

SITRANS P measuring instruments for pressure

Transmitters for food, pharmaceuticals and biotechnology

**SITRANS P Compact,
for pressure and absolute pressure**

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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 $R_a = 0.4 \mu\text{m}$ ($1.57 \cdot 10^{-5}$ inch) in the wetted area (welded seam area $R_a < 0.8 \mu\text{m}$ ($3.15 \cdot 10^{-5}$ inch)). The system can be electropolished in addition.

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

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

Using appropriate thermal decouplers, the SITRANS P Compact pressure transmitter can be used for process temperatures up to 200 °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.

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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 Pressure 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 to 20 mA
• Three-wire system 0 ... 20 mA

Measuring accuracy

Linearity error including hysteresis (reference point adjustment) $\leq 0.2\%$ of full-scale value
Adjustment accuracy $\leq \pm 0.2\%$ of full-scale value
Adjustment time < 20 ms
Influence of ambient temperature
Housing
• Zero $< 0.2\%/10$ K ($< 0.2\%/18$ °F) of full-scale value
• Measured span $< 0.2\%/10$ K ($< 0.2\%/18$ °F) of full-scale value
Process connection (remote seal) Zero error (depends on design)
• Flange remote seal
- DN 25 / 1" 4.8 mbar/10 K (0.070 psi/18 °F)
- DN 32 / 1¼" 2.3 mbar/10 K (0.033 psi/18 °F)
- DN 40 / 1½" 1.6 mbar/10 K (0.023 psi/18 °F)
- DN 50 / 2" 0.6 mbar/10 K (0.009 psi/18 °F)
• Clamp-on seal
- DN 25 / 1" 9.5 mbar/10 K (0.138 psi/18 °F)
- DN 32 / 1¼" 4.1 mbar/10 K (0.060 psi/18 °F)
- DN 40 / 1½" 3.9 mbar/10 K (0.057 psi/18 °F)
- DN 50 / 2" 3.9 mbar/10 K (0.057 psi/18 °F)

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.
- Noise 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 Selection and Ordering data
• Material of coupling Stainless steel, mat. No. 1.4404/316L

Power supply

Terminal voltage on transmitter (standard design) 24 V DC
Functional range 10 ... 30 V DC
Max. permissible operating voltage 30 V DC

Certificate and approvals

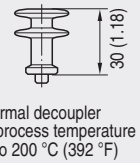
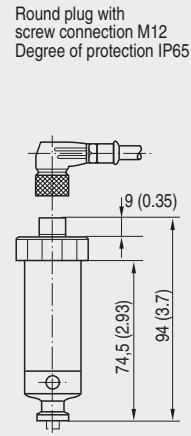
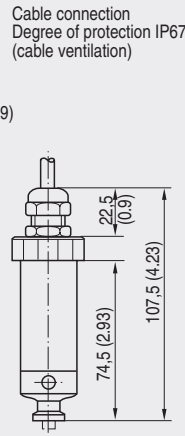
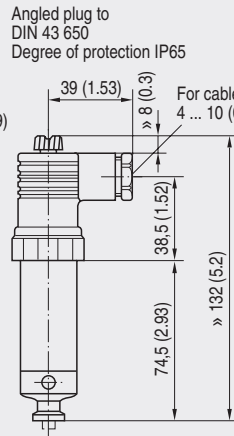
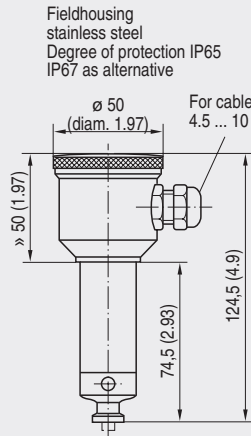
Classification according to pressure equipment directive (DRGL 97/23/EC) For gases of fluid group 1 and liquids of fluid group 1; complies with the requirements of article 3, paragraph 1 (appendix 1); assigned to category III, conformity evaluation module H by the TÜV Nord
Explosion protection
• Intrinsic safety "i" TÜV 03 ATEX 2099 X
- Identification Ex II 2G EEx ib IIC T6

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Dimensional drawings

Housing

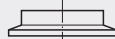


Process connections

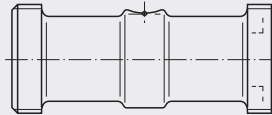
Standard



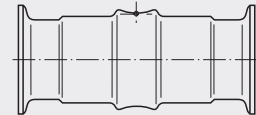
Food screwed gland
Union nut to DIN 11 851
DN 25 ... 65



Clamp connection to DIN 32 676
ISO 2852
DN 25 ... 65
1" ... 2 1/2"

