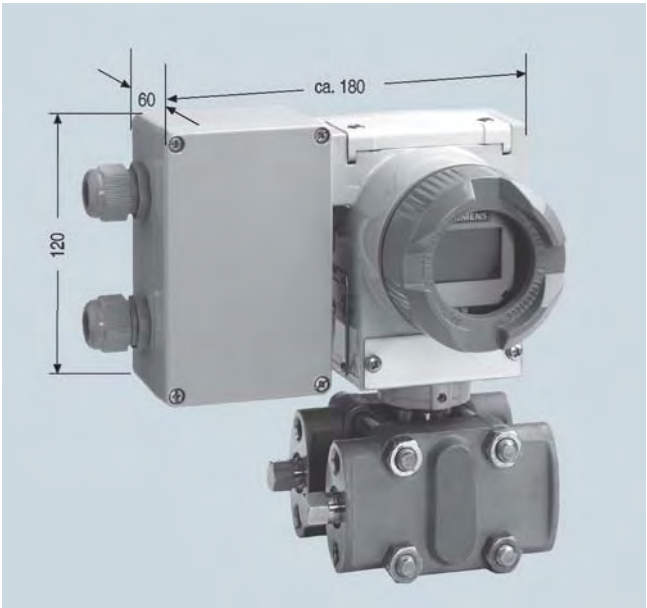
Note on ordering:

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

Technical specifications

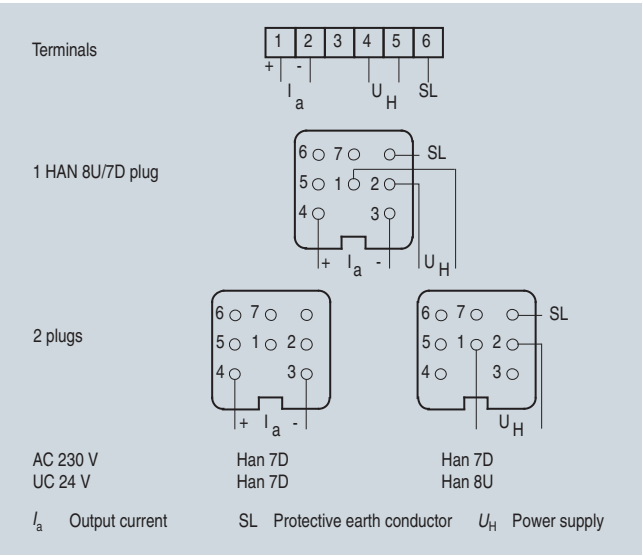
SITRANS P, supplementary electronics for 4-wire connection	
Output	
Output signal	0 ... 20 mA or 4 ... 20 mA
Load	Max. 750 Ω
Voltage measurement	Linear (square-rooting in transmitter if necessary)
Electrical isolation	Between power supply and input/output
Measuring accuracy	To EN 60770-1
Conformity error (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 EN 60529
Electromagnetic compatibility (EMC)	EN 50081, EN 50082
Structural design	
Dimensions (W x H x D) in mm (inch)	80 x 120 x 60 (3.15 x 4.72 x 2.36)
Electrical connection	Screw terminals (Pg 13.5 cable inlet) or Han 7D / Han 8U plug
Power supply	
Supply voltage	230 V AC (-10 ... +6%, 47 ... 63 Hz, approx. 6 VA) or 24 V AC/DC (24 V AC ± 10%, 47 ... 63 Hz, approx. 3 VA)
Permissible ripple (within the 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

Supplementary electronics for 4-wire connection

Selection and Ordering data		Order code
Supplementary electronics for 4-wire connection		**V** ■ ■
Order No. of the transmitter **7MF4.33-.....-1AB.** 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**

Selection and Ordering data	Order No.
Accessories	
Instruction Manual German/English	**E86060-K6017-A131-A3**

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

2

Selection and Ordering data		Order No.
Replacement measuring cell for pressure for SITRANS P, DS III, DS III PA and DS III FF series		**7MF4990-** ■■■■**0-0DC0**
Measuring cell filling	**Measuring cell cleaning**	
Silicone oil	Standard	**1**
Inert liquid	Grease-free	**3**
Measured span		
0.01 ... 1 bar g	(0.15 ... 14.5 psi g)	**B**
0.04 ... 4 bar g	(0.58 ... 58 psi g)	**C**
0.16 ... 16 bar g	(2.32 ... 232 psi g)	**D**
0.63 ... 63 bar g	(9.14 ... 914 psi g)	**E**
1.6 ... 160 bar g	(23.2 ... 2320 psi g)	**F**
4.0 ... 400 bar g	(58.0 ... 5802 psi g)	**G**
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 EN 61518		**2**
- Mounting thread M10 to DIN 19213		**3**
Further designs		Order code
Please add "-Z" to Order No. and specify Order code.		
Acceptance test certificate to EN 10204-3.1		**C12**

Selection and Ordering data		Order No.
Replacement measuring cell for absolute pressure (from the pressure series) for SITRANS P, DS III, DS III PA and DS III FF series	F)	**7MF4992-** ■■■■**0-0DC0**
Measuring cell filling	**Measuring cell cleaning**	
Silicone oil	Standard	**1**
Inert liquid	Grease-free	**3**
Measured span		
8.3 ... 250 mbar a	(0.12 ... 3.63 psi a)	**D**
43 ... 1300 mbar a	(0.62 ... 18.9 psi a)	**F**
0.16 ... 5 bar a	(2.32 ... 72.5 psi a)	**G**
1 ... 30 bar a	(14.5 ... 435 psi a)	**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 EN 61518		**2**
- Mounting thread M10 to DIN 19213		**3**
Further designs		Order code
Please add "-Z" to Order No. and specify Order code.		
Acceptance test certificate to EN 10204-3.1		**C12**

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

Selection and Ordering data			Order No.
Spare parts / Accessories			
Replacement measuring cell for absolute pressure (from the differential pressure series) for SITRANS P, DS III, DS III PA and DS III FF series		F)	7MF4993 - ■■■■■ - 0DC0
Measuring cell filling	**Measuring cell cleaning**		
Silicone oil	Standard		1
Inert liquid	Grease-free		3
Measured span			
8.3 ... 250 mbar a	(0.12 ... 3.63 psi a)	E)	D
43 ... 1300 mbar a	(0.62 ... 18.9 psi a)	E)	F
0.16 ... 5 bar a	(2.32 ... 72.5 psi a)	E)	G
1 ... 30 bar a	(14.5 ... 435 psi a)		H
5.3 ... 100 bar a	(76.9 ... 1450 psi a)		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	E)	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 EN 61518			2
• Vent on side of process flange[1]			
- Mounting thread M10 to DIN 19213			4
- Mounting thread $^7/_{16}$-20 UNF to EN 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.			
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
Acceptance test certificate to EN 10204-3.1			C12
Process connection G½A			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 (MWP 145 psi) max. temperature of medium 90 °C (194 °F)			K04

[1] Not for span "5.3 ... 100 bar (76.9 ... 1450 psi)"

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

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

Selection and Ordering data			Order No.
Spare parts / Accessories			
Replacement measuring cell for differential pressure and PN 32/160 (MWP 464/2320 psi) for SITRANS P, DS III, DS III PA and DS III FF series			7MF4994 - ■■■■■ - 0DC0
Measuring cell filling	**Measuring cell cleaning**		
Silicone oil	Standard		1
Inert liquid	Grease-free		3
Measured span			
PN 32 (MWP 464 psi)			
1 ... 20 mbar[1]	(0.4015 ... 8.03 inH_2O)		B
PN 160 (MWP 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[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 EN 61518			2
• Vent on side of process flange			
- Mounting thread M10 to DIN 19213			4
- Mounting thread $^7/_{16}$-20 UNF to EN 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.			
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
Acceptance test 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 (MWP 145 psi) max. temperature of medium 90 °C (194 °F)			K04

[1] Not suitable for connection of remote seal

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

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

2

Selection and Ordering data		Order No.
Spare parts / Accessories		
Replacement measuring cell for differential pressure and PN 420 (MWP 6092 psi) for SITRANS P, DS III, DS III PA and DS III FF series		7MF4995 - ■■■■■ - 0DC0
Measuring cell filling	**Measuring cell cleaning**	
Silicone oil	Standard	1
Measured span		
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
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 EN 61518		3
• Vent on side of process flange		
- Mounting thread M12 to DIN 19213		5
- Mounting thread $^7/_{16}$-20 UNF to EN 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**
Acceptance test 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)

Selection and Ordering data		Order No.
Spare parts / Accessories		
Replacement measuring cell for level for SITRANS P, DS III, DS III PA and DS III FF series		7MF4996 - ■■■■■ - 0DC0
Measuring cell filling	**Measuring cell cleaning**	
Silicone oil	Standard	1
Rated measuring range		
250 mbar	(3.63 psi)	D
600 mbar	(8.70 psi)	E
1600 mbar	(23.2 psi)	F
5 bar	(72.5 psi)	G
Wetted parts materials (stainless steel process flanges)		
Seal diaphragm	Parts of measuring cell	
Stainless steel	Stainless steel	A
Process connection of low-pressure side		
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 EN 61518		2
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**
Acceptance test certificate to EN 10204-3.1		**C12**
without process flanges		**K00**

Selection and Ordering data		Order No.
Spare parts / Accessories		
Mounting bracket and mounting parts for pressure transmitters DS III, DS III PA and DS III FF series (7MF403.-…..-..C.) for absolute pressure transmitters DS III, DS III PA and DS III FF series (7MF423.-…..-..C.)		
• made of steel		**7MF4997-1AB**
• made of stainless steel		**7MF4997-1AH**
Mounting bracket and mounting parts for pressure transmitters DS III, DS III PA and DS III FF series (7MF403.-…..-..A., -..B. and -..D.) for absolute pressure transmitters DS III, DS III PA and DS III FF series (7MF423.-…..-..A., -..B. and -..D.)		
• Made of steel		**7MF4997-1AC**
• Made of stainless steel	▶	**7MF4997-1AJ**
Mounting bracket and mounting parts for differential pressure transmitters with flange thread M10 DS III, DS III PA and DS III FF series (7MF433.-… and 7MF443.-...)		
• made of steel		**7MF4997-1AD**
• made of stainless steel	▶	**7MF4997-1AK**
Mounting bracket and mounting parts for differential pressure transmitters with flange thread M12 DS III, DS III PA and DS III FF series (7MF453.-…)		
• made of steel		**7MF4997-1AE**
• made of stainless steel		**7MF4997-1AL**
Mounting bracket and mounting parts for differential and absolute pressure transmitters with flange thread 7/16-20 UNF DS III, DS III PA and DS III FF series (7MF433.-…, 7MF443.-... and 7MF453.-...)		
• made of steel		**7MF4997-1AF**
• made of stainless steel		**7MF4997-1AM**
Cover Made of die-cast aluminium, including gasket, for DS III, DS III PA and DS III FF series		
• without window	F)	**7MF4997-1BB**
• with window	▶ F)	**7MF4997-1BE**
Cover Made of stainless steel, including gasket, for DS III, DS III PA and DS III FF series		
• without window	F)	**7MF4997-1BC**
• with window	F)	**7MF4997-1BF**
Digital indicator Including mounting material for DS III, DS III PA and DS III FF series		**7MF4997-1BR**
Measuring-point label		
• without inscription (5 off)		**7MF4997-1CA**
• with inscription (1 off) Data according to Y01 or Y02, Y15 and Y16 (see "SITRANS P pressure transmitters")		**7MF4997-1CB-Z** **Y..: .....**
Mounting screws for measuring-point label, earthing and connection terminals or for digital indicator (50 off)		**7MF4997-1CD**

Selection and Ordering data		Order No.
Sealing screws (1 set = 2 off) for process flange		
• made of stainless steel		**7MF4997-1CG**
• made of Hastelloy	F)	**7MF4997-1CH**
Screw plug with valve (1 set = 2 off)		
• made of stainless steel	▶	**7MF4997-1CP**
• made of Hastelloy	F)	**7MF4997-1CQ**
Electronics		
• for DS III series		**7MF4997-1DK**
• for DS III PA series		**7MF4997-1DL**
• for DS III FF series		**7MF4997-1DM**
Connection board		
• for DS III series		**7MF4997-1DN**
• for DS III PA and DS III FF series		**7MF4997-1DP**
O-rings for process flanges made of		
• FPM (Viton)	F)	**7MF4997-2DA**
• PTFE (Teflon)	F)	**7MF4997-2DB**
• FEP (with silicone core, approved for food)	F)	**7MF4997-2DC**
• FFPM (Kalrez, compound 4079)	F)	**7MF4997-2DD**
• NBR (Buna N)	F)	**7MF4997-2DE**
Weldable sockets for PMC connection for DS III and P300 series		
• PMC Style Standard: Thread 1½"		**7MF4997-2HA**
• PMC Style Mini bolt: front-flush 1"	F)	**7MF4997-2HB**
Sealing rings for PMC connection (packing unit: 5 pcs)		
• Sealing ring made of PTFE for PMC Style Standard: Thread 1½"	F)	**7MF4997-2HC**
• Sealing ring made of Viton for PMC Style Minibolt: front-flush 1"	F)	**7MF4997-2HD**
Weldable socket for TG 52/50- and TG 52/150 connection for DS III and P300 series		
• TG 52/50 connection		**7MF4997-2HE**
• TG 52/150 connection		**7MF4997-2HF**
Seals for TG 52/50 and TG 52/150 made of silicone		**7MF4997-2HG**
Seals for flange connection with flush-mounted diaphragm Material FPM (Viton), 10 units		
• DN 25, PN 40 (M11)	F)	**7MF4997-2HH**
• DN 25, PN 100 (M21)	F)	**7MF4997-2HJ**
• 1", class 150 (M40)	F)	**7MF4997-2HK**
• 1", class 300 (M45)	F)	**7MF4997-2HL**
Mounting bracket and mounting parts for P300		
• Made of stainless steel		**7MF8997-1AA**
Lid without window for P300		
• Gasket not included		**7MF8997-1BA**
Lid with glass window for P300		
• Gasket not included		**7MF8997-1BD**
NBR housing gasket for P300		**7MF8997-1BG**
Measuring point label for P300		
• Unlabeled		**7MF8997-1CA**
Cable gland for P300		
• Metal		**7MF8997-1EA**
• Plastic (blue)		**7MF8997-1EB**

▶ Available ex stock

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

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

Selection and Ordering data		Order No.
Instruction Manual[1]		
• for P300 series with HART communication		
- German		**A5E00359580**
- English		**A5E00359579**
- French		**A5E00359578**
- Spanish		**A5E00359576**
- Italian		**A5E00359577**
- Leporello German/English		**A5E00359581**
• for P300 series with PROFIBUS PA communication		
- German		**A5E00414587**
- English		**A5E00414588**
- French		**A5E00414589**
- Spanish		**A5E00414590**
- Italian		**A5E00414591**
- Leporello German/English		**A5E00414592**
• for DS III series		
- German		**A5E00047090**
- English		**A5E00047092**
- French		**A5E00053218**
- Spanish		**A5E00053219**
- Italian		**A5E00053220**
• for DS III PA series		
- German		**A5E00053275**
- English		**A5E00053276**
- French		**A5E00053277**
- Spanish		**A5E00053278**
- Italian		**A5E00053279**
• for DS III FF series		
- German		**A5E00279627**
- English		**A5E00279629**
- French (planned)		**A5E00279630**
- Spanish (planned)		**A5E00279632**
- Italian (planned)		**A5E00279631**
Brief instructions (Leporello)		
• for DS III series, German, English		**A5E00047093**
• for DS III PA series, German, English		**A5E00053274**
• for DS III FF series, German, English		**A5E00282355**
CD with documentation	G)	**A5E00090345**
for P300, DS III, DS III PA and DS III FF series German, English, French, Italian, Spanish		
Instruction Manual		
for replacement of electronics, measuring cell and connection board		
• German/English		**A5E00078060**
HART modem		
• with RS232 interface	► D)	**7MF4997-1DA**
• with USB interface	► D)	**7MF4997-1DB**
Supplementary electronics for 4-wire connection		see page 2/134

► Available ex stock

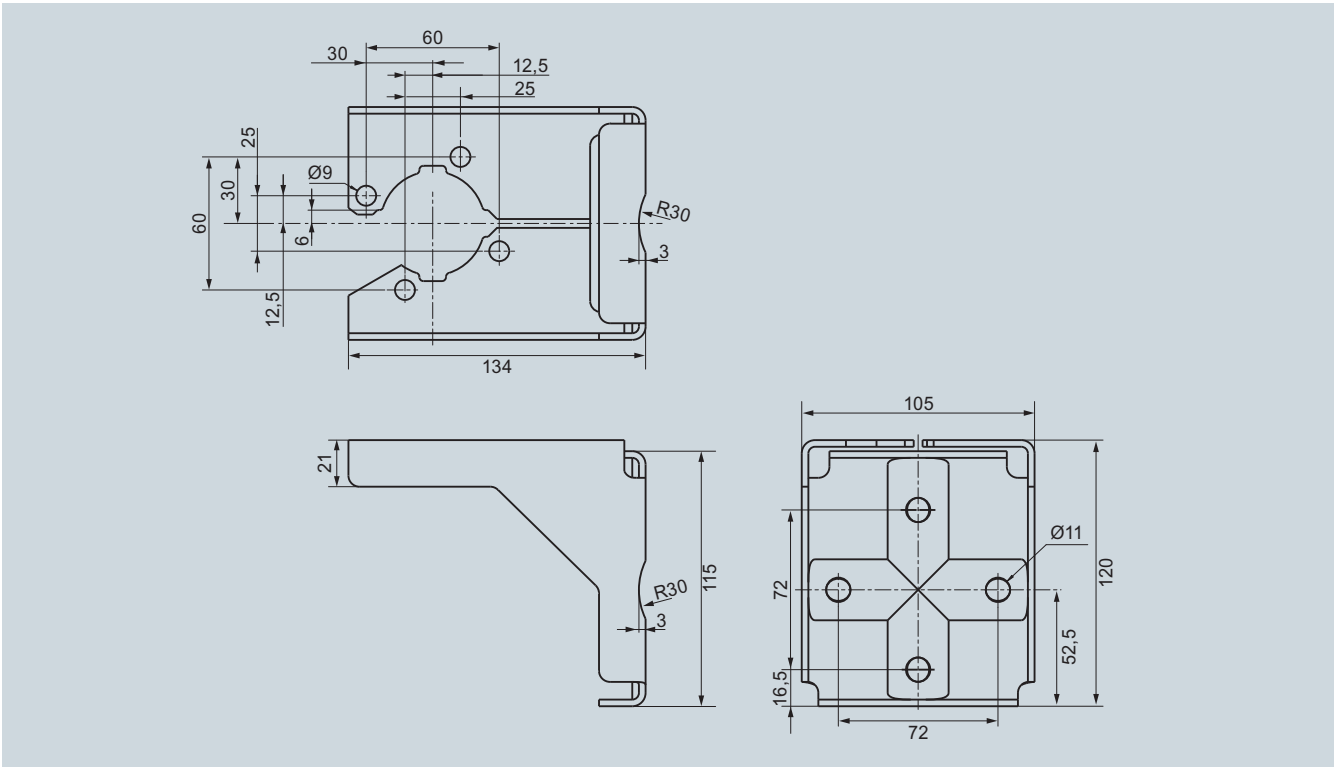
Power supply units see "SITRANS I power supply units and input isolators".

1) You can download the Instruction Manuals free-of-charge from the Internet site www.siemens.com/sitransp.

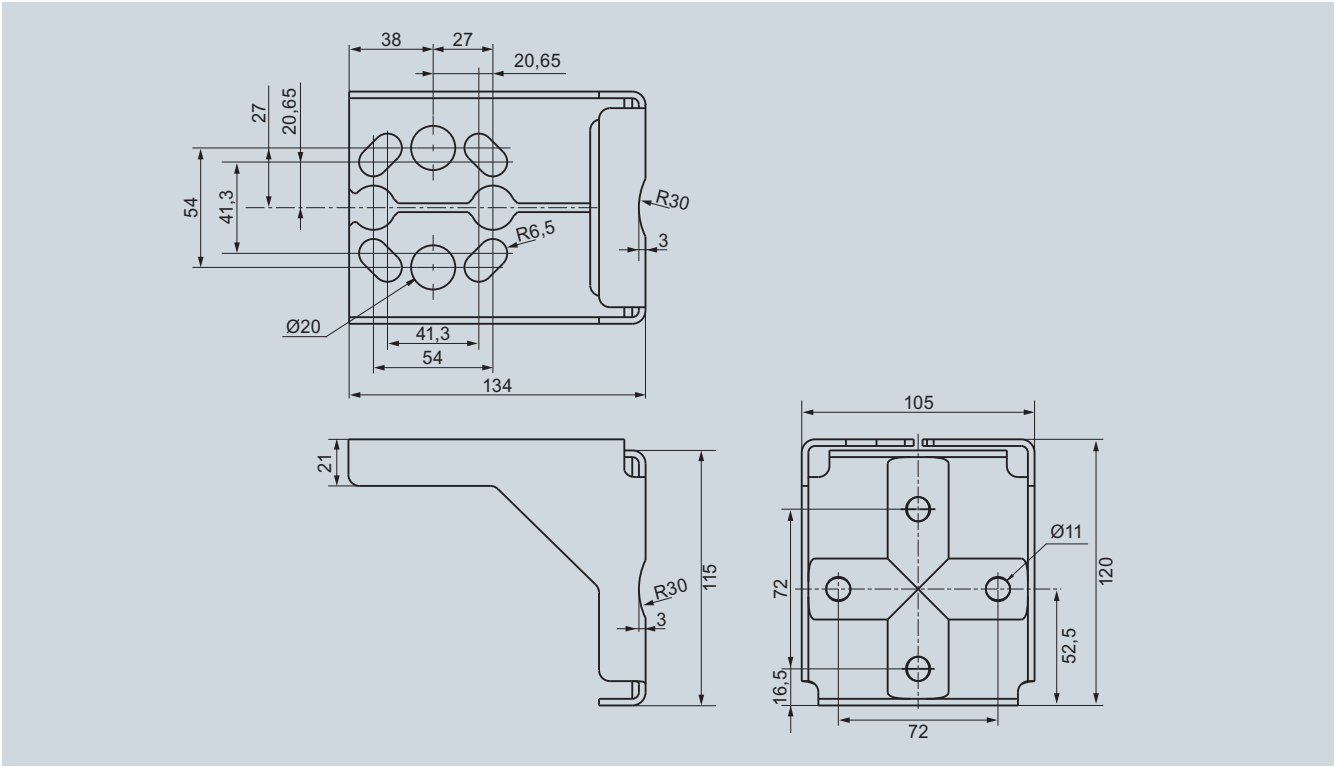
D) Subject to export regulations AL: N, ECCN: EAR99H.

G) Subject to export regulations AL: N, ECCN: 5D992B1.

Dimensional drawings



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



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

Factory-mounting of valve manifolds on SITRANS P transmitters

Overview

SITRANS P transmitters

- P300 for relative and absolute pressure,
- DS III for relative and absolute pressure (both designs) and
- DS III for differential pressure

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

- 7MF9011-4EA and 7MF9011-4FA valve manifolds for relative 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 and is certified leak-proof with a factory certificate to EN 10204 - 2.2.

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

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

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

Selection and Ordering data

7MF9011-4FA valve block 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.-... and SITRANS P300 7MF802.-...1.-...	**T03**
With process connection female thread ½-14 NPT in-sealed with PTFE sealing strip	
Delivery incl. high-pressure test certified by factory certificate to EN10204-2.2	

7MF9011-4EA valve block 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.-... and SITRANS P300 7MF802.-...0.-...	**T02**
with process connection collar G1/2 A to EN837-1 with gasket made of PTFE between valve manifold and transmitter	
Alternative sealing material:	
• soft iron	**A70**
• stainless steel, Mat. No. 14571	**A71**
• copper	**A72**
Delivery incl. high-pressure test certified by factory certificate to EN10204-2.2	
Further designs:	
Delivery includes mounting brackets and mounting clips made of stainless steel (instead of the mounting bracket supplied with the transmitter)	**A02**
Supplied acceptance test certificate to EN 10204- 3.1 for transmitters and mounted valve manifold	**C12**
Oil and grease-free cleaning for oxygen operation	**E10**

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**
• stainless steel	**U02**
Delivery incl. high-pressure test certified by factory certificate to EN10204-2.2	

7MF9411-5CA valve manifold on differential pressure transmitters

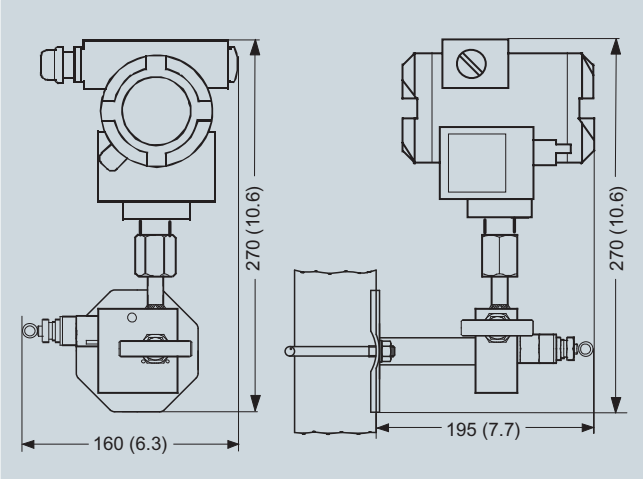
Add -Z to the Order No. of the transmitter and add order codes.	Order code
SITRANS P DSIII 7MF443.-... und 7MF453.-...[1]	
mounted with gaskets made of PTFE and screws made of	
• chromized steel	**U03**
• stainless steel	**U04**
Delivery incl. high-pressure test certified by factory certificate to EN10204-2.2	
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**
Oil and grease-free cleaning for oxygen operation	**E10**

[1] For 7MF453.-... transmitters, you require a 7/10-20 UNF connection thread in the process flange.

Dimensional drawings

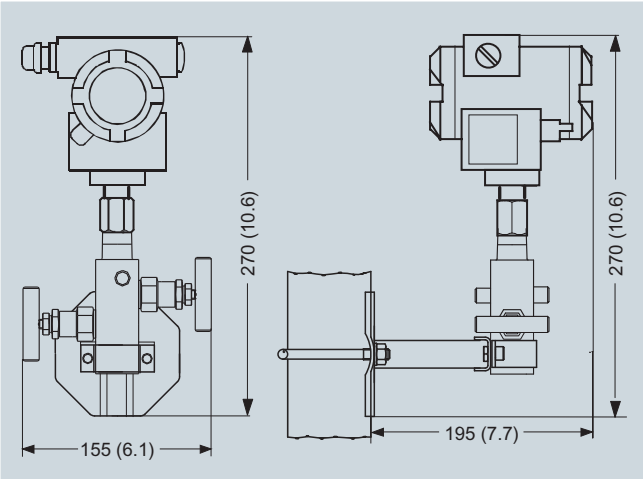
Valve manifolds mounted on SITRANS P DS III

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



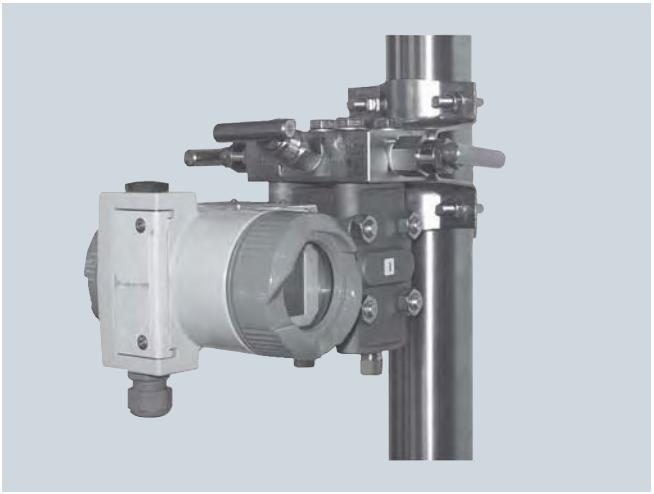
Valve manifold 7MF9011-4EA with mounted relative pressure and absolute pressure transmitters, dimensions in mm (inch)

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

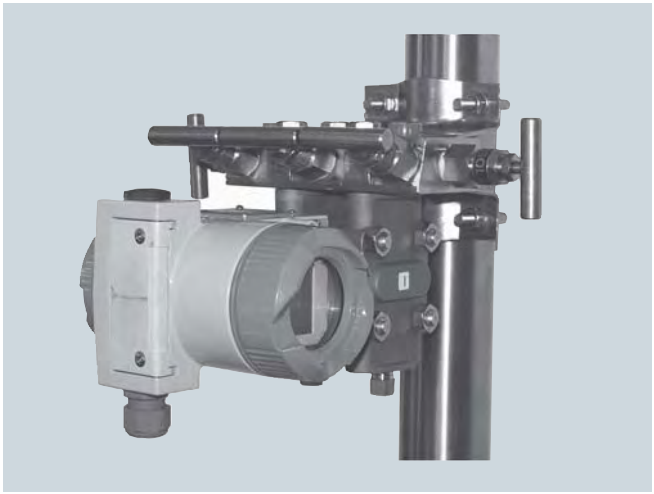


Valve manifold 7MF9011-4FA with mounted relative pressure and absolute pressure transmitters, dimensions in mm (inch)

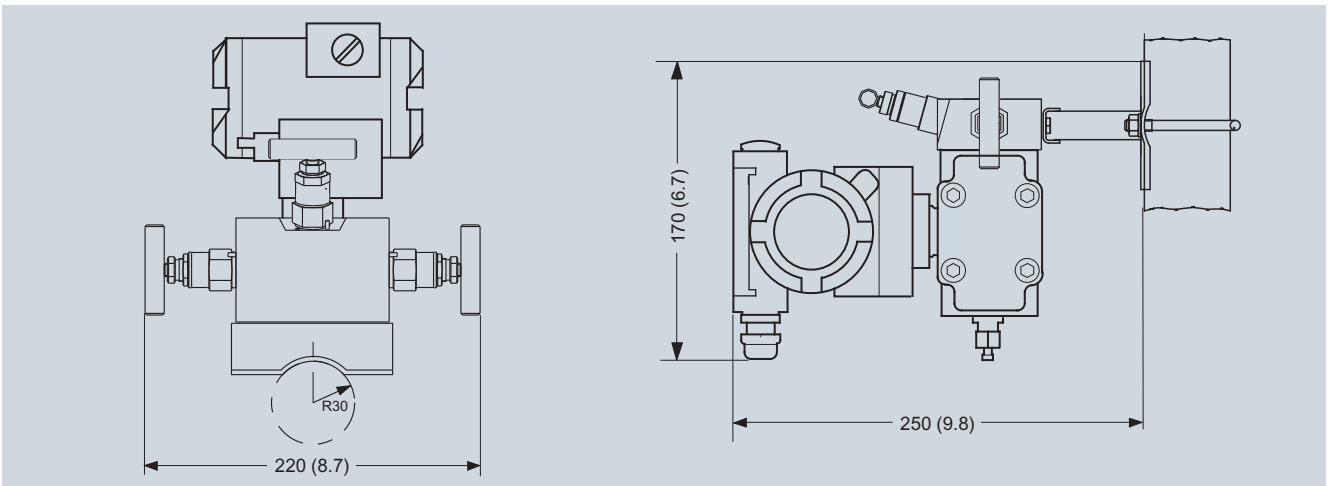
Factory-mounting of valve manifolds on SITRANS P transmitters



