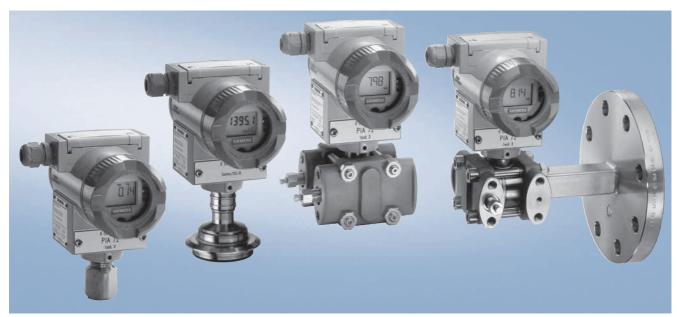
Transmitters for gage, absolute and differential pressure, flow and level

DS III series Technical description

Overview



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

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

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

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

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

- Gage pressure
- Absolute pressure
- For differential pressure transmitters
- Filling level
- Mass level
- · Volume level
- Volume flow
- Mass flow

Benefits

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

- Infinitely adjustable span from 0.01 mbar to 400 mbar for DS III with HART communication
- Nominal measuring range from 1° to°400°bar for DS III PA (PROFIBUS PA) and FF (Foundation Fieldbus)
- · High measuring accuracy
- Parameterization over control keys and HART communication, PROFIBUS PA communication or Foundation Fieldbus interface

Application

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

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

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

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

The pressure transmitter can be operated locally over 3 control keys or programmed externally over HART communication or over PROFIBUS PA or Foundation Fieldbus interface.

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

DS III series Technical description

Pressure transmitter for gage pressure

- Measured variable: Gage pressure of aggressive and non-aggressive gases, vapors and liquids.
- Span (infinitely adjustable) for DS III HART: 0.01 ... 400 bar g(0.145 ... 5802 psi g)
- Nominal measuring range for DS III PA and FF: 1 ... 400 bar g(14.5 ... 5802 psi g)

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:
 - Gage pressure series
 - Differential pressure series

Pressure transmitters for differential pressure and flow

- · Measured variables:
 - Differential pressure
 - Small positive or negative pressure
 - Flow q ~ √∆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

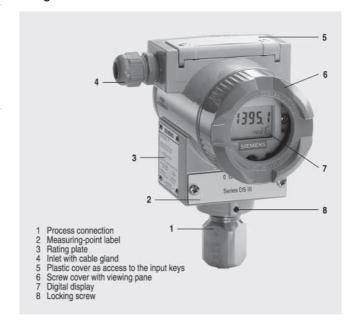
- Measured variable: Level of aggressive and non-aggressive liquids in open and closed vessels.
- Span (infinitely adjustable) for DS III HART: 25 mbar ... 5 bar (0.363 ... 72.5 psi)
- Nominal measuring range for DS III PA and FF: 250 mbar ... 5 bar (3.63 ... 72.5 psi)
- · Nominal diameter of the mounting flange
 - DN 80 or DN 100
 - 3 inch or 4 inch

In the case of level measurements in open containers, the low-pressure 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.

Design



Front view

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

The rating plate (3,Figure "Front view") with the Order No. is located on the side of the housing. The specified number together with the ordering information provide details on the optional design details and on the possible measuring range (physical properties of built-in sensor element).

The approval label is located on the opposite side.

The housing is made of die-cast aluminium or stainless steel precision casting. A round cover is screwed on at the front and rear of the housing. The front cover (6) can be fitted with a viewing pane so that the measured values can be read directly on the digital display. The inlet (4) for the electrical connection is located either on the left or right side. The unused opening on the opposite side is sealed by a blanking plug. The protective earth connection is located on the rear of the housing.

The electrical connections for the power supply and screen are accessible by unscrewing the rear cover. The bottom part of the housing contains the measuring cell with process connection (1). The measuring cell is 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.

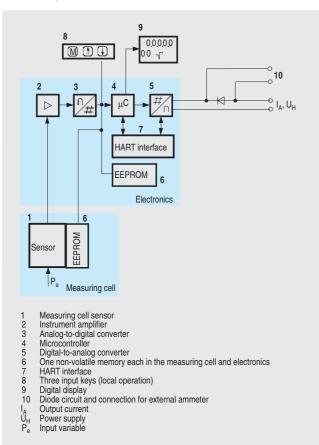
At the top of the housing is a plastic cover (5), which hides the input keys.

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

DS III series
Technical description

Function

Mode of operation of the DS III HART electronics



Function diagram of the electronics

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

The diode circuit (10) protects against incorrect polarity.

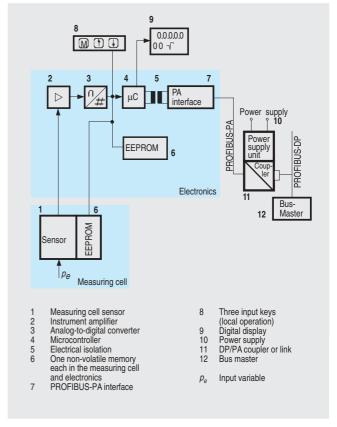
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The one memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced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

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

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

The pressure transmitters with spans \leq 63 bar measure the input pressure compared to atmosphere, transmitters with spans \geq 160 bar compared to vacuum.

Mode of operation of the DS III PA 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 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.

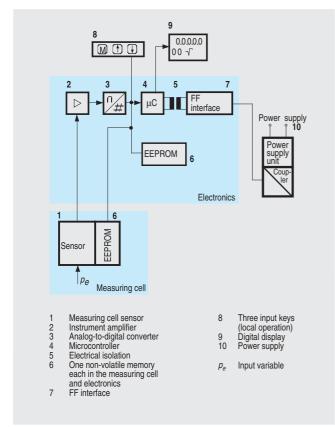
Using the three input keys (8) you can parameterize the pressure transmitter directly at the point of measurement. The input keys can also be used to control the view of the results, the error messages and the operating modes on the digital display (9).

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.

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

DS III series Technical description

Mode of operation of the DS III FF electronics



Function diagram of 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).

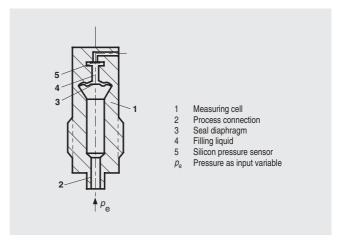
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The one memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced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

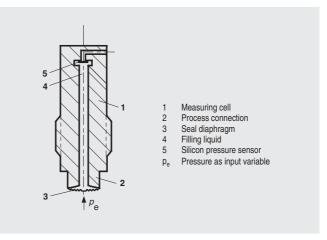
Measuring cell for gage pressure



Measuring cell for gage pressure, function diagram

The pressure pe is applied through the process connection (2, Figure "Measuring cell for gage 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 gage pressure, with front-flush diaphragm for paper industry



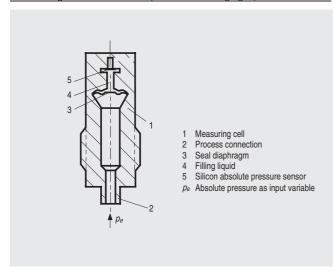
Measuring cell for gage pressure, with front-flush diaphragm for paper industry, function diagram $\,$

The pressure pe is applied through the process connection (2, Figure "Measuring cell for gage 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.

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

DS III series
Technical description

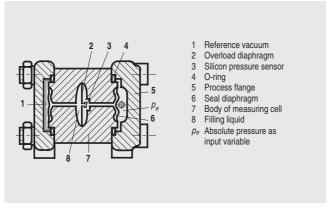
Measuring cell for absolute pressure from gage pressure series



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 gage 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



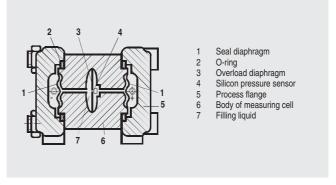
Measuring cell for absolute pressure from differential pressure series, function diagram

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.

Measuring cell for differential pressure and flow



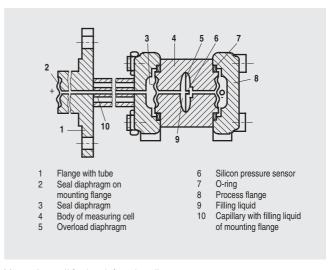
Measuring cell for differential pressure and flow, function diagram

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

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

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

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

DS III series Technical description

Parameterization DS III

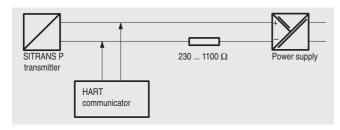
Depending on the version, there are a range of options for parameterizing the pressure transmitter and for setting or scanning the parameters.

