

# Pressure Measurement

## Transmitters for general requirements

**SITRANS P DS III**  
Technical description

### 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.

# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III

#### Technical description

#### 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

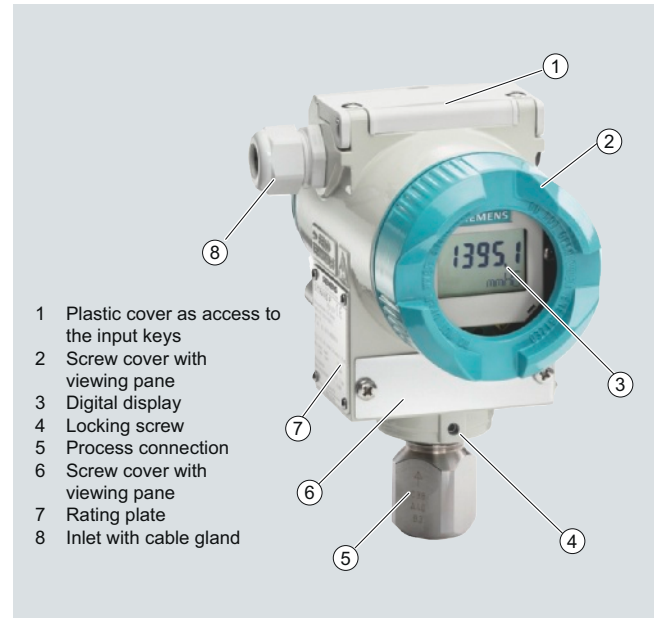
- DN 80 or DN 100
- 3 inch or 4 inch

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 Order No. is located on the side of the housing. The specified number together with the ordering information provide details on the optional design details and on the possible measuring range (physical properties of built-in sensor element).

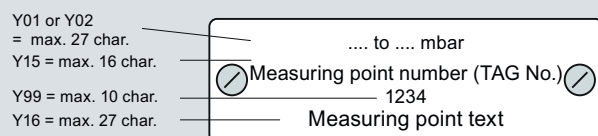
The approval label is located on the opposite side.

The housing is made of die-cast aluminium or stainless steel precision casting. A round cover (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



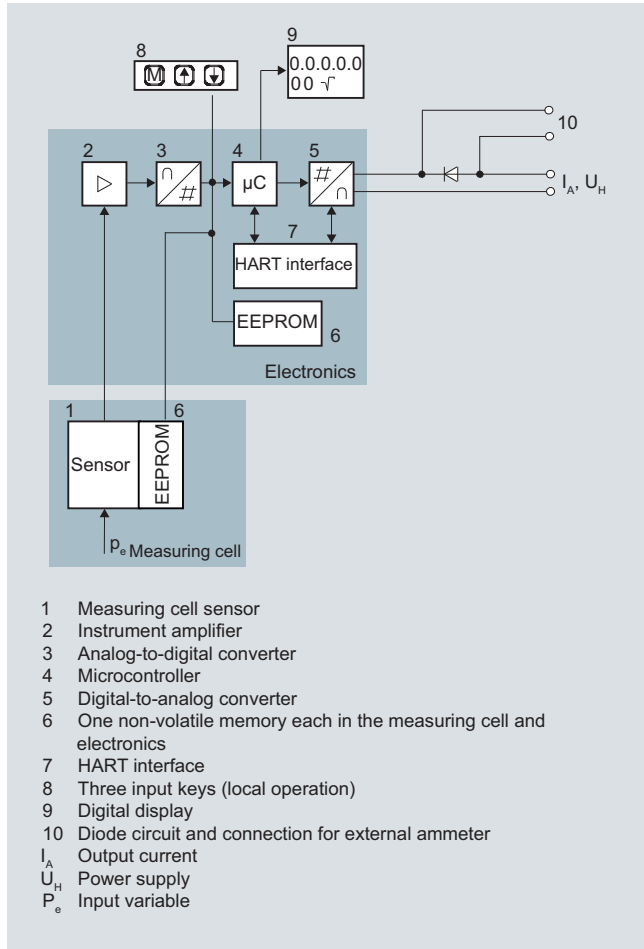
# Pressure Measurement

## Transmitters for general requirements

SITRANS P DS III  
Technical description

### Function

#### Operation of electronics with HART communication



Function diagram of electronics

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

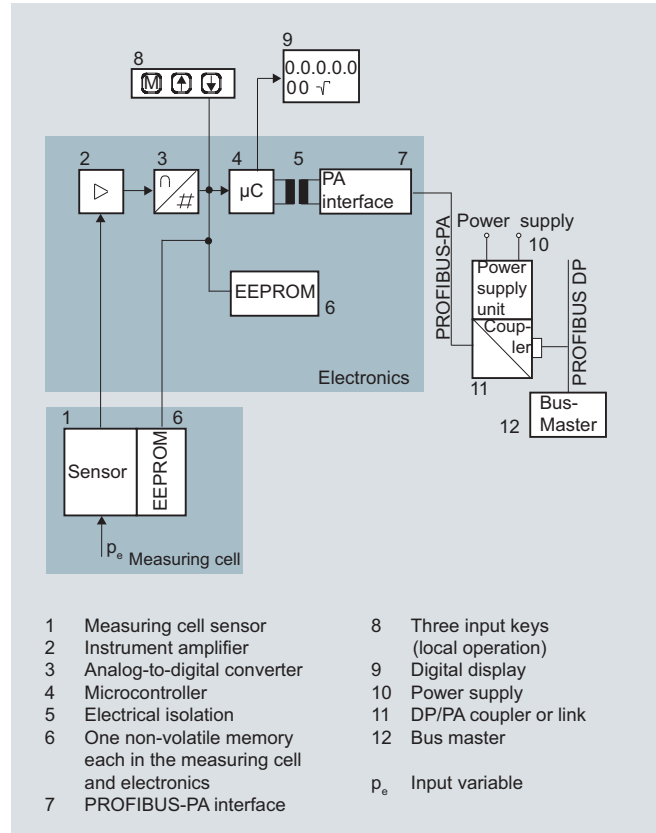
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The one memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced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

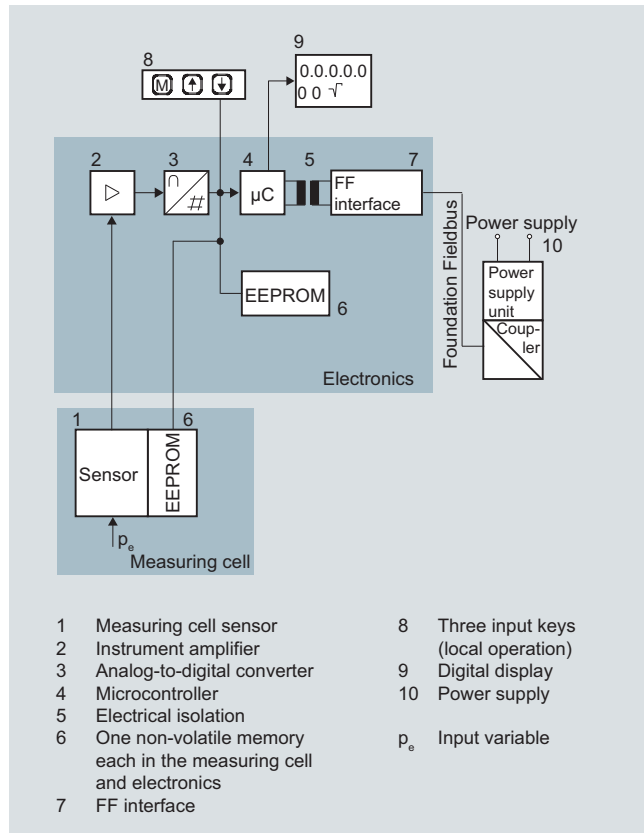
# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III

#### Technical description

#### Operation of electronics with FOUNDATION Fieldbus communication



Function diagram of electronics

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

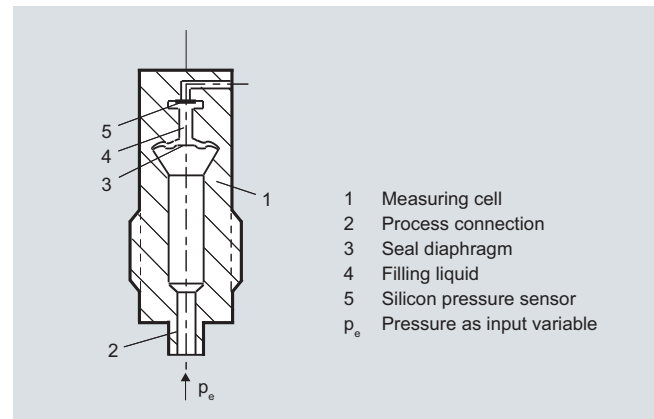
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The one memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced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

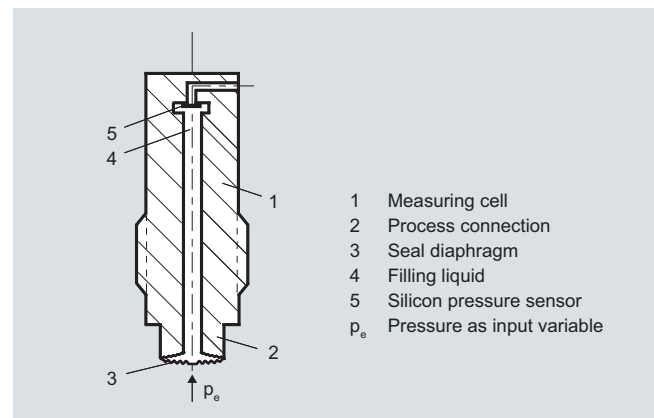
##### Measuring cell for gauge pressure



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

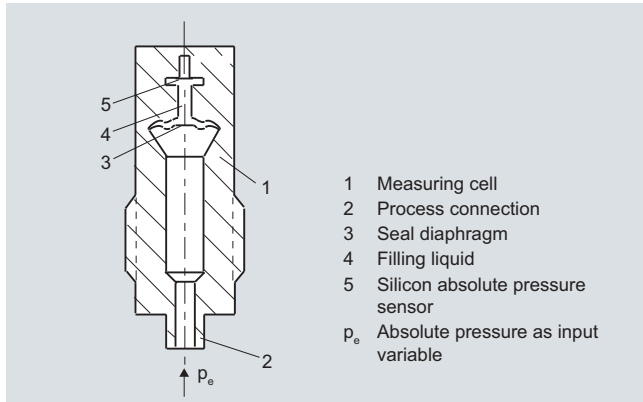
The pressure  $p_e$  is applied through the process connection (2, Figure "Measuring cell for gauge pressure, with front-flush diaphragm for paper industry, function diagram") to the measuring cell (1). This pressure is subsequently transmitted further through the seal diaphragm (3) and the filling liquid (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  
Technical description

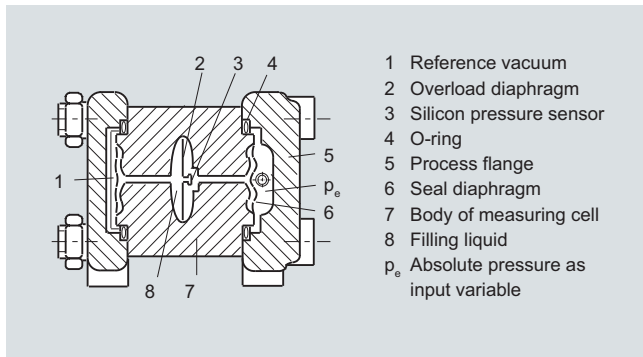
### Measuring cell for absolute pressure from gauge pressure series



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



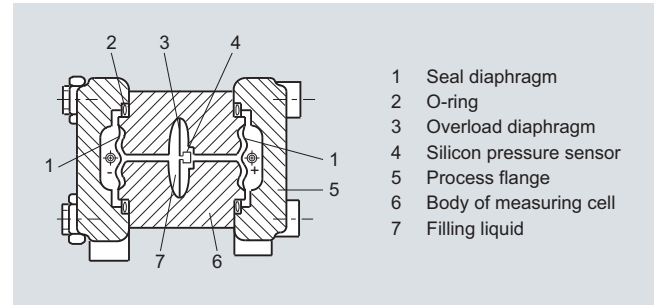
Measuring cell for absolute pressure from differential pressure series, function diagram

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



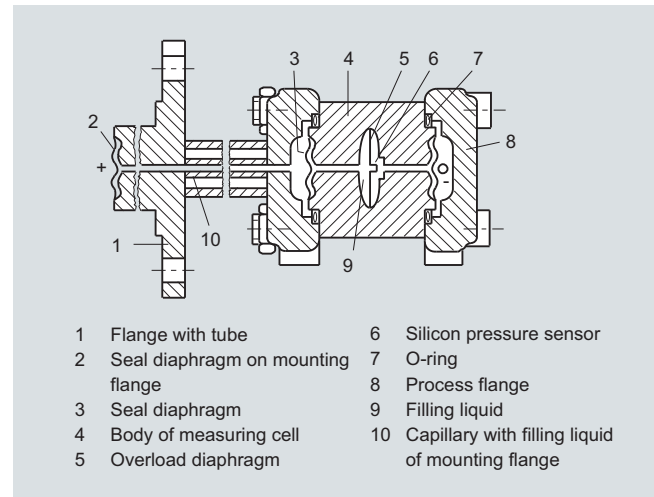
Measuring cell for differential pressure and flow, function diagram

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 (7), 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 (2) is flexed until the seal diaphragm rests on the body of the measuring cell (7), thus protecting the silicon pressure sensor from overloads.



# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III Technical description

#### Parameterization DS III

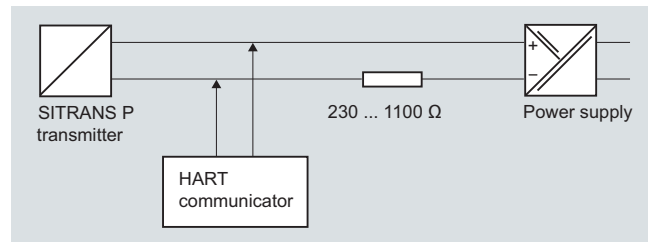
Depending on the version, there are a range of options for parameterizing the pressure transmitter and for setting or scanning the parameters.

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

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

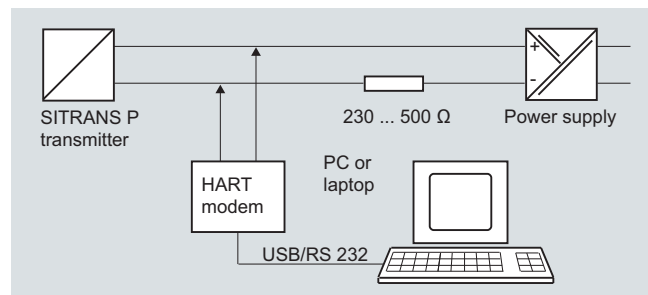
#### Parameterization using HART

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

<sup>1)</sup> Cancel apart from write protection

<sup>2)</sup> 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

# Pressure Measurement

## Transmitters for general requirements

SITRANS P DS III  
Technical description

2

### 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, mmH <sub>2</sub> O (4 °C), inH <sub>2</sub> O, inH <sub>2</sub> O (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

#### Technical specifications

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

	HART	PROFIBUS PA and FOUNDATION Fieldbus
<b>Input</b>	Gauge pressure	
Measured variable	Span (min. ... max.)	Max. perm. test pressure
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Nominal measuring range	Max. perm. test pressure
	0.01 ... 1 bar (0.15 ... 14.5 psi)	6 bar (87 psi)
	0.04 ... 4 bar (0.58 ... 58 psi)	10 bar (145 psi)
	0.16 ... 16 bar (2.32 ... 232 psi)	32 bar (464 psi)
	0.6 ... 63 bar (9.14 ... 914 psi)	100 bar (1450 psi)
	1.6 ... 160 bar (23.2 ... 2320 psi)	250 bar (3626 psi)
	4.0 ... 400 bar (58 ... 5802 psi)	600 bar (8700 psi)
	7.0 ... 700 bar (102 ... 10153 psi)	800 bar (11603 psi)
Lower measuring limit	30 mbar a (0.44 psia)	
• Measuring cell with silicone oil filling	30 mbar a (0.44 psia)	
• Measuring cell with inert filling liquid	100 % of max. span (for oxygen version and inert filling liquid; max. 120 bar (1740 psi))	
Upper measuring limit		
<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.	
<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	$\leq 0.075 \%$	
- $r \leq 10$	$\leq (0.0029 \cdot r + 0.071) \%$	
- $10 < r \leq 30$	$\leq (0.0045 \cdot r + 0.071) \%$	
- $30 < r \leq 100$	$\leq (0.005 \cdot r + 0.05) \%$	
Long-term drift (temperature change $\pm 30 \text{ °C}$ ( $\pm 54 \text{ °F}$ ))		
• 1 ... 4-bar measuring cell	$\leq (0.25 \cdot r) \%$ per 5 years	$\leq 0.25 \%$ per 5 years
• 16 ... 400-bar measuring cell	$\leq (0.125 \cdot r) \%$ per 5 years	$\leq 0.125 \%$ per 5 years
Influence of ambient temperature		
• at -10 ... +60 °C (14 ... 140 °F)	$\leq (0.08 \cdot r + 0.1) \%^{1)}$ (at 700 bar: $\leq (0.1 \cdot r + 0.2) \%^{2)}$	$\leq 0.3 \%$
• at -40 ... -10 °C and +60 ... +85 °C (-40 ... +14 °F and 140 ... 185 °F)	$\leq (0.1 \cdot r + 0.15) \%/10 \text{ K}$	$\leq 0.25 \%/10 \text{ K}$
Measured Value Resolution	-	$3 \cdot 10^{-5}$ of nominal measuring range



# Pressure Measurement

## Transmitters for general requirements

**SITRANS P DS III**  
for gauge pressure

2

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

	HART	PROFIBUS PA and FOUNDATION Fieldbus
Rated conditions		
Degree of protection (to EN 60529)	IP65 (optional 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		
- 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 EN 61326 and NAMUR NE 21	
Design		
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 120 bar (1740 psi) at 60 °C (140 °F))	
Process connection	Connection shank G½B to DIN EN 837-1, female thread ½ -14 NPT or oval flange (PN 160 (MAWP 2320 psi)) to DIN 19213 with mounting thread M10 or 7/16-20 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)	
Power supply U <sub>H</sub>		
Terminal voltage on transmitter	10.5 ... 45 V DC 10.5 ... 30 V DC in intrinsically-safe mode	Supplied through bus -
Separate 24 V power supply necessary	-	No
Bus voltage		
• Not Ex	-	9 ... 32 V
• With intrinsically-safe operation	-	9 ... 24 V
Current consumption		
• Basic current (max.)	-	12.5 mA
• Start-up current ≤ basic current	-	Yes
• Max. current in event of fault	-	15.5 mA
Fault disconnection electronics (FDE) available	-	Yes

# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III for gauge pressure

2

#### 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 99 ATEX 2122	
- Marking	Ex II 1/2 G EEx ia/ib IIB/IIC T6	
- 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 EEx d IIC T4/T6	
- 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: $U_H = 9 \dots 32 \text{ V DC}$ ; $P_{\max} = 1.2 \text{ W}$
• Type of protection "n" (zone 2)	TÜV 01 ATEX 1696 X	Planned
- Marking	Ex II 3 G EEx nA L IIC T4/T5/T6	-
• 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 < (0.064 · r + 0.08) % / 28 °C (50 °F).