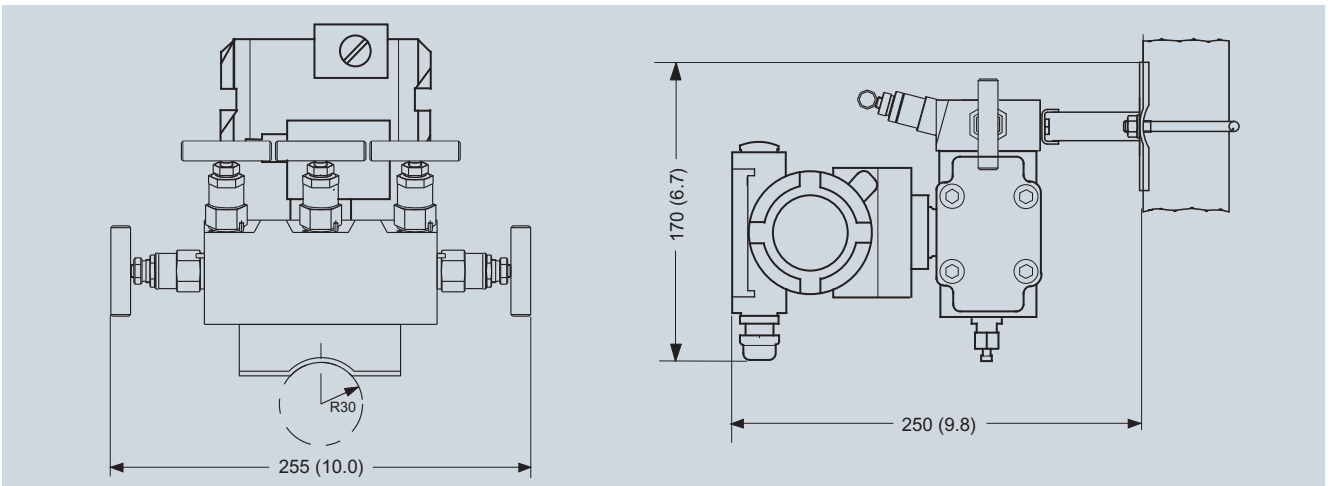
Valve manifold 7MF9411-5BA with mounted differential pressure transmitter



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



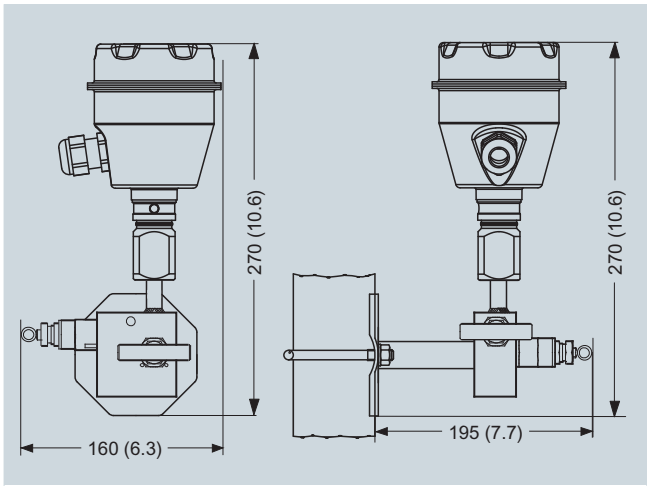
Valve manifold 7MF9411-5BA with mounted differential pressure transmitter, dimensions in mm (inch)



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

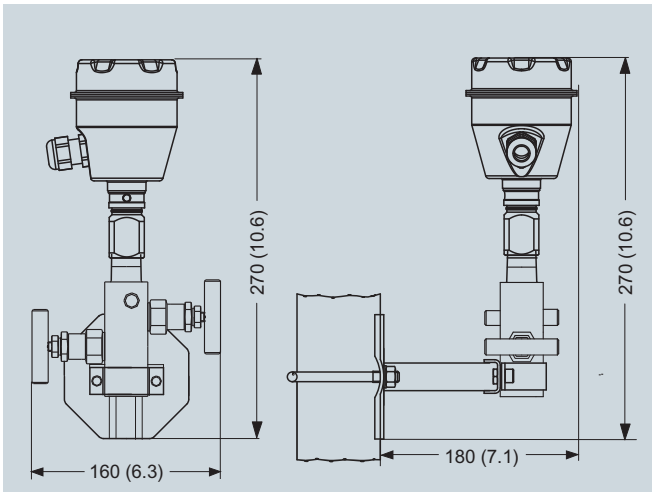
Valve manifolds mounted on SITRANS P300

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



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

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



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

MPS series (submersible sensor)

Overview

SITRANS P pressure transmitters, MPS series (submersible sensor)

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

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

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

Benefits

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

Application

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

- Oil and gas industries
- Shipbuilding
- Water supply

Design

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

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

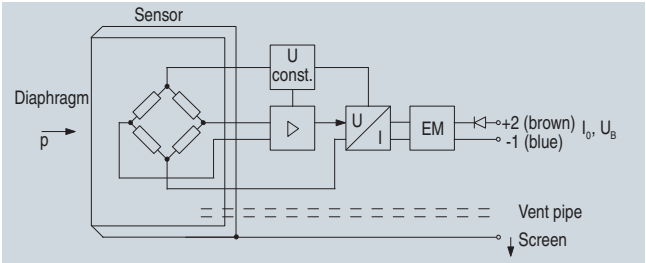
The diaphragm is protected against external influences by a protective cap.

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

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

Function

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



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

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

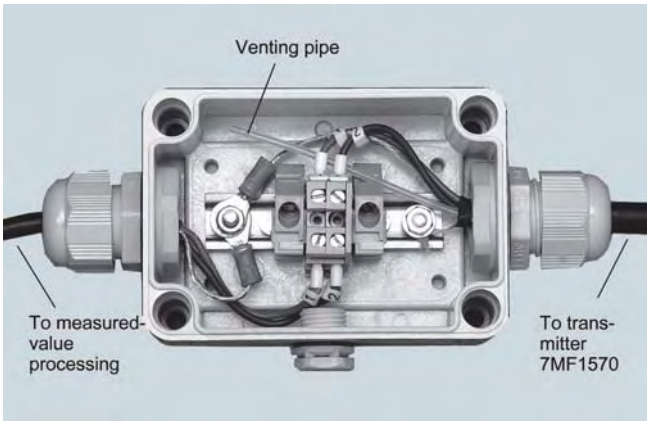
The hydrostatic pressure of the liquid column acts on the sensor diaphragm, and transmits the pressure to the piezo-resistive bridge in the sensor.

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

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

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

Integration



Junction box 7MF1570-8AA, opened

Measuring point setup, in principle

Technical specifications

SITRANS P pressure transmitters, MPS series (submersible sensor)

Mode of operation	
Measuring principle	Piezo-resistive
Input	
Measured variable	Hydrostatic level
Measuring range	Maximum working pressure
• 0 ... 2 mH_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)	• 6.0 bar (87.0 psi) (corresponds to 60 mH_2O (180 ftH_2O))
Output	
Output signal	4 ... 20 mA
Accuracy	To EN 60770-1
Error in measurement (including non-linearity, hysteresis and repeatability, at 25 °C (77 °F))	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 operating conditions	
Ambient conditions	
• Process temperature	-10 ... +80 °C (+14 ... +176 °F)
• Storage temperature	-40 ... +100 °C (-40 ... +212 °F)
Degree of protection to DIN EN 60529	IP68
Design	
Weight	
• Pressure transmitters	≈ 0.4 kg (≈ 0.88 lb)
• Cable	0.08 kg/m (≈ 0.054 lb/ft)
Electrical connection	Cable with 2 conductors with screen and vent pipe, strength cord (max. 300 N (67.44 lbf)
Material	
• Seal diaphragm	Stainless steel, mat. No. 1.4571/316 Ti
• Casing	Stainless steel, mat. No. 1.4571/316 Ti
• Gasket	Viton
• Connecting cable	Optionally PE/HFFR sheath (non-halogen) or FEP sheath
Power supply	
Terminal voltage on pressure transmitter (U_B)	10 ... 36 V DC
Certificate and approvals	
The transmitter is not subject to the pressure equipment directive (DGRL 97/23/EC)	
Explosion protection	
• Intrinsic safety "i"	TÜV 03 ATEX 2004X
- Identification	Ex II 1 G EEx ia IIC T4

Junction box

Application	For connecting the transmitter cable
Design	
Weight	0.2 kg (0.44 lb)
Electrical connection	2 x 3-way (28 ... 18 AWG)
Cable entry	2 x M20x1.5
Enclosure material	Polycarbonate
Vent pipe for atmospheric pressure	
Screw for cable strength cord	
Rated operating conditions	
Degree of protection to DIN EN 60529	IP54

Cable hanger

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

Transmitters for hydrostatic level

MPS series (submersible sensor)

Selection and Ordering data

Order No.

SITRANS P pressure transmitters for pressure, MPS series (submersible sensor) C) **7MF1570-** ■■**A0**■ ■■■

2-wire system

Note: Junction box and cable hanger included in delivery

Cable material

PE	▶	1
FEP		5

Measuring range	Cable length L		
0 ... 2 mH_2O	10 m	▶	C
0 ... 4 mH_2O	10 m	▶	D
0 ... 5 mH_2O	25 m	▶	B
0 ... 6 mH_2O	25 m	▶	E
0 ... 10 mH_2O	25 m	▶	F
0 ... 20 mH_2O	25 m	▶	G
0 ... 6 ftH_2O	32 ft		K
0 ... 12 ftH_2O	32 ft		L
0 ... 18 ftH_2O	82 ft		M
0 ... 30 ftH_2O	82 ft		N
0 ... 60 ftH_2O	82 ft		P
Special measuring range/Special cable length [1] Specify measuring range and cable length in plain text			Z J 1 Y

Explosion protection

• without	▶	1
• with, type of protection "Intrinsic safety" (Ex II 1 G EEx ia IIC T4)	▶	2
• With approval for drinking water to WRAS and ACS	▶ D)	6

	Order code
Further designs	
Quality inspection certificate (Factory calibration) to IEC 60770-2, add "-Z" to Order No. and Order code.	**C11**

	Order No.
Quality inspection certificate (Factory calibration) to IEC 60770-2 supplied later, specify factory no. of transmitter for this porpose.	**7MF1564-8CC11**
Accessories (as spare parts)	
Junction box for connecting the transmitter cable	**7MF1570-8AA**
Cable hanger for mounting the pressure transmitter	**7MF1570-8AB**

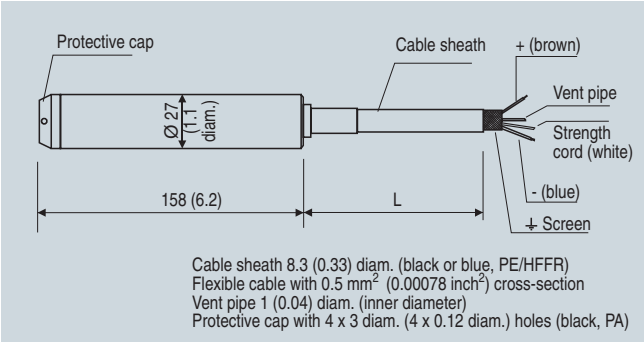
▶ Available ex stock

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

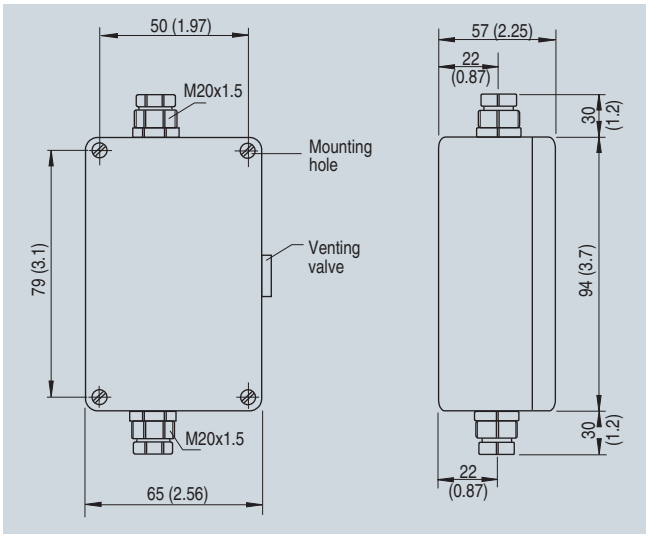
[1] Special measuring ranges between 0 ... 1 mH_2O (0 ... 3 ftH_2O) and 0 ... 200 mH_2O (0 ... 656 ftH_2O) and special cable lengths up to 1000 m (3281ft) are possible. With Ex versions the max. special cable length is 50 m (150 ft). The length of free-hanging cable should not exceed 375 m.

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

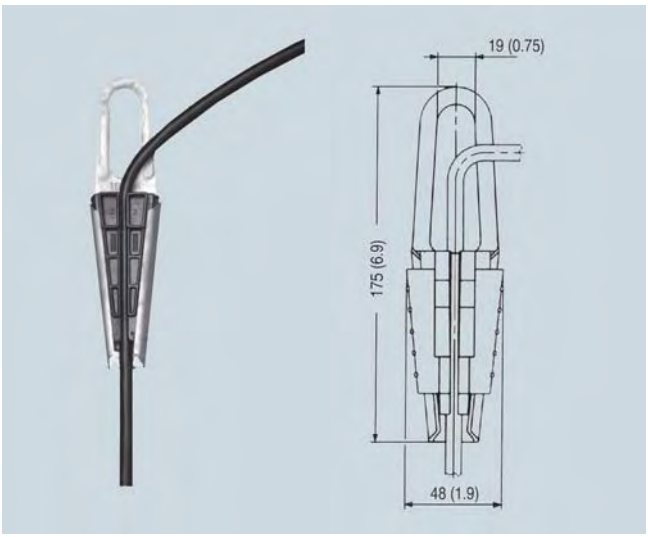
Dimensional drawings



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



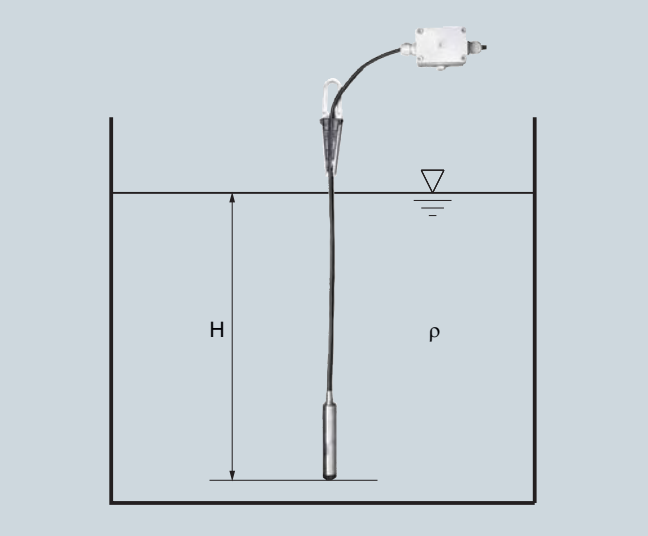
Junction box, dimensions in mm (inch)



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:

$p = \rho \times g \times H$

with:

ρ = density of medium

g = local acceleration due to gravity

H = maximum level

Example:

Medium: Diesel fuel = 850 kg/m³

Acceleration due to gravity: 9.81 m/s²

Start-of-scale : 0 m

Maximum level: 6,2 m

Calculation:

p = 850 kg/m³ x 9.81 m/s² x 6.2 m

p = 51698.7 N/m²

p = 517 mbar

Transmitter to be ordered:

7MF1570-5ZA02-Z

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

Technical description

Overview

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

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

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

Note

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

Benefits

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

Application

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

Examples of such cases:

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

Design

A remote seal system consists of the following components.

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

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

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

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

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

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

Designs

Diaphragm seal

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

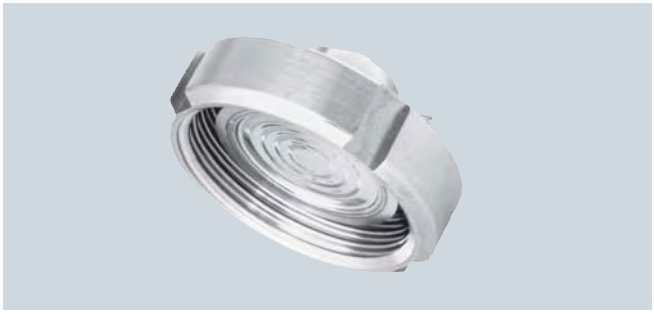
The following types of diaphragm seals exist:

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

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

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

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



Quick-release diaphragm seal

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

Miniature diaphragm seal with diaphragm flush with front

- Miniature diaphragm seals

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

Clamp-on seal

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

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

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

The following types of clamp-on seals exist:

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

Note:

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

Function

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

Transmission response

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

- Temperature error
- Adjustment time

Temperature error

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

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

The temperature error is dependent on the following variables:

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

Diaphragm rigidity

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

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

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

- Diaphragm thickness
- Diaphragm material
- Coatings if present

Filling liquid

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

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

Note:

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

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

Technical description

Response time

The response time is dependent on the following factors:

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

Recommendations

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

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

Note

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

Other versions can be:

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

Please contact your Siemens Regional Office for more information.

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	48	(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)	0.4	(0.006)	0.4	(0.006)	0.4	(0.006)	100	(1.45)
	DN 100 with tube	89	(3.50)	0.4	(0.006)	0.4	(0.006)	0.4	(0.006)	100	(1.45)
	DN 125 without tube	124	(4.88)	0.2	(0.003)	0.1	(0.002)	0.1	(0.002)	20	(0.29)
	DN 125 with tube	124	(4.88)	0.2	(0.003)	0.1	(0.002)	0.1	(0.002)	20	(0.29)
Sandwich 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	48	(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)	0.4	(0.006)	0.4	(0.006)	0.4	(0.006)	100	(1.45)
	4 inch with tube	89	(3.50)	0.4	(0.006)	0.4	(0.006)	0.4	(0.006)	100	(1.45)
	5 inch without tube	124	(4.88)	0.2	(0.003)	0.1	(0.002)	0.1	(0.002)	20	(0.29)
	5 inch with tube	124	(4.88)	0.2	(0.003)	0.1	(0.002)	0.1	(0.002)	20	(0.29)
Remote seal 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 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.

Technical description

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

	Nominal diameter/ design	Diaphragm diameter		Temperature error of remote seal		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	48	(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)	0.1	(0.002)	0.07	(0.001)	0.07	(0.001)	50	(0.725)
	DN 100 with tube	89	(3.50)	0.1	(0.002)	0.07	(0.001)	0.07	(0.001)	50	(0.725)
	DN 125 without tube	124	(4.88)	0.05	(0.001)	0.03	(0.0004)	0.03	(0.0004)	20	(0.29)
	DN 125 with tube	124	(4.88)	0.05	(0.001)	0.03	(0.0004)	0.03	(0.0004)	20	(0.29)
Sandwich 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	48	(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)	0.1	(0.002)	0.07	(0.001)	0.07	(0.001)	50	(0.725)
	4 inch with tube	89	(3.50)	0.1	(0.002)	0.07	(0.001)	0.07	(0.001)	50	(0.725)
	5 inch without tube	124	(4.88)	0.05	(0.001)	0.03	(0.0004)	0.03	(0.0004)	20	(0.29)
	5 inch with tube	124	(4.88)	0.05	(0.001)	0.03	(0.0004)	0.03	(0.0004)	20	(0.29)
Remote seal 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.

Temperature error Clamp-on seals

Temperature errors of clamp-on seals when connected to pressure transmitters for 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

Technical description

Calculation of the temperature error

The following equation is used to calculate the temperature error:

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

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 80 remote seal diaphragms without tube, diaphragm made of stainless steel, mat. No. 1.4404/316L	f_{RS} = 0.1 mbar/10 K (0.0014 psi/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}) (0.001 psi/(10 K · m_{Cap}))
Filling liquid silicone M5	f_{PF} = 0.07 mbar/10 K (0.001 psi/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) · 0.1 mbar/10 K + (50 °C – 20 °C) · 6 m · 0.07 mbar/(10 K · m) + (50 °C – 20 °C) · 0.07 mbar/10 K

dp = 0.8 mbar + 1.26 mbar + 0.21 mbar

in psi

dp = (212 °F – 68 °F) · 0.0014 psi/10 K + (112 °F – 68 °F) · 19.7 ft · 0.001 psi/(10 K · 3.28 ft) + (112 °F – 68 °F) · (0.001 psi/10 K)

dp = 0.012 psi + 0.018 psi + 0.003 psi

Result

dp = 2.27 mbar (0.033 psi) (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 (14.5 psi)**		**p_{abs} > 1 bar (14.5 psi)**	
	°C	(°F)	°C	(°F)
Stainless steel, 316L	200	(392)	400	(662)
PTFE coating	200	(392)	260	(500)
ECTFE coating	100	(212)	150	(302)
PFA coating	200	(392)	260	(500)
Hastelloy C4, mat. No. 2.4610	200	(392)	260	(500)
Hastelloy C276, mat. No. 2.4819	200	(392)	400	(662)
Monel 400, mat. No. 2.4360	200	(392)	400	(662)
Tantalum	200	(392)	300	(572)

Maximum capillary length for diaphragm seals (guidance values)

Nom. 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)	-	-

Response times

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

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

The response times are independent of the set span within the range of the respective transmitter. The response times are of insignificant importance for spans above 10 bar (145 psi). The response times of the pressure transmitters are not considered in the table.

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

Technical data of filling liquids

When selecting the filling liquid, check that it is suitable with respect to the permissible temperature of the medium and the process pressure.

Also check the compatibility of the filling liquid with the measured medium. For example, only physiologically harmless filling liquids may be used in the food industry.

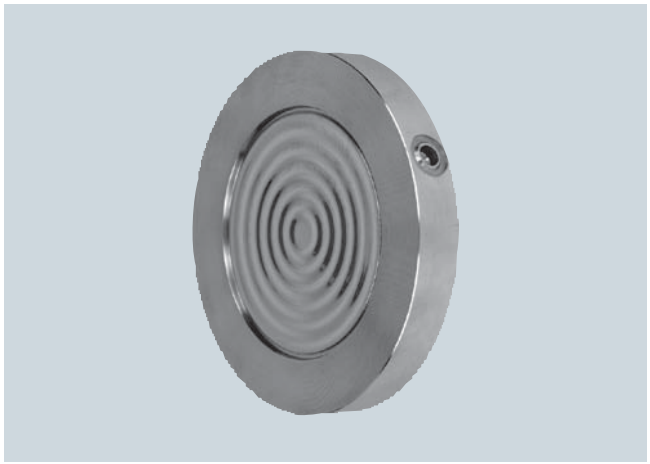
Oxygen and chlorine are special cases of measured medium. The liquid must not react with either of these two media or a leaking remote seal may lead to an explosion or fire.

Filling liquid	Digit in Order No.	Permissible temperature of medium				Density at 20 °C (68 °F)		Viscosity at 20 °C (68 °F)		Coefficient of expansion	
		p_{abs} < 1 bar	(p_{abs} < 14.5 psi)	p_{abs} > 1 bar	(p_{abs} > 14.5 psi)						
		°C	(°F)	°C	(°F)	kg/dm^3	(lb/in^3)	m^2/s·10^6	(ft^2/s·10^6)	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)	-10 ... +350	(+14 ... +662)	1.07	(0.04)	39	(420)	0.00080	(0.00044)
Halocarbon oil	4	-40 ... +80	(-40 ... +176)	-40 ... +175	(-40 ... +347)	1.968	(0.07)	14	(151)	0.00086	(0.00048)
Glycerin/water	6	Not 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)

Diaphragm seals of sandwich design

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

Overview



Diaphragm seals of sandwich design

Technical specifications

Diaphragm seals of sandwich 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 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. 1.4404/216L	To EN 1092-1, form B1 or ASME B16.5 RF 125 ... 250 AA
• For the other materials	To EN 1092-1, form B2 or ASME B16.5 RFSF
Materials	
• Main body	Stainless steel 316L
• Wetted parts	Stainless steel 316L
	• Without foil
	• PTFE (for vacuum on request)
	• ECTFE (for vacuum on request)
	• PFA (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
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)

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)		D)	7MF4900-	
for absolute pressure 7MF433■; Scope of delivery (1 off)		D)	7MF4901-	
for differential pressure and flow 7MF443■; scope of delivery 2 off		D)	7MF4903-	
			1■■■■-■B	■■■
Nominal diameter and nominal pressure				
• DN 50	PN 16 ... 100		A	
(recommended only for pressure transmitters for pressure)				
• DN 80	PN 16 ... 100		B	
• DN 100	PN 16 ... 100		C	
• DN 125	PN 16 ... 100		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 foil			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	
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	
• Glycerin/water[3]			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) For vacuum on request
3) 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)		D)	7MF4900-	
for absolute pressure 7MF433■; Scope of delivery (1 off)		D)	7MF4901-	
for differential pressure and flow 7MF443■; scope of delivery 2 off		D)	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

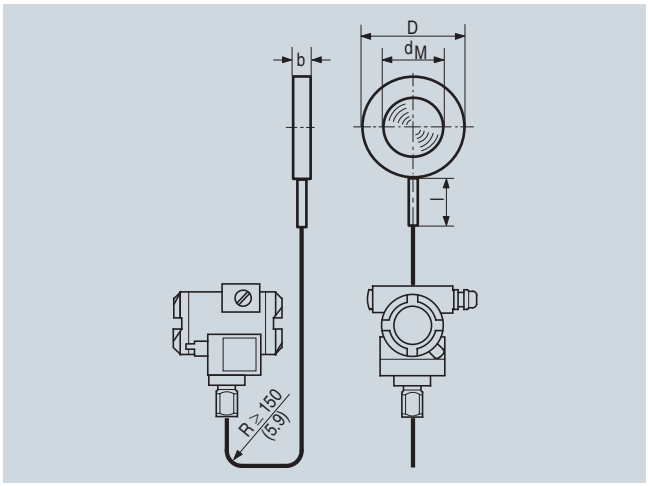
1) With 7MF802■ and the measuring cells Q, S, T and U also order the vacuum-tight version.
2) Max. capillary length, see section "Technical description".
D) Subject to export regulations AL: N, ECCN: EAR99H.

Selection and Ordering data	Order code
Further designs	
Please add "-Z" to Order No. and specify Order code.	
Spark arrestor	
With spark arrestor for mounting on zone 0 (including documentation)	
• Pressure and absolute pressure	**A01**
• for differential pressure transmitters	**A02**
Quality inspection certificate (Factory calibration) to IEC 60770-2	**C11**
Acceptance test certificate to EN 10204, section 3.1	**C12**
Vacuum-proof design for use in low-pressure range for transmitters for	
• Pressure	**V01**
• For differential pressure transmitters	**V03**
Calculation of span of associated pressure transmitter Enclose filled-in questionnaire with order	**Y05**

Diaphragm seals of sandwich design

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

Dimensional drawings



Connection to EN 1092-1

Nom. diam.	Nom. press.	b	D	d_M	l
		mm	mm	mm	mm
DN 50	PN 16 ... PN 100	20	102	59	100
DN 80		20	138	89	100
DN 100		20	158	89	100
DN 125		22	188	124	100

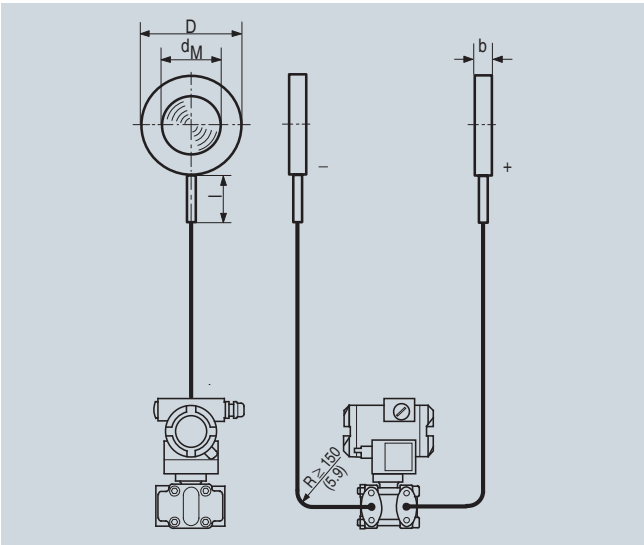
Connection to ASME B16.5

Nom. diam.	Nom. press.	b	D	d_M	l
	lb/sq.in.	mm (inch)	mm (inch)	mm (inch)	mm (inch)
2 inch	150 2500	20 (0.79)	100 (3.94)	59 (2.32)	100 (3.94)
3 inch		20 (0.79)	134 (5.28)	89 (2.32)	100 (3.94)
4 inch		20 (0.79)	158 (6.22)	89 (2.32)	100 (3.94)
5 inch		22 (0.87)	186 (7.32)	124 (4.88)	100 (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 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 100	20	102	59	100
DN 80		20	138	89	100
DN 100		20	158	89	100
DN 125		22	188	124	100

Connection to ASME B16.5

Nom. diam.	Nom. press.	b	D	d_M	l
	lb/sq.in.	mm (inch)	mm (inch)	mm (inch)	mm (inch)
2 inch	150 ... 2500	20 (0.79)	100 (3.94)	59 (2.32)	100 (3.94)
3 inch		20 (0.79)	134 (5.28)	89 (2.32)	100 (3.94)
4 inch		20 (0.79)	158 (6.22)	89 (2.32)	100 (3.94)
5 inch		22 (0.87)	186 (7.32)	124 (4.88)	100 (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)

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 16, PN 40
• DN 125	PN 16, PN 40
• 2 inch (recommendable only for pressure transmitters for pressure)	Class 150, class 300, class 600, class 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 316L
• Wetted parts	Stainless steel 316L
	• Without foil
	• PTFE (for vacuum on request)
	• ECTFE (for vacuum on request)
	• PFA (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. 1.4404/316L

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)

Diaphragm seals of flange design

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

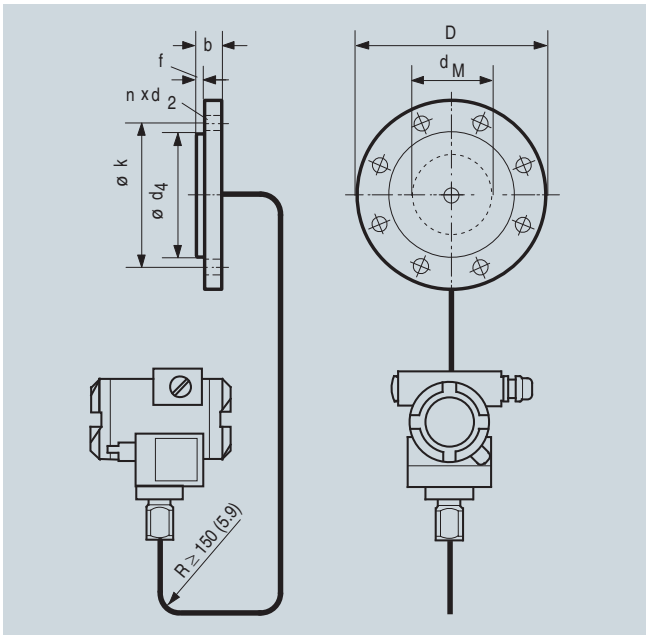
Selection and Ordering data		Order No. Ord. code
Diaphragm seal		
Flange design, with flexible capillary, connected to a pressure transmitter SITRANS P (order separately):		
for pressure 7MF403■ and 7MF423■ together with Order code "V01" (vacuum-proof design) and 7MF802■[1]; scope of delivery: 1 off	D)	**7MF4920-**
for absolute pressure 7MF433■; scope of delivery: 1 off	D)	**7MF4921-**
for differential pressure and flow 7MF443■; scope of delivery: 2 off	D)	**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 16	**G**
	PN 40	**H**
• DN 125	PN 16	**J**
	PN 40	**K**
• 2 inch	Class 150	**L**
	Class 300	**M**
	Class 600	**N**
	Class 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 foil		**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**
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**

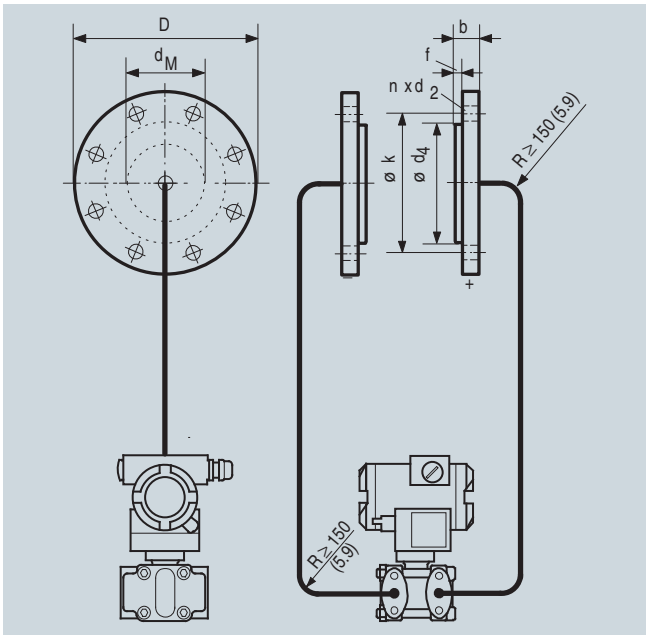
Selection and Ordering data		Order No. Ord. code
Diaphragm seal		
Flange design, with flexible capillary, connected to a pressure transmitter SITRANS P (order separately):		
for pressure 7MF403■ and 7MF423■ together with Order code "V01" (vacuum-proof design) and 7MF802■[1]; scope of delivery: 1 off	D)	**7MF4920-**
for absolute pressure 7MF433■; scope of delivery: 1 off	D)	**7MF4921-**
for differential pressure and flow 7MF443■; scope of delivery: 2 off	D)	**7MF4923-**
		1 ■■■■ - ■B ■■■
Filling liquid		
• Silicone oil M5		**1**
• Silicone oil M50		**2**
• High-temperature oil		**3**
• Halocarbon oil (for measuring O_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**
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**

1) With 7MF802■ and the measuring cells Q, S, T and U also order the vacuum-tight version.
2) For vacuum on request.
3) Not suitable for use in low-pressure range.
4) Max. capillary length, see section "Technical description".
D) Subject to export regulations AL: N, ECCN: EAR99H.

