

# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III Technical description

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#### Overview



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

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

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

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

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

- Gauge pressure
- Absolute pressure
- Differential pressure
- Level
- Volume level
- Mass level
- volume flow
- Mass flow

#### Benefits

- High quality and service life
- High reliability even under extreme chemical and mechanical loads
- For aggressive and non-aggressive gases, vapors and liquids
- Extensive diagnosis and simulation functions
- Separate replacement of measuring cell and electronics without recalibration
- Minimum conformity error
- Good long-term stability
- Wetted parts made of high-grade materials (e.g. stainless steel, Hastelloy, gold, Monel, tantalum)

- Infinitely adjustable span from 0.01 bar to 700 bar (0.15 psi to 10153 psi) for DS III with HART interface
- Nominal measuring range from 1 bar to 700 bar (14.5 psi to 10153 psi) for DS III with PROFIBUS PA and FOUNDATION Fieldbus interface
- High measuring accuracy
- Parameterization over control keys and HART or PROFIBUS PA, or FOUNDATION Fieldbus interface.

#### Application

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

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

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

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

The pressure transmitter can be programmed locally using the 3 control buttons or externally via HART or PROFIBUS PA or FOUNDATION Fieldbus interface.

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### Pressure transmitter for gauge pressure

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

#### Span (infinitely adjustable)

for DS III with HART: 0.01 bar to 700 bar (0.15 psi to 10153 psi)

#### Nominal measuring range

for DS III with PROFIBUS PA and FOUNDATION Fieldbus:  
1 bar to 700 bar (14.5 psi to 10153 psi)

### Pressure transmitters for absolute pressure

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

#### Span (infinitely adjustable)

for DS III with HART: 8.3 mbar a ... 100 bar a (0.12 ... 1450 psia)

#### Nominal measuring range

for DS III with PROFIBUS PA and FOUNDATION Fieldbus:  
250 mbar a ... 100 bar a (3.6 ... 1450 psia)

There are two series:

- Gauge pressure series
- Differential pressure series

### Pressure transmitters for differential pressure and flow

Measured variables:

- Differential pressure
- Small positive or negative pressure
- Flow  $q \sim \sqrt{\Delta p}$  (together with a primary differential pressure device (see Chapter "Flow Meters"))

#### Span (infinitely adjustable)

for DS III with HART: 1 mbar ... 30 bar (0.0145 ... 435 psi)

#### Nominal measuring range

for DS III with PROFIBUS PA and FOUNDATION Fieldbus:  
20 mbar ... 30 bar (0.29 ... 435 psi)

### Pressure transmitters for level

Measured variable: Level of aggressive and non-aggressive liquids in open and closed vessels.

#### Span (infinitely adjustable)

for DS III with HART: 25 mbar ... 5 bar (0.363 ... 72.5 psi)

#### Nominal measuring range

for DS III with PROFIBUS PA and FOUNDATION Fieldbus:  
250 mbar ... 5 bar (3.63 ... 72.5 psi)

#### Nominal diameter of the mounting flange

- DN 80 or DN 100
- 3 inch or 4 inch

In the case of level measurements in open containers, the low-pressure connection of the measuring cell remains open (measurement "compared to atmospheric").

In the case of measurements in closed containers, the lower-pressure connection has to be connected to the container in order to compensate the static pressure.

The wetted parts are made from a variety of materials, depending on the degree of corrosion resistance required.

### Design



Front view

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

The rating plate (7, Figure "Front view") with the Article 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).

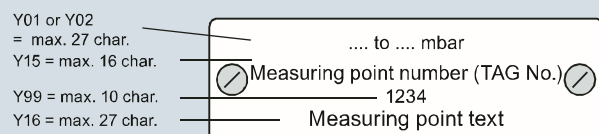
The approval label is located on the opposite side.

The housing is made of die-cast aluminium or stainless steel precision casting. A round cover (6) is screwed on at the front and rear of the housing. The front cover can be fitted with a viewing pane so that the measured values can be read directly on the 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 for an attached measuring point label



# Pressure Measurement

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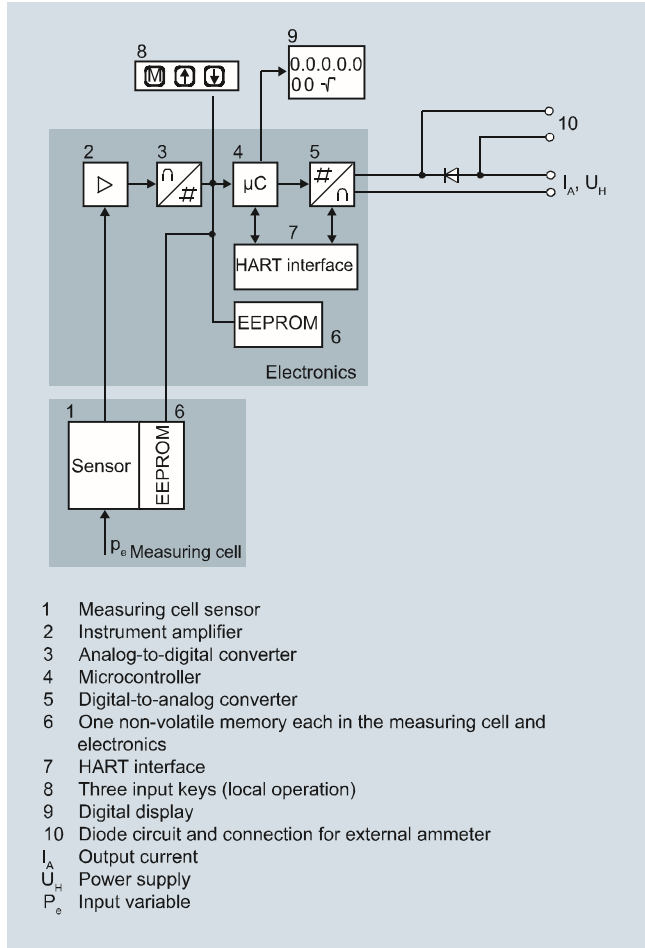
### SITRANS P DS III

#### Technical description

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#### Function

##### Operation of electronics with HART communication



Function diagram of electronics

The bridge output voltage created by the sensor (1, Figure "Function diagram of the 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 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.

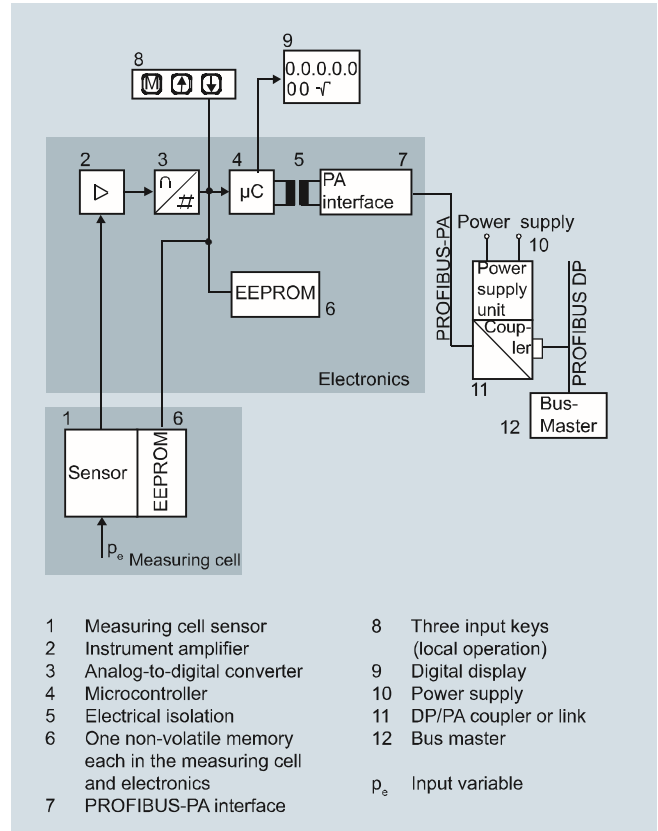
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The one memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced 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 display (9).

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

The pressure transmitters with spans  $\leq 63$  bar measure the input pressure compared to atmosphere, transmitters with spans  $\geq 160$  bar 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 the 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 one memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced separately from each other.

Using the three input buttons (8) you can 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 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.

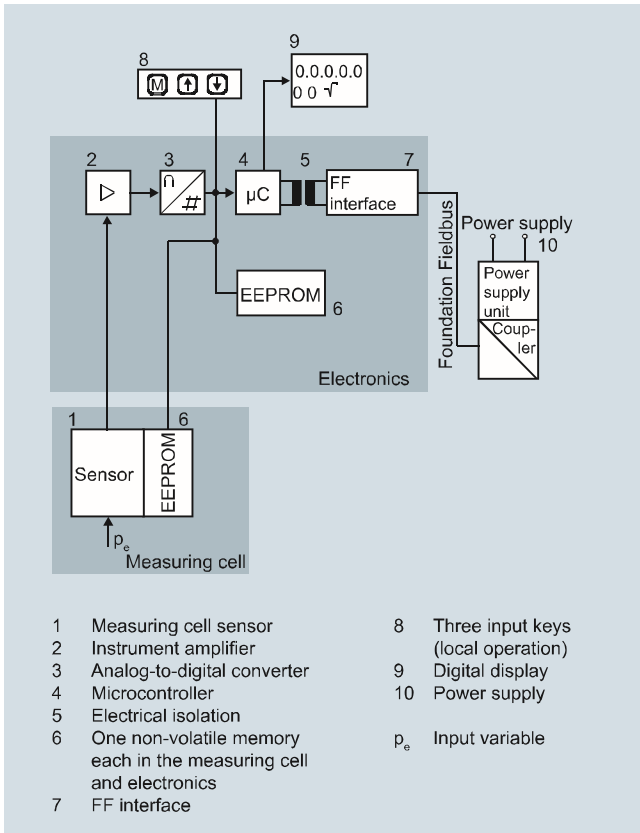
# Pressure Measurement

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### 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).

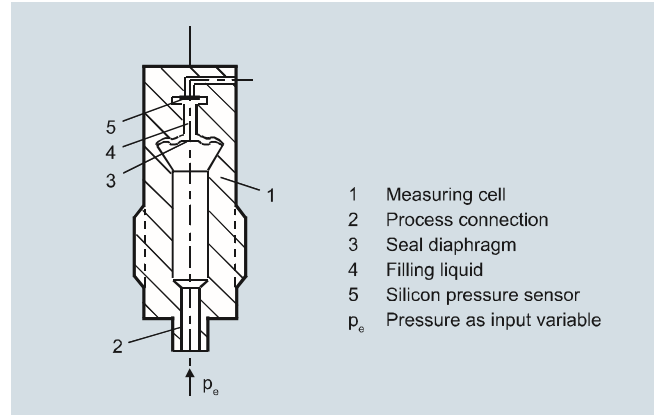
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The one memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced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

Using the three input buttons (8) you can 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 display (9).

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

### Mode of operation of the measuring cells

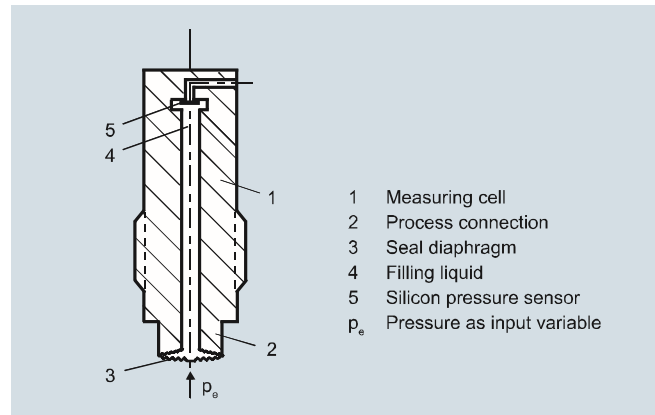
#### Measuring cell for gauge pressure



Measuring cell for gauge pressure, function diagram

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

#### 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.

# Pressure Measurement

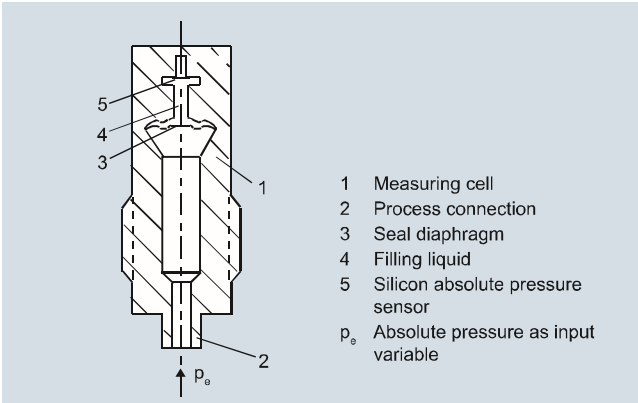
## Transmitters for general requirements

### SITRANS P DS III

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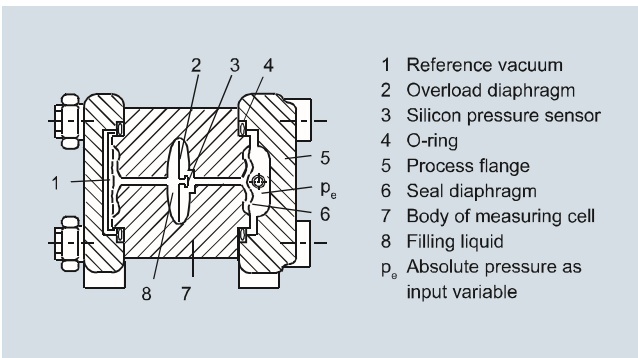
#### Measuring cell for absolute pressure from gauge pressure series



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

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

#### Measuring cell for absolute pressure from differential pressure series



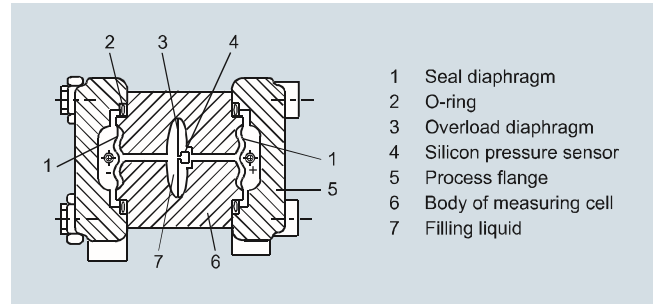
Measuring cell for absolute pressure from differential pressure series, function diagram

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

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

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

#### Measuring cell for differential pressure and flow



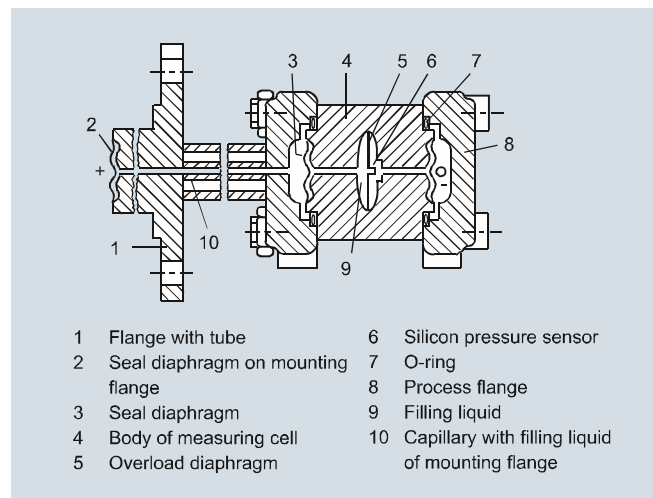
Measuring cell for differential pressure and flow, function diagram

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

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

An overload diaphragm is installed to provide protection from overloads. If the measuring limits are exceeded, the overload diaphragm (3) is flexed until the seal diaphragm rests on the body of the measuring cell (6), thus protecting the silicon pressure sensor from overloads.

#### Measuring cell for level



Measuring cell for level, function diagram

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

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

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

An overload diaphragm is installed to provide protection from overloads. If the measuring limits are exceeded, the overload diaphragm (5) is flexed until the seal diaphragm rests on the body of the measuring cell (4), thus protecting the silicon pressure sensor from overloads.

# Pressure Measurement

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### SITRANS P DS III Technical description

#### Parameterization DS III

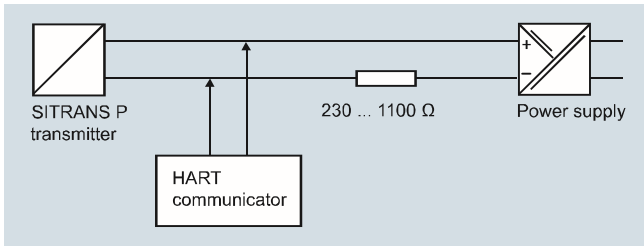
Depending on the version, there are a range of options for parameterizing the pressure transmitter and for setting or scanning the parameters.

#### Parameterization using the input buttons (local operation)

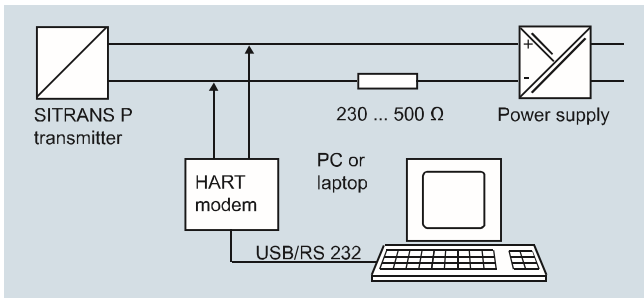
With the input buttons you can easily set the most important parameters without any additional equipment.

#### Parameterization using HART

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



Communication between a HART Communicator and a pressure transmitter  
When parameterizing with the HART Communicator, the connection is made directly to the 2-wire cable.



HART communication between a PC communicator and a pressure transmitter  
When parameterizing with a PC, the connection is made through a HART modem.

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

#### Adjustable parameters, DS III with HART

Parameters	Input keys (DS III HART)	HART communication
Start of scale	x	x
Full-scale value	x	x
Electrical damping	x	x
Start-of-scale value without application of a pressure ('Blind setting')	x	x
Full-scale value without application of a pressure ('Blind setting')	x	x
Zero adjustment	x	x
current transmitter	x	x
Fault current	x	x
Disabling of buttons, write protection	x	x <sup>1)</sup>
Type of dimension and actual dimension	x	x
Characteristic (linear / square-rooted)	x <sup>2)</sup>	x <sup>2)</sup>
Input of characteristic		x
Freely-programmable LCD		x
Diagnostic functions		x

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

#### Diagnostic functions for DS III with HART

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

#### Available physical units of display for DS III with HART

Table style: Technical specifications 2

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

#### Parameterization through PROFIBUS PA interface

Fully digital communication through PROFIBUS PA, profile 3.0, is particularly user-friendly. Through the PROFIBUS the DS III with PROFIBUS PA is connected 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 with FOUNDATION Fieldbus 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 with PROFIBUS PA and FOUNDATION Fieldbus

Parameters	Input keys	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
Adjustment of characteristic	x	x
Input of characteristic		x
Freely-programmable LCD		x
Diagnostics functions		x

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#### Diagnostic functions for DS III with PROFIBUS PA and FOUNDATION Fieldbus

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

#### Physical dimensions available for the display

Physical variable	Physical dimensions
Pressure (setting can also be made in the factory)	MPa, kPa, Pa, bar, mbar, torr, atm, psi, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , mmH <sub>2</sub> O, mmHg (4 °C), inH <sub>2</sub> O, inHg (4 °C), ftH <sub>2</sub> O (20 °C), mmHg, inHg
Level (height data)	m, cm, mm, ft, in, yd
Volume	m <sup>3</sup> , dm <sup>3</sup> , hl, yd <sup>3</sup> , ft <sup>3</sup> , in <sup>3</sup> , US gallon, Imp. gallon, bushel, barrel, barrel liquid
volume flow	m <sup>3</sup> /s, m <sup>3</sup> /min, m <sup>3</sup> /h, m <sup>3</sup> /d, l/s, l/min, l/h, l/d, Ml/d, ft <sup>3</sup> /s, ft <sup>3</sup> /min, ft <sup>3</sup> /h, ft <sup>3</sup> /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	%

# Pressure Measurement

## Transmitters for general requirements

**SITRANS P DS III**  
**for gauge pressure**

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**Technical specifications**

SITRANS P, DS III series for gauge pressure				
	HART		PROFIBUS PA and FOUNDATION Fieldbus	
<b>Input</b>	Gauge pressure			
Measured variable	Gauge pressure			
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span (min. ... max.)	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure
	0.01 ... 1 bar (0.15 ... 14.5 psi)	6 bar (87 psi)	1 bar (14.5 psi)	6 bar (87 psi)
	0.04 ... 4 bar (0.58 ... 58 psi)	10 bar (145 psi)	4 bar (58 psi)	10 bar (145 psi)
	0.16 ... 16 bar (2.32 ... 232 psi)	32 bar (464 psi)	16 bar (232 psi)	32 bar (464 psi)
	0.6 ... 63 bar (9.14 ... 914 psi)	100 bar (1450 psi)	63 bar (914 psi)	100 bar (1450 psi)
	1.6 ... 160 bar (23.2 ... 2320 psi)	250 bar (3626 psi)	160 bar (2320 psi)	250 bar (3626 psi)
	4.0 ... 400 bar (58 ... 5802 psi)	600 bar (8700 psi)	400 bar (5802 psi)	600 bar (8700 psi)
	7.0 ... 700 bar (102 ... 10153 psi)	800 bar (11603 psi)	700 bar (10153 psi)	800 bar (11603 psi)
Lower measuring limit	30 mbar a (0.44 psia)			
<ul style="list-style-type: none"> <li>Measuring cell with silicone oil filling</li> <li>Measuring cell with inert filling liquid</li> </ul>	30 mbar a (0.44 psia)			
Upper measuring limit	100 % of max. span (for oxygen version and inert filling liquid; max. 120 bar (1740 psi))			
<b>Output</b>				
Output signal	4 ... 20 mA		Digital PROFIBUS PA and FOUNDATION Fieldbus signal	
<ul style="list-style-type: none"> <li>Lower limit (infinitely adjustable)</li> <li>Upper limit (infinitely adjustable)</li> </ul>	3.55 mA, factory preset to 3.84 mA		-	
	23 mA, factory preset to 20.5 mA or optionally set to 22.0 mA		-	
Load				
<ul style="list-style-type: none"> <li>Without HART</li> </ul>	$R_B \leq (U_H - 10.5 \text{ V})/0.023 \text{ A}$ in $\Omega$ , $U_H$ : Power supply in V		-	
<ul style="list-style-type: none"> <li>With HART</li> </ul>	$R_B = 230 \dots 500 \Omega$ (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.			
Electrical damping (step width 0.1 s)			Set to 2 s (0 ... 100 s)	
<b>Measuring accuracy</b>	Acc. to IEC 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 at limit setting incl. hysteresis and reproducibility				
<ul style="list-style-type: none"> <li>Linear characteristic</li> </ul>			$\leq 0.075 \%$	
<ul style="list-style-type: none"> <li>- <math>r \leq 10</math></li> </ul>	$\leq (0.0029 \cdot r + 0.071) \%$			
<ul style="list-style-type: none"> <li>- <math>10 &lt; r \leq 30</math></li> </ul>	$\leq (0.0045 \cdot r + 0.071) \%$			
<ul style="list-style-type: none"> <li>- <math>30 &lt; r \leq 100</math></li> </ul>	$\leq (0.005 \cdot r + 0.05) \%$			
Long-term stability (temperature change $\pm 30 \text{ }^\circ\text{C}$ ( $\pm 54 \text{ }^\circ\text{F}$ ))				
<ul style="list-style-type: none"> <li>1 ... 4-bar measuring cell</li> </ul>	$\leq (0.25 \cdot r) \%$ per 5 years		$\leq 0.25 \%$ per 5 years	
<ul style="list-style-type: none"> <li>16 ... 700-bar measuring cell</li> </ul>	$\leq (0.125 \cdot r) \%$ per 5 years		$\leq 0.125 \%$ per 5 years	
Influence of ambient temperature				
<ul style="list-style-type: none"> <li>at -10 ... +60 °C (14 ... 140 °F)</li> </ul>	$\leq (0.08 \cdot r + 0.1) \%$ <sup>1)</sup> (at 700 bar: $\leq (0.1 \cdot r + 0.2) \%$ <sup>2)</sup>		$\leq 0.3 \%$	
<ul style="list-style-type: none"> <li>at -40 ... -10 °C and +60 ... +85 °C (-40 ... +14 °F and 140 ... 185 °F)</li> </ul>	$\leq (0.1 \cdot r + 0.15) \%$ /10 K		$\leq 0.25 \%$ /10 K	
Measured Value Resolution	-		$3 \cdot 10^{-5}$ of nominal measuring range	



# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III for gauge pressure

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SITRANS P, DS III series for gauge pressure		
	HART	PROFIBUS PA and FOUNDATION Fieldbus
<b>Rated conditions</b>		
Degree of protection (to EN 60529)		IP65 (optional IP65/IP68)
Temperature of medium		
• Measuring cell with silicone oil filling		-40 ... +100 °C (-40 ... +212 °F)
• Measuring cell with inert filling liquid		-20 ... +100 °C (-4 ... +212 °F)
• In conjunction with dust explosion protection		-20 ... +60 °C (-4 ... +140 °F)
Ambient conditions		
• Ambient temperature		
- Transmitter (with 4-wire connection, observe temperature values of supplementary 4-wire electronics)		-40 ... +85 °C (-40 ... +185 °F)
- Display readable		-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
• Electromagnetic Compatibility		
- Emitted interference and interference immunity		Acc. to IEC 61326 and NAMUR NE 21
<b>Design</b>		
Weight (without options)		≈ 1.5 kg (≈ 3.3 lb)
Enclosure material		Low-copper die-cast aluminum, GD-AISI 12 or stainless steel precision casting, mat. no. 1.4408
Wetted parts materials		
• Connection shank		Stainless steel, mat. no. 1.4404/316L or Hastelloy C4, mat. no. 2.4610
• Oval flange		Stainless steel, mat. no. 1.4404/316L
• Seal diaphragm		Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819
Measuring cell filling		Silicone oil or inert filling liquid (maximum value with oxygen measurement pressure 100 bar (1450 psi) at 60 °C (140 °F))
Process connection		Connection shank G $\frac{1}{2}$ B to DIN EN 837-1, female thread $\frac{1}{2}$ -14 NPT or oval flange (PN 160 (MAWP 2320 psi)) to DIN 19213 with mounting thread M10 or $\frac{1}{16}$ -20 UNF to EN 61518
Material of mounting bracket		
Steel		Sheet-steel, Mat. No. 1.0330, chrome-plated
Stainless steel		Sheet stainless steel, mat. no. 1.4301 (SS 304)
<b>Power supply <math>U_H</math></b>		
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 $\leq$ basic current	-	Yes
• Max. current in event of fault	-	15.5 mA
Fault disconnection electronics (FDE) available	-	Yes

# Pressure Measurement

## Transmitters for general requirements

SITRANS P DS III  
for gauge pressure

1

### SITRANS P, DS III series for gauge pressure

	HART	PROFIBUS PA and FOUNDATION Fieldbus
<b>Certificates and approvals</b>		
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 13 ATEX 2007 X
- Marking		Ex II 1/2 G Ex ia/ib IIC T4/T5/T6 Ga/Gb
- Permissible ambient temperature		-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +70 °C (-40 ... +158 °F) temperature class T5; -40 ... +60 °C (-40 ... +140 °F) temperature class T6
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}$ , $I_i = 100 \text{ mA}$ , $P_i = 750 \text{ mW}$ ; $R_i = 300 \Omega$	FISCO supply unit: $U_o = 17.5 \text{ V}$ , $I_o = 380 \text{ mA}$ , $P_o = 5.32 \text{ W}$ Linear barrier: $U_o = 24 \text{ V}$ , $I_o = 174 \text{ mA}$ , $P_o = 1 \text{ W}$
- Effective internal inductance/capacitance	$L_i = 0.4 \text{ mH}$ , $C_i = 6 \text{ nF}$	$L_i = 7 \mu\text{H}$ , $C_i = 1.1 \text{ nF}$
• Explosion-proof "d"		PTB 99 ATEX 1160
- Marking		Ex II 1/2 G Ex d IIC T4/T6 Gb
- Permissible ambient temperature		-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +60 °C (-40 ... +140 °F) temperature class T6
- Connection	To circuits with values: $U_H = 10.5 \dots 45 \text{ V DC}$	To circuits with values: $U_H = 9 \dots 32 \text{ V DC}$
• Dust explosion protection for zone 20		PTB 01 ATEX 2055
- Marking		Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C
- Permissible ambient temperature		-40 ... +85 °C (-40 ... +185 °F)
- Max. surface temperature		120 °C (248 °F)
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}$ , $I_i = 100 \text{ mA}$ , $P_i = 750 \text{ mW}$ , $R_i = 300 \Omega$	FISCO supply unit: $U_o = 17.5 \text{ V}$ , $I_o = 380 \text{ mA}$ , $P_o = 5.32 \text{ W}$ Linear barrier: $U_o = 24 \text{ V}$ , $I_o = 250 \text{ mA}$ , $P_o = 1 \text{ W}$
- Effective internal inductance/capacitance	$L_i = 0.4 \text{ mH}$ , $C_i = 6 \text{ nF}$	$L_i = 7 \mu\text{H}$ , $C_i = 1.1 \text{ nF}$
• Dust explosion protection for zone 21/22		PTB 01 ATEX 2055
- Marking		Ex II 2 D IP65 T 120 °C
- Connection	To circuits with values: $U_H = 10.5 \dots 45 \text{ V DC}$ ; $P_{\max} = 1.2 \text{ W}$	To circuits with values: $U_H = 9 \dots 32 \text{ V DC}$ ; $P_{\max} = 1 \text{ W}$
• Type of protection "n" (zone 2)		PTB 13 ATEX 2007 X
- Marking		Ex II 2/3 G Ex nA II T4/T5/T6 Gc Ex II 2/3 G Ex ic IIC T4/T5/T6 Gc
- Connection (Ex nA)	$U_m = 45 \text{ V}$	$U_m = 32 \text{ V}$
- Connections (Ex ic)	To circuits with values: $U_i = 45 \text{ V}$	FISCO supply unit ic: $U_o = 17.5 \text{ V}$ , $I_o = 570 \text{ mA}$ Linear barrier: $U_o = 32 \text{ V}$ , $I_o = 132 \text{ mA}$ , $P_o = 1 \text{ W}$
- Effective internal inductance/capacitance	$L_i = 0.4 \text{ mH}$ , $C_i = 6 \text{ nF}$	$L_i = 7 \mu\text{H}$ , $C_i = 1.1 \text{ nF}$
• Explosion protection acc. to FM		Certificate of Compliance 3008490
- Identification (XP/DIP) or (IS); (NI)		CL I, DIV 1, GP ABCD T4...T6; CL II, DIV 1, GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4...T6; CL I, DIV 2, GP ABCD T4...T6; CL II, DIV 2, GP FG; CL III
• Explosion protection to CSA		Certificate of Compliance 1153651
- Identification (XP/DIP) or (IS)		CL I, DIV 1, GP ABCD T4...T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4...T6; CL I, DIV 2, GP ABCD T4...T6; CL II, DIV 2, GP FG; CL III

1) Conversion of temperature error per 28 °C. Valid for temperature range -3 ... +53 °C < (0.064 · r + 0.08) % / 28 °C (50 °F).

2) Conversion of temperature error per 28 °C. Valid for temperature range -3 ... +53 °C < (0.08 · r + 0.16) % / 28 °C (50 °F).

# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III for gauge pressure

1

HART communication		FOUNDATION Fieldbus communication	
HART	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
<b>PROFIBUS PA communication</b>		- Electrical damping, 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 FOUNDATION Fieldbus function block
• Input byte	0, 1, or 2 (register operating mode and reset function for metering)	• 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, 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 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		
- Specification of a container characteristic with	Max. 30 nodes		
- Square-rooted characteristic for flow measurement	Yes		
- Gradual volume suppression and implementation point of square-root extraction	Parameterizable		
- Simulation function for measured pressure value and sensor temperature	Constant value or over parameterizable ramp function		

# Pressure Measurement

## Transmitters for general requirements

**SITRANS P DS III**  
**for gauge pressure**

1

Selection and Ordering data		Article No.
<b>Pressure transmitter for gauge pressure, SITRANS P DS III with HART</b>		<b>7MF4033-</b>
<b>Measuring cell filling</b>	<b>Measuring cell cleaning</b>	
Silicone oil	normal	▶ ◆ 1
Inert liquid <sup>1)</sup>	grease-free to cleanliness level 2	▶ ◆ 3
<b>Measuring span (min. ... max.)</b>		
0.01 ... 1 bar	(0.15 ... 14.5 psi)	▶ ◆ B
0.04 ... 4 bar	(0.58 ... 58 psi)	▶ ◆ C
0.16 ... 16 bar	(2.32 ... 232 psi)	▶ ◆ D
0.63 ... 63 bar	(9.14 ... 914 psi)	▶ ◆ E
1.6 ... 160 bar	(23.2 ... 2320 psi)	▶ ◆ F
4.0 ... 400 bar	(58.0 ... 5802 psi)	▶ ◆ G
7.0 ... 700 bar	(102.0 ... 10153 psi)	▶ ◆ J
<b>Wetted parts materials</b>		
Seal diaphragm	Process connection	
Stainless steel	Stainless steel	▶ ◆ A
Hastelloy	Stainless steel	B
Hastelloy	Hastelloy	C
Version as diaphragm seal <sup>2) 3) 4) 5)</sup>		Y
<b>Process connection</b>		
• Connection shank G $\frac{1}{2}$ B to EN 837-1		▶ ◆ 0
• Female thread $\frac{1}{2}$ -14 NPT		◆ 1
• Stainless steel oval flange with process connection (Oval flange has no female thread)		
- Mounting thread $\frac{7}{16}$ -20 UNF to IEC 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 $\frac{1}{2}$ -14 NPT		6
<b>Non-wetted parts materials</b>		
• Housing made of die-cast aluminium		▶ ◆ 0
• Housing stainless steel precision casting <sup>6)</sup>		3
<b>Version</b>		
• Standard versions		◆ 1
• International version, English label inscriptions, documentation in 5 languages on CD (no Order code selectable)		▶ ◆ 2
<b>Explosion protection</b>		
• None		◆ A
• With ATEX, Type of protection:		
- "Intrinsic safety (Ex ia)"		◆ B
- "Explosion-proof (Ex d) <sup>7)</sup>		◆ D
- "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d) <sup>8)</sup>		◆ P
- "Ex nA/ic (Zone 2) <sup>9)</sup>		◆ E
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia + Ex d + Zone 1D/2D) <sup>8)</sup>		▶ ◆ R
• FM + CSA intrinsic safe (is)		F
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX)		S
• With FM + CSA, Type of protection:		
- "Intrinsic Safe und Explosion Proof (is + xp) <sup>7)</sup>		◆ NC
<b>Electrical connection / cable entry</b>		
• Screwed gland Pg 13.5 (adapter) <sup>10)</sup>		A
• Screwed gland M20 x1 .5		▶ ◆ B
• Screwed gland $\frac{1}{2}$ -14 NPT		◆ C
• Han 7D plug (plastic housing) incl. mating connector <sup>10)</sup>		D
• M12 connectors (stainless steel) <sup>10)11)</sup>		F

Selection and Ordering data		Article No.
<b>Pressure transmitter for gauge pressure, SITRANS P DS III with HART</b>		<b>7MF4033-</b>
<b>Display</b>		
• Without display	◆	0
• Without visible display (display concealed, setting: mA)	▶ ◆	1
• With visible display, setting: mA	◆	6
• with customer-specific display (setting as specified, Order code "Y21" or "Y22" required)	◆	7
▶ Available ex stock		
◆ We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ◆. For details see page 9/5 in the appendix.		
Power supply units see Chap. 7 "Supplementary Components".		
Included in delivery of the device:		
• Brief instructions (Leporello)		
• CD-ROM with detailed documentation		
1) For oxygen application, add Order code E10.		
2) When the manufacture's certificate (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 total combination is certified here.		
3) 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.		
4) The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF403-...Y... and 7MF4900-1...-B		
5) The standard measuring cell filling of configurations with remote seals (Y) is silicone oil.		
6) Not in conjunction with Electrical connection "Screwed gland Pg 13.5" and "Han7D plug".		
7) Without cable gland, with blanking plug		
8) With enclosed cable gland Ex ia and blanking plug		
9) Configurations with HAN and M12 connectors are only available in Ex ic.		
10) Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".		
11) M12 delivered without cable socket		

# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III for gauge pressure

1

Selection and Ordering data		Article No.
<b>Pressure transmitter for gauge pressure</b>		
<b>SITRANS P DS III with PROFIBUS PA (PA)</b>		<b>7 MF 4 0 3 4 -</b>
<b>SITRANS P DS III with FOUNDATION Fieldbus (FF)</b>		<b>7 MF 4 0 3 5 -</b>
<b>Measuring cell filling</b>		
Silicone oil	normal	1
Inert liquid <sup>1)</sup>	grease-free to cleanliness level 2	3
<b>Nominal measuring range</b>		
1 bar	(14.5 psi)	B
4 bar	(58 psi)	C
16 bar	(232 psi)	D
63 bar	(914 psi)	E
160 bar	(2320 psi)	F
400 bar	(5802 psi)	G
700 bar	(10153 psi)	J
<b>Wetted parts materials</b>		
Seal diaphragm	Process connection	
Stainless steel	Stainless steel	A
Hastelloy	Stainless steel	B
Hastelloy	Hastelloy	C
Version as diaphragm seal <sup>2) 3) 4) 5)</sup>		Y
<b>Process connection</b>		
• Connection shank G½B to EN 837-1		0
• Female thread ½-14 NPT		1
• Stainless steel oval flange with process connection (Oval flange has no female thread) <sup>6)</sup>		
- Mounting thread 7/16-20 UNF to IEC 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
<b>Non-wetted parts materials</b>		
• Housing made of die-cast aluminium		0
• Housing stainless steel precision casting		3
<b>Version</b>		
• Standard versions		1
• International version, English label inscriptions, documentation in 5 languages on CD (no Order code selectable)		2
<b>Explosion protection</b>		
• None		A
• With ATEX, Type of protection:		
- "Intrinsic safety (Ex ia)"		B
- "Explosion-proof (Ex d)" <sup>7)</sup>		D
- "Intrinsic safety and flameproof enclosure (Ex ia + Ex d)" <sup>8)</sup>		P
- "Ex nA/ic (Zone 2)" <sup>9)</sup>		E
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia + Ex d + Zone 1D/2D)" <sup>8)</sup> (not for DS III FF)		R
• FM + CSA intrinsic safe (is)		F
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX)		S
• With FM + CSA, Type of protection:		
- "Intrinsic Safe und Explosion Proof (is + xp)" <sup>7)</sup>		NC
<b>Electrical connection/cable entry</b>		
• Screwed gland M20 x 1.5		B
• Screwed gland ½-14 NPT		C
• M12 connectors (stainless steel) <sup>10) 11) 12)</sup>		F

Selection and Ordering data		Article No.
<b>Pressure transmitter for gauge pressure</b>		
<b>SITRANS P DS III with PROFIBUS PA (PA)</b>		<b>7 MF 4 0 3 4 -</b>
<b>SITRANS P DS III with FOUNDATION Fieldbus (FF)</b>		<b>7 MF 4 0 3 5 -</b>
<b>Display</b>		
• Without display		0
• Without visible display (display concealed, setting: bar)		1
• With visible display		6
• with customer-specific display (setting as specified, Order code "Y21" required)		7
Included in delivery of the device:		
• Brief instructions (Leporello)		
• CD-ROM with detailed documentation		
1) For oxygen application, add Order code E10.		
2) When the manufacture's certificate (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.		
3) 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.		
4) The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF403-...Y... and 7MF4900-1...-B		
5) The standard measuring cell filling of configurations with remote seals (Y) is silicone oil.		
6) M10 fastening thread: Max. span 160 bar (2320 psi) 7/16-20 UNF and M12 fastening thread: Max. span 400 bar (5802 psi)		
7) Without cable gland, with blanking plug.		
8) With enclosed cable gland Ex ia and blanking plug.		
9) Configurations with HAN and M12 connectors are only available in Ex ic.		
10) M12 delivered without cable socket		
11) Not available with protection type "Ex d" bestellbar (Options D, P, N and R)		
12) Not with protection types "Explosion-proof" and protection type „Ex nA“, „Intrinsic safe" and „Explosion proof".		