<sup>2)</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 gauge pressure

2

<b>HART communication</b>		<b>FOUNDATION Fieldbus communication</b>	
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

2

Selection and Ordering data		Order 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)</sup>		▶ Y
<b>Process connection</b>		
• Connection shank G½B to EN 837-1		▶ 0
• Female thread ½-14 NPT		▶ 1
• Stainless steel oval flange		
- 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 <sup>4)</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 (EEx ia)"		▶ B
- "Explosion-proof (EExd)" <sup>5)</sup>		▶ D
- "Intrinsic safety and flameproof enclosure" (EEx ia + EEx d)" <sup>6)</sup>		▶ P
- "Ex nA/nL (Zone 2)"		▶ E
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)" <sup>6)</sup>		▶ R
• With FM + CSA, Type of protection:		
- "Intrinsic Safe und Explosion Proof (is + xp)" <sup>5)</sup>		▶ NC
<b>Electrical connection / cable entry</b>		
• Screwed gland Pg 13.5 (adapter) <sup>7)</sup>		▶ A
• Screwed gland M20 x1.5		▶ B
• Screwed gland ½-14 NPT		▶ C
• Han 7D plug (plastic housing) incl. mating connector <sup>7)</sup>		▶ D
• M12 connectors (metal) <sup>8)</sup>		▶ F

Selection and Ordering data		Order 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		
Power supply units see Chap. 8 "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) Not in conjunction with Electrical connection "Screwed gland Pg 13.5" and "Han7D plug".		
5) Without cable gland, with blanking plug		
6) With enclosed cable gland EEx ia and blanking plug		
7) Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".		
8) M12 delivered without cable socket		

# Pressure Measurement

## Transmitters for general requirements

**SITRANS P DS III**  
for gauge pressure

2

Selection and Ordering data		Order No.
<b>Pressure transmitter for gauge pressure</b>		
<b>SITRANS P DS III with PROFIBUS PA (PA)</b>		<b>7MF4034 -</b>
<b>SITRANS P DS III with FOUNDATION Fieldbus (FF)</b>		<b>7MF4035 -</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>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)</sup>		Y
<b>Process connection</b>		
• Connection shank G½B to EN 837-1		0
• Female thread ½-14 NPT		1
• Stainless steel oval flange		
- 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 (Exd)" <sup>4)</sup>		D
"Intrinsic safety and flameproof enclosure" (Ex ia + Ex d)" <sup>5)</sup>		P
"Ex nA/nL (Zone 2)"		E
"Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia + Exd + Zone 1D/2D)" <sup>6)</sup> (not for DS III FF)		R
With FM + CSA, Type of protection:		
"Intrinsic Safe und Explosion Proof (is + xp)" <sup>5)</sup>		NC
<b>Electrical connection/cable entry</b>		
• Screwed gland M20 x 1.5		B
• Screwed gland ½-14 NPT		C
• M12 connectors (metal) <sup>6)</sup>		F

Selection and Ordering data		Order No.
<b>Pressure transmitter for gauge pressure</b>		
<b>SITRANS P DS III with PROFIBUS PA (PA)</b>		<b>7MF4034 -</b>
<b>SITRANS P DS III with FOUNDATION Fieldbus (FF)</b>		<b>7MF4035 -</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
► Available ex stock		
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) Without cable gland, with blanking plug.		
5) With enclosed cable gland EEx ia and blanking plug.		
6) M12 delivered without cable socket		

# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III for gauge pressure

2

Selection and Ordering data	Order code			
<b>Further designs</b> Add "-Z" to Order No. and specify Order Code.		HART	PA	FF
<b>Pressure transmitter with mounting bracket (2 shackles, 4 nuts, 4 U-plates, 1 angle) 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 (metal)</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></b> Acc. to EN 10204-3.1	C12	✓	✓	✓
<b>Factory certificate</b> Acc. to EN 10204-2.2	C14	✓	✓	✓
<b>"Functional safety (SIL2)" certificate to IEC 61508</b>	C20	✓		
<b>PROFIsafe certificate and protocol</b>	C21		✓	
<b>"Functional safety (SIL2/3)" certificate to IEC 61508</b>	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</b>	D07	✓	✓	✓
<b>Degree of protection 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 (Ex ia)")	E01	✓	✓	✓
<b>Oxygen application</b> (In the case of oxygen measurement and inert liquid max. 120 bar (1740 psi) at 60°C (140 °F))	E10	✓	✓	✓
<b>Export approval Korea</b>	E11	✓	✓	✓
<b>Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-B..)	E25	✓	✓	✓
<b>Explosion-proof "Intrinsic safety" (Ex d) to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-D..)	E26	✓	✓	✓
<b>Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-P..)	E28	✓	✓	
<b>Ex Approval IEC Ex (EEEx ia)</b> (only for transmitter 7MF4...-.....-B..)	E45	✓	✓	✓
<b>Ex Approval IEC Ex (EEEx id)</b> (only for transmitter 7MF4...-.....-D..) (only for transmitter 7MF4...-.....-B..)	E46	✓	✓	✓

Selection and Ordering data	Order code			
<b>Further designs</b> Add "-Z" to Order No. and specify Order Code.		HART	PA	FF
<b>Explosion-proof "Intrinsic safety" to NEPSI (China)</b>	E55	✓	✓	✓
<b>Explosion protection "Explosion-proof" to NEPSI (China)</b> (only for transmitter 7MF4...-.....-D..)	E56	✓	✓	✓
<b>Ex protection "Zone 2" to NEPSI (China)</b> (only for transmitter 7MF4...-.....-E..)	E57	✓	✓	✓
<b>Two coats of lacquer on casing and cover (PU on epoxy)</b>	G10	✓	✓	✓

Selection and Ordering data	Order code			
<b>Additional data</b> Please add "-Z" to Order No. and specify Order code(s) and plain text.		HART	PA	FF
<b>Measuring range to be set</b> Specify in plain text (max. 5 characters): Y01: ... up to ... mbar, bar, kPa, MPa, psi	Y01	✓		
<b>Stainless steel tag plate (measuring point description)</b> Max. 16 characters, specify in plain text: Y15: .....	Y15	✓	✓	✓
<b>Measuring point text</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>3)</sup> , inH <sub>2</sub> O <sup>3)</sup> , ftH <sub>2</sub> O <sup>3)</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>3)</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		✓	

Factory mounting of valve manifolds, see accessories.

Only "Y01", "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)

<sup>1)</sup> 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.

<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> Preset values can only be changed over SIMATIC PDM.

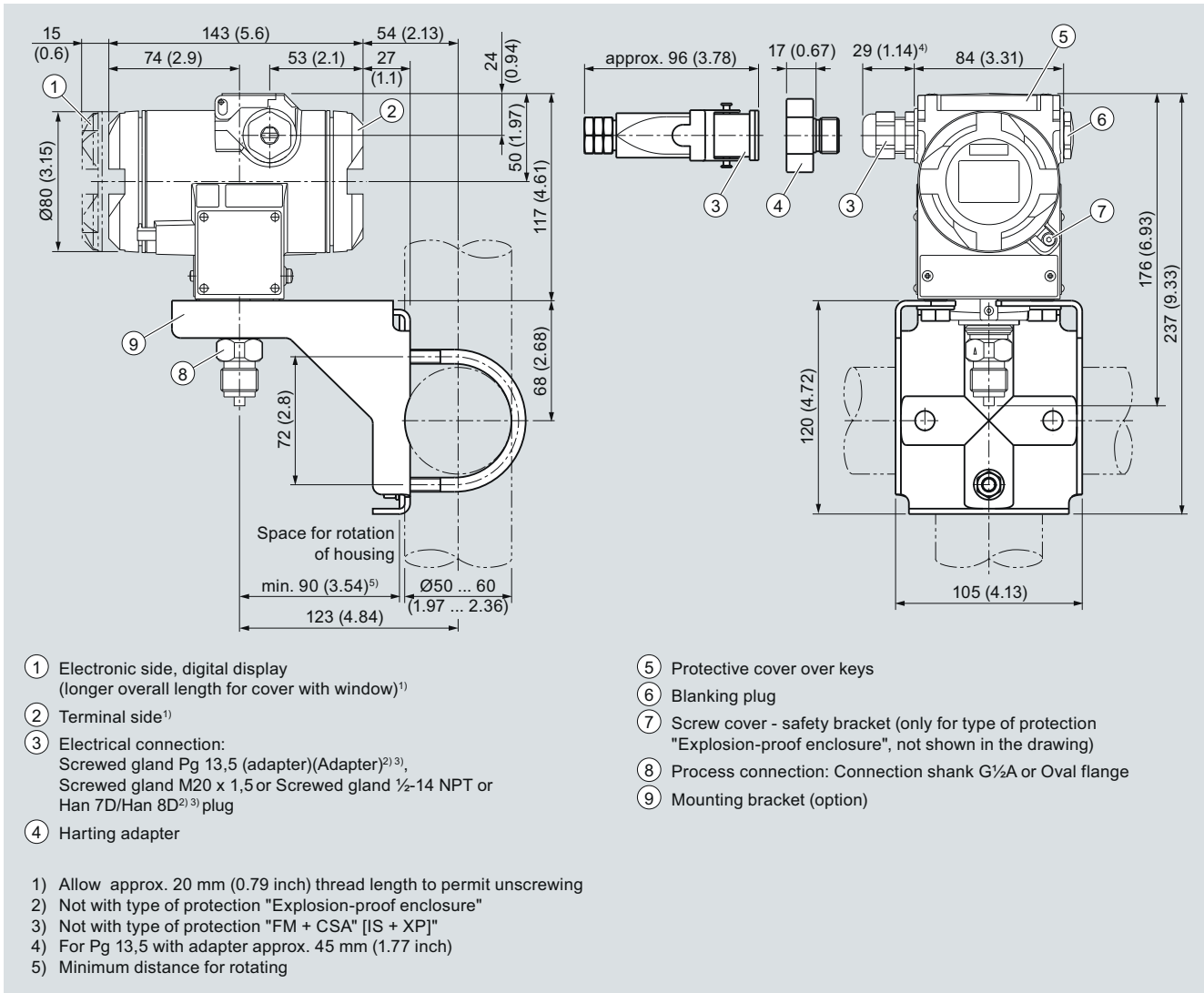


# Pressure Measurement

## Transmitters for general requirements

SITRANS P DS III  
for gauge pressure

### 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**

### 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.			
<b>Measuring accuracy</b>				
Reference conditions (All error data refer always refer to the set span)	Acc. to IEC 60770-1 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	Gauge pressure, front-flush	Absolute pressure, front-flush	Gauge pressure, front-flush	Absolute pressure, front-flush
• Linear characteristic				
- r ≤ 10	≤ (0.0029 · r + 0.071) %	≤ 0.2 %	≤ 0.075 %	≤ 0.2 %
- 10 < r ≤ 30	≤ (0.0045 · r + 0.071) %	≤ 0.4 %		
- 30 < r ≤ 100	≤ (0.005 · r + 0.05) %			
Long-term stability (temperature change ± 30 °C (± 54 °F))	≤ (0.25 · r) % per 5 years		≤ 0.25 % per 5 years	

# Pressure Measurement

## Transmitters for general requirements

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

2

SITRANS P DS III series for gauge and absolute pressure, with front-flush diaphragm				
	HART		PROFIBUS PA and FOUNDATION Fieldbus	
Influence of ambient temperature				
• at -10 ... +60 °C (14 ... 140 °F)	≤ (0.1 · r + 0.2) % <sup>1)</sup>	≤ (0.2 · r + 0.3) %	≤ 0.3 %	≤ 0.5 %
• at -40 ... -10 °C and 60 ... 85 °C (-40 ... +14 °F and 140 ... 185 °F)	≤ (0.1 · r + 0.15) %/10 K	≤ (0.2 · r + 0.3) %/10 K	≤ 0.25 %/10 K	≤ 0.5 %/10 K
Influence of mounting position	0.1 mbar (0.00145 psi) per 10° inclination			
Measured Value Resolution	-		3 · 10 <sup>-5</sup> of nominal measuring range	
Influence of the medium temperature (only with front-flush diaphragm)				
• Temperature difference between medium temperature and ambient temperature	3 mbar/10 K (0.04 psi/10 K)			
<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)			
• 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))			
• Climatic class				
- Condensation	Relative humidity 0 ... 100 % 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				
- Emitted interference and interference immunity	Acc. to EN 61326 and NAMUR NE 21			
<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 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	-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			
Measuring cell filling	Silicone oil or inert filling liquid			
Process connection	• Flanges as per EN and ASME • F&B and pharmaceutical flanges			
Surface quality touched-by-media	R <sub>a</sub> -values ≤ 0.8 μm (32 μ-inch)/welds R <sub>a</sub> ≤ 1.6 μm (64 μ-inch) (Process connections according to 3A; R <sub>a</sub> -values ≤ 0,8 μm (32 μ-inch)/welds R <sub>a</sub> ) ≤ 0,8 μm (32 μ-inch)			

# Pressure Measurement

## Transmitters for general requirements

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

2

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 99 ATEX 2122	
- Marking	Ex II 1/2 G EEx ia/ib IIB/IIC T6	
- 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: $U_o = 24 \text{ V}$ , $I_o = 250 \text{ mA}$ , $P_o = 1.2 \text{ W}$ $L_i = 7 \mu\text{H}$ , $C_i = 1.1 \text{ nF}$
- Effective internal inductance/capacitance	$L_i = 0.4 \text{ mH}$ , $C_i = 6 \text{ nF}$	
• Explosion-proof "d"	PTB 99 ATEX 1160	
- Marking	Ex II 1/2 G EEx d IIC T4/T6	
- 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: $U_o = 24 \text{ V}$ , $I_o = 250 \text{ mA}$ , $P_o = 1.2 \text{ W}$ $L_i = 7 \mu\text{H}$ , $C_i = 1.1 \text{ nF}$
- Effective internal inductance/capacitance	$L_i = 0.4 \text{ mH}$ , $C_i = 6 \text{ nF}$	
• 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: $U_H = 9 \dots 32 \text{ V DC}$ ; $P_{\max} = 1.2 \text{ W}$
• Type of protection "n" (zone 2)	TÜV 01 ATEX 1696 X	Planned
- Marking	Ex II 3 G EEx nA L IIC T4/T5/T6	-
• 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 < (0.064 · 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**

2

<b>HART communication</b>		<b>FOUNDATION Fieldbus communication</b>	
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**

2

Selection and Ordering data		Order No.
<b>Pressure transmitter for gauge and absolute pressure, front-flush diaphragm, SITRANS P DS III HART</b>		F) <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 (EEx ia)"		B
- "Explosion-proof (EExd)" <sup>3)</sup>		D
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia+ EEx d + Zone 1D/2D)" <sup>4)</sup>		R
• With FM + CSA, Type of protection:		
- "Intrinsic Safe und Explosion Proof (is + xp)" <sup>3)</sup> (Available soon)		NC
<b>Electrical connection/cable entry</b>		
• Inner thread M20 x 1.5		B
• Female thread ½-14 NPT		C
• M12 connectors (metal) <sup>5)</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

► Available ex stock

Power supply units see Chap. 8 "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 possible for flange with M.., N.. and Q.. option.

3) Without cable gland, with blanking plug

4) With enclosed cable gland EEx ia and blanking plug

5) M12 delivered without cable socket

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



# Pressure Measurement

## Transmitters for general requirements

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

Selection and Ordering data		Order No.
<b>Pressure transmitter P for gauge and absolute pressure, front-flush diaphragm:</b>		
<b>SITRANS P DS III with PROFIBUS PA (PA)</b>	F)	7MF4134-
<b>SITRANS P DS III with FOUNDATION Fieldbus (FF)</b>	F)	7MF4135-
		-
<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>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
1300 mbar a <sup>1)</sup>	(18.85 psia) <sup>1)</sup>	N
5 bar a <sup>1)</sup>	(72.5 psia) <sup>1)</sup>	O
30 bar a <sup>1)</sup>	(435 psia) <sup>1)</sup>	T
<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 (EEx ia)"		B
- "Explosion-proof (EExd)" <sup>3)</sup>		D
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)" <sup>4)</sup>		R
• With FM + CSA, Type of protection:		
- "Intrinsic Safe und Explosion Proof (is + xp)" <sup>3)</sup> (Available soon)		NC
<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>5)</sup>		D
• M12 connectors (metal) <sup>6)</sup>		F

Selection and Ordering data		Order No.
<b>Pressure transmitter P for gauge and absolute pressure, front-flush diaphragm:</b>		
<b>SITRANS P DS III with PROFIBUS PA (PA)</b>	F)	7MF4134-
<b>SITRANS P DS III with FOUNDATION Fieldbus (FF)</b>	F)	7MF4135-
		-
<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" required)		7
► Available ex stock		
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 R01, R02, R04, R10 and R11, and can only be ordered in conjunction with silicone oil.		
2) Only possible for flange with M.., N.. and Q.. option.		
3) Without cable gland, with blanking plug		
4) With enclosed cable gland EEx ia and blanking plug		
5) Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".		
6) M12 delivered without cable socket		
F) Subject to export regulations AL: 91999, ECCN: N.		

# Pressure Measurement

## Transmitters for general requirements

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

2

Selection and Ordering data	Order code			
<b>Further designs</b> Add "-Z" to Order No. and specify Order Code.		<b>HART</b>	<b>PA</b>	<b>FF</b>
<b>Plug</b>				
• Angled	A32	✓		
• Han 8D (metal, gray)	A33	✓		
<b>Cable sockets for M12 connectors (metal)</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)" certificate to IEC 61508</b>	C20	✓		
<b>PROFIsafe certificate and protocol</b>	C21		✓	
<b>"Functional safety (SIL2/3)" certificate to IEC 61508</b>	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>Export approval Korea</b>	E11	✓	✓	✓
<b>Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-B..)	E25	✓	✓	✓
<b>Explosion-proof "Intrinsic safety" (Ex d) to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-D..)	E26	✓	✓	✓
<b>Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-P..)	E28	✓	✓	
<b>Ex Approval IEC Ex (EEx ia)</b> (only for transmitter 7MF4...-.....-B..)	E45	✓	✓	✓
<b>Ex Approval IEC Ex (EEx id)</b> (only for transmitter 7MF4...-.....-D..)	E46	✓	✓	✓
<b>Two coats of lacquer on casing and cover (PU on epoxy)</b>	G10	✓	✓	✓
<b>Flanges to EN 1092-1, Form b1</b>				
• DN 25, PN 40 <sup>1)</sup>	M11	✓	✓	✓
• DN 25, PN 100 <sup>1)</sup>	M21	✓	✓	✓
• DN 40, PN 40	M13	✓	✓	✓
• DN 40, PN 100	M23	✓	✓	✓
• DN 50, PN 16	M04	✓	✓	✓
• DN 50, PN 40	M14	✓	✓	✓
• DN 80, PN 16	M06	✓	✓	✓
• DN 80, PN 40	M16	✓	✓	✓
<b>Flanges to ASME B16.5</b>				
• Stainless steel flange 1" class 150 <sup>1)</sup>	M40	✓	✓	✓
• Stainless steel flange 1½" class 150	M41	✓	✓	✓
• Stainless steel flange 2" class 150	M42	✓	✓	✓
• Stainless steel flange 3" class 150	M43	✓	✓	✓
• Stainless steel flange 4" class 150	M44	✓	✓	✓
• Stainless steel flange 1" class 300 <sup>1)</sup>	M45	✓	✓	✓
• Stainless steel flange 1½" class 300	M46	✓	✓	✓
• Stainless steel flange 2" class 300	M47	✓	✓	✓
• Stainless steel flange 3" class 300	M48	✓	✓	✓
• Stainless steel flange 4" class 300	M49	✓	✓	✓

Selection and Ordering data	Order code			
<b>Further designs</b> Add "-Z" to Order No. and specify Order Code.		<b>HART</b>	<b>PA</b>	<b>FF</b>
<b>Threaded connector to DIN 3852-2, form A, thread to ISO 228</b>				
• G ¾"-A, front-flush <sup>2)</sup>	R01	✓	✓	✓
• G 1"-A, front-flush <sup>2)</sup>	R02	✓	✓	✓
• G 2"-A, front-flush <sup>2)</sup>	R04	✓	✓	✓
<b>Tank connection<sup>3)</sup></b> Sealing is included in delivery				
• TG 52/50, PN 40	R10	✓	✓	✓
• TG 52/150, PN 40	R11	✓	✓	✓
<b>Sanitary process connection according DIN 11851 (Dairy connection)</b>				
• DN 50, PN 25	N04	✓	✓	✓
• DN 80, PN 25	N06	✓	✓	✓
<b>Tri-Clamp connection according DIN 32676/ISO 2852</b>				
• DN 50/2", PN 16	N14	✓	✓	✓
• DN 65/3", PN 10	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>4)</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	Q53	✓	✓	✓
• DN 65, PN 16	Q54	✓	✓	✓
<b>Sanitary process connection to DRD</b>				
• DN 50, PN 40	M32	✓	✓	✓
<b>SMS socket with union nut</b>				
• 2"	M67	✓	✓	✓
• 2½"	M68	✓	✓	✓
• 3"	M69	✓	✓	✓
<b>SMS threaded socket</b>				
• 2"	M73	✓	✓	✓
• 2½"	M74	✓	✓	✓
• 3"	M75	✓	✓	✓
<b>IDF socket with union nut ISO 2853</b>				
• 2"	M82	✓	✓	✓
• 2½"	M83	✓	✓	✓
• 3"	M84	✓	✓	✓
<b>IDF threaded socket ISO 2853</b>				
• 2"	M92	✓	✓	✓
• 2½"	M93	✓	✓	✓
• 3"	M94	✓	✓	✓
<b>Sanitary process connection to NEUMO Bio-Connect screw connection</b> Certified to EHEDG				
• DN 50, PN 16	Q05	✓	✓	✓
• DN 65, PN 16	Q06	✓	✓	✓
• DN 80, PN 16	Q07	✓	✓	✓
• DN 100, PN 16	Q08	✓	✓	✓
• DN 2", PN 16	Q13	✓	✓	✓
• DN 2½", PN 16	Q14	✓	✓	✓
• DN 3", PN 16	Q15	✓	✓	✓
• DN 4", PN 16	Q16	✓	✓	✓

# Pressure Measurement

## Transmitters for general requirements

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

2

Selection and Ordering data	Order code			
<b>Further designs</b> Add <b>"-Z"</b> to Order No. and specify Order Code.		HART	PA	FF
<b>Sanitary process connection to NEUMO Bio-Connect flange connection</b> Certified to EHEDG				
• 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	✓	✓	✓
<b>Aseptic threaded socket to DIN 11864-1 Form A</b> approved according to EHEDG				
• DN 50, PN 25	N33	✓	✓	✓
• DN 65, PN 25	N34	✓	✓	✓
• DN 80, PN 25	N35	✓	✓	✓
• DN 100, PN 25	N36	✓	✓	✓
<b>Aseptic flange with notch to DIN 11864-2 Form A</b> approved according to EHEDG				
• DN 50, PN 16	N43	✓	✓	✓
• DN 65, PN 16	N44	✓	✓	✓
• DN 80, PN 16	N45	✓	✓	✓
• DN 100, PN 16	N46	✓	✓	✓
<b>Aseptic flange with groove to DIN 11864-2 Form A</b> approved according to EHEDG				
• DN 50, PN 16	N43 + P11	✓	✓	✓
• DN 65, PN 16	N44 + P11	✓	✓	✓
• DN 80, PN 16	N45 + P11	✓	✓	✓
• DN 100, PN 16	N46 + P11	✓	✓	✓

Selection and Ordering data	Order code			
<b>Further designs</b> Add <b>"-Z"</b> to Order No. and specify Order Code.		HART	PA	FF
<b>Aseptic clamp with groove to DIN 11864-3 Form A</b> approved according to EHEDG				
• DN 50, PN 25	N53	✓	✓	✓
• DN 65, PN 25	N54	✓	✓	✓
• DN 80, PN 16	N55	✓	✓	✓
• DN 100, PN 16	N56	✓	✓	✓

- 1) Special seal in Viton included in the scope of delivery.
- 2) Lower measuring limit -100 mbar (1.45 psi).
- 3) The weldable socket can be ordered under accessories.
- 4) The maximum permissible temperatures of the medium depend on the respective cell fillings.

