

Pressure Measurement

Transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 for gauge and absolute pressure

Overview

2



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

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

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

Benefits

- High quality and service life
- High reliability even under extreme chemical and mechanical loads
- Extensive diagnosis and simulation functions
- Small long-term drift
- Wetted parts made of high-grade materials (such as stainless steel, Hastelloy)
- Measuring range 0.1 psi to 5800 psi (0.008 bar to 400 bar)
- High measuring accuracy
- Parameterization via pushbuttons and HART communication and/or PROFIBUS PA communication or FOUNDATION Fieldbus communication

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 aggressive, non-aggressive and hazardous gases, as well as vapors and liquids.

It can be used for the following measurement types:

- Gauge pressure
- Absolute pressure

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

- Level
- Volume
- Mass

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

Gauge pressure

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

The smallest measuring span is 0.1 psi g, the largest 5800 psi g (0.01 bar g, the largest 400 bar g).

Level

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

For measuring the level in an open tank you require a gauge transmitter.

Absolute pressure

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

The smallest measuring span is 0.1 psi a, the largest 435 psi a (0.008 bar a, the largest 30 bar a).

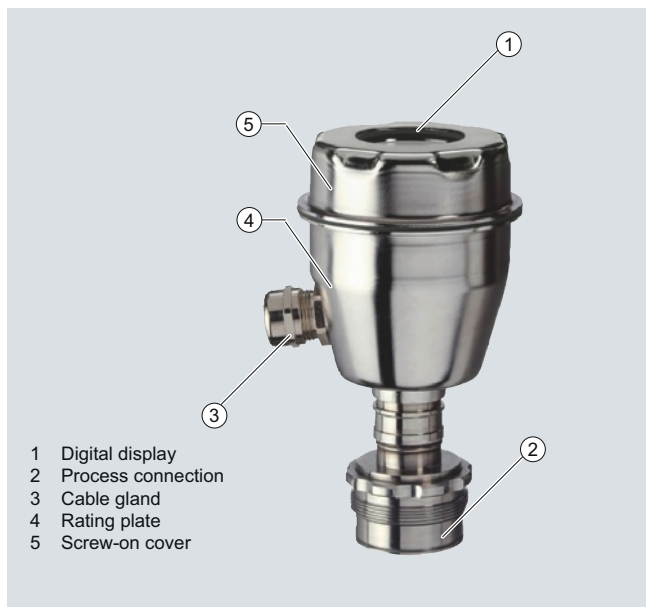
Pressure Measurement Transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 for gauge and absolute pressure

Design

The device comprises:

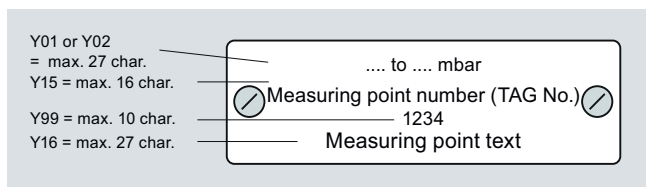
- Electronics
- Housing
- Measuring cell



Perspective view of SITRANS P300

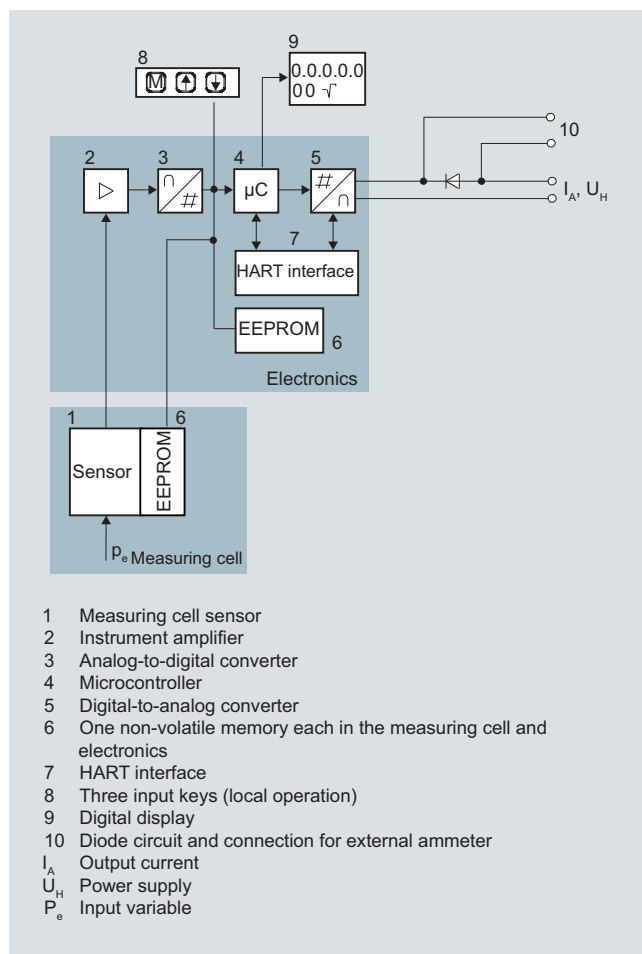
The housing has a screw-on cover (5) and, depending on the version, is with or without an inspection window. The electrical terminal housing, the buttons for operation of the device are located under this cover and, depending on the version, the digital display. The connections for the auxiliary power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

Example of attached measuring points sign



Function

Operation of electronics with HART communication



Function diagram of electronics

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

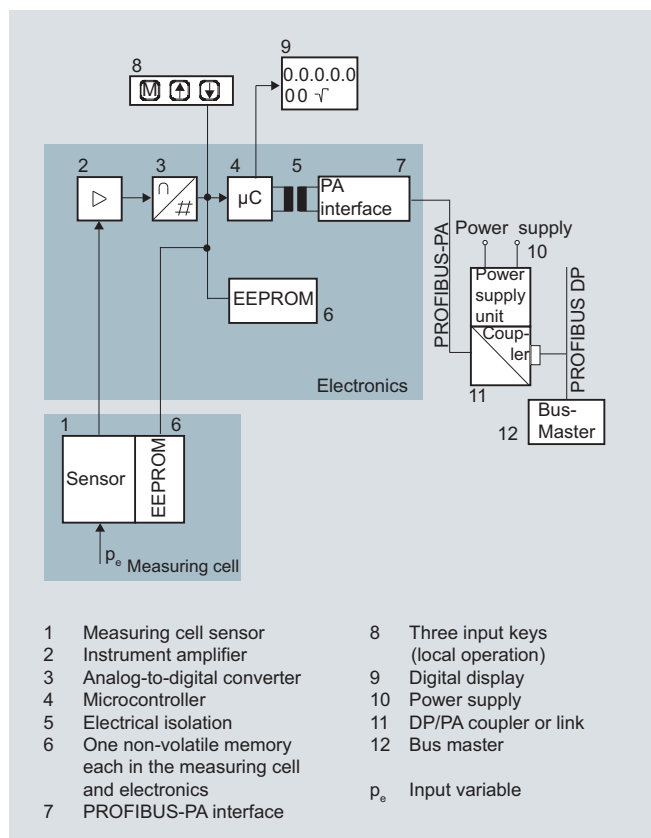
The buttons (8) can be used to call up individual functions, so-called modes. If you have a device with a digital display (9), you can use this to track mode settings and other messages. The basic mode settings can be changed with a computer via the HART modem (7).

Pressure Measurement

Transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 for gauge and absolute pressure

Operation of electronics with PROFIBUS PA communication

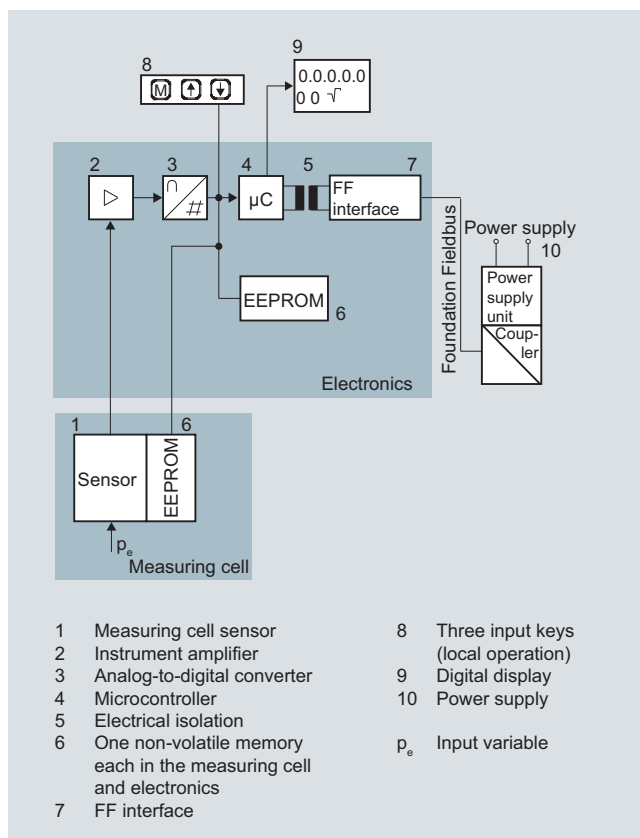


Function diagram of electronics

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

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

Operation of electronics with FOUNDATION Fieldbus communication



Function diagram of electronics

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

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

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

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

Mode of operation of the measuring cells

The process connections available include the following:

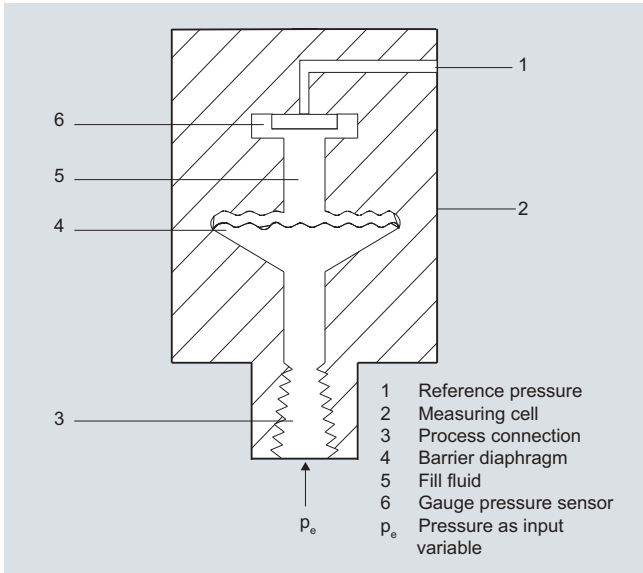
- G $\frac{1}{2}$
- $\frac{1}{2}$ -14 NPT
- Flush-mounted diaphragm:
 - Flanges to EN
 - Flanges to ASME
 - NuG and pharmaceutical connections

Pressure Measurement

Transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 for gauge and absolute pressure

Measuring cell for gauge pressure

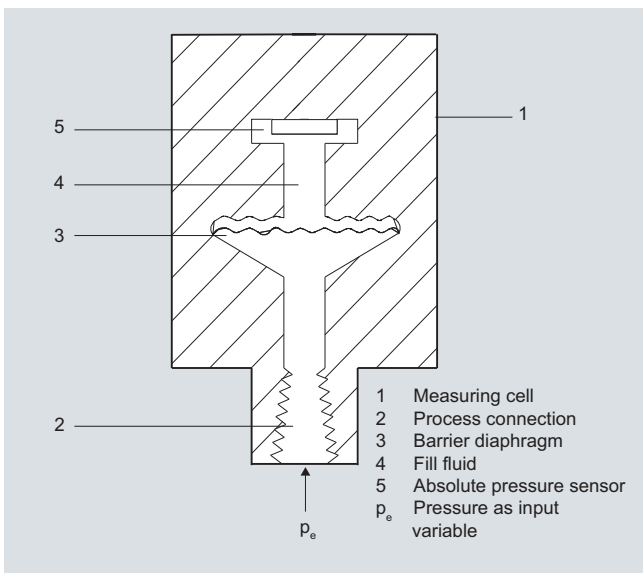


Measuring cell for gauge pressure, function diagram

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

The transmitters with spans ≤ 926.1 psi (≤ 63 bar) measure the input pressure against atmosphere, those with spans ≥ 2352 psi (≥ 160 bar) against vacuum.

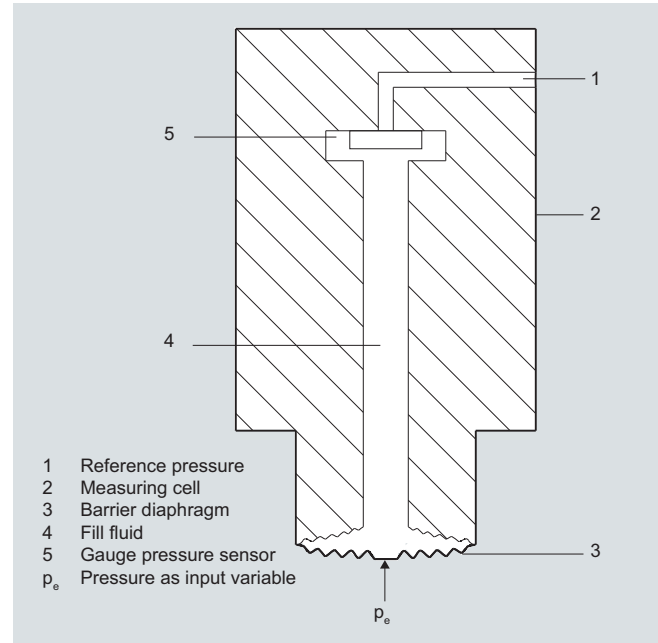
Measuring cell for absolute pressure



Measuring cell for absolute pressure, function diagram

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

Measuring cell for gauge pressure, front-flush diaphragm

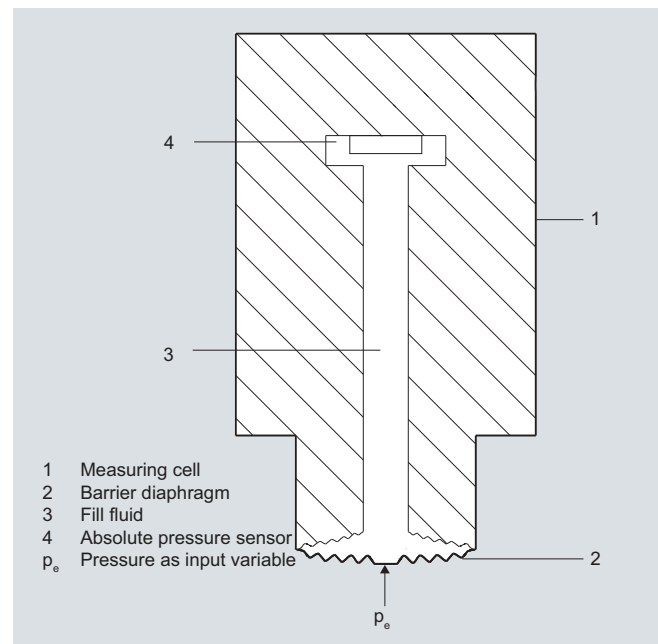


Measuring cell for gauge pressure, front-flush diaphragm, function diagram

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

The transmitters with spans ≤ 926.1 psi (≤ 63 bar) measure the input pressure against atmosphere, those with spans ≥ 2352 psi (≥ 160 bar) against vacuum.

