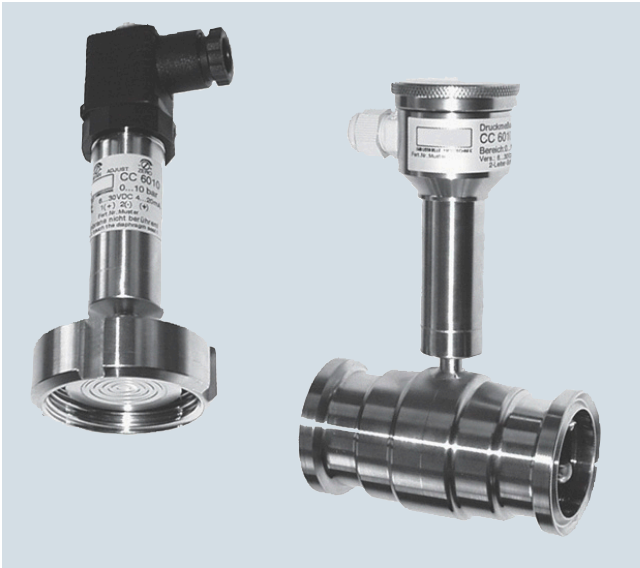


Overview



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

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

Particular value has been placed on a high surface quality. The system can be electropolished in addition.

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

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

Using appropriate thermal decouplers, the SITRANS P Compact pressure transmitter can be used for process temperatures up to 200 °C (392 °F).

Benefits

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

Application

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

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

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

Design

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

Notes on operating the pressure transmitter

Compensation of internal atmospheric pressure

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

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

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

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

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

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

CE marking

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

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

Hazardous areas

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

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

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

Pressure Measurement

Single-range transmitters for general applications

SITRANS P Compact for gauge and absolute pressure

Function

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

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

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

Technical specifications

Pressure transmitters for food, pharmaceuticals and biotechnology

Mode of operation

Measuring principle piezo-resistive

Input

Measured variable gauge or absolute pressure
 Measuring range 0 ... 160 mbar (0 ... 2.32 psi)
 ...
 0 ... 40 bar (0 ... 580 psi)

Output

Output signal
 • 2-wire system 4 ... 20 mA
 • Three-wire system 0 ... 20 mA

Measuring accuracy

Acc. to IEC 60770-1
 Error in measurement at limit setting incl. hysteresis and reproducibility $\leq 0.2\%$ of full-scale value
 Adjustment accuracy $\leq \pm 0.2\%$ of full-scale value
 Step response time < 20 ms
Influence of ambient temperature
 On the enclosure
 • Zero point $< 0.2\%$ /10 K of full-scale value
 • Measuring span $< 0.2\%$ /10 K of full-scale value
 On the process connection (remote seals)
 • Flange remote seal
 - DN 25 / 1" 4.8 mbar/10 K (0.069 psi/10 K)
 - DN 32 / 1¼" 2.3 mbar/10 K (0.033 psi/10 K)
 - DN 40 / 1½" 1.6 mbar/10 K (0.023 psi/10 K)
 - DN 50 / 2" 0.6 mbar/10 K (0.009 psi/10 K)
 • Clamp-on seal
 - DN 25 / 1" 9.5 mbar/10 K (0.14 psi/10 K)
 - DN 32 / 1¼" 4.1 mbar/10 K (0.06 psi/10 K)
 - DN 40 / 1½" 3.9 mbar/10 K (0.05 psi/10 K)
 - DN 50 / 2" 3.9 mbar/10 K (0.05 psi/10 K)

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

Rated conditions

Installation conditions
 • Mounting position Any, vertical as standard
 Ambient conditions
 • Ambient temperature -10 ... +70 °C (14 ... 158 °F)
 • Storage temperature -10 ... +90 °C (14 ... 194 °F)
 • Process temperature Max. 200 °C (392 °F), depending on design
 Vacuum-resistant 0 mbar (0 psi) absolute at max. 50 °C. Higher process temperatures on request.
 • Degree of protection (to EN 60529) IP65, optional IP67
 • Electromagnetic Compatibility
 - Emitted interference To EN 50081 Part 1, issue 1993 (residential and industrial areas). The unit has no own emissions.
 - Noise immunity to EN 50082 Part 2, issue March 1995 (industrial areas)

Design

Weight (without remote seal)
 • Field enclosure ≈ 460 G (≈ 1.01 lb)
 • Enclosure with plug ≈ 200 g (≈ 0.44 lb)
 Enclosure
 • Designs
 • Field housing IP65 or IP67, with screwed gland
 • Angled plug DIN 43650, IP65
 • Cable connection, IP67
 • Round plug connector M12, IP65
 • Material Stainless steel, mat. no. 1.4404/316L/1.4305
 Material of union nut Polyamide (with electrical connection using plug or cable)
 Electronics unit potted with silicone
 Internal ventilation for measuring ranges < 16 bar (< 232 psi), through housing thread or connection cable depending on design
 Process connection
 • Versions See ordering data
 • Material of coupling Stainless steel, mat. no. 1.4404/316L

Power supply

Terminal voltage on transmitter 10 ... 30 V DC
 Rated voltage 24 V DC

Certificates and approvals

Classification according to pressure equipment directive (PED 2014/68/EU)
 • For 7MF8010-1... (with diaphragm seal)
 For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)
 • For 7MF8010-2... (with clamp-on seal)
 For gases of fluid group 1 and liquids of fluid group 1; complies with the requirements of article 4, paragraph 1 (appendix 1); assigned to category III, conformity evaluation module H by the TÜV Nord
 Explosion protection
 • Intrinsic safety "i"
 - Marking TÜV 03 ATEX 2099 X
 Ex II 2G Ex ib IIC T6