# Pressure Measurement

## Transmitters for general requirements

**SITRANS P DS III**  
**for gauge pressure**

1

Selection and Ordering data	Order code		
<i>Further designs</i>	HART	PA	FF
Add "-Z" to Article No. and specify Order code.			
<b>Pressure transmitter with mounting bracket (1x fixing angle, 2 x nut, 2 x U-washer or 1 x bracket, 2 x nut, 2 x U-washer) made of:</b>			
• Steel	◆ A01	✓	✓
• Stainless steel	◆ A02	✓	✓
<b>Plug</b>			
• Han 7D (metal, gray)	A30	✓	
• Han 8U (instead of Han 7D)	A31	✓	
• Angled	A32	✓	
• Han 8D (metal, gray)	A33	✓	
<b>Cable sockets for M12 connectors (stainless steel)</b>	A50	✓	✓
<b>Rating plate inscription</b> (instead of German)			
• English	◆ B11	✓	✓
• French	◆ B12	✓	✓
• Spanish	◆ B13	✓	✓
• Italian	◆ B14	✓	✓
<b>English rating plate</b>	◆ B21	✓	✓
Pressure units in inH <sub>2</sub> O and/or psi			
<b>Quality inspection certificate (Five-step factory calibration) to IEC 60770-2<sup>1)</sup></b>	◆ C11	✓	✓
<b>Inspection certificate<sup>2)</sup></b>	◆ C12	✓	✓
Acc. to EN 10204-3.1			
<b>Factory certificate</b>	◆ C14	✓	✓
Acc. to EN 10204-2.2			
<b>Functional safety (SIL2)</b>	◆ C20	✓	
Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration			
<b>Functional safety (PROFIsafe) Certificate and PROFIsafe protocol</b>	C21 <sup>3)</sup>	✓	
<b>Functional safety (SIL2/3)</b>	◆ C23	✓	
Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration			
<b>Device passport Russia</b>	C99	✓	✓
(For price request please contact the technical support <a href="http://www.siemens.com/automation/support-request">www.siemens.com/automation/support-request</a> )			
<b>Setting of upper limit of output signal to 22.0 mA</b>	D05	✓	
<b>Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009)</b>	D07	✓	✓
<b>Degree of protection IP65/IP68</b> (only for M20x1.5 and ½-14 NPT)	D12	✓	✓
<b>Supplied with oval flange</b> (1 item), PTFE packing and screws in thread of oval flange	D37	✓	✓
<b>Use in or on zone 1D/2D</b> (only together with type of protection "Intrinsic safety" (transmitter 7MF4...-.....-B.. Ex ia <sup>4)</sup> )	E01	✓	✓
<b>Oxygen application</b> (In the case of oxygen measurement and inert liquid max. 100 bar (1450 psi) at 60°C (140 °F))	E10	✓	✓
<b>Export approval Korea</b>	E11	✓	✓
<b>CRN approval Canada</b> (Canadian Registration Number)	E22	✓	✓
<b>Dual seal</b>	E24	✓	✓
<b>Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-B..)	E25 <sup>4)</sup>	✓	✓

Selection and Ordering data	Order code		
<i>Further designs</i>	HART	PA	FF
Add "-Z" to Article No. and specify Order code.			
<b>"Flameproof" explosion protection according to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-D..)	E26 <sup>4)</sup>	✓	✓
<b>Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-P..)	E28 <sup>4)</sup>	✓	✓
<b>Ex Approval IEC Ex (Ex ia)</b> (only for transmitter 7MF4...-.....-B..)	E45 <sup>4)</sup>	✓	✓
<b>Ex Approval IEC Ex (Ex id)</b> (only for transmitter 7MF4...-.....-D..)	E46 <sup>4)</sup>	✓	✓
<b>Explosion-proof "Intrinsic safety" to NEPSI (China)</b>	E55 <sup>4)</sup>	✓	✓
<b>Explosion protection "Explosion-proof" to NEPSI (China)</b> (only for transmitter 7MF4...-.....-D..)	E56 <sup>4)</sup>	✓	✓
<b>Ex protection "Zone 2" to NEPSI (China)</b> (only for transmitter 7MF4...-.....-E..)	E57 <sup>4)</sup>	✓	✓
<b>"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea)</b> (only for transmitter 7MF4...-.....-[B, D]..-Z + E11)	E70 <sup>4)</sup>	✓	✓
<b>Two coats of lacquer on casing and cover (PU on epoxy)</b>	G10	✓	✓
<b>Transient protector 6 kV (lightning protection)</b>	J01	✓	✓

◆ We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ◆. For details see page 9/5 in the appendix.

1) When the manufacturer'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 total 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) Profisafe transmitters can only be operated with the S7 F Systems V6.1 configuration software in combination with S7-400H

4) Option does not include ATEX approval, but instead includes only the country-specific approval.

# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III for gauge pressure

1

Selection and Ordering data	Order code			
Additional data		HART	PA	FF
Please add '-Z' to Article No. and specify Order code(s) and plain text.				
<b>Measuring range to be set</b> Specify in plain text (max. 5 characters): Y01: ... up to ... mbar, bar, kPa, MPa, psi	◆ Y01	✓	✓ <sup>1)</sup>	
<b>Stainless steel tag plate and entry in device variable (measuring point description)</b> Max. 16 characters, specify in plain text: Y15: .....	◆ Y15	✓	✓	✓
<b>Measuring point text (entry in device variable)</b> Max. 27 characters, specify in plain text: Y16: .....	◆ Y16	✓	✓	✓
<b>Entry of HART address (TAG)</b> Max. 8 characters, specify in plain text: Y17: .....	◆ Y17	✓		
<b>Setting of pressure indication in pressure units</b> Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi, ... Note: The following pressure units can be selected: bar, mbar, mm H <sub>2</sub> O <sup>*)</sup> , inH <sub>2</sub> O <sup>*)</sup> , ftH <sub>2</sub> O <sup>*)</sup> , mmHG, inHG, psi, Pa, kPa, MPa, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , Torr, ATM or % ) ref. temperature 20 °C	◆ Y21	✓	✓	✓
<b>Setting of pressure indication in non-pressure units<sup>2)</sup></b> Specify in plain text: Y22: ..... up to ..... l/min, m <sup>3</sup> /h, m, USgpm, ... (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	◆ Y22 + Y01	✓		
<b>Preset bus address</b> possible between 1 and 126 Specify in plain text: Y25: .....	Y25		✓	✓
<b>Damping adjustment in seconds (0 ... 100 s)</b>	Y30	✓	✓	✓

◆ We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ◆. For details see page 9/5 in the appendix.

Only Y01, Y15, Y16, Y17, Y21, Y22, Y25 and D05 can be factory preset

✓ = available

#### Ordering example

Item line: 7MF4033-1EA00-1AA7-Z  
B line: A01 + Y01 + Y21  
C line: Y01: 10 ... 20 bar (145 ... 290 psi)  
C line: Y21: bar (psi)

1) Measuring accuracies for PROFIBUS PA transmitters with Option Y01 are calculated in the same way as for HART devices.

2) Preset values can only be changed over SIMATIC PDM.

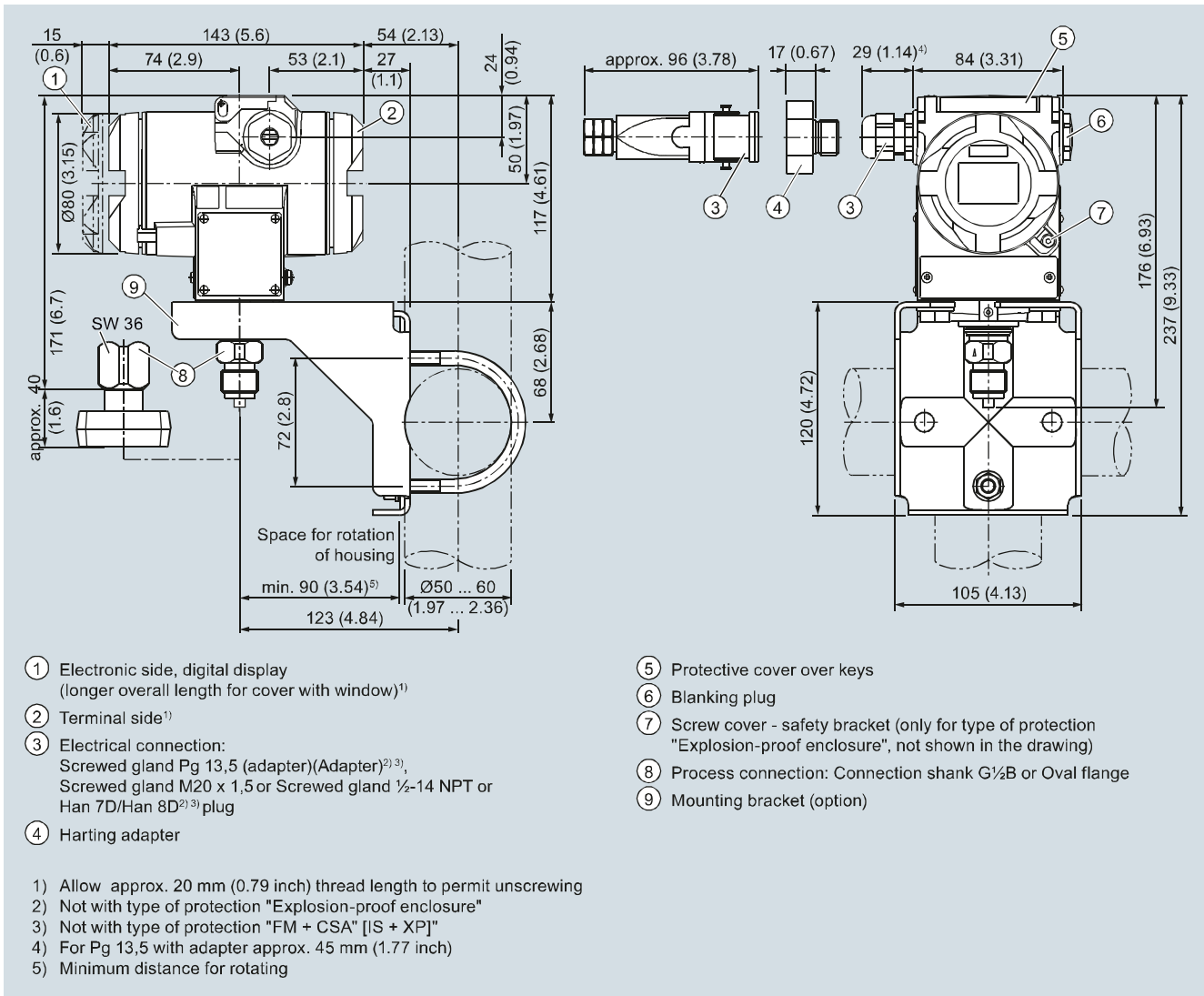
# Pressure Measurement

## Transmitters for general requirements

SITRANS P DS III  
for gauge pressure

1

### Dimensional drawings



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



# Pressure Measurement

## Transmitters for general requirements

**SITRANS P DS III for gauge/absolute pressure, with front-flush diaphragm**

1

### Technical specifications

SITRANS P DS III series for gauge and absolute pressure, with front-flush diaphragm				
	HART		PROFIBUS PA and FOUNDATION Fieldbus	
<b>Input of gauge pressure, with front-flush diaphragm</b>				
Measured variable	Gauge pressure, front-flush			
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span (min. ... max.)	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure
	0.01 ... 1 bar (0.15 ... 14.5 psi)	6 bar (87 psi)	1 bar (14.5 psi)	6 bar (87 psi)
	0.04 ... 4 bar (0.58 ... 58 psi)	10 bar (145 psi)	4 bar (58 psi)	10 bar (145 psi)
	0.16 ... 16 bar (2.32 ... 232 psi)	32 bar (464 psi)	16 bar (232 psi)	32 bar (464 psi)
	0.6 ... 63 bar (9.14 ... 914 psi)	100 bar (1450 psi)	63 bar (914 psi)	100 bar (1450 psi)
Lower measuring limit	100 mbar a (1.45 psia)			
Upper measuring limit	100 % of max. span		100 % of the max. nominal measuring range	
<b>Input of absolute pressure, with front-flush diaphragm</b>				
Measured variable	Absolute pressure, front-flush			
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span (min. ... max.)	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure
	43 ... 1300 mbar a (0.62 ... 18.85 psia)	10 bar a (145 psia)	1300 mbar a (18.85 psia)	10 bar a (145 psia)
	0.16 ... 5 bar a (2.32 ... 72.5 psia)	30 bar a (435 psia)	5 bar a (72.5 psia)	30 bar a (435 psia)
	1 ... 30 bar a (14.5 ... 435 psia)	100 bar a (1450 psia)	30 bar a (435 psia)	100 bar a (1450 psia)
Lower measuring limit	0 bar a (0 psia)			
Upper measuring limit	100 % of max. span		100 % of the max. nominal measuring range	
<b>Output</b>				
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	$R_B \leq (U_H - 10.5 \text{ V})/0.023 \text{ A}$ in $\Omega$ , $U_H$ : Power supply in V		-	
• With HART	$R_B = 230 \dots 500 \Omega$ (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.			
Electrical damping (step width 0.1 s)	Set to 2 s (0 ... 100 s)			
<b>Measuring accuracy</b>				
Reference conditions (All error data refer always refer to the set span)	Acc. to IEC 60770-1			
Error in measurement at limit setting incl. hysteresis and reproducibility	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)			
	Gauge pressure, front-flush	Absolute pressure, front-flush	Gauge pressure, front-flush	Absolute pressure, front-flush
• Linear characteristic			$\leq 0.075 \%$	$\leq 0.2 \%$
- r $\leq 10$	$\leq (0.0029 \cdot r + 0.071) \%$	$\leq 0.2 \%$		
- 10 < r $\leq 30$	$\leq (0.0045 \cdot r + 0.071) \%$	$\leq 0.4 \%$		
- 30 < r $\leq 100$	$\leq (0.005 \cdot r + 0.05) \%$			
Long-term stability (temperature change $\pm 30 \text{ °C}$ ( $\pm 54 \text{ °F}$ ))	$\leq (0.25 \cdot r) \%$ per 5 years		$\leq 0.25 \%$ per 5 years	

# Pressure Measurement

## Transmitters for general requirements

SITRANS P DS III for gauge/absolute pressure, with front-flush diaphragm

1

SITRANS P DS III series for gauge and absolute pressure, with front-flush diaphragm	HART		PROFIBUS PA and FOUNDATION Fieldbus	
	Gauge pressure, front-flush	Absolute pressure, front-flush	Gauge pressure, front-flush	Absolute pressure, front-flush
Influence of ambient temperature				
• at -10 ... +60 °C (14 ... 140 °F)	$\leq (0.1 \cdot r + 0.2) \%^{1)}$	$\leq (0.2 \cdot r + 0.3) \%$	$\leq 0.3 \%$	$\leq 0.5 \%$
• at -40 ... -10 °C and 60 ... 85 °C (-40 ... +14 °F and 140 ... 185 °F)	$\leq (0.1 \cdot r + 0.15) \%/10 \text{ K}$	$\leq (0.2 \cdot r + 0.3) \%/10 \text{ K}$	$\leq 0.25 \%/10 \text{ K}$	$\leq 0.5 \%/10 \text{ K}$
Influence of mounting position	0.1 mbar (0.04 inH <sub>2</sub> O) per 10° inclination			
Measured Value Resolution	3 · 10 <sup>-5</sup> of nominal measuring range			
Influence of the medium temperature				
• Temperature difference between medium temperature and ambient temperature	3 mbar/10 K (0.04 psi/10 K)			
<b>Rated conditions</b>				
<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)			
• Measuring cell with Neobee oil (with front-flush diaphragm)	-10 ... +85 °C (14 ... +185 °F)			
• Measuring cell with inert liquid (not with front-flush diaphragm)	-20 ... +85 °C (-4 ... +185 °F)			
• Transmitter (with 4-wire connection, observe temperature values of supplementary 4-wire electronics)	-40 ... +85 °C (-40 ... +185 °F)			
• Display readable	-30 ... +85 °C (-22 ... +185 °F)			
• Storage temperature	-50 ... +85 °C (-58 ... +185 °F) (in the case of Neobee: -20 ... +85 °C (-4 ... +185 °F)) (for high temperature oil: -10 ... +85 °C (14 ... 185 °F))			
• Climatic class	Relative humidity 0 ... 100 %			
- Condensation	Condensation permissible, suitable for use in the tropics			
Degree of protection (to IEC 60529)	IP65, IP68, NEMA 4X, enclosure cleaning, resistant to lyes, steam to 150 °C (302 °F)			
• Electromagnetic Compatibility	Acc. to IEC 61326 and NAMUR NE 21			
- Emitted interference and interference immunity				
<u>Medium conditions</u>	The max. medium temperature of the front-flush process connections is to be taken into account in accordance with the relevant connection standards (e. g. DIN 32676, DIN 11851 etc.).			
Temperature of medium				
• Measuring cell with silicone oil	-40 ... +100 °C (-40 ... +212 °F)			
• Measuring cell with silicone oil (with front-flush diaphragm)	-40 ... +150 °C (-40 ... +302 °F)			
• Measuring cell with Neobee oil (with front-flush diaphragm)	-10 ... +150 °C (14 ... 302 °F)			
• Measuring cell with silicone oil, with temperature decoupler (only for gauge pressure version with front-flush diaphragm)	-40 ... +200 °C (-40 ... +392 °F)			
• Measuring cell with inert filling liquid	-20 ... +100 °C (-4 ... +212 °F)			
• Measuring cell with high-temperature oil (only for gauge pressure version with front-flush diaphragm)	-10 ... +250 °C (14 ... 482 °F)			
<b>Design</b>				
Weight (without options)	≈ 1.5 kg (≈ 3.3 lb)			
Enclosure material	Low-copper die-cast aluminum, GD-AISI12 or stainless steel precision casting, mat. no. 1.4408			
Wetted parts materials	Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819			
Measuring cell filling	Silicone oil or inert filling liquid			
Process connection	<ul style="list-style-type: none"> <li>• Flanges as per EN and ASME</li> <li>• F&amp;B and pharmaceutical flanges</li> </ul>			
Surface quality touched-by-media	$R_a$ -values $\leq 0.8 \mu\text{m}$ (32 $\mu\text{-inch}$ )/welds $R_a \leq 1.6 \mu\text{m}$ (64 $\mu\text{-inch}$ ) (Process connections acc. to 3A; $R_a$ -values $\leq 0.8 \mu\text{m}$ (32 $\mu\text{-inch}$ )/welds $R_a \leq 0.8 \mu\text{m}$ (32 $\mu\text{-inch}$ ))			

# Pressure Measurement

## Transmitters for general requirements

SITRANS P DS III for gauge/absolute pressure, with front-flush diaphragm

1

SITRANS P DS III series for gauge and absolute pressure, with front-flush diaphragm		
	HART	PROFIBUS PA and FOUNDATION Fieldbus
<b>Power supply <math>U_H</math></b>		Supplied through bus
Terminal voltage on transmitter	10.5 ... 45 V DC 10.5 ... 30 V DC in intrinsically-safe mode	-
Separate 24 V power supply necessary	-	No
Bus voltage		
• Not Ex	-	9 ... 32 V
• With intrinsically-safe operation	-	9 ... 24 V
Current consumption		
• Basic current (max.)	-	12.5 mA
• Start-up current $\leq$ basic current	-	Yes
• Max. current in event of fault	-	15.5 mA
Fault disconnection electronics (FDE) available	-	Yes
<b>Certificates and approvals</b>		
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 13 ATEX 2007 X	
- Marking	Ex II 1/2 G Ex ia/ib IIC T4/T5/T6 Ga/Gb	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +70 °C (-40 ... +158 °F) temperature class T5; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30$ V, $I_i = 100$ mA, $P_i = 750$ mW; $R_i = 300$ $\Omega$	FISCO supply unit: $U_o = 17.5$ V, $I_o = 380$ mA, $P_o = 5.32$ W Linear barrier: $U_o = 24$ V, $I_o = 250$ mA, $P_o = 1.2$ W
- Effective internal inductance/capacitance	$L_i = 0.4$ mH, $C_i = 6$ nF	$L_i = 7$ $\mu$ H, $C_i = 1.1$ nF
• Explosion-proof "d"	PTB 99 ATEX 1160	
- Marking	Ex II 1/2 G Ex d IIC T4/T6 Gb	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To circuits with values: $U_H = 10.5$ ... 45 V DC	To circuits with values: $U_H = 9$ ... 32 V DC
• Dust explosion protection for zone 20	PTB 01 ATEX 2055	
- Marking	Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F)	
- Max. surface temperature	120 °C (248 °F)	
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30$ V, $I_i = 100$ mA, $P_i = 750$ mW; $R_i = 300$ $\Omega$	FISCO supply unit: $U_o = 17.5$ V, $I_o = 380$ mA, $P_o = 5.32$ W Linear barrier: $U_o = 24$ V, $I_o = 250$ mA, $P_o = 1$ W
- Effective internal inductance/capacitance	$L_i = 0.4$ mH, $C_i = 6$ nF	$L_i = 7$ $\mu$ H, $C_i = 1.1$ nF
• Dust explosion protection for zone 21/22	PTB 01 ATEX 2055	
- Marking	Ex II 2 D IP65 T 120 °C	
- Connection	To circuits with values: $U_H = 10.5$ ... 45 V DC; $P_{max} = 1.2$ W	To circuits with values: $U_H = 9$ ... 32 V DC; $P_{max} = 1$ W
• Type of protection "n" (zone 2)	PTB 13 ATEX 2007 X	
- Marking	Ex II 2/3 G Ex nA II T4/T5/T6 Gc Ex II 2/3 G Ex ic IIC T4/T5/T6 Gc	
- Connection (Ex nA)	$U_m = 45$ V	$U_m = 32$ V
- Connections (Ex ic)	To circuits with values: $U_i = 45$ V	FISCO supply unit ic: $U_o = 17.5$ V, $I_o = 570$ mA Linear barrier: $U_o = 32$ V, $I_o = 132$ mA, $P_o = 1$ W
- Effective internal inductance/capacitance	$L_i = 0.4$ mH, $C_i = 6$ nF	$L_i = 7$ $\mu$ H, $C_i = 1.1$ nF

# Pressure Measurement

## Transmitters for general requirements

SITRANS P DS III for gauge/absolute pressure,  
with front-flush diaphragm

1

SITRANS P DS III series for gauge and absolute pressure, with front-flush diaphragm	
HART	PROFIBUS PA and FOUNDATION Fieldbus
<b>Certificates and approvals</b> (continued)	
<ul style="list-style-type: none"> <li>Explosion protection acc. to FM               <ul style="list-style-type: none"> <li>Identification (XP/DIP) or (IS); (NI)</li> </ul> </li> <li>Explosion protection to CSA               <ul style="list-style-type: none"> <li>Identification (XP/DIP) or (IS)</li> </ul> </li> </ul>	<p>Certificate of Compliance 3008490</p> <p>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</p> <p>Certificate of Compliance 1153651</p> <p>CL I, DIV 1, GP ABCD T4...T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4...T6; CL I, DIV 2, GP ABCD T4...T6; CL II, DIV 2, GP FG; CL III</p>

<sup>1)</sup> Conversion of temperature error per 28 °C. Valid for temperature range -3 ... +53 °C < (0.064 · r + 0.08) % / 28 °C (50 °F).

### Hygiene version

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

# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III for gauge/absolute pressure, with front-flush diaphragm

1

HART communication		FOUNDATION Fieldbus communication	
HART	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
<b>PROFIBUS PA communication</b>		- Electrical damping, 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 FOUNDATION Fieldbus function block
• Input byte	0, 1, or 2 (register operating mode and reset function for metering)	• 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, 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 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		
- Specification of a container characteristic with	Max. 30 nodes		
- Square-rooted characteristic for flow measurement	Yes		
- Gradual volume suppression and implementation point of square-root extraction	Parameterizable		
- Simulation function for measured pressure value and sensor temperature	Constant value or over parameterizable ramp function		

# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III for gauge/absolute pressure, with front-flush diaphragm

1

Selection and Ordering data		Article No.
<b>Pressure transmitter for gauge and absolute pressure, front-flush diaphragm, SITRANS P DS III HART</b>		<b>7MF4133-</b>
<b>Measuring cell filling</b>	<b>Measuring cell cleaning</b>	
Silicone oil	normal	1
Inert liquid	grease-free to cleanliness level 2	3
FDA compliant fill fluid		
• Neobee oil	normal	4
<b>Measuring span (min. ... max.)</b>		
0.01 ... 1 bar	(0.15 ... 14.5 psi)	B
0.04 ... 4 bar	(0.58 ... 58 psi)	C
0.16 ... 16 bar	(2.32 ... 232 psi)	D
0.63 ... 63 bar	(9.14 ... 914 psi)	E
13 ... 1300 mbar a <sup>1)</sup>	(0.62 ... 18.85 psia) <sup>1)</sup>	S
0.05 ... 5 bar a <sup>1)</sup>	(0.7 ... 72.5 psia) <sup>1)</sup>	T
0.3 ... 30 bar a <sup>1)</sup>	(4.35 ... 435 psia) <sup>1)</sup>	U
<b>Wetted parts materials</b>		
Seal diaphragm	Connection shank	
Stainless steel	Stainless steel	A
Hastelloy <sup>2)</sup>	Stainless steel	B
<b>Process connection</b>		
• Flange version with Order code M., N., R. or Q..		7
<b>Non-wetted parts materials</b>		
• Housing made of die-cast aluminium		0
• Housing stainless steel precision casting		3
<b>Version</b>		
• Standard versions		1
• International version, English label inscriptions, documentation in 5 languages on CD (no Order code selectable)		2
<b>Explosion protection</b>		
• None		A
• With ATEX, Type of protection:		
- "Intrinsic safety (Ex ia)"		B
- "Explosion-proof (Ex d)" <sup>3)</sup>		D
- „Ex nA/ic (Zone 2)" <sup>4)</sup>		E
• FM + CSA intrinsic safe (is)		F
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX)		S
• With FM + CSA, Type of protection:		
- "Intrinsic Safe und Explosion Proof (is + xp)" <sup>3)</sup>		NC
<b>Electrical connection/cable entry</b>		
• Inner thread M20 x 1.5		B
• Female thread ½-14 NPT		C
• M12 connectors (stainless steel) <sup>5) 6) 7)</sup>		F
<b>Display</b>		
• Without display		0
• Without visible display (display concealed, setting: mA)		1
• with visible display, setting: mA		6
• with customer-specific display (setting as specified, Order code "Y21" or "Y22" required)		7

Power supply units see Chap. 7 "Supplementary Components".

Included in delivery of the device:

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

- 1) Not with temperature decoupler P00 and P10, not for process connections R02, R04, R10 and R11, and can only be ordered in conjunction with silicone oil.
- 2) Only available for flanges with options M., N. and Q..
- 3) Without cable gland, with blanking plug
- 4) Bei Konfiguration mit Stecker HAN und M12 ist nur Zündschutzart Ex ic möglich.
- 5) M12 delivered without cable socket
- 6) Not available with protection type „Ex d“ (options D and N)
- 7) Not with protection types "Explosion-proof" and "Ex nA", „Intrinsic safe" and „Explosion proof“.

# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III for gauge/absolute pressure, with front-flush diaphragm

1

Selection and Ordering data		Article No.	Selection and Ordering data		Article No.
<b>Pressure transmitter P for gauge and absolute pressure, front-flush diaphragm:</b>			<b>Pressure transmitter P for gauge and absolute pressure, front-flush diaphragm:</b>		
<b>SITRANS P DS III with PROFIBUS PA (PA)</b>		7MF4134-	<b>SITRANS P DS III with PROFIBUS PA (PA)</b>		7MF4134-
<b>SITRANS P DS III with FOUNDATION Fieldbus (FF)</b>		7MF4135-	<b>SITRANS P DS III with FOUNDATION Fieldbus (FF)</b>		7MF4135-
		■ ■ ■ ■ ■ - ■ ■ ■ ■ ■			■ ■ ■ ■ ■ - ■ ■ ■ ■ ■
<b>Measuring cell filling</b>	<b>Measuring cell cleaning</b>		<b>Display</b>		
Silicone oil	normal	1	• Without display		0
Inert liquid	grease-free to cleanliness level 2	3	• Without visible display (display concealed, setting: bar)		1
FDA compliant fill fluid			• With visible display		6
• Neobee oil	normal	4	• With customer-specific display (setting as specified, Order code "Y21" required)		7
<b>Nominal measuring range</b>			Included in delivery of the device:		
1 bar	(14.5 psi)	B	• Brief instructions (Leporello)		
4 bar	(58 psi)	C	• CD-ROM with detailed documentation		
16 bar	(232 psi)	D	1) Not with temperature decoupler P00 and P10, not for process connections R01, R02, R04, R10 and R11, and can only be ordered in conjunction with silicone oil.		
63 bar	(914 psi)	E	2) Only available for flanges with options M..., N... and Q...		
1300 mbar a <sup>1)</sup>	(18.85 psia) <sup>1)</sup>	S	3) Without cable gland, with blanking plug		
5 bar a <sup>1)</sup>	(72.5 psia) <sup>1)</sup>	T	4) Not in conjunction with types of protection "Explosion-proof" and "Ex ic", "Intrinsic safety" and "Explosion-proof".		
30 bar a <sup>1)</sup>	(435 psia) <sup>1)</sup>	U	5) M12 delivered without cable socket		
<b>Wetted parts materials</b>			6) Not available with protection type „Ex d“ (optionen D and N)		
Seal diaphragm	Connection shank		7) Not with protection types "Explosion-proof" and "Ex nA", „Intrinsic safe“ and „Explosion proof“.		
Stainless steel	Stainless steel	A			
Hastelloy <sup>2)</sup>	Stainless steel	B			
<b>Process connection</b>					
• Flange version with Order code M..., N..., R.. or Q..		7			
<b>Non-wetted parts materials</b>					
• Housing made of die-cast aluminium		0			
• Housing stainless steel precision casting		3			
<b>Version</b>					
• Standard versions		1			
• International version, English label inscriptions, documentation in 5 languages on CD (no Order code selectable)		2			
<b>Explosion protection</b>					
• None			A		
• With ATEX, Type of protection:			B		
- "Intrinsic safety (Ex ia)"			D		
- "Explosion-proof (Ex d)" <sup>3)</sup>			F		
• FM + CSA intrinsic safe (is)			S		
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX)			NC		
• With FM + CSA, Type of protection:					
- "Intrinsic Safe und Explosion Proof (is + xp)" <sup>3)</sup> (Available soon)					
<b>Electrical connection/cable entry</b>					
• Screwed gland M20 x 1.5			B		
• Screwed gland ½-14 NPT			C		
• Han 7D plug (plastic housing) incl. mating connector <sup>4)</sup>			D		
• M12 connectors (stainless steel) <sup>5) 6) 7)</sup>			F		

# Pressure Measurement

## Transmitters for general requirements

SITRANS P DS III for gauge/absolute pressure, with front-flush diaphragm

1

Selection and Ordering data	Order code		
<i>Further designs</i> Add "-Z" to Article No. and specify Order code.	HART	PA	FF
<b>Plug</b> • Angled • Han 8D (metal, gray)	A32 A33	✓ ✓	
<b>Cable sockets for M12 connectors (stainless steel)</b>	A50	✓	✓
<b>Rating plate inscription</b> (instead of German) • English • French • Spanish • Italian	B11 B12 B13 B14	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓
<b>English rating plate</b> Pressure units in inH <sub>2</sub> O and/or psi	B21	✓	✓
<b>Quality inspection certificate (Five-step factory calibration) to IEC 60770-2</b>	C11	✓	✓
<b>Inspection certificate</b> Acc. to EN 10204-3.1	C12	✓	✓
<b>Factory certificate</b> Acc. to EN 10204-2.2	C14	✓	✓
<b>Functional safety (SIL2)</b> Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	C20	✓	
<b>Functional safety (PROFIsafe) Certificate and PROFIsafe protocol</b>	C21 <sup>1)</sup>		✓
<b>Functional safety (SIL2/3)</b> Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	C23	✓	
<b>Device passport Russia</b> (For price request please contact the technical support www.siemens.com/automation/support-request.)	C99	✓	✓
<b>Setting of upper limit of output signal to 22.0 mA</b>	D05	✓	
<b>Degree of protection IP65/IP68</b> (only for M20x1.5 and ½-14 NPT)	D12	✓	✓
<b>Oxygen application</b> (In the case of oxygen measurement and inert liquid max. 100 bar (1450 psi) at 60°C (140 °F))	E10	✓	✓
<b>Export approval Korea</b>	E11	✓	✓
<b>CRN approval Canada</b> (Canadian Registration Number)	E22	✓	✓
<b>Dual seal</b>	E24	✓	✓
<b>Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-B..)	E25 <sup>2)</sup>	✓	✓
<b>"Flameproof" explosion protection according to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-D..)	E26 <sup>2)</sup>	✓	✓
<b>Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-P..)	E28 <sup>2)</sup>	✓	✓
<b>Ex Approval IEC Ex (Ex ia)</b> (only for transmitter 7MF4...-.....-B..)	E45 <sup>2)</sup>	✓	✓
<b>Ex Approval IEC Ex (Ex id)</b> (only for transmitter 7MF4...-.....-D..)	E46 <sup>2)</sup>	✓	✓
<b>"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea)</b> (only for transmitter 7MF4...-.....-[B, D]..-Z + E11)	E70 <sup>2)</sup>	✓	✓