Selection and Ordering data	Order code			
<b>Additional data</b> Please add <b>"-Z"</b> to Order No. and specify Order code(s) and plain text.		HART	PA	FF
<b>Measuring range to be set</b> Specify in plain text (max. 5 characters): Y01: ... up to ... mbar, bar, kPa, MPa, psi	Y01	✓		
<b>Stainless steel tag plate (measuring point description)</b> Max. 16 characters, specify in plain text: Y15: .....	Y15	✓	✓	✓
<b>Measuring point text</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 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 % *) ref. temperature 20 °C	Y21	✓	✓	✓
<b>Preset bus address</b> possible between 1 and 126 Specify in plain text: Y25: .....	Y25		✓	

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

✓ = available

### ordering example

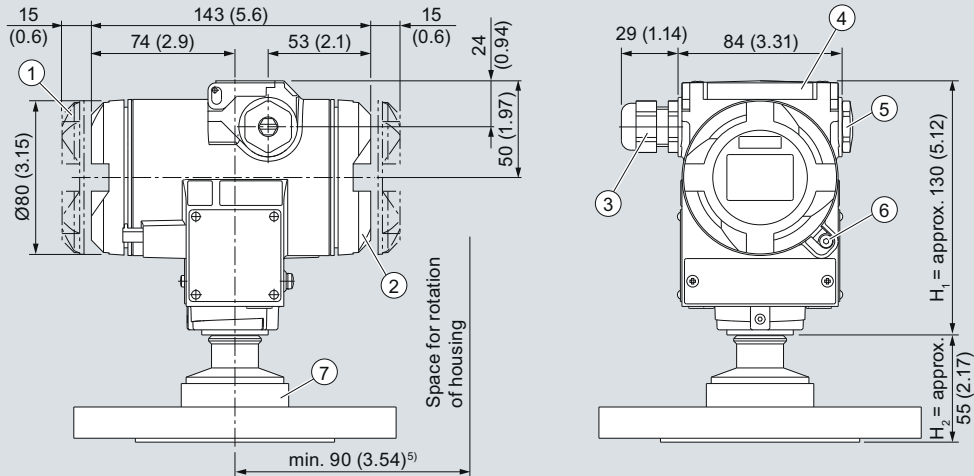
Item line: 7MF4133-1DB20-1AB7-Z  
B line: A22 + Y01 + Y21  
C line: Y01: 1 ... 10 bar (14.5 ... 145 psi)  
C line: Y21: bar (psi)

# Pressure Measurement

## Transmitters for general requirements

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

### Dimensional drawings



- 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 M20 x 1,5 or screwed gland ½-14 NPT or M12 connector
- ④ Protective cover over keys
- ⑤ Blanking plug
- ⑥ Screw cover - safety bracket (only for type of protection "Explosion-proof enclosure", not shown in the drawing)
- ⑦ Process connection: see flange tables

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

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  $H_1$  and  $H_2$ .

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

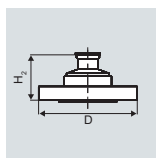
$H_2$  = Height of the flange up to this defined cross-section

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

### Flanges as per EN and ASME

#### Flange to EN

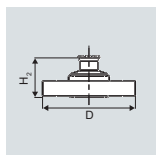
##### EN 1092-1



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

#### Flanges to ASME

##### ASME B16.5

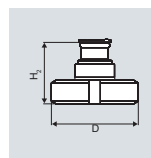


DN	Class	ØD	H <sub>2</sub>
1"	150	110 mm (4.3")	Approx. 52 mm (2")
1"	300	125 mm (4.9")	
1½"	150	130 mm (5.1")	
1½"	300	155 mm (6.1")	
2"	150	150 mm (5.9")	
2"	300	165 mm (6.5")	
3"	150	190 mm (7.5")	
3"	300	210 mm (8.1")	
4"	150	230 mm (9.1")	
4"	300	255 mm (10.0")	

### F&B and pharmaceutical flanges

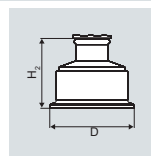
#### Connections to DIN

##### DIN 11851 (milk pipe union)



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

##### TriClamp to DIN 32676



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

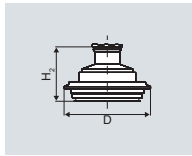
# Pressure Measurement

## Transmitters for general requirements

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

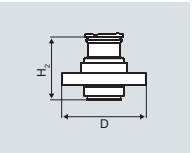
### Other connections

#### Varivent connection



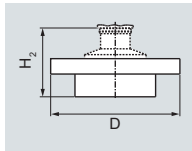
DN	PN	ØD	H <sub>2</sub>
40 ... 125	40	84 mm (3.3")	Approx. 52 mm (2")

#### Biocontrol connection



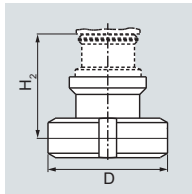
DN	PN	ØD	H <sub>2</sub>
50	16	90 mm (3.5")	Approx. 52 mm (2")
65	16	120 mm (4.7")	

#### Sanitary process connection to DRD



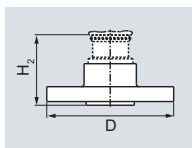
DN	PN	ØD	H <sub>2</sub>
50	40	105 mm (4.1")	Approx. 52 mm (2")

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



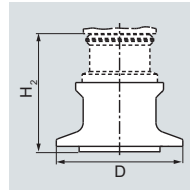
DN	PN	ØD	H <sub>2</sub>
50	16	82 mm (3.2")	Approx. 52 mm (2")
65	16	105 mm (4.1")	
80	16	115 mm (4.5")	
100	16	145 mm (5.7")	
2"	16	82 mm (3.2")	
2½"	16	105 mm (4.1")	
3"	16	105 mm (4.1")	
4"	16	145 mm (5.7")	

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



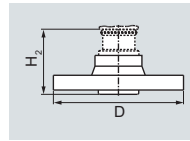
DN	PN	ØD	H <sub>2</sub>
50	16	110 mm (4.3")	Approx. 52 mm (2")
65	16	140 mm (5.5")	
80	16	150 mm (5.9")	
100	16	175 mm (6.9")	
2"	16	100 mm (3.9")	
2½"	16	110 mm (4.3")	
3"	16	140 mm (5.5")	
4"	16	175 mm (6.9")	

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



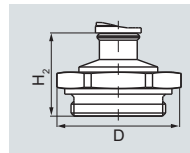
DN	PN	ØD	H <sub>2</sub>
50	16	77.4 mm (3.0")	Approx. 52 mm (2")
65	10	90.9 mm (3.6")	
80	10	106 mm (4.2")	
100	10	119 mm (4.7")	
2"	16	64 mm (2.5")	
2½"	16	77.4 mm (3.0")	
3"	10	90.9 mm (3.6")	
4"	10	77.4 mm (3.0")	

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



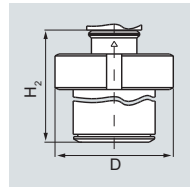
DN	PN	ØD	H <sub>2</sub>
50	16	125 mm (4.9")	Approx. 52 mm (2")
65	10	145 mm (5.7")	
80	10	155 mm (6.1")	
100	10	180 mm (7.1")	
2"	16	125 mm (4.9")	
2½"	10	135 mm (5.3")	
3"	10	145 mm (5.7")	
4"	10	180 mm (7.1")	

#### Threaded connection G¾", G1" and G2" acc. to DIN 3852



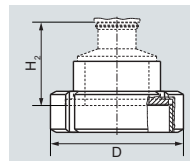
DN	PN	ØD	H <sub>2</sub>
¾"	63	37 mm (1.5")	Approx. 45 mm (1.8")
1"	63	48 mm (1.9")	approx. 47 mm (1.9")
2"	63	78 mm (3.1")	Approx. 52 mm (2")

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



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

#### SMS socket with union nut



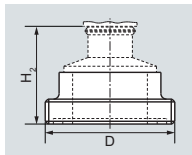
DN	PN	ØD	H <sub>2</sub>
2"	25	84 mm (3.3")	Approx. 52 mm (2.1")
2½"	25	100 mm (3.9")	
3"	25	114 mm (4.5")	

# Pressure Measurement

## Transmitters for general requirements

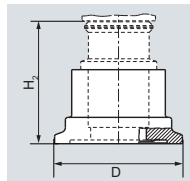
SITRANS P DS III for gauge/absolute pressure,  
with front-flush diaphragm

### SMS threaded socket



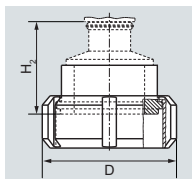
DN	PN	ØD	H <sub>2</sub>
2"	25	70 x 1/6 mm	Approx. 52 mm (2.1")
2½"	25	85 x 1/6 mm	
3"	25	98 x 1/6 mm	

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



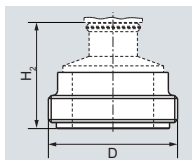
DN	PN	ØD	H <sub>2</sub>
50	25	77,5	Approx. 52 mm (2.1")
65	25	91	
80	16	106	
100	16	130	

### IDF socket with union nut



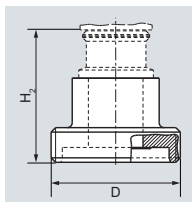
DN	PN	ØD	H <sub>2</sub>
2"	25	77 mm (3")	Approx. 52 mm (2.1")
2½"	25	91 mm (3.6")	
3"	25	106 mm (4.2")	

### IDF threaded socket



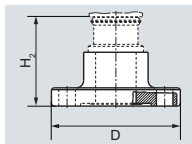
DN	PN	ØD	H <sub>2</sub>
2"	25	64 mm (2.5")	Approx. 52 mm (2.1")
2½"	25	77.5 mm (3.1")	
3"	25	91 mm (3.6")	

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



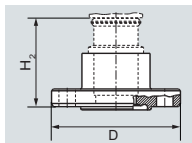
DN	PN	ØD	H <sub>2</sub>
50	25	94	Approx. 52 mm (2.1")
65	25	113	
80	25	133	
100	25	159	

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



DN	PN	ØD	H <sub>2</sub>
50	16	78 x 1/6"	Approx. 52 mm (2.1")
65	16	95 x 1/6"	
80	16	110 x 1/4"	
100	16	130 x 1/4"	

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



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



# Pressure Measurement

## Transmitters for general requirements

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

### Technical specifications

SITRANS P DS III series for absolute pressure (from the gauge pressure series)				
	HART		PROFIBUS PA and FOUNDATION Fieldbus	
<b>Input</b>				
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	100 % of max. span			
Upper measuring limit				
<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.			
<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)

2

SITRANS P DS III series for absolute pressure (from the gauge pressure series)		
	HART	PROFIBUS PA and FOUNDATION Fieldbus
Rated conditions		
Degree of protection (to IEC 60529)	IP65, optional 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		
- 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 EN 61326 and NAMUR NE 21	
Design		
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 120 bar a) (1740 psia)) at 60 °C (140 °F))	
Process connection	Connection shank G½B to EN 837-1, female thread ½ -14 NPT or oval flange (PN 160 (MAWP 2320 psia)) to DIN 19213 with mounting thread M10 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)	
Power supply $U_H$		
Terminal voltage on transmitter	10.5 ... 45 V DC 10.5 ... 30 V DC in intrinsically-safe mode	Supplied through bus -
Separate 24 V power supply necessary	-	No
Bus voltage		
• Not Ex	-	9 ... 32 V
• With intrinsically-safe operation	-	9 ... 24 V
Current consumption		
• Basic current (max.)	-	12.5 mA
• Start-up current ≤ basic current	-	Yes
• Max. current in event of fault	-	15.5 mA
Fault disconnection electronics (FDE) available	-	Yes

# Pressure Measurement

## Transmitters for general requirements

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

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 99 ATEX 2122
- Marking	Ex II 1/2 G EEx ia/ib IIB/IIC T6
- 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: $U_i = 30 \text{ V}$ , $I_i = 100 \text{ mA}$ , $P_i = 750 \text{ mW}$ ; $R_i = 300 \Omega$
- Effective internal inductance/capacitance	$L_i = 0.4 \text{ mH}$ , $C_i = 6 \text{ nF}$
• Explosion-proof "d"	PTB 99 ATEX 1160
- Marking	Ex II 1/2 G EEx d IIC T4/T6
- 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: $U_H = 10.5 \dots 45 \text{ V DC}$
• Dust explosion protection for zone 20	To circuits with values: $U_H = 9 \dots 32 \text{ V DC}$
- Marking	PTB 01 ATEX 2055
- Permissible ambient temperature	Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C
- Max. surface temperature	-40 ... +85 °C (-40 ... +185 °F)
- Connection	120 °C (248 °F)
- Effective internal inductance/capacitance	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}$ , $I_i = 100 \text{ mA}$ , $P_i = 750 \text{ mW}$ , $R_i = 300 \Omega$
• Dust explosion protection for zone 21/22	$L_i = 0.4 \text{ mH}$ , $C_i = 6 \text{ nF}$
- Marking	PTB 01 ATEX 2055
- Connection	Ex II 2 D IP65 T 120 °C
• Type of protection "n" (zone 2)	To circuits with values: $U_H = 10.5 \dots 45 \text{ V DC}$ ; $P_{\max} = 1.2 \text{ W}$
- Marking	TÜV 01 ATEX 1696 X
• Explosion protection acc. to FM	Ex II 3 G EEx nA L IIC T4/T5/T6
- Identification (XP/DIP) or (IS); (NI)	Certificate of Compliance 3008490
• Explosion protection to CSA	CL I, DIV 1, GP ABCD T4...T6; CL II, DIV 1, GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4...T6; CL I, DIV 2, GP ABCD T4...T6; CL II, DIV 2, GP FG; CL III
- Identification (XP/DIP) or (IS)	Certificate of Compliance 1153651
	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)

2

#### HART communication

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

#### PROFIBUS PA communication

Simultaneous communication with master class 2 (max.)	4
The address can be set using	Configuration tool or local operation (standard setting address 126)
Cyclic data usage	
• Output byte	5 (one measured value) or 10 (two measured values)
• Input byte	0, 1, or 2 (register operating mode and reset function for metering)
Internal preprocessing	
Device profile	PROFIBUS PA Profile for Process Control Devices Version 3.0, Class B
Function blocks	2
• Analog input	
- Adaptation to customer-specific process variables	Yes, linearly rising or falling characteristic
- Electrical damping, adjustable	0 to 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 ... 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 gauge pressure series)**

Selection and Ordering data		Order No.	
<b>Pressure transmitters for absolute pressure aus F) series pressure, 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)</sup>		Y	
<b>Process connection</b>			
• Connection shank G½B to EN 837-1		0	
• Female thread ½-14 NPT		1	
• Stainless steel oval flange			
- Mounting thread 7/16-20 UNF to EN 61518		2	
- Mounting thread M10 to DIN 19213		3	
- Mounting thread M12 to DIN 19213		4	
• Male thread M20 x 1.5		5	
• Male thread ½-14 NPT		6	
<b>Non-wetted parts materials</b>			
• Housing made of die-cast aluminium		0	
• Housing stainless steel precision casting <sup>5)</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 (EEx ia)"		B	
- "Explosion-proof (EEx d)" <sup>6)</sup>		D	
- "Intrinsic safety and flameproof enclosure" (EEx ia + EEx d)" <sup>7)</sup>		P	
- "Ex nA/nL (Zone 2)"		E	
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia+ EEx d + Zone 1D/2D)" <sup>7)</sup>		R	
• With FM + CSA, Type of protection:			
- "Intrinsic Safe und Explosion Proof (is + xp)" <sup>6)</sup>		NC	
<b>Electrical connection/cable entry</b>			
• Screwed gland Pg 13.5 <sup>8)</sup>		A	
• Screwed gland M20x1.5		B	
• Screwed gland ½-14 NPT		C	
• Han 7D plug (plastic housing) incl. mating connector <sup>8)</sup>		D	
• M12 connectors (metal) <sup>9)</sup>		F	

Selection and Ordering data		Order No.	
<b>Pressure transmitters for absolute pressure aus F) series pressure, 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
▶ Available ex stock			
Power supply units see Chap. 8 "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) Version 7MF4233-1DY... only up to max. span 200 mbar a (2.9 psia).			
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.			
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) Not in conjunction with Electrical connection "Screwed gland Pg 13.5" and "Han7D plug".			
6) Without cable gland, with blanking plug.			
7) With enclosed cable gland EEx ia and blanking plug.			
8) Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".			
9) M12 delivered without cable socket			
F) Subject to export regulations AL: 91999, ECCN: N.			

# Pressure Measurement

## Transmitters for general requirements

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

Selection and Ordering data		Order No.
<b>For absolute pressure (from the gauge pressure series)</b>		
<b>SITRANS P DS III with PROFIBUS PA (PA)</b>	F)	7 MF 4 2 3 4 -
<b>SITRANS P DS III with FOUNDATION Fieldbus (FF)</b>	F)	7 MF 4 2 3 5 -
		-
<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>Nominal measuring range</b>		
250 mbar a	(3.62 psia)	D
1300 mbar a	(18.85 psia)	F
5 bar a	(72.5 psia)	G
30 bar a	(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 as diaphragm seal <sup>2) 3) 4)</sup>		Y
<b>Process connection</b>		
• Connection shank G½B to EN 837-1		0
• Female thread ½-14 NPT		1
• Stainless steel oval flange		
- 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>5)</sup>		D
- "Intrinsic safety and flameproof enclosure (Ex ia + Ex d)" <sup>6)</sup>		P
- "Ex nA/nL"		E
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia + Ex d + Zone 1D/2D)" <sup>6)</sup> (not for DS III FF)		R
• With FM + CSA, Type of protection:		
- "Intrinsic Safe und Explosion Proof (is + xp)" <sup>5)</sup>		NC
<b>Electrical connection/cable entry</b>		
• Screwed gland M20 x 1.5		B
• Screwed gland ½-14 NPT		C
• M12 connectors (metal) <sup>7)</sup>		F

Selection and Ordering data		Order No.
<b>For absolute pressure (from the gauge pressure series)</b>		
<b>SITRANS P DS III with PROFIBUS PA (PA)</b>	F)	7 MF 4 2 3 4 -
<b>SITRANS P DS III with FOUNDATION Fieldbus (FF)</b>	F)	7 MF 4 2 3 5 -
		-
<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
Included in delivery of the device:		
• Brief instructions (Leporello)		
• CD-ROM with detailed documentation		
1) For oxygen application, add Order code E10.		
2) Version 7MF4233-1DY... only up to max. span 200 mbar a (2.9 psia).		
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.		
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) Without cable gland, with blanking plug.		
6) With enclosed cable gland EEx ia and blanking plug.		
7) M12 delivered without cable socket		
F) Subject to export regulations AL: 91999, ECCN: N.		



