### Transmitters for pressure, absolute pressure, differential pressure, flow and level

**DS III series** 

#### Overview



SITRANS P pressure transmitters, DS III series, are digital pressure transmitters featuring extensive user-friendliness and high accuracy. Parameterization is performed using input keys or by means of HART communication.

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:

- Pressure
- · Absolute pressure
- For differential pressure transmitters
- Level
- Volume
- Volume flow
- Mass flow

#### Benefits

- High quality and long life
- High reliability even under extreme chemical and mechanical loads
- Extensive diagnosis and simulation functions
- Separate replacement of measuring cell and electronics without recalibration
- Minimum conformity error
- Small long-term drift
- Wetted parts made of high-grade materials (e.g. stainless steel, Hastelloy, gold, Monel, tantalum)
- Measuring range 1 mbar ... 400 bar
- · High measuring accuracy
- Parameterization using input keys and HART communication

#### 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 transmitters can be programmed locally using three input keys or externally through HART communication.

#### Pressure transmitters for pressure

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

Nominal measuring ranges: 1 ... 400 bar (14.5 ... 5802 psi)

#### Pressure transmitters for absolute pressure

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

Nominal measuring ranges: 250 mbar ... 100 bar (3.63 ... 1450 psi)

There are two series:

- Pressure series
- Differential pressure series

#### Pressure transmitters for differential pressure and flow

Measured variables:

- Differential pressure
- Small positive or negative pressure

### Transmitters for pressure, absolute pressure, differential pressure, flow and level

#### **DS III series**

Flow q ~ √∆p (together with a primary differential pressure device)

Nominal measuring ranges: 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.

Nominal measuring ranges: 250 mbar ... 5 bar (3.63 ... 72.5 psi)

Nominal diameter of the mounting flange:

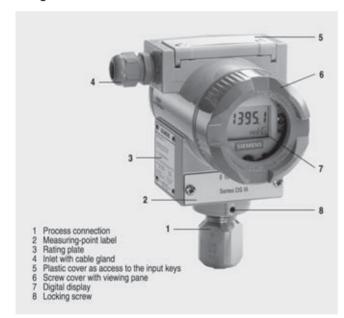
- DN 80 or DN 100
- 3 inch or 4 inch

In the case of level measurements in open containers, the lowpressure 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 constructed 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 (3, 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.

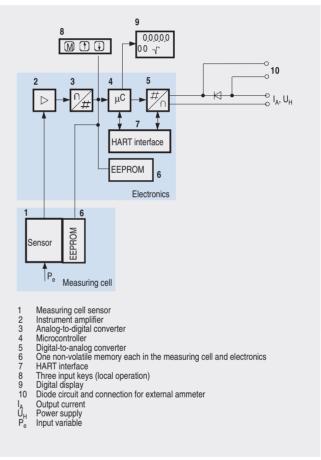
The housing is made of die-cast aluminium or stainless steel precision casting. A round cover is screwed on at the front and rear of the housing. The front cover (6) can be fitted with a viewing pane so that the measured values can be read directly on the digital display. The inlet (4) for the electrical 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 (1). The measuring cell is protected from rotating by a locking screw (8). 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 (5), under which the input keys can be found.

#### Function

#### Mode of operation of the electronics



Function diagram of the electronics

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

The diode circuit (10) protects against incorrect polarity.

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

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

**DS III series** 

### SITRANS P measuring instruments for pressure

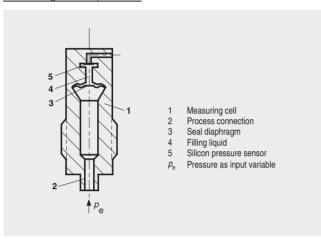
## Transmitters for pressure, absolute pressure, differential pressure, flow and level

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.

#### Mode of operation of the measuring cells

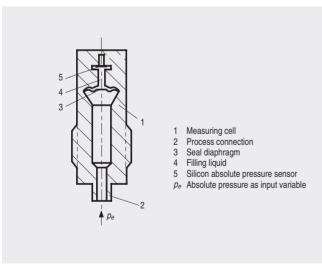
Measuring cell for pressure



Measuring cell for pressure, functional diagram

The pressure  $p_{\rm e}$  is applied through the process connection (2, Figure "Measuring cell for pressure, functional 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. The resistance of the four piezo-resistors fitted in the diaphragm in a bridge circuit thus changes. This change in resistance results in a bridge output voltage proportional to the input pressure.

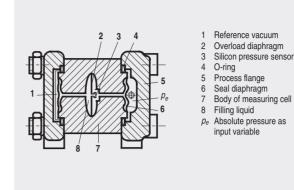
Measuring cell for absolute pressure from pressure series



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

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

Measuring cell for absolute pressure from differential pressure series



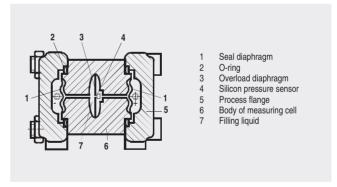
Measuring cell for absolute pressure from differential pressure series, functional diagram

The input pressure  $p_{\rm e}$  is transmitted through the seal diaphragm (6, Figure "Measuring cell for absolute pressure from differential pressure series, functional diagram") and the filling liquid (8) to the silicon pressure sensor (3).

The difference in pressure between the input pressure  $p_{\rm e}$  and the reference vacuum (1) on the low-pressure side of the measuring cell flexes the measuring diaphragm. The resistance of the four piezo-resistors fitted in the diaphragm in a bridge circuit thus changes. 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, functional diagram

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

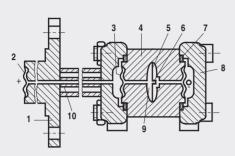
The measuring diaphragm is flexed by the applied differential pressure. The resistance of the four piezo-resistors fitted in the diaphragm in a bridge circuit thus changes. This change in resistance results in a bridge output voltage proportional to the absolute pressure.

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.

### Transmitters for pressure, absolute pressure, differential pressure, flow and level

#### **DS III series**

#### Measuring cell for level



- Flange with tube Seal diaphragm on
- mounting flange 3 Seal diaphragm
- Body of measuring cell
- Overload diaphragm
- Silicon pressure sensor
- O-ring Process flange
- Filling liquid
- 10 Capillary with filling liquid of mounting flange

Measuring cell for level, functional 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, functional 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.

The resistance of the four piezo-resistors fitted in the diaphragm in a bridge circuit thus changes

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

#### **Parameterization**

Depending on the version, there are different possibilities for parameterizing the pressure transmitter and for setting or scanning the parameters.

#### Adjustable parameters

Parameters	Input keys	HART com- munication
Start of scale	Х	Х
Full-scale value	Х	Х
Electrical damping	Х	Х
Start-of-scale value without application of a pressure ("Blind setting")	Х	×
End-of-scale value without application of a pressure ("Blind setting")	Х	×
Zero adjustment	Х	Х
Current transmitter	Х	Х
Fault current	Х	Х
Disabling of keys, write protection	Х	x 1)
Type of dimension and actual dimension	Х	Х
Characteristic (linear / square-rooted)	x <sup>2)</sup>	x <sup>2)</sup>
Input of characteristic		Х
Freely-programmable LCD		Х
Diagnostics functions		Х

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

The following diagnostics functions are available using HART communication:

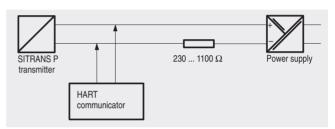
- Zero correction display
- Event counter
- · Limit transmitter
- Saturation alarm
- Slave pointer
- · Simulation functions
- Maintenance timer

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

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

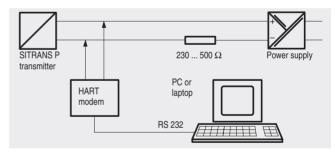
#### Parameterization using HART communication

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



HART communication between a HART communicator and a pressure

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



HART communication between a PC communicator and a pressure

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.

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Physical dimensions available for the display		
Physical variable	Physical dimensions	
Pressure (setting can also be made in the factory)	Pa, MPa, kPa, hPa, bar, mbar, torr, atm, psi, g/cm², kg/cm², inH <sub>2</sub> 0, inH <sub>2</sub> 0 (4 °C), mmH <sub>2</sub> 0, ftH <sub>2</sub> 0, 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, lmp, gallon, bushel, barrel, barrel liquid	
Volume flow	m <sup>3</sup> /d, m <sup>3</sup> /h, m <sup>3</sup> /s, I/min, I/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	
Total mass flow	t, kg, g, lb, oz, LTon, STon	
Temperature	K, °C, °F, °R	
Miscellaneous	%, mA	

<sup>2)</sup> Only differential pressure

			DS III series for pressure
Technical enseifications		Process connection	Connection shank G½A to DIN
Technical specifications			EN 837-1, female thread 1/2-14
SITRANS P pressure transmitters, Input	DS III series, for pressure		NPT or oval flange (PN 160 (MWP 2320)) with mounting thread M10 or $^{7}/_{16}$ -20 UNF to EN
Measured variable	Pressure	Power supply $U_{H}$	61518
Span (continuously adjustable)	Maximum working pressure		10.5 45 V DC
• 0.01 1 bar (0.145 14.5 psi)	6 bar (87 psi)	Terminal voltage on transmitter	10.5 30 V DC in intrinsically-
• 0.04 4 bar (0.58 58 psi)	10 bar (145 psi)		safe mode
• 0.16 16 bar (2.32 232 psi)	32 bar (464 psi)	Certificates and approvals	
• 0.6 63 bar (9.14 914 psi)	100 bar (1450 psi)	Classification according to pressure equipment directive	For gases of fluid group 1 and liquids of fluid group 1; complies
• 1.6 160 bar (23.2 2320 psi)	250 bar (3626 psi)	(DRGL 97/23/EC)	with requirements of article 3,
• 4.0 400 bar (58 5802 psi)	500 bar (7252 psi)		paragraph 3 (sound engineering practice)
Lower measuring limit	20 mark (0.425 pai) absolute	Explosion protection	
<ul> <li>Measuring cell with silicone oil filling</li> </ul>	30 mark (0.435 psi) absolute	• Intrinsic safety "i"	PTB 99 ATEX 2122
Upper measuring limit	100% of max. span (max. 160 bar	- Identification	Ex II 1/2 G EEx ia/ib IIB/IIC T6
	(2320 psi) with oxygen measurement and inert liquid)	- Permissible ambient temperatu-	-40 +85 °C (-40 +185 °F)
Output	ment and mert iiquid)	re	temperature class T4; -40 +70 °C (-40 +158 °F)
Output signal	4 20 mA		temperature class T5;
Measuring accuracy			-40 +60 °C (-40 +140 °F) temperature class T6
Reference conditions	Increasing characteristic Start-of-scale value 0 bar Stainless steel seal diaphragm Silicone oil filling	- Connection	To certified intrinsically-safe circuits with maximum values: $U_{\rm i} = 30 \text{ V}, \ I_{\rm i} = 100 \text{ mA}, \ P_{\rm i} = 750 \text{ mW}; \ R_{\rm i} = 300 \ \Omega$
	Room temperature (25 °C (77 °C)) r: Span ratio (r = max. span / set	- Effective internal inductance/ca- pacitance	$L_{\rm i} = 0.4 \text{ mH}, \ C_{\rm i} = 6 \text{ nF}$
Error in measurement and fixed-	span)	<ul><li>Explosion-proof "d"</li></ul>	PTB 99 ATEX 1160
point setting (including hysteresis		- Identification	Ex II 1/2 G EEx d IIC T4/T6
and repeatability)  • Linear characteristic		- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperature class T4; -40 +60 °C (-40 +140 °F)
- r ≤ 10	≤ (0.0029 · r +0.071)%		temperature class T6
- 10 < r ≤ 30	≤ (0.0045 · r +0.071)%	- Connection	To circuits with values:
- 30 < r ≤ 100	$\leq (0.005 \cdot r + 0.05)\%$	- Duet evaluation protection for many	U <sub>H</sub> = 10.5 45 V DC
Influence of ambient temperature		<ul> <li>Dust explosion protection for zone 20</li> </ul>	PTB 01 ATEX 2055
• With -10 +60 °C (14 140 °F)	≤ (0.08 · r +0.1)%	- Identification	Ex II 1 D IP65 T 120°°C
• With -4010 °C and +60 °C +85 °C (-40 +14 and 140 185 °F)	≤ (0.1 · r +0.15)% / 10 K (≤ (0.1 · r +0.15)% / 18 °F)	- Permissible ambient temperatu-	Ex II 1/2 D IP65 T 120 °C -40 +85 °C (-40 +185 °F)
Rated conditions		re - Max.surface temperature	120 °C (248 °F)
Degree of protection (to EN 60529)	IP65	- Connection	To certified intrinsically-safe cir-
Process temperature		- Connection	cuits with maximum values:
Measuring cell with silicone oil fil- ling	-40 +100 °C (-40 +212 °F)		$U_{\rm i} = 30 \text{ V}, I_{\rm i} = 100 \text{ mA},$ $P_{\rm i} = 750 \text{ mW}, R_{\rm i} = 300 \Omega$
<ul> <li>Measuring cell with inert filling liquid</li> </ul>	-20 +100 °C (-4 +212 °F)	- Effective internal inductance/ca- pacitance	$L_{\rm i} = 0.4 \text{ mH}, C_{\rm i} = 6 \text{ nF}$
• In conjunction with dust explosion protection	-20 +60 °C (-4 +140 °F)	Dust explosion protection for zone 21/22	PTB 01 ATEX 2055
Design		- Identification	Ex II 2 D IP65 T 120 °C
Weight (without options) Wetted parts materials	≈ 1.5 kg (≈ 3.3 lb)	- Connection	To circuits with values: $U_H = 10.5 \dots 45 \text{ V DC};$ $P_{\text{max}} = 1.2 \text{ W}$
Connection shank	Stainless steel, mat. No.	• Type of protection "n" (zone 2)	TÜV 01 ATEX 1696 X
	1.4404/316L or Hastelloy C4, mat. No. 2.4610	- Identification	Ex II 3 G EEx nA L IIC T4/T5/T6
• Seal diaphragm	Stainless steel, mat. No. 1.4404/316L or Hastelloy C276,	• Explosion protection to FM	Certificate of Compliance 3008490
Measuring cell filling	mat. No. 2.4819 Silicone oil or inert filling liquid (max. 160 bar (2320 psi) with oxygen measurement)	- Identification (XP/DIP) or (IS); (NI)	CL I, DIV 1, GP ABCD T4T6; CL II, DIV 1, GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4T6; CL I, DIV 2, GP ABCD T4T6; CL II, DIV 2, GP FG; CL III

Transmitters for pressure, absolute pressure, differential pressure, flow and level

#### **DS III series for pressure**

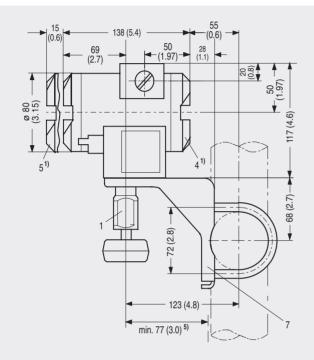
• Explosion protection to CSA

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

#### Dimensional drawings



- 1 Process connection:
  - ½-14 NPT,
  - connection shank G½A or
- oval flange
- 2 Blanking plug
- 3 Electrical connection:
  - screwed gland Pg 13,5 (adapter)2) 3),
  - screwed gland M20x1,5 3)
  - screwed gland ½-14 NPT or
  - Han 7D/ Han 8U plug <sup>2) 3)</sup>
- 4 Terminal side
- 5 Electronics side, digital display (longer overall length for cover with window)
- 6 Protective cover over keys
- 7 Mounting bracket (option)
- 8 Screw cover safety bracket (only for type of protection "Explosion-proof enclosure", not shown in the drawing)

