Overview

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

The output signal is a load-independent direct current from 4 to 20 mA or a PROFIBUS PA or FOUNDATION Fieldbus signal, which is linearly proportional to the input pressure. Communication is via HART protocol or PROFIBUS PA or FOUNDATION Fieldbus interface. The basic settings of the pressure transmitter can be made easily on-site by means of three buttons.

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

Benefits

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

Application

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

It can be used for the following measurement types:

- Gauge pressure
- Absolute pressure

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

- Level
- Volume
- Mass

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

Gauge pressure

This variant measures the gauge pressure of corrosive, non-corrosive and hazardous gases, vapors and liquids.

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

Level

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

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

Absolute pressure

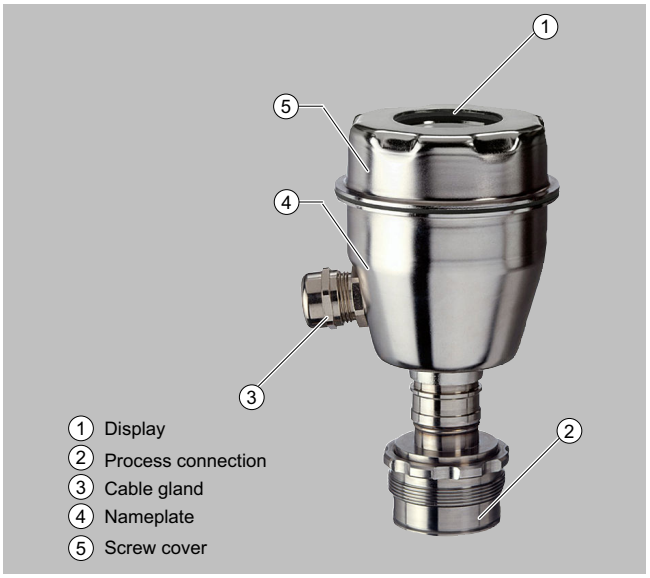
This variant measures the absolute pressure of corrosive, non-corrosive and hazardous gases, vapors and liquids.

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

Design

The device comprises:

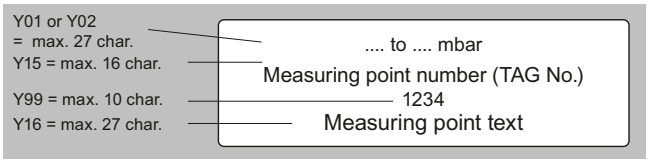
- electronics
- Enclosure
- Measuring cell



Perspective view of SITRANS P300

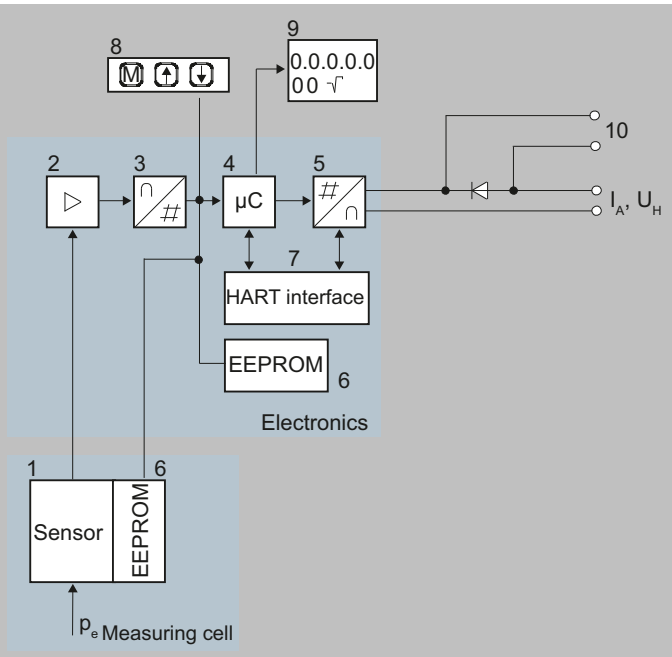
The enclosure has a screw-on cover (5) and, depending on the version, comes with or without an inspection window. The electrical terminal compartment, the buttons for operation of the device are located under this cover and, depending on the version, the display. The connections for the auxiliary power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

Example of attached measuring points sign



Function

Mode of operation of electronics with HART communication



1 Measuring cell sensor
2 Instrument amplifier
3 Analog-to-digital converter
4 Microcontroller
5 Digital-to-analog converter
6 One non-volatile memory each in the measuring cell and electronics
7 HART interface
8 Three input keys (local operation)
9 Digital display
10 Diode circuit and connection for external ammeter
I_A Output current 4 ... 20 mA
U_H Power supply
P_e Input variable

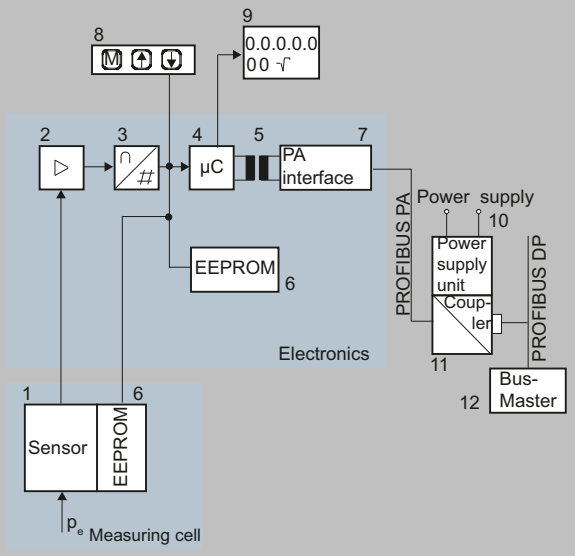
Function diagram of electronics

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

The buttons (8) can be used to call up individual functions, so-called modes. If you have a device with a local 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).

Function (continued)

Mode of operation of 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		

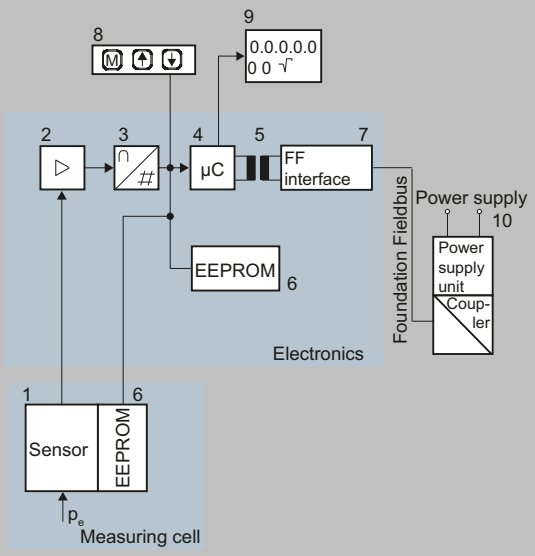
Function diagram of electronics

The input pressure is converted into an electrical signal by the sensor (1). This signal is amplified by the instrument amplifier (2) and digitalized in an analog-to-digital converter (3). The digital signal is analyzed in a microcontroller (4) and corrected for linearity and temperature response. It is then made available on the PROFIBUS PA via 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 storage is linked to the measuring cell, the second to the electronics.

The buttons (8) can be used to call up individual functions, so-called modes. If you have a device with a local 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).

Function (continued)

Mode of operation of electronics with FOUNDATION Fieldbus communication



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

Function diagram of electronics

The bridge output voltage created by the sensor (1, Figure "Function diagram of electronics") is amplified by the measuring amplifier (2) and digitalized in the analog-to-digital converter (3). The digital information is evaluated in the microcontroller, corrected for linearity and temperature response and made available on the FOUNDATION Fieldbus via 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). One memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced separately from each other.

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

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

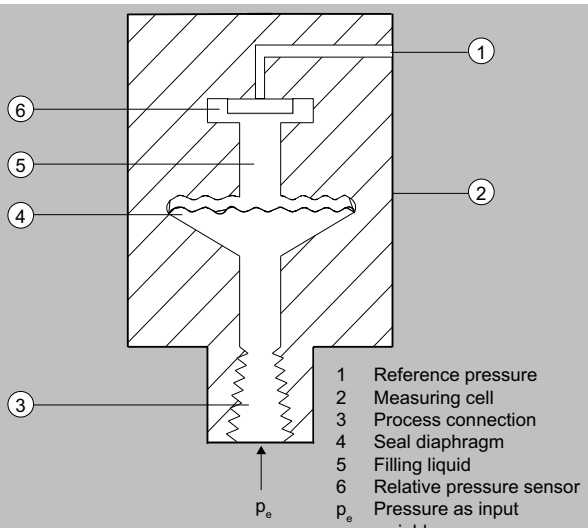
Mode of operation of the measuring cells

The process connections available include the following:

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

Function (continued)