Selection and Ordering data	Order code
Further designs Please add "-Z" to Order No. and specify Order code.	
Spark arrestor With spark arrestor for mounting on zone 0 (including documentation) for transmitters for	
• pressure and absolute pressure	**A01**
• differential pressure	**A02**
Quality inspection certificate (Factory calibration) to IEC 60770-2	**C11**
Acceptance test certificate to EN 10204, section 3.1	**C12**
Vacuum-proof design for use in low-pressure range for transmitters for	
• pressure	**V01**
• differential pressure	**V03**
Calculation of span of associated pressure transmitter Enclose filled-in questionnaire with order	**Y05**

Dimensional drawings





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 16	20	220	18	158	89	2	180	8
	PN 40	24	235	22	162	89	2	190	8
DN 125	PN 16	22	250	18	188	124	2	210	8
	PN 40	26	270	26	188	124	2	220	8

Connection to ASME B16.5

Nom. diam.	Nom. press.	b	D	d_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	20 (0.79)	150 (5.80)	20 (0.79)	92 (3.62)	59 (2.32)	1.6 (0.06)	120.5 (4.74)	4
	300	22.5 (0.89)	165 (6.50)	20 (0.79)	92 (3.62)	59 (2.32)	1.6 (0.06)	127 (5)	8
	600	32 (1.26)	165 (6.50)	20 (0.79)	92 (3.62)	59 (2.32)	1.6 (0.06)	127 (5)	8
3 inch	150	24 (0.96)	190 (7.48)	20 (0.79)	127 (5)	89 (3.50)	1.6 (0.06)	152.5 (6)	4
	300	29 (1.14)	210 (8.27)	22 (0.87)	127 (5)	89 (3.50)	1.6 (0.06)	168.5 (6.63)	8
	400	38.5 (1.52)	210 (8.27)	22 (0.87)	127 (5)	89 (3.50)	6.4 (0.25)	168.5 (6.63)	8
4 inch	150	24 (0.95)	230 (9.06)	20 (0.79)	158 (6.22)	89 (3.50)	1.6 (0.06)	190.5 (7.5)	4
	300	32 (1.26)	255 (10.04)	22 (0.87)	158 (6.22)	89 (3.50)	1.6 (0.06)	200 (7.87)	8
	400	41.5 (1.62)	255 (10.04)	26 (1.02)	158 (6.22)	89 (3.50)	6.4 (0.25)	200 (7.87)	8
5 inch	150	24 (0.94)	255 (10.04)	22 (0.87)	186 (7.32)	124 (4.88)	2 (0.08)	216 (8.50)	4
	300	35 (1.38)	280 (11.02)	22 (0.87)	186 (7.32)	124 (4.88)	2 (0.08)	235 (9.25)	8
	400	45.5 (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 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 80	PN 40	24	200	18	138	89	2	160	8
	PN 100	32	230	26	138	89	2	180	8
DN 100	PN 16	20	220	18	158	89	2	180	8
	PN 40	24	235	22	162	89	2	190	8
DN 125	PN 16	22	250	18	188	124	2	210	8
	PN 40	26	270	26	188	124	2	220	8

Connection to ASME B16.5

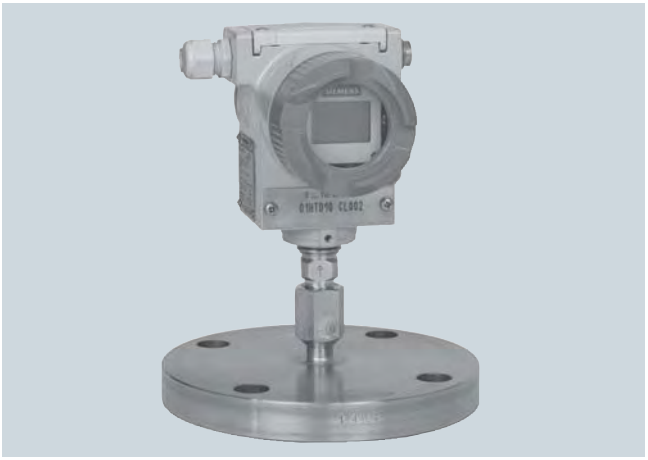
Nom. diam.	Nom. press.	b	D	d_2	d_4	d_M	f	k	n
	lb/sq.in.	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	
3 inch	150	24 (0.96)	190 (7.48)	20 (0.79)	127 (5)	89 (3.50)	1.6 (0.06)	152.5 (6)	4
	300	29 (1.14)	210 (8.27)	22 (0.87)	127 (5)	89 (3.50)	1.6 (0.06)	168.5 (6.63)	8
	600	38.5 (1.52)	210 (8.27)	22 (0.87)	127 (5)	89 (3.50)	6.4 (0.25)	168.5 (6.63)	8
4 inch	150	24 (0.95)	230 (9.06)	20 (0.79)	158 (6.22)	89 (3.50)	1.6 (0.06)	190.5 (7.5)	4
	300	32 (1.26)	255 (10.04)	22 (0.87)	158 (6.22)	89 (3.50)	1.6 (0.06)	200 (7.87)	8
	400	41.5 (1.62)	255 (10.04)	26 (1.02)	158 (6.22)	89 (3.50)	6.4 (0.25)	200 (7.87)	8
5 inch	150	24 (0.94)	255 (10.04)	22 (0.87)	186 (7.32)	124 (4.88)	2 (0.08)	216 (8.50)	4
	300	35 (1.38)	280 (11.02)	22 (0.87)	186 (7.32)	124 (4.88)	2 (0.08)	235 (9.25)	8
	400	45.5 (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)

Diaphragm seals of flange design

For gage and absolute pressure, directly fitted on transmitter

Overview



Diaphragm seals of flange design, directly fitted on a pressure transmitter for pressure

Technical specifications

Diaphragm seals (flange design) 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 16, PN 40
• 2 inch	Class 150, class 300, class 600, class 1500
• 3 inch	Class 150, class 300, class 600
• 4 inch	Class 150, class 300, class 400
Sealing face	
• 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 316L
• Wetted parts	Stainless steel 316L
	• Without foil
	• PTFE (for vacuum on request)
	• ECTFE (for vacuum on request)
	• PFA (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, 1.4571/316Ti
• Sealing material on the process connection	Copper
Maximum pressure	See above and the technical data of the transmitter
Tube length	• Without tube
	• 50 mm (1.97 inch)
	• 100 mm (3.94 inch)
	• 150 mm (5.91 inch)
	• 200 mm (7.87 inch)
Capillary	
• 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		D)	**7MF4910-**								
Directly fitted to a pressure transmitter SITRANS P for pressure 7MF403■ and 7MF423■ together with Order code "V01" (vacuum-proof design) and 7MF802■[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 16			G							
	PN 40			H							
• 2 inch	Class 150			L							
	Class 300			M							
	Class 600			N							
	Class 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						J	1 Y
Wetted parts materials											
• Stainless steel 316L											
- without foil					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						
Other version Add Order code and plain text: Wetted parts materials: ...					Z					K	1 Y
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: Tube length: ...						9				L	1 Y

Selection and Ordering data		Order No. Ord.code									
Diaphragm seal		D)	**7MF4910-**								
Directly fitted to a pressure transmitter SITRANS P for pressure 7MF403■ and 7MF423■ together with Order code "V01" (vacuum-proof design) and 7MF802■[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)						4					
• Glycerin/water[3]						6					
• Food oil (FDA listed)						7					
Other version Add Order code and plain text: Filling liquid: ...						9				M	1 Y

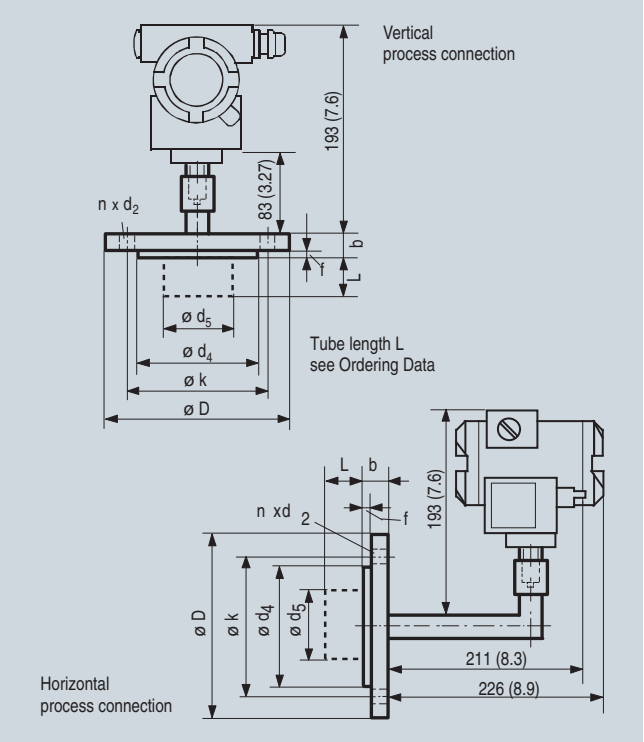
1) With 7MF802■ and the measuring cells Q, S, T and U also order the vacuum-tight version.
2) For vacuum on request.
3) Not suitable for use in low-pressure range.
D) Subject to export regulations AL: N, ECCN: EAR99H.

Selection and Ordering data	Order code
Further designs	
Please add "-Z" to Order No. and specify Order code.	
Spark arrestor With spark arrestor for mounting on zone 0 (including documentation) for transmitters for pressure and absolute pressure	**A01**
Quality inspection certificate (Factory calibration) to IEC 60770-2 to IEC 60770-2	**C11**
Acceptance test certificate to EN 10204, section 3.1	**C12**
Vacuum-proof design for use in low-pressure range for transmitters for pressure	**V01**
Calculation of span of associated pressure transmitter Enclose filled-in questionnaire with order	**Y05**

Diaphragm seals of flange design

For gage and absolute pressure, directly fitted on transmitter

Dimensional drawings



Diaphragm seals of flange design, direct connection to a SITRANS P pressure transmitter (process connection vertical (top) and horizontal (bottom)), dimensions in mm (inch)

Connection to EN 1092-1

Nom. diam.	Nom. 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	59	2	125	4
	PN 100	28	195	26	102	48.3	59	2	145	4
DN 80	PN 40	24	200	18	138	76	89	2	160	8
	PN 100	32	230	26	138	76	89	2	180	8
DN 100	PN 16	20	220	18	158	94	89	2	180	8
	PN 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	20 (0.79)	150 (5.91)	20 (0.79)	92 (3.62)	48.3 (1.9)	59 (2.32)	1.6 (0.06)	120.5 (4.74)	4
	300	22.5 (0.89)	165 (6.5)	20 (0.79)	92 (3.62)	48.3 (1.9)	59 (2.32)	1.6 (0.06)	127 (5)	8
	600	32 (1.26)	165 (6.5)	20 (0.79)	92 (3.62)	48.3 (1.9)	59 (2.32)	6.4 (0.25)	127 (5)	8
	1500	45 (1.77)	215 (8.46)	26 (1.02)	92 (3.62)	48.3 (1.9)	59 (2.32)	6.4 (0.25)	165 (6.5)	8
3 inch	150	24 (0.95)	190 (7.48)	20 (0.79)	127 (5)	76 (3)	89 (3.50)	1.6 (0.06)	152.5 (6)	4
	300	29 (1.14)	210 (8.27)	22 (0.87)	127 (5)	76 (3)	89 (3.50)	1.6 (0.06)	168.5 (6.63)	8
	600	38.5 (1.52)	210 (8.27)	22 (0.87)	127 (5)	76 (3)	89 (3.50)	6.4 (0.25)	168.5 (6.63)	8
4 inch	150	24 (0.95)	230 (9.06)	20 (0.79)	158 (6.22)	94 (3.69)	89 (3.50)	1.6 (0.06)	190.5 (7.5)	8
	300	32 (1.26)	255 (10.04)	22 (0.79)	158 (6.22)	94 (3.69)	89 (3.50)	1.6 (0.06)	200 (7.87)	8
	400	41.5 (1.62)	255 (10.04)	26 (1.02)	158 (6.22)	94 (3.69)	89 (3.50)	6.4 (0.25)	200 (7.87)	8

d: Inside diameter of gasket according to EN 1092-1/ ASME B16.5

d_M: Effective diaphragm diameter

Overview

Diaphragm seals of flange design for pressure transmitters for differential pressure, fixed connection and with flexible capillary

Technical specifications

Diaphragm seals of flange design for pressure transmitters for differential pressure, fixed connection and with flexible capillary

Nominal diameter	Nominal pressure
• DN 80	PN 40
• DN 100	PN 16, PN 40
• 3 inch	Class 150, class 300
• 4 inch	Class 150, class 300
Sealing face	
• For stainless steel, mat. No. 1.4404/316L	To EN 1092-1, form B1 or ASME B16.5 RF 125 ... 250 AA
• For the other materials	To EN 1092-1, form B2 or ASME B16.5 RFSF
Materials	
• Main body	Stainless steel 316L
• Wetted parts	Stainless steel 316L
	• Without foil
	• PTFE (for vacuum on request)
	• ECTFE (for vacuum on request)
	• PFA (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
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)

Diaphragm seals of flange design

For differential pressure, fixed connection and with capillary

Selection and Ordering data		Order No. Ord. code
Diaphragm seal	D)	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■)		1■■■■-■B■■■
Flange, connection to EN 1092-1		
Nom. diam.	**Nom. press.**	
• DN 80	PN 40	D
• DN 100	PN 16	G
	PN 40	H
Flange, connection to ASME B16.5		
Nom. diam.	**Nom. press.**	
• 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 J1Y
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 foil		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
Other version Add Order code and plain text: Wetted parts materials: ...		Z K1Y
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: 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
• Glycerin/water[2]		6
• Food oil (FDA listed)		7
Other version Add Order code and plain text: Filling liquid: ...		9 M1Y

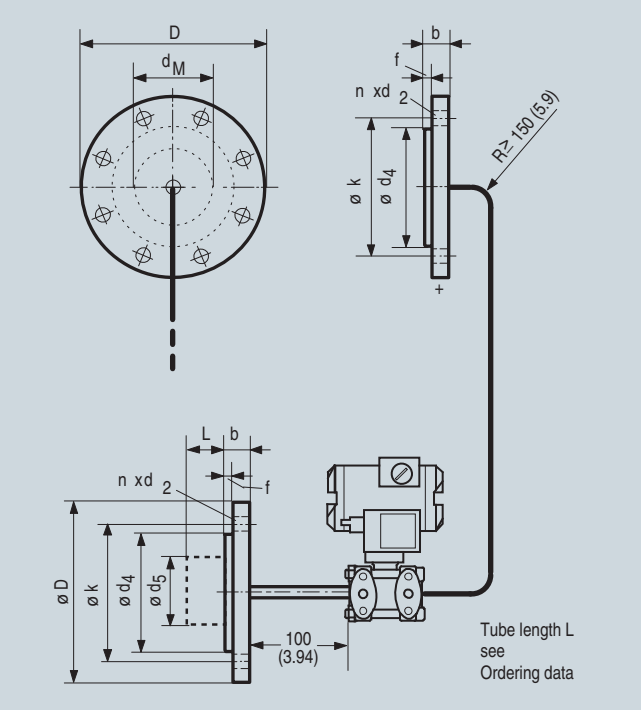
Selection and Ordering data		Order No. Ord. code
Diaphragm seal	D)	7MF4913-
Mounting flange (with tube as option) for direct mounting to high-pressure side **and flanged remote seal without tube**, fitted by means of capillary to low-pressure side of SITRANS P for differential pressure, DS III series (7MF443■)		1■■■■-■B■■■
Length of capillary[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

1) For vacuum on request.
2) Not suitable for use in low-pressure range.
3) Max. capillary length, see section "Technical description".
D) Subject to export regulations AL: N, ECCN: EAR99H.

Selection and Ordering data	Order code
Further designs	
Please add "-Z" to Order No. and specify Order code.	
Spark arrestor With spark arrestor for mounting on zone 0 (including documentation)	**A02**
Quality inspection certificate (Factory calibration) to IEC 60770-2	**C11**
Acceptance test certificate to EN 10204, section 3.1	**C12**
Vacuum-proof design for use in low-pressure range	**V03**
Calculation of span of associated pressure transmitter Enclose filled-in questionnaire with order	**Y05**

For differential pressure, fixed connection and with capillary

Dimensional drawings



Diaphragm seals of flange design with flexible capillary, fixed connection, for connection to a SITRANS P pressure transmitter for differential pressure, dimensions in mm (inch)

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 80	PN 40	24	200	18	138	76	89	2	160	8
DN 100	PN 16	20	200	18	158	94	89	2	180	8
	PN 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)	
3 inch	150	24 (0.96)	190 (7.48)	20 (0.79)	127 (5)	76 (3)	89 (3.50)	1,6 (0.06)	152,5 (6)	4
	300	29 (1.14)	210 (8.27)	22 (0.87)	127 (5)	76 (3)	89 (3.50)	1,6 (0.06)	168,5 (6.63)	8
4 inch	150	24 (0.95)	230 (9.06)	20 (0.79)	158 (6.22)	94 (3.69)	89 (3.50)	1,6 (0.06)	190,5 (7)	4
	300	32 (1.26)	255 (10.04)	22 (0.87)	158 (6.22)	94 (3.69)	89 (3.50)	1,6 (0.06)	200 (7.87)	8

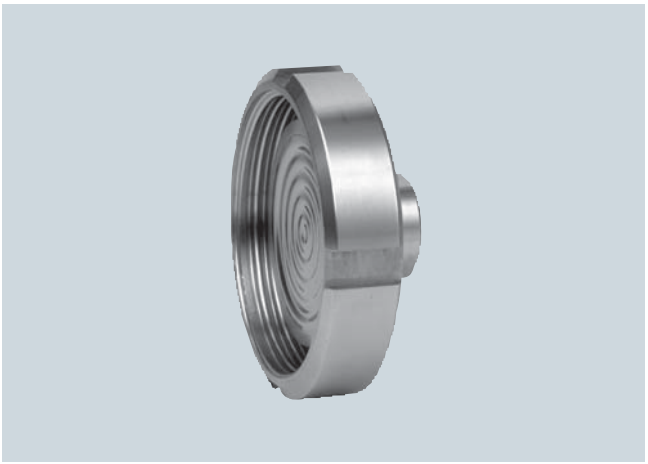
d: Inside diameter of gasket according to EN 1092-1 / ASME B16.5

d_M: Effective diaphragm diameter

Quick-release diaphragm seals

For gage, absolute and differential pressure

Overview



Quick-release diaphragm seals, to DIN 11851 with slotted union nut

Quick-release diaphragm seals, with clamp connection

Quick-release diaphragm seals are available for the following SITRANS P pressure transmitter series:

- For pressure: MK II, DS III, DS III PA, DS III FF
- For differential pressure and flow: DS III, DS III PA, DS III FF

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

Technical specifications

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 40
- 2 inch	PN 40
- 2½ inch	PN 25
- 3 inch	PN 25
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 40
- 2½ inch	PN 25
- 3 inch	PN 25
Sealing face	
• For stainless steel, mat. No. 1.4404/316L	To EN 1092-1, form B1 or ASME B 16.5RF 125 ... 250 AA
• For the other materials	To EN 1092-1, form B2 or ASME B16.5 RFSF
Materials	
• Main body	Stainless steel 316L
• Wetted parts	Stainless steel 316L
• Capillary	Stainless steel, mat. No. 1.4571/316Ti
• Sheath	Spiral hose made of stainless steel, mat. No. 1.4301/316
Maximum pressure	See above and the technical data of the pressure transmitter
Tube length	Without tube
Capillary	
• Length	Max. 10 m (32.8 ft), longer lengths on request
• 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)

Selection and Ordering data		Order No. Ord. code
Quick-release diaphragm seal	D)	**7 M F 4 9 4 0 -**
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		■■ **A 0** ■ **-** ■ **B** ■■■
Nom. diam.	**Nom. press.**	
• Connection to DIN 11851 with slotted union nut		
- DN 25	PN 40	**1 B**
- DN 32	PN 40	**1 C**
- DN 40	PN 40	**1 D**
- DN 50	PN 25	**1 E**
- DN 65	PN 25	**1 F**
- DN 80	PN 25	**1 G**
• Connection to DIN 11851 with screw necks		
- DN 25	PN 40	**2 B**
- DN 32	PN 40	**2 C**
- DN 40	PN 40	**2 D**
- DN 50	PN 25	**2 E**
- DN 65	PN 25	**2 F**
- DN 80	PN 25	**2 G**
• Clamp connection		
- 1½ inch	PN 40	**4 L**
- 2 inch	PN 40	**4 M**
- 2½ inch	PN 40	**4 N**
- 3 inch	PN 40	**4 P**
Other version Add Order codes and plain text:		
Nominal diameter: ...		**9** **H 1 Y**
Nominal pressure: ...		**Z** **J 1 Y**
Filling liquid		
• Glycerin/water[2]		**6**
• Food oil (FDA listed)		**7**
Other version Add Order code and plain text: Filling liquid: ...		**9** **M 1 Y**
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** **N 1 Y**
Further designs		Order code
Please add "-Z" to Order No. and specify Order code.		
Quality inspection certificate (Factory calibration) to IEC 60770-2		**C11**
Acceptance test certificate		**C12**
to EN 10204, section 3.1		
Vacuum-proof design		**V01**
for use in low-pressure range		

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

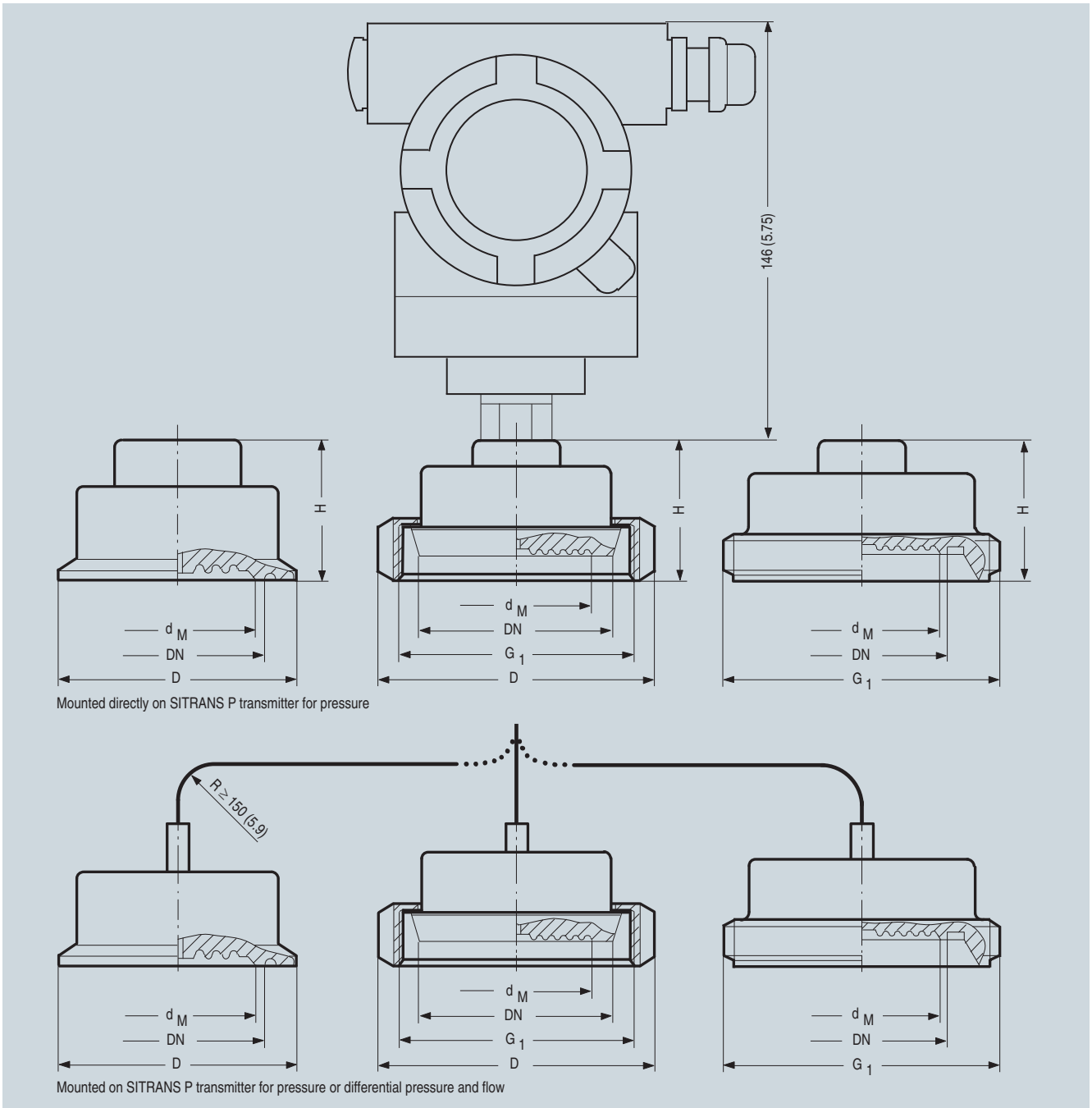
Selection and Ordering data		Order No. Ord. code
Quick-release diaphragm seal	D)	**7 M F 4 9 4 3 -**
for SITRANS P pressure transmitters for pressure for differential pressure and flow, type 7MF443■; order separately Filling liquid: Food oil (FDA listed) Material: Stainless steel, mat. No. 1.4435 Delivery unit: 2 off		■■ **A 0** ■ **-** ■ **B** ■■■
Nom. diam.	**Nom. press.**	
• 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**
• Clamp connection		
- 2 inch	PN 40	**4 M**
- 2½ inch	PN 40	**4 N**
- 3 inch	PN 40	**4 P**
Other version Add Order codes and plain text:		
Nominal diameter: ...		**9** **H 1 Y**
Nominal pressure: ...		**Z** **J 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 (Factory calibration) to IEC 60770-2		**C11**
Acceptance test certificate		**C12**
to EN 10204, section 3.1		
Vacuum-proof design		**V03**
for use in low-pressure range		

[1] Not suitable for use in low-pressure range.
[2] Max. capillary length, see section "Technical description"
D) Subject to export regulations AL: N, ECCN: EAR99H.

Quick-release diaphragm seals

For gage, absolute and differential pressure

Dimensional drawings



Clamp connection (left)

DN	Ø d_M		Ø D		H	
(1½ inch)	32	(1.26)	50,5	(2)	35	(1.38)
(2 inch)	40	(1.57)	64	(2.52)	35	(1.38)
(2½ inch)	52	(2.05)	77,5	(3.05)	35	(1.38)
(3 inch)	72	(2.83)	91	(3.58)	35	(1.38)

Connection to DIN 11851 with slotted union nut (center)

DN	Ø d_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:

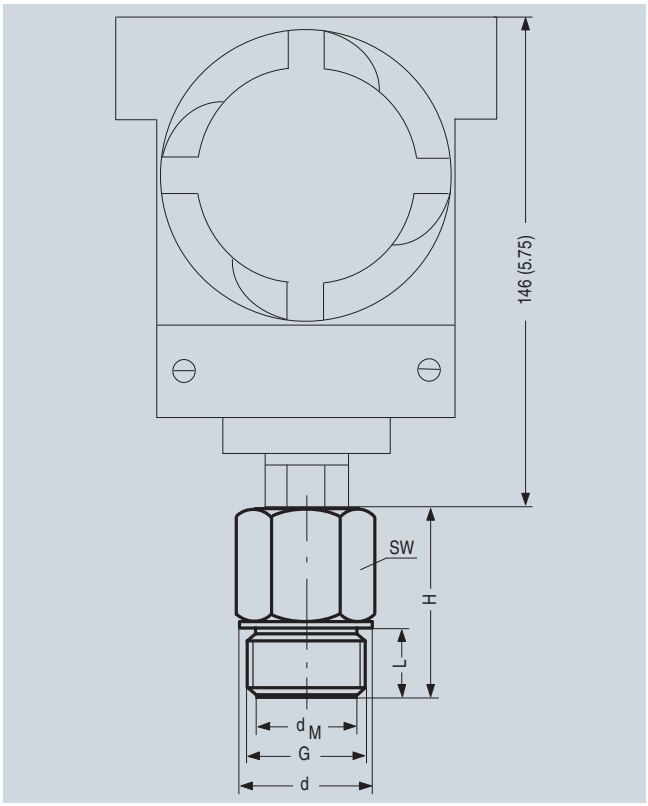
- P300, DS III, DS III PA, DS III FF

Suitable for high pressures, contaminated, fibrous and viscous media in the chemical, paper, food and drink industries.