Parameterization using the input keys (local operation)

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

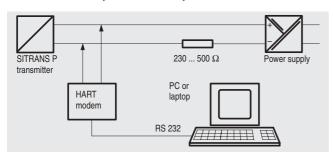
Parameterization using HART communication

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

- 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 dimensions
Pa, MPa, kPa, hPa, bar, mbar, torr, atm, psi, g/cm², kg/cm², inH ₂ O, inH ₂ O (4 °C), mmH ₂ O, ftH ₂ O, inHg, mmHg
m, cm, mm, ft, in
m ³ , dm ³ , hI, yd ³ , ft ³ , in ³ , US gallon, Imp. gallon, bushel, barrel, barrel liquid
g, kg, t, lb, Ston, Lton, oz
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
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
t, kg, g, lb, oz, LTon, STon
K, °C, °F, °R
%, mA

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	Х	Х
Zero adjustment (correction of position)	X	Х
Key and/or function disabling	Х	Х
Source of measured-value display	Х	Х
Physical dimension of display	Х	Х
Position of decimal point	Х	Х
Bus address	Х	Х
Adjustment of characteristic	Χ	Х
Input of characteristic		Х
Freely-programmable LCD		Х
Diagnostics functions		X

DS III 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 dimensions
MPa, hPa, kPa, Pa, bar, mbar, torr, atm, psi, g/cm^2 , kg/cm^2 , mmH_2O
m, cm, mm, ft, in, yd
m ³ , dm ³ , hl, yd ³ , ft ³ , in ³ , US gallon, lmp. gallon, bushel, barrel, barrel liquid
$\rm m^3/s,m^3/min,m^3/h,m^3/d,l/s,l/min,l/h,l/d,Ml/d,ft^3/s,ft^3/min,ft^3/h,ft^3/d,USgallon/s,USgallon/min,USgallon/h,USgallon/d,bbl/s,bbl/min,bbl/h,bbl/d$
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
t, kg, g, lb, oz, LTon, STon
K, °C, °F, °R
%

DS III series for gage pressure

Technical specifications

SITRANS P, DS III series for gage pressure						
	HART		PROFIBUS PA or Fou	PROFIBUS PA or Foundation Fieldbus		
Input						
Measured variable	Gage pressure					
Spans (infinitely adjustable) or nominal measuring range and	1 ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' '		Nominal measuring range	Max. perm. test pressure		
max. pemissible test pressure	0.01 1 bar g (0.145 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)		
Lower measuring limit		•		•		
Measuring cell with silicone oil filling	30 mbar a (0.435 psi a)		1			
Upper measuring limit	100% of max. span (ma	x. 160 bar g (2320 psi g)	with oxygen measureme	ent and inert liquid)		
Output						
Output signal	4 20 mA		Digital PROFIBUS PA or Foundation Fieldbus signal			
 Lower limit (infinitely adjustable) 	3.55 mA, factory preset	to 3.84 mA	-			
Upper limit (infinitely adjustable)	23 mA, factory preset to to 22.0 mA	20.5 mA or optionally se	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	S A in Ω,	-			
With HART communication	$R_{\rm B} = 230 \dots 500 \ \Omega \ {\rm (SIM)}$ $R_{\rm B} = 230 \dots 1100 \ \Omega \ {\rm (HA)}$		-			
Physical bus	-		IEC 61158-2			
With polarity reversal protection	-		Yes			
Accuracy						
Reference conditions		c, start-of-scale value 0 b (77 °F)) r: Span ratio (r :		aphragm, silicone oil filling,		
Error in measurement and fixed-point setting (including hysteresis and repeatability)						
Linear characteristic			≤ 0,075%			
- r ≤ 10	$\leq (0.0029 \cdot r + 0.071)\%$					
- 10 < r ≤ 30	$\leq (0.0045 \cdot r + 0.071)\%$					
- 30 < r ≤ 100	≤ (0.005 · r + 0.05)%					
Long-term drift (temperature change ± 30 °C (± 54 °F))	≤ (0.25 · r)% every 5 year	ars	≤ 0.25% every 5 years			
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)	≤ (0.1 · r + 0.15)%/10 K		≤ 0.25%/10 K			
Measured Value Resolution	_		3 · 10 ⁻⁵ of nominal mea	asuring range		

DS III series for gage pressure

SITRANS P, DS III series for gage pressure	•	
	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	To EN 50081-1	
- Interference immunity	To EN 61236 and NAMUR NE 21	
Design		
Weight (without options)	≈ 1.5 kg (≈ 3.3 lb)	
Wetted parts materials		
Connection shank	Stainless steel, mat. No. 1.4404/316L or Haste	elloy C4, mat. No. 2.4610
Oval flange	Stainless steel, mat. No. 1.4404/316L	
Seal diaphragm	Stainless steel, mat. No. 1.4404/316L or Haste	elloy C276, mat. No. 2.4819
Measuring cell filling	Silicone oil or inert filling liquid (max. 160 bar ((2320 psi g) with oxygen measurement)
Process connection	Connection shank G½B to DIN EN 837-1, feminate (MWP 2320 psi g)) to DIN 19213 with mounting	ale thread $\frac{1}{2}$ -14 NPT or oval flange (PN 160 g thread M10 or 7 / ₁₆ -20 UNF to EN 61518
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

DS III series for gage pressure

SITRANS F	, DS III	series f	or gage	pressure
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	HART	PROFIBUS PA or Foundation Fieldbus
Certificate and approvals		
Classification according to pressure equipment directive (DRGL 97/23/EC)	For gases of fluid group 1 and liquids of fluid grougraph 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: $\begin{array}{l} U_i=30 \text{ V, } I_i=100 \text{ mA,} \\ P_i=750 \text{ mW; } R_i=300 \Omega \end{array}$	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	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{i} = 7 \mu H, C_{i} = 1.1 nF$
• 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: $U_{H} = 10.5 \dots 45 \text{ V DC}$	To circuits with values: $U_{H} = 9 \dots 32 \text{ V DC}$
• Dust explosion protection for zone 20	PTB 01 ATEX 2055	•
- 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: $U_{\rm i}$ = 30 V, $I_{\rm i}$ = 100 mA, $P_{\rm i}$ = 750 mW, $R_{\rm i}$ = 300 Ω	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	$L_{\rm i} = 0.4 \rm mH, C_{\rm i} = 6 \rm nF$	$L_{\rm i} = 7 \mu \text{H}, C_{\rm i} = 1.1 \text{nF}$
• Dust explosion protection for zone 21/22	PTB 01 ATEX 2055	1
- 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

DS III series

for gage pressure	
HART communication	000 4400 0
HART communication	230 1100 Ω;
Protocol Software for computer	HART Version 5.x SIMATIC PDM
Software for computer	SIMATIC PDIVI
PROFIBUS PA communication	
Simultaneous communication with master class 2 (max.)	4
The address can be set using	Configuration tool or local operation (standard setting address 126)
Cyclic data usage	
Output byte	5 (one measuring value) or 10 (two measuring values)
• Input byte	0, 1, or 2 (register operating mode and reset function for metering)
Internal preprocessing	
Device profile	PROFIBUS PA Profile for Process Control Devices Version 3.0, Class B
Function blocks	2
Analog input	
 Adaptation to customer-specific process variables 	Yes, linearly rising or falling characteristic
- Electrical damping T_{63} , adjustable	0 100 s
- Simulation function	Input /Output
- Failure mode	Can be parameterized (last good value, substitute value, incorrect value)
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respectively
Register (totalizer)	Can be reset, preset, optional direction of counting, simulation function of register output
- Failure mode	Can be parameterized (summation with last good value, continuous summation, summation with incorrect value)
- Limit monitoring	One upper and lower warning limit and one alarm limit respectively
 Physical block 	1
Transducer blocks	2
Pressure transducer block	
 Can be calibrated by applying two pressures 	Yes
- Monitoring of sensor limits	Yes
 Specification of a container characteristic with 	Max. 30 nodes

Parameterizable

Constant value or over parameter-

Communication Foundation Field	lbus
Function blocks	3 function blocks analog input, 1 function block PID
 Analog input 	
 Adaptation to customer-specific process variables 	Yes, linearly rising or falling characteristic
 Electrical damping T₆₃, adjustable 	0 100 s
- Simulation function	Output/input (can be locked within the device with a bridge)
- Failure mode	Can be parameterized (last good value, substitute value, incorrect value)
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respectively
 Square-rooted characteristic for flow measurement 	Yes
• PID	Standard FF function block
Physical block	1 Resource block
Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block LCD
Pressure transducer block	
 Can be calibrated by applying two pressures 	Yes
- Monitoring of sensor limits	Yes
 Simulation function: Measured pressure value, sensor temper- ature and electronics tempera- 	Constant value or over parameter- izable ramp function

sured pressure value and sen- izable ramp function

- Square-rooted characteristic for flow measurement - Gradual volume suppression

and implementation point of square-root extraction - Simulation function for mea-

sor temperature

DS III series for gage pressure

Selection and order				er No		
	e transmitters for gage		7MF4033-			
pressure, series DS	III HAKI				-	
Measuring cell fillin	g Measuring cell cleaning					
Silicone oil	Standard	•	1			
Inert liquid ¹⁾	Grease-free		3			
Span						
0.01 1 bar g	(0.15 14.5 psi g)		В			
0.04 4 bar g	(0.58 58 psi g)		C			
0.16 16 bar q	(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			
Wetted parts mater						
Seal diaphragm	Process connection					
Stainless steel	Stainless steel	_	ļ			
Hastelloy	Stainless steel		É			
Hastelloy	Hastelloy					
Version as diaphragr	•			0		
Process connection						
 Connection shank 				0		
• Female thread ½-1				1		
 Oval flange made 						
max. span 160 bar						
	⁷ / ₁₆ -20 UNF to EN 61518			2		
- Mounting thread				3		
Non-wetted parts m	aterials					
 Housing made of c 	lie-cast aluminium	•		0		
 Housing stainless s 	steel precision casting			3		
Version						
 Standard version 					1	
 International version 	n, English label inscription	ıs, 🕨			2	
documentation in 5	languages on CD					
Explosion protection	n					
Without					Α	
With ATEX, Type of					_	
- "Intrinsic safety (E					В	
- "Explosion-proof	(EEx d)" ² /				D	
- "Intrinsic safety at	nd explosion-proof enclosu 3)	ıre >			P	
- "n (Zone 2)"					Е	
	xplosion-proof enclosure a	nd			R	
dust explosion pr	otection (EEx ia + EEx d +					
Zone 1D/2D)" 3)						
 With FM + CSA, Ty 						
 "Intrinsic safety a (is + xp)" ²⁾ 	nd explosion-proof				N	С
Electrical connection	on / cable entry					
Screwed gland Pg	13.5 (adapter) 17					A
 Screwed gland M2 						В
 Screwed gland ½- 						C D
connector 4)	ic housing) incl. mating					U
Display						
	icator hidden, setting: mA)) -				1
With visible digital	indicator, setting: mA					6
 with customer-spec 						7
	d, Order Code "Y21" or "Y2	22"				
required)						