Selection and Ordering data	Order code		
<i>Further designs</i> Add "-Z" to Article No. and specify Order code.	HART	PA	FF
<b>Two coats of lacquer on casing and cover (PU on epoxy)</b>	G10	✓	✓
<b>Transient protector 6 kV (lightning protection)</b>	J01	✓	✓
<b>Flanges to EN 1092-1, Form b1</b> • DN 25, PN 40 <sup>3)</sup> • DN 25, PN 100 <sup>3)</sup> • DN 40, PN 40 • DN 40, PN 100 • DN 50, PN 16 • DN 50, PN 40 • DN 80, PN 16 • DN 80, PN 40	M11 M21 M13 M23 M04 M14 M06 M16	✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓
<b>Flanges to ASME B16.5</b> • Stainless steel flange 1" class 150 <sup>3)</sup> • Stainless steel flange 1½" class 150 • Stainless steel flange 2" class 150 • Stainless steel flange 3" class 150 • Stainless steel flange 4" class 150 • Stainless steel flange 1" class 300 <sup>3)</sup> • Stainless steel flange 1½" class 300 • Stainless steel flange 2" class 300 • Stainless steel flange 3" class 300 • Stainless steel flange 4" class 300	M40 M41 M42 M43 M44 M45 M46 M47 M48 M49	✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓
<b>Threaded connector to DIN 3852-2, form A, thread to ISO 228<sup>4)</sup></b> • G ¾"-A, front-flush • G 1"-A, front-flush • G 2"-A, front-flush	R01 R02 R04	✓ ✓ ✓	✓ ✓ ✓
<b>Tank connection<sup>5)</sup></b> Sealing is included in delivery • TG 52/50, PN 40 • TG 52/150, PN 40	R10 R11	✓ ✓	✓ ✓
<b>Sanitary process connection according DIN 11851 (Dairy connection with slotted union nut)</b> • DN 50, PN 25 • DN 80, PN 25	N04 N06	✓ ✓	✓ ✓
<b>Tri-Clamp connection according DIN 32676/ISO 2852</b> • DN 50/2", PN 16 • DN 65/3", PN 10	N14 N15	✓ ✓	✓ ✓
<b>Varivent connection</b> Certified to EHEDG • Type N = 68 for Varivent housing DN 40 ... 125 und 1½" ... 6", PN 40	N28	✓	✓
<b>Temperature decoupler up to 200 °C<sup>6)</sup></b> for version with front-flush diaphragm	P00	✓	✓
<b>Temperature decoupler up to 250 °C</b> Measuring cell filling: High-temperature oil, only in conjunction with measuring cell filling silicone oil	P10	✓	✓
<b>Bio-Control sanitary process connection</b> Certified to EHEDG • DN 50, PN 16 • DN 65, PN 16	Q53 Q54	✓ ✓	✓ ✓
<b>Sanitary process connection to DRD</b> • DN 50, PN 40	M32	✓	✓
<b>SMS socket with union nut</b> • 2" • 2½" • 3"	M67 M68 M69	✓ ✓ ✓	✓ ✓ ✓



# Pressure Measurement

## Transmitters for general requirements

SITRANS P DS III for gauge/absolute pressure, with front-flush diaphragm

1

Selection and Ordering data	Order code			Selection and Ordering data	Order code		
<i>Further designs</i> Add "-Z" to Article No. and specify Order code.	HART	PA	FF	<i>Further designs</i> Add "-Z" to Article No. and specify Order code.	HART	PA	FF
<b>SMS threaded socket</b>				<b>Aseptic threaded socket to DIN 11864-1 Form A</b>			
• 2"	M73	✓	✓	approved according to EHEDG			
• 2½"	M74	✓	✓	• DN 50, PN 25	N33	✓	✓
• 3"	M75	✓	✓	• DN 65, PN 25	N34	✓	✓
<b>IDF socket with union nut ISO 2853</b>				• DN 80, PN 25	N35	✓	✓
• 2"	M82	✓	✓	• DN 100, PN 25	N36	✓	✓
• 2½"	M83	✓	✓	<b>Aseptic flange with notch to DIN 11864-2 Form A</b>			
• 3"	M84	✓	✓	approved according to EHEDG			
<b>IDF threaded socket ISO 2853</b>				• DN 50, PN 16	N43	✓	✓
• 2"	M92	✓	✓	• DN 65, PN 16	N44	✓	✓
• 2½"	M93	✓	✓	• DN 80, PN 16	N45	✓	✓
• 3"	M94	✓	✓	• DN 100, PN 16	N46	✓	✓
<b>Sanitary process connection to NEUMO Bio-Connect screw connection</b>				<b>Aseptic flange with groove to DIN 11864-2 Form A</b>			
Certified to EHEDG				approved according to EHEDG			
• DN 50, PN 16	Q05	✓	✓	• DN 50, PN 16	N43 + P11	✓	✓
• DN 65, PN 16	Q06	✓	✓	• DN 65, PN 16	N44 + P11	✓	✓
• DN 80, PN 16	Q07	✓	✓	• DN 80, PN 16	N45 + P11	✓	✓
• DN 100, PN 16	Q08	✓	✓	• DN 100, PN 16	N46 + P11	✓	✓
• DN 2", PN 16	Q13	✓	✓	<b>Aseptic clamp with groove to DIN 11864-3 Form A</b>			
• DN 2½", PN 16	Q14	✓	✓	approved according to EHEDG			
• DN 3", PN 16	Q15	✓	✓	• DN 50, PN 25	N53	✓	✓
• DN 4", PN 16	Q16	✓	✓	• DN 65, PN 25	N54	✓	✓
<b>Sanitary process connection to NEUMO Bio-Connect flange connection</b>				• DN 80, PN 16	N55	✓	✓
Certified to EHEDG				• DN 100, PN 16	N56	✓	✓
• 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	✓	✓				
<b>Sanitary process connection to NEUMO Bio-Connect clamp connection</b>							
Certified to EHEDG							
• DN 50, PN 16	Q39	✓	✓				
• DN 65, PN 10	Q40	✓	✓				
• DN 80, PN 10	Q41	✓	✓				
• DN 100, PN 10	Q42	✓	✓				
• DN 2½", PN 16	Q48	✓	✓				
• DN 3", PN 10	Q49	✓	✓				
• DN 4", PN 10	Q50	✓	✓				
<b>Sanitary process connection to NEUMO Bio-Connect S flange connection</b>							
Certified to EHEDG							
• DN 50, PN 16	Q63	✓	✓				
• DN 65, PN 10	Q64	✓	✓				
• DN 80, PN 10	Q65	✓	✓				
• DN 100, PN 10	Q66	✓	✓				
• DN 2", PN 16	Q72	✓	✓				
• DN 2½", PN 10	Q73	✓	✓				
• DN 3", PN 10	Q74	✓	✓				
• DN 4", PN 10	Q75	✓	✓				

- Profisafe transmitters can only be operated with the S7 F Systems V6.1 configuration software in combination with S7-400H.
- Option does not include ATEX approval, but instead includes only the country-specific approval.
- Special seal in Viton included in the scope of delivery
- Lower measuring limit -100 mbar (1.45 psi).
- The weldable socket can be ordered under accessories.
- The maximum permissible temperatures of the medium depend on the respective cell fillings.

# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III for gauge/absolute pressure, with front-flush diaphragm

1

Selection and Ordering data	Order code			
Additional data		HART	PA	FF
Please add <b>"-Z"</b> to Article No. and specify Order code(s) and plain text.				
<b>Measuring range to be set</b> Specify in plain text (max. 5 characters): Y01: ... up to ... mbar, bar, kPa, MPa, psi	<b>Y01</b>	✓	✓ <sup>1)</sup>	
<b>Stainless steel tag plate and entry in device variable (measuring point description)</b> Max. 16 characters, specify in plain text: Y15: .....	<b>Y15</b>	✓	✓	✓
<b>Measuring point text (entry in device variable)</b> Max. 27 characters, specify in plain text: Y16: .....	<b>Y16</b>	✓	✓	✓
<b>Entry of HART address (TAG)</b> Max. 8 characters, specify in plain text: Y17: .....	<b>Y17</b>	✓		
<b>Setting of pressure indicator in pressure units</b> Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi, ... Note: The following pressure units can be selected: bar, mbar, mm H <sub>2</sub> O <sup>*)</sup> , inH <sub>2</sub> O <sup>*)</sup> , ftH <sub>2</sub> O <sup>*)</sup> , mmHG, inHG, psi, Pa, kPa, MPa, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , Torr, ATM or % <sup>*)</sup> ref. temperature 20 °C	<b>Y21</b>	✓	✓	✓
<b>Setting of pressure indication in non-pressure units<sup>2)</sup></b> Specify in plain text: Y22: ..... up to ..... l/min, m <sup>3</sup> /h, m, USgpm, ... (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	<b>Y22 + Y01</b>	✓		
<b>Preset bus address</b> possible between 1 and 126 Specify in plain text: Y25: .....	<b>Y25</b>		✓	✓
<b>Damping adjustment in seconds (0 ... 100 s)</b>	<b>Y30</b>	✓	✓	✓

Only Y01, Y15, Y16, Y17, Y21, Y22, Y25 and D05 can be factory preset

✓ = available

#### ordering example

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

<sup>1)</sup> Measuring accuracies for PROFIBUS PA transmitters with Option Y01 are calculated in the same way as for HART devices.

<sup>2)</sup> Preset values can only be changed over SIMATIC PDM.

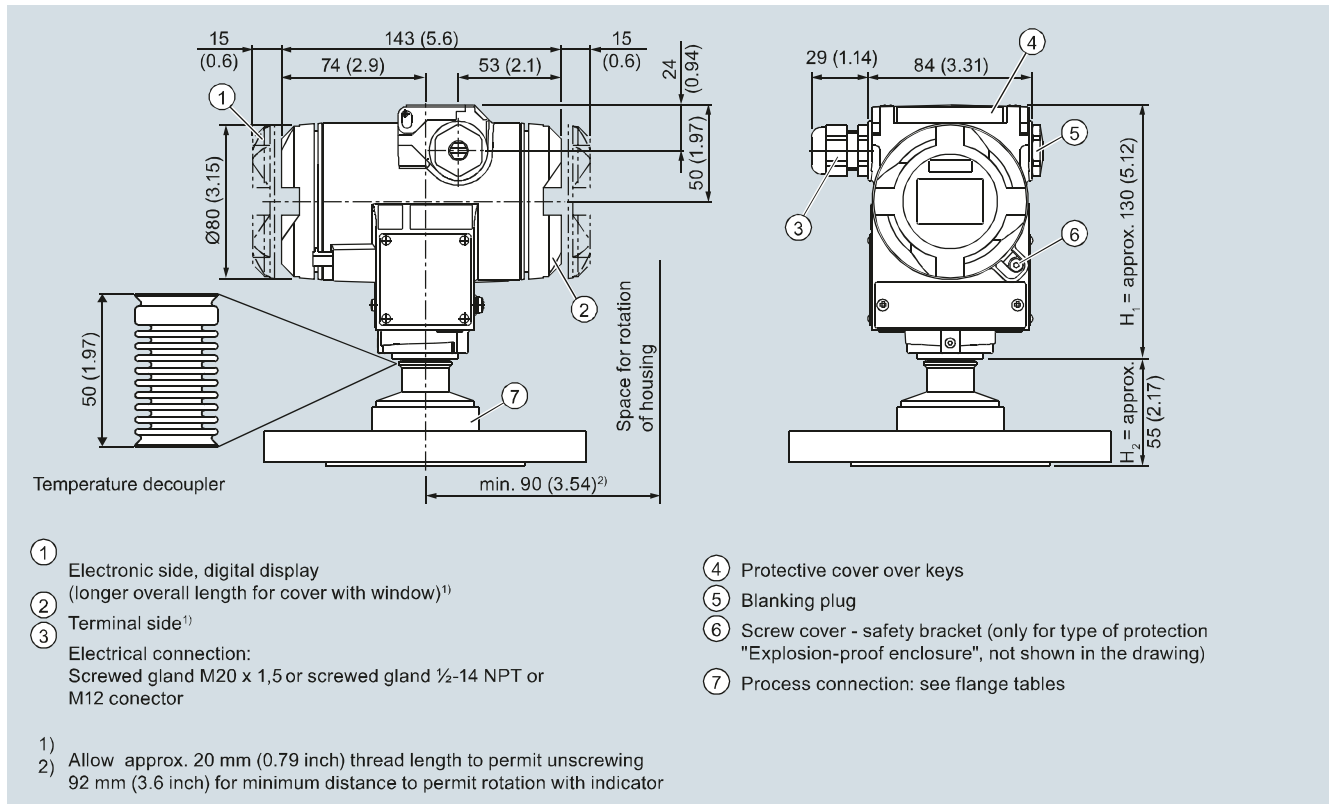
# Pressure Measurement

## Transmitters for general requirements

SITRANS P DS III for gauge/absolute pressure, with front-flush diaphragm

1

### Dimensional drawings



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

The diagram shows a SITRANS P DS III with an example of a flange. In this drawing the height is subdivided into H<sub>1</sub> and H<sub>2</sub>.

H<sub>1</sub> = Height of the SITRANS P300 up to a defined cross-section

H<sub>2</sub> = Height of the flange up to this defined cross-section

Only the height H<sub>2</sub> is indicated in the dimensions of the flanges.

# Pressure Measurement

## Transmitters for general requirements

SITRANS P DS III for gauge/absolute pressure, with front-flush diaphragm

1

### Flanges as per EN and ASME

#### Flange to EN

EN 1092-1				
Order code	DN	PN	ØD	H <sub>2</sub>
M11	25	40	115 mm (4.5")	Approx. 52 mm (2")
M21	25	100	140 mm (5.5")	
M13	40	40	150 mm (5.9")	
M23	40	100	170 mm (6.7")	
M04	50	16	165 mm (6.5")	
M14	50	40	165 mm (6.5")	
M06	80	16	200 mm (7.9")	
M16	80	40	200 mm (7.9")	

#### Flanges to ASME

ASME B16.5				
Order code	DN	PN	ØD	H <sub>2</sub>
M40	1"	150	110 mm (4.3")	Approx. 52 mm (2")
M41	1½"	150	130 mm (5.1")	
M42	2"	150	150 mm (5.9")	
M43	3"	150	190 mm (7.5")	
M44	4"	150	230 mm (9.1")	
M45	1"	300	125 mm (4.9")	
M46	1½"	300	155 mm (6.1")	
M47	2"	300	165 mm (6.5")	
M48	3"	300	210 mm (8.1")	
M49	4"	300	255 mm (10.0")	

### NuG and pharmaceutical connections

#### Connections to DIN

DIN 11851 (milk pipe union with slotted union nut)				
Order code	DN	PN	ØD	H <sub>2</sub>
N04	50	25	92 mm (3.6")	Approx. 52 mm (2")
N06	80	25	127 mm (5.0")	

#### Tri-Clamp nach DIN 32676

Order code	DN	PN	ØD	H <sub>2</sub>
N14	50	16	64 mm (2.5")	Approx. 52 mm (2")
N15	65	10	91 mm (3.6")	

#### Other connections

Varivent connection				
Order code	DN	PN	ØD	H <sub>2</sub>
N28	40 ... 125	40	84 mm (3.3")	Approx. 52 mm (2")

#### Biocontrol connection

Order code	DN	PN	ØD	H <sub>2</sub>
Q53	50	16	90 mm (3.5")	Approx. 52 mm (2")
Q54	65	16	120 mm (4.7")	

#### Sanitary process connection to DRD

Order code	DN	PN	ØD	H <sub>2</sub>
M32	50	40	105 mm (4.1")	Approx. 52 mm (2")

#### Sanitary process screw connection to NEUMO Bio-Connect

Order code	DN	PN	ØD	H <sub>2</sub>
Q05	50	16	82 mm (3.2")	Approx. 52 mm (2")
Q06	65	16	105 mm (4.1")	
Q07	80	16	115 mm (4.5")	
Q08	100	16	145 mm (5.7")	
Q13	2"	16	82 mm (3.2")	
Q14	2½"	16	105 mm (4.1")	
Q15	3"	16	105 mm (4.1")	
Q16	4"	16	145 mm (5.7")	

#### Sanitary process connection to NEUMO Bio-Connect flange connection

Order code	DN	PN	ØD	H <sub>2</sub>
Q23	50	16	110 mm (4.3")	Approx. 52 mm (2")
Q24	65	16	140 mm (5.5")	
Q25	80	16	150 mm (5.9")	
Q26	100	16	175 mm (6.9")	
Q31	2"	16	100 mm (3.9")	
Q32	2½"	16	110 mm (4.3")	
Q33	3"	16	140 mm (5.5")	
Q34	4"	16	175 mm (6.9")	

#### Sanitary process connection to NEUMO Bio-Connect clamp connection

Order code	DN	PN	ØD	H <sub>2</sub>
Q39	50	16	77.4 mm (3.0")	Approx. 52 mm (2")
Q40	65	10	90.9 mm (3.6")	
Q41	80	10	106 mm (4.2")	
Q42	100	10	119 mm (4.7")	
Q48	2½"	16	77.4 mm (3.0")	
Q49	3"	10	90.9 mm (3.6")	
Q50	4"	10	119 mm (4.7")	

#### Sanitary process connection to NEUMO Bio-Connect S flange connection

Order code	DN	PN	ØD	H <sub>2</sub>
Q63	50	16	125 mm (4.9")	Approx. 52 mm (2")
Q64	65	10	145 mm (5.7")	
Q65	80	10	155 mm (6.1")	
Q66	100	10	180 mm (7.1")	
Q72	2"	16	125 mm (4.9")	
Q73	2½"	10	135 mm (5.3")	
Q74	3"	10	145 mm (5.7")	
Q75	4"	10	180 mm (7.1")	

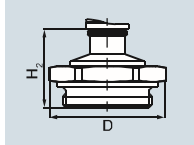
# Pressure Measurement

## Transmitters for general requirements

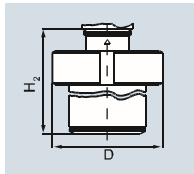
SITRANS P DS III for gauge/absolute pressure, with front-flush diaphragm

1

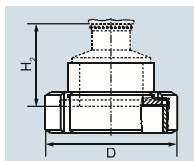
### Threaded connection G $\frac{3}{4}$ " , G1" and G2" acc. to DIN 3852

	Order code	DN	PN	ØD	H <sub>2</sub>
	R01	¾"	60	37 mm (1.5")	Approx. 45 mm (1.8")
	R02	1"	60	48 mm (1.9")	Approx. 47 mm (1.9")
	R04	2"	60	78 mm (3.1")	Approx. 52 mm (2")

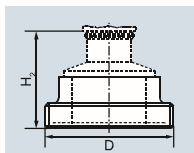
### Tank connection TG 52/50 and TG52/150

	Order code	DN	PN	ØD	H <sub>2</sub>
	R10	25	40	63 mm (2.5")	Approx. 63 mm (2.5")
	R11	25	40	63 mm (2.5")	Approx. 170 mm (6.7")

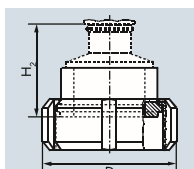
### SMS socket with union nut

	Order code	DN	PN	ØD	H <sub>2</sub>
	M67	2"	25	84 mm (3.3")	Approx. 52 mm (2")
	M68	2½"	25	100 mm (3.9")	
	M69	3"	25	114 mm (4.5")	

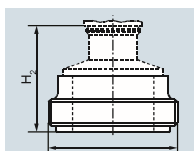
### SMS threaded socket

	Order code	DN	PN	ØD	H <sub>2</sub>
	M73	2"	25	70 x 1/6 mm	Approx. 52 mm (2")
	M74	2½"	25	85 x 1/6 mm	
	M75	3"	25	98 x 1/6 mm	

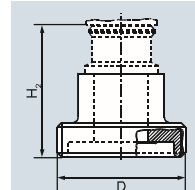
### IDF socket with union nut

	Order code	DN	PN	ØD	H <sub>2</sub>
	M82	2"	25	77 mm (3")	Approx. 52 mm (2")
	M83	2½"	25	91 mm (3.6")	
	M84	3"	25	106 mm (4.2")	

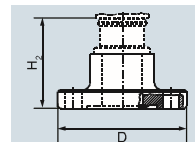
### IDF threaded socket

	Order code	DN	PN	ØD	H <sub>2</sub>
	M92	2"	25	64 mm (2.5")	Approx. 52 mm (2")
	M93	2½"	25	77.5 mm (3.1")	
	M94	3"	25	91 mm (3.6")	

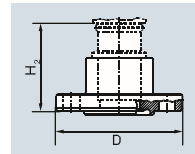
### Aseptic threaded socket to DIN 11864-1 Form A

	Order code	DN	PN	ØD	H <sub>2</sub>
	N33	50	25	78 x 1/6"	Approx. 52 mm (2")
	N34	65	25	95 x 1/6"	
	N35	80	25	110 x ¼"	
	N36	100	25	130 x ¼"	

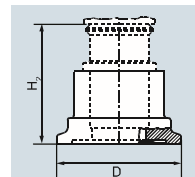
### Aseptic flange with notch to DIN 11864-2 Form A

	Order code	DN	PN	ØD	H <sub>2</sub>
	N43	50	16	94	Approx. 52 mm (2")
	N44	65	16	113	
	N45	80	16	133	
	N46	100	16	159	

### Aseptic flange with groove to DIN 11864-2 Form A

	Order code	DN	PN	ØD	H <sub>2</sub>
	N43 + P11	50	16	94	Approx. 52 mm (2")
	N44 + P11	65	16	113	
	N45 + P11	80	16	133	
	N46 + P11	100	16	159	

### Aseptic clamp with groove to DIN 11864-3 Form A

	Order code	DN	PN	ØD	H <sub>2</sub>
	N53	50	25	77.5	Approx. 52 mm (2")
	N54	65	25	91	
	N55	80	16	106	
	N56	100	16	130	

# Pressure Measurement

## Transmitters for general requirements

SITRANS P DS III for absolute pressure  
(from gauge pressure series)

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### Technical specifications

SITRANS P DS III series for absolute pressure (from the gauge pressure series)				
	HART		PROFIBUS PA and FOUNDATION Fieldbus	
<b>Input</b>	Absolute pressure			
Measured variable	Absolute pressure			
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span (min. ... max.)	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure
	8.3 ... 250 mbar a (0.12 ... 3.62 psia)	6 bar a (87 psia)	250 mbar a (3.6 psia)	6 bar a (87 psia)
	43 ... 1300 mbar a (0.62 ... 18.85 psi a)	10 bar a (145 psia)	1300 mbar a (18.9 psi a)	10 bar a (145 psia)
	160 ... 5000 mbar a (2.32 ... 72.5 psia)	30 bar a (435 psia)	5 bar a (72.5 psia)	30 bar a (435 psia)
	1 ... 30 bar a (14.5 ... 435 psia)	100 bar a (1450 psia)	30 bar a (435 psia)	100 bar a (1450 psia)
Lower measuring limit	0 mbar a (0 psia)			
• Measuring cell with silicone oil filling				
Upper measuring limit	100 % of max. span			
<b>Output</b>				
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	$R_B \leq (U_H - 10.5 \text{ V})/0.023 \text{ A}$ in $\Omega$ , $U_H$ : Power supply in V	-		
• With HART	$R_B = 230 \dots 500 \Omega$ (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.			
Electrical damping (step width 0.1 s)	Set to 2 s (0 ... 100 s)			
<b>Measuring accuracy</b>	Acc. to IEC 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 at limit setting incl. hysteresis and reproducibility				
• Linear characteristic			≤ 0.1 %	
- r ≤ 10	≤ 0.1 %			
- 10 < r ≤ 30	≤ 0.2 %			
Long-term stability (temperature change ± 30 °C (± 54 °F))	≤ (0.1 · r) %/year		≤ 0.1 %/year	
Influence of ambient temperature				
• at -10 ... +60 °C (14 ... 140 °F)	≤ (0.1 · r + 0.2) % <sup>1)</sup>		≤ 0.3 %	
• at -40 ... -10 °C and 60 ... 85 °C (-40 ... +14 °F and 140 ... 185 °F)	≤ (0.1 · r + 0.15) %/10 K		≤ 0.25 %/10 K	
Measured Value Resolution	-		3 · 10 <sup>-5</sup> of nominal measuring range	

# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III for absolute pressure (from gauge pressure series)

1

SITRANS P DS III series for absolute pressure (from the gauge pressure series)		HART	PROFIBUS PA and FOUNDATION Fieldbus
<b>Rated conditions</b>			
Degree of protection (to IEC 60529)			IP65 (optional IP65/IP68)
Temperature of medium			
• Measuring cell with silicone oil filling		-40 ... +100 °C (-40 ... +212 °F)	-20 ... +100 °C (-4 ... +212 °F) with 30 bar a measuring cell
• Measuring cell with inert filling liquid		-20 ... +100 °C (-4 ... +212 °F)	
• In conjunction with dust explosion protection		-20 ... +60 °C (-4 ... +140 °F)	
Ambient conditions			
• Ambient temperature			
- Transmitter (with 4-wire connection, observe temperature values of supplementary 4-wire electronics)		-40 ... +85 °C (-40 ... +185 °F)	
- Display readable		-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
• Electromagnetic Compatibility			
- Emitted interference and interference immunity			Acc. to IEC 61326 and NAMUR NE 21
<b>Design</b>			
Weight (without options)			≈ 1.5 kg (≈ 3.3 lb)
Enclosure material			Low-copper die-cast aluminum, GD-AISI 12 or stainless steel precision casting, mat. no. 1.4408
Wetted parts materials			
• Connection shank			Stainless steel, mat. no. 1.4404/316L or Hastelloy C4, mat. no. 2.4610
• Oval flange			Stainless steel, mat. no. 1.4404/316L
• Seal diaphragm			Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819
Measuring cell filling			Silicone oil or inert filling liquid (maximum value with oxygen measurement pressure 100 bar (1450 psi) at 60 °C (140 °F))
Process connection			Connection shank G $\frac{1}{2}$ B to EN 837-1, female thread $\frac{1}{2}$ -14 NPT or oval flange (PN 160 (MAWP 2320 psia)) to DIN 19213 with mounting thread M10 or $\frac{7}{16}$ -20 UNF to IEC 61518
Material of mounting bracket			
• Steel			Sheet-steel, Mat. No. 1.0330, chrome-plated
• Stainless steel			Sheet stainless steel, mat. no. 1.4301 (SS 304)
<b>Power supply <math>U_H</math></b>			Supplied through bus
Terminal voltage on transmitter	10.5 ... 45 V DC 10.5 ... 30 V DC in intrinsically-safe mode		-
Separate 24 V power supply necessary	-		No
Bus voltage			
• Not Ex	-		9 ... 32 V
• With intrinsically-safe operation	-		9 ... 24 V
Current consumption			
• Basic current (max.)	-		12.5 mA
• Start-up current $\leq$ basic current	-		Yes
• Max. current in event of fault	-		15.5 mA
Fault disconnection electronics (FDE) available	-		Yes

# Pressure Measurement

## Transmitters for general requirements

SITRANS P DS III for absolute pressure  
(from gauge pressure series)

1

SITRANS P DS III series for absolute pressure (from the gauge pressure series)	HART	PROFIBUS PA and FOUNDATION Fieldbus
<b>Certificates and approvals</b>		
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 13 ATEX 2007 X	
- Marking	Ex II 1/2 G Ex ia/ib IIC T4/T5/T6 Ga/Gb	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +70 °C (-40 ... +158 °F) temperature class T5; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}$ , $I_i = 100 \text{ mA}$ , $P_i = 750 \text{ mW}$ ; $R_i = 300 \Omega$	FISCO supply unit: $U_o = 17.5 \text{ V}$ , $I_o = 380 \text{ mA}$ , $P_o = 5.32 \text{ W}$ Linear barrier: $U_o = 24 \text{ V}$ , $I_o = 250 \text{ mA}$ , $P_o = 1.2 \text{ W}$
- Effective internal inductance/capacitance	$L_i = 0.4 \text{ mH}$ , $C_i = 6 \text{ nF}$	$L_i = 7 \mu\text{H}$ , $C_i = 1.1 \text{ nF}$
• Explosion-proof "d"	PTB 99 ATEX 1160	
- Marking	Ex II 1/2 G Ex d IIC T4/T6 Gb	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To circuits with values: $U_H = 10.5 \dots 45 \text{ V DC}$	To circuits with values: $U_H = 9 \dots 32 \text{ V DC}$
• Dust explosion protection for zone 20	PTB 01 ATEX 2055	
- Marking	Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F)	
- Max. surface temperature	120 °C (248 °F)	
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}$ , $I_i = 100 \text{ mA}$ , $P_i = 750 \text{ mW}$ , $R_i = 300 \Omega$	FISCO supply unit: $U_o = 17.5 \text{ V}$ , $I_o = 380 \text{ mA}$ , $P_o = 5.32 \text{ W}$ Linear barrier: $U_o = 24 \text{ V}$ , $I_o = 250 \text{ mA}$ , $P_o = 1.2 \text{ W}$
- Effective internal inductance/capacitance	$L_i = 0.4 \text{ mH}$ , $C_i = 6 \text{ nF}$	$L_i = 7 \mu\text{H}$ , $C_i = 1.1 \text{ nF}$
• Dust explosion protection for zone 21/22	PTB 01 ATEX 2055	
- Marking	Ex II 2 D IP65 T 120 °C	
- Connection	To circuits with values: $U_H = 10.5 \dots 45 \text{ V DC}$ ; $P_{\max} = 1.2 \text{ W}$	To circuits with values: $U_H = 9 \dots 32 \text{ V DC}$ ; $P_{\max} = 1 \text{ W}$
• Type of protection "n" (zone 2)	PTB 13 ATEX 2007 X	
- Marking	Ex II 2/3 G Ex nA II T4/T5/T6 Gc Ex II 2/3 G Ex ic IIC T4/T5/T6 Gc	
- Connection (Ex nA)	$U_m = 45 \text{ V}$	$U_m = 32 \text{ V}$
- Connection (Ex ic)	To circuits with values: $U_i = 45 \text{ V}$	FISCO supply unit ic: $U_o = 17.5 \text{ V}$ , $I_o = 570 \text{ mA}$ Linear barrier: $U_o = 32 \text{ V}$ , $I_o = 132 \text{ mA}$ , $P_o = 1 \text{ W}$
- Effective internal inductance/capacitance	$L_i = 0.4 \text{ mH}$ , $C_i = 6 \text{ nF}$	$L_i = 7 \mu\text{H}$ , $C_i = 1.1 \text{ nF}$
• Explosion protection acc. to FM	Certificate of Compliance 3008490	
- Identification (XP/DIP) or (IS); (NI)	CL I, DIV 1, GP ABCD T4...T6; CL II, DIV 1, GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4...T6; CL I, DIV 2, GP ABCD T4...T6; CL II, DIV 2, GP FG; CL III	
• Explosion protection to CSA	Certificate of Compliance 1153651	
- Identification (XP/DIP) or (IS)	CL I, DIV 1, GP ABCD T4...T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4...T6; CL I, DIV 2, GP ABCD T4...T6; CL II, DIV 2, GP FG; CL III	

<sup>1)</sup> Conversion of temperature error per 28 °C. Valid for temperature range -3 ... +53 °C < (0.08 · r + 0.16) % / 28 °C (50 °F).



# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III for absolute pressure (from gauge pressure series)

1

HART communication		FOUNDATION Fieldbus communication	
HART	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
<b>PROFIBUS PA communication</b>		- Electrical damping, 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	
• Input byte	0, 1, or 2 (register operating mode and reset function for metering)	• PID	Standard FOUNDATION Fieldbus function block
Internal preprocessing		• Physical block	1 resource block
Device profile	PROFIBUS PA Profile for Process Control Devices Version 3.0, Class B	Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block LCD
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, adjustable	0 to 100 s	- Simulation function: Measured pressure value, sensor temperature and electronics temperature	Constant value or over parameterizable ramp function
- 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		
- Specification of a container characteristic with	Max. 30 nodes		
- Square-rooted characteristic for flow measurement	Yes		
- Gradual volume suppression and implementation point of square-root extraction	Parameterizable		
- Simulation function for measured pressure value and sensor temperature	Constant value or over parameterizable ramp function		

# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III for absolute pressure (from gauge pressure series)

1

Selection and Ordering data		Article No.
<b>Pressure transmitters for absolute pressure from gauge pressure series</b> <b>SITRANS P DS III with HART</b>		<b>7MF4233-</b>
<b>Measuring cell filling</b>	<b>Measuring cell cleaning</b>	
Silicone oil	normal	1
Inert liquid <sup>1)</sup>	grease-free to cleanliness level 2	3
<b>Measuring span (min. ... max.)</b>		
8.3 ... 250 mbar a	(0.12 ... 3.62 psia)	D
43 ... 1300 mbar a	(0.62 ... 18.85 psia)	F
0.16 ... 5 bar a	(2.32 ... 72.5 psia)	G
1 ... 30 bar a	(14.5 ... 435 psia)	H
<b>Wetted parts materials</b>		
Seal diaphragm	Process connection	
Stainless steel	Stainless steel	A
Hastelloy	Stainless steel	B
Hastelloy	Hastelloy	C
Version for diaphragm seal <sup>2) 3) 4) 5) 6)</sup>		Y
<b>Process connection</b>		
• Connection shank G $\frac{1}{2}$ B to EN 837-1		0
• Female thread $\frac{1}{2}$ -14 NPT		1
• Stainless steel oval flange with process connection (Oval flange has no female thread)		
- Mounting thread $\frac{7}{16}$ -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 $\frac{1}{2}$ -14 NPT		6
<b>Non-wetted parts materials</b>		
• Housing made of die-cast aluminium		0
• Housing stainless steel precision casting <sup>7)</sup>		3
<b>Version</b>		
• Standard versions		1
• International version, English label inscriptions, documentation in 5 languages on CD (no Order code selectable)		2
<b>Explosion protection</b>		
• None		A
• With ATEX, Type of protection:		
- "Intrinsic safety (Ex ia)"		B
- "Explosion-proof (Ex d) <sup>8)</sup>		D
- "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d) <sup>9)</sup>		P
- "Ex nA/ic (Zone 2) <sup>10)</sup>		E
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia+ Ex d + Zone 1D/2D) <sup>9)</sup>		R
• FM + CSA intrinsic safe (is)		F
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX)		S
• With FM + CSA, Type of protection:		
- "Intrinsic Safe und Explosion Proof (is + xp) <sup>8)</sup>		NC
<b>Electrical connection/cable entry</b>		
• Screwed gland Pg 13.5 <sup>11)</sup>		A
• Screwed gland M20x1.5		B
• Screwed gland $\frac{1}{2}$ -14 NPT		C
• Han 7D plug (plastic housing) incl. mating connector <sup>11)</sup>		D
• M12 connectors (stainless steel) <sup>12) 13) 14)</sup>		F

Selection and Ordering data		Article No.
<b>Pressure transmitters for absolute pressure from gauge pressure series</b> <b>SITRANS P DS III with HART</b>		<b>7MF4233-</b>
<b>Display</b>		
• Without display		0
• Without visible display (display concealed, setting: mA)		1
• With visible display		6
• with customer-specific display (setting as specified, Order code "Y21" or "Y22" required)		7
<p>• We can offer shorter delivery times for configurations designated with the Quick Ship Symbol . For details see page 9/5 in the appendix.</p>		
<p>Power supply units see Chap. 7 "Supplementary Components".</p>		
<p>Included in delivery of the device:</p> <ul style="list-style-type: none"> <li>• Brief instructions (Leporello)</li> <li>• CD-ROM with detailed documentation</li> </ul>		
<p>1) For oxygen application, add Order code E10.</p>		
<p>2) Version 7MF4233-1DY... only up to max. span 200 mbar a (80 inH<sub>2</sub>O a).</p>		
<p>3) 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 total combination is certified here. 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.</p>		
<p>4) 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.</p>		
<p>5) The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF423-...Y... and 7MF4900-1...-B</p>		
<p>6) The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.</p>		
<p>7) Not in conjunction with Electrical connection "Screwed gland Pg 13.5" and "Han7D plug".</p>		
<p>8) Without cable gland, with blanking plug.</p>		
<p>9) With enclosed cable gland Ex ia and blanking plug.</p>		
<p>10) Configurations with HAN and M12 connectors are only available in Ex ic.</p>		
<p>11) Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".</p>		
<p>12) M12 delivered without cable socket</p>		
<p>13) Not available with protection type "Ex d" (optiones D, P, N and R)</p>		
<p>14) Not with protection types „Explosion-proof“ and „Ex nA“, „Intrinsic safe“ and „Explosion proof“.</p>		

# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III for absolute pressure (from gauge pressure series)