Measuring cell for gauge pressure

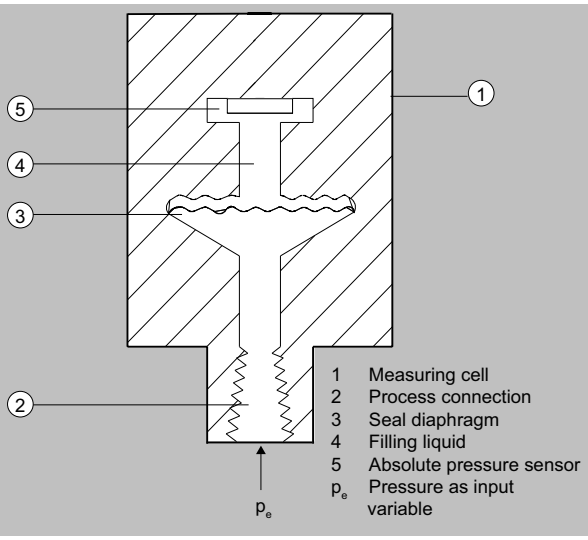


Measuring cell for gauge pressure, function diagram

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

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

Measuring cell for absolute pressure

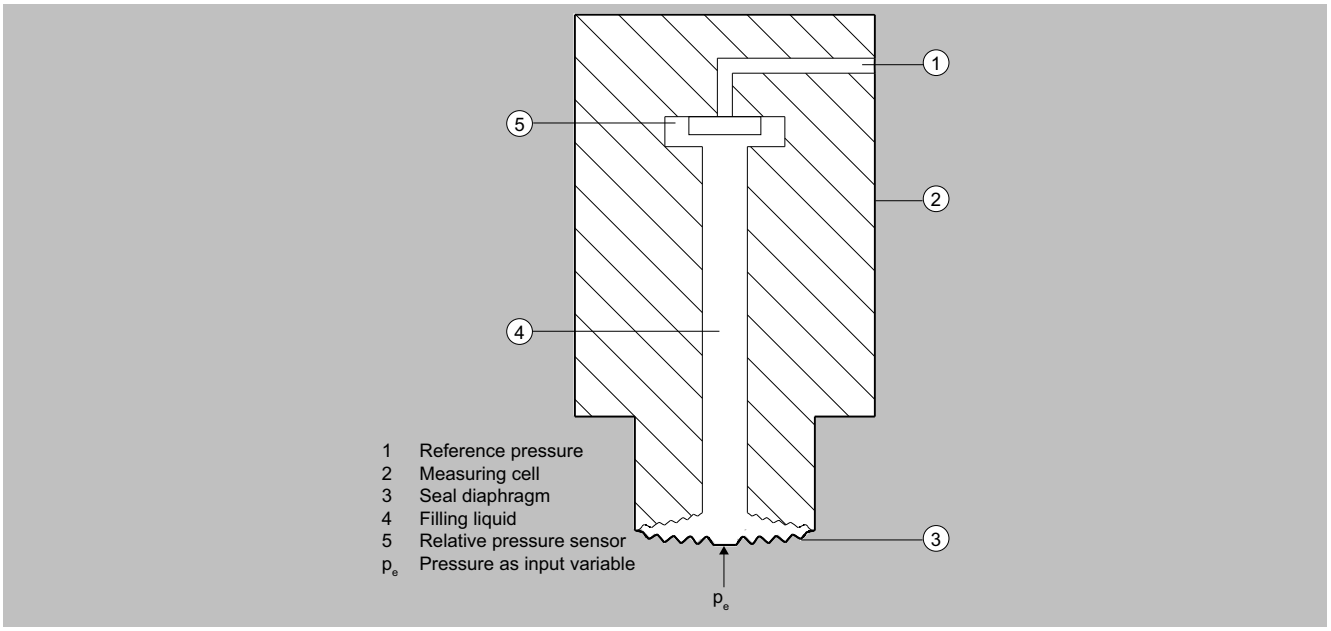


Measuring cell for absolute pressure, function diagram

The input pressure (p_e) is transferred via the seal diaphragm (3) and the filling liquid (4) to the absolute pressure sensor (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.

Function (continued)

Measuring cell for gauge pressure, flush-mounted diaphragm

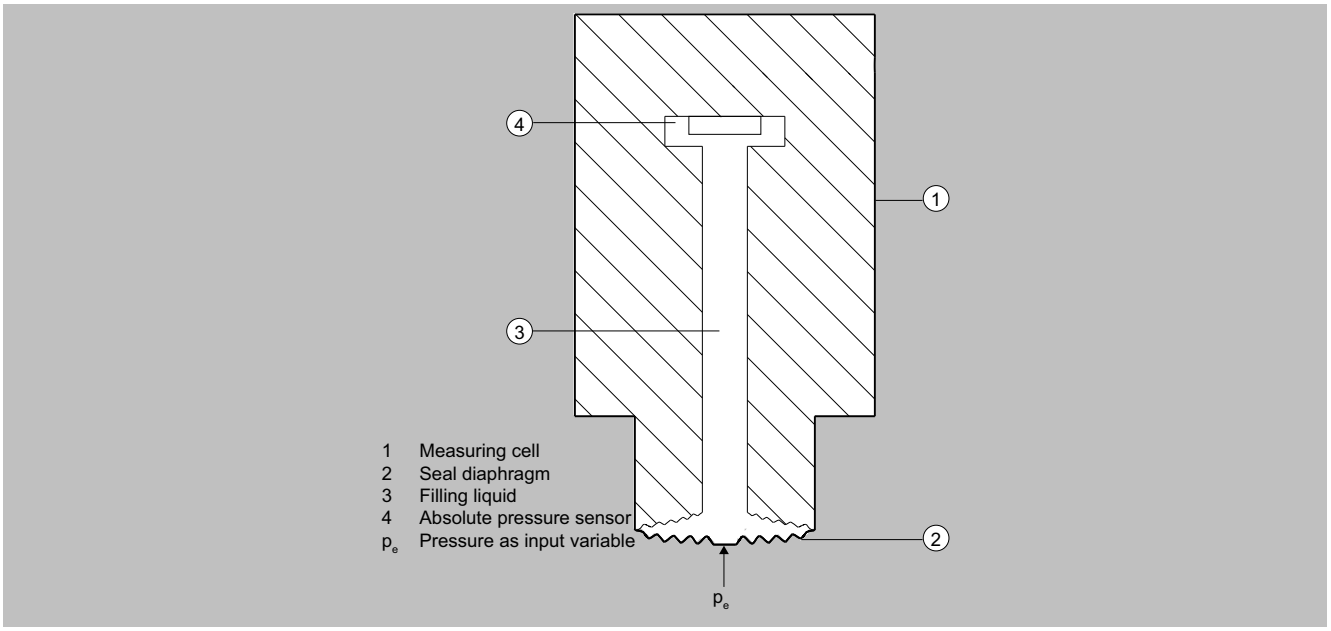


Measuring cell for gauge pressure, flush-mounted diaphragm, function diagram

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

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

Measuring cell for absolute pressure, flush-mounted diaphragm



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

Function (continued)

The input pressure (p_e) is transferred via the seal diaphragm (2) and the filling liquid (3) to the absolute pressure sensor (4), displacing its measuring diaphragm. The displacement changes the resistance value of the four piezo resistors in the measuring diaphragm in a bridge circuit. The change in the resistance causes a bridge output voltage proportional to the input pressure.

Parameterization

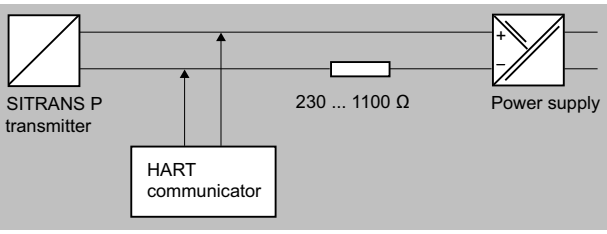
Depending on the version, there are a range of options for parameterizing the pressure transmitter and for setting or scanning the parameters.

Parameterization using the input buttons (local operation)

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

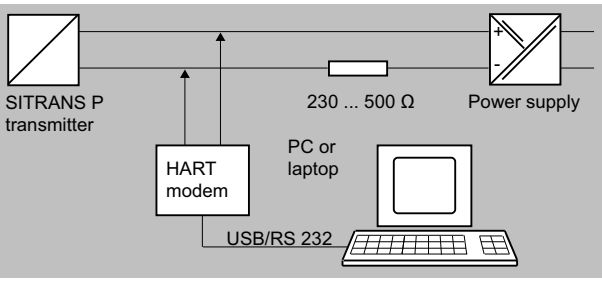
Parameterization using HART

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



Communication between a HART Communicator and a pressure transmitter

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



HART communication between a PC communicator and a pressure transmitter

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

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

Adjustable SITRANS P300 parameters with HART

Parameters	Input buttons	HART
Lower range value	x	x
Upper range value	x	x
Electrical damping	x	x
Blind adjustment of the lower range value	x	x
Blind adjustment of the upper range value	x	x
Zero adjustment	x	x
Current simulator	x	x
Fault current	x	x
Disabling of buttons, write protection	x	x [1]
Type of unit, unit	x	x
Input of characteristic curve		x
Freely-programmable LCD		x
Diagnostic functions		x

[1] Except cancel write protection.

Diagnostic functions for SITRANS P300 with HART

- Zero correction display
- Event counter
- Limit transmitter
- Saturation alarm
- Min/max pointer
- Simulation functions
- Maintenance timer

Available physical units of display for SITRANS P300 with HART

Physical variable	Physical units
Pressure (can also be preset in the factory)	Pa, MPa, kPa, bar, mbar, torr, atm, psi, g/cm², kg/cm², in H_2O, in H_2O (4 °C), mmH_2O, ftH_2O (20 °C), inHg, mmHg
Level (height data)	m, cm, mm, ft, in
Volume	m³, dm³, hl, yd³, ft³, in³, US gallon, Imp. gallon, bushel, barrel, barrel liquid
Mass	g, kg, t, lb, Ston, Lton, oz
Temperature	K, °C, °F, °R
Other	%, mA

Function (continued)

Parameterization through PROFIBUS interface

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

For parameter assignment via PROFIBUS, you need suitable software, e.g. SIMATIC PDM (Process Device Manager)

Parameterization through FOUNDATION Fieldbus interface

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

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

Adjustable parameters for SITRANS P300 with PROFIBUS PA and FOUNDATION Fieldbus

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

Diagnostic functions for SITRANS P300 with PROFIBUS PA and FOUNDATION Fieldbus

- Event counter
- Min/max pointer
- Maintenance timer
- Simulation functions
- Zero correction display
- Limit transmitter
- Saturation alarm

Physical units available for the local display

Physical variable	Physical units
Pressure (can also be preset in the factory)	Mpa, kPa, Pa, bar, mbar, torr, atm, psi, g/cm², kg/cm², mmH_2O, mmH_2O (4 °C), in H_2O, in H_20 (4 °C), ftH_2O (20 °C), mmHg, inHg
Level (height data)	m, cm, mm, ft, in, yd
Mass	g, kg, t, lb, Ston, Lton, oz
Volume	m^3, dm^3, hl, yd^3, ft^3, in^3, US gallon, Imp. gallon, bushel, barrel, barrel liquid
Volume flow	m^3/s, m^3/min, m^3/h, m^3/d, l/s, l/min, l/h, l/ d, Ml/d, ft^3/s, ft^3/min, ft^3/h, ft^3/d, US gallon/s, US gallon/min, US gallon/h, US gallon/d, bbl/s, bbl/min, bbl/h, bbl/d
Mass flow	g/s, g/min, g/h, g/d, kg/s, kg/min, kg/h, kg/d, t/s, t/min, t/h, /t/d, lb/s, lb/min, lb/h, lb/d, STon/s, STon/min, STon/h, STon/d, LTon/s, LTon/min, LTon/h, LTon/d
Temperature	K, °C, °F, °R
Other	%

Hygiene version

In the case of the SITRANS P300 with 7MF812.-... flush-mounted diaphragm, selected connections comply with the requirements of the EHEDG or 3A. You can 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.