3 3 3 3 171 (6.7) (1.44) 237 (9.3)

ca. 30 (1.2) 4)

ca. 96 (3.78)

100 (3.94)

2

- 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) 45 mm (1.8 inch) for Pg 13,5 with adapter
- 5) Minimum distance for rotation

SITRANS P pressure transmitters, DS III series for pressure, dimensional drawing, dimensions in mm (inch)

**DS III series for pressure** 

	g data	Ord	er No	). <u> </u>
	ransmitter, DS III series, >	7 M	F 4 0	3 3 -
for pressure 2-wire system				-
Measuring cell filling	Measuring cell			
	cleaning			
Silicone oil	Standard	1		
Inert liquid <sup>1)</sup>	Grease-free	3		
Measured span				
0.01 1 bar	(0.15 14.5 psi)	В		
0.04 4 bar	(0.58 58 psi)	С		
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		
Wetted parts materials				
Seal diaphragm	Process connection			
Stainless steel	Stainless steel		Α	
Hastelloy	Stainless steel		В	
Hastelloy	Hastelloy		C	
Version as diaphragm s	eal		Y 0	
Process connection	D +- EN 007 d			
<ul> <li>Connection shank G½</li> </ul>			0	
• Female thread ½-14 N			1	
<ul> <li>Oval flange made of s max. span 160 bar (23)</li> </ul>				
- Mounting thread <sup>7</sup> / <sub>16</sub>	20 UNF to		2	
EN 61518	5 20 0.11 10		-	
- Mounting thread M1	0 to DIN 19213		3	
Non-wetted parts mate	erials			
<ul> <li>Housing made of die-</li> </ul>	cast aluminium		0	
<ul> <li>Housing stainless stee</li> </ul>	el precision casting		3	
Design				
<ul> <li>Standard design</li> </ul>				1
	English label inscriptions, >			2
documentation in 5 la	nguages on CD	_		
Explosion protection				
<ul><li>without</li><li>with ATEX, Type of pro</li></ul>	staation:			Α
- "Intrinsic safety (EEx				В
- "Explosion-proof (EE				D
				P
(EEx ia + EEx d)" 3)	explosion-proof enclosure >			
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- "Intrinsic safety, expl				n
<ul> <li>"Intrinsic safety, expl dust explosion prote</li> </ul>	ection (EEx ia + EEx d +			n
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<ul> <li>"Intrinsic safety, expl dust explosion prote zone 1D/2D)" <sup>3)</sup></li> <li>with FM + CSA, Type</li> <li>"Intrinsic safety and 6</li> </ul>	ection (EEx ia + EEx d +  of protection: explosion-proof (is + xp)" 2)	_		N C
- "Intrinsic safety, expl dust explosion prote zone 1D/2D)" <sup>3)</sup> • with FM + CSA, Type - "Intrinsic safety and a Electrical connection of	of protection: explosion-proof (is + xp)" 2)  cable inlet	_		NC
- "Intrinsic safety, expl dust explosion prote zone 1D/2D)" 3)  • with FM + CSA, Type - "Intrinsic safety and explosed in the connection of the connection	oction (EEx ia + EEx d +  of protection: explosion-proof (is + xp)" <sup>2)</sup> oction (EEx ia + EEx d +  of protection: explosion-proof (is + xp)" <sup>2)</sup> oction (EEx ia + EEx d +  oction (Ex ia + EEx d +  oction (EEx ia +  oction (E	_		N C
- "Intrinsic safety, expl dust explosion prote zone 1D/2D)" 3)  • with FM + CSA, Type - "Intrinsic safety and of Electrical connection / • Screwed gland Pg 13 • Screwed gland M20x  • Screwed gland M20x	oction (EEx ia + EEx d +  of protection: explosion-proof (is + xp)" <sup>2)</sup> oction (EEx ia + EEx d +  of protection: explosion-proof (is + xp)" <sup>2)</sup> oction (EEx ia + EEx d +  oction (Ex ia	_		N C A B
<ul> <li>"Intrinsic safety, expl dust explosion prote zone 1D/2D)" <sup>3)</sup></li> <li>with FM + CSA, Type</li> <li>"Intrinsic safety and a Electrical connection of Screwed gland Pg 13</li> <li>Screwed gland M20x</li> <li>Screwed gland ½-14</li> </ul>	of protection: explosion-proof (is + xp)" 2)  cable inlet .5 (adapter) 4) 1.5  NPT			N C
<ul> <li>"Intrinsic safety, expl dust explosion prote zone 1D/2D)" <sup>3)</sup></li> <li>with FM + CSA, Type</li> <li>"Intrinsic safety and a Electrical connection of Screwed gland Pg 13</li> <li>Screwed gland M20x</li> <li>Screwed gland ½-14</li> </ul>	of protection: explosion-proof (is + xp)" 2)  cable inlet .5 (adapter) 4) 1.5  NPT			N C A B
- "Intrinsic safety, expl dust explosion prote zone 1D/2D)" 3)  • with FM + CSA, Type - "Intrinsic safety and of Electrical connection / • Screwed gland Pg 13 • Screwed gland M20x* • Screwed gland ½-14 I • Han 7D plug (plastic I connector 4)	of protection: explosion-proof (is + xp)" 2)  cable inlet .5 (adapter) 4) 1.5  NPT			N C
- "Intrinsic safety, expl dust explosion prote zone 1D/2D)" 3)  • with FM + CSA, Type - "Intrinsic safety and 6  Electrical connection 6  • Screwed gland Pg 13  • Screwed gland M20x  • Screwed gland ½-14  • Han 7D plug (plastic 1)	of protection: explosion-proof (is + xp)" 2)  cable inlet .5 (adapter) 4) 1.5  NPT nousing) incl. mating	-		N C
- "Intrinsic safety, expl dust explosion prote zone 1D/2D)" 3)  • with FM + CSA, Type - "Intrinsic safety and of  Electrical connection of  • Screwed gland Pg 13  • Screwed gland M20x* • Screwed gland ½-14 I  • Han 7D plug (plastic I connector 4)  Display	or hidden, setting: mA)  of protection: explosion-proof (is + xp)" 2)  cable inlet .5 (adapter) 4) 1.5  NPT nousing) incl. mating			N C A B C D
- "Intrinsic safety, expl dust explosion prote zone 1D/2D)" 3)  • with FM + CSA, Type 6  - "Intrinsic safety and 6  Electrical connection /  • Screwed gland Pg 13  • Screwed gland M20x:  • Screwed gland ½-14    • Han 7D plug (plastic lonnector 4)  Display  • without (digital indicated)  • with visible digital indicated  • with visible digital indicated	or hidden, setting: mA)  of protection: explosion-proof (is + xp)" 2)  cable inlet .5 (adapter) 4) 1.5  NPT nousing) incl. mating	_		N C A B C D

Available ex stock

Power supply units see "SITRANS I power supply units and input isolators".

- Included in delivery of the device:
   Brief instructions (Leporello)
- CD-ROM with detailed documentation

- 1) For oxygen application, add Order code E10.
- 2) Without cable gland, with blanking plug
- 3) With enclosed cable gland EEx ia and blanking plug
- 4) Not together with type of protection "Explosion-proof"

#### **DS III series for pressure**

Further designs	Order code
Please add "-Z" to Order No. and specify Order code.	
Pressure transmitter with mounting bracket made of: • Steel • Stainless steel Plug • Han 7D (metal, gray)	A01 A02 A30
Han 8U (instead of Han 7D)	A31
Rating plate inscription (instead of German) • English • French • Spanish • Italian	B11 B12 B13 B14
English rating plate	B21
Pressure units in inH <sub>2</sub> O or psi	521
Manufacturer's test certificate M (calibration certificate) to DIN 55350, Part 18 and to ISO 8402	C11
Acceptance test certificate B to EN 10204-3.1.B	C12
Factory certificate to EN 10204-2.2	C14
Certificate "Functional Safety (SIL)"	C20
Setting of upper limit of output signal to 22.0 mA	D05
Acid gas version to NACE (only together with seal diaphragm made of Hastelloy)	D07
Type of protection IP68 (not together with Han 7D / Han 8U plug, Pg 13.5 screwed gland)	D12
<b>Digital indicator along side the input keys</b> (only together with the devices 7MF40330A.6 orA.7-Z, Y21 or Y22 + Y01)	D27
Use in or at zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)"	E01
Use at zone 0 (only together with type of protection "Intrinsic safety (EEx ia)"	E02
Oxygen application (max. 160 bar (2320 psi) with oxygen measurement and inert liquid)	E10

Additional data	Order code
Please add "-Z" to Order No. and specify Order code.	
Measuring range to be set specify in plain text: Y01: to mbar, bar, kPa, MPa, psi	Y01
Measuring point number/identification max. 16 characters, specify in plain text: Y15:	Y15
Measuring point text max. 27 characters, specify in plain text: Y16:	Y16
Entry of HART address (TAG) max. 8 characters, specify in plain text: Y17:	Y17
Setting of pressure indicator in pressure units specify in plain text (standard setting: mA): Y21: mbar, bar, kPa, MPa, psi,  Note: The following pressure units can be selected: bar, mbar, mm H <sub>2</sub> O*), inH <sub>2</sub> O*), tH <sub>2</sub> O*), mmHG, inHG, psi, Pa, kPa, MPa, g/cm², kg/cm², mA, Torr, ATM or % *) Reference temperature 20 °C	Y21
Setting of pressure indicator in non-pressure units specify in plain text: Y22: up to l/min, m³/h, m, USgpm, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	Y22 + Y01

Only the settings for "Y01", "Y21", "Y22" and "D05" can be made in the

#### 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)

# SITRANS P measuring instruments for pressure Transmitters for pressure, absolute pressure, differential pressure, flow and level DS III series for absolute pressure (from pressure series)

			(from pressure series)		
Technical specifications	DC III carios for all a late and	Process connection	Connection shank G½A to DIN EN 837-1, female thread ½-14 NPT or oval flange (PN 160		
SITRANS P pressure transmitters, sure, from the pressure series	DS III series for absolute pres-		(MWP 2320)) with mounting thread M10 or $^7/_{16}$ -20 UNF to		
Input	Alasah da sasasana		EN 61518		
Measured variable	Absolute pressure	Power supply $ extcolor{black}{m{U}_{\!\! o}}$			
Span  ■ 8.3 250 mbar (0.12 3.6 psi)	Maximum working pressure 6 bar (87 psi)	Terminal voltage on pressure trans- mitter	10.5 45 V DC 10.5 30 V DC in intrinsically- safe mode		
• 43 1300 mbar (0.62 18.9 psi)	10 bar (145 psi)	Certificates and approvals	sale mode		
• 160 5000 mbar (2.32 72.5 psi)	30 bar (435 psi)	Classification according to pressure equipment directive	For gases of fluid group 1 and liquids of fluid group 1; complies		
• 1 30 bar (14.5 435 psi) Lower measuring limit	100 bar (1450 psi)	(DRGL 97/23/EC)	with requirements of article 3, paragraph 3 (sound engineering		
Measuring cell with silicone oil fil- ling	0 mark (0 psi) absolute	Explosion protection	practice)		
Upper measuring limit	100% of max. span (max. 160 bar	<ul><li>Intrinsic safety "i"</li></ul>	PTB 99 ATEX 2122		
0	(2320 psi) with oxygen measurement and inert liquid)	- Identification	Ex II 1/2 G EEx ia/ib IIB/IIC T6		
Output	ment and mert liquid)	<ul> <li>Permissible ambient temperature</li> </ul>	-40 +85 °C (-40 +185 °F) temperature class T4;		
Output signal	4 20 mA	16	-40 +70 °C (-40 +158 °F)		
Measuring accuracy	7 20 IIIA		temperature class T5; -40 +60 °C (-40 +140 °F)		
Reference conditions	Increasing characteristic		temperature class T6		
	Start-of-scale value 0 bar Stainless steel seal diaphragm Silicone oil filling Room temperature (25 °C (77 °F))	- Connection	To certified intrinsically-safe circuits with maximum values: $U_{\rm i} = 30$ V, $I_{\rm i} = 100$ mA, $P_{\rm i} = 750$ mW; $R_{\rm i} = 300$ $\Omega$		
	r: Span ratio (r = max. span / set span)	- Effective internal inductance/ca- pacitance	$L_{\rm i} = 0.4 \text{ mH}, C_{\rm i} = 6 \text{ nF}$		
Error in measurement and fixed- point setting (including hysteresis		• Explosion-proof "d"	PTB 99 ATEX 1160		
and repeatability)		- Identification	Ex II 1/2 G EEx d IIC T4/T6		
<ul><li>Linear characteristic</li><li>r ≤ 10</li></ul>	≤ (0.0029 · r +0.071)%	- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperature class T4; -40 +60 °C (-40 +140 °F)		
- 10 < r ≤ 30	≤ (0.0045 · r +0.071)%		temperature class T6		
Influence of ambient temperature • With -10 +60 °C (14 140 °F)	≤ (0.1 · r +0.2)%	- Connection	To circuits with values: $U_H = 10.5 \dots 45 \text{ V DC}$		
• With -4010 °C and +60 °C +85 °C	≤ (0.1 · r +0.15)% / 10 K (≤ (0.1 · r +0.15)% / 18 °F)	<ul> <li>Dust explosion protection for zone 20</li> </ul>	PTB 01 ATEX 2055		
(-40 +14 and 140 185 °F)	(5(0.171 +0.13)/07 10 1)	- Identification	Ex II 1 D IP65 T 120 °C		
Rated conditions		Dayneisaible ambient temporaret	Ex II 1/2 D IP65 T 120 °C		
Degree of protection (to EN 60529)	IP65	<ul> <li>Permissible ambient temperature</li> </ul>	-40 +85 °C (-40 +185 °F)		
Process temperature		- Max.surface temperature	120 °C (248 °F)		
<ul> <li>Measuring cell with silicone oil filling</li> </ul>	-40 +100 °C (-40 +212 °F)	- Connection	To certified intrinsically-safe circuits with maximum values:		
<ul> <li>Measuring cell with inert filling liquid</li> </ul>	-20 +100 °C (-4 +212 °F)	<b></b>	$U_{\rm i} = 30 \text{ V}, I_{\rm i} = 100 \text{ mA},$ $P_{\rm i} = 750 \text{ mW}, R_{\rm i} = 300 \Omega$		
<ul> <li>In conjunction with dust explosion protection</li> </ul>	-20 +60 °C (-4 +140 °F)	- Effective internal inductance/ca- pacitance	$L_{\rm i} = 0.4 \text{ mH}, \ C_{\rm i} = 6 \text{ nF}$		
Design		<ul> <li>Dust explosion protection for zone 21/22</li> </ul>	PTB 01 ATEX 2055		
Weight (without options)	≈ 1.5 kg (≈ 3.3 lb)	- Identification	Ex II 2 D IP65 T 120 °C		
Wetted parts materials		- Connection	To circuits with values:		
Connection shank	Stainless steel, mat. No. 1.4404/316L or Hastelloy C4, mat. No. 2.4610		$U_{H} = 10.5 45 \text{ V DC};$ $P_{\text{max}} = 1.2 \text{ W}$		
Seal diaphragm	Stainless steel, mat. No.	<ul> <li>Type of protection "n" (zone 2)</li> </ul>	TÜV 01 ATEX 1696 X		
Joan Giaprilagili	1.4404/316L or Hastelloy C276,	- Identification	Ex II 3 G EEx nA L IIC T4/T5/T6		
Measuring cell filling	mat. No. 2.4819 Silicone oil or inert filling liquid	• Explosion protection to FM	Certificate of Compliance 3008490		
	(max. 160 bar (2320 psi) with oxygen measurement)	<ul> <li>Identification (XP/DIP) or (IS); (NI)</li> </ul>	CL I, DIV 1, GP ABCD T4T6; CL II, DIV 1, GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4T6; CL I, DIV 2, GP ABCD T4T6; CL II, DIV 2, GP FG; CL III		