Measuring cell for absolute pressure, front-flush diaphragm



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

Pressure Measurement

Transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 for gauge and absolute pressure

The input pressure (p_e) is transferred to the absolute pressure sensor (5) via the barrier diaphragm (3) and the fill fluid (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

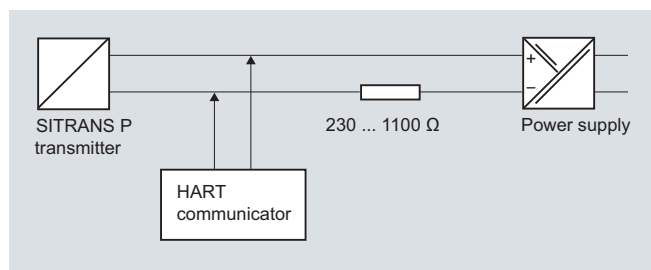
Depending on the version, there are a range of options for parameterizing the pressure transmitter and for setting or scanning the parameters.

Parameterization using the pushbuttons (local operation)

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

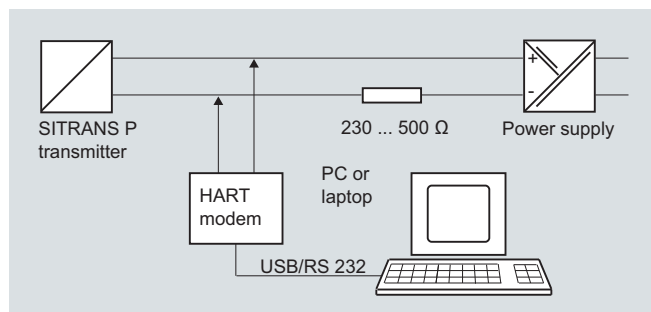
Parameterization using HART communication

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



Communication between a HART communicator and a pressure transmitter

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



HART communication between a PC communicator and a pressure transmitter

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

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

Adjustable parameters on SITRANS P300 with HART communication

Parameters	Pushbuttons	HART communication
Start of scale	x	x
Full-scale value	x	x
Electrical damping	x	x
Start-of-scale value without application of a pressure ("Blind setting")	x	x
Full-scale value without application of a pressure ("Blind setting")	x	x
Zero adjustment	x	x
Current transmitter	x	x
Fault current	x	x
Disabling of buttons, write protection	x	x ¹⁾
Linear or square root outputs	x	x
Characterizer setup		x
Freely-programmable LCD		x
Diagnostic functions		x

¹⁾ Cancel apart from write protection

Diagnostic functions for SITRANS P300 with HART communication

- Zero correction for position
- Event counter
- Transmitter output alarms
- Saturation alarm
- Min/Max registers
- Simulation functions
- Maintenance timer

Available physical units of display for SITRANS P300 with HART communication

Table style: Technical specifications 2

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

Pressure Measurement

Transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 for gauge and absolute pressure

Parameterization through PROFIBUS PA interface

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

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

Parameterization through FOUNDATION Fieldbus interface

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

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

Adjustable parameters for SITRANS P300 PA and FF

Adjustable parameters	Push-buttons	PROFIBUS PA and FOUNDATION Fieldbus interface
Electrical damping	x	x
Zero adjustment (correction of position)	x	x
Buttons and/or function disabling	x	x
Source of measured-value display	x	x
Physical dimension of display	x	x
Position of decimal point	x	x
Bus address	x	x
Linear or square root outputs	x	x
Characterizer setup		x
Freely-programmable LCD		x
Diagnostic functions		x

Diagnostic functions for SITRANS P300 PA and FF

- Event counter
- Min/Max registers
- Maintenance timer
- Simulation functions
- Zero correction for position
- Transmitter output alarms
- Saturation alarm

Physical dimensions available for the display

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

Sanitary version

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

Pressure Measurement

Transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 for gauge and absolute pressure

Technical specifications

SITRANS P300 for gauge and absolute pressure

	HART	PROFIBUS PA and FOUNDATION Fieldbus		
Gauge pressure input				
Measured variable	Gauge pressure			
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Measuring span	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure
	0.15 ... 14.5 psi g (0.01 ... 1 bar g)	87 psi g (6 bar g)	14.5 psi g (1 bar g)	87 psi g (6 bar g)
	0.58 ... 58 psi g (0.04 ... 4 bar g)	145 psi g (10 bar g)	58 psi g (4 bar g)	145 psi g (10 bar g)
	2.3 ... 232 psi g (0.16 ... 16 bar g)	464 psi g (32 bar g)	232 psi g (16 bar g)	464 psi g (32 bar g)
	9.1 ... 914 psi g (0.6 ... 63 bar g)	1450 psi g (100 bar g)	914 psi g (63 bar g)	1450 psi g (100 bar g)
	23.2 ... 2321 psi g (1.6 ... 160 bar g)	3626 psi g (250 bar g)	2321 psi g (160 bar g)	3626 psi g (250 bar g)
	58 ... 5802 psi g (4.0 ... 400 bar g)	8700 psi g (600 bar g)	5802 psi g (400 bar g)	8700 psi g (600 bar g)
	Depending on the process connection, the span may differ from these values		Depending on the process connection, the nominal measuring range may differ from these values	
Lower measuring limit	0.44 psi a (30 mbar a)			
• Measuring cell with silicone oil				
Upper measuring limit	100 % of the max. nominal measuring range			
• Measuring cell with silicone oil	100% of max. span			
Absolute pressure input				
Measured variable	Absolute pressure			
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Measuring span	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure
	0.12 ... 3.6 psi a (8 ... 250 mbar a)	87 psi a (6 bar a)	3.6 psi a (250 mbar a)	87 psi a (6 bar a)
	0.62 ... 19 psi a (0.043 ... 1.30 bar a)	145 psi a (10 bar a)	19 psi a (1.30 bar a)	145 psi a (10 bar a)
	2.3 ... 73 psi a (0.16 ... 5 bar a)	435 psi a (30 bar a)	73 psi a (5 bar a)	435 psi a (30 bar a)
	14.5 ... 435 psi a (1 ... 30 bar a)	1450 psi a (100 bar a)	435 psi a (30 bar a)	1450 psi a (100 bar a)
Lower measuring limit	0 mbar a (0 psi a)			
• Measuring cell with silicone oil				
Upper measuring limit	100 % of the max. nominal measuring range			
• Measuring cell with silicone oil	100% of max. span			
Input of gauge pressure, with front-flush diaphragm				
Measured variable	Gauge pressure, front-flush			
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Measuring span	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure
	0.15 ... 14.5 psi g (0.01 ... 1 bar g)	87 psi g (6 bar g)	14.5 psi g (1 bar g)	87 psi g (6 bar g)
	0.58 ... 58 psi g (0.04 ... 4 bar g)	145 psi g (10 bar g)	58 psi g (4 bar g)	145 psi g (10 bar g)
	2.32 ... 232 psi g (0.16 ... 16 bar g)	464 psi g (32 bar g)	232 psi g (16 bar g)	464 psi g (32 bar g)
	9.14 ... 914 psi g (0.6 ... 63 bar g)	1450 psi g (100 bar g)	914 psi g (63 bar g)	1450 psi g (100 bar g)
Lower measuring limit	-1.45 psi g (-100 mbar g)			
Upper measuring limit	100 % of the max. nominal measuring range			
• Measuring cell with silicone oil	100% of max. span			

Pressure Measurement

Transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 for gauge and absolute pressure

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HART			PROFIBUS PA and FOUNDATION Fieldbus			
Input of absolute pressure, with front-flush diaphragm						
Measured variable						
Absolute pressure, front-flush						
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure		Measuring span	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure	
		0.62 ... 18.9 psi a (43 ... 1300 mbar a)	145 psi a (10 bar a)	18.9 psi a (1300 mbar a)	145 psi a (10 bar a)	
		2.32 ... 72.5 psi a (0.16 ... 5 bar a)	435 psi a (30 bar a)	72.5 psi a (5 bar a)	435 psi a (30 bar a)	
		14.5 ... 435 psi a (1 ... 30 bar a)	1450 psi a (100 bar a)	435 psi a (30 bar a)	1450 psi a (100 bar a)	
		Depending on the process connection, the span may differ from these values		Depending on the process connection, the nominal measuring range may differ from these values		
Lower measuring limit		0 psi a (0 bar a)				
Upper measuring limit						
• Measuring cell with silicone oil		100% of max. span		100 % of the max. nominal measuring range		
Output						
Output signal		4 ... 20 mA		Digital PROFIBUS PA signal		
Physical bus		-		IEC 61158-2		
Protection against polarity reversal		Protected against short-circuit and polarity reversal. Each connection against the other with max. supply voltage.				
Electrical damping T ₆₃ (step width 0.1 s)		Set to 0.1 s (0 ... 100 s)				
as per EN60770-1						
Measuring accuracy						
Reference conditions (All error data refer always refer to the set span)						
Increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, measuring cell with silicone oil, room temperature 25 °C (77 °F), span ratio (r = max. span / set span)						
Measurement deviation with limit setting, including hysteresis and repeatability.						
Gauge pressure		Absolute pressure	Absolute pressure, front-flush	Gauge pressure	Absolute pressure	Absolute pressure, front-flush
Linear characteristic				≤ 0.075 %	≤ 0.1 %	≤ 0.2 %
• r + 10		≤ (0.0029 · r + 0.071) %	≤ 0.1 %	≤ 0.2 %		
• 10 < r ≤ 30		≤ (0.0045 · r + 0.071) %	≤ 0.2 %	≤ 0.4 %		
• 30 < r ≤ 100		≤ (0.005 · r + 0.05) %	-	-		
Settling time T ₆₃ without electrical damping		approx. 0.2 NO				
Long-term drift at ±30 °C (±54 °F)		≤ (0.25 · r) %/5 years	≤ (0.1 · r) %/year	≤ 0.25 %/5 years	≤ 0.1 %/year	
Influence of ambient temperature						
• at -10 ... +60 °C (14 ... 140 °F)		≤ (0.08 · r + 0.1) %	≤ (0.2 · r + 0.3) %	≤ 0.3 %		≤ 0.5 %
• at -40 ... -10 °C and +60 ... +85 °C (-40 ... 14 °F and 140 ... 185 °F)		≤ (0.1 · r + 0.15) %/10 K	≤ (0.2 · r + 0.3) %/10 K	≤ 0.25 %/10 K		≤ 0.5 %/10 K
Influence of the medium temperature (only with front-flush diaphragm)						
• Temperature difference between medium temperature and ambient temperature		3 mbar/10 K (0.04 psi/10 K)				

Pressure Measurement

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SITRANS P300 for gauge and absolute pressure

2

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Rated conditions		
<u>Installation conditions</u>		
Ambient temperature	Observe the temperature class in areas subject to explosion hazard.	
<ul style="list-style-type: none"> • Measuring cell with silicone oil • Measuring cell with Neobee oil (with front-flush diaphragm) • Measuring cell with inert liquid (not with front-flush diaphragm) • Digital display • Storage temperature 	-40 ... +85 °C (-40 ... +185 °F) -10 ... +85 °C (14 ... +185 °F) -20 ... +85 °C (-4 ... +185 °F) -30 ... +85 °C (-22 ... +185 °F) -50 ... +85 °C (-58 ... +185 °F) (for Neobee: -20 ... +85 °C (-4 ... +185 °F))	
Climatic class	Relative humidity 0 ... 100 %	
Condensation	Condensation permissible, suitable for use in the tropics	
Degree of protection acc. to EN 60529	IP65, IP68, NEMA X, enclosure cleaning, resistant to lyes, steam to 150 °C (302 °F)	
<u>Electromagnetic Compatibility</u>		
<ul style="list-style-type: none"> • Emitted interference and interference immunity 	Acc. to EN 61326 and NAMUR NE 21	
<u>Medium conditions</u>		
Temperature of medium		
<ul style="list-style-type: none"> • Measuring cell with silicone oil • Measuring cell with silicone oil (with front-flush diaphragm) • Measuring cell with Neobee oil (with front-flush diaphragm) • Measuring cell with silicone oil, with temperature decoupler (only with front-flush diaphragm) • Measuring cell with inert liquid • Measuring cell with high-temperature oil 	-40 ... +100 °C (-40 ... +212 °F) -40 ... +150 °C (-40 ... +302 °F) -10 ... +150 °C (-14 ... +302 °F) -40 ... +200 °C (-40 ... +392 °F) -20 ... +100 °C (-4 ... +212 °F) -10 ... +250 °C (14 ... 482 °F)	
Design (standard version)		
Weight (without options)	Approx. 800 g (1.8 lb)	
Enclosure material	Stainless steel, mat. no. 1.4301/304	
Material of parts in contact with the medium		
<ul style="list-style-type: none"> • Connection shank • Oval flange • Seal diaphragm • Measuring cell filling 	Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819 Stainless steel, mat. no. 1.4404/316L Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819	<ul style="list-style-type: none"> •Silicone oil •Inert filling liquid •G½B to EN 837-1 •Female thread ½-14 NPT
Process connection	<ul style="list-style-type: none"> •Oval flange PN 160 (MWP 2320 psi) with fastening thread: <ul style="list-style-type: none"> -7₁₆-20 UNF to IEC 61518 -M10 as per DIN 19213 	
Design (version with front-flush diaphragm)		
Weight (without options)	approx. 1 ... 13 kg (2.2 ... 29 lb)	
Enclosure material	Stainless steel, mat. no. 1.4301/304	
Material of parts in contact with the medium		
<ul style="list-style-type: none"> • Process connection • Seal diaphragm • Measuring cell filling 	Stainless steel, mat. no. 1.4404/316L Stainless steel, mat. no. 1.4404/316L	<ul style="list-style-type: none"> •Silicone oil •Inert filling liquid
Process connection	<ul style="list-style-type: none"> •FDA compliant fill fluid (Neobee oil) •Flanges as per EN and ASME •F&B and pharmaceutical flanges 	
Surface quality touched-by-media	R _a -values ≤ 0.8 μm (32 μ-inch)/welds R _a ≤ 1.6 μm (64 μ-inch)	
(Process connections acc. to 3A; R _a -values ≤ 0.8 μm (32 μ-inch)/welds R _a ≤ 0.8 μm (32 μ-inch))		

