Design

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

DS III, DS III PA and DS III FF series Technical description

Pressure transmitter for gauge pressure

- Measured variable: Gauge pressure of aggressive and nonaggressive gases, vapors and liquids.
- Span (infinitely adjustable) for DS III HART: 0.01 bar to 700 bar (0.15 psi to 10153 psi)
 Nominal measuring range
- for DS III PA and FF: 1 bar to 700 bar (14.5 psi to 10153 psi)

Pressure transmitters for absolute pressure

- Measured variable: Absolute pressure of aggressive and nonaggressive gases, vapors and liquids.
- Span (infinitely adjustable) for DS III HART: 8.3 mbar a ... 100 bar a (0.12 ... 1450 psi a)
- Nominal measuring range for DS III PA and FF: 250 mbar a ... 100 bar a (3.63 ... 1450 psi a)
- There are two series:
- Gauge pressure series
- Differential pressure series

Pressure transmitters for differential pressure and flow

- Measured variables:
 - Differential pressure
 - Small positive or negative pressure
 - Flow q ~ $\sqrt{\Delta p}$ (together with a primary differential pressure device (see Chapter "Flow Meters"))
- Span (infinitely adjustable) for DS III HART: 1 mbar ... 30 bar (0.0145 ... 435 psi)
- Nominal measuring range for DS III PA and FF: 20 mbar ... 30 bar (0.29 ... 435 psi)

Pressure transmitters for level

- Measured variable: Level of aggressive and non-aggressive liquids in open and closed vessels.
- Span (infinitely adjustable) for DS III HART: 25 mbar ... 5 bar (0.363 ... 72.5 psi)
- Nominal measuring range for DS III PA and FF: 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 lowerpressure connection has to be connected to the container in order to compensate the static pressure.

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



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 prevented 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), which hides the input keys.

Example for an attached measuring point label

Y15 = max. 16 char. Y99 = max. 10 char.	mbar t number (TAG No.) 1234 ng point text
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DS III, DS III PA and DS III FF series Technical description

Function

Operation of the electronics with HART communication



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

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).

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 ≥ 160 bar compared to vacuum.

Operation of the electronics with PROFIBUS PA communication



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 the microcontroller, its linearity and temperature response corrected, and provided on the PROFIBUS PA through an electrically isolated PA interface (7).

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

Using the three input 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).

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

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

DS III, DS III PA and DS III FF series **Technical description**

Mode of operation of the FOUNDATION Fieldbus 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 the microcontroller, its linearity and temperature response corrected, and provided on the FOUNDATION Fieldbus through an electrically isolated FOUNDATION Fieldbus Interface (7)

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

Using the three input 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).

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

Mode of operation of the measuring cells





Measuring cell for gauge pressure, function diagram

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

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



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

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

Measuring cell for absolute pressure from gauge pressure series



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

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

Measuring cell for absolute pressure from differential pressure series



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

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

The difference in pressure between the input pressure pe 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.



DS III, DS III PA and DS III FF series

Technical description

Measuring cell for differential pressure and flow, function diagram

Measuring cell for differential pressure and flow

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

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

An overload diaphragm is installed to provide protection from overloads. If the measuring limits are exceeded, the overload diaphragm (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 level



Measuring cell for level, function diagram

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

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

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

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

DS III. DS III PA and DS III FF series **Technical description**

Parameterization DS III

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

Parameterization using the input 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



Communication between a HART communicator and a pressure transm.

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 transmitter

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

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

Adjustable parameters, DS III HART

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

1) Cancel apart from write protection

2) Only differential pressure

Diagnostic functions for DS III HART

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

Available physical units of display for DS III HART

Table style: Technical specifications 2

Physical variable	Physical dimensions
Pressure (setting can also be made in the factory)	Pa, MPa, kPa, bar, mbar, torr, atm, psi, g/cm², kg/cm², inH₂O, inH₂O (4 °C), mmH₂O, ftH₂O (20 °C), inHg, mmHg
Level (height data)	m, cm, mm, ft, in
Volume	m ³ , dm ³ , hl, yd ³ , ft ³ , in ³ , US gallon, Imp. gallon, bushel, barrel, barrel liquid
Mass	g, kg, t, lb, Ston, Lton, oz
Volume flow	m ³ /d, m ³ /h, m ³ /s, l/min, l/s, ft ³ /d, ft ³ /min, ft ³ /s, US gallon/min, US gallon/s
Mass flow	t/d, t/h, t/min, kg/d, kg/h, kg/min, kg/s, g/d, g/h, g/min, g/s, lb/d, lb/h, lb/min, lb/s, LTon/d, LTon/h, STon/d, STon/h, STon/min
Temperature	K, °C, °F, °R
Miscellaneous	%, mA
	DDOFIDUR DA interface

Parameterization through PROFIBUS PA interface

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

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

Parameterization through FOUNDATION Fieldbus Interface

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

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

Adjustable parameters for DS III PA and FF

Parameters	Input keys (DS III HART)	PROFIBUS PA and FOUNDATION Fieldbus interface
Electrical damping	x	х
Zero adjustment (correction of position)	x	x
Key and/or function disabling	x	х
Source of measured-value display	х	x
Physical dimension of display	x	х
Position of decimal point	x	х
Bus address	x	х
Adjustment of characteristic	x	х
Input of characteristic		х
Freely-programmable LCD		х
Diagnostics functions		х

DS III, DS III PA and DS III FF series Technical description

Diagnostic functions for DS III PA and FF

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

Physical dimensions available for the display

Physical variable	Physical dimensions
Pressure (setting can also be made in the factory)	MPa, kPa, Pa, bar, mbar, torr, atm, psi, g/cm ² , kg/cm ² , mmH ₂ O, mmH ₂ O (4 °C), inH ₂ O, inH ₂ O (4 °C), ftH ₂ O (20 °C), mmHg, inHg
Level (height data)	m, cm, mm, ft, in, yd
Volume	m ³ , dm ³ , hl, yd ³ , ft ³ , in ³ , US gallon, Imp. gallon, bushel, barrel, barrel liquid
Volume flow	m³/s, m³/min, m³/h, m³/d, l/s, l/min, l/h, l/ d, Ml/d, ft³/s, ft³/min, ft³/h, ft³/d, US gal- lon/s, US gallon/min, US gallon/h, US gal- lon/d, bbl/s, bbl/min, bbl/h, bbl/d
Mass flow	g/s, g/min, g/h, g/d, kg/s, kg/min, kg/h, kg/d, t/s, t/min, t/h, /t/d, lb/s, lb/min, lb/h, lb/d, STon/s, STon/min, STon/h, STon/d, LTon/s, LTon/min, LTon/h, LTon/d
Total mass flow	t, kg, g, lb, oz, LTon, STon
Temperature	K, °C, °F, °R
Miscellaneous	%

DS III series for gauge pressure

Technical specifications

SITRANS P, DS III series for gauge pressure

	HART		PROFIBUS PA or FOL	INDATION Fieldbus	
Input					
Measured variable	Gauge pressure				
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span	Max. perm. test pres- sure	Nominal measuring range	Max. perm. test pres- sure	
max. permissible lest pressure	0.01 1 bar g (0.15 14.5 psi g)	6 bar g (87 psi g)	1 bar g (14.5 psi g)	6 bar g (87 psi g)	
	0.04 4 bar g (0.58 58 psi g)	10 bar g (145 psi g)	4 bar g (58 psi g)	10 bar g (145 psi g)	
	0.16 16 bar g (2.23 232 psi g)	32 bar g (464 psi g)	16 bar g (232 psi g)	32 bar g (464 psi g)	
	0.6 63 bar g (9.14 914 psi g)	100 bar g (1450 psi g)	63 bar g (914 psi g)	100 bar g (1450 psi g)	
	1.6 160 bar g (23.2 2320 psi g)	250 bar g (3626 psi g)	160 bar g (2320 psi g)	250 bar g (3626 psi g)	
	4.0 400 bar g (58 5802 psi g)	600 bar g (8700 psi g)	400 bar g (5802 psi g)	600 bar g (8700 psi g)	
	7.0 700 bar g (102 10153 psi g)	800 bar g (11603 psi g)	700 bar g (10153 psi g)	800 bar g (11603 psi g)	
Lower measuring limit					
 Measuring cell with silicone oil filling 	30 mbar a (0.435 psi a)				
 Measuring cell with inert filling liquid 	30 mbar a (0.435 psi a)				
Upper measuring limit	100% of max. span (ma	ax. 160 bar g (2320 psi g)	with oxygen measureme	nt and inert liquid)	
Output					
Output signal	4 20 mA		Digital PROFIBUS PA or FOUNDATION Fieldbox		
 Lower limit (infinitely adjustable) 	3.55 mA, factory preset	to 3.84 mA	-		
Upper limit (infinitely adjustable)	23 mA, factory preset to to 22.0 mA	20.5 mA or optionally set	-		
Load					
Without HART communication	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.023$ $U_{\rm H}$: Power supply in V	3 A in Ω,	-		
With HART communication	$R_{\rm B}$ = 230 500 Ω (SIM $R_{\rm B}$ = 230 1100 Ω (HA		-		
Physical bus	-		IEC 61158-2		
Protection against polarity reversal	Protected against short supply voltage.	-circuit and polarity revers	al. Each connection aga	inst the other with max.	
Accuracy	To EN 60770-1				
Reference conditions (All error data refer always refer to the set span)		c, start-of-scale value 0 ba C (77 °F)) r: Span ratio (r =		aphragm, silicone oil filling	
Error in measurement and fixed-point setting (including hysteresis and repeatability)	9				
Linear characteristic			≤ 0,075 %		
- r ≤ 10	≤ (0.0029 · r + 0.071) %)			
- 10 < r ≤ 30	≤ (0.0045 · r + 0.071) %)			
- 30 < r ≤ 100	≤ (0.005 · r + 0.05) %				
Long-term drift (temperature change ±30 °C (±54 °F))	S ≤ (0.25 · r) % every 5 ye	ears	≤ 0.25 % every 5 years	5	
Influence of ambient temperature					
• at -10 +60 °C (14 140 °F)	\leq (0.08 · r + 0.1) % (at 700 bar: \leq (0.1 · r + 0.2) %) \leq 0,3 %				
• at -4010 °C and +60 +85 °C	≤ (0.1 · r + 0.15) %/10 K ≤ 0.25 %/10 K				
(-40 +14 °F and 140 185 °F) Measured Value Resolution			3 · 10 ⁻⁵ of nominal mea		

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

DS III series for gauge pressure

SITRANS P, DS III series for gauge pressu	HART	PROFIBUS PA or FOUNDATION Fieldbus
Rated operating conditions		
Degree of protection (to EN 60529)	IP65	
Process temperature		
Measuring cell with silicone oil filling	-40 +100 °C (-40 +212 °F)	
Measuring cell with inert filling liquid	-20 +100 °C (-4 +212 °F)	
 In conjunction with dust explosion protec- tion 	-20 +60 °C (-4 +140 °F)	
Ambient conditions		
Ambient temperature		
- Digital indicators	-30 +85 °C (-22 +185 °F)	
Storage temperature	-50 +85 °C (-58 +185 °F)	
Climatic class	-50 +65 (-56 +165 1)	
	Pormissible	
- Condensation	Permissible	
 Electromagnetic compatibility Emitted interference and interference immunity 	To EN 61326 and NAMUR NE 21	
Design		
Weight (without options)	$\approx 1.5 \text{ kg} (\approx 3.3 \text{ lb})$	ar staiplass stack provision assting mot. No. 1.44
Housing material	Poor in copper die-cast auminium, GD-AISIT2	or stainless steel precision casting, mat. No. 1.44
Wetted parts materials		
Connection shank	Stainless steel, mat. No. 1.4404/316L or Haste	aloy C4, mai. No. 2.4610
Oval flange	Stainless steel, mat. No. 1.4404/316L	llev 0070 met No. 0.4010
Seal diaphragm	Stainless steel, mat. No. 1.4404/316L or Haste	
Measuring cell filling	Silicone oil or inert filling liquid (max. 160 bar (
Process connection	Connection shank G ¹ / ₂ B to DIN EN 837-1, fema (MWP 2320 psi g)) to DIN 19213 with mounting	g thread M10 or $^{7}/_{16}$ -20 UNF to EN 61518
Material of the mounting bracket		
• Steel	Sheet steel, Mat. No. 1.0330, chrome-plated	
Stainless steel	Stainless steel, Mat. No. 1.4301 (SS304)	
Power supply $U_{\rm H}$		Supplied through bus
Terminal voltage on transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically-safe mode	
Separate 24 V power supply necessary	-	No
Bus voltage		1
• Not Ex	-	932 V
 With intrinsically-safe operation 	-	924 V
Current consumption		
Basic current (max.)	-	12.5 mA
 Startup current ≤ basic current 	-	Yes
Max. current in event of fault	_	15.5 mA
Fault disconnection electronics (FDE) avail-	_	Yes
able		

DS III series for gauge pressure

SITRANS P, DS III series for gauge pressure	HART	PROFIBUS PA or FOUNDATION Fieldbus	
Outifients and summaries		PROFIDUS PA OF FOONDATION FIEldbus	
Certificate and approvals			
Classification according to pressure equip- ment directive (DRGL 97/23/EC)	For gases of fluid group 1 and liquids of fluid gro graph 3 (sound engineering practice)	up 1; complies with requirements of Article 3, para-	
Explosion protection			
Intrinsic safety "i"	PTB 99 ATEX 2122		
- Identification	Ex II 1/2 G EEx ia/ib IIB/IIC T6		
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperature class -40 +70 °C (-40 +158 °F) temperature class -40 +60 °C (-40 +140 °F) temperature class	T5;	
- Connection	To certified intrinsically-safe circuits with maximum values: $U_i = 30 V, \ l_i = 100 \text{ mA}, \ P_i = 750 \text{ mW}; \ R_i = 300 \Omega$	FISCO supply unit: $U_0 = 17.5$ V, $I_0 = 380$ mA, $P_0 = 5.32$ W Linear barrier: $U_0 = 24$ V, $I_0 = 250$ mA, $P_0 = 1.2$ W	
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{\rm i} = 7 \mu {\rm H}, C_{\rm i} = 1.1 {\rm nF}$	
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 -40 +60 °C (-40 +140 °F) temperature class		
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC	To circuits with values: $U_{\rm H}$ = 9 32 V DC	
Dust explosion protection for zone 20	PTB 01 ATEX 2055		
- Identification	Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C		
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F)		
- Max.surface temperature	120 °C (248 °F)		
- Connection	To certified intrinsically-safe circuits with maximum values: $U_i = 30 \text{ V}, \ I_i = 100 \text{ mA},$ $P_i = 750 \text{ mW}, \ R_i = 300 \Omega$	FISCO supply unit: $U_0 = 17.5$ V, $I_0 = 380$ mA, $P_0 = 5.32$ W Linear barrier: $U_0 = 24$ V, $I_0 = 250$ mA, $P_0 = 1.2$ W	
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 \rm mH, C_{\rm i} = 6 \rm nF$	$L_{\rm i} = 7 \mu {\rm H}, C_{\rm i} = 1.1 {\rm nF}$	
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 45 V DC; $P_{\rm max}$ = 1.2 W	To circuits with values: $U_{\rm H}$ = 9 32 V DC; $P_{\rm max}$ = 1.2 W	
 Type of protection "n" (zone 2) 	TÜV 01 ATEX 1696 X	Planned	
- 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 E DIV 2, GP ABCD T4T6; CL II, DIV 2, GP FG; CL		
 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 EI T4T6; CL II, DIV 2, GP FG; CL III	FG; CL III; Ex ia IIC T4T6; CL I, DIV 2, GP ABCD	

Transmitters for gauge, absolute and differential pressure, flow and level DS III series

			for gauge pressure
HART communication		Communication FOUNDATION	
HART communication	230 1100 Ω	Fieldbus	
Protocol	HART Version 5.x	Function blocks	3 function blocks analog input, 1 function block PID
Software for computer	SIMATIC PDM	 Analog input 	
PROFIBUS PA communication Simultaneous communication with	4	 Adaptation to customer-specif- ic process variables 	Yes, linearly rising or falling char- acteristic
master class 2 (max.)		- Electrical damping T ₆₃ ,	0 100 s
The address can be set using	Configuration tool or local opera- tion (standard setting address 126)	adjustable - Simulation function	Output/input (can be locked within the device with a bridge)
Cyclic data usage		- Failure mode	Can be parameterized (last good
Output byte	5 (one measuring value) or 10 (two measuring values)		value, substitute value, incorrect value)
Input byte	0, 1, or 2 (register operating mode and reset function for metering)	- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respec- tively
Internal preprocessing		- Square-rooted characteristic	Yes
Device profile	PROFIBUS PA Profile for Process Control Devices Version 3.0,	for flow measurement	100
	Class B	• PID	Standard FF function block
Function blocks	2	 Physical block 	1 Resource block
 Analog input 		Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block
 Adaptation to customer- specific process variables 	Yes, linearly rising or falling char- acteristic		LCD
- Electrical damping T ₆₃ ,	0 100 s	Pressure transducer block Organize a stillbast of the second bin second secon	N
adjustable	land 10 days	 Can be calibrated by applying two pressures 	Yes
- Simulation function	Input /Output	- Monitoring of sensor limits	Yes
- Failure mode	Can be parameterized (last good value, substitute value, incorrect value)	 Simulation function: Measured pressure value, sensor temper- ature and electronics tempera- 	Constant value or over para- meterizable ramp function
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respec- tively	ture	
Register (totalizer)	Can be reset, preset, optional direction of counting, simulation function of register output		
- Failure mode	Can be parameterized (summation with last good value, continuous summation, summation with incor- rect value)		
- Limit monitoring	One upper and lower warning limit and one alarm limit respectively		
 Physical block 	1		
Transducer blocks	2		
 Pressure transducer block 			
 Can be calibrated by applying two pressures 	Yes		
- Monitoring of sensor limits	Yes		
 Specification of a container characteristic with 	Max. 30 nodes		
 Square-rooted characteristic for flow measurement 	Yes		
 Gradual volume suppression and implementation point of square-root extraction 	Parameterizable		
 Simulation function for mea- sured pressure value and sen- sor temperature 	Constant value or over para- meterizable ramp function		

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

F

DS III series

for gauge pressure

Selection and Ordering	g data		0	rde	r No).	
SITRANS P pressure transmitters for gauge			7 M F 4 0 3 3 -				
pressure, series DS III	HART			- 11	- 11	- 1	
Measuring cell filling	Measuring cell cleaning						
Silicone oil Inert liquid ¹⁾	Standard Grease-free	►	1 3				
Span							
0.01 1 bar g	(0.15 14.5 psi g)			в			
0.04 4 bar g	(0.58 58 psi g)			č			
0.16 16 bar g	(2.32 232 psi g)			D			
0.63 63 bar g	(9.14 914 psi g)			E			
1.6 160 bar g	(23.2 2320 psi g)			F			
4.0 400 bar g	(58.0 5802 psi g)			G			
7,0 700 bar g	(102.010153 psi g)	►		J			
Wetted parts materials	1						
Seal diaphragm	Process connection						
Stainless steel	Stainless steel			Α			
Hastelloy	Stainless steel			в			
Hastelloy	Hastelloy			С			
Version as diaphragm s	eal ^{2) 3)}			Y			
Process connection							
 Connection shank G¹/2 	B to EN 837-1	►			0		
 Female thread ½-14 N 					1		
 Oval flange made of s 							
 Mounting thread ⁷/₁₆ 					2		
 Mounting thread M10 					3		
- Mounting thread M1					4		
Male thread M20 x 1,5					5		
Male thread ½-14 NPT					6		
Non-wetted parts mate							
 Housing made of die- Housing stainless stee 					0 3		
	er precision casting '				3		
Version							
Standard version	Teelish John Linearisticse					1	
documentation in 5 lar	English label inscriptions nguages on CD	,				2	
Explosion protection							
Without							A
 With ATEX, Type of pro - "Intrinsic safety (EEx) 							в
- "Explosion-proof (EE							D
	explosion-proof enclosure	۵					P
(EEx ia + EEx d)"6)		0					
- "Ex nA/nL (zone 2)"							E
 "Intrinsic safety, explo dust explosion prote Zone 1D/2D)"⁶⁾ 	osion-proof enclosure and ction (EEx ia + EEx d +	d 🕨					R
• With FM + CSA, Type	of protection:						
- "Intrinsic safety and							NC
(is + xp) ^{"5)}							
Electrical connection /							
 Screwed gland Pg 13. 							Α
Screwed gland M20x1							В
Screwed gland ¹ / ₂ -14 N							C
 Han 7D plug (plastic h connector⁷⁾ 	iousing) incl. mating						D
	(8)						

Selection and Ordering data	Order No.
SITRANS P pressure transmitters for gauge	7 M F 4 0 3 3 -
pressure, series DS III HART	
Display	
Without indicator	0
 Without visible digital indicator (digital indicator hidden, setting: mA) 	1
With visible digital indicator, setting: mA	6
 with customer-specific digital indicator (setting as specified, Order code "Y21" or "Y22" required) 	7
Available ex stock	

Power supply units see "SITRANS I power supply units and isolation amplifiers".

Factory-mounting of shut-off values and value manifolds see page 2/147.

- Included in delivery of the device:
- Brief instructions (Leporello)
- CD-ROM with detailed documentation
- ¹⁾ For oxygen application, add Order code E10.
- ²⁾ When the manufacture's certificate M (calibration certificate) has to be ordered for transmitters with diaphragm seals, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.
- ³⁾ Whe the acceptance test certificate 3.1 for transmitters with direct-connected diaphragm seals is ordered, this certificate must also be ordered with the corresponding seals.
- ⁴⁾ Not together with Electrical connection "Screwed gland Pg 13.5" and "Han7D plug".
- ⁵⁾ Without cable gland, with blanking plug
- ⁶⁾ With enclosed cable gland EEx ia and blanking plug
- 7) Not together with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".
- ⁸⁾ M12 delivered without cable socketsafety and explosion-proof

M12 connector (metal)⁸⁾

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

DS III series or <u>gauge pressure</u>

6

7

Selection and Orderin	-	Orde	er No.	
SITRANS P pressure t pressure	ransmitters for gauge			
DS III PA (PROFIBUS F	A) series	7 M E	403	1 -
DS III FF series (FOUN			403	-
DS III FF Series (FOON	IDATION FIEldbus)			5.
	M		-	
Measuring cell filling	Measuring cell cleaning			
Silicone oil	Standard	1		
Inert liquid ¹⁾	Grease-free	3		
Nominal measuring ra	-			
1 bar g 4 bar g	(14.5 psi g) (58 psi g)	B		
16 bar g	(232 psi g)	D		
63 bar g	(914 psi g)	E		
160 bar g	(2320 psi g)	F		
400 bar g	(5802 psi g)	G		
700 bar g	(10153 psi g)	J		
Wetted parts materials				
Seal diaphragm	Process connection			
Stainless steel Hastelloy	Stainless steel Stainless steel	AB		
Hastelloy	Hastelloy	c		
Version as diaphragm s		Ŷ		
Process connection		-		
Connection shank G ¹ / ₂	2B to EN 837-1		0	
• Female thread 1/2-14 N			1	
Oval flange made of s Mounting throad 7/	stainless steel 3-20 UNF to EN 61518		2	
- Mounting thread M1	-		3	
 Mounting thread M1 			4	
• Male thread M20 x 1,5			5	
Male thread ½-14 NP	Γ	_	6	
Non-wetted parts mate				
Housing made of die-			0	
Housing stainless stee	er precision casting	-	3	
VersionStandard version				1
	English label inscriptions,			2
documentation in 5 la				
Explosion protection				
Without	ata ati a a			A
 With ATEX, Type of pro- "Intrinsic safety (EEx 				в
- "Explosion-proof (EE				D
- "Intrinsic safety and	explosion-proof enclosure			Р
$(EEx ia + EEx d)^{(5)}$				-
 "Ex nA/nL (zone 2)" "Intrinsic safety expl 	osion-proof enclosure and			E R
dust explosion prote	ection (EEx ia + EEx d +			
Zone 1D/2D)" ^{o)} (not	for DS III FF)			
 With FM + CSA, Type "Intrinsic safety and 				NC
(is + xp) ^{#5)}				NO
Electrical connection	cable entry			
Screwed gland M20x ⁻	1.5			в
Screwed gland ¹ / ₂ -14	NPT			C
 Plug M12 (metal)⁶⁾ 				F

tor g	auge pressure
Selection and Ordering data	Order No.
SITRANS P pressure transmitters for gauge pressure	
DS III PA (PROFIBUS PA) series	7 M F 4 0 3 4 -
DS III FF series (FOUNDATION Fieldbus)	7 M F 4 0 3 5 -
Display	
Without indicator	0
• Without visible digital indicator (digital indicator >	1

- hidden, setting: mA)With visible digital indicator
- With customer-specific digital indicator (setting as specified, Order code "Y21" or required)

Factory-mounting of shut-off valves and valve manifolds see page 2/147.