Selection and ordering data

SITRANS P300 pressure transmitters for gauge pressure and absolute pressure, single chamber enclosure, nameplate inscription in English 4 ... 20 mA / HART PROFIBUS PA (PA) FOUNDATION Fieldbus (FF)		Article No. 7MF8023- 7MF8024- 7MF8025-										
		●	●	●	●	●	-	●	●	●	●	
Click the article number for online configuration in the PIA Life Cycle Portal.												
Measuring cell filling	**Measuring cell cleaning**											
Silicone oil	Normal	1										
Inert liquid	Cleanliness level 2 according to DIN 25410	3										
Measuring span (min. ... max.)												
8.3 ... 250 mbar (0.12 ... 3.63 psi)			A									
0.01 ... 1 bar (0.15 ... 14.5 psi)			B									
0.04 ... 4 bar (0.58 ... 58 psi)			C									
0.16 ...16 bar (2.32 ... 232 psi)			D									
0.63 ... 63 bar (9.14 ... 914 psi)			E									
1.6 ... 160 bar (23.2 ... 2320 psi)			F									
4 ... 400 bar (58 ... 5802 psi)			G									
8.34 ... 250 mbar a (0.13 ... 3.63 psi a)			Q									
43.34 ... 1300 mbar a (0.63 ... 18.86 psi a)			S									
0.17 ... 5 bar a (2.43 ... 72.5 psi a)			T									
1 ... 30 bar a (14.6 ... 435 psi a)			U									
Material of wetted parts												
Seal diaphragm	***Measuring cell***											
Stainless steel	Stainless steel			A								
Hastelloy	Stainless steel			B								
Hastelloy	Hastelloy			C								
Version for diaphragm seal in combination with "internal thread ½-14 NPT" process connection **(recommended version)**[1) 2) 3) 4) 5)]				Y	1							
Process connection												
Connection shank G½B according to EN 837-1					0							
Internal thread ½-14 NPT					1							
Oval flange with process connection out of stainless steel (oval flange has no internal thread)[6)]												
• Fastening thread $^{7}/_{16}$ 20 UNF according to EN 61518					2							
• Fastening thread M10 according to DIN 19213					3							
• Mounting thread M12 according to DIN 19213					4							
External thread M20 × 1.5					5							
External thread ½-14 NPT					6							
Material of non-wetted parts												
Stainless steel, deep-drawn and electrolytically polished						4						
Version												
Standard version								1				
Explosion protection												
None									A			
With ATEX, type of protection:												
"Intrinsic safety (Ex ia)"									B			
Zone 20/21/22[7)]									C			
Ex nA/nL (Zone 2)[8)]									E			
With FM "Intrinsic safety" (cFM_{US})									M			
Electrical connection/cable entry												
Screw gland M20×1.5 (polyamide)[9)]										A		
Screw gland M20×1.5 (metal)										B		
Screw gland M20×1.5 (stainless steel)										C		
Device plug M12 (stainless steel, without cable socket)										G		
½-14 NPT gland threading metal[10)]										H		
½-14 NPT gland threading stainless steel[10)]										J		
Display												
Without local display, with buttons, closed lid											1	
With local display and buttons, closed lid[11)]											2	

Selection and ordering data (continued)

	Article No.
SITRANS P300 pressure transmitters for gauge pressure and absolute pressure, single chamber enclosure, nameplate inscription in English	
4 ... 20 mA / HART	**7MF8023-**
PROFIBUS PA (PA)	**7MF8024-**
FOUNDATION Fieldbus (FF)	**7MF8025-**
	● ● ● ● ● - ● ● ● ●
With local display and buttons, lid with polycarbonate pane (setting for HART devices: mA, for PROFIBUS PA and FOUNDATION Fieldbus devices: Pressure units[11])	**4**
With local display and buttons (setting acc. to specifications, order code "Y21" or "Y22" required), lid with polycarbonate pane[11]	**5**
With local display and buttons, lid with glass pane (setting for HART devices: mA, for PROFIBUS and FOUNDATION Fieldbus devices: Pressure units)[11]	**6**
With local display and buttons (setting acc. to specifications, order code "Y21" or "Y22" required), lid with glass pane[11]	**7**

Note:

See section "Supplementary components" for supply units. A quick-start guide is included in the scope of delivery of the device.

1) If the quality inspection certificate (factory calibration) according to IEC 60770-2 is to be ordered for transmitters with mounted diaphragm seals, it is recommended that this certificate be ordered exclusively for the remote seals. Here, the measuring accuracy of the entire combination is certified.
2) If Inspection Certificate 3.1. is to be ordered for transmitters with mounted diaphragm seals, this certificate must also be ordered with the respective remote seals.
3) The diaphragm seal is to be specified with a separate article number and must be included with the transmitter article number, for example 7MF802.-..Y..-.... and 7MF0810-.....-0...
4) The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.
5) Remote seal for direct mounting only available in combination with process connection ½-14 NPT.
6) M10 fastening thread: Max. measuring span 160 bar (2320 psi) fastening thread $^{7}/_{16}$-20 UNF and M12: Max. measuring span 400 bar (5802 psi)
7) Can only be ordered together with electrical connection option A.
8) Can only be ordered together with electrical connection option B, C or G.
9) Only together with HART electronics.
10) Without cable gland.
11) Local display cannot be rotated.

		Article No.
SITRANS P300 pressure transmitters for gauge pressure and absolute pressure with flush-mounted membrane, single chamber enclosure, nameplate inscription in English		
4 ... 20 mA / HART		**7MF8123-**
PROFIBUS PA (PA)		**7MF8124-**
FOUNDATION Fieldbus (FF)		**7MF8125-**
		● ● ● ● ● - ● ● ● ●
Click the article number for online configuration in the PIA Life Cycle Portal.		
Measuring cell filling	**Measuring cell cleaning**	
Silicone oil	Normal	**1**
Inert liquid		**3**
FDA compliant fill oil		
• Neobee oil	Normal	**4**
Measuring span (min. ... max.)		
0.01 ... 1 bar (0.15 ... 14.5 psi)		**B**
0.04 ... 4 bar (0.58 ... 58 psi)		**C**
0.16 ... 16 bar (2.32 ... 232 psi)		**D**
0.63 ... 63 bar (9.14 ... 914 psi)		**E**
43.34 ... 1300 mbar a (0.63 ... 18.86 psi a)[1]		**S**
0.17 ... 5 bar a (2.43 ... 72.5 psi a)[1]		**T**
1 ... 30 bar a (14.6 ... 435 psi a)[1]		**U**
Material of wetted parts		
Seal diaphragm	***Measuring cell***	
Stainless steel	Stainless steel	**A**
Hastelloy[2]	Stainless steel	**B**
Process connection		
Flange version with order code M.., N.., R.. or Q.. (see "Options")		**7**
Material of non-wetted parts		
Stainless steel, deep-drawn and electrolytically polished		**4**
Version		
Standard version		**1**
Explosion protection		
None		**A**
With ATEX, type of protection:		

Selection and ordering data (continued)

SITRANS P300 pressure transmitters for gauge pressure and absolute pressure with flush-mounted membrane, single chamber enclosure, nameplate inscription in English 4 ... 20 mA / HART PROFIBUS PA (PA) FOUNDATION Fieldbus (FF)	Article No. 7MF8123- 7MF8124- 7MF8125-										
	●	●	●	●	●	-	●	●	●	●	
"Intrinsic safety (Ex ia)"							B				
Zone 20/21/22[3]							C				
Ex nA/nL (Zone 2)[4]							E				
With FM "Intrinsic safety" (cFM_{US})							M				
Electrical connection/cable entry											
Screw gland M20×1.5 (polyamide)[5]								A			
Screw gland M20×1.5 (metal)								B			
Screw gland M20×1.5 (stainless steel)								C			
Device plug M12 (stainless steel, without cable socket)								G			
Screw gland ½-14 NPT threading metal[6]								H			
½-14 NPT gland threading stainless steel[6]								J			
Display											
Without local display, with buttons, closed lid									1		
With local display and buttons, closed lid[7]									2		
With local display and buttons, lid with polycarbonate pane (setting for HART devices: mA, for PROFIBUS PA and FOUNDATION Fieldbus devices: Pressure units[7]									4		
With local display and buttons (setting acc. to specifications, order code "Y21" or "Y22" required), lid with polycarbonate pane[7]									5		
With local display and buttons, lid with glass pane (setting for HART devices: mA, for PROFIBUS and FOUNDATION Fieldbus devices: pressure units)[7]									6		
With local display and buttons (setting acc. to specifications, order code "Y21" or "Y22" required), lid with glass pane[7]									7		

Note:

See section "Supplementary components" for supply units. A quick-start guide is included in the scope of delivery of the device.

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

Options Add "-Z" to article number and specify order code.	Order code	Communication
Pressure transmitter with mounting bracket (2 brackets, 4 nuts, 4 U washers, 1 angle) Completely of stainless steel, for wall and pipe mounting	**A02**	HART / PQ / FF
Cable socket for M12 device plug, stainless steel	**A51**	HART / PQ / FF
Nameplate inscription (in place of English)		HART / PQ / FF
• German	**B10**	HART / PQ / FF
• French	**B12**	HART / PQ / FF
• Spanish	**B13**	HART / PQ / FF
• Italian	**B14**	HART / PQ / FF
English nameplate Pressure units in inH_20 or psi	**B21**	HART / PQ / FF
Quality inspection certificate (5-point characteristic curve test) according to IEC 62828-2[1]	**C11**	HART / PQ / FF
Inspection certificate according to EN 10204-3.1[2]	**C12**	HART / PQ / FF
Factory certificate according to EN 10204-2.2	**C14**	HART / PQ / FF
Degree of protection IP65/IP68, only for M20×1.5 and ½-14 NPT	**D12**	HART / PQ / FF
Degree of protection IP6k9k, only for M20×1.5	**D46**	HART / PQ / FF

Options Add "-Z" to article number and specify order code.	Order code	Communication
CRN Approval Canada (Canadian Registration Number)	**E22**	HART / PQ / FF
Export approval Korea	**E11**	HART / PQ / FF
Explosion protection Ex ia according to EAC Ex (Russia)	**E80**	HART / PQ / FF
Ex approval Ex ia/ib NEPSI	**E55**	HART / PQ / FF
Only for SITRANS P300 with flush-mounted diaphragm (7MF81..-...)		
Flange according to EN 1092-1 form B1		
DN 25, PN 40[3]	**M11**	HART / PQ / FF
DN 40, PN 40	**M13**	HART / PQ / FF
DN 40, PN 100	**M23**	HART / PQ / FF
DN 50, PN 16	**M04**	HART / PQ / FF
DN 50, PN 40	**M14**	HART / PQ / FF
DN 80, PN 16	**M06**	HART / PQ / FF
DN 80, PN 40	**M16**	HART / PQ / FF
Flange according to ASME B16.5		
1", Class 150[3]	**M40**	HART / PQ / FF
1½", Class 150	**M41**	HART / PQ / FF
2", Class 150	**M42**	HART / PQ / FF
3", Class 150	**M43**	HART / PQ / FF
4", Class 150	**M44**	HART / PQ / FF
1½", Class 300	**M46**	HART / PQ / FF
2", Class 300	**M47**	HART / PQ / FF
3", Class 300	**M48**	HART / PQ / FF
4", Class 300	**M49**	HART / PQ / FF
Threaded connection according to DIN 3852-2 form A, thread according to ISO 228		
G ¾" A, flush mounted[4]	**R01**	HART / PQ / FF
G 1" A, flush mounted[4]	**R02**	HART / PQ / FF
G 2" A, flush mounted	**R04**	HART / PQ / FF

Selection and ordering data (continued)