Pressure Measurement

Transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 for gauge and absolute pressure

2

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

Pressure Measurement

Transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 for gauge and absolute pressure

SITRANS P300 for gauge and absolute pressure

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

Pressure Measurement

Transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 for gauge and absolute pressure

HART Communication		FOUNDATION Fieldbus communication	
HART communication	230 ... 1100 Ω	Function blocks	3 function blocks analog input, 1 function block PID
Protocol	HART Version 5.x	• Analog input	Yes, linearly rising or falling characteristic
Software for computer	SIMATIC PDM	- Adaptation to customer-specific process variables	0 ... 100 s
PROFIBUS PA communication		- Electrical damping T_{63} , adjustable	Output/input (can be locked within the device with a bridge)
Simultaneous communication with master class 2 (max.)	4	- Simulation function	parameterizable (last good value, substitute value, incorrect value)
The address can be set using	Configuration tool or local operation (standard setting Address 126)	- Failure mode	Yes, one upper and lower warning limit and one alarm limit respectively
Cyclic data usage		- Limit monitoring	Yes
• Output byte	5 (one measured value) or 10 (two measured values)	- Square-rooted characteristic for flow measurement	Standard FF function block
• Input byte	0.1 or 2 (totalizer mode and reset function for dosing)	• PID	1 resource block
• Internal preprocessing		• Physical block	1 transducer block Pressure with calibration, 1 transducer block LCD
Device profile	PROFIBUS PA Profile for Process Control Devices Version 3.0, Class B	Transducer blocks	
Function blocks	2	• Pressure transducer block	
• Analog input		- Can be calibrated by applying two pressures	Yes
- Adaptation to customer-specific process variables	Yes, linearly rising or falling characteristic	- Monitoring of sensor limits	Yes
- Electrical damping T_{63} , adjustable	0 ... 100 s	- Simulation function: Measured pressure value, sensor temperature and electronics temperature	Constant value or over parameterizable ramp function
- Simulation function	Input /Output		
- Failure function	parameterizable (last good value, substitute value, incorrect value)		
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respectively		
• Register (totalizer)	Can be reset, preset, optional direction of counting, simulation function of register output		
- Failure mode	parameterizable (summation with last good value, continuous summation, summation with incorrect value)		
- Limit monitoring	One upper and lower warning limit and one alarm limit respectively		
• Physical block	1		
Transducer blocks	2		
• Pressure transducer block			
- Can be calibrated by applying two pressures	Yes		
- Monitoring of sensor limits	Yes		
- Characterizer	Max. 30 points		
- Simulation function for measured pressure value and sensor temperature	Constant value or over parameterizable ramp function		

Pressure Measurement

Transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 for gauge and absolute pressure

Selection and Ordering data		Order No.
SITRANS P300 pressure transmitters for relative and absolute pressure , single-chamber measuring housing, rating plate inscription in English		
4 ... 20 mA/HART		7MF8023-
PROFIBUS PA		7MF8024-
FOUNDATION Fieldbus (FF)		7MF8025-
Measuring cell filling		
Silicone oil	normal	1
Inert liquid	Cleanliness level 2 to DIN 25410	3
max. span		
0.15 ... 14.5 psi g	(0.04 ... 4 bar g)	B
0.58 ... 58 psi g	(0.16 ... 16 bar g)	C
2.32 ... 232 psi g	(0.63 ... 63 bar g)	D
9.14 ... 914 psi g	(1.6 ... 160 bar g)	E
23.2 ... 2320 psi g	(4 ... 400 bar g)	F
58 ... 5802 psi g	(2.5 ... 25 mbar a)	G
0.036 ... 3.63 psi a	(13 ... 1300 mbar a)	F) Q
0.19 ... 18.9 psi a	(0.05 ... 5 bar a)	F) N
0.7 ... 72.5 psi a	(0.3 ... 30 bar a)	F) T
4.35 ... 435 psi a	(0.01 ... 1 bar g)	F) U
Wetted parts materials		
Seal diaphragm	Measuring cell	
Stainless steel	Stainless steel	A
Hastelloy	Stainless steel	F) B
Hastelloy	Hastelloy	F) C
Version for diaphragm seal ¹⁾²⁾		Y
Process connection		
• G½B to EN 837-1		0
• ½-14 NPT		1
• Stainless steel oval flange		
- Mounting thread 7/16-20 UNF to EN 61518		2
- Mounting thread M10 to DIN 19213		3
- Mounting thread M12 to DIN 19213		4
• Male thread M20 x 1.5		5
• Male thread ½-14 NPT		6
Non-wetted parts materials		
• Stainless steel, deep-drawn and electrolytically polished		4
Version		
• Standard versions		1
Hazardous Area Rating		
• General Purpose		A
• ATEX, Hazardous Approval		
- "Intrinsic safety (EEx ia)"		B
• FM/CSA Hazardous approval		
- "Intrinsically safe and explosion proof (is + xp)"		M J
Electrical connection / cable entry		
• Screwed gland M20x1.5 (polyamide) ³⁾		A
• Screwed gland M20x1.5 (metal)		B
• Screwed gland M20x1.5 (stainless steel)		C
• M20 connectors (stainless steel), without cable		G
• ½-14 NPT stainless steel thread ⁴⁾		J

Selection and Ordering data		Order No.
SITRANS P300 pressure transmitters for relative and absolute pressure , single-chamber measuring housing, rating plate inscription in English		
4 ... 20 mA/HART		7MF8023-
PROFIBUS PA		7MF8024-
FOUNDATION Fieldbus (FF)		7MF8025-
Indicator		
• Without display, with keys, closed lid ³⁾		1
• With display and keys, closed lid		2
• With display and keys, lid with plastics (Makrolon) pane (setting on HART devices: mA, on PROFIBUS devices: pressure units)		4
• With display and keys, lid with plastics (Makrolon) pane (setting acc. to specifications, Order code "Y21" or "Y22" required)		5
• With indicator (digital display visible, setting: mA)		6
• With indicator (digital display visible, setting as specified, Order code "Y21" or "Y22" required)		7
Power supply units see Chap. 8 "Supplementary Components".		
Included in delivery of the device:		
• Brief instructions (Leporello)		
• CD-ROM with detailed documentation		
1) When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the <u>total</u> combination is certified here.		
2) If the acceptance test certificate 3.1 is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.		
3) Only together with HART electronics.		
4) Without cable gland.		
F) Subject to export regulations AL: 91999, ECCN: N.		

Pressure Measurement

Transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 for gauge and absolute pressure

2

Selection and Ordering data		Order code			
Further designs			HART	PA	FF
Add "-Z" to Order No. and specify Order Code.					
Pressure transmitter with mounting bracket (2 shackles, 4 nuts, 4 U-plates, 1 angle) made of: made completely of stainless steel, for wall or pipe mounting	A02	✓	✓	✓	
Rating plate inscription (instead of English)					
• German	B10	✓	✓	✓	
• French	B12	✓	✓	✓	
• Spanish	B13	✓	✓	✓	
• Italian	B14	✓	✓	✓	
English rating plate Pressure units in inH ₂ O and/or psi	B21	✓	✓	✓	
Factory calibration certificate	C11	✓	✓	✓	
Material traceability certification	C12	✓	✓	✓	
Factory certificate of conformance	C14	✓	✓	✓	
Degree of protection IP68 (only for M20x1.5 and ½-14 NPT)	D12	✓	✓	✓	
Brad Harrison Connector	D40	✓	✓	✓	
Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4...-B..)	E45	✓	✓	✓	
Ex Approval EEx ia/ib NEPSI	E55	✓	✓	✓	
Only for SITRANS P300 with front-flush diaphragm (7MF81...-...)					
Flange to EN 1092-1, Form b1					
• DN 25, PN 40 ¹⁾	M11	✓	✓	✓	
• DN 25, PN 100 ⁴⁾	M21	✓	✓	✓	
• DN 40, PN 40	M13	✓	✓	✓	
• DN 40, PN 100	M23	✓	✓	✓	
• DN 50, PN 16	M04	✓	✓	✓	
• DN 50, PN 40	M14	✓	✓	✓	
• DN 80, PN 16	M06	✓	✓	✓	
• DN 80, PN 40	M16	✓	✓	✓	
Flanges to ASME B16.5					
• 1", class 150 ⁴⁾	M40	✓	✓	✓	
• 1½", class 150	M41	✓	✓	✓	
• 2", class 150	M42	✓	✓	✓	
• 3", class 150	M43	✓	✓	✓	
• 4", class 150	M44	✓	✓	✓	
• 1", class 300 ⁴⁾	M45	✓	✓	✓	
• 1½", class 300	M46	✓	✓	✓	
• 2", class 300	M47	✓	✓	✓	
• 3", class 300	M48	✓	✓	✓	
• 4", class 300	M49	✓	✓	✓	
Threaded connector to DIN 3852-2, form A, thread to ISO 228					
• G ¾"-A, front-flush ²⁾	R01	✓	✓	✓	
• G 1"-A, front-flush ⁴⁾	R02	✓	✓	✓	
• G 2"-A, front-flush ⁴⁾	R04	✓	✓	✓	
Tank connection³⁾ Sealing is included in delivery					
• TG 52/50, PN 40	R10	✓	✓	✓	

Selection and Ordering data		Order code			
Further designs			HART	PA	FF
Add "-Z" to Order No. and specify Order Code.					
Sanitary process connection according DIN 11851 (Dairy connection) Certified to 3A ⁴⁾					
• DN 50, PN 25	N04	✓	✓	✓	
• DN 80, PN 25	N06	✓	✓	✓	
Tri-Clamp connection according DIN 32676/ISO 2852 Certified to 3A ⁴⁾					
• DN 50/2", PN 16	N14	✓	✓	✓	
• DN 65/3", PN 10	N15	✓	✓	✓	
Varivent connection Certified to 3A and EHEDG ⁴⁾					
• Type N = 68 for Varivent housing DN 40 ... 125 und 1½" ... 6", PN 40	N28	✓	✓	✓	
Temperature decoupler up to 200 °C⁵⁾ for front-flush diaphragm version	P00	✓	✓	✓	
Temperature decoupler up to 250 °C Measuring cell filling: High-temperature oil, only in conjunction with measuring cell filling silicone oil	P10	✓	✓	✓	
Bio-Control sanitary process connection Certified to 3A and EHEDG ⁴⁾					
• DN 50, PN 16	Q53	✓	✓	✓	
• DN 65, PN 16	Q54	✓	✓	✓	
• DN 80, PN 16	Q55	✓	✓	✓	
Sanitary process connection to DRD					
• 65 mm, PN 40	M32	✓	✓	✓	
SMS socket with union nut					
• 2"	M67	✓	✓	✓	
• 2½"	M68	✓	✓	✓	
• 3"	M69	✓	✓	✓	
SMS threaded socket					
• 2"	M73	✓	✓	✓	
• 2½"	M74	✓	✓	✓	
• 3"	M75	✓	✓	✓	
IDF socket with union nut ISO 2853					
• 2"	M82	✓	✓	✓	
• 2½"	M83	✓	✓	✓	
• 3"	M84	✓	✓	✓	
IDF threaded socket ISO 2853					
• 2"	M92	✓	✓	✓	
• 2½"	M93	✓	✓	✓	
• 3"	M94	✓	✓	✓	
Sanitary process connection to NEUMO Bio-Connect screw connection Certified to 3A and EHEDG ⁴⁾					
• DN 50, PN 16	Q05	✓	✓	✓	
• DN 65, PN 16	Q06	✓	✓	✓	
• DN 80, PN 16	Q07	✓	✓	✓	
• DN 100, PN 16	Q08	✓	✓	✓	
• DN 2", PN 16	Q13	✓	✓	✓	
• DN 2½", PN 16	Q14	✓	✓	✓	
• DN 3", PN 16	Q15	✓	✓	✓	
• DN 4", PN 16	Q16	✓	✓	✓	
Sanitary process connection to NEUMO Bio-Connect flange connection Certified to 3A and EHEDG ⁴⁾					
• DN 50, PN 16	Q23	✓	✓	✓	
• DN 65, PN 16	Q24	✓	✓	✓	
• DN 80, PN 16	Q25	✓	✓	✓	
• DN 100, PN 16	Q26	✓	✓	✓	
• DN 2", PN 16	Q31	✓	✓	✓	
• DN 2½", PN 16	Q32	✓	✓	✓	
• DN 3", PN 16	Q33	✓	✓	✓	
• DN 4", PN 16	Q34	✓	✓	✓	

Pressure Measurement Transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 for gauge and absolute pressure

2

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

- 1) Special seal in Viton included in the scope of delivery
- 2) Lower measuring limit -100 mbar g (1.45 psi g).
- 3) The weldable socket can be ordered under accessories.
- 4) 3A certification only if used in conjunction with 3A-compliant sealing rings.
- 5) Certified to 3A.
The maximum permissible temperatures of the medium depend on the respective cell fillings.
- 6) Preset values can only be changed over SIMATIC PDM

Selection and Ordering data	Order code			
Additional data		HART	PA	FF
Please add "-Z" to Order No. and specify Order code(s) and plain text.				
Calibrated range Specify in plain text (max. 5 characters): Y01: X to Y psi, inH ₂ O, ftH ₂ O...	Y01	✓		
Tag number/Identification (max. 16 characters), specify in plain text: Y15:	Y15	✓	✓	✓
Tag description (max. 27 characters), specify in plain text: Y16:.....	Y16	✓	✓	✓
Entry of HART (TAG) (max. 8 characters), specify in plain text: Y17:	Y17	✓		
Pressure units for digital display specify in plain text: Y21: psi, inH ₂ O, ftH ₂ O ...	Y21	✓	✓	✓
Non-Pressure units for digital display⁶⁾ (measuring range in pressure units ("Y01"/"Y02") mandatory) specify in plain text: Y22: X to Y GPM, MGD, Feet ...	Y22 + Y01	✓		
Preset bus address (possible between 1 ... 126) Specify in plain text: Y25:	Y25		✓	

Factory mounting of valve manifolds, see accessories.