Design

- Flush-mounted diaphragm
- No dead spaces
- Fixed threaded stems

Dimensional drawings



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)

d_M: Effective diaphragm diameter

Miniature diaphragm seal, dimensions in mm (inch)

Technical specifications

Miniature diaphragm seals	
Span with • G1B • G1½B • G2B	 > 6 bar (> 87 psi) > 2 bar (> 29 psi) > 600 mbar (> 8.7 psi)
Filling liquid	Silicone oil M5 or food oil (FDA listed)
Material • Main body • Diaphragm	 Stainl. steel mat No. 1.4404/ 316L Stainl. steel mat No. 1.4404 / 316L
Maximum pressure	100% of nominal pressure of pressure transmitter, up to maximum of PN 400 (5802 psi) (depending on the seal used)
Temperature of use	Same as pressure transmitter
Temperature range of medium	Same as pressure transmitter
Max. recommended process temperature	150 °C (302 °F)
Weight • G1B • G1½B • G2B	 Approx. 0.3 kg (approx. 0.66 lb) Approx. 0.5 kg (approx. 1.10 lb) Approx. 0.8 kg (approx. 1.76 lb)
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
Miniature diaphragm seals	D) **7MF4960-**
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. 1.4401 Pressure rating, 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**

[1] With 7MF802■ and the measuring cells Q, S, T and U also order the vacuum-tight version.

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

Selection and Ordering data	Order code
Further designs Please add "-Z" to Order No. and specify Order code.	
Quality inspection certificate (Factory calibration) to IEC 60770-2	**C11**
Acceptance test certificate to EN 10204, section 3.1	**C12**
Vacuum-proof design for use in low-pressure range	**V01**

Flushing rings

For diaphragm seals

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.

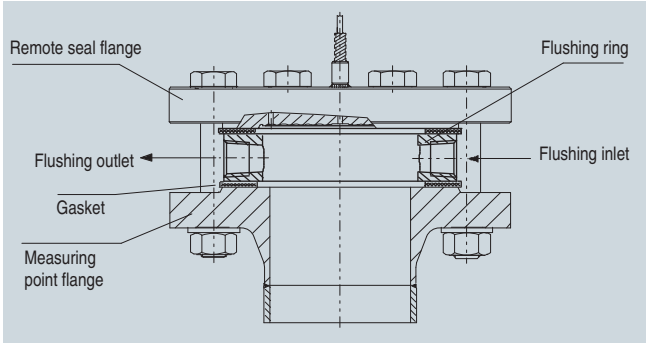
Process connection

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

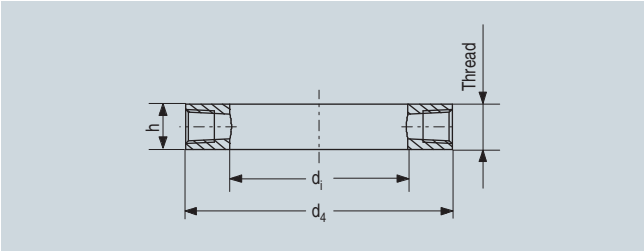
Flushing ring for remote seals of sandwich and flange design	
Nominal diameter	Nominal pressure
• DN 50	PN 16 ... PN 100
• DN 80	PN 16 ... PN 100
• DN 100	PN 16 ... PN 100
• DN 125	PN 16 ... PN 100
• 2 inch	Class 150 ... class 600
• 3 inch	Class 150 ... class 600
• 4 inch	Class 150 ... class 600
• 5 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

Selection and Ordering data		Order No. Ord. code
Flushing ring		D) 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

Selection and Ordering data	Order code
Further designs Please add "-Z" to Order No. and specify Order code.	
Acceptance test certificate to EN 10204, section 3.1	**C12**

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

Dimensional drawings



Connection to EN 1092-1

DN	PN	d_4	d_i	h	Weight
(mm)	(bar)	(mm)	(mm)	(mm)	(kg)
50	16 ... 100	102	62	30	1.10
80	16 ... 100	138	92	30	1.90
100	16 ... 100	162	92	30	3.15
125	16 ... 100	188	126	30	3.50

Connection to ASME B 16.5

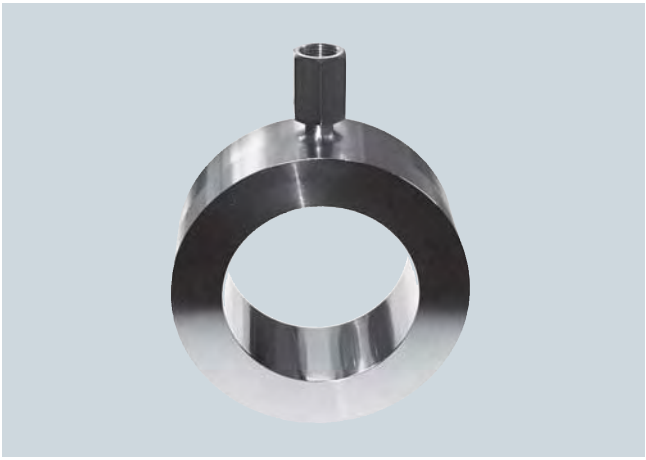
DN	Class	d_4		d_i		h		Weight	
inch		mm	(inch)	mm	(inch)	mm	(inch)	kg	(lb)
2	150 ... 600	92	(3.62)	62	(2.44)	30	(1.18)	0.60	(1.32)
3	150 ... 600	127	(5)	92	(3.62)	30	(1.18)	1.05	(2.31)
4	150 ... 600	157	(6.18)	92	(3.62)	30	(1.18)	2.85	(6.28)
5	150 ... 600	185.5	(7.3)	126	(4.96)	30	(1.18)	3.30	(7.28)

Flushing ring, dimension drawing

Clamp-on seals of flange design

For gage pressure, differential pressure and flow

Overview



Clamp-on seals for flange-mounting

The clamp-on seal is completely integrated in the process line. It is particularly suitable for flowing and highly viscous media.

The clamp-on remote seal consists of a cylindrical jacket into which a thin-walled pipe is welded. It is clamped directly between two flanges in the pipeline.

Design

- Clamp-on seals for flange-mounting (flange design) to EN/ASME for SITRANS P pressure transmitters
  - For pressure: P300, DS III, DS III PA and DS III FF series
  - For differential pressure and flow: DS III, DS III PA and DS III FF
- Sealing face to EN 1092-1 or ASME B16.5
- Connection to the transmitter directly or by means of a flexible capillary (max. 10 m long)
- See Technical data for details of materials used for the wetted parts
- Material used for the capillary, the guard sleeve, the seal's main body and the measuring cell: Stainless steel, mat.-No. 1.4571
- Filling liquid: Silicone oil, high-temperature oil, halocarbon oil, food oil (FDA listed) or glycerin/water (not suitable for uses in low-pressure range)

Function

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

Note:

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

Technical specifications

Clamp-on 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 foil
	• 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

Clamp-on seals of flange design

For gage pressure, differential pressure and flow

Selection and Ordering data		Order No. Ord. code
Clamp-on seal for flange-mounting for SITRANS P pressure transmitters		
for pressure D) 7MF4980 - 7MF403■ and 7MF423■ together with Order code "V01" (vacuum-proof design) and 7MF802■[1]; must be ordered separately, scope of delivery: 1 off		
for differential pressure and flow D) 7MF4983 - 7MF4433 or 7MF4434; 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		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 foil		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)		4
• Glycerin/water[3]		6
• Food oil (FDA listed)		7
Other version Add Order code and plain text: Filling liquid: ...		9 M 1 Y
Connection to transmitter		
• direct (only for 7MF4980)		0
through capillary, length:[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

1) With 7MF802■ and the measuring cells Q, S, T and U also order the vacuum-tight version.
2) For vacuum on request.
3) Not suitable for use in low-pressure range.
4) Max. capillary length, see section "Technical description"

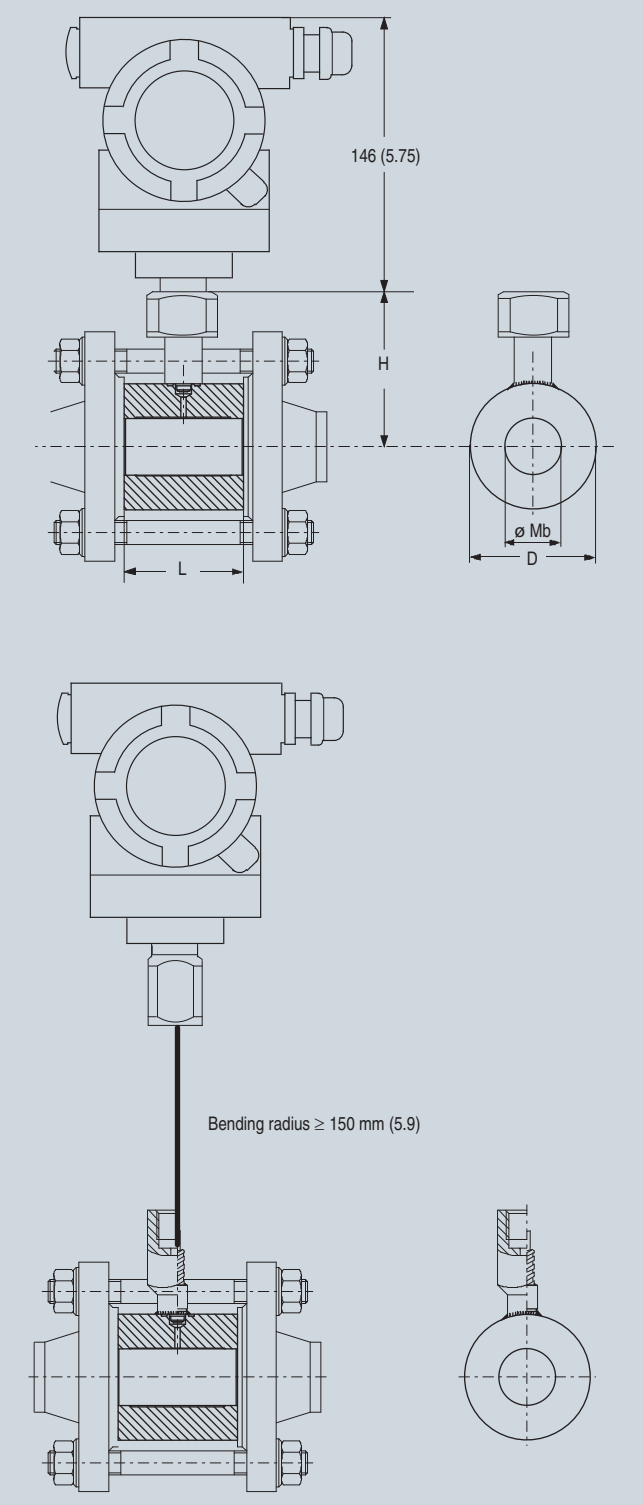
Selection and Ordering data	Order code
Further designs Please add "-Z" to Order No. and specify Order code.	
Spark arrestor With spark arrestor for mounting on zone 0 (including documentation)	
• Pressure and absolute pressure	**A01**
• for differential pressure transmitters	**A02**
Quality inspection certificate (Factory calibration) to IEC 60770-2	**C11**
Acceptance test certificate To EN 10204, section 3.1	**C12**
Vacuum-proof design For use in low-pressure range	**V01**
Calculation of span of associated pressure transmitter Enclose filled-in questionnaire with order Note: Suffix "Y01" required with pressure transmitter!	**Y05**

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

Clamp-on seals of flange design

For gage pressure, differential pressure and flow

Dimensional drawings



Clamp-on seal for flange-mounting, connected to SITRANS P pressure transmitter, dimensions in mm (inch)

Connection to EN 1092-1

DN	PN	D	Mb	L	H
mm	bar	mm	mm	mm	mm
25	6 ... 100	63	28,5	60	78.5
40	6 ... 100	85	43	60	89.5
50	6 ... 100	95	54.5	60	92.5
80	6 ... 100	130	82.5	60	112
100	6 ... 100	150	107	60	122

Connection to ASME B16.5

DN	Class	D	Mb	L	H
(inch)		mm (inch)	mm (inch)	mm (inch)	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)

Overview

Quick-release clamp-on seals, to DIN 11851 with threaded socket

Quick-release clamp-on seals, with clamp connection

Quick-release clamp-on seals for pressure are available for the following SITRANS P pressure transmitter series:

- P300
- DS III
- DS III PA
- DS III FF

Application

The quick-release clamp-on seal is a special design for flowing media and high-viscosity media. Since it is completely integrated in the process pipe, no turbulences, dead volumes or other obstructions to the flow occur. The measured medium flows unhindered through the clamp-on seal and results in self-cleaning of the measuring chamber. Furthermore, the clamp-on seal can be cleaned by a pig.

Design

The quick-release clamp is available in two versions:

- DIN 11851 with threaded socket
- Clamp connection

The clamp-on seal is connected to the pressure transmitter either directly or by way of a capillary.

Function

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

Note:

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

Technical specifications

Clamp-on seals of quick-release design for 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	

Quick-release clamp-on seals

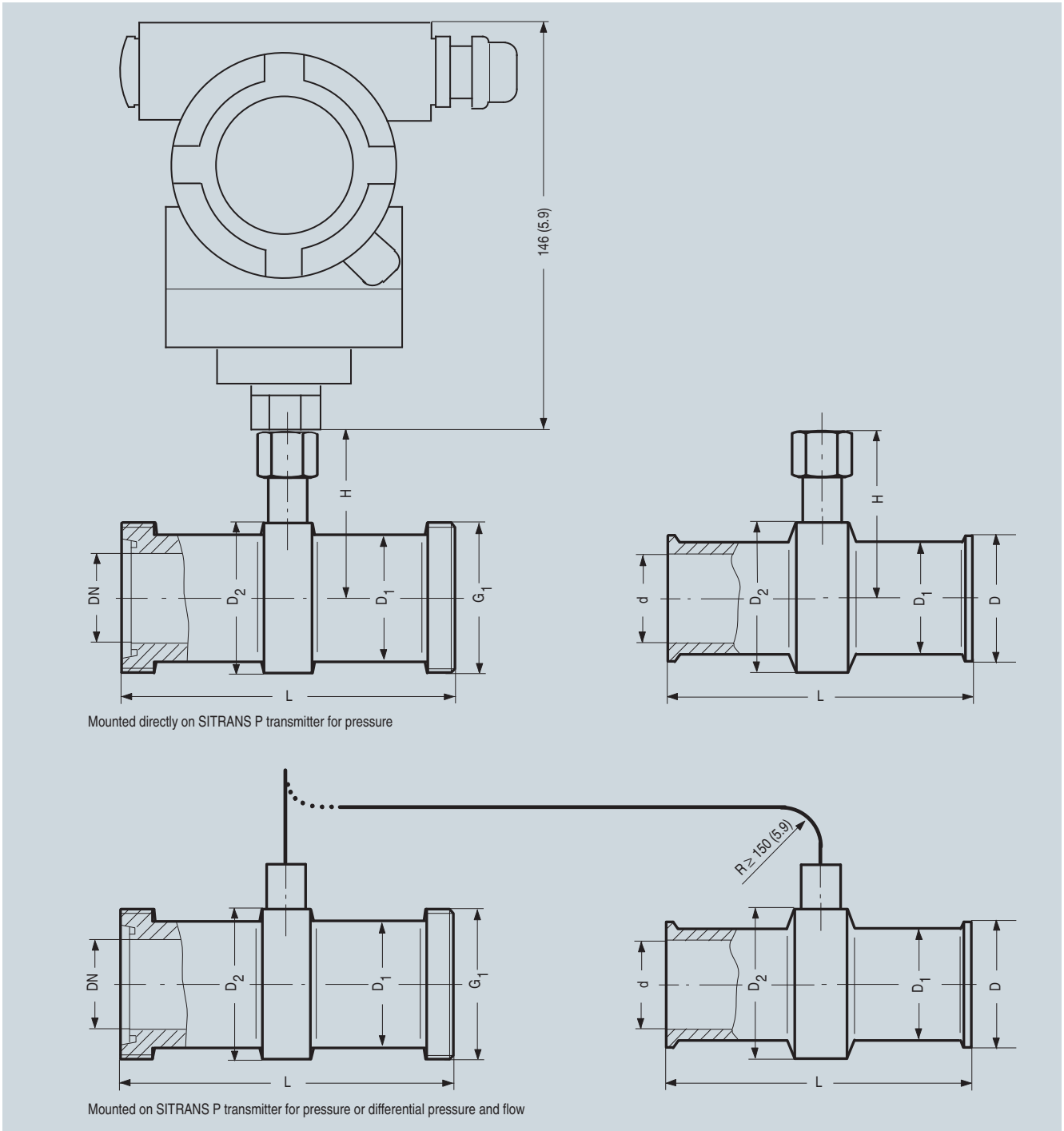
For pressure and absolute pressure

Selection and Ordering data		Order No. Ord. code
Quick-release clamp-on seal		D) **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 40	**4L**
- 2 inch	PN 40	**4M**
- 2½ inch	PN 40	**4N**
- 3 inch	PN 40	**4P**
Other version Add Order codes and plain text:		
Nominal diameter: ...		**9** **H1Y**
Nominal pressure: ...		**Z** **J1Y**
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**

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

Selection and Ordering data	Order code
Further designs Please add "-Z" to Order No. and specify Order code.	
Quality inspection certificate (Factory calibration) to IEC 60770-2	**C11**
Acceptance test certificate to EN 10204, section 3.1	**C12**
Vacuum-proof design for use in low-pressure range	**V01**

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 clamp-on seal, dimensions in mm (inch)

Measuring setups

Overview

This section shows examples of typical measuring setups for using SITRANS P pressure transmitters with and without remote seals.

Equations for calculating start of scale and full scale are provided for each example.

Questionnaires are included to help you select the right combination of remote seal and pressure transmitter.

Installation

Remote seals of sandwich design are fitted between the connection flange of the measuring point and a dummy flange. Remote seals of flange design are fitted directly on the connection flange of the measuring point. The respective pressure rating of the dummy flange or the flanged remote seal must be observed.

The pressure transmitter should be installed below the connection flange (and below the lower connection flange in the case of differential pressure transmitters). This arrangement 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.

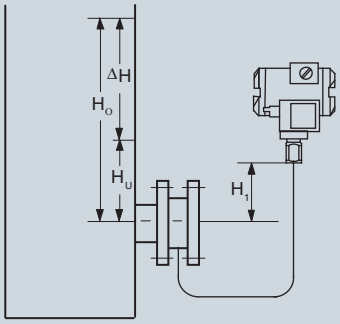
Possible combinations of pressure transmitters and remote seals

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	7MF4903 7MF4923
E	7MF4433 7MF4434 7MF4435	7MF4913
G, H and J	7MF4433 7MF4434 7MF4435	7MF4903 7MF4923

Dimensional drawings

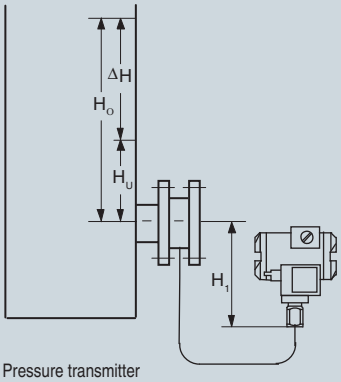
Types of installation for pressure and level measurements (open vessels)

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: $p_{MA} = \rho_{FL} \cdot g \cdot H_U + \rho_{Oil} \cdot g \cdot H_1$

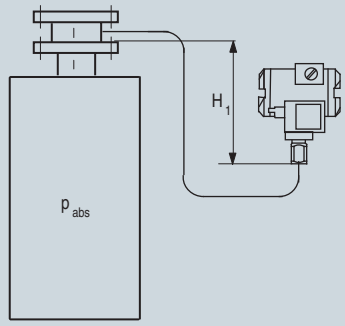
Full-scale: $p_{ME} = \rho_{FL} \cdot g \cdot H_O + \rho_{Oil} \cdot g \cdot H_1$

Legend

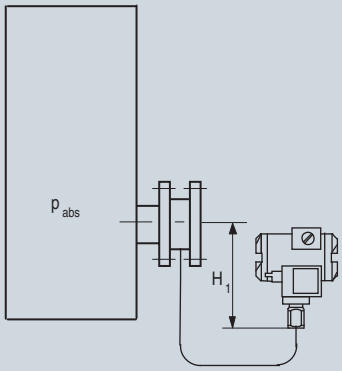
p_{MA}	Start-of-scale value to be set
p_{ME}	Full-scale value to be set
ρ_{FL}	Density of medium in vessel
ρ_{Oil}	Density of filling oil in the capillary to the remote seal
g	Local acceleration due to gravity
H_U	Start-of-scale value
H_O	Full-scale value
H_1	Distance between vessel flange and pressure 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: $p_{MA} = p_{START} + \rho_{Oil} \cdot g \cdot H_1$

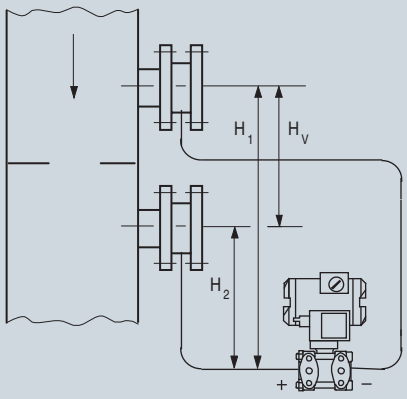
Full-scale: $p_{ME} = p_{END} + \rho_{Oil} \cdot g \cdot H_1$

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: $p_{ME} = p_{END} - \rho_{Oil} \cdot g \cdot H_V$

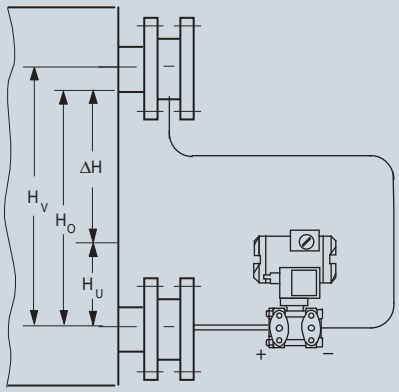
Legend

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)

Measuring setups with remote seals

Types of installation for level measurements (closed vessels)

Installation type E



Installation type E

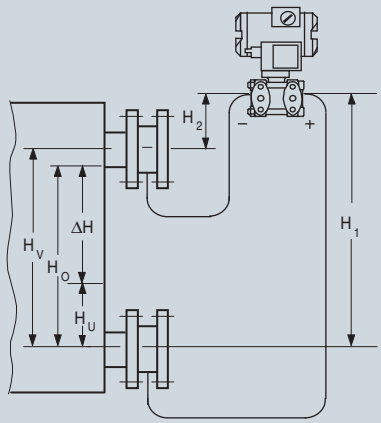
Start-of-scale: $p_{MA} = \rho_{FL} \cdot g \cdot H_U - \rho_{Oil} \cdot g \cdot H_V$

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)

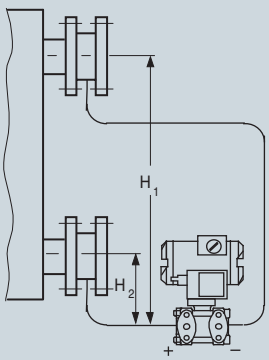
Installation type G



Pressure transmitter for differential pressure above the upper measuring point, no vacuum

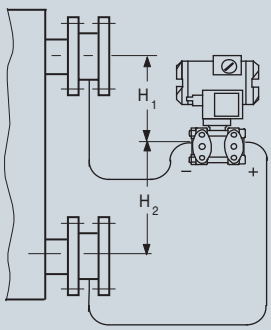
$H_1 \leq 7$ m (23 ft), with halocarbon oil as filling liquid only $H_1 \leq 4$ m (13.1 ft)

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	g	Local acceleration due to gravity
p_{ME}	Full-scale value to be set	H_U	Start-of-scale value
ρ_{FL}	Density of medium in vessel	H_O	Full-scale value
ρ_{Oil}	Density of filling oil in the capillary to the remote seal	H_V	Distance between the measuring points (spigots)

Overview

Notes

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

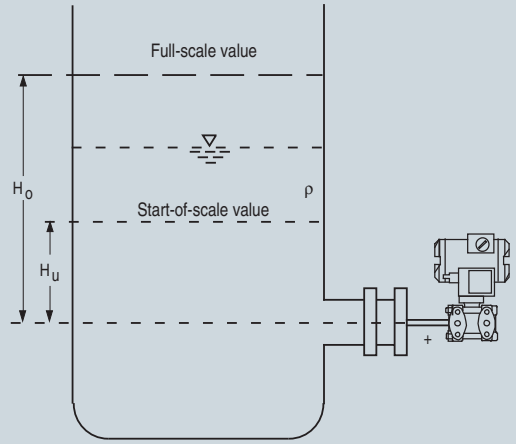
Also you must make sure that the level in the container is always above the top spigot.

- 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



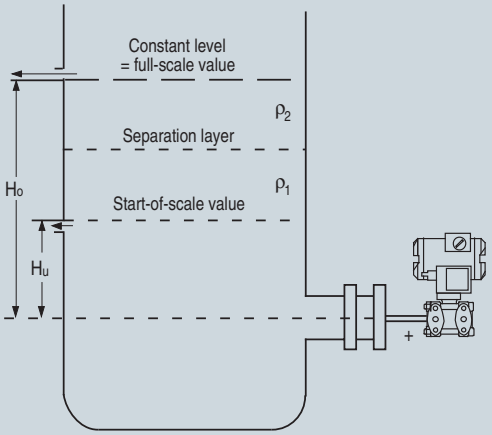
Level measurement

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



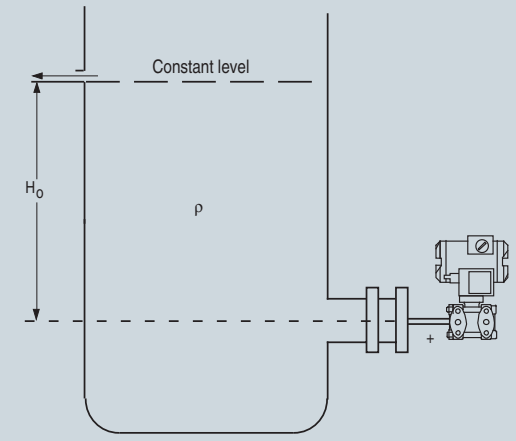
Separation layer measurement

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: $p_{MA} = \rho_{MIN} \cdot g \cdot H_O$

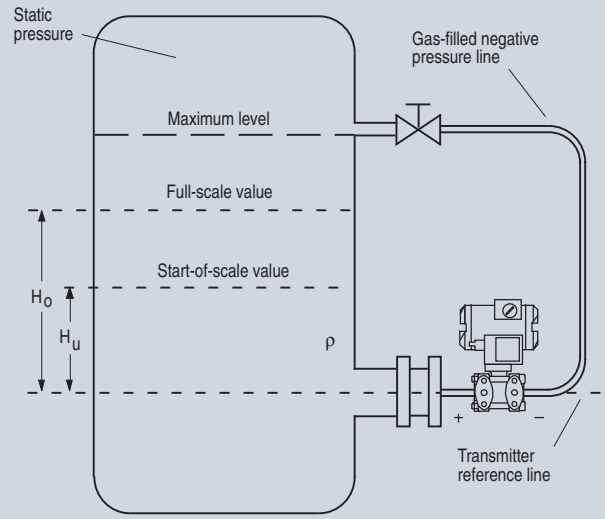
Full-scale: $p_{ME} = \rho_{MAX} \cdot g \cdot H_O$

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 without remote seals

Measuring setups for closed containers



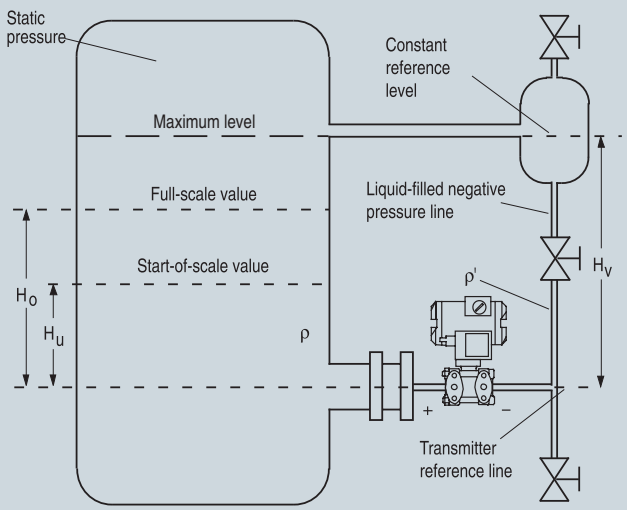
Level measurement, Version 1

Start-of-scale: $\Delta p_{MA} = \rho \cdot g \cdot H_U$

Full-scale: $\Delta p_{ME} = \rho \cdot g \cdot H_O$

Legend

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



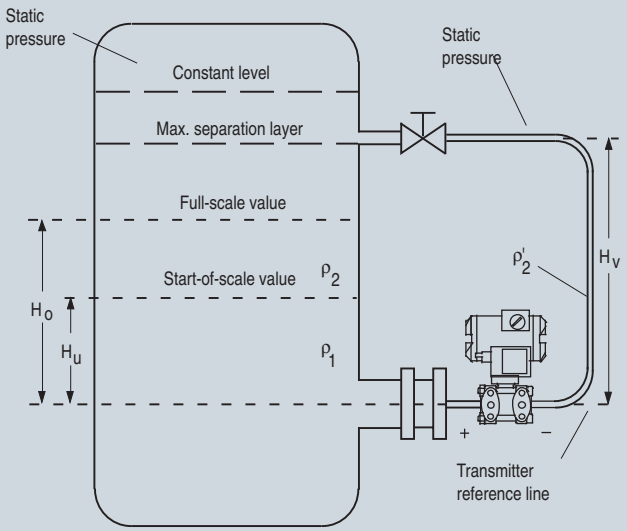
Level measurement, Version 2

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

* Customer:_____ Tag. No.: _____
* Plant: _____ Item No.: _____
* Ordering code:_____ Person responsible: _____
* Ordering department: _____ Phone: _____
* **Transmitter Order No.: 7MF 4 ☐☐☐ –1 ☐☐☐☐ –1 ☐☐☐**

Order No. of transmitter 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!

Checked: Name:
Department:
Date:

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 2/183 and 2/184 ☐ 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

***) 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

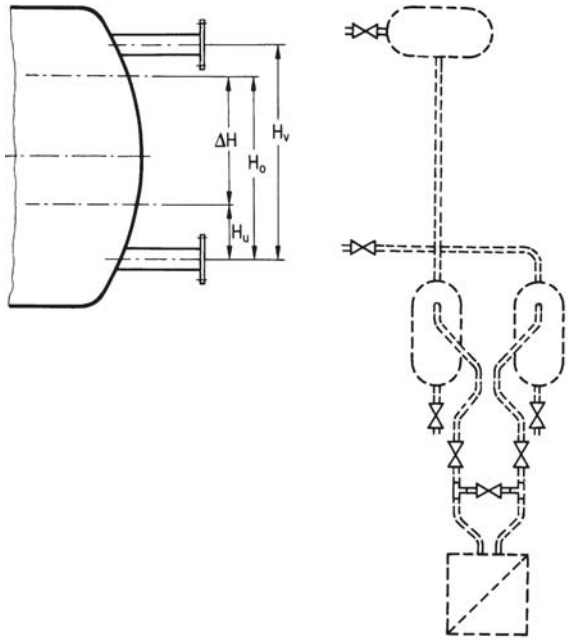
Temperature: ☐ K ☐ °C

Measuring range: ☐ cm ☐ m
(please mark with cross)

Order No. of transmitter [1]:

7 M F 4 _ _ _ _ _ – _ _ _ _ _ – _ _ _ _ _ –Z

Y01



The different pressures and temperatures (densities) in the vessel and in the reference column result in an offset in the start-of-scale and full-scale values.
The calibration data are determined in addition.
It is also checked whether – as a result of the range offset – the ordered transmitter is suitable for this measurement.