# Pressure Measurement

## Transmitters for general requirements

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

Selection and Ordering data	Order code			
<b>Further designs</b>		<b>HART</b>	<b>PA</b>	<b>FF</b>
Add "-Z" to Order No. and specify Order Code.				
<b>Pressure transmitter with mounting bracket (2 shackles, 4 nuts, 4 U-plates, 1 angle) 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 (metal)</b>	A50	✓	✓	✓
<b>Rating plate inscription (instead of German)</b>				
• 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)" certificate to IEC 61508</b>	C20	✓		
<b>PROFIsafe certificate and protocol</b>	C21		✓	
<b>"Functional safety (SIL2/3)" certificate to IEC 61508</b>	C23	✓		
<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</b>	D07	✓	✓	✓
<b>Degree of protection IP68</b>	D12	✓	✓	✓
(only for M20 x 1.5 and 1/2-14 NPT)				
<b>Supplied with oval flange</b>	D37	✓	✓	✓
(1 item), PTFE packing and screws in thread of oval flange				
<b>Use in or on zone 1D/2D</b>	E01	✓	✓	✓
(only together with type of protection "Intrinsic safety (Ex ia)")				
<b>Oxygen application</b>	E10	✓	✓	✓
(In the case of oxygen measurement and inert liquid max. 120 bar a (1740 psia) at 60°C (140 °F))				
<b>Export approval Korea</b>	E11	✓	✓	✓
<b>Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil)</b>	E25	✓	✓	✓
(only for transmitter 7MF4...-.....-B..)				
<b>Explosion-proof "Intrinsic safety" (Ex d) to INMETRO (Brazil)</b>	E26	✓	✓	✓
(only for transmitter 7MF4...-.....-D..)				
<b>Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil)</b>	E28	✓	✓	
(only for transmitter 7MF4...-.....-P..)				
<b>Ex Approval IEC Ex (Ex ia)</b>	E45	✓	✓	✓
(only for transmitter 7MF4...-.....-B..)				
<b>Ex Approval IEC Ex (Ex id)</b>	E46	✓	✓	✓
(only for transmitter 7MF4...-.....-D..)				

Selection and Ordering data	Order code			
<b>Further designs</b>		<b>HART</b>	<b>PA</b>	<b>FF</b>
Add "-Z" to Order No. and specify Order Code.				
<b>Explosion-proof "Intrinsic safety" to NEPSI (China)</b>	E55	✓	✓	✓
(only for transmitter 7MF4...-.....-B..)				
<b>Explosion protection "Explosion-proof" to NEPSI (China)</b>	E56	✓	✓	✓
(only for transmitter 7MF4...-.....-D..)				
<b>Explosion-proof "Zone 2" to NEPSI (China)</b>	E57	✓	✓	✓
(only for transmitter 7MF4...-.....-E..)				
<b>Two coats of lacquer on casing and cover (PU on epoxy)</b>	G10	✓	✓	✓
<b>Additional data</b>				
Please add "-Z" to Order No. and specify Order code(s) and plain text.				
<b>Measuring range to be set</b>	Y01	✓		
Specify in plain text (max. 5 characters): Y01: .... up to ... mbar, bar, kPa, MPa, psi				
<b>Stainless steel tag plate (measuring point description)</b>	Y15	✓	✓	✓
Max. 16 characters, specify in plain text: Y15: .....				
<b>Measuring point text</b>	Y16	✓	✓	✓
Max. 27 characters, specify in plain text: Y16: .....				
<b>Entry of HART address (TAG)</b>	Y17	✓		
Max. 8 characters, specify in plain text: Y17: .....				
<b>Setting of pressure indication 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>3)</sup> , inH <sub>2</sub> O <sup>3)</sup> , ftH <sub>2</sub> O <sup>3)</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 indication in non-pressure units<sup>3)</sup></b>	Y22 + Y01	✓		
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>Preset bus address</b>	Y25		✓	
possible between 1 and 126 Specify in plain text: Y25: .....				

Factory mounting of valve manifolds, see accessories.

Only "Y01", "Y21", "Y22", "Y25" and "D05" can be factory preset

✓ = 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.

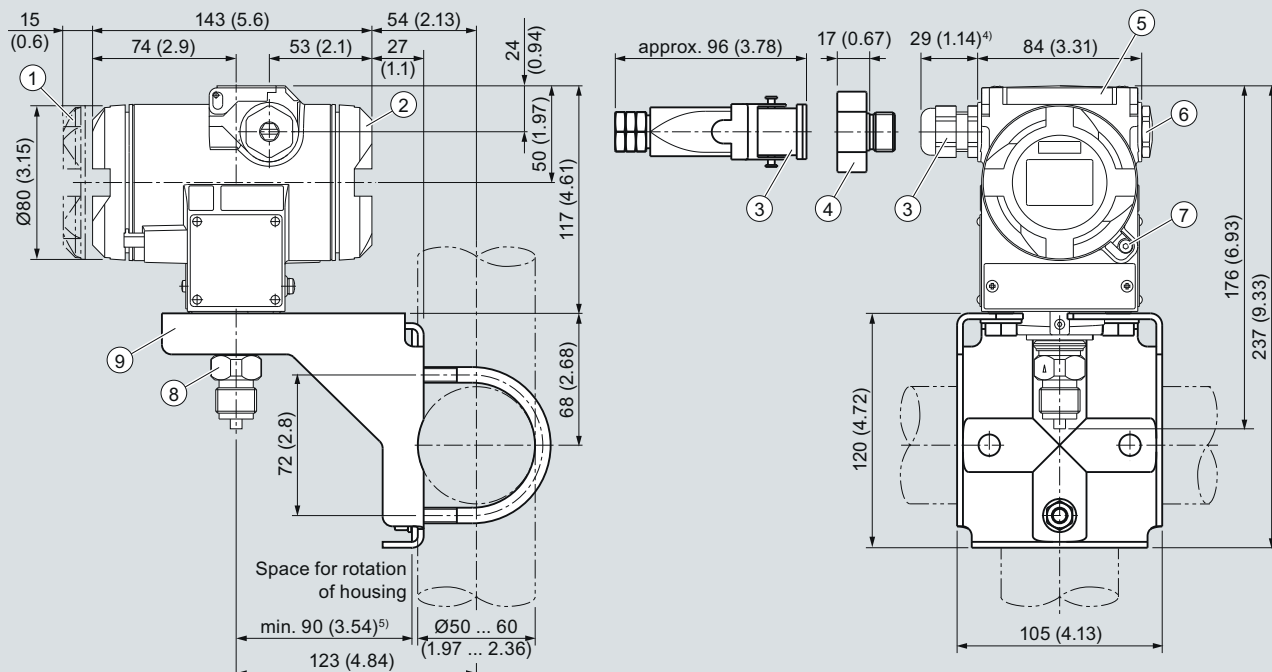
3) Preset values can only be changed over SIMATIC PDM.

## Pressure Measurement

### Transmitters for general requirements

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

## Dimensional drawings



- |  |   |
|--|---|
| ① Electronic side, digital display<br>(longer overall length for cover with window) <sup>1)</sup>  | ⑤ Protective cover over keys  |
| ② Terminal side <sup>1)</sup>  | ⑥ Blanking plug   |
| ③ Electrical connection:<br>Screwed gland Pg 13,5 (adapter)(Adapter) <sup>2) 3)</sup> ,<br>Screwed gland M20 x 1,5 or Screwed gland ½-14 NPT or<br>Han 7D/Han 8D <sup>2) 3)</sup> plug | ⑦ Screw cover - safety bracket (only for type of protection<br>"Explosion-proof enclosure", not shown in the drawing) |
| ④ Harting adapter  | ⑧ Process connection: Connection shank G½A or Oval flange   |
|  | ⑨ Mounting bracket (option)   |

- 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) For Pg 13,5 with adapter approx. 45 mm (1.77 inch)
- 5) Minimum distance for rotating

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)

### Technical specifications

SITRANS P, DS III for absolute pressure (from the differential pressure series)				
	HART		PROFIBUS PA and FOUNDATION Fieldbus	
Input	Absolute pressure			
Measured variable	Span (min. ... max.)	Maximum operating pressure	Nominal measuring range	Maximum operating pressure
Spans (infinitely adjustable) or nominal measuring range and max. permissible 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	0 mbar a (0 psia)			
Upper measuring limit	100 % of max. span			
Output				
Output signal	4 ... 20 mA	Digital PROFIBUS PA and FOUNDATION Fieldbus signal		
• Lower limit (infinitely adjustable)	3.55 mA, factory preset to 3.84 mA	-		
• Upper limit (infinitely adjustable)	23 mA, factory preset to 20.5 mA or optionally set to 22.0 mA	-		
Load				
• Without HART	$R_B \leq (U_H - 10.5 \text{ V})/0.023 \text{ A}$ 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.			
Measuring accuracy	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			
Influence of ambient temperature				
• at -10 ... +60 °C (14 ... 140 °F)	≤ (0.1 · r + 0.2) % <sup>1)</sup>			
• at -40 ... -10 °C and 60 ... 85 °C (-40 ... +14 °F and 140 ... 185 °F)	≤ (0.1 · r + 0.15) %/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)

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

##### HART

##### PROFIBUS PA and FOUNDATION Fieldbus

#### Rated conditions

Degree of protection (to IEC 60529)

IP65, optional IP68

Temperature of medium

- Measuring cell with silicone oil filling
- Measuring cell with inert filling liquid
- In conjunction with dust explosion protection

-40 ... +100 °C (-40 ... +212 °F)

-20 ... +100 °C (-4 ... +212 °F)

-20 ... +60 °C (-4 ... +140 °F)

Ambient conditions

- Ambient temperature

- 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 EN 61326 and NAMUR NE 21

#### Design

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 120 bar a) (1740 psia) 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)

#### Power supply $U_H$

Terminal voltage on transmitter

10.5 ... 45 V DC

10.5 ... 30 V DC in intrinsically-safe mode

Supplied through bus

-

Separate 24 V power supply necessary

-

No

Bus voltage

- Not Ex

-

9 ... 32 V

- With intrinsically-safe operation

-

9 ... 24 V

Current consumption

- Basic current (max.)

-

12.5 mA

- Start-up current ≤ basic current

-

Yes

- Max. current in event of fault

-

15.5 mA

Fault disconnection electronics (FDE) available

-

Yes

# Pressure Measurement

## Transmitters for general requirements

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

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 99 ATEX 2122
- Marking	Ex II 1/2 G EEx ia/ib IIB/IIC T6
- 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: $U_i = 30 \text{ V}$ , $I_i = 100 \text{ mA}$ , $P_i = 750 \text{ mW}$ ; $R_i = 300 \Omega$
- Effective internal inductance/capacitance	$L_i = 0.4 \text{ mH}$ , $C_i = 6 \text{ nF}$
• Explosion-proof "d"	PTB 99 ATEX 1160
- Marking	Ex II 1/2 G EEx d IIC T4/T6
- 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: $U_H = 10.5 \dots 45 \text{ V DC}$
• Dust explosion protection for zone 20	To circuits with values: $U_H = 9 \dots 32 \text{ V DC}$
- Marking	PTB 01 ATEX 2055
- Permissible ambient temperature	Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C
- Max. surface temperature	-40 ... +85 °C (-40 ... +185 °F)
- Connection	120 °C (248 °F)
- Effective internal inductance/capacitance	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}$ , $I_i = 100 \text{ mA}$ , $P_i = 750 \text{ mW}$ , $R_i = 300 \Omega$
• Dust explosion protection for zone 21/22	$L_i = 0.4 \text{ mH}$ , $C_i = 6 \text{ nF}$
- Marking	PTB 01 ATEX 2055
- Connection	Ex II 2 D IP65 T 120 °C
• Type of protection "n" (zone 2)	To circuits with values: $U_H = 10.5 \dots 45 \text{ V DC}$ ; $P_{\max} = 1.2 \text{ W}$
- Marking	TÜV 01 ATEX 1696 X
• Explosion protection acc. to FM	Ex II 3 G EEx nA L IIC T4/T5/T6
- Identification (XP/DIP) or (IS); (NI)	Certificate of Compliance 3008490
• Explosion protection to CSA	CL I, DIV 1, GP ABCD T4...T6; CL II, DIV 1, GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4...T6; CL I, DIV 2, GP ABCD T4...T6; CL II, DIV 2, GP FG; CL III
- Identification (XP/DIP) or (IS)	Certificate of Compliance 1153651
	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)

2

#### HART communication

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

#### PROFIBUS PA communication

Simultaneous communication with master class 2 (max.)	4
The address can be set using	Configuration tool or local operation (standard setting address 126)
Cyclic data usage	
• Output byte	5 (one measured value) or 10 (two measured values)
• Input byte	0, 1, or 2 (register operating mode and reset function for metering)
Internal preprocessing	
Device profile	PROFIBUS PA Profile for Process Control Devices Version 3.0, Class B
Function blocks	2
• Analog input	
- Adaptation to customer-specific process variables	Yes, linearly rising or falling characteristic
- Electrical damping, 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)**

Selection and Ordering data		Order No.	
<b>Pressure transmitters for absolute pressure from differential pressure series, SITRANS P DS III with HART</b>		F)	7MF4333 -
<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)	E)	D
43 ... 1300 mbar a	(0.62 ... 18.85 psia)	E)	F
0.16 ... 5 bar a	(2.32 ... 72.5 psia)	E)	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	E)	H
Gold	Gold		L
Version for diaphragm seal <sup>2)3)4)</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>5)</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>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 (EEx ia)"			B
- "Explosion-proof (EEx d)" <sup>7)</sup>			D
- "Intrinsic safety and flameproof enclosure" (EEx ia + EEx d)" <sup>8)</sup>			P
- "Ex nA/nL (Zone 2)"			E
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia+ EEx d + Zone 1D/2D)" <sup>8)</sup>			R
• 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 <sup>9)</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>9)</sup>			D
• M12 connectors (metal) <sup>10)</sup>			F

Selection and Ordering data		Order No.	
<b>Pressure transmitters for absolute pressure from differential pressure series, SITRANS P DS III with HART</b>		F)	7MF4333 -
<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			
Power supply units see Chap. 8 "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 flange(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 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.			
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) 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).			
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 EEx ia and blanking plug			
9) Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".			
10) M12 delivered without cable socket			
E) Combinations of the versions marked with E) are subject to the export regulations AL: 2B230, ECCN: N.			
F) Subject to export regulations AL: 9I999, ECCN: N.			



# Pressure Measurement

## Transmitters for general requirements

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

Selection and Ordering data		Order No.	
<b>Pressure transmitter for absolute pressure from differential pressure series</b>			
<b>SITRANS P DS III with PROFIBUS PA (PA)</b>	F)	<b>7 MF 4 3 3 4 -</b>	
<b>SITRANS P DS III with FOUNDATION Fieldbus (FF)</b>	F)	<b>7 MF 4 3 3 5 -</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>Nominal measuring range</b>			
250 mbar a	(3.62 psia)	E)	D
1300 mbar a	(18.85 psia)	E)	F
5 bar a	(72.5 psia)	E)	G
30 bar a	(435 psia)		H
100 bar a	(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	E)	H
Gold	Gold		L
Version as diaphragm seal <sup>2)3)4)</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>5)</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>6)</sup>			D
- "Intrinsic safety and flameproof enclosure (Ex ia + Ex d)" <sup>7)</sup>			P
- "Ex nA/nL (Zone 2)"			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
• With FM + CSA, Type of protection:			
- "Intrinsic Safe und Explosion Proof (is + xp)" <sup>6)</sup>			NC
<b>Electrical connection/cable entry</b>			
• Screwed gland M20 x 1.5			B
• Screwed gland 1/2-14 NPT			C
• M12 connectors (metal) <sup>8)</sup>			F

Selection and Ordering data		Order No.	
<b>Pressure transmitter for absolute pressure from differential pressure series</b>			
<b>SITRANS P DS III with PROFIBUS PA (PA)</b>	F)	<b>7 MF 4 3 3 4 -</b>	
<b>SITRANS P DS III with FOUNDATION Fieldbus (FF)</b>	F)	<b>7 MF 4 3 3 5 -</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" required)			7
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) Version 7MF4334-1DY... only up to max. span 200 mbar a (2.9 psia).			
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.			
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) Not for nominal measuring range 100 bar a (1450 psia). Position of the top vent valve in the process flange (see dimensional drawing).			
6) Without cable gland, with blanking plug			
7) With enclosed cable gland EEx ia and blanking plug			
8) M12 delivered without cable socket			
E) Combinations of the versions marked with E) are subject to the export regulations AL: 2B230, ECCN: N.			
F) Subject to export regulations AL: 91999, ECCN: N.			

# Pressure Measurement

## Transmitters for general requirements

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

Selection and Ordering data	Order code			
<b>Further designs</b> Add "-Z" to Order No. and specify Order Code.		<b>HART</b>	<b>PA</b>	<b>FF</b>
<b>Pressure transmitter with mounting bracket (2 shackles, 4 nuts, 4 U-plates, 1 angle) 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 screw</b>	A40	✓	✓	✓
1/4-18 NPT, with valve in mat. of process flanges				
<b>Cable sockets for M12 connectors (metal)</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> Acc. to EN 10204-3.1	C12	✓	✓	✓
<b>Factory certificate</b> Acc. to EN 10204-2.2	C14	✓	✓	✓
<b>"Functional safety (SIL2)" certificate to IEC 61508</b>	C20	✓		
<b>PROFIsafe certificate and protocol</b>	C21		✓	
<b>"Functional safety (SIL2/3)" certificate to IEC 61508</b>	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</b> (only together with seal diaphragm made of Hastelloy and stainless steel)	D07	✓	✓	✓
<b>Degree of protection IP68</b> (only for M20 x 1.5 and 1/2-14 NPT)	D12	✓	✓	✓
<b>Supplied with oval flange</b> (1 item), PTFE packing and screws in thread of process flange	D37	✓	✓	✓
<b>Use in or on zone 1D/2D</b> (only together with type of protection "Intrinsic safety (Ex ia)")	E01	✓	✓	✓
<b>Oxygen application</b> (In the case of oxygen measurement and inert liquid max. 120 bar a (1740 psia) at 60°C (140 °F))	E10	✓	✓	✓
<b>Export approval Korea</b>	E11	✓	✓	✓
<b>Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-B..)	E25	✓	✓	✓

Selection and Ordering data	Order code			
<b>Further designs</b> Add "-Z" to Order No. and specify Order Code.		<b>HART</b>	<b>PA</b>	<b>FF</b>
<b>Explosion-proof "Intrinsic safety" (Ex d) to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-D..)	E26	✓	✓	✓
<b>Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-P..)	E28	✓	✓	
<b>Ex Approval IEC Ex (EEx ia)</b> (only for transmitter 7MF4...-.....-B..)	E45	✓	✓	✓
<b>Ex Approval IEC Ex (EEx id)</b> (only for transmitter 7MF4...-.....-D..)	E46	✓	✓	✓
<b>Explosion-proof "Intrinsic safety" to NEPSI (China)</b> (only for transmitter 7MF4...-.....-B..)	E55	✓	✓	✓
<b>Explosion protection "Explosion-proof" to NEPSI (China)</b> (only for transmitter 7MF4...-.....-D..)	E56	✓	✓	✓
<b>Explosion-proof "Zone 2" to NEPSI (China)</b> (only for transmitter 7MF4...-.....-E..)	E57	✓	✓	✓
<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>Process flange</b>				
• Hastelloy	K01 <sup>F)</sup>	✓	✓	✓
• Monel	K02 <sup>F)</sup>	✓	✓	✓
• 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>F)</sup>	✓	✓	✓

- 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) 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)

Selection and Ordering data	Order code			
<i>Additional data</i>		HART	PA	FF
Please add <b>"-Z"</b> to Order 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	✓		
<b>Stainless steel tag plate (measuring point description)</b> Max. 16 characters, specify in plain text: Y15: .....	Y15	✓	✓	✓
<b>Measuring point text</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>3)</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		✓	

Factory mounting of valve manifolds, see accessories.