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

DS III series for gage pressure

Further designs	Order Code			
Add "-Z" to Order No. and		HART	PA	FF
specify Order Code.				
Pressure transmitter with mounting bracket made of:				
Steel Stainless steel	A01 A02	\ \ \	1	1
Plug	7102			
• Han 7D (metal, gray)	A30	//		
Han 8U (instead of Han 7D)	A31	✓		
Rating plate inscription				
(instead of German)				
English	B11	✓	1	✓
• French	B12	✓	✓	✓
• Spanish	B13	/	1	\
• Italian	B14	/	V	'
English rating plate	B21	🗸	✓	✓
Pressure units in inH ₂ O or psi				
Manufacturer's test certificate M	C11	✓	1	1
(calibration certificate) To DIN 55350, Part 18 and to ISO 8402				
Acceptance test certificate	C12	✓	✓	✓
To EN 10204-3.1				
Factory certificate	C14	✓	1	✓
To EN 10204-2.2				
"Functional Safety (SIL)" certificate	C20	✓		
Setting of upper limit of output signal to	D05	1		
22.0 mA				
Manufacturer's declaration acc. to NACE	D07	✓	✓	✓
Type of protection IP68	D12	✓	✓	✓
(not together with 7D/				
Han 8Ú plug, cable gland Pg 13.5)				,
Digital indicator alongside the input keys (only together with the devices 7MF4033-	D27	✓	~	'
0A.6 orA.7-Z, Y21 or Y22 + Y01)				
Supplied with oval flange	D37	1	1	1
(1 item), PTFE packing and screws in thread				
of oval flange				
Use in or on zone 1D/2D	E01	✓	✓	✓
(only together with type of protection "Intrinsic safety (EEx ia)")				
Use on zone 0	E02	1	1	1
(only together with type of protection	_02			
"Intrinsic safety (EEx ia)")				
Oxygen application	E10	✓	✓	1
(max. 160 bar g (2320 psi g) for oxygen measurement and inert liquid)				
1 /	EOF		,	,
Explosion-proof "Intrinsic safety" to INMETRO (Brazil)	E25	V	V	*
(only for transmitter 7MF4B)				
Explosion-proof "Intrinsic safety" to	E55	1	1	1
NEPSI (China)				
(only for transmitter 7MF4B)				
Explosion protection "Explosion-proof" to	E56	✓	1	1
NEPSI (China) (only for transmitter 7MF4D)				
Explosion-proof "Zone 2" to NEPSI (China)	F57	1	1	./
LAURDSIDIE DIODI ZONE Z 10 NEPSI (CNINA)	E3/		V	

Additional data	Order	Code		
Add "-Z" to Order No. and specify Order Code.		HART	PA	FF
Measuring range to be set Specify in plain text: Y01: up to mbar, bar, kPa, MPa, psi	Y01	√		
Measuring point number/identification Max. 16 characters, specify in plain text: Y15:	Y15	✓	✓	✓
Measuring point text Max. 27 characters, specify in plain text: Y16:	Y16	✓	✓	✓
Entry of HART address (TAG) Max. 8 characters, specify in plain text: Y17:	Y17	✓		
Setting of pressure indication in pressure units	Y21	✓	✓	1
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 , mA, Torr, ATM oder % *) ref. temperature 20 °C				
Setting of pressure indication in non-pressure units Specify in plain text: Y22: up to //min, m³/h, m, USgpm, (specification of measuring range in	Y22 + Y01	✓		
pressure units "Y01" is essential, unit with max. 5 characters)				
Preset bus address Specify in plain text: Y25:	Y25		✓	

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

✓ = available

Ordering example

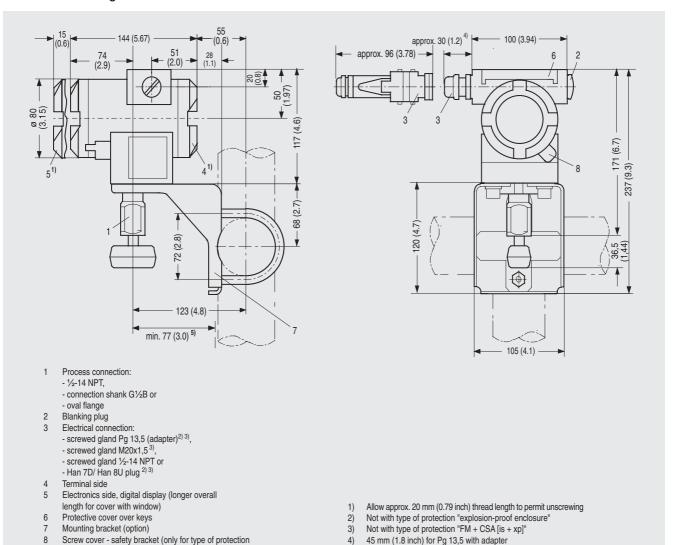
Item line: 7MF4033-1EA00-1AA7-Z B line: A01 + Y01 + Y21

C line: Y01: 10 ... 20 bar (145 ... 290 psi)

C line: Y21: bar (psi)

DS III series for gage pressure

Dimensional drawings



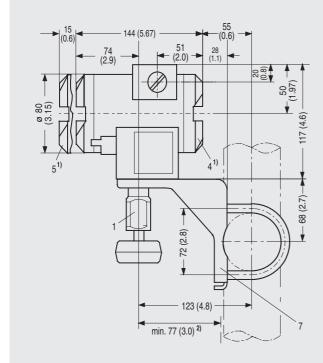
45 mm (1.8 inch) for Pg 13,5 with adapter

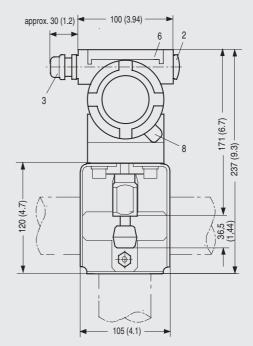
Minimum distance for rotation

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

"Explosion-proof enclosure", not shown in the drawing)

DS III series for gage pressure





- Process connection:
 - ½-14 NPT,
 - connection shank G1/2B or
 - oval flange
- Blanking plug
- Electrical connection:
 - screwed gland M20x1,54),
 - screwed gland ½-14 NPT or
 - PROFIBUS plug M12 3) 4)
- Terminal side
- Electronics side, digital display (longer overall length for cover with window)
- Protective cover over keys
- Mounting bracket (option)
- Screw cover safety bracket (only for explosion-proof enclosure, not shown in the drawing)
- Allow approx. 20 mm (0.79 inch) thread length in addition
- Minimum distance for rotating 2)
- 3) Not with type of protection "Explosion-proof enclosure".

 Not with type of protection "FM + CSA".

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

DS III series

for gage pressure, with front-flush diaphragm

Technical specifications

SITRANS P, DS III series for gage pressure,	with front-flush diaphra	gm				
	HART		PROFIBUS PA or Fo	undation Fieldbus		
Input						
Measured variable	Gage pressure					
Spans (infinitely adjustable) or nominal measuring range and	ange and sure		Nominal measuring range	Max. perm. test pressure		
max. pemissible test pressure	0.01 1 bar g (0.145 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		•	· ·			
Measuring cell with silicone oil filling	100 mbar a (1.45 psi a	a)	•			
Upper measuring limit	100% of max. span					
Output						
Output signal	4 20 mA Digital PROFIBUS PA or Foundation signal			or Foundation Fieldbus		
• Lower limit (infinitely adjustable)	3.55 mA, factory preset to 3.84 mA		-			
Upper limit (infinitely adjustable)	23 mA, factory preset to 20.5 mA or optionally set to 22.0 mA		-			
Load			•			
Without HART communication	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.023 \text{ A in } \Omega,$ $U_{\rm H}$: Power supply in V		-			
With HART communication	$R_{\rm B} = 230 \dots 500 \ \Omega \ ({\rm SI} \ R_{\rm B} = 230 \dots 1100 \ \Omega \ ({\rm H} \ R_{\rm B} = 230 \dots 1100 \ \Omega \ ($	MATIC PDM) or HART Communicator)	-			
Physical bus	-		IEC 61158-2			
With polarity reversal protection	-		Yes			
Accuracy			·			
Reference conditions		stic, start-of-scale value 0 e 25 °C (77 °F)) r: Span ra		diaphragm, silicone oil fill- span)		
Error in measurement and fixed-point setting (including hysteresis and repeatability)						
Linear characteristic			≤ 0,075%			
- r ≤ 10	$\leq (0.0029 \cdot r + 0.071)$	%				
- 10 < r ≤ 30	$\leq (0.0045 \cdot r + 0.071)$	≤ (0.0045 · r + 0.071)%				
- 30 < r ≤ 100	≤ (0.005 · r + 0.05)%					
Long-term drift (temperature change ± 30 °C (± 54 °F))	≤ (0.25 · r)% every 5 y	rears	≤ 0.25% every 5 years			
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)	$\leq (0.1 \cdot r + 0.15)\%/10$	K	≤ 0.25%/10 K			
Influence of mounting position	0.1 mbar g (0.00145 p	osi g) per 10° inclination				
Measured Value Resolution	-		3 · 10 ⁻⁵ of nominal me	easuring range		

DS III series for gage pressure, with front-flush diaphragm

SITRANS P, DS III series for gage pressure, with front-flush diaphragm		
	HART	PROFIBUS PA or Foundation Fieldbus
Rated operating conditions		·
Degree of protection (to EN 60529)	IP65	
Process temperature	-20 +100 °C (-4 +212 °F)	
Ambient conditions		
Ambient temperature	-20 +85 °C (-4 +185 °F)	
Storage temperature	-50 +85 °C (-58 +185 °F)	
Climatic class		
- Condensation	Permissible	
Electromagnetic compatibility		
- Emitted interference	To EN 50081-1	
- Interference immunity	To EN 61236 and NAMUR NE 21	
Design		
Weight (without options)	≈ 1.5 kg (≈ 3.3 lb)	
Wetted parts materials	Stainless steel	
Measuring cell filling	Silicone oil or inert filling liquid	
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 directive (DRGL 97/23/EC)	For gases of fluid group 1 and liquids of fluid garagraph 3 (sound engineering practice)	group 1; complies with requirements of Article 3,

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

DS III series

for gage pressure, with front-flush diaphragm

HART communication	

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

PROFIBUS PA communication

Simultaneous communication with 4

master class 2 (max.)