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

Please mark type of boiler with a cross: Closed[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

* Customer:_____ Tag. No.: _____
* Plant: _____ Item No.: _____
* Ordering code:_____ Person responsible: _____
* Ordering department: _____ Phone: _____
*** Transmitter Order No.: 7MF 4 ☐☐☐ –1 ☐☐☐☐ –1 ☐☐☐**

Order No. of transmitter 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!

Checked: Name:
Department:
Date:

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 2/183 and 2/184 ☐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

***) Values must be entered here!**

Technical description

Overview

All 21-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).Siemens FI 01 · 2009

New standard DIN EN 61518

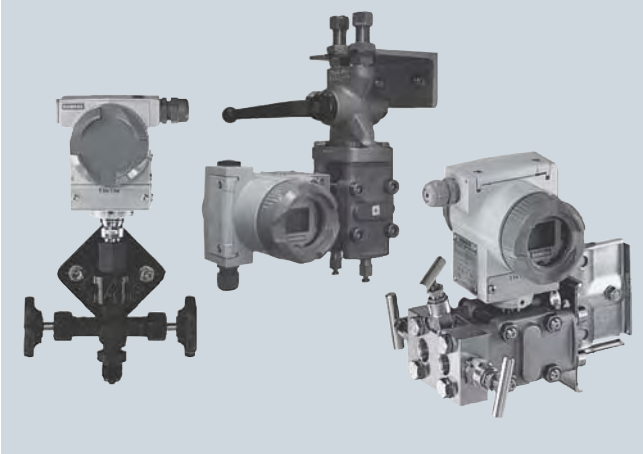
The flange connection between transmitter and valve manifold was modified in the new standard DIN EN 61518. The only connection thread approved for use in the process flanges of the pressure transmitter is $^{7}/_{16}$-20 UNF.

The valve manifolds for M12 screws, including the accessory sets, have therefore been deleted.

Material acceptance test certificate to EN 10204-3.1

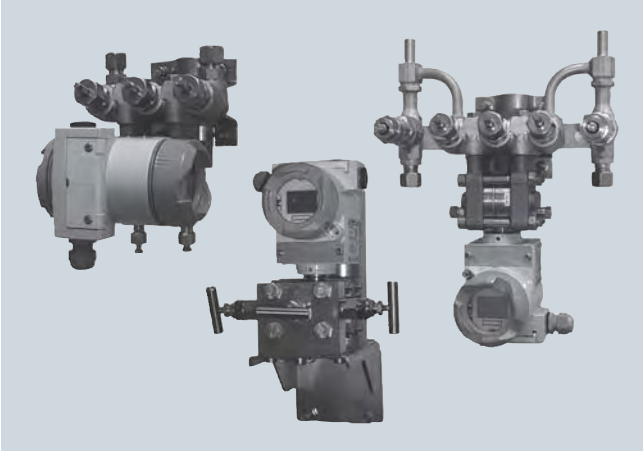
If a material acceptance test certificate to EN 10204-3.1 is required when ordering valve manifolds or shut-off fittings, please note that a single certificate is sufficient for each ordered item type. This means that you will only be charged for one certificate in the cost calculations.

Pressure transmitters with shut-off fittings - mounting examples



SITRANS P transmitter for gage pressure with double shut-off valve, SITRANS P pressure transmitter with multiway cock or 3-spindle valve manifold

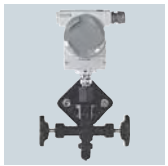
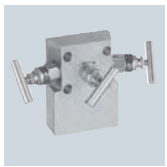
SITRANS P pressure transmitter for differential pressure, mounted in protective box (available on request)



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 "Monoflange" for direct connection to flanges (available on request)

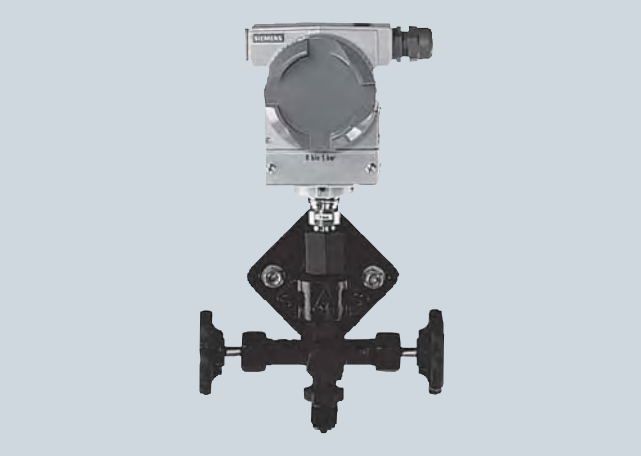
Selection of available shut-off valves

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 P, Z series 7MF1564-.....-.A.. • 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	2/193		Double shut-off valve DN 5 for crossover ½-NPT-F to G½ nipple connection 7MF9011-4EA	2/196	
				2-spindle valve manifold DN 5 for installation in protective boxes 7MF9412-1B	2/216	
				2-way valve manifolds, DN 5, forged version 7MF9401-2J. and 7MF9401-2K.	2/198	
Relative and absolute pressure transmitter with G½"-14 NPT female thread • e.g. • SITRANS P Z series 7MF1564-.....-.H.. • 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	2/196		Double shut-off valve DN 5 for process connection ½-NPT 7MF9011-4DA	2/196	
Absolute pressure transmitter with process connection to IEC 61518 e.g. • SITRANS P DS III series 7MF433.-...	2-spindle valve manifold DN 5 7MF9411-5A.	2/201		2-spindle valve manifold DN 5 for installation in protective boxes 7MF9412-1C.	2/216	
				2-way valve manifolds, DN 5, forged version 7MF9401-2E. and 7MF9401-2F.	2/198	

Selection aid

Transmitters	Shut-off valves for general applications	Page		Shut-off valves for special applications	Page	
Differential pressure transmitter with process connection to IEC 61518 e.g. • SITRANS P DS III series 7MF443.-... and 7MF453.-...	For 3/5-spindle valve manifold DN 5 7MF9411-5B. and 7MF9411-5C.	2/201		3-way valve manifolds, DN 5, forged version 7MF9410-1..	2/206	
				5-way valve manifolds, DN 5, forged version 7MF9410-3..	2/206	
	PN 100 multiway cocks 7MF9004-...	2/204		3-way valve manifolds, DN 8, forged version 7MF9416-1.. and 7MF9416-2..	2/209	
				Valve manifold combination DN 5/DN 8 for vapor measurement 7MF9416-6..	2/212	
				Valve manifold combination DN 8 for vapor measurement 7MF9416-4..	2/214	
				3- and 5-spindle valve manifolds for DN 5 for installation in protective boxes 7MF9412-1D. and 7MF9412-1E.	2/216	 
				3- and 5-spindle valve manifolds for vertical differential pressure lines 7MF9413-1..	2/220	
				Low-pressure multiway cock 7MF9004-4..	2/223	

Overview



Transmitter for pressure with double shut-off valve 7MF9401-...

The shut-off valves for pressure gages are used to shut off the line of the measured medium when dealing with aggressive and non-aggressive gases, vapors and liquids.

Design

A water trap must be connected upstream of the shut-off valve in the case of temperatures of the medium above 120 °C. The shut-off valves form B have a shaft with which they can be secured on an instrument bracket. An adapter is therefore not required to secure these valves. The vent/test connection can be shut off separately with the double shut-off valves DN 5. This permits checking of the zero on the pressure gage. In addition, the characteristic of the pressure gage can be checked using an external pressure source.

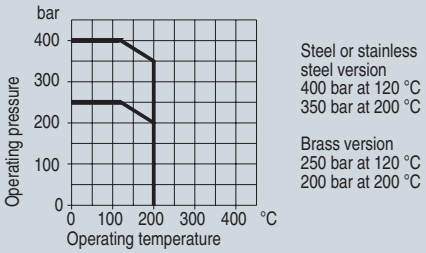
Selection and Ordering data		Order No.
Shut-off valves, form B, DIN 16270		
without test collar, connection shank, without certificate		
Material Valve housing	Maximum permissible working pressure	
CW614N (CuZn39Pb3) (mat. No. 2.0402)	250 bar	**7MF9401-7AA**
P250GH (mat. No. 1.0460)	400 bar	**7MF9401-7AB**
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)	400 bar	**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	**7MF9401-7BA**
P250GH (mat. No. 1.0460)	400 bar	**7MF9401-7BB**
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)	400 bar	**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 8484-1, without certificate		
Material Valve housing	Maximum permissible working pressure	
P250GH (mat. No. 1.0460)	400 bar	**7MF9401-8AB**
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)	400 bar	**7MF9401-8AC**
Shut-off valves, form B, DIN 16271		
with test collar, pipe union with ferrule 12 S DIN EN ISO 8484-1, without certificate		
Material Valve housing	Maximum permissible working pressure	
P250GH (mat. No. 1.0460)	400 bar	**7MF9401-8BB**
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)	400 bar	**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	**7MF9401-7DA**
P250GH (mat. No. 1.0460)	400 bar	**7MF9401-7DB**
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)	400 bar	**7MF9401-7DC**
Double shut-off valves, form B, DIN 16272		
with test collar, pipe union with ferrule 12 S DIN EN ISO 8484-1, without certificate		
Material Valve housing	Maximum permissible working pressure	
P250GH (mat. No. 1.0460)	400 bar	**7MF9401-8DB**
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)	400 bar	**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 2/197.

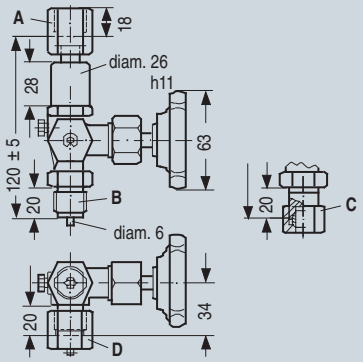
Shut-off valves to DIN 16270, DIN 16271 and DIN 16272

Characteristic curves



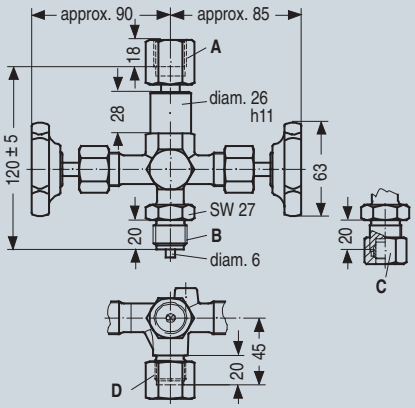
Permissible operating pressure as a function of the permissible operating temperature

Dimensional drawings



A Connection on device side: to DIN 16 284, 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 diam., S series, to DIN EN ISO 8434-1
D Connection on test collar (with sealing cap): thread M20x1,5

Shut-off valve, form B, dimension drawing, dimensions in mm



A Connection on device side: to DIN 16 284, 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 diam., S series, to DIN EN ISO 8434-1
D Connection on test collar (with protective cap): thread M20x1,5

Double shut-off valve, form B, dimension drawing, dimensions in mm

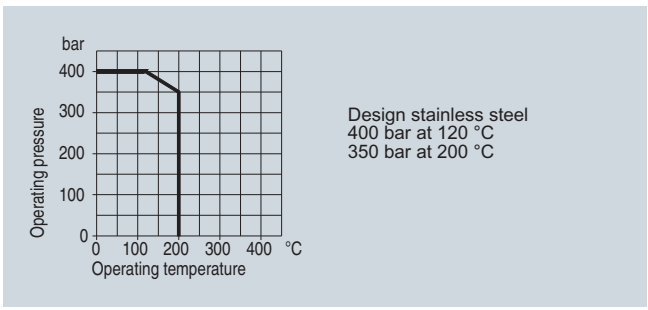
Overview

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.

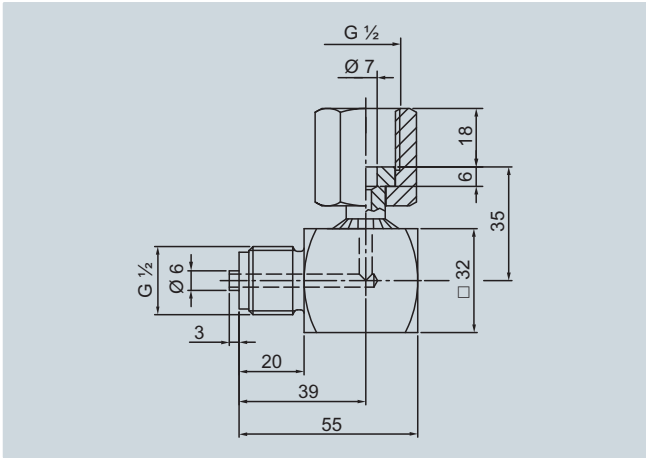
Selection and Ordering data	Order No.
Angle adapters	**7MF9401-7WA**
Material: X 12 CrNiMoTi 17 12 2 (mat. No. 1.45714/316Ti), max. permissible operating pressure 400 bar	
Accessories	
Factory test certificate EN 10204–2.2	**7MF9000-8AB**
Material acceptance test certificate EN 10204-3.1	**7MF9000-8AD**

Characteristic curves



Permissible operating overpressure as a function of the permissible operating temperature

Dimensional drawings



Angle adapter, dimensions in mm

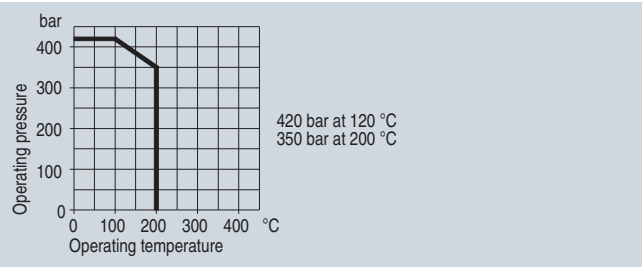
Double shut-off valves

Overview

The double shut-off valves DN 5 are suitable for pressure gages and pressure transmitters and available in 4 versions:

- Sleeve-collar
- Sleeve-sleeve
- Sleeve-nipple
- Collar-collar

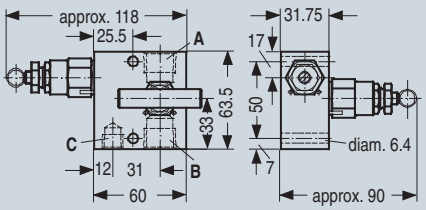
Characteristic curves



Permissible operating pressure as a function of the permissible operating temperature

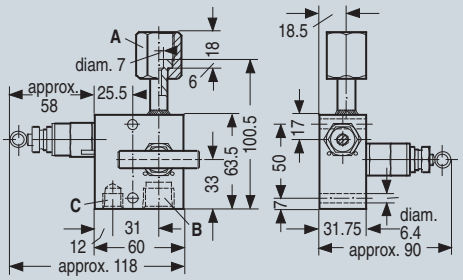
Selection and Ordering data	Order No.
Double shut-off valves DN 5	
Material: X 6 CrNiMoTi 17 13 2 (mat. No. 1.4404/316L), max. permissible working pressure 420 bar;	
• Sleeve-sleeve	**7MF9011-4DA**
• Sleeve-nipple connection	**7MF9011-4EA**
• Sleeve-collar	**7MF9011-4FA**
• Collar-collar	**7MF9011-4GA**
Accessories	
Factory test certificate EN 10204–2.2	**7MF9000-8AB**
Material acceptance test certificate EN 10204-3.1	**7MF9000-8AD**

Dimensional drawings



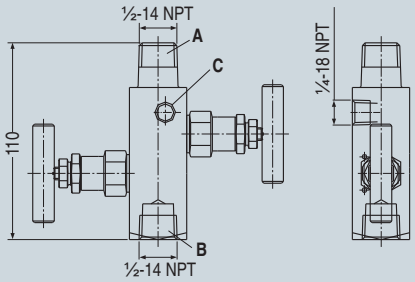
A Connection on device side: ½-14 NPT
B Connection on measurement side: ½-14 NPT
C Vent and test connection: ¼-18 NPT

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



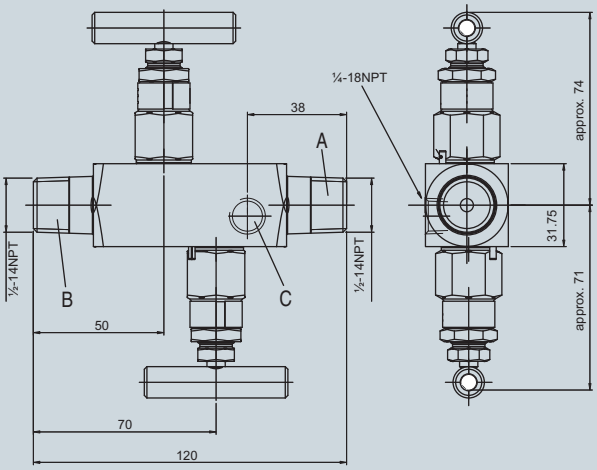
A Connection on device side: nipple to DIN 16 284, G½, SW 27
B Connection on measurement side: ½-14 NPT
C Vent and test connection: ¼-18 NPT

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

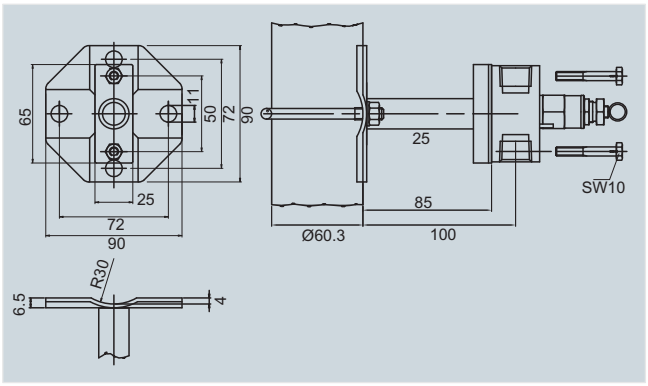
Double shut-off valve DN 5 (collar-collar) 7MF9011-4GA, dimensions in mm

Overview

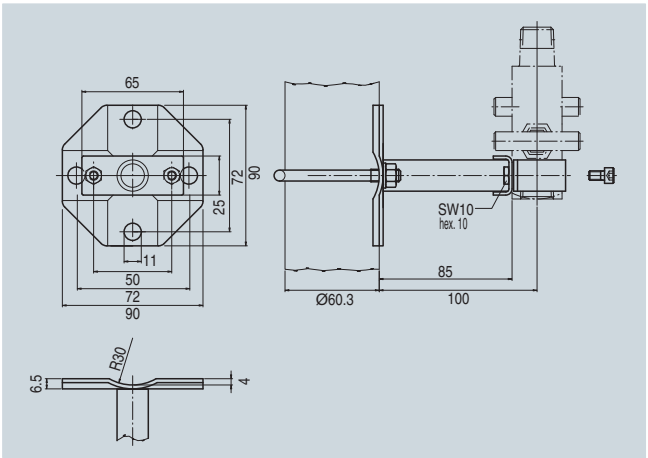
The mounting set is suitable for the double shut-off valves 7MF9011-4.A and for wall, rack and pipe mounting.

Selection and Ordering data	Order No.
Mounting set for shut-off valves	
• 7MF9011-4DA und -4EA	**7MF9011-8AB**
made of stainless steel, scope of delivery: 1x mounting bracket, 2x hexagon screws M6x40, 1x mounting clip, 2x washers 8.4 to DIN 125; 2x hexagon nuts 8.4 to DIN EN 24032	
• 7MF9011-4FA und -4GA	**7MF9011-8AC**
made of stainless steel, scope of delivery: 1x mounting bracket, 2x hexagon screws M6x10, 1x mounting clip, 2x washers 8.4 to DIN 125; 2x hexagon nuts 8.4 to DIN EN 24032	

Dimensional drawings



Mounting bracket (7MF9011-8AB) for shut-off valves 7MF9011-4DA and 7MF9011-4EA for wall, rack or pipe mounting, dimensions in mm



Mounting bracket (7MF9011-8AC) for shut-off valves 7MF9011-4FA and 7MF9011-4GA for wall, rack or pipe mounting, dimensions in mm

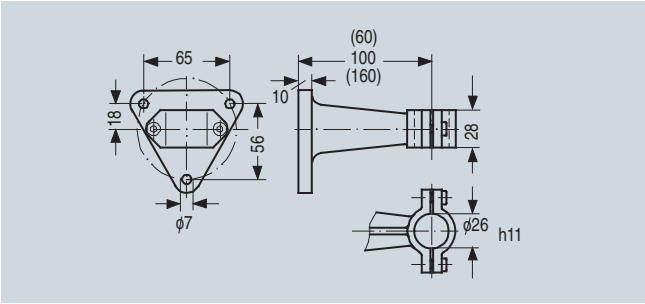
Overview

The instrument brackets are needed to mount the following units:

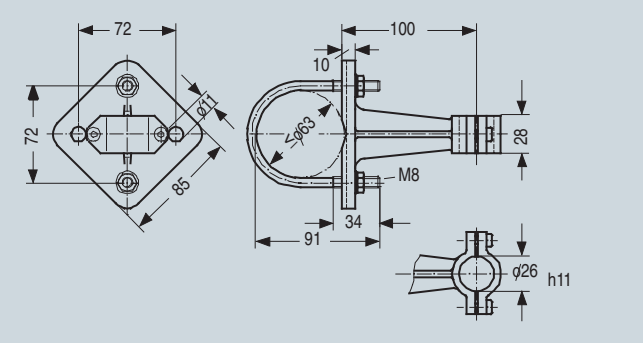
- Pressure gages with threaded connection at the bottom
- Shut-off valves to DIN 16270, DIN 16271 and DIN 16272 (7MF9401-7.. and 7MF9401-8..)

Selection and Ordering data	Order No.
Instrument bracket, form H, DIN 16281	
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	
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	
made of annealed cast iron, galvanized and primed with pipe clamp **for mouting on a pipe** (horizotal/vertical) Screw-type bracket cover	**M56340-A0079**

Dimensional drawings



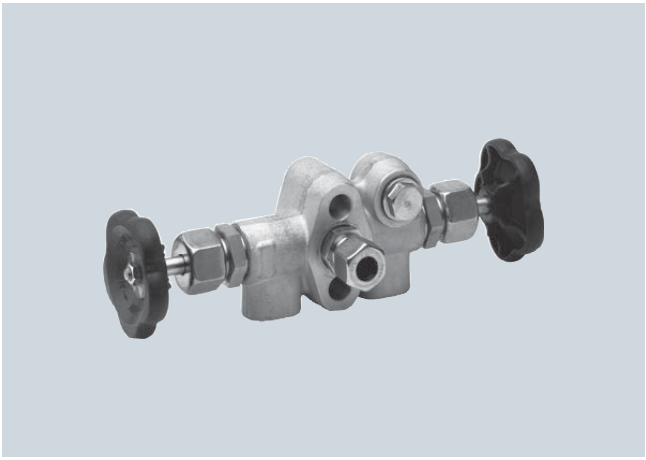
Instrument bracket form H, for wall mounting, M56340-A0046/-A0047, dimensions in mm



Instrument bracket form A, wall or pipe mounting, M56340-A0053/-A0079, dimensions in mm

2-way valve manifolds DN 5

Overview



The two-way valve manifold DN 5 (7MF9401-2..) is used to shut off and vent the line with the measured medium, and to test the connected pressure gage or transmitter.

Benefits

- Available for aggressive and non-aggressive liquids and gases
- Two connection versions available
  - For flanging to pressure transmitters
  - With nipple for connection of pressure gages and pressure transmitters for pressure
- Max. working pressure 420 bar, with version for oxygen max. 100 bar

Application

The 2-way valve manifold is available in versions for aggressive and non-aggressive liquids and gases.

Mounting plates are available for wall mounting, for securing to mounting racks or for pipe mounting.

Design

The 2-way valve manifold DN 5 has 3 connections:

- A process connection (pipe union with ferrule Ø 12 mm)
- A connection for a pressure gage (flange or nipple)
- A test connection (thread $G^3/_8$)

The 2-fold valve manifold DN 5 also has an operating valve and a test valve, each with an internal spindle thread.

Materials used

2-way valve manifold DN 5 for flanging to pressure transmitters

	For non-aggressive 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 hard-ened and tempered	1.4122		
Valve seats	X 6 CrNiMoTi 17 12 2	1.4571/316Ti		
Packings	PTFE	-	PTFE	-

Function

The characteristic of the pressure measuring instrument or pressure transmitter can be tested through the test connection.

A pressure gage for local display can be connected to the test connection.

The two-way valve manifold DN 5 can be used in addition to shut off and vent the line with the measured medium.

Accessories

Accessory set for 2-way valve manifold DN 5 for flanging

- A31: 2 screws $^7/_{16}$-20 UNF x $2^1/_8$ inch to ASME B18.3, 1 flat gasket
- A34: 2 screws $^7/_{16}$-20 UNF x $2^1/_8$ inch to ASME B18.3, 1 O-ring (FPM 90)
- A11: 2 screws M10x55 to DIN EN 4762, 2 washers, 1 flat gasket
- A15 (suitable for oxygen): 2 screws M10x55 to DIN EN 4762, 2 washers, 1 flat gasket
- A16: 2 screws M10x55 to DIN EN 4762, 2 washers, 1 flat gasket (FPM 90)

Note: M10 screws only permissible up to PN 160!

Washers Ø 10.5 to DIN 125

Flat gaskets made of PTFE, max. 420 bar, 80 °C

O-ring to DIN 3771, 20 x 2.65 - S – FPM90, max. 420 bar, 120 °C

Mounting plate

Made of electrogalvanized sheet-steel

- M11: For wall mounting or for securing on rack (72 mm grid)
  Scope of delivery:
  - 1 mounting plate with bolts for mounting on valve manifold
- M12: For pipe mounting
  Scope of delivery:
  - 1 mounting plate M11
  - 2 pipe brackets with nuts and washers for pipes with max. Ø 60.3 mm

Valve manifold 100 bar, suitable for oxygen

- S12: (only in combination with versions for aggressive liquids and gases): Suitable for oxygen

Selection and Ordering data	Order No.
2-way valve manifold DN 5 for flanging to pressure transmitters, max. working pressure 420 bar, weight 1.85 kg (order accessory set and mounting plate with Order code), without certificate	7MF9401 - ■■ A
• for non-aggressive liquids and gases	2 E
• for aggressive liquids and gases	2 F
for fitting to pressure gages or pressure transmitters for pressure, with nipple connection to DIN 16284, max. working pressure 420 bar, weight 1.8 kg (order mounting plate with Order code)[1]	
• for non-aggressive liquids and gases	2 J
• for aggressive liquids and gases	2 K
Accessories	
Factory test certificate EN 10204–2.2	**7MF9000-8AB**
Material acceptance test certificate EN 10204-3.1	**7MF9000-8AD**

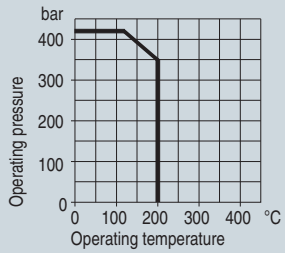
[1] For suitable seals, see page 2/228.

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)		
2x screws $^{7}/_{16}$-20 UNF x $2^{1}/_{8}$ inch to ASME B18.3; chromized steel 1x gasket made of PTFE, max. permissible 420 bar, 80 °C	**A31**	**7MF9001-5CC**
2x screws $^{7}/_{16}$-20 UNF x $2^{1}/_{8}$ inch to ASME B18.3; chromized steel 1x O-ring to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar, 120 °C	**A34**	**7MF9401-5AA**
Accessory set to DIN[2] (required for flanging[3], weight 0.2 kg) 2x screws M10x55 to DIN EN ISO 4762; chromized steel 2x washers Ø 10.5 to DIN 125; 1x gaskets made of PTFE, max. permissible 420 bar, 80 °C		
• Standard design	**A11**	**7MF9001-6AD**
• Version for oxygen	**A15**	**7MF9001-6AE**
2x screws M10x55 to DIN EN ISO 4762; chromized steel 2x washers Ø 10.5 mm to DIN 125; 1x O-ring to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar, 120 °C	**A16**	**7MF9001-6AF**
Mounting plate for valve manifold, made of electrogalvanized sheet-steel		
for wall mounting or for securing on rack (72 mm grid), weight 0.5 kg Scope of delivery: 1 mounting plate with bolts for mounting on valve manifold	**M11**	**7MF9006-6EA**
for pipe mounting, 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, only for 7MF9401-2F. and 7MF9401-2K.	**S12**	

[1] When ordering accessory set or mounting together with the 2-way valve manifold, please use Order code; otherwise use Order No.
[2] Flange connections to DIN 19213 only permissible up to PN 160!
[3] Only required for versions 7MF9401-2E. und -2F.

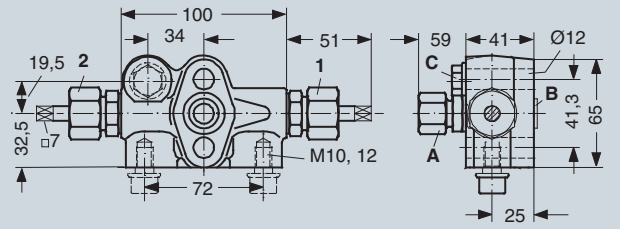
2-way valve manifolds DN 5

Characteristic curves



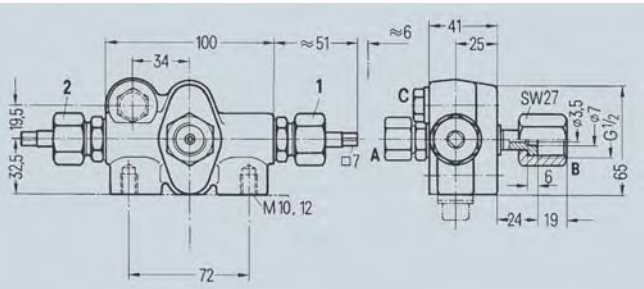
2-way valve manifold DN 5, permissible working pressure as a function of the permissible working temperature

Dimensional drawings



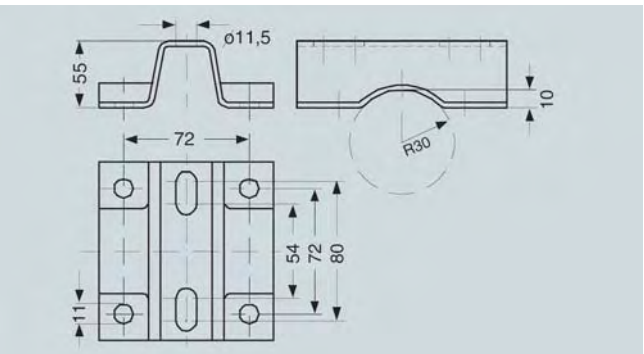
A Process connection,
Pipe union with ferrule, diameter 12 mm,
S series to DIN 2353
B Connection for pressure gauge: flange conn. to DIN EN 61 518, Form A
C Test connection: thread G3/8
1 Operating valve
2 Test valve
Valve design: Internal spindle thread

2-way valve manifold DN 5 (7MF9401-2E/-2F) for flanging, dimensions in mm



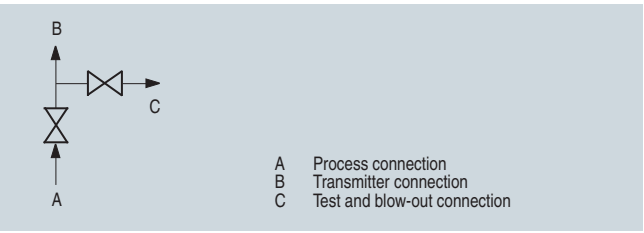
A Process connection,
Pipe union with ferrule, diameter 12 mm,
S series to DIN 2353
B Connection for pressure gauge: nipple conn. to DIN 16 284
C Test connection: thread G3/8
1 Operating valve
2 Test valve
Valve design: internal spindle thread

2-way valve manifold DN 5 (7MF9401-2J/-2K) for connection to pressure gages and pressure transmitters, dimensions in mm



Mounting plate 7MF9006-6.. (M11, M12) for valve manifold, dimensions in mm

Schematics



Connection diagram of the 2-way valve manifolds

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

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
- Each available in version for oxygen

Application

The spindle valve manifolds DN 5 are designed for liquids and gases

Each is available in a version for oxygen on request

Design

All versions of the valve manifolds have a process connection ½-14 NPT. The connection for the pressure transmitter is always designed as a flange connection to EN 61518, form B . The 2-spindle and the 5-spindle valve manifold have in addition a vent and test connection 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, 80 °C	**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, 80 °C	**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, 80 °C	**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, 80 °C	**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, 80 °C	**K15**	**7MF9411-7BB**
2x screws M10x45 to DIN EN 24014; **stainless steel** 2x washers Ø 10.5 mm to DIN 125, **stainless steel**; 1x gasket made of PTFE, max. permissible 420 bar, 80 °C	**K25**	**7MF9411-7BC**

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

Selection and Ordering data	Order code	Order No.
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, 80 °C 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, 80 °C 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)	**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		
Suitable for oxygen		
• for 7MF9411-5A.	**S12**	
• for 7MF9411-5B.	**S13**	
• for 7MF9411-5C.	**S14**	

1) When ordering accessory set or mounting together with the valve manifolds, please use Order code; otherwise use Order No.
2) Flange connections to DIN 19213 only permissible up to 160!