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

- ¹⁾ For oxygen application, add Order code E10.
- ²⁾ When the manufacture's certificate M (calibration certificate) has to be ordered for transmitters with diaphragm seals, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the <u>total</u> combination is certified here.
- 3) Whe the acceptance test certificate 3.1 for transmitters with direct-connected diaphragm seals is ordered, this certificate must also be ordered with the corresponding seals.
- ⁴⁾ Without cable gland, with blanking plug.
- ⁵⁾ With enclosed cable gland EEx ia and blanking plug.
- 6) M12 delivered without cable socket

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

DS III series for gauge pressure

Selection and Order index of the selection of the selection and specify Order code.HARTPAFFFurther designs Add '-Z' to Order No. and specify Order code.HARTPAFFPressure transmitter with mounting bracket made of:A01✓✓✓SteelA01✓✓✓✓Stainless steelA02✓✓✓✓PlugA30✓✓✓✓✓Han 7D (metal, gray)A30✓✓✓✓Han 7D (metal, gray)A31✓✓✓✓Cable sockets for M12 connectors (metal)A50✓✓✓Instead of German)B11✓✓✓✓• EnglishB11✓✓✓✓✓• SpanishB13✓✓✓✓✓• SpanishB13✓✓✓✓✓• ItalianB14✓✓✓✓✓Pressure units in inH20 or psiCullity inspection certificate (Factory cali- to EN 10204-3.1C14✓✓✓Factory certificateC14✓✓✓✓✓Setting of upper limit of output signal to 2.0 and 2.0 and Manufacturer's declaration acc. to NACED07✓✓Vigot of protection IP68 (only for M201.5 and ½-14 NPT)D12✓✓✓Digital indicator alongside the input keys of oval flangeD37✓✓✓(only together with type of protectio	Selection and Ordenics data	Order	aada		
Add "-Z" to Order No. and specify Order code.Image: No. and specify Order code.Pressure transmitter with mounting bracket made of:A01✓✓SteelA02✓✓✓Stainless steelA02✓✓✓PlugA30✓✓✓✓Han 7D (metal, gray)A30✓✓✓✓Fating plate inscription (instead of German)B11✓✓✓• EnglishB11✓✓✓✓• SpanishB13✓✓✓✓• ItalianB14✓✓✓✓Pressure units in inH ₂ O or psiClait✓✓✓Ouality inspection certificate (Factory cali- to EN 10204-3.1C14✓✓✓Factory certificateC10✓✓✓✓PROFIsafe" certificate and protocol C21C21✓✓✓Setting of upper limit of output signal to 2.0 mAD05✓✓✓Only together with the devices 7MF4033- (only together with the devices 7MF4033- (only together with type of protection "Intrinsic safety (EEx ia)"D37✓✓✓Ouspection cert (Grachy C140 °F) to col drageE10✓✓✓✓Ing upper limit of output signal to cal on an ozone 10/2D (only together with type of protection "Intrinsic safety (EEx ia)"C14✓✓✓Ouspective with type of protection "Intrinsic safety (EEx ia)"D37✓✓✓ <th></th> <th>Order</th> <th></th> <th>D٨</th> <th>CC</th>		Order		D٨	CC
bracket made of: Image: Steel A01 Image: Steel Stainless steel A02 Image: Steel Image			HANI	FA	FF
• SteelA01·····• Stainless steelA02·····PlugA30····• Han 7D (metal, gray)A30·····• Cable sockets for M12 connectors (metal)A50····Cable sockets for M12 connectors (metal)A50····• EnglishB11······• EnglishB11······• SpanishB13······• English rating plateB11······• English rating plateB21······• ItalianD166070-21'C12·····• Conton loc 60707-21'C12········• Conton loc 60707-21'C12···					
• Stainless steel A02 ✓ ✓ ✓ Plug		A01	1	1	1
• Han 7D (metal, gray)A30×I• Han 8U (instead of Han 7D)A31×××Cable sockets for M12 connectors (metal)A50×××Rating plate inscriptionB11×××ו EnglishB12×××ו SpanishB13×××ו ItalianB14××××English rating plateB21××××Pressure units in inH ₂ O or psiC11×××Cuality inspection certificate?C12×××To EN 10204-3.1C14××××Factory certificateC20××××To EN 10204-2.2"Functional Safety (SIL)" certificateC20×××"Functional Safety (SIL)" certificateC20××××Setting of upper limit of output signal to 2.0 mAD05××××Manufacturer's declaration acc. to NACE (only together with the devices 7MF4033- 				1	1
• Han 8U (instead of Han 7D) A31 ✓ ✓ Cable sockets for M12 connectors (metal) A50 ✓ ✓ Rating plate inscription (instead of German) B11 ✓ ✓ • English B11 ✓ ✓ ✓ • French B12 ✓ ✓ ✓ • Spanish B13 ✓ ✓ ✓ • Italian B13 ✓ ✓ ✓ English rating plate B21 ✓ ✓ ✓ Pressure units in inH ₂ O or psi C11 ✓ ✓ ✓ Quality inspection certificate (Factory cali- bration) to IEC 60770-21 C12 ✓ ✓ ✓ Acceptance test certificate ²¹ C12 ✓ ✓ ✓ ✓ To EN 10204-3.1 Factory certificate C20 ✓ ✓ ✓ Setting of upper limit of output signal to 20.0 C21 ✓ ✓ ✓ Setting of upper limit of output signal to 20.0 C20 ✓ ✓ ✓ Manufacturer's declaration acc. to NACE D07 ✓ ✓ ✓	Plug				
National control of M12 connectors (metal)A50✓✓✓Rating plate inscription (instead of German)B11✓✓✓EnglishB11✓✓✓✓SpanishB13✓✓✓✓ItalianB14✓✓✓✓English rating plateB21✓✓✓✓Pressure units in inH ₂ O or psiC11✓✓✓✓Quality inspection certificate (Factory cali- toration) to IEC 60770-21)C12✓✓✓Acceptance test certificate22)C12✓✓✓✓To EN 10204-3.1C20✓✓✓✓Factory certificateC20✓✓✓✓To EN 10204-2.2"Functional Safety (SIL)" certificateC20✓✓✓"PROFIsafe" certificate and protocolC21✓✓✓✓Setting of upper limit of output signal to 22.0 mAD05✓✓✓Manufacturer's declaration acc. to NACE 20 mAD07✓✓✓Manufacturer's declaration acc. to NACE (only tog ther with the devices 7MF4033- 	• Han 7D (metal, gray)	A30	✓		
Rating plate inscription (instead of German)HIVVVRating plate of German)B11VVVFrenchB12VVVSpanishB13VVVItalianB14VVVEnglish rating plateB21VVVPressure units in inH2O or psiC11VVVAcceptance test certificate (Factory cali- bration) to IEC 60770-21)C12VVVAcceptance test certificate?C12VVVVTo EN 10204-3.1C12VVVVFunctional Safety (SIL)" certificateC20VVVTo EN 10204-2.2"Functional Safety (SIL)" certificateC007VVVPROFIsafe" certificate and protocolC21VVVSetting of upper limit of output signal to 22.0 mAD05VVVManufacturer's declaration acc. to NACED07VVVItalian dicator alongside the input keys (only together with the devices 7MF4033- 		A31	✓		
(instand of German) B1 V V • English B11 V V V • French B12 V V V • Spanish B13 V V V • Italian B14 V V V English rating plate B21 V V V Pressure units in inH2O or psi C11 V V V Quality inspection certificate (Factory calipote intercent) to EC 60770-21) C12 V V V Acceptance test certificate ²) C12 V V V V To EN 10204-3.1 T V V V V V Factory certificate C10 V V V V V Setting of upper limit of output signal to 2.0 mA D07 V V V V Setting of upper limit of output signal to 2.0 mA D07 V V V V Setting of upper limit of output signal to 2.0 mA D07 V V V V Supplied with oval flange <	Cable sockets for M12 connectors (metal)	A50	✓	~	~
• English French B11 ✓ ✓ ✓ • Spanish B13 ✓ ✓ ✓ • Italian B13 ✓ ✓ ✓ English rating plate B13 ✓ ✓ ✓ Pressure units in inH ₂ O or psi C11 ✓ ✓ ✓ Quality inspection certificate (Factory calibration to IEC 60770-21) C12 ✓ ✓ ✓ Acceptance test certificate ²) C12 ✓ ✓ ✓ ✓ To EN 10204-3.1 Factory certificate C14 ✓ ✓ ✓ Factory certificate C12 ✓ ✓ ✓ ✓ PROFIsafe" certificate and protocol C21 ✓ ✓ ✓ Setting of upper limit of output signal to 22.0 mA D05 ✓ ✓ ✓ Manufacturer's declaration acc. to NACE D07 ✓ ✓ ✓ ✓ Only for M20x1.5 and ½-14 NPT) D12 ✓ ✓ ✓ ✓ ✓ Digital indicator alongside the input keys D17 ✓ ✓ ✓ ✓ <					
• French B12 ✓ ✓ ✓ • Spanish B13 ✓ ✓ ✓ • Italian B14 ✓ ✓ ✓ English rating plate B14 ✓ ✓ ✓ Pressure units in inH ₂ O or psi C11 ✓ ✓ ✓ Quality inspection certificate (Factory calibration) to IEC 60770-2 ¹¹ C12 ✓ ✓ ✓ Acceptance test certificate ²¹ C12 ✓ ✓ ✓ ✓ To EN 10204-3.1 Factory certificate C20 ✓ ✓ ✓ "Functional Safety (SIL)" certificate C20 ✓ ✓ ✓ "PROFIsafe" certificate and protocol C21 ✓ ✓ ✓ Setting of upper limit of output signal to 22.0 mA D05 ✓ ✓ ✓ Manufacturer's declaration acc. to NACE D07 ✓ ✓ ✓ Only together with the devices 7MF40330-A.6 or -A.7-Z, Y21 or Y22 + Y01) D37 ✓ ✓ ✓ Supplied with oval flange D37 ✓ ✓ ✓ ✓ Use in or on zone		B11	✓	1	1
• ItalianB14✓✓✓English rating plate Pressure units in inH2O or psiB21✓✓✓Quality inspection certificate (Factory cali- bration) to IEC 60770-21)C11✓✓✓Acceptance test certificate2) To EN 10204-3.1C12✓✓✓Factory certificate To EN 10204-2.2C12✓✓✓"Functional Safety (SIL)" certificate C20C20✓✓✓"PROFIsafe" certificate and protocol 2.0 mAC21✓✓✓Manufacturer's declaration acc. to NACE (only for M20x1.5 and ½-14 NPT)D12✓✓✓Digital indicator alongside the input keys (only dogether with the devices 7MF4033- 	3				
English rating plate Pressure units in inH2O or psiB21✓✓✓Quality inspection certificate (Factory cali bration) to IEC 60770-2 ¹¹ C11✓✓✓Acceptance test certificate2 ²¹ To EN 10204-3.1C12✓✓✓Factory certificate To EN 10204-2.2C12✓✓✓"Functional Safety (SIL)" certificate C20C20✓✓✓"PROFIsafe" certificate and protocol Setting of upper limit of output signal to 20.0 mAD05✓✓✓Manufacturer's declaration acc. to NACE (only for M20x1.5 and ½-14 NPT)D12✓✓✓Digital indicator alongside the input keys (only together with the devices 7MF4033- 	• Spanish	B13	✓	✓	✓
Pressure units in inH20 or psiD21111Quality inspection certificate (Factory cali- bration) to IEC 60770-21)C11✓✓✓Acceptance test certificate2) To EN 10204-3.1C12✓✓✓✓Factory certificate To EN 10204-2.2C14✓✓✓✓"Functional Safety (SIL)" certificate C20C20✓✓✓"PROFIsafe" certificate and protocol 22.0 mAD05✓✓✓Manufacturer's declaration acc. to NACE (only for M20x1.5 and ½-14 NPT)D12✓✓✓Digital indicator alongside the input keys (only together with the devices 7MF4033- 0A.6 orA.7-Z, Y21 or Y22 + Y01)D37✓✓✓Supplied with oval flange (1 tem), PTFE packing and screws in thread of oaval flangeD37✓✓✓Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")E10✓✓✓Oxygen application (only together with type of protection "Intrinsic safety (EEx ia)")E10✓✓✓Oxygen application (only together with type of protection "Intrinsic safety (EEx ia)")E10✓✓✓Distor proof "Intrinsic safety" to NMETRO (Brazil) (only for transmitter 7MF4B)E55✓✓✓Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)E55✓✓✓Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)	• Italian	B14	✓		✓
Quality inspection certificate (Factory cali- bration) to IEC 60770-21)C11✓✓✓Acceptance test certificate2) To EN 10204-3.1C12✓✓✓Factory certificate To EN 10204-2.2C14✓✓✓"Functional Safety (SIL)" certificate C20C20✓✓✓"PROFIsafe" certificate and protocol 22.0 mAC21✓✓✓Manufacturer's declaration acc. to NACE 20.0 mAD05✓✓✓Manufacturer's declaration acc. to NACE (only for M20x1.5 and ½-14 NPT)D12✓✓✓Digital indicator alongside the input keys (only together with the devices 7MF4033- 0A.6 orA.7-Z, Y21 or Y22 + Y01)D37✓✓✓Supplied with oval flange (only together with type of protection "Intrinsic safety (EEx ia)")D37✓✓✓Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")E10✓✓✓Oxygen application (max. 120 bar g (1740 psi g) at 60°C (140 °F) for oxygen measurement and inert liquid)E10✓✓✓Explosion-proof "Intrinsic safety" to NEFSI (China) (only for transmitter 7MF4B)E55✓✓✓Explosion-proof "Cone 2" to NEPSI (China) (only for transmitter 7MF4D)E55✓✓✓	• • • •	B21	✓	✓	1
Distriction to IEC 60770-21)C112C11C11C11C11Acceptance test certificateC12✓✓✓To EN 10204-3.1C14✓✓✓✓Factory certificateC14✓✓✓✓To EN 10204-2.2"Functional Safety (SIL)" certificateC20✓✓✓"PROFIsafe" certificate and protocolC21✓✓✓✓Setting of upper limit of output signal to 22.0 mAD05✓✓✓✓Manufacturer's declaration acc. to NACE (only for M20x1.5 and ½-14 NPT)D12✓✓✓✓Digital indicator alongside the input keys (only together with the devices 7MF4033- 	Pressure units in inH ₂ O or psi				
To EN 10204-3.1CI4CI	Quality inspection certificate (Factory calibration) to IEC 60770-2 ¹⁾	C11	1	~	*
Factory certificate To EN 10204-2.2C14✓✓✓"Functional Safety (SIL)" certificateC20✓✓"PROFIsafe" certificate and protocolC21✓✓Setting of upper limit of output signal to 22.0 mAD05✓✓Manufacturer's declaration acc. to NACED07✓✓(only for M20x1.5 and ½-14 NPT)D12✓✓Digital indicator alongside the input keys (only together with the devices 7MF4033- 0A.6 orA.7-Z, Y21 or Y22 + Y01)D37✓Supplied with oval flange (1 tiem), PTFE packing and screws in thread of oval flangeD37✓✓Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")E01✓✓Use on zone 0 (only together with type of protection "Intrinsic safety (EEx ia)")E10✓✓Oxygen application (max. 120 bar g (1740 psi g) at 60°C (140 °F) for oxygen measurement and inert liquid)E25✓✓Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B.)E55✓✓Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B.)E56✓✓Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4D.)E56✓✓Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4D.)E57✓✓		C12	1	✓	*
"Functional Safety (SIL)" certificateC20✓✓"PROFIsafe" certificate and protocolC21✓Setting of upper limit of output signal to 22.0 mAD05✓✓Manufacturer's declaration acc. to NACED07✓✓✓Type of protection IP68 (only for M20x1.5 and ½-14 NPT)D12✓✓✓Digital indicator alongside the input keys (only together with the devices 7MF4033- 0-A.6 orA.7-Z, Y21 or Y22 + Y01)D377✓✓✓Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flangeD37✓✓✓Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")E01✓✓✓Oxygen application (max.120 bar g (1740 psi g) at 60°C (140 °F) for oxygen measurement and inert liquid)E10✓✓✓Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)E55✓✓✓Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4D)E56✓✓✓Explosion-proof "Zone 2" to NEPSI (China) (only for transmitter 7MF4D)E56✓✓✓	Factory certificate	C14	~	✓	~
"PROFIsafe" certificate and protocolC21✓Setting of upper limit of output signal to 22.0 mAD05✓Manufacturer's declaration acc. to NACED07✓✓Type of protection IP68 (only for M20x1.5 and ½-14 NPT)D12✓✓Digital indicator alongside the input keys (only together with the devices 7MF4033- O-A.6 or -A.7-Z, Y21 or Y22 + Y01)D37✓✓Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flangeD37✓✓✓Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")E01✓✓✓Use on zone 0 (max. 120 bar g (1740 psi g) at 60°C (140 °F) for oxygen measurement and inert liquid)E10✓✓✓Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)E55✓✓✓Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)E56✓✓Explosion-proof "Zone 2" to NEPSI (China)E57✓✓✓		C20	~		
Setting of upper limit of output signal to 22.0 mAD05✓✓Manufacturer's declaration acc. to NACE (only for M20x1.5 and ½-14 NPT)D12✓✓✓Digital indicator alongside the input keys (only together with the devices 7MF4033- 0- A.6 or A. 7-Z, Y21 or Y22 + Y01)D27✓✓✓Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flangeD37✓✓✓Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")E01✓✓✓Use on zone 0 (only together with type of protection "Intrinsic safety (EEx ia)")E10✓✓✓Oxygen application (max. 120 bar g (1740 psi g) at 60°C (140 °F) for oxygen measurement and inert liquid)E10✓✓✓Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)E55✓✓✓Explosion protection "Explosion-proof" to magniture 7MF4D)E56✓✓✓Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4D)E56✓✓✓			, i	1	
22.0 mADotVVManufacturer's declaration acc. to NACE (only for M20x1.5 and ½-14 NPT)D12VVDigital indicator alongside the input keys (only together with the devices 7MF4033- 0-A.6 orA.7-Z, Y21 or Y22 + Y01)D27VVSupplied with oval flange (1 item), PTFE packing and screws in thread of oval flangeD37VVVUse in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")E01VVVOxygen application (max. 120 bar g (1740 psi g) at 60°C (140 °F) for oxygen measurement and inert liquid)E10VVVExplosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)E25VVVExplosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)E56VVVExplosion-proof "Zone 2" to NEPSI (China) (only for transmitter 7MF4D)E57VVV	•			•	
Type of protection IP68 (only for M20x1.5 and ½-14 NPT)D12✓✓Digital indicator alongside the input keys (only together with the devices 7MF4033- 0-A.6 orA.7-Z, Y21 or Y22 + Y01)D27✓✓Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flangeD37✓✓✓Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")E01✓✓✓Oxygen application (max. 120 bar g (1740 psi g) at 60°C (140 °F) for oxygen measurement and inert liquid)E10✓✓✓Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)E25✓✓✓Explosion-proof "Composition of transmitter 7MF4B)E55✓✓✓Explosion-proof "Composition of transmitter 7MF4B)E56✓✓✓Explosion-proof "Composition of transmitter 7MF4B)E56✓✓✓Explosion-proof "Composition of transmitter 7MF4B)E55✓✓✓Explosion-proof "Composition of transmitter 7MF4B)E56✓✓✓Explosion-proof "Composition of transmitter 7MF4B)E56✓✓✓Explosion-proof "Composition of transmitter 7MF4D)E57✓✓✓		D05	×		
(only for M20x1.5 and ½-14 NPT)D1211Digital indicator alongside the input keys (only together with the devices 7MF4033- 0-A.6 orA.7-Z, Y21 or Y22 + Y01)D27✓✓Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flangeD37✓✓✓Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")E01✓✓✓Use on zone 0 (only together with type of protection "Intrinsic safety (EEx ia)")E02✓✓✓Oxygen application (max. 120 bar g (1740 psi g) at 60°C (140 °F) for oxygen measurement and inert liquid)E10✓✓✓Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)E55✓✓✓Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)E56✓✓✓Explosion-proof "Zone 2" to NEPSI (China) (only for transmitter 7MF4D)✓✓	Manufacturer's declaration acc. to NACE	D07	✓	✓	1
(only together with the devices 7MF4033- 0-A.6 orA.7-Z, Y21 or Y22 + Y01)D37✓✓Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flangeD37✓✓Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")E01✓✓Use on zone 0 (only together with type of protection "Intrinsic safety (EEx ia)")E02✓✓Oxygen application (max. 120 bar g (1740 psi g) at 60°C (140 °F) for oxygen measurement and inert liquid)E10✓✓Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)E55✓✓Explosion protection "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)E55✓✓Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)E55✓✓Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D) ٤57 ✓✓		D12	~	✓	~
Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flangeD37✓✓✓Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")E01✓✓✓Use on zone 0 (only together with type of protection "Intrinsic safety (EEx ia)")E02✓✓✓Oxygen application (max. 120 bar g (1740 psi g) at 60°C (140 °F) for oxygen measurement and inert liquid)E10✓✓✓Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)E55✓✓✓Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)E56✓✓✓Explosion-proof "Zone 2" to NEPSI (China) (only for transmitter 7MF4D.)✓✓✓	(only together with the devices 7MF4033-	D27	~	1	*
(1 item), PTFE packing and screws in thread of oval flangeImageImageImageUse in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")E01ImageImageUse on zone 0 (only together with type of protection "Intrinsic safety (EEx ia)")E02ImageImageOxygen application (max. 120 bar g (1740 psi g) at 60°C (140 °F)) for oxygen measurement and inert liquid)E10ImageImageExplosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)E55ImageImageExplosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)E56ImageImageExplosion-proof "Zone 2" to NEPSI (China)ImageImageImageImageImageImageImageImageImageImageExplosion-proof "Zone 2" to NEPSI (China)ImageIma		D37	1	1	1
(only together with type of protection "Intrinsic safety (EEx ia)")E02✓✓Use on zone 0 (only together with type of protection "Intrinsic safety (EEx ia)")E02✓✓✓Oxygen application (max. 120 bar g (1740 psi g) at 60°C (140 °F) for oxygen measurement and inert liquid)E10✓✓✓Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)E55✓✓✓Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4B)E55✓✓✓Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)E56✓✓✓Explosion-proof "Zone 2" to NEPSI (China)✓✓✓	(1 item), PTFE packing and screws in thread				
(only together with type of protection "Intrinsic safety (EEx ia)")E10✓✓Oxygen application (max. 120 bar g (1740 psi g) at 60°C (140 °F) for oxygen measurement and inert liquid)E10✓✓Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)E25✓✓Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)E55✓✓Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)E56✓✓Explosion-proof "Zone 2" to NEPSI (China) \checkmark ✓✓	(only together with type of protection	E01	*	1	~
Oxygen application (max. 120 bar g (1740 psi g) at 60°C (140 °F) for oxygen measurement and inert liquid)E10✓✓Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)E25✓✓Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)E55✓✓Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4B)E56✓✓Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)E56✓✓Explosion-proof "Zone 2" to NEPSI (China)E57✓✓	(only together with type of protection	E02	~	1	*
(max. 120 bar g (1740 psi g) at 60°C (140 °F) for oxygen measurement and inert liquid)Image: Second		E10	1	1	1
INMETRO (Brazil) (only for transmitter 7MF4B)Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)E55 E56 Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)E56 E56 Explosion-proof "Zone 2" to NEPSI (China) E57✓ ✓✓	(max. 120 bar g (1740 psi g) at 60°C (140 °F)				
NEPSI (China) (only for transmitter 7MF4B) Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D) Explosion-proof "Zone 2" to NEPSI (China) E57 ✓	INMETRO (Brazil)	E25	~	~	*
Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)E56 Explosion-proof "Zone 2" to NEPSI (China) E57✓✓	NEPSI (China)	E55	1	1	*
Explosion-proof "Zone 2" to NEPSI (China) E57 🖌 🖌 🖌	Explosion protection "Explosion-proof" to NEPSI (China)	E56	~	~	~
	Explosion-proof "Zone 2" to NEPSI (China)	E57	~	1	*

Selection and Ordering data	Order	code		
Additional data Add "-Z" to Order No. and specify Order code.		HART	PA	FF
Measuring range to be set Specify in plain text (max. 5 digits): Y01: up to mbar, bar, kPa, MPa, psi	Y01	~		
Measuring point number (TAG No.) Max. 16 characters, specify in plain text: Y15:	Y15	~	1	*
Measuring point text Max. 27 characters, specify in plain text: Y16:	Y16	~	1	~
Entry of HART address (TAG) Max. 8 characters, specify in plain text: Y17:	Y17	~		
Setting of pressure indication 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 ₂ O ^{*)} , inH ₂ O ^{*)} , ftH ₂ O ^{*)} , mmHG, inHG, psi, Pa, kPa, MPa, g/cm ² , kg/cm ² , Torr, ATM oder % *) ref. temperature 20 °C	Y21	*	•	*
Setting of pressure indication in non-pressure units ³⁾ Specify in plain text: Y22: up to //min, m ³ /h, m, USgpm, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	Y22 + Y01	~		
Preset bus address (possible between 1 and 126) Specify in plain text: Y25:	Y25		~	

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

available

Ordering example

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

¹⁾ When the manufacture's certificate M (calibration certificate) has to be orde red for transmitters with diaphragm seals, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.