Pressure Measurement

Single-range transmitters for general applications

SITRANS P Compact for gauge and absolute pressure

1

Selection and Ordering data	Article No.	Ord. code	Selection and Ordering data	Article No.	Ord. code
SITRANS P Compact pressure transmitters for pressure and absolute pressure with diaphragm flush at front 2-wire system Process temperature up to 140 °C (284 °F) Accuracy: 0.2 % of full-scale value Output 4 ... 20 mA ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7MF8010-		SITRANS P Compact pressure transmitters for pressure and absolute pressure with diaphragm flush at front 2-wire system Process temperature up to 140 °C (284 °F) Accuracy: 0.2 % of full-scale value Output 4 ... 20 mA	7MF8010-	
Diaphragm seal with quick-release clamp Milk pipe union to DIN 11851 with slotted union nut <ul style="list-style-type: none"> • DN 25 • DN 32 • DN 40 • DN 50 • DN 65 Milk pipe union to DIN 11851 with threaded socket <ul style="list-style-type: none"> • DN 25 • DN 32 • DN 40 • DN 50 • DN 65 Clamp connection to DIN 32676 <ul style="list-style-type: none"> • DN 25 • DN 40 • DN 50 Clamp connection to ISO 2852 <ul style="list-style-type: none"> • 1 inch • 1½ inch • 2 inch • 2½ inch IDF standard with slotted union nut <ul style="list-style-type: none"> • 1 inch • 1½ inch • 2 inch IDF standard with threaded socket <ul style="list-style-type: none"> • 1 inch • 1½ inch • 2 inch SMS standard with slotted union nut <ul style="list-style-type: none"> • 1 inch • 1½ inch • 2 inch SMS standard with threaded socket <ul style="list-style-type: none"> • 1 inch • 1½ inch • 2 inch DRD flange, without welding-type flange <ul style="list-style-type: none"> • DN 50, PN 40 Varivent connection (Tuchenhausen) <ul style="list-style-type: none"> • D = 50, for Varivent housing DN 25 and 1 inch • D = 68, for Varivent housing DN 40 ... DN 125 and 1½ ... 6 inch Special version (add Order code and plain text)	1 AD AE AF AG AH BD BE BF BG BH CD CF CG DM DN DP DQ EM EN EP FM FN FP GM GN GP HM HN HP JH KF KL ZA	J 1 Y M 1 Y	Diaphragm seal with aseptic connection Aseptic screwed gland to DIN 11864-1, form A, with slotted union nut <ul style="list-style-type: none"> • 1 inch • 1½ inch • 2 inch • 2½ inch Aseptic screwed gland to DIN 11864-1, form A with threaded socket <ul style="list-style-type: none"> • 1 inch • 1½ inch • 2 inch • 2½ inch Aseptic screwed NEUMO with slotted union nut ¹⁾ <ul style="list-style-type: none"> • DN 25 • DN 32 • DN 40 • DN 50 Aseptic screwed NEUMO with threaded socket ¹⁾ <ul style="list-style-type: none"> • DN 25 • DN 32 • DN 40 • DN 50 Aseptic screwed NEUMO with clamp connection, form R ¹⁾ <ul style="list-style-type: none"> • DN 25 • DN 32 • DN 40 • DN 50 Aseptic screwed NEUMO with clamp connection, form V ¹⁾ <ul style="list-style-type: none"> • DN 25 • DN 32 • DN 40 • DN 50 Male thread DIN 3852 Form A <ul style="list-style-type: none"> • G½", min. meas. span 1.6 bar (23.2 psi) • G¾", min. meas. span 1 bar (14.5 psi) • G1", min. meas. span 0.4 bar (5.8 psi) • G1½", min. meas. span 0.25 bar (3.63 psi) • G2", min. meas. span 0.16 bar (2.32 psi) Special version (add Order code and plain text)	1 PM PN PP PQ QM QN QP QQ RD RE RF RG SD SE SF SG TD TE TF TG UD UE UF UG XA XB XC XD XE ZA	J 1 Y L 1 Y M 1 Y
Filling liquid Food oil, FDA-listed Medicinal white oil Special version (add Order code and plain text)	3 2 9	L 1 Y	Filling liquid Food oil, FDA-listed Medicinal white oil Special version (add Order code and plain text)	3 2 9	L 1 Y
Output signal 4 ... 20 mA Special version (add Order code and plain text)	1 9	M 1 Y	Output signal 4 ... 20 mA Special version (add Order code and plain text)	1 9	M 1 Y

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

Pressure Measurement

Single-range transmitters for general applications

SITRANS P Compact for gauge and absolute pressure

1

Selection and Ordering data		Article No.	Ord. code	Selection and Ordering data		Article No.	Ord. code
SITRANS P Compact pressure transmitters for pressure and absolute pressure with diaphragm flush at front		7MF8010-		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		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				Measured range			
Housing with angled plug to DIN 43650, IP65		1		(continued)			
Housing with round plug M12, IP65, union nut made of polyamide		2		-1 ... +9 bar (-14.5 ... +130.5 psi)		30 bar (435 psi)	GA
Housing with round plug M12, IP65, union nut made of stainless steel		3		-1 ... +15 bar (-14.5 ... +217.6 psi)		50 bar (725 psi)	GB
Stainless steel field housing (small) with cable gland, IP65		4		0 ... 1 bar a (0 ... 14.5 psia)		10 bar a (145 psia)	HA
Stainless steel field housing (small) with cable gland, IP67		5		0 ... 1.6 bar a (0 ... 23.2 psia)		10 bar a (145 psia)	HB
Internal ventilation for measuring ranges < 16 bar (< 232 psi)				0 ... 2.5 bar a (0 ... 36.3 psia)		16 bar a (232 psia)	HC
Measured range				0 ... 4 bar a (0 ... 58 psia)		16 bar a (232 psia)	HD
Overload pressure				0 ... 6 bar a (0 ... 87 psia)		30 bar a (435 psi)	HE
0 ... 160 mbar (0 ... 2.32 psi)	2 bar (29 psi)		BB	0 ... 10 bar a (0 ... 145 psia)		30 bar a (435 psi)	JA
0 ... 250 mbar (0 ... 3.63 psi)	2 bar (29 psi)		BC	Special version (add Order code and plain text)			ZA P1Y
0 ... 400 mbar (0 ... 5.8 psi)	6 bar (87 psi)		BD	Explosion protection			
0 ... 600 mbar (0 ... 8.7 psi)	6 bar (87 psi)		BE	without			1
0 ... 1 bar (0 ... 14.5 psi)	10 bar (145 psi)		CA	with, to ATEX 100a, II 2 G, Ex ib IIC T6			2
0 ... 1.6 bar (0 ... 23.2 psi)	10 bar (145 psi)		CB	Further designs			Order code
0 ... 2.5 bar (0 ... 36.3 psi)	16 bar (232 psi)		CC	Please add "-Z" to Article No. and specify Order code			
0 ... 4 bar (0 ... 58 psi)	16 bar (232 psi)		CD	Hygiene version			P01
0 ... 6 bar (0 ... 87 psi)	30 bar (435 psi)		CE	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)			
0 ... 10 bar (0 ... 145 psi)	30 bar (435 psi)		DA	Integral cooling element			K01
0 ... 16 bar (0 ... 232 psi)	50 bar (725 psi)		DB	Process temperature max. 200 °C (392 °F) instead of 140 °C (284 °F)			
0 ... 25 bar (0 ... 363 psi)	50 bar (725 psi)		DC	Connections for pipe			R01
0 ... 40 bar (0 ... 580 psi)	70 bar (1015 psi)		DD	Pipes to DIN 11850 ISO pipes to DIN 2463 Pipes to O. D. Tubing "BS 4825 Part 1"			R02 R03
-160 ... 0 mbar (-2.32 ... 0 psi)	2 bar (29 psi)		EB	Certificates			
-250 ... 0 bar (-3.73 ... 0 psi)	2 bar (29 psi)		EC	Quality Inspection Certificate (5-point characteristic curve test) according to IEC 60770-2			C11
-400 ... 0 bar (-5.8 ... 0 psi)	6 bar (87 psi)		ED	Inspection certificate to EN 10204-3.1			C12
-600 ... 0 bar (-8.7 ... 0 psi)	6 bar (87 psi)		EE	Use of FDA-listed remote seal filling liquids certified by test report to EN 10204-2.2			C17
-1 ... 0 bar (-14.5 ... 0 psi)	10 bar (145 psi)		FA	Roughness depth measurement R_a certified by test report to EN 10204-3.1			C18
-1 ... 0.6 bar (-14.5 ... 8.7 psi)	10 bar (145 psi)		FB	Certification to EHEDG for clamp-on seals with aseptic screwed gland to DIN 11864			C19
-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				