The address can be set using

Configuration tool or local operation (standard setting address

Cyclic data usage

Output byte

5 (one measuring value) or 10 (two measuring values)

Input byte

0, 1, or 2 (register operating mode and reset function for metering)

Internal preprocessing

Device profile

PROFIBUS PA Profile for Process Control Devices Version 3.0,

Class B

Function blocks

Analog input

ic process variables

- Adaptation to customer-specif- Yes, linearly rising or falling characteristic

- Electrical damping T₆₃, adjust- 0 ... 100 s

- Simulation function

- Failure mode

Can be parameterized (last good value, substitute value, incorrect

value)

Input /Output

- Limit monitoring

Yes, one upper and lower warning limit and one alarm limit respec-

tively

· 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

Transducer blocks 2

Pressure transducer block

- Can be calibrated by applying two pressures

Yes

- Monitoring of sensor limits

- Specification of a container

Max. 30 nodes

characteristic with

- Square-rooted characteristic

for flow measurement - Gradual volume suppression

and implementation point of square-root extraction

- Simulation function for measured pressure value and sensor temperature

Parameterizable

Constant value or over parameterizable ramp function

Communication Foundation Fieldbus

Function blocks

3 function blocks analog input,

1 function block PID

Analog input

ic process variables

- Adaptation to customer-specif- Yes, linearly rising or falling characteristic

- Electrical damping T₆₃, adjust- 0 ... 100 s

- Simulation function

Output/input (can be locked within

the device with a bridge)

- Failure mode Can be parameterized (last good value, substitute value, incorrect

- Limit monitoring

Yes, one upper and lower warning limit and one alarm limit respec-

tively

- Square-rooted characteristic for flow measurement

Yes

Standard FF function block

Physical block

1 Resource block

Transducer blocks

1 transducer block Pressure with calibration, 1 transducer block

LCD

• Pressure transducer block

- Can be calibrated by applying Yes

two pressures

- Monitoring of sensor limits Yes

- Simulation function: Measured pressure value, sensor temperature and electronics tempera-

Constant value or over parameter-

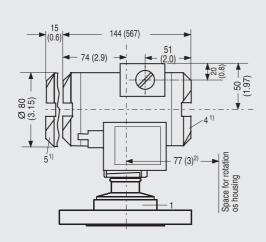
izable ramp function

approx. 30 (1.18)

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

DS III series for gage pressure, with front-flush diaphragm

Dimensional drawings



H₁₌ approx. 130 (5.12)

100 (3.94)

- Process connection: PMC standard
- Blanking plug
- Electrical connection:
 - screwed gland M20x1,5
 - screwed gland 1/2-14 NPT
- Terminal side
 Electronics side, digital display (longer overall length for cover with window)
 Protective cover over keys
- Mounting bracket (option)
 Sealing srew with valve (option)
- Screw cover safety bracket (only for explosion-proof enclosure, not shown in the drawing)

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

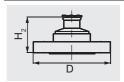
SITRANS P pressure transmitters, DS III series for gage pressure, with front-flush diaphragm, dimensions in mm (inch)

The diagram shows a SITRANS P DS III with an example of a flange. In this drawing the height is subdivided into H₁ and H₂. H₁ = Height of the SITRANS P300 up to a defined cross-section H_2 = Height of the flange up to this defined cross-section Only the height H₂ is indicated in the dimensions of the flanges.

Flanges to EN and ASME

Flange to EN

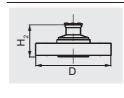
EN 1092-1



DN	PN	ØD	H_2
25	40	115 mm (4.5")	Approx.
25	100	140 mm (5.5")	55 mm (2.2")
40	40	150 mm (5.9")	
40	100	170 mm (6.7")	-
50	16	165 mm (6.5")	_
50	40	165 mm (6.5")	
80	16	200 mm (7.9")	-
80	40	200 mm (7.9")	_

Flanges to ASME

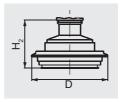
ASME B16.5



DN	class	ØD	H_2
2"	150	150 mm (5.9")	Approx.
2"	300	165 mm (6.5")	- 53 mm (2.1'')
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 flange

Varivent connection



D	Ν	PN	ØD	H ₂
	0 25	40	84 mm (3.3")	Approx. 53 mm (2.1")

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

Technical specifications

SITRANS P, DS III series for absolute press	sure (from the gage pres	ssure series)					
	HART		PROFIBUS PA or Fou	ındation Fieldbus			
Input			•				
Measured variable	Absolute pressure						
Spans (infinitely adjustable) or nominal measuring range and max. pemissible test pressure	Span	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure			
	8.3 250 mbar a (0.12 3.6 psi a)	6 bar a (87 psi a)	250 mbar a (3.6 psi a)	6 bar a (87 psi a)			
	43 1300 bar 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)			
	160 5000 mbar 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)			
	1 30 bar a (14.5 435 psi a)	100 bar a (1450 psi a)	30 bar a (435 psi a)	100 bar a (1450 psi a)			
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 Fieldbunal 3.55 mA, factory preset to 3.84 mA -			or Foundation Fieldbus sig-			
 Lower limit (infinitely adjustable) 	3.55 mA, factory preset to 3.84 mA 23 mA, factory preset to 20.5 mA or optionally set		-				
Upper limit (infinitely adjustable)	23 mA, factory preset to 20.5 mA or optionally set to 22.0 mA		-				
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	$R_{\rm B} = 230 \dots 500 \Omega$ (SIN $R_{\rm B} = 230 \dots 1100 \Omega$ (HA		-				
Physical bus	-		IEC 61158-2				
With polarity reversal protection	-		Yes				
Accuracy							
Reference conditions		ic, 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)							
Linear characteristic			≤ 0.075%				
- r≤10	≤ 0.1%						
- 10 < r ≤ 30	≤ 0.2%						
Long-term drift (temperature change ± 30 °C (± 54 °F))	≤ (0.1 · r)%/year		≤ 0.1%/year				
Influence of ambient temperature			•				
• at -10 +60 °C (14 140 °F)	≤ (0.1 · r +0.2)%		≤ 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 mea	asuring range			

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

	HART	PROFIBUS PA or Foundation Fieldbus
Rated operating conditions		<u>'</u>
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	To EN 50081-1	
- Interference immunity	To EN 61236 and NAMUR NE 21	
Design		
Weight (without options)	≈ 1.5 kg (≈ 3.3 lb)	
Wetted parts materials		
Connection shank	Stainless steel, mat. No. 1.4404/316L or Haste	elloy C4, mat. No. 2.4610
Oval flange	Stainless steel, mat. No. 1.4404/316L	
• Seal diaphragm	Stainless steel, mat. No. 1.4404/316L or Haste	elloy 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	
Power supply $m{\textit{U}}_{H}$		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) avail-	-	Yes

able

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

SITRANS P, DS III series for absolute press	ure (from the gage pressure series)		
	HART	PROFIBUS PA or Foundation Fieldbus	
Certificate and approvals			
Classification according to pressure equipment directive (DRGL 97/23/EC)	For gases of fluid group 1 and liquids of fluid grougraph 3 (sound engineering practice)	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	PROFIBUS PA or Foundation Fieldbus 1 and liquids of fluid group 1; complies with requirements of Article 3, pararing practice) IC T6 85 °F) temperature class T4; 80 °F) temperature class T5; 40 °F) temperature class T6 81 EISCO supply unit: $U_0 = 17.5 \text{ V}$, $I_0 = 380 \text{ mA}$, $P_0 = 5.32 \text{ W}$ Linear barrier: $U_0 = 24 \text{ V}$, $I_0 = 250 \text{ mA}$, $P_0 = 1.2 \text{ W}$ $I_0 = 10.5 \text{ mA}$, $I_0 = 1.1 \text{ nF}$ T6 85 °F) temperature class T6 $I_0 = 10.5 \text{ mA}$, $I_0 = 1.1 \text{ nF}$ T7 T8 T8 T9 T9 T9 T9 T9 T9 T9 T9	
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperature class 7 -40 +70 °C (-40 +158 °F) temperature class 7 -40 +60 °C (-40 +140 °F) temperature class 7	Г5;	
- Connection	To certified intrinsically-safe circuits with maximum values: $U_{\rm i}$ = 30 V, $I_{\rm i}$ = 100 mA, $P_{\rm i}$ = 750 mW; $R_{\rm i}$ = 300 Ω	$U_0 = 17.5$ V, $l_0 = 380$ mA, $P_0 = 5.32$ W Linear barrier:	
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{i} = 7 \mu H, C_{i} = 1.1 nF$	
• 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 7 -40 +60 °C (-40 +140 °F) temperature class 7	T4; T6	
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC	To circuits with values: $U_{H} = 9 \dots 32 \text{ V DC}$	
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	$U_0 = 17.5$ V, $I_0 = 380$ mA, $P_0 = 5.32$ W Linear barrier:	
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{i} = 7 \mu H, C_{i} = 1.1 nF$	
• 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		
• 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	G; CL III; Ex ia IIC T4T6; CL I, DIV 2, GP ABCD	

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

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

HART communicati	

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

PROFIBUS PA communication

Simultaneous communication with 4

master class 2 (max.)