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

✓ = available

Ordering example

Item line: 7MF8023-1DB24-1AB7-Z
 B line: A02 + Y01 + Y21
 C line: Y01: 0 ... 14,5 psi (0 ... 1 bar)
 C line: Y21: psi (bar)

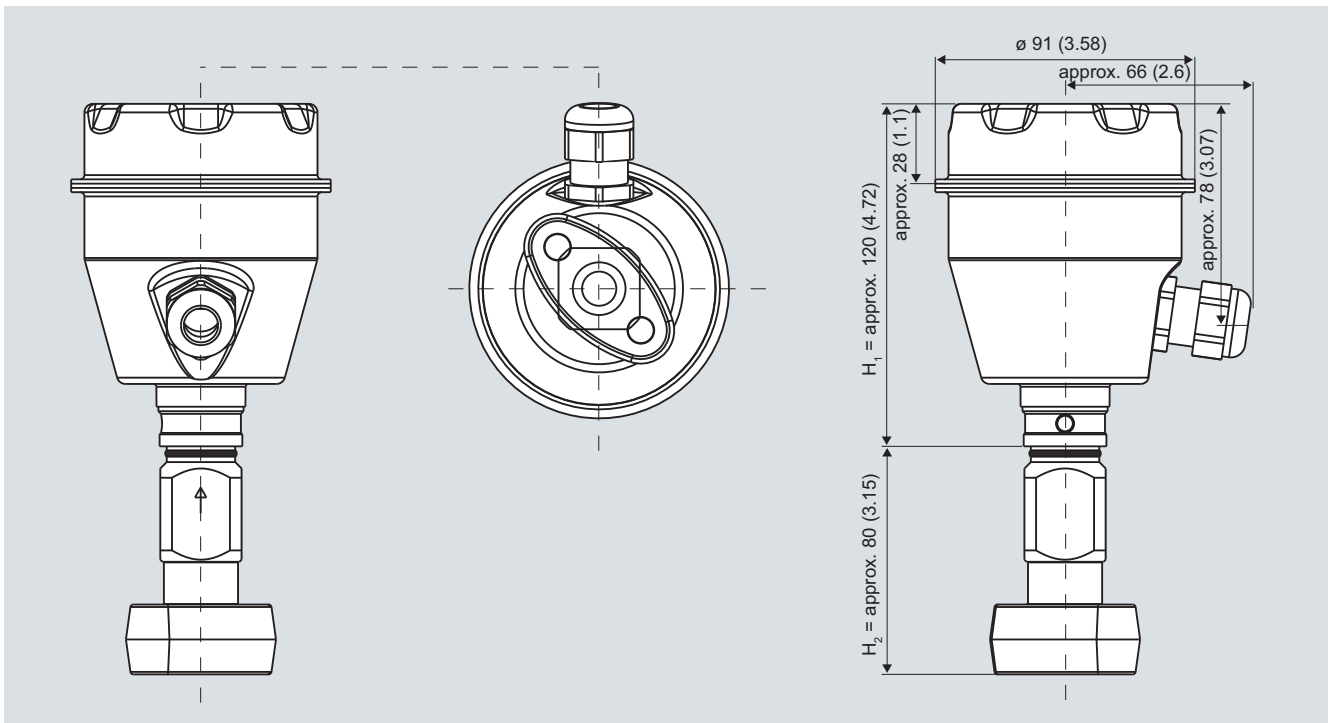
Pressure Measurement

Transmitters for food, pharmaceuticals and biotechnology

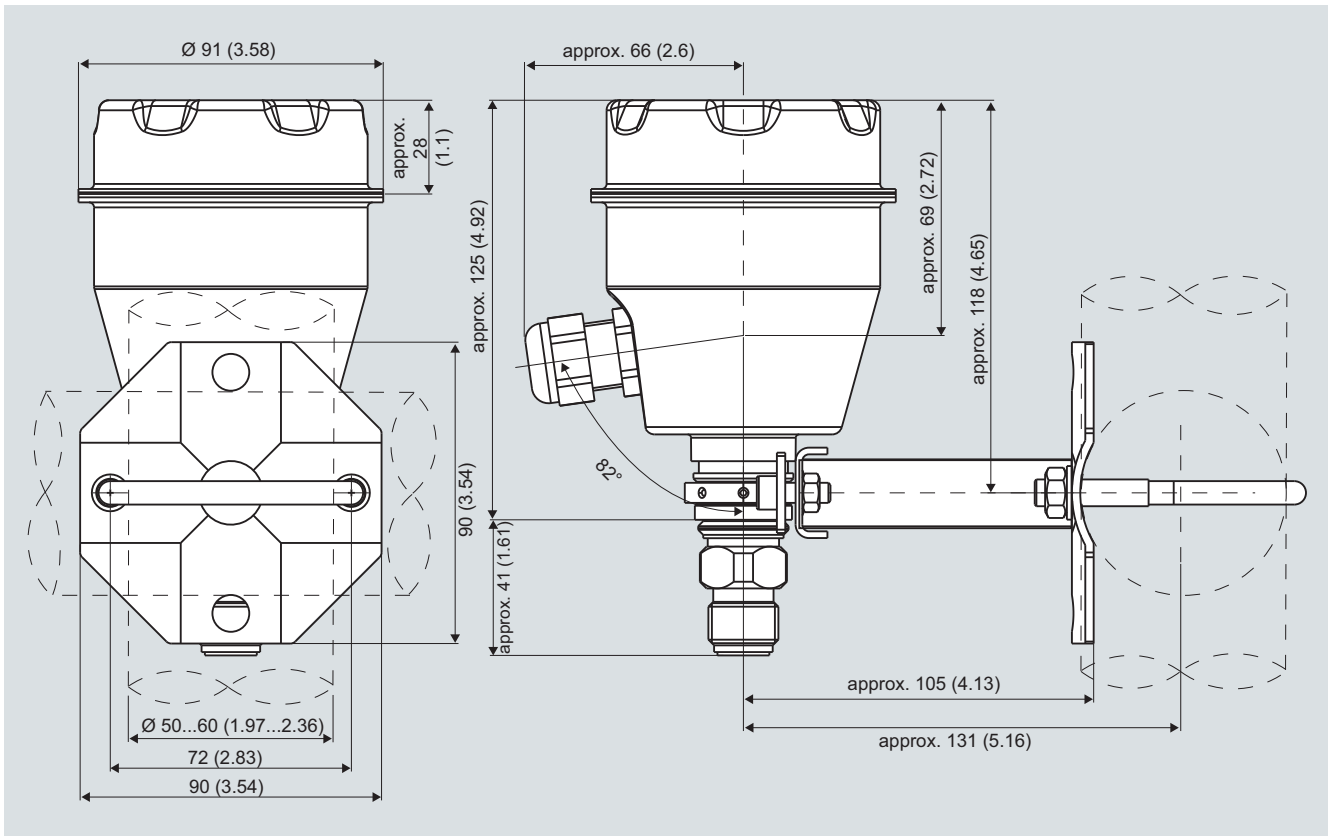
SITRANS P300 for gauge and absolute pressure

Dimensional drawings

2



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

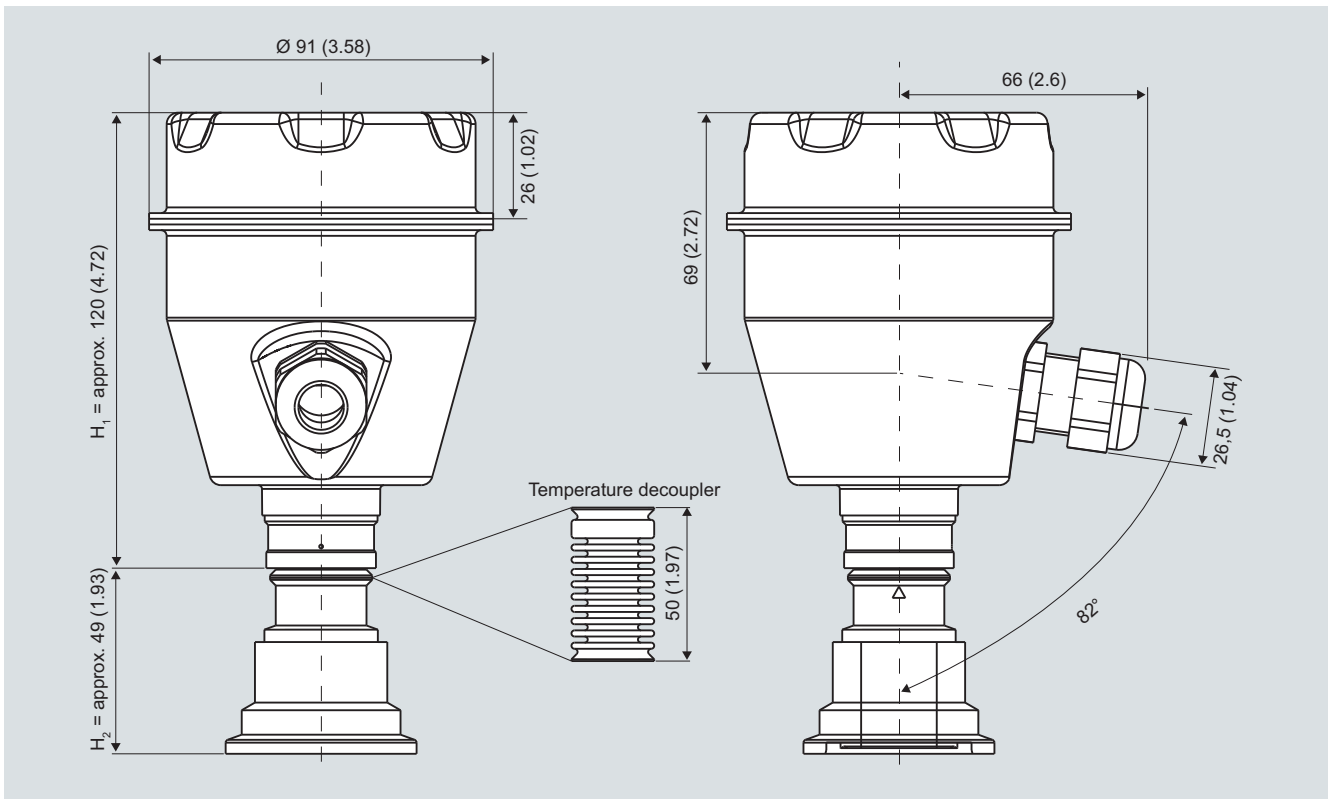


SITRANS P300, process connection M20 x 1.5, with mounted mounting bracket, dimensions in mm (inch)

Pressure Measurement

Transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 for gauge and absolute pressure



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

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

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

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

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

Pressure Measurement

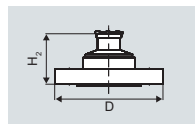
Transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 for gauge and absolute pressure

Flanges as per EN and ASME

Flange to EN

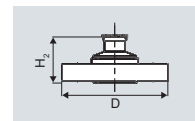
EN 1092-1



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

Flanges to ASME

ASME B16.5

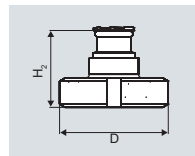


DN	Class	ØD	H ₂
1"	150	110 mm (4.3")	Approx. 52 mm (2")
1"	300	125 mm (4.9")	
1½"	150	130 mm (5.1")	
1½"	300	155 mm (6.1")	
2"	150	150 mm (5.9")	
2"	300	165 mm (6.5")	
3"	150	190 mm (7.5")	
3"	300	210 mm (8.1")	
4"	150	230 mm (9.1")	
4"	300	255 mm (10.0")	

NuG and pharmaceutical connections

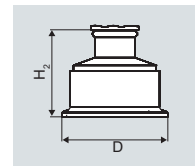
Connections to DIN

DIN 11851 (milk pipe union)



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

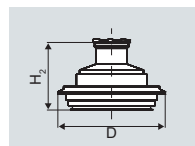
TriClamp to DIN 32676



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

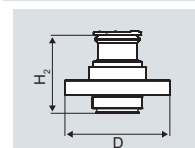
Other connections

Varivent connection



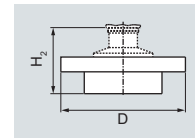
DN	PN	ØD	H ₂
40 ... 125	40	84 mm (3.3")	Approx. 52 mm (2")

Biocontrol connection



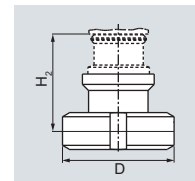
DN	PN	ØD	H ₂
50	16	90 mm (3.5")	Approx. 52 mm (2")
65	16	120 mm (4.7")	

Sanitary process connection to DRD



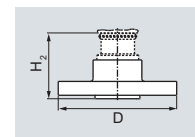
DN	PN	ØD	H ₂
50	40	105 mm (4.1")	Approx. 52 mm (2")

Sanitary process screw connection to NEUMO Bio-Connect



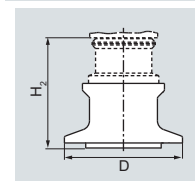
DN	PN	ØD	H ₂
50	16	82 mm (3.2")	Approx. 52 mm (2")
65	16	105 mm (4.1")	
80	16	115 mm (4.5")	
100	16	145 mm (5.7")	
2"	16	82 mm (3.2")	
2½"	16	105 mm (4.1")	
3"	16	105 mm (4.1")	
4"	16	145 mm (5.7")	

Sanitary process connection to NEUMO Bio-Connect flange connection



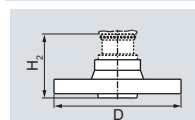
DN	PN	ØD	H ₂
50	16	110 mm (4.3")	Approx. 52 mm (2")
65	16	140 mm (5.5")	
80	16	150 mm (5.9")	
100	16	175 mm (6.9")	
2"	16	100 mm (3.9")	
2½"	16	110 mm (4.3")	
3"	16	140 mm (5.5")	
4"	16	175 mm (6.9")	

Sanitary process connection to NEUMO Bio-Connect clamp connection



DN	PN	ØD	H ₂
50	16	77.4 mm (3.0")	Approx. 52 mm (2")
65	10	90.9 mm (3.6")	
80	10	106 mm (4.2")	
100	10	119 mm (4.7")	
2"	16	64 mm (2.5")	
2½"	16	77.4 mm (3.0")	
3"	10	90.9 mm (3.6")	
4"	10	119 mm (4.7")	

Sanitary process connection to NEUMO Bio-Connect S flange connection



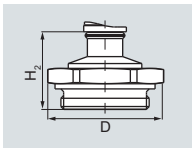
DN	PN	ØD	H ₂
50	16	125 mm (4.9")	Approx. 52 mm (2")
65	10	145 mm (5.7")	
80	10	155 mm (6.1")	
100	10	180 mm (7.1")	
2"	16	125 mm (4.9")	
2½"	10	135 mm (5.3")	
3"	10	145 mm (5.7")	
4"	10	180 mm (7.1")	

Pressure Measurement

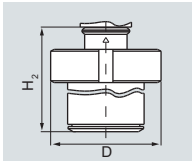
Transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 for gauge and absolute pressure