Whe the acceptance test certificate 3.1 for transmitters with direct-connected diaphragm seals is ordered, this certificate must also be ordered with the corresponding seals.

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

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

DS III series for gauge pressure

- 171 (6.7) (9.3)

237

_36,5 (1,44)

2 6

8

100 (3.94)

 \oplus

105 (4.1)

Dimensional drawings



Not with type of protection "Explosion-proof enclosure"

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

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

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

DS III series for gauge pressure



- oval flange
- 2 Blanking plug
- 3 Electrical connection:
 - screwed gland M20x1,5⁴),
 screwed gland ½-14 NPT or
 PROFIBUS-Stecker M12³⁾⁴)
- 4 Terminal side
- 5 Electronic side, digital display (longer overall
- length for cover with window)
- 6 Protective cover over keys
- Mounting bracket (option) 7 8
- Screw cover safety bracket (only for type of protection "Explosion-proof enclosure", not shown in the drawing)



- 1) Allow approx. 20 mm (0.79 inch) thread length in addition
- 2) Minimum distance for rotating
- 3) Not with type of protection "Explosion-proof enclosure"
- Not with type of protection "FM + CSA" 4)
- Minimum distance for rotating 5)

SITRANS P pressure transmitters, DS III PA and FF series for gauge pressure, dimensions in mm (inch)

SITRANS P measuring instruments for pressure Transmitters for gauge, absolute and differential pressure, flow and level DS III series for gauge and absolute pressure, with front-flush diaphragm

Technical specifications

SITRANS P, DS III series for gauge and absolution	HART		PROFIBUS PA or FOU			
Input gauge pressure, with front-flush			PROFIBUS PA OF FOU	NDATION FIEldbus		
diaphragm						
Measured variable	Gauge pressure, flush-r	sh-mounted				
Spans (infinitely adjustable) or nominal measuring range and	Span	Max. perm. test pres- sure	Nominal measuring range	Max. perm. test pres- sure		
max. permissible test pressure	0.01 1 bar g (0.15 14.5 psi g)	6 bar g (87 psi g)	1 bar g (14.5 psi g)	6 bar g (87 psi g)		
	0.04 4 bar g (0.58 58 psi g)	10 bar g (145 psi g)	4 bar g (58 psi g)	10 bar g (145 psi g)		
	0.16 16 bar g (2.23 232 psi g)	32 bar g (464 psi g)	16 bar g (232 psi g)	32 bar g (464 psi g)		
	0.6 63 bar g (9.14 914 psi g)	100 bar g (1450 psi g)	63 bar g (914 psi g)	100 bar g (1450 psi g)		
Lower measuring limit	-100 mbar g (-1.45 psi g	g)	1			
Upper measuring limit	100% of max. span		100% of nominal measu	uring range		
Input absolute pressure, with front-flush diaphragm						
Measured variable	Absolute pressure, flush	n-mounted				
Spans (infinitely adjustable) or nominal measuring range and	Span	Max. perm. test pres- sure	Nominal measuring range	Max. perm. test pres- sure		
max. permissible test pressure	43 1300 mbar a (0.62 18.9 psi a)	10 bar a (145 psi a)	1300 mbar a (18.9 psi a)	10 bar a (145 psi a)		
	0,16 5 bar a (2.32 72,5 psi a)	30 bar a (435 psi a)	5 bar a (72,5 psi a)	30 bar a (435 psi a)		
	(14.5 435 psi a) (1450 psi a) (435 ps		30 bar a 100 bar a (435 psi a) (1450 psi a)			
	Depending on the proce may differ from these va	ess connection, the nomi- ay differ from these values				
Lower measuring limit	0 bar a (0 psi a)					
Upper measuring limit	100% of max. span		100% of nominal measu	uring range		
Output Output signal	4 20 mA		Digital PROFIBUS PA or signal	FOUNDATION Fieldbus		
 Lower limit (infinitely adjustable) 	3.55 mA, factory preset	to 3.84 mA	-			
Upper limit (infinitely adjustable)	23 mA, factory preset to set to 22.0 mA	20.5 mA or optionally	-			
Load			1			
Without HART communication	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.023$ $U_{\rm H}$: Power supply in V	$3 \text{ A in } \Omega$,	-			
With HART communication	$R_{\rm B} = 230 \dots 500 \Omega ({\rm SIM} R_{\rm B} = 230 \dots 1100 \Omega ({\rm HA} R_{\rm B} = 230 \dots 1100 \Omega ({\rm HA} R_{\rm B} = 230 \Omega)$	ATIC PDM) or ART Communicator)	-			
Physical bus	-		IEC 61158-2			
Protection against polarity reversal	Protected against short- supply voltage.	-circuit and polarity rever	sal. Each connection ag	ainst the other with max.		
Accuracy	To EN 60770-1					
Reference conditions (All error data refer always refer to the set span)			oar, stainless steel seal d o (r = max. span/set spa			
Error in measurement and fixed-point setting (including hysteresis and repeatability)						
	Gauge pressure, front-flushed	Absolute pressure, front-flushed	Gauge pressure, front-flushed	Absolute pressure, front-flushed		
Linear characteristic			≤ 0,075 %	≤ 0,2 %		
- r ≤ 10	≤ (0.0029 · r + 0.071) %					
- 10 < r ≤ 30	≤ (0.0045 · r + 0.071) %	≤ 0,4 %				
- 30 < r ≤ 100	≤ (0.005 · r + 0.05) %	-				
Long-term drift (temperature change ±30 °C (±54 °F))	≤ (0.25 · r) % every 5 years		≤ 0.25 % every 5 years			

2

SITRANS P measuring instruments for pressure Transmitters for gauge, absolute and differential pressure, flow and level DS III series for gauge and absolute pressure, with front-flush diaphragm

luence of ambient temperature .t -10 +60 °C (14 140 °F) .t -4010 °C and +60 +85 °C -40 +14 °F and 140 185 °F)	HART $\leq (0.1 \cdot r + 0.2) \%$		PROFIBUS PA or FO	UNDATION Fieldbus
t -10 +60 °C (14 140 °F) tt -4010 °C and +60 +85 °C	· · · · ·			
t -4010 °C and +60 +85 °C	· · · · ·			
t -4010 °C and +60 +85 °C	$< (0.1 + 0.015) \otimes (10) $	≤ (0,2 · r + 0,3) %	≤ 0,3 %	≤ 0,5 %
-40 + 14 T and 140 105 T j	$\leq (0.1 \cdot 1 + 0.15) \% 10 \text{ K}$	≤ (0,2 · r + 0,3) %/10 K	≤ 0.25 %/10 K	≤ 0,5 %/10 K
luence of mounting position	0.1 mbar g (0.00145 psi	i g) per 10° inclination	1	I
easured Value Resolution	-		3 · 10 ⁻⁵ of nominal me	asuring range
luence of the medium temperature (only wit nt-flush diaphragm)	h		1	
emperature difference between medium ter perature and ambient temperature	n- 3 mbar/10 K (0.04 psi/10	0 K)		
ted operating conditions				
tallation conditions				
nbient temperature	Observe the temperatur	e class in areas subject	to explosion hazard.	
leasuring cell with silicone oil	-40 +85 °C (-40 +1	85 °F)		
leasuring cell with Neobee oil with front-flush diaphragm)	-10 +85 °C (14 +18	35 °F)		
leasuring cell with inert liquid not with front-flush diaphragm)	-20 +85 °C (-4 +18	5 °F)		
Digital display	-30 +85 °C (-22 +1	85 °F)		
Storage temperature	-50 +85 °C (-58 +1 (with Neobee: -20 +8			
matic class				
ndensation	Permissible			
gree of protection to EN 60529	IP65, IP68, NEMA X, end	closure cleaning, resista	nt to lyes, steam to 150	° C (302 °F)
ectromagnetic compatibility				
mitted interference and interference immunity	To EN 61326 and NAML	JR NE 21		
edium conditions				
ocess temperature				
leasuring cell with silicone oil	-40 +100 °C (-40 +	212 °F)		
Aeasuring cell with silicone oil (with front-flus liaphragm)	sh -40 +150 °C (-40 +	302 °F)		
Neasuring cell with Neobee oil (with front-flus liaphragm)	sh -40 +150 °C (-40 +	302 °F)		
leasuring cell with silicone oil, with temperaure isolator (only with front-flush diaphragm		392 °F)		
leasuring cell with inert liquid	-20 +100 °C (-4 +2	12 °F)		
leasuring cell with high temperature oil	-10 +250 °C (14 +4	182 °F)		
sign				
eight (without options)	≈ 1.5 kg (≈ 3.3 lb)			
using material	Poor in copper die-cast	aluminium, GD-AlSi12 or	stainless steel precisior	n casting, mat. No. 1.440
etted parts materials	Stainless steel, mat. No.	1.4404/316L		
easuring cell filling	Silicone oil or inert filling	ı liquid		
ocess connection	• Flanges as per EN and	d ASME		
	• F&B and pharmaceuti			
rface quality touched-by-media	R_a values \leq 0,8 µm (3.15)	5·10 ⁻⁸ inch)/welded sean	nsR _a ≤ 1,6 µm (6.4·10 ⁻⁸	inch)
	(process connections as $R_a \le 0.8 \ \mu m \ (3.15 \cdot 10^{-8} \ ir$	ccording to 3A; R _a values nch))	s ≤ 0,8 µm (3.15·10 ⁻⁸ in	ch)/welded seams

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

DS III series for gauge and absolute pressure, with front-flush diaphragm

SITRANS P, DS III series for gauge and absolu	· · · •	
	HART	PROFIBUS PA or FOUNDATION Fieldbus
Power supply <i>U</i> _H		Supplied through bus
Terminal voltage on transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically-safe mode	-
Separate 24 V power supply necessary	-	No
Bus voltage		
Not Ex	-	932 V
With intrinsically-safe operation	-	924 V
Current consumption		
Basic current (max.)	-	12.5 mA
Startup current ≤ basic current	-	Yes
Max. current in event of fault	-	15.5 mA
Fault disconnection electronics (FDE) available	-	Yes
Certificate and approvals		
Classification according to pressure equipment lirective (DRGL 97/23/EC)	For gases of fluid group 1 and liquids of fluid group aragraph 3 (sound engineering practice)	roup 1; complies with requirements of Article 3
Explosion protection		
Intrinsic safety "i"	PTB 99 ATEX 2122	
- Identification	Ex II 1/2 G EEx ia/ib IIB/IIC T6	
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperature clas -40 +70 °C (-40 +158 °F) temperature clas -40 +60 °C (-40 +140 °F) temperature clas	is T5;
- Connection	To certified intrinsically-safe circuits with maximum values:	FISCO supply unit: $U_0 = 17.5$ V, $I_0 = 380$ mA, $P_0 = 5.32$ W
	$U_{\rm i}$ = 30 V, $I_{\rm i}$ = 100 mA, $P_{\rm i}$ = 750 mW; $R_{\rm i}$ = 300 Ω	Linear barrier: $U_0 = 24$ V, $I_0 = 250$ mA, $P_0 = 1.2$ W
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{\rm i} = 7 \mu{\rm H}, C_{\rm i} = 1.1 {\rm nF}$
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 clas -40 +60 °C (-40 +140 °F) temperature clas	is T4; is T6
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC	To circuits with values: $U_{\rm H}$ = 9 32 V DC
Dust explosion protection for zone 20	PTB 01 ATEX 2055	
- Identification	Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C	
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F)	
- Max.surface temperature	120 °C (248 °F)	
- Connection	To certified intrinsically-safe circuits with maximum values: U_i = 30 V, I_i = 100 mA, P_i = 750 mW, R_i = 300 Ω	FISCO supply unit: $U_0 = 17.5$ V, $I_0 = 380$ mA, $P_0 = 5.32$ W Linear barrier: $U_0 = 24$ V, $I_0 = 250$ mA, $P_0 = 1.2$ W
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{i} = 7 \mu\text{H}, C_{i} = 1.1 \text{nF}$
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 45 V DC; $P_{\rm max}$ = 1.2 W	To circuits with values: $U_{\rm H}$ = 9 32 V DC; $P_{\rm max}$ = 1.2 W
Type of protection "n" (zone 2)	TÜV 01 ATEX 1696 X	Planned
- 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 DIV 2, GP ABCD T4T6; CL II, DIV 2, GP FG; C	
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 E T4T6; CL II, DIV 2, GP FG; CL III	FG; CL III; Ex ia IIC T4T6; CL I, DIV 2, GP AB

Hygiene version

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

SITRANS P measuring instruments for pressure Transmitters for gauge, absolute and differential pressure, flow and level DS III series for gauge and absolute pressure, with front-flush diaphragm

HART communication		Communication FOUNDATION Fieldbus	
HART communication	230 1100 Ω	Function blocks	3 function blocks analog input,
Protocol	HART Version 5.x	I difetion blocks	1 function block PID
Software for computer	SIMATIC PDM	 Analog input 	
PROFIBUS PA communication Simultaneous communication with	4	 Adaptation to customer- specific process variables 	Yes, linearly rising or falling char- acteristic
master class 2 (max.)		- Electrical damping T ₆₃ ,	0 100 s
The address can be set using	Configuration tool or local opera- tion (standard setting address 126)	adjustable - Simulation function	Output/input (can be locked within the device with a bridge)
Cyclic data usage		- Failure mode	Can be parameterized (last good
Output byte	5 (one measuring value) or 10 (two measuring values)		value, substitute value, incorrect value)
Input byte	0, 1, or 2 (register operating mode and reset function for metering)	- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respec- tively
Internal preprocessing		- Square-rooted characteristic	Yes
Device profile	PROFIBUS PA Profile for Process Control Devices Version 3.0,	 For flow measurement PID 	Standard FE function block
Europhice blocks	Class B	Physical block	1 Resource block
Function blocks	2	Transducer blocks	1 transducer block Pressure with
 Analog input Adaptation to customer- specific process variables 	Yes, linearly rising or falling char- acteristic		calibration, 1 transducer block LCD
- Electrical damping T ₆₃ ,	0 100 s	 Pressure transducer block 	
adjustable	0100.0	 Can be calibrated by applying two pressures 	Yes
- Simulation function	Input /Output	- Monitoring of sensor limits	Yes
- Failure mode	Can be parameterized (last good value, substitute value, incorrect value)	 Simulation function: Measured pressure value, sensor temper- 	Constant value or over para-
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respec- tively	ature and electronics tempera- ture	
Register (totalizer)	Can be reset, preset, optional direction of counting, simulation function of register output		
- Failure mode	Can be parameterized (summation with last good value, continuous summation, summation with incor- rect value)		
- Limit monitoring	One upper and lower warning limit and one alarm limit respectively		
 Physical block 	1		
Transducer blocks	2		
 Pressure transducer block 			
 Can be calibrated by applying two pressures 	Yes		
- Monitoring of sensor limits	Yes		
 Specification of a container characteristic with 	Max. 30 nodes		
 Square-rooted characteristic for flow measurement 	Yes		
 Gradual volume suppression and implementation point of square-root extraction 	Parameterizable		
 Simulation function for mea- sured pressure value and sen- sor temperature 	Constant value or over para- meterizable ramp function		

2

DS III series for gauge and absolute pressure, with front-flush diaphragm

Selection and Ordering	g data	Orde	er No			
SITRANS P pressure t and absolute pressure series DS III HART	ransmitters for gauge F) e, front-flush membrane,	7 M F	413			
Measuring cell filling Silicone oil Inert liquid FDA compliant fill fluid	Measuring cell cleaning Standard Grease-free	1 3				
Neobee oil	Standard	4				
Span 0.01 1 bar g 0.04 4 bar g 0.16 16 bar g 0.63 63 bar g 13 1300 mbar a ¹⁾ 0.05 5 bar a ¹⁾ 3 30 bar a ¹⁾	(0.15 14.5 psi g) (0.58 58 psi g) (2.32 232 psi g) (9.14 914 psi g) (0.19 18.9 psi a) ¹⁾ (0.7 72.5 psi a) ¹⁾ (43.5 435 psi a) ¹⁾	B C D E S T U				
Wetted parts materials Seal diaphragm	Connection shank					
Stainless steel Hastelloy ²⁾	Stainless steel Stainless steel	A B				
Process connectionFlange version with Or	der code M, N, R or Q		7			
Non-wetted parts mate • Housing made of die- • Housing stainless stee	cast aluminium	_	0 3			
 Version Standard version International version, I documentation in 5 lan 	English label inscriptions, nguages on CD	_		1 2		
Explosion protection • Without		-				
Without With ATEX, Type of pro	otection:			1	A	
 "Intrinsic safety (EEx "Explosion-proof (EE "Intrinsic safety, expl dust explosion prote Zone 1D/2D)"⁴) 				I	B D R	
 With FM + CSA, Type "Intrinsic safety and (is + xp)"³⁾ (available 	explosion-proof			I	NC	
Electrical connection A • Inner thread M20x1.5 • Female thread ½-14 N • M12 connectors (meta	IPT	_			B C F	
Display						0
 Without indicator Without visible digital hidden, setting: mA) 	indicator (digital indicator >					0 1
 With visible digital ind With customer-specific as specified, Order correquired) 	c digital indication (setting					6 7

Power supply units see "SITRANS I power supply units and isolation amplifiers".

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

- CD-ROM with detailed documentation
- ¹⁾ Not with temperature decoupler P00 and P10, not for process connections R02, R04, R10 and R11, and can only be ordered in conjunction with silicone oil.
- 2) Only for flanges with option M.., N.. and Q.
- ³⁾ Without cable gland, with blanking plug.
- ⁴⁾ With enclosed cable gland EEx ia and blanking plug.
- Cannot be used together with the following types of protection: "Explosion-proof" and "Intrinsic safety and explosion-proof"
- F) Subject to export regulations AL: 91999, ECCN: N.

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

DS III series for gauge and absolute pressure, with front-flush diaphragm

Selection and Ordering	g data	Orde	er No.	
SITRANS P pressure to pressure, front-flush n				
DS III PA series (PROF	IBUS PA) F)	7 M F	4134 -	
DS III FF series (FOUN	DATION Fieldbus) F)	7 M F	4135-	
		11		
Measuring cell filling	Measuring cell			
Silicone oil	cleaning Standard	1		
Inert liquid	Grease-free	3		
FDA compliant fill fluid				
Neobee oil	Standard	4		
Nominal measuring ra	-			
1 bar g	(14.5 psi g)	B C		
4 bar g 16 bar g	(58 psi g) (232 psi g)	D		
63 bar g	(914 psi g)	Ē		
1300 mbar a ¹⁾	(18.9 psi a) ¹⁾	s		
5 bar a ¹⁾	(72.5 psi a) ¹⁾	т		
30 bar a ¹⁾	(435 psi a) ¹⁾	U		
Wetted parts materials				
Seal diaphragm	Connection shank			
Stainless steel Hastellov ²⁾	Stainless steel Stainless steel	AB		
Process connection				
Flange version with Or Q	der code M., N., R. or		7	
Non-wetted parts mate				
 Housing made of die- Housing stainless stee 			0 3	
Version	er precision casting		3	
Standard version			1	
	English label inscriptions,		2	
documentation in 5 lar	nguages on CD	_		
Explosion protectionWithout				
With ATEX, Type of pro	ntection.		Α	
- "Intrinsic safety (EEx			в	
- "Explosion-proof (EE			D	
 "Intrinsic safety, explo- dust explosion prote Zone 1D/2D)"⁴⁾ 	osion-proof enclosure and ction (EEx ia + EEx d +		R	
• With FM + CSA, Type				
 "Intrinsic safety and (is + xp)"³⁾ (available 	e soon)	_	NC	;
Electrical connection /				
 Screwed gland M20x1 Screwed gland ½-14 I 			B	
 Han 7D plug (plastic h connector⁵⁾ 	nousing) incl. mating		D	
connector ^{5)°°}				
M12 connectors (meta	al) */		F	
 Display Without indicator 				0
	ndicator (digital indicator 🕨			1
hidden, setting: mA)				
With visible digital display with outpatients appointed by the suprementation of the second sec				6
 With customer-specific specified, Order code 	digital display (setting as "Y21" or required)			7
Included in delivery of t • Brief instructions (Lep • CD-BOM with detailed	orello)			

- ¹⁾ Not with temperature decoupler P00 and P10, not for process connections R01, R02, R04, R10 and R11, and can only be ordered in conjunction with silicone oil.
- ²⁾ Only for flanges with option M.., N.. and Q..
- ³⁾ Without cable gland, with blanking plug.
- ⁴⁾ With enclosed cable gland EEx ia and blanking plug.
- ⁵⁾ Cannot be used together with the following types of protection: "Explosion-proof" and "Intrinsic safety and explosion-proof"
- 6) M12 delivered without cable socket.
- F) Subject to export regulations AL: 91999, ECCN: N.