## Transmitters for pressure, absolute pressure, differential pressure, flow and level

#### DS III series for absolute pressure (from pressure series)

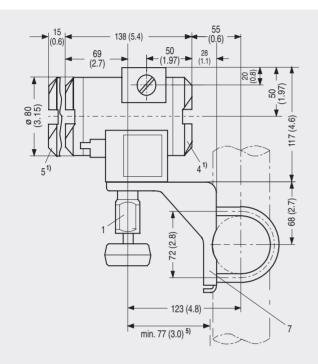
Explosion protection to CSA

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

#### Dimensional drawings



- Process connection:
  - ½-14 NPT,
  - connection shank G½A or - oval flange
- 2 Blanking plug
- Electrical connection:
  - screwed gland Pg 13,5 (adapter)2) 3),
  - screwed gland M20x1,5 3)
  - screwed gland ½-14 NPT or
  - Han 7D/ Han 8U plug <sup>2) 3)</sup>
- Terminal side
- Electronics side, digital display (longer overall length for cover with window)
- Protective cover over keys
- Mounting bracket (option)
- Screw cover safety bracket (only for type of protection "Explosion-proof enclosure", not shown in the drawing)

ca. 30 (1.2) 4)

ca. 96 (3.78)

120 (4.7)

100 (3.94)

105 (4.1) -

2

171 (6.7)

36,5

(6.3) 237

- Allow approx. 20 mm (0.79 inch) thread length to permit unscrewing
- Not with type of protection "explosion-proof enclosure" 2)
- Not with type of protection "FM + CSA [is + xp]"
- 45 mm (1.8 inch) for Pg 13,5 with adapter
- Minimum distance for rotation

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

DS III series for absolute pressure (from pressure series)

- 4) Not together with type of protection "Explosion-proof"
- E) Combinations of the versions marked with E) are subject to the export regulations AL: 2B230, ECCN: N.

Selection and Orderin	g data		Ord	de	r N	Ο.		
SITRANS P pressure transmitters, DS III series for absolute pressure from the pressure series		7 M F 4 2 3 3 -						
2-wire system	mom the procedure conte	•				1-1		
Measuring cell filling	Measuring cell					Н	Н	Н
	cleaning							
Silicone oil	Standard		1					
Inert liquid	Grease-free		3					
Measured span								
8.3 250 mbar	(0.12 3.63 psi)	E)	D					
43 1300 mbar	(0.62 18.9 psi)	E)	F					
0.16 5 bar	(2.32 72.5 psi)	E)	G					
1 30 bar	(14.5 435 psi)		Н					
Wetted parts materials								
Seal diaphragm	Process connection							
Stainless steel	Stainless steel			Α				
Hastelloy	Stainless steel	E)		В				
Hastelloy	Hastelloy	E)		С				
Version for diaphragm s	seal "			Y	0			
Process connection								
<ul> <li>Connection shank G½</li> </ul>					0			
<ul> <li>Female thread ½-14 N</li> </ul>					1			
Oval flange made of s								
max. span 160 bar (2					_			
<ul> <li>Mounting thread <sup>7</sup>/<sub>1</sub>, EN 61518</li> </ul>	6-20 UNF to				2			
- Mounting thread M1	0 to DIN 19213				3			
Non-wetted parts materials					0			
<ul> <li>Housing made of die-cast aluminium</li> <li>Housing stainless steel precision casting</li> </ul>					3			
	or precision easing				•			
Design							1	
Standard design     International version English label inscriptions							2	
<ul> <li>International version, English label inscriptions, documentation in 5 languages on CD</li> </ul>							_	
Explosion protection	33							
• without							Α	
<ul> <li>with ATEX, Type of pro</li> </ul>	otection:						^`	
- "Intrinsic safety (EEx							В	
- "Explosion-proof (EE							D	
- "Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d)" 3)							Р	
(EEx ia + EEx d)" 3)								
- "n (zone 2)"							Е	
	osion-proof enclosure and	d					R	
aust explosion prote	ection (EEx ia + EEx d +							
zone 1D/2D)" 3)	-ftt							
<ul> <li>with FM + CSA, Type</li> </ul>	explosion-proof (is + xp)"	2)					N (	
							IV	•
Electrical connection								
Screwed gland Pg 13     Screwed gland M20v							-	
Screwed gland M20x1.5							E	
• Screwed gland ½-14 NPT							[	
<ul> <li>Han 7D plug (plastic lonnector 4)</li> </ul>	nousing) inci. mating						L	1
Display								
	tor hidden, setting: mA)							1
<ul> <li>with visible digital ind</li> </ul>	,							6
•	c digital indicator (setting							7
■ MILLI CASIOLIEL-SDECILI								

Power supply units see "SITRANS I power supply units and input isola-

The device is delivered together with brief instructions (Leporello) and a CD-ROM containing detailed documentation.

- 1) Version 7MF4233-1DY... only up to max. span 200 mbar (2.9 psi)
- 2) Without cable gland, with blanking plug
- 3) With enclosed cable gland EEx ia and blanking plug

# SITRANS P measuring instruments for pressure Transmitters for pressure, absolute pressure, differential pressure, flow and level DS III series for absolute pressure

(from pressure series)

Further designs	Order code
Please add "-Z" to Order No. and specify Order code.	
Pressure transmitter with mounting bracket made of:  Steel Stainless steel	A01 A02
Plug  • Han 7D (metal, gray)  • Han 8U (instead of Han 7D)	A30 A31
Rating plate inscription (instead of German) • English • French • Spanish • Italian	B11 B12 B13 B14
English rating plate Pressure units in inH <sub>2</sub> O or psi	B21
Manufacturer's test certificate M (calibration certificate) to DIN 55350, Part 18 and to ISO 8402	C11
Acceptance test certificate B to EN 10204-3.1.B	C12
Factory certificate to EN 10204-2.2	C14
Certificate "Functional Safety (SIL)"	C20
Setting of upper limit of output signal to 22.0 mA	D05
Acid gas version to NACE (only together with seal diaphragm made of Hastelloy)	D07
<b>Type of protection IP68</b> (not together with Han 7D / Han 8U plug, Pg 13.5 screwed gland)	D12
<b>Digital indicator along side the input keys</b> (only together with the devices 7MF42330A.6 orA.7-Z, Y21 or Y22 + Y01).	D27
Use in or at zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)"	E01
Use at zone 0 (only together with type of protection "Intrinsic safety (EEx ia)"	E02
Oxygen application (max. 160 bar (2320 psi) with oxygen measurement and inert liquid)	E10

Further designs	Order code
Please add "-Z" to Order No. and specify Order code.	
Additional data	
Measuring range to be set specify in plain text: Y01: to mbar, bar, kPa, MPa, psi	Y01
Measuring point number/identification max. 16 characters, specify in plain text: Y15:	Y15
Measuring point text max. 27 characters, specify in plain text: Y16:	Y16
Entry of HART address (TAG) max. 8 characters, specify in plain text: Y17:	Y17
Setting of pressure indicator in pressure units specify in plain text (standard setting: mA): Y21: mbar, bar, kPa, MPa, psi,  Note: The following pressure units can be selected: bar, mbar, mm H <sub>2</sub> O*, inH <sub>2</sub> O*, tH <sub>2</sub> O*, mmHG, inHG, psi, Pa, kPa, MPa, g/cm², kg/cm², mA, Torr, ATM or % *) Reference temperature 20 °C	Y21
Setting of pressure indicator in non-pressure units specify in plain text: Y22: up to  /min, m³/h, m, USgpm, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	Y22 + Y01

Only the settings for "Y01", "Y21", "Y22" and "D05" can be made in the

### Transmitters for pressure, absolute pressure, differential pressure, flow and level

solute pr	essure, dilierential pre	
		ies for absolute pressure
	(from dif	ferential pressure series)
	Measuring cell filling	Silicone oil or inert filling liquid
ute pres-	December of the control of the contr	(max. 160 bar (2320 psi) with oxygen measurement)
	Process connection	Female thread ¼-18 NPT and flange connection to DIN 19 213 with mounting thread M10 or $^{7}/_{16}$ -20 UNF
ssure	Power supply $U_{H}$	
	Terminal voltage on pressure transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically- safe mode
	Certificates and approvals	
d M10 and cess flan-	Classification according to pressure equipment directive (DRGL 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	
	<ul><li>Intrinsic safety "i"</li></ul>	PTB 99 ATEX 2122
9	- Identification	Ex II 1/2 G EEx ia/ib IIB/IIC T6
ax. 160 bar n measure- ble between	- 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 maximum values: $U_{\rm i} = 30 \text{ V}, I_{\rm i} = 100 \text{ mA}, P_{\rm i} = 750 \text{ mW}; R_{\rm i} = 300 \Omega$
stic bar	- Effective internal inductance/ca- pacitance	$L_{\rm i} = 0.4 \; {\rm mH}, \; C_{\rm i} = 6 \; {\rm nF}$
aphragm	<ul><li>Explosion-proof "d"</li></ul>	PTB 99 ATEX 1160
5 °C (77 °F))	- Identification	Ex II 1/2 G EEx d IIC T4/T6
oan)	<ul> <li>Permissible ambient temperature</li> </ul>	-40 +85 °C (-40 +185 °F) temperature class T4; -40 +60 °C (-40 +140 °F) temperature class T6
	- Connection	To circuits with values: $U_{H} = 10.5 \dots 45 \text{ V DC}$
6	<ul> <li>Dust explosion protection for zone 20</li> </ul>	PTB 01 ATEX 2055
6	- Identification	Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C
0-mbar	- Permissible ambient temperature	-40 +85 °C (-40 +185 °F)
cell K	- Max.surface temperature	120 °C (248 °F)
3°F) 0-mbar cell	- Connection	To certified intrinsically-safe circuits with maximum values: $U_i = 30 \text{ V}, I_i = 100 \text{ mA}, P_i = 750 \text{ mW}, R_i = 300 \Omega$
	- Effective internal inductance/ca- pacitance	$L_{\rm i} = 0.4 \; {\rm mH}, \; C_{\rm i} = 6 \; {\rm nF}$
+212 °F)	<ul> <li>Dust explosion protection for zone 21/22</li> </ul>	PTB 01 ATEX 2055
1212 1)	- Identification	Ex II 2 D IP65 T 120 °C
-212 °F) 140 °F)	- Connection	To circuits with values: $U_{H} = 10.5 \dots 45 \text{ V DC};$ $P_{\text{max}} = 1.2 \text{ W}$
140 1)	• Type of protection "n" (zone 2)	TÜV 01 ATEX 1696 X
	- Identification	Ex II 3 G EEx nA L IIC T4/T5/T6
	• Explosion protection to FM	Certificate of Compliance 3008490
lo. y C276, el, mat. No. old	<ul> <li>Identification (XP/DIP) or (IS); (NI)</li> </ul>	CL I, DIV 1, GP ABCD T4T6; CL II, DIV 1, GP EFG; CL III; CL I, ZN 0/1 AEX ia IIC T4T6; CL I, DIV 2, GP ABCD T4T6; CL II, DIV 2, GP FG; CL III

SITRANS P pressure transmitters, DS III series for absolu sure, from the differential pressure series

#### Input

Measured variable Absolute pressure Span Maximum working pres • 8.3 ... 250 mbar (0.12 ... 3.6 psi) 32 bar (464 psi) • 43 ... 1300 mbar (0.62 ... 18.9 psi) 32 bar (464 psi)

• 160 ... 5000 mbar (2.32 ... 72.5 psi) 32 bar (464 psi)

• 1 ... 30 bar (14.5 ... 435 psi) 160 bar (2320 psi) • 5.3 ... 100 bar (76.9 ... 1450 psi) 160 bar (2320 psi)

> With connection thread  $\frac{7}{16}$ -20 UNF in the proc

Lower measuring limit

· Measuring cell with silicone oil fil-

0 mark (0 psi) absolute

Upper measuring limit

100% of max. span (ma (2320 psi) with oxygen ment and inert liquid)

Continuously adjustable the measuring limits

#### Output

Start of scale

Output signal 4 ... 20 mA

#### Measuring accuracy

Increasing characterist Reference conditions Start-of-scale value 0 b Stainless steel seal dia Silicone oil filling Room temperature (25

r: Span ratio (r = max. span / set span

Error in measurement and fixedpoint setting (including hysteresis and repeatability)

Linear characteristic

-  $r \le 10$  $\leq (0.0029 \cdot r + 0.071)\%$  $-10 < r \le 30$  $\leq (0.0045 \cdot r + 0.071)\%$ 

Influence of ambient temperature

• With -10 ... +60 °C (14 ... 140 °F)  $\leq (0.1 \cdot r + 0.2)\%$ 

Twice the value with 20 (0.29 psi) measuring co

• With -40 ... -10 °C and +60 °C ... +85 °C (-40 ... +14 and 140 ... 185 °F)  $\leq (0.1 \cdot r + 0.15)\% / 10 \text{ }$  $(\leq (0.1 \cdot r + 0.15)\% / 18$ Twice the value with 20 (0.29 psi) measuring ce

#### **Rated conditions**

Degree of protection (to EN 60529) IP65

Process temperature

· Measuring cell with silicone oil fil--40 ... +100 °C (-40 ... ling

• Measuring cell with inert filling li-

-20 ... +100 °C (-4 ... +

protection

#### Design

Weight (without options) ≈ 4.5 kg (≈ 9.9 lb)

• In conjunction with dust explosion -20 ... +60 °C (-4 ... +1

Wetted parts materials

• Seal diaphragm Stainless steel, mat. No 1.4404/316L, Hastelloy C276, mat. No. 2.4819, Monel, mat. No. 2.4360, tantalum or gold