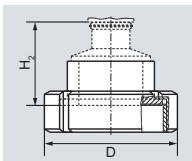
Threaded connection G $\frac{3}{4}$ ", G1" and G2" acc. to DIN 3852

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

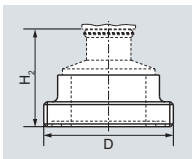
Tank connection TG 52/50 and TG52/150

	DN	PN	ØD	H ₂
	25	40	63 mm (2.5")	approx. 63 mm (2.5")
	25	40	63 mm (2.5")	approx. 170 mm (6.7")

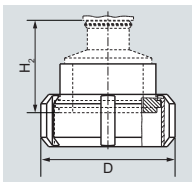
SMS socket with union nut

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

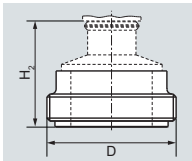
SMS threaded socket

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

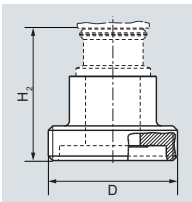
IDF socket with union nut

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

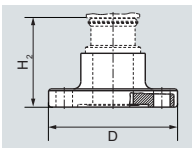
IDF threaded socket

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

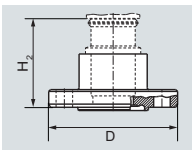
Aseptic threaded socket to DIN 11864-1 Form A

	DN	PN	ØD	H ₂
	50	25	78 x 1/6"	Approx. 52 mm (2.1")
	65	25	95 x 1/6"	
	80	25	110 x ¼"	
	100	25	130 x ¼"	

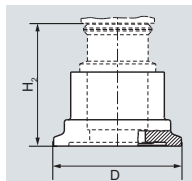
Aseptic flange with notch to DIN 11864-2 Form A

	DN	PN	ØD	H ₂
	50	16	94	Approx. 52 mm (2.1")
	65	16	113	
	80	16	133	
	100	16	159	

Aseptic flange with groove to DIN 11864-2 Form A

	DN	PN	ØD	H ₂
	50	16	94	Approx. 52 mm (2.1")
	65	16	113	
	80	16	133	
	100	16	159	

Aseptic clamp with groove to DIN 11864-3 Form A

	DN	PN	ØD	H ₂
	50	25	77,5	Approx. 52 mm (2.1")
	65	25	91	
	80	16	106	
	100	16	130	

2

Pressure Measurement

Transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 Accessories/Spare parts

2

Selection and Ordering data	Order No.	Selection and Ordering data	Order No.
<i>Spare parts / Accessories</i>		Operating Instructions¹⁾	
Mounting bracket and fastening parts kit made of stainless steel	7MF8997-1AA	• for SITRANS P300 series with HART communication - German - English - French - Spanish - Italian - Leporello German/English	A5E00359580 A5E00359579 A5E00359578 A5E00359576 A5E00359577 A5E00359581
Cover without window gasket not included	7MF8997-1BA	• for SITRANS P300 series with PROFIBUS PA communication - German - English - French - Spanish - Italian - Leporello German/English	A5E00414587 A5E00414588 A5E00414589 A5E00414590 A5E00414591 A5E00414592
Cover with glass window gasket not included	7MF8997-1BD	CD with documentation for SITRANS P300 and SITRANS DS III	A5E00090345
NBR enclosure sealing F)	7MF8997-1BG	• German, English, French, Spanish, Italian	A5E00090345
Measuring point label unlabeled	7MF8997-1CA	Certificates (order only via SAP) instead of Internet download	A5E03252406 A5E03252407
Cable gland • metal • plastic (blue)	7MF8997-1EA 7MF8997-1EB	• hard copy (to order)	A5E03252406
Weldable sockets for PMC connection • PMC Style Standard: Thread 1½" • PMC Style Minibolt: front-flush 1"	7MF4997-2HA 7MF4997-2HB	• on CD (to order)	A5E03252407
Gaskets for PMC connection (packing unit = 5 units) • PTFE seal for PMC Style Standard: Thread 1½" • Gasket made of Viton for PMC Style Minibolt: front-flush 1"	F) 7MF4997-2HC F) 7MF4997-2HD	HART modem	
Weldable socket for TG52/50 and TG52/150 connection • TG52/50 connection • TG52/150 connection02	7MF4997-2HE 7MF4997-2HF	• with RS232 interface D)	7MF4997-1DA
Seals for TG 52/50 and TG 52/150 made of silicone	7MF4997-2HG	• with USB interface D)	7MF4997-1DB
Seals for flange connection with front-flush diaphragm Material FPM (Viton), 10 units • DN 25, PN 40 (M11) • DN 25, PN 100 (M21) • 1", class 150 (M40) • 1", class 300 (M45)	F) 7MF4997-2HH F) 7MF4997-2HJ F) 7MF4997-2HK F) 7MF4997-2HL	¹⁾ You can download these operating instructions free-of-charge from our Internet site at www.siemens.de/sitransp . D) Subject to export regulations AL: N, ECCN: EAR99H F) Subject to export regulations AL: 91999, ECCN: N Power supply units see Chap. 8 "Supplementary Components".	

Pressure Measurement

Transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 - Factory-mounting of valve manifolds on transmitters

Overview

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

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

Design

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

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

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

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

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

Selection and Ordering data

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



Add -Z to the Order No. of the transmitter and add order codes	Order code
SITRANS P300 7MF802-...1.-...	T03
With process connection female thread 1/2-14 NPT in-sealed with PTFE sealing tape Delivery incl. high-pressure test certified by test report to EN 10204-2.2	
Further designs:	
Delivery includes mounting brackets and mounting clips made of stainless steel (instead of the mounting bracket supplied with the transmitter)	A02
Material traceability certification	C12

Pressure Measurement

Transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 - Factory-mounting of valve manifolds on transmitters

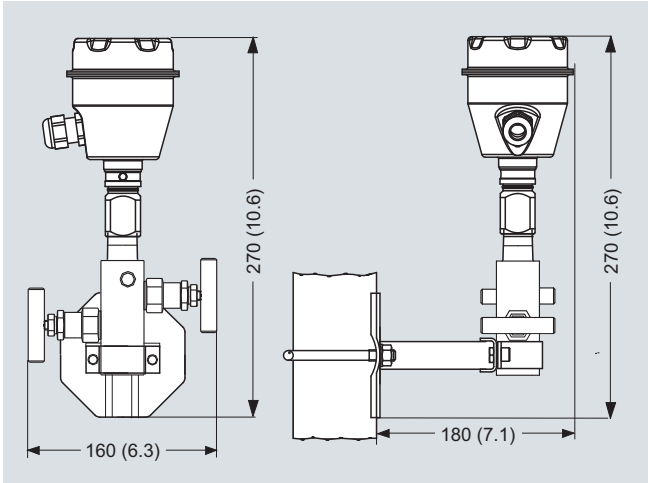
Dimensional drawings

Valve manifold mounted on SITRANS P300

2



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



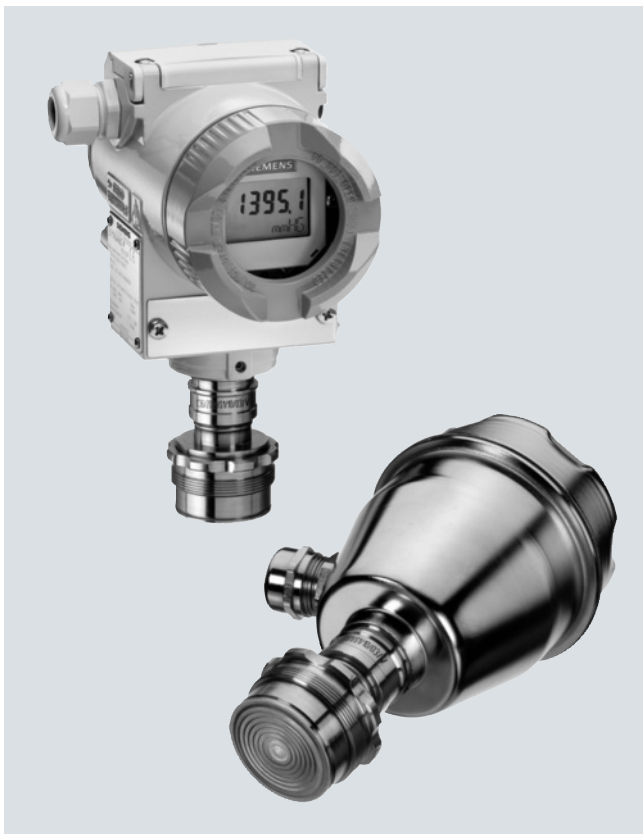
7MF9011-4FA valve manifold with mounted gauge pressure and absolute pressure transmitters, dimensions in mm (Inch)

Pressure Measurement

Transmitters for gauge pressure for the paper industry

SITRANS P DS III and P300 with PMC connection
Technical description

Overview



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

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

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

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

Various versions of the pressure transmitters are available for measuring:

- Gauge pressure
- Level
- Mass level
- Volume level

Benefits

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

Application

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

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

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

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

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

SITRANS P, DS III series

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

Span (infinitely adjustable)

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

Nominal measuring range

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

SITRANS P300

Span (infinitely adjustable)

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

Nominal measuring range

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

Pressure Measurement

Transmitters for gauge pressure for the paper industry

SITRANS P DS III and P300 with PMC connection

Technical description

Design

SITRANS P DS III



Device front view, SITRANS P DS III

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

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

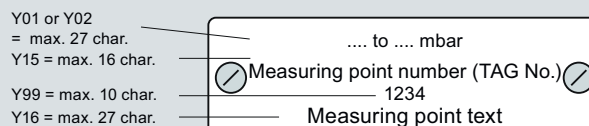
The approval label is located on the opposite side.

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

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

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

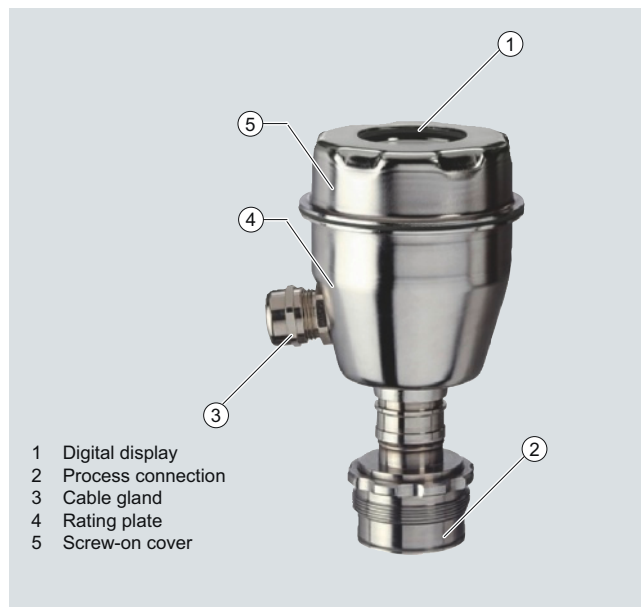
Example of attached measuring points sign



SITRANS P300

The device comprises:

- Electronics
- Housing
- Measuring cell



Perspective view of the SITRANS P300

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

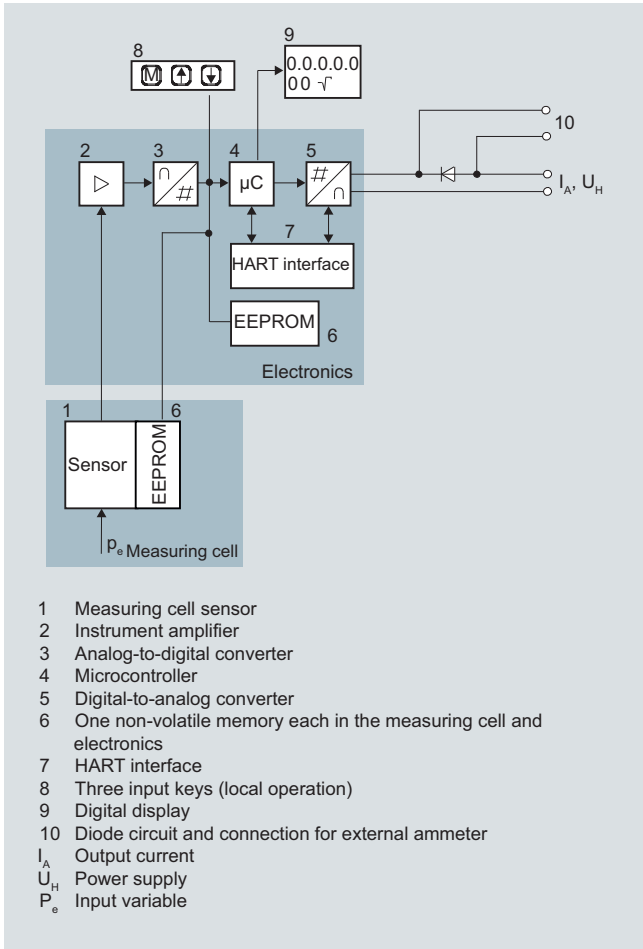
Pressure Measurement

Transmitters for gauge pressure for the paper industry

SITRANS P DS III and P300 with PMC connection
Technical description

Function

Operation of electronics with HART communication



Function diagram of electronics

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

The diode circuit (10) protects against incorrect polarity.