Pressure Measurement

Single-range transmitters for general applications

SITRANS P Compact for gauge and absolute pressure

1

Selection and Ordering data	Article No.	Ord. code	Selection and Ordering data	Article No.	Ord. code
SITRANS P Compact pressure transmitters for pressure and absolute pressure with clamp-on remote seal 2-wire system Process temperature up to 140 °C (284 °F) Accuracy: 0.2 % of full-scale value Output 4 ... 20 mA ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7MF8010-		SITRANS P Compact pressure transmitters for pressure and absolute pressure with clamp-on remote seal 2-wire system Process temperature up to 140 °C (284 °F) Accuracy: 0.2 % of full-scale value Output 4 ... 20 mA	7MF8010-	
Clamp-on remote seal (screwed gland at both ends) with quick-release clamps Milk pipe union to DIN 11851 with threaded socket • DN 25 • DN 32 • DN 40 • DN 50 • DN 65 Clamp connection to DIN 32676 • DN 25 • DN 32 • DN 40 • DN 50 • DN 65 Clamp connection to ISO 2852 ¹⁾ • 1 inch • 1½ inch • 2 inch • 2½ inch Special version (add Order code and plain text)	AD AE AF AG AH CD CE CF CG CH DM DN DP DQ ZA		Clamp-on seal with aseptic connection Aseptic screwed gland to DIN 11864-1, form A with threaded socket • 1 inch • 1½ inch • 2 inch Aseptic screwed NEUMO with threaded socket ¹⁾ • DN 25 • DN 32 • DN 40 • DN 50 • DN 65 Aseptic screwed NEUMO with clamp connection, form R ¹⁾ • DN 25 • DN 32 • DN 40 • DN 50 Aseptic screwed gland SÜDMO with threaded socket W 501 • 1 inch • 1½ inch • 2 inch Aseptic screwed gland SÜDMO with clamp connection W 601 • 1 inch • 1½ inch • 2 inch Special version (add Order code and plain text)	QM QN QP SD SE SF SG SH TD TE TF TG VM VN VP WM WN WP ZA	
Filling liquid Food oil, FDA-listed Medicinal white oil Special version (add Order code and plain text)	3 2 9		Filling liquid Food oil, FDA-listed Medicinal white oil Special version (add Order code and plain text)	3 2 9	
Output signal 4 ... 20 mA Special version (add Order code and plain text)	1 9	J 1 Y L 1 Y M 1 Y	Output signal 4 ... 20 mA Special version (add Order code and plain text)	1 9	J 1 Y L 1 Y M 1 Y

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

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

Pressure Measurement

Single-range transmitters for general applications

SITRANS P Compact for gauge and absolute pressure

1

Selection and Ordering data

Article 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



Housing design (stainless steel mat. No. 1.4404/316L) / electr. connection

Housing with angled plug to DIN 43650, IP65, union nut made of polyamide

Housing with round plug M12, IP65, union nut made of polyamide

Housing with round plug M12, IP65, union nut made of stainless steel

Stainless steel field housing (small) with cable gland, IP65

Stainless steel field housing (small) with cable gland, IP67

Internal ventilation for measuring ranges < 16 bar (< 232 psi)

1

2

3

4

5

Measured range Overload pressure

0 ... 160 mbar 2 bar

(0 ... 2.32 psi) (29 psi)

0 ... 250 mbar 2 bar

(0 ... 3.63 psi) (29 psi)

0 ... 400 mbar 6 bar

(0 ... 5.8 psi) (87 psi)

0 ... 600 mbar 6 bar

(0 ... 8.7 psi) (87 psi)

0 ... 1 bar 10 bar

(0 ... 14.5 psi) (145 psi)

0 ... 1.6 bar 10 bar

(0 ... 23.2 psi) (145 psi)

0 ... 2.5 bar 16 bar

(0 ... 36.3 psi) (232 psi)

0 ... 4 bar 16 bar

(0 ... 58 psi) (232 psi)

0 ... 6 bar 30 bar

(0 ... 87 psi) (435 psi)

0 ... 10 bar 30 bar

(0 ... 145 psi) (435 psi)

0 ... 16 bar 50 bar

(0 ... 232 psi) (725 psi)

0 ... 25 bar 50 bar

(0 ... 363 psi) (725 psi)

0 ... 40 bar 70 bar

(0 ... 580 psi) (1015 psi)

-160 ... 0 mbar 2 bar

(-2.32 ... 0 psi) (29 psi)

-250 ... 0 bar 2 bar

(-3.73 ... 0 psi) (29 psi)

-400 ... 0 bar 6 bar

(-5.8 ... 0 psi) (87 psi)

-600 ... 0 bar 6 bar

(-8.7 ... 0 psi) (87 psi)

-1 ... 0 bar 10 bar

(-14.5 ... 0 psi) (145 psi)