## Transmitters for pressure, absolute pressure, differential pressure, flow and level

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

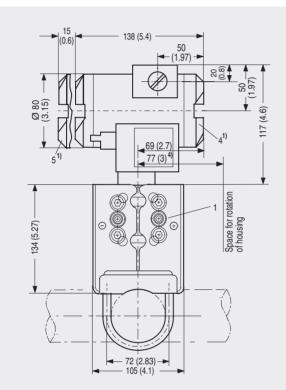
Explosion protection to CSA

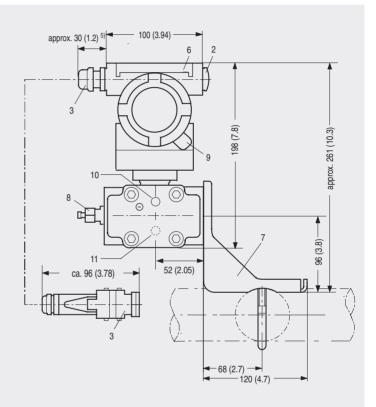
Certificate of Compliance 1153651

- 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

#### Dimensional drawings





- Process connection: 1/4-18 NPT (EN 61518)
- Blanking plug
- Electrical connection:
  - screwed gland Pg 13,5 (adapter) 2) 3),
  - screwed gland M20x1,5
  - screwed gland 1/2-14 NPT or
  - Han 7D/ Han 8U plug <sup>2) 3</sup>
  - Terminal side
- Electronics side, digital display (longer overall length for cover with window)
- Protective cover over keys
- Mounting bracket (option) Sealing screw with valve (option)
- Screw cover safety bracket (only for type of protection
- "Explosion-proof enclosure", not shown in the drawing)
  Lateral venting for liquid measurement
- Lateral venting for gas measurement (suffix H02)

- Allow approx. 20 mm (0.79 inch) thread length to permit unscrewing
- Not with type of protection "explosion-proof enclosure"
- Not with type of protection "FM + CSA [is + xp]"
- 92 mm (3.62 inch) for minimum distance to permit rotation with indicator
  - 45 mm (1.8 inch) for Pg 13,5 with adapter

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

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

Selection and Orderin					r N			
SITRANS P pressure t for absolute pressure Differential pressure	ransmitters, DS III series from the series	S	7 1	ΙF	4 3	3 3	3 -	•
2-wire system				ī		-		•
Measuring cell filling	Measuring cell				П	Т		
	cleaning							
Silicone oil	Standard		1					
Inert liquid <sup>1)</sup>	Grease-free		3					
Measured span								
8.3 250 mbar	(0.12 3.63 psi)	E)		)				
43 1300 mbar	(0.62 18.9 psi)	E)	-	=				
0.16 5 bar	(2.32 72.5 psi)	E)		à				
1 30 bar	(14.5 435 psi)			1				
5.3 100 bar	(76.9 1450 psi)		ŀ	(E				
Wetted parts materials	5							
Seal diaphragm	Parts of measuring cell							
Stainless steel	Stainless steel	-		A				
Hastelloy	Stainless steel	E)		В				
Hastelloy	Hastelloy	E)		C				
Tantalum	Tantalum			Е				
Monel	Monel	E)		Н				
Gold	Gold			L				
Version for diaphragm s	seal <sup>2)</sup>			Υ				
Process connection								
Female thread 1/4-18 NF	T with flange connection							
<ul> <li>Sealing screw opposi</li> </ul>								
- Mounting thread M1	0 to DIN 19213				0			
- Mounting thread <sup>7</sup> / <sub>10</sub>	<sub>6</sub> -20 UNF to EN 61518				2			
<ul> <li>Vent on side of proces</li> </ul>	ss flange <sup>3)</sup>							
- Mounting thread M1	0 to DIN 19213				4			
<ul> <li>Mounting thread <sup>7</sup>/<sub>10</sub></li> </ul>	<sub>6</sub> -20 UNF to EN 61518				6			
Non-wetted parts mate								
Process flange screws	Electronics housing	_						
Stainless steel	Die-cast aluminium				2			
Stainless steel	Stainless steel precision casting	1			3	3		
Design								
<ul> <li>Standard design</li> </ul>							1	
<ul> <li>International version,</li> </ul>	English label inscriptions,						2	
documentation in 5 la	nguages on CD							
Explosion protection							١.	
<ul><li>without</li><li>with ATEX, Type of pro</li></ul>	otection:						,	A
- "Intrinsic safety (EEx								3
- "Explosion-proof (EE								9
	explosion-proof enclosure	į						5
(EEx ia + EEx d)" <sup>5)</sup>	cp.ooioii prooi orioiosuic						'	
- "n (zone 2)"							E	
	osion-proof enclosure and	t					F	3
dust explosion prote	ection (EEx ia + EEx d +							
zone 1D/2D)" <sup>5)</sup>								
• with FM + CSA, Type	of protection:							
	explosion-proof (is + xp)" <sup>2</sup>	1)					1	1 C
- "Intrinsic safety and		_						
- "Intrinsic safety and c Electrical connection	/ cable inlet							
- "Intrinsic safety and c Electrical connection	/ cable inlet							Α
<ul> <li>"Intrinsic safety and of Electrical connection."</li> <li>Screwed gland Pg 13</li> </ul>	/ cable inlet							A B
- "Intrinsic safety and of Electrical connection."  Screwed gland Pg 13  Screwed gland M20x  Screwed gland ½-14	<b>/ cable inlet</b> .5 <sup>6)</sup> 1.5 NPT							
- "Intrinsic safety and	<b>/ cable inlet</b> .5 <sup>6)</sup> 1.5 NPT							В

Selection and Ordering data	Order No.	
SITRANS P pressure transmitters, DS III series for absolute pressure from the series Differential pressure	7 M F 4 3 3 3 -	
2-wire system		
Display		
<ul> <li>without (digital indicator hidden, setting: mA)</li> </ul>	1	
<ul> <li>with visible digital indicator</li> </ul>	6	
<ul> <li>with customer-specific digital indicator (setting as specified, Order code "Y21" required)</li> </ul>	7	

Power supply units see "SITRANS I power supply units and input isola-

Included in delivery of the device:
• Brief instructions (Leporello)

- CD-ROM with detailed documentation
- Sealing plug(s) or sealing screw(s) for the process flanges(s)
- 1) For oxygen applications, add Order code E10.
- 2) Version 7MF4433-1DY... only up to max. span 200 mbar (2.9 psi)
- 3) Not for span "5.3 ... 100 bar (76.9 ... 1450 psi)"
- 4) Without cable gland, with blanking plug
- 5) With enclosed cable gland EEx ia and blanking plug
- 6) Not together with type of protection "Explosion-proof"
- Combinations of the versions marked with E) are subject to the export regulations AL: 2B230, ECCN: N.

# SITRANS P measuring instruments for pressure Transmitters for pressure, absolute pressure, differential pressure, flow and level DS III series for absolute pressure (from differential pressure series)

Further designs	Order code
Please add "-Z" to Order No. and specify Order code.	
Pressure transmitter with mounting bracket made of:	-
Steel     Stainless steel	A01 A02
	AU2
O-rings for process flanges (instead of FPM (Viton))  PTFE (Teflon)  FEP (with silicone core, approved for food)  FFPM (Kalrez, compound 4079)  NBR (Buna N)	A20 A21 A22 A23
Plug • Han 7D (metal, gray) • Han 8U (instead of Han 7D)	A30 A31
Sealing screws 1/4-18 NPT, with valve in material of process flanges	A40
Rating plate inscription (instead of German)	
<ul><li>English</li><li>French</li><li>Spanish</li><li>Italian</li></ul>	B11 B12 B13 B14
English rating plate Pressure units in inH <sub>2</sub> O or psi	B21
Manufacturer's test certificate M (calibration certificate) to DIN 55350, Part 18 and to ISO 8402	C11
Acceptance test certificate B to EN 10204-3.1.B	C12
Factory certificate to EN 10204-2.2	C14
Certificate "Functional Safety (SIL)"	C20
Setting of upper limit of output signal to 22.0 mA	D05
Acid gas version to NACE (only together with seal diaphragm made of Hastelloy)	D07
Type of protection IP68 (not together with Han 7D / Han 8U plug, Pg 13.5 screwed gland)	D12
<b>Digital indicator along side the input keys</b> (only together with the devices 7MF43330A6 orA.7-Z, Y21 or Y22 + Y01)	D27
Use in or at zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)"	E01
Use at zone 0 (only together with type of protection "Intrinsic safety (EEx ia)"	E02
Oxygen application (max. 160 bar (2320 psi) with oxygen measurement and inert liquid)	E10
Interchanging of process connection side	H01
Vent on side for gas measurements	H02
Process flange	
<ul> <li>Hastelloy</li> <li>Monel</li> <li>Stainless steel with PVDF insert max. PN 10 (MWP 145 psi), Max. temperature of medium 90 °C (194 °F)</li> </ul>	K01 K02 K04

Further designs	Order code
Please add "-Z" to Order No. and specify Order code.	
Additional data	
Measuring range to be set	Y01
specify in plain text: Y01: up to mbar, bar, kPa, MPa, psi	
Measuring point number/identification	Y15
max. 16 characters, specify in plain text:	
Measuring point text	Y16
max. 27 characters, specify in plain text:	
Y16:	
Entry of HART address (TAG)	Y17
max. 27 characters, specify in plain text: Y17:	
Setting of pressure indicator in pressure units	Y21
specify in plain text (standard setting: mA):	
Y21: mbar, bar, kPa, MPa, psi, Note:	
The following pressure units can be selected:	
bar, mbar, mm $H_2O^{*)}$ , in $H_2O^{*)}$ , ft $H_2O^{*)}$ , mmHG, inHG, psi, Pa, kPa, MPa, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , mA, Torr, ATM or %	
*) Reference temperature 20 °C	
Setting of pressure indicator in non-pressure units	Y22 + Y01
specify in plain text: Y22: up to I/min, m <sup>3</sup> /h, m, USgpm,	
(specification of measuring range in pressure units	
"Y01" is essential, unit with max. 5 characters)	

Only the settings for "Y01", "Y21", "Y22" and "D05" can be made in the

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

sure and flow	
Input	
Measured variable	Differential pressure and flow
Span	Maximum working pressure
• PN 32 (MWP 464 psi)	
- 1 20 mbar (0.0145 0.29 psi)	32 bar (464 psi)
• PN 160 (MWP 2320 psi)	
- 1 60 mbar (0.0145 0.87 psi)	160 bar (2320 psi)
- 2.5 250 mbar (0.036 3.63 psi)	160 bar (2320 psi)
- 6 600 mbar (0.087 8.7 psi)	160 bar (2320 psi)
- 16 1600 mbar (0.232 23.2 psi)	160 bar (2320 psi)
- 50 5000 mbar (0.725 72.5 psi)	160 bar (2320 psi)
- 0.3 30 bar (4.35 435 psi)	160 bar (2320 psi)
• PN 420 (MWP 6092)	400 har (6000 no:\)
- 2.5 250 mbar (0.036 3.63 psi)	420 bar (6092 psi)
- 6 600 mbar (0.087 8.7 psi)	420 bar (6092 psi)
- 16 1600 mbar (0.232 23.3 psi)	420 bar (6092 psi)
- 50 5000 mbar (0.725 72.5 psi)	420 bar (6092 psi)
- 0.3 30 bar (4.35 435 psi)	420 bar (6092 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 (0.44 psi) absolute
Upper measuring limit	100% of max. span (max. 160 bar (2320 psi) with oxygen measurement and inert liquid)
Output	
Output signal	4 20 mA
Measuring accuracy	
Reference conditions	Increasing characteristic Start-of-scale value 0 bar Stainless steel seal diaphragm Silicone oil filling Room temperature (25 °C (77 °F)) r: Span ratio (r = max. span / set span)
Error in measurement and fixed- point setting (including hysteresis and repeatability)	
Linear characteristic	
- r ≤ 10	$\leq$ (0.0029 · r + 0.071)%
- 10 < r ≤ 30	$\leq$ (0.0045 · r + 0.071)%
- 30 < r ≤ 100	$\leq$ (0.005 · r +0.05)%
• Square-root characteristic (flow > 50%)	
- r ≤ 10	≤ 0.1%
- 10 < r ≤ 30	≤ 0.2%
• Square-root characteristic (flow 25 50%)	
- r ≤ 10	≤ 0.2%
- 10 < r ≤ 30	≤ 0.4%