· CD-ROM with detailed documentation

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

DS III series for gauge and absolute pressure, with front-flush diaphragm

> Order code HART PA

> > ✓

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P00

P10

Q53

Q54

M32

M67

M68

M69

M73

M74

M75

M82

M83

M84

M92

M93

M94

Q05

Q06

Q07

Q08 Q13 Q14 Q15

Q16

Q23

Q24

Q25 Q26 Q31

Q32 Q33 Q34

Q39

Q40 Q41

Q42 Q48

Q49

Q50

Selection and Ordering data	Order	code			Selection and Ordering data
Further designs		HART	PA	FF	Further designs
Add "-Z" to Order No. and specify Order code.					Add "-Z" to Order No. and specify Order code.
Cable sockets for M12 connectors (metal)	A50	✓	✓	✓	Temperature decoupler up to 200 °C ⁴⁾
Rating plate inscription (instead of German)					for version with front-flush diaphragm Temperature decoupler up to 250 °C
• English	B11	1	~	~	Measuring cell filling: High-temperature oil,
French	B12	1	· •	1	only in conjunction with measuring cell filling silicone oil
Spanish	B13	~	~	~	Bio-Control (Neumo) sanitary connection
• Italian	B14	✓	~	✓	certified to EHEDG
English rating plate	B21	1	~	1	• DN 50, PN 16
Pressure units in inH ₂ O or psi					• DN 65, PN 16
Quality inspection certificate (Factory cali bration) to IEC 60770-2	C11	~	~	~	Sanitary process connection to DRD • 65 mm, PN 40
Acceptance test certificate	C12	1	~	1	SMS socket with union nut
To EN 10204-3.1	012				• 2"
					• 21/2"
Factory certificate	C14	✓	~	1	• 3"
To EN 10204-2.2					SMS threaded socket
"PROFIsafe" certificate and protocol	C21		~		• 2"
Flanges to EN 1092-1					• 2½" • 3"
• DN 25, PN 40 ¹⁾	M11	✓	✓	✓	-
• DN 25, PN 100 ¹⁾	M21	✓	✓	✓	IDF socket with union nut ISO 2853
• DN 40, PN 40	M13	1	1	✓	• 2"
• DN 40, PN 100	M23	√	√	√	• 2½" • 3"
• DN 50, PN 16	M04	1	1	1	-
• DN 50, PN 40	M14 M06	✓ ✓	✓ ✓	✓ ✓	IDF threaded socket ISO 2853
 DN 80, PN 16 DN 80, PN 40 	MU6	↓	↓	¥	• 2" • 2½"
,	WITO	•	•	•	• 3"
 Flanges to ASME B16.5 Stainless steel flange 1" class 150¹⁾ 	M40	1	~	1	-
Stainless steel flange 11/2" class 150	M40 M41	↓	↓	✓ ✓	Sanitary process connection to NEUMO Bio-Connect screw connection
Stainless steel flange 2" class 150	M41 M42	· ·	· •	· ·	certified to EHEDG
Stainless steel flange 3" class 150	M43	1	1	1	• DN 50, PN 16
Stainless steel flange 4" class 150	M44	1	✓	✓	• DN 65, PN 16
Stainless steel flange 1" class 3001)	M45	1	✓	✓	• DN 80, PN 16
 Stainless steel flange 1½" class 300 	M46	 ✓ 	✓	✓	• DN 100, PN 16
 Stainless steel flange 2" class 300 	M47	✓	~	✓	• DN 2", PN 16
Stainless steel flange 3" class 300	M48	1	✓	✓	• DN 2½", PN 16 • DN 3", PN 16
 Stainless steel flange 4" class 300 	M49	1	~	1	• DN 4", PN 16
Threaded connection acc. to DIN 3852-2,					Sanitary process connection to
 Form A, Thread to ISO 228 G ³/₄", flush-mounted²⁾ 	Dot	1	~	~	NEUMO Bio-Connect flange connection
• G $\frac{9}{4}$, hush-mounted ²	R01 R02	↓	↓	✓ ✓	certified to EHEDG
• G 2", flush-mounted ²⁾	R04	1	· •	· /	• DN 50, PN 16
Tank connection ³⁾			-		• DN 65, PN 16 • DN 80, PN 16
Sealing is included in delivery					• DN 100, PN 16
• TG 52/50, PN 40	R10	1	~	1	• DN 2", PN 16
• TG 52/150, PN 40	R11	1	✓	✓	• DN 2½", PN 16
Sanitary process connection according					• DN 3", PN 16
DIN 11851 (Dairy connection)					• DN 4", PN 16
• DN 50, PN 25	N04	✓	✓	✓	Sanitary process connection to
DN 80, PN 25 Tri-Clamp connection according	N06	1	~	1	NEUMÓ Bio-Connect clamp connection certified to EHEDG
DIN 32676/ISO 2852					• DN 50, PN 16
• DN 50/2", PN 16	N14	1	1	1	• DN 65, PN 10
	N15	✓	\checkmark	✓	• DN 80, PN 10
• DN 65/3", PN 10	NIS				• DNI 100 PNI 10
• DN 65/3", PN 10 Varivent connection	NIS				• DN 100, PN 10 • DN 2½" PN 16
• DN 65/3", PN 10	N28		~	~	 DN 100, PN 10 DN 2½", PN 16 DN 3", PN 10

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

DS III series for gauge and absolute pressure, with front-flush diaphragm

Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add "-Z" to Order No. and specify Order code.				
Sanitary process connection to NEUMO Connect S flange connection				
certified to EHEDG • DN 50, PN 16	Q63	~	1	~
• DN 65, PN 10	Q64	1	1	1
• DN 80, PN 10	Q65	✓	✓	1
• DN 100, PN 10	Q66	✓	✓	✓
• DN 2", PN 16	Q72	✓	1	1
• DN 2½", PN 10	Q73	1	1	1
 DN 3", PN 10 DN 4", PN 10 	Q74 Q75	1 1	1	4
	Q/5	×	v	v
Aseptic threaded socket to DIN 11864-1 Form A				
• DN 50, PN 25	N33	✓	1	1
• DN 65, PN 25	N34	✓	✓	1
• DN 80, PN 25	N35	✓	✓	1
• DN 100, PN 25	N36	✓	1	✓
Aseptic flange with notch to DIN 11864-2 Form A				
• DN 50, PN 16	N43	1	1	~
• DN 65, PN 16	N44	✓	✓	1
• DN 80, PN 16	N45	✓	✓	1
• DN 100, PN 16	N46	✓	✓	✓
Aseptic flange with groove to DIN 11864-2 Form A				
• DN 50, PN 16	N43 + P11	1	~	~
• DN 65, PN 16	N44 + P11	1	~	~
• DN 80, PN 16	N45 + P11	1	~	~
• DN 100, PN 16	N46 + P11	1	✓	1
Aseptic clamp with groove to DIN 11864-3 Form A				
• DN 50, PN 25	N53	1	✓	1
• DN 65, PN 25	N54	✓	✓	1
• DN 80, PN 16	N55	1	1	1
• DN 100, PN 16	N56	✓	~	1

Selection and Ordering data	Order	code		
Additional data		HART	PA	FF
Add "-Z" to Order No. and specify Order code.				
Measuring range to be set Specify in plain text (max. 5 digits): Y01: up to mbar, bar, kPa, MPa, psi	Y01	•		
Measuring point number (TAG No.) Max. 16 characters, specify in plain text: Y15:	Y15	1	1	~
Measuring point text Max. 27 characters, specify in plain text: Y16:	Y16	*	1	•
Entry of HART address (TAG)	Y17	✓		
Max. 8 characters, specify in plain text: Y17:				
Setting of pressure indicator in pressure	Y21	✓	✓	✓
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_2O^{*}), in H_2O^{*}), ft H_2O^{*}), mmHG, inHG, psi, Pa, kPa, MPa, g/cm ² , kg/cm ² , Torr, ATM oder % *) ref. temperature 20 °C				
Preset bus address (possible between 1 and 126) Specify in plain text: Y25:	Y25		*	

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

✓ = available

Ordering example

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

1) Special Viton seal included in delivery.

²⁾ Lower measuring limit -100 mbar g (1.45 psi g).

3) The weldable socket can be ordered under accessories
 4) The maximum temperatures of the medium depend on the respective cell fillings.

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

DS III series for gauge and absolute pressure, with front-flush diaphragm

Dimensional drawings



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

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

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

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

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

Flanges to EN and ASME

Flanges to EN



Flanges to ASME

ASME B16.5



DN	class	ØD	H ₂
1"	150	110 mm (4.3")	Approx.
1"	300	125 mm (4.9")	52 mm (2")
11⁄2"	150	130 mm (5.1")	
11⁄2"	300	155 mm (6.1")	
2"	150	150 mm (5.9")	
2"	300	165 mm (6.5")	
3"	150	190 mm (7.5")	
3"	300	210 mm (8.1")	
4"	150	230 mm (9.1")	
4"	300	255 mm (10.0")	

NuG and pharmaceutical connections

Connections to DIN

DIN 11851 (Dairy connection)



Tri-Clamp according



9	g DIN 32676							
		DN	PN	ØD	H ₂			
		50	16	64 mm (2.5")	Approx.			
		65	16	91 mm (3.6")	52 mm (2")			

Other connections

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

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

 H_2

Approx. 52 mm (2")

DS III series for gauge and absolute pressure, with front-flush diaphragm

Bio-Control connection

	DN	PN	ØD	H ₂			
	50	16	90 mm (3.5")	Approx.			
	65	16	120 mm (4.7")	52 mm (2")			
l ∢ D → l							
anitary process connection to DRD							

Sa

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

Sanitary process screw connection to NEUMO Bio-Connect



Sanitary connection to NEUMO Bio-Connect flange connection



DN	PN	ØD	H ₂
50	16	110 mm (4.3")	Approx.
65	16	140 mm (5.5")	52 mm (2")
80	16	150 mm (5.9")	
100	16	175 mm (6.9")	
2"	16	100 mm (3.9")	
21⁄2"	16	110 mm (4.3")	
3"	16	140 mm (5.5")	
4"	16	175 mm (6.9")	

Sanitary connection to NEUMO Bio-Connect clamp connection



DN	PN	ØD	H ₂
50	16	77,4 mm (3.0")	Approx.
65	10	90,9 mm (3.6")	52 mm (2")
80	10	106 mm (4.2")	
100	10	119 mm (4.7")	
2"	16	64 mm (2.5")	
21⁄2"	16	77,4 mm (3.0")	
3"	10	90,9 mm (3.6")	
4"	10	119 mm (4.7")	

Sanitary connection to NEUMO Bio-Connect S flange

e connection							
	DN	PN	ØD				
	50	16	125 mm (4.9")				
	65	10	145 mm (5.7")				
D +	80	10	155 mm (6.1")				
	100	10	180 mm (7.1")				
	2"	16	125 mm (4.9")				
	21⁄2"	10	135 mm (5.3")				
	3"	10	145 mm (5.7")				
	4"	10	180 mm (7.1")				

Thread connection G¾", G1" and G2" to DIN 3852



	DN	PN	ØD	H ₂
	3⁄4"	63	37 mm (1.5")	Approx. 45 mm (1.8")
	1"	63	48 mm (1.9")	Approx. 47 mm (1.9")
	2"	63	78 mm (3.1")	Approx. 52 mm (2")

H₂

Approx. 52 mm (2")

Tank connection TG52/50 and TG52/150

2	
Ξ	

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

SMS socket with union nut

 DN	PN	ØD	H ₂
2"	25	84 mm (3.3")	Approx.
21⁄2"	25	100 mm (3.9")	52 mm (2.1")
3"	25	114 mm (4.5")	

SMS threaded socket

H	
_	

DN	PN	ØD	H ₂
2"	25	70 x 1/6 mm	Approx. 52 mm
21⁄2"	25	85 x 1/6 mm	52 mm (2.1")
3"	25	98 x 1/6 mm	

IDF socket with union nut



[
DN	PN	ØD	H ₂
2"	25	77 mm (3")	Approx. 52 mm
21⁄2"	25	91 mm (3.6")	o∠ mm (2.1")
3"	25	106 mm (4.2")	

DS III series for gauge and absolute pressure, with front-flush diaphragm

IDF threaded socket

	DN	PN	ØD	H ₂
	2"	25	64 mm (2.5")	Approx. 52 mm
	21⁄2"	25	77.5 mm (3.1")	o∠ mm (2.1")
	3"	25	91 mm (3.6")	

Aseptic threaded socket to DIN 11864-1 Form A



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

Aseptic flange with notch to DIN 11864-2 Form A

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

Aseptic flange with groove to DIN 11864-2 Form A

H	
+	

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

Aseptic clamp with groove to DIN 11864-3 Form A

1	
Ξ	

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

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

Technical specifications

nput Measured variable Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	HART Absolute pressure Span 8.3 250 mbar a (0.12 3.6 psi a) 43 1300 mbar a (0.62 18.9 psi a) 160 5000 mbar a (2.32 72.5 psi a) 1 30 bar a (14.5 435 psi a)	Max. perm. test pressure 6 bar a (87 psi a) 10 bar a (145 psi a) 30 bar a (435 psi a) 100 bar a (1450 psi a)	PROFIBUS PA or FOU Nominal measuring range 250 mbar a (3.6 psi a) 1300 mbar a (18.9 psi a) 5 bar a (72.5 psi a) 30 bar a	Max. perm. test pressure 6 bar a (87 psi a) 10 bar a (145 psi a) 30 bar a (435 psi a)		
Measured variable Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span 8.3 250 mbar a (0.12 3.6 psi a) 43 1300 mbar a (0.62 18.9 psi a) 160 5000 mbar a (2.32 72.5 psi a) 1 30 bar a	pressure 6 bar a (87 psi a) 10 bar a (145 psi a) 30 bar a (435 psi a) 100 bar a	range 250 mbar a (3.6 psi a) 1300 mbar a (18.9 psi a) 5 bar a (72.5 psi a) 30 bar a	pressure 6 bar a (87 psi a) 10 bar a (145 psi a) 30 bar a (435 psi a)		
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.ower measuring limit	(0.12 3.6 psi a) 43 1300 mbar a (0.62 18.9 psi a) 160 5000 mbar a (2.32 72.5 psi a) 1 30 bar a	(87 psi a) 10 bar a (145 psi a) 30 bar a (435 psi a) 100 bar a	(3.6 psi a) 1300 mbar a (18.9 psi a) 5 bar a (72.5 psi a) 30 bar a	(87 psi a) 10 bar a (145 psi a) 30 bar a (435 psi a)		
.ower measuring limit	(0.62 18.9 psi a) 160 5000 mbar a (2.32 72.5 psi a) 1 30 bar a	(145 psi a) 30 bar a (435 psi a) 100 bar a	(18.9 psi a) 5 bar a (72.5 psi a) 30 bar a	(145 psi a) 30 bar a (435 psi a)		
.ower measuring limit	(2.32 72.5 psi a) 1 30 bar a	(435 psi a) 100 bar a	(72.5 psi a) 30 bar a	(435 psi a)		
.ower measuring limit				1001		
ower measuring limit			(435 psi a)	100 bar a (1450 psi a)		
 Measuring cell with silicone oil filling 	0 mbar a (0 psi a)					
Jpper measuring limit	100% of max. span					
Output						
Dutput signal	4 20 mA		Digital PROFIBUS PA or FOUNDATION Fieldbu signal			
 Lower limit (infinitely adjustable) 	3.55 mA, factory prese	et to 3.84 mA	-			
Upper limit (infinitely adjustable)	23 mA, factory preset to 22.0 mA	to 20.5 mA or optionally set	-			
_oad						
Without HART communication	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.02$ $U_{\rm H}$: Power supply in V		-			
With HART communication	$ \begin{array}{l} R_{\rm B} = 230 \ \ 500 \ \Omega \ ({\rm SII} \\ R_{\rm B} = 230 \ \ 1100 \ \Omega \ (\vdash \ 100 \ (\vdash \ 10)\ (\vdash \ 10) \ (\vdash \ 100 \ (\vdash \ 100 \ (\vdash \ 10)\ (\vdash \ 10) \ ($		-			
Physical bus	-		IEC 61158-2			
Protection against polarity reversal	Protected against short-circuit and polarity reversal. Each connection against the other with max. supply voltage.					
Accuracy	To EN 60770-1					
Reference conditions All error data refer always refer to the set span)	Increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil filling room temperature 25 °C (77 °F)) r: Span ratio (r = max. span / set span)					
Error in measurement and fixed-point setting including hysteresis and repeatability)	3					
Linear characteristic			≤ 0.1 %			
- r ≤ 10	≤ 0.1 %					
- 10 < r ≤ 30	≤ 0.2 %					
_ong-term drift (temperature change ±30 °C ±54 °F))	≤ (0.1 · r) %/year	≤(0.1 · r) %/year		≤ 0.1 %/year		
nfluence of ambient temperature						
• at -10 +60 °C (14 140 °F)	≤ (0.1 · r +0.2) %		≤ 0,3 %			
• at -4010 °C and +60 +85 °C (-40 +14 °F and 140 185 °F)	≤ (0.1 · r + 0.15) %/10	К	≤ 0.25 %/10 K			
Measured Value Resolution	-		3 · 10 ⁻⁵ of nominal mea	asuring range		

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

SITRANS P, DS III series for absolute press	SITRANS P, DS III series for absolute pressure (from the gauge pressure series)							
	HART	PROFIBUS PA or FOUNDATION Fieldbus						
Rated operating conditions								
Degree of protection (to EN 60529)	IP65							
Process temperature								
 Measuring cell with silicone oil filling 	-40 +100 °C (-40 +212 °F)							
 Measuring cell with inert filling liquid 	-20 +100 °C (-4 +212 °F)							
 In conjunction with dust explosion protection 	-20 +60 °C (-4 +140 °F)							
Ambient conditions								
Ambient temperature								
- Digital indicators	-30 +85 °C (-22 +185 °F)							
Storage temperature	-50 +85 °C (-58 +185 °F)							
Climatic class								
- Condensation	Permissible							
 Electromagnetic compatibility 								
- Emitted interference and interference im- munity	To EN 61326 and NAMUR NE 21							
Design								
Weight (without options)	≈ 1.5 kg (≈ 3.3 lb)							
Housing material	Poor in copper die-cast aluminium, GD-AlSi12 or stainless steel precision casting, mat. No. 1.4408							
Wetted parts materials								
Connection shank	Stainless steel, mat. No. 1.4404/316L or Hastelloy C4, mat. No. 2.4610							
Oval flange	Stainless steel, mat. No. 1.4404/316L							
Seal diaphragm	Stainless steel, mat. No. 1.4404/316L or Hastelloy C276, mat. No. 2.4819							
Measuring cell filling	Silicone oil or inert filling liquid (max. 160 bar a (2320 psi a) with oxygen measurement)							
Process connection	Connection shank G½B to DIN EN 837-1, female thread ½ -14 NPT or oval flange (PN 160 (MWP 2320 psi a)) to DIN 19213 with mounting thread M10 or $^7/_{16}$ -20 UNF to EN 61518							
Material of the mounting bracket								
• Steel	Sheet steel, Mat. No. 1.0330, chrome-plated							
Stainless steel	Stainless steel, Mat. No. 1.4301 (SS304)							
Power supply $\textit{U}_{ec{H}}$		Supplied through bus						
Terminal voltage on transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically-safe mode	-						
Separate 24 V power supply necessary	-	No						
Bus voltage								
• Not Ex	-	9 32 V						
 With intrinsically-safe operation 	-	9 24 V						
Current consumption								
Basic current (max.)	-	12.5 mA						
 Startup current ≤ basic current 	-	Yes						
Max. current in event of fault	-	15.5 mA						
Fault disconnection electronics (FDE) available	-	Yes						

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

(from gauge pressure series)

	HART	PROFIBUS PA or FOUNDATION Fieldbus				
Certificate and approvals						
Classification according to pressure equip- ment directive (DRGL 97/23/EC)	For gases of fluid group 1 and liquids of fluid gro graph 3 (sound engineering practice)	up 1; complies with requirements of Article 3, para-				
Explosion protection						
Intrinsic safety "i"	PTB 99 ATEX 2122					
- Identification	Ex II 1/2 G EEx ia/ib IIB/IIC T6					
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperature class -40 +70 °C (-40 +158 °F) temperature class -40 +60 °C (-40 +140 °F) temperature class	Τ5;				
- Connection	To certified intrinsically-safe circuits with maximum values: $U_i = 30 \text{ V}, \ l_i = 100 \text{ mA},$ $P_i = 750 \text{ mW}; \ R_i = 300 \Omega$	FISCO supply unit: $U_0 = 17.5$ V, $I_0 = 380$ mA, $P_0 = 5.32$ W Linear barrier: $U_0 = 24$ V, $I_0 = 250$ mA, $P_0 = 1.2$ W				
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{\rm i} = 7 \mu {\rm H}, C_{\rm i} = 1.1 {\rm nF}$				
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: $U_{\rm H}$ = 10.5 45 V DC	To circuits with values: $U_{\rm H}$ = 9 32 V DC				
Dust explosion protection for zone 20	PTB 01 ATEX 2055					
- Identification	Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C					
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F)					
- Max.surface temperature	120 °C (248 °F)					
- Connection	To certified intrinsically-safe circuits with maximum values: $U_i = 30 \text{ V}, \ l_i = 100 \text{ mA},$ $P_i = 750 \text{ mW}, \ R_i = 300 \Omega$	FISCO supply unit: $U_0 = 17.5$ V, $I_0 = 380$ mA, $P_0 = 5.32$ W Linear barrier: $U_0 = 24$ V, $I_0 = 250$ mA, $P_0 = 1.2$ W				
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{\rm i} = 7 \mu {\rm H}, C_{\rm i} = 1.1 {\rm nF}$				
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 45 V DC; $P_{\rm max}$ = 1.2 W	To circuits with values: $U_{\rm H}$ = 9 32 V DC; $P_{\rm max}$ = 1.2 W				
 Type of protection "n" (zone 2) 	TÜV 01 ATEX 1696 X	Planned				
- 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; 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					