-1 ... 0.6 bar 10 bar

(-14.5 ... 8.7 psi) (145 psi)

-1 ... 1.5 bar 16 bar

(-14.5 ... 21.8 psi) (232 psi)

-1 ... 3 bar 16 bar

(-14.5 ... 43.5 psi) (232 psi)

-1 ... 5 bar 30 bar

(-14.5 ... 72.5 psi) (435 psi)

BB

BC

BD

BE

CA

CB

CC

CD

CE

DA

DB

DC

DD

EB

EC

ED

EE

FA

FB

FC

FD

FE

Selection and Ordering data

Article No. Ord. code

SITRANS P Compact pressure transmitters for pressure and absolute pressure with clamp-on remote seal

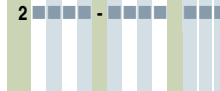
7MF8010-

2-wire system

Process temperature up to 140 °C (284 °F)

Accuracy: 0.2 % of full-scale value

Output 4 ... 20 mA



Measured range Overload pressure (continued)

-1 ... 9 bar 30 bar
(-14.5 ... 130.5 psi) (435 psi)-1 ... 15 bar 50 bar
(-14.5 ... 217.6 psi) (725 psi)0 ... 1 bar a 10 bar a
(0 ... 14.5 psia) (145 psia)0 ... 1.6 bar a 10 bar a
(0 ... 23.2 psia) (145 psia)0 ... 2.5 bar a 16 bar a
(0 ... 36.3 psia) (232 psia)0 ... 4 bar a 16 bar a
(0 ... 58 psia) (232 psia)0 ... 6 bar a 30 bar a
(0 ... 87 psia) (435 psi)0 ... 10 bar a 30 bar a
(0 ... 145 psia) (435 psi)Special version
(add Order code and plain text)

Explosion protection

without

with, to ATEX 100a, II 2 G, Ex ib IIC T6

GA

GB

HA

HB

HC

HD

HE

JA

ZA

1

2

P 1 Y

Further designs

Please add "-Z" to Article 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)

Integral cooling element

Process temperature max. 200 °C
(392 °F) instead of 140 °C (284 °F)

Connections for pipe

Pipes to DIN 11850

ISO pipes to ISO 2463

Pipes to O. D. Tubing "BS 4825 Part 1"

Certificates

Quality Inspection Certificate (5-point
characteristic curve test) according to
IEC 60770-2

Inspection certificate to EN 10204-3.1

Use of FDA-listed remote seal filling
liquids certified by test report
to EN 10204-2.2Roughness depth measurement R_a
certified by test report
to EN 10204-3.1Certification to EHEDG for clamp-on
seals with aseptic screwed gland
to DIN 11864

Order code

P01

K01

R01

R02

R03

C11

C12

C17

C18

C19

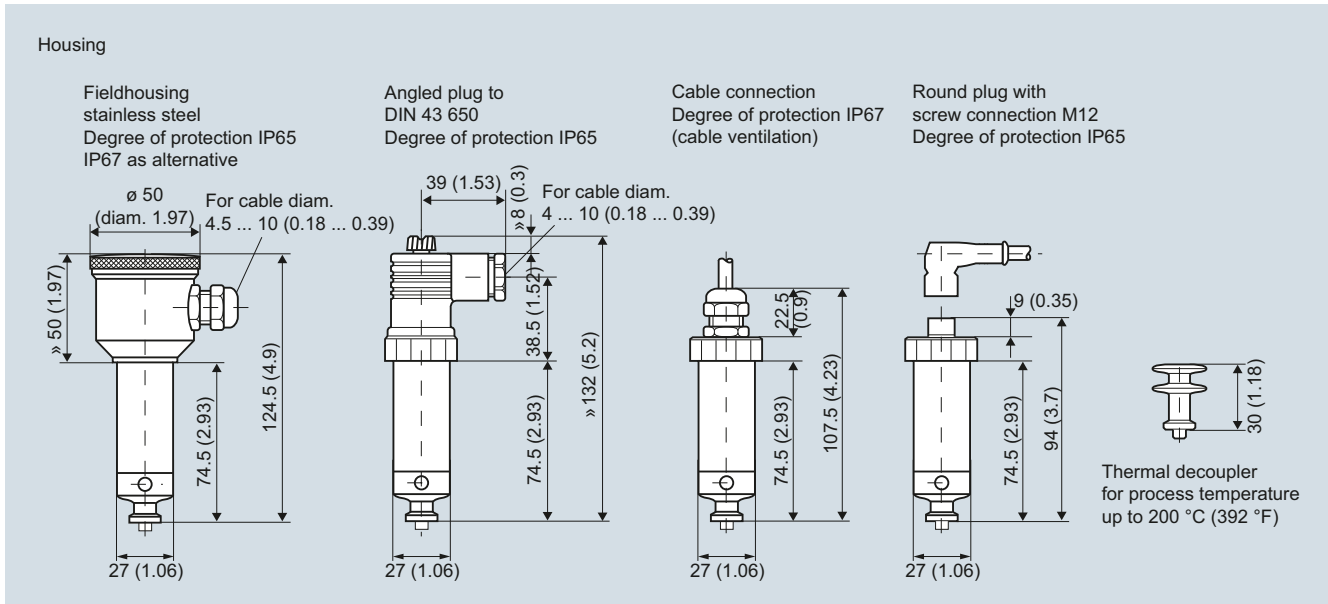
Pressure Measurement

Single-range transmitters for general applications

SITRANS P Compact for gauge and absolute pressure

1

Dimensional drawings

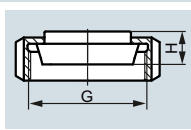


SITRANS P Compact, dimensions in mm (inch)

Process connections

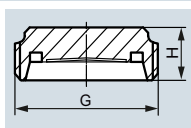
Diaphragm seal with quick-release clamp

Milk pipe union to DIN 11851 with slotted union nut



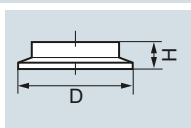
DN	PN	H mm (inch)	G
25	40	24 (0.95)	Rd. 52 x 1/6"
32	40	24 (0.95)	Rd. 58 x 1/6"
40	40	24 (0.95)	Rd. 65 x 1/6"
50	25	25.1 (0.99)	Rd. 78 x 1/6"
65	25	28.6 (1.13)	Rd. 95 x 1/6"