1

Selection and Ordering data		Article No.	Selection and Ordering data		Article No.
<b>Pressure transmitters for absolute pressure from gauge pressure series</b>			<b>Pressure transmitters for absolute pressure from gauge pressure series</b>		
<b>SITRANS P DS III with PROFIBUS PA (PA)</b>		7 MF 4 2 3 4 -	<b>SITRANS P DS III with PROFIBUS PA (PA)</b>		7 MF 4 2 3 4 -
<b>SITRANS P DS III with FOUNDATION Fieldbus (FF)</b>		7 MF 4 2 3 5 -	<b>SITRANS P DS III with FOUNDATION Fieldbus (FF)</b>		7 MF 4 2 3 5 -
<b>Measuring cell filling</b>			<b>Display</b>		
Silicone oil	normal	1	• Without display		0
Inert liquid <sup>1)</sup>	grease-free to cleanliness level 2	3	• Without visible display (display concealed, setting: bar)		1
			• With visible display		6
			• with customer-specific display (setting as specified, Order code "Y21" or "Y22" required)		7
<b>Nominal measuring range</b>			Included in delivery of the device:		
250 mbar a	(3.62 psia)	D	• Brief instructions (Leporello)		
1300 mbar a	(18.85 psia)	F	• CD-ROM with detailed documentation		
5 bar a	(72.5 psia)	G	1) For oxygen application, add Order code E10.		
30 bar a	(435 psia)	H	2) Version 7MF4233-1DY... only up to max. span 200 mbar a (2.9 psia).		
<b>Wetted parts materials</b>			3) 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.		
Seal diaphragm	Process connection		4) 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.		
Stainless steel	Stainless steel	A	5) The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF423-..Y..-... and 7MF4900-1...-B		
Hastelloy	Stainless steel	B	6) The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.		
Hastelloy	Hastelloy	C	7) Without cable gland, with blanking plug.		
Version as diaphragm seal <sup>2) 3) 4) 5) 6)</sup>		Y	8) With enclosed cable gland Ex ia and blanking plug.		
<b>Process connection</b>			9) Configurations with HAN and M12 connectors are only available in Ex ic.		
• Connection shank G½B to EN 837-1		0	10) M12 delivered without cable socket		
• Female thread ½-14 NPT		1	11) Not with protection types „Explosion-proof“ and „Ex nA“, „Intrinsic safe“ and „Explosion proof“.		
• Stainless steel oval flange with process connection (Oval flange has no female thread)		2			
- Mounting thread 7/16-20 UNF to IEC 61518		3			
- Mounting thread M10 to DIN 19213		4			
- Mounting thread M12 to DIN 19213		5			
• Male thread M20 x 1.5		6			
• Male thread ½-14 NPT					
<b>Non-wetted parts materials</b>					
• Housing made of die-cast aluminium		0			
• Housing stainless steel precision casting		3			
<b>Version</b>					
• Standard versions		1			
• International version, English label inscriptions, documentation in 5 languages on CD (no Order code selectable)		2			
<b>Explosion protection</b>					
• None		A			
• With ATEX, Type of protection:					
- "Intrinsic safety (Ex ia)"		B			
- "Explosion-proof (Ex d)" <sup>7)</sup>		D			
- "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d) <sup>8)</sup>		P			
- "Ex nA/ic (Zone 2)" <sup>9)</sup>		E			
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia + Ex d + Zone 1D/2D) <sup>8)</sup> (not for DS III FF)		R			
• FM + CSA intrinsic safe (is)		F			
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX)		S			
• With FM + CSA, Type of protection:					
- "Intrinsic Safe und Explosion Proof (is + xp)" <sup>7)</sup>		NC			
<b>Electrical connection/cable entry</b>					
• Screwed gland M20 x 1.5		B			
• Screwed gland ½-14 NPT		C			
• M12 connectors (stainless steel) <sup>10) 11)</sup>		F			

# Pressure Measurement

## Transmitters for general requirements

SITRANS P DS III for absolute pressure  
(from gauge pressure series)

1

Selection and Ordering data	Order code		
Further designs	HART	PA	FF
Add <b>"-Z"</b> to Article No. and specify Order code.			
<b>Pressure transmitter with mounting bracket (1x fixing angle, 2 x nut, 2 x U-washer or 1 x bracket, 2 x nut, 2 x U-washer) made of:</b>			
• Steel	◆ A01	✓	✓
• Stainless steel	◆ A02	✓	✓
<b>Plug</b>			
• Han 7D (metal, gray)	A30	✓	
• Han 8U (instead of Han 7D)	A31	✓	
• Angled	A32	✓	
• Han 8D (metal, gray)	A33	✓	
<b>Cable sockets for M12 connectors (stainless steel)</b>	A50	✓	✓
<b>Rating plate inscription</b> (instead of German)			
• English	◆ B11	✓	✓
• French	◆ B12	✓	✓
• Spanish	◆ B13	✓	✓
• Italian	◆ B14	✓	✓
<b>English rating plate</b>	◆ B21	✓	✓
Pressure units in inH <sub>2</sub> O and/or psi			
<b>Quality inspection certificate (Five-step factory calibration) to IEC 60770-2<sup>1)</sup></b>	◆ C11	✓	✓
<b>Inspection certificate<sup>2)</sup></b>	◆ C12	✓	✓
Acc. to EN 10204-3.1			
<b>Factory certificate</b>	◆ C14	✓	✓
Acc. to EN 10204-2.2			
<b>Functional safety (SIL2)</b>	◆ C20	✓	
Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration			
<b>Functional safety (PROFIsafe) Certificate and PROFIsafe protocol</b>	C21 <sup>3)</sup>		✓
<b>Functional safety (SIL2/3)</b>	◆ C23	✓	
Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration			
<b>Device passport Russia</b>	C99	✓	✓
(For price request please contact the technical support <a href="http://www.siemens.com/automation/support-request">www.siemens.com/automation/support-request</a> )			
<b>Setting of upper limit of output signal to 22.0 mA</b>	D05	✓	
<b>Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009)</b>	D07	✓	✓
<b>Degree of protection IP65/IP68</b> (only for M20 x 1.5 and ½-14 NPT)	D12	✓	✓
<b>Supplied with oval flange</b> (1 item), PTFE packing and screws in thread of oval flange	D37	✓	✓

Selection and Ordering data	Order code		
Further designs	HART	PA	FF
Add <b>"-Z"</b> to Article No. and specify Order code.			
<b>Use in or on zone 1D/2D</b> (only together with type of protection "Intrinsic safety" (transmitter 7MF4...-.....-B.. Ex ia")	E01	✓	✓
<b>Oxygen application</b> (In the case of oxygen measurement and inert liquid max. 100 bar (1450 psi) at 60°C (140 °F))	E10	✓	✓
<b>Export approval Korea</b>	E11	✓	✓
<b>CRN approval Canada</b> (Canadian Registration Number)	E22	✓	✓
<b>Dual seal</b>	E24	✓	✓
<b>Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-B..)	E25 <sup>4)</sup>	✓	✓
<b>"Flameproof" explosion protection according to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-D..)	E26 <sup>4)</sup>	✓	✓
<b>Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-P..)	E28 <sup>4)</sup>	✓	✓
<b>Ex Approval IEC Ex (Ex ia)</b> (only for transmitter 7MF4...-.....-B..)	E45 <sup>4)</sup>	✓	✓
<b>Ex Approval IEC Ex (Ex id)</b> (only for transmitter 7MF4...-.....-D..)	E46 <sup>4)</sup>	✓	✓
<b>Explosion-proof "Intrinsic safety" to NEPSI (China)</b> (only for transmitter 7MF4...-.....-B..)	E55 <sup>4)</sup>	✓	✓
<b>Explosion protection "Explosion-proof" to NEPSI (China)</b> (only for transmitter 7MF4...-.....-D..)	E56 <sup>4)</sup>	✓	✓
<b>Explosion-proof "Zone 2" to NEPSI (China)</b> (only for transmitter 7MF4...-.....-E..)	E57 <sup>4)</sup>	✓	✓
<b>"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea)</b> (only for transmitter 7MF4...-.....-[B, D]..-Z + E11)	E70 <sup>4)</sup>	✓	✓
<b>Two coats of lacquer on casing and cover (PU on epoxy)</b>	G10	✓	✓
<b>Transient protector 6 kV (lightning protection)</b>	J01	✓	✓

◆ We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ◆. For details see page 9/5 in the appendix.

<sup>1)</sup> When the manufacturer'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 total combination is certified here.

<sup>2)</sup> 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.

<sup>3)</sup> Profisafe transmitters can only be operated with the S7 F Systems V6.1 configuration software in combination with S7-400H

<sup>4)</sup> Option does not include ATEX approval, but instead includes only the country-specific approval.

# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III for absolute pressure (from gauge pressure series)

1

Selection and Ordering data	Order code			
Additional data		HART	PA	FF
Please add <b>"-Z"</b> to Article No. and specify Order code(s) and plain text.				
<b>Measuring range to be set</b> Specify in plain text (max. 5 characters): Y01: ... up to ... mbar, bar, kPa, MPa, psi	◆ Y01	✓	✓ <sup>1)</sup>	
<b>Stainless steel tag plate and entry in device variable (measuring point description)</b> Max. 16 characters, specify in plain text: Y15: .....	◆ Y15	✓	✓	✓
<b>Measuring point text (entry in device variable)</b> Max. 27 characters, specify in plain text: Y16: .....	◆ Y16	✓	✓	✓
<b>Entry of HART address (TAG)</b> Max. 8 characters, specify in plain text: Y17: .....	◆ Y17	✓		
<b>Setting of pressure indication in pressure units</b> Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi, ... Note: The following pressure units can be selected: bar, mbar, mm H <sub>2</sub> O <sup>*</sup> , inH <sub>2</sub> O <sup>*</sup> , ftH <sub>2</sub> O <sup>*</sup> , mmHG, inHG, psi, Pa, kPa, MPa, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , Torr, ATM or % *) ref. temperature 20 °C	◆ Y21	✓	✓	✓
<b>Setting of pressure indication in non-pressure units<sup>2)</sup></b> Specify in plain text: Y22: ..... up to ..... l/min, m <sup>3</sup> /h, m, USgpm, ... (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	◆ Y22 + Y01	✓		
<b>Preset bus address</b> possible between 1 and 126 Specify in plain text: Y25: .....	Y25		✓	✓
<b>Damping adjustment in seconds (0 ... 100 s)</b>	Y30	✓	✓	✓

- ◆ We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ◆. For details see page 9/5 in the appendix.

Factory mounting of valve manifolds, see accessories.

Only Y01, Y15, Y16, Y17, Y21, Y22, Y25 and D05 can be factory preset

✓ = available

<sup>1)</sup> Measuring accuracies for PROFIBUS PA transmitters with Option Y01 are calculated in the same way as for HART devices.

<sup>2)</sup> Preset values can only be changed over SIMATIC PDM.

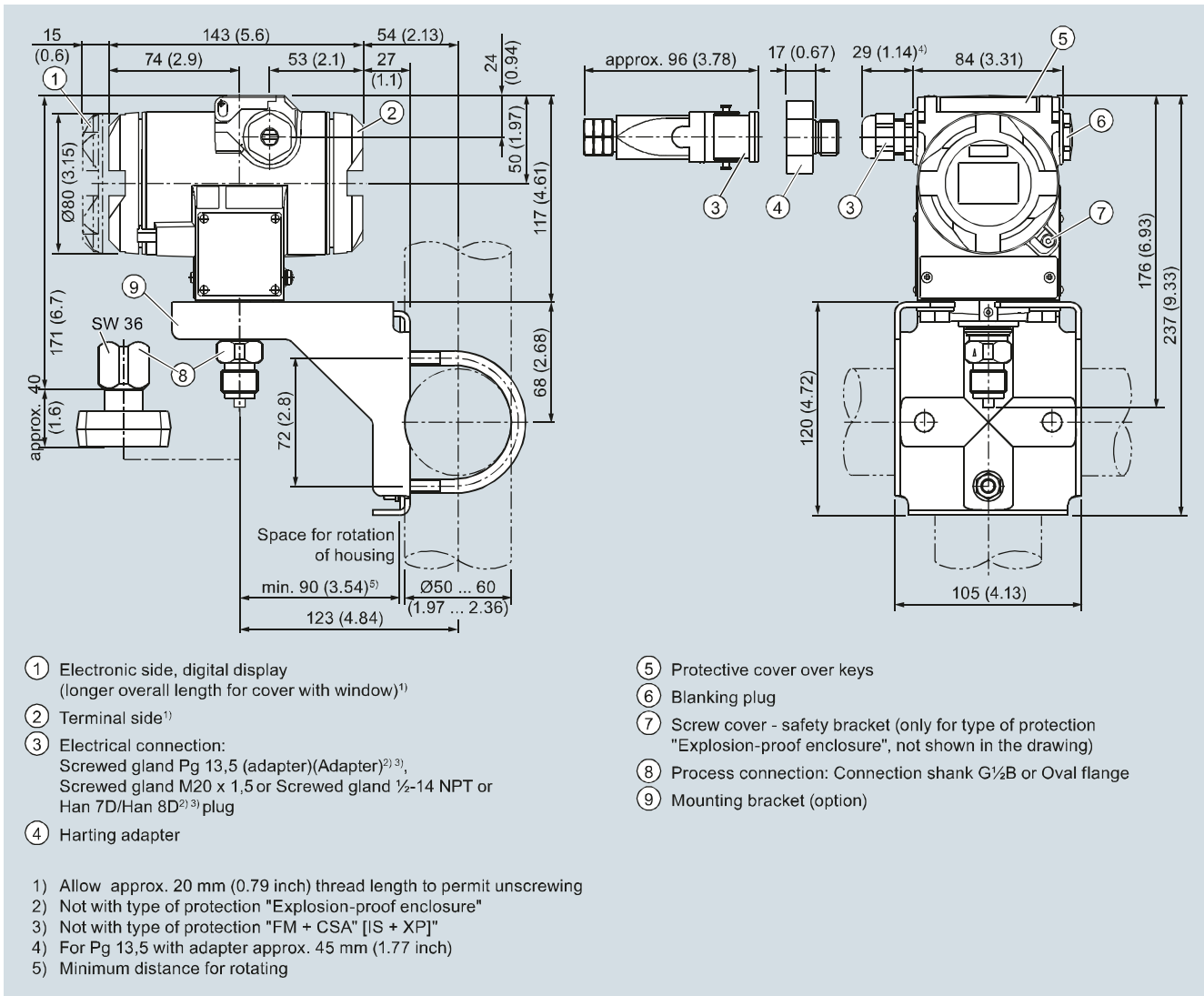
# Pressure Measurement

## Transmitters for general requirements

SITRANS P DS III for absolute pressure  
(from gauge pressure series)

1

### Dimensional drawings



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

# Pressure Measurement

## Transmitters for general requirements

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

1

### Technical specifications

SITRANS P, DS III for absolute pressure (from the differential pressure series)				
	HART		PROFIBUS PA and FOUNDATION Fieldbus	
<b>Input</b>	Absolute pressure			
Measured variable	Absolute pressure			
Spans (infinitely adjustable) or nominal measuring range and max. permissible operating pressure	Span (min. ... max.)	Maximum operating pressure	Nominal measuring range	Maximum operating pressure
	8.3 ... 250 mbar a (0.12 ... 3.62 psia)	32 bar a (464 psia)	250 mbar a (3.62 psia)	32 bar a (464 psia)
	43 ... 1300 mbar a (0.62 ... 18.85 psia)	32 bar a (464 psia)	1300 bar a (18.85 psia)	32 bar a (464 psia)
	160 ... 5000 mbar a (2.32 ... 72.52 psia)	32 bar a (464 psia)	5 bar a (72.5 psia)	32 bar a (464 psia)
	1 ... 30 bar a (14.5 ... 435 psia)	160 bar a (2320 psia)	30 bar a (435 psia)	160 bar a (2320 psia)
	5.3 ... 100 bar a (76.9 ... 1450 psia)	160 bar a (2320 psia) (for connection thread M10 and 7/16-20 UNF in the process flanges)	100 bar a (1450 psia)	160 bar a (2320 psia) (for connection thread M10 and 7/16-20 UNF in the process flanges)
Lower measuring limit	0 mbar a (0 psia)			
• Measuring cell with silicone oil filling				
Upper measuring limit	100 % of max. span			
<b>Output</b>				
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	$R_B \leq (U_H - 10.5 \text{ V})/0.023 \text{ A}$ in $\Omega$ , $U_H$ : Power supply in V		-	
• With HART	$R_B = 230 \dots 500 \Omega$ (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.			
Electrical damping (step width 0.1 s)	Set to 2 s (0 ... 100 s)			
<b>Measuring accuracy</b>	Acc. to IEC 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 at limit setting incl. hysteresis and reproducibility				
• Linear characteristic			≤ 0.1 %	
- r ≤ 10	≤ 0.1 %			
- 10 < r ≤ 30	≤ 0.2 %			
Long-term stability (temperature change ± 30 °C (± 54 °F))	≤ (0.1 · r) %/year		≤ 0.1 %/year	
Influence of ambient temperature				
• at -10 ... +60 °C (14 ... 140 °F)	≤ (0.1 · r + 0.2) % <sup>1)</sup>		≤ 0.3 %	
• at -40 ... -10 °C and 60 ... 85 °C (-40 ... +14 °F and 140 ... 185 °F)	≤ (0.1 · r + 0.15) %/10 K		≤ 0.25 %/10 K	
Measured Value Resolution	-		3 · 10 <sup>-5</sup> of nominal measuring range	

# Pressure Measurement

## Transmitters for general requirements

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

1

SITRANS P, DS III for absolute pressure (from the differential pressure series)		
	HART	PROFIBUS PA and FOUNDATION Fieldbus
<b>Rated conditions</b>		
Degree of protection (to IEC 60529)		IP65 (optional IP65/IP68)
Temperature of medium		
• Measuring cell with silicone oil filling		-40 ... +100 °C (-40 ... +212 °F)
• Measuring cell with inert filling liquid		-20 ... +100 °C (-4 ... +212 °F)
• In conjunction with dust explosion protection		-20 ... +60 °C (-4 ... +140 °F)
Ambient conditions		
• Ambient temperature		
- Transmitter (with 4-wire connection, observe temperature values of supplementary 4-wire electronics)		-40 ... +85 °C (-40 ... +185 °F)
- Display readable		-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
• Electromagnetic Compatibility		
- Emitted interference and interference immunity		Acc. to IEC 61326 and NAMUR NE 21
<b>Design</b>		
Weight (without options)		≈ 4.5 kg (≈ 9.9 lb)
Enclosure material		Low-copper die-cast aluminum, GD-AISI12 or stainless steel precision casting, mat. no. 1.4408
Wetted parts materials		
• Seal diaphragm		Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819, Monel, mat. no. 2.4360, tantalum or gold
• Process flanges and sealing screw		Stainless steel, mat. no. 1.4408, Hastelloy C4, mat. no. 2.4610 or Monel, mat. no. 2.4360
• O-Ring		FPM (Viton) or optionally: PTFE, FEP, FEPM and NBR
Measuring cell filling		Silicone oil or inert filling liquid (maximum value with oxygen measurement pressure 100 bar (1450 psi) at 60 °C (140 °F))
Process connection		1/4-18 NPT and flange connection with mounting thread M10 to DIN 19213 or 7/16-20 UNF to IEC 61518
Material of mounting bracket		
• Steel		Sheet-steel, Mat. No. 1.0330, chrome-plated
• Stainless steel		Sheet stainless steel, mat. no. 1.4301 (SS 304)
<b>Power supply <math>U_H</math></b>		Supplied through bus
Terminal voltage on transmitter	10.5 ... 45 V DC 10.5 ... 30 V DC in intrinsically-safe mode	-
Separate 24 V power supply necessary	-	No
Bus voltage		
• Not Ex	-	9 ... 32 V
• With intrinsically-safe operation	-	9 ... 24 V
Current consumption		
• Basic current (max.)	-	12.5 mA
• Start-up current ≤ basic current	-	Yes
• Max. current in event of fault	-	15.5 mA
Fault disconnection electronics (FDE) available	-	Yes



# Pressure Measurement

## Transmitters for general requirements

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

1

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

	HART	PROFIBUS PA and FOUNDATION Fieldbus
<b>Certificates and approvals</b>		
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 13 ATEX 2007 X
- Marking		Ex II 1/2 G Ex ia/ib IIC T4/T5/T6 Ga/Gb
- Permissible ambient temperature		-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +70 °C (-40 ... +158 °F) temperature class T5; -40 ... +60 °C (-40 ... +140 °F) temperature class T6
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}$ , $I_i = 100 \text{ mA}$ , $P_i = 750 \text{ mW}$ ; $R_i = 300 \Omega$	FISCO supply unit: $U_o = 17.5 \text{ V}$ , $I_o = 380 \text{ mA}$ , $P_o = 5.32 \text{ W}$ Linear barrier: $U_o = 24 \text{ V}$ , $I_o = 250 \text{ mA}$ , $P_o = 1.2 \text{ W}$
- Effective internal inductance/capacitance	$L_i = 0.4 \text{ mH}$ , $C_i = 6 \text{ nF}$	$L_i = 7 \mu\text{H}$ , $C_i = 1.1 \text{ nF}$
• Explosion-proof "d"		PTB 99 ATEX 1160
- Marking		Ex II 1/2 G Ex d IIC T4/T6 Gb
- Permissible ambient temperature		-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +60 °C (-40 ... +140 °F) temperature class T6
- Connection	To circuits with values: $U_{H1} = 10.5 \dots 45 \text{ V DC}$	To circuits with values: $U_{H1} = 9 \dots 32 \text{ V DC}$
• Dust explosion protection for zone 20		PTB 01 ATEX 2055
- Marking		Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C
- Permissible ambient temperature		-40 ... +85 °C (-40 ... +185 °F)
- Max. surface temperature		120 °C (248 °F)
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}$ , $I_i = 100 \text{ mA}$ , $P_i = 750 \text{ mW}$ , $R_i = 300 \Omega$	FISCO supply unit: $U_o = 17.5 \text{ V}$ , $I_o = 380 \text{ mA}$ , $P_o = 5.32 \text{ W}$ Linear barrier: $U_o = 24 \text{ V}$ , $I_o = 250 \text{ mA}$ , $P_o = 1.2 \text{ W}$
- Effective internal inductance/capacitance	$L_i = 0.4 \text{ mH}$ , $C_i = 6 \text{ nF}$	$L_i = 7 \mu\text{H}$ , $C_i = 1.1 \text{ nF}$
• Dust explosion protection for zone 21/22		PTB 01 ATEX 2055
- Marking		Ex II 2 D IP65 T 120 °C
- Connection	To circuits with values: $U_{H1} = 10.5 \dots 45 \text{ V DC}$ ; $P_{\max} = 1.2 \text{ W}$	To circuits with values: $U_{H1} = 9 \dots 32 \text{ V DC}$ ; $P_{\max} = 1 \text{ W}$
• Type of protection "n" (zone 2)		PTB 13 ATEX 2007 X
- Marking		Ex II 2/3 G Ex nA II T4/T5/T6 Gc Ex II 2/3 G Ex ic IIC T4/T5/T6 Gc
- Connection (Ex nA)	$U_m = 45 \text{ V}$	$U_m = 32 \text{ V}$
- Connection (Ex ic)	To circuits with values: $U_i = 45 \text{ V}$	FISCO supply unit ic: $U_o = 17.5 \text{ V}$ , $I_o = 570 \text{ mA}$ Linear barrier: $U_o = 32 \text{ V}$ , $I_o = 132 \text{ mA}$ , $P_o = 1 \text{ W}$
- Effective internal inductance/capacitance	$L_i = 0.4 \text{ mH}$ , $C_i = 6 \text{ nF}$	$L_i = 7 \mu\text{H}$ , $C_i = 1.1 \text{ nF}$
• Explosion protection acc. to FM		Certificate of Compliance 3008490
- Identification (XP/DIP) or (IS); (NI)		CL I, DIV 1, GP ABCD T4...T6; CL II, DIV 1, GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4...T6; CL I, DIV 2, GP ABCD T4...T6; CL II, DIV 2, GP FG; CL III
• Explosion protection to CSA		Certificate of Compliance 1153651
- Identification (XP/DIP) or (IS)		CL I, DIV 1, GP ABCD T4...T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4...T6; CL I, DIV 2, GP ABCD T4...T6; CL II, DIV 2, GP FG; CL III

<sup>1)</sup> Conversion of temperature error per 28 °C. Valid for temperature range -3 ... +53 °C < (0.08. r + 0.16) % / 28 °C (50 °F).

# Pressure Measurement

## Transmitters for general requirements

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

1

<b>HART communication</b>	
HART	230 ... 1100 Ω
Protocol	HART Version 5.x
Software for computer	SIMATIC PDM
<b>PROFIBUS PA communication</b>	
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, 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
- Specification of a container characteristic with	Max. 30 nodes
- Square-rooted characteristic for flow measurement	Yes
- Gradual volume suppression and implementation point of square-root extraction	Parameterizable
- Simulation function for measured pressure value and sensor temperature	Constant value or over parameterizable ramp function

### **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, adjustable	0 to 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 FOUNDATION Fieldbus 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 general requirements

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

1

Selection and Ordering data		Article No.
<b>Pressure transmitters for absolute pressure from differential pressure series, SITRANS P DS III with HART</b>		<b>7MF4333-</b>
<b>Measuring cell filling</b>	<b>Measuring cell cleaning</b>	
Silicone oil	normal	1
Inert liquid <sup>1)</sup>	grease-free to cleanliness level 2	3
<b>Measuring span (min. ... max.)</b>		
8.3 ... 250 mbar a	(0.12 ... 3.62 psia)	D
43 ... 1300 mbar a	(0.62 ... 18.85 psia)	F
0.16 ... 5 bar a	(2.32 ... 72.5 psia)	G
1 ... 30 bar a	(14.5 ... 435 psia)	H
5.3 ... 100 bar a	(76.9 ... 1450 psia)	KE
<b>Wetted parts materials</b>		
Seal diaphragm	Parts of measuring cell	
Stainless steel	Stainless steel	A
Hastelloy	Stainless steel	B
Hastelloy	Hastelloy	C
Tantalum	Tantalum	E
Monel	Monel	H
Gold	Gold	L
Version for diaphragm sea <sup>2) 3) 4) 5) 6)</sup>		Y
<b>Process connection</b>		
Female thread 1/4-18 NPT with flange connection		
• Sealing screw opposite process connection		
- Mounting thread 7/16-20 UNF to EN 61518		2
- Mounting thread M10 to DIN 19213 (only for replacement requirement)		0
• Vent on side of process flange <sup>7)</sup>		
- Mounting thread 7/16-20 UNF to EN 61518		6
- Mounting thread M10 to DIN 19213 (only for replacement requirement)		4
<b>Non-wetted parts materials</b>		
process flange screws	Electronics housing	
Stainless steel	Die-cast aluminum	2
Stainless steel	Stainless steel precision casting <sup>8)</sup>	3
<b>Version</b>		
• Standard versions		1
• International version, English label inscriptions, documentation in 5 languages on CD (no Order code selectable)		2
<b>Explosion protection</b>		
• None		A
• With ATEX, Type of protection:		
- "Intrinsic safety (Ex ia)"		B
- "Explosion-proof (Ex d)" <sup>9)</sup>		D
- "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d)" <sup>10)</sup>		P
- "Ex nA/ic (Zone 2)" <sup>11)</sup>		E
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia+ Ex d + Zone 1D/2D)" <sup>10)</sup>		R
• FM + CSA intrinsic safe (is)		F
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX)		S
• With FM + CSA, Type of protection:		
- "Intrinsic Safe und Explosion Proof (is + xp)" <sup>9)</sup>		NC
<b>Electrical connection/cable entry</b>		
• Screwed gland Pg 13.5 <sup>12)</sup>		A
• Screwed gland M20 x 1.5		B
• Screwed gland 1/2-14 NPT		C
• Han 7D plug (plastic housing) incl. mating connector <sup>12)</sup>		D
• M12 connectors (stainless steel) <sup>12) 13)</sup>		F

Selection and Ordering data		Article No.
<b>Pressure transmitters for absolute pressure from differential pressure series, SITRANS P DS III with HART</b>		<b>7MF4333-</b>
<b>Display</b>		
• Without display		0
• Without visible display (display concealed, setting: mA)		1
• With visible display		6
• with customer-specific display (setting as specified, Order code "Y21" or "Y22" required)		7
Power supply units see Chap. 7 "Supplementary Components".		
Included in delivery of the device:		
• Brief instructions (Leporello)		
• CD-ROM with detailed documentation		
• Sealing plug(s) or sealing screw(s) for the process flanges(s)		
1) For oxygen applications, add Order code E10.		
2) Version 7MF4333-1DY... only up to max. span 200 mbar a (2.9 psia).		
3) When the manufacturer'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.		
4) 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.		
5) The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF433-..Y..-.... and 7MF4900-1...-B		
6) The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.		
7) Not for span "5.3 ... 100 bar a (76.9 ... 1450 psia)". Position of the top vent valve in the process flange (see dimensional drawing).		
8) Not in conjunction with Electrical connection "Screwed gland Pg 13.5" and "Han7D plug".		
9) Without cable gland, with blanking plug		
10) With enclosed cable gland Ex ia and blanking plug		
11) Configurations with HAN and M12 connectors are only available in Ex ic.		
12) Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".		
13) M12 delivered without cable socket		

# Pressure Measurement

## Transmitters for general requirements

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

1

Selection and Ordering data		Article No.	Selection and Ordering data		Article No.
<b>Pressure transmitter for absolute pressure from differential pressure series</b>			<b>Pressure transmitter for absolute pressure from differential pressure series</b>		
<b>SITRANS P DS III with PROFIBUS PA (PA)</b>		7 MF 4 3 3 4 -	<b>SITRANS P DS III with PROFIBUS PA (PA)</b>		7 MF 4 3 3 4 -
<b>SITRANS P DS III with FOUNDATION Fieldbus (FF)</b>		7 MF 4 3 3 5 -	<b>SITRANS P DS III with FOUNDATION Fieldbus (FF)</b>		7 MF 4 3 3 5 -
<b>Measuring cell filling</b>			<b>Display</b>		
Silicone oil	normal	1	• Without display	0	
Inert liquid <sup>1)</sup>	grease-free to cleanliness level 2	3	• Without visible display (display concealed, setting: bar)	1	
			• With visible display	6	
			• With customer-specific display (setting as specified, Order code "Y21" required)	7	
<b>Nominal measuring range</b>			Included in delivery of the device:		
250 mbar a	(3.62 psia)	D	• Brief instructions (Leporello)		
1300 mbar a	(18.85 psia)	F	• CD-ROM with detailed documentation		
5 bar a	(72.5 psia)	G	• Sealing plug(s) or sealing screw(s) for the process flanges(s)		
30 bar a	(435 psia)	H			
100 bar a	(1450 psia)	KE			
<b>Wetted parts materials</b>			1) For oxygen application, add Order code E10.		
Seal diaphragm	Parts of measuring cell		2) Version 7MF4334-1DY... only up to max. span 200 mbar a (80 inH <sub>2</sub> O a).		
Stainless steel	Stainless steel	A	3) 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.		
Hastelloy	Stainless steel	B	4) 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.		
Hastelloy	Hastelloy	C	5) The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF433-..Y.-... und 7MF4900-1...-B		
Tantalum	Tantalum	E	6) The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.		
Monel	Monel	H	7) Not for nominal measuring range 100 bar a (1450 psia). Position of the top vent valve in the process flange (see dimensional drawing).		
Gold	Gold	L	8) Without cable gland, with blanking plug		
Version as diaphragm seal <sup>2) 3) 4) 5) 6)</sup>		Y	9) With enclosed cable gland Ex ia and blanking plug		
<b>Process connection</b>			10) Configurations with HAN and M12 connectors are only available in Ex ic.		
Female thread 1/4-18 NPT with flange connection			11) M12 delivered without cable socket		
• Sealing screw opposite process connection			12) Not available with protection type „Ex d“ (options D, P, N and R)		
- Mounting thread 7/16-20 UNF to IEC 61518		2	13) Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".		
- Mounting thread M10 to DIN 19213 (only for replacement requirement)		0			
• Vent on side of process flange <sup>7)</sup>					
- Mounting thread 7/16-20 UNF to IEC 61518		6			
- Mounting thread M10 to DIN 19213 (only for replacement requirement)		4			
<b>Non-wetted parts materials</b>					
process flange screws	Electronics housing				
Stainless steel	Die-cast aluminum	2			
Stainless steel	Stainless steel precision casting	3			
<b>Version</b>					
• Standard versions		1			
• International version, English label inscriptions, documentation in 5 languages on CD (no Order code selectable)		2			
<b>Explosion protection</b>					
• None		A			
• With ATEX, Type of protection:					
- "Intrinsic safety (Ex ia)"		B			
- "Explosion-proof (Ex d)" <sup>8)</sup>		D			
- "Intrinsic safety and flameproof enclosure (Ex ia + Ex d)" <sup>9)</sup>		P			
- "Ex nA/ic (Zone 2)" <sup>10)</sup>		E			
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia + Ex d + Zone 1D/2D)" <sup>9)</sup> (not for DS III FF)		R			
• FM + CSA intrinsic safe (is)		F			
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX)		S			
• With FM + CSA, Type of protection:					
- "Intrinsic Safe und Explosion Proof (is + xp)" <sup>8)</sup>		NC			
<b>Electrical connection/cable entry</b>					
• Screwed gland M20 x 1.5		B			
• Screwed gland 1/2-14 NPT		C			
• M12 connectors (stainless steel) <sup>11) 12) 13)</sup>		F			

# Pressure Measurement

## Transmitters for general requirements

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

1

Selection and Ordering data	Order code		
<b>Further designs</b> Add "-Z" to Article No. and specify Order code.	<b>HART</b>	<b>PA</b>	<b>FF</b>
<b>Pressure transmitter with mounting bracket (1x fixing angle, 2 x nut, 2 x U-washer or 1 x bracket, 2 x nut, 2 x U-washer) made of:</b>			
• Steel	<b>A01</b>	✓	✓
• Stainless steel	<b>A02</b>	✓	✓
<b>O-rings for process flanges</b> (instead of FPM (Viton))			
• PTFE (Teflon)	<b>A20</b>	✓	✓
• FEP (with silicone core, approved for food)	<b>A21</b>	✓	✓
• FFPM (Kalrez, compound 4079)	<b>A22</b>	✓	✓
• NBR (Buna N)	<b>A23</b>	✓	✓
<b>plug</b>			
• Han 7D (metal, gray)	<b>A30</b>	✓	
• Han 8U (instead of Han 7D)	<b>A31</b>	✓	
• Angled	<b>A32</b>	✓	
• Han 8D (metal, gray)	<b>A33</b>	✓	
<b>Sealing screw</b> ¼-18 NPT, with valve in mat. of process flanges	<b>A40</b>	✓	✓
<b>Cable sockets for M12 connectors (stainless steel)</b>	<b>A50</b>	✓	✓
<b>Rating plate inscription</b> (instead of German)			
• English	<b>B11</b>	✓	✓
• French	<b>B12</b>	✓	✓
• Spanish	<b>B13</b>	✓	✓
• Italian	<b>B14</b>	✓	✓
<b>English rating plate</b> Pressure units in inH <sub>2</sub> O and/or psi	<b>B21</b>	✓	✓
<b>Quality inspection certificate (Five-step factory calibration) to IEC 60770-2<sup>1)</sup></b>	<b>C11</b>	✓	✓
<b>Inspection certificate<sup>2)</sup></b> Acc. to EN 10204-3.1	<b>C12</b>	✓	✓
<b>Factory certificate</b> Acc. to EN 10204-2.2	<b>C14</b>	✓	✓
<b>Functional safety (SIL2)</b> Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	<b>C20</b>	✓	
<b>Functional safety (PROFIsafe) Certificate and PROFIsafe protocol</b>	<b>C21<sup>3)</sup></b>		✓
<b>Functional safety (SIL2/3)</b> Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	<b>C23</b>	✓	
<b>Device passport Russia</b> (For price request please contact the technical support <a href="http://www.siemens.com/automation/support-request">www.siemens.com/automation/support-request</a> )	<b>C99</b>	✓	✓
<b>Setting of upper limit of output signal to 22.0 mA</b>	<b>D05</b>	✓	
<b>Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009)</b> (only together with seal diaphragm made of Hastelloy and stainless steel)	<b>D07</b>	✓	✓
<b>Degree of protection IP65/IP68</b> (only for M20 x 1.5 and ½-14 NPT)	<b>D12</b>	✓	✓
<b>Supplied with oval flange</b> (1 item), PTFE packing and screws in thread of process flange	<b>D37</b>	✓	✓

Selection and Ordering data	Order code		
<b>Further designs</b> Add "-Z" to Article No. and specify Order code.	<b>HART</b>	<b>PA</b>	<b>FF</b>
<b>Use in or on zone 1D/2D</b> (only together with type of protection "Intrinsic safety" (transmitter 7MF4...-.....-B.. Ex ia"))	<b>E01</b>	✓	✓
<b>Oxygen application</b> (In the case of oxygen measurement and inert liquid max. 100 bar (1450 psi) at 60°C (140 °F))	<b>E10</b>	✓	✓
<b>Export approval Korea</b>	<b>E11</b>	✓	✓
<b>CRN approval Canada</b> (Canadian Registration Number)	<b>E22</b>	✓	✓
<b>Dual seal</b>	<b>E24</b>	✓	✓
<b>Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-B..)	<b>E25<sup>4)</sup></b>	✓	✓
<b>"Flameproof" explosion protection according to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-D..)	<b>E26<sup>4)</sup></b>	✓	✓
<b>Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-P..)	<b>E28<sup>4)</sup></b>	✓	✓
<b>Ex Approval IEC Ex (Ex ia)</b> (only for transmitter 7MF4...-.....-B..)	<b>E45<sup>4)</sup></b>	✓	✓
<b>Ex Approval IEC Ex (Ex id)</b> (only for transmitter 7MF4...-.....-D..)	<b>E46<sup>4)</sup></b>	✓	✓
<b>Explosion-proof "Intrinsic safety" to NEPSI (China)</b> (only for transmitter 7MF4...-.....-B..)	<b>E55<sup>4)</sup></b>	✓	✓
<b>Explosion protection "Explosion-proof" to NEPSI (China)</b> (only for transmitter 7MF4...-.....-D..)	<b>E56<sup>4)</sup></b>	✓	✓
<b>Explosion-proof "Zone 2" to NEPSI (China)</b> (only for transmitter 7MF4...-.....-E..)	<b>E57<sup>4)</sup></b>	✓	✓
<b>"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea)</b> (only for transmitter 7MF4...-.....-[B, D]..-Z + E11)	<b>E70<sup>4)</sup></b>	✓	✓
<b>Two coats of lacquer on casing and cover (PU on epoxy)</b>	<b>G10</b>	✓	✓
<b>Interchanging of process connection side</b>	<b>H01</b>	✓	✓
<b>Vent on side for gas measurements</b>	<b>H02</b>	✓	✓
<b>Transient protector 6 kV (lightning protection)</b>	<b>J01</b>	✓	✓
<b>Process flange</b>			
• Hastelloy	<b>K01</b>	✓	✓
• Monel	<b>K02</b>	✓	✓
• Stainless steel with PVDF insert max. PN 10 (MAWP 145 psi), max. temperature of medium 90 °C (194 °F) For ½-14 NPT inner process connection on the side in the middle of the process flange, vent valve not possible	<b>K04</b>	✓	✓

<sup>1)</sup> When the manufacturer'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 total combination is certified here.