Options Add "-Z" to article number and specify order code.	Order code	Communication
Tank connection[5] Seal not included in scope of delivery		
TG 52/50, PN 40	**R10**	HART / PQ / FF
TG 52/150, PN 40	**R11**	HART / PQ / FF
Sanitary process connection according to DIN 11851 (dairy connection with slotted union nut)		
DN 50, PN 25	**N04**	HART / PQ / FF
DN 80, PN 25	**N06**	HART / PQ / FF
Tri-Clamp connection according to DIN 32676/ ISO 2852 3A compliant[6]		
DN 50/2", PN 16	**N14**	HART / PQ / FF
DN 65/2.5", PN 10	**N15**	HART / PQ / FF
Clamp 2" ISO 2852, PN 16	**N22**	HART / PQ / FF
Clamp 3" ISO 2852, PN 10	**N23**	HART / PQ / FF
Varivent connection 3A and EHEDG compliant[6]		
Type N = 68 for Varivent enclosure DN 40 ... 125 and 1½" ... 6", PN 40	**N28**	HART / PQ / FF
Temperature decoupler up to 200 °C[7] For version with flush-mounted diaphragm	**P00**	HART / PQ / FF
Sanitary process connection according to DRD		
DN 50, PN 40	**M32**	HART / PQ / FF
SMS screwed connector		
2"	**M73**	HART / PQ / FF
2½"	**M74**	HART / PQ / FF
3"	**M75**	HART / PQ / FF
Sanitary process screw connection according to NEUMO BioConnect screw connection, 3A and EHEDG compliant[6]		
DN 50, PN 16	**Q05**	HART / PQ / FF
DN 65, PN 16	**Q06**	HART / PQ / FF
DN 80, PN 16	**Q07**	HART / PQ / FF
DN 100, PN 16	**Q08**	HART / PQ / FF
DN 2", PN 16	**Q13**	HART / PQ / FF
DN 2½", PN 16	**Q14**	HART / PQ / FF
DN 3", PN 16	**Q15**	HART / PQ / FF
DN 4", PN 16	**Q16**	HART / PQ / FF
Sanitary process flange connection according to NEUMO Connect S		
DN 2", PN 16	**Q72**	HART / PQ / FF
Aseptic screwed connector according to DIN 11864-1 form A 3A compliant[6]		
DN 50, PN 25	**N33**	HART / PQ / FF
DN 65, PN 25	**N34**	HART / PQ / FF
DN 80, PN 25	**N35**	HART / PQ / FF
DN 100, PN 25	**N36**	HART / PQ / FF
Aseptic flange with notch according to DIN 11864-2 form A 3A compliant[6]		
DN 50, PN 16	**N43**	HART / PQ / FF
DN 65, PN 16	**N44**	HART / PQ / FF
DN 80, PN 16	**N45**	HART / PQ / FF
DN 100, PN 16	**N46**	HART / PQ / FF
Aseptic flange with groove according to DIN 11864-2 form A 3A compliant[6]		
DN 50, PN 16	**N43 + P11**	HART / PQ / FF
DN 65, PN 16	**N44 + P11**	HART / PQ / FF
DN 80, PN 16	**N45 + P11**	HART / PQ / FF
DN 100, PN 16	**N46 + P11**	HART / PQ / FF
Aseptic clamp with groove according to DIN 11864-3 form A 3A compliant[6]		
DN 50, PN 25	**N53**	HART / PQ / FF
DN 65, PN 25	**N54**	HART / PQ / FF
DN 80, PN 16	**N55**	HART / PQ / FF
DN 100, PN 16	**N56**	HART / PQ / FF
Additional information Add "**-Z**" to article number, specify order code and plain text.		
Measuring range to be set Specify in plain text (max. 5 digits): Y01: ... to ... mbar, bar, kPa, MPa, psi	**Y01**	HART / PQ[8]
Tag plate made of stainless steel and entry in the device variable (measuring point description) Max. 16 characters; specify in plain text: Y15:	**Y15**	HART / PQ / FF
Measuring point text (entry in device variable) Max. 27 characters; specify in plain text: Y16:	**Y16**	HART / PQ / FF
Entry of HART TAG Max. 8 characters; specify in plain text: Y17:	**Y17**	HART
Setting of the local display in pressure units Specify in plain text (default setting: bar): Y21: mbar, bar, kPa, MPa, psi, ... ***Note*** The following pressure units can be selected: bar, mbar, mm H_2O[10], inH_2O[10], ftH_2O[10], mmHG, inHG, psi, Pa, kPa, MPa, g/cm², kg/cm², Torr, ATM or %	**Y21**	HART / PQ / FF
Setting of the local display in non-pressure units[9] Specify in plain text: Y22: ..... to ..... l, m³, m, USg, ... (Specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	**Y22 + Y01**	HART
Preset bus address, possible range 1 ... 126 Specify in plain text: Y25:	**Y25**	PQ / FF

Note:

Factory-mounting of valve manifolds, see Accessories. Only Y01, Y15, Y16, Y17, Y21, Y22 and Y25 are possible as factory preset.

1) If the quality inspection certificate (factory calibration) according to IEC 60770-2 is to be ordered for transmitters with mounted diaphragm seals, it is recommended that this certificate be ordered exclusively for the remote seals. Here, the measuring accuracy of the entire combination is certified.
2) If Inspection Certificate 3.1. is to be ordered for transmitters with mounted diaphragm seals, this certificate must also be ordered with the respective remote seals.
3) Special Viton seal included in scope of delivery (FKM; temperature range -20 ... +200 °C (-4 ... +392 °F))
4) Cannot be combined with order code P00. Can only be ordered together with silicon oil measuring cell filling.
5) Weld-in sockets can be ordered under Accessories.
6) 3A compliance ensured only when 3A compliant sealing rings are used.
7) Conformity according to 3A and EHEDG. The maximum permissible medium temperatures depend on the respective measuring cell fillings (see process conditions).
8) Measuring accuracies for PROFIBUS PA transmitters with option Y01 are calculated in the same way as for HART devices.
9) Preset value can only be change via SIMATIC PDM
10) 20 °C reference temperature.

Selection and ordering data (continued)

Spare parts/accessories	Article number
Mounting bracket and fastening parts kit Made of stainless steel	7MF8997-1AA
Lid without inspection window Gasket not included	7MF8997-1BA
Lid with glass inspection window Gasket not included	7MF8997-1BD
NBR enclosure sealing	7MF8997-1BG
Measuring point label Unlabeled	7MF8997-1CA
Cable gland	
• Metal	7MF8997-1EA
• Plastic (blue)	7MF8997-1EB
Weldable sockets for PMC connection	
• PMC style Standard: Thread 1½"	7MF4997-2HA
• PMC style Minibolt: Flush mounted 1"	7MF4997-2HB
Gaskets for PMC connection (Packing unit: 5 units)	
• PTFE seal for PMC style standard: Thread 1½"	7MF4997-2HC
• Gasket made of Viton for PMC style minibolt: Flush mounted 1"	7MF4997-2HD
Weldable sockets for TG 52/50 and TG 52/150 connection	
• 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

Spare parts/accessories	Article number
Seals for flange connection with flush-mounted diaphragm Material FKM (Viton); temperature range:-20 ... +200 °C (-4 ... +392 °F), 10 units	
• DN 25, PN 40 (M11)	7MF4997-2HH
• 1", Class 150 (M40)	7MF4997-2HK

Documentation	Article number
The entire documentation is available for download free of charge in various languages at: http://www.siemens.com/processinstrumentation/documentation	
Compact operating instructions	
• English, German, Spanish, French, Italian, Dutch	A5E03434657
HART modem	
With USB interface	7MF4997-1DC

Note:

See section "Supplementary components" for supply units.

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)

Technical specifications

SITRANS P300 for gauge and absolute pressure

Gauge pressure input

Measured variable: Gauge pressure

Measuring span (infinitely adjustable) or nominal measuring range, max. permissible operating pressure (in accordance with 2014/68/EU Pressure Equipment Directive) and max. permissible test pressure (pursuant to DIN 16086)
(for oxygen measurement, max. 100 bar/10 MPa/1450 psi and 60 °C (140 °F) ambient temperature/medium temperature)

HART	PROFIBUS PA/FOUNDATION Fieldbus		
Measuring span	Nominal measuring range	Max. permissible operating pressure MAWP (PS)	Max. permissible test pressure
8.3 ... 250 mbar 0.83 ... 25 kPa 0.12 ... 3.6 psi	250 mbar 25 kPa 3.6 psi	4 bar 400 kPa 58 psi	6 bar 600 kPa 87 psi
0.01 ... 1 bar 1 ... 100 kPa 0.15 ... 14.5 psi	1 bar 100 kPa 14.5 psi	4 bar 400 kPa 58 psi	6 bar 600 kPa 87 psi
0.04 ... 4 bar 4 ... 400 kPa 0.58 ... 58 psi	4 bar 400 kPa 58 psi	7 bar 0.7 Mpa 102 psi	10 bar 1 MPa 145 psi
0.16 ... 16 bar 16 ... 1600 kPa 2.3 ... 232 psi	16 bar 1600 kPa 232 psi	21 bar 2.1 MPa 305 psi	32 bar 3.2 MPa 464 psi
0.63 ... 63 bar 63 ... 6300 kPa 9.1 ... 914 psi	63 bar 6300 kPa 914 psi	67 bar 6.7 MPa 972 psi	100 bar 10 MPa 1450 psi
1.6 ... 160 bar 0.16 ... 16 MPa 23 ... 2321 psi	160 bar 16 MPa 2321 psi	167 bar 16.7 MPa 2422 psi	250 bar 25 MPa 3626 psi
4 ... 400 bar 0.4 ... 40 MPa 58 ... 5802 psi	400 bar 40 MPa 5802 psi	400 bar 40 MPa 5802 psi	600 bar 60 MPa 8702 psi

Lower measuring limit

For 250 mbar/25 kPa/3.6 psi measuring cells, the lower measuring limit is 750 mbar a/75 kPa a/10.8 psi a. The measuring cell is vacuum-resistant up to 30 mbar a/3 kPa a/0.44 psi a.