Only "Y01", "Y21", "Y22", "Y25" and "D05" can be factory preset

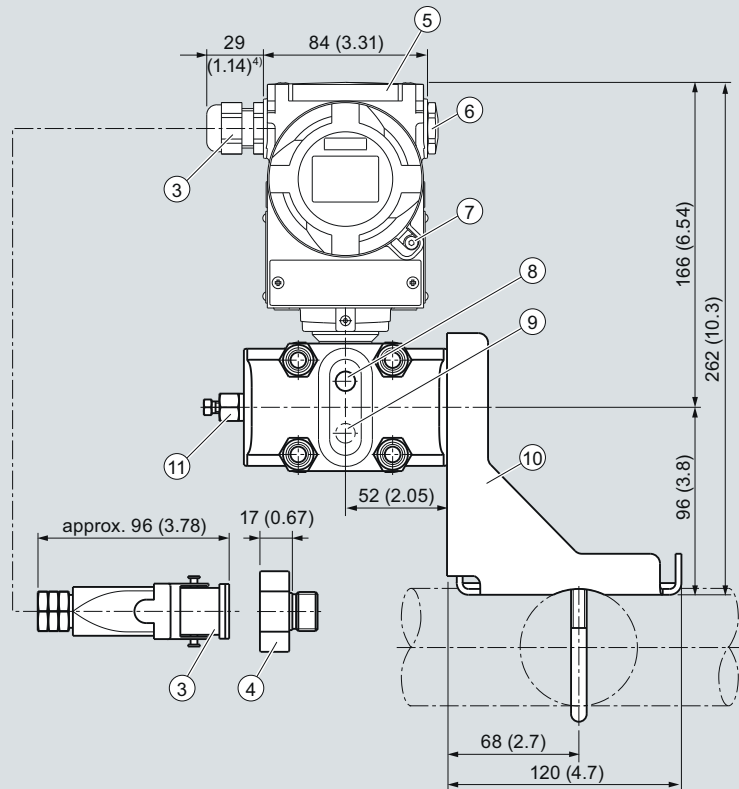
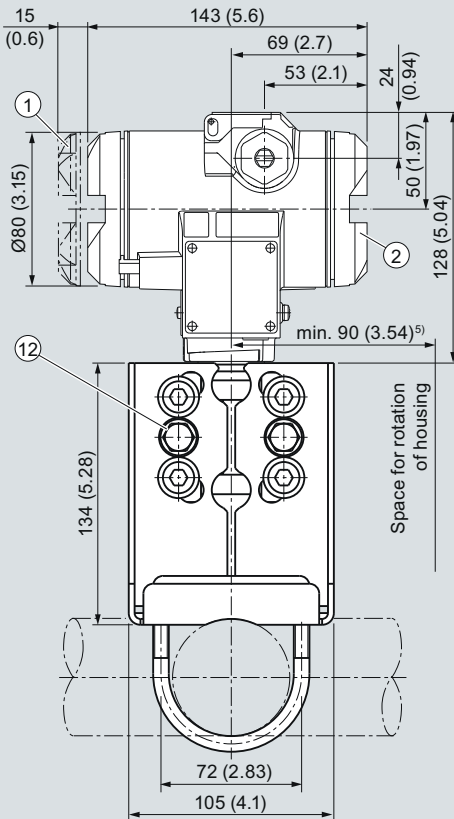
✓ = available

# Pressure Measurement

## Transmitters for general requirements

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

### Dimensional drawings



- 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 Lateral venting for liquid measurement (Standard)
- ⑨ Lateral venting for gas measurement (suffix H02)
- ⑩ Mounting bracket (option)
- ⑪ Sealing screw with valve (option)
- ⑫ 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 (3.62 inch) for minimum distance to permit rotation with indicator
- 5) For Pg 13,5 with adapter approx. 45 mm (1.77 inch)

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

#### Technical specifications

SITRANS P, DS III for differential pressure and flow				
	HART		PROFIBUS PA and FOUNDATION Fieldbus	
<b>Input</b>				
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 (-33 % with 30 bar (435 psi) measuring cell or 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	
• 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.			
<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

2

<b>SITRANS P, DS III for differential pressure and flow</b>		
	<b>HART</b>	<b>PROFIBUS PA and FOUNDATION Fieldbus</b>
<ul style="list-style-type: none"> <li>Square-rooted characteristic (flow &gt; 25 ... 50 %) <ul style="list-style-type: none"> <li>- <math>r \leq 10</math> <math>\leq 0.2 \%</math></li> <li>- <math>10 &lt; r \leq 30</math> <math>\leq 0.4 \%</math></li> </ul> </li> <li>Long-term stability (temperature change <math>\pm 30 \text{ }^{\circ}\text{C}</math> (<math>\pm 54 \text{ }^{\circ}\text{F}</math>)) <ul style="list-style-type: none"> <li><math>\leq (0.25 \cdot r) \%</math> every 5 years static pressure max. 70 bar (1015 psi)</li> </ul> </li> <li>20 mbar (0.29 psi)-measuring cell <math>\leq (0.2 \cdot r)</math> per year</li> <li>250, 600, 1600 and 5000 mbar (0.29, 0.87, 2.32 and 7.25 psi) -measuring cell <math>\leq (0.125 \cdot r)</math> per 5 years</li> <li>Influence of ambient temperature <ul style="list-style-type: none"> <li>at <math>-10 \dots +60 \text{ }^{\circ}\text{C}</math> (<math>14 \dots 140 \text{ }^{\circ}\text{F}</math>) <math>\leq (0.08 \cdot r + 0.1) \%</math><sup>1)</sup></li> <li>at <math>-40 \dots -10 \text{ }^{\circ}\text{C}</math> and <math>60 \dots 85 \text{ }^{\circ}\text{C}</math> (<math>-40 \dots +14 \text{ }^{\circ}\text{F}</math> and <math>140 \dots 185 \text{ }^{\circ}\text{F}</math>) <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> </li> <li>Influence of static pressure <ul style="list-style-type: none"> <li>on the zero point (PKN) <math>\leq (0.15 \cdot r) \%</math> per 70 bar (1015 psi)</li> <li>- 20 mbar (0.29 psi)-measuring cell <math>\leq (0.15 \cdot r) \%</math> per 32 bar (464 psi)</li> <li>on the span (PKS) <math>\leq 0.14 \%</math> per 70 bar (1015 psi)</li> <li>- 20 mbar (0.29 psi)-measuring cell <math>\leq 0.2 \%</math> per 32 bar (464 psi)</li> </ul> </li> <li>Measured Value Resolution - <math>3 \cdot 10^{-5}</math> of nominal measuring range</li> </ul>		
<b>Rated conditions</b>		
Degree of protection (to EN 60529)	IP65, optional IP68	
Temperature of medium		
• Measuring cell with silicone oil filling	$-40 \dots +100 \text{ }^{\circ}\text{C}$ ( $-40 \dots +212 \text{ }^{\circ}\text{F}$ )	
• Measuring cell with inert filling liquid	$-20 \dots +100 \text{ }^{\circ}\text{C}$ ( $-4 \dots +212 \text{ }^{\circ}\text{F}$ )	
• In conjunction with dust explosion protection	$-20 \dots +60 \text{ }^{\circ}\text{C}$ ( $-4 \dots +140 \text{ }^{\circ}\text{F}$ )	
Ambient conditions		
• Ambient temperature		
- Display readable	$-30 \dots +85 \text{ }^{\circ}\text{C}$ ( $-22 \dots +185 \text{ }^{\circ}\text{F}$ )	
• Storage temperature	$-50 \dots +85 \text{ }^{\circ}\text{C}$ ( $-58 \dots +185 \text{ }^{\circ}\text{F}$ )	
• Climatic class		
- Condensation	Relative humidity 0 ... 100 % Condensation permissible, suitable for use in the tropics	
• Electromagnetic Compatibility		
- Emitted interference and interference immunity	Acc. to EN 61326 and NAMUR NE 21	
<b>Design</b>		
Weight (without options)	$\approx 4.5 \text{ kg}$ ( $\approx 9.9 \text{ lb}$ )	
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	
Measuring cell filling	Silicone oil or inert filling liquid (maximum value with oxygen measurement pressure 120 bar a) (1740 psia)) at $60 \text{ }^{\circ}\text{C}$ ( $140 \text{ }^{\circ}\text{F}$ )	
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		
• 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	-
Separate 24 V power supply necessary	-	No
Bus voltage		
• Not Ex	-	9 ... 32 V
• With intrinsically-safe operation	-	9 ... 24 V

# Pressure Measurement

## Transmitters for general requirements

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

2

SITRANS P, DS III for differential pressure and flow		
	HART	PROFIBUS PA and FOUNDATION Fieldbus
<b>Power supply <math>U_H</math> (Continuation)</b>		
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 99 ATEX 2122	
- Marking	Ex II 1/2 G EEx ia/ib IIB/IIC T6	
- 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 EEx d IIC T4/T6	
- 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: $U_H = 9 \dots 32 \text{ V DC}$ ; $P_{\max} = 1.2 \text{ W}$
• Type of protection "n" (zone 2)	TÜV 01 ATEX 1696 X	Planned
- Marking	Ex II 3 G EEx nA L IIC T4/T5/T6	-
• 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 < (0.064 · r + 0.08) % / 28 °C (50 °F).



# Pressure Measurement

## Transmitters for general requirements

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

2

<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

- 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

# Pressure Measurement

## Transmitters for general requirements

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

2

Selection and Ordering data		Order No.
<b>SITRANS P DS III with HART pressure transmitters for differential pressure and flow, PN 32/160 (MAWP 464/2320 psi)</b>		<b>7 MF 4 4 3 3 -</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)</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>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/nL (Zone 2)"		E
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia + Ex d + Zone 1D/2D)" <sup>8)</sup>		▶ R
• With FM + CSA, Type of protection:		
- "Intrinsic Safe und Explosion Proof (is + xp)" <sup>7)</sup>		NC


Selection and Ordering data		Order No.
<b>SITRANS P DS III with HART pressure transmitters for differential pressure and flow, PN 32/160 (MAWP 464/2320 psi)</b>		<b>7 MF 4 4 3 3 -</b>
<b>Electrical connection/cable entry</b>		
• Screwed gland Pg 13.5 <sup>9)</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>9)10)</sup>		D
• M12 connectors (metal) <sup>11)</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		
Power supply units see Chap. 8 "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 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.		
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) 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 EEx ia and blanking plug		
9) Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".		
10) Permissible only for crimp-contact of conductor cross-section 1 mm <sup>2</sup>		
11) M12 delivered without cable socket. Not for Ex version "Explosion-Proof".		


# Pressure Measurement

## Transmitters for general requirements

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

2

Selection and Ordering data		Order No.
<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>		7MF4434-
<b>SITRANS P DS III with FOUNDATION Fieldbus (FF)</b>		7MF4435-
		
<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>Nominal measuring range</b>		
PN 32 (MAWP 464 psi)		
20 mbar <sup>2)</sup>	(8.03 inH <sub>2</sub> O)	B
PN 160 (MAWP 2320 psi)		
60 mbar	(24.09 inH <sub>2</sub> O)	C
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>		
(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 as diaphragm seal <sup>4)5)</sup>		Y
<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 7/16"-20 UNF to IEC 61518</li> <li>Mounting thread M10 to DIN 19213 (only for replacement requirement)</li> </ul> </li> <li>Venting on side of process flanges<sup>2)</sup> <ul style="list-style-type: none"> <li>Mounting thread 7/16"-20 UNF to IEC 61518</li> <li>Mounting thread M10 to DIN 19213 (only for replacement requirement)</li> </ul> </li> </ul>		2064
<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>		
<ul style="list-style-type: none"> <li>Standard versions</li> <li>International version, English label inscriptions, documentation in 5 languages on CD (no order code selectable)</li> </ul>		12
<b>Explosion protection</b>		
<ul style="list-style-type: none"> <li>None</li> <li>With ATEX, Type of protection:               <ul style="list-style-type: none"> <li>"Intrinsic safety (Ex ia)"</li> <li>"Explosion-proof (Ex d)"<sup>6)</sup></li> <li>"Intrinsic safety and flameproof enclosure (Ex ia + Ex d)"<sup>7)</sup></li> <li>"Ex nA/nL (Zone 2)"</li> <li>"Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia + Ex d + Zone 1D/2D)"<sup>7)</sup> (not for DS III FF)</li> </ul> </li> <li>With FM + CSA, Type of protection:               <ul style="list-style-type: none"> <li>"Intrinsic Safe und Explosion Proof (is + xp)"<sup>6)</sup></li> </ul> </li> </ul>		A B D P E R  NC

Selection and Ordering data		Order No.
<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>		7MF4434-
<b>SITRANS P DS III with FOUNDATION Fieldbus (FF)</b>		7MF4435-
		
<b>Electrical connection/cable entry</b>		
<ul style="list-style-type: none"> <li>Screwed gland M20 x 1.5</li> <li>Screwed gland 1/2-14 NPT</li> <li>M12 connectors (metal)<sup>8)</sup></li> </ul>		B C F
<b>Display</b>		
<ul style="list-style-type: none"> <li>Without display</li> <li>Without visible display (display concealed, setting: mA)</li> <li>With visible display</li> <li>With customer-specific display (setting as specified, Order Code "Y21" required)</li> </ul>		0 1 6 7
► Available ex stock		
Included in delivery of the device:		
<ul style="list-style-type: none"> <li>Brief instructions (Leporello)</li> <li>CD-ROM with detailed documentation</li> <li>Sealing plug(s) or sealing screw(s) for the process flanges(s)</li> </ul>		
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 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.		
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) Without cable gland, with blanking plug.		
7) With enclosed cable gland EEx ia and blanking plug.		
8) M12 delivered without cable socket		

# Pressure Measurement

## Transmitters for general requirements

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

2

Selection and Ordering data	Order code			
<b>Further designs</b>		HART	PA	FF
Add "-Z" to Order No. and specify Order Code.				
<b>Pressure transmitter with mounting bracket (2 shackles, 4 nuts, 4 U-plates, 1 angle) 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	✓	✓	✓
• FFP (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>	A40	✓	✓	✓
1/4-18 NPT, with valve in mat. of process flanges				
<b>Cable sockets for M12 connectors (metal)</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> to EN 10204-3.1</b>	C12	✓	✓	✓
<b>Factory certificate to EN 10204-2.2</b>	C14	✓	✓	✓
<b>"Functional safety (SIL2)" certificate to IEC 61508</b>	C20	✓		
<b>PROFIsafe certificate and protocol</b>	C21		✓	
<b>"Functional safety (SIL2/3)" certificate to IEC 61508</b>	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</b> (only together with seal diaphragm made of Hastelloy and stainless steel)	D07	✓	✓	✓
<b>Degree of protection 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	✓	✓	✓
<b>Use in or on zone 1D/2D</b> (only together with type of protection "Intrinsic safety (EEx ia)")	E01	✓	✓	✓
<b>TÜV approval to AD/TRD</b> (only together with type of protection "Intrinsic safety (EEx ia)")	E06	✓		

Selection and Ordering data	Order code			
<b>Further designs</b>		HART	PA	FF
Add "-Z" to Order No. and specify Order Code.				
<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 (EEx ia)", 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. 120 bar a (1740 psia) at 60°C (140 °F))	E10	✓	✓	✓
<b>Export approval Korea</b>	E11	✓	✓	✓
<b>Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-B..)	E25	✓	✓	✓
<b>Explosion-proof "Intrinsic safety" (Ex d) to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-D..)	E26	✓	✓	✓
<b>Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-P..)	E28	✓	✓	
<b>Ex Approval IEC Ex (EEx ia)</b> (only for transmitter 7MF4...-.....-B..)	E45	✓	✓	✓
<b>Ex Approval IEC Ex (EEx id)</b> (only for transmitter 7MF4...-.....-D..)	E46	✓	✓	✓
<b>Explosion-proof "Intrinsic safety" to NEPSI (China)</b> (only for transmitter 7MF4...-.....-B..)	E55	✓	✓	✓
<b>Explosion protection "Explosion-proof" to NEPSI (China)</b> (only for transmitter 7MF4...-.....-D..)	E56	✓	✓	✓
<b>Explosion-proof "Zone 2" to NEPSI (China)</b> (only for transmitter 7MF4...-.....-E..)	E57	✓	✓	✓
<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	✓	✓	✓
<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) For 1/2-14 NPT inner process connection on the side in the middle of the process flange, vent valve not possible	K04	✓	✓	✓

Factory mounting of valve manifolds, see accessories.

Supplementary electronics for 4-wire connection, see accessories.

✓ = available

<sup>1)</sup> 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.

<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> Not suitable for connection of remote seal

# Pressure Measurement

## Transmitters for general requirements

SITRANS P DS III  
for differential pressure and flow

2

Selection and Ordering data	Order code		
<b>Additional data</b> Please add <b>"-Z"</b> to Order No. and specify Order code(s) and plain text.		<b>HART</b>	<b>PA</b> <b>FF</b>
<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	<b>Y01</b>	✓	
• in the case of square rooted characteristic (max. 5 characters): Y02: ... up to ... mbar, bar, kPa, MPa, psi	<b>Y02</b>	✓	
<b>Stainless steel tag plate (measuring point description)</b> Max. 16 char., specify in plain text: Y15: .....	<b>Y15</b>	✓	✓
<b>Measuring point text</b> Max. 27 char., specify in plain text: Y16: .....	<b>Y16</b>	✓	✓
<b>Entry of HART address (TAG)</b> Max. 8 char., 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 % *) ref. temperature 20 °C	<b>Y21</b>	✓	✓
<b>Setting of pressure indicator in non-pressure units<sup>1)</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)	<b>Y22<sup>2)</sup></b> <b>+ Y01 or Y02</b>	✓	
<b>Preset bus address</b> possible between 1 and 126 Specify in plain text: Y25: .....	<b>Y25</b>		✓

Factory mounting of valve manifolds, see accessories.

Only "Y01", "Y21", "Y22", "Y25" and "D05" can be factory preset

✓ = available

<sup>1)</sup> Preset values can only be changed over SIMATIC PDM.

<sup>2)</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 differential pressure and flow

2

Selection and Ordering data		Order 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
Connection of remote seal possible on request		
<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 7/16-20 UNF to IEC 61518</li> <li>Mounting thread M12 to DIN 19213 (only for replacement requirement)</li> </ul> </li> <li>Venting on side of process flanges, location of vent valve at top of process flanges (see dimensional drawing)               <ul style="list-style-type: none"> <li>Mounting thread 7/16-20 UNF to IEC 61518</li> <li>Mounting thread M12 to DIN 19213 (only for replacement requirement)</li> </ul> </li> </ul>		3 1 7 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>2)</sup>	3
<b>Version</b>		
<ul style="list-style-type: none"> <li>Standard versions</li> <li>International version, English label inscriptions, documentation in 5 languages on CD (no order code selectable)</li> </ul>		1 2
<b>Explosion protection</b>		
<ul style="list-style-type: none"> <li>None</li> <li>With ATEX, Type of protection:               <ul style="list-style-type: none"> <li>"Intrinsic safety (EEx ia)"</li> <li>"Explosion-proof (EEx d)"<sup>3)</sup></li> <li>"Intrinsic safety and flameproof enclosure" (EEx ia + EEx d)<sup>4)</sup></li> <li>"Ex nA/nL (Zone 2)"</li> <li>"Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia+ EEx d + Zone 1D/2D)"<sup>4)</sup></li> </ul> </li> <li>With FM + CSA, Type of protection:               <ul style="list-style-type: none"> <li>"Intrinsic safety and explosion-proof (is + xp)"<sup>3)</sup>, max PN 360</li> </ul> </li> </ul>		A B D P E R NC
<b>Electrical connection/cable entry</b>		
<ul style="list-style-type: none"> <li>Screwed gland Pg 13.5<sup>5)</sup></li> <li>Screwed gland M20x1.5</li> <li>Screwed gland 1/2-14 NPT</li> <li>Han 7D plug (plastic housing) incl. mating connector<sup>5)6)</sup></li> <li>M12 connectors (metal)<sup>7)</sup></li> </ul>		A B C D F

Selection and Ordering data		Order 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>		
<ul style="list-style-type: none"> <li>Without display</li> <li>Without visible display (display concealed, setting: mA)</li> <li>With visible display</li> <li>with customer-specific display (setting as specified, Order Code "Y21" or "Y22" required)</li> </ul>		0 1 6 7
► Available ex stock		
Power supply units see Chap. 8 "Supplementary Components".		
Scope of delivery: Pressure transmitter as ordered (Instruction Manual is extra ordering item)		
<ol style="list-style-type: none"> <li>Not in conjunction with max. span 600 mbar (240.9 inH<sub>2</sub>O)</li> <li>Not in conjunction with Electrical connection "Screwed gland Pg 13.5" and "Han7D plug".</li> <li>Without cable gland, with blanking plug</li> <li>With enclosed cable gland EEx ia and blanking plug</li> <li>Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".</li> <li>Permissible only for crimp-contact of conductor cross-section 1 mm<sup>2</sup></li> <li>M12 delivered without cable socket</li> </ol>		

# Pressure Measurement

## Transmitters for general requirements

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

2

Selection and Ordering data	Order No.
<b>Pressure transmitters for differential pressure and flow, PN 420 (MAWP 6092 psi)</b>	
<b>SITRANS P DS III with PROFIBUS PA (PA)</b>	7MF4534 -
<b>SITRANS P DS III with FOUNDATION Fieldbus (FF)</b>	7MF4535 -
	1 ■ ■ ■ ■ ■ ■ ■ ■ ■ ■
<b>Nominal measuring range</b>	
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> (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
Connection of remote seal possible on request	
<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	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 (EEx ia)"	B
- "Explosion-proof (EEx d)" <sup>2)</sup>	D
- "Intrinsic safety and flameproof enclosure" (EEx ia + EEx d) <sup>3)</sup>	P
- "Ex nA/nL (Zone 2)"	E
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D) <sup>3)</sup> (not for DS III FF)	R
• With FM + CSA, Type of protection:	
- "Intrinsic safety and explosion-proof (is + xp)" <sup>2)</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 (metal) <sup>4)</sup>	F