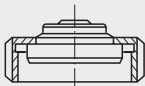


Pipe-screwed gland (food)
Round thread to DIN 11 851
DN 25 ... 65

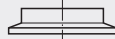


Pipe clamp connection to DIN 32 676
DN 25 ... 100 to ISO 2853
1" ... 2 1/2"

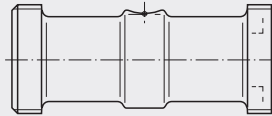
Aseptic



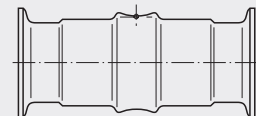
Aseptic screwed gland
Round thread
Neumo, Südmö, Guth
DIN 11 864-1
DN 25 ... 65
1" ... 2"



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



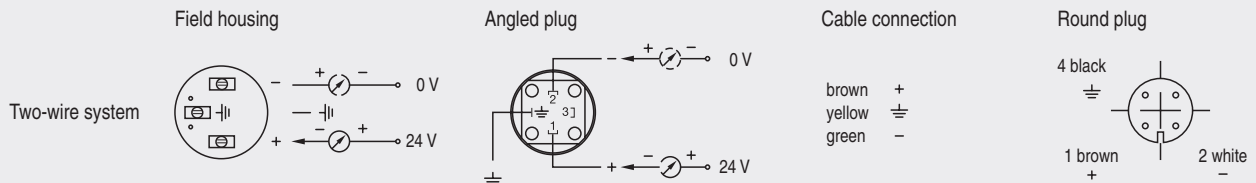
Pipe screwed gland (aseptic)
Round thread
DIN 11 864-1
Neumo, Südmö, Guth
DN 25 ... 65
1" ... 2"



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

SITRANS P, dimensions in mm (inch)

Schematics



SITRANS P Compact, connection diagram

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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 11 851 with slotted union nut		
• DN 25	AD	
• DN 32	AE	
• DN 40	AF	
• DN 50	AG	
• DN 65	AH	
Milk pipe union to DIN 11 851 with threaded socket		
• DN 25	BD	
• DN 32	BE	
• DN 40	BF	
• DN 50	BG	
• DN 65	BH	
Clamp connection to DIN 32 676		
• 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	J 1 Y
Filling liquid		
Vegetable oil	1	
medicinal white oil	2	
Food oil, FDA-listed	3	
Special version (add Order code and plain text)	9	L 1 Y
Output signal		
4 ... 20 mA	1	
Special version (add Order code and plain text)	9	M 1 Y

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 11 864-1, form A, with slotted union nut		
• 1 inch	PM	
• 1½ inch	PN	
• 2 inch	PP	
• 2½ inch	PQ	
Aseptic screwed gland to DIN 11 864-1, 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	J 1 Y
Filling liquid		
Vegetable oil	1	
medicinal white oil	2	
Food oil, FDA-listed	3	
Special version (add Order code and plain text)	9	L 1 Y
Output signal		
4 ... 20 mA	1	
Special version (add Order code and plain text)	9	M 1 Y

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

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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 43 650, IP65	1	
Housing with round plug M12, IP 65, union nut made of polyamide	2	
Housing with round plug M12, IP 65, union nut made of stainless steel	3	
Stainless steel field housing (small) with cable gland, IP65	4	
Stainless steel field housing (small) with cable gland, IP67 Internal ventilation for measuring ranges < 10 bar (< 145 psi)	5	
Measured range Overload pressure		
0 ... 160 mbar (0 ... 2.32 psi)	2 bar (29 psi)	BB
0 ... 250 mbar (0 ... 3.63 psi)	2 bar (29 psi)	BC
0 ... 400 mbar (0 ... 5.8 psi)	6 bar (87 psi)	BD
0 ... 600 mbar (0 ... 8.7 psi)	6 bar (87 psi)	BE
0 ... 1 bar (0 ... 14.5 psi)	10 bar (145 psi)	CA
0 ... 1.6 bar (0 ... 23.2 psi)	10 bar (145 psi)	CB
0 ... 2.5 bar (0 ... 36.3 psi)	16 bar (232 psi)	CC
0 ... 4 bar (0 ... 58 psi)	16 bar (232 psi)	CD
0 ... 6 bar (0 ... 87 psi)	30 bar (435 psi)	CE
0 ... 10 bar (0 ... 145 psi)	30 bar (435 psi)	DA
0 ... 16 bar (0 ... 232 psi)	50 bar (725 psi)	DB
0 ... 25 bar (0 ... 363 psi)	50 bar (725 psi)	DC
0 ... 40 bar (0 ... 580 psi)	70 bar (1015 psi)	DD
-160 ... 0 mbar (-2.32 ... 0 psi)	2 bar (29 psi)	EB
-250 ... 0 bar (-3.73 ... 0 psi)	2 bar (29 psi)	EC
-400 ... 0 bar (-5.8 ... 0 psi)	6 bar (87 psi)	ED
-600 ... 0 bar (-8.7 ... 0 psi)	6 bar (87 psi)	EE