### DS III series for differential pressure and flow

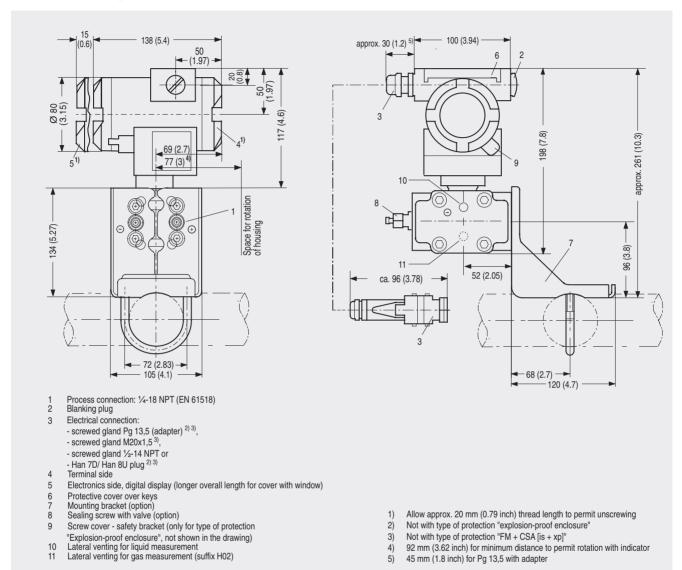
Influence of ambient temperature	
• With -10 +60 °C (14 140 °F)	$\leq (0.08 \cdot r + 0.1)\%$
• With -4010 °C and	≤ (0.1 · r +0.15)% / 10 K
+60 °C +85 °C	(≤ (0.1 · r +0.15)% / 18 °F)
(-40 +14 and 140 185 °F)	Twice the value with 20-mbar (0.29 psi) measuring cell.
Rated conditions	(0.29 psi) measuring ceii.
	IDGE
Degree of protection (to EN 60529)	IP65
Process temperature	40 . 100 %C / 40 010 %E)
<ul> <li>Measuring cell with silicone oil fil- ling</li> </ul>	-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)
Design	
Weight (without options)	≈ 4.5 kg (≈ 9.9 lb)
Wetted parts materials	
Seal diaphragm	Stainless steel, mat. No.
	1.4404/316L, Hastelloy C276, mat. No. 2.4819, Monel, mat. No.
	2.4360, tantalum or gold
Measuring cell filling	Silicone oil or inert filling liquid
	(max. 160 bar (2320 psi) with ox gen measurement)
Process connection	Female thread 1/4-18 NPT and
	flange connection to DIN 19 213
	with mounting thread M10 or $^{7}/_{16}$ -20 UNF to EN 61518
Power supply U <sub>H</sub>	
Terminal voltage on pressure trans-	10.5 45 V DC
mitter	10.5 30 V DC in intrinsically- safe mode
Certificates and approvals	
Classification according to pressure	
Classification according to pressure equipment directive (DRGL 97/23/EC)	
equipment directive	For gases of fluid group 1 and
equipment directive (DRGL 97/23/EC)	liquids of fluid group 1; complies
equipment directive (DRGL 97/23/EC)	liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering
equipment directive (DRGL 97/23/EC) • PN 32/160 (MWP 464/2320)	liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)
equipment directive (DRGL 97/23/EC)	liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)  For gases of fluid group 1 and
equipment directive (DRGL 97/23/EC) • PN 32/160 (MWP 464/2320)	liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)  For gases of fluid group 1 and liquids of fluid group 1; complies with basic safety requirements of
equipment directive (DRGL 97/23/EC) • PN 32/160 (MWP 464/2320)	liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)  For gases of fluid group 1 and liquids of fluid group 1; complies with basic safety requirements carticle 3, paragraph 1 (appendix
equipment directive (DRGL 97/23/EC) • PN 32/160 (MWP 464/2320)	liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)  For gases of fluid group 1 and liquids of fluid group 1; complies with basic safety requirements article 3, paragraph 1 (appendix 1); assigned to category III, conformity evaluation module H by
equipment directive (DRGL 97/23/EC)  PN 32/160 (MWP 464/2320)  PN 420 (MWP 6092)	liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)  For gases of fluid group 1 and liquids of fluid group 1; complies with basic safety requirements carticle 3, paragraph 1 (appendia 1); assigned to category III, con
equipment directive (DRGL 97/23/EC)  PN 32/160 (MWP 464/2320)  PN 420 (MWP 6092)  Explosion protection	liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)  For gases of fluid group 1 and liquids of fluid group 1; complies with basic safety requirements carticle 3, paragraph 1 (appendix 1); assigned to category III, con formity evaluation module H by the TUV Nord
equipment directive (DRGL 97/23/EC)  PN 32/160 (MWP 464/2320)  PN 420 (MWP 6092)  Explosion protection Intrinsic safety "i"	liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)  For gases of fluid group 1 and liquids of fluid group 1; complies with basic safety requirements carticle 3, paragraph 1 (appendix 1); assigned to category III, conformity evaluation module H by the TÜV Nord  PTB 99 ATEX 2122
equipment directive (DRGL 97/23/EC)  PN 32/160 (MWP 464/2320)  PN 420 (MWP 6092)  Explosion protection	liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)  For gases of fluid group 1 and liquids of fluid group 1; complies with basic safety requirements carticle 3, paragraph 1 (appendix 1); assigned to category III, con formity evaluation module H by the TUV Nord
equipment directive (DRGL 97/23/EC)  PN 32/160 (MWP 464/2320)  PN 420 (MWP 6092)  Explosion protection  Intrinsic safety "i"  Identification  Permissible ambient temperatu-	liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)  For gases of fluid group 1 and liquids of fluid group 1; complies with basic safety requirements carticle 3, paragraph 1 (appendix 1); assigned to category III, conformity evaluation module H by the TÜV Nord  PTB 99 ATEX 2122  Ex II 1/2 G EEx ia/ib IIB/IIC T6  -40 +85 °C (-40 +185 °F)
equipment directive (DRGL 97/23/EC)  PN 32/160 (MWP 464/2320)  PN 420 (MWP 6092)  Explosion protection  Intrinsic safety "i"  Identification	liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)  For gases of fluid group 1 and liquids of fluid group 1; complies with basic safety requirements carticle 3, paragraph 1 (appendix 1); assigned to category III, conformity evaluation module H by the TÜV Nord  PTB 99 ATEX 2122  EX II 1/2 G EEx ia/ib IIB/IIC T6  -40 +85 °C (-40 +185 °F) temperature class T4;  -40 +70 °C (-40 +158 °F)
equipment directive (DRGL 97/23/EC)  PN 32/160 (MWP 464/2320)  PN 420 (MWP 6092)  Explosion protection  Intrinsic safety "i"  Identification  Permissible ambient temperatu-	liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)  For gases of fluid group 1 and liquids of fluid group 1; complies with basic safety requirements carticle 3, paragraph 1 (appendix 1); assigned to category III, conformity evaluation module H by the TÜV Nord  PTB 99 ATEX 2122  EX II 1/2 G EEx ia/ib IIB/IIC T6  -40 +85 °C (-40 +185 °F) temperature class T4;  -40 +70 °C (-40 +158 °F) temperature class T5;
equipment directive (DRGL 97/23/EC)  PN 32/160 (MWP 464/2320)  PN 420 (MWP 6092)  Explosion protection  Intrinsic safety "i"  Identification  Permissible ambient temperatu-	liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)  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  PTB 99 ATEX 2122  EX II 1/2 G EEX ia/ib IIB/IIC T6  -40 +85 °C (-40 +185 °F) temperature class T4;  -40 +70 °C (-40 +158 °F)
equipment directive (DRGL 97/23/EC)  PN 32/160 (MWP 464/2320)  PN 420 (MWP 6092)  Explosion protection  Intrinsic safety "i"  Identification  Permissible ambient temperatu-	liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)  For gases of fluid group 1 and liquids of fluid group 1; complies with basic safety requirements carticle 3, paragraph 1 (appendix 1); assigned to category III, conformity evaluation module H by the TÜV Nord  PTB 99 ATEX 2122  EX II 1/2 G EEx ia/ib IIB/IIC T6  -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
equipment directive (DRGL 97/23/EC)  PN 32/160 (MWP 464/2320)  PN 420 (MWP 6092)  Explosion protection  Intrinsic safety "i"  Identification  Permissible ambient temperature	liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)  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  PTB 99 ATEX 2122  EX II 1/2 G EEX ia/ib IIB/IIC T6  -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  To certified intrinsically-safe circuits with maximum values:
equipment directive (DRGL 97/23/EC)  PN 32/160 (MWP 464/2320)  PN 420 (MWP 6092)  Explosion protection  Intrinsic safety "i"  Identification  Permissible ambient temperature	liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)  For gases of fluid group 1 and liquids of fluid group 1; complies with basic safety requirements carticle 3, paragraph 1 (appendix 1); assigned to category III, conformity evaluation module H by the TUV Nord  PTB 99 ATEX 2122  Ex II 1/2 G EEx ia/ib IIB/IIC T6  -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  To certified intrinsically-safe circuits with maximum values: $U_i = 30 \text{ V}, I_i = 100 \text{ mA},$
equipment directive (DRGL 97/23/EC)  PN 32/160 (MWP 464/2320)  PN 420 (MWP 6092)  Explosion protection Intrinsic safety "i" Identification Permissible ambient temperature  Connection	liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)  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  PTB 99 ATEX 2122  Ex II 1/2 G EEx ia/ib IIB/IIC T6  -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  To certified intrinsically-safe circuits with maximum values: $U_i = 30 \text{ V}, I_i = 100 \text{ mA}, P_i = 750 \text{ mW}; R_i = 300 \Omega$
equipment directive (DRGL 97/23/EC)  PN 32/160 (MWP 464/2320)  PN 420 (MWP 6092)  Explosion protection  Intrinsic safety "i"  Identification  Permissible ambient temperature	liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)  For gases of fluid group 1 and liquids of fluid group 1; complies with basic safety requirements carticle 3, paragraph 1 (appendix 1); assigned to category III, conformity evaluation module H by the TUV Nord  PTB 99 ATEX 2122  Ex II 1/2 G EEx ia/ib IIB/IIC T6  -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  To certified intrinsically-safe circuits with maximum values: $U_i = 30 \text{ V}, I_i = 100 \text{ mA},$

### DS III series for differential pressure and flow

• Explosion-proof "d"	PTB 99 ATEX 1160
- Identification	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: $U_{H} = 10.5 \dots 45 \text{ V DC}$
<ul> <li>Dust explosion protection for zone 20</li> </ul>	PTB 01 ATEX 2055
- Identification	Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C
<ul> <li>Permissible ambient temperature</li> </ul>	-40 +85 °C (-40 +185 °F)
- Max.surface temperature	120 °C (248 °F)
- Connection	To certified intrinsically-safe circuits with maximum values: $U_{\rm i} = 30 \text{ V}, I_{\rm i} = 100 \text{ mA}, P_{\rm i} = 750 \text{ mW}, R_{\rm i} = 300 \Omega$
<ul> <li>Effective internal inductance/ca- pacitance</li> </ul>	$L_{\rm i} = 0.4 \; {\rm mH}, \; C_{\rm i} = 6 \; {\rm nF}$
• Dust explosion protection for zone 21/22	PTB 01 ATEX 2055
- Identification	Ex II 2 D IP65 T 120 °C
- Connection	To circuits with values: $U_{\rm H} = 10.5 \dots 45  \rm V  DC;$ $P_{\rm max} = 1.2  \rm W$
<ul> <li>Type of protection "n" (zone 2)</li> </ul>	TÜV 01 ATEX 1696 X
- Identification	Ex II 3 G EEx nA L IIC T4/T5/T6
• Explosion protection to FM	Certificate of Compliance 3008490
<ul> <li>Identification (XP/DIP) or (IS); (NI)</li> </ul>	CL I, DIV 1, GP ABCD T4T6; CL II, DIV 1, GP EFG; CL III; CL I, ZN 0/1 AEX ia IIC T4T6; CL I, DIV 2, GP ABCD T4T6; 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 T4T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4T6; CL I, DIV 2, GP ABCD T4T6; CL II, DIV 2, GP FG; CL III

DS III series for differential pressure and flow

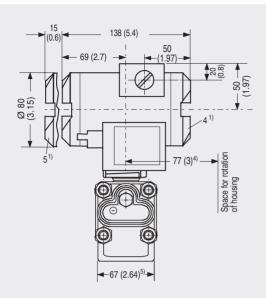
#### Dimensional drawings



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

# Transmitters for pressure, absolute pressure, differential pressure, flow and level

#### DS III series for differential pressure and flow



100 (3.94) ca. 96 (3.78) 217 (8.54)<sup>7)</sup> ᄀᅁ 85 (3.35)<sup>6)</sup> Θ g. ca. 84,6 (3.33)

- Process connection: 1/4-18 NPT (EN 61518)
- Blanking plug
- Electrical connection:
  - screwed gland Pg 13,5 (adapter) 2) 3),
  - screwed gland M20x1,5 3)
  - screwed gland 1/2-14 NPT or
  - Han 7D/ Han 8U plug 2) 3)
- Terminal side
- 5 Electronics side, digital display (longer overall length for cover with window)
- Protective cover over keys
- Mounting bracket (option)
  Sealing screw with valve (option)
- Screw cover safety bracket (only for type of protection "Explosion-proof enclosure", not shown in the drawing)

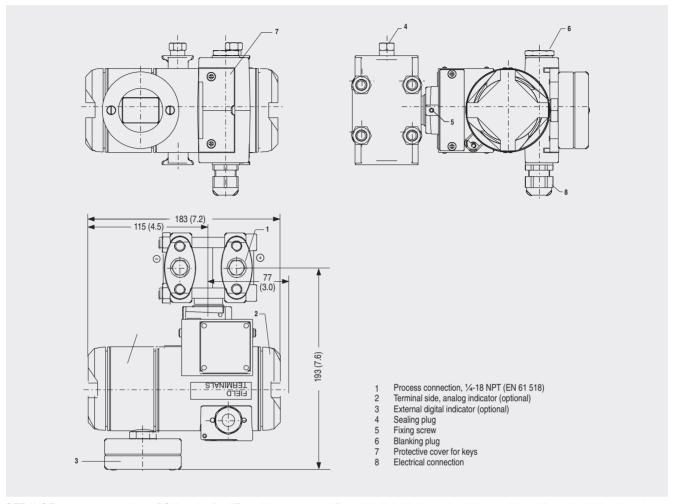
- Allow approx. 20 mm (0.79 inch) thread length to permit unscrewing
- Not with type of protection "explosion-proof enclosure"
- Not with type of protection "FM + CSA [is + xp]" 3)
- 92 mm (3.6 inch) for minimum distance to permit rotation with indicator 4)
- 74 mm (2.9 inch) for PN ≥ 420 (MWP ≥ 6092 psi)
- 91 mm (3.6 inch) for PN ≥ 420 (MWP ≥ 6092 psi) 6)
- 7) 219 mm (8.62 inch) for PN ≥ 420 (MWP ≥ 6092 psi)
- 45 mm (1.8 inch) for Pg 13,5 with adapter

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



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

#### DS III series for differential pressure and flow



SITRANS P pressure transmitters, DS III series for differential pressure and flow, with digital indicator beside control keys, dimensional drawing, dimen-



SITRANS P pressure transmitters, DS III series for differential pressure and flow, with digital indicator beside control keys