Selection and Ordering data	Order No.
<b>Pressure transmitters for differential pressure and flow, PN 420 (MAWP 6092 psi)</b>	
<b>SITRANS P DS III with PROFIBUS PA (PA)</b>	7MF4534 -
<b>SITRANS P DS III with FOUNDATION Fieldbus (FF)</b>	7MF4535 -
	1 ■ ■ ■ ■ ■ ■ ■ ■ ■ ■
<b>Display</b>	
• Without (display hidden)	0
• Without visible display (display concealed, setting: mA)	1
• With visible display	6
• With customer-specific display (setting as specified, Order Code "Y21" required)	7
► Available ex stock	
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) Not in conjunction with max. span 600 mbar (240.9 inH <sub>2</sub> O)	
2) Without cable gland, with blanking plug.	
3) With enclosed cable gland EEx ia and blanking plug.	
4) M12 delivered without cable socket	



# Pressure Measurement

## Transmitters for general requirements

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

2

Selection and Ordering data	Order code			
<b>Further designs</b>		<b>HART</b>	<b>PA</b>	<b>FF</b>
Add "-Z" to Order No. and specify Order Code.				
<b>Pressure transmitter with mounting bracket (2 shackles, 4 nuts, 4 U-plates, 1 angle) 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	✓	✓	✓
• 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 screws (2 unit(s))</b>	A40	✓	✓	✓
1/4-18 NPT, with valve in mat. of process flanges				
<b>Cable sockets for M12 connectors (metal)</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)" certificate to IEC 61508</b>	C20	✓		
<b>PROFIsafe certificate and protocol</b>	C21		✓	
<b>"Functional safety (SIL2/3)" certificate to IEC 61508</b>	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</b> (only together with seal diaphragm made of Hastelloy and stainless steel)	D07	✓	✓	✓
<b>Degree of protection IP68</b> (only for M20 x 1.5 and 1/2-14 NPT)	D12	✓	✓	✓
<b>Nominal pressure 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	✓		
<b>Use in or on zone 1D/2D</b> (only together with type of protection "Intrinsic safety (Ex ia)")	E01	✓	✓	✓
<b>Export approval Korea</b>	E11	✓	✓	✓
<b>Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-B..)	E25	✓	✓	✓
<b>Explosion-proof "Intrinsic safety" (Ex d) to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-D..)	E26	✓	✓	✓

Selection and Ordering data	Order code			
<b>Further designs</b>		<b>HART</b>	<b>PA</b>	<b>FF</b>
Add "-Z" to Order No. and specify Order Code.				
<b>Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-P..)	E28	✓	✓	
<b>Ex Approval IEC Ex (EEx ia)</b> (only for transmitter 7MF4...-.....-B..)	E45	✓	✓	✓
<b>Ex Approval IEC Ex (EEx id)</b> (only for transmitter 7MF4...-.....-D..)	E46	✓	✓	✓
<b>Explosion-proof "Intrinsic safety" to NEPSI (China)</b> (only for transmitter 7MF4...-.....-B..)	E55	✓	✓	✓
<b>Ex prot. "Explosion-proof" to NEPSI (China)</b> (only for transmitter 7MF4...-.....-D..)	E56	✓	✓	✓
<b>Explosion-proof "Zone 2" to NEPSI (China)</b> (only for transmitter 7MF4...-.....-E..)	E57	✓	✓	✓
<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>Additional data</b>				
Please add "-Z" to Order 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	✓		
• in the case of square rooted characteristic (max. 5 characters): Y02: ... up to ... mbar, bar, kPa, MPa, psi	Y02	✓		
<b>Stainless steel tag plate (measuring point description)</b>	Y15	✓	✓	✓
Max. 16 char., specify in plain text: Y15: .....				
<b>Measuring point text</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 indication 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>1)</sup> , inH <sub>2</sub> O <sup>1)</sup> , ftH <sub>2</sub> O <sup>1)</sup> , mmHg <sup>2)</sup> , 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 indication in non-pressure units<sup>1)</sup></b>	Y22 + 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: .....				
Factory mounting of valve manifolds, see accessories.				
Only "Y01", "Y21", "Y22", "Y25" and "D05" can be factory preset.				
✓ = available				

<sup>1)</sup> Preset values can only be changed over SIMATIC PDM.

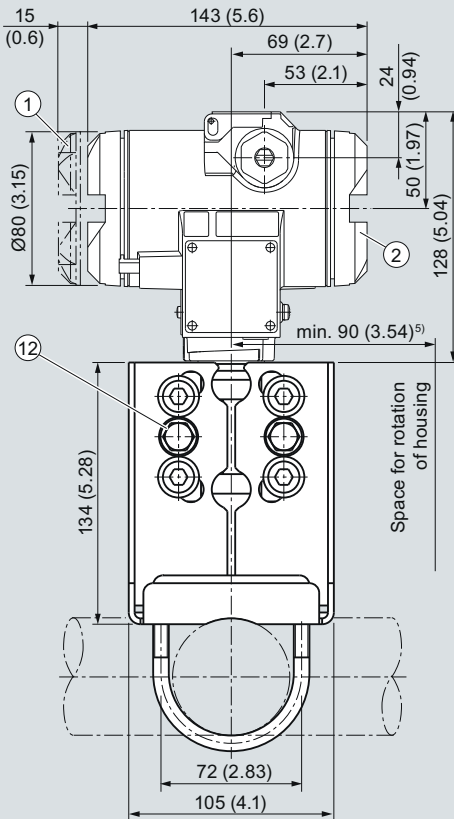
<sup>2)</sup> Tested according to IEC 61010. Only for measuring materials of the group of fluids 2 in accordance with DGRL permissible. Not for use with dangerous media suitable.

# Pressure Measurement

## Transmitters for general requirements

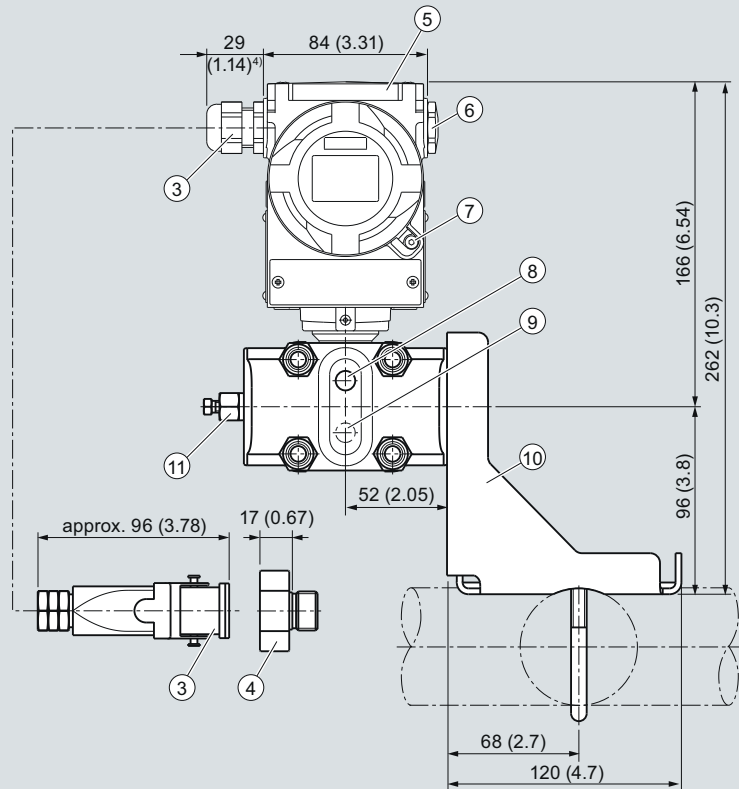
SITRANS P DS III  
for differential pressure and flow

### Dimensional drawings



- 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

- 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 (3.62 inch) for minimum distance to permit rotation with indicator
- 5) For Pg 13,5 with adapter approx. 45 mm (1.77 inch)



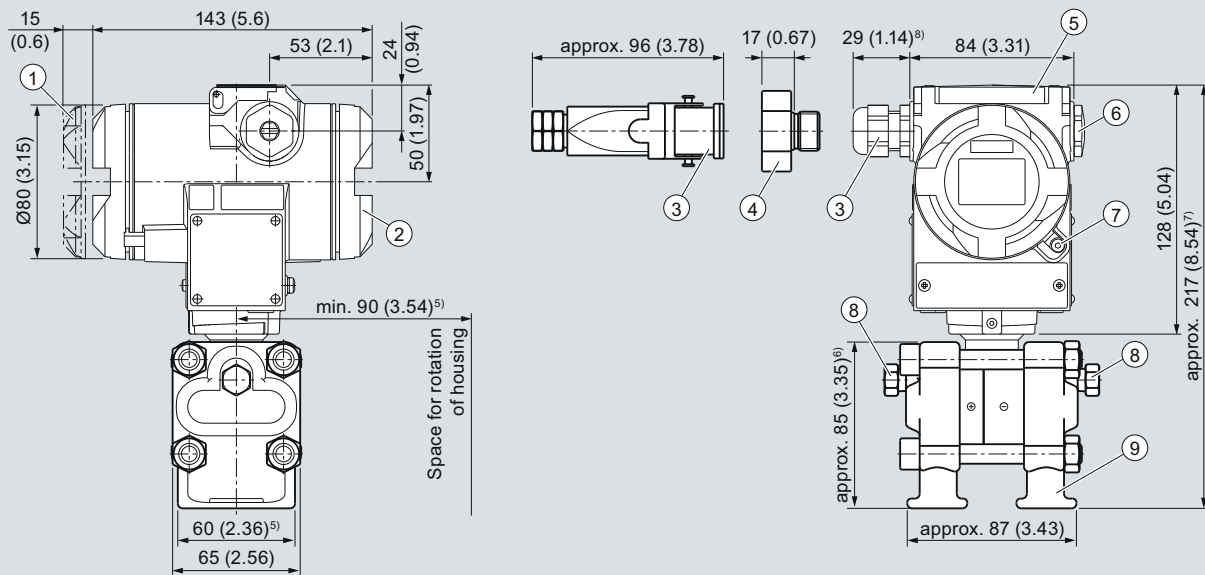
- ⑥ Blanking plug
- ⑦ Screw cover - safety bracket (only for type of protection  
"Explosion-proof enclosure", not shown in the drawing)
- ⑧ Lateral venting for liquid measurement (Standard)
- ⑨ Lateral venting for gas measurement (suffix H02)
- ⑩ Mounting bracket (option)
- ⑪ Sealing screw with valve (option)
- ⑫ Process connection: ¼-18 NPT (IEC 61518)

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

# Pressure Measurement

## Transmitters for general requirements

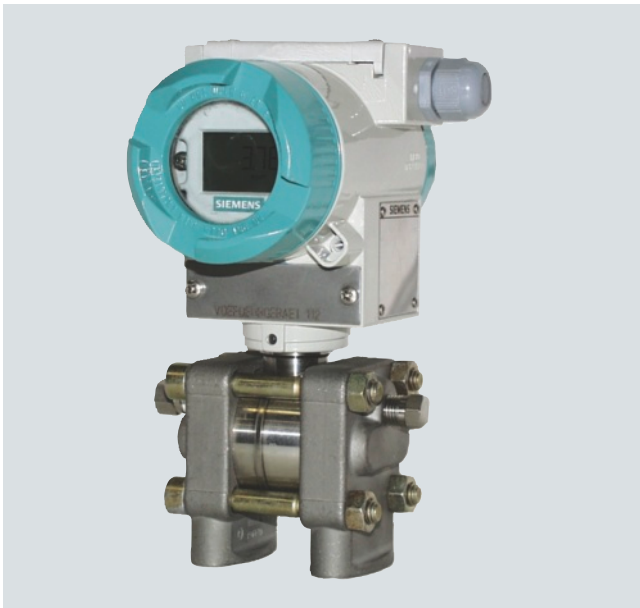
### SITRANS P DS III for differential pressure and flow



- ① 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 1/2-14 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: 1/4-18 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**

2

### Technical specifications

SITRANS P DS III for level		HART		PROFIBUS PA or FOUNDATION Fieldbus	
<b>Input</b>					
Measured variable	Level				
Spans (infinitely adjustable) or nominal measuring range and max. permissible operating pressure	Span (min. ... max.)	Maximum operating pressure	Nominal measuring range	Maximum operating pressure	
	25 ... 250 mbar (10 ... 100 inH <sub>2</sub> O)	See "Mounting flange"	250 mbar (100 inH <sub>2</sub> O)	See "Mounting flange"	
	25 ... 600 mbar (10 ... 240 inH <sub>2</sub> O)	See "Mounting flange"	600 mbar (240 inH <sub>2</sub> O)	See "Mounting flange"	
	53 ... 1600 mbar (21 ... 642 inH <sub>2</sub> O)	See "Mounting flange"	1600 mbar (642 inH <sub>2</sub> O)	See "Mounting flange"	
	160 ... 5000 mbar (64 ... 2000 inH <sub>2</sub> O)	See "Mounting flange"	5 bar (2000 inH <sub>2</sub> O)	See "Mounting flange"	
Lower measuring limit					
• Measuring cell with silicone oil filling	-100 % of max. span or 30 mbar a (0.44 psia), depending on mounting flange				
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.				
<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					≤ 0.15 %
- r ≤ 10	≤ 0.15 %				
- 10 < r ≤ 30	≤ 0.3 %				
- 30 < r ≤ 100	≤ (0.0075 · r + 0.075) %				
Long-term stability (temperature change ± 30 °C (± 54 °F))	≤ (0.25 · r)% every 5 years static pressure max. 70 bar (1015 psi)				≤ 0.25 % every 5 years static pressure max. 70 bar (1015 psi)
Influence of ambient temperature					
• at -10 ... +60 °C (14 ... 140 °F)					
- 250 mbar- (100 inH <sub>2</sub> O)-measuring cell	≤ (0.5 · r + 0.2) % <sup>1) 4)</sup>				≤ 0.7 %
- 600 mbar- (240 inH <sub>2</sub> O)-measuring cell	≤ (0.3 · r + 0.2) % <sup>2) 4)</sup>				≤ 0.5 %
- 1600 and 5000 mbar- (642 and 2000 inH <sub>2</sub> O)-measuring cell	≤ (0.25 · r + 0.2) % <sup>3) 4)</sup>				≤ 0.45 %
• at -40 ... -10 °C and 60 ... 85 °C (-40 ... +14 °F and 140 ... 185 °F)					
- 250 mbar- (100 inH <sub>2</sub> O)-measuring cell	≤ (0.25 · r + 0.15) %/10 K doubled values at 10 < r ≤ 30				≤ 0.4 %/10 K
- 600 mbar- (240 inH <sub>2</sub> O)-measuring cell	≤ (0.15 · r + 0.15) %/10 K doubled values at 10 < r ≤ 30				≤ 0.3 %/10 K
- 1600 and 5000 mbar- (642 and 2000 inH <sub>2</sub> O)-measuring cell	≤ (0.12 · r + 0.15) %/10 K double values at 10 < r ≤ 30				≤ 0.27 %/10 K

# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III for level

2

SITRANS P DS III for level		
	HART	PROFIBUS PA or FOUNDATION Fieldbus
Influence of static pressure		
• on the zero point		
- 250 mbar- (100 inH <sub>2</sub> O)-measuring cell	≤ (0.3 · r) % per nominal pressure	≤ 0.3 % per nominal pressure
- 600 mbar- (240 inH <sub>2</sub> O)-measuring cell	≤ (0.15 · r) % per nominal pressure	≤ 0.15 % per nominal pressure
- 1600 and 5000 mbar- (642 and 2000 inH <sub>2</sub> O)-measuring cell	≤ (0.1 · r) % per nominal pressure	≤ 0.1 % per nominal pressure
• on the span	≤ (0.1 · r) % per nominal pressure	≤ 0.1 % per nominal pressure
Measured Value Resolution	-	3 · 10 <sup>-5</sup> of nominal measuring range
Rated conditions		
Degree of protection to IEC 60529	IP65, optional 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!	
• Measuring cell with silicone oil filling	-40 ... +100 °C (-40 ... +212 °F)	
- High-pressure side	p <sub>abs</sub> ≥ 1 bar: -40 ... +175 °C (-40 ... +347 °F)	
	p <sub>abs</sub> < 1 bar: -40 ... +80 °C (-40 ... +176 °F)	
- Low-pressure side	-40 ... +100 °C (-40 ... +212 °F)	
	-20 ... +60 °C (-4 ... +140 °F) in conjunction with dust explosion protection	
Ambient conditions		
• Ambient temperature		
- -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 EN 61326 and NAMUR NE 21	
Design		
Weight (without options)		
To EN (pressure transmitter with mounting flange, without tube)	≈ 11 ... 13 kg (≈ 24.2 ... 28.7 (lb)	
To ASME (pressure transmitter with mounting flange, without tube)	≈ 11 ... 18 kg (≈ 24.2 ... 39.7 lb)	
Enclosure material	Low-copper die-cast aluminum, GD-AlSi12 or stainless steel precision casting, mat. no. 1.4408	
Wetted parts materials		
High-pressure side		
• Seal diaphragm of mounting flange	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	
Measuring cell filling	Silicone oil	
Process connection		
• High-pressure side	Flange to EN and ASME	
• Low-pressure side	Female thread ¼-18 NPT and flange connection with mounting thread M10 to DIN 19213 or 7/16-20 UNF to EN 61518	
Power supply U <sub>H</sub>		
Terminal voltage on transmitter	10.5 ... 45 V DC 10.5 ... 30 V DC in intrinsically-safe mode	Supplied through bus -
Separate 24 V power supply necessary	-	No
Bus voltage		
• Not Ex	-	9 ... 32 V
• With intrinsically-safe operation	-	9 ... 24 V
Current consumption		
• Basic current (max.)	-	12.5 mA
• Start-up current ≤ basic current	-	Yes
• Max. current in event of fault	-	15.5 mA
Fault disconnection electronics (FDE) available	-	Yes

# Pressure Measurement

## Transmitters for general requirements

**SITRANS P DS III**  
**for level**
**SITRANS P DS III for level**
**HART**
**PROFIBUS PA or FOUNDATION Fieldbus**
**Certificates and approvals**

Classification according to PED 97/23/EC

For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)

Explosion protection

## • Intrinsic safety "i"

PTB 99 ATEX 2122

- Marking

Ex II 1/2 G EEx ia/ib IIB/IIC T6

- 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 EEx d IIC T4/T6

- 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:  $U_H = 9 \dots 32 \text{ V DC}$ ;  
 $P_{\max} = 1.2 \text{ W}$ 

## • Type of protection "n" (zone 2)

TÜV 01 ATEX 1696 X

- Marking

Ex II 3 G EEx nA L IIC T4/T5/T6

TÜV 01 ATEX 1696 X

Ex II 3 G EEx nA L IIC T4/T5/T6

## • 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 &lt; (0.4 · r + 0.16) % / 28 °C (50 °F).

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

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

4) 0.32 instead of 0.16 at 10 &lt; r &lt; 30

# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III for level

2

<b>HART communication</b>		<b>FOUNDATION Fieldbus communication</b>	
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 ... 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	<b>Mounting flange</b>	
- Failure mode	parameterizable (summation with last good value, continuous summation, summation with incorrect value)	Nominal diameter	Nominal pressure
- Limit monitoring	One upper and lower warning limit and one alarm limit respectively	• Acc. to EN 1092-1	
		- DN 80	PN 40
• Physical block	1	- DN100	PN16, PN40
Transducer blocks	2	• To ASME B16.5	
• Pressure transducer block		- 3 inch	Class 150, class 300
- Can be calibrated by applying two pressures	Yes	- 4 inch	Class 150, class 300
- 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 level

2

Selection and Ordering data		Order 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>	
Silicone oil	normal	1
<b>Measuring span (min. ... max.)</b>		
25 ... 250 mbar	(10 ... 100 inH <sub>2</sub> O)	D
25 ... 600 mbar	(10 ... 240 inH <sub>2</sub> O)	E
53 ... 1600 mbar	(21 ... 642 inH <sub>2</sub> O)	F
0.16 ... 5 bar	(64.3 ... 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 <sup>1)</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 (EEx ia)"		B
- "Explosion-proof (EEx d)" <sup>2)</sup>		D
- "Intrinsic safety and flameproof enclosure" (EEx ia + EEx d) <sup>3)</sup>		P
- "Ex nA/nL (Zone 2)"		E
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia+ EEx d + Zone 1D/2D) <sup>3)</sup>		R
• 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 Pg 13.5 <sup>4)</sup>		A
• Screwed gland M20x1.5		B
• Screwed gland 1/2-14 NPT		C
• Han 7D plug (plastic housing) incl. mating connector <sup>4)</sup>		D
• M12 connectors (metal) <sup>5)</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

### 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. 8 "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) Not in conjunction with electrical connection "Screwed gland Pg 13.5" and "Han7D plug".
- 2) Without cable gland, with blanking plug.
- 3) With enclosed cable gland EEx ia and blanking plug.
- 4) Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".
- 5) M12 delivered without cable socket

# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III for level

Selection and Ordering data		Order No.	
<b>Pressure transmitters for level</b>			
<b>SITRANS P DS III with PROFIBUS PA (PA)</b>		<b>7MF4634 -</b>	
<b>SITRANS P DS III with FOUNDATION Fieldbus (FF)</b>		<b>7MF4635 -</b>	
		<b>1 Y - - - -</b>	
<b>Nominal measuring range</b>			
250 mbar	(100 inH <sub>2</sub> O)	<b>D</b>	
600 mbar	(240 inH <sub>2</sub> O)	<b>E</b>	
1600 mbar	(642 inH <sub>2</sub> O)	<b>F</b>	
5 bar	(2000 inH <sub>2</sub> O)	<b>G</b>	
<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	<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:			
- "Intrinsic safety (EEx ia)"		<b>B</b>	
- "Explosion-proof (EEx <sup>1</sup> d)"		<b>D</b>	
- "Intrinsic safety and flameproof enclosure" (EEx ia + EEx d) <sup>*2</sup>		<b>P</b>	
- "Ex nA/nL (Zone 2)"		<b>E</b>	
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D) <sup>*2</sup> (not for DS III FF)"		<b>R</b>	
• With FM + CSA, Type of protection:			
- "Intrinsic Safe und Explosion Proof (is + xp) <sup>*1</sup> "		<b>NC</b>	
<b>Electrical connection/cable entry</b>			
• Screwed gland M20 x 1.5		<b>B</b>	
• Screwed gland 1/2-14 NPT		<b>C</b>	
• M12 connectors (metal) <sup>3</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" required)		<b>7</b>	

► Available ex stock

#### 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 flanges(s)

<sup>1</sup>) Without cable gland, with blanking plug.