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, 80 °C

Note: Flange connection with M10 screws only permissible up to PN 160!

Mounting plate

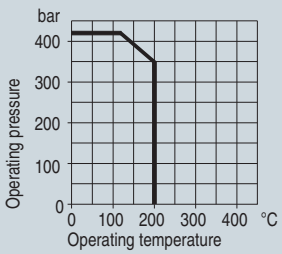
Made of electrogalvanized sheet-steel

- M11: For wall mounting or for securing on rack (72 mm grid)
  Scope of delivery:
  - 1 mounting plate with bolts for mounting on valve manifold
- M12: For pipe mounting
  Scope of delivery:
  - 1 mounting plate M11
  - 2 pipe brackets with nuts and washers for pipes with max. Ø 60.3 mm

Valve manifold 100 bar, suitable for oxygen

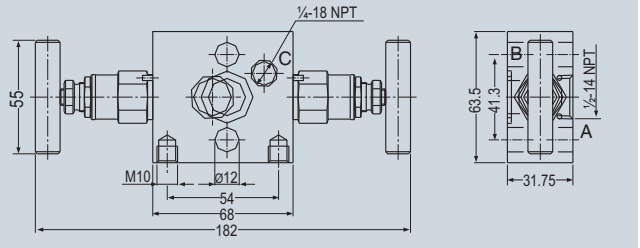
- S12: For 2-way valve manifold
- S13: For 3-way valve manifold
- S13: For 5-way valve manifold

Characteristic curves



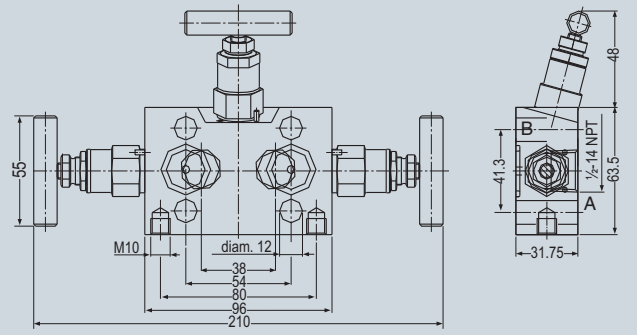
Valve manifolds PN 5 (7MF9411-5..), permissible working pressure as a function of the permissible working temperature

Dimensional drawings



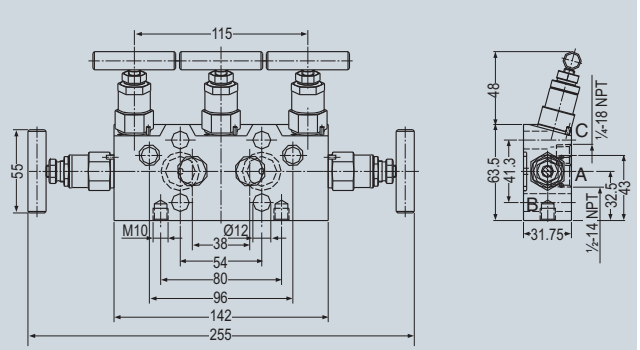
A Process connection: ½-14 NPT
B Transmitter connection: Flange connection to EN 61 518, form B
C Vent / test connection: ¼-18 NPT
Valve design: external spindle thread

2-spindle valve manifold DN 5 (7MF9411-5A.), dimensions in mm



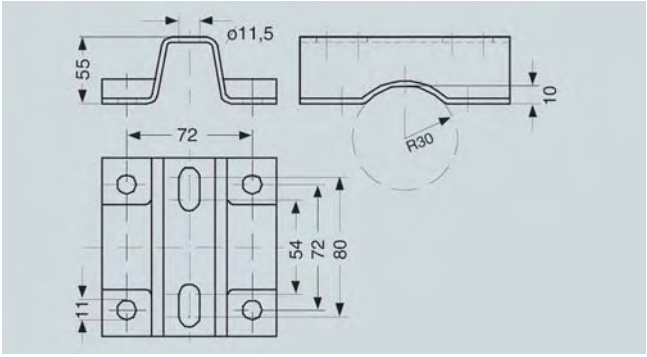
A Process connection: ½-14 NPT
B Transmitter connection: flange connection to EN 61 518, form B
Valve design: external spindle thread

3-spindle valve manifold DN 5 (7MF9411-5B.), dimensions in mm



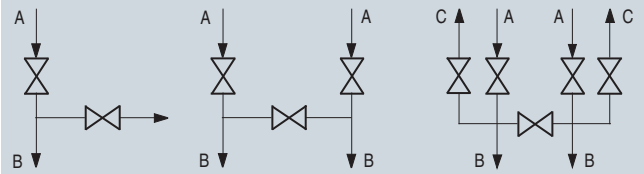
A Process connection: ½-14 NPT
B Transmitter connection: Flange connection to EN 61 518, form B
C Vent / test connection: ¼-18 NPT
Valve design: external spindle thread

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-connection

2-spindle, 3-spindle and 5-spindle valve manifold DN 5, connections

Multiway cocks PN 100

Overview

Multiway cock PN 100 (7MF9004-1P.) for differential pressure transmitters

The multiway cock PN 100 can be flanged to pressure transmitters for differential pressure.

Benefits

- Version available for aggressive liquids, gases and vapors
- Robust design
- Oil-free and grease-free version possible
- One-hand operation

Application

The PN 100 multiway cock is available in versions for aggressive and non-aggressive liquids, gases and vapors.

Design

The multiway cock can be flanged with four screws to pressure transmitters for differential pressure.

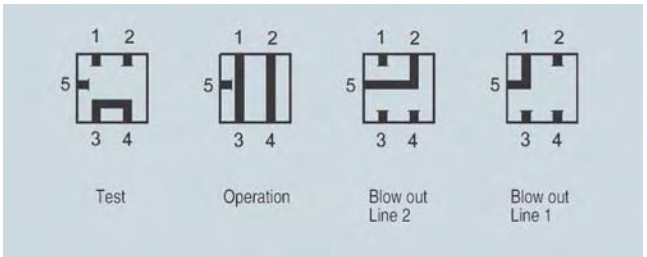
The PN 100 has 2 process connections and one blow-out connection. A steel version of the multiway cock is available for non-aggressive media, and a stainless steel version for aggressive media. The housing is forged in one piece. The switching lever is removable.

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	2 bulkhead glands	
• Connection for blowing out	Pipe union with ferrule	
Max. permissible working temperature	200 °C	
Max. permissible working pressure	100 bar (up to max. 60 °C)	
Weight	2.5 kg	

Selection and Ordering data	Order No.
Multiway cock PN 100 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	**L31**	**7MF9004-5CC**
Accessory set to DIN (required for flanging, weight 0.2 kg) 4x screws M10x25 to DIN EN 24017; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x gaskets made of PTFE, max. permissible temperature 80 °C		
• Standard design	**L11**	**7MF9004-6AD**
• Version for oxygen (together with Order code S11	**L15**	**7MF9004-6AE**
Multiway cock in oil-free and grease-free design Max. PN 63 (instead of PN 100), 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**

[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

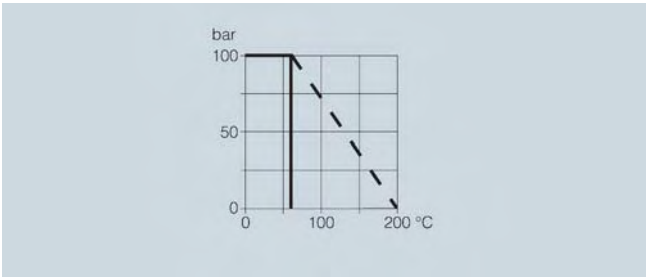
Multiway cock in oil-free and grease-free design

- S11 (only for aggressive liquids, gases and vapors (7MF9004-1Q.)): Max. PN 63 (instead of PN 100), BAM-tested lubricant, gasket suitable for oxygen

Mounting brackets

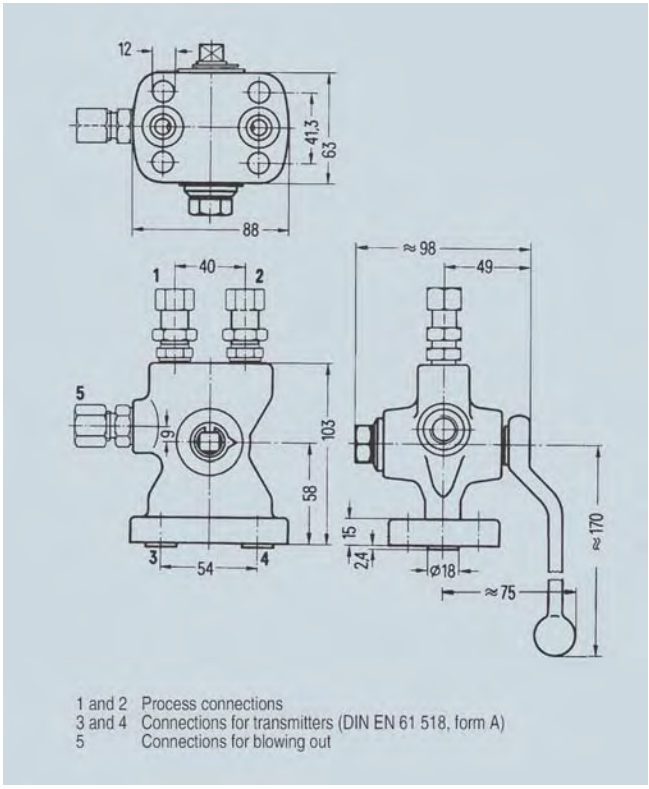
- M13: Required for wall mounting or for securing on rack (72 mm grid); made of electrogalvanized sheet-steel

Characteristic curves

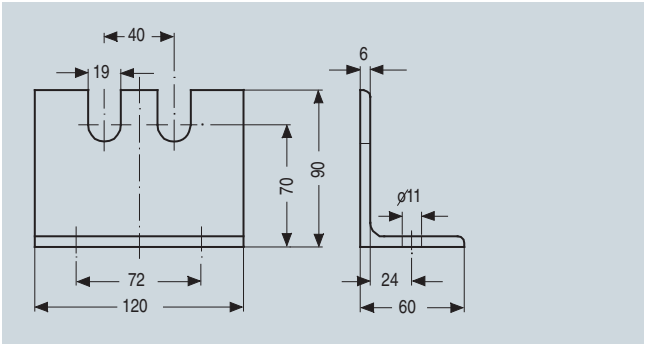


Multiway cock PN 100, permissible operating pressure as a function of the permissible operating temperature

Dimensional drawings



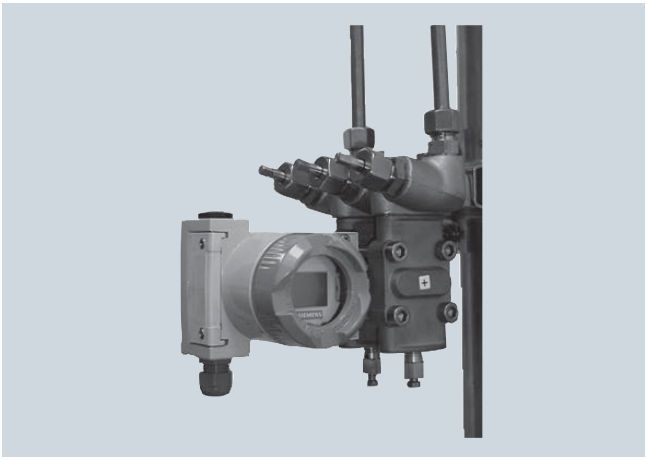
Multiway cock 7MF9004-1P. for flanging to pressure transmitters for differential pressure, dimensions in mm



Mounting bracket 7MF9004-6AA (M13), dimensions in mm

3-way and 5-way valve manifolds DN 5

Overview



The three-spindle and five-spindle valve manifolds DN 5 (7MF9410-1../-3..) are used to shut off the differential pressure lines and to check the transmitter zero.

In addition, the five-way valve manifold permits blowing out of the differential pressure lines.

Benefits

- Available for aggressive and non-aggressive liquids and gases
- Max. working pressure 420 bar, with version for oxygen max. 100 bar

Application

The 3-way and 5-way valve manifolds are available in versions for aggressive and non-aggressive liquids and gases.

Mounting plates are available for wall mounting, for securing to mounting racks or for pipe mounting.

Design

The process connection of the 3-way and 5-way valve manifolds is a pipe union with ferrule.

Both valve manifolds have 2 flange connections for connecting a pressure transmitter.

In addition, the five-way valve manifold has 2 blow-out connections.

Depending on the version the valve manifold has either 3 or 5 valves, each with an internal spindle thread.

Materials used

	For non-aggressive 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	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, 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, 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, 80 °C	**B31**	F) **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, 120 °C	**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, 80 °C		
• 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. permissible 420 bar, 120 °C	**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**	

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!

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

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, 80 °C

O-ring to DIN 3771, 20 x 2.65 – S – FPM90, max. 420 bar, 120 °C

Note: M10 screws only permissible up to PN 160!

Mounting plate

Made of electrogalvanized sheet-steel

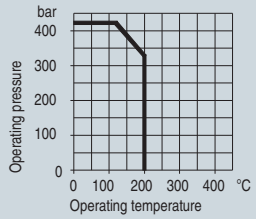
- M11: For wall mounting or for securing on rack (72 mm grid)
  Scope of delivery:
  - 1 mounting plate 7MF9006-6EA with bolts for mounting on valve manifold
- M12: For pipe mounting
  Scope of delivery:
  - 1 mounting plate M11
  - 2 pipe brackets with nuts and washers for pipes with max. Ø 60.3 mm

Valve manifold 100 bar, suitable for oxygen

S12: Only in combination with versions for aggressive liquids and gases

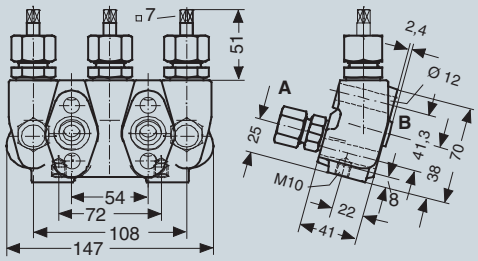
3-way and 5-way valve manifolds DN 5

Characteristic curves



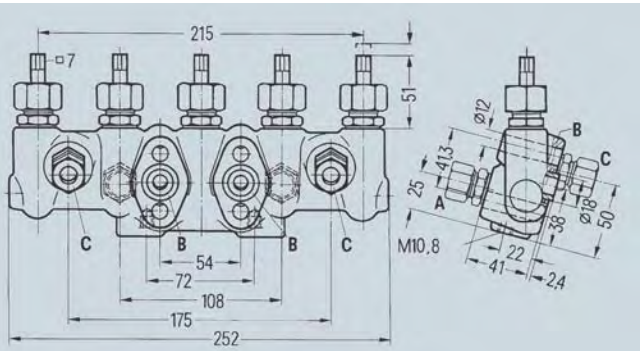
Permissible operating pressure as a function of the permissible operating temperature

Dimensional drawings



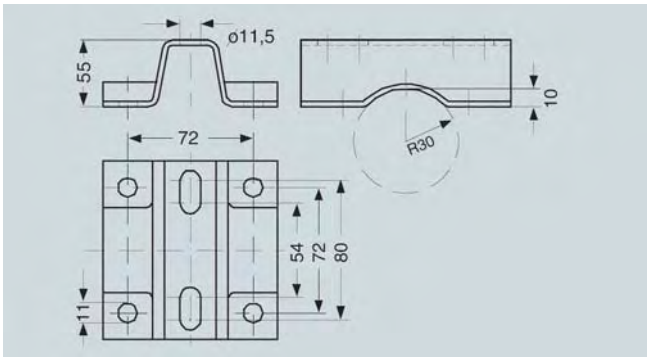
A Process connection (e.g. on primary device):
Pipe union with ferrule, diameter 12 mm, S series to DIN 2353
B Transmitter connection:
Flange connection to EN 61 518, form A
Valve design: internal spindle thread

3-way valve manifold DN 5 (7MF9410-1..), dimensions in mm



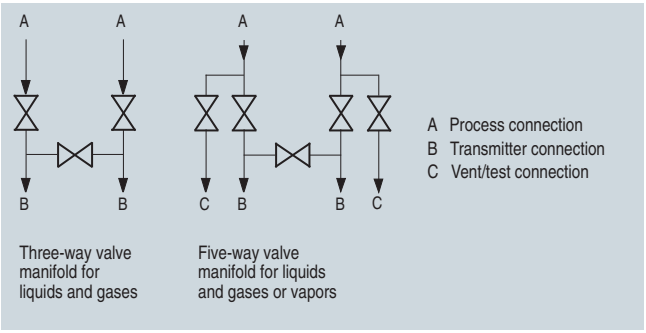
A Process connection (e. g. on primary device):
Pipe union with ferrule, diameter 12 mm, S series to DIN 2353
B Transmitter connection:
Flange connection to EN 61 518, form A
C Blow-out connection:
Pipe union with ferrule, diameter 12 mm, S series to DIN 2353
Valve design: internal spindle thread

5-way valve manifold DN 5 (7MF9410-3..), dimensions in mm



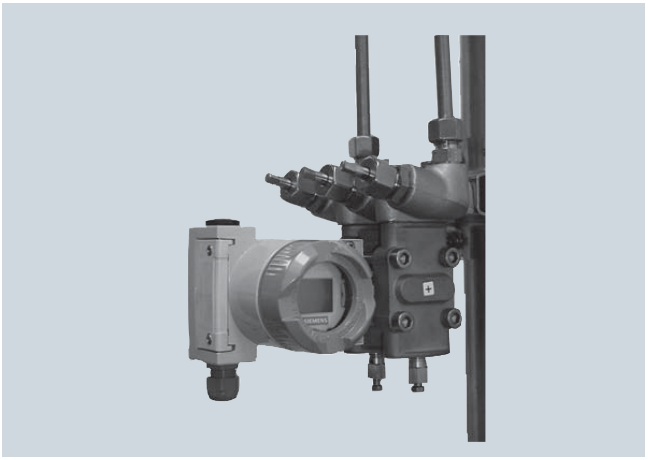
Mounting plate 7MF9006-6.. (M11, M12) for valve manifold, dimensions in mm

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.

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 hard-ened and tempered	1.4122		
Valve seats	X 6 CrNiMoTi 17 12 2	1.4571/316Ti		
Packings	PTFE	-	PTFE	-

Function

The 3-way valve manifold DN 8 performs two functions as standard:

- Shutting off the differential pressure lines
- Checking the pressure transmitter zero

All versions are also available with a test connection, to which a test device for checking the pressure transmitter characteristic can be connected.

Selection and Ordering data	Order No.
3-way valve manifold DN 8 for flanging to pressure transmitters for differential pressure, max. working pressure 420 bar, (order accessory set and mounting plate with Order code), without certificate	**7MF9416 - ■■A**
for non-aggressive liquids and gases procedss connection: Pipe union with ferrule	
• 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	
• 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, 80 °C	**B31**	F)	**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, 120 °C	**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, 80 °C	**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, 120 °C	**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**

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!

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

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, 80 °C

O-ring to DIN 3771, 20 x 2.65 – S – FPM90, max. 420 bar, 120 °C

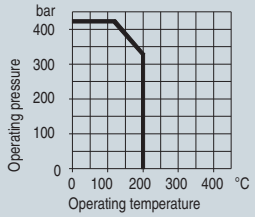
Note: M10 screws only permissible up to PN 160!

Mounting plate

Made of electrogalvanized sheet-steel

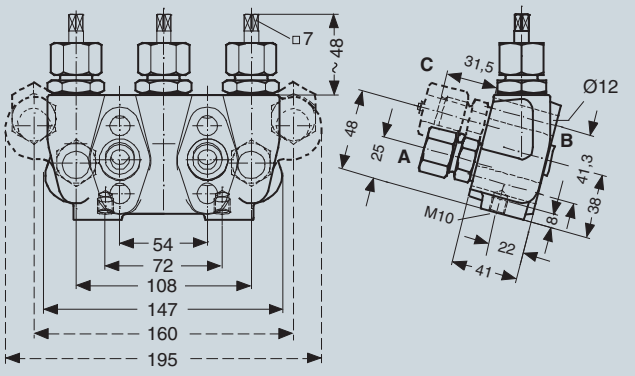
- M11: For wall mounting or for securing on rack (72 mm grid)
  Scope of delivery:
  - 1 mounting plate with bolts for mounting on valve manifold
- M12: For pipe mounting
  Scope of delivery:
  - 1 mounting plate M11
  - 2 pipe brackets with nuts and washers for pipes with max. Ø 60.3 mm

Characteristic curves



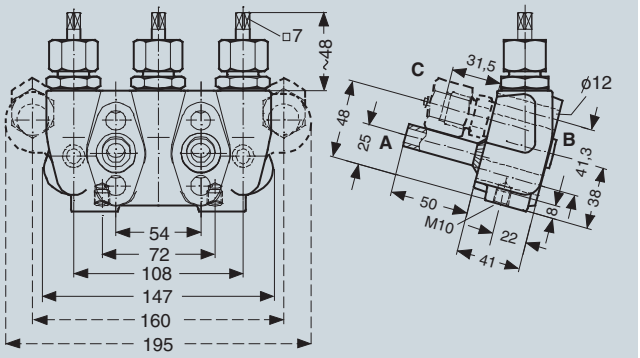
3-way valve manifold DN 8, permissible working pressure as a function of the permissible working temperature

Dimensional drawings



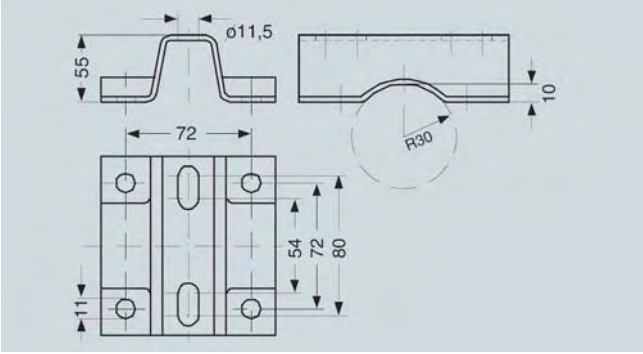
A Process connection (e.g. on primary device):
Pipe union with ferrule, diameter 12 mm, S series to DIN 2353
B Transmitter connection:
Flange connection to EN 61 518, form A
C Test connection:
M20x1.5
Valve design: internal spindle thread

3-way valve manifold DN 8 (7MF9416-1..) with pipe union, dimensions in mm



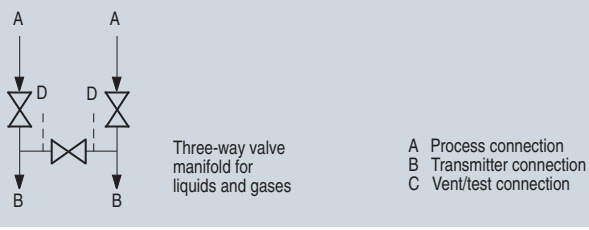
A Process connection (e.g. on primary device):
Welding pin, diameter 14x2,5
B Transmitter connection:
Flange connection to EN 61 518, form A
C Test connection:
M20x1.5
Valve design: internal spindle thread

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



3-way valve manifold DN 8, connections

Valve manifold combination DN 5/DN 8

Overview

The valve manifold combination DN 5/DN 8 (7MF9416-6..) is for pressure transmitters for differential pressure.

The combination is used to shut off and blow out differential pressure lines and to test the pressure transmitter zero.

In the designs with a test connection, a test device can be connected to test the pressure transmitter characteristic.

Benefits

- Max. working pressure 420 bar

Application

The valve manifold combination DN 5/DN 8 is designed for vapors.

Design

The valve manifold combination DN 5/DN 8 has a process connection with welding pins.

The connection for the pressure transmitter is designed as as flange connection, while the blow-out connection is designed as a pipe union with ferrule.

The manifold valves have an internal spindle thread, while the blow-out valves have an external spindle thread.

The optional test connections are M20x1.5.

Materials used

	Valve 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, 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, 120 °C	**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, 120 °C 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 160!

Accessories

Accessory set for valve manifold combination DN 5/DN 8 for flanging

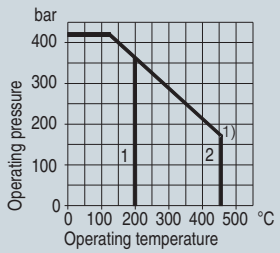
- B34: 4 screws $^{7}/_{16}$-20 UNF x $2^{1}/_{8}$ inch to ASME B18.2.1, 2 O-rings (FPM 90)
- B16: 4 screws M10x55 to DIN EN 24014, 4 washers, 2 O-rings (FPM 90)

Washers Ø 10.5 to DIN 125

O-ring to DIN 3771, 20 x 2.65 - S – FPM90, max. 420 bar, 120 °C

Note: M10 screws only permissible up to PN 160!

Characteristic curves

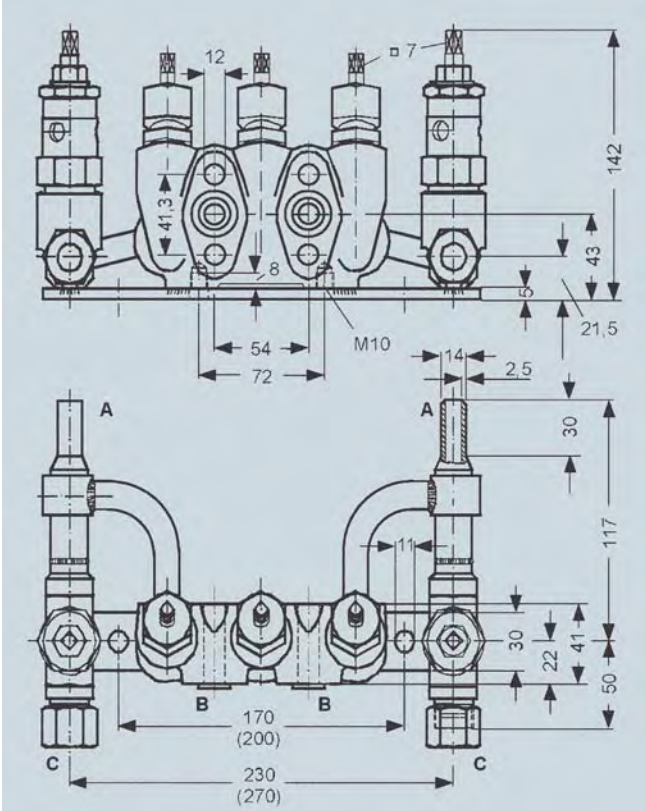


1 Valve manifold
2 Blow-out connection

1) According to DIN 19210 the design can be such that the temperatures for the differential pressure line can be set approx. 100 °C lower than the media temperature.

Permissible operating pressure as a function of the permissible operating temperature

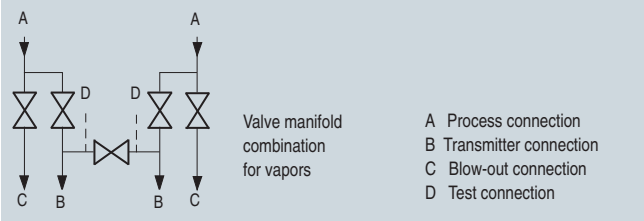
Dimensional drawings



A Process connection (e.g. on primary device):
Welding pin
B Transmitter connection:
Flange conection to EN 61 518, 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 spinde thread

Valve manifold combination DN 5/DN 8 (7MF9416-6C.), dimensions in mm (deviating dimensions for 7MF9416-6D. shown in brackets)

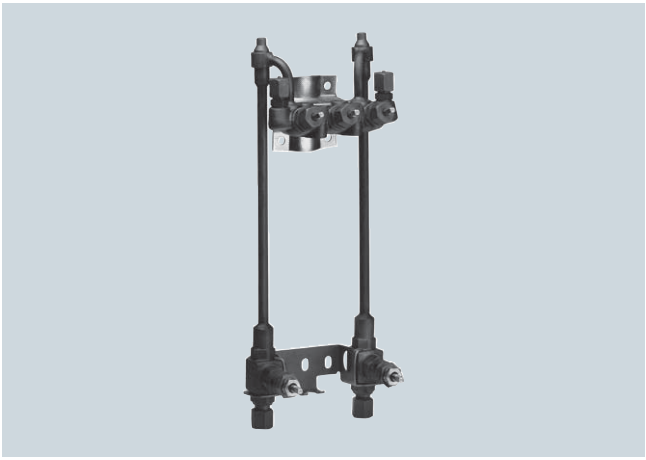
Schematics



Valve manifold combination DN 5/DN 8, connections

Valve manifold combination DN 8

Overview



The valve manifold combination DN 8 (7MF9416-4..) is for pressure transmitters for differential pressure.

It is used to shut off and blow out the differential pressure lines and to check the pressure transmitter zero.

In the designs with a test connection, a test device can be connected to check the pressure transmitter characteristic.

Benefits

- Max. working pressure 420 bar

Application

The valve manifold combination DN 8 is designed for vapors.

Design

The valve manifold combination DN 8 has a process connection with welding pins.

The connection for the pressure transmitter is designed as as flange connection, while the blow-out connection is designed as a pipe union with ferrule.

The manifold valves have an internal spindle thread, while the blow-out valves have an external spindle thread.

The optional test connection is M20x1.5.