The address can be set using

Configuration tool or local operation (standard setting address

Cyclic data usage

Output byte

5 (one measuring value) or 10 (two measuring values)

Input byte

0, 1, or 2 (register operating mode and reset function for metering)

Internal preprocessing

Device profile

PROFIBUS PA Profile for Process Control Devices Version 3.0, Class B

Function blocks

Analog input

- Adaptation to customer-specific process variables

Yes, linearly rising or falling characteristic

- Electrical damping T₆₃, adjust- 0 ... 100 s

- Simulation function Input /Output

- Failure mode

Can be parameterized (last good value, substitute value, incorrect

value)

- Limit monitoring

Yes, one upper and lower warning limit and one alarm limit respec-

tively

· 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

Transducer blocks 2

Pressure transducer block

- Can be calibrated by applying two pressures

Yes

- Monitoring of sensor limits

- Specification of a container

Max. 30 nodes

characteristic with

- Square-rooted characteristic

for flow measurement

- Gradual volume suppression and implementation point of square-root extraction

Parameterizable

- Simulation function for measured pressure value and sensor temperature

Constant value or over parameterizable ramp function

Communication Foundation Fieldbus

Function blocks

3 function blocks analog input,

1 function block PID

Analog input

- Adaptation to customer-specific process variables

Yes, linearly rising or falling characteristic

- Electrical damping T₆₃, adjust- 0 ... 100 s

- Simulation function

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

- Failure mode

Can be parameterized (last good

value, substitute value, incorrect

- Limit monitoring

Yes, one upper and lower warning limit and one alarm limit respec-

tively Yes

- Square-rooted characteristic for flow measurement

Standard FF function block

Physical block

1 Resource block

Transducer blocks 1 transducer block Pressure with calibration, 1 transducer block

LCD

• Pressure transducer block

- Can be calibrated by applying Yes

two pressures

- Monitoring of sensor limits Yes

- Simulation function: Measured pressure value, sensor temperature and electronics tempera-

Constant value or over parameter-

izable ramp function

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

Selection and ordering	j data		Ord	er	No).			
	ransmitters for absolute		7 M	F 4	2 :	3 3	-		
	ssure series DS III HART								
Measuring cell filling	Measuring cell cleaning					Ī			_
Silicone oil	Standard		1						
Inert liquid ¹⁾	Grease-free		3						
Span									
8.3 250 mbar a	(0.12 3.63 psi a)	E)	D						
43 1300 mbar a	(0.62 18.9 psi a)	E)	F						
0.16 5 bar a	(2.32 72.5 psi a)	E)	G						
1 30 bar a	(14.5 435 psi a)	1	Н						
Wetted parts materials	1								
Seal diaphragm	Process connection								
Stainless steel	Stainless steel	-		Α					
Hastelloy	Stainless steel	E)		В					
Hastelloy	Hastelloy	E)		С					
Version for diaphragm s		,		Υ 0					
Process connection									
• Connection shank G1/2	B to EN 837-1			0					
 Female thread ½-14 N 	IPT			1					
 Oval flange made of s 	tainless steel,								
max. span 160 bar g (2320 psi a)								
- Mounting thread ⁷ / ₁₆				2					
- Mounting thread M1				3					
Non-wetted parts mate									
Housing made of die-					0				
Housing stainless stee	el precision casting				3				
Version									
Standard version						1			
 International version, Educumentation in 5 lar 	English label inscriptions, named and appears on CD					2			
Explosion protection									
• Without							Α		
• With ATEX, Type of pro	otection:								
- "Intrinsic safety (EEx	ia)"						В		
- "Explosion-proof (EE	x d)" ³⁾						D		
- "Intrinsic safety and	explosion-proof enclosure						Р		
- "n (Zone 2)"	anian proof analogura and						E R		
dust explosion prote	osion-proof enclosure and ction (EEx ia + EEx d +						n		
Zone 1D/2D)" 4)	ction (EEx ia + EEx d +								
• With FM + CSA, Type	of protection:								
 "Intrinsic safety and (is + xp)" ³⁾ 	explosion-proof						N	C	
Electrical connection /		Ī							
 Screwed gland Pg 13. 								A	
								В	
• Screwed gland M20x1	/IP I							C	
• Screwed gland ½-14 i								D	
• Screwed gland ½-14 i									
 Screwed gland ½-14 i Han 7D plug (plastic is connector 5) 									
 Screwed gland ½-14 I Han 7D plug (plastic honnector 5) Display 	nousing) incl. mating								•
 Screwed gland ½-14 I Han 7D plug (plastic han 7D plug (plastic hannector 5) Display Without (digital indicated) 	nousing) incl. mating tor hidden, setting: mA)	_							1
 Screwed gland ½-14 I Han 7D plug (plastic honnector 5) Display Without (digital indicated) With visible digital indicated 	nousing) incl. mating tor hidden, setting: mA)							•	1 6 7

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

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) Version 7MF4233-1DY... only up to max. span 200 mbar a (2.9 psi a)
- 3) Without cable gland, with blanking plug.
- 4) With enclosed cable gland EEx ia and blanking plug.
- 5) Not together with type of protection "Explosion-proof"
- Combinations of the versions marked with E) are subject to the export regulations AL: 2B230, ECCN: N.

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

(main gage presents series)				
Further designs	Order			
Add "-Z" to Order No. and specify Order Code.		HART	PA	FF
Pressure transmitter with mounting bracket made of:				
Steel	A01	1	1	1
Stainless steel	A02	✓	✓	1
Plug				
• Han 7D (metal, gray)	A30	1		
Han 8U (instead of Han 7D)	A31	V		
Rating plate inscription (instead of German)				
• English	B11	1	✓	1
• French	B12	V	4	1
• Spanish	B13 B14	1	1	1
• Italian	B14		y	· /
English rating plate Pressure units in inH ₂ O or psi	BZI	•	•	•
Manufacturer's test certificate M	C11	/	1	1
(calibration certificate)	011	Ů	Ť	ľ
To DIN 55350, Part 18 and to ISO 8402				
Acceptance test certificate	C12	✓	✓	1
To EN 10204-3.1				,
Factory certificate To EN 10204-2.2	C14	1	✓	~
"Functional Safety (SIL)" certificate	C20			
7	D05	, I		
Setting of upper limit of output signal to 22.0 mA	DUS	•		
Manufacturer's declaration acc. to NACE	D07	✓	✓	1
Type of protection IP68	D12	1	1	1
(not together with Han 7D / Han 8U plug, Pg 13.5 screwed gland)				
Digital indicator alongside the input keys	D27	✓	✓	1
(only together with the devices 7MF42330A.6 orA.7-Z, Y21 or Y22 + Y01).				
Supplied with oval flange	D37	1	1	1
(1 item), PTFE packing and screws in thread	-0.			
of oval flange				
Use in or on zone 1D/2D	E01	✓	✓	1
(only together with type of protection "Intrinsic safety (EEx ia)")				
Use on zone 0	E02	1	1	1
(only together with type of protection "Intrinsic				
safety (EEx ia)")				
Oxygen application (max. 160 bar a (2320 psi a) with oxygen	E10	V	V	~
measurement and inert liquid)				
Explosion-proof "Intrinsic safety" to	E25	1	✓	1
INMETRO (Brazil)				
(only for transmitter 7MF4B)				
Explosion-proof "Intrinsic safety" to NEPSI (China)	E55	V	V	V
(only for transmitter 7MF4B)				
Explosion protection "Explosion-proof" to	E56	✓	1	1
NEPSI (China) (only for transmitter 7MF4D)				
	EF7	./		./
Explosion-proof "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)	E3/	•	•	•
(5) 15. (16.10.11.16.1.11.11.11.11.11.11.11.11.11.11.1				

Further designs	Order	Code		
Add "-Z" to Order No. and specify Order Code.		HART	PA	FF
Additional data				
Measuring range to be set Specify in plain text: Y01: up to mbar, bar, kPa, MPa, psi	Y01	√		
Measuring point number/identification Max. 16 characters, specify in plain text: Y15:	Y15	*	✓	✓
Measuring point text Max. 27 characters, specify in plain text: Y16:	Y16	*	✓	✓
Entry of HART address (TAG) Max. 8 characters, specify in plain text: Y17:	Y17	*		
Setting of pressure 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/cm², kg/cm², mA, Torr, ATM oder % *) ref. temperature 20 °C	Y21	*	*	✓
Setting of pressure indication in non-pressure units Specify in plain text: Y22: up to I/min, m³/h, m, USgpm, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	Y22 + Y01	✓	✓	√
Preset bus address Specify in plain text: Y25:	Y25		1	

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

^{✓ =} available

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

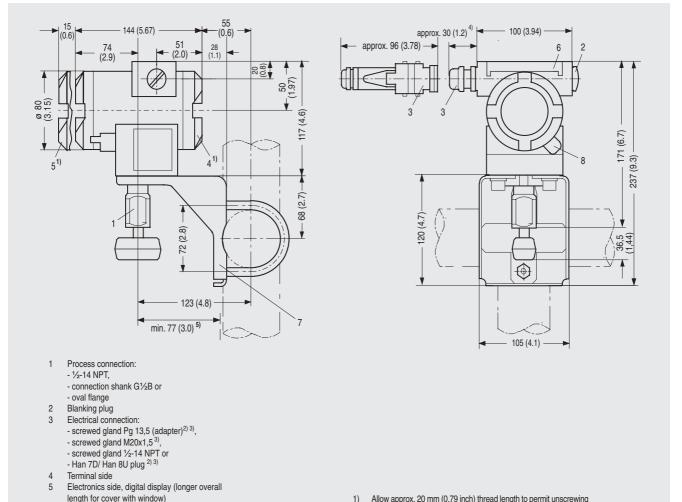
Dimensional drawings

Protective cover over keys

Mounting bracket (option)

Screw cover - safety bracket (only for type of protection

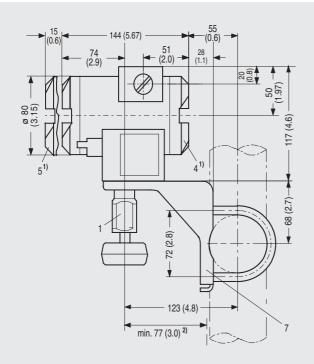
"Explosion-proof enclosure", not shown in the drawing)



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

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

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



171 (6.7) (8.3) 237 120 (4.7)

105 (4.1)

100 (3.94)

approx. 30 (1.2)

- Process connection:
 - ½-14 NPT,
 - connection shank G1/2B or
 - oval flange
- Blanking plug
- Electrical connection:
 - screwed gland M20x1,54),
 - screwed gland ½-14 NPT or
 - PROFIBUS plug M12 3) 4)
- Terminal side
- Electronics side, digital display (longer overall length for cover with window)
- Protective cover over keys
- Mounting bracket (option)
- Screw cover safety bracket (only for explosion-proof enclosure, not shown in the drawing)
- Allow approx. 20 mm (0.79 inch) thread length in addition
- Minimum distance for rotating
- Not with type of protection "Explosion-proof enclosure". 3)
- Not with type of protection "FM + CSA".