- Measuring cell with silicone oil filling: 30 mbar a/3 kPa a/0.44 psi a
- Measuring cell with inert filling liquid: 30 mbar a/3 kPa a/0.44 psi a

Upper measuring limit: 100% of the max. measuring span (for oxygen measurement max. 100 bar/10 MPa/1450 psi and 60 °C (140 °F) ambient temperature/medium temperature)

Absolute pressure input

Measured variable: Absolute pressure

Measuring span (continuously adjustable) or nominal measuring range, max. permissible operating pressure (in accordance with 2014/68/EU Pressure Equipment Directive) and max. permissible test pressure (pursuant to DIN 16086)

HART	PROFIBUS PA/FOUNDATION Fieldbus		
Measuring span	Nominal measuring range	Max. permissible operating pressure MAWP (PS)	Max. permissible test pressure
8.34 ... 250 mbar a 0.83 ... 25 kPa a 3.35 ... 100 inH_2O a 0.13 ... 3.63 psi a	250 mbar a 25 kPa a 100 inH_2O a	1.5 bar a 150 kPa a 21.8 psi a	6 bar a 600 kPa a 87 psi a
43.34 ... 1300 mbar a 4.33 ... 130 kPa a 17.42 ... 522.4 inH_2O a 0.63 ... 18.86 psi a	1300 mbar a 130 kPa a 525 inH_2O a	2.6 bar a 260 kPa a 37.7 psi a	10 bar a 1 MPa a 145 psi a
0.17 ... 5 bar a 17 ... 500 kPa a 2.43 ... 72.5 psi a	5000 mbar a 500 kPa a 72.5 psi a	10 bar a 1 MPa a 145 psi a	30 bar a 3 MPa a 435 psi a
1 ... 30 bar a 0.1 ... 3 MPa a 14.6 ... 435 psi a	30 bar a 3 MPa a 435 psi a	45 bar a 4.5 MPa a 653 psi a	100 bar a 10 MPa a 1450 psi a

Lower measuring limit

- Measuring cell with silicone oil filling: 0 mbar a/3 kPa a/0.44 psi a
- Measuring cell with inert liquid
  - For medium temperature -20 °C < ϑ ≤ +60 °C (-4 °F < ϑ ≤ +140 °F): 30 mbar a/0 kPa a/0 psi a

Technical specifications (continued)

SITRANS P300 for gauge and absolute pressure				
- For medium temperature 60 °C < ϑ ≤ +100 °C (max. 85 °C for measuring cell 30 bar) (140 °F < ϑ ≤ +212 °F (max. 185 °F for measuring cell 435 psi))	30 mbar a + 20 mbar a · (ϑ -60 °C)/°C 3 kPa a + 2 kPa a · (ϑ -60 °C)/°C 0.44 psi a + 0.29 psi a · (ϑ - 140 °F)/°F			
Upper measuring limit	100% of the max. measuring span (for oxygen measurement max. 100 bar/10 MPa/1450 psi and 60 °C (140 °F) ambient temperature/medium temperature)			
Lower range value	Between the measuring limits (continuously adjustable)			
Input of gauge pressure with flush-mounted diaphragm				
Measured variable	Gauge pressure, flush mounted			
Measuring span (continuously adjustable) or nominal measuring range, max. permissible operating pressure and max. permissible test pressure	**HART**	**PROFIBUS PA/FOUNDATION Fieldbus**		
	Measuring span	Nominal measuring range	Max. permissible operating pressure MAWP (PS)	Max. permissible test pressure
	0.01 ... 1 bar 1 ... 100 kPa 0.15 ... 14.5 psi	1 bar 100 kPa 14.5 psi	4 bar 400 kPa 58 psi	6 bar 600 kPa 87 psi
	0.04 ... 4 bar 4 ... 400 kPa 0.58 ... 58 psi	4 bar 400 kPa 58 psi	7 bar 0.7 Mpa 102 psi	10 bar 1 MPa 145 psi
	0.16 ... 16 bar 16 ... 1600 kPa 2.3 ... 232 psi	16 bar 1600 kPa 232 psi	21 bar 2.1 MPa 305 psi	32 bar 3.2 MPa 464 psi
	0.63 ... 63 bar 63 ... 6300 kPa 9.1 ... 914 psi	63 bar 6300 kPa 914 psi	67 bar 6.7 MPa 972 psi	100 bar 10 MPa 1450 psi
Lower measuring limit	100 mbar a (1.45 psi a)			
• Measuring cell with silicone oil	100 mbar a/10 kPa a/1.45 psi a			
• Measuring cell with inert liquid	100 mbar a/10 kPa a/1.45 psi a			
• Measuring cell with neobee	100 mbar a/10 kPa a/1.45 psi a			
Upper measuring limit	100% of max. measuring span			
Input of absolute pressure, with flush-mounted diaphragm				
Measured variable	Absolute pressure, flush mounted			
Measuring span (continuously adjustable) or nominal measuring range and max. permissible test pressure	**HART**	**PROFIBUS PA/FOUNDATION Fieldbus**		
	Measuring span	Nominal measuring range	Max. permissible operating pressure MAWP (PS)	Max. permissible test pressure
	43 ... 1300 mbar a 4.3 ... 130 kPa a 17 ... 525 inH_2O a	1300 mbar a 130 kPa a 525 inH_2O a	2.6 bar a 260 kPa a 37.7 psi a	10 bar a 1 MPa a 145 psi a
	160 ... 5000 mbar a 16 ... 500 kPa a 2.32 ... 72.5 psi a	5000 mbar a 500 kPa a 72.5 psi a	10 bar a 1 MPa a 145 psi a	30 bar a 3 MPa a 435 psi a
	1 ... 30 bar a 0.1 ... 3 MPa a 14.5 ... 435 psi a	30 bar a 3 MPa a 435 psi a	45 bar a 4.5 MPa a 653 psi a	100 bar a 10 MPa a 1450 psi a
	Depending on the process connection, the measuring span may differ from these values			
Lower measuring limit	0 mbar a/0 kPa a/0 psi a			
Upper measuring limit	100% of max. measuring span			
Output	**HART**		**PROFIBUS PA/FOUNDATION Fieldbus**	
Output signal	4 ... 20 mA		Digital PROFIBUS PA signal	
Physical bus	-		IEC 61158-2	
Protection against polarity reversal	Protected against short-circuit and polarity reversal. Each connection against the other with max. supply voltage.		Protected against short-circuit and polarity reversal. Each connection against the other with max. supply voltage.	
Electrical damping (step width 0.1 s)	Set to 2 s (0 ... 100 s)		Set to 2 s (0 ... 100 s)	

Technical specifications (continued)

SITRANS P300 for gauge and absolute pressure	
Measuring accuracy for gauge pressure	According to IEC 62828-1
Reference conditions	• Rising characteristic curve • Lower range value 0 bar • Seal diaphragm stainless steel • Measuring cell with silicone oil • Room temperature 25 °C (77 °F)
Measuring span ratio (spread, turn-down)	r = maximum measuring span/set measuring span or nominal measuring range
Measurement deviation at limit setting including hysteresis and reproducibility	
• Linear characteristic curve	
- 250 mbar/25 kPa/3.6 psi	r ≤ 1.25: ≤ 0.075% 1.25 < r ≤ 30: ≤ (0.008 · r +0.065)%
- 1 bar/100 kPa/14.5 psi 4 bar/400 kPa/58 psi 16 bar/1.6 MPa/232 psi 63 bar/6.3 MPa/914 psi 160 bar/16 MPa/2321 psi	r ≤ 5: ≤ 0.075% 5 < r ≤ 100: ≤ (0.005 · r +0.05)%
- 400 bar/40 MPa/5802 psi	r ≤ 3: ≤ 0.075% 3 < r ≤ 10: ≤ (0.0029 · r +0.071)% 10 < r ≤ 100: ≤ (0.005 · r +0.05)%
Influence of ambient temperature (in percent per 28 °C (50 °F))	
• 250 mbar/25 kPa/3.6 psi	≤ (0.16 · r +0.1)%
• 1 bar/100 kPa/14.5 psi 4 bar/400 kPa/58 psi 16 bar/1.6 MPa/232 psi 63 bar/6.3 MPa/914 psi 160 bar/16 MPa/2321 psi 400 bar/40 MPa/5802 psi	≤ (0.07 · r +0.08)%
Long-term stability (temperature change ±30 °C (± 54 °F))	
• 250 mbar/25 kPa/3.6 psi	≤ (0.16 · r)% per year
• 1 bar/100 kPa/14.5 psi 4 bar/400 kPa/58 psi	≤ (0.25 · r)% in 5 years
• 16 bar/1.6 MPa/232 psi 63 bar/6.3 MPa/914 psi 160 bar/16 MPa/2321 psi 400 bar/40 MPa/5802 psi	≤ (0.125 · r)% in 5 years
Influence of mounting position	≤ 0.05 mbar/0.005 kPa/0.000725 psi per 10° incline (zero offset is possible with position error compensation)
Effect of auxiliary power (in percent per voltage change)	0.005% per 1 V
Measured value resolution for PROFIBUS PA and FOUNDATION Fieldbus	$3 \cdot 10^{-5}$ of nominal measuring range
Measuring accuracy for absolute pressure	According to IEC 62828-1
Reference conditions (All error information always refers to the set measuring span)	• Rising characteristic curve • Lower range value 0 bar • Seal diaphragm stainless steel • Silicone oil filling • Room temperature 25 °C (77 °F)
Measuring span ratio r (spread, turn-down)	r = maximum measuring span/set measuring span or nominal measuring range
Measurement deviation at limit setting including hysteresis and reproducibility	
• Linear characteristic curve	
- r ≤ 10	≤ 0.1%

Technical specifications (continued)

SITRANS P300 for gauge and absolute pressure		
- 10 < r ≤ 30	≤ 0.2%	
Influence of ambient temperature (in percent per 28 °C (50 °F))		
• 250 mbar a/25 kPa a/3.6 psi a	≤ (0.15 · r +0.1)%	
• 1300 mbar a/130 kPa a/18.8 psi a 5 bar a/500 kPa a/72.5 psi a 30 bar a/3000 kPa a/435 psi a	≤ (0.08 · r +0.16)%	
Long-term stability (temperature change ±30 °C (± 54 °F))	≤ (0.25 · r)% in 5 years	
Effect of mounting position (in pressure per change of angle)	≤ 0.05 mbar/0.005 kPa/0.000725 psi per 10° incline (zero offset is possible with position error compensation)	
Effect of auxiliary power (in percent per voltage change)	0.005% per 1 V	
Measured value resolution for PROFIBUS PA and FOUNDATION Fieldbus	$3 \cdot 10^{-5}$ of nominal measuring range	
Measuring accuracy for gauge and absolute pressure, with flush-mounted diaphragm	According to IEC 62828-1	
Reference conditions (All error information always refers to the set measuring span)	• Rising characteristic curve • Lower range value 0 bar • Seal diaphragm stainless steel • Silicone oil filling • Room temperature 25 °C (77 °F)	
Measuring span ratio r (spread, turn-down)	r = maximum measuring span/set measuring span or nominal measuring range	
Measurement deviation at limit setting including hysteresis and reproducibility		
• Linear characteristic curve	**Gauge pressure with flush-mounted diaphragm**	**Absolute pressure with flush-mounted diaphragm**
- r ≤ 5	≤ 0.075%	-
- 5 < r ≤ 100	≤ (0.005 · r +0.05)%	-
- r ≤ 10	-	≤ 0.2%
- 10 < r ≤ 30	-	≤ 0.4%
Influence of ambient temperature (in percent per 28 °C (50 °F))	≤ (0.08 · r +0.16)%	≤ (0.16 · r +0.24)%
Influence of the medium temperature (in pressure per temperature unit)		
• Temperature difference between medium temperature and ambient temperature	3 mbar/0.3 kPa/0.04 psi per 10 K	
Long-term stability (temperature change ±30 °C (± 54 °F))	≤ (0.25 · r)% in 5 years	
Effect of mounting position (in pressure per change of angle)	0.4 mbar/0.04 kPa/0.006 per 10° incline (zero offset is possible with position error compensation)	
Effect of auxiliary power (in percent per voltage change)	0.005% per 1 V	
Measured value resolution for PROFIBUS PA and FOUNDATION Fieldbus	$3 \cdot 10^{-5}$ of nominal measuring range	