Milk pipe union to DIN 11851 with threaded socket



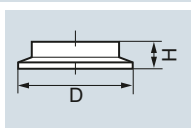
DN	PN	H mm (inch)	G
25	40	-	Rd. 52 x 1/6"
32	40	20 (0.79)	Rd. 58 x 1/6"
40	40	20 (0.79)	Rd. 65 x 1/6"
50	25	20 (0.79)	Rd. 78 x 1/6"
65	25	22 (0.87)	Rd. 95 x 1/6"

Clamp connection to DIN 32676



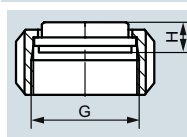
DN	PN	H mm (inch)	D mm (inch)
25	16	14 (0.55)	50.5 (2)
40	16	14 (0.55)	50.5 (2)
50	16	14 (0.55)	64 (2.52)

Clamp connection to ISO 2852



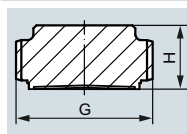
DN	PN	H mm (inch)	D mm (inch)
1"	16	14 (0.55)	50.5 (2)
1½"	16	12 (0.47)	50.5 (2)
2"	16	14 (0.55)	64 (2.52)
2½"	16	14 (0.55)	77.5 (3.05)

IDF standard with slotted union nut



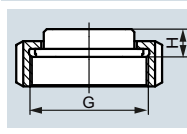
DN	PN	H mm (inch)	G inch (IDF thread)
1"	40	21 (0.83)	1"
1½"	40	13.5 (0.53)	1½"
2"	25	15 (0.59)	2"

IDF standard with threaded socket



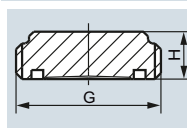
DN	PN	H mm (inch)	G inch (IDF thread)
1"	40	21 (0.83)	1"
1½"	40	13.5 (0.53)	1½"
2"	25	15 (0.59)	2"

SMS standard with slotted union nut



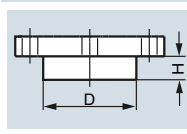
DN	PN	H mm (inch)	G
1"	40	16 (0.63)	Rd 40 x 1.6"
1½"	40	16 (0.63)	Rd 60 x 1.6"
2"	25	16 (0.63)	Rd 70 x 1.6"

SMS standard with threaded socket



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

DRD flange, without welding-type flange



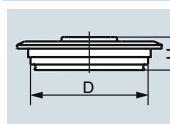
DN	PN	H mm (inch)	D mm (inch)
50	40	16.7 (0.66)	65.5 (2.58)

Pressure Measurement

Single-range transmitters for general applications

SITRANS P Compact for gauge and absolute pressure

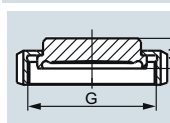
Varivent connection



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

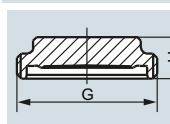
Diaphragm seal with aseptic connection

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



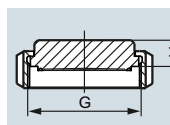
DN	PN	H mm (inch)	G
1"	40	20 (0.79)	Rd 52 x 1/6"
1½"	40	20 (0.79)	Rd 58 x 1/6"
2"	25	20 (0.79)	Rd 65 x 1/6"
2½"	25	20 (0.79)	Rd 78 x 1/6"

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



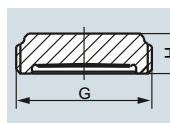
DN	PN	H mm (inch)	G
1"	40	15 (0.59)	Rd 52 x 1/6"
1½"	40	15 (0.59)	Rd 58 x 1/6"
2"	25	15 (0.59)	Rd 65 x 1/6"
2½"	25	15 (0.59)	Rd 78 x 1/6"

Aseptic screwed NEUMO BioConnect with slotted union nut



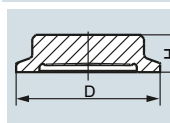
DN	PN	H mm (inch)	G
25	16	15 (0.59)	M 42 x 2
32	16	15 (0.59)	M 52 x 2
40	16	15 (0.59)	M 56 x 2
50	16	15 (0.59)	M 68 x 2

Aseptic screwed NEUMO BioConnect with threaded socket



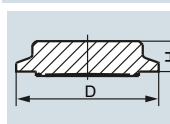
DN	PN	H mm (inch)	G
25	16	20 (0.79)	M 42 x 2
32	16	20 (0.79)	M 52 x 2
40	16	20 (0.79)	M 56 x 2
50	16	20 (0.79)	M 68 x 2

Aseptic screwed NEUMO BioConnect with clamp connection, form R



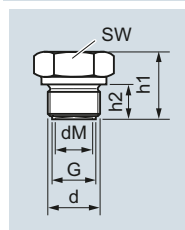
DN	PN	H mm (inch)	D mm (inch)
25	40	20 (0.79)	50.5 (2)
32	40	20 (0.79)	50.5 (2)
40	40	20 (0.79)	64 (2.52)
50	25	20 (0.79)	77.4 (3.05)

Aseptic screwed NEUMO BioConnect with clamp connection, form V



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

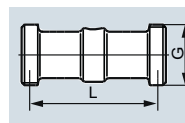
Male thread DIN 3852, form A



G	d mm (inch)	d _M mm (inch)	h ₁ mm (inch)	h ₂ mm (inch)	SW mm (inch)
G½A	26 (1.02)	17.5 (0.69)	27 (1.06)	14 (0.55)	27 (1.06)
G¾A	32 (1.26)	22.6 (0.89)	31 (1.22)	16 (0.63)	32 (1.26)
G1A	39 (1.54)	27 (1.06)	33 (1.30)	18 (0.71)	51 (2.01)
G1½A	55 (2.17)	40 (1.57)	40 (1.57)	22 (0.87)	55 (2.17)
G2A	68 (2.68)	51 (2.00)	42 (1.65)	24 (0.94)	70 (2.76)

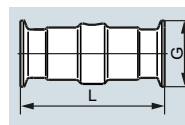
Clamp-on remote seal (screwed gland at both ends) with quick-release clamps

Milk pipe union to DIN 11851 with threaded socket



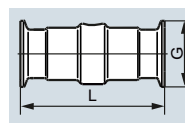
DN	PN	L mm (inch)	G
25	40	110 (4.33)	Rd 52 x 1/6"
32	40	110 (4.33)	Rd 58 x 1/6"
40	40	110 (4.33)	Rd 65 x 1/6"
50	25	110 (4.33)	Rd 78 x 1/6"
65	25	110 (4.33)	Rd 95 x 1/6"