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

	HART		PROFIBUS PA or Foundation Fieldb		
Input					
Measured variable	Absolute pressure pre	ssure			
Spans (infinitely adjustable) or nominal measuring range and max. pemissible working pressure	Span	Maximum working pressure	Nominal measuring range	Maximum working pressure	
	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 (14.5 435 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		'	•	1	
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 sig-	
 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			•		
Without HART communication	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.02$ $U_{\rm H}$: Power supply in V	23 A in Ω ,	-		
With HART communication	$R_{\rm B} = 230 \dots 500 \Omega \text{ (SII)} $ $R_{\rm B} = 230 \dots 1100 \Omega \text{ (H)} $		-		
Physical bus	-		IEC 61158-2		
With polarity reversal protection	-		Yes		
Accuracy					
Reference conditions		tic, 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	≤ 0.1%				
- 10 < r ≤ 30	≤ 0.2%				
Long-term drift (temperature change ± 30 °C (± 54 °F))	≤ (0.1 · r)%/year		≤ 0.1%/year		
Influence of ambient temperature			•		
• at -10 +60 °C (14 140 °F)	≤ (0.1 · r +0.2)%		≤ 0.3%		
• at -4010 °C and +60 +85 °C (-40 +14 °F and 140 185 °F)	≤ (0.1 · r + 0.15)%/10 l	K	≤ 0.25%/10 K		
Measured Value Resolution	I_		3 · 10 ⁻⁵ of nominal mea	asuring range	

DS III series for absolute pressure (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	To EN 50081-1	
- Interference immunity	To EN 61236 and NAMUR NE 21	
Design		
Weight (without options)	≈ 4.5 kg (≈ 9.9 lb)	
Wetted parts materials		
Seal diaphragm	Stainless steel, mat. No. 1.4404/316L or Hastel tantalum or gold	loy C276, mat. No. 2.4819, Monel, mat. No. 2.4360
Process flanges and sealing screw	Stainless steel, mat. No. 1.4408, Hastelloy C4,	mat. No. 2.4610 or Monel, mat. No. 2.4360
O-Ring	FPM (Viton) or optionally: PTFE, FEP, FEPM and	NBR
Measuring cell filling	Silicone oil or inert filling liquid (max. 160 bar (2	2320 psi a) with oxygen measurement)
Process connection	$^{1/4}$ -18 NPT and flange connection to DIN 19213 $^{7/}$ $_{16}$ -20 UNF to EN 61518	with mounting thread M10 to DIN 19213 or
Power supply $m{\it U}_{ ext{H}}$		Supplied through bus
Ferminal 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) avail-	_	Yes

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

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

	HART	PROFIBUS PA or Foundation Fieldbus
Certificate and approvals		
Classification according to pressure equipment directive (DRGL 97/23/EC)	For gases of fluid group 1 and liquids of fluid grou graph 3 (sound engineering practice)	p 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 T -40 +70 °C (-40 +158 °F) temperature class T -40 +60 °C (-40 +140 °F) temperature class T	T5:
- Connection	To certified intrinsically-safe circuits with maximum values: $ U_{\rm i} = 30 \ {\rm V}, \ I_{\rm i} = 100 \ {\rm mA}, \\ P_{\rm i} = 750 \ {\rm mW}; \ R_{\rm 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	$L_{i} = 0.4 \text{ mH}, C_{i} = 6 \text{ nF}$	$L_i = 7 \mu\text{H}, C_i = 1.1 \text{nF}$
• Explosion-proof "d"	PTB 99 ATEX 1160	ı
- Identification	Ex II 1/2 G EEx d IIC T4/T6	
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperature class T -40 +60 °C (-40 +140 °F) temperature class T	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_{\rm i} = 30 \ V, \ I_{\rm i} = 100 \ {\rm mA}, \\ P_{\rm i} = 750 \ {\rm mW}, \ R_{\rm 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	$L_{\rm i} = 0.4 \rm mH, C_{\rm i} = 6 \rm nF$	$L_{i} = 7 \mu H, C_{i} = 1.1 \text{ nF}$
• Dust explosion protection for zone 21/22	PTB 01 ATEX 2055	ı
- 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 I	G; CL III; CL I, ZN 0/1 AEx ia IIC T4T6; CL I, 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 EF T4T6; CL II, DIV 2, GP FG; CL III	G; CL III; Ex ia IIC T4T6; CL I, DIV 2, GP ABCD

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

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

HANT COMMUNICATION	HART	commun	ication
--------------------	------	--------	---------

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

PROFIBUS PA communication

Simultaneous communication with 4

master class 2 (max.)

The address can be set using

Configuration tool or local operation (standard setting address

Cyclic data usage

Output byte

5 (one measuring value) or 10 (two measuring values)

Input byte

0, 1, or 2 (register operating mode and reset function for metering)

Internal preprocessing

Device profile

PROFIBUS PA Profile for Process Control Devices Version 3.0,

Class B

Function blocks

Analog input

ic process variables

- Adaptation to customer-specif- Yes, linearly rising or falling characteristic

- Electrical damping T₆₃, adjust- 0 ... 100 s

- Simulation function Input /Output

- Failure mode

Can be parameterized (last good value, substitute value, incorrect

value)

- Limit monitoring

Yes, one upper and lower warning limit and one alarm limit respec-

tively

· 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 incorrect value)

- Limit monitoring

One upper and lower warning limit and one alarm limit respectively

Physical block

Transducer blocks 2

Pressure transducer block

- Can be calibrated by applying two pressures

Yes

- Monitoring of sensor limits

- Specification of a container Max. 30 nodes

characteristic with

sor temperature

- Square-rooted characteristic

for flow measurement

- Gradual volume suppression

and implementation point of square-root extraction

- Simulation function for measured pressure value and sen-

Parameterizable

Constant value or over parameterizable ramp function

Communication Foundation Fieldbus

Function blocks

3 function blocks analog input,

1 function block PID

Analog input

ic process variables

- Adaptation to customer-specif- Yes, linearly rising or falling characteristic

- Electrical damping T₆₃, adjust- 0 ... 100 s

Output/input (can be locked within

the device with a bridge)

- Failure mode Can be parameterized (last good value, substitute value, incorrect

- Limit monitoring

- Simulation function

Yes, one upper and lower warning limit and one alarm limit respec-

tively

- Square-rooted characteristic for flow measurement

Yes

Standard FF function block

Physical block

1 Resource block

Transducer blocks

1 transducer block Pressure with calibration, 1 transducer block

LCD

• Pressure transducer block

- Can be calibrated by applying Yes

two pressures

- Monitoring of sensor limits Yes

- Simulation function: Measured pressure value, sensor temperature and electronics tempera-

Constant value or over parameter-

izable ramp function

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

Selection and ordering			Orde			
SITRANS P pressure to pressure, from the diff	ransmitters for absolute erential pressure.	•	-		333-	
series DS III HART	cicitiai picosaic,			П	-	
Measuring cell filling	Measuring cell cleaning			П		
Silicone oil	Standard		1			
Inert liquid ¹⁾	Grease-free		3			
Span						
3.3 250 mbar a	(0.12 3.63 psi a)	E)	D			
43 1300 mbar a	(0.62 18.9 psi a)	E)	F			
0.16 5 bar a	(2.32 72.5 psi a)	E)				
1 30 bar a	(14.5 435 psi a)	,	Н			
5.3 100 bar a	(76.9 1450 psi a)		K			
Netted parts materials	· · · · · · · · · · · · · · · · · · ·					
Seal diaphragm	Parts of measuring cell					
Stainless steel	Stainless steel	-	,	١		
Hastelloy	Stainless steel	E)	E			
Hastellov	Hastelloy	E)				
Tantalum	Tantalum	-,	Ē			
Monel	Monel	E)	ŀ	1		
Gold	Gold	,	ı	ш		
ersion for diaphragm s	eal ²⁾		١	1		
Process connection						
	T with flange connection					
Sealing screw opposit	e process connection					
- Mounting thread M1				0		
- Mounting thread 7/16	-20 UNF to EN 61518			2		
 Vent on side of proces 						
- Mounting thread M1	0 to DIN 19213			4		
- Mounting thread ⁷ / ₁₆	-20 UNF to EN 61518			6		
Non-wetted parts mate	erials					
Process flange screws	Electronics housing					
Stainless steel	Die-cast aluminium	_		2	2	
Stainless steel	Stainless steel precision	1		3	3	
	casting					
/ersion						
Standard version					1	
International version, E	English label inscriptions,				2	
documentation in 5 lar	iguages on CD					
Explosion protection Without						
withoutWith ATEX, Type of pro	ntection:				A	,
- "Intrinsic safety (EEx					В	3
- "Explosion-proof (EE					0	
- "Intrinsic safety and e	explosion-proof enclosure	è			P	
(EEx ia + EEx d)" ⁵⁾						
- "n (Zone 2)"					E	
- "Intrinsic safety, explo	osion-proof enclosure and	k			F	}
dust explosion prote	ction (EEx ia + EEx d +					
• With FM + CSA, Type	•					
 "Intrinsic safety and (is + xp)" ⁴⁾ 	expiosion-proot				N	IC
Electrical connection /	cable entry					
Screwed gland Pg 13.						Α
Screwed gland M20x1						В
	-					C
-	NPT					
 Screwed gland ½-14 Notes Han 7D plug (plastic honnector f) 						D

Selection and ordering data	Order No.
SITRANS P pressure transmitters for absolute pressure, from the differential pressure, series DS III HART	7 M F 4 3 3 3 -
Without (digital indicator hidden, setting: mA) With visible digital indicator With customer-specific digital indicator (setting as specified, Order Code "Y21" or required)	1 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
- 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) Not for span "5.3 ... 100 bar a (76.9 ... 1450 psi a)"
- 4) Without cable gland, with blanking plug
- 5) With enclosed cable gland EEx ia and blanking plug
- 6) Not together with type of protection "Explosion-proof"
- E) Combinations of the versions marked with E) are subject to the export regulations AL: 2B230, ECCN: N.