<sup>2)</sup> 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.

<sup>3)</sup> Profisafe transmitters can only be operated with the S7 F Systems V6.1 configuration software in combination with S7-400H

<sup>4)</sup> Option does not include ATEX approval, but instead includes only the country-specific approval.

# Pressure Measurement Transmitters for general requirements

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

Selection and Ordering data	Order code			
<i>Additional data</i>		HART	PA	FF
Please add <b>"-Z"</b> to Article No. and specify Order code(s) and plain text.				
<b>Measuring range to be set</b> Specify in plain text (max. 5 characters): Y01: ... up to ... mbar, bar, kPa, MPa, psi	<b>Y01</b>	✓	✓ <sup>1)</sup>	
<b>Stainless steel tag plate and entry in device variable (measuring point description)</b> Max. 16 characters, specify in plain text: Y15: .....	<b>Y15</b>	✓	✓	✓
<b>Measuring point text (entry in device variable)</b> Max. 27 characters, specify in plain text: Y16: .....	<b>Y16</b>	✓	✓	✓
<b>Entry of HART address (TAG)</b> Max. 8 characters, specify in plain text: Y17: .....	<b>Y17</b>	✓		
<b>Setting of pressure indication in pressure units</b> Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi, ... Note: The following pressure units can be selected: bar, mbar, mm H <sub>2</sub> O <sup>1)</sup> , inH <sub>2</sub> O <sup>1)</sup> , ftH <sub>2</sub> O <sup>1)</sup> , mmHG, inHG, psi, Pa, kPa, MPa, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , Torr, ATM or % ) ref. temperature 20 °C	<b>Y21</b>	✓	✓	✓
<b>Setting of pressure indication in non-pressure units<sup>2)</sup></b> Specify in plain text: Y22: ..... up to ..... l/min, m <sup>3</sup> /h, m, USgpm, ... (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	<b>Y22 + Y01</b>	✓		
<b>Preset bus address</b> possible between 1 and 126 Specify in plain text: Y25: .....	<b>Y25</b>		✓	✓
<b>Damping adjustment in seconds (0 ... 100 s)</b>	<b>Y30</b>	✓	✓	✓

Factory mounting of valve manifolds, see accessories.  
Only Y01, Y15, Y16, Y17, Y21, Y22, Y25 and D05 can be factory preset  
✓ = available

1) Measuring accuracies for PROFIBUS PA transmitters with Option Y01 are calculated in the same way as for HART devices.  
2) Preset values can only be changed over SIMATIC PDM.

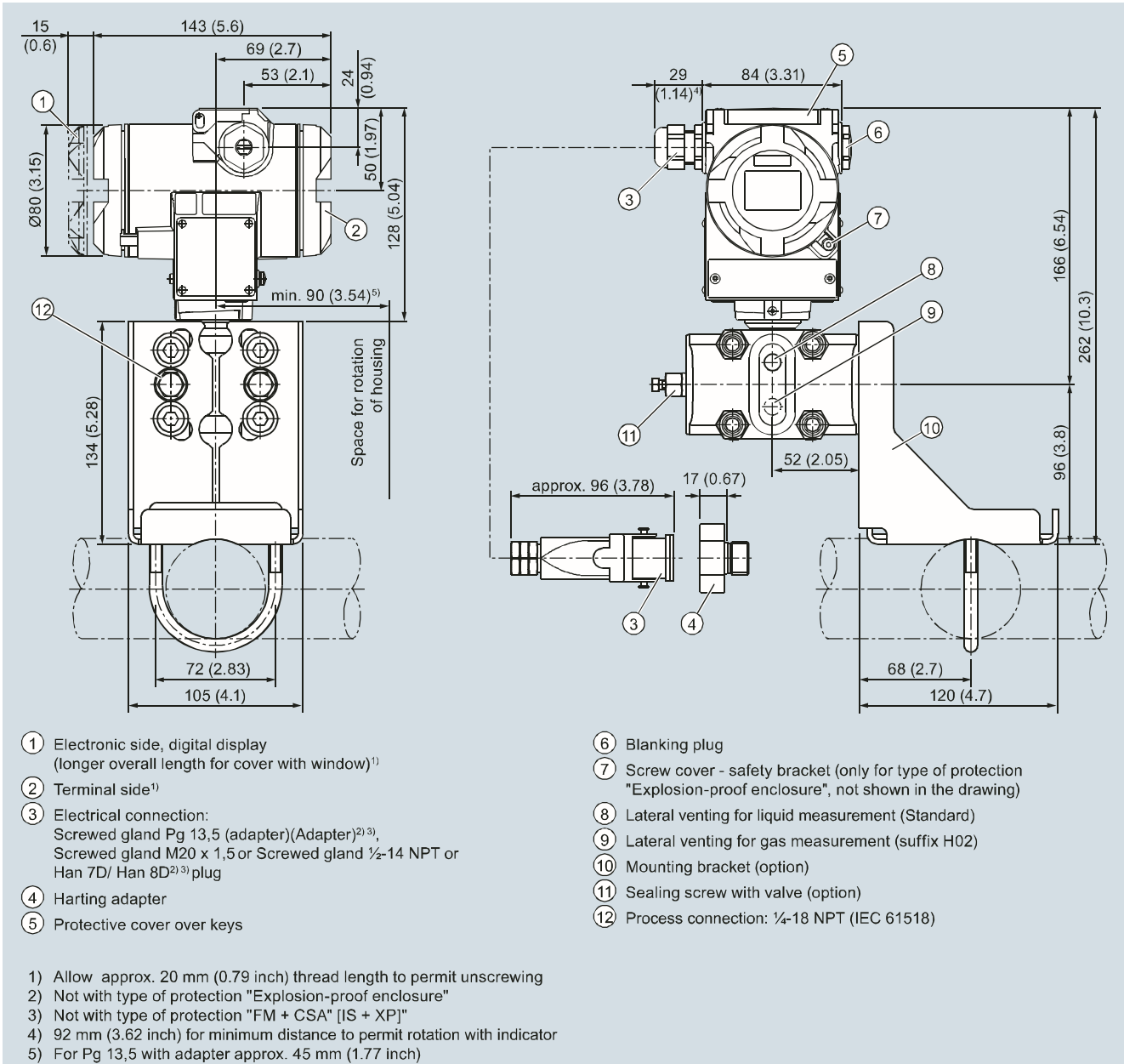
# Pressure Measurement

## Transmitters for general requirements

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

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### Dimensional drawings



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

# Pressure Measurement

## Transmitters for general requirements

SITRANS P DS III  
for differential pressure and flow

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### Technical specifications

SITRANS P, DS III for differential pressure and flow				
	HART	PROFIBUS PA and FOUNDATION Fieldbus		
<b>Input</b>	Differential pressure and flow			
Measured variable	Differential pressure and flow			
Spans (infinitely adjustable) or nominal measuring range and max. permissible operating pressure	Span (min. ... max.)	Maximum operating pressure	Nominal measuring range	Maximum operating pressure
	1 ... 20 mbar (0.4 ... 8 inH <sub>2</sub> O)	32 bar (464 psi)	20 mbar (8 inH <sub>2</sub> O)	32 bar (464 psi)
	1 ... 60 mbar (0.4 ... 24 inH <sub>2</sub> O)	160 bar (2320 psi)	60 mbar (24 inH <sub>2</sub> O)	160 bar (2320 psi)
	2.5 ... 250 mbar (1 ... 100 inH <sub>2</sub> O)		250 mbar (100 inH <sub>2</sub> O)	
	6 ... 600 mbar (2.4 ... 240 inH <sub>2</sub> O)		600 mbar (240 inH <sub>2</sub> O)	
	16 ... 1600 mbar (6.4 ... 642 inH <sub>2</sub> O)		1600 mbar (642 inH <sub>2</sub> O)	
	50 ... 5000 mbar (20 ... 2000 inH <sub>2</sub> O)		5 bar (2000 inH <sub>2</sub> O)	
	0.3 ... 30 bar (4.35 ... 435 psi)		30 bar (435 psi)	
	2.5 ... 250 mbar (1 ... 100 inH <sub>2</sub> O)	420 bar (6091 psi)	250 mbar (100 inH <sub>2</sub> O)	420 bar (6091 psi)
	6 ... 600 mbar (2.4 ... 240 inH <sub>2</sub> O)		600 mbar (240 inH <sub>2</sub> O)	
	16 ... 1600 mbar (6.4 ... 642 inH <sub>2</sub> O)		1600 mbar (642 inH <sub>2</sub> O)	
	50 ... 5000 mbar (20 ... 2000 inH <sub>2</sub> O)		5 bar (2000 inH <sub>2</sub> O)	
	0.3 ... 30 bar (4.35 ... 435 psi)		30 bar (435 psi)	
Lower measuring limit				
• Measuring cell with silicone oil filling	-100 % of max. span or 30 mbar a (0.44 psia) (-33 % with 30 bar (435 psi) measuring cell)			
Upper measuring limit	100 % of max. span (for oxygen version and inert filling liquid; max. 120 bar (1740 psi))			
<b>Output</b>	Digital PROFIBUS PA and FOUNDATION Fieldbus signal			
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	$R_B \leq (U_H - 10.5 \text{ V})/0.023 \text{ A}$ in $\Omega$ , $U_H$ : Power supply in V		-	
• With HART	$R_B = 230 \dots 500 \Omega$ (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.			
Electrical damping (step width 0.1 s)	Set to 2 s (0 ... 100 s)			
<b>Measuring accuracy</b>	Acc. to IEC 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 at limit setting incl. hysteresis and reproducibility				
• Linear characteristic			≤ 0.075 %	
- r ≤ 10	≤ (0.0029 · r + 0.071) %			
- 10 < r ≤ 30	≤ (0.0045 · r + 0.071) %			
- 30 < r ≤ 100	≤ (0.005 · r + 0.05) %			
• Square-rooted characteristic (flow > 50 %)			≤ 0.1 %	
- r ≤ 10	≤ 0.1 %			
- 10 < r ≤ 30	≤ 0.2 %			



# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III for differential pressure and flow

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SITRANS P, DS III for differential pressure and flow		
	HART	PROFIBUS PA and FOUNDATION Fieldbus
<ul style="list-style-type: none"> <li>• Square-rooted characteristic (flow &gt; 25 ... 50 %)</li> <li>- <math>r \leq 10</math></li> <li>- <math>10 &lt; r \leq 30</math></li> </ul>	<ul style="list-style-type: none"> <li><math>\leq 0.2 \%</math></li> <li><math>\leq 0.4 \%</math></li> </ul>	$\leq 0.2$
Long-term stability (temperature change $\pm 30 \text{ °C}$ ( $\pm 54 \text{ °F}$ ))	$\leq (0.25 \cdot r)\%$ every 5 years static pressure max. 70 bar (1015 psi)	$\leq 0.25 \%$ every 5 years static pressure max. 70 bar (1015 psi)
<ul style="list-style-type: none"> <li>• 20 mbar (0.29 psi)-measuring cell</li> <li>• 250, 600, 1600 and 5000 mbar (0.29, 0.87, 2.32 and 7.25 psi) -measuring cell</li> </ul>	<ul style="list-style-type: none"> <li><math>\leq (0.2 \cdot r)</math> per year</li> <li><math>\leq (0.125 \cdot r)</math> per 5 years</li> </ul>	<ul style="list-style-type: none"> <li><math>\leq 0.2</math> per year</li> <li><math>\leq 0.125</math> per 5 years</li> </ul>
Influence of ambient temperature		
<ul style="list-style-type: none"> <li>• at <math>-10 \dots +60 \text{ °C}</math> (<math>14 \dots 140 \text{ °F}</math>)</li> <li>• at <math>-40 \dots -10 \text{ °C}</math> and <math>60 \dots 85 \text{ °C}</math> (<math>-40 \dots +14 \text{ °F}</math> and <math>140 \dots 185 \text{ °F}</math>)</li> </ul>	<ul style="list-style-type: none"> <li><math>\leq (0.08 \cdot r + 0.1) \%^{1)}</math></li> <li><math>\leq (0.1 \cdot r + 0.15) \%/10 \text{ K}</math> (Twice the value with 20-mbar (0.29 psi) measuring cell)</li> </ul>	<ul style="list-style-type: none"> <li><math>\leq 0.3 \%</math></li> <li><math>\leq 0.25 \%/10 \text{ K}</math></li> </ul>
Influence of static pressure		
<ul style="list-style-type: none"> <li>• on the zero point (PKN)</li> <li>- 20 mbar (0.29 psi)-measuring cell</li> <li>• on the span (PKS)</li> <li>- 20 mbar (0.29 psi)-measuring cell</li> </ul>	<ul style="list-style-type: none"> <li><math>\leq (0.15 \cdot r)\%</math> per 70 bar (1015 psi)</li> <li><math>\leq (0.15 \cdot r)\%</math> per 32 bar (464 psi)</li> <li><math>\leq 0.14 \%</math> per 70 bar (1015 psi)</li> <li><math>\leq 0.2 \%</math> per 32 bar (464 psi)</li> </ul>	<ul style="list-style-type: none"> <li><math>\leq 0.15 \%</math> per 70 bar (1015 psi)</li> <li><math>\leq 0.15 \%</math> per 32 bar (464 psi)</li> <li>-</li> <li>-</li> </ul>
Measured Value Resolution	-	$3 \cdot 10^{-5}$ of nominal measuring range
<b>Rated conditions</b>		
Degree of protection (to EN 60529)	IP65 (optional IP65/IP68)	
Temperature of medium		
<ul style="list-style-type: none"> <li>• Measuring cell with silicone oil filling</li> <li>• Measuring cell with inert filling liquid</li> <li>• In conjunction with dust explosion protection</li> </ul>	<ul style="list-style-type: none"> <li><math>-40 \dots +100 \text{ °C}</math> (<math>-40 \dots +212 \text{ °F}</math>) <math>-20 \dots +100 \text{ °C}</math> (<math>-4 \dots +212 \text{ °F}</math>) with 30 bar measuring cell</li> <li><math>-20 \dots +100 \text{ °C}</math> (<math>-4 \dots +212 \text{ °F}</math>)</li> <li><math>-20 \dots +60 \text{ °C}</math> (<math>-4 \dots +140 \text{ °F}</math>)</li> </ul>	
Ambient conditions		
<ul style="list-style-type: none"> <li>• Ambient temperature</li> <li>- Transmitter (with 4-wire connection, observe temperature values of supplementary 4-wire electronics)</li> <li>- Display readable</li> <li>• Storage temperature</li> <li>• Climatic class</li> <li>- Condensation</li> </ul>	<ul style="list-style-type: none"> <li><math>-40 \dots +85 \text{ °C}</math> (<math>-40 \dots +185 \text{ °F}</math>)</li> <li><math>-30 \dots +85 \text{ °C}</math> (<math>-22 \dots +185 \text{ °F}</math>)</li> <li><math>-50 \dots +85 \text{ °C}</math> (<math>-58 \dots +185 \text{ °F}</math>)</li> <li>Relative humidity 0 ... 100 % Condensation permissible, suitable for use in the tropics</li> </ul>	
<ul style="list-style-type: none"> <li>• Electromagnetic Compatibility</li> <li>- Emitted interference and interference immunity</li> </ul>	Acc. to IEC 61326 and NAMUR NE 21	
<b>Design</b>		
Weight (without options)	$\approx 4.5 \text{ kg}$ ( $\approx 9.9 \text{ lb}$ )	
Enclosure material	Low-copper die-cast aluminum, GD-AlSi12 or stainless steel precision casting, mat. no. 1.4408	
Wetted parts materials		
<ul style="list-style-type: none"> <li>• Seal diaphragm</li> </ul>	Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819, Monel, mat. no. 2.4360, tantalum or gold	
Measuring cell filling	Silicone oil or inert filling liquid (maximum value with oxygen measurement pressure 100 bar (1450 psi) at $60 \text{ °C}$ ( $140 \text{ °F}$ ))	
Process connection	Female thread $\frac{1}{4}$ -18 NPT and flange connection with mounting thread M10 to DIN 19213 or $\frac{7}{16}$ -20 UNF to IEC 61518	
Material of mounting bracket		
<ul style="list-style-type: none"> <li>• Steel</li> <li>• Stainless steel</li> </ul>	<ul style="list-style-type: none"> <li>Sheet-steel, Mat. No. 1.0330, chrome-plated</li> <li>Sheet stainless steel, mat. no. 1.4301 (SS 304)</li> </ul>	

# Pressure Measurement

## Transmitters for general requirements

SITRANS P DS III  
for differential pressure and flow

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SITRANS P, DS III for differential pressure and flow		
	HART	PROFIBUS PA and FOUNDATION Fieldbus
<b>Power supply <math>U_H</math></b>		
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 $\leq$ basic current	-	Yes
• Max. current in event of fault	-	15.5 mA
Fault disconnection electronics (FDE) available	-	Yes
<b>Certificates and approvals</b>		
Classification according to PED 97/23/EC PN 32/160 (MAWP 464/2320 psi)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)	
PN 420 (MAWP 6092 psi)	For gases of fluid group 1 and liquids of fluid group 1; complies with basic safety requirements of Article 3, paragraph 1 (appendix 1); assigned to category III, conformity evaluation module H by the TÜV Nord.	
Explosion protection		
• Intrinsic safety "i"	PTB 13 ATEX 2007 X	
- Marking	Ex II 1/2 G Ex ia/ib IIC T4/T5/T6 Ga/Gb	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +70 °C (-40 ... +158 °F) temperature class T5; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30$ V, $I_i = 100$ mA, $P_i = 750$ mW; $R_i = 300$ $\Omega$	FISCO supply unit: $U_o = 17.5$ V, $I_o = 380$ mA, $P_o = 5.32$ W Linear barrier: $U_o = 24$ V, $I_o = 250$ mA, $P_o = 1.2$ W
- Effective internal inductance/capacitance	$L_i = 0.4$ mH, $C_i = 6$ nF	$L_i = 7$ $\mu$ H, $C_i = 1.1$ nF
• Explosion-proof "d"	PTB 99 ATEX 1160	
- Marking	Ex II 1/2 G Ex d IIC T4/T6 Gb	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To circuits with values: $U_H = 10.5$ ... 45 V DC	To circuits with values: $U_H = 9$ ... 32 V DC
• Dust explosion protection for zone 20	PTB 01 ATEX 2055	
- Marking	Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F)	
- Max. surface temperature	120 °C (248 °F)	
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30$ V, $I_i = 100$ mA, $P_i = 750$ mW, $R_i = 300$ $\Omega$	FISCO supply unit: $U_o = 17.5$ V, $I_o = 380$ mA, $P_o = 5.32$ W Linear barrier: $U_o = 24$ V, $I_o = 250$ mA, $P_o = 1$ W
- Effective internal inductance/capacitance	$L_i = 0.4$ mH, $C_i = 6$ nF	$L_i = 7$ $\mu$ H, $C_i = 1.1$ nF
• Dust explosion protection for zone 21/22	PTB 01 ATEX 2055	
- Marking	Ex II 2 D IP65 T 120 °C	
- Connection	To circuits with values: $U_H = 10.5$ ... 45 V DC; $P_{max} = 1.2$ W	To circuits with values: $U_H = 9$ ... 32 V DC; $P_{max} = 1$ W

# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III for differential pressure and flow

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

	HART	PROFIBUS PA and FOUNDATION Fieldbus
<ul style="list-style-type: none"> <li>Type of protection "n" (zone 2)               <ul style="list-style-type: none"> <li>- Marking</li> <li>- Connection (Ex nA)</li> <li>- Connection (Ex ic)</li> </ul> </li> <li>- Effective internal inductance/capacitance</li> <li>Explosion protection acc. to FM               <ul style="list-style-type: none"> <li>- Identification (XP/DIP) or (IS); (NI)</li> </ul> </li> <li>Explosion protection to CSA               <ul style="list-style-type: none"> <li>- Identification (XP/DIP) or (IS)</li> </ul> </li> </ul>	<p><math>U_m = 45 \text{ V}</math></p> <p>To circuits with values: <math>U_i = 45 \text{ V}</math></p> <p><math>L_i = 0.4 \text{ mH}</math>, <math>C_i = 6 \text{ nF}</math></p>	<p>PTB 13 ATEX 2007 X</p> <p>Ex II 2/3 G Ex nA II T4/T5/T6 Gc Ex II 2/3 G Ex ic IIC T4/T5/T6 Gc</p> <p><math>U_m = 32 \text{ V}</math></p> <p>FISCO supply unit ic: <math>U_o = 17.5 \text{ V}</math>, <math>I_o = 570 \text{ mA}</math></p> <p>Linear barrier: <math>U_o = 32 \text{ V}</math>, <math>I_o = 132 \text{ mA}</math>, <math>P_o = 1 \text{ W}</math></p> <p><math>L_i = 7 \mu\text{H}</math>, <math>C_i = 1,1 \text{ nF}</math></p> <p>Certificate of Compliance 3008490</p> <p>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</p> <p>Certificate of Compliance 1153651</p> <p>CL I, DIV 1, GP ABCD T4...T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4...T6; CL I, DIV 2, GP ABCD T4...T6; CL II, DIV 2, GP FG; CL III</p>

<sup>1)</sup> Conversion of temperature error per 28 °C. Valid for temperature range -3 ... +53 °C < (0.064 · r + 0.08) % / 28 °C (50 °F).

# Pressure Measurement

## Transmitters for general requirements

SITRANS P DS III  
for differential pressure and flow

1

<b>HART communication</b>	
HART	230 ... 1100 Ω
Protocol	HART Version 5.x
Software for PC	SIMATIC PDM
<b>PROFIBUS PA communication</b>	
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, 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
- Specification of a container characteristic with	Max. 30 nodes
- Square-rooted characteristic for flow measurement	Yes
- Gradual volume suppression and implementation point of square-root extraction	Parameterizable
- Simulation function for measured pressure value and sensor temperature	Constant value or over parameterizable ramp function

### **FOUNDATION Fieldbus communication**

Function blocks

3 function blocks analog input, 1 function block PID

## • Analog input

- Adaptation to customer-specific process variables
- Electrical damping, adjustable
- Simulation function
- Failure mode

Yes, linearly rising or falling characteristic

0 ... 100 s

Output/input (can be locked within the device with a bridge)

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 FOUNDATION Fieldbus 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 general requirements

### SITRANS P DS III for differential pressure and flow

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Selection and Ordering data		Article No.
<b>SITRANS P DS III with HART pressure transmitters for differential pressure and flow, PN 32/160 (MAWP 464/2320 psi)</b>		<b>7MF4433-</b>
<b>Measuring cell filling</b>	<b>Measuring cell cleaning</b>	
Silicone oil	normal	▶◆ 1
Inert liquid <sup>1)</sup>	grease-free to cleanliness level 2	▶◆ 3
<b>Measuring span (min. ... max.)</b>		
PN 32 (MAWP 464 psi)		
1 ... 20 mbar <sup>2)</sup>	(0.4015 ... 8.03 inH <sub>2</sub> O)	▶◆ B
PN 160 (MAWP 2320 psi)		
1 ... 60 mbar	(0.4015 ... 24.09 inH <sub>2</sub> O)	▶◆ C
2.5 ... 250 mbar	(1.004 ... 100.4 inH <sub>2</sub> O)	▶◆ D
6 ... 600 mbar	(2.409 ... 240.9 inH <sub>2</sub> O)	▶◆ E
16 ... 1600 mbar	(6.424 ... 642.4 inH <sub>2</sub> O)	▶◆ F
50 ... 5000 mbar	(20.08 ... 2008 inH <sub>2</sub> O)	▶◆ G
0,3 ... 30 bar	(4.35 ... 435 psi)	▶◆ H
<b>Wetted parts materials</b>		
(stainless steel process flanges)		
Seal diaphragm	Parts of measuring cell	
Stainless steel	Stainless steel	▶◆ A
Hastelloy	Stainless steel	B
Hastelloy	Hastelloy	C
Tantalum <sup>3)</sup>	Tantalum	E
Monel <sup>3)</sup>	Monel	H
Gold <sup>3)</sup>	Gold	L
Version for diaphragm seal <sup>4) 5) 6) 7)</sup>		Y
<b>Process connection</b>		
Female thread 1/4-18 NPT with flange connection		
• Sealing screw opposite process connection		
- Mounting thread 7/16-20 UNF to IEC 61518	▶◆	2
- Mounting thread M10 to DIN 19213 (only for replacement requirement)	◆	0
• Vent on side of process flange <sup>2)</sup>		
- Mounting thread 7/16-20 UNF to IEC 61518	▶◆	6
- Mounting thread M10 to DIN 19213 (only for replacement requirement)	◆	4
<b>Non-wetted parts materials</b>		
process flange screws Electronics housing		
Stainless steel	Die-cast aluminum	▶◆ 2
Stainless steel	Stainless steel precision casting <sup>8)</sup>	▶◆ 3
<b>Version</b>		
• Standard versions	◆	1
• International version, English label inscriptions, documentation in 5 languages on CD (no Order code selectable)	▶◆	2
<b>Explosion protection</b>		
• None	◆	A
• With ATEX, Type of protection:		
- "Intrinsic safety (Ex ia)"	◆	B
- "Explosion-proof (Ex d) <sup>9)</sup>	◆	D
- "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d) <sup>10)</sup>	◆	P
- "Ex nA/ic (Zone 2) <sup>11)</sup>	◆	E
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia + Ex d + Zone 1D/2D) <sup>10)</sup>	▶◆	R
• FM + CSA intrinsic safe (is)	◆	F
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX)	◆	S
• With FM + CSA, Type of protection:		
- "Intrinsic Safe und Explosion Proof (is + xp) <sup>9)</sup>	◆	NC

Selection and Ordering data		Article No.
<b>SITRANS P DS III with HART pressure transmitters for differential pressure and flow, PN 32/160 (MAWP 464/2320 psi)</b>		<b>7MF4433-</b>
<b>Electrical connection/cable entry</b>		
• Screwed gland Pg 13.5 <sup>12)</sup>	▶◆	A
• Screwed gland M20 x 1.5	▶◆	B
• Screwed gland 1/2-14 NPT	◆	C
• Han 7D plug (plastic housing) incl. mating connector <sup>12)13)</sup>	◆	D
• M12 connectors (stainless steel) <sup>12) 14)</sup>	◆	F
<b>Display</b>		
• Without display	◆	0
• Without visible display (display concealed, setting: mA)	▶◆	1
• With visible display	◆	6
• with customer-specific display (setting as specified, Order code "Y21" or "Y22" required)	◆	7
▶ Available ex stock		
◆ We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ◆. For details see page 9/5 in the appendix.		
Power supply units see Chap. 7 "Supplementary Components".		
Included in delivery of the device:		
• Brief instructions (Leporello)		
• CD-ROM with detailed documentation		
• Sealing plug(s) or sealing screw(s) for the process flanges(s)		
1) For oxygen application, add Order code E10.		
2) Not suitable for connection of remote seal. Position of the top vent valve in the process flange (see dimensional drawing).		
3) Not in conjunction with max. span 20 and 60 mbar (8.03 und 24.09 inH <sub>2</sub> O))		
4) When the manufacturer'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.		
5) 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.		
6) The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF443-...Y... and 7MF4900-1...-B		
7) The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.		
8) Not in conjunction with Electrical connection "Screwed gland Pg 13.5" and "Han7D plug".		
9) Without cable gland, with blanking plug		
10) With enclosed cable gland Ex ia and blanking plug		
11) Configurations with HAN and M12 connectors are only available in Ex ic.		
12) Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".		
13) Permissible only for crimp-contact of conductor cross-section 1 mm <sup>2</sup>		
14) M12 delivered without cable socket. Not available with protection type "Explosion-proof".		

# Pressure Measurement

## Transmitters for general requirements

**SITRANS P DS III**  
 for differential pressure and flow

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Selection and Ordering data		Article No.	Selection and Ordering data		Article No.
<b>Pressure transmitters for differential pressure and flow PN 32/160 (MAWP 464/2320 psi)</b>			<b>Pressure transmitters for differential pressure and flow PN 32/160 (MAWP 464/2320 psi)</b>		
<b>SITRANS P DS III with PROFIBUS PA (PA)</b>		7 MF 4 4 3 4 -	<b>SITRANS P DS III with PROFIBUS PA (PA)</b>		7 MF 4 4 3 4 -
<b>SITRANS P DS III with FOUNDATION Fieldbus (FF)</b>		7 MF 4 4 3 5 -	<b>SITRANS P DS III with FOUNDATION Fieldbus (FF)</b>		7 MF 4 4 3 5 -
<b>Measuring cell filling</b>			<b>Electrical connection/cable entry</b>		
Silicone oil	normal	1	• Screwed gland M20 x 1.5	B	
Inert liquid <sup>1)</sup>	grease-free to cleanliness level 2	3	• Screwed gland ½-14 NPT	C	
			• M12 connectors (stainless steel) <sup>11) 12) 13)</sup>	F	
<b>Nominal measuring range</b>			<b>Display</b>		
PN 32 (MAWP 464 psi)			• Without display	0	
20 mbar <sup>2)</sup>	(8.03 inH <sub>2</sub> O)	B	• Without visible display (display concealed, setting: bar)	1	
PN 160 (MAWP 2320 psi)			• With visible display	6	
60 mbar	(24.09 inH <sub>2</sub> O)	C	• With customer-specific display (setting as specified, Order code "Y21" required)	7	
250 mbar	(100.4 inH <sub>2</sub> O)	D			
600 mbar	(240.9 inH <sub>2</sub> O)	E			
1600 mbar	(642.4 inH <sub>2</sub> O)	F			
5 bar	(2008 inH <sub>2</sub> O)	G			
30 bar	(435 psi)	H			
<b>Wetted parts materials</b>			<b>Included in delivery of the device:</b>		
(stainless steel process flanges)			• Brief instructions (Leporello)		
Seal diaphragm	Parts of measuring cell		• CD-ROM with detailed documentation		
Stainless steel	Stainless steel	A	• Sealing plug(s) or sealing screw(s) for the process flanges(s)		
Hastelloy	Stainless steel	B			
Hastelloy	Hastelloy	C			
Tantalum <sup>3)</sup>	Tantalum	E			
Monel <sup>3)</sup>	Monel	H			
Gold <sup>3)</sup>	Gold	L			
Version as diaphragm seal <sup>4) 5) 6) 7)</sup>		Y			
<b>Process connection</b>			<b>Footnote 1)</b>		
Female thread ¼-18 NPT with flange connection			For oxygen application, add Order code E10.		
• Sealing screw opposite process connection			<b>Footnote 2)</b>		
- Mounting thread 7/16"-20 UNF to IEC 61518		2	Not suitable for connection of remote seal. Position of the top vent valve in the process flange (see dimensional drawing).		
- Mounting thread M10 to DIN 19213 (only for replacement requirement)		0	<b>Footnote 3)</b>		
• Venting on side of process flanges <sup>2)</sup>			Not in conjunction with max. span 20 and 60 mbar (8.03 und 24.09 inH <sub>2</sub> O))		
- Mounting thread 7/16"-20 UNF to IEC 61518		6	<b>Footnote 4)</b>		
- Mounting thread M10 to DIN 19213 (only for replacement requirement)		4	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.		
<b>Non-wetted parts materials</b>			<b>Footnote 5)</b>		
process flange screws	Electronics housing		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.		
Stainless steel	Die-cast aluminum	2	<b>Footnote 6)</b>		
Stainless steel	Stainless steel precision casting	3	The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF443-...-Y...-... und 7MF4900-1...-B		
<b>Version</b>			<b>Footnote 7)</b>		
• Standard versions		1	The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.		
• International version, English label inscriptions, documentation in 5 languages on CD (no Order code selectable)		2	<b>Footnote 8)</b>		
<b>Explosion protection</b>			Without cable gland, with blanking plug.		
• None		A	<b>Footnote 9)</b>		
• With ATEX, Type of protection:			With enclosed cable gland Ex ia and blanking plug.		
- "Intrinsic safety (Ex ia)"		B	<b>Footnote 10)</b>		
- "Explosion-proof (Ex d)" <sup>8)</sup>		D	Configurations with HAN and M12 connectors are only available in Ex ic.		
- "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d) <sup>9)</sup>		P	<b>Footnote 11)</b>		
- "Ex nA/ic (Zone 2)" <sup>10)</sup>		E	M12 delivered without cable socket		
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia + Ex d + Zone 1D/2D)" <sup>9)</sup> (not for DS III FF)		R	<b>Footnote 12)</b>		
• FM + CSA intrinsic safe (is)		F	Not available with protection type „Ex d“ (options D, P, N and R)		
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX)		S	<b>Footnote 13)</b>		
• With FM + CSA, Type of protection:			Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".		
- "Intrinsic Safe und Explosion Proof (is + xp)" <sup>6)</sup>		NC			

# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III for differential pressure and flow

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Selection and Ordering data	Order code			
<b>Further designs</b> Add "-Z" to Article No. and specify Order code.		HART	PA	FF
<b>Pressure transmitter with mounting bracket (1x fixing angle, 2 x nut, 2 x U-washer or 1 x bracket, 2 x nut, 2 x U-washer) made of:</b>				
• Steel	◆ A01	✓	✓	✓
• Stainless steel	◆ A02	✓	✓	✓
<b>O-rings for process flanges</b> (instead of FPM (Viton))				
• PTFE (Teflon)	◆ A20	✓	✓	✓
• FEP (with silicone core, approved for food)	A21	✓	✓	✓
• FPM (Kalrez, compound 4079)	A22	✓	✓	✓
• NBR (Buna N)	A23	✓	✓	✓
<b>plug</b>				
• Han 7D (metal, gray)	A30	✓		
• Han 8U (instead of Han 7D)	A31	✓		
• Angled	A32	✓		
• Han 8D (metal, gray)	A33	✓		
<b>Sealing screws (2 unit(s))</b> 1/4-18 NPT, with valve in mat. of process flanges	◆ A40	✓	✓	✓
<b>Cable sockets for M12 connectors (stainless steel)</b>	A50	✓	✓	✓
<b>Rating plate inscription</b> (instead of German)				
• English	◆ B11	✓	✓	✓
• French	◆ B12	✓	✓	✓
• Spanish	◆ B13	✓	✓	✓
• Italian	◆ B14	✓	✓	✓
<b>English rating plate</b> Pressure units in inH <sub>2</sub> O and/or psi	◆ B21	✓	✓	✓
<b>Quality inspection certificate (Five-step factory calibration) to IEC 60770-2<sup>1)</sup></b>	◆ C11	✓	✓	✓
<b>Inspection certificate<sup>2)</sup> to EN 10204-3.1</b>	◆ C12	✓	✓	✓
<b>Factory certificate to EN 10204-2.2</b>	◆ C14	✓	✓	✓
<b>Functional safety (SIL2)</b> Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	◆ C20	✓		
<b>Functional safety (PROFIsafe) Certificate and PROFIsafe protocol</b>	C21 <sup>5)</sup>		✓	
<b>Functional safety (SIL2/3)</b> Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	◆ C23	✓		
<b>Device passport Russia</b> (For price request please contact the technical support <a href="http://www.siemens.com/automation/support-request">www.siemens.com/automation/support-request</a> )	C99	✓	✓	✓
<b>Setting of upper limit of output signal to 22.0 mA</b>	D05	✓		
<b>Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009)</b> (only together with seal diaphragm made of Hastelloy and stainless steel)	D07	✓	✓	✓
<b>Degree of protection IP65/IP68</b> (only for M20 x 1.5 and 1/2-14 NPT)	D12	✓	✓	✓
<b>Process flange screws made of Monel</b> (max. nominal pressure PN20)	D34	✓	✓	✓
<b>Supplied with oval flange set</b> (2 items), PTFE packings and screws in thread of process flanges	D37	✓	✓	✓

Selection and Ordering data	Order code			
<b>Further designs</b> Add "-Z" to Article No. and specify Order code.		HART	PA	FF
<b>Use in or on zone 1D/2D</b> (only together with type of protection "Intrinsic safety" (transmitter 7MF4...-.....-B.. Ex ia <sup>4)</sup> )	E01	✓	✓	✓
<b>TÜV approval to AD/TRD</b> (only together with type of protection "Intrinsic safety (Ex ia <sup>4)</sup> ")	E06	✓		
<b>Overfilling safety device for flammable and non-flammable liquids</b> (max. PN 32 (MAWP 464 psi), basic device with type of protection "Intrinsic safety (Ex ia <sup>4)</sup> ", to WHG and VbF, not together with measuring cell filling "inert liquid")	E08	✓		
<b>Oxygen application</b> (In the case of oxygen measurement and inert liquid max. 100 bar (1450 psi) at 60°C (140 °F))	E10	✓	✓	✓
<b>Export approval Korea</b>	E11	✓	✓	✓
<b>CRN approval Canada</b> (Canadian Registration Number)	E22	✓	✓	✓
<b>Dual seal</b>	E24	✓	✓	✓
<b>Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-B..)	E25 <sup>4)</sup>	✓	✓	✓
<b>"Flameproof" explosion protection according to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-D..)	E26 <sup>4)</sup>	✓	✓	✓
<b>Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-P..)	E28 <sup>4)</sup>	✓	✓	
<b>Ex Approval IEC Ex (Ex ia)</b> (only for transmitter 7MF4...-.....-B..)	E45 <sup>4)</sup>	✓	✓	✓
<b>Ex Approval IEC Ex (Ex id)</b> (only for transmitter 7MF4...-.....-D..)	E46 <sup>4)</sup>	✓	✓	✓
<b>Explosion-proof "Intrinsic safety" to NEPSI (China)</b> (only for transmitter 7MF4...-.....-B..)	E55 <sup>4)</sup>	✓	✓	✓
<b>Explosion protection "Explosion-proof" to NEPSI (China)</b> (only for transmitter 7MF4...-.....-D..)	E56 <sup>4)</sup>	✓	✓	✓
<b>Explosion-proof "Zone 2" to NEPSI (China)</b> (only for transmitter 7MF4...-.....-E..)	E57 <sup>4)</sup>	✓	✓	✓
<b>"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea)</b> (only for transmitter 7MF4...-.....-[B, D]..-Z + E11)	E70 <sup>4)</sup>	✓	✓	✓
<b>Two coats of lacquer on casing and cover (PU on epoxy)</b>	G10	✓	✓	✓
<b>Interchanging of process connection side</b>	H01	✓	✓	✓
<b>Vent on side for gas measurements</b>	H02	✓	✓	✓
<b>Stainless steel process flanges for vertical differential pressure lines</b> (not together with K01, K02 and K04) <sup>3)</sup>	H03	✓	✓	✓

◆ We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ◆. For details see page 9/5 in the appendix.