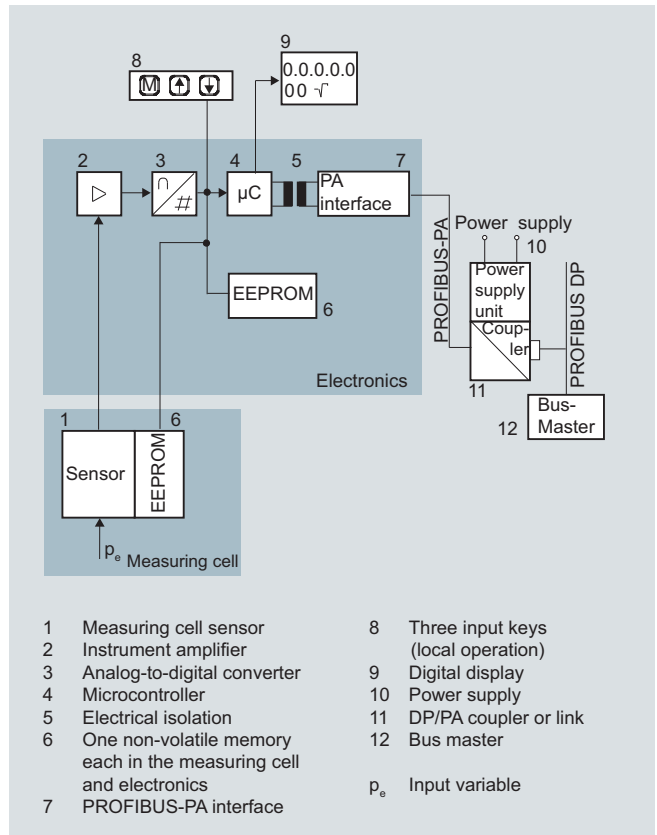
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The one memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced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

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

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

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

Operation of electronics with PROFIBUS PA communication



Function diagram of electronics

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

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

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

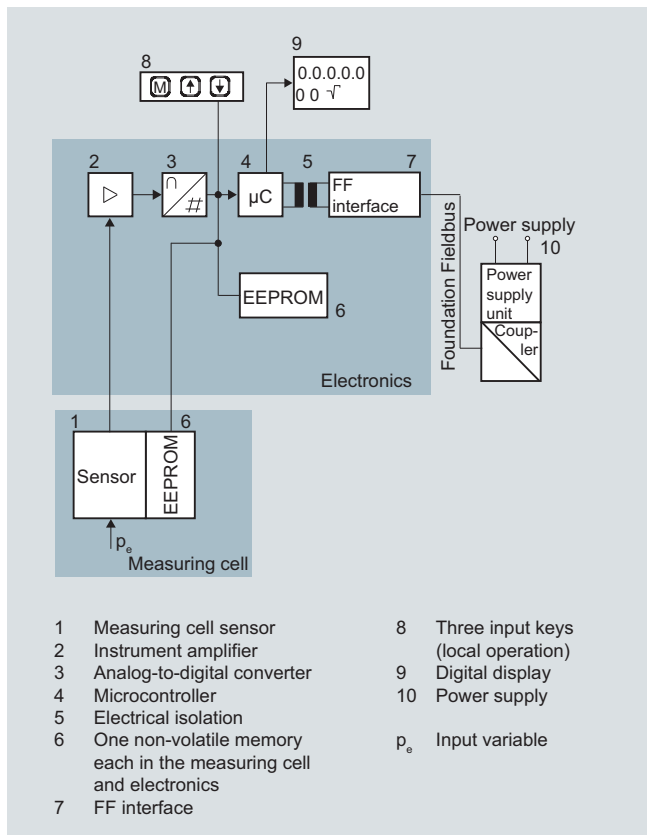
The results with status values and diagnostic values are transferred by cyclic data transmission on the PROFIBUS PA. Parameterization data and error messages are transferred by acyclic data transmission. Special software such as SIMATIC PDM is required for this.

Pressure Measurement

Transmitters for gauge pressure for the paper industry

SITRANS P DS III and P300 with PMC connection Technical description

Operation of electronics with FOUNDATION Fieldbus communication



Function diagram of electronics

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

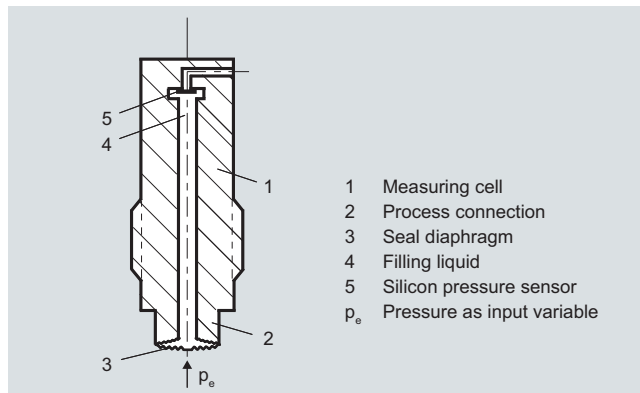
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The one memory is coupled to the measuring cell, the other to the electronics. As a result of this modular design, the electronics and the measuring cell can be replaced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

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

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

Mode of operation of the measuring cell

Measuring cell for gauge pressure with front-flush diaphragm



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

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

Parameterization

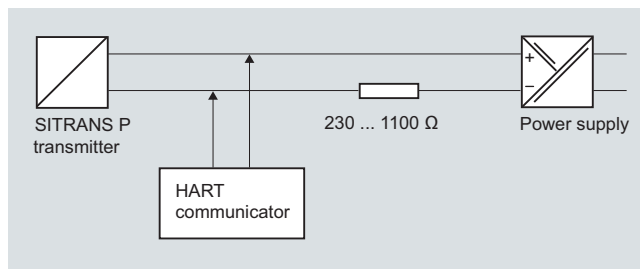
Depending on the version, there are a range of options for parameterizing the pressure transmitter and for setting or scanning the parameters.

Parameterization using the input buttons (local operation)

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

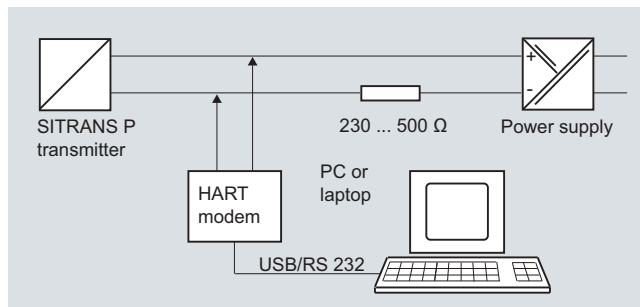
Parameterization using HART communication

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



Communication between a HART communicator and a pressure transmitter

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



Pressure Measurement

Transmitters for gauge pressure for the paper industry

SITRANS P DS III and P300 with PMC connection Technical description

HART communication between a PC communicator and a pressure transmitter

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

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

Adjustable parameter DS III HART and P300 HART

Parameters	Pushbuttons	HART communication
Start of scale	x	x
Full-scale value	x	x
Electrical damping	x	x
Start-of-scale value without application of a pressure ("Blind setting")	x	x
Full-scale value without application of a pressure ("Blind setting")	x	x
Zero adjustment	x	x
current transmitter	x	x
Fault current	x	x
Disabling of buttons, write protection	x	x ¹⁾
Type of dimension and actual dimension	x	x
Linear or square root output	x	x
Characterizer setup		x
Freely-programmable LCD		x
Diagnostic functions		x

¹⁾ Cancel apart from write protection

Diagnostic functions for DS III HART and P300 HART

- Zero correction for position
- Event counter
- Transmitter output alarms
- Saturation alarm
- Min/Max registers
- Simulation functions
- Maintenance timer

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

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

Parameterization through PROFIBUS PA interface

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

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

Parameterization through FOUNDATION Fieldbus interface

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

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

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

Adjustable parameters	Pushbuttons	PROFIBUS PA and FOUNDATION Fieldbus interface
Electrical damping	x	x
Zero adjustment (correction of position)	x	x
Buttons and/or function disabling	x	x
Source of measured-value display	x	x
Physical dimension of display	x	x
Position of decimal point	x	x
Bus address	x	x
Linear or square root output	x	x
Characterizer setup		x
Freely-programmable LCD		x
Diagnostic functions		x

Diagnostic functions for DS III PA and FF and P300 PA and FF

- Event counter
- Min/Max registers
- Maintenance timer
- Simulation functions
- Zero correction for position
- Transmitter output alarms
- Saturation alarm

Physical dimensions available for the display

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

Pressure Measurement

Transmitters for gauge pressure for the paper industry

SITRANS P DS III with PMC connection

Technical specifications

SITRANS P, DS III series for gauge pressure with PMC connection for the paper industry				
	HART		PROFIBUS PA and FOUNDATION Fieldbus	
Input				
Measured variable	Gauge pressure			
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure
	0.15 ... 14.5 psi g (0.01 ... 1 bar g)	87 psi g (6 bar g)	14.5 psi g (1 bar g)	87 psi g (6 bar g)
	0.58 ... 58 psi g (0.04 ... 4 bar g)	145 psi g (10 bar g)	58 psi g (4 bar g)	145 psi g (10 bar g)
	2.32 ... 232 psi g (0.16 ... 16 bar g)	464 psi g (32 bar g)	232 psi g (16 bar g)	464 psi g (32 bar g)
Lower measuring limit	1.45 psi a (-100 mbar a)			
• Measuring cell with silicone oil filling	100% of max. span			
Upper measuring limit				
Output				
Output signal	4 ... 20 mA	Digital PROFIBUS PA and FOUNDATION Fieldbus signal		
• Lower limit (infinitely adjustable)	3.55 mA, factory preset to 3.84 mA	-		
• Upper limit (infinitely adjustable)	23 mA, factory preset to 20.5 mA or optionally set to 22.0 mA	-		
Load				
• Without HART communication	$R_B \leq (U_H - 10.5 \text{ V})/0.023 \text{ A}$ in Ω , U_H : Power supply in V	-		
• With HART communication	$R_B = 230 \dots 500 \Omega$ (SIMATIC PDM) or $R_B = 230 \dots 1100 \Omega$ (HART Communicator)	-		
Physical bus	-	IEC 61158-2		
Protection against polarity reversal	Protected against short-circuit and polarity reversal. Each connection against the other with max. supply voltage.			
Measuring accuracy				
Acc. to EN 60770-1				
Reference conditions (All error data refer always refer to the set span)	Increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil filling, room temperature 25 °C (77 °F) r: Span ratio (r = max. span / set span)			
Error in measurement and fixed-point setting (including hysteresis and repeatability)				
• Linear characteristic			≤ 0.075 %	
- r ≤ 10	≤ (0.0029 · r + 0.071) %			
- 10 < r ≤ 30	≤ (0.0045 · r + 0.071) %			
- 30 < r ≤ 100	≤ (0.005 · r + 0.05) %			
Long-term drift (temperature change ±30 °C (±54 °F))				
1- to 4-bar measuring cell	≤ (0.25 · r) % per 5 years		≤ 0.25 % per 5 years	
16-bar measuring cell	≤ (0.125 · r) % per 5 years		≤ 0.125 % per 5 years	
Influence of ambient temperature				
• at -10 ... +60 °C (14 ... 140 °F)	≤ (0.08 · r + 0.1) %		≤ 0.3 %	
• at -40 ... -10 °C and +60 ... +85 °C (-40 ... +14 °F and 140 ... 185 °F)	≤ (0.1 · r + 0.15) %/10 K		≤ 0.25 %/10 K	
Influence of the medium temperature (only with front-flush diaphragm)				
• Temperature difference between medium temperature and ambient temperature	3 mbar/10 K (0.04 psi/10 K)			
Influence of mounting position	≤ 0.1 mbar g (0.00145 psi g) per 10° inclination			
Measured Value Resolution	-		3 · 10 ⁻⁵ of nominal measuring range	

Pressure Measurement

Transmitters for gauge pressure for the paper industry

SITRANS P DS III with PMC connection

SITRANS P, DS III series for gauge pressure with PMC connection for the paper industry		
	HART	PROFIBUS PA and FOUNDATION Fieldbus
Rated conditions		
Degree of protection (to EN 60529)	IP65, IP68, NEMA 4X, enclosure cleaning, resistant to lyes, steam to 150 °C (302 °F)	
Temperature of medium	-20 ... +100 °C (-4 ... +212 °F)	
Ambient conditions		
• Ambient temperature	-20 ... +85 °C (-4 ... +185 °F)	
• Storage temperature	-50 ... +85 °C (-58 ... +185 °F)	
• Climatic class		
- Condensation	Relative humidity 0 ... 100 % Condensation permissible, suitable for use in the tropics	
• Electromagnetic Compatibility		
- Emitted interference and interference immunity	Acc. to EN 61326 and NAMUR NE 21	
Design		
Weight (without options)	≈ 1.5 kg (≈ 3.3 lb)	
Enclosure material	Low-copper die-cast aluminum, GD-ALSi12 or stainless steel precision casting, mat. no. 1.4408	
Wetted parts materials		
• Gasket (standard)	PTFE flat gasket	
• O-ring (minibolt)	FPM (Viton) or optionally: FFPM or NBR	
Measuring cell filling	Silicone oil or inert filling liquid	
Process connection (standard)	Flush-mounted, 1½", PMC Standard design	
Process connection (minibolt)	Flush-mounted, 1", minibolt design	
Power supply U_H		
Terminal voltage on transmitter	10.5 ... 45 V DC 10.5 ... 30 V DC in intrinsically-safe mode	Supplied through bus -
Separate 24 V power supply necessary	-	No
Bus voltage		
• Not Ex	-	9 ... 32 V
• With intrinsically-safe operation	-	9 ... 24 V
Current consumption		
• Basic current (max.)	-	12.5 mA
• Start-up current ≤ basic current	-	Yes
• Max. current in event of fault	-	15.5 mA
Fault disconnection electronics (FDE) available	-	Yes
Certificates and approvals		
Classification according to PED 97/23/EC	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)	

Pressure Measurement

Transmitters for gauge pressure for the paper industry

SITRANS P DS III with PMC connection

2

HART communication

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

PROFIBUS PA communication

Simultaneous communication with master class 2 (max.)	4
The address can be set using	Configuration tool or local operation (standard setting address 126)
Cyclic data usage	
• Output byte	5 (one measured value) or 10 (two measured values)
• Input byte	0, 1, or 2 (register operating mode and reset function for metering)
Internal preprocessing	
Device profile	PROFIBUS PA Profile for Process Control Devices Version 3.0, Class B
Function blocks	2
• Analog input	
- Adaptation to customer-specific process variables	Yes, linearly rising or falling characteristic
- Electrical damping T_{63} , adjustable	0 ... 100 s
- Simulation function	Input /Output
- Failure mode	parameterizable (last good value, substitute value, incorrect value)
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respectively
• Register (totalizer)	Can be reset, preset, optional direction of counting, simulation function of register output
- Failure mode	parameterizable (summation with last good value, continuous summation, summation with incorrect value)
- Limit monitoring	One upper and lower warning limit and one alarm limit respectively
• Physical block	1
Transducer blocks	2
• Pressure transducer block	
- Can be calibrated by applying two pressures	Yes
- Monitoring of sensor limits	Yes
- Characterizer	Max. 30 points
- Square-rooted characteristic for flow measurement	Yes
- Gradual volume suppression and implementation point of square-root extraction	Parameterizable
- Simulation function for measured pressure value and sensor temperature	Constant value or over parameterizable ramp function

FOUNDATION Fieldbus communication

Function blocks	3 function blocks analog input, 1 function block PID
• Analog input	
- Adaptation to customer-specific process variables	Yes, linearly rising or falling characteristic
- Electrical damping T_{63} , adjustable	0 ... 100 s
- Simulation function	Output/input (can be locked within the device with a bridge)
- Failure mode	parameterizable (last good value, substitute value, incorrect value)
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respectively
- Square-rooted characteristic for flow measurement	Yes
• PID	Standard FF function block
• Physical block	1 resource block
Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block LCD
• Pressure transducer block	
- Can be calibrated by applying two pressures	Yes
- Monitoring of sensor limits	Yes
- Simulation function: Measured pressure value, sensor temperature and electronics temperature	Constant value or over parameterizable ramp function

Pressure Measurement

Transmitters for gauge pressure for the paper industry

SITRANS P DS III with PMC connection

2

Selection and Ordering data		Order No.
SITRANS P pressure transmitters for gauge pressure, with PMC connection series DS III HART		F) 7MF4133 -
Measuring cell filling	Measuring cell cleaning	
Silicone oil	normal	1
Inert liquid	Grease-free	3
Measuring span		
0.15 ... 14.5 psi g ¹⁾	(0.01 ... 1 bar g) ¹⁾	B
0.58 ... 58 psi g	(0.04 ... 4 bar g)	C
2.32 ... 232 psi g	(0.16 ... 16 bar g)	D
Wetted parts materials		
Seal diaphragm	Connection shank	
Hastelloy	Stainless steel	B
Process connection		
• PMC Style Standard: Thread 1½"		2
• PMC Style Minibolt: front-flush 1" (not with minimum span: 500 mbar (7.25 psi) - version "B")		3
Non-wetted parts materials		
• Housing made of die-cast aluminium		0
• Housing stainless steel precision casting		3
Version		
• Standard versions		1
• International version, English label inscriptions, documentation in 5 languages on CD		2
Hazardous area rating		
• General purpose		A
• FM/CSA Hazardous approval		
- "Intrinsically Safe und explosion proof (is + xp) ²⁾		NC
Electrical connection / cable entry		
• Female thread M20 x 1.5		B
• Female thread ½-14 NPT		C
• M12 connectors (metal) ²⁾		F
Indicator		
• Without indicator		0
• Without indicator (digital display hidden, setting: mA)		1
• With indicator (digital display visible, setting: mA)		6
• With indicator (digital display visible, setting as specified, Order code "Y21"/"Y22" required)		7

Power supply units see Chap. 8 "Supplementary Components".