#### DS III series for differential pressure and flow

Selection and Orderin	•		Ord				
SITRANS P pressure t		•	7 M	F 4	4 3	3 -	
DS III series for differe PN 32/160 (MWP 464/2	ential pressure and flow (320 psi)				-		
2-wire system							
Measuring cell filling	Measuring cell						
	cleaning						
Silicone oil	standard	•	1				
Inert liquid <sup>1)</sup>	grease-free		3				
Measured span							
PN 32 (MWP 464 psi) 1 20 mbar <sup>2)</sup>	(0.014E 0.00 poi)		В				
=	(0.0145 0.29 psi)		В				
PN 160 (MWP 2320 psi 1 60 mbar	) (0.0145 0.87 psi)		С				
2.5 250 mbar	(0.036 3.63 psi)		D				
6 600 mbar	(0.087 8.70 psi)		E				
16 1600 mbar	(0.232 23.2 psi)	▶	F				
50 5000 mbar	(0.725 72.5 psi)	•	G				
0.3 30 bar	(4.35 435 psi)		Н				
Wetted parts materials							
(stainless steel process	0 /						
Seal diaphragm	Parts of measuring cell	-					
Stainless steel	Stainless steel Stainless steel			A			
Hastelloy Hastelloy	Stainless steel Hastelloy			B C			
Tantalum 3)	Tantalum			E			
Monel 3)	Monel			Н			
Gold <sup>3)</sup>	Gold			L			
Version for diaphragm s	seal			Υ			
Process connection							
	T with flange connection						
	te process connection						
- Mounting thread M1	0 to DIN 19213	•		0			
<ul> <li>Mounting thread M1</li> <li>Mounting thread <sup>7</sup>/<sub>10</sub></li> </ul>	0 to DIN 19213 6-20 UNF to EN 61518	•		0			
<ul> <li>Mounting thread M1</li> <li>Mounting thread <sup>7</sup>/<sub>1</sub></li> <li>Vent on side of proces</li> </ul>	0 to DIN 19213 6-20 UNF to EN 61518 ss flange <sup>2)</sup>	•					
<ul> <li>Mounting thread M1</li> <li>Mounting thread <sup>7</sup>/<sub>1</sub></li> <li>Vent on side of proces</li> <li>Mounting thread M1</li> </ul>	0 to DIN 19213 6-20 UNF to EN 61518 ss flange <sup>2)</sup>	•		2			
<ul> <li>Mounting thread M1</li> <li>Mounting thread <sup>7</sup>/<sub>1/1</sub></li> <li>Vent on side of proces</li> <li>Mounting thread M1</li> <li>Mounting thread <sup>7</sup>/<sub>1/1</sub></li> </ul>	0 to DIN 19213 6-20 UNF to EN 61518 ss flange <sup>2)</sup> 0 to DIN 19213 6-20 UNF to EN 61518	•		2			
<ul> <li>Mounting thread M1</li> <li>Mounting thread <sup>7</sup>/<sub>1/1</sub></li> <li>Vent on side of proceder</li> <li>Mounting thread M1</li> <li>Mounting thread <sup>7</sup>/<sub>1/1</sub></li> </ul> Non-wetted parts materials	0 to DIN 19213 6-20 UNF to EN 61518 ss flange <sup>2)</sup> 0 to DIN 19213 6-20 UNF to EN 61518	•		2			
- Mounting thread M1 - Mounting thread <sup>7</sup> / <sub>11</sub> • Vent on side of proce: - Mounting thread M1 - Mounting thread <sup>7</sup> / <sub>11</sub> Non-wetted parts mate Process flange screws	0 to DIN 19213 6-20 UNF to EN 61518 ss flange <sup>2)</sup> 0 to DIN 19213 6-20 UNF to EN 61518	•		2	2		
- Mounting thread M1 - Mounting thread <sup>7</sup> / <sub>11</sub> • Vent on side of proce: - Mounting thread M1 - Mounting thread <sup>7</sup> / <sub>11</sub> Non-wetted parts mate Process flange screws  Stainless steel	0 to DIN 19213 6-20 UNF to EN 61518 ss flange <sup>2)</sup> 0 to DIN 19213 6-20 UNF to EN 61518 <b>erials</b> Electronics housing Die-cast aluminium Stainless steel precision	•		2	2 3		
- Mounting thread M1 - Mounting thread <sup>7</sup> / <sub>11</sub> • Vent on side of proce: - Mounting thread M1 - Mounting thread <sup>7</sup> / <sub>11</sub> Non-wetted parts mate Process flange screws  Stainless steel  Stainless steel	0 to DIN 19213 6-20 UNF to EN 61518 ss flange <sup>2)</sup> 0 to DIN 19213 6-20 UNF to EN 61518 erials Electronics housing	<b>•</b>		2			
- Mounting thread M1 - Mounting thread <sup>7</sup> / <sub>11</sub> • Vent on side of proce: - Mounting thread M1 - Mounting thread <sup>7</sup> / <sub>11</sub> Non-wetted parts mate Process flange screws  Stainless steel  Stainless steel  Design	0 to DIN 19213 6-20 UNF to EN 61518 ss flange <sup>2)</sup> 0 to DIN 19213 6-20 UNF to EN 61518 <b>erials</b> Electronics housing Die-cast aluminium Stainless steel precision			2		1	
- Mounting thread M1 - Mounting thread <sup>7</sup> / <sub>1</sub> , • Vent on side of proces - Mounting thread M1 - Mounting thread <sup>7</sup> / <sub>1</sub> , • Non-wetted parts mate • Process flange screws • Stainless steel • Stainless steel • Standard design	0 to DIN 19213 6-20 UNF to EN 61518 ss flange <sup>2)</sup> 0 to DIN 19213 6-20 UNF to EN 61518 erials Electronics housing Die-cast aluminium Stainless steel precision casting	_		2		1 2	
- Mounting thread M1 - Mounting thread <sup>7</sup> / <sub>1</sub> , • Vent on side of proces - Mounting thread M1 - Mounting thread <sup>7</sup> / <sub>1</sub> , • Non-wetted parts mate • Process flange screws • Stainless steel • Stainless steel • Standard design	0 to DIN 19213 6-20 UNF to EN 61518 6s flange <sup>2)</sup> 0 to DIN 19213 6-20 UNF to EN 61518 6-20 U	_		2			
- Mounting thread M1 - Mounting thread <sup>7</sup> / <sub>1</sub> ,  • Vent on side of proces - Mounting thread M1 - Mounting thread M1 - Mon-wetted parts mate  Process flange screws  Stainless steel  Stainless steel  Design  • Standard design  • International version, documentation in 5 la  Explosion protection	0 to DIN 19213 6-20 UNF to EN 61518 6s flange <sup>2)</sup> 0 to DIN 19213 6-20 UNF to EN 61518 6-20 U	_		2			
- Mounting thread M1 - Mounting thread <sup>7</sup> / <sub>1</sub> ,  • Vent on side of proces - Mounting thread M1 - Mounting thread M1 - Mon-wetted parts mate Process flange screws Stainless steel Stainless steel Stainless steel  Design  • Standard design • International version, documentation in 5 la  Explosion protection  • without	0 to DIN 19213 6-20 UNF to EN 61518 ss flange <sup>2)</sup> 0 to DIN 19213 6-20 UNF to EN 61518 erials Electronics housing Die-cast aluminium Stainless steel precision casting English label inscriptions, nguages on CD	_		2			
- Mounting thread M1 - Mounting thread <sup>7</sup> / <sub>1</sub> ,  • Vent on side of proces - Mounting thread M1 - Mounting thread M1 - Mon-wetted parts mate Process flange screws Stainless steel Stainless steel Stainless steel  Design  • Standard design • International version, documentation in 5 la  Explosion protection  • without • with ATEX, Type of process  • Mounting thread M1 - Mounting thread	0 to DIN 19213 6-20 UNF to EN 61518 6s flange <sup>2)</sup> 0 to DIN 19213 6-20 UNF to EN 61518 6-20 U	_		2		2 A	
- Mounting thread M1 - Mounting thread <sup>7</sup> / <sub>1</sub> , • Vent on side of proces - Mounting thread M1 - Mounting thread M1 - Mounting thread <sup>7</sup> / <sub>1</sub> ,  Non-wetted parts mate Process flange screws Stainless steel Stainless steel  Design • Standard design • International version, documentation in 5 la  Explosion protection • without • with ATEX, Type of processing threads a selection of the company of th	0 to DIN 19213 6-20 UNF to EN 61518 6-58 flange 2) 0 to DIN 19213 6-20 UNF to EN 61518 6-20 UNF to EN 61518  Electronics housing Die-cast aluminium Stainless steel precision casting  English label inscriptions, nguages on CD	_		2		2 A B	
- Mounting thread M1 - Mounting thread <sup>7</sup> / <sub>1</sub> , • Vent on side of proces - Mounting thread M1 - Mounting thread M1 - Mounting thread <sup>7</sup> / <sub>1</sub> ,  Non-wetted parts mate Process flange screws Stainless steel Stainless steel  Design • Standard design • International version, documentation in 5 la  Explosion protection • without • with ATEX, Type of procession, design - "Intrinsic safety (EEx- "Explosion-proof (EEx-	0 to DIN 19213 6-20 UNF to EN 61518 6-58 flange 2) 0 to DIN 19213 6-20 UNF to EN 61518  Frials Electronics housing Die-cast aluminium Stainless steel precision casting  English label inscriptions, nguages on CD  Dietection: (ia)" Ex d)" 4)	<b>&gt;</b>		2		2 A	
- Mounting thread M1 - Mounting thread <sup>7</sup> / <sub>1</sub> , • Vent on side of proces - Mounting thread M1 - Mounting thread M1 - Mounting thread <sup>7</sup> / <sub>1</sub> ,  Non-wetted parts mate Process flange screws Stainless steel Stainless steel Stainless steel  Design • Standard design • International version, documentation in 5 la  Explosion protection • without • with ATEX, Type of processes after the minimum of the	0 to DIN 19213 6-20 UNF to EN 61518 6-58 flange 2) 0 to DIN 19213 6-20 UNF to EN 61518 6-20 UNF to EN 61518  Electronics housing Die-cast aluminium Stainless steel precision casting  English label inscriptions, nguages on CD	<b>&gt;</b>		2		A B D	
- Mounting thread M1 - Mounting thread <sup>7</sup> / <sub>1</sub> , • Vent on side of proces - Mounting thread M1 - Mounting thread M1 - Mounting thread <sup>7</sup> / <sub>1</sub> ,  Non-wetted parts mate Process flange screws  Stainless steel  Stainless steel  Design • Standard design • International version, documentation in 5 la  Explosion protection • without • with ATEX, Type of procession in the safety (EEx in the safety and (EX in the safety and (	0 to DIN 19213 6-20 UNF to EN 61518 ss flange <sup>2)</sup> 0 to DIN 19213 6-20 UNF to EN 61518 erials Electronics housing Die-cast aluminium Stainless steel precision casting  English label inscriptions, nguages on CD  otection: (a)" (x d)" 4) explosion-proof enclosure	<b>&gt;</b>		2		A B D P	
- Mounting thread M1 - Mounting thread <sup>7</sup> / <sub>1</sub> , • Vent on side of proces - Mounting thread M1 - Mounting thread M1 - Mounting thread <sup>7</sup> / <sub>1</sub> ,  Non-wetted parts mate Process flange screws Stainless steel Stainless steel Stainless steel  Design • Standard design • International version, documentation in 5 la  Explosion protection • without • with ATEX, Type of processing safety (EEX - "Explosion-proof (EEX - "Intrinsic safety and (EEX ia + EEX d)" <sup>5</sup> ) - "n (zone 2)" - "Intrinsic safety, expl	0 to DIN 19213 6-20 UNF to EN 61518 ss flange <sup>2)</sup> 0 to DIN 19213 6-20 UNF to EN 61518 erials Electronics housing Die-cast aluminium Stainless steel precision casting  English label inscriptions, nguages on CD  otection: (x ia)" (x ia)" 4) explosion-proof enclosure	<b>&gt;</b>		2		A B D P	
- Mounting thread M1 - Mounting thread <sup>7</sup> / <sub>1</sub> , • Vent on side of proces - Mounting thread M1 - Mounting thread M1 - Mounting thread <sup>7</sup> / <sub>1</sub> ,  Non-wetted parts mate Process flange screws Stainless steel Stainless steel Stainless steel  Design • Standard design • International version, documentation in 5 la  Explosion protection • without • with ATEX, Type of processing safety (EEx - "Explosion-proof (EE - "Intrinsic safety and (EEx ia + EEx d)" <sup>5</sup> ) - "n (zone 2)" - "Intrinsic safety, explodust explosion protessing protesi	0 to DIN 19213 6-20 UNF to EN 61518 ss flange <sup>2)</sup> 0 to DIN 19213 6-20 UNF to EN 61518 erials Electronics housing Die-cast aluminium Stainless steel precision casting  English label inscriptions, nguages on CD  otection: (a)" (x d)" 4) explosion-proof enclosure	<b>&gt;</b>		2		A B D P	
- Mounting thread M1 - Mounting thread <sup>7</sup> / <sub>1</sub> , • Vent on side of proces - Mounting thread M1 - Mounting thread M1 - Mounting thread <sup>7</sup> / <sub>1</sub> ,  Non-wetted parts mate Process flange screws Stainless steel Stainless steel Stainless steel Stainless steel Standard design • International version, documentation in 5 la  Explosion protection • without • with ATEX, Type of processing safety (EEx - "Explosion-proof (EE - "Intrinsic safety and (EEx ia + EEx d)" <sup>5)</sup> - "In (zone 2)" - "Intrinsic safety, expl dust explosion protession protession protession protession 1D/2D)" <sup>5)</sup>	0 to DIN 19213 6-20 UNF to EN 61518 6-30 UNF to EN	<b>&gt;</b>		2		A B D P	
- Mounting thread M1 - Mounting thread <sup>7</sup> / <sub>1</sub> , • Vent on side of proces - Mounting thread M1 - Mounting thread M1 - Mounting thread M7/ <sub>1</sub> ,  Non-wetted parts mate Process flange screws Stainless steel Stainless steel Stainless steel  Design • Standard design • International version, documentation in 5 la  Explosion protection • without • with ATEX, Type of processing safety (EEx in the safety and (EEx in the EEx d)" 5) - "in (zone 2)" - "Intrinsic safety, explodust explosion protessing safety, explosion protessing safety, explodust explosion protessing safety,	0 to DIN 19213 6-20 UNF to EN 61518 6-30 UNF to EN	<b>&gt;</b>		2		A B D P	C
- Mounting thread M1 - Mounting thread <sup>7</sup> / <sub>1</sub> , • Vent on side of proces - Mounting thread M1 - Mounting thread M1 - Mounting thread M1 - Mon-wetted parts mate Process flange screws Stainless steel Stainless steel Stainless steel Stainless steel  Design • Standard design • International version, documentation in 5 la Explosion protection • without • with ATEX, Type of proceed without - "Intrinsic safety (EEx - "Explosion-proof (EEx - "Intrinsic safety and (EEx ia + EEx d)" <sup>5)</sup> - "n (zone 2)" - "Intrinsic safety, expl dust explosion protex zone 1D/2D)" <sup>5)</sup> • with FM + CSA, Type - "Intrinsic safety and of the control of the cont	0 to DIN 19213 6-20 UNF to EN 61518 ss flange <sup>2)</sup> 0 to DIN 19213 6-20 UNF to EN 61518 erials Electronics housing Die-cast aluminium Stainless steel precision casting  English label inscriptions, nguages on CD  otection: (ia)" Ex d)" <sup>4)</sup> explosion-proof enclosure osion-proof enclosure and ection (EEx ia + EEx d + of protection: explosion-proof (is + xp)" <sup>4</sup>	<b>&gt;</b>		2		A B D P E R	C
- Mounting thread M1 - Mounting thread <sup>7</sup> / <sub>1</sub> , • Vent on side of proces - Mounting thread M1 - Mounting thread M1 - Mounting thread M7/ <sub>1</sub> , Non-wetted parts mate Process flange screws Stainless steel  Design • Standard design • International version, documentation in 5 la Explosion protection • without • with ATEX, Type of proceeding in the proceeding of the proceeding in the proceeding	0 to DIN 19213 6-20 UNF to EN 61518 6-30 UNF to EN	<b>&gt;</b>		2		A B D P E R	C
- Mounting thread M1 - Mounting thread <sup>7</sup> / <sub>1</sub> , • Vent on side of proces - Mounting thread M1 - Mounting thread M1 - Mounting thread M7/ <sub>1</sub> , Non-wetted parts mate Process flange screws Stainless steel  Design • Standard design • International version, documentation in 5 la Explosion protection • without • with ATEX, Type of proceed in the safety and (EEx ia + EEx d) significant (EEx ia + Ex d) significan	0 to DIN 19213 6-20 UNF to EN 61518 6-30 UNF to EN	<b>•</b>		2		A B D P E R	A B
- Mounting thread M1 - Mounting thread <sup>7</sup> / <sub>1</sub> , • Vent on side of proces - Mounting thread M1 - Mounting thread M1 - Mounting thread <sup>7</sup> / <sub>1</sub> ,  Non-wetted parts mate Process flange screws Stainless steel Stainless steel Stainless steel  Design • Standard design • International version, documentation in 5 la  Explosion protection • without • with ATEX, Type of processing safety (EEX = "Explosion-proof (EEX = "Intrinsic safety and (EEX ia + EEX d)" <sup>5)</sup> - "n (zone 2)" - "Intrinsic safety, explodust explosion protextone 1D/2D)" <sup>5)</sup> • with FM + CSA, Type	0 to DIN 19213 6-20 UNF to EN 61518 ss flange <sup>2)</sup> 0 to DIN 19213 6-20 UNF to EN 61518 erials Electronics housing Die-cast aluminium Stainless steel precision casting  English label inscriptions, nguages on CD  otection: (a)" (x d)" 4) explosion-proof enclosure osion-proof enclosure and action (EEx ia + EEx d + of protection: explosion-proof (is + xp)" 4  / cable inlet .5 6) 1.5 NPT	<b>•</b>		2		A B D P E R	A

Selection and Ordering data	Order No.
SITRANS P pressure transmitters, DS III series for differential pressure and flow PN 32/160 (MWP 464/2320 psi)	7 M F 4 4 3 3 -
2-wire system	
Display	
<ul> <li>without (digital indicator hidden, setting: mA)</li> </ul>	1
<ul> <li>with visible digital indicator</li> </ul>	6
<ul> <li>with customer-specific digital indicator (setting as specified, Order code "Y21" required)</li> </ul>	7

Available ex stock

Power supply units see "SITRANS I power supply units and input isolators".