Clamp connection to DIN 32676



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

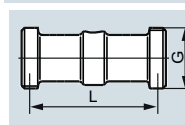
Clamp connection to ISO 2852



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

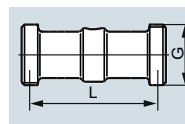
Clamp-on seal with aseptic connection

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



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

Aseptic screwed NEUMO BioConnect with threaded socket



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

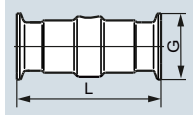
Pressure Measurement

Single-range transmitters for general applications

SITRANS P Compact for gauge and absolute pressure

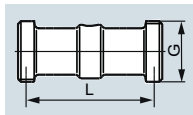
1

Aseptic screwed NEUMO BioConnect with clamp connection, form R



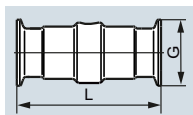
DN	PN	L mm (inch)	D mm (inch)
25	16	110 (4.33)	50.4 (2)
32	16	110 (4.33)	50.4 (2)
40	16	110 (4.33)	64 (2.52)
50	16	110 (4.33)	77.4 (3.05)

Aseptic screwed gland SÜDMO with threaded socket W 501



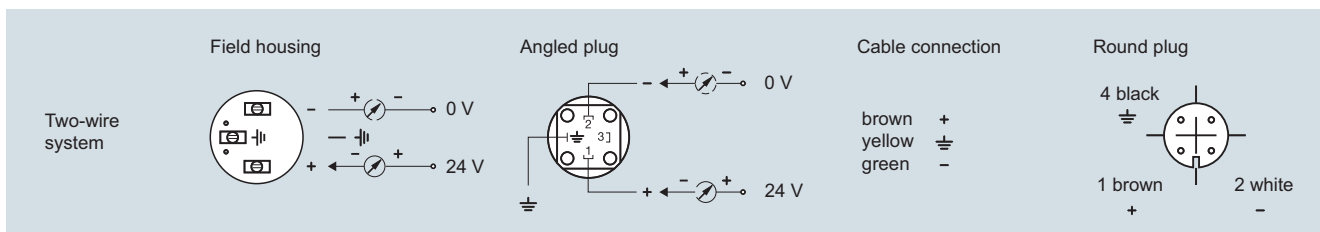
DN	PN	L mm (inch)	G
1"	25	110 (4.33)	Rd 44 x 1/6"
1½"	25	110 (4.33)	Rd 58 x 1/6"
2"	20	110 (4.33)	Rd 78 x 1/6"

Aseptic screwed gland SÜDMO with threaded socket W 601



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

Schematics



SITRANS P Compact, connection diagram

Pressure Measurement

Transmitters with WirelessHART

SITRANS P280 for gauge and absolute pressure

1

Overview



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

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

Benefits

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

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

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

Application

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

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

The sensor is integrated into the transmitter housing.

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

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

Design

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

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

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

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

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

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

Function

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

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

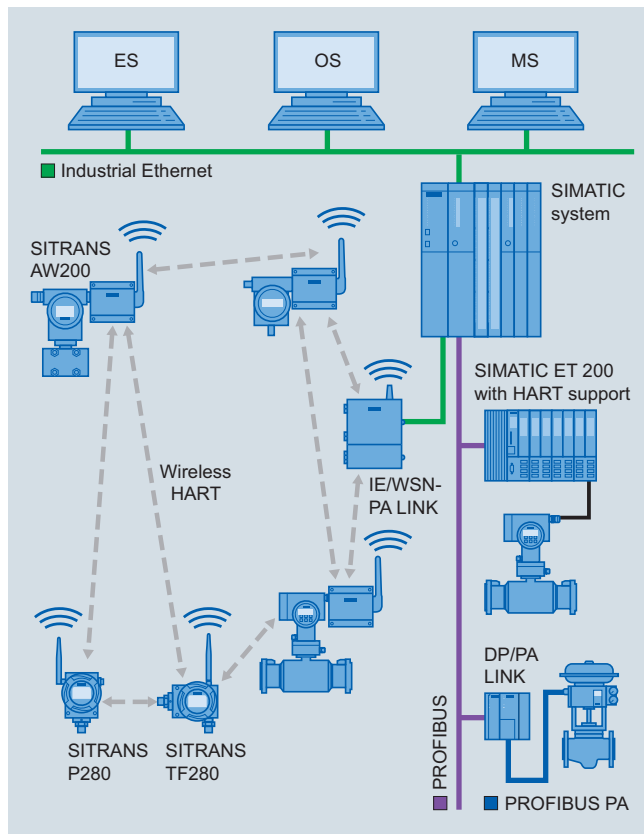
Detailed information on IE/WSN-PA can be found in the FI 01 catalogue, section 7 or <http://www.siemens.com/wirelesshart>.

Integration

Connecting to SIMATIC PCS 7

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

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



Integration of a meshed network in SIMATIC PCS 7

Configuration

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

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

Technical specifications

SITRANS P280 WirelessHART pressure transmitter

Mode of operation

Measuring principle	piezo-resistive
Measured variable	Gauge and absolute pressure

Gauge pressure input

Measuring range	Overload limit/Bursting pressure
0 ... 1.6 bar (0 ... 23 psi)	4 bar (58 psi)
0 ... 10 bar (0 ... 145 psi)	20 bar (290 psi)
0 ... 50 bar (0 ... 725 psi)	100 bar (1450 psi)
0 ... 200 bar (0 ... 2900 psi)	400 bar (5801 psi)
0 ... 320 bar (0 ... 4641 psi)	640 bar (9282 psi)

Units

mbar, bar, m4H₂O, i4H₂O, atm, Torr, gcm², kgcm², Pa, kPa, MPa, psi, mmHG, mmH₂O, ftH₂O, inHG, inH₂O

Absolute pressure input

Measuring range	Overload limit/Bursting pressure
0 ... 1.6 bar a (0 ... 23 psia)	4 bar a (58 psia)
0 ... 10 bar a (0 ... 145 psia)	20 bar a (290 psia)
0 ... 50 bar a (0 ... 725 psia)	100 bar a (1450 psia)
0 ... 200 bar a (0 ... 2900 psia)	400 bar a (5801 psia)
0 ... 320 bar a (0 ... 4641 psia)	640 bar a (9282 psia)

Units

mbar, bar, m4H₂O, i4H₂O, atm, Torr, gcm², kgcm², Pa, kPa, MPa, psi, mmHG, mmH₂O, ftH₂O, inHG, inH₂O