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

Further designs	Order	Code		
Add "-Z" to Order No. and specify Order Code.		HART	PA	FF
Pressure transmitter with mounting bracket made of: • Steel • Stainless steel	A01 A02	*	4	* *
O-rings for process flanges (instead of FPM (Viton)) • PTFE (Teflon) • FEP (with silicone core, approved for food) • FFPM (Kalrez, compound 4079) • NBR (Buna N)	A20 A21 A22 A23	* * * * * * * * * * * * * * * * * * *		* * * *
Plug • Han 7D (metal, gray) • Han 8U (instead of Han 7D)	A30 A31	*		
Sealing screws 1/4-18 NPT, with valve in material of process flanges	A40	V	✓	√
Rating plate inscription (instead of German) • English • French • Spanish • Italian	B11 B12 B13 B14	* * * *	* * * *	* * * *
English rating plate Pressure units in inH ₂ O or psi	B21	✓	✓	1
Manufacturer's test certificate M (calibration certificate) To DIN 55350, Part 18 and to ISO 8402	C11	✓	✓	✓
Acceptance test certificate To EN 10204-3.1	C12	/	✓	1
Factory certificate To EN 10204-2.2	C14	✓	✓	✓
"Functional Safety (SIL)" certificate	C20	✓		
Setting of upper limit of output signal to 22.0 mA	D05	✓		
Manufacturer's declaration acc. to NACE (only together with seal diaphragm made of Hastelloy and stainless steel)	D07	✓	✓	√
Type of protection IP68 (not together with Han 7D/Han 8U plug, cable gland PG 13.5)	D12	*	✓	√
Digital indicator alongside the input keys (only together with the devices 7MF43330 A6 or A. 7-Z, Y21 or Y22 + Y01)	D27	✓	✓	✓
Supplied with oval flange (1 item), PTFE packing and screws in thread of process flange	D37	✓	✓	✓
Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")	E01	✓	✓	1
Use on zone 0 (only together with type of protection "Intrinsic safety (EEx ia)")	E02	✓	✓	✓
Oxygen application (max. 160 bar a (2320 psi a) with oxygen measurement and inert liquid)	E10	✓	✓	1
Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)	E25	✓	✓	✓

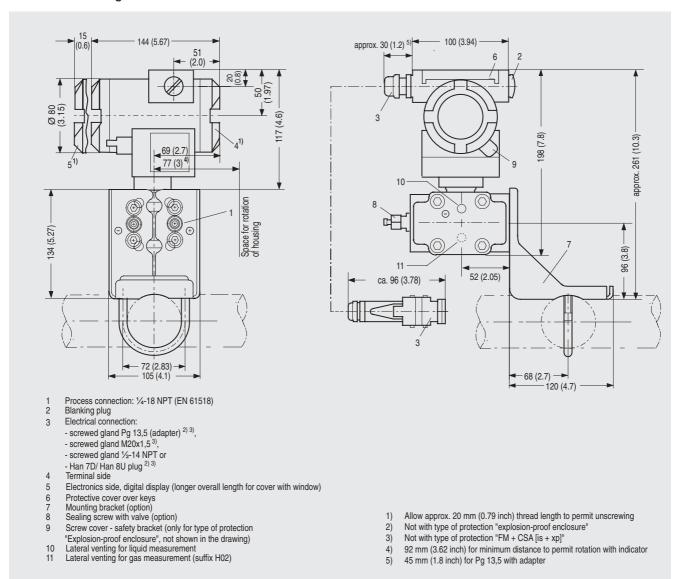
Further designs	Order	Code		
Add "-Z" to Order No. and specify Order Code.		HART	PA	FF
Explosion-proof "Intrinsic safety" to NEPSI (China)	E55	√	√	✓
(only for transmitter 7MF4B) Explosion protection "Explosion-proof" to	E56	1	1	1
NEPSI (China) (only for transmitter 7MF4)	E30	Ť	·	ľ
Explosion-proof "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)	E57	*	✓	✓
Interchanging of process connection side	H01	1	1	1
Vent on side for gas measurements	H02	✓	✓	✓
Process flange • Hastelloy • Monel • Stainless steel with PVDF insert max. PN 10 (MWP 145 psi), max. temperature of medium 90 °C (194 °F)	K01 K02 K04	* * *	>>>	* * *
Additional data				
Measuring range to be set	Y01	✓		
Specify in plain text: Y01: up to mbar, bar, kPa, MPa, psi				
Measuring point number/identification Max. 16 characters, specify in plain text: Y15:	Y15	*	✓	✓
Measuring point text Max. 27 characters, specify in plain text: Y16:	Y16	*	✓	✓
Entry of HART address (TAG) Max. 27 characters, specify in plain text: Y17:	Y17	~		
Setting of pressure indication in pressure units	Y21	✓	1	1
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/cm², kg/cm², mA, Torr, ATM oder % *) ref. temperature 20 °C				
Setting of pressure indication in non-pressure units	Y22 + Y01	1		
Specify in plain text: Y22: up to l/min, m³/h, m, USgpm, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	101			
Preset bus address	Y25		1	
Specify in plain text: Y25:				
Only "V01" "V21" "V22" "V25" and "D05" can be	o footo		-	

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

^{✓ =} available

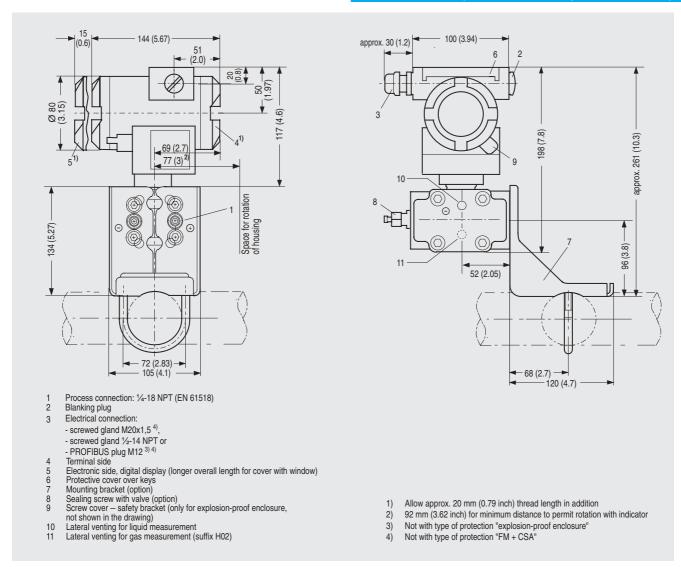
DS III series for absolute pressure (from differential pressure series)