The valve manifold combination DN 8 is supplied with a mounting plate.

Materials used

	Valve manifold		**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.

Valve manifold combination DN 8

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, also available in stainless steel on request (order accessory set with Order code), without certificate	**7MF9416 - ■■A**
• without test connection	**4C**
• with test connection M20 × 1.5	**4D**
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, 120 °C	**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, 120 °C 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 160!

Accessories

Accessory set for valve manifold combination DN 8 for flanging

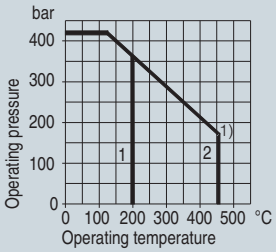
- B34: 4 screws $^{7}/_{16}$-20 UNF x $2^{1}/_{8}$ inch to ASME B 18.2.1, 2 O-rings (FPM 90)
- B16: 4 screws M10x55 to DIN EN 24014, 4 washers, 2 O-rings (FPM 90)

Washers Ø 10.5 to DIN 125

O-ring to DIN 3771, 20 x 2.65 – S – FPM90, max. 420 bar, 120 °C

Note: M10 screws only permissible up to PN 160!

Characteristic curves

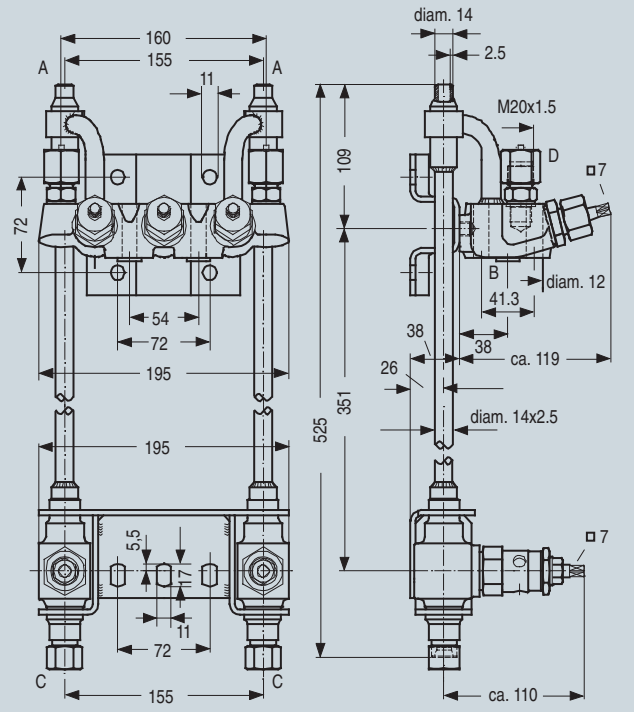


1 Valve manifold
2 Blow-out connection

1) According to DIN 19210 the design can be such that the temperatures for the differential pressure line can be set approx. 100 °C lower than the media temperature.

Permissible operating pressure as a function of the permissible operating temperature

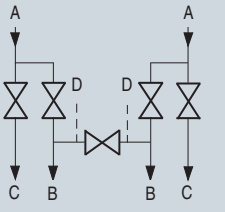
Dimensional drawings



A Process connection (e.g. on primary device):
Welding pin
B Transmitter connection:
Flange connection to EN 61 518, form A
C Blow-out connection:
Pipe union with ferrule, diameter 14 mm, S series to DIN 2353
C Test connection (only with Order No. 7MF9416-4D.):
M20x1.5
Valve design:
Manifold valves: internal spindle thread
Blow-out valves: external spindle thread

Valve manifold combination DN 8 (7MF9416-4..), dimensions in mm

Schematics



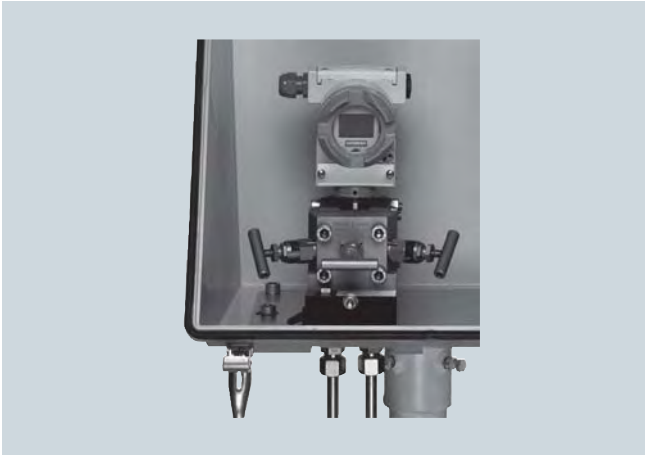
Valve manifold combination for vapors

A Process connection
B Transmitter connection
C Blow-out connection
D Test connection

Valve manifold combination DN 8, connections

2-, 3- and 5-spindle valve manifolds for installing in protective boxes

Overview



The two-spindle, three-spindle and five-spindle valve manifolds (7MF9412-1..) are used to shut off the differential pressure lines and to check the transmitter zero.

The five-spindle valve manifold permits venting on the transmitter side and checking of the transmitter characteristic.

These valve manifolds are preferentially used when mounting in protective boxes. In addition, they can also be used for wall, frame or pipe mounting together with the mounting bracket.

Transmitters of the DS series can be operated and read from the front when using these valve manifolds.

Application

The valve manifolds DN 5 are designed for liquids and vapors and for installing in protective boxes.

Each is available in a version for oxygen on request

Design

All versions of the spindle manifolds have a process connection ½-14 NPT.

The connection for the pressure transmitter is always designed as a flange connection to EN 61518, Form A.

The 2-spindle and the 5-spindle valve manifold have in addition a vent and test connection 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 (order accessory set with Order code), without certificate	**7 M F 9 4 1 2 - ■ ■ A**
• 2-spindle valve manifold with rotatng sleeve G½	**1 B**
• 2-spindle valve manifold with flange connection	**1 C**
• 3-spindle valve manifold	**1 D**
• 5-spindle valve manifold	**1 E**
Accessories	
Factory test certificate EN 10204–2.2	**7MF9000-8AB**
Material acceptance test certificate EN 10204-3.1	**7MF9000-8AD**

Selection and Ordering data	Order code	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, 120 °C	**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, 80 °C[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, 120 °C[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, 80 °C[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. permissible 420 bar, 120 °C[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, 80 °C[2] for valve manifold 7MF9412–1D and -1E.	**F15**	**7MF9412-6BA**
4x screws M10x50 to DIN EN 24014; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permissible 420 bar, 120 °C[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, 80 °C[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 suitable for oxygen		
• for valve manifolds 7MF9412-1B. and -1C.	**S12**	
• for valve manifold 7MF9412-1D.	**S13**	
• for valve manifold 7MF9412-1E.	**S14**	

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!

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 toDIN 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 toDIN EN 24014, 4 washers, 2 O-rings (FPM90)
- F16: 4 screws M10x50 toDIN EN 24014, 4 washers, 2 flat-gaskets

Washers Ø 10,5 to DIN 125

Flat-gaskets made of PTFE, max. 420 bar, 80 °C

O-ring to DIN 3771, 20 x 2,65 - S - FPM90; max.420 bar, 120 °C

Note:
Flange connections with M10 screws only permissible up to PN 160!

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

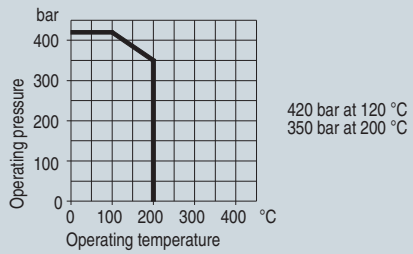
Mounting clips (2 off)

- 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

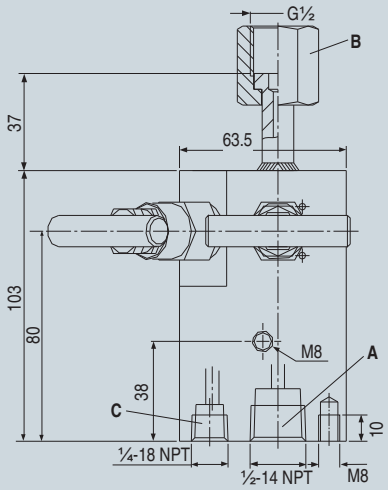
Characteristic curves



Permissible operating pressure as a function of the permissible operating temperature

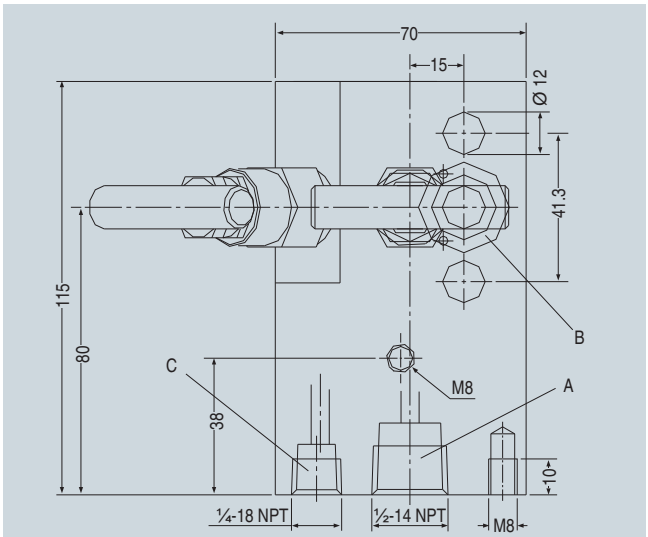
2-, 3- and 5-spindle valve manifolds for installing in protective boxes

Dimensional drawings



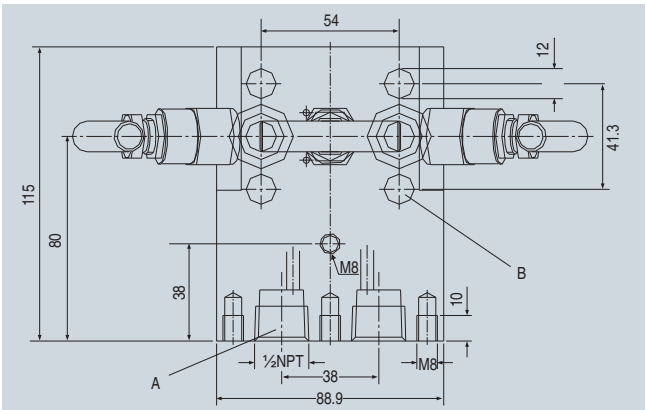
A Process connection: ½-14 NPT
B Transmitter connection:
Nipple to DIN 16 284, G½, SW 27
C Vent / test connection: ¼-18 NPT

2-spindle valve manifold DN 5 (7MF9412-1B..) with rotating sleeve, dimensions in mm



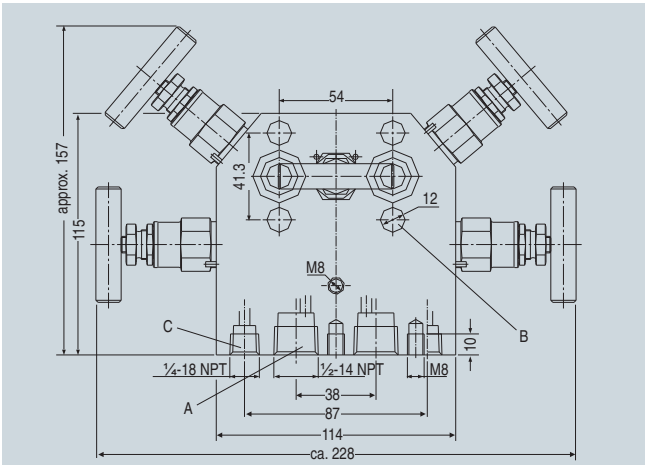
A Process connection: ½-14 NPT
B Transmitter connection:
Flange connection to EN 61 518, form A
C Vent / test connection: ¼-18 NPT
Valve design: external spindle thread

2-spindle valve manifold DN 5 (7MF9412-1C..), dimensions in mm



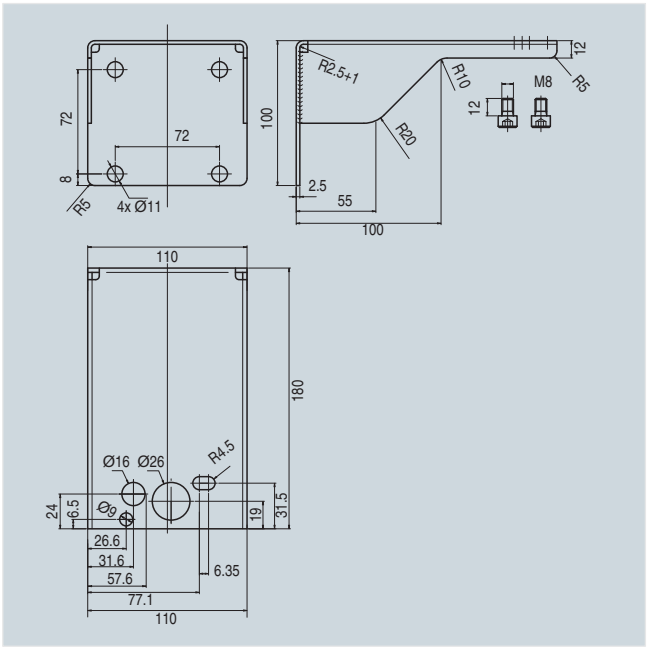
A Process connection: ½-14 NPT
B Transmitter connection: Flange connection EN 61 518, form A
Valve design: external spindle thread

3-spindle valve manifold DN 5 (7MF9412-1D..), dimensions in mm

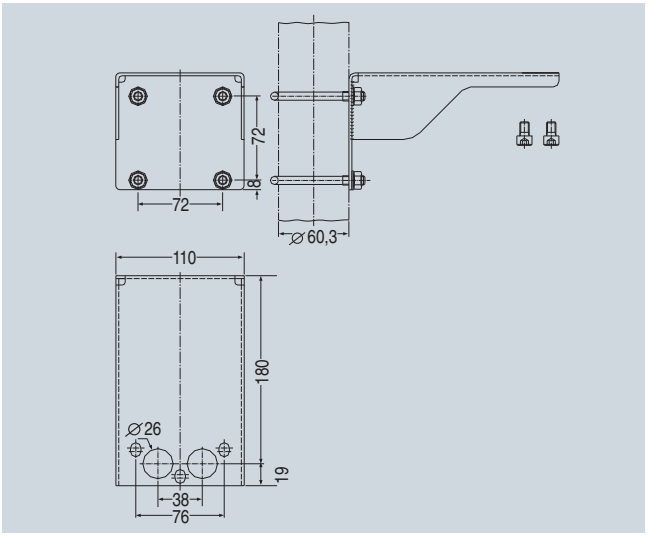


A Process connection: ½-14 NPT
B Transmitter connection:
Flange connection to EN 61 518, form A
C Vent / test conenction: ¼-18 NPT
Valve design: external spindle thread

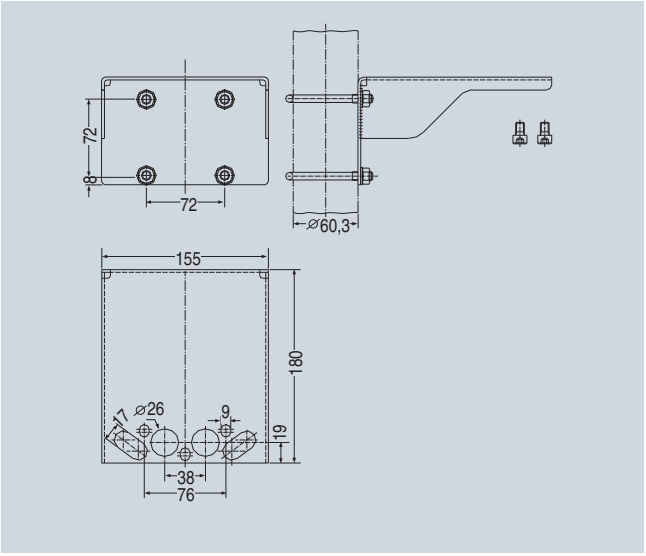
5-spindle valve manifold DN 5 (7MF9412-1E..), dimensions in mm



Mounting bracket (7MF9006-6LA)/(M14) for 2-spindle valve manifolds, dimensions in mm

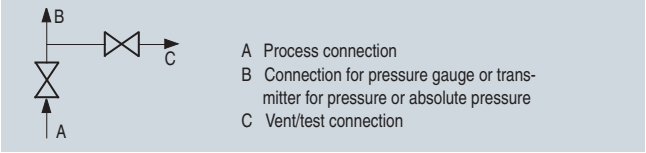


Mounting bracket (7MF9006-6NA)/(M17) for 3-spindle valve manifolds, dimensions in mm

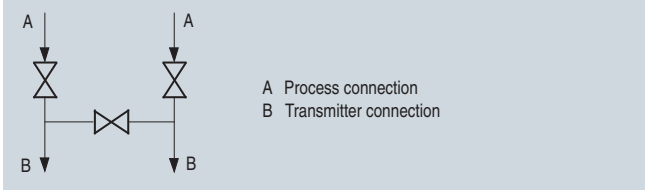


Mounting bracket (7MF9006-6PA)/(M18) for 5-spindle valve manifolds, dimensions in mm

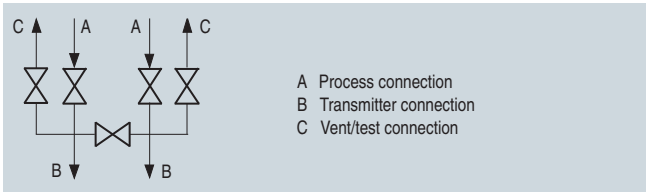
Schematics



2-spindle valve manifold DN 5 (with rotating sleeve G½ or flange connection), connections



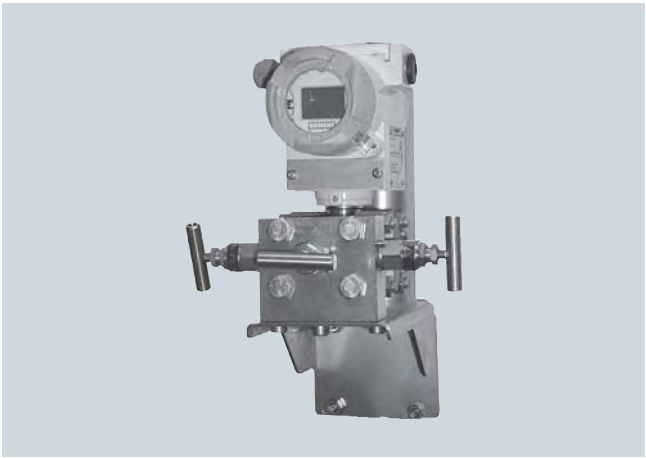
3-spindle valve manifold DN 5, connections



5-spindle valve manifold DN 5, connections

3- and 5-spindle valve manifolds for vertical angular differential pressure lines

Overview



These 3-spindle and 5-spindle valve manifolds 7MF9413-1.. were developed specially for vertical differential pressure lines.

The valve manifolds are used to shut off the differential pressure lines and to check the pressure transmitter zero.

The 5-spindle valve manifold permits venting on the transmitter side and checking of the pressure transmitter characteristic.

Benefits

- For vertical differential pressure lines
- Max. operating pressure 420 bar
- Transmitters of the DS series can be operated and read from the front.

Application

The 3-spindle and 5-spindle valve manifolds for vertical differential pressure lines are for liquids and gases. The valve manifolds are flanged on the pressure transmitter.

Design

All versions of the spindle valve manifolds have a process connection ½-14 NPT.

The connection for the pressure transmitter is always designed as a flange connection to EN 61518, form B .

The 2-spindle and the 5-spindle valve manifold have in addition a vent and test connection 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 (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, 80 °C	**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, 80 °C Flange connection with M10 screws only permissible up to PN 160.	**K16**	**7MF9411-6BB**
Mounting bracket required **for wall mounting** or for securing to mounting rack, with bolts for mounting on valve manifold		
• for valve manifold 7MF9413-1D.	**M17**	**7MF9006-6NA**
• for valve manifold 7MF9413-1E.	**M18**	**7MF9006-6PA**
required **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 suitable for oxygen		
• for valve manifold 7MF9413-1D.	**S13**	
• for valve manifold 7MF9413-1E.	**S14**	

[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 160!

3- and 5-spindle valve manifolds for vertical angular differential pressure lines

Accessories

Accessory set (connection between manifold and transmitter)

- K36: 4 screws $^{7}/_{16}$-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, 80 °C

Note: Flange connection with M10 screws only permissible up to PN 160!

Mounting bracket for wall mounting or for securing to mounting rack

With bolts for mounting on valve manifold

- M17: For 3-spindle valve manifold
- M18: For 5-spindle valve manifold

Mounting bracket for mounting on 2" standpipe

With bolts for mounting on valve manifold

- M19: For 3-spindle valve manifold

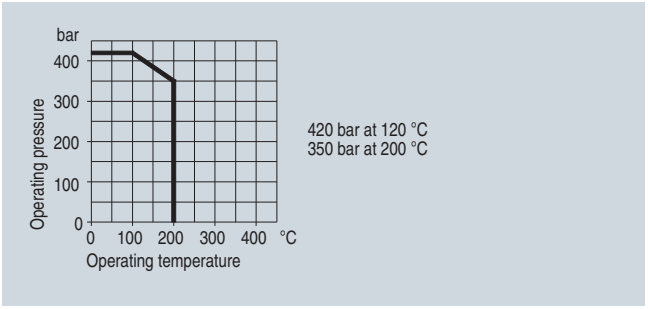
Mounting clips (2 off)

For securing the mounting brackets M17, M18 and M19 to pipe

Valve manifold 100 bar, suitable for oxygen

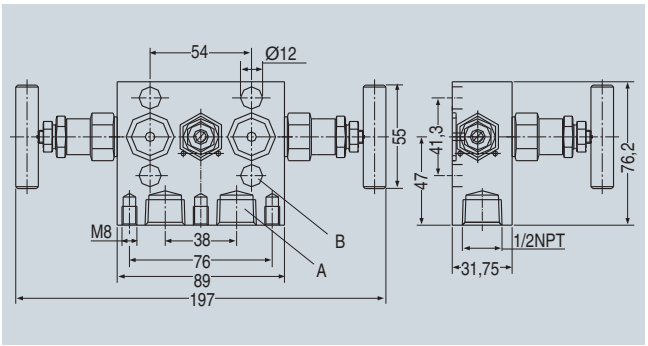
- For 3-spindle valve manifold
- For 5-spindle valve manifold

Characteristic curves

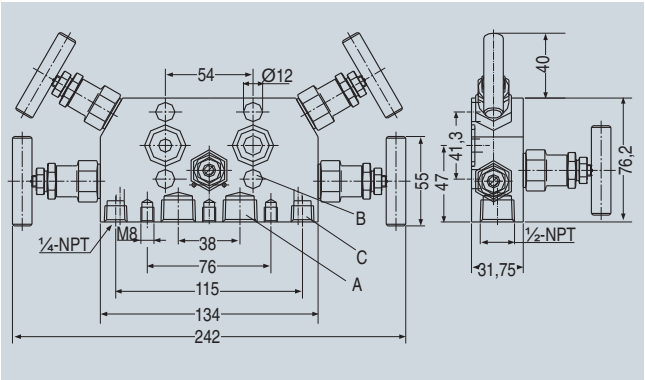


Permissible operating pressure as a function of the permissible operating temperature

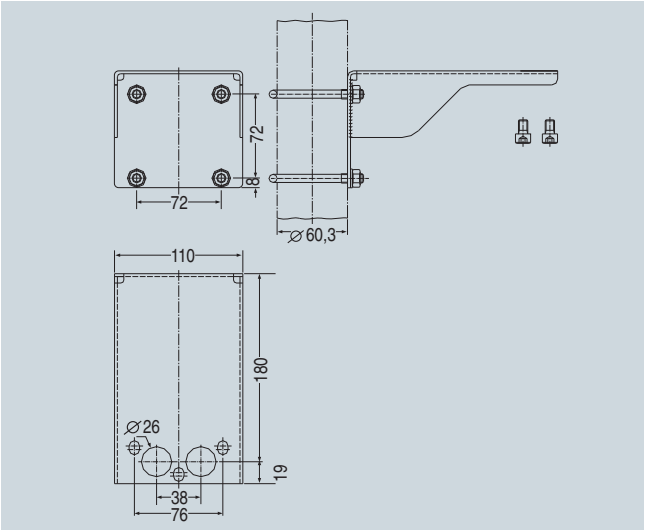
Dimensional drawings



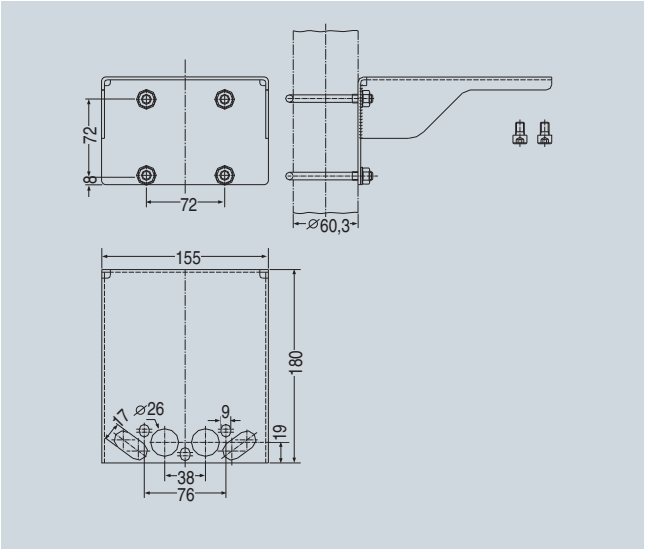
3-spindle valve manifold 7MF9413-1D. for vertical differential pressure lines, dimensions in mm



5-spindle valve manifold 7MF9413-1E. for vertical differential pressure lines, dimensions in mm

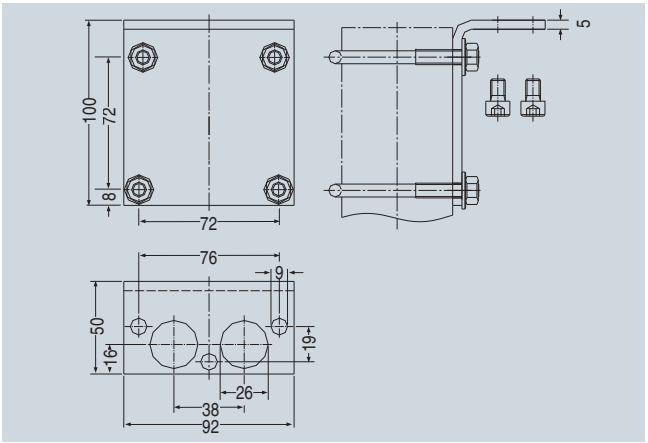


Mounting bracket (7MF9006-6NA)/(M17) for 3-spindle valve manifolds, dimensions in mm



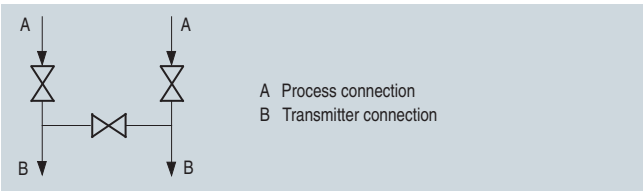
Mounting bracket (7MF9006-6PA)/(M18) for 5-spindle valve manifolds, dimensions in mm

3- and 5-spindle valve manifolds for vertical angular differential pressure lines

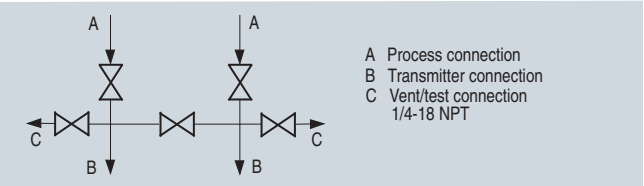


Mounting bracket (7MF9006-6QA)/(M19) for 3-spindle and 5-spindle valve manifolds, dimensions in mm

Schematics



3-spindle valve manifold for vertical differential pressure lines, connections



5-spindle valve manifold for vertical differential pressure lines, connections

Low-pressure multiway cock

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

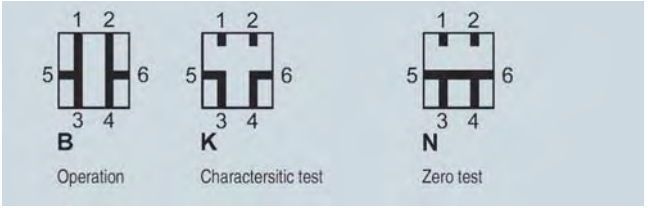
Design

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, max. working temperature 60 °C (up to 80 °C 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**

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	**L31**	**7MF9004-5CC**
Accessory set to DIN (required for flanging, weight 0.2 kg)		
4x screws M10x25 to DIN EN 24017; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x gaskets made of PTFE, max. permissible temperature 80 °C		
• Standard design	**L11**	**7MF9004-6AD**
• Version for oxygen	**L15**	**7MF9004-6AE**
Multiway cock in oil-free and grease-free design BAM-tested lubricant, gasket suitable for oxygen	**S11**	
Mounting bracket required **for wall mounting** or for securing on rack (72 mm grid), made of electrogalvanized sheet-steel, weight 0.85 kg	**M13**	**7MF9004-6AA**

[1] When ordering accessory set or mounting together with the multiway cock, please use Order code; otherwise use Order No.