Output

Output signal	2.4 GHz Wireless signal with TSMP (Time Synchronized Mesh Protocol)
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Measuring accuracy

as per IEC 60770-1	
Error in measurement at limit setting incl. hysteresis and reproducibility	typ. 0.17 % of sensor's span max. 0.25 % of sensor's span
Long-term stability	max. ± 0.25 % of sensor/year span
Influence of ambient temperature	typ. 0.07 %/10K, max. 0.2 %/10 K of sensor's span

Rated conditions

Ambient conditions	
• Ambient temperature	-40 ... +80 °C (-40 ... +176 °F) (in ambient temperatures below -20 °C (-4 °F) and above +70 °C (158 °F), readability of the display is limited.)
• Storage temperature	-40 ... +85 °C (-40 ... +185 °F)
• Relative humidity	< 95 %
Climatic class	4K4H in accordance with EN 60721-3-4 (stationary use at locations not protected against weather)
Degree of protection	IP65/NEMA 4
Allowable media temperature	-40 ... +85 °C (-40 ... +185 °F)

Pressure Measurement

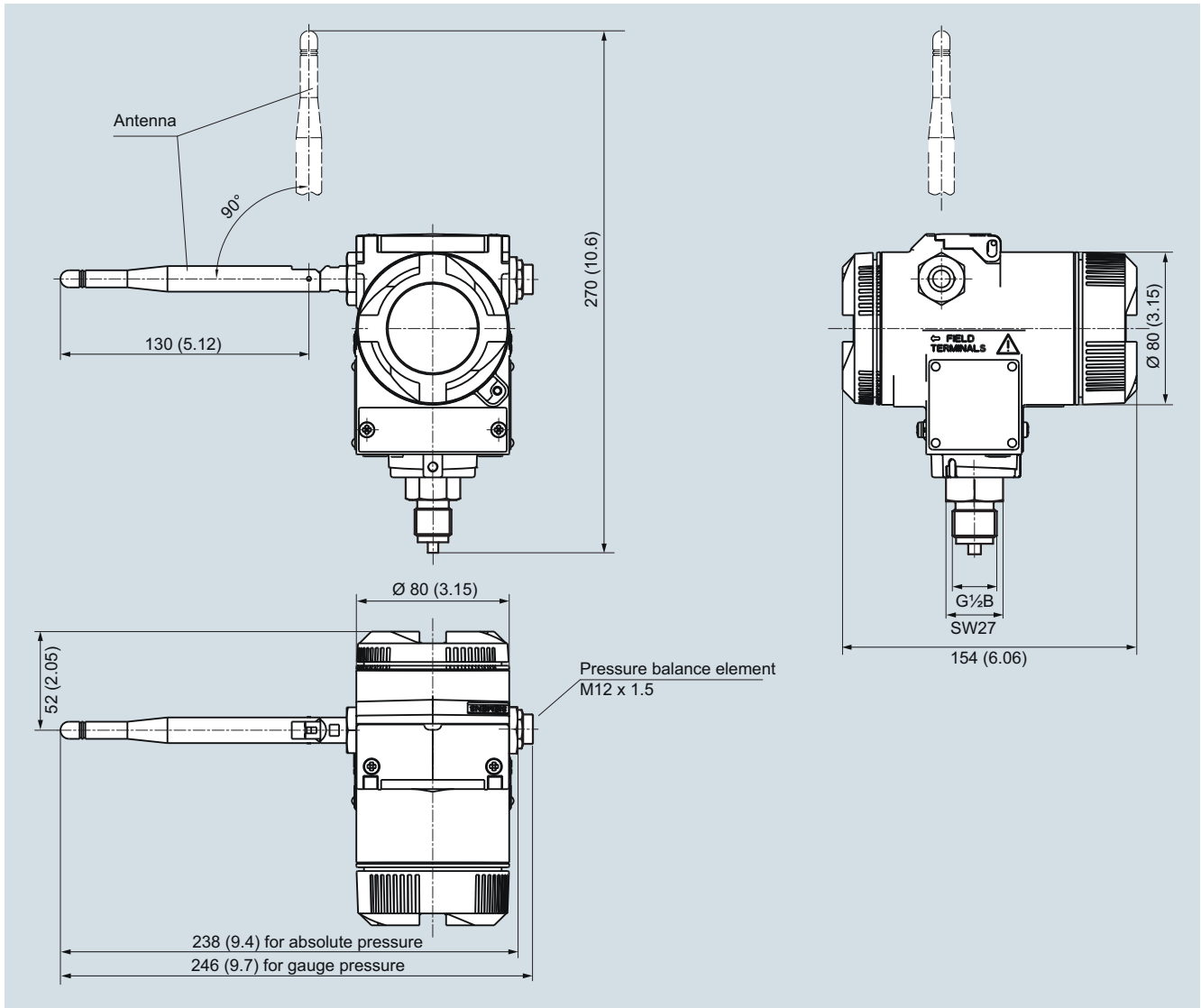
Transmitters with WirelessHART

SITRANS P280 for gauge and absolute pressure

Design	
Enclosure material	low-copper die-cast aluminum, AC-AISI12(Fe)
Shock resistance	in accordance with DIN EN 60068-2-29 / 03.95
Resistance to vibration	in accordance with DIN EN 60068-2-6/ 12.07
Weight	
• without battery	1.5 kg (3.31 lb)
• With battery	1.6 kg (3.53 lb)
Dimensions (W x H x D)	See Dimensional drawing
Process connection	<ul style="list-style-type: none"> G$\frac{1}{2}$B male thread as per EN 837-1 $\frac{1}{2}$-14 NPT
Sensor break	Is recognized
Displays and controls	
Display (with illumination)	
• Size of display	104 x 80 pixels
• Number of digits	adjustable
• Number of spaces after comma	adjustable
Setting options	<ul style="list-style-type: none"> on site with 3 buttons with SIMATIC PDM or HART-Communicator
Power supply	
Battery	3.6 V DC
Communication	
Radio	WirelessHART V7.1 conforming
Transmission frequency band	2.4 GHz (ISM-Band)
Transmission range under reference conditions	Up to 250 m (line of sight) in outside areas Up to 50 m (greatly dependent on obstacles) in inside areas
Communication interfaces	<ul style="list-style-type: none"> HART communication with HART modem WirelessHART
Certificates and approvals	
Wireless communication approvals	R&TTE, FCC
General Product Safety	CSA _{US/C} , CE, UL
Classification according to pressure equipment directive (PED 2014/68/EU)	Gases: Fluid group 1 Liquids: Fluid group 1; meets requirements as per Section 3, Subsection 3 (sound engineering practice)