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

		(fro	m gauge pressure series)
HART communication		Communication FOUNDATION	
HART communication	230 1100 Ω	Fieldbus	
Protocol	HART Version 5.x	Function blocks	3 function blocks analog input,
Software for computer	SIMATIC PDM		1 function block PID
PROFIBUS PA communication		 Analog input 	
Simultaneous communication with	4	 Adaptation to customer- specific process variables 	Yes, linearly rising or falling characteristic
master class 2 (max.) The address can be set using	Configuration tool or local opera-	 Electrical damping T₆₃, adjustable 	0 100 s
	tion (standard setting address 126)	- Simulation function	Output/input (can be locked within the device with a bridge)
Cyclic data usage		- Failure mode	Can be parameterized (last good
Output byte	5 (one measuring value) or 10 (two measuring values)		value, substitute value, incorrect value)
Input byte	0, 1, or 2 (register operating mode and reset function for metering)	- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respec- tively
Internal preprocessing		- Square-rooted characteristic	Yes
Device profile	PROFIBUS PA Profile for Process Control Devices Version 3.0,	for flow measurement	
	Class B	• PID	Standard FF function block
Function blocks	2	 Physical block 	1 Resource block
 Analog input 		Transducer blocks	1 transducer block Pressure with
 Adaptation to customer- specific process variables 	Yes, linearly rising or falling char- acteristic		calibration, 1 transducer block LCD
- Electrical damping T ₆₃ ,	0 100 s	Pressure transducer block	N/
adjustable		 Can be calibrated by applying two pressures 	Yes
- Simulation function	Input /Output	- Monitoring of sensor limits	Yes
- Failure mode	Can be parameterized (last good value, substitute value, incorrect value)	 Simulation function: Measured pressure value, sensor temper- ature and electronics tempera- 	Constant value or over para- meterizable ramp function
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respec- tively	ture	
Register (totalizer)	Can be reset, preset, optional direction of counting, simulation function of register output		
- Failure mode	Can be parameterized (summation with last good value, continuous summation, summation with incor- rect value)		
- Limit monitoring	One upper and lower warning limit and one alarm limit respectively		
 Physical block 	1		
Transducer blocks	2		
 Pressure transducer block 			
 Can be calibrated by applying two pressures 	Yes		
- Monitoring of sensor limits	Yes		
 Specification of a container characteristic with 	Max. 30 nodes		
 Square-rooted characteristic for flow measurement 	Yes		
- Gradual volume suppression and implementation point of square-root extraction	Parameterizable		
 Simulation function for mea- sured pressure value and sen- sor temperature 	Constant value or over para- meterizable ramp function		

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

(from gauge pressure series)

Selection and Orderin	g data	Order No.		Selection and Ordering dat
	transmitters for absolute F)	7 M F 4 2 3 3	-	SITRANS P pressure trans
pressure, from the pre	essure series DS III HART			pressure, from the pressur
Measuring cell filling Silicone oil Inert liquid ¹⁾	Measuring cell cleaning Standard	1 3		 Display Without indicator Without visible digital indic
	Grease-free	3		hidden, setting: mA)With visible digital indicato
Span 8.3 250 mbar a 43 1300 mbar a 0.16 5 bar a	(0.12 3.63 psi a) (0.62 18.9 psi a) (2.32 72.5 psi a)	D F G		 With customer-specific dig as specified, Order code " quired)
1 30 bar a	(14.5 435 psi a)	н		Power supply units see "SITF amplifiers".
Wetted parts materials Seal diaphragm	s Process connection			Factory-mounting of shut-off 2/147.
Stainless steel Hastelloy Hastelloy Version for diaphragm	Stainless steel F) Stainless steel F) Hastelloy F) seal ²⁾³⁾⁴⁾	в		Included in delivery of the de Brief instructions (Leporella CD-ROM with detailed doc
Process connection				 For oxygen application, add Version 7MF4233-1DY on
 Connection shank G¹/₂ Female thread ¹/₂-14 I Oval flange made of statements 	NPT stainless steel ₆ -20 UNF to EN 61518 10 to DIN 19213 5	0 1 2 3 5 6		 When the manufacture's ce ordered for transmitters with order this certificate exclus accuracy of the total combit Whe the acceptance test connected diaphragm seals is with the corresponding sea Not together with Electrical "Han7D plug".
Non-wetted parts mat • Housing made of die- • Housing stainless ste	-cast aluminium	0 3		 6) Without cable gland, with b 7) With enclosed cable gland 8) Not together with types of p "Intrinsic safety" and "Explo
Version				⁹⁾ M12 delivered without cabl
 Standard version International version, documentation in 5 la 	English label inscriptions, inguages on CD	1		F) Subject to export regulation
Explosion protectionWithout			A	
With ATEX, Type of pr	otection:		^	
- "Intrinsic safety (EE)			В	
 "Explosion-proof (El - "Intrinsic safety and 	explosion-proof enclosure		D P	
(EEx ia + EEx d)" ⁷⁾			E	
 "Ex nA/nL (zone 2)" "Intrinsic safety, exp dust explosion prote Zone 1D/2D)"⁷⁾ 	losion-proof enclosure and ection (EEx ia + EEx d +		R	
• With FM + CSA, Type				
 "Intrinsic safety and (is + xp)"⁶⁾ 	explosion-proof		NC	
Electrical connection				
Screwed gland Pg 13 Screwed gland M20x			A	
 Screwed gland M20x Screwed gland ¹/₂-14 			B C	
• Han 7D plug (plastic			D	
connector ⁸⁾			_	
 Plug M12 (metal)⁹⁾ 			F	

Selection and Ordering data	Order No.
SITRANS P pressure transmitters for absolute F pressure, from the pressure series DS III HART	7 M F 4 2 3 3 - -
Display	
 Without indicator Without visible digital indicator (digital indicator) hidden, setting: mA) 	► 0 1
With visible digital indicator	6
• With customer-specific digital indicator (setting as specified, Order code "Y21" or "Y22" required)	7
Power supply units see "SITRANS I power supply u amplifiers".	units and isolation
Factory-mounting of shut-off valves and valve man 2/147.	ifolds see page
Included in delivery of the device: • Brief instructions (Leporello) • CD-ROM with detailed documentation	
 For oxygen application, add Order code E10. Version 7MF4233-1DY only up to max. span 200 (When the manufacture's certificate M (calibration c ordered for transmitters with diaphragm seals, it is order this certificate exclusively with the diaphragm accuracy of the total combination is certified here. 	ertificate) has to be recommended only to
⁴⁾ Whe the acceptance test certificate 3.1 for transminected diaphragm seals is ordered, this certificate with the corresponding seals.	
 Not together with Electrical connection "Screwed g "Han7D plug". 	land Pg 13.5" and
6) Without cable gland, with blanking plug.	
7) With enclosed cable gland EEx is and blanking plu	a.

- d EEx ia and blanking plug.
- protection "Explosion-proof" and "Ex nA", osion-proof".
- ole socket.
- ons AL: 91999, ECCN: N.

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

Selection and Ordering	g data		Order No.	Selection and Ordering data		Order No.
SITRANS P pressure t pressure (from the gai	ransmitters for absolute uge pressure series)	е		SITRANS P pressure transmitters for absolut pressure (from the gauge pressure series)	е	
DS III PA series (PROF	IBUS PA)	F)	7 M F 4 2 3 4 -	DS III PA series (PROFIBUS PA)	F)	7 M F 4 2 3 4 -
DS III FF series (FOUN	DATION Fieldbus)	F)	7 M F 4 2 3 5 -	DS III FF series (FOUNDATION Fieldbus)	F)	7 M F 4 2 3 5 -
Measuring cell filling Silicone oil Inert liquid ¹⁾ Nominal measuring ra 250 mbar a 1300 mbar a 5 bar a	(3.63 psi a) (18.9 psi a)		1 3 D F G	 Display Without indicator Without visible digital indicator (digital indicator hidden, setting: mA) With visible digital indicator With customer-specific digital indicator (setting as specified, Order code "Y21" or "Y22" required) 		
30 bar a	(72.5 psi a) (435 psi a)		н	Factory-mounting of shut-off valves and valve m 2/147.	anif	olds see page
Wetted parts materials Seal diaphragm Stainless steel Hastelloy Hastelloy Version as diaphragm s	Process connection Stainless steel Stainless steel Hastelloy	F) F) F)	A B C Y	 Included in delivery of the device: Brief instructions (Leporello) CD-ROM with detailed documentation ¹⁾ For oxygen application, add Order code E10. ²⁾ Version 7MF4233-1DY only up to max. span 20 ³⁾ When the manufacture's certificate M (calibration))0 m	bar a (2.9 psi a). rtificate) has to b
 Connection shank G¹/₂ Female thread ¹/₂-14 N Oval flange made of s Mounting thread ⁷/₁₆ Mounting thread M1 Male thread M20 x 1,5 Male thread ¹/₂-14 NP² Non-wetted parts mate Housing made of die- Housing stainless stee 	NPT stainless steel s-20 UNF to EN 61518 0 to DIN 19213 5 F erials cast aluminium		0 1 2 3 5 6 0 3	 accuracy of the <u>total</u> combination is certified her 4) Whe the acceptance test certificate 3.1 for trans nected diaphragm seals is ordered, this certificat with the corresponding seals. 5) Without cable gland, with blanking plug. 6) With enclosed cable gland EEx ia and blanking 7) M12 delivered without cable socket. F) Subject to export regulations AL: 91999, ECCN: 1 	mitte ate m plug	nust also be orde
Version • Standard version	English label inscriptions	;,	1 2			
(EEx ia + EEx d)" ⁶⁾ - "Ex nA/nL (zone 2)" - "Intrinsic safety expl	: ia)" (x d) ^{*5)} explosion-proof enclosur osion-proof enclosure an ection (EEx ia + EEx d + for DS III FF) of protection:		A B D P E R NC			
Electrical connection <i>J</i> Screwed gland M20x ⁺ Screwed gland ½-14 Plug M12 incl. mating	1.5 NPT		B C F			

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

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

Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add "-Z" to Order No. and specify Order code.				
Pressure transmitter with mounting				
• Steel	A01	~	1	~
Stainless steel	A01	×	1	~
Plug				
• Han 7D (metal, gray)	A30	✓		
 Han 8U (instead of Han 7D) 	A31	✓		
Cable sockets for M12 connectors (metal)	A50	 ✓ 	~	~
Rating plate inscription (instead of German)				
• English	B11	1	~	~
• French	B12	✓	✓	✓
Spanish Italian	B13	×	√ ✓	1
• Italian	B14	×	* -	✓ ✓
English rating plate Pressure units in inH ₂ O or psi	B21	×	V	•
Quality inspection certificate (Factory calibration) to IEC 60770-2 ¹⁾	C11	~	~	~
Acceptance test certificate ²⁾ To EN 10204-3.1	C12	~	~	~
Factory certificate To EN 10204-2.2	C14	~	~	1
"Functional Safety (SIL)" certificate	C20	1		
"PROFIsafe" certificate and protocol	C21		~	
Setting of upper limit of output signal to 22.0 mA	D05	1		
Manufacturer's declaration acc. to NACE	D07	✓	✓	~
Type of protection IP68 (only for M20x1.5 and ½-14 NPT)	D12	~	~	~
Digital indicator alongside the input keys (only together with the devices 7MF42330-A.6 orA.7-Z, Y21 or Y22 + Y01).	D27	*	1	1
Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flange	D37	*	1	*
Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")	E01	*	~	*
Use on zone 0 (only together with type of protection "Intrinsic safety (EEx ia)")	E02	*	1	~
Oxygen application (max. 120 bar a (1740 psi a) at 60 °C (140 °F) with oxygen measurement and inert liquid)	E10	*	~	1
Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)	E25	*	~	1
Explosion-proof "Intrinsic safety" to NEPSI (China)	E55	*	~	~
(only for transmitter 7MF4B)				
Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)	E56	-	~	-
Explosion-proof "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)	E57	1	~	~

Selection and Ordering data	Order code					
Additional data		HART	PA	FF		
Add "-Z" to Order No. and specify Order code.						
Measuring range to be set Specify in plain text (max. 5 digits): Y01: up to mbar, bar, kPa, MPa, psi	Y01	1				
Measuring point number (TAG No.) Max. 16 characters, specify in plain text: Y15:	Y15	~	~	~		
Measuring point text Max. 27 characters, specify in plain text: Y16:	Y16	~	1	1		
Entry of HART address (TAG) Max. 8 characters, specify in plain text: Y17:	Y17	~				
Setting of pressure indication in pressure units Specify in plain text (standard setting: mA): Y21: mbar, bar, kPa, MPa, psi, Note: The following pressure units can be selected:	Y21	*	~	*		
bar, mbar, mm H ₂ O ^{*)} , inH ₂ O ^{*)} , ftH ₂ O ^{*)} , mmHG, inHG, psi, Pa, kPa, MPa, g/cm ² , kg/cm ² , Torr, ATM oder % *) ref. temperature 20 °C						
Setting of pressure indication in non-pressure units ³⁾ Specify in plain text: Y22: up to //min, m ³ /h, m, USgpm, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	Y22 + Y01	~	•	*		
Preset bus address (possible between 1 and 126) Specify in plain text: Y25:	Y25		1			

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

✓ = available

 When the manufacture's certificate M (calibration certificate) has to be ordered for transmitters with diaphragm seals, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the <u>total</u> combination is certified here.

²⁾ Whe the acceptance test certificate 3.1 for transmitters with direct-connected diaphragm seals is ordered, this certificate must also be ordered with the corresponding seals.

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

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

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

6

- 171 (6.7) (9.3)

237

_36,5 (1,44)

8

Dimensional drawings



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

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

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



- oval flange
- 2 Blanking plug
- 3 Electrical connection:
 - screwed gland M20x1,5⁴),
 screwed gland ½-14 NPT or
 PROFIBUS-Stecker M12³⁾⁴)
- 4 Terminal side
- 5 Electronic side, digital display (longer overall
- length for cover with window)
- 6 Protective cover over keys
- Mounting bracket (option) 7
- 8 Screw cover - safety bracket (only for type of protection "Explosion-proof enclosure", not shown in the drawing)



- 1) Allow approx. 20 mm (0.79 inch) thread length in addition
- 2) Minimum distance for rotating
- 3) Not with type of protection "Explosion-proof enclosure"
- Not with type of protection "FM + CSA" 4)
- Minimum distance for rotating 5)

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

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

Technical specifications

SITRANS P, DS III series for absolute press	sure (from differential p	pressure series)					
	HART		PROFIBUS PA or FOUNDATION Fieldbus				
Input							
Measured variable	Absolute pressure pressure						
Spans (infinitely adjustable) or nominal measuring range and max. permissible working pressure	Span	Maximum working pres- sure	Nominal measuring range	Maximum working pres- sure			
	8.3 250 mbar a (0.12 3.6 psi a)	32 bar a (464 psi a)	250 mbar a (3.6 psi a)	32 bar a (464 psi a)			
	43 1300 mbar a (0.62 18.9 psi a)	32 bar a (464 psi a)	1300 bar a (18.9 psi a)	32 bar a (464 psi a)			
	160 5000 mbar a (2.32 72.5 psi a)	32 bar a (464 psi a)	5 bar a (72.5 psi a)	32 bar a (464 psi a)			
	1 30 bar a (14.5 435 psi a)	160 bar a (2320 psi a)	30 bar a (435 psi a)	160 bar a (2320 psi a)			
	5.3 100 bar a (77 1450 psi a)	160 bar a (2320 psi a) (for connection thread M10 and ⁷ / ₁₆ -20 UNF in the process flanges)	100 bar a (1450 psi a)	160 bar a (2320 psi a) (for connection thread M10 and ⁷ / ₁₆ -20 UNF in the process flanges)			
Lower measuring limit			' 	'			
 Measuring cell with silicone oil filling 	0 mbar a (0 psi a)						
Upper measuring limit	100% of max. span						
Output							
Output signal	4 20 mA		Digital PROFIBUS PA or FOUNDATION Fieldbus signal				
 Lower limit (infinitely adjustable) 	3.55 mA, factory prese	et to 3.84 mA	-				
Upper limit (infinitely adjustable)	23 mA, factory preset to 22.0 mA	to 20.5 mA or optionally set	-				
Load			1				
Without HART communication	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.02$ $U_{\rm H}$: Power supply in V	$_3 \leq (U_{\rm H}$ - 10.5 V)/0.023 A in Ω , $_4$: Power supply in V					
With HART communication	$\begin{array}{l} R_{\rm B} = 230 \ \ 500 \ \Omega \ ({\rm SII} \\ R_{\rm B} = 230 \ \ 1100 \ \Omega \ (\vdash \ 100 \ \Omega \ ({\rm SII} \ {\rm SII}$	MATIC PDM) or IART Communicator)	-				
Physical bus	-		IEC 61158-2				
Protection against polarity reversal	Protected against short-circuit and polarity reversal. Each connection against the other with max. supply voltage.						
Accuracy	To EN 60770-1						
Reference conditions (All error data refer always refer to the set span)	Increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil filling, room temperature 25 °C (77 °F)) r: Span ratio (r = max. span / set span)						
Error in measurement and fixed-point setting (including hysteresis and repeatability)							
Linear characteristic			≤ 0.1 %				
- r ≤ 10	≤0.1 %						
- 10 < r ≤ 30	≤0.2 %						
Long-term drift (temperature change \pm 30 °C (± 54 °F))	≤ (0.1 · r) %/year		≤ 0.1 %/year				
Influence of ambient temperature							
• at -10 +60 °C (14 140 °F)	≤ (0.1 · r +0.2) %		≤ 0.3 %				
• at -4010 °C and +60 +85 °C (-40 +14 °F and 140 185 °F)	≤ (0.1 · r + 0.15) %/10 K ≤ 0.25 %/10 K						
Measured Value Resolution	-		3 · 10 ⁻⁵ of nominal me	asuring range			
SITRANS P measuring instruments for pressure Transmitters for gauge, absolute and differential pressure, flow and level DS III series for absolute pressure (from differential pressure series)

SITRANS P, DS III series for absolute press	sure (from differential pressure series)		
	HART	PROFIBUS PA or FOUNDATION Fieldbus	
Rated operating conditions		+	
Degree of protection (to EN 60529)	IP65		
Process temperature			
 Measuring cell with silicone oil filling 	-40 +100 °C (-40 +212 °F)		
 Measuring cell with inert filling liquid 	-20 +100 °C (-4 +212 °F)		
 In conjunction with dust explosion protection 	-20 +60 °C (-4 +140 °F)		
Ambient conditions			
Ambient temperature			
- Digital indicators	-30 +85 °C (-22 +185 °F)		
Storage temperature	-50 +85 °C (-58 +185 °F)		
Climatic class			
- Condensation	Permissible		
 Electromagnetic compatibility 			
- Emitted interference and interference im- munity	To EN 61326 and NAMUR NE 21		
Design			
Weight (without options)	≈ 4.5 kg (≈ 9.9 lb)		
Housing material	Poor in copper die-cast aluminium, GD-AlSi12 or stainless steel precision casting, mat. No. 1.440		
Wetted parts materials			
Seal diaphragm	Stainless steel, mat. No. 1.4404/316L or Hastelle tantalum or gold	oy C276, mat. No. 2.4819, Monel, mat. No. 2.4360,	
 Process flanges and sealing screw 	Stainless steel, mat. No. 1.4408, Hastelloy C4, r	nat. No. 2.4610 or Monel, mat. No. 2.4360	
• O-Ring	FPM (Viton) or optionally: PTFE, FEP, FEPM and	NBR	
Measuring cell filling	Silicone oil or inert filling liquid (max. 160 bar (2	320 psi a) with oxygen measurement)	
Process connection	$^{1\!$	with mounting thread M10 to DIN 19213 or	
Material of the mounting bracket			
Steel	Sheet steel, Mat. No. 1.0330, chrome-plated		
Stainless steel	Stainless steel, Mat. No. 1.4301 (SS304)		
Power supply $m{\textit{U}}_{\!$		Supplied through bus	
Terminal voltage on transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically-safe mode	-	
Separate 24 V power supply necessary	-	No	
Bus voltage			
• Not Ex	-	9 32 V	
 With intrinsically-safe operation 	-	9 24 V	
Current consumption			
Basic current (max.)	-	12.5 mA	
 Startup current ≤ basic current 	-	Yes	
Max. current in event of fault	-	15.5 mA	
Fault disconnection electronics (FDE) available	-	Yes	

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

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

	HART	PROFIBUS PA or FOUNDATION Fieldbus
Certificate and approvals		
Classification according to pressure equip- ment directive (DRGL 97/23/EC)	For gases of fluid group 1 and liquids of fluid gro graph 3 (sound engineering practice)	oup 1; complies with requirements of Article 3, para-
Explosion protection		
Intrinsic safety "i"	PTB 99 ATEX 2122	
- Identification	Ex II 1/2 G EEx ia/ib IIB/IIC T6	
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperature class -40 +70 °C (-40 +158 °F) temperature class -40 +60 °C (-40 +140 °F) temperature class	s T5;
- Connection	To certified intrinsically-safe circuits with maximum values: $U_i = 30 \text{ V}, I_i = 100 \text{ mA},$ $P_i = 750 \text{ mW}; R_i = 300 \Omega$	FISCO supply unit: $U_0 = 17.5$ V, $I_0 = 380$ mA, $P_0 = 5.32$ W Linear barrier: $U_0 = 24$ V, $I_0 = 250$ mA, $P_0 = 1.2$ W
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{\rm i} = 7 \mu{\rm H}, C_{\rm i} = 1.1 {\rm nF}$
• Explosion-proof "d"	PTB 99 ATEX 1160	1
- Identification	Ex II 1/2 G EEx d IIC T4/T6	
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperature class -40 +60 °C (-40 +140 °F) temperature class	
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC	To circuits with values: $U_{\rm H}$ = 9 32 V DC
Dust explosion protection for zone 20	PTB 01 ATEX 2055	1
- Identification	Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C	
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F)	
- Max.surface temperature	120 °C (248 °F)	
- Connection	To certified intrinsically-safe circuits with maximum values: $U_i = 30 \text{ V}, I_i = 100 \text{ mA},$ $P_i = 750 \text{ mW}, R_i = 300 \Omega$	FISCO supply unit: $U_0 = 17.5$ V, $I_0 = 380$ mA, $P_0 = 5.32$ W Linear barrier: $U_0 = 24$ V, $I_0 = 250$ mA, $P_0 = 1.2$ W
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{\rm i} = 7 \ \mu {\rm H}, \ C_{\rm i} = 1.1 \ {\rm nF}$
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 45 V DC; $P_{\rm max}$ = 1.2 W	To circuits with values: $U_{\rm H}$ = 9 32 V DC; $P_{\rm max}$ = 1.2 W
 Type of protection "n" (zone 2) 	TÜV 01 ATEX 1696 X	Planned
- 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 E DIV 2, GP ABCD T4T6; CL II, DIV 2, GP FG; CL	
 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 E T4T6; CL II, DIV 2, GP FG; CL III	FG; CL III; Ex ia IIC T4T6; CL I, DIV 2, GP ABCD

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

(from differential pressure series)