Operating conditions	
Installation conditions	
Ambient temperature	Observe the temperature class in hazardous areas.
• Measuring cell with silicone oil	-40 ... +85 °C (-40 ... +185 °F)

Operating conditions	
• Measuring cell with Neobee oil (FDA compliant, with flush-mounted diaphragm)	-10 ... +85 °C (14 ... 185 °F)
• Measuring cell with inert liquid	-40 ... +85 °C (-40 ... +185 °F)
• Local display readable	-30 ... +85 °C (-22 ... +185 °F)

Technical specifications (continued)

Operating conditions	
• Storage temperature	-50 ... +85 °C (-58 ... +185 °F) - For Neobee: -20 ... +85 °C (-4 ... +185 °F) - For high-temperature oil: -10 ... +85 °C (14 ... +185 °F)
• Climatic class	
- Condensation	Relative humidity 0 ... 100% Condensation permissible, suitable for use in the tropics
Degree of protection	
• According to IEC 60529	IP65, IP68
• According to NEMA 250	Type 4X, enclosure cleaning, resistant to lyes, steam to 150 °C (302 °F)
Electromagnetic compatibility	
• Emitted interference and interference immunity	According to IEC 61326 and NAMUR NE 21
Process conditions	
Medium temperature	The max. medium temperature of the flush-mounted process connections is to be taken into account in accordance with the relevant connection standards (e.g. DIN 32676, DIN 11851, etc.).
• Measuring cell with silicone oil	-40 ... +100 °C (-40 ... +212 °F)
• Measuring cell with silicone oil (with flush-mounted diaphragm)	-40 ... +150 °C (-40 ... +302 °F)
• Measuring cell with Neobee oil (FDA compliant, with flush-mounted diaphragm)	-10 ... +150 °C (14 ... 302 °F)
• Measuring cell with silicone oil, with temperature decoupler (only for gauge pressure version with flush-mounted diaphragm)	-40 ... +200 °C (-40 ... +392 °F)
• Measuring cell with Neobee oil, with temperature decoupler (only for gauge pressure version with flush-mounted diaphragm)	-10 ... +200 °C (14 ... 392 °F)
• Measuring cell with inert liquid	-20 ... +100 °C (-4 ... +212 °F)
Structural design (standard version)	
Weight (without options)	Approx. 800 g (1.8 lb)
Enclosure material	Stainless steel, mat. no. 1.4301/304
Material of wetted parts	
• 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 according to EN 837-1 • Internal thread ½-14 NPT • Oval flange PN 160 (MAWP 2320 psi) with fastening thread: - $^{7}/_{16}$-20 UNF according to with IEC 61518/EN 61518 - M10 according to DIN 19213

Operating conditions		
Structural design (version with flush-mounted diaphragm)		
Weight (without options)	Approx. 1 ... 13 kg (2.2 ... 29 lb)	
Enclosure material	Stainless steel, mat. no. 1.4301/304	
Material of wetted parts		
• 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 oil (Neobee oil)	
Process connection	• Flanges according to EN and ASME • F&B and pharmaceutical flanges	
Surface quality touched-by-media	R_a values ≤ 0.8 µm (32 µ-inch)/welds R_a ≤ 1.6 µm (64 µ-inch) (Process connections according to 3A; R_a values ≤ 0.8 µm (32 µ inch)/welds R_a ≤ 0.8 µm (32 µ inch)	
Auxiliary power U_H	**HART**	**PROFIBUS PA/FOUNDATION Fieldbus**
Terminal voltage on transmitter	10.5 ... 42 V DC 10.5 ... 30 V DC for intrinsically safe operation	-
Auxiliary power	-	Bus-powered
Separate supply voltage	-	Not necessary
Bus voltage		
• Without Ex	-	9 ... 32 V
• With intrinsically safe operation	-	9 ... 24 V
Current consumption		
• Max. basic current	-	12.5 mA
• Starting current ≤ basic current	-	Yes
• Max. fault current in the event of an error	-	15.5 mA
Fault disconnection electronics (FDE) available	-	Yes
Certificates and approvals	**HART**	**PROFIBUS PA/FOUNDATION Fieldbus**
Classification according to pressure equipment directive (PED 2014/68/EU)	For gasses of fluid group 1 and liquids of fluid group 1; complies with requirements of Article 4, Paragraph 3 (sound engineering practice)	
Water, waste water	Available soon	
Explosion protection		
Intrinsic safety "i"	PTB 05 ATEX 2048	
• Marking	II1/2 G Ex ia IIC/IIB T4/T5/T6 Ga/Gb	
• Permissible ambient temperature		
- Temperature class T4	-40 ... +85 °C (-40 ... +185 °F)	
- Temperature class T5	-40 ... +70 °C (-40 ... +158 °F)	

Technical specifications (continued)

Operating conditions		
- Temperature class T6	-40 ... +60 °C (-40 ... +140 °F)	
• Connection	To certified intrinsically safe circuits with peak values: U_i = 30 V, I_i = 100 mA, P_i = 7-50 mW, R_i = 300 Ω	To certified intrinsically safe circuits with peak values: ***FISCO supply unit:*** U_i = 17.5 V, I_i = 380 mA, P_i = -5.32 W ***Linear barrier:*** U_i = 24 V, I_i = 250 mA, P_i = 1.-2 W
• Effective internal capacitance	C_i = 6 nF	C_i = 1.1 nF
• Effective internal inductance	L_i = 0.4 mH	L_i = 7 µH
Explosion protection to FM for USA and Canada (cFM_{US})		
• Identification (DIP) or (IS); (NI)	Certificate of Compliance 3025099 CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4 ... T6 CL I, DIV 2, GP ABCD T4 ... T6; CL II, DIV 2, GP FG; CL III	
• Identification (DIP) or (IS)	Certificate of Compliance 3025099C CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC 4 ... T6 CL I, DIV 2, GP ABCD T4 ... T6; CL II, DIV 2, GP FG; CL III	
Dust explosion protection for Zone 20/21/22	PTB 05 ATEX 2048	
• Marking	II 1 D Ex ia IIIC T_{200}122 °C Da II 1/2 D Ex ia IIIC T_{200} 122°C Da/Db II 2 D Ex ib IIIC T_{200}122 °C Db	
• Permissible ambient temperature		
- Temperature class T4	-40 ... +85 °C (-40 ... +185 °F) (for mineral glass window -20 ... +85 °C (-4 ... +185 °F))	
- Temperature class T5	-40 ... +70 °C (-40 ... +158 °F) (for mineral glass window -20 ... +70 °C (-4 ... +158 °F))	
- Temperature class T6	-40 ... +60 °C (-40 ... +140 °F) (for mineral glass window -20 ... +60 °C (-4 ... +140 °F))	
• Connection	To certified intrinsically safe circuits with peak values: U_i = 30 V, Ii = 100 mA, Pi = 750 mW	To certified intrinsically safe circuits with peak values: U_i = 24 V, Ii = 380 mA, P_i = 5.-32 W
• Effective internal capacitance	C_i = 6 nF	C_i = 5 nF
• Effective internal inductance	L_i = 0.4 µH	L_i = 10 µH
Type of protection Ex nA/nL/ic (Zone 2)	PTB 05 ATEX 2048	
• Marking	II 3 G Ex ic IIC T6 ... T4 Gc II 3 G Ex ec IIC T6 ... T4 Gc II 3 G Ex ic IIC T6 ... T4 Gc	
• Permissible ambient temperature		
- Temperature class T4	-40 ... +85 °C (-40 ... +185 °F) (only for mineral glass window -20 ... +85 °C (-4 ... +185 °F))	
- Temperature class T5	-40 ... +70 °C (-40 ... +158 °F) (only for mineral glass window -20 ... +70 °C (-4 ... +158 °F))	
- Temperature class T6	-40 ... +60 °C (-40 ... +140 °F) (only for mineral glass window -20 ... +60 °C (-4 ... +140 °F))	
• Ex nA/nL connection	To certified intrinsically safe circuits with peak values: U_m = 45 V	To certified intrinsically safe circuits with peak values: U_m = 32 V
• Ex ic connection	To certified intrinsically safe circuits with peak values: U_i = 45 V	To certified intrinsically safe circuits with peak values: U_i = 32 V
• Effective internal capacitance	C_i = 6 nF	C_i = 5 nF
• Effective internal inductance	L_i = 0.4 mH	L_i = 20 µH