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
- 3) Only together with max. spans 250, 1600, 5000 and 30000 mbar (3.63, 23.2, 72.5 and 435 psi).
  4) Without cable gland, with blanking plug
- 5) With enclosed cable gland EEx ia and blanking plug
- 6) Not together with type of protection "Explosion-proof"

### DS III series for differential pressure and flow

Further designs	Order code	Further designs	Order code
Please add "-Z" to Order No. and specify Order code.		Please add "-Z" to Order No. and specify Order code.	
Pressure transmitter with mounting bracket made of:		Oxygen application	E10
• Steel	A01	(max. 160 bar (2320 psi) with oxygen measurement	
Stainless steel	A02	and inert liquid)	
O-rings for process flanges		Interchanging of process connection side	H01
(instead of FPM (Viton))		Vent on side for gas measurements	H02
PTFE (Teflon)  FED (with alliance and a grant and factor)	A20	Stainless steel process flanges for vertical	H03
<ul><li>FEP (with silicone core, approved for food)</li><li>FFPM (Kalrez, compound 4079)</li></ul>	A21 A22	differential pressure lines	
• NBR (Buna N)	A23	(not together with K01, K02 and K04) 1)	
Plug		Process flange	140.4
• Han 7D (metal, gray)	A30	Hastelloy	K01 K02
Han 8U (instead of Han 7D)	A31	Monel     Stainless steel with PVDF insert	K02 K04
Sealing screws		Max. PN 10 (MWP 145 psi)	NO4
1/4-18 NPT, with valve in material of process flanges	A40	Max. temperature of medium 90 °C (194 °F)	
Rating plate inscription			
(instead of German)		Additional data	
• English	B11	Measuring range to be set	
• French	B12	specify in plain text:	
• Spanish	B13	<ul> <li>with linear characteristic:</li> <li>Y01: up to mbar, bar, kPa, MPa, psi</li> </ul>	Y01
• Italian	B14	with square-root characteristic:	Y02
English rating plate (calibration certificate)  Pressure units in inH <sub>2</sub> O or psi	B21	Y01: up to mbar, bar, kPa, MPa, psi	
<u>-</u> '	044	Measuring point number/identification	Y15
Manufacturer's test certificate M to DIN 55.350, Part 18 and to ISO 8402	C11	max. 16 characters, specify in plain text:	
,	010		
Acceptance test certificate B to EN 10 204-3.1.B	C12	Measuring point text max. 27 characters, specify in plain text:	Y16
Factory certificate	C14	Y16:	
to EN 10.204-2.2	014	Entry of HART address (TAG)	Y17
Certificate "Functional Safety (SIL)"	C20	max. 27 characters, specify in plain text:	
Setting of upper limit of output signal to 22.0 mA	D05	Y17:	
		Setting of pressure indicator in pressure units	Y21
Acid gas version to NACE (only together with seal diaphragm made of Hastelloy)	D07	specify in plain text (standard setting: mA): Y21: mbar, bar, kPa, MPa, psi,	
Type of protection IP68	D12	Note:	
(not together with Han 7D / Han 8U plug,	DIZ	The following pressure units can be selected:	
Pg 13.5 screwed gland)		bar, mbar, mm $H_2O^{*)}$ , in $H_2O^{*)}$ , ft $H_2O^{*)}$ , mmHG, inHG,	
Digital indicator along side the input keys	D27	psi, Pa, kPa, MPa, g/cm², kg/cm², mA, Torr, ATM or % *) Reference temperature 20 °C	
(only together with the devices 7MF44330A.6 or		Setting of pressure indicator in non-pressure units	Y22 <sup>2)</sup> +
A.7-Z, Y21 or Y22 + Y01)		specify in plain text:	Y01 or Y02
Use in or at zone 1D/2D	E01	Y22: up to I/min, m <sup>3</sup> /h, m, USgpm,	
(only together with type of protection "Intrinsic safety (EEx ia)"		(specification of measuring range in pressure units "Y01" or "Y02" is essential, unit with max. 5 characters)	
Use at zone 0	E02	Only the settings for "Y01", "Y21", "Y21", "Y22" and "D05"c	an ho mado ir
(only together with type of protection "Intrinsic safety	LUZ	the factory	an be made ii
(EEx ia)"		1) Not autable for connection of remate and	
TÜV approval to AD/TRD	E06	<ol> <li>Not suitable for connection of remote seal</li> <li>Not together with over-filling safety device for flammable</li> </ol>	and
Overfilling safety device for flammable and	E08	non-flammable liquids (Order code "E08")	
non-flammable liquids			
(may DN 22 (M)/MD 464 poi) boois dovice with type of			

(max. PN 32 (MVWP 464 psi), basic device with type of protection "Intrinsic safety (EEx ia)", to WHG and VbF)

#### DS III series for differential pressure and flow

Selection and Orderin	•	Orde			
SITRANS P pressure t	ransmitters, DS III series	7 M F	4 5	3 3 -	
for differential pressu PN 420 (MWP 6092 ps				-	
2-wire system	''				
					Н
Measuring cell filling	Measuring cell cleaning Standard	1			
Silicone oil	Standard	1			
Measured span	(0.000 0.00 1)				
2.5 250 mbar	(0.036 3.63 psi)	D			
6 600 mbar	(0.087 8.70 psi)	E			
16 1600 mbar	(0.232 23.2 psi)	F			
50 5000 mbar	(0.725 72.5 psi)	G			
0.3 30 bar	(4.35 435 psi)	Н			
Wetted parts materials					
(stainless steel process					
	Parts of measuring cell				
Stainless steel	Stainless steel	Α			
Hastelloy	Stainless steel	В			
Gold <sup>1)</sup>	Gold	L			
Process connection					
	T with flange connection				
<ul> <li>Sealing screw opposi</li> </ul>					
- Mounting thread M1			1		
- Mounting thread <sup>7</sup> / <sub>1</sub>	<sub>6</sub> -20 UNF to		3		
EN 61518					
<ul> <li>Vent on side of proces</li> </ul>					
- Mounting thread M1	2 to DIN 19213		5		
- Mounting thread <sup>7</sup> / <sub>1</sub>	<sub>6</sub> -20 UNF to		7		
EN 61518					
Non-wetted parts mate	erials	-			
Process flange screws					
Stainless steel	Die-cast aluminium		2		
Stainless steel	Stainless steel precision		3		
	casting				
Design					
<ul> <li>Standard design</li> </ul>				1	
<ul> <li>International version,</li> </ul>	English label inscriptions,			2	
documentation in 5 la	nguages on CD				
Explosion protection					
• without				Α	
<ul> <li>with ATEX, Type of pre</li> </ul>					
- "Intrinsic safety (EE)	•			В	
- "Explosion-proof (EE	Ex d)" <sup>2)</sup>			D	
	explosion-proof enclosure			Р	
(EEx ia + EEx d)" 3)					
- "n (zone 2)"				E	
	osion-proof enclosure and			R	
dust explosion prote	ection (EEx ia + EEx d +				
zone 1D/2D)" 3)					
<ul> <li>with FM + CSA, Type</li> </ul>					
- "Intrinsic safety and e	explosion-proof (is + xp)" 2),			NC	
max. PN 360	·				
Electrical connection					
<ul> <li>Screwed gland Pg 13</li> </ul>				A	
<ul> <li>Screwed gland M20x</li> </ul>				В	
• Screwed gland M20x	1.0				
• Screwed gland ½-14	NPT			C	
O	NPT			B C D	

Selection and Ordering data	Order No.			
SITRANS P pressure transmitters, DS III series	7MF4533-			
for differential pressure and flow PN 420 (MWP 6092 psi)				
2-wire system				
Display				
<ul> <li>without (digital indicator hidden, setting: mA)</li> </ul>	1			
<ul> <li>with visible digital indicator</li> </ul>	6			
<ul> <li>with customer-specific digital indicator (setting as specified, Order code "Y21" required)</li> </ul>	7			

Power supply units see "SITRANS I power supply units and input isola-

Scope of delivery: Pressure transmitter as ordered (Instruction Manual is extra ordering item)

- 1) Not together with max. span 600 mbar
- 2) Without cable gland, with blanking plug
- 3) With enclosed cable gland EEx ia and blanking plug
- 4) Not together with type of protection "Explosion-proof"

### DS III series for differential pressure and flow

Further designs	Order code
Please add "-Z" to Order No. and specify	Jidei Code
Order code.	_
Pressure transmitter with mounting bracket made of:	404
Steel     Stainless steel	A01 A02
O-rings for process flanges	7102
(instead of FPM (Viton))	
• PTFE (Teflon)	A20
<ul><li>FEP (with silicone core, approved for food)</li><li>FFPM (Kalrez, compound 4079)</li></ul>	A21 A22
• NBR (Buna N)	A23
Plug	
<ul><li>Han 7D (metal, gray)</li><li>Han 8U (instead of Han 7D)</li></ul>	A30 A31
Sealing screws	A40
1/4-18 NPT, with valve in material of process flanges	71.0
Rating plate inscription	
(instead of German)  • English	B11
• French	B12
• Spanish	B13
• Italian	B14
English rating plate Pressure units in inH <sub>2</sub> O or psi	B21
Manufacturer's test certificate M	C11
(calibration certificate)	
to DIN 55350, Part 18 and to ISO 8402	040
Acceptance test certificate B to EN 10204-3.1.B	C12
Factory certificate	C14
to EN 10204-2.2	
Certificate "Functional Safety (SIL)"	C20
Setting of upper limit of output signal to 22.0 mA	D05
Acid gas version to NACE	D07
(only together with seal diaphragm made of Hastelloy)	
Type of protection IP68	D12
(not together with Han 7D / Han 8U plug, Pg 13.5 screwed gland)	
Digital indicator along side the input keys	D27
(only together with the devices 7MF45332A.6 orA.7-Z, Y21 or Y22 + Y01)	
Use in or at zone 1D/2D	E01
(only together with type of protection "Intrinsic safety (EEx ia)"	
Use at zone 0	E02
(only together with type of protection "Intrinsic safety (EEx ia)"	
Interchanging of process connection side	H01
Stainless steel process flanges for vertical differential pressure lines	H03
amoroniui produite inico	

Further designs	Order code
Please add "-Z" to Order No. and specify Order code.	
Additional data	
Measuring range to be set	_
specify in plain text:	Wad
<ul> <li>with linear characteristic:</li> <li>Y01: up to mbar, bar, kPa, MPa, psi</li> </ul>	Y01
with square-root characteristic:     Y01: up to mbar, bar, kPa, MPa, psi	Y02
Measuring point number/identification	Y15
max. 16 characters, specify in plain text:	
	Y16
Measuring point text max. 27 characters, specify in plain text:	110
Y16:	
Entry of HART address (TAG)	Y17
max. 27 characters, specify in plain text: Y17:	
Setting of pressure indicator in pressure units	Y21
specify in plain text (standard setting: mA): Y21: mbar, bar, kPa, MPa, psi,	
Note:	
The following pressure units can be selected:	
bar, mbar, mm $\rm H_2O^{^*}$ ), in $\rm H_2O^{^*}$ ), ft $\rm H_2O^{^*}$ ), mm $\rm HG$ , in $\rm HG$ , psi, Pa, kPa, MPa, g/cm $^2$ , kg/cm $^2$ , mA, Torr, ATM or %	
*) Reference temperature 20 °C	
Setting of pressure indicator in non-pressure units	Y22 + Y01 or Y02
specify in plain text: Y22: up to I/min, m <sup>3</sup> /h, m, USgpm,	101 0/ 102
(specification of measuring range in pressure units "Y01" or "Y02" is essential, unit with max. 5 characters)	

Only the settings for "Y01", "Y21", "Y22" and "D05" can be made in the

### DS III series for level

Technical specifications		Measuring cell with silicone oil filling			
SITRANS P pressure transmitters,	DS III corine for lovel	- High-pressure side	p <sub>abs</sub> ≥ 1 bar: -40 +175 °C (-40 +347 °F)		
Input Input	Do in Series, for level				
Measured variable	Level		p <sub>abs</sub> < 1 bar: -40 +80 °C (-40 +176 °F)		
Span	Maximum working pressure (nominal pressure)	- Low-pressure side	-40 +100 °C (-40 +212 °F) -20 +60 °C (-4 +140 °F) in conjunction with dust explosion		
• 25 250 mbar (0.36 3.63 psi)	See "Mounting flange"		protection		
• 25 600 mbar (0.36 8.7 psi)		Design			
• 53 1600 mbar (0.7723.2 psi)		Weight (without options)			
• 160 5000 mbar (2.32 72.5 psi)		<ul> <li>To DIN (pressure transmitter with mounting flange, without tube)</li> </ul>	≈ 11 13 kg (≈ 24.2 28.7 lb)		
Lower measuring limit (measuring cell with silicone oil filling)	-100% of max. span or 30 mbar (0.435 psi) abs., depending on mounting flange	To ANSI (pressure transmitter with mounting flange, without tube)	≈ 11 18 kg (≈ 24.2 39.7 lb)		
Upper measuring limit	100% of max. span	Wetted parts materials	0		
Output		<ul> <li>High-pressure side: Seal dia- phragm of mounting flange</li> </ul>	Stainless steel, mat. No. 1.4404/316L,		
Output signal	4 20 mA	. 0	Monel 400, mat. No. 2.4360, Hastelloy B2, mat. No. 2.4617,		
Measuring accuracy Reference conditions	Increasing characteristic Start-of-scale value 0 bar		Hastelloy B2, Hat. No. 2.4617, Hastelloy C276, mat. No. 2.4819, Hastelloy C4, mat. No. 2.4610, tantalum, PTFE, ECTFE		
	Stainless steel seal diaphragm	Measuring cell filling	Silicone oil		
	Mounting flange without tube Silicone oil filling	Process connection	Flange to DIN and ANSI		
	Room temperature (25 °C (77 °F))	High-pressure side			
Error in measurement and fixed-	r: Span ratio (r = max. span / set span)	Low-pressure side	Female thread 1/4-18 NPT and flange connection to DIN 19213 with mounting thread M10 or		
point setting (including hysteresis and repeatability)			<sup>7</sup> / <sub>16</sub> -20 UNF to EN 61518		
Linear characteristic		Power supply $ extcolor{black}{m{U}_{\! extcolor{H}}}$			
- r ≤ 10	≤ 0.15%	Terminal voltage on pressure trans- mitter	10.5 45 V DC 10.5 30 V DC in intrinsically-		
- 10 < r ≤ 30	≤ 0.3%	Tille	safe mode		
- 30 < r ≤ 100	(0.0075 · r + 0.075)%	Certificates and approvals			
Influence of ambient temperature		Classification according to pressure	For gases of fluid group 1 and		
• With -10 +60 °C (14 140 °F)		equipment directive (DRGL 97/23/EC)	liquids of fluid group 1; complies with requirements of article 3,		
- 250-mbar (3.63 psi) measuring cell	$\leq$ (0.5 · r + 0.2)% (0.4 instead of 0.2 with 10 < r $\leq$ 30)	,	paragraph 3 (sound engineering practice)		
- 600-mbar (8.7 psi) measuring	$\leq$ (0.3 · r + 0.2)% (0.4 instead of 0.2 with 10 < r $\leq$ 30)	Explosion protection			
cell	$\leq (0.25 \cdot r + 0.2)\%$ (0.4 instead of	<ul><li>Intrinsic safety "i"</li></ul>	PTB 99 ATEX 2122		
<ul> <li>1,600 and 5,000 mbar (23.2 and 72.5 psi) measuring cells</li> </ul>	0.2 with $10 < r \le 30$ )	- Identification	Ex II 1/2 G EEx ia/ib IIB/IIC T6		
• With -4010 °C and +60 °C +85 °C (-40 +14 and 140 185 °F) - 250-mbar (3.63 psi) measuring	≤ (0.25 · r +0.15)% / 10 K	- Permissible ambient temperatu- re	-40 +85 °C (-40 +185 °F) temperature class T4; -40 +70 °C (-40 +158 °F) temperature class T5; -40 +60 °C (-40 +140 °F)		
cell	$(\le (0.25 \cdot r + 0.15)\% / 18 ^{\circ}F)$ (Twice the value for $10 < r \le 30$ )	- Connection	temperature class T6 To certified intrinsically-safe cir-		
- 600-mbar (8.7 psi) measuring cell	$\leq$ (0.15 · r +0.15)% / 10 K ( $\leq$ (0.15 · r +0.15)% / 18 °F) (Twice the value for 10 < r $\leq$ 30)		cuits with maximum values: $U_{\rm i} = 30$ V, $I_{\rm i} = 100$ mA, $P_{\rm i} = 750$ mW; $R_{\rm i} = 300$ $\Omega$		
- 1,600 and 5,000 mbar (23.2 and 72.5 psi) measuring cells	≤ (0.12 · r +0.15)% / 10 K (≤ (0.12 · r +0.15)% / 18 °F) (Twice the value for 10 < r ≤ 30)	- Effective internal inductance/ca- pacitance	$L_{\rm i} = 0.4 \text{ mH}, C_{\rm i} = 6 \text{ nF}$		
Rated conditions	(50 110 74140 101 10 11 200)	<ul><li>Explosion-proof "d"</li><li>Identification</li></ul>	PTB 99 ATEX 1160 Ex II 1/2 G EEx d IIC T4/T6		
	IP65		-40 +85 °C (-40 +185 °F)		
Process temperature  Note: Note the assignmen max. permissible operatin perature to the max. perm		- Permissible ambient temperature	temperature class T4; -40 +60 °C (-40 +140 °F) temperature class T6		
	operating pressure of the respec- tive flange connection!	- Connection	To circuits with values: $U_H = 10.5 \dots 45 \text{ V DC}$		