HART communication		Communication FOUNDATION	
HART communication	230 1100 Ω	Fieldbus	
Protocol	HART Version 5.x	Function blocks	3 function blocks analog input, 1 function block PID
Software for computer	SIMATIC PDM	 Analog input 	
PROFIBUS PA communication Simultaneous communication with	4	 Adaptation to customer- specific process variables 	Yes, linearly rising or falling char- acteristic
master class 2 (max.)		 Electrical damping T₆₃, adjustable 	0 100 s
The address can be set using	Configuration tool or local opera- tion (standard setting address 126)	- Simulation function	Output/input (can be locked within the device with a bridge)
Cyclic data usage		- Failure mode	Can be parameterized (last good
Output byte	5 (one measuring value) or 10 (two measuring values)		value, substitute value, incorrect value)
Input byte	0, 1, or 2 (register operating mode and reset function for metering)	- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respec- tively
Internal preprocessing		- Square-rooted characteristic	Yes
Device profile	PROFIBUS PA Profile for Process Control Devices Version 3.0,	 For flow measurement PID 	Standard FF function block
Function blocks	Class B 2	Physical block	1 Resource block
Analog input	2	Transducer blocks	1 transducer block Pressure with
 Adaptation to customer- specific process variables 	Yes, linearly rising or falling char- acteristic		calibration, 1 transducer block LCD
- Electrical damping T ₆₃ ,	0 100 s	 Pressure transducer block 	
adjustable		 Can be calibrated by applying two pressures 	Yes
- Simulation function	Input /Output	- Monitoring of sensor limits	Yes
- Failure mode	Can be parameterized (last good value, substitute value, incorrect value)	 Simulation function: Measured pressure value, sensor temper- 	Constant value or over para- meterizable ramp function
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respec- tively	ature and electronics tempera- ture	
Register (totalizer)	Can be reset, preset, optional direction of counting, simulation function of register output		
- Failure mode	Can be parameterized (summation with last good value, continuous summation, summation with incor- rect value)		
- Limit monitoring	One upper and lower warning limit and one alarm limit respectively		
 Physical block 	1		
Transducer blocks	2		
Pressure transducer block			
 Can be calibrated by applying two pressures 	Yes		
- Monitoring of sensor limits	Yes		
 Specification of a container characteristic with 	Max. 30 nodes		
 Square-rooted characteristic for flow measurement 	Yes		
 Gradual volume suppression and implementation point of square-root extraction 	Parameterizable		
 Simulation function for mea- sured pressure value and sen- sor temperature 	Constant value or over para- meterizable ramp function		

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

	g data					Selection
SITRANS P pressure t pressure, from the dif	transmitters for absolute ferential pressure,	F)				SITRANS pressure,
series DS III HART	• • • • • • • • • • • • • • • • • • • •			•		series DS
Measuring cell filling	Measuring cell cleaning					Display ● Without in
Silicone oil	Standard		1			 Without w
Inert liquid ¹⁾	Grease-free		3			hidden, s
Span		_				 With visit
8.3 250 mbar a	(0.12 3.63 psi a)	E)	D			 With cust
43 1300 mbar a	(0.62 18.9 psi a)	E)	F			as specif
0.16 5 bar a	(2.32 72.5 psi a)	E)	G			quired)
1 30 bar a	(14.5 435 psi a)		н			Power sup
5.3 100 bar a	(76.9 1450 psi a)		ΚE			amplifiers"
Wetted parts materials	5	_				Factory-mo 2/147.
Seal diaphragm	Parts of measuring cell					Included in
Stainless steel	Stainless steel		Α			 Brief inst
Hastelloy	Stainless steel		в			CD-ROM
Hastelloy	Hastelloy		С			 Sealing p
Tantalum	Tantalum		E			¹⁾ For oxyg
Monel	Monel	E)	н			²⁾ Version
Gold	Gold		L			³⁾ When th
Version for diaphragm	seal ^{2/3/4/}		Y			ordered order thi
Process connection						accurac
Female thread 1/4-18 NF	PT with flange connection					⁴⁾ Whe the
 Sealing screw opposi 						nected of with the
	₆ -20 UNF to EN 61518		2			⁵⁾ Not for s
- Mounting thread M1			C			valve in
(only for replacement						6) Not toge
Vent on side of proce	₆ -20 UNF to EN 61518					"Han7D ⁷⁾ Without
 Mounting thread 71 Mounting thread M1 			6 4			⁸⁾ With end
(only for replaceme			1			9) Not toge
Non-wetted parts mat		_				sic safet ¹⁰⁾ M12 del
Process flange screws						E) Combina
Stainless steel	Die-cast aluminium			2		regulatio
Stainless steel	Stainless steel precision			3		F) Subject
	easting ⁶⁾			-		
Version	casting ⁶⁾					
Version • Standard version	casting ⁶⁾	_		1		
 Standard version 	casting ⁶⁾	_		-		
 Standard version 	casting ⁶⁾ English label inscriptions,	_		1		
 Standard version International version, documentation in 5 la Explosion protection 	casting ⁶⁾ English label inscriptions,	_		1		
 Standard version International version, documentation in 5 la Explosion protection Without 	casting ⁶⁾ English label inscriptions, Inguages on CD	_		1	A	
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 Standard version International version, documentation in 5 la Explosion protection Without With ATEX, Type of pr - "Intrinsic safety (EEx - "Explosion-proof (EE - "Intrinsic safety and (EEx ia + EEx d)" ⁸) "Ex nA/nL (zone 2)" - "Intrinsic safety explosed 	casting ⁶⁾ English label inscriptions, inguages on CD otection: < ia)" Ex d)" ⁷⁾ explosion-proof enclosure and			1	A B D P	
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 Standard version International version, documentation in 5 la Explosion protection Without With ATEX, Type of pr - "Intrinsic safety (EE) - "Explosion-proof (EE - "Intrinsic safety and (EEx ia + EEx d)"⁸) "Ex nA/nL (zone 2)" "Intrinsic safety, explosion prote Zone 1D/2D)"⁸) With FM + CSA, Type 	casting ⁶⁾ English label inscriptions, inguages on CD otection: < ia)" Ex d)" ⁷⁾ explosion-proof enclosure losion-proof enclosure and ection (EEx ia + EEx d + of protection:			1	A B D P E	
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 Standard version International version, documentation in 5 la Explosion protection Without With ATEX, Type of pr - "Intrinsic safety (EE) - "Explosion-proof (EE - "Intrinsic safety and (EEx ia + EEx d)"⁸) "Ex nA/nL (zone 2)" "Intrinsic safety, explosion prote Zone 1D/2D)"⁸ With FM + CSA, Type "Intrinsic safety and (is + xp)"⁷ Electrical connection Screwed gland Pg 13 	casting ⁶⁾ English label inscriptions, inguages on CD otection: < (a)" Ex d)" ⁷⁾ explosion-proof enclosure and ection (EEx ia + EEx d + of protection: explosion-proof / cable entry 3.5 ⁹⁾			1	A D P E R	
 Standard version International version, documentation in 5 la Explosion protection Without With ATEX, Type of pr - "Intrinsic safety (EE) - "Explosion-proof (EE - "Intrinsic safety and (EEx ia + EEx d)"⁸) "Ex nA/nL (zone 2)" "Intrinsic safety, explosion prote Zone 1D/2D)"⁸ With FM + CSA, Type "Intrinsic safety and (is + xp)"⁷ Electrical connection Screwed gland Pg 13 	casting ⁶⁾ English label inscriptions, inguages on CD otection: < (a)" Ex d)" ⁷⁾ explosion-proof enclosure and ection (EEx ia + EEx d + of protection: explosion-proof / cable entry 3.5 ⁹⁾			1	A B D P E R NC	
 Standard version International version, documentation in 5 la Explosion protection Without With ATEX, Type of pr - "Intrinsic safety (EE) - "Explosion-proof (EE - "Intrinsic safety and (EEx ia + EEx d)"⁸) "Ex nA/nL (zone 2)" - "Intrinsic safety, expl dust explosion prote Zone 1D/2D)^{*8} With FM + CSA, Type - "Intrinsic safety and (is + xp)*7) Electrical connection Screwed gland Pg 13 Screwed gland ½-14 	casting ⁶⁾ English label inscriptions, inguages on CD rotection: (ia)" Ex d)" ⁷⁾ explosion-proof enclosure and ection (EEx ia + EEx d + of protection: explosion-proof / cable entry 9.5 ⁹⁾ 1.5 NPT			1	A B D P E R NC A B C	
 Standard version International version, documentation in 5 la Explosion protection Without With ATEX, Type of pr - "Intrinsic safety (EE) - "Explosion-proof (EE - "Intrinsic safety and (EEx ia + EEx d)"⁸) "Ex nA/nL (zone 2)" "Intrinsic safety, explosion prote Zone 1D/2D)"⁸ With FM + CSA, Type "Intrinsic safety and (is + xp)"⁷ Electrical connection Screwed gland Pg 13 Screwed gland M20x 	casting ⁶⁾ English label inscriptions, inguages on CD rotection: (ia)" Ex d)" ⁷⁾ explosion-proof enclosure and ection (EEx ia + EEx d + of protection: explosion-proof / cable entry 9.5 ⁹⁾ 1.5 NPT			1	A B D P E R NC	

 SITRANS P pressure transmitters for absolute F) TMF 4 3 3 3 - pressure, from the differential pressure, series DS III HART Display Without indicator Without visible digital indicator (digital indicator hidden, setting: mA) With visible digital indicator With visible digital indicator With customer-specific digital indicator (setting as specified, Order code "Y21" or "Y22" required) Power supply units see "SITRANS I power supply units and isolatic amplifiers". Factory-mounting of shut-off valves and valve manifolds see page 2/147. 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) For oxygen applications, add Order code E10. Version 7MF4333-1DY only up to max. span 200 mbar a (2.9 psi ad When the manufacture's certificate M (calibration certificate) has to ordere this certificate exclusively with the diaphragm seals. It is recommended or order this certificate exclusively with the diaphragm seals. The meast accuracy of the total combination is certificate must also be ord with the corresponding seals. Not for span "5.3 100 bar a (76.9 1450 psi a)". Position of the top valve in the process flange (see dimensional drawing). Not together with Electrical connection "Screwed gland Pg 13.5" an "Han7D plug". Withou cable gland, with blanking plug Not together with types of protection "Explosion-proof" and "Ex nA", " sic safety" and "Explosion-proof". M12 delivered without cable socket. Combinations of the versions marked with E) are subject to the exporregulations AL: 2B230, ECCN: N. Subject to export regulations AL: 91999, ECCN: N. 	Selection and Orderin	ig data	Order I	No.
 Without indicator Without visible digital indicator (digital indicator hidden, setting: mA) With visible digital indicator With visible digital indicator With customer-specific digital indicator (setting as specified, Order code "Y21" or "Y22" required) Power supply units see "SITRANS I power supply units and isolatic amplifiers". Factory-mounting of shut-off valves and valve manifolds see page 2/147. 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) For oxygen applications, add Order code E10. Version 7MF4333-1DY only up to max. span 200 mbar a (2.9 psi a) When the manufacture's certificate M (calibration certificate) has to ordered for transmitters with diaphragm seals, it is recommended or order this certificate exclusively with the diaphragm seals. The meas accuracy of the <u>total</u> combination is certified here. Whe the acceptance test certificate 3.1 for transmitters with direct-c nected diaphrag seals. is ordered, this certificate must also be ord with the corresponding seals. Not for span "5.3 100 bar a (76.9 1450 psi a)". Position of the top valve in the process flange (see dimensional drawing). Not together with Electrical connection "Screwed gland Pg 13.5" an "Han7D plug". Without cable gland, with blanking plug With enclosed cable gland EEx ia and blanking plug With enclosed cable gland EEx ia and blanking plug Not together with types of protection "Explosion-proof" and "Ex nA", " sic safety" and "Explosion-proof". M12 delivered without cable socket. Combinations of the versions marked with E) are subject to the expore regulations AL: 2B230, ECCN: N. 	pressure, from the dif			
 hidden, setting: mA) With visible digital indicator With visible digital indicator With customer-specific digital indicator (setting as specified, Order code "Y21" or "Y22" required) Power supply units see "SITRANS I power supply units and isolatic amplifiers". Factory-mounting of shut-off valves and valve manifolds see page 2/147. 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) For oxygen applications, add Order code E10. Version 7MF4333-1DY only up to max. span 200 mbar a (2.9 psi aj When the manufacture's certificate M (calibration certificate) has to 1 ordered for transmitters with diaphragm seals, it is recommended or order this certificate exclusively with the diaphragm seals. The meas accuracy of the total combination is certificate must also be ord with the corresponding seals. Not for span "5.3 100 bar a (76.9 1450 psi a)". Position of the top valve in the process flange (see dimensional drawing). Not together with Electrical connection "Screwed gland Pg 13.5" an "Han7D plug". With enclosed cable gland Ex ia and blanking plug With enclosed cable gland Ex ia and blanking plug With enclosed cable gland Ex ia and blanking plug With enclosed cable gland Ex ia and blanking plug Not together with types of protection "Explosion-proof" and "Ex nA", " sic safety" and "Explosion-proof". M12 delivered without cable socket. Combinations of the versions marked with E) are subject to the expore regulations AL: 2B230, ECCN: N. 	 Without indicator 	indicator (digital indica	tor 🕨	
 amplifiers". Factory-mounting of shut-off valves and valve manifolds see page 2/147. Included in delivery of the device: Brief instructions (Leporello) CD-ROM with detailed documentation Sealing plug(s) or sealing screw(s) for the process flanges(s) 1) For oxygen applications, add Order code E10. 2) Version 7MF4333-1DY only up to max. span 200 mbar a (2.9 psi al 3) When the manufacture's certificate M (calibration certificate) has to 1 ordered for transmitters with diaphragm seals, it is recommended or order this certificate exclusively with the diaphragm seals. The meas accuracy of the total combination is certified here. 4) Whe the acceptance test certificate 3.1 for transmitters with direct-c nected diaphragm seals is ordered, this certificate must also be ord with the corresponding seals. 5) Not for span "5.3 100 bar a (76.9 1450 psi a)". Position of the top valve in the process flange (see dimensional drawing). 6) Not together with Electrical connection "Screwed gland Pg 13.5" an "Han7D plug". 7) Without cable gland, with blanking plug 8) With enclosed cable gland EEx ia and blanking plug 9) Not together with types of protection "Explosion-proof" and "Ex nA", " sic safety" and "Explosion-proof". 10) M12 delivered without cable socket. E) Combinations of the versions marked with E) are subject to the exportegulations AL: 2B230, ECCN: N. 	 hidden, setting: mA) With visible digital inc With customer-specifias specified, Order c 	dicator ic digital indicator (setti		
 2/147. Included in delivery of the device: Brief instructions (Leporello) CD-ROM with detailed documentation Sealing plug(s) or sealing screw(s) for the process flanges(s) 1) For oxygen applications, add Order code E10. 2) Version 7MF4333-1DY only up to max. span 200 mbar a (2.9 psi a) 3) When the manufacture's certificate M (calibration certificate) has to 1 ordered for transmitters with diaphragm seals, it is recommended or order this certificate exclusively with the diaphragm seals. The meas accuracy of the total combination is certified here. 4) Whe the acceptance test certificate 3.1 for transmitters with direct-c nected diaphragm seals is ordered, this certificate must also be ord with the corresponding seals. 5) Not for span "5.3 100 bar a (76.9 1450 psi a)". Position of the top valve in the process flange (see dimensional drawing). 6) Not together with Electrical connection "Screwed gland Pg 13.5" an "Han7D plug". 7) Without cable gland, with blanking plug 8) With enclosed cable gland EEx ia and blanking plug 9) Not together with types of protection "Explosion-proof" and "Ex nA", " sic safety" and "Explosion-proof". 10) M12 delivered without cable socket. E) Combinations of the versions marked with E) are subject to the exportegulations AL: 2B230, ECCN: N. 		"SITRANS I power sup	ply units and	isolatio
 Brief instructions (Leporello) CD-ROM with detailed documentation Sealing plug(s) or sealing screw(s) for the process flanges(s) For oxygen applications, add Order code E10. Version 7MF4333-1DY only up to max. span 200 mbar a (2.9 psi a) When the manufacture's certificate M (calibration certificate) has to 1 ordered for transmitters with diaphragm seals, it is recommended or order this certificate exclusively with the diaphragm seals. The meas accuracy of the total combination is certified here. Whe the acceptance test certificate 3.1 for transmitters with direct-c nected diaphragm seals is ordered, this certificate must also be ord with the corresponding seals. Not for span "5.3 100 bar a (76.9 1450 psi a)". Position of the top valve in the process flange (see dimensional drawing). Not together with Electrical connection "Screwed gland Pg 13.5" an "Han7D plug". With enclosed cable gland EEx ia and blanking plug Not together with types of protection "Explosion-proof" and "Ex nA", " sic safety" and "Explosion-proof". M12 delivered without cable socket. E) Combinations of the versions marked with E) are subject to the exportegulations AL: 2B230, ECCN: N. 		ut-off valves and valve	manifolds see	e page
 ²⁾ Version 7MF4333-1DY only up to max. span 200 mbar a (2.9 psi a) ³⁾ When the manufacture's certificate M (calibration certificate) has to ordered for transmitters with diaphragm seals, it is recommended or order this certificate exclusively with the diaphragm seals. The meas accuracy of the <u>total</u> combination is certified here. ⁴⁾ Whe the acceptance test certificate 3.1 for transmitters with direct-c nected diaphragm seals is ordered, this certificate must also be ord with the corresponding seals. ⁵⁾ Not for span "5.3 100 bar a (76.9 1450 psi a)". Position of the top valve in the process flange (see dimensional drawing). ⁵⁾ Not together with Electrical connection "Screwed gland Pg 13.5" an "Han7D plug". ⁶⁾ Without cable gland, with blanking plug ⁶⁾ With enclosed cable gland EEx ia and blanking plug ⁶⁾ Not ogether with types of protection "Explosion-proof" and "Ex nA", " sic safety" and "Explosion-proof". ⁶⁾ M12 delivered without cable socket. ⁶⁾ Combinations of the versions marked with E) are subject to the exporting AL. 2B230, ECCN: N. 	 Brief instructions (Lep CD-ROM with detaile 	oorello) d documentation	ocess flanges	s(s)
regulations AL: 2B230, ECCN: N.	 Version 7MF4333-1D' When the manufactur ordered for transmitte order this certificate e accuracy of the total d Whe the acceptance nected diaphragm se with the correspondin Not for span "5.3 10 valve in the process f Not together with Elec "Han7D plug". Without cable gland, With enclosed cable e Not together with type sic safety" and "Explo M12 delivered withou 	Y only up to max. span : e's certificate M (calibrati rrs with diaphragm seals, exclusively with the diaph combination is certified h test certificate 3.1 for trar eals is ordered, this certifie g seals. Do bar a (76.9 1450 psi lange (see dimensional d strical connection "Screw with blanking plug gland EEx ia and blanking es of protection "Explosion sion-proof" t cable socket.	200 mbar a (2. on certificate) it is recommer ragm seals. There. Ismitters with cate must also rawing). ed gland Pg 1 g plug n-proof" and "E	has to b nded or ne meas direct-co be orde be orde f the top 3.5" and Ex nA", "
	regulations AL: 2B230	D, ECCN: N.		he expo

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

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

Selection and Ordering	g data		Ord	er	No.		
SITRANS P pressure t	ransmitters for absolute						
pressure (from the diff	erential pressure series)					
DS III PA series (PROF	IBUS PA)	F)	7 M	F 4	33	4 -	
DS III FF series (FOUN	DATION Fieldbus)	F)	7 M	F 4	33	5 -	
	,						1
Measuring cell filling	Measuring call			F			
Measuring cell filling	Measuring cell cleaning						
Silicone oil	Standard		1				
Inert liquid ¹⁾	Grease-free		3				
Nominal measuring ra	nge						
250 mbar a	(3.63 psi a)	E)	D				
1300 mbar a	(18.9 psi a)	E)	F				
5 bar a	(72.5 psi a)	E)	G				
30 bar a	(435 psi a)		Н				
100 bar a	(1450 psi a)		K	Е			
Wetted parts materials	•						
Seal diaphragm	Parts of measuring cell						
Stainless steel	Stainless steel	-		A			
Hastelloy	Stainless steel			в			
Hastelloy	Hastelloy			С			
Tantalum	Tantalum			Е			
Monel	Monel	E)		н			
Gold	Gold			L			
Version as diaphragm s	eal ^{2/3/4/}			Y			
Process connection							
	T with flange connection						
 Sealing screw opposit 							
 Mounting thread ⁷/₁₆ 	-20 UNF to EN 61518			2			
 Mounting thread M1 				0			
(only for replacemen							
• Vent on side of proces							
- Mounting thread ⁷ / ₁₆				6			
 Mounting thread M1 (only for replacement 				4			
Non-wetted parts mate							
Process flange screws	5						
Stainless steel	Die-cast aluminium				2		
Stainless steel	Stainless steel precision casting				3		
Vanalan	odoting						
VersionStandard version						1	
	English label inscriptions,					2	
documentation in 5 lar						2	
Explosion protection	0 0						
Without						А	
With ATEX, Type of pro	otection:						
- "Intrinsic safety (EEx						в	
- "Explosion-proof (EE	x d)" ⁶⁾					D	
	explosion-proof enclosure	;				Р	
(EEx ia + EEx d)"7)							
- "Ex nA/nL (zone 2)"						E	
	osion-proof enclosure and	ł				R	
	ction (EEx ia + EEx d +						
Zone 1D/2D) ^{"7)} (not • With FM + CSA, Type							
- "Intrinsic safety and	•					N	c
(is + xp) ^{"6)}						N	v
	aabla antru	_					
Electrical connection / Screwed gland M20x1	•						в
Screwed gland 1/2-14 I							C
M12 Connector (metal							F
,	•						

Selection and Ordering data		Order No.	
SITRANS P pressure transmitters for absolut pressure (from the differential pressure serie			
DS III PA series (PROFIBUS PA)	F)	7 M F 4 3 3 4 -	
DS III FF series (FOUNDATION Fieldbus)	F)	7 M F 4 3 3 5 -	
Display			
 Without indicator 			0
 Without visible digital indicator (digital indicator hidden, setting: mA) 	or 🕨		1
 With visible digital indicator 			6
 With customer-specific digital indicator (setting as specified, Order code "Y21" or required) 	g		7
Factory-mounting of shut-off valves and valve m 2/147.	nanifo	olds see page	
Included in delivery of the device: • Brief instructions (Leporello) • CD-ROM with detailed documentation • Sealing plug(s) or sealing screw(s) for the pro	cess	flanges(s)	
 For oxygen application, add Order code E10. Version 7MF4334-1DY only up to max. span 2/d When the manufacture's certificate M (calibration ordered for transmitters with diaptraom seals, it 	n cer	tificate) has to b	be

- ordered for transmitters with diaphragm seals, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.
- 4) Whe the acceptance test certificate 3.1 for transmitters with direct-connected diaphragm seals is ordered, this certificate must also be ordered with the corresponding seals. with the corresponding seals.
- b) Not for nominal measuring range 100 bar a (1450 psi a). Position of the top vent valve in the process flange (see dimensional drawing).
 b) Without cable gland, with blanking plug
- 7) With enclosed cable gland EEx ia and blanking plug
- 8) M12 delivered without cable socket.
- E) Combinations of the versions marked with E) are subject to the export regulations AL: 2B230, ECCN: N.
- F) Subject to export regulations AL: 91999, ECCN: N.