Selection and Ordering data	Article No.
SITRANS P280 WirelessHART pressure transmitter (Required battery not included with delivery, see accessories) Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7MP1120-0
Measuring cell filling Dry measuring cell	0
Measuring span Gauge pressure 0 ... 1.6 bar (0 ... 23 psi) 0 ... 10 bar (0 ... 145 psi) 0 ... 50 bar (0 ... 725 psi) 0 ... 200 bar (0 ... 2900 psi) 0 ... 320 bar (0 ... 4641 psi) Absolute pressure 0 ... 1.6 bar a (0 ... 3 psia) 0 ... 10 bar a (0 ... 145 psia) 0 ... 50 bar a (0 ... 725 psia) 0 ... 200 bar a (0 ... 2900 psia) 0 ... 320 bar a (0 ... 4641 psia)	D E F G H M N P Q R K 1 1 0 1 A A
Wetted parts Ceramic	
Display Display, visible	
Enclosure Die-cast aluminum	
Process connection G $\frac{1}{2}$ as per EN 837-1 $\frac{1}{2}$ -14 NPT	
Explosion protection Without	
Antenna Variable, attached to device	
Further designs Please add "-Z" to Article No. and specify Order code(s) and plain text.	Order code
Stainless steel tag plate (measuring point description) max. 16 digits entered in plain text Y15:	Y15
Measuring point message max. 27 characters entered in plain text: Y16:	Y16
Accessories	Article No.
Lithium battery for SITRANS TF280/P280	7MP1990-0AA00
Mounting bracket, steel	7MF4997-1AC
Mounting bracket, stainless steel	7MF4997-1AJ
Cover, die-cast aluminum, without window	7MF4997-1BB
Cover, die-cast aluminum, with window	7MF4997-1BE
IE/WSN-PA LINK	see Sec. 7
HART modem with USB interface	7MF4997-1DB
SIMATIC PDM	see Sec. 8
► Available ex stock	

Dimensional drawings



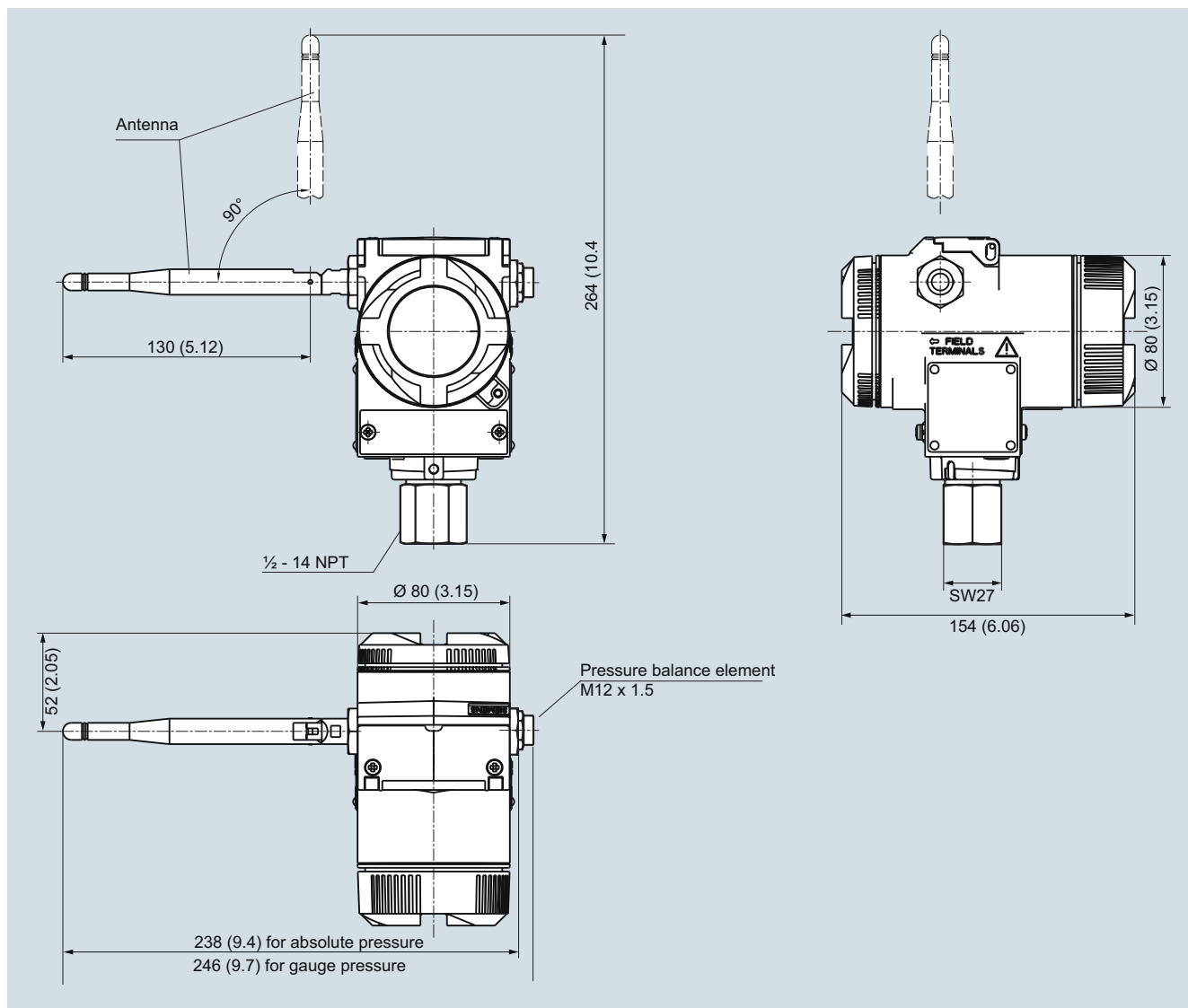
SITRANS P280 WirelessHART pressure transmitter, process connection G $\frac{1}{2}$ ", dimensions in mm (inch)
The dimensional drawing of the mounting bracket see on page 1/198.

Pressure Measurement

Transmitters with WirelessHART

SITRANS P280 for gauge and absolute pressure

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SITRANS P280 WirelessHART pressure transmitter, process connection 1/2 - 14 NPT, dimensions in mm (inch)
The dimensional drawing of the mounting bracket see on page 1/198.