<sup>2</sup>) With enclosed cable gland EEx ia and blanking plug.

<sup>3</sup>) M12 delivered without cable socket

# Pressure Measurement

## Transmitters for general requirements

SITRANS P DS III  
for level

Selection and Ordering data	Order code			
<b>Further designs</b>		<b>HART</b>	<b>PA</b>	<b>FF</b>
Add "-Z" to Order 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	✓	✓	✓
• FFP (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> 1/4-18 NPT, with valve in mat. of process flanges	A40	✓	✓	✓
<b>Cable sockets for M12 connectors (metal)</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)" certificate to IEC 61508</b>	C20	✓		
<b>PROFIsafe certificate and protocol</b>	C21		✓	
<b>"Functional safety (SIL2/3)" certificate to IEC 61508</b>	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 IP68</b> (only for M20x1.5 and 1/2-14 NPT)	D12	✓	✓	✓
<b>Supplied with oval flange</b> (1 item), PTFE packing and screws in thread of process flange	D37	✓	✓	✓
<b>Use on zone 1D / 2D</b> (only together with type of protection "Intrinsic safety (EEx 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 (EEx ia)")	E08	✓		
<b>Export approval Korea</b>	E11	✓	✓	✓
<b>Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-B..)	E25	✓	✓	✓
<b>Explosion-proof "Intrinsic safety" (Ex d) to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-D..)	E26	✓	✓	✓
<b>Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-P..)	E28	✓	✓	

Selection and Ordering data	Order code			
<b>Further designs</b>		<b>HART</b>	<b>PA</b>	<b>FF</b>
Add "-Z" to Order No. and specify Order Code.				
<b>Ex Approval IEC Ex (EEx ia)</b> (only for transmitter 7MF4...-.....-B..)	E45	✓	✓	✓
<b>Ex Approval IEC Ex (EEx id)</b> (only for transmitter 7MF4...-.....-D..)	E46	✓	✓	✓
<b>Explosion-proof "Intrinsic safety" to NEPSI (China)</b> (only for transmitter 7MF4...-.....-B..)	E55	✓	✓	✓
<b>Explosion protection "Explosion-proof" to NEPSI (China)</b> (only for transmitter 7MF4...-.....-D..)	E56	✓	✓	✓
<b>Ex protection "Zone 2" to NEPSI (China)</b> (only for transmitter 7MF4...-.....-E..)	E57	✓	✓	✓
<b>Two coats of lacquer on casing and cover (PU on epoxy)</b>	G10	✓	✓	✓
<b>Replacement of process connection side</b>	H01	✓	✓	✓
<b>Additional data</b>				
Please add "-Z" to Order 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	✓		
<b>Stainless steel tag plate (measuring point description)</b> Max. 16 characters, specify in plain text: Y15: .....	Y15	✓	✓	✓
<b>Measuring point text</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 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	Y21	✓	✓	✓
<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 "Y01" is essential, unit with max. 5 characters)	Y22 <sup>1</sup> + Y01	✓		
<b>Preset bus address</b> possible between 1 and 126 Specify in plain text Y25: .....	Y25		✓	

Only "Y01", "Y21", "Y22", "Y25" and "D05" can be factory preset

✓ = available

<sup>1</sup> Not in conjunction with over-filling safety device for flammable and non-flammable liquids (Order Code "E08")

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

# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III for level

2

Selection and Ordering data		Order No.	
<b>Mounting flange</b>		D) 7 MF 4 9 1 2	
Directly mounted on the SITRANS P pressure transmitter (converter part) for level, for DS III series		3	
<b>Connection to EN 1092-1</b>			
<b>Nominal diameter</b>	<b>Nominal pressure</b>		
DN 80	PN 40	D	
DN 100	PN 16	G	
	PN 40	H	
<b>Connection to ASME B16.5</b>			
<b>Nominal diameter</b>	<b>Nominal pressure</b>		
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.: ...		Z	J 1 Y
<b>Wetted parts materials</b>			
<ul style="list-style-type: none"> <li>Stainless steel 316L               <ul style="list-style-type: none"> <li>Coated with PFA</li> <li>Coated with PTFE</li> </ul> </li> <li>Coated with ECTFE<sup>1)</sup></li> <li>Monel 400, mat. no. 2.4360</li> <li>Hastelloy B2, mat. no. 2.4617</li> <li>Hastelloy C276, mat. no. 2.4819</li> <li>Hastelloy C4, mat. no. 2.4610</li> <li>Tantalum</li> </ul>		A	
		D	
		E 0	
		F	
		G	
		H	
		J	
		U	
		K	
Other version, add Order Code and plain text: material of parts in contact with the medium: ... Sealing face, see "Technical specifications"		Z	K 1 Y
<b>Tube length</b>			
<ul style="list-style-type: none"> <li>None</li> <li>50 mm (1.97 inch)</li> <li>100 mm (3.94 inch)</li> <li>150 mm (5.90 inch)</li> <li>200 mm (7.87 inch)</li> </ul>		0	
		1	
		2	
		3	
		4	
Other version: add Order Code and plain text: tube length: ...		9	L 1 Y
<b>Filling liquid</b>			
<ul style="list-style-type: none"> <li>Silicone oil M5</li> <li>Silicone oil M50</li> <li>High-temperature oil</li> <li>Halocarbon oil (for O<sub>2</sub>-measurement)</li> <li>Glycerin/water<sup>2)</sup></li> <li>Food oil (FDA-listed)</li> </ul>		1	
		2	
		3	
		4	
		6	
		7	
Other version, add Order Code and plain text: filling liquid: ...		9	M 1 Y

1) For vacuum on request

2) Not suitable for use in low-pressure range

D) Subject to export regulations AL:N, ECCN:EAR99H

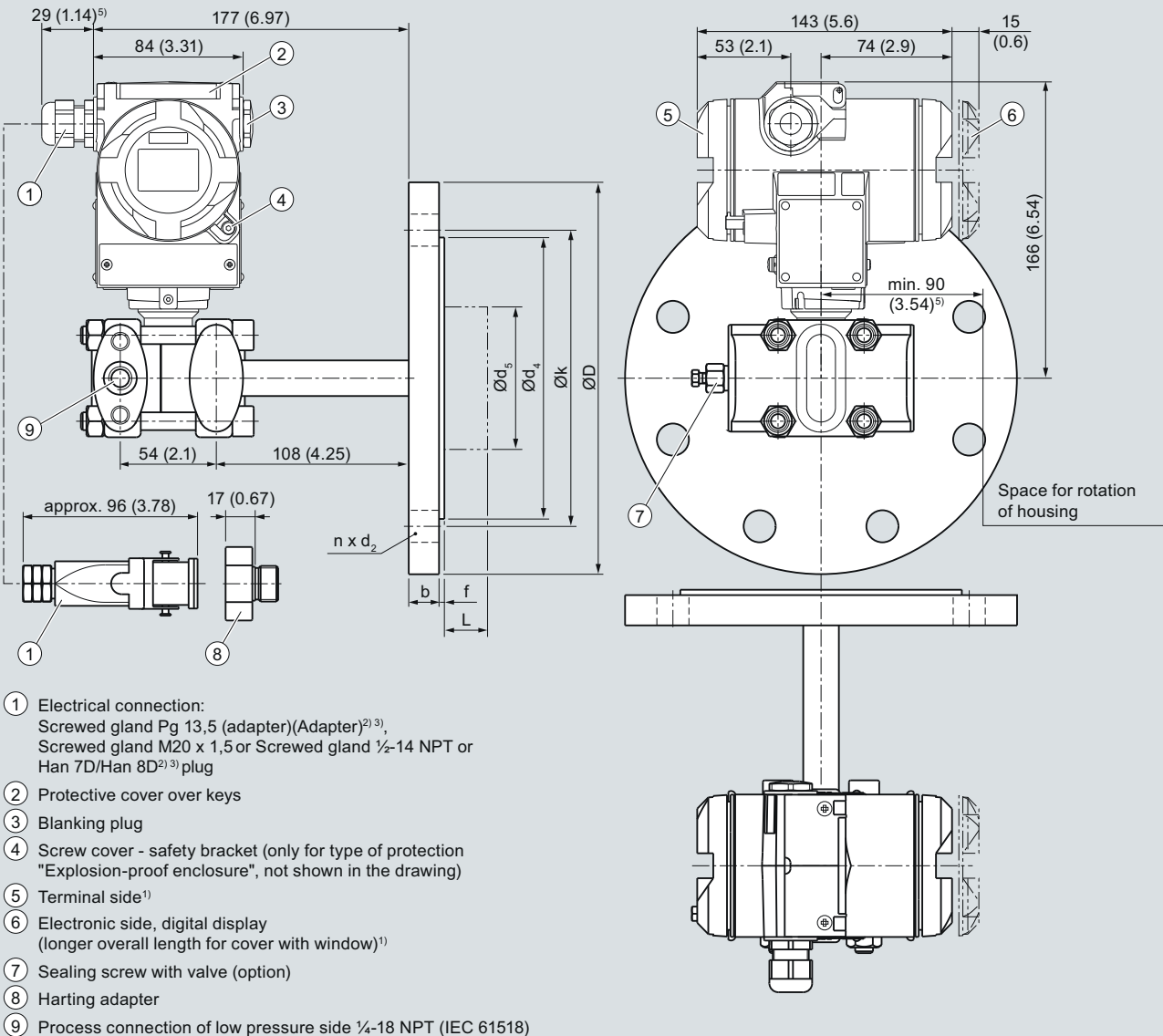
Selection and Ordering data	Order code		
<b>Further designs</b>		HART	PA
Add "-Z" to Order No. and specify Order Code.			FF
<b>Spark arrester</b>	A01	✓	✓
For mounting on zone 0 (including documentation)			
<b>Certificate to EN 10204-2.2</b>	C10		
For certification of oil - and grease-free cleaned and packed version for oxygen and summer applications in which only inert filling liquid may be used. (Only in conjunction with halocarbon oil fill fluid)			
<b>Quality inspection certificate (Five-step factory calibration) to IEC 60770-2</b>	C11	✓	✓
<b>Inspection certificate</b>	C12	✓	✓
Acc. to EN 10204-3.1			
<b>"Functional safety (SIL2)" certificate to IEC 61508</b>	C20	✓	
(only for conjunction with the order code "C20" in the case of SITRANS P DS III transmitter)			
<b>"Functional safety (SIL2/3)" certificate to IEC 61508</b>	C23	✓	
(only for conjunction with the order code "C23" in the case of SITRANS P DS III transmitter)			
<b>Vacuum-proof design</b>	V04	✓	✓
(for use in low-pressure range)			
Note: suffix "Y01" required with pressure transmitter!			
✓ = available			

# Pressure Measurement

## Transmitters for general requirements

SITRANS P DS III  
for level

### 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

#### Connection to EN 1092-1

Nominal diameter	Nominal pressure	L	D	h	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub>	j	k	n	L
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
DN 80	PN 40	24	200	90	18	138	76	72 <sup>1)</sup>	2	160	8	0, 50, 100,
DN 100	PN 16	20	220	115	18	158	94	89	2	180	8	150 or 200
	PN 40	24	235	115	22	162	94	89	2	190	8	

#### Connection to ASME B16.5

Nominal diameter	Nominal pressure	L	D	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub>	j	k	n	L
		mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)		mm (inch)
3 inch	150	0.94 (24.3)	7.5 (190)	0.75 (19.0)	5 (127)	3 (76)	2.81 <sup>1)</sup> (72)	0.06 (2)	6 (152,4)	4	0, 2, 3.94,
	300	1.12 (29)	8.25 (210)	0.87 (22.2)	5 (127)	3 (76)	2.81 <sup>1)</sup> (72)	0.06 (2)	6.69 (168,3)	8	5.94 or 7.87
4 inch	150	0.94 (24.3)	9 (230)	0.75 (19.0)	6.19 (157.2)	3.69 (94)	3.5 (89)	0.06 (2)	7.5 (190,5)	8	(0, 50, 100,
	300	1.25 (32.2)	10 (255)	0.87 (22.2)	6.19 (157.2)	3.69 (94)	3.5 (89)	0.06 (2)	7.88 (200)	8	150 or 200)

d: Internal diameter of gasket to DIN 2690

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

<sup>1)</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

#### 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

	acc. to IEC 60770-1
Measurement deviation (in addition to transmitter)	≤ 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	-20 ... +80 °C (-4 ... +176 °F)
Storage temperature	-50 ... +85 °C (-58 ... +185 °F)
Degree of protection	IP54 to IEC 60529
Electromagnetic compatibility (EMC)	EN 50081, EN 50082

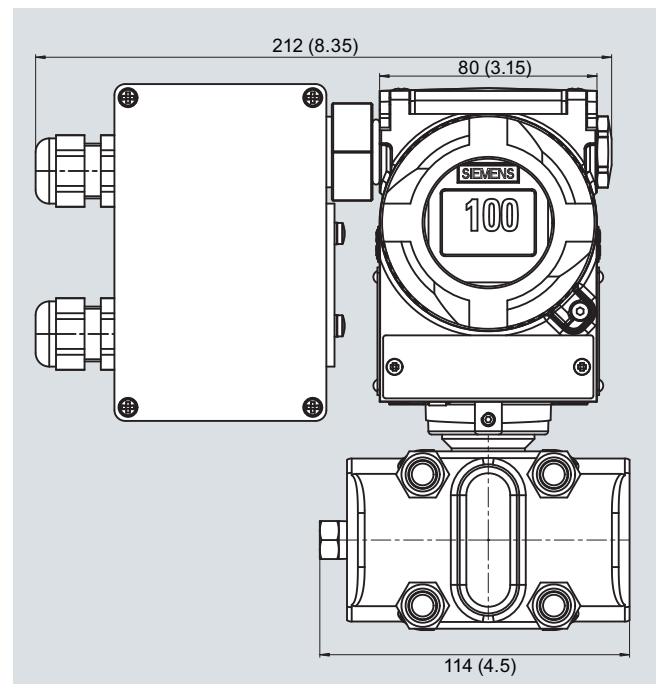
#### Structural design

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



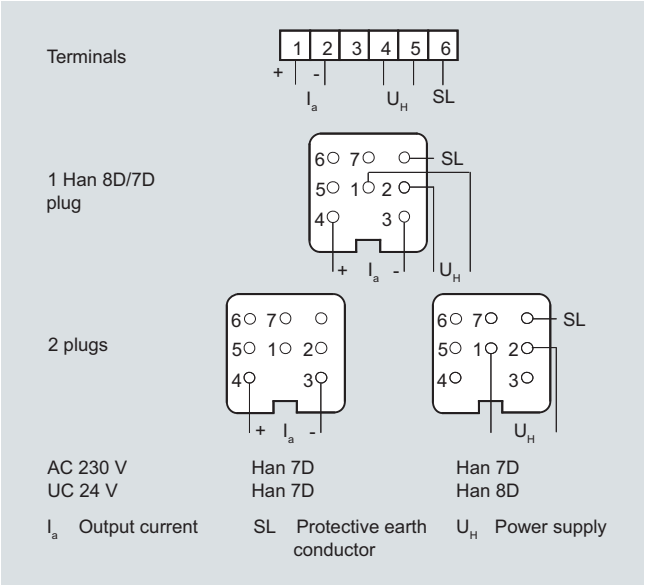
# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III

#### Supplementary electronics for 4-wire connection

Schematics



Supplementary electronics for 4-wire connection, connection diagram

Selection and Ordering data		Order code
<b>Supplementary electronics for 4-wire connection</b> Order No. of the transmitter <b>7MF4.33-.....-1AB.</b> add <b>"-Z"</b> and Order code.		V ■ ■
<b>Power supply</b> 24 V AC/DC	<b>Electrical connection</b> Terminals; 2 Pg screwed glands, to left	1
	2 Han 7D/Han 8U plugs incl. mating connector, to left	3
230 V AC	1 Han 7D plug incl. mating connector, angled	5
	Terminals; 1 Pg screwed gland, downwards	6
	1 Han 8U plug incl. mating connector, downwards (observe arrangement of plug and differential pressure line)	9
	Terminals; 2 Pg screwed glands, to left	7
	2 Han 7D plugs incl. mating connector, to left	8
<b>Output current</b> 0 ... 20 mA 4 ... 20 mA		0 1
<b>Accessories</b> <b>Instruction Manual</b> German/English		<b>A5E00322799</b>

# Pressure Measurement

## Transmitters for general requirements

SITRANS P DS III  
Accessories/Spare Parts

Selection and Ordering data		Order No.
<b>Replacement measuring cell for pressure for SITRANS P DS III</b>		<b>7MF4990 -</b>
		<b>0 - 0 C 0</b>
<b>Measuring cell filling</b>	<b>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>		
<ul style="list-style-type: none"> <li>• Connection shank G½B to EN 837-1</li> <li>• Female thread ½-14 NPT</li> <li>• Oval flange made of stainless steel, max. span 160 bar (2320 psi) <ul style="list-style-type: none"> <li>- Mounting thread 7/16-20 UNF to IEC 61518</li> <li>- Mounting thread M10 to DIN 19213</li> </ul> </li> </ul>		0 1  2 3
<b>Ex protection Ex ia and Ex d</b>		D
<b>Further designs</b>		Order code
Please add "-Z" to Order No. and specify Order code.		
<b>Inspection certificate</b>		C12
to EN 10204-3.1		

Selection and Ordering data		Order No.
<b>Replacement measuring cell for absolute pressure for SITRANS P DS III (from the pressure series)</b>		<b>F) 7MF4992 -</b>
		<b>0 - 0 DC 0</b>
<b>Measuring cell filling</b>	<b>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>		
<ul style="list-style-type: none"> <li>• Connection shank G½B to EN 837-1</li> <li>• Female thread ½-14 NPT</li> <li>• Oval flange made of stainless steel, max. span 160 bar (2320 psi) <ul style="list-style-type: none"> <li>- Mounting thread 7/16-20 UNF to IEC 61518</li> <li>- Mounting thread M10 to DIN 19213</li> </ul> </li> </ul>		0 1  2 3
<b>Further designs</b>		Order code
Please add "-Z" to Order No. and specify Order code.		
<b>Inspection certificate</b>		C12
to EN 10204-3.1		
F) Subject to export regulations AL: 91999, ECCN: N.		

2

# Pressure Measurement

## Transmitters for general requirements

### SITRANS P DS III

#### Accessories/Spare Parts

2

Selection and Ordering data		Order No.
<b>Replacement measuring cell for absolute pressure (from the differential pressure series)</b> for SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus series		<b>7MF4993 -</b> - 0 DC 0
<b>Measuring cell filling</b>	<b>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)	E) D
43 ... 1300 mbar a	(0.62 ... 18.85 psia)	E) F
0.16 ... 5 bar a	(2.32 ... 72.5 psia)	E) 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
<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 "-Z" to Order 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

1) Not for span "5.3 ... 100 bar (76.9 ... 1450 psi)"

E) Subject to the export regulations AL: 2B230, ECCN: N.