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 ... 0 bar (-14.5 ... 0 psi)	10 bar (145 psi)	FA
-1 ... 0.6 bar (-14.5 ... 8.7 psi)	10 bar (145 psi)	FB
-1 ... 1.5 bar (-14.5 ... 21.8 psi)	16 bar (232 psi)	FC
-1 ... 3 bar (-14.5 ... 43.5 psi)	16 bar (232 psi)	FD
-1 ... 5 bar (-14.5 ... 72.5 psi)	30 bar (435 psi)	FE
-1 ... 9 bar (-14.5 ... 130.5 psi)	30 bar (435 psi)	GA
-1 ... 15 bar (-14.5 ... 217.6 psi)	50 bar (725 psi)	GB
0 ... 1 bar _{abs} (0 ... 14.5 psi _{abs})	10 bar (145 psi)	HA
0 ... 1.6 bar _{abs} (0 ... 23.2 psi _{abs})	10 bar (145 psi)	HB
0 ... 2.5 bar _{abs} (0 ... 36.3 psi _{abs})	16 bar (232 psi)	HC
0 ... 4 bar _{abs} (0 ... 58 psi _{abs})	16 bar (232 psi)	HD
0 ... 6 bar _{abs} (0 ... 87 psi _{abs})	30 bar (435 psi)	HE
0 ... 10 bar _{abs} (0 ... 145 psi _{abs})	30 bar (435 psi)	JA
Special version (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 $R_a < 0.8 \mu\text{m}$ ($3.15 \cdot 10^{-8}$ inch); Welded seams $R_a < 1.5 \mu\text{m}$ ($5.9 \cdot 10^{-8}$ 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 11 850 ISO pipes to DIN 2463 Pipes to O. D. Tubing "BS 4825 Part 1"	R01 R02 R03
Certificates Use of FDA-listed remote seal filling liquids certified by factory certificate to EN 10 204-2.2	C17
Roughness depth measurement R_a certified by factory certificate to EN 10 204-3.1B	C18
Certification to EHEDG for clamp-on seals with aseptic screwed gland to DIN 11 864	C19

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Selection and Ordering data	Order No.	Ord. code	Selection and Ordering data	Order No.	Ord. code
SITRANS P Compact pressure transmitters for pressure and absolute pressure with clamp-on remote seal	7MF8010-		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		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 11 851 with threaded socket			Clamp-on seal with aseptic connection Aseptic screwed gland to DIN 11 864-1, form A with threaded socket		
• DN 25	AD		• 1 inch	QM	
• DN 32	AE		• 1½ inch	QN	
• DN 40	AF		• 2 inch	QP	
• DN 50	AG		Aseptic screwed NEUMO with threaded socket ¹⁾		
• DN 65	AH		• DN 25	SD	
Clamp connection to DIN 32 676			• DN 32	SE	
• DN 25	CD		• DN 40	SF	
• DN 32	CE		• DN 50	SG	
• DN 40	CF		• DN 65	SH	
• DN 50	CG		Aseptic screwed NEUMO with clamp connection, form R ¹⁾		
• DN 65	CH		• DN 25	TD	
Clamp connection to ISO 2852 / DIN 32 676			• DN 32	TE	
• 1 inch	DM		• DN 40	TF	
• 1½ inch	DN		• DN 50	TG	
• 2 inch	DP		Aseptic screwed gland SÜDMO with threaded socket W 501		
• 2½ inch	DQ		• 1 inch	VM	
Special version (add Order code and plain text)	ZA	J 1 Y	• 1½ inch	VN	
			• 2 inch	VP	
Filling liquid			Aseptic screwed gland SÜDMO with clamp connection W 601		
Vegetable oil	1		• 1 inch	WM	
Medicinal white oil	2		• 1½ inch	WN	
Food oil, FDA-listed	3		• 2 inch	WP	
Special version (add Order code and plain text)	9	L 1 Y	Special version (add Order code and plain text)	ZA	J 1 Y
Output signal			Filling liquid		
4 ... 20 mA	1		Vegetable oil	1	
Special version (add Order code and plain text)	9	M 1 Y	medicinal white oil	2	
			Food oil, FDA-listed	3	
			Special version (add Order code and plain text)	9	L 1 Y
			Output signal		
			4 ... 20 mA	1	
			Special version (add Order code and plain text)	9	M 1 Y