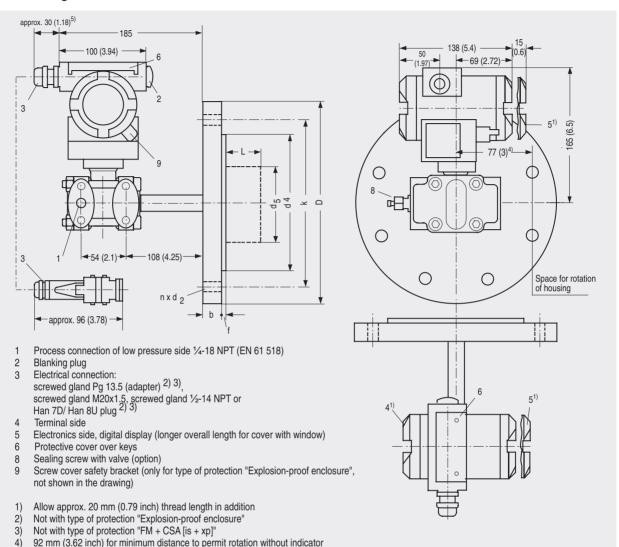
DS III series for level

# SITRANS P measuring instruments for pressure Transmitters for pressure, absolute pressure, differential pressure, flow and level

Dust explosion protection for zone 20	PTB 01 ATEX 2055	Mounting flange	
	Ev. II 1 D IDOS T 100 90	Nom. diam.	Nom. press.
- Identification	Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C	• To EN 1092-1	
- Permissible ambient temperatu-	-40 +85 °C (-40 +185 °F)	- DN 80	PN 40
re		- DN 100	PN 16
- Max.surface temperature	120 °C (248 °F)		PN 40
- Connection	To certified intrinsically-safe cir-	• To ASME B16.5	
	cuits with maximum values: $U_i = 30 \text{ V}, I_i = 100 \text{ mA},$ $P_i = 750 \text{ mW}, P_i = 300 \Omega$	- 3 inch	class 150 class 300
- Effective internal inductance/ca- pacitance	$L_{\rm i} = 0.4  {\rm mH},  C_{\rm i} = 6  {\rm nF}$	- 4 inch	class 150 class 300
• Dust explosion protection for zone 21/22	PTB 01 ATEX 2055		
- Identification	Ex II 2 D IP65 T 120 °C		
- Connection	To circuits with values: $U_H = 10.5 45 \text{ V DC};$ $P_{\text{max}} = 1.2 \text{ W}$		
• Type of protection "n" (zone 2)	TÜV 01 ATEX 1696 X		
- Identification	Ex II 3 G EEx nA L IIC T4/T5/T6		
• Explosion protection to FM	Certificate of Compliance 3008490		
- Identification (XP/DIP) or (IS); (NI)	CL I, DIV 1, GP ABCD T4T6; CL II, DIV 1, GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4T6; CL I, DIV 2, GP ABCD T4T6; 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 T4T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4T6; CL I, DIV 2, GP ABCD T4T6; CL II, DIV 2, GP FG; CL III		

#### **DS III series for level**

#### Dimensional drawings



SITRANS P pressure transmitters, DS III series for level, including mounting flange, dimensional drawing, dimensions in mm (inch)

Approx. 45 mm (1.77 inch) for Pg 13.5 with adapter

#### Connection to EN 1092-1

Nom. diam.	Nom. press.	b	D	d	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub>	f	k	n	L
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
DN 80	PN 40	24	200	90	18	138	76	72 <sup>1)</sup>	2	160	8	0, 50, 100,
DN 100	PN 40	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

Nom. diam.	Nom. press.	b	D	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub>	f	k	n	L
	lb/sq.in.	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)		inch (mm)
3 inch	150	0.94 (23.8)	7.5 (190.5)	0.75 (19.0)	5 (127)	3 (76)	2.81 <sup>1)</sup> (72)	0.06 (1.6)	6 (152.4)	4	0, 2, 3.94, 5.94 or 7.87
	300	1.12 (28.6)	8.25 (209.5)	0.87 (22.2)	5 (127)	3 (76)	2.81 <sup>1)</sup> (72)	0.06 (1.6)	6.69 (168.3)	8	- (0, 50, 100, 150 or 200)
4 inch	150	0.94 (23.8)	9 (228.5)	0.75 (19.0)	6,19 (157.2)	3.69 (94)	3.5 (89)	0.06 (1.6)	7.5 (190.5)	8	_
	300	1.25 (31.7)	10 (254)	0.87 (22.2)	6,19 (157.2)	3.69 (94)	3.5 (89)	0.06 (1.6)	7.88 (200)	8	_

d: Internal diameter of gasket to DIN 2690 d<sub>M</sub>: Effective diaphragm diameter

<sup>1) 89</sup> mm =  $3\frac{1}{2}$  inch with tube length L = 0.

#### **DS III series for level**

Selection and Orderi	ng data	Orde	er No.	
SITRANS P pressure	transmitters, DS III series	7 M F	463	3 -
<b>for level</b> 2-wire system			/ <b></b>	
Measuring cell filling	Measuring cell cleaning			
Measuring ceil miling Silicone oil	Standard	1		
	Otaridard			
Measured span 25 250 mbar	(0.363 3.63 psi)	D		
25 600 mbar	(0.363 8.70 psi)	E		
53 1600 mbar	(0.77 23.2 psi)	F		
0.16 5 bar	(2.32 72.5 psi)	G		
		_ ~		
	of low-pressure side  IPT with flange connection			
<ul> <li>Mounting thread M1</li> </ul>	<u> </u>		0	
	<sub>3</sub> -20 UNF to EN 61518		2	
		-	-	
Non-wetted parts ma				
Process flange screw				
Stainless steel	Die-cast aluminium		2	
Stainless steel	Stainless steel precision		3	
	casting			
Design				
Standard design				1
<ul> <li>International version documentation in 5</li> </ul>	, English label inscriptions,			2
Explosion protection	1			
• without				Α
with ATEX, Type of p     "Intrinsic sefety (FI)				В
<ul><li>- "Intrinsic safety (El</li><li>- "Explosion-proof (El</li></ul>				D
"Intrincic cafety and	d explosion proof analysure			P
(EEx ia + EEx d)"	d explosion-proof enclosure			-
- "n (zone 2)"				Е
	plosion-proof enclosure and			R
	tection (EEx ia + EEx d +			
zone 1D/2D)" 2)				
<ul> <li>with FM + CSA, Type</li> </ul>				
<ul> <li>"Intrinsic safety and</li> </ul>	d explosion-proof (is + xp)" 1)			NC
Electrical connection	n / cable inlet			
<ul> <li>Screwed gland Pg 1</li> </ul>				Α
<ul> <li>Screwed gland M20</li> </ul>				В
<ul> <li>Screwed gland ½-1.</li> </ul>				С
Han 7D plug (plastic	c housing) incl. mating			D
Display				
	ator hidden, setting: mA)			1
with visible digital in				6
with customer-speci	fic digital indicator (setting code "Y21" required)			7
as specified Urder	code tzi redulred)			

Ordering information:

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

#### Example of ordering:

Item line 1: 7MF4633-1EY20-1AA1-Z

Y01: 80 to 143 mbar (1.16 to 2.1 psi)

7MF4912-3GE01

Power supply units see "SITRANS I power supply units and input isola-

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) Without cable gland, with blanking plug
- 2) With enclosed cable gland EEx ia and blanking plug
- 3) Not together with type of protection "Explosion-proof"

Further designs	Order code
Please add "-Z" to Order No. and specify Order code.	
O-rings for process flanges (instead of FPM (Viton))  PTFE (Teflon)  FEP (with silicone core, approved for food)  FFPM (Kalrez, compound 4079)  NBR (Buna N)	A20 A21 A22 A23
Plug • Han 7D (metal, gray) • Han 8U (instead of Han 7D)	A30 A31
Sealing screws 1/4-18 NPT, with valve in material of process flanges	A40
Rating plate inscription (instead of German)  English French Spanish Italian	B11 B12 B13 B14
English rating plate Pressure units in inH <sub>2</sub> O or psi	B21
Manufacturer's test certificate M (calibration certificate) to DIN 55350, Part 18 and to ISO 8402	C11
Acceptance test certificate B to EN 10204-3.1.B	C12
Factory certificate to EN 10204-2.2	C14
Certificate "Functional Safety (SIL)"	C20
Setting of upper limit of output signal to 22.0 mA	D05
Type of protection IP68 (not together with Han 7D / Han 8U plug, Pg 13.5 screwed gland)	D12
Use in or at zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)"	E01
Use at zone 0 (only together with type of protection "Intrinsic safety (EEx ia)"	E02
Overfilling safety device for flammable and non-flammable liquids	E08
(max. PN 32, only together with type of protection "Intrinsic safety (EEx ia)"), to WHG and VbF	
Interchanging of process connection side	H01

#### **DS III series for level**

Further designs	Order code
Please add "-Z" to Order No. and specify Order code.	
Additional data	•
Measuring range to be set specify in plain text: Y01: up to mbar, bar, kPa, MPa, psi	Y01
Measuring point number/identification max. 16 characters, specify in plain text: Y15:	Y15
Measuring point text max. 27 characters, specify in plain text: Y16:	Y16
Entry of HART address (TAG) max. 8 characters, specify in plain text: Y17:	Y17
Setting of pressure indicator in pressure units specify in plain text (standard setting: mA): Y21: mbar, bar, kPa, MPa, psi,	Y21
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> , mA, Torr, ATM or % *) Reference temperature 20 °C	
Setting of pressure indicator in non-pressure units specify in plain text: Y22: up to I/min, m³/h, m, USgpm, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	Y22 <sup>1)</sup> + Y01
Only the settings for "Y01" "Y21" "Y22" and "D05" can be a	mada in tha

Only the settings for "Y01", "Y21", "Y22" and "D05" can be made in the

1) Not together with over-filling safety device for flammable and non-flammable liquids (Order code "E08")

Selection and Or	dering data	Order No. Ord. code
Mounting flange		7 M F 4 9 1 2 -
directly fitted to pr SITRANS P (conve for DS III series	3	
Connection to EN	N 1092-1	
Nom. diam.	Nom. press.	
DN 80	PN 40	D
DN 100	PN 16	G
	PN 40	Н
Connection to AS	SME B16.5	
Nom. diam.	Nom. press.	
3 inch	Class 150	Q
	Class 300	R
4 inch	Class 150	T
	Class 300	U
Other version Add Order code a Nominal diameter	and plain text: :; Nominal pressure:	Z J 1 Y

Selection and Ord	dering data	Order No	o. Ord. code
Mounting flange		7MF49	12-
directly fitted to pre SITRANS P (conve for DS III series		3	
• Stainless steel 3 - Coated with PF - Coated with PT - Coated with EC • Monel 400, mat. • Hastelloy B2, ma • Hastelloy C276, • Hastelloy C4, ma • Tantalum	16L (A 1) FE 1) CTFE 1) No. 2.4360 It. No. 2.4617 mat. No. 2.4819	A D E 0 F G H J U K	
Other version Add Order code a Wetted parts mate Sealing face, see	rials:	Z	K 1 Y
Tube length			
<ul> <li>without</li> <li>50 mm</li> <li>100 mm</li> <li>150 mm</li> <li>200 mm</li> <li>Other version:</li> <li>Add Order code at Tube length:</li> </ul>	(1.97 inch) (3.94 inch) (5.90 inch) (7.87 inch) and plain text:	0 1 2 3 4 9	L1Y
Filling liquid  Silicone oil M5  Silicone oil M50  High-temperatur  Halocarbon oil (f  Vegetable  Glycerin / water <sup>2</sup>	or O <sub>2</sub> measurements)	1 2 3 4 5 6	
Other version Add Order code a Filling liquid:	nd plain text:	9	M 1 Y

Ordering example see previous page

- 1) For vacuum on request
- 2) Not suitable for use in low-pressure range

Further designs	Order code
Please add "-Z" to Order No. and specify Order code.	
Spark arrestor for mounting on zone 0 (including documentation)	A01
Manufacturer's test certificate M to DIN 55.350, Part 18 and to ISO 8402	C11
Acceptance test certificate B to EN 10 204-3.1B	C12
Vacuum-proof design (for use in low-pressure range)	V04
Calculation of span of associated pressure transmitter	Y05
(enclose filled-in questionnaire with order) Note: Suffix "Y01" required with pressure transmitter	