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

Selection and Ordering data		Order No.
<b>Replacement measuring cell for differential pressure and PN 32/160 (MAWP 464/2320 psi)</b> for SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus series		<b>7MF4994 -</b> - 0 DC 0
<b>Measuring cell filling</b>	<b>Measuring cell cleaning</b>	
Silicone oil	Normal	1
Inert liquid	grease-free to cleanliness level 2	3
<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	A
Hastelloy	Stainless steel	B
Hastelloy	Hastelloy	C
Tantalum <sup>2)</sup>	Tantalum	E
Monel <sup>2)</sup>	Monel	H
Gold <sup>2)</sup>	Gold	L
<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 "-Z" to Order 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

1) Not suitable for connection of remote seal

2) 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

2

Selection and Ordering data		Order 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>7MF4995 -</b> <b>- 0 DC 0</b>
<b>Measuring cell filling</b> Silicone oil	<b>Measuring cell cleaning</b> Normal	<b>1</b>
<b>Measured span (min. ... max.)</b>		<b>D</b> <b>E</b> <b>F</b> <b>G</b> <b>H</b>
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)		
Seal diaphragm	Parts of measuring cell	
Stainless steel	Stainless steel	<b>A</b>
Hastelloy	Stainless steel	<b>B</b>
Gold <sup>1)</sup>	Gold	<b>L</b>
<b>Process connection</b> Female thread 1/4-18 NPT with flange connection		
• Sealing screw opposite process connection		
- Mounting thread M12 to DIN 19213		<b>1</b>
- Mounting thread 7/16-20 UNF to IEC 61518		<b>3</b>
• Vent on side of process flange		
- Mounting thread M12 to DIN 19213		<b>5</b>
- Mounting thread 7/16-20 UNF to IEC 61518		<b>7</b>
<b>Non-wetted parts materials</b>		
• Stainless steel process flange screws		<b>2</b>
<b>Further designs</b>		Order code
Please add "-Z" to Order No. and specify Order code.		
<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>Inspection certificate</b> to EN 10204-3.1		<b>C12</b>
<b>Stainless steel process flanges for vertical differential pressure lines</b>		<b>H03</b>
<b>without process flanges</b>		<b>K00</b>

<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

2

Selection and Ordering data	Order No.
<b>Spare parts/Accessories</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	<b>7MF4997-1AB</b> <b>7MF4997-1AH</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-.....-..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 ▶	<b>7MF4997-1AC</b> <b>7MF4997-1AJ</b>
<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 ▶	<b>7MF4997-1AD</b> <b>7MF4997-1AK</b>
<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	<b>7MF4997-1AE</b> <b>7MF4997-1AL</b>
<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	<b>7MF4997-1AF</b> <b>7MF4997-1AM</b>
<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 F) • with window ▶ F)	<b>7MF4997-1BB</b> <b>7MF4997-1BE</b>
<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 F) • with window F)	<b>7MF4997-1BC</b> <b>7MF4997-1BF</b>

Selection and Ordering data	Order No.
<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	<b>7MF4997-1BR</b>
<b>Measuring point label</b> • without inscription (5 units) • Printed (1 unit) Data according to Y01 or Y02, Y15 and Y16 (see "Pressure transmitters")	<b>7MF4997-1CA</b> <b>7MF4997-1CB-Z</b> Y..: .....
<b>Mounting screws</b> For measuring point label, grounding and connection terminals or for display (50 units)	<b>7MF4997-1CD</b>
<b>Sealing screws</b> (1 set = 2 units) for process flange • made of stainless steel • made of Hastelloy	<b>7MF4997-1CG</b> <b>7MF4997-1CH</b>
<b>Sealing screws with vent valve</b> Complete (1 set = 2 units) • made of stainless steel ▶ • made of Hastelloy	<b>7MF4997-1CP</b> <b>7MF4997-1CQ</b>
<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	<b>7MF4997-1DK</b> <b>7MF4997-1DL</b> <b>7MF4997-1DM</b>
<b>Connection board</b> • for SITRANS P DS III • for SITRANS P DS III PROFIBUS PA and FOUNDATION Fieldbus	<b>7MF4997-1DN</b> <b>7MF4997-1DP</b>
<b>O-rings for process flanges made of:</b> • FPM (Viton) F) • PTFE (Teflon) F) • FEP (with silicone core, approved for food) F) • FFPN (Kalrez, compound 4079) F) • NBR (Buna N) F)	<b>7MF4997-2DA</b> <b>7MF4997-2DB</b> <b>7MF4997-2DC</b> <b>7MF4997-2DD</b> <b>7MF4997-2DE</b>
<b>Sealing ring</b> for process connection	see "Fittings"
<b>Weldable sockets for PMC connection</b> • PMC Style Standard: Thread 1½" • PMC Style Minibolt: front-flush 1"	<b>7MF4997-2HA</b> <b>7MF4997-2HB</b>
<b>Gaskets for PMC connection</b> (packing unit = 5 units) • PTFE seal for PMC Style Standard: Thread 1½" F) • Gasket made of Viton for PMC Style Minibolt: front-flush 1" F)	<b>7MF4997-2HC</b> <b>7MF4997-2HD</b>
<b>Weldable socket for TG52/50 and TG52/150 connection</b> • TG52/50 connection • TG52/150 connection	<b>7MF4997-2HE</b> <b>7MF4997-2HF</b>
<b>Seals for TG 52/50 and TG 52/150 made of silicone</b>	<b>7MF4997-2HG</b>
<b>Seals for flange connection with front-flush diaphragm</b> Material FPM (Viton), 10 units • DN 25, PN 40 (M11) F) • DN 25, PN 100 (M21) F) • 1", class 150 (M40) F) • 1", class 300 (M45) F)	<b>7MF4997-2HH</b> <b>7MF4997-2HJ</b> <b>7MF4997-2HK</b> <b>7MF4997-2HL</b>

▶ available ex stock

F) Subject to export regulations AL: 91999, ECCN: N.

# Pressure Measurement

## Transmitters for general requirements

SITRANS P DS III  
Accessories/Spare Parts

2

Selection and Ordering data	Order 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>Brief instruction (Leporello)</b>	
German, English	
<ul style="list-style-type: none"> <li>for SITRANS DS III with HART               <ul style="list-style-type: none"> <li>German, English <b>A5E00047093</b></li> </ul> </li> <li>for SITRANS DS III with PROFIBUS PA               <ul style="list-style-type: none"> <li>German, English <b>A5E00053274</b></li> </ul> </li> <li>for SITRANS DS III with FOUNDATION Fieldbus               <ul style="list-style-type: none"> <li>German, English <b>A5E00282355</b></li> </ul> </li> </ul>	
<b>CD with documentation</b>	<b>A5E00090345</b>
for SITRANS P, P300 series, SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus series German, English, French, Spanish, Italian	
<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 2/151</b>
▶ available ex stock	

Power supply units see Chap. 8 "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).

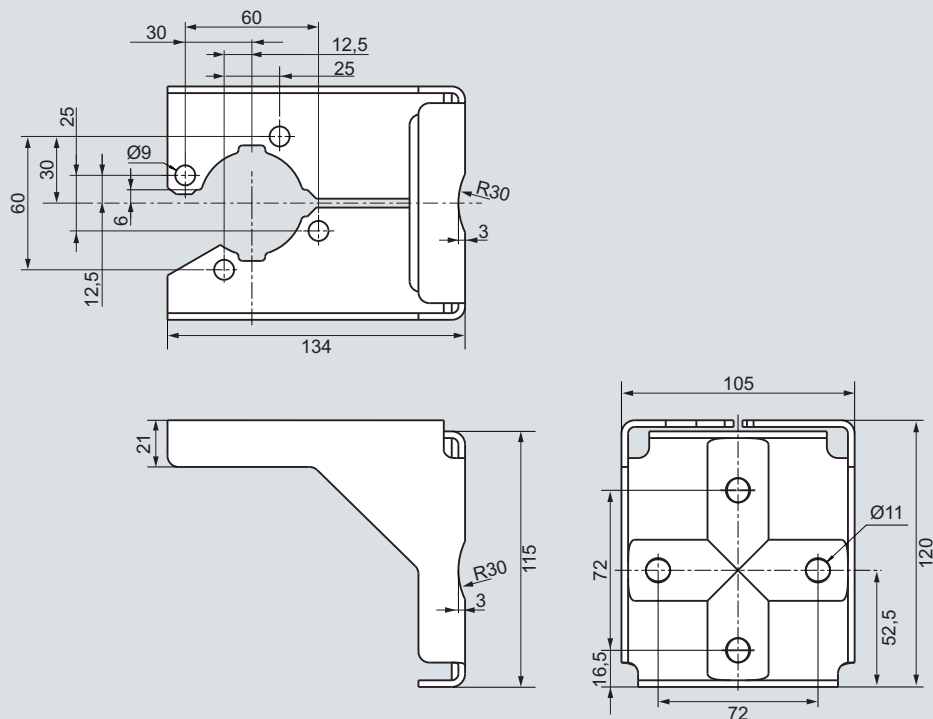
D) Subject to export regulations AL: N, ECCN: EAR99H.

# Pressure Measurement

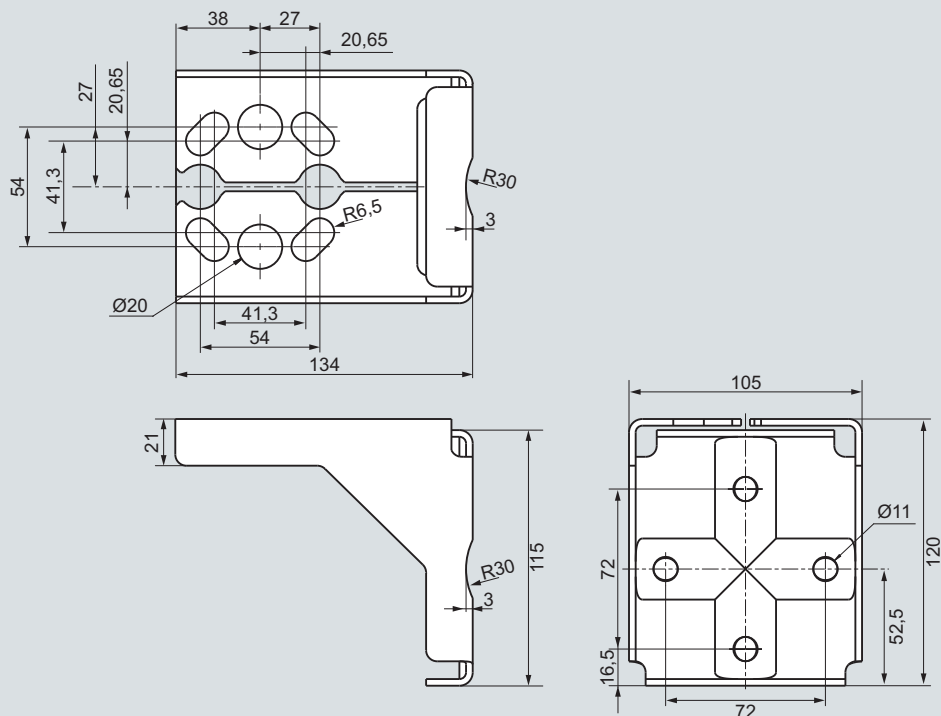
## Transmitters for general requirements

SITRANS P DS III  
Accessories/Spare Parts

### 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

#### 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 <b>-Z</b> to the Order No. of the transmitter and add order codes	Order code
	SITRANS P DSIII 7MF403-...1-..., 7MF423-...1-...	<b>T03</b>
	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	
	<b>Further designs:</b> Delivery includes mounting brackets and mounting clips made of stainless steel (instead of the mounting bracket supplied with the transmitter)	<b>A02</b>
	Supplied acceptance test certificate to EN 10204- 3.1 for transmitters and mounted valve manifold	<b>C12</b>


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

	Add <b>-Z</b> to the Order No. of the transmitter and add order codes	Order code
	SITRANS P DSIII 7MF403-...0-..., 7MF423-...0-...	<b>T02</b>
	with process connection collar G1/2 A to EN 837-1 with gasket made of PTFE between valve manifold and transmitter	
	<b>Alternative sealing material:</b> • Soft iron • Stainless steel, Mat. No. 14571 • copper	<b>A70</b> <b>A71</b> <b>A72</b>
	Delivery incl. high-pressure test certified by test report to EN 10204-2.2	
	<b>Further designs:</b> Delivery includes mounting brackets and mounting clips made of stainless steel (instead of the mounting bracket supplied with the transmitter)	<b>A02</b>
	Supplied acceptance test certificate to EN 10204- 3.1 for transmitters and mounted valve manifold	<b>C12</b>

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

	Add <b>-Z</b> to the Order No. of the transmitter and add order codes	Order code
	SITRANS P DSIII 7MF433-..., 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	<b>U01</b> <b>U02</b>
	<b>Further designs:</b> Delivery includes mounting bracket and mounting clips made of • Steel • Stainless steel (instead of the mounting bracket supplied with the transmitter)	<b>A01</b> <b>A02</b>
	Supplied acceptance test certificate to EN 10204-3.1 for transmitters and mounted valve manifold	<b>C12</b>

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

	Add <b>-Z</b> to the Order No. of the transmitter and add order codes	Order code
	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	<b>U03</b> <b>U04</b>
	<b>Further designs:</b> Delivery includes mounting bracket and mounting clips made of • Steel • Stainless steel (instead of the mounting bracket supplied with the transmitter)	<b>A01</b> <b>A02</b>
	Supplied acceptance test certificate to EN 10204-3.1 for transmitters and mounted valve manifold	<b>C12</b>

<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

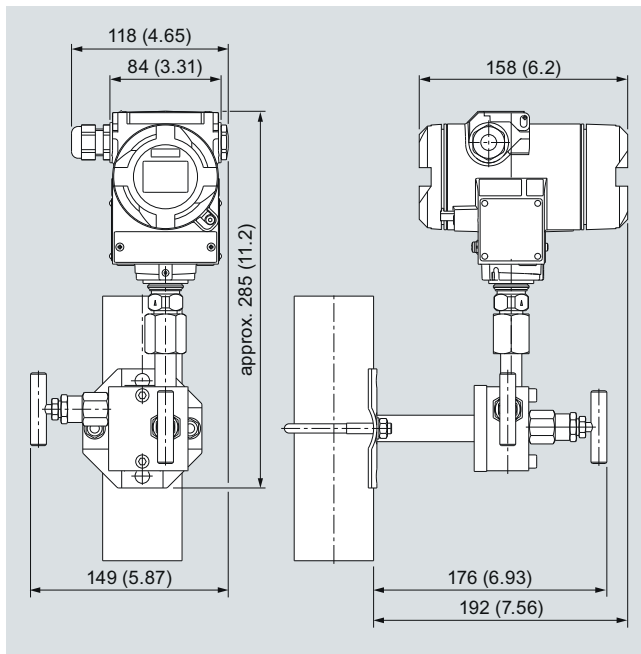
#### Dimensional drawings

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

2



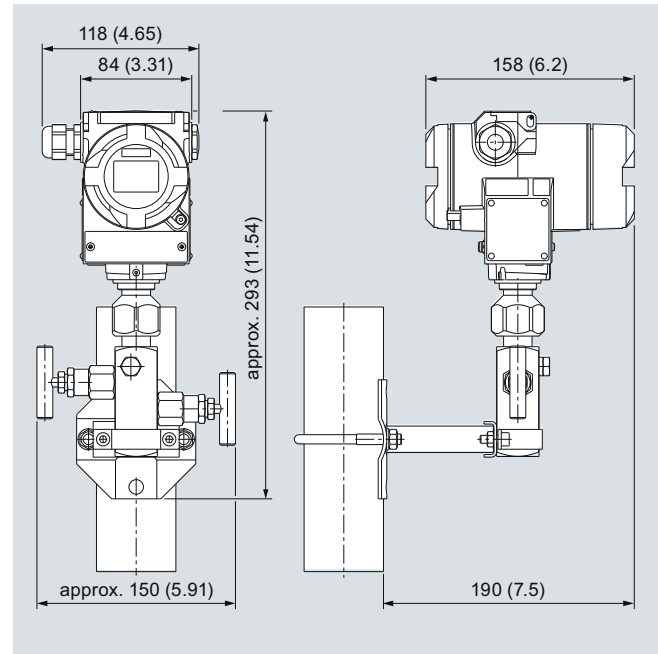
7MF9011-4EA valve manifold with mounted gauge pressure and absolute pressure transmitters



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



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



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

# Pressure Measurement

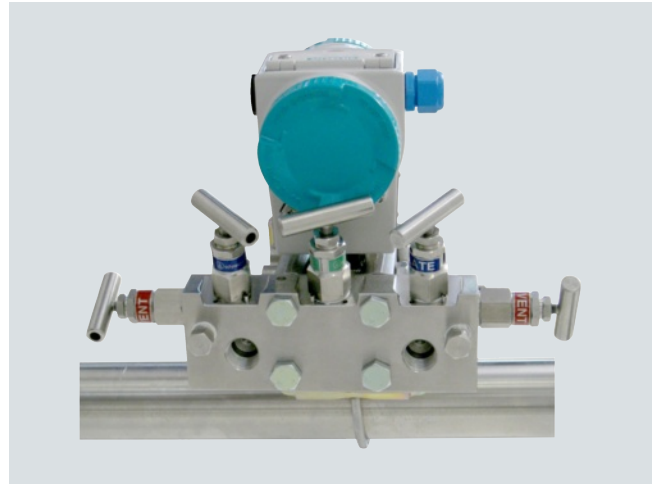
## Transmitters for general requirements

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

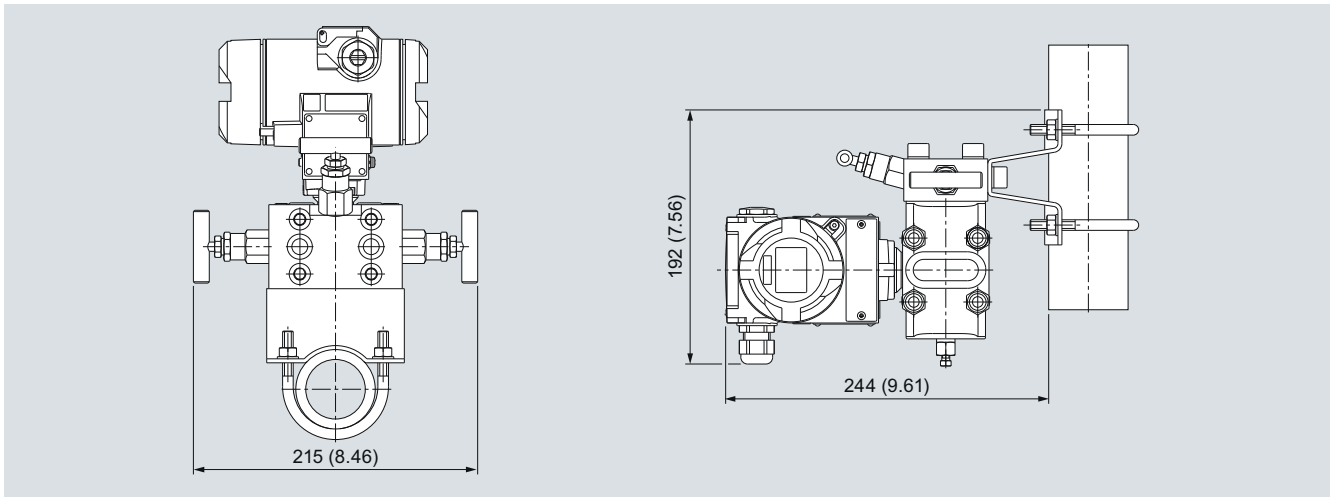
2



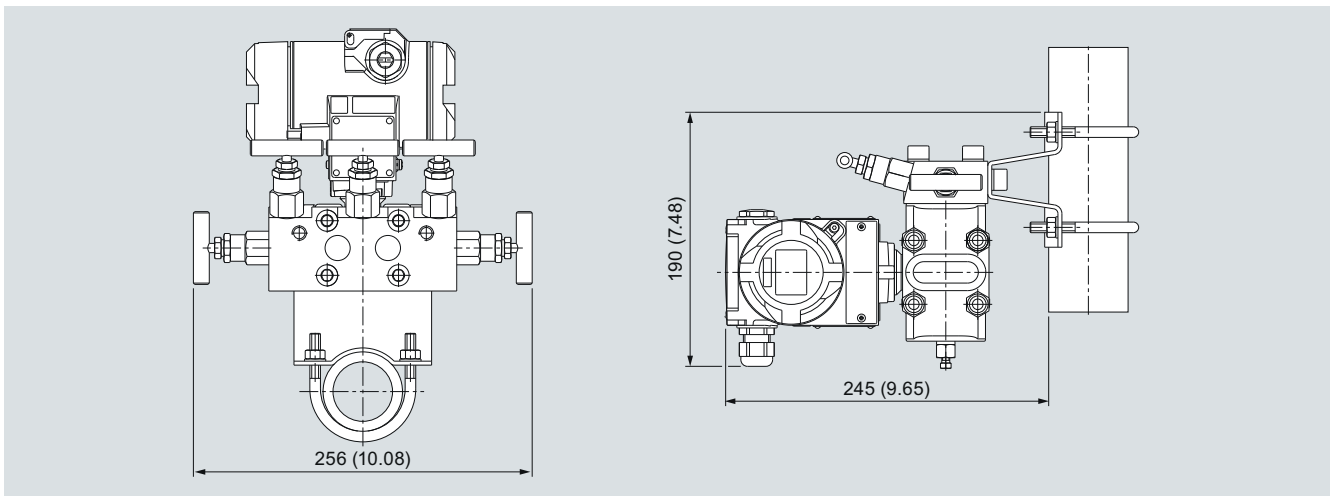
7MF9411-5BA valve manifold with mounted differential pressure transmitter



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)