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

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Selection and Ordering data	Order No.	Ord. code
SITRANS P Compact pressure transmitters for pressure and absolute pressure with clamp-on remote seal	7 MF 8 0 1 0 -	
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 43 650, IP65, union nut made of polyamide		1
Housing with round plug M12, IP65, union nut made of polyamide		2
Housing with round plug M12, IP65, union nut made of stainless steel		3
Stainless steel field housing (small) with cable gland, IP65		4
Stainless steel field housing (small) with cable gland, IP67 Internal ventilation for measuring ranges < 10 bar (< 145 psi)		5
Measured range Overload pressure		
0 ... 160 mbar (0 ... 2.32 psi)	2 bar (29 psi)	BB
0 ... 250 mbar (0 ... 3.63 psi)	2 bar (29 psi)	BC
0 ... 400 mbar (0 ... 5.8 psi)	6 bar (87 psi)	BD
0 ... 600 mbar (0 ... 8.7 psi)	6 bar (87 psi)	BE
0 ... 1 bar (0 ... 14.5 psi)	10 bar (145 psi)	CA
0 ... 1.6 bar (0 ... 23.2 psi)	10 bar (145 psi)	CB
0 ... 2.5 bar (0 ... 36.3 psi)	16 bar (232 psi)	CC
0 ... 4 bar (0 ... 58 psi)	16 bar (232 psi)	CD
0 ... 6 bar (0 ... 87 psi)	30 bar (435 psi)	CE
0 ... 10 bar (0 ... 145 psi)	30 bar (435 psi)	DA
0 ... 16 bar (0 ... 232 psi)	50 bar (725 psi)	DB
0 ... 25 bar (0 ... 363 psi)	50 bar (725 psi)	DC
0 ... 40 bar (0 ... 580 psi)	70 bar (1015 psi)	DD
-160 ... 0 mbar (-2.32 ... 0 psi)	2 bar (29 psi)	EB
-250 ... 0 bar (-3.73 ... 0 psi)	2 bar (29 psi)	EC
-400 ... 0 bar (-5.8 ... 0 psi)	6 bar (87 psi)	ED
-600 ... 0 bar (-8.7 ... 0 psi)	6 bar (87 psi)	EE

Selection and Ordering data	Order No.	Ord. code
SITRANS P Compact pressure transmitters for pressure and absolute pressure with clamp-on remote seal	7 MF 8 0 1 0 -	
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 ... 0 bar (-14.5 ... 0 psi)	10 bar (145 psi)	FA
-1 ... 0.6 bar (-14.5 ... 8.7 psi)	10 bar (145 psi)	FB
-1 ... 1.5 bar (-14.5 ... 21.8 psi)	16 bar (232 psi)	FC
-1 ... 3 bar (-14.5 ... 43.5 psi)	16 bar (232 psi)	FD
-1 ... 5 bar (-14.5 ... 72.5 psi)	30 bar (435 psi)	FE
-1 ... 9 bar (-14.5 ... 130.5 psi)	30 bar (435 psi)	GA
-1 ... 15 bar (-14.5 ... 217.6 psi)	50 bar (725 psi)	GB
0 ... 1 bar _{abs} (0 ... 14.5 psi _{abs})	10 bar (145 psi)	HA
0 ... 1.6 bar _{abs} (0 ... 23.2 psi _{abs})	10 bar (145 psi)	HB
0 ... 2.5 bar _{abs} (0 ... 36.3 psi _{abs})	16 bar (232 psi)	HC
0 ... 4 bar _{abs} (0 ... 58 psi _{abs})	16 bar (232 psi)	HD
0 ... 6 bar _{abs} (0 ... 87 psi _{abs})	30 bar (435 psi)	HE
0 ... 10 bar _{abs} (0 ... 145 psi _{abs})	30 bar (435 psi)	JA
Special version (add Order code and plain text)		ZA 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 $R_a < 0.8 \mu\text{m}$ ($3.15 \cdot 10^{-8}$ inch); Welded seams $R_a < 1.5 \mu\text{m}$ ($5.9 \cdot 10^{-8}$ 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 11 850 ISO pipes to DIN 2463 Pipes to O. D. Tubing "BS 4825 Part 1"	R01 R02 R03
Certificates Use of FDA-listed remote seal filling liquids certified by factory certificate to EN 10 204-2.2	C17
Roughness depth measurement R_a certified by factory certificate to EN 10 204-3.1B	C18
Certification to EHEDG for clamp-on seals with aseptic screwed gland to DIN 11 864	C19