Included in delivery of the device:

- Brief instructions (Leporello)
- CD-ROM with detailed documentation
- sealing ring

¹⁾ Only with "PMC Style Standard" process connection

²⁾ M12 delivered without cable socket

Selection and Ordering data		Order No.
SITRANS P pressure transmitter for gauge pressure, with PMC connection		
DS III PA (PROFIBUS PA)		F) 7MF4134 -
DS III FF (FOUNDATION Fieldbus)		F) 7MF4135 -
Measuring cell filling	Measuring cell cleaning	
Silicone oil	normal	1
Inert liquid	Grease-free	3
Nominal measuring range		
14.5 psi g ¹⁾	(1 bar g) ¹⁾	B
58 psi g	(4 bar g)	C
232 psi g	(16 bar g)	D
Wetted parts materials		
Seal diaphragm	Connection shank	
Hastelloy	Stainless steel	B
Process connection²⁾		
• PMC Style Standard: Thread 1½"		2
• PMC Style Minibolt: front-flush 1" (minimum span: 500 mbar (7.25 psi), not available with 1-bar-measuring cell (Option B))		3
Non-wetted parts materials		
• Housing made of die-cast aluminium		0
• Housing stainless steel precision casting		3
Version		
• Standard versions		1
• International version, English label inscriptions, documentation in 5 languages on CD		2
Hazardous area rating		
• General purpose		A
• FM/CSA Hazardous approval		
- "Intrinsically Safe und explosion proof (is + xp) ³⁾		NC
Electrical connection / cable entry		
• Screwed gland M20x1.5		B
• Screwed gland ½-14 NPT		C
• M12 connectors (metal) ³⁾		F
Indicator		
• Without indicator		0
• Without indicator (digital display hidden, setting: mA)		1
• With indicator (digital display visible, setting: mA)		6
• With indicator (digital display visible, setting as specified, Order code "Y21" required)		7

Included in delivery of the device:

- Brief instructions (Leporello)
- CD-ROM with detailed documentation
- sealing ring

¹⁾ Only with "PMC Style Standard" process connection

²⁾ Sealing is included in delivery.

³⁾ M12 delivered without cable socket

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

Pressure Measurement

Transmitters for gauge pressure for the paper industry

SITRANS P DS III with PMC connection

2

Selection and Ordering data	Order code			
<i>Further designs</i>		HART	PA	FF
Add "-Z" to Order No. and specify Order Code.				
Plug				
• Angled	A32	✓		
• Han 8D (metal, gray)	A33	✓		
Rating plate inscription (instead of German)				
• English	B11	✓	✓	✓
• French	B12	✓	✓	✓
• Spanish	B13	✓	✓	✓
• Italian	B14	✓	✓	✓
English rating plate Pressure units in inH ₂ O and/or psi	B21	✓	✓	✓
Factory calibration certificate	C11	✓	✓	✓
Material traceability certificate	C12	✓	✓	✓
Factory certificate of conformance	C14	✓	✓	✓
SIL2 certificate per IEC 61508 / 61511	C20	✓		
Output signal can be set to upper limit of 22.0mA	D05	✓	✓	✓
Brad Harrison Connector	D40	✓	✓	✓
External, ½" NPT	J01	✓		
Mounting				
• Weldable sockets for standard 1½" threaded connection	P01	✓	✓	✓
• Weldable socket for minibolt connection 1" (incl. screw 5/16-18 UNC-2B and washer)	P02	✓	✓	✓

Selection and Ordering data	Order code			
<i>Additional data</i>		HART	PA	FF
Please add "-Z" to Order No. and specify Order code(s) and plain text.				
Calibrated range Specify in plain text (max. 5 characters): Y01: X to Y psi, inH ₂ O, ftH ₂ O...	Y01	✓		
Tag number/Identification (max. 16 characters), specify in plain text: Y15:	Y15	✓	✓	✓
Tag description (max. 27 characters), specify in plain text: Y16:	Y16	✓	✓	✓
Entry of HART (TAG) (max. 8 characters), specify in plain text: Y17:	Y17	✓		
Pressure units for digital display specify in plain text: Y21: psi, inH ₂ O, ftH ₂ O ...	Y21	✓	✓	✓
Preset bus address possible between 1 and 126 Max. 8 characters, specify in plain text: Y25:	Y25		✓	
Only "Y01" and "Y21" can be factory preset ✓ = available				
ordering example				
Item line: 7MF4133-1DB20-1AB7-Z				
B line: C11 + Y01 + Y21				
C line: Y01: 14.5 ... 145 psi (1 ... 10 bar)				
C line: Y21: psi (bar)				

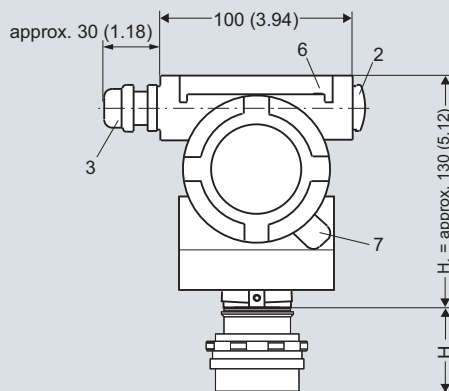
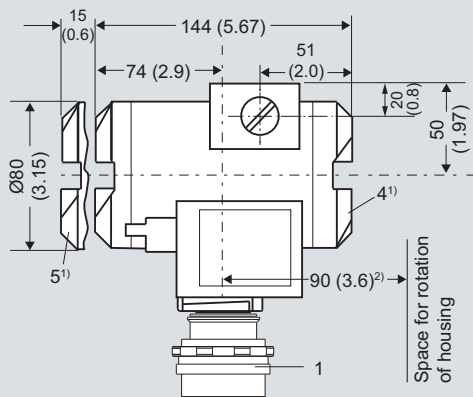
Pressure Measurement

Transmitters for gauge pressure for the paper industry

SITRANS P DS III with PMC connection

2

Dimensional drawings



- 1 Process connection: PMC standard
- 2 Blanking plug
- 3 Electrical connection:
 - Screwed gland M20x1,5,
 - Screwed gland 1/2-14 NPT or
 - M12 connector
- 4 Terminal side
- 5 Electronics side, digital display (longer overall length for cover with window)
- 6 Protective cover over keys
- 7 Mounting bracket (option)

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

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

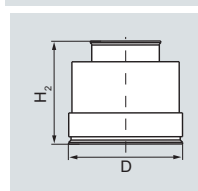
The diagram shows a SITRANS P DS III with an example of a flange. In this drawing the height is subdivided into H₁ and H₂.

H₁ = Height of the SITRANS P DS III up to a defined cross-section

H₂ = Height of the flange up to this defined cross-section

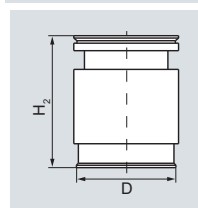
Only the height H₂ is indicated in the dimensions of the flanges.

PMC Style standard

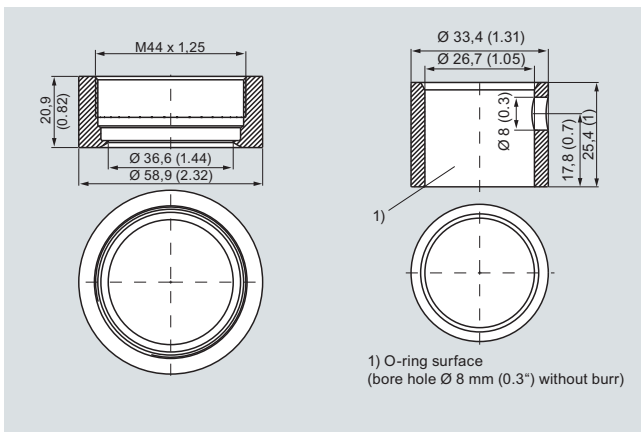


DN	PN	ØD	H ₂
		40.9 mm (1.6")	approx. 36.8 mm (1.4")

PMC Style minibolt



DN	PN	ØD	H ₂
		26.3 mm (1.0")	approx. 33.1 mm (1.3")



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

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

Pressure Measurement

Transmitters for gauge pressure for the paper industry

SITRANS P300 with PMC connection

Technical specifications

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

	HART	PROFIBUS PA and FOUNDATION Fieldbus
Input	Gauge pressure (front-flush)	
Measured variable		
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Measuring span	Max. perm. test pressure
	0.15 ... 14.5 psi g (0.01 ... 1 bar g)	87 psi g (6 bar g)
	0.58 ... 58 psi g (0.04 ... 4 bar g)	145 psi g (10 bar g)
	2.3 ... 232 psi g (0.16 ... 16 bar g)	464 psi g (32 bar g)
	Depending on the process connection, the span may differ from these values	Depending on the process connection, the nominal measuring range may differ from these values
Lower measuring limit	1.45 psi a (-100 mbar a)	
• Measuring cell with silicone oil		
Upper measuring limit		
• Measuring cell with silicone oil	100 % of max. span	100 % of the max. nominal measuring range
Output		
Output signal	4 ... 20 mA	Digital PROFIBUS PA signal
Physical bus	-	IEC 61158-2
Protection against polarity reversal	Protected against short-circuit and polarity reversal. Each connection against the other with max. supply voltage.	
Electrical damping T_{63} (step width 0.1 s)	Set to 0.1 s (0 ... 100 s)	
Measuring accuracy	Acc. to EN 60770-1	
Reference conditions (All error data always refer to the set span)	Increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, measuring cell with silicone oil, room temperature 25 °C (77 °F), span ratio ($r = \text{max. span} / \text{set span}$)	
Measurement deviation with limit setting, including hysteresis and repeatability.		
Linear characteristic	$\leq 0,075 \%$	
• $r + 10$	$\leq (0.0029 \cdot r + 0.071) \%$	
• $10 < r \leq 30$	$\leq (0.0045 \cdot r + 0.071) \%$	
• $30 < r \leq 100$	$\leq (0.005 \cdot r + 0.05) \%$	
Settling time T_{63} without electrical damping	approx. 0.2 s	
Long-term drift at $\pm 30 \text{ °C}$ ($\pm 54 \text{ °F}$)	$\leq (0.25 \cdot r) \%/5 \text{ years}$	$\leq 0.25 \%/5 \text{ years}$
Influence of ambient temperature		
• at -10 ... +60 °C (14 ... 140 °F)	$\leq (0.1 \cdot r + 0.2) \%$	$\leq 0,3 \%$
• at -40 ... -10 °C and 60 ... 85 °C (-40 ... 14 °F and 140 ... 185 °F)	$\leq (0.1 \cdot r + 0.15) \%/10 \text{ K}$	$\leq 0.25 \%/10 \text{ K}$
Influence of the medium temperature (only with front-flush diaphragm)		
• Temperature difference between medium temperature and ambient temperature	3 mbar/10 K (0.04 psi/10 K)	
Rated conditions		
<u>Installation conditions</u>		
Ambient temperature	Observe the temperature class in areas subject to explosion hazard.	
• Measuring cell with silicone oil	-40 ... +85 °C (-40 ... +185 °F)	
• Digital display	-30 ... +85 °C (-22 ... +185 °F)	
• Storage temperature	-50 ... +85 °C (-58 ... +185 °F)	
Climatic class		
Condensation	Relative humidity 0 ... 100 % Condensation permissible, suitable for use in the tropics	
Degree of protection acc. to EN 60529	IP65, IP68, NEMA 4X, enclosure cleaning, resistant to lyes, steam to 150 °C (302 °F)	
Electromagnetic Compatibility		
• Emitted interference and interference immunity	Acc. to EN 61326 and NAMUR NE 21	