# Pressure Measurement Transmitters for general requirements

## SITRANS P DS III for differential pressure and flow

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Selection and Ordering data	Order code		
<i>Further designs</i>	HART	PA	FF
Add "-Z" to Article No. and specify Order code.			
<b>Process flange</b>			
• Hastelloy	K01	✓	✓
• Monel	K02	✓	✓
• Stainless steel with PVDF insert max. PN 10 (MAWP 145 psi), max. temperature of medium 90 °C (194 °F)	K04	✓	✓

For 1/2-14 NPT inner process connection on the side in the middle of the process flange, vent valve not possible

Factory mounting of valve manifolds, see accessories.

Supplementary electronics for 4-wire connection, see accessories.

✓ = available

- 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 total 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) Not suitable for connection of remote seal
- 4) Option does not include ATEX approval, but instead includes only the country-specific approval.
- 5) Profisafe transmitters can only be operated with the S7 F Systems V6.1 configuration software in combination with S7-400H

Selection and Ordering data	Order code		
<i>Additional data</i>	HART	PA	FF
Please add "-Z" to Article No. and specify Order code(s) and plain text.			
<b>Measuring range to be set</b>			
Specify in plain text:			
• in the case of linear characteristic curve (max. 5 characters): Y01: ... up to ... mbar, bar, kPa, MPa, psi	Y01	✓	✓ <sup>1)</sup>
• in the case of square rooted characteristic (max. 5 characters): Y02: ... up to ... mbar, bar, kPa, MPa, psi	Y02	✓	
<b>Stainless steel tag plate and entry in device variable (measuring point description)</b>	Y15	✓	✓
Max. 16 characters, specify in plain text: Y15: .....			
<b>Measuring point text (entry in device variable)</b>	Y16	✓	✓
Max. 27 char., specify in plain text: Y16: .....			
<b>Entry of HART address (TAG)</b>	Y17	✓	
Max. 8 char., specify in plain text: Y17: .....			
<b>Setting of pressure indicator in pressure units</b>	Y21	✓	✓
Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi, ... Note: The following pressure units can be selected: bar, mbar, mm H <sub>2</sub> O <sup>*)</sup> , inH <sub>2</sub> O <sup>*)</sup> , ftH <sub>2</sub> O <sup>*)</sup> , mmHG, inHG, psi, Pa, kPa, MPa, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , Torr, ATM or % *) ref. temperature 20 °C			
<b>Setting of pressure indicator in non-pressure units<sup>2)</sup></b>	Y22 <sup>3)</sup> + Y01 or Y02	✓	
Specify in plain text: Y22: ..... up to ..... l/min, m <sup>3</sup> /h, m, USgpm, ... (specification of measuring range in pressure units "Y01" or "Y02" is essential, unit with max. 5 characters)			
<b>Preset bus address</b>	Y25		✓
possible between 1 and 126 Specify in plain text: Y25: .....			
<b>Damping adjustment in seconds (0 ... 100 s)</b>	Y30	✓	✓

◆ We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ◆. For details see page 9/5 in the appendix.

Factory mounting of valve manifolds, see accessories.

Only Y01, Y15, Y16, Y17, Y21, Y22, Y25 und D05 can be factory preset

✓ = available

- 1) Measuring accuracies for PROFIBUS PA transmitters with Option Y01 are calculated in the same way as for HART devices.
- 2) Preset values can only be changed over SIMATIC PDM.
- 3) Not in conjunction with over-filling safety device for flammable and non-flammable liquids (Order code "E08")



# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III for differential pressure and flow

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Selection and Ordering data		Article No.
<b>SITRANS P DS III with HART pressure transmitters for differential pressure and flow, PN 420 (MAWP 6092 psi)</b>		<b>7MF4533-</b>
<b>Measuring cell filling</b>	<b>Measuring cell cleaning</b>	
Silicone oil	normal	1
<b>Measuring span (min. ... max.)</b>		
2.5 ... 250 mbar	(1.004 ... 100.4 inH <sub>2</sub> O)	D
6 ... 600 mbar	(2.409 ... 240.9 inH <sub>2</sub> O)	E
16 ... 1600 mbar	(6.424 ... 642.4 inH <sub>2</sub> O)	F
50 ... 5000 mbar	(20.08 ... 2008 inH <sub>2</sub> O)	G
0.3 ... 30 bar	(4.35 ... 435 psi)	H
<b>Wetted parts materials</b> (stainless steel process flanges)		
Seal diaphragm	Parts of measuring cell	
Stainless steel	Stainless steel	A
Hastelloy	Stainless steel	B
Gold <sup>1)</sup>	Gold	L
Ausführung als Membrandruckmittler <sup>2) 3) 4) 5)</sup>		Y
<b>Process connection</b>		
Female thread 1/4-18 NPT with flange connection		
• Sealing screw opposite process connection		
- Mounting thread 7/16"-20 UNF to IEC 61518		3
- Mounting thread M12 to DIN 19213 (only for replacement requirement)		1
• Venting on side of process flanges, location of vent valve at top of process flanges (see dimensional drawing)		
- Mounting thread 7/16"-20 UNF to IEC 61518		7
- Mounting thread M12 to DIN 19213 (only for replacement requirement)		5
<b>Non-wetted parts materials</b>		
process flange screws	Electronics housing	
Stainless steel	Die-cast aluminum	2
Stainless steel	Stainless steel precision casting <sup>6)</sup>	3
<b>Version</b>		
• Standard versions		1
• International version, English label inscriptions, documentation in 5 languages on CD (no Order code selectable)		2
<b>Explosion protection</b>		
• None		A
• With ATEX, Type of protection:		
- "Intrinsic safety (Ex ia)"		B
- "Explosion-proof (Ex d)" <sup>7)</sup>		D
- "Intrinsic safety and flameproof enclosure (Ex ia + Ex d)" <sup>8)</sup>		P
- "Ex nA/ic (Zone 2)" <sup>9)</sup>		E
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia+ Ex d + Zone 1D/2D)" <sup>8)</sup>		R
• FM + CSA intrinsic safe (is)		F
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX)		S
• With FM + CSA, Type of protection:		
- "Intrinsic safety and explosion-proof (is + xp)" <sup>7)</sup> , max PN 360		NC
<b>Electrical connection/cable entry</b>		
• Screwed gland Pg 13.5 <sup>10)</sup>		A
• Screwed gland M20x1.5		B
• Screwed gland 1/2"-14 NPT		C
• Han 7D plug (plastic housing) incl. mating connector <sup>10) 11)</sup>		D
• M12 connectors (stainless steel) <sup>12) 13) 14)</sup>		F

Selection and Ordering data		Article No.
<b>SITRANS P DS III with HART pressure transmitters for differential pressure and flow, PN 420 (MAWP 6092 psi)</b>		<b>7MF4533-</b>
<b>Display</b>		
• Without display		0
• Without visible display (display concealed, setting: mA)		1
• With visible display		6
• with customer-specific display (setting as specified, Order code "Y21" or "Y22" required)		7
Power supply units see Chap. 7 "Supplementary Components".		
Scope of delivery: Pressure transmitter as ordered (Instruction Manual is extra ordering item)		
1) Not in conjunction with max. span 600 mbar (240.9 inH <sub>2</sub> O)		
2) When the manufacturer'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.		
3) 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.		
4) The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF453-...Y...-... und 7MF4900-1...-B		
5) The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.		
6) Not in conjunction with Electrical connection "Screwed gland Pg 13.5" and "Han7D plug".		
7) Without cable gland, with blanking plug		
8) With enclosed cable gland Ex ia and blanking plug		
9) Configurations with HAN and M12 connectors are only available in Ex ic.		
10) Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".		
11) Permissible only for crimp-contact of conductor cross-section 1 mm <sup>2</sup>		
12) M12 delivered without cable socket		
13) Not available with protection type „Ex d“ (options D, P, N and R)		
14) Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".		

# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III for differential pressure and flow

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Selection and Ordering data	Article No.	Selection and Ordering data	Article No.
<b>Pressure transmitters for differential pressure and flow, PN 420 (MAWP 6092 psi)</b>		<b>Pressure transmitters for differential pressure and flow, PN 420 (MAWP 6092 psi)</b>	
<b>SITRANS P DS III with PROFIBUS PA (PA)</b>	7 MF 4 5 3 4 -	<b>SITRANS P DS III with PROFIBUS PA (PA)</b>	7 MF 4 5 3 4 -
<b>SITRANS P DS III with FOUNDATION Fieldbus (FF)</b>	7 MF 4 5 3 5 -	<b>SITRANS P DS III with FOUNDATION Fieldbus (FF)</b>	7 MF 4 5 3 5 -
	1 ■■■■ - ■■■■		1 ■■■■ - ■■■■
<b>Nominal measuring range</b>		<b>Display</b>	
250 mbar (100.4 inH <sub>2</sub> O)	D	• Without (display hidden)	0
600 mbar (240.9 inH <sub>2</sub> O)	E	• Without visible display (display concealed, setting: bar)	1
1600 mbar (642.4 inH <sub>2</sub> O)	F	• With visible display	6
5 bar (2008 inH <sub>2</sub> O)	G	• With customer-specific display (setting as specified, Order code "Y21" required)	7
30 bar (435 psi)	H		
<b>Wetted parts materials</b> (stainless steel process flanges)		Included in delivery of the device:	
Seal diaphragm      Parts of measuring cell		• Brief instructions (Leporello)	
Stainless steel      Stainless steel	A	• CD-ROM with detailed documentation	
Hastelloy            Stainless steel	B	• Sealing plug(s) or sealing screw(s) for the process flanges(s)	
Gold <sup>1)</sup> Gold	L		
Ausführung als Membrandruckmittler <sup>2) 3) 4) 5)</sup>	Y	1) Not in conjunction with max. span 600 mbar (240.9 inH <sub>2</sub> O)	
<b>Process connection</b>		2) 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.	
Female thread 1/4-18 NPT with flange connection		3) 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.	
• Sealing screw opposite process connection		4) The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF453-...Y-... und 7MF4900-1-...-B	
- Mounting thread 7/16-20 UNF to IEC 61518	3	5) The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.	
- Mounting thread M12 to DIN 19213 (only for replacement requirement)	1	6) Without cable gland, with blanking plug.	
• Venting on side of process flanges, location of vent valve at top of process flanges (see dimensional drawing).		7) With enclosed cable gland Ex ia and blanking plug.	
- Mounting thread 7/16-20 UNF to IEC 61518	7	8) Configurations with HAN and M12 connectors are only available in Ex ic.	
- Mounting thread M12 to DIN 19213 (only for replacement requirement)	5	9) M12 delivered without cable socket	
<b>Non-wetted parts materials</b>		<sup>10)</sup> Not available with protection type „Ex d“ (options D, P, N and R)	
Process flange screws      Electronics housing		<sup>11)</sup> Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".	
Stainless steel            Die-cast aluminum	2		
Stainless steel            Stainless steel precision casting	3		
<b>Version</b>			
• Standard versions	1		
• International version, English label inscriptions, documentation in 5 languages on CD (no Order code selectable)	2		
<b>Explosion protection</b>			
• None	A		
• With ATEX, Type of protection:			
- "Intrinsic safety (Ex ia)"	B		
- "Explosion-proof (Ex d)" <sup>6)</sup>	D		
- "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d) <sup>7)</sup>	P		
- "Ex nA/ic (Zone 2)" <sup>8)</sup>	E		
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia + Ex d + Zone 1D/2D)" <sup>7)</sup> (not for DS III FF)	R		
• FM + CSA intrinsic safe (is)	F		
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX)	S		
• With FM + CSA, Type of protection:			
- "Intrinsic safety and explosion-proof (is + xp)" <sup>6)</sup> , max PN 360	NC		
<b>Electrical connection/cable entry</b>			
• Screwed gland M20 x 1.5	B		
• Screwed gland 1/2-14 NPT	C		
• M12 connectors (stainless steel) <sup>9) 10) 11)</sup>	F		

# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III for differential pressure and flow

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Selection and Ordering data	Order code		
<i>Further designs</i>	HART	PA	FF
Add "-Z" to Article No. and specify Order code.			
<b>Pressure transmitter with mounting bracket (1x fixing angle, 2 x nut, 2 x U-washer or 1 x bracket, 2 x nut, 2 x U-washer) made of:</b>			
• Steel	A01	✓	✓
• Stainless steel	A02	✓	✓
<b>O-rings for process flanges</b> (instead of FPM (Viton))			
• PTFE (Teflon)	A20	✓	✓
• FEP (with silicone core, approved for food)	A21	✓	✓
• FFFM (Kalrez, compound 4079)	A22	✓	✓
• NBR (Buna N)	A23	✓	✓
<b>Plug</b>			
• Han 7D (metal, gray)	A30	✓	
• Han 8U (instead of Han 7D)	A31	✓	
• Angled	A32	✓	
• Han 8D (metal, gray)	A33	✓	
<b>Sealing screws (2 unit(s))</b> ¼-18 NPT, with valve in mat. of process flanges	A40	✓	✓
<b>Cable sockets for M12 conn. (stainless steel)</b>	A50	✓	✓
<b>Rating plate inscription</b> (instead of German)			
• English	B11	✓	✓
• French	B12	✓	✓
• Spanish	B13	✓	✓
• Italian	B14	✓	✓
<b>English rating plate</b> Pressure units in inH <sub>2</sub> O and/or psi	B21	✓	✓
<b>Quality inspection certificate (Five-step factory calibration) to IEC 60770-2</b>	C11	✓	✓
<b>Inspection certificate</b> Acc. to EN 10204-3.1	C12	✓	✓
<b>Factory certificate</b> Acc. to EN 10204-2.2	C14	✓	✓
<b>Functional safety (SIL2)</b> Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	C20	✓	
<b>Functional safety (PROFIsafe) Certificate and PROFIsafe protocol</b>	C21 <sup>1)</sup>		✓
<b>Functional safety (SIL2/3)</b> Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	C23	✓	
<b>Device passport Russia</b> (For price request please contact the technical support <a href="http://www.siemens.com/automation/support-request">www.siemens.com/automation/support-request</a> )	C99	✓	✓
<b>Setting of upper limit of output signal to 22.0 mA</b>	D05	✓	
<b>Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009)</b> (only together with seal diaphragm made of Hastelloy and stainless steel)	D07	✓	✓
<b>Degree of protection IP65/IP68</b> (only for M20 x 1.5 and ½-14 NPT)	D12	✓	✓
<b>Nom. press. rating PN 500 (MAWP 7250 psi)</b> (Only for measuring cell 600 mbar ... 30 bar (240 inH <sub>2</sub> O ... 435 psi), SIL- und Ex-options not possible) <sup>2)</sup>	D56	✓	

Selection and Ordering data	Order code		
<i>Further designs</i>	HART	PA	FF
Add "-Z" to Article No. and specify Order code.			
<b>Use in or on zone 1D/2D</b> (only together with type of protection "Intrinsic safety" (transmitter 7MF4...-.....-B.. Ex ia)*)	E01	✓	✓
<b>Export approval Korea</b>	E11	✓	✓
<b>Dual seal</b>	E24	✓	✓
<b>Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-B..)	E25 <sup>3)</sup>	✓	✓
<b>"Flameproof" explosion protection according to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-D..)	E26 <sup>3)</sup>	✓	✓
<b>Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-P..)	E28 <sup>3)</sup>	✓	✓
<b>Ex Approval IEC Ex (Ex ia)</b> (only for transmitter 7MF4...-.....-B..)	E45 <sup>3)</sup>	✓	✓
<b>Ex Approval IEC Ex (Ex id)</b> (only for transmitter 7MF4...-.....-D..)	E46 <sup>3)</sup>	✓	✓
<b>Explosion-proof "Intrinsic safety" to NEPSI (China)</b> (only for transmitter 7MF4...-.....-B..)	E55 <sup>3)</sup>	✓	✓
<b>Ex prot. "Explosion-proof" to NEPSI (China)</b> (only for transmitter 7MF4...-.....-D..)	E56 <sup>3)</sup>	✓	✓
<b>Explosion-proof "Zone 2" to NEPSI (China)</b> (only for transmitter 7MF4...-.....-E..)	E57 <sup>3)</sup>	✓	✓
<b>"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea)</b> (only for transmitter 7MF4...-.....-[B, D]...-Z + E11)	E70 <sup>3)</sup>	✓	✓
<b>Two coats of lacquer on casing and cover (PU on epoxy)</b>	G10	✓	✓
<b>Interchanging of process connection side</b>	H01	✓	✓
<b>Stainless steel process flanges for vertical differential pressure lines</b>	H03	✓	✓
<b>Transient protector 6 kV (lightning protection)</b>	J01	✓	✓

1) Profisafe transmitters can only be operated with the S7 F Systems V6.1 configuration software in combination with S7-400H

2) Tested according to IEC 61010. Only for measuring materials of the group of fluids 2 in accordance with PED permissible. Not for use with dangerous media suitable.

3) Option does not include ATEX approval, but instead includes only the country-specific approval.

# Pressure Measurement Transmitters for general requirements

SITRANS P DS III  
for differential pressure and flow

Selection and Ordering data	Order code		
Additional data	HART	PA	FF
Please add <b>"-Z"</b> to Article No. and specify Order code(s) and plain text.			
<b>Measuring range to be set</b> Specify in plain text: • in the case of linear characteristic curve (max. 5 characters): Y01: ... up to ... mbar, bar, kPa, MPa, psi • in the case of square rooted characteristic (max. 5 characters): Y02: ... up to ... mbar, bar, kPa, MPa, psi	Y01 Y02	✓ ✓	✓ <sup>1)</sup> ✓
<b>Stainless steel tag plate and entry in device variable (measuring point description)</b> Max. 16 characters, specify in plain text: Y15: .....	Y15	✓	✓
<b>Measuring point text (entry in device variable)</b> Max. 27 char., specify in plain text: Y16: .....	Y16	✓	✓
<b>Entry of HART address (TAG)</b> Max. 8 char., specify in plain text: Y17: .....	Y17	✓	
<b>Setting of pressure indication in pressure units</b> Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi, ... Note: The following pressure units can be selected: bar, mbar, mm H <sub>2</sub> O <sup>1)</sup> , inH <sub>2</sub> O <sup>1)</sup> , ftH <sub>2</sub> O <sup>1)</sup> , mmHG, inHG, psi, Pa, kPa, MPa, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , Torr, ATM or % ) ref. temperature 20 °C	Y21	✓	✓
<b>Setting of pressure indication in non-pressure units<sup>2)</sup></b> Specify in plain text: Y22: ..... up to ..... l/min, m <sup>3</sup> /h, m, USgpm, ... (specification of measuring range in pressure units "Y01" or "Y02" is essential, unit with max. 5 characters)	Y22 + Y01 or Y02	✓	
<b>Preset bus address</b> possible between 1 and 126 Specify in plain text: Y25: .....	Y25		✓
<b>Damping adjustment in seconds (0 ... 100 s)</b> Factory mounting of valve manifolds, see accessories. Only Y01, Y15, Y16, Y17, Y21, Y22, Y25 and D05 can be factory preset. ✓ = available	Y30	✓	✓

1) Measuring accuracies for PROFIBUS PA transmitters with Option Y01 are calculated in the same way as for HART devices.  
2) Preset values can only be changed over SIMATIC PDM.

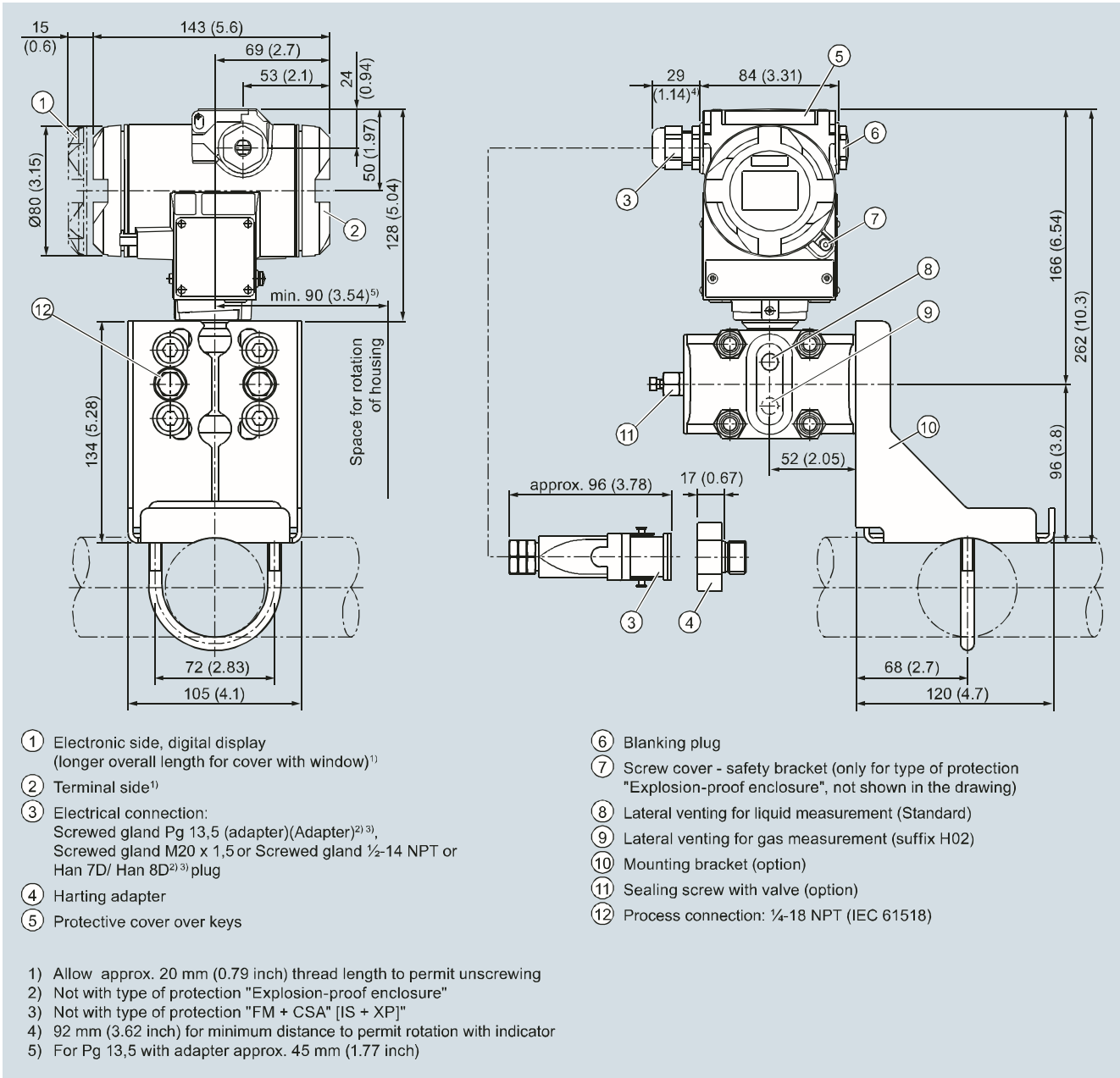
# Pressure Measurement

## Transmitters for general requirements

SITRANS P DS III  
for differential pressure and flow

1

### Dimensional drawings

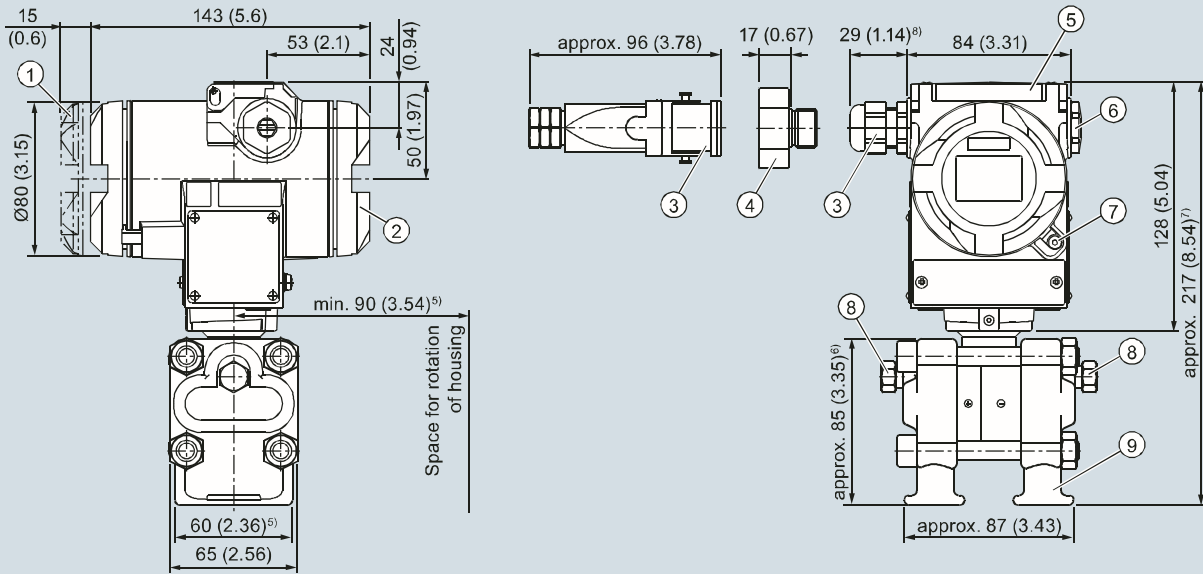


SITRANS P DS III pressure transmitters for differential pressure and flow, dimensions in mm (inch)

# Pressure Measurement Transmitters for general requirements

## SITRANS P DS III for differential pressure and flow

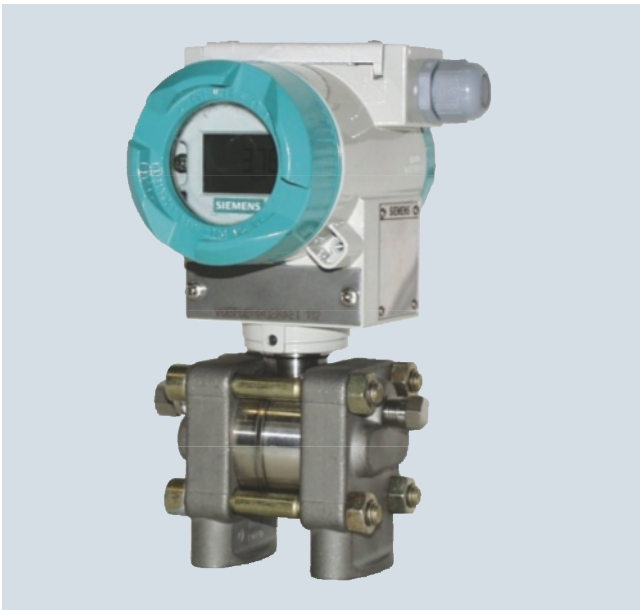
1



- ① Electronic side, digital display (longer overall length for cover with window)<sup>1)</sup>
- ② Terminal side<sup>1)</sup>
- ③ Electrical connection: Screwed gland Pg 13,5 (adapter)(Adapter)<sup>2) 3)</sup>, Screwed gland M20 x 1,5 or Screwed gland ½-14 NPT or Han 7D/ Han 8D<sup>2) 3)</sup> plug
- ④ Harting adapter
- ⑤ Protective cover over keys
- ⑥ Blanking plug
- ⑦ Screw cover - safety bracket (only for type of protection "Explosion-proof enclosure", not shown in the drawing)
- ⑧ Sealing screw with valve (option)
- ⑨ Process connection: ¼-18 NPT (IEC 61518)

- 1) Allow approx. 20 mm (0.79 inch) thread length to permit unscrewing
- 2) Not with type of protection "Explosion-proof enclosure"
- 3) Not with type of protection "FM + CSA" [IS + XP]"
- 4) 92 mm (3.6 inch) for minimum distance to permit rotation with indicator
- 5) 74 mm (2.9 inch) for PN ≥ 420 (MAWP ≥ 6092 psi)
- 6) 91 mm (3.6 inch) for PN ≥ 420 (MAWP ≥ 6092 psi)
- 7) 219 mm (8.62 inch) for PN ≥ 420 (MAWP ≥ 6092 psi)
- 8) For Pg 13,5 with adapter approx. 45 mm (1.77 inch)

SITRANS P DS III pressure transmitters for differential pressure and flow, with process covers for vertical differential pressure lines, optional "H03", dimensional drawing, dimensions in mm (inch)



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



# Pressure Measurement

## Transmitters for general requirements

**SITRANS P DS III**  
 for level

1

SITRANS P DS III for level	HART	PROFIBUS PA or FOUNDATION Fieldbus
Influence of static pressure		
<ul style="list-style-type: none"> <li>on the zero point               <ul style="list-style-type: none"> <li>- 250 mbar- (100 inH<sub>2</sub>O)-measuring cell</li> <li>- 600 mbar- (240 inH<sub>2</sub>O)-measuring cell</li> <li>- 1600 and 5000 mbar- (642 and 2000 inH<sub>2</sub>O)-measuring cell</li> </ul> </li> <li>on the span</li> </ul>	$\leq (0.3 \cdot r) \% \text{ per nominal pressure}$ $\leq (0.15 \cdot r) \% \text{ per nominal pressure}$ $\leq (0.1 \cdot r) \% \text{ per nominal pressure}$ $\leq (0.1 \cdot r) \% \text{ per nominal pressure}$	$\leq 0.3 \% \text{ per nominal pressure}$ $\leq 0.15 \% \text{ per nominal pressure}$ $\leq 0.1 \% \text{ per nominal pressure}$ $\leq 0.1 \% \text{ per nominal pressure}$
Measured Value Resolution	-	$3 \cdot 10^{-5}$ of nominal measuring range
<b>Rated conditions</b>		
Degree of protection to IEC 60529	IP65 (optional IP65/IP68)	
Temperature of medium	<b>Note:</b> Always take into account assignment of max. permissible operating temperature to max. permissible operating pressure of the respective flange connection! $-40 \dots +100^{(5)} \text{ } ^\circ\text{C} (-40 \dots +212^{(5)} \text{ } ^\circ\text{F})$ $p_{\text{abs}} \geq 1 \text{ bar: } -40 \dots +175 \text{ } ^\circ\text{C} (-40 \dots +347 \text{ } ^\circ\text{F})$ $p_{\text{abs}} < 1 \text{ bar: } -40 \dots +80 \text{ } ^\circ\text{C} (-40 \dots +176 \text{ } ^\circ\text{F})$ $-40 \dots +100 \text{ } ^\circ\text{C} (-40 \dots +212 \text{ } ^\circ\text{F})$ $-20 \dots +60 \text{ } ^\circ\text{C} (-4 \dots +140 \text{ } ^\circ\text{F})$ in conjunction with dust explosion protection	
<ul style="list-style-type: none"> <li>Measuring cell with silicone oil filling               <ul style="list-style-type: none"> <li>- High-pressure side</li> <li>- Low-pressure side</li> </ul> </li> </ul>		
Ambient conditions		
<ul style="list-style-type: none"> <li>Ambient temperature               <ul style="list-style-type: none"> <li>- Transmitter (with 4-wire connection, observe temperature values of supplementary 4-wire electronics)</li> <li>- -Display readable</li> </ul> </li> <li>Storage temperature</li> <li>Climatic class               <ul style="list-style-type: none"> <li>- Condensation</li> </ul> </li> <li>Electromagnetic Compatibility               <ul style="list-style-type: none"> <li>- Emitted interference and interference immunity</li> </ul> </li> </ul>		$-40 \dots +85 \text{ } ^\circ\text{C} (-40 \dots +185 \text{ } ^\circ\text{F})$ $-30 \dots +85 \text{ } ^\circ\text{C} (-22 \dots +185 \text{ } ^\circ\text{F})$ $-50 \dots +85 \text{ } ^\circ\text{C} (-58 \dots +185 \text{ } ^\circ\text{F})$ Relative humidity 0 ... 100 %, condensation permissible, suitable for use in the tropics Acc. to IEC 61326 and NAMUR NE 21
<b>Design</b>		
Weight (without options)		
<ul style="list-style-type: none"> <li>To EN (pressure transmitter with mounting flange, without tube)</li> <li>To ASME (pressure transmitter with mounting flange, without tube)</li> </ul>		$\approx 11 \dots 13 \text{ kg} (\approx 24.2 \dots 28.7 \text{ lb})$ $\approx 11 \dots 18 \text{ kg} (\approx 24.2 \dots 39.7 \text{ lb})$
Enclosure material	Low-copper die-cast aluminum, GD-AISI12 or stainless steel precision casting, mat. no. 1.4408	
Wetted parts materials		
High-pressure side		
<ul style="list-style-type: none"> <li>Seal diaphragm of mounting flange</li> </ul>	Stainless steel, mat. no. 1.4404/316L, Monel, mat. no. 2.4360, Hastelloy B2, mat. no. 2.4617, Hastelloy C276, mat. no. 2.4819, Hastelloy C4, mat. no. 2.4610, tantalum, PTFE, ETCFE, stainless steel Duplex, mat. no. 1.4462	
Measuring cell filling	Silicone oil	
Process connection		
<ul style="list-style-type: none"> <li>High-pressure side</li> <li>Low-pressure side</li> </ul>	Flange to EN and ASME Female thread 1/4-18 NPT and flange connection with mounting thread M10 to DIN 19213 or 7/16-20 UNF to EN 61518	
<b>Power supply <math>U_H</math></b>		
Terminal voltage on transmitter	$10.5 \dots 45 \text{ V DC}$ $10.5 \dots 30 \text{ V DC}$ in intrinsically-safe mode	Supplied through bus
Separate 24 V power supply necessary	-	No
Bus voltage		
<ul style="list-style-type: none"> <li>Not Ex</li> <li>With intrinsically-safe operation</li> </ul>		$9 \dots 32 \text{ V}$ $9 \dots 24 \text{ V}$
Current consumption		
<ul style="list-style-type: none"> <li>Basic current (max.)</li> <li>Start-up current <math>\leq</math> basic current</li> <li>Max. current in event of fault</li> </ul>		$12.5 \text{ mA}$ Yes $15.5 \text{ mA}$
Fault disconnection electronics (FDE) available	-	Yes



# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III for level

1

#### SITRANS P DS III for level

	HART	PROFIBUS PA or FOUNDATION Fieldbus
<b>Certificates and approvals</b>		
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 13 ATEX 2007 X	
- Marking	Ex II 1/2 G Ex ia/ib IIC T4/T5/T6 Ga/Gb	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +70 °C (-40 ... +158 °F) temperature class T5; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}$ , $I_i = 100 \text{ mA}$ , $P_i = 750 \text{ mW}$ ; $R_i = 300 \Omega$	FISCO supply unit: $U_o = 17.5 \text{ V}$ , $I_o = 380 \text{ mA}$ , $P_o = 5.32 \text{ W}$ Linear barrier: $U_o = 24 \text{ V}$ , $I_o = 250 \text{ mA}$ , $P_o = 1.2 \text{ W}$
- Effective internal inductance/capacitance	$L_i = 0.4 \text{ mH}$ , $C_i = 6 \text{ nF}$	$L_i = 7 \mu\text{H}$ , $C_i = 1.1 \text{ nF}$
• Explosion-proof "d"	PTB 99 ATEX 1160	
- Marking	Ex II 1/2 G Ex d IIC T4/T6 Gb	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To circuits with values: $U_H = 10.5 \dots 45 \text{ V DC}$	To circuits with values: $U_H = 9 \dots 32 \text{ V DC}$
• Dust explosion protection for zone 20	PTB 01 ATEX 2055	
- Marking	Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F)	
- Max. surface temperature	120 °C (248 °F)	
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}$ , $I_i = 100 \text{ mA}$ , $P_i = 750 \text{ mW}$ , $R_i = 300 \Omega$	FISCO supply unit: $U_o = 17.5 \text{ V}$ , $I_o = 380 \text{ mA}$ , $P_o = 5.32 \text{ W}$ Linear barrier: $U_o = 24 \text{ V}$ , $I_o = 250 \text{ mA}$ , $P_o = 1.2 \text{ W}$
- Effective internal inductance/capacitance	$L_i = 0.4 \text{ mH}$ , $C_i = 6 \text{ nF}$	$L_i = 7 \mu\text{H}$ , $C_i = 1.1 \text{ nF}$
• Dust explosion protection for zone 21/22	PTB 01 ATEX 2055	
- Marking	Ex II 2 D IP65 T 120 °C	
- Connection	To circuits with values: $U_H = 10.5 \dots 45 \text{ V DC}$ ; $P_{\max} = 1.2 \text{ W}$	To circuits with values: $U_H = 9 \dots 32 \text{ V DC}$ ; $P_{\max} = 1 \text{ W}$
• Type of protection "n" (zone 2)	PTB 13 ATEX 2007 X	
- Marking	Ex II 2/3 G Ex nA II T4/T5/T6 Gc Ex II 2/3 G Ex ic IIC T4/T5/T6 Gc	
- Connection (Ex nA)	$U_m = 45 \text{ V}$	$U_m = 32 \text{ V}$
- Connection (Ex ic)	To circuits with values: $U_i = 45 \text{ V}$	FISCO supply unit ic: $U_o = 17.5 \text{ V}$ , $I_o = 570 \text{ mA}$ Linear barrier: $U_o = 32 \text{ V}$ , $I_o = 132 \text{ mA}$ , $P_o = 1 \text{ W}$
- Effective internal inductance/capacitance	$L_i = 0.4 \text{ mH}$ , $C_i = 6 \text{ nF}$	$L_i = 7 \mu\text{H}$ , $C_i = 1.1 \text{ nF}$
• Explosion protection acc. to FM	Certificate of Compliance 3008490	
- Identification (XP/DIP) or (IS); (NI)	CL I, DIV 1, GP ABCD T4...T6; CL II, DIV 1, GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4...T6; CL I, DIV 2, GP ABCD T4...T6; CL II, DIV 2, GP FG; CL III	
• Explosion protection to CSA	Certificate of Compliance 1153651	
- Identification (XP/DIP) or (IS)	CL I, DIV 1, GP ABCD T4...T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4...T6; CL I, DIV 2, GP ABCD T4...T6; CL II, DIV 2, GP FG; CL III	

1) Conversion of temperature error per 28 °C. Valid for temperature range -3 ... +53 °C < (0.4 · r + 0.16) % / 28 °C (50 °F).