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

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

Selection and Ordering data	Order	code		
Further designs	ordel	HART	PA	FF
Add "-Z" to Order No. and specify Order code.				
Pressure transmitter with mounting bracket made of:				
• Steel	A01	1	~	1
Stainless steel	A02	1	✓	✓
O-rings for process flanges				
(instead of FPM (Viton))				
PTFE (Teflon)FEP (with silicone core, approved for food)	A20 A21	✓ ✓	✓ ✓	✓ ✓
 FFPM (Kalrez, compound 4079) 	A21	1	~	<i>✓</i>
• NBR (Buna N)	A23	1	~	1
Plug				
Han 7D (metal, gray)Han 8U (instead of Han 7D)	A30 A31	✓ ✓		
Sealing screws	A31 A40	·	~	1
1/4-18 NPT, with vent valve in material of pro-	740		•	
cess flanges				
Cable sockets for M12 connectors (metal)	A50	1	✓	~
Rating plate inscription				
(instead of German) • English	B11	1	~	~
French	B12	✓	↓	✓
• Spanish	B13	1	✓.	1
• Italian	B14	√	✓	1
English rating plate Pressure units in inH ₂ O or psi	B21	1	~	1
Quality inspection certificate (Factory calibration) to IEC 60770-2 ¹⁾	C11	1	✓	~
Acceptance test certificate ²⁾	C12	1	~	~
To EN 10204-3.1				
Factory certificate To EN 10204-2.2	C14	1	~	~
"Functional Safety (SIL)" certificate	C20	1		
"PROFIsafe" certificate and protocol	C21		✓	
Setting of upper limit of output signal to	D05	✓		
22.0 mA				
Manufacturer's declaration acc. to NACE (only together with seal diaphragm made of	D07	~	~	1
Hastelloy and stainless steel)				
Type of protection IP68	D12	1	~	~
(only for M20x1.5 and ½-14 NPT)	D07	,	,	
Digital indicator alongside the input keys (only together with the devices 7MF4333- 2 A 6 or A 7 7 Y21 or Y22 + Y01)	D27	-	V	1
2A.6 orA.7-Z, Y21 or Y22 + Y01) Supplied with oval flange	D37 ^{F)}	1	1	1
(1 item), PTFE packing and stainless steel screws in thread of process flange	537 /		·	•
Use in or on zone 1D/2D	E01	1	~	1
(only together with type of protection "Intrinsic safety (EEx ia)")				
Use on zone 0	E02	1	~	1
(only together with type of protection "Intrinsic safety (EEx ia)")				
	E10	1	1	1
Oxygen application (max. 120 bar a (1740 psi a) at 60°C (140 °F)	210		•	•
with oxygen measurement and inert liquid)				
Explosion-proof "Intrinsic safety" to	E25	1	1	1
INMETRO (Brazil) (only for transmitter 7MF4B)				

Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add "-Z" to Order No. and specify Order code.				
Explosion-proof "Intrinsic safety" to NEPSI (China)	E55	~	1	~
(only for transmitter 7MF4B)				
Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)	E56	*	~	~
Explosion-proof "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)	E57	~	~	*
Interchanging of process connection side	H01	~	~	~
Vent on side for gas measurements	H02	✓	~	1
Process flange				
Hastelloy Monel	K01 K02		✓ ✓	4
 Stainless steel with PVDF insert max. PN 10 (MWP 145 psi), max. temperature of medium 90 °C (194 °F) 	K02 K04	*	√	*
For ½-14 NPT inner process connection on the side in the middle of the process flange, vent valve not possible				
Additional data				
Add "-Z" to Order No. and specify Order code.				
Measuring range to be set Specify in plain text (max. 5 digits): Y01: up to mbar, bar, kPa, MPa, psi	Y01	•		
Measuring point number (TAG No.) 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:	¥17	*		
Setting of pressure indication 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 ² , kg/cm ² , Torr, ATM oder % *) ref. temperature 20 °C				
Setting of pressure indication in non-pressure units ³)	Y22 + Y01	1		
Specify in plain text: Y22: up to l/min, m ³ /h, m, USgpm, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)				
Preset bus address (possible between 1 and 126) Specify in plain text: Y25:	Y25		1	
Only "Y01", "Y21", "Y22", "Y25" and "D05" can b	e facto	ry pres	et	<u> </u>

only "Y01", "Y21", "Y22", "Y25" and "D05" can be factory preset ' = available

¹⁾ When the manufacture's certificate M (calibration certificate) has to be ordered for transmitters with diaphragm seals, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the <u>total</u> combination is certified here.

²⁾ Whe the acceptance test certificate 3.1 for transmitters with direct-connected diaphragm seals is ordered, this certificate must also be ordered with the corresponding seals.

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

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

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

Dimensional drawings





- 1 Process connection: 1/4-18 NPT (EN 61518)
- 2 Blanking plug
- 3 Electrical connection:
 - screwed gland Pg 13,5 (adapter) ^{2) 3)},
 - screwed gland M20x1,5³⁾,
 - screwed gland 1/2-14 NPT or
 - Han 7D/ Han 8U plug 2) 3)
 - Terminal side

4

- 5 Electronics side, digital display (longer overall length for cover with window)
- 6 Protective cover over keys
- 7 Mounting bracket (option)
- 8 Sealing screw (optionally with vent valve)
- 9 Screw cover safety bracket (only for type of protection
- "Explosion-proof enclosure", not shown in the drawing)
- 10 Lateral venting for liquid measurement (Standard)
- 11 Lateral venting for gas measurement (suffix H02)

- 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]"
- 92 mm (3.62 inch) for minimum distance to permit rotation with indicator
- 5) 45 mm (1.8 inch) for Pg 13,5 with adapter

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

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

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



- Process connection: 1/4-18 NPT (EN 61518) 1
- 2 Blanking plug
- Electrical connection: 3
 - screwed gland M20x1,5 $^{\rm 4)}\!,$
 - screwed gland 1/2-14 NPT or
 - PROFIBUS plug M12 3) 4)
- Terminal side 4
- 5 Electronic side, digital display (longer overall length for cover with window)
- Protective cover over keys 6
- 7 Mounting bracket (option)
- 8 Sealing screw (optionally with vent valve)
- Screw cover safety bracket (only for explosion-proof enclosure, 9 not shown in the drawing)
- 10 Lateral venting for liquid measurement (Standard)
- 11 Lateral venting for gas measurement (suffix H02)



- 1) Allow approx. 20 mm (0.79 inch) thread length in addition
- 92 mm (3.62 inch) for minimum distance to permit rotation with 2) indicator
- Not with type of protection "explosion-proof enclosure" Not with type of protection "FM + CSA" 3)
- 4)

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

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

DS III series

for differential pressure and flow

Technical specifications

SITRANS P, DS III series, for differential pr				
	HART		PROFIBUS PA or FOU	INDATION Fieldbus
Input	Differential	1.0		
Measured variable	Differential pressure and	1	.	.
Spans (infinitely adjustable) or nominal measuring range and max. permissible working pressure	Span	Maximum working pressure	Nominal measuring range	Maximum working pressure
	1 20 mbar (0.4 8 inH ₂ O)	32 bar (464 psi)	20 mbar g (8 inH ₂ O)	32 bar (464 psi)
	1 60 mbar (0.4 24 inH ₂ O)	160 bar (2320 psi)	60 mbar (24 inH ₂ O)	160 bar (2320 psi)
	2.5 250 mbar (1 100 inH ₂ O)		250 mbar (100 inH ₂ O)	
	6 600 mbar (2.4 240 inH ₂ O)		600 mbar (240 inH ₂ O)	
	16 1600 mbar (6.4 642 inH ₂ O)		1600 mbar (642 inH ₂ O)	
	50 5000 mbar (20 2000 inH ₂ O)		5 bar (2000 inH ₂ O)	
	0.3 30 bar (4.35 435 psi)		30 bar (435 psi)	
	2.5 250 mbar (1 100 inH ₂ O)	420 bar (6091 psi)	250 mbar (100 inH ₂ O)	420 bar (6091 psi)
	6 600 mbar (2.4 240 inH ₂ O)		600 mbar (240 inH ₂ O)	
	16 1600 mbar (6.4 642 inH ₂ O)		1600 mbar (642 inH ₂ O)	
	50 5000 mbar (20 2000 inH ₂ O)		5 bar (2000 inH ₂ O)	
	0.3 30 bar (4.35 435 psi)		30 bar (435 psi)	
Lower measuring limit				
 Measuring cell with silicone oil filling 	-100% of max. span (-33	3% with 30 bar (435 psi) I	measuring cell or 30 mba	r a (0.44 psi))
Upper measuring limit	100% of max. span (for	oxygen version and inert	filling liquid; max. 160 ba	ar g (2320 psi g))
Output				
Output signal	4 20 mA		Digital PROFIBUS PA c signal	r FOUNDATION Fieldbu
 Lower limit (infinitely adjustable) 	3.55 mA, factory preset	to 3.84 mA	-	
Upper limit (infinitely adjustable)	23 mA, factory preset to to 22.0 mA	20.5 mA or optionally set	t -	
Load				
Without HART communication	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.023$ $U_{\rm H}$: Power supply in V	βA in Ω,	-	
With HART communication	$R_{\rm B}$ = 230 500 Ω (SIM $R_{\rm B}$ = 230 1100 Ω (HA		-	
Physical bus	-		IEC 61158-2	
Protection against polarity reversal	Protected against short- supply voltage.	circuit and polarity revers	sal. Each connection aga	inst the other with max.
Accuracy	To EN 60770-1			
Reference conditions (All error data refer always refer to the set span)		c, start-of-scale value 0 b c (77 °F)) r: Span ratio (r =	ar, stainless steel seal dia = max. span / set span)	phragm, silicone oil fillin
Error in measurement and fixed-point setting (including hysteresis and repeatability)				
Linear characteristic			≤ 0,075 %	
- r ≤ 10	≤ (0.0029 · r + 0.071) %			
- 10 < r ≤ 30	≤ (0.0045 · r + 0.071) %			
	≤ (0.005 · r + 0.05) %			
- 30 < r ≤ 100	- (0.000 0.000) / .			
	_ (,,,,,,		≤0,1 %	
- $30 < r \le 100$ • Square-root characteristic (flow > 50%) - $r \le 10$	≤ 0,1 %		≤ 0,1 %	

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

SITRANS P, DS III series, for differential pre	essure and flow	
	HART	PROFIBUS PA or FOUNDATION Fieldbus
Square-root characteristic (flow 25 50%)		≤ 0,2 %
- r ≤ 10	≤ 0,2 %	-
- 10 < r ≤ 30	≤ 0,4 %	-
Long-term drift (temperature change \pm 30 °C (± 54 °F))	≤ (0.25 · r) % every 5 years static pressure max. 70 bar g (1015 psi g)	≤ (0.25 % every 5 years static pressure max. 70 bar g (1015 psi g)
• 20 mbar (0.29 psi)-measuring cell	≤ (0.2 · r) per year	≤ 0.2 per year
Influence of ambient temperature		
• at -10 +60 °C (14 140 °F)	≤ (0.08 · r + 0.1) %	≤ 0,3 %
• at -4010 °C and +60 +85 °C (-40 +14 °F and 140 185 °F)	\leq (0.1 · r + 0.15) %/10 K (Twice the value with 20-mbar (0.29 psi) measuring cell)	≤ 0.25 %/10 K
Influence of static pressure		
 on the zero point 	≤ (0.15 · r) % per 100 bar (1450 psi)	≤ 0.15 % je 100 bar (1450 psi)
- 20 mbar (0.29 psi)-measuring cell	≤ (0.15 · r) % per 32 bar (464 psi)	≤ 0.15 % je 32 bar (464 psi)
• on the span	≤ 0.2 % je 100 bar (1450 psi)	-
- 20 mbar (0.29 psi)-measuring cell	≤ 0.2 % je 32 bar (464 psi)	-
Measured Value Resolution	-	$3 \cdot 10^{-5}$ of nominal measuring range
Rated operating conditions		
Degree of protection (to EN 60529)	IP65	
Process temperature		
Measuring cell with silicone oil filling	-40 +100 °C (-40 +212 °F)	
Measuring cell with inert filling liquid	-20 +100 °C (-4 +212 °F)	
 In conjunction with dust explosion protec- tion 	-20 +60 °C (-4 +140 °F)	
Ambient conditions		
Ambient temperature		
- Digital indicators	-30 +85 °C (-22 +185 °F)	
Storage temperature	-50 +85 °C (-58 +185 °F)	
Climatic class		
- Condensation	Permissible	
 Electromagnetic compatibility 		
- Emitted interference and interference immunity	To EN 61326 and NAMUR NE 21	
Material of the mounting bracket		
Steel	Sheet steel, Mat. No. 1.0330, chrome-plated	
Stainless steel	Stainless steel, Mat. No. 1.4301 (SS304)	
Design		
Weight (without options)	≈ 4.5 kg (≈ 9.9 lb)	
Housing material	Poor in copper die-cast aluminium, GD-AlSi12 or	stainless steel precision casting, mat. No. 1.4408
Wetted parts materials		
Seal diaphragm	Stainless steel, mat. No. 1.4404/316L or Hastelloy tantalum or gold	2 C276, mat. No. 2.4819, Monel, mat. No. 2.4360,
Measuring cell filling	Silicone oil or inert filling liquid (max. 160 bar (232	20 psi g) with oxygen measurement)
Process connection	Female thread 1/4-18 NPT and flange connection v $^{7}/_{16}\text{-}20$ UNF to EN 61518	vith mounting thread M10 to DIN 19213 or
Power supply $oldsymbol{U}_{ec}$		Supplied through bus
Terminal voltage on transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically-safe mode	-
Separate 24 V power supply necessary	-	No
Bus voltage		
• Not Ex	-	932 V
With intrinsically-safe operation	-	924 V

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

	HART	PROFIBUS PA or FOUNDATION Fieldbus
Power supply $U_{ m H}$		
Current consumption		
Basic current (max.)	-	12.5 mA
 Startup current ≤ basic current 	-	Yes
Max. current in event of fault	-	15.5 mA
Fault disconnection electronics (FDE) avail.	-	Yes
Certificate and approvals		
Classification according to pressure equip- ment directive (DRGL 97/23/EC)		
PN 32/160 (MWP 464/2320 psi)	For gases of fluid group 1 and liquids of fluid grougraph 3 (sound engineering practice)	up 1; complies with requirements of Article 3, para
PN 420 (MWP 6092 psi)	For gases of fluid group 1 and liquids of fluid grou Article 3, paragraph 1 (appendix 1); assigned to TÜV Nord.	up 1; complies with basic safety requirements of category III, conformity evaluation module H by the
Explosion protection		
Intrinsic safety "i"	PTB 99 ATEX 2122	
- Identification	Ex II 1/2 G EEx ia/ib IIB/IIC T6	
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperature class -40 +70 °C (-40 +158 °F) temperature class -40 +60 °C (-40 +140 °F) temperature class	T5;
- Connection	To certified intrinsically-safe circuits with maximum values: $U_i = 30 \text{ V}, I_i = 100 \text{ mA},$ $P_i = 750 \text{ mW}; R_i = 300 \Omega$	FISCO supply unit: $U_0 = 17.5 \text{ V}, I_0 = 380 \text{ mA}, P_0 = 5.32 \text{ W}$ Linear barrier: $U_0 = 24 \text{ V}, I_0 = 250 \text{ mA}, P_0 = 1.2 \text{ W}$
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 \rm mH, C_{\rm i} = 6 \rm nF$	$L_{\rm i} = 7 \mu {\rm H}, C_{\rm i} = 1.1 {\rm nF}$
 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 -40 +60 °C (-40 +140 °F) temperature class	T4; T6
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC	To circuits with values: $U_{\rm H}$ = 9 32 V DC
 Dust explosion protection for zone 20 	PTB 01 ATEX 2055	
- Identification	Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C	
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F)	
- Max.surface temperature	120 °C (248 °F)	
- Connection	To certified intrinsically-safe circuits with maximum values: $U_i = 30 \text{ V}, I_i = 100 \text{ mA},$	FISCO supply unit: $U_0 = 17.5 \text{ V}$, $I_0 = 380 \text{ mA}$, $P_0 = 5.32 \text{ W}$ Linear barrier:
	$P_{\rm i}^{\rm '} = 750 {\rm mW}, R_{\rm i} = 300 \Omega$	$U_0 = 24 \text{ V}, I_0 = 250 \text{ mA}, P_0 = 1.2 \text{ W}$
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$U_0 = 24 \text{ V}, I_0 = 250 \text{ mA}, P_0 = 1.2 \text{ W}$ $L_1 = 7 \text{\mu}\text{H}, C_1 = 1.1 \text{ n}\text{F}$
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 45 V DC; $P_{\rm max}$ = 1.2 W	To circuits with values: $U_{\rm H}$ = 9 32 V DC; $P_{\rm max}$ = 1.2 W
 Type of protection "n" (zone 2) 	TÜV 01 ATEX 1696 X	Planned
- 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 EF DIV 2, GP ABCD T4T6; CL II, DIV 2, GP FG; CL	
 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 EF T4T6; CL II, DIV 2, GP FG; CL III	FG; CL III; Ex ia IIC T4T6; CL I, DIV 2, GP ABCD

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

		for diffe	erential pressure and flow
HART communication		Communication FOUNDATION Fi	eldbus
HART communication	230 1100 Ω	Function blocks	3 function blocks analog input,
Protocol	HART Version 5.x		1 function block PID
Software for computer	SIMATIC PDM	Analog input	
PROFIBUS PA communication		 Adaptation to customer- specific process variables 	Yes, linearly rising or falling char- acteristic
Simultaneous communication with master class 2 (max.)	4	 Electrical damping T₆₃, adjustable 	0 100 s
The address can be set using	Configuration tool or local opera- tion (standard setting address 126)	- Simulation function	Output/input (can be locked within the device with a bridge)
Cyclic data usage	,	- Failure mode	Can be parameterized (last good value, substitute value, incorrect
Output byte	5 (one measuring value) or 10 (two measuring values)	- Limit monitoring	value, substitute value, incorrect value) Yes, one upper and lower warning
Input byte	0, 1, or 2 (register operating mode and reset function for metering)	- Limit monitoring	limit and one alarm limit respec- tively
Internal preprocessing	0,	- Square-rooted characteristic	Yes
Device profile	PROFIBUS PA Profile for Process	for flow measurement	
	Control Devices Version 3.0, Class B	• PID	Standard FF function block
Function blocks	2	Physical block Transducer block	1 Resource block
Analog input		Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block
 Adaptation to customer- specific process variables 	Yes, linearly rising or falling char- acteristic	Pressure transducer block	LCD
- Electrical damping T ₆₃ , adjustable	0 100 s	 Can be calibrated by applying two pressures 	Yes
- Simulation function	Input /Output	- Monitoring of sensor limits	Yes
- Failure mode	Can be parameterized (last good value, substitute value, incorrect value)	 Simulation function: Measured pressure value, sensor temper- ature and electronics tempera- 	Constant value or over para- meterizable ramp function
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respec- tively	ture	
Register (totalizer)	Can be reset, preset, optional direction of counting, simulation function of register output		
- Failure mode	Can be parameterized (summation with last good value, continuous summation, summation with incor- rect value)		
- Limit monitoring	One upper and lower warning limit and one alarm limit respectively		
 Physical block 	1		
Transducer blocks	2		
 Pressure transducer block 			
 Can be calibrated by applying two pressures 	Yes		
- Monitoring of sensor limits	Yes		
 Specification of a container characteristic with 	Max. 30 nodes		
 Square-rooted characteristic for flow measurement 	Yes		
 Gradual volume suppression and implementation point of square-root extraction 	Parameterizable		
 Simulation function for mea- sured pressure value and sen- sor temperature 	Constant value or over para- meterizable ramp function		

2

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

DS III series

for differential pressure and flow

Selection and Ordering	y data		Orde	er No).	
	ansmitters for differen-		7 M F	11	33.	
tial pressure and flow,						
PN 32/160 (MWP 464/2					- 11	
			_			
Measuring cell filling	Measuring cell					
	cleaning					
Silicone oil	Standard		1			
Inert liquid ¹⁾	Grease-free		3			
Span						
PN 32 (MWP 464 psi)						
1 20 mbar ²⁾	(0.4015 8.03 inH ₂ O)		В			
PN 160 (MWP 2320 psi)						
1 60 mbar	(0.4015 24.09 inH ₂ O)		с			
	/					
2.5 250 mbar	(1.004 100.4 inH ₂ O)		D			
6 600 mbar	(2.409 240.9 inH ₂ O)		E			
16 1600 mbar	(6.424 642.4 inH ₂ O)	►	F			
50 5000 mbar	(20.08 2008 inH ₂ O)		G			
0.3 30 bar	(4.35 435 psi)		н			
	(4.00 400 p3i)	-				
Wetted parts materials						
(stainless steel process	flanges)					
Seal diaphragm	Parts of measuring cell					
		-				
Stainless steel	Stainless steel		A			
Hastelloy	Stainless steel		В			
Hastelloy	Hastelloy		С			
Tantalum ³⁾	Tantalum		E			
Monel ³⁾	Monel		н			
Gold ³⁾	Gold		L			
Version for diaphragm s	eal ^{4) 5)}		Y			
Process connection						
	T with flange connection					
	0					
 Sealing screw opposit 						
 Mounting thread ⁷/₁₆ 				2		
 Mounting thread M10) to DIN 19213	►		0		
(only for replacemen	t needs)					
• Vent on side of proces						
- Mounting thread 7/16				6		
- Mounting thread M10				4		
(only for replacemen	(needs)					
Non-wetted parts mate	rials					
Process flange screws	Electronics housing					
	Dia anatal mainima			~		
Stainless steel	Die-cast aluminium			2		
Stainless steel	Stainless steel precision			3		
	casting ⁶⁾					
Version						
					1	
Standard version						
	English label inscriptions,				2	
documentation in 5 lar	iguages on CD					
Explosion protection						
Without					Α	
With ATEX, Type of pro	tootion				~	
- "Intrinsic safety (EEx					В	
- "Explosion-proof (EE					D	
 "Intrinsic safety and end 	explosion-proof				Р	
enclosure (EEx ia + l	EEx d)" ⁸⁾					
- "Ex nA/nL (zone 2)"					E	
- "Intrinsic safety, expl	osion-proof enclosure				B	
and dust explosion p						
(EEx ia + EEx d + Zo						
• With FM + CSA, Type	-					
- "Intrinsic safety and (explosion-proot				N	С
(is + xp)"/)						
Electrical connection /	cable entry					
Screwed gland Pg 13.						۸
						6
Screwed gland M20x1						В
 Screwed gland ½-14 N 						С
 Han 7D plug (plastic h connector¹⁰⁾ 	ousing) incl. mating					D
• M12 connectors (moto	IV IO)					E .

Selection and Ordering data	Order No.
SITRANS P pressure transmitters for differen- tial pressure and flow, Series DS III HART PN 32/160 (MWP 464/2320 psi)	7 M F 4 4 3 3 -
 Display Without indicator Without visible digital indicator (digital indicator ► hidden, setting: mA) With visible digital indication With customer-specific digital indicator (setting as specified, Order code "Y21" or "Y22" required) 	0 1 6 7

Power supply units see "SITRANS I power supply units and isolation amplifiers".

Factory-mounting of shut-off valves and valve manifolds see page 2/147.

Included in delivery of the device:

- Brief instructions (Leporello)
- CD-ROM with detailed documentation
- Sealing plug(s) or sealing screw(s) for the process flanges(s)
- 1) For oxygen application, add Order code E10.
- ²⁾ Not suitable for connection of remote seal. Position of the top vent valve in the process flanges (see dimensional drawing).
- $^{3)}$ Not together with max. span 20 and 60 mbar (8.03 and 24.09 inH_2O)
- 4) When the manufacture's certificate M (calibration certificate) has to be ordered for transmitters with diaphragm seals, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.
- 5) Whe the acceptance test certificate 3.1 for transmitters with direct-connected diaphragm seals is ordered, this certificate must also be ordered with the corresponding seals.
- ⁶⁾ Not together with Electrical connection "Screwed gland Pg 13.5" and "Han7Ď plug".
- 7) Without cable gland, with blanking plug
- ⁸⁾ With enclosed cable gland EEx ia and blanking plug
- ⁹⁾ Not together with type of protection "Explosion-proof" and and type of protection "Ex nA"
- ¹⁰⁾ M12 delivered without cable socket.