Communication

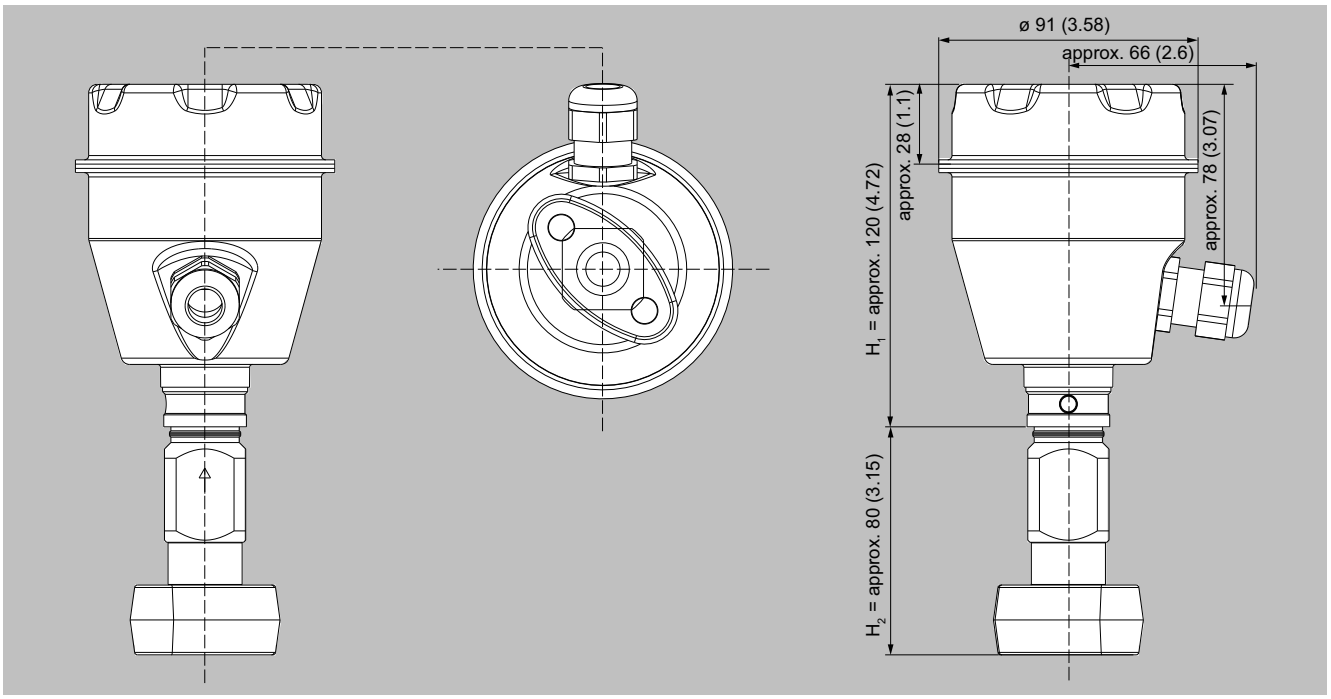
Communication	
HART	
HART	230 ... 1100 Ω
Protocol	HART version 5.x
Software for computer	SIMATIC PDM
PROFIBUS PA	
Simultaneous communication with master class 2 (max.)	4
The address can be set using	Configuration tool or local operation (standard setting Address 126)
Cyclic data usage	
• Output byte	5 (one measured value) or 10 (two measured values)
• Input byte	0, 1 or 2 (register operation mode and reset function for dosing)
Internal preprocessing	
Device profile	PROFIBUS PA Profile for Process Control Devices Version 3.0, Class B
Function blocks	2
• Analog input	
- Adaptation to user-specific process variable	Yes, linearly rising or falling characteristic curve
- Electrical damping adjustable	0 ... 100 s
- Simulation function	Output/input
- Failure behavior	Parameterizable (last good value, substitute value, incorrect value)
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respectively
• Register (totalizer)	Can be reset, preset, optional direction of counting, simulation function of register output
- Failure behavior	Parameterizable (summation with last good value, continuous summation, summation with incorrect value)
- Limit monitoring	One upper and lower warning limit and one alarm limit respectively
• Physical block	1
Transducer blocks	2
• Pressure transducer block	
- Can be calibrated by applying two pressures	Yes
- Monitoring of sensor limits	Yes
- Specification of a vessel characteristic curve with	Max. 30 nodes
- Simulation function for measured pressure value and sensor temperature	Constant value or by means of parameterizable ramp function
FOUNDATION Fieldbus	
Function blocks	3 function blocks analog input, 1 function block PID
• Analog input	
- Adaptation to user-specific process variable	Yes, linearly rising or falling characteristic curve
- Electrical damping adjustable	0 ... 100 s
- Simulation function	Output/input (can be locked within the device with a bridge)

Technical specifications (continued)

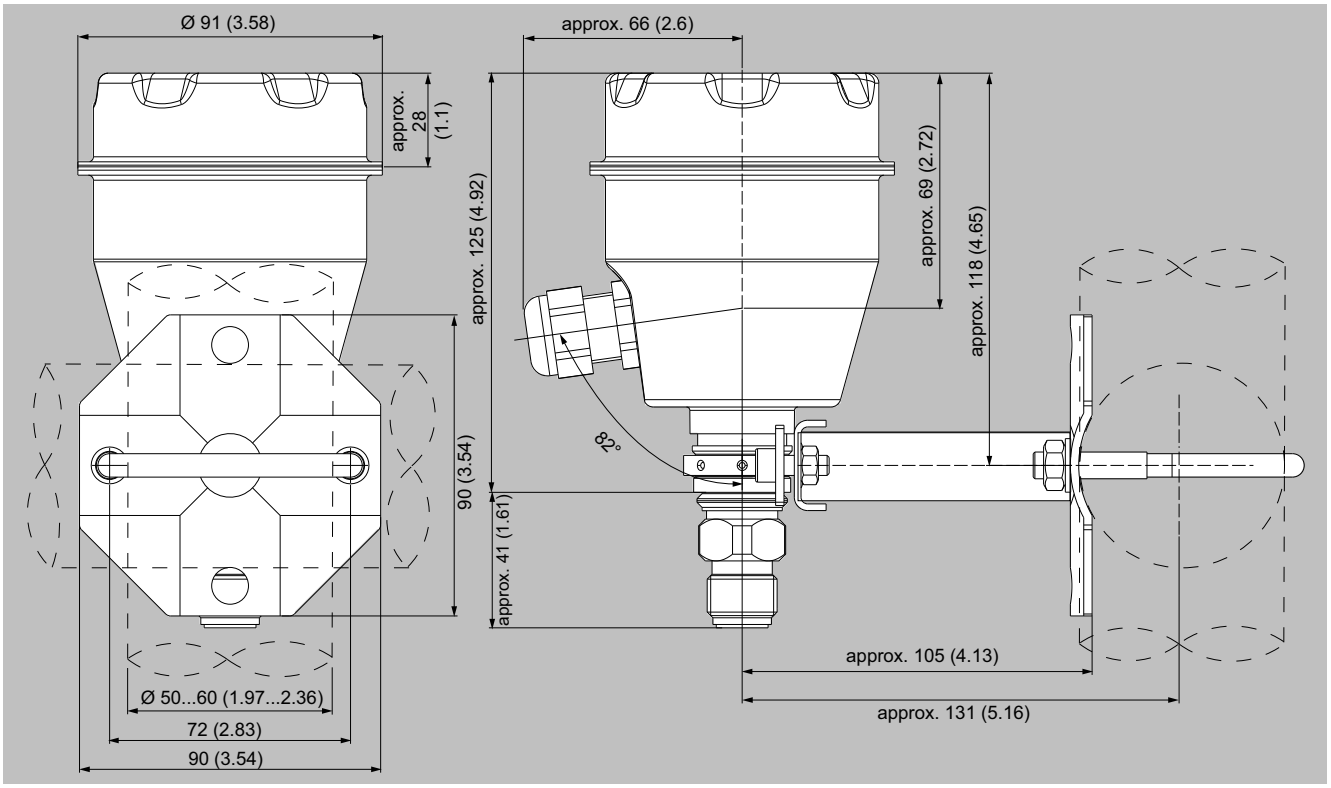
Communication	
- Failure behavior	Parameterizable (last good value, substitute value, incorrect value)
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respectively
- Square-rooted characteristic curve for flow measurement	Yes
• PID	Standard-FOUNDATION Fieldbus function block
• Physical block	1 resource block
Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block LCD

Communication	
• 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 by means of parameterizable ramp function

Dimensional drawings

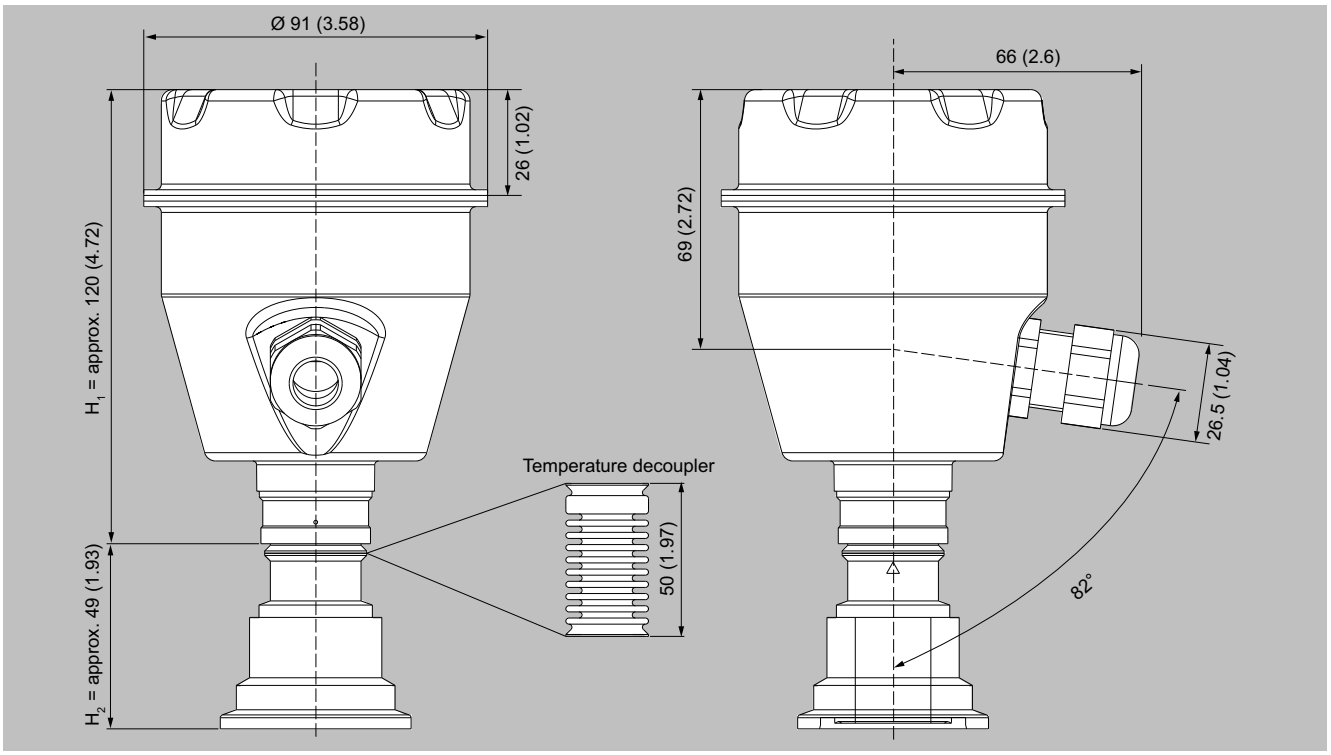


SITRANS P300, with oval flange, dimensions in mm (inch)



SITRANS P300, process connection M20 × 1.5, with built-in mounting bracket, dimensions in mm (inch)

Dimensional drawings (continued)



SITRANS P300, flush mounted, dimensions in mm (inch)

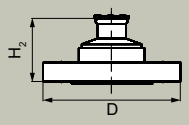
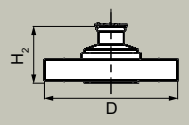
The figure shows a SITRANS P300 with an example flange. In this drawing the height is subdivided into H_1 and H_2.

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.