2) Conversion of temperature error per 28 °C. Valid for temperature range -3 ... +53 °C < (0.24 · r + 0.16) % / 28 °C (50 °F).

3) Conversion of temperature error per 28 °C. Valid for temperature range -3 ... +53 °C < (0.2 · r + 0.16) % / 28 °C (50 °F).

4) 0.32 instead of 0.16 at  $10 < r < 30$

5) This value may be increased if the process connection is sufficiently insulated.

# Pressure Measurement

## Transmitters for general requirements

**SITRANS P DS III**  
**for level**

1

<b>HART communication</b> HART Protocol Software for computer		230 ... 1100 Ω HART Version 5.x SIMATIC PDM
<b>PROFIBUS PA communication</b> Simultaneous communication with master class 2 (max.) The address can be set using Cyclic data usage • Output byte • Input byte Internal preprocessing Device profile Function blocks • Analog input - Adaptation to customer-specific process variables - Electrical damping, adjustable - Simulation function - Failure mode - Limit monitoring • Register (totalizer) - Failure mode - Limit monitoring • Physical block Transducer blocks • Pressure transducer block - Can be calibrated by applying two pressures - Monitoring of sensor limits - Specification of a container characteristic with - Square-rooted characteristic for flow measurement - Gradual volume suppression and implementation point of square-root extraction - Simulation function for measured pressure value and sensor temperature		4 Configuration tool or local operation (standard setting address 126) 5 (one measured value) or 10 (two measured values) 0, 1, or 2 (register operating mode and reset function for metering) PROFIBUS PA Profile for Process Control Devices Version 3.0, Class B 2 Yes, linearly rising or falling characteristic 0 ... 100 s Input/Output parameterizable (last good value, substitute value, incorrect value) Yes, one upper and lower warning limit and one alarm limit respectively Can be reset, preset, optional direction of counting, simulation function of register output parameterizable (summation with last good value, continuous summation, summation with incorrect value) One upper and lower warning limit and one alarm limit respectively 1 2 Yes Yes Max. 30 nodes Yes Parameterizable Constant value or over parameterizable ramp function
<b>FOUNDATION Fieldbus communication</b> Function blocks • Analog input - Adaptation to customer-specific process variables - Electrical damping, adjustable - Simulation function - Failure mode - Limit monitoring - Square-rooted characteristic for flow measurement • PID • Physical block Transducer blocks • Pressure transducer block - Can be calibrated by applying two pressures - Monitoring of sensor limits - Simulation function: Measured pressure value, sensor temperature and electronics temperature		3 function blocks analog input, 1 function block PID Yes, linearly rising or falling characteristic 0 ... 100 s Output/input (can be locked within the device with a bridge) parameterizable (last good value, substitute value, incorrect value) Yes, one upper and lower warning limit and one alarm limit respectively Yes Standard FOUNDATION Fieldbus function block 1 resource block 1 transducer block Pressure with calibration, 1 transducer block LCD Yes Yes Constant value or over parameterizable ramp function
<b>Mounting flange</b> Nominal diameter • Acc. to EN 1092-1 - DN 80 - DN100 • To ASME B16.5 - 3 inch - 4 inch		Nominal pressure PN 40 PN16, PN40 Class 150, class 300 Class 150, class 300

# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III for level

1

Selection and Ordering data		Article No.
<b>Pressure transmitter for level, SITRANS P DS III with HART</b>		<b>7MF4633-</b>
<b>Measuring cell filling</b>	<b>Measuring cell cleaning</b>	<b>Y -</b>
Silicone oil	normal	<b>1</b>
<b>Measuring span (min. ... max.)</b>		<b>D</b>
25 ... 250 mbar	(10 ... 100 inH <sub>2</sub> O)	<b>E</b>
25 ... 600 mbar	(10 ... 240 inH <sub>2</sub> O)	<b>F</b>
53 ... 1600 mbar	(21 ... 642 inH <sub>2</sub> O)	<b>G</b>
0.16 ... 5 bar	(64.3 ... 2000 inH <sub>2</sub> O)	
<b>Process connection of low-pressure side</b>		
Female thread 1/4-18 NPT with flange connection		
• Mounting thread 7/16-20 UNF to IEC 61518		<b>2</b>
• Mounting thread M10 to DIN 19213 (only for replacement requirement)		<b>0</b>
<b>Non-wetted parts materials</b>		
process flange screws	Electronics housing	
Stainless steel	Die-cast aluminum	<b>2</b>
Stainless steel	Stainless steel precision casting <sup>1)</sup>	<b>3</b>
<b>Version</b>		
• Standard versions		<b>1</b>
• International version, English label inscriptions, documentation in 5 languages on CD (no Order code selectable)		<b>2</b>
<b>Explosion protection</b>		
• None		<b>A</b>
• With ATEX, Type of protection:		<b>B</b>
- "Intrinsic safety (Ex ia)"		<b>D</b>
- "Explosion-proof (Ex d)" <sup>2)</sup>		<b>P</b>
- "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d) <sup>3)</sup>		<b>E</b>
- "Ex nA/ic (Zone 2)" <sup>4)</sup>		<b>R</b>
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia+ Ex d + Zone 1D/2D)" <sup>3)</sup>		<b>F</b>
• FM + CSA intrinsic safe (is)		<b>S</b>
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX)		
• With FM + CSA, Type of protection:		<b>NC</b>
- "Intrinsic Safe und Explosion Proof (is + xp)" <sup>1)</sup>		
<b>Electrical connection/cable entry</b>		
• Screwed gland Pg 13.5 <sup>5)</sup>		<b>A</b>
• Screwed gland M20x1.5		<b>B</b>
• Screwed gland 1/2-14 NPT		<b>C</b>
• Han 7D plug (plastic housing) incl. mating connector <sup>5)</sup>		<b>D</b>
• M12 connectors (stainless steel) <sup>5) 6) 7)</sup>		<b>F</b>
<b>Display</b>		
• Without display		<b>0</b>
• Without visible display (display concealed, setting: mA)		<b>1</b>
• With visible display		<b>6</b>
• With customer-specific display (setting as specified, Order code "Y21" or "Y22" required)		<b>7</b>

### Ordering information

1st order item: Pressure transmitter 7MF4633-...  
2nd order item: Mounting flange 7MF4912-3...

### Ordering example

Item line 1: 7MF4633-1EY20-1AA1-Z  
B line: Y01  
C line: Y01: 80 to 143 mbar (1.16 to 2.1 psi)  
Item line 2: 7MF4912-3GE01

Power supply units see Chap. 7 "Supplementary Components".

Included in delivery of the device:

- Brief instructions (Leporello)
- CD-ROM with detailed documentation
- Sealing plug(s) or sealing screw(s) for the process flanges(s)

<sup>1)</sup> Not in conjunction with electrical connection "Screwed gland Pg 13.5" and "Han7D plug".

<sup>2)</sup> Without cable gland, with blanking plug.

<sup>3)</sup> With enclosed cable gland Ex ia and blanking plug.

<sup>4)</sup> Configurations with HAN and M12 connectors are only available in Ex nL.

<sup>5)</sup> Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".

<sup>6)</sup> M12 delivered without cable socket

<sup>7)</sup> Not available with protection type „Ex d“ (optiones D, P, N and R)

# Pressure Measurement

## Transmitters for general requirements

**SITRANS P DS III**  
 for level

1

Selection and Ordering data	Article No.
<b>Pressure transmitters for level</b>	
<b>SITRANS P DS III with PROFIBUS PA (PA)</b>	7MF4634-
<b>SITRANS P DS III with FOUNDATION Fieldbus (FF)</b>	7MF4635-
	1 Y - - - -
<b>Nominal measuring range</b>	
250 mbar (100 inH <sub>2</sub> O)	D
600 mbar (240 inH <sub>2</sub> O)	E
1600 mbar (642 inH <sub>2</sub> O)	F
5 bar (2000 inH <sub>2</sub> O)	G
<b>Process connection of low-pressure side</b>	
Female thread 1/4-18 NPT with flange connection	
• Mounting thread 7/16-20 UNF to IEC 61518	2
• Mounting thread M10 to DIN 19213 (only for replacement requirement)	0
<b>Non-wetted parts materials</b>	
process flange screws Electronics housing	
Stainless steel Die-cast aluminum	2
Stainless steel Stainless steel precision casting	3
<b>Version</b>	
• Standard versions	1
• International version, English label inscriptions, documentation in 5 languages on CD (no Order code selectable)	2
<b>Explosion protection</b>	
• None	A
• With ATEX, Type of protection:	
- "Intrinsic safety (Ex ia)" <sup>1)</sup>	B
- "Explosion-proof (Ex d)" <sup>1)</sup>	D
- "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d) <sup>2)</sup>	P
- "Ex nA/IC (Zone 2)" <sup>3)</sup>	E
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia + Ex d + Zone 1D/2D)" <sup>2)</sup> (not for DS III FF)	R
• FM + CSA intrinsic safe (is)	F
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX)	S
• With FM + CSA, Type of protection:	
- "Intrinsic Safe und Explosion Proof (is + xp)" <sup>1)</sup>	NC
<b>Electrical connection/cable entry</b>	
• Screwed gland M20 x 1.5	B
• Screwed gland 1/2-14 NPT	C
• M12 connectors (stainless steel) <sup>4) 5)</sup>	F
<b>Display</b>	
• Without display	0
• Without visible display (display concealed, setting: bar)	1
• With visible display	6
• With customer-specific display (setting as specified, Order code "Y21" required)	7

**Ordering information**

 1st order item: Pressure transmitter 7MF4634-...  
 2nd order item: Mounting flange 7MF4912-...

**ordering example**

 Item line 1: 7MF4634-1EY20-1AA1  
 Item line 2: 7MF4912-3GE01

Included in delivery of the device:

- Brief instructions (Leporello)
- CD-ROM with detailed documentation
- Sealing plug(s) or sealing screw(s) for the process flange(s)

- 1) Without cable gland, with blanking plug.
- 2) With enclosed cable gland Ex ia and blanking plug.
- 3) Configurations with HAN and M12 connectors are only available in Ex nL.
- 4) M12 delivered without cable socket
- 5) Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".

# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III for level

1

Selection and Ordering data	Order code		
<i>Further designs</i>	HART	PA	FF
Add <b>"-Z"</b> to Article No. and specify Order code.			
<b>O-rings for process flanges on low-pressure side</b> (instead of FPM (Viton))			
• PTFE (Teflon)	A20	✓	✓
• FEP (with silicone core, approved for food)	A21	✓	✓
• FFPM (Kalrez, compound 4079)	A22	✓	✓
• NBR (Buna N)	A23	✓	✓
<b>Plug</b>			
• Han 7D (metal, gray)	A30	✓	
• Han 8U (instead of Han 7D)	A31	✓	
• Angled	A32	✓	
• Han 8D (metal, gray)	A33	✓	
<b>Sealing screw</b> ¼-18 NPT, with valve in mat. of process flanges	A40	✓	✓
<b>Cable sockets for M12 connectors (stainless steel)</b>	A50	✓	✓
<b>Rating plate inscription</b> (instead of German)			
• English	B11	✓	✓
• French	B12	✓	✓
• Spanish	B13	✓	✓
• Italian	B14	✓	✓
<b>English rating plate</b> Pressure units in inH <sub>2</sub> O and/or psi	B21	✓	✓
<b>Quality inspection certificate (Five-step factory calibration) to IEC 60770-2</b>	C11	✓	✓
<b>Inspection certificate</b> Acc. to EN 10204-3.1	C12	✓	✓
<b>Factory certificate</b> Acc. to EN 10204-2.2	C14	✓	✓
<b>Functional safety (SIL2)</b> Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	C20	✓	
<b>Functional safety (PROFIsafe) Certificate and PROFIsafe protocol</b>	C21 <sup>1)</sup>		✓
<b>Functional safety (SIL2/3)</b> Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	C23	✓	
<b>Device passport Russia</b> (For price request please contact the technical support <a href="http://www.siemens.com/automation/support-request">www.siemens.com/automation/support-request</a> )	C99	✓	✓
<b>Setting of upper limit of output signal to 22.0 mA</b>	D05	✓	
<b>Degree of protection IP65/IP68</b> (only for M20x1.5 and ½-14 NPT)	D12	✓	✓
<b>Supplied with oval flange</b> (1 item), PTFE packing and screws in thread of process flange	D37	✓	✓

Selection and Ordering data	Order code		
<i>Further designs</i>	HART	PA	FF
Add <b>"-Z"</b> to Article No. and specify Order code.			
<b>Use on zone 1D / 2D</b> (only together with type of protection "Intrinsic safety" (transmitter 7MF4...-.....-B.. Ex ia)")	E01	✓	✓
<b>Overfilling safety device for flammable and non-flammable liquids</b> (max. PN 32 (MAWP 464 psi), basic device with type of protection "Intrinsic safety (Ex ia)", to WHG and VbF, not together with measuring cell filling "inert liquid")	E08	✓	
<b>Export approval Korea</b>	E11	✓	✓
<b>CRN approval Canada</b> (Canadian Registration Number)	E22	✓	✓
<b>Dual seal</b>	E24	✓	✓
<b>Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-B..)	E25 <sup>2)</sup>	✓	✓
<b>"Flameproof" explosion protection according to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-D..)	E26 <sup>2)</sup>	✓	✓
<b>Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-P..)	E28 <sup>2)</sup>	✓	✓
<b>Ex Approval IEC Ex (Ex ia)</b> (only for transmitter 7MF4...-.....-B..)	E45 <sup>2)</sup>	✓	✓
<b>Ex Approval IEC Ex (Ex id)</b> (only for transmitter 7MF4...-.....-D..)	E46 <sup>2)</sup>	✓	✓
<b>Explosion-proof "Intrinsic safety" to NEPSI (China)</b> (only for transmitter 7MF4...-.....-B..)	E55 <sup>2)</sup>	✓	✓
<b>Explosion protection "Explosion-proof" to NEPSI (China)</b> (only for transmitter 7MF4...-.....-D..)	E56 <sup>2)</sup>	✓	✓
<b>Ex protection "Zone 2" to NEPSI (China)</b> (only for transmitter 7MF4...-.....-E..)	E57 <sup>2)</sup>	✓	✓
<b>"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea)</b> (only for transmitter 7MF4...-.....-[B, D]..-Z + E11)	E70 <sup>2)</sup>	✓	✓
<b>Two coats of lacquer on casing and cover (PU on epoxy)</b>	G10	✓	✓
<b>Replacement of process connection side</b>	H01	✓	✓
<b>Transient protector 6 kV (lightning protection)</b>	J01	✓	✓

<sup>1)</sup> Profisafe transmitters can only be operated with the S7 F Systems V6.1 configuration software in combination with S7-400H

<sup>2)</sup> Option beinhaltet keine ATEX-Zulassung, sondern nur die landesspezifische Zulassung.

# Pressure Measurement

## Transmitters for general requirements

SITRANS P DS III  
for level

1

Selection and Ordering data	Order code		
	HART	PA	FF
<b>Additional data</b>			
Please add <b>'-Z'</b> to Article No. and specify Order code(s) and plain text.			
<b>Measuring range to be set</b> Specify in plain text (max. 5 characters): Y01: ... up to ... mbar, bar, kPa, MPa, psi	<b>Y01</b>	✓	✓ <sup>1)</sup>
<b>Stainless steel tag plate and entry in device variable (measuring point description)</b> Max. 16 characters, specify in plain text: Y15: .....	<b>Y15</b>	✓	✓
<b>Measuring point text (entry in device variable)</b> Max. 27 characters, specify in plain text: Y16: .....	<b>Y16</b>	✓	✓
<b>Entry of HART address (TAG)</b> Max. 8 characters, specify in plain text: Y17: .....	<b>Y17</b>	✓	
<b>Setting of pressure indicator in pressure units</b> Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi, ... Note: The following pressure units can be selected: bar, mbar, mm H <sub>2</sub> O <sup>1)</sup> , inH <sub>2</sub> O <sup>1)</sup> , ftH <sub>2</sub> O <sup>1)</sup> , mmHG, inHG, psi, Pa, kPa, MPa, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , Torr, ATM or % <sup>1)</sup> ref. temperature 20 °C	<b>Y21</b>	✓	✓
<b>Setting of pressure indicator in non-pressure units<sup>2)</sup></b> Specify in plain text: Y22: ..... up to ..... l/min, m <sup>3</sup> /h, m, USgpm, ... (specification of measuring range in pressure units <b>'Y01'</b> is essential, unit with max. 5 characters)	<b>Y22<sup>3)</sup> + Y01</b>	✓	
<b>Preset bus address</b> possible between 1 and 126 Specify in plain text: Y25: .....	<b>Y25</b>		✓
<b>Damping adjustment in seconds (0 ... 100 s)</b>	<b>Y30</b>	✓	✓

Only Y01, Y15, Y16, Y17, Y21, Y22, Y25 and D05 can be factory preset

✓ = available

<sup>1)</sup> Measuring accuracies for PROFIBUS PA transmitters with Option Y01 are calculated in the same way as for HART devices.

<sup>2)</sup> Preset values can only be changed over SIMATIC PDM.

<sup>3)</sup> Not in conjunction with over-filling safety device for flammable and non-flammable liquids (Order code 'E08')

# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III for level

1

#### Selection and Ordering data

Article No. Ord. code

**Mounting flange** 7MF4912 -

Directly mounted on the SITRANS P pressure transmitter (converter part) for level, for DS III series

#### Connection to EN 1092-1

Nominal diameter	Nominal pressure	
DN 50	PN 40	A
	PN 100	B
DN 80	PN 40	D
DN 100	PN 16	G
	PN 40	H

#### Connection to ASME B16.5

Nominal diameter	Nominal pressure	
2 inch	class 150	L
	class 300	M
	class 400/600	N
	class 900/1500	P
3 inch	Class 150	Q
	Class 300	R
4 inch	Class 150	T
	Class 300	U

Other version, add Order code and plain text:  
Nominal diameter: ...; Nominal press.: ...

#### Wetted parts materials

- Stainless steel 316L
  - Coated with PFA
  - Coated with PTFE
  - Coated with ECTFE<sup>1)</sup>
- Monel 400, mat. no. 2.4360
- Hastelloy C276, mat. no. 2.4819
- Hastelloy C4, mat. no. 2.4610
- Tantalum
- Duplex 2205, mat. no. 1.4462
- Duplex 2205, mat. no. 1.4462, incl. main body
- Stainless steel 316L, gold plated, thickness approx. 25 µm

#### Tube length

- None 0
- 50 mm (1.97 inch) 1
- 100 mm (3.94 inch) 2
- 150 mm (5.90 inch) 3
- 200 mm (7.87 inch) 4

Other version: add Order code and plain text:  
material of parts in contact with medium: .....,  
tubus length: .....

#### Filling liquid

- Silicone oil M5 1
- Silicone oil M50 2
- High-temperature oil 3
- Halocarbon oil (for O<sub>2</sub>-measurement) 4
- Glycerin/water<sup>2)</sup> 6
- Food oil (FDA-listed) 7

Other version, add  
Order code and plain text:  
filling liquid: ...

<sup>1)</sup> For vacuum on request

<sup>2)</sup> Not suitable for use in low-pressure range

#### Selection and Ordering data

Order code

#### Further designs

Add "-Z" to Article No. and specify Order code.

#### Spark arrester

For mounting on zone 0 (incl. documentation)

#### Remote seal nameplate

attached out of stainless steel, contains Article No. and order number of the remote seal supplier

#### 2.2 Certificate for oil-free and grease-free cleaning

For inert filling liquid, not for operation with oxygen, Option E10 cannot be selected.

#### Quality inspection certificate (Five-step factory calibration) to IEC 60770-2

#### Inspection certificate

Acc. to EN 10204-3.1

#### 2.2 Certificate of FDA approval of fill oil

Only in conjunction with filling liquid "Food oil" (FDA listed)"

#### "Functional safety (SIL2)" certificate to IEC 61508

(only for conjunction with the Order code "C20" in the case of SITRANS P DS III transmitter)

#### "Functional safety (SIL2/3)" certificate to IEC 61508

(only for conjunction with the Order code "C23" in the case of SITRANS P DS III transmitter)

#### Certification acc. to NACE MR-0175

Includes acceptance test certificate 3.1 acc. to EN 10204 (only for wetted parts made of stainless steel 1.4404/316L and Hastelloy C276)

#### Certification acc. to NACE MR-0103

Includes acceptance test certificate 3.1 acc. to EN 10204 (only for wetted parts made of stainless steel 1.4404/316L and Hastelloy C276)

#### Epoxy painting

Not possible with vacuum-proof design

Color: transparent, coverage: front and rear of the remote seal, capillary(ies) or connecting tube, process connection of the transmitter. With transmitters 7MF40... and 7MF42... only possible with process connection G $\frac{1}{2}$ B according to EN837-1.

#### Sealing surface B1 or ASME B16.5 RF 125 ... 250 AA

instead of sealing surface B2 or RF SF (only for wetted parts made of Hastelloy C276 (2.4819), tantalum and Duplex 2205 (1.4462) and for nominal sizes 2", 3", DN 50 and DN 80)

#### Sealing surface groove, EN 1092-1, form D

instead of sealing surface B1 (only for wetted parts made of stainless steel 316L)

#### Sealing surface RJF (groove) ASME B16.5

instead of sealing surface ASME B16.5 RF 125 ... 250 AA (only for wetted parts made of stainless steel 316L)

#### Elongated pipe, 150 mm instead of 100 mm,

max. medium temperature 250 °C, observe the maximum permissible media temperature of the filling liquid.

#### Elongated pipe, 200 mm instead of 100 mm,

max. medium temperature 300 °C, observe the maximum permissible media temperature of the filling liquid.

#### Vacuum-proof design

(for use in low-pressure range)

Note: suffix "Y01" required with press. transm.  
✓ = available

HART PA FF

A01 ✓ ✓ ✓

B20 ✓ ✓ ✓

C10 ✓ ✓ ✓

C11 ✓ ✓ ✓

C12 ✓ ✓ ✓

C17 ✓ ✓ ✓

C20 ✓ ✓

C23 ✓ ✓

D07 ✓ ✓ ✓

D08 ✓ ✓ ✓

E15 ✓ ✓ ✓

J12 ✓ ✓ ✓

J14 ✓ ✓ ✓

J24 ✓ ✓ ✓

R15 ✓ ✓ ✓

R20 ✓ ✓ ✓

V04 ✓ ✓ ✓

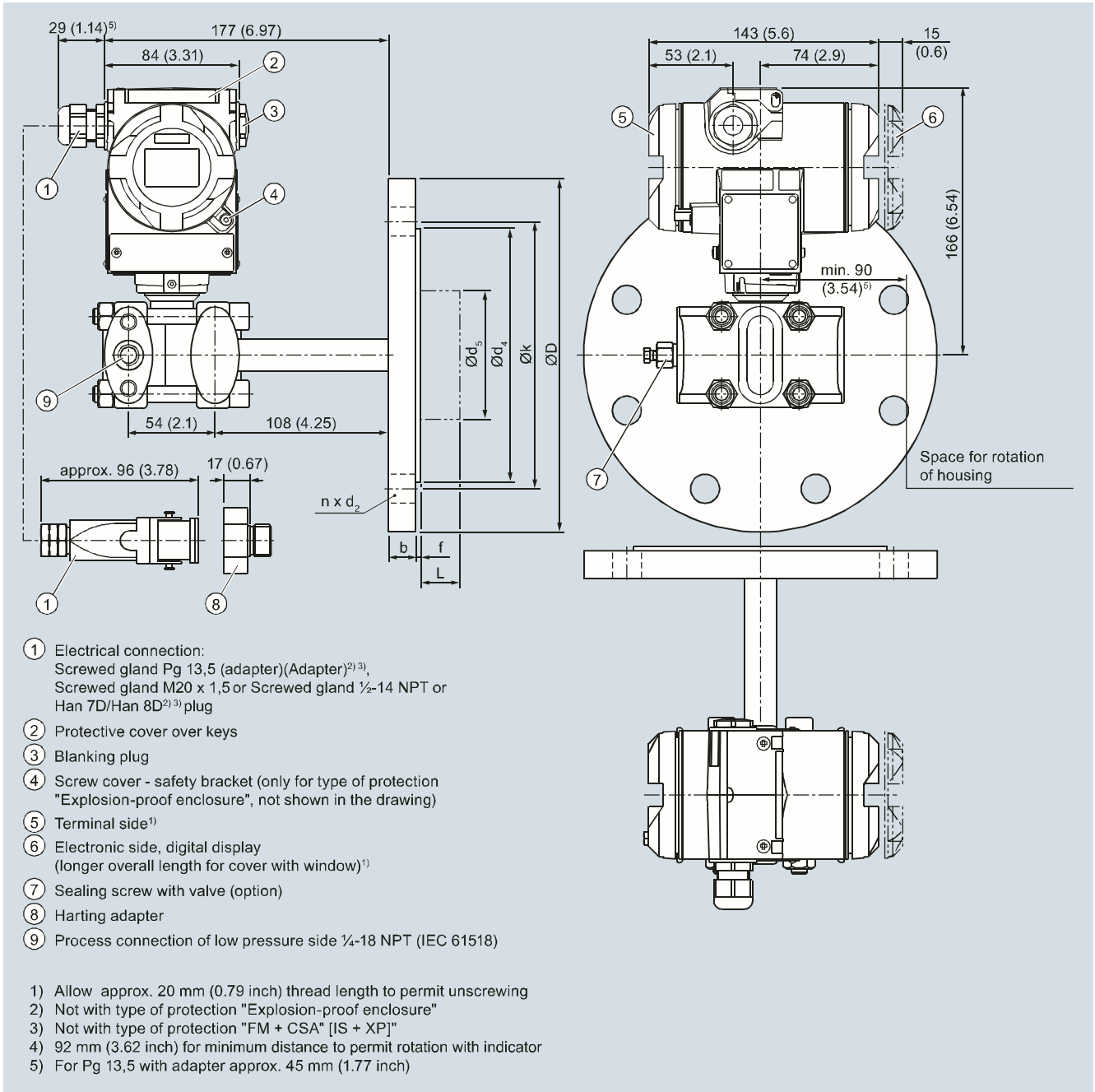
# Pressure Measurement

## Transmitters for general requirements

SITRANS P DS III  
for level

1

### Dimensional drawings



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



# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III for level

1

#### Connection to EN 1092-1

Nominal diameter	Nominal pressure	b	D	d	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub>	f	k	n	L
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
DN 50	PN 10/16/ 25/40	20	165	90	18	102	48.3	45 <sup>1)</sup>	2	125	8	0, 50, 100, 150 or 200
	PN 100	28	195	90	26	102	48.3	45 <sup>1)</sup>	2	145	8	
DN 80	PN 10/16/ 25/40	24	200	90	18	138	76	72 <sup>2)</sup>	2	160	8	
	PN 100	32	230	90	26	138	76	72 <sup>2)</sup>	2	180	8	
DN 100	PN 10/16	20	220	115	18	158	94	89	2	180	8	
	PN 25/40	24	235	115	22	162	94	89	2	190	8	

#### Connection to ASME B16.5

Nominal diameter	Nominal pressure	b	D	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub>	f	k	n	L
	lb./sq.in	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)
2 inch	150	0.77 (19.5)	5.91 (150)	0.79 (20)	3.62 (92)	1.9 (48.3)	1.77 <sup>1)</sup> (45)	0.08 (2)	4.74 (120.5)	4	0, 2, 3.94, 5.94 or 7.87 (0, 50, 100, 150 or 200)
	300	0.89 (22.7)	6.5 (165)	0.79 (20)	3.62 (92)	1.9 (48.3)	1.77 <sup>1)</sup> (45)	0.08 (2)	5 (127)	8	
	400/600	1.28 (32.4)	6.5 (165)	0.79 (20)	3.62 (92)	1.9 (48.3)	1.77 <sup>1)</sup> (45)	0.28 (7)	5 (127)	8	
	900/1500	1.78 (45.1)	8.46 (215)	1.02 (26)	5 (127)	1.9 (48.3)	1.77 <sup>1)</sup> (45)	0.28 (7)	6.5 (165)	8	
3 inch	150	0.96 (24.3)	7.48 (190)	0.79 (20)	5 (127)	3 (76)	2.83 <sup>2)</sup> (72)	0.08 (2)	6 (152.5)	4	
	300	1.14 (29)	8.27 (210)	0.87 (22)	5 (127)	3 (76)	2.83 <sup>2)</sup> (72)	0.08 (2)	6.63 (168.5)	8	
	600	1.53 (38.8)	8.27 (210)	0.87 (22)	5 (127)	3 (76)	2.83 <sup>2)</sup> (72)	0.28 (7)	6.63 (168.5)	8	
4 inch	150	0.96 (24.3)	9.06 (230)	0.79 (20)	6.22 (158)	3.69 (94)	3.5 (89)	0.08 (2)	7.5 (190.5)	8	
	300	1.27 (32.2)	10.04 (255)	0.87 (22)	6.22 (158)	3.69 (94)	3.5 (89)	0.08 (2)	7.87 (200)	8	
	400	1.65 (42)	10.04 (255)	1.02 (26)	6.22 (158)	3.69 (94)	3.5 (89)	0.28 (7)	7.87 (200)	8	

d: Internal diameter of gasket to DIN 2690

d<sub>M</sub>: Effective diaphragm diameter

<sup>1)</sup> 59 mm = 2.32 inch with tube length L=0.

<sup>2)</sup> 89 mm = 3½ inch with tube length L=0.

# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III Supplementary electronics for 4-wire connection

1

#### Overview



Direct connection of the supplementary electronics to a SITRANS P DS III pressure transmitter with HART produces a transmitter for 4-wire connection.

The supplementary electronics cannot be attached to explosion-protected pressure transmitters. The supplementary electronics is fitted in a light metal housing which is mounted on the left side of the pressure transmitter.

#### Note on ordering:

The supplementary electronics can only be ordered as an **optional accessory** for the corresponding pressure transmitter.

#### Technical specifications

##### SITRANS P, supplementary electronics for 4-wire connection

#### Output

Output signal	0 ... 20 mA or 4 ... 20 mA
Load	Max. 750 Ω
Voltage measurement	Linear (square-rooting in transmitter if necessary)
Electrical isolation	Between power supply and input/ output

#### Measuring accuracy

Measurement deviation (in addition to transmitter)	acc. to IEC 60770-1 ≤ 0.15 % of set span
Influence of ambient temperature	≤ 0.1 % per 10 K
Power supply effect	≤ 0.1 % per 10 % change in voltage or frequency
Load effect	≤ 0.1 % per 100 % change

#### Rated conditions

Ambient temperature	
• 24 V version	-20 ... +80 °C (-4 ... +176 °F)
• 230 V version	-20 ... +60 °C (-4 ... +140 °F)
Storage temperature	-50 ... +85 °C (-58 ... +185 °F)
Degree of protection	IP54 to IEC 60529
Electromagnetic compatibility (EMC)	IEC 61236
Condensation	Relative humidity 0 ... 95 % condensation permissible

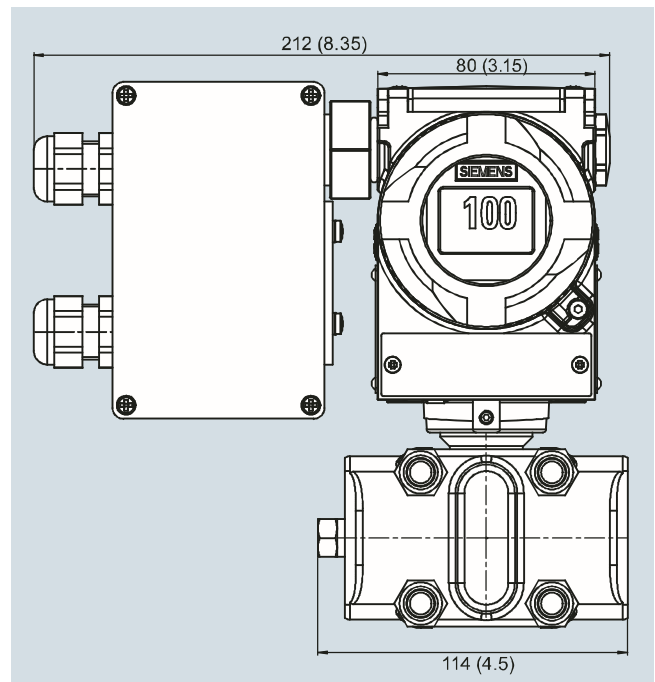
#### Structural design

Dimensions (W x H x D) in mm (inch)	80 x 120 x 60 (3.15 x 4.72 x 2.36)
Electrical connection	Screw terminals (Pg 13.5 cable inlet) or Han 7D / Han 8U plug

#### Power supply

Supply voltage	230 V AC (-10 ... +6 %, 47 ... 63 Hz, approx. 6 VA) or 24 V AC/DC (24 V AC ± 10 %, 47 ... 63 Hz, approx. 3 VA)
Permissible ripple (within the specified limits)	Approx. 2.5 V <sub>pp</sub>

#### Dimensional drawings



SITRANS P pressure transmitters with supplementary electronics for four-wire connection, dimension drawing, dimensions in mm

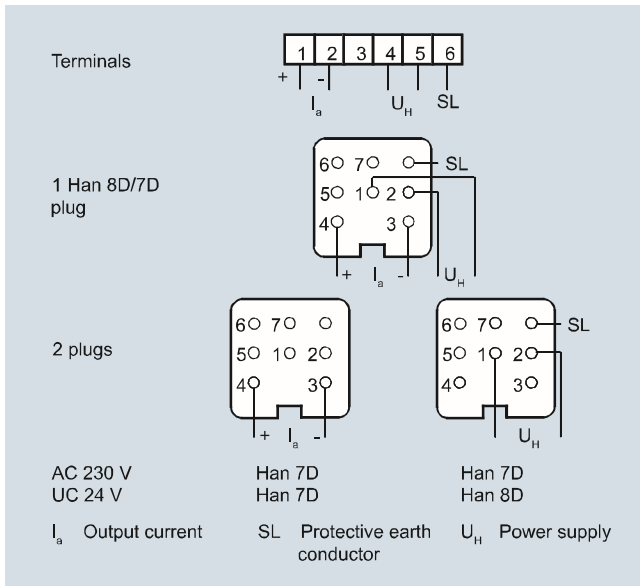
# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III Supplementary electronics for 4-wire connection

1

#### Schematics



Supplementary electronics for 4-wire connection, connection diagram

#### Selection and Ordering data

Order code

#### Supplementary electronics for 4-wire connection

V

Article No. of the transmitter  
**7MF4.33-.....-AB**, add "-Z" and Order code.