M12 connectors (metal)¹⁰⁾

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

Selection and Ordering	g data	Order No		Selection and Ordering data	Order No.
SITRANS P pressure t for differential pressur PN 32/160 (MWP 464/2	re and flow			SITRANS P pressure transmitters for differential pressure and flow PN 32/160 (MWP 464/2320 psi)	
DS III PA series (PROF	BUS PA)	7 M F 4 4 3	34 -	DS III PA series (PROFIBUS PA)	7 M F 4 4 3 4 -
DS III FF series (FOUN	DATION Fieldbus)	7 M F 4 4 3	35-	DS III FF series (FOUNDATION Fieldbus)	7 M F 4 4 3 5 -
Measuring cell filling	Measuring cell			Electrical connection / cable entry	
measuring cen ming	cleaning			Screwed gland M20x1.5	в
Silicone oil	Standard	1		Screwed gland 1/2-14 NPT	c
Inert liquid ¹⁾	Grease-free	3		• M12 connectors (metal) ⁸⁾	F
Nominal measuring ra	nge			Display	_
PN 32 (MWP 464 psi)				Without indicator	
20 mbar ²⁾	(8.03 inH ₂ O)	В		Without visible digital indicator (digital indicator	•
PN 160 (MWP 2320 psi))			hidden, setting: mA)	
60 mbar	(24.09 inH ₂ O)	С		With visible digital indication	
250 mbar	(100.4 inH ₂ O)	D		 With customer-specific digital indication (setting as specified, Order code "Y21" or required) 	
600 mbar	(240.9 inH ₂ O)	E			ifoldo coo nama
1600 mbar	(642.4 inH ₂ O)	F		Factory-mounting of shut-off valves and valve man 2/147.	noius see page
5 bar 30 bar	(2008 inH ₂ O) (435 psi)	G H		Included in delivery of the device:	
	(435 psi)	_ "		 Brief instructions (Leporello) 	
Wetted parts materials				CD-ROM with detailed documentation Social plug(a) or oppling percent(a) for the property	n flangas(s)
(stainless steel process Seal diaphragm	flanges) Parts of measuring cell			 Sealing plug(s) or sealing screw(s) for the process 	ss lianges(s)
1 0				¹⁾ For oxygen application, add Order code E10.	
Stainless steel	Stainless steel	A		2) Not suitable for connection of remote seal. Position the process flanges (ass dimensional drawing)	of the top vent valv
Hastelloy	Stainless steel	B C		the process flanges (see dimensional drawing). ³⁾ Not together with max. span 20 and 60 mbar (8.03	and 24.09 in $H_{2}O$
Hastelloy Tantalum ³⁾	Hastelloy Tantalum	E		 When the manufacture's certificate M (calibration of 	ertificate) has to be
Monel ³⁾	Monel	H		ordered for transmitters with diaphragm seals, it is	recommended only
Gold ³⁾	Gold	ï		order this certificate exclusively with the diaphragn accuracy of the total combination is certified here.	n seals. The measu
Version as diaphragm s		Ÿ		⁵⁾ Whe the acceptance test certificate 3.1 for transmi	tters with direct-cor
Process connection	T with flange connection			nected diaphragm seals is ordered, this certificate with the corresponding seals. ⁶⁾ Without cable gland, with blanking plug.	must also be order
 Sealing screw opposit 	0			 Without cable gland, with blanking plug. With enclosed cable gland EEx ia and blanking plu 	a.
- Mounting thread ⁷ / ₁₆		^		⁸⁾ M12 delivered without cable socket.	5
- Mounting thread M1	-	2			
(only for replacemer		v			
 Venting on side of pro 	cess flanges ²⁾				
- Mounting thread 7/16	-20 UNF to EN 61518	6			
- Mounting thread M1	,	4			
(only for replacemer	nt needs)				
Non-wetted parts mate	erials				
Process flange screws	Electronics housing				
Stainless steel	Die-cast aluminium	2			
Stainless steel	Stainless steel precision	3			
Nevelon	casting	_			
 Version Standard version 			1		
	English label inscriptions,		2		
documentation in 5 la					
Explosion protection					
Without			Α		
 With ATEX, Type of pro 					
 Intrinsic safety (EEx 	,		В		
- "Explosion-proof (EE			D		
- "Intrinsic safety and			Р		
enclosure (EEx ia +					
- "n (Zone 2)" (planned			E		
- "Intrinsic safety, expl	losion-proof enclosure		R		
EFx d + Zone 1D/2F	protection (EEx ia +))" ⁷⁾ (not for DS III FF)				
With FM + CSA Type	of protection.				
• With FM + CSA, Type - "Intrinsic safety and	•		NC		

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

DS III series for differential pressure and flow

Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add "-Z" to Order No. and specify Order code.				
Pressure transmitter with mounting bracket made of:				
• Steel	A01	✓	✓	1
Stainless steel	A02	✓	~	1
O-rings for process flanges (instead of FPM (Viton))				
PTFE (Teflon)	A20	✓	✓	1
• FEP (with silicone core, approved for food)	A21	✓	✓.	1
 FFPM (Kalrez, compound 4079) NBR (Buna N) 	A22 A23	×	√ √	<i>×</i> <i>×</i>
Plug	ALU		·	
• Han 7D (metal, gray)	A30	✓		
 Han 8U (instead of Han 7D) 	A31	✓		
Sealing screws ¼-18 NPT, with vent valve in mat. of process	A40	✓	~	1
flanges				
Cable sockets for M12 connectors (metal)	A50	✓	✓	1
Rating plate inscription (instead of German)				
EnglishFrench	B11 B12	✓ ✓	√ √	✓ ✓
• Spanish	B13	✓	¥	1
• Italian	B14	✓	✓	1
English rating plate (calibration certificate)	B21	✓	✓	1
Pressure units in inH ₂ O or psi	.		,	
Quality inspection certificate (Factory calibration) to IEC 60770-2 ¹⁾	C11	-	~	~
Acceptance test certificate ²⁾	C12	~	✓	1
To EN 10 204-3.1				
Factory certificate To EN 10 204-2.2	C14	✓	~	~
"Functional Safety (SIL)" certificate	C20	~		
"PROFIsafe" certificate and protocol	C21		✓	
Setting of upper limit of output signal to	D05	✓		
22.0 mA				
Manufacturer's declaration acc. to NACE (only together with seal diaphragm made of	D07	 ✓ 	~	~
Hastelloy and stainless steel)				
Type of protection IP68	D12	✓	✓	1
(only for M20x1.5 and ½-14 NPT)	D27			
Digital indicator alongside the input keys (only together with the devices 7MF4433-	D27	Ť	v	v
2A.6 orA.7-Z, Y21 or Y22 + Y01)				
Process flange screws made of Monel	D34	✓	~	1
(max. nominal pressure PN20) Supplied with oval flange set	D37	1	1	1
(2 items), PTFE packings and stainles steel	207			
screws in thread of process flanges				
Use in or on zone 1D/2D (only together with type of protection	E01	-	~	~
"Intrinsic safety (EEx ia)")				
Use on zone 0	E02	✓	✓	1
(only together with type of protection "Intrinsic safety (EEx ia)")				
TÜV approval to AD/TRD	E06	1		
(only together with type of protection				
"Intrinsic safety (EEx ia)")	-		,	
Overfilling safety device for flammable and non-flammable liquids	E08	-	~	-
(max. PN 32 (MVWP 464 psi), basic device with type of protection "Intrinsic safety				
(EEx ia)", to WHG and VbF, not together with				
measuring cell filling "inert liquid")				

Selection and Ordering data	Order	code		
Further designs Add "-Z" to Order No. and specify Order code.		HART	PA	FF
Oxygen application (max. 120 bar (1740 psi) at 60°C (140 °F) with oxygen measurement and inert liquid)	E10	1	1	~
Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)	E25	~	1	1
Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)	E55	~	1	*
Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)	E56	~	1	*
Explosion-proof "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)	E57	~	~	1
Interchanging of process connection side	H01	1	✓	✓
Vent on side for gas measurements	H02	✓	✓	✓
$\begin{array}{l} \mbox{Stainless steel process flanges for vertical} \\ \mbox{differential pressure lines} \\ (not together with K01, K02 and K04)^{3)} \end{array}$	H03	~	1	*
Process flange • Hastelloy • Monel • Stainless steel with PVDF insert max. PN 10 (MWP 145 psi), max. temperature of medium 90 °C (194 °F) For ½-14 NPT inner process connection on	K01 K02 K04	* * *	* * * *	
the side in the middle of the process flange, vent valve not possible				

✓ = available

1) When the manufacture's certificate M (calibration certificate) has to be when the manufacture's centificate in (calibration centificate) include the store ordered for transmitters with diaphragm seals, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.
 Whe the acceptance test certificate 3.1 for transmitters with direct-connected diaphragm seals is ordered, this certificate must also be ordered with the correspondence or ordered.

with the corresponding seals.

3) Not suitable for connection of remote seal

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

Selection and Ordering data	Order	code		
Additional data		HART	PA	FF
Add $"\mbox{-}Z"$ to Order No. and specify Order code.				
Measuring range to be set Specify in plain text:				
• With linear characteristic (max. 5 digits): Y01: up to mbar, bar, kPa, MPa, psi	Y01	*		
 With square-rooted characteristic (max. 5 digits): Y02: up to mbar, bar, kPa, MPa, psi 	Y02	•		
Measuring point number (TAG No.) Max. 16 char., specify in plain text: Y15:	Y15	~	~	~
Measuring point text Max. 27 char., specify in plain text: Y16:	Y16	*	~	~
Entry of HART address (TAG) Max. 8 char., specify in plain text: Y17:	Y17	~		
Setting of pressure indicator in pressure	Y21	✓	✓	1
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 $H_2O^{(*)}$, $inH_2O^{(*)}$, $ftH_2O^{(*)}$, mmHG, inHG, psi, Pa, kPa, MPa, g/cm ² , kg/cm ² , Torr, ATM oder % *) ref. temperature 20 °C				
Setting of pressure indicator in	Y22 ²⁾	~		
non-pressure units ¹⁾ Specify in plain text: Y22: up to //min, m ³ /h, m, USgpm, (specification of measuring range in pressure units "Y01" or "Y02" is essential, unit with max. 5 characters)	+ Y01 or Y02			
Preset bus address	Y25		✓	
(possible between 1 and 126) Specify in plain text: Y25:				

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

✓ = available

Preset values can only be modified over SIMATIC PDM.
 Not together with over-filling safety device for flammable and non-flammable liquids (Order code "E08")

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

DS III series

for differential pressure and flow

Selection and Orderin	g data	Order No.
SITRANS P pressure	transmitters for differen-	7 M F 4 5 3 3 -
tial pressure and flow	, Series DS III HART	
PN 420 (MWP 6092 ps	i)	
Measuring cell filling	Measuring cell cleaning	
Silicone oil	Standard	1
Snon		-
Span 2.5 250 mbar	(1 004 100 4 ipH O)	D
6 600 mbar	(1.004 100.4 inH ₂ O)	
	(2.409 240.9 inH ₂ O)	E
16 1600 mbar	(6.424 642.4 inH ₂ O)	
50 5000 mbar	(20.08 2008 inH ₂ O)	G
0.3 30 bar	(4.35 435 psi)	н
Wetted parts material		
(stainless steel process	0,	
Seal diaphragm	Parts of measuring cell	
Stainless steel	Stainless steel	A
Hastelloy	Stainless steel	В
Gold ¹⁾	Gold	L
Process connection		-
	PT with flange connection	
 Sealing screw opposition 	0	
	₆ -20 UNF to EN 61518	3
- Mounting thread M		1
(only for replaceme		
	ocess flanges. Position of	
	he process flanges (see	
dimensional drawing)	l.	
	₆ -20 UNF to EN 61518	7
 Mounting thread M⁻ 		5
(only for replaceme	nt needs)	_
Non-wetted parts mat Process flange screws	erials Electronics housing	
Stainless steel	Die-cast aluminium	2
Stainless steel	Stainless steel precision casting ²⁾	3
Version		
 Standard version 		1
	English label inscriptions,	2
documentation in 5 la	inguages on CD	
Explosion protection		
 Without 		A
 With ATEX, Type of pr 		
 Intrinsic safety (EE) 	,	В
- "Explosion-proof (El	Ex d)" ³⁾	D
- "Intrinsic safety and		Р
enclosure (EEx ia +	EEx d)" ⁴⁾	
- "Ex nA/nL (zone 2)"		E
 "Intrinsic safety, exp 	losion-proof enclosure	R
and dust explosion	protection (EEx ia +	
EEx d + Zone 1D/2I		
• With FM + CSA, Type		
- "Intrinsic safety and		NC
(is + xp) ^{"3)} , max PN	360	
Electrical connection	-	
Screwed gland Pg 13	8.5 ⁵⁾	Α
 Screwed gland M20x 	1.5	В
 Screwed gland ½-14 		С
Han 7D plug (plastic	housing) incl. mating	D
connector ⁵⁾	6)	
 M12 connectors (met 	al) ^{cy}	F

Order No.	
7 M F 4 5 3 3 -	e.
	0
•	1
	6
	7
	7 M F 4 5 3 3 -

amplifiers".

Factory-mounting of shut-off values and value manifolds see page 2/147.

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

¹⁾ Not together with max. span 600 mbar (240.9 inH₂O)

- Not together with Electrical connection "Screwed gland Pg 13.5" and "Han7D plug".
- ³⁾ Without cable gland, with blanking plug
- ⁴⁾ With enclosed cable gland EEx ia and blanking plug
- Not together with type of protection "Explosion-proof" and and type of protection "Ex nA".
- 6) Cannot be used together with the following types of protection: "Explosion-proof" and "Intrinsic safety and explosion-proof".

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

		for differential pre	ssure and now
Selection and Ordering data	Order No.	Selection and Ordering data	Order No.
SITRANS P pressure transmitters for differen- tial pressure and flow, Series DS III HART PN 420 (MWP 6092 psi)		SITRANS P pressure transmitters for differen- tial pressure and flow, Series DS III HART PN 420 (MWP 6092 psi)	
DS III PA (PROFIBUS PA) series	7 M F 4 5 3 4 -	DS III PA (PROFIBUS PA) series	7 M F 4 5 3 4 -
DS III FF series (FOUNDATION Fieldbus)	7 M F 4 5 3 5 -	DS III FF series (FOUNDATION Fieldbus)	7 M F 4 5 3 5 -
	1		1
Nominal measuring range250 mbar $(100.4 \text{ inH}_2\text{O})$ 600 mbar $(240.9 \text{ inH}_2\text{O})$ 1600 mbar $(642.4 \text{ inH}_2\text{O})$ 5 bar $(2008 \text{ inH}_2\text{O})$ 30 bar (435 psi) Wetted parts materials(stainless steel process flanges)Seal diaphragmParts of measuring cellStainless steelStainless steelHastelloyStainless steelGold ¹¹ GoldProcess connectionFemale thread ¼-18 NPT with flange connection• Sealing screw opposite process connection• Mounting thread 7/16-20 UNF to EN 61518• Mounting thread M12 to DIN 19213 (only for replacement needs)• Venting on side of process flanges. Position of the top vent valve in the process flanges (see dimensional drawing).• Mounting thread 7/16-20 UNF to EN 61518• Mounting thread 7/26-20 UNF to EN 6151	D E F G H L 3 1 7 5	 Display Without indicator Without visible digital indicator (digital indicator hidden, setting: mA) With visible digital indicator With customer-specific digital indicator (setting as specified, Order code "Y21" or required) Factory-mounting of shut-off valves and valve manif2/147. Included in delivery of the device: Brief instructions (Leporello) CD-ROM with detailed documentation Sealing plug(s) or sealing screw(s) for the proces 1) Not together with max. span 600 mbar (240.9 inH₂C 2) Without cable gland, with blanking plug. 3) With enclosed cable gland EEx ia and blanking plug 4) Not together with types of protection "Explosion-prod and explosion-proof" 	6 7 folds see page s flanges(s)
Process flange screws Electronics housing Stainless steel Die-cast aluminium	2		
Stainless steel Stainless steel precision casting Version • Standard version • International version, English label inscriptions,	3 		
documentation in 5 languages on CD Explosion protection Without With ATEX, Type of protection: - "Intrinsic safety (EEx ia)" - "Explosion-proof (EEx d)* ²) - "Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d)* ³) - "Ex nA/nL (zone 2)" - "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)* ³) (not for DS III FF) With FM + CSA, Type of protection: - "Intrinsic safety and explosion-proof (is + xp)* ²), max PN 360 Electrical connection / cable entry Screwed gland M20x1.5 Screwed gland ½-14 NPT Plug M12 incl. mating connector ⁴)	A B D P E R NC S F		

HART PA

✓ ✓

✓ ~

√ √

1

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✓ √

✓ ✓

✓

✓

✓

FF

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

Further designs Add "-Z" to Order No. and specify Order code. Pressure transmitter with mounting bracket made of:		HART	PA	FF	Further decigno		HART	
code. Pressure transmitter with mounting bracket made of:					Further designs			P/
bracket made of:					Add "-Z" to Order No. and specify Order code.			
					Explosion protection "Explosion-proof" to NEPSI (China)	E56	1	1
• Steel	A01	✓	1	✓	(only for transmitter 7MF4D)			
 Stainless steel 	A02	1	✓	 ✓ 	Explosion-proof "Zone 2" to NEPSI (China)	E57	✓	✓
O-rings for process flanges (instead of FPM (Viton))					(only for transmitter 7MF4E)	LI01	-	
PTFE (Teflon)	A20	√	1	✓	Interchanging of process connection side	H01		v
 FEP (with silicone core, approved for food) FFPM (Kalrez, compound 4079) NBR (Buna N) 	A21 A22 A23		* * *		Stainless steel process flanges for vertical differential pressure lines	H03	-	~
Plug	ALU							
 Han 7D (metal, gray) 	A30	1			Add "-Z" to Order No. and specify Order code.			
 Han 8U (instead of Han 7D) 	A31	✓			Measuring range to be set			
Sealing screws 1/4-18 NPT, with vent valve in material of pro-	A40	~	1	1	 Specify in plain text: With linear characteristic (max. 5 digits): 	Y01	~	
					Y01: up to mbar, bar, kPa, MPa, psi • With square-rooted characteristic	Y02	1	
Cable sockets for M12 connectors (metal)	A50	1	1	1	(max. 5 digits):			
Rating plate inscription (instead of German)					Y02: up to mbar, bar, kPa, MPa, psi Measuring point number (TAG No.)	Y15	~	1
• English • French	B11 B12	✓ ✓	✓ ✓	1 1	Max. 16 characters, specify in plain text: Y15:			
Spanish	B13	1	1	1		Vic	1	
• Italian	B14	1	1	✓	Measuring point text Max. 27 characters, specify in plain text:	Y16	•	v
English rating plate Pressure units in inH ₂ O or psi	B21	~	~	~	Y16: Entry of HART address (TAG)	Y17	-	
Quality inspection certificate (Factory cali bration) to IEC 60770-2	C11	~	~	~	Max. 8 characters, specify in plain text: Y17:			
Acceptance test certificate To EN 10204-3.1	C12	~	~	1	Setting of pressure indication in pressure units	Y21	*	-
Factory certificate To EN 10204-2.2	C14	~	~	~	Specify in plain text (standard setting: mA): Y21: mbar, bar, kPa, MPa, psi, Note:			
"Functional Safety (SIL)" certificate	C20	1			The following pressure units can be selected:			
"PROFIsafe" certificate and protocol	C21		~		bar, mbar, mm $H_2O^{*)}$, in $H_2O^{*)}$, ft $H_2O^{*)}$, mmHG, inHG, psi, Pa, kPa, MPa, g/cm ² ,			
Setting of upper limit of output signal to 22.0 mA	D05	~			kg/cm ² , Torr, ATM or % *) ref. temperature 20 °C			
Manufacturer's declaration acc. to NACE (only together with seal diaphragm made of Hastelloy and stainless steel)	D07	1	*	*	Setting of pressure indication in non-pressure units ¹⁾ Specify in plain text:	Y22 + Y01 or Y02	*	
Type of protection IP68 (only for M20x1.5 and ½-14 NPT) (not together with Han 7D / Han 8U plug, Pg 13.5 screwed gland)	D12	×	~	1	Y22: up to l/min, m ³ /h, m, USgpm, (specification of measuring range in pressure units "Y01" or "Y02" is essential, unit with max. 5 characters)			
Digital indicator alongside the input keys (only together with the devices 7MF4533- 2A.6 orA.7-Z, Y21 or Y22 + Y01)	D27	~	*	~	Preset bus address (possible between 1 and 126) Specify in plain text: Y25:	Y25		
Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")	E01	1	*	~	Only "Y01", "Y21", "Y22", "Y25" and "D05" can b ✓ = available	pe facto	ry pres	et
Use on zone 0 (only together with type of protection "Intrinsic safety (EEx ia)")	E02	~	*	1	1) Preset values can only be modified over SIMA	TIC PDN	1.	
Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)	E25	~	*	~				
Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)	E55	~	~	~				

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

DS III series for differential pressure and flow

Dimensional drawings



- 1 Process connection: 1/4-18 NPT (EN 61518)
- 2 Blanking plug
- 3 Electrical connection:
 - screwed gland Pg 13,5 (adapter) ^{2) 3)},
 - screwed gland M20x1,5³⁾,
 - screwed gland 1/2-14 NPT or
 - Han 7D/ Han 8U plug 2) 3)
 - Terminal side

4

- 5 Electronics side, digital display (longer overall length for cover with window)
- 6 Protective cover over keys
- 7 Mounting bracket (option)
- 8 Sealing screw (optionally with vent valve)
- 9 Screw cover safety bracket (only for type of protection
- "Explosion-proof enclosure", not shown in the drawing)
- 10 Lateral venting for liquid measurement (Standard)
- 11 Lateral venting for gas measurement (suffix H02)



- 1) Allow approx. 20 mm (0.79 inch) thread length to permit unscrewing
- 2) Not with type of protection "explosion-proof enclosure"
- 3) Not with type of protection "FM + CSA [is + xp]"
- 4) 92 mm (3.62 inch) for minimum distance to permit rotation with indicator
- 5) 45 mm (1.8 inch) for Pg 13,5 with adapter

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

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

DS III series

for differential pressure and flow



- Process connection: 1/4-18 NPT (EN 61518) 1
- 2 Blanking plug
- Electrical connection: 3
 - screwed gland M20x1,5 ⁴⁾,
 - screwed gland 1/2-14 NPT or
 - PROFIBUS plug M12 3) 4)
- Terminal side 4
- 5 Electronic side, digital display (longer overall length for cover with window)
- 6 Protective cover over keys
- 7 Mounting bracket (option)
- 8 Sealing screw (optionally with vent valve)
- 9 Screw cover - safety bracket (only for explosion-proof enclosure, not shown in the drawing)
- 10 Lateral venting for liquid measurement (Standard)
- 11 Lateral venting for gas measurement (suffix H02)



- 1) Allow approx. 20 mm (0.79 inch) thread length in addition
- 92 mm (3.62 inch) for minimum distance to permit rotation 2) indicator
- Not with type of protection "explosion-proof enclosure" Not with type of protection "FM + CSA" 3)
- 4)

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