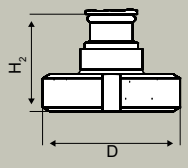
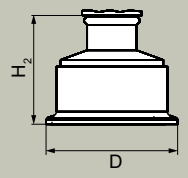
Flanges according to EN and ASME

Flange	Order code	DN	PN	ØD	H_2
EN 1092-1					
	M11	25	40	115 mm (4.5 inches)	Approx. 52 mm (2 inches)
	M13	40	40	150 mm (5.9 inches)	
	M23	40	100	170 mm (6.7 inches)	
	M04	50	16	165 mm (6.5 inches)	
	M14	50	40	165 mm (6.5 inches)	
	M06	80	16	200 mm (7.9 inches)	
	M16	80	40	200 mm (7.9 inches)	
ASME B16.5					
	M40	1 inch	150	110 mm (4.3 inches)	Approx. 52 mm (2 inches)
	M41	1½ inches	150	130 mm (5.1 inches)	
	M42	2 inches	150	150 mm (5.9 inches)	
	M43	3 inches	150	190 mm (7.5 inches)	
	M44	4 inches	150	230 mm (9.1 inches)	
	M45	1 inch	300	125 mm (4.9 inches)	
	M46	1½ inches	300	155 mm (6.1 inches)	
	M47	2 inches	300	165 mm (6.5 inches)	
	M48	3 inches	300	210 mm (8.1 inches)	
	M49	4 inches	300	255 mm (10.0 inches)	

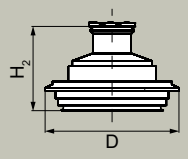
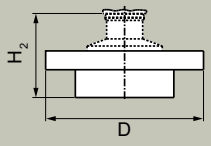
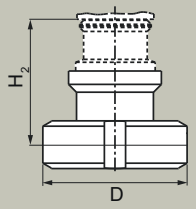
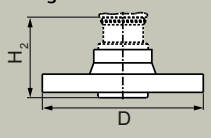
Dimensional drawings (continued)

NuG and pharmaceutical connections

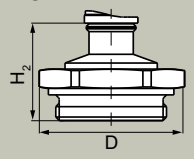
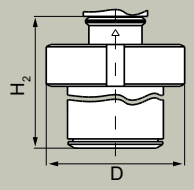
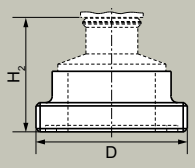
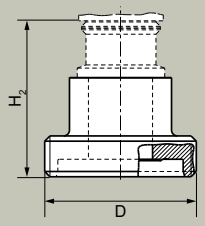
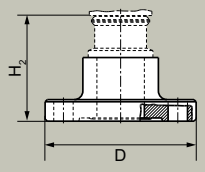
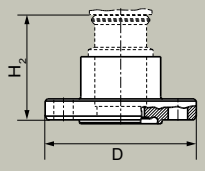
Connections according to DIN

Connection	Order code	DN	PN	ØD	H_2
DIN 11851 (dairy connection with slotted union nut) 	N04	50	25	92 mm (3.6 inches)	Approx. 52 mm (2 inches)
	N06	80	25	127 mm (5.0 inches)	
Tri-Clamp acc. to DIN 32676 	N14	50	16	64 mm (2.5 inches)	Approx. 52 mm (2 inches)
	N15	65	10	91 mm (3.6 inches)	

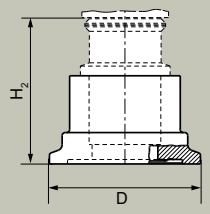
Other connections

Connection	Order code	DN	PN	ØD	H_2
Varivent connection 	N28	40 ... 125	40	84 mm (3.3 inches)	Approx. 52 mm (2 inches)
Sanitary process connection according to DRD 	M32	50	40	105 mm (4.1 inches)	Approx. 52 mm (2 inches)
Sanitary process screw connection according to NEUMO BioConnect 	Q05	50	16	82 mm (3.2 inches)	Approx. 52 mm (2 inches)
	Q06	65	16	105 mm (4.1 inches)	
	Q07	80	16	115 mm (4.5 inches)	
	Q08	100	16	145 mm (5.7 inches)	
	Q13	2 inches	16	82 mm (3.2 inches)	
	Q14	2½ inches	16	105 mm (4.1 inches)	
	Q15	3 inches	16	105 mm (4.1 inches)	
	Q16	4 inches	16	145 mm (5.7 inches)	
Sanitary process connection according to NEUMO BioConnect S flange connection 	Q72	2 inches	16	125 mm (4.9 inches)	Approx. 52 mm (2 inches)

Dimensional drawings (continued)

Connection	Order code	DN	PN	ØD	H_2
Threaded connection G¾ inch, G1 inch and G2 inch according to DIN 3852-2 form A 	R01	¾ inch	60	37 mm (1.5 inches)	Approx. 45 mm (1.8 inches)
	R02	1 inch	60	48 mm (1.9 inches)	Approx. 47 mm (1.9 inches)
	R04	2 inches	60	78 mm (3.1 inches)	Approx. 52 mm (2 inches)
Tank connection TG 52/50 and TG 52/150 	R10	25	40	63 mm (2.5 inches)	Approx. 63 mm (2.5 inches)
	R11	25	40	63 mm (2.5 inches)	Approx. 170 mm (6.7 inches)
SMS screwed connector 	M73	2 inches	25	70 x 1/6 mm	Approx. 52 mm (2.1 inches)
	M74	2½ inches	25	85 x 1/6 mm	
	M75	3 inches	25	98 x 1/6 mm	
Aseptic screwed connector according to DIN 11864-1 form A 	N33	50	25	78 x 1/6 inch	Approx. 52 mm (2.1 inches)
	N34	65	25	95 x 1/6 inch	
	N35	80	25	110 x ¼ inch	
	N36	100	25	130 x ¼ inch	
Aseptic flange with notch according to DIN 11864-2 form A 	N43	50	16	94	Approx. 52 mm (2.1 inches)
	N44	65	16	113	
	N45	80	16	133	
	N46	100	16	159	
Aseptic flange with groove according to DIN 11864-2 form A 	**N43 + P11**	50	16	94	Approx. 52 mm (2.1 inches)
	N44 + P11	65	16	113	
	N45 + P11	80	16	133	
	N46 + P11	100	16	159	

Dimensional drawings (continued)

Connection	Order code	DN	PN	ØD	H_2
Aseptic clamp with groove according to DIN 11864-3 form A 	N53	50	25	77.5	Approx. 52 mm (2.1 inches)
	N54	65	25	91	
	N55	80	16	106	
	N56	100	16	130	

Overview

The SITRANS P300 transmitter for gauge and absolute pressure can be delivered factory-fitted with the following valve manifold 7MF9011-4EA and 7MF9011-4FA.

Design

The 7MF9011-4EA valve manifolds are sealed with PTFE sealings between the transmitter and the valve manifold as standard. Soft iron, stainless steel and copper sealings 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 complete unit is checked for leaks under pressure after assembly (air pressure 6 bar (87 psi)) and certified with a factory certificate according to EN 10204 - 2.2.

All valve manifolds should preferably be secured with the corresponding 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 inspection certificate 3.1 to EN 10204 after choosing the option "Factory-mounting of valve manifolds", a separate certificate is provided for the transmitter and for the valve manifold.

Selection and ordering data

Valve manifolds

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

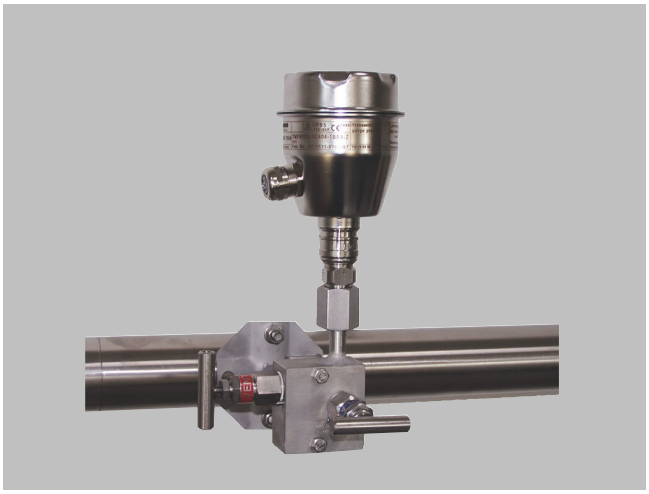
Add **-Z** to the article number of the transmitter and specify order codes	**Order code**
SITRANS P300	T03
7MF802.-...1.-...	
With process connection internal thread ½-14 NPT, in-sealed with PTFE sealing tape Delivery including high-pressure test certified by factory certificate according to EN 10204-2.2	
Additional versions:	
Delivery includes mounting bracket and stainless steel mounting clips (instead of the mounting bracket supplied with the transmitter)	A02
Inspection certificate according to EN 10204-3.1 for transmitter and mounted valve manifold	C12

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

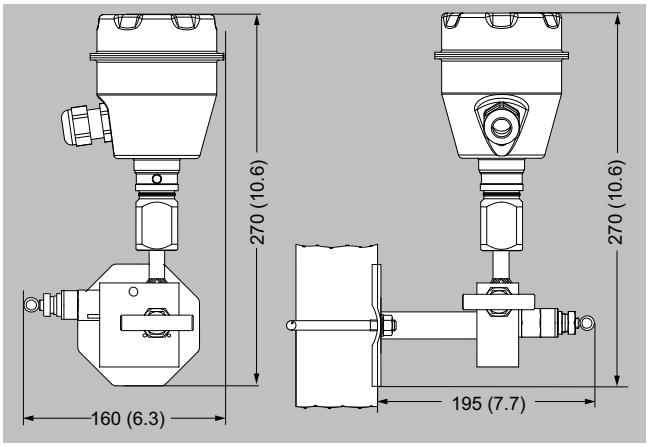
Add **-Z** to the article number of the transmitter and specify order codes	**Order code**
SITRANS P300	T02
7MF802.-...0.-...	
With process connection shank G½ A according to EN 837-1, gasket made of PTFE between valve manifold and transmitter	
Alternative gasket material:	
• Soft iron	A70
• Stainless steel, mat. no. 14571	A71
• Copper	A72
Delivery including high-pressure test certified by factory certificate according to EN 10204-2.2	
Additional versions:	
Delivery includes mounting bracket and stainless steel mounting clips (instead of the mounting bracket supplied with the transmitter)	A02
Inspection certificate according to EN 10204- 3.1 for transmitters and mounted valve manifold	C12

Dimensional drawings

Valve manifolds mounted on SITRANS P300



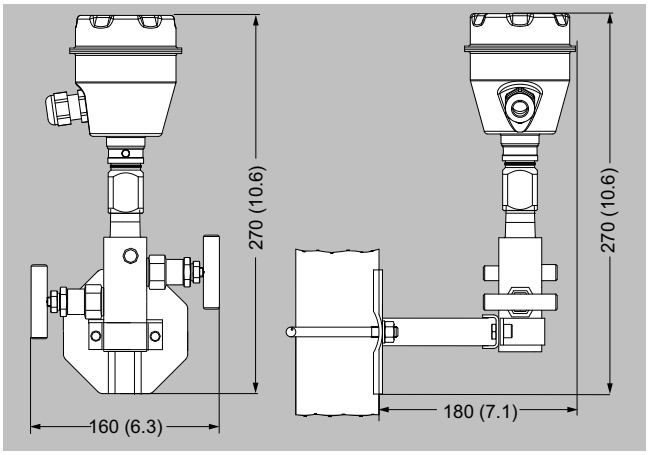
7MF9011-4EA valve manifold with mounted gauge pressure and absolute pressure transmitters



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

Dimensional drawings (continued)

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



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