#### Power supply

24 V AC/DC

#### Electrical connection

Terminals; 2 Pg screwed glands, to left  
2 Han 7D/Han 8U plugs incl. mating connector, to left  
1 Han 7D plug incl. mating connector, angled  
Terminals; 1 Pg screwed gland, downwards  
1 Han 8U plug incl. mating connector, downwards (observe arrangement of plug and differential pressure line)  
Terminals; 2 Pg screwed glands, to left  
2 Han 7D plugs incl. mating connector, to left

1  
3  
5  
6  
9  
7  
8

230 V AC

#### Output current

0 ... 20 mA  
4 ... 20 mA

0  
1

#### Accessories

**Instruction Manual**  
German/English

**A5E00322799**

# Pressure Measurement

## Transmitters for general requirements

SITRANS P DS III  
Accessories/Spare Parts

1

Selection and Ordering data		Article No.
<b>Replacement measuring cell for pressure for SITRANS P DS III</b>		<b>7 MF 4 9 9 0 -</b>
		<b>0 - 0 DB 0</b>
<b>Measuring cell filling Measuring cell cleaning</b>		
Silicone oil	Normal	1
Inert liquid	grease-free to cleanliness level 2	3
<b>Measured span (min. ... max.)</b>		
0.01 ... 1 bar	(0.15 ... 14.5 psi)	B
0.04 ... 4 bar	(0.6 ... 58 psi)	C
0.16 ... 16 bar	(2.32 ... 232 psi)	D
0.63 ... 63 bar	(9.14 ... 914 psi)	E
1.6 ... 160 bar	(23.2 ... 2320 psi)	F
4.0 ... 400 bar	(58.0 ... 5802 psi)	G
7.0 ... 700 bar	(102.0 ... 10153 psi)	J
<b>Wetted parts materials</b>		
Seal diaphragm	Process connection	
Stainless steel	Stainless steel	A
Hastelloy	Stainless steel	B
Hastelloy	Hastelloy	C
<b>Process connection</b>		
• Connection shank G½B to EN 837-1		0
• Female thread ½-14 NPT		1
• Oval flange made of stainless steel, max. span 160 bar (2320 psi)		
- Mounting thread 7/16-20 UNF to IEC 61518		2
- Mounting thread M10 to DIN 19213		3
<b>Further designs</b>		Order code
Please add '-Z' to Article No. and specify Order code.		
<b>Inspection certificate</b>		<b>C12</b>
to EN 10204-3.1		

Selection and Ordering data		Article No.
<b>Replacement measuring cell for absolute pressure for SITRANS P DS III (from the pressure series)</b>		<b>7 MF 4 9 9 2 -</b>
		<b>0 - 0 DB 0</b>
<b>Measuring cell filling Measuring cell cleaning</b>		
Silicone oil	Normal	1
Inert liquid	grease-free to cleanliness level 2	3
<b>Measured span (min. ... max.)</b>		
8.3 ... 250 mbar a	(0.12 ... 3.62 psia)	D
43 ... 1300 mbar a	(0.62 ... 18.85 psia)	F
0.16 ... 5 bar a	(2.32 ... 72.5 psia)	G
1 ... 30 bar a	(14.5 ... 435 psia)	H
<b>Wetted parts materials</b>		
Seal diaphragm	Process connection	
Stainless steel	Stainless steel	A
Hastelloy	Stainless steel	B
Hastelloy	Hastelloy	C
<b>Process connection</b>		
• Connection shank G½B to EN 837-1		0
• Female thread ½-14 NPT		1
• Oval flange made of stainless steel, max. span 160 bar (2320 psi)		
- Mounting thread 7/16-20 UNF to IEC 61518		2
- Mounting thread M10 to DIN 19213		3
<b>Further designs</b>		Order code
Please add '-Z' to Article No. and specify Order code.		
<b>Inspection certificate</b>		<b>C12</b>
to EN 10204-3.1		

# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III Accessories/Spare Parts

1

Selection and Ordering data	Article No.
<b>Replacement measuring cell for absolute pressure (from the differential pressure series) for SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus series</b>	<b>7 MF 4 9 9 3 -</b> - 0 DC 0
<b>Measuring cell filling</b>	
Silicone oil	1
Inert liquid	3
<b>Measuring cell cleaning</b>	
Normal	
grease-free to cleanliness level 2	
<b>Measured span (min. ... max.)</b>	
8.3 ... 250 mbar a (0.12 ... 3.62 psia)	D
43 ... 1300 mbar a (0.62 ... 18.85 psia)	F
0.16 ... 5 bar a (2.32 ... 72.5 psia)	G
1 ... 30 bar a (14.5 ... 435 psia)	H
5.3 ... 100 bar a (76.9 ... 1450 psia)	KE
<b>Wetted parts materials</b>	
Seal diaphragm	Parts of measuring cell
Stainless steel	Stainless steel
Hastelloy	Stainless steel
Hastelloy	Hastelloy
Tantalum	Tantalum
Monel	Monel
Gold	Gold
<b>Process connection</b>	
Female thread 1/4-18 NPT with flange connection	
• Sealing screw opposite process connection	
- Mounting thread M10 to DIN 19213	0
- Mounting thread 7/16-20 UNF to IEC 61518	2
• Vent on side of process flange <sup>1)</sup>	
- Mounting thread M10 to DIN 19213	4
- Mounting thread 7/16-20 UNF to IEC 61518	6
<b>Non-wetted parts materials</b>	
• Stainless steel process flange screws	2
<b>Further designs</b>	Order code
Please add <b>"-Z"</b> to Article No. and specify Order code.	
<b>O-rings for process flanges</b> (instead of FPM (Viton))	
• PTFE (Teflon)	A20
• FEP (with silicone core, approved for food)	A21
• FFPM (Kalrez, compound 4079)	A22
• NBR (Buna N)	A23
<b>Inspection certificate</b> to EN 10204-3.1	C12
<b>Process connection G1/2B</b>	D16
<b>Remote seal flanges</b> (not together with K01, K02 and K04)	D20
<b>Vent on side for gas measurements</b>	H02
<b>Process flanges</b>	
• without	K00
• with process flange made of	
- Hastelloy	K01
- Monel	K02
- Stainless steel with PVDF insert max. PN 10 (MAWP 145 psi) max. temperature of medium 90 °C (194 °F) For 1/2-14 NPT inner process connection on the side in the middle of the process flange, vent valve not possible	K04

<sup>1)</sup> Not for span "5.3 ... 100 bar (76.9 ... 1450 psi)"

Selection and Ordering data	Article No.
<b>Replacement measuring cell for differential pressure and PN 32/160 (MAWP 464/2320 psi) for SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus series</b>	<b>7 MF 4 9 9 4 -</b> - 0 DC 0
<b>Measuring cell filling</b>	
Silicone oil	1
Inert liquid	3
<b>Measuring cell cleaning</b>	
Normal	
grease-free to cleanliness level 2	
<b>Measured span (min. ... max.)</b>	
<b>PN 32 (MAWP 464 psi)</b>	
1 ... 20 mbar <sup>1)</sup> (0.4 ... 8 inH <sub>2</sub> O)	B
<b>PN 160 (MAWP 2320 psi)</b>	
1 ... 60 mbar (0.4 ... 24 inH <sub>2</sub> O)	C
2.5 ... 250 mbar (1 ... 100 inH <sub>2</sub> O)	D
6 ... 600 mbar (2.4 ... 240 inH <sub>2</sub> O)	E
16 ... 1600 mbar (6.4 ... 642 inH <sub>2</sub> O)	F
50 ... 5000 mbar (20 ... 2000 inH <sub>2</sub> O)	G
0.3 ... 30 bar (4.35 ... 435 psi)	H
<b>Wetted parts materials</b> (stainless steel process flanges)	
Seal diaphragm	Parts of measuring cell
Stainless steel	Stainless steel
Hastelloy	Stainless steel
Hastelloy	Hastelloy
Tantalum <sup>2)</sup>	Tantalum
Monel <sup>2)</sup>	Monel
Gold <sup>2)</sup>	Gold
<b>Process connection</b>	
Female thread 1/4-18 NPT with flange connection	
• Sealing screw opposite process connection	
- Mounting thread M10 to DIN 19213	0
- Mounting thread 7/16-20 UNF to IEC 61518	2
• Vent on side of process flange	
- Mounting thread M10 to DIN 19213	4
- Mounting thread 7/16-20 UNF to IEC 61518	6
<b>Non-wetted parts materials</b>	
Stainless steel process flange screws	2
<b>Further designs</b>	Order code
Please add <b>"-Z"</b> to Article No. and specify Order code.	
<b>O-rings for process flanges</b> (instead of FPM (Viton))	
• PTFE (Teflon)	A20
• FEP (with silicone core, approved for food)	A21
• FFPM (Kalrez, compound 4079)	A22
• NBR (Buna N)	A23
<b>Inspection certificate</b> to EN 10204-3.1	C12
<b>Remote seal flanges</b> (not together with K01, K02 and K04)	D20
<b>Vent on side for gas measurements</b>	H02
<b>Stainless steel process flanges for vertical differential pressure lines</b> (not together with K01, K02 and K04)	H03
<b>Process flanges</b>	
• without	K00
• with process flange made of	
- Hastelloy	K01
- Monel	K02
- Stainless steel with PVDF insert max. PN 10 (MAWP 145 psi) max. temperature of medium 90 °C (194 °F) For 1/2-14 NPT inner process connection on the side in the middle of the process flange, vent valve not possible	K04

<sup>1)</sup> Not suitable for connection of remote seal

<sup>2)</sup> Only together with max. spans 250, 1600, 5000 and 30000 mbar (100 inH<sub>2</sub>O, 642 inH<sub>2</sub>O, 2000 inH<sub>2</sub>O und 435 psi).

# Pressure Measurement

## Transmitters for general requirements

SITRANS P DS III  
Accessories/Spare Parts

1

Selection and Ordering data		Article No.
<b>Replacement measuring cell for differential pressure and PN 420 (MAWP 6092 psi)</b> for SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus series		<b>7 MF 4 9 9 5 -</b> <b>0 D C 0</b>
<b>Measuring cell filling</b>	<b>Measuring cell cleaning</b>	1
Silicone oil	Normal	
<b>Measured span (min. ... max.)</b>		D E F G H
2.5 ... 250 mbar	(1 ... 100 inH <sub>2</sub> O)	
6 ... 600 mbar	(2.4 ... 240 inH <sub>2</sub> O)	
16 ... 1600 mbar	(6.4 ... 642 inH <sub>2</sub> O)	
50 ... 5000 mbar	(20 ... 2000 inH <sub>2</sub> O)	
0.3 ... 30 bar	(4.35 ... 435 psi)	
<b>Wetted parts materials</b> (stainless steel process flanges)		A B L
Seal diaphragm	Parts of measuring cell	
Stainless steel	Stainless steel	
Hastelloy	Stainless steel	
Gold <sup>1)</sup>	Gold	
<b>Process connection</b> Female thread 1/4-18 NPT with flange connection		
<ul style="list-style-type: none"> <li>Sealing screw opposite process connection               <ul style="list-style-type: none"> <li>Mounting thread M12 to DIN 19213</li> <li>Mounting thread 7/16-20 UNF to IEC 61518</li> </ul> </li> <li>Vent on side of process flange               <ul style="list-style-type: none"> <li>Mounting thread M12 to DIN 19213</li> <li>Mounting thread 7/16-20 UNF to IEC 61518</li> </ul> </li> </ul>		1 3 5 7
<b>Non-wetted parts materials</b>		2
<ul style="list-style-type: none"> <li>Stainless steel process flange screws</li> </ul>		
<b>Further designs</b>		Order code
Please add <b>"-Z"</b> to Article No. and specify Order code.		
<b>O-rings for process flanges</b> (instead of FPM (Viton))		A20 A21 A22 A23
<ul style="list-style-type: none"> <li>PTFE (Teflon)</li> </ul>		
<ul style="list-style-type: none"> <li>FEP (with silicone core, approved for food)</li> </ul>		
<ul style="list-style-type: none"> <li>FFPM (Kalrez, compound 4079)</li> <li>NBR (Buna N)</li> </ul>		
<b>Inspection certificate</b> to EN 10204-3.1		C12
<b>Stainless steel process flanges for vertical differential pressure lines</b>		H03
<b>without process flanges</b>		K00

<sup>1)</sup> Not together with max. span 600 mbar (240.9 inH<sub>2</sub>O)

# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III Accessories/Spare Parts

1

Selection and Ordering data	Article No.	Selection and Ordering data	Article No.
<b>Spare parts/Accessories</b>		<b>Mounting screws</b>	
<b>Mounting bracket and fastening parts</b> for pressure transmitters SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus (7MF403-.....-..C.) For absolute pressure transmitters SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus (7MF423-.....-..C.) • made of steel • made of stainless steel	7MF4997-1AB 7MF4997-1AH	For measuring point label, grounding and connection terminals or for display (50 units)	7MF4997-1CD
<b>Mounting bracket and fastening parts</b> for pressure transmitters SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus (7MF403-.....-..A., ..B., ..D. and ..F.) For absolute pressure transmitters SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus (7MF423-.....-..A., ..B., ..D. and ..F.) • made of steel • made of stainless steel	7MF4997-1AC 7MF4997-1AJ	<b>Sealing screws</b> (1 set = 2 units) for process flange • made of stainless steel • made of Hastelloy	7MF4997-1CG 7MF4997-1CH
<b>Mounting and fastening brackets</b> For differential pressure transmitters with flange thread M10 SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus (7MF433-.... and 7MF443-....) • made of steel • made of stainless steel	7MF4997-1AD 7MF4997-1AK	<b>Sealing screws with vent valve</b> Complete (1 set = 2 units) • made of stainless steel • made of Hastelloy	7MF4997-1CP 7MF4997-1CQ
<b>Mounting and fastening brackets</b> For differential pressure transmitters with flange thread M12 SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus (7MF453-....) • made of steel • made of stainless steel	7MF4997-1AE 7MF4997-1AL	<b>Electronics</b> • for SITRANS P DS III with HART • for SITRANS P DS III with PROFIBUS PA • for SITRANS P DS III with FOUNDATION Fieldbus	7MF4997-1DK 7MF4997-1DL 7MF4997-1DM
<b>Mounting and fastening brackets</b> For differential and absolute pressure transmitters with flange thread 7/16 -20 UNF SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus (7MF433-...., 7MF443-.... and 7MF453-....) • made of steel • made of stainless steel	7MF4997-1AF 7MF4997-1AM	<b>Connection board</b> • for SITRANS P DS III • for SITRANS P DS III PROFIBUS PA and FOUNDATION Fieldbus	7MF4997-1DN 7MF4997-1DP
<b>Cover</b> made of die-cast aluminum, including gasket, for SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus • without window • with window	7MF4997-1BB 7MF4997-1BE	<b>O-rings for process flanges made of:</b> • FPM (Viton) • PTFE (Teflon) • FEP (with silicone core, approved for food) • FPPM (Kalrez, compound 4079) • NBR (Buna N)	7MF4997-2DA 7MF4997-2DB 7MF4997-2DC 7MF4997-2DD 7MF4997-2DE
<b>Cover</b> made of stainless steel, including gasket, for SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus • without window • with window	7MF4997-1BC 7MF4997-1BF	<b>Sealing ring</b> for process connection	see "Fittings"
<b>Digital indicator</b> Including mounting material for SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus	7MF4997-1BR	<b>Weldable sockets for PMC connection</b> • PMC Style Standard: Thread 1½" • PMC Style Minibolt: front-flush 1"	7MF4997-2HA 7MF4997-2HB
<b>Measuring point label</b> • without inscription (5 units) • Printed (1 unit) Data according to Y01 or Y02, Y15, Y16 and Y99 (see "Pressure transmitters")	7MF4997-1CA 7MF4997-1CB-Z Y...: .....	<b>Gaskets for PMC connection</b> (packing unit = 5 units) • PTFE seal for PMC Style Standard: Thread 1½" • Gasket made of Viton for PMC Style Minibolt: front-flush 1"	7MF4997-2HC 7MF4997-2HD
		<b>Weldable socket for TG52/50 and TG52/150 connection</b> • TG52/50 connection • TG52/150 connection	7MF4997-2HE 7MF4997-2HF
		<b>Seals for TG 52/50 and TG 52/150 made of silicone (FDA compliant)</b>	7MF4997-2HG
		<b>Seals for flange connection with front-flush diaphragm</b> Material FPM (Viton), 10 units • DN 25, PN 40 (M11) • DN 25, PN 100 (M21) • 1", class 150 (M40) • 1", class 300 (M45) ▶ Available ex stock	7MF4997-2HH 7MF4997-2HJ 7MF4997-2HK 7MF4997-2HL

# Pressure Measurement

## Transmitters for general requirements

SITRANS P DS III  
Accessories/Spare Parts

1

Selection and Ordering data	Article No.
<b>Operating Instructions<sup>1)</sup></b>	
<ul style="list-style-type: none"> <li>• for SITRANS DS III with HART               <ul style="list-style-type: none"> <li>- German <b>A5E00047090</b></li> <li>- English <b>A5E00047092</b></li> <li>- French <b>A5E00053218</b></li> <li>- Spanish <b>A5E00053219</b></li> <li>- Italian <b>A5E00053220</b></li> </ul> </li> <li>• for SITRANS DS III with PROFIBUS PA               <ul style="list-style-type: none"> <li>- German <b>A5E00053275</b></li> <li>- English <b>A5E00053276</b></li> <li>- French <b>A5E00053277</b></li> <li>- Spanish <b>A5E00053278</b></li> <li>- Italian <b>A5E00053279</b></li> </ul> </li> <li>• for SITRANS DS III with FOUNDATION Fieldbus               <ul style="list-style-type: none"> <li>- German <b>A5E00279629</b></li> <li>- English <b>A5E00279627</b></li> </ul> </li> </ul>	
<b>Compact operating instructions</b>	
The compact operating instructions are available in 21 EU languages on the product CD supplied with each transmitter. They can also be downloaded from the SITRANS P web page.	
<b>Brief instruction (Leporello)</b>	
German, English	
<ul style="list-style-type: none"> <li>• for SITRANS DS III with HART <b>A5E00047093</b> <ul style="list-style-type: none"> <li>- German, English</li> </ul> </li> <li>• for SITRANS DS III with PROFIBUS PA <b>A5E00053274</b> <ul style="list-style-type: none"> <li>- German, English</li> </ul> </li> <li>• for SITRANS DS III with FOUNDATION Fieldbus <b>A5E00282355</b> <ul style="list-style-type: none"> <li>- German, English</li> </ul> </li> </ul>	
<b>CD with SITRANS P documentation</b>	<b>A5E00090345</b>
German, English, French, Spanish, Italian incl. compact operating instructions in 21 EU languages	
<b>Certificates (order only via SAP)</b>	
instead of Internet download	
<ul style="list-style-type: none"> <li>• hard copy (to order) <b>A5E03252406</b></li> <li>• on CD (to order) <b>A5E03252407</b></li> </ul>	
<b>Operating Instructions</b>	<b>A5E00078060</b>
for replacement of electronics, measuring cell and connection board (only available from the Internet <sup>1)</sup> )	
<b>HART modem</b>	
<ul style="list-style-type: none"> <li>• with RS232 interface ▶ <b>7MF4997-1DA</b></li> <li>• with USB interface ▶ <b>7MF4997-1DB</b></li> </ul>	
<b>Supplementary electronics for 4-wire connection</b>	<b>See page 1/159</b>

▶ Available ex stock

Power supply units see Chap. 7 "Supplementary Components".

<sup>1)</sup> You can download these operating instructions free-of-charge from our Internet site at [www.siemens.com/sitransp](http://www.siemens.com/sitransp).



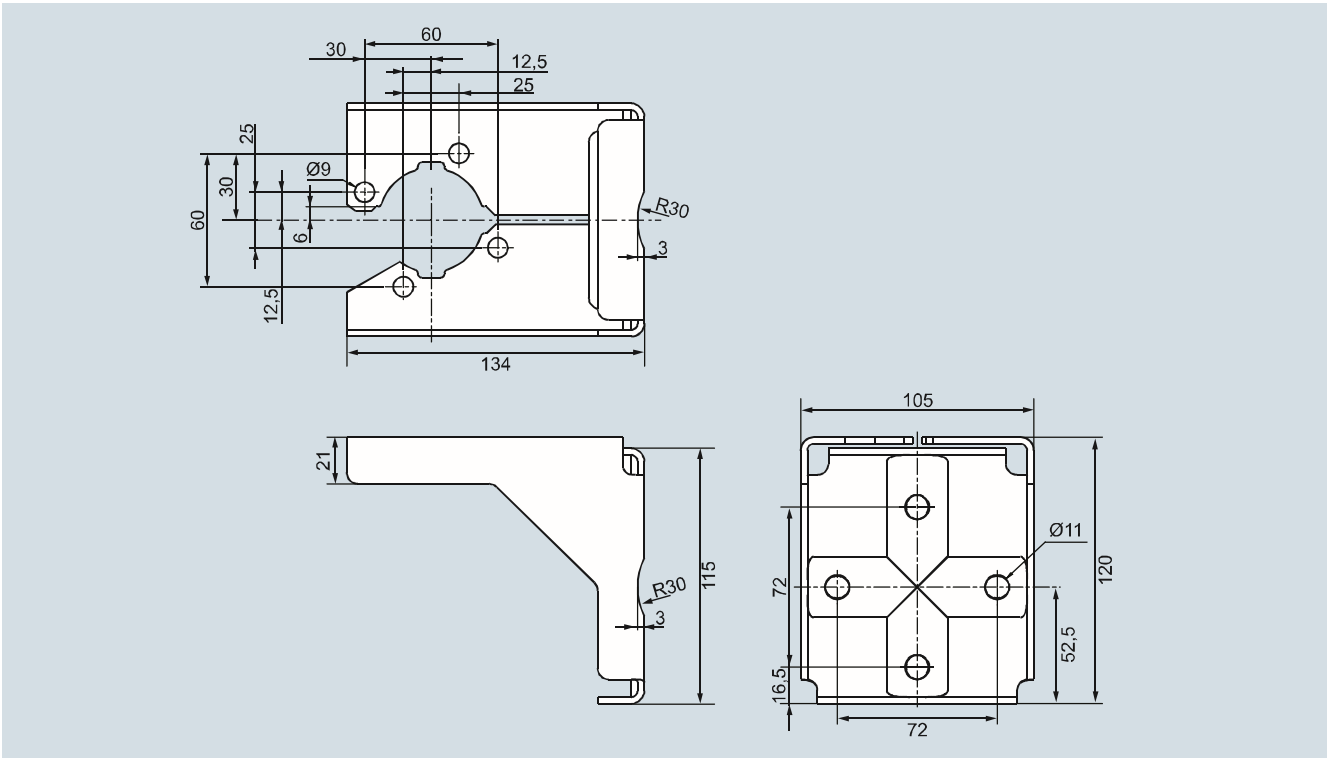
# Pressure Measurement

## Transmitters for general requirements

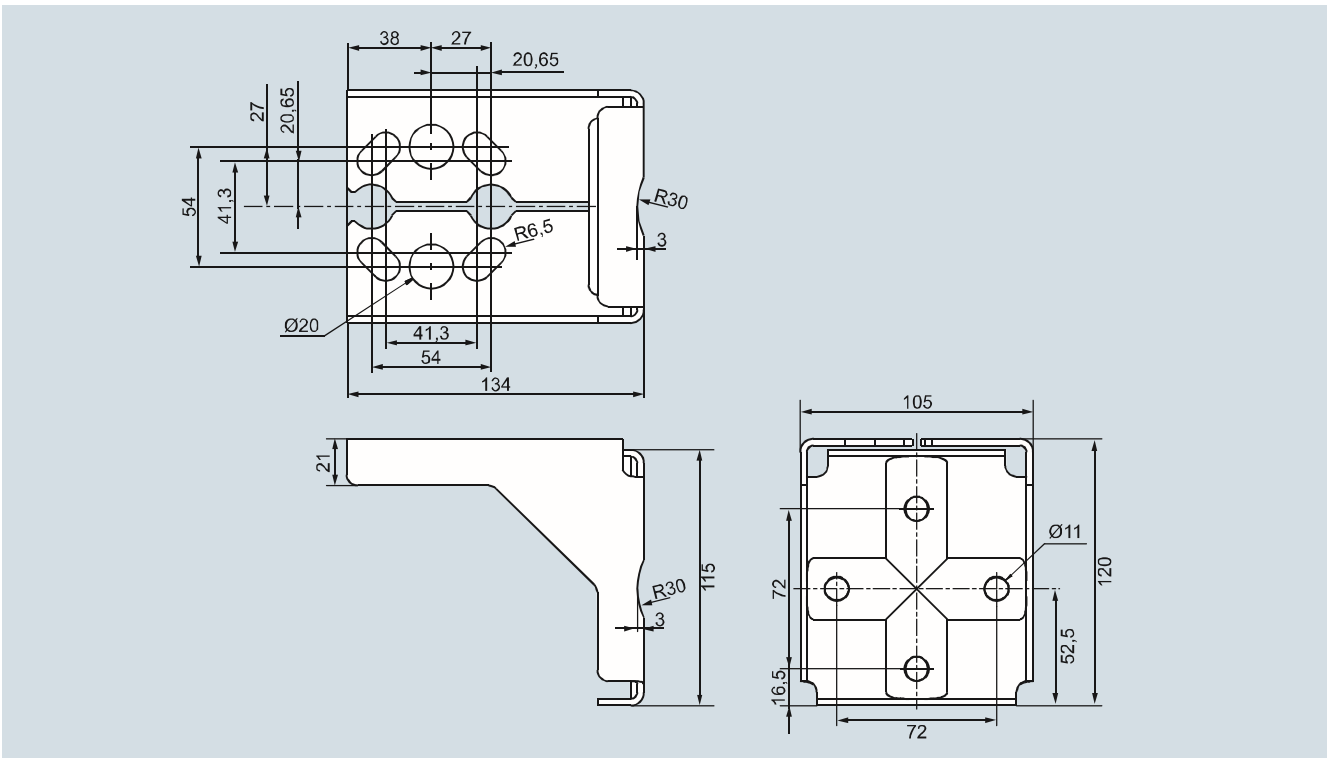
SITRANS P DS III  
Accessories/Spare Parts

1

### Dimensional drawings



Mounting bracket for SITRANS P DS III and SITRANS P280 gauge and absolute pressure-transmitters, dimensions in mm  
mounting bracket material: Sheet-steel Mat. No. 1.0330, chrome-plated, or stainless steel Mat. No. 1.4301 (304)



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

# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III - Factory-mounting of valve manifolds on transmitters

1

#### Overview

SITRANS P transmitters

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

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

- 7MF9011-4EA and 7MF9011-4FA valve manifolds for gauge pressure and absolute pressure transmitters
- 7MF9411-5BA and 7MF9411-5CA valve manifolds for absolute pressure and differential pressure transmitters

#### Design

The 7MF9011-4EA valve manifolds are sealed with gaskets made of PTFE between transmitter and the valve manifold as standard. Soft iron, stainless steel and copper gaskets are also available for sealing purposes if preferred.

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

The 7MF9411-5BA and 7MF9411-5CA valve manifolds are sealed with PTFE sealing rings between the transmitter and the valve manifold.

Once installed, the complete unit is checked under pressure for leaks (compressed air 6 bar (87 psi)) 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 EN10204 when choosing the option "Factory mounting of valve manifolds", a separate certificate is provided for the transmitters and the valve manifolds respectively.

#### Selection and Ordering data

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



Add **-Z** to the Article No. of the transmitter and add Order codes

SITRANS P DSIII  
7MF403-...1.-..., 7MF423-...1.-...  
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 EN10204-2.2

Order code

**T03**

##### Further designs:

Delivery includes mounting brackets and mounting clips made of stainless steel (instead of the mounting bracket supplied with the transmitter)

**A02**

Supplied acceptance test certificate to EN 10204- 3.1 for transmitters and mounted valve manifold

**C12**

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



Add **-Z** to the Article No. of the transmitter and add Order codes

SITRANS P DSIII  
7MF403-...0.-..., 7MF423-...0.-...  
with process connection collar G1/2 A to EN 837-1 with gasket made of PTFE between valve manifold and transmitter

Order code

**T02**

##### Alternative sealing material:

- Soft iron
- Stainless steel, Mat. No. 14571
- copper

**A70**

**A71**

**A72**

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**

Supplied acceptance test certificate to EN 10204- 3.1 for transmitters and mounted valve manifold

**C12**

##### 7MF9411-5BA valve manifold on absolute and differential pressure transmitters



Add **-Z** to the Article No. of the transmitter and add Order codes

SITRANS P DSIII  
7MF433-...1.-..., 7MF443-... and 7MF453-...<sup>1)</sup>  
mounted with gaskets made of PTFE and screws made of  
• chromized steel  
• made of stainless steel  
Delivery incl. high-pressure test certified by test report to EN 10204-2.2

Order code

**U01**

**U02**

##### Further designs:

Delivery includes mounting bracket and mounting clips made of  
• Steel  
• Stainless steel  
(instead of the mounting bracket supplied with the transmitter)

**A01**

**A02**

Supplied acceptance test certificate to EN 10204-3.1 for transmitters and mounted valve manifold

**C12**

##### 7MF9411-5CA valve manifold on differential pressure transmitters



Add **-Z** to the Article No. of the transmitter and add Order codes

SITRANS P DSIII  
7MF443-... and 7MF453-...<sup>1)</sup>  
mounted with gaskets made of PTFE and screws made of  
• chromized steel  
• Stainless steel  
Delivery incl. high-pressure test certified by test report to EN 10204-2.2

Order code

**U03**

**U04**

##### Further designs:

Delivery includes mounting bracket and mounting clips made of  
• Steel  
• Stainless steel  
(instead of the mounting bracket supplied with the transmitter)

**A01**

**A02**

Supplied acceptance test certificate to EN 10204-3.1 for transmitters and mounted valve manifold

**C12**

<sup>1)</sup> For 7MF453-... transmitters, you require a 7/10-20 UNF connection thread in the process flange

# Pressure Measurement

## Transmitters for general requirements

SITRANS P DS III - Factory-mounting of valve manifolds on transmitters

1

### Dimensional drawings

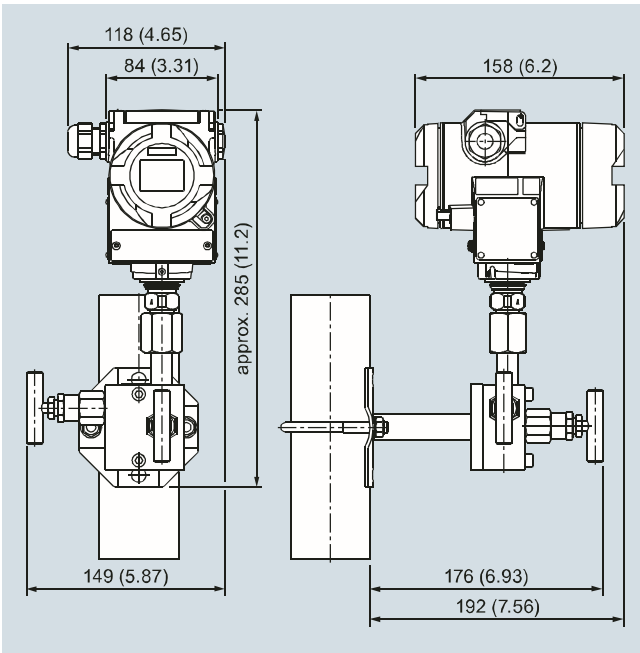
#### Valve manifolds mounted on SITRANS P DS III



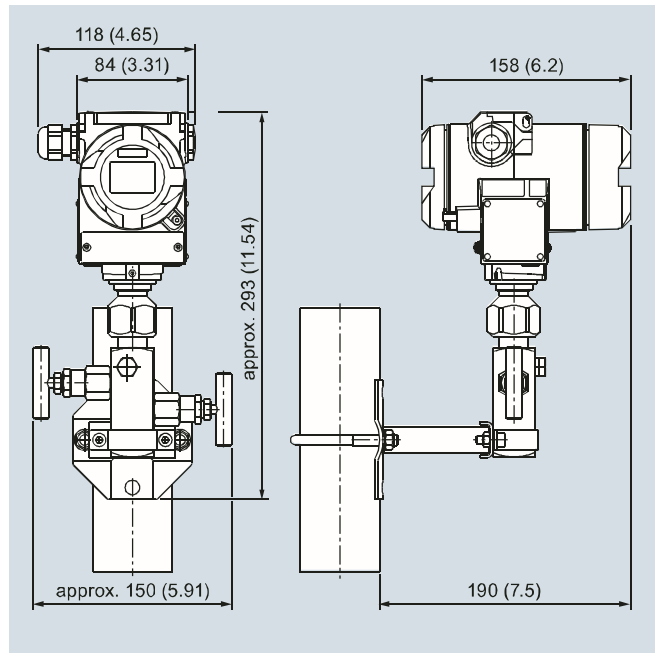
7MF9011-4EA valve manifold with mounted gauge pressure and absolute pressure transmitters



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



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



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

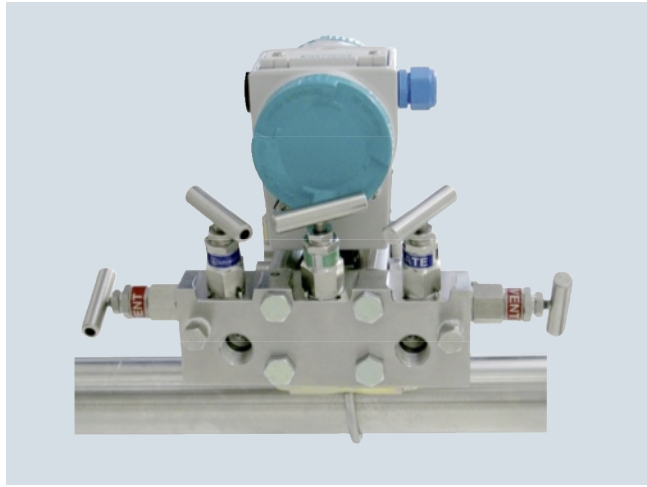
# Pressure Measurement Transmitters for general requirements

SITRANS P DS III - Factory-mounting  
of valve manifolds on transmitters

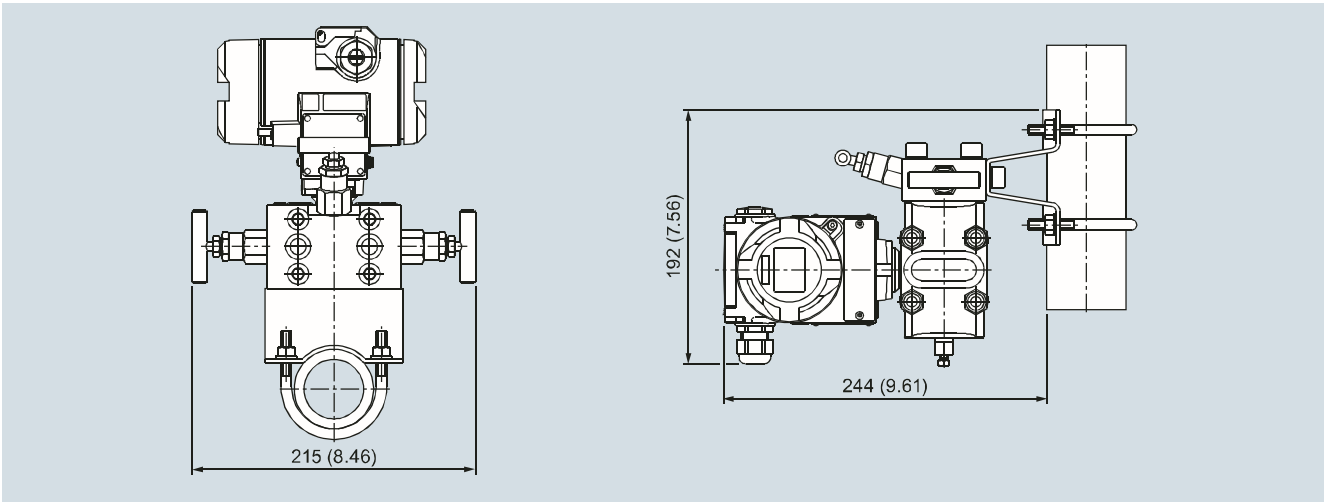
1



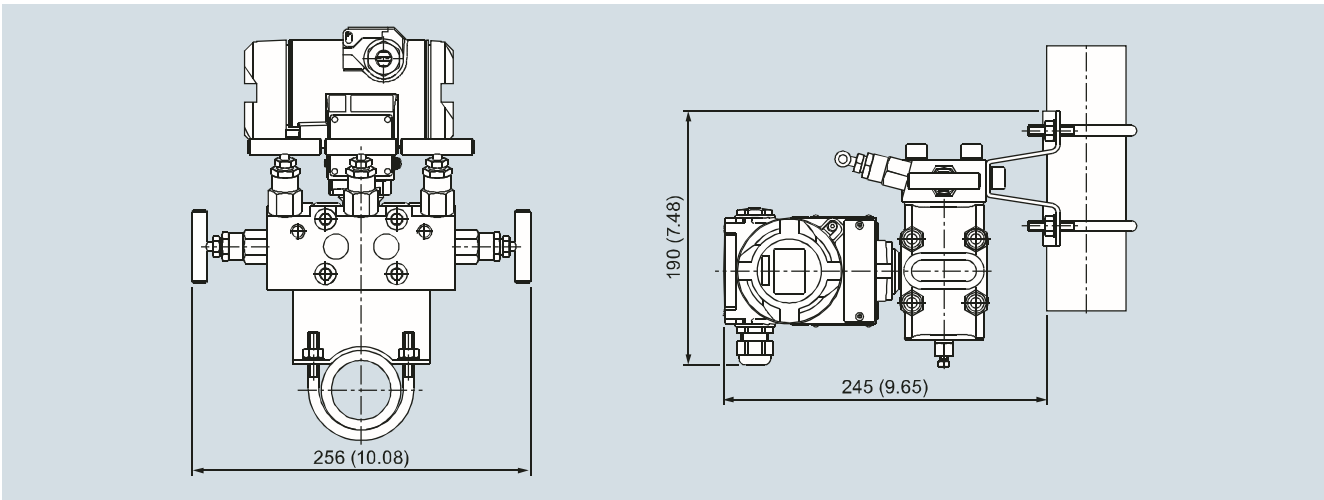
7MF9411-5BA valve manifold with mounted differential pressure transmitter



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



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



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