Pressure Measurement

Transmitters for gauge pressure for the paper industry

SITRANS P300 with PMC connection

2

SITRANS P300 for gauge pressure with PMC connection for the paper industry		
	HART	PROFIBUS PA and FOUNDATION Fieldbus
Medium conditions		
Temperature of medium		
• Measuring cell with silicone oil		-40 ... +100 °C (-40 ... +212 °F)
Design		
Weight (without options)		Approx. 1 kg (2.2 lb)
Enclosure material		Stainless steel, mat. no. 1.4301/304
Material of parts in contact with the medium		
• Seal diaphragm		Hastelloy C276, mat. no. 2.4819
• Measuring cell filling		Silicone oil
Surface quality touched-by-media		Ra-values ≤ 0.8 μm (32 μ inch)/welds Ra ≤ 1.6 μm (64 μ inch)
Power supply U_H		
Terminal voltage on transmitter	10.5 ... 42 V DC for intrinsically safe operation: 10.5 ... 30 V DC	Supplied through bus
Separate power supply	-	Not necessary
Bus voltage		
• Without EEx	-	9 ... 32 V
• With intrinsically-safe operation	-	9 ... 24 V
Current consumption		
• Max. basic current	-	12.5 mA
• Start-up current ≤ basic current	-	Yes
• Max. fault current in the event of a fault	-	15.5 mA
Fault disconnection electronics (FDE)	-	Available
Certificates and approvals		
Classification according to PED 97/23/EC	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of Article 3, paragraph 3 (sound engineering practice)	
Explosion protection		
Intrinsic safety "i"	PTB 05 ATEX 2048	
Marking	Ex II 1/2 G EEx ia/ib IIB/IIC T4, T5, T6	
Permissible ambient temperature		
• Temperature class T4	-40 ... +85 °C (-40 ... +185 °F)	
• Temperature class T5	-40 ... +70 °C (-40 ... +158 °F)	
• Temperature class T6	-40 ... +60 °C (-40 ... +140 °F)	
Connection	To certified intrinsically-safe circuits with peak values: U _i = 30 V, I _i = 100 mA, P _i = 750 mW, R _i = 300 Ω	To certified intrinsically-safe circuits with peak values: FISCO supply unit: U _i = 17.5 V, I _i = 380 mA, P _i = 5.32 W Linear barrier: U _i = 24 V, I _i = 250 mA, P _i = 1.2 W
Effective inner capacitance:	C _i = 6 nF	C _i = 1,1 nF
Effective internal inductance:	L _i = 0.4 mH	L _i ≤ 7 μH
Explosion protection to FM for USA and Canada (cFM _{US})		
• Identification (DIP) or (IS); (NI)	Certificate of Compliance 3025099 CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4 ... T6; CL I, DIV 2, GP ABCD T4 ... T6; CL II, DIV 2, GP FG; CL III	
• Identification (DIP) or (IS)	Certificate of Compliance 3025099C CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC 4 ... T6; CL I, DIV 2, GP ABCD T4 ... T6; CL II, DIV 2, GP FG; CL III	

Pressure Measurement

Transmitters for gauge pressure for the paper industry

SITRANS P300 with PMC connection

2

HART communication		FOUNDATION Fieldbus communication	
HART communication	230 ... 1100 Ω	Function blocks	3 function blocks analog input, 1 function block PID
Protocol	HART Version 5.x	• Analog input	Yes, linearly rising or falling characteristic
Software for computer	SIMATIC PDM	- Adaptation to customer-specific process variables	0 ... 100 s
PROFIBUS PA communication		- Electrical damping T_{63} , adjustable	Output/input (can be locked within the device with a bridge)
Simultaneous communication with master class 2 (max.)	4	- Simulation function	parameterizable (last good value, substitute value, incorrect value)
The address can be set using	Configuration tool Local operation (standard setting Address 126)	- Failure mode	Yes, one upper and lower warning limit and one alarm limit respectively
Cyclic data usage		- Limit monitoring	Yes
• Output byte	One measured value: 5 bytes Two measured values: 10 bytes	- Square-rooted characteristic for flow measurement	Standard FF function block
• Input byte	Register operating mode: 1 bytes Reset function due to metering, 1 bytes	• PID	1 resource block
Device profile	PROFIBUS PA Profile for Process Control Devices Version 3.0, Class B	• Physical block	1 transducer block Pressure with calibration, 1 transducer block LCD
Function blocks	2	Transducer blocks	
• Analog input		• Pressure transducer block	
- Adaptation to customer-specific process variables	Linearly rising or falling characteristic	- Can be calibrated by applying two pressures	Yes
- Electrical damping T_{63}	0 ... 100 s adjustable	- Monitoring of sensor limits	Yes
- Simulation function	Input /Output	- Simulation function: Measured pressure value, sensor temperature and electronics temperature	Constant value or over parameterizable ramp function
- Limit monitoring	One upper and lower warning limit and one alarm limit respectively		
• Register (totalizer)	Can be reset and preset Optional direction of counting Simulation function of the register output		
- Limit monitoring	One upper and lower warning limit and one alarm limit respectively		
• Physical block	1		
Transducer blocks	2		
• Pressure transducer block			
- Monitoring of sensor limits	Yes		
- Characterizer	Max. 31 points		
- Characteristic curve	Linear		
- Simulation function	Available		
• Transducer block "Electronic temperature"			
Simulation function	Available		

Pressure Measurement

Transmitters for gauge pressure for the paper industry

SITRANS P300 with PMC connection

2

Selection and Ordering data		Order No.
SITRANS P300 pressure transmitters with PMC connection , single-chamber measuring housing, rating plate inscription in English		
4 ... 20 mA/HART	F)	7 MF 8 1 2 3 -
PROFIBUS PA	F)	7 MF 8 1 2 4 -
FOUNDATION Fieldbus (FF)	F)	7 MF 8 1 2 5 -
		■ ■ ■ ■ - ■ ■ ■ ■
Measuring cell filling	Measuring cell cleaning	
Silicone oil	normal	1
Inert liquid	Cleanliness level 2 to DIN 25410	3
Measuring span		
14.5 psi g ¹⁾	(1 bar g) ¹⁾	B
58 psi g	(4 bar g)	C
232 psi g	(16 bar g)	D
Wetted parts materials		
Seal diaphragm	Measuring cell	
Hastelloy ²⁾	Stainless steel	B
Process connection		
• PMC Style Standard: Thread 1½"		2
• PMC Style Minibolt: front-flush 1" (minimum span: 500 mbar (7.25 psi), not available with 1-bar-measuring cell (Option B))		3
Non-wetted parts materials		
• Stainless steel, deep-drawn and electrolytically polished		4
Version		
• Standard versions		1
Explosion protection		
• None		A
• With ATEX, Type of protection: - "Intrinsic safety (EEx ia)"		B
• With FM + CSA, Type of protection: - "Intrinsic Safe (is)" (planned)		M J
Electrical connection / cable entry		
• Screwed gland M20 x .5 (polyamide) ³⁾		A
• Screwed gland M20 x 1.5 (metal)		B
• Screwed gland M20 x 1.5 (stainless steel)		C
• M20 connectors (stainless steel), without cable socket		G
• ½-14 NPT stainless steel thread ⁴⁾		J

Selection and Ordering data		Order No.
SITRANS P300 pressure transmitters with PMC connection , single-chamber measuring housing, rating plate inscription in English		
4 ... 20 mA/HART	F)	7 MF 8 1 2 3 -
PROFIBUS PA	F)	7 MF 8 1 2 4 -
FOUNDATION Fieldbus (FF)	F)	7 MF 8 1 2 5 -
		■ ■ ■ ■ - ■ ■ ■ ■
Indicator		
• Without display, with keys, closed lid		1
• With display and keys, closed lid		2
• With display and keys, lid with plastics (Makrolon) pane (setting on HART devices: mA, on Profibus devices: pressure units)		4
• With display and keys, lid with plastics (Makrolon) pane (setting acc. to specifications, Order code "Y21" or "Y22" required)		5
• With indicator (digital display visible, setting: mA)		6
• With indicator (digital display visible, setting as specified) Order code "Y21" or "Y22" required		7
Power supply units see Chap. 8 "Supplementary Components".		
Included in delivery of the device:		
• Brief instructions (Leporello)		
• CD-ROM with detailed documentation		
• sealing ring		
1) Only with "Standard" process connection"		
2) Only possible for flange with M.., N.. and Q.. option		
3) Only together with HART electronics.		
4) Without cable gland.		
F) Subject to export regulations AL: 9I999, ECCN: N.		

Pressure Measurement

Transmitters for gauge pressure for the paper industry

SITRANS P300 with PMC connection

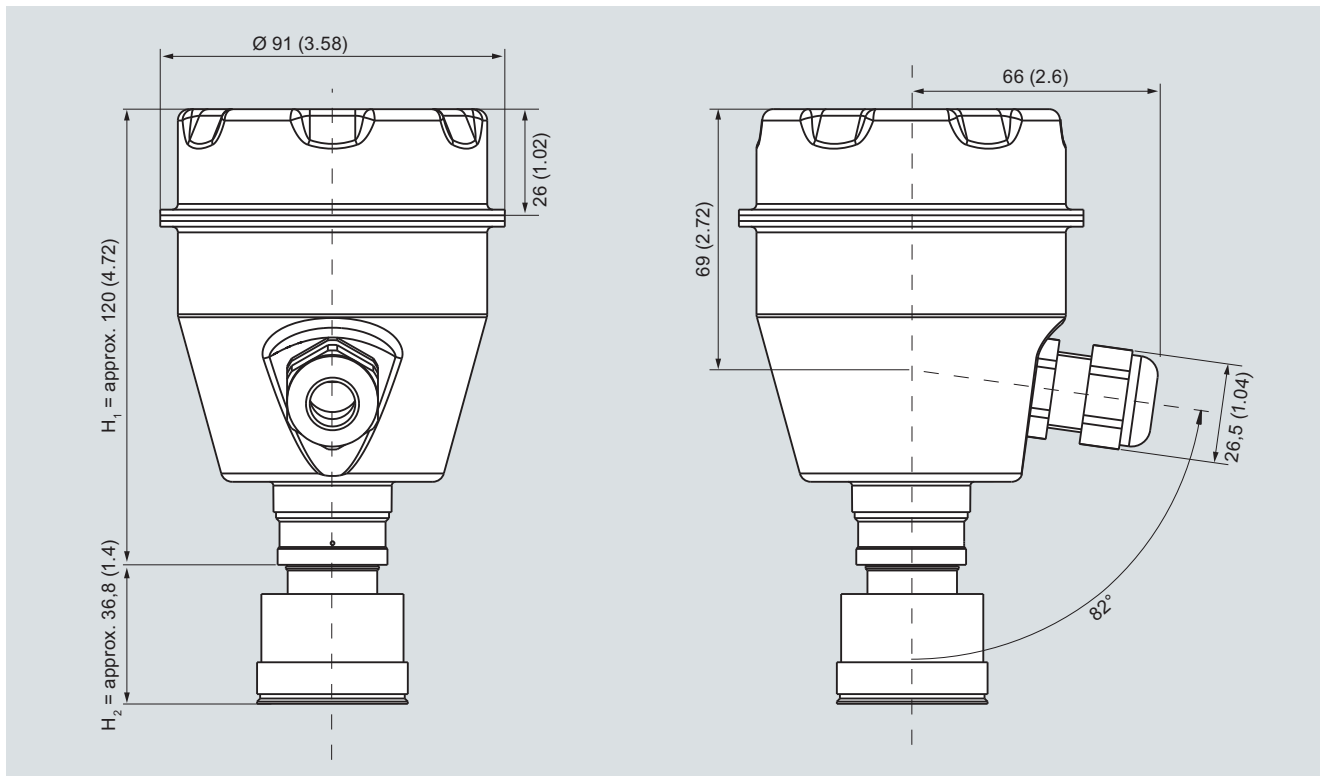
Selection and Ordering data	Order code			
<i>Further designs</i>	HART	PA	FF	
Add "-Z" to Order No. and specify Order Code.				
Rating plate inscription (instead of English)				
• German	B10	✓	✓	✓
• French	B12	✓	✓	✓
• Spanish	B13	✓	✓	✓
• Italian	B14	✓	✓	✓
English rating plate Pressure units in inH ₂ O and/or psi	B21	✓	✓	✓
Factory calibration certificate	C11	✓	✓	✓
Material traceability certificate	C12	✓	✓	✓
Factory certificate of conformance	C14	✓	✓	✓
Set output signal to upper limit of 22.0mA	D05	✓	✓	✓
Degree of protection IP68 (only for M20x1.5 and ½-14 NPT)	D12	✓	✓	✓
Brad Harrison Connector	D40	✓	✓	✓
Mounting				
• Weldable sockets for standard 1½" threaded connection	P01	✓	✓	✓
• Weldable socket for minibolt connection 1" (incl. screw 5/16-18 UNC-2B and washer)	P02	✓	✓	✓
Additional data				
Please add "-Z" to Order No. and specify Order code(s) and plain text.				
Calibrated range Specify in plain text (max. 5 characters): Y01: X to Y psi, inH ₂ O, ftH ₂ O...	Y01	✓		
Tag number/Identification (max. 16 characters), specify in plain text: Y15:	Y15	✓	✓	✓
Tag description (max. 27 characters), specify in plain text: Y16:	Y16	✓	✓	✓
Entry of HART (TAG) (max. 8 characters), specify in plain text: Y17:	Y17	✓		
Pressure units for digital display specify in plain text: Y21: psi, inH ₂ O, ftH ₂ O ...	Y21	✓	✓	✓
Non-Pressure units for digital display (measuring range in pressure units ("Y01"/"Y02") mandatory) specify in plain text: Y22: X to Y GPM, MGD, Feet ...	Y22 + Y01	✓		
Preset bus address possible between 1 and 126 Specify in plain text: Y25:	Y25		✓	
Only "Y01" and "Y21" can be factory preset				
✓ = available				

Pressure Measurement

Transmitters for gauge pressure for the paper industry

SITRANS P300 with PMC connection

Dimensional drawings

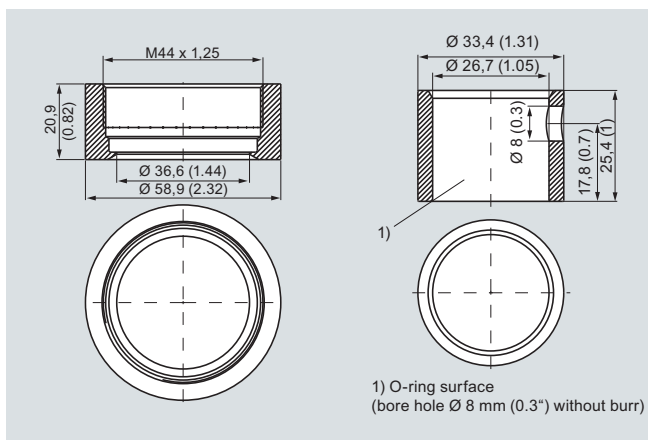


SITRANS P300 pressure transmitters for gauge pressure, with PMC connection, dimensions in mm (inch)

The diagram shows a SITRANS P300 with an example of a flange. In this drawing the height is subdivided into H_1 and H_2 .
 H_1 = Height of the SITRANS P300 up to a defined cross-section
 H_2 = Height of the flange up to this defined cross-section
 Only the height H_2 is indicated in the dimensions of the flanges.

PMC Style Standard			
DN	PN	$\varnothing D$	H_2
		40.4 mm (1.6")	Approx. 36.8 mm (1.4")

PMC Style Mini bolt			
DN	PN	$\varnothing D$	H_2
		26.3 mm (1.0")	Approx. 33.1 mm (1.3")



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

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