Accessories

Accessory set for low-pressure multiway cock

- L11: 4 screws M10x25 to DIN EN 24017, 4 washers, 2 flat gaskets
- L15 (suitable for oxygen): 4 screws M10x25 to DIN EN 24017, 4 washers, 2 flat gaskets
- L31: 4 screws $^7/_{16}$-20 UNF x 1 inch, 2 flat gaskets

Washers Ø 10.5 to DIN 125

Flat gaskets made of PTFE, max. permissible temperature 80 °C

Multiway cock in oil-free and grease-free design

- S11: BAM-tested lubricant, gasket suitable for oxygen

Mounting brackets

- M13: Required for wall mounting or for securing on rack (72 mm grid); made of electrogalvanized sheet-steel

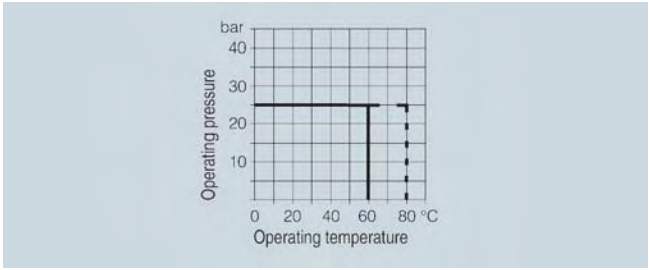
Low-pressure multiway cock

Options

Test connections

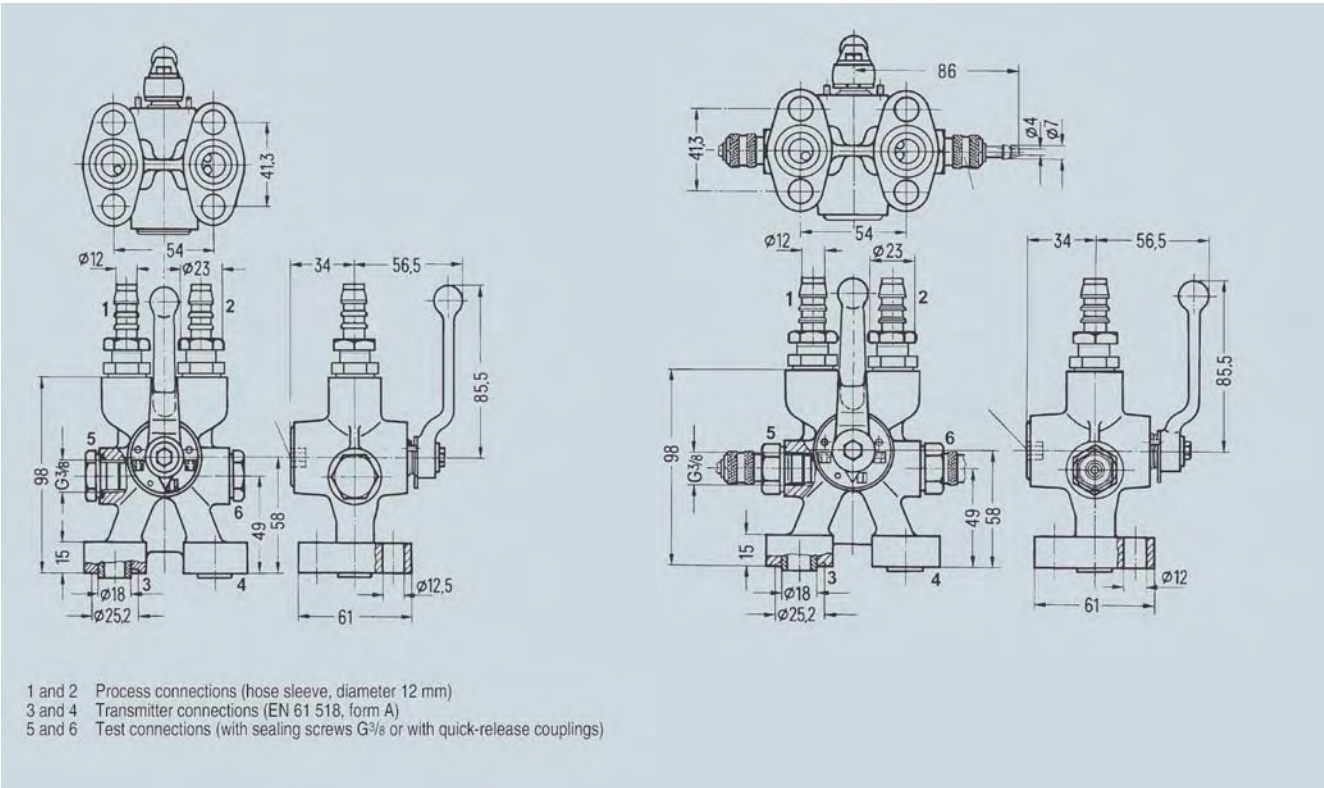
- 2 sealing screws $G^3/_8$
- 2 quick-release couplings

Characteristic curves

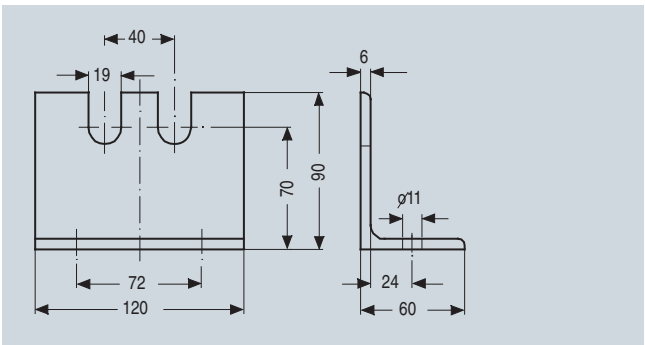


Low-pressure multiway cock, permissible operating pressure as a function of the permissible operating temperature

Dimensional drawings

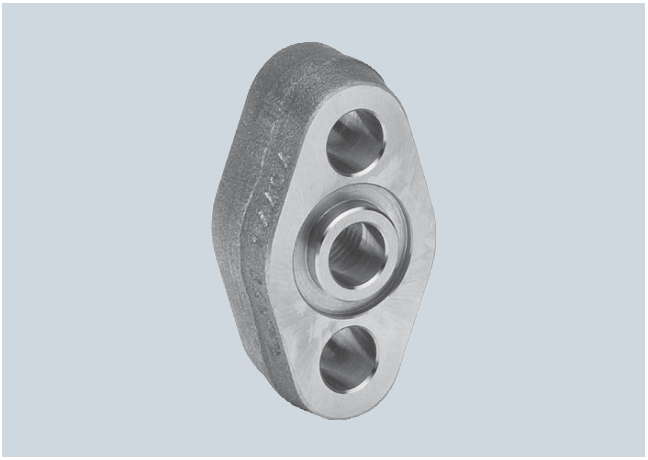


Low-pressure multiway cock 7MF9004-4CA/-4DA for direct flanging to pressure transmitters for differential pressure, dimensions in mm



Mounting bracket 7MF9004-6AA (M13), dimensions in mm

Overview



The oval flange 7MF9408-2C. for pressure transmitters for absolute pressure and differential pressure has a ½-14 NPT female thread and is designed for max. operating pressure 400 bar.

Accessories

- E34: 2 screws $^{7}/_{16}$-20 UNF x 1½ inch to ASME B18.3, 1 O-ring (FPM 90)
- E13: 2 screws M10x40 to DIN EN 4762, 2 washers, 1 O-ring (FPM 90)
- E36: 2 screws $^{7}/_{16}$-20 UNF x 1½ inch to ASME B18.2.1, 1 flat gasket
- E16: 2 screws M10x40 to DIN EN ISO 4762, 2 washers, 1 flat gasket

Washers Ø 10.5 to DIN 125

Flat gaskets made of PTFE, max. 420 bar, 80 °C

O-ring to DIN 3771, 20 x 2.65 – S – FPM90, max. 420 bar, 120 °C

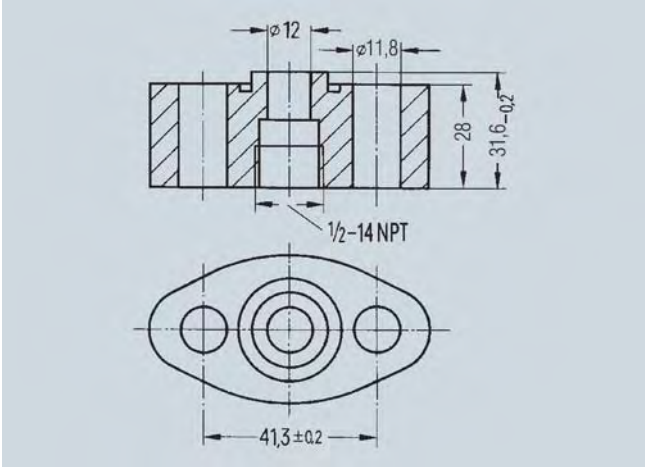
Note: M10 screws only permissible up to PN 160!

Selection and Ordering data	Order No.
Oval flange with female thread ½-14 NPT, max. working pressure 420 bar, flange connection to DIN EN 61518, form A	
Material	
P250GH, mat. No.: 1.0460	**7MF9408-2CE**
X 2 CrNiMo 17 13 2, mat. No. 1.4404/316L	**7MF9408-2CL**

Selection and Ordering data	Order code	Order No.
Further designs Please add "-Z" to Order No. and specify Order code.		
Accessory set to EN[1]		
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, 80 °C	**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, 120 °C	**E34**	**7MF9408-5CA**
Accessory set to DIN[1]		
2x screws M10x40 to DIN EN ISO 4762; chromized steel 2x washers Ø 10.5 mm to DIN 125; 1x O-ring to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar, 120 °C[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, 80 °C[2]	**E16**	**7MF9408-6BA**

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!

Dimensional drawings



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

Adapters, connection glands

Overview

Adapters enable e.g. a transition from medium connections with NPT thread to shut-off valves to DIN 16270 ... 16272 or pipes in conjunction with a connection gland (e.g. 7MF9008).

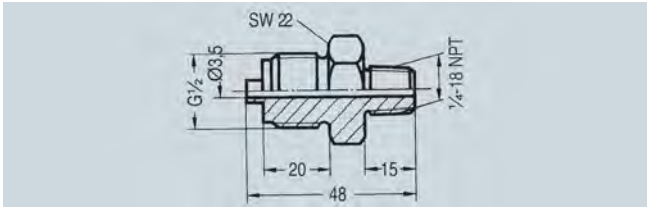
Design

The connection pieces are made of X 6 CrNiMoTi 17 12 2, mat. No. 1.4571 and available in 3 versions

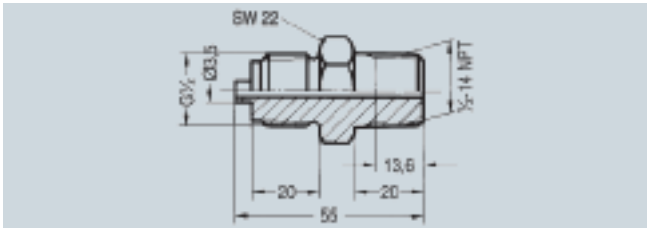
- Thread ¼-18 NPT and connection shank G½ to DIN EN 837-1
- Thread ½-14 NPT and connection shank G½ to DIN EN 837-1
- Thread ½-14 NPT and thread ½-14 NPT

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**

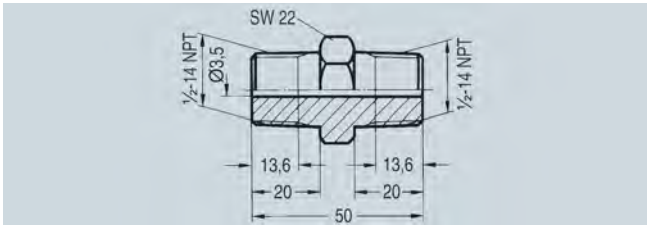
Dimensional drawings



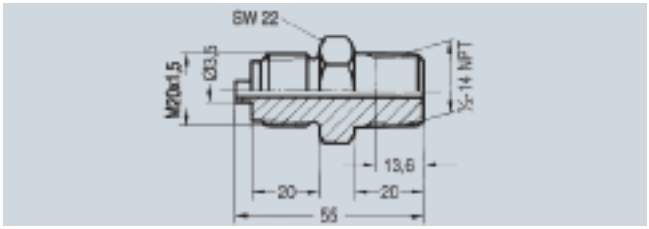
Connection piece with thread ¼-18 NPT and connection shank G½
7MF9001-1AA, dimensions in mm



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 thread M20 x 1.5
7MF9001-1EA, dimensions in mm

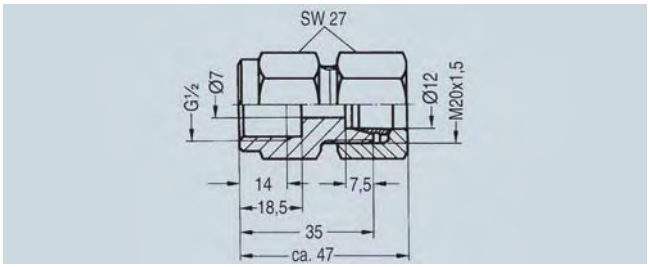
Overview

Connection glands to connect medium or differential pressure lines to collars G½ to DIN EN 837-1

- For rated pressures up to PN 630
- For oxygen only up to PN 250

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

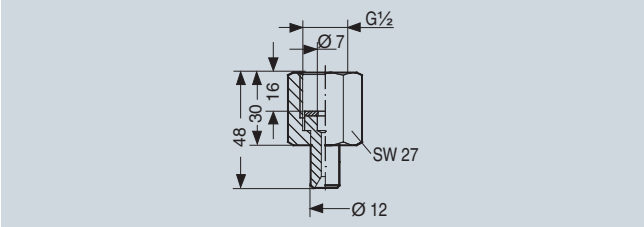
Overview

Connection parts G½ for pressure gages and shut-off fittings are available in 3 versions:

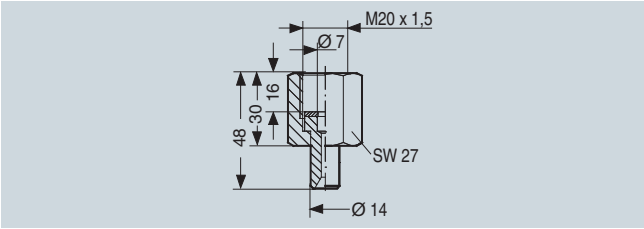
- Nipple connection
- Clamping sleeve
- Collar connection piece

Selection and Ordering data		Order No.
Adapters G½ for pressure gages and shut-off fittings		
Nipple connection G½ to DIN 16284 (union nut with nipple and gasket); max. working pressure 400 bar; 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 Nipple: RSt 37-2	 1.0715 1.0037	**M56340-A0002**
Union nut X 8 CrNiS 18 9 Nipple: X 6 CrNiMoTi 17 12 2	 1.4305 1.4571/316Ti	**M56340-A0003**
Nipple connection M20 x 1.5 to DIN 16284 (union nut with nipple and gasket); max. working pressure 400 bar; weight 0.1 kg; connection: G½ to DIN EN 837-1; Female thread G½		
Material	Mat. No.	
Union nut X 8 CrNiS 18 9 Nipple: X 6 CrNiMoTi 17 12 2	 1.4305 1.4571/316Ti	**M56340-A0008**
Clamping sleeve G½ to DIN 16283; max. working pressure 400 bar; 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**

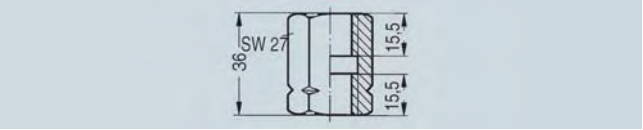
Dimensional drawings



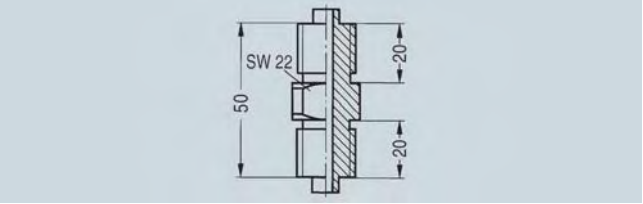
Nipple connection (G) M56340-A0001 to -A0003, dimensions in mm



Nipple connection (M20 x 1.5) M56340-A0008, dimensions in mm



Clamping sleeve M56340-A0004/-A0005, dimensions in mm



Collar connection piece M56340-A0006/-A0007, dimensions in mm

Water traps, Sealing rings to EN 837-1

Overview

Water traps protect pressure gages and shut-off fittings from heating up (e.g. by steam) by the water column produced by the water trap.

The max. working temperature is 120 °C at 160 bar, 300 °C at 80 bar or 400 °C at 63 bar. If the temperature of the measured medium is higher, a sufficiently long line has to be connected upstream of the trap to enable heat dissipation.

Design

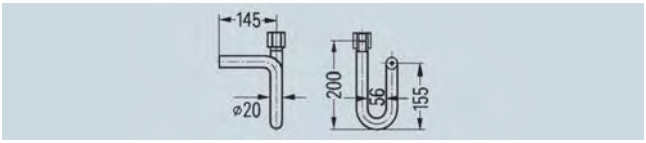
The water traps are available in U shape (type B) or circular shape (type D) to DIN 16282. They have a weld-on end Ø 20 mm × 2.6 mm on the measurement side. The connection on the device side is a clamping sleeve G½ to DIN 16283.

The water traps are made of steel (P250GH) or stainless steel (X 6 CrNiMoTi 17 12 2)

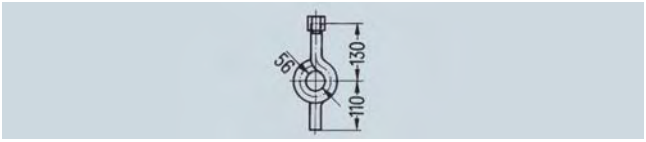
Water traps are designed as standard for max. operating temperature 120 °C at max. operating pressure 160 bar (300 °C at 80 bar, 400 °C at 63 bar). Water traps for higher operating pressures and temperatures are available on request.

Selection and Ordering data		Order No.
Water traps for pressure gages and pressure transmitters, max. working temperature 120 °C, max. working pressure 160 bar (or 400 °C and 104 bar), 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

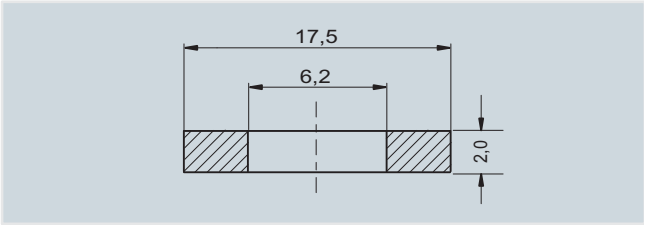


Water traps, type D, M56340-A0045/-A0063, dimensions in mm

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	F)	**7MF9007-7AA**
• soft iron	F)	**7MF9007-7AB**
• stainless steel, mat.-No. 1.4571	F)	**7MF9007-7AC**
• PTFE	F)	**7MF9007-7AD**

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

Overview

The pressure surge reducer protects the pressure gage against damage, premature wear and tear and inaccurate/fluctuating indications.

Application

The pressure reducer is used when pulsations occur in the measured medium (e.g. in slow-running vapor engines, piston pumps and compressors), or if drastic fluctuations are likely to occur in the measured medium (e.g. in hydraulic presses and tensile testing machines).

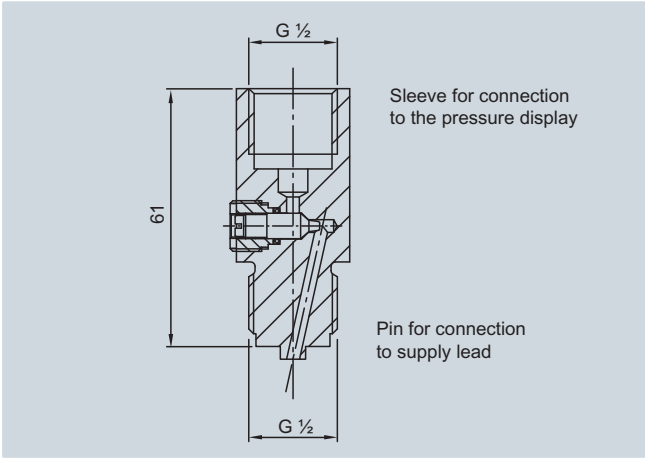
Design

- Enclosure made of brass or stainless steel
- Adjustable nozzle
- Sleeve for connection to the measuring instrument
- Pin for connection to supply lead

Selection 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	0.21	**M56340-A54**
Stainless steel	600 bar	0.21	**M56340-A59**

Dimensional drawings



Pressure surge reducer, dimensions in mm

Primary shut-off valves

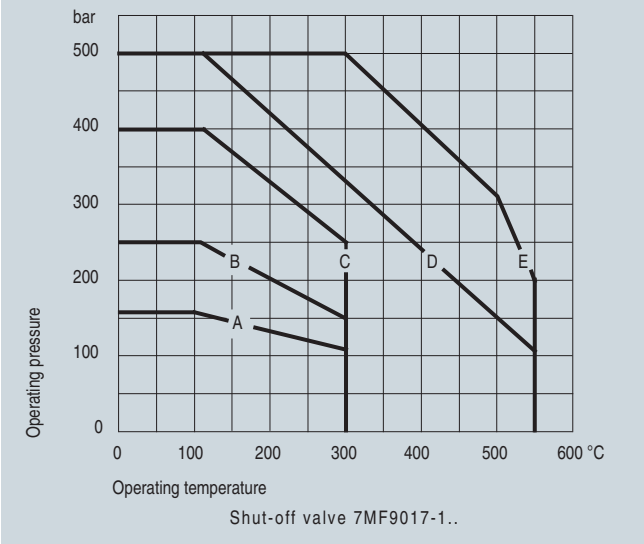
Overview

Primary shut-off valves are available in the following versions:

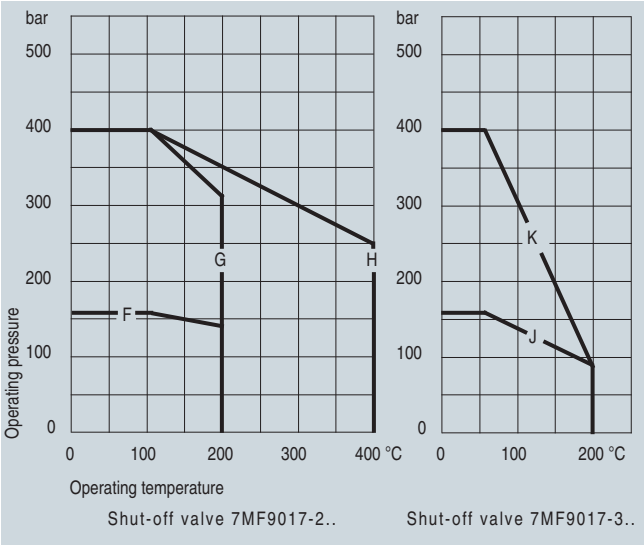
- For non-corrosive liquids, gases and vapors
- For corrosive liquids and gases
- Grease-free for oxygen

The shut-off valves are available in various materials and with various connections (see Selection and Ordering data)

Characteristic curves

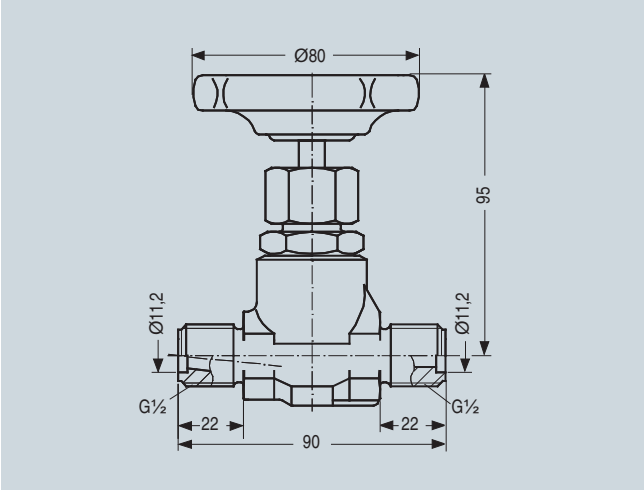


Shut-off valve 7MF9017-1.., permissible working pressure as a function of the permissible working temperature

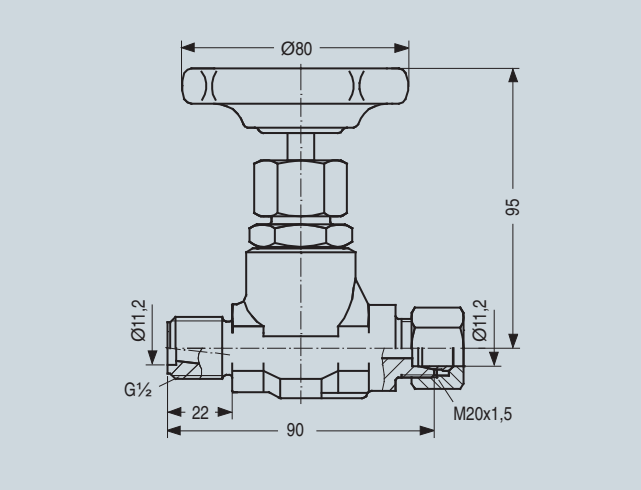


Shut-off valve 7MF9017-2.. and -3.., permissible working pressure as a function of the permissible working temperature

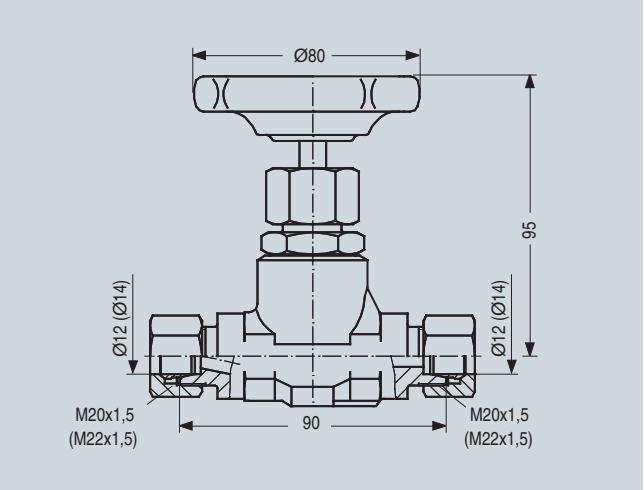
Dimensional drawings



Shut-off valve 7MF9017–1A., dimensions in mm

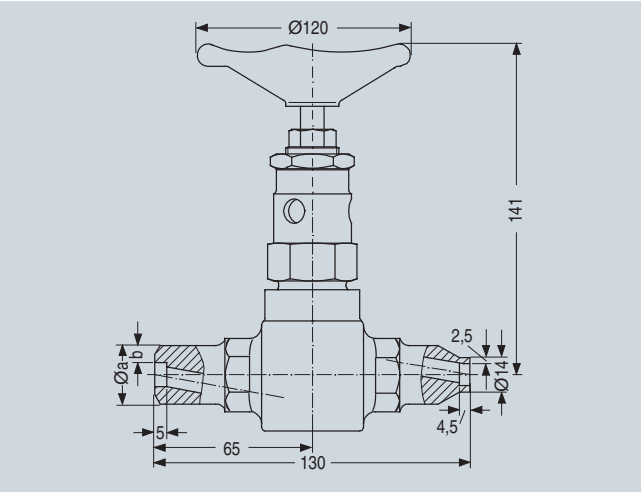


Shut-off valve 7MF9017-1B. and -2B., dimensions in mm



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	Characteristic[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	A	P250GH	1.0460	Internal	Threaded socket G½ form R, DIN 19207	0.8		**A**
160 bar	A	P250GH	1.0460	Internal	Threaded socket G½ form R, DIN 19207 DIN 19207 and pipe union with ferrule for pipe Ø 12 mm, S series	0.8		**B**
400 bar	C	P250GH	1.0460	Internal	Pipe union with ferrule for pipe Ø 12 mm, S series	1		**C**
400 bar	C	P250GH	1.0460	Internal	Pipe union with ferrule for pipe Ø 14 mm, S series	1		**D**
500 bar	D	16 Mo 3	1.5415	External	Welding sleeves Ø 14 mm × 2.5 mm	1.6		**F**
500 bar	E	11 CrMo 9 10	1.7383	External	Welding sleeves Ø 14 mm × 2.5 mm	1.6		**G**
500 bar	D	16 Mo 3	1.5415	External	Welding sleeves Ø 21.3 mm × 6.3 mm and Ø 14 mm × 2.5 mm	1.6		**H**
500 bar	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	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	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	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	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	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"

Compensation vessels

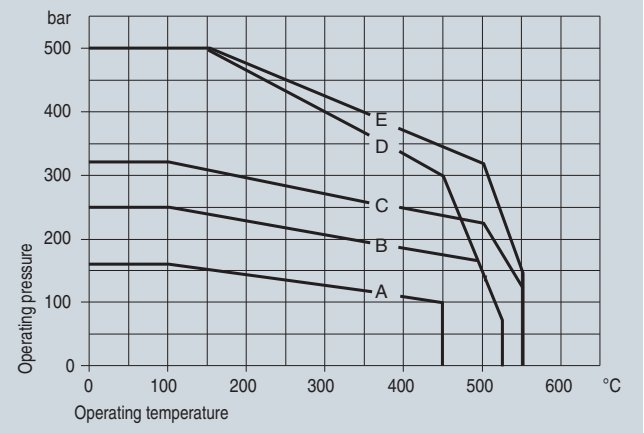
Overview

The compensation vessels prevent the level difference which occurs with pressure changes in the pressure lines and which falsifies the measurement.

According to DIN 19211, the temperature in the compensation vessel must be assumed to be 50 K less than the steam temperature in the pipe when calculating the wall thicknesses. This is because the temperature in the compensation vessel during operation can only rise up to the saturated steam temperature.

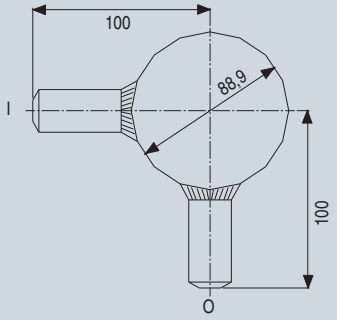
A material acceptance test certificate A to EN 10204-3.1 is available for the materials from which the compensation vessels are made.

Characteristic curves



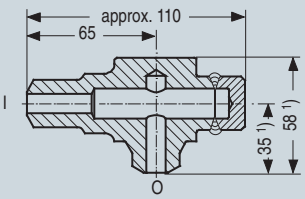
Permissible operating pressure as a function of the permissible operating temperature

Dimensional drawings



O Output (see Ordering data for dimensions)
I Input (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	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	B	16 Mo 3	1.5415	Welding sleeve Ø 21 mm × 6.3 mm	Welding sleeve Ø 21.3 mm × 6.3 mm	250	0.8	1 B
250 bar	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	C	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	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	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	D	16 Mo 3	1.5415	Welding sleeve Ø 21 mm × 6.3 mm	Welding sleeve Ø 21.3 mm × 6.3 mm	20	1.6	5 B
500 bar	D	16 Mo 3	1.5415	Welding sleeve Ø 24 mm × 7.1 mm	Welding sleeve Ø 24 mm × 7.1 mm	20	1.6	5 C
500 bar	E	11 CrMo 9 10	1.7383	Welding sleeve Ø 24 mm × 7.1 mm	Welding sleeve Ø 24 mm × 7.1 mm	20	1.6	5 D

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

Connection parts are available in the following versions:

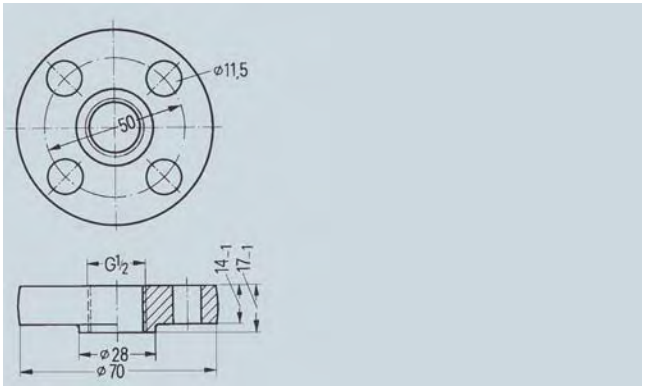
- Threaded flange pair G½ with stainless steel gasket
- Nipple G½ form V to DIN 19207
- Union nut G½ made of C 35 to DIN 16284
- Gasket B½ (grooved) to DIN 19207

All connection parts are also available grease-free for oxygen.

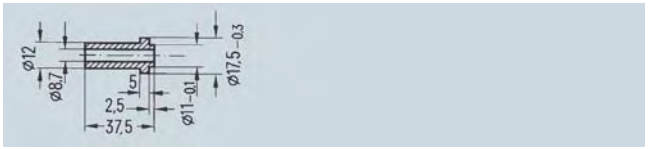
Selection and Ordering data		Order No.
Threaded flange pair G½		
• with stainless steel gasket		**7MF9007-4CA**
• grease-free for oxygen, with stainless steel gasket		**7MF9007-4DA**
Scope of delivery:		
2x threaded flanges G½ to DIN 19207; material: P250GH (mat. No. 1.0460)		
4x hexagon screws M10x45 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)	F)	**7MF9007-6BA**
• grease-free for oxygen, Material: X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)	F)	**7MF9007-6CA**

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

Dimensional drawings



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