Dimensional drawings



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

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



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

DS III series for differential pressure and flow

Technical specifications

HART		PROFIBUS PA or Fou	ndation Fieldbus
		•	
Differential pressure and	flow		
Span	Maximum working pressure	Nominal measuring range	Maximum working pres- sure
1 20 mbar (0.4015 8.031 inH ₂ O)	32 bar (464 psi)	20 mbar g (8.031 inH ₂ O)	32 bar (464 psi)
1 60 mbar (0.4015 24.09 inH ₂ O)	160 bar (2320 psi)	60 mbar (24.09 inH ₂ O)	160 bar (2320 psi)
2.5 250 mbar (1.004 100.4 inH ₂ O)		250 mbar (100.4 inH ₂ O)	
6 600 mbar (2.409 240.9 inH ₂ O)		600 mbar (240.9 inH ₂ O)	
16 1600 mbar (6.424 642.4 inH ₂ O)		1600 mbar (642.4 inH ₂ O)	
50 5000 mbar (20.08 2008 inH ₂ O)		5 bar (2008 inH ₂ O)	
0.3 30 bar (4.35 435 psi)		30 bar (435 psi)	
2.5 250 mbar (1.004 100.4 inH ₂ O)	420 bar (6091 psi)	250 mbar (100.4 inH ₂ O)	420 bar (6091 psi)
6 600 mbar (2.409 240.9 inH ₂ O)		600 mbar (240.9 inH ₂ O)	
16 1600 mbar (6.424 642.4 inH ₂ O)		1600 mbar (642.4 inH ₂ O)	
50 5000 mbar (20.08 2008 inH ₂ O)		5 bar (2008 inH ₂ O)	
0.3 30 bar (4.35 435 psi)		30 bar (435 psi)	
			·
-100% of max. span (-33	% with 30 bar (435 psi) m	neasuring cell or 30 mba	ar a (0.44 psi))
100% of max. span (for o	oxygen version and inert f	filling liquid; max. 160 ba	ar g (2320 psi g))
4 20 mA		Digital PROFIBUS PA o signal	or Foundation Fieldbus
3.55 mA, factory preset t	to 3.84 mA	-	
23 mA, factory preset to to 22.0 mA	20.5 mA or optionally set	-	
$R_{\rm B} \le (U_{\rm H}$ - 10.5 V)/0.023 $U_{\rm H}$: Power supply in V	A in Ω ,	-	
$R_{\rm B} = 230 \dots 500 \Omega$ (SIMA $R_{\rm B} = 230 \dots 1100 \Omega$ (HAN	ATIC PDM) or RT Communicator)	-	
-		IEC 61158-2	
-		Yes	
			aphragm, silicone oil filling,
		≤ 0,075%	
≤ (0.0029 · r + 0.071)%			
≤ (0.0045 · r + 0.071)%			
≤ (0.005 · r + 0.05)%			
,		≤ 0,1%	
1		-, -, -	
≤ 0,1%			
	Differential pressure and Span 1 20 mbar (0.4015 8.031 inH ₂ O) 1 60 mbar (0.4015 24.09 inH ₂ O) 2.5 250 mbar (1.004 inH ₂ O) 6 600 mbar (2.409 240.9 inH ₂ O) 16 1600 mbar (6.424 642.4 inH ₂ O) 50 5000 mbar (20.08 2008 inH ₂ O) 0.3 30 bar (4.35 435 psi) 2.5 250 mbar (1.004 inH ₂ O) 6 600 mbar (2.409 240.9 inH ₂ O) 6 600 mbar (2.409 240.9 inH ₂ O) 16 1600 mbar (6.424 642.4 inH ₂ O) 50 5000 mbar (2.409 240.9 inH ₂ O) 10 30 bar (4.35 435 psi) -100% of max. span (-33 100% of max. span (for 0.3 100% of max. span (for 0.4 1 20 mA 3.55 mA, factory preset to to 22.0 mA $R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.023 U_{\rm H} : \text{Power supply in V}$ $R_{\rm B} = 230 500 \Omega \text{ (SIMM/} R_{\rm B} = 230 1100 \Omega \text{ (HAII)}$ Increasing characteristic room temperature 25 °C $\le (0.0029 \cdot \text{r} + 0.071)\%$ $\le (0.0045 \cdot \text{r} + 0.071)\%$	Differential pressure and flow Span Maximum working pressure 1 20 mbar (0.4015 8.031 inH ₂ O) (464 psi) 1 60 mbar (0.4015 24.09 inH ₂ O) (2.5 250 mbar (1.004 100.4 inH ₂ O) 6 600 mbar (2.409 240.9 inH ₂ O) 50 5000 mbar (20.08 2008 inH ₂ O) 0.3 30 bar (4.35 435 psi) 2.5 250 mbar (1.004 100.4 inH ₂ O) 6 600 mbar (2.409 240.9 inH ₂ O) 6 600 mbar (2.409 240.9 inH ₂ O) 16 1600 mbar (2.409 240.9 inH ₂ O) 16 1600 mbar (2.409 240.9 inH ₂ O) 50 5000 mbar (20.08 2008 inH ₂ O) 50	Differential pressure and flow Span

DS III series for differential pressure and flow

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%		
_ong-term drift (temperature change \pm 30 °C (\pm 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	
nfluence 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	
nfluence 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)	ļ	
- 20 mbar (0.29 psi)-measuring cell	≤ 0.2% je 32 bar (464 psi)		
Measured Value Resolution	-	3 · 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 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	To EN 50081-1		
- Interference immunity	To EN 61236 and NAMUR NE 21		
Design			
Veight (without options)	≈ 4.5 kg (≈ 9.9 lb)		
Vetted parts materials			
Seal diaphragm	Stainless steel, mat. No. 1.4404/316L or Hastelloy tantalum or gold	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 ¼-18 NPT and flange connection v		
	⁷ / ₁₆ -20 UNF to EN 61518		
Power supply $m{\textit{U}}_{H}$		Supplied through bus	
erminal 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) avail-	_	Yes	
able			

DS III series for differential pressure and flow

SITRANS P, DS III series, for differential pre	essure and flow	
	HART	PROFIBUS PA or Foundation Fieldbus
Certificate and approvals		
Classification according to pressure equipment directive (DRGL 97/23/EC)		
PN 32/160 (MWP 464/2320 psi)	For gases of fluid group 1 and liquids of fluid grograph 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 gro 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	$ \begin{array}{c} -40 \dots +85 \ ^{\circ}\text{C} \ (-40 \dots +185 \ ^{\circ}\text{F}) \ \text{temperature class} \\ -40 \dots +70 \ ^{\circ}\text{C} \ (-40 \dots +158 \ ^{\circ}\text{F}) \ \text{temperature class} \\ -40 \dots +60 \ ^{\circ}\text{C} \ (-40 \dots +140 \ ^{\circ}\text{F}) \ \text{temperature class} \\ \end{array} $	T5;
- Connection	To certified intrinsically-safe circuits with maximum values: $U_{\rm i}=30$ V, $I_{\rm i}=100$ mA, $P_{\rm i}=750$ mW; $P_{\rm i}=300$ Ω	FISCO supply unit: $U_{\rm o}=17.5$ V, $I_{\rm o}=380$ mA, $P_{\rm o}=5.32$ W Linear barrier: $U_{\rm o}=24$ V, $I_{\rm o}=250$ mA, $P_{\rm o}=1.2$ W
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{\rm i} = 7 \mu \text{H}, C_{\rm i} = 1.1 \text{nF}$
• 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: $U_{\rm i}$ = 30 V, $I_{\rm i}$ = 100 mA, $P_{\rm i}$ = 750 mW, $R_{\rm i}$ = 300 Ω	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	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{\rm i} = 7 \mu \text{H}, C_{\rm i} = 1.1 \text{nF}$
Dust explosion protection for zone 21/22	PTB 01 ATEX 2055	1
- 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	FG; CL III; CL I, ZN 0/1 AEx ia IIC T4T6; CL I, 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 E 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 gage, absolute and differential pressure, flow and level

DS III series for differential pressure and flow

commun	

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

PROFIBUS PA communication

Simultaneous communication with 4

master class 2 (max.)

The address can be set using

Configuration tool or local operation (standard setting address

Cyclic data usage

 Output byte 5 (one measuring value) or 10 (two measuring values)

 Input byte 0, 1, or 2 (register operating mode

and reset function for metering)

Internal preprocessing

PROFIBUS PA Profile for Process Device profile

Control Devices Version 3.0,

Class B

Function blocks

Analog input

- Adaptation to customer-specific process variables

Yes, linearly rising or falling char-

acteristic

- Electrical damping T₆₃, adjust- 0 ... 100 s

- Simulation function Input /Output

- Failure mode Can be parameterized (last good

value, substitute value, incorrect

value)

- Limit monitoring

Yes, one upper and lower warning limit and one alarm limit respec-

tively

· 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

Transducer blocks 2

Pressure transducer block

- Can be calibrated by applying two pressures

Yes

- Monitoring of sensor limits

- Specification of a container

characteristic with

Max. 30 nodes

- Square-rooted characteristic

sor temperature

for flow measurement

- Gradual volume suppression and implementation point of square-root extraction

- Simulation function for measured pressure value and sen-

Parameterizable

Constant value or over parameterizable ramp function

Communication Foundation Fieldbus

Function blocks

3 function blocks analog input, 1 function block PID

Analog input

- Adaptation to customer-specific process variables

Yes, linearly rising or falling characteristic

- Electrical damping T₆₃, adjust- 0 ... 100 s

- Simulation function

Output/input (can be locked within

the device with a bridge)

- Failure mode

Can be parameterized (last good value, substitute value, incorrect

- Limit monitoring

Yes, one upper and lower warning limit and one alarm limit respec-

tively

- Square-rooted characteristic for flow measurement

Yes

Standard FF function block

 Physical block 1 Resource block

Transducer blocks

1 transducer block Pressure with calibration, 1 transducer block

LCD

• Pressure transducer block

- Can be calibrated by applying Yes

two pressures

- Monitoring of sensor limits Yes

- Simulation function: Measured pressure value, sensor temperature and electronics tempera-

Constant value or over parameter-

izable ramp function

DS III series for differential pressure and flow

Selection and ordering data	for differential pr	essure and now				
tal pressure and flow, Series DS III HART PN 32/160 (MWP 464/2320 psi) Measuring cell filling Silicone oil Standard	Selection and ordering	ı data	Order	No.		
Measuring cell filling Measuring cell cleaning			7 M F 4	7MF4433-		
Silicone oil Standard 1 Inert liquid¹) Grease-free 3			-			
Silicone oil Standard 1 Inert liquid¹ Grease-free 3	Measuring cell filling					
Inert liquid¹) Grease-free 3	011	•				
Span			1			
PN 32 (MWP 464 psi) 1 20 mbar ²) (0.4015 8.03 inH ₂ O) ▶ B PN 160 (MWP 2320 psi) 1 20 mbar ²) (0.4015 24.09 inH ₂ O) ▶ C 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 (2.409 240.9 inH ₂ O) ▶ E 16 1600 mbar (2.409 240.9 inH ₂ O) ▶ E 16 1600 mbar (2.008 2008 inH ₂ O) ▶ G 0.3 30 bar (4.35 435 psi) ▶ H Wetted parts materials (stainless steel process flanges) Seal diaphragm Parts of measuring cell Stainless steel Stainless steel ▶ B Hastelloy Stainless steel B Hastelloy Stainless steel B Hastelloy Hastelloy C Tantalum ³) Tantalum E Monel ³) Monel H Gold ³) Gold L Version for diaphragm seal Process connection Female thread ⅓-18 NPT with flange connection • Sealing screw opposite process connection • Seali	mert liquia 7	Grease-free	3			
1 20 mbar ²⁾ (0.4015 8.03 inH ₂ O)	-					
PN 160 (MWP 2320 psi) 1 60 mbar (0.4015 24.09 inH₂O)						
1 60 mbar (0.4015 24.09 inH₂O)		` /	В			
2.5 250 mbar (1.004 100.4 inH₂O)	PN 160 (MWP 2320 psi)					
6 600 mbar (2.409 240.9 inH ₂ O) ► E 16 1600 mbar (6.424 642.4 inH ₂ O) ► F 50 500 5000 mbar (20.08 2008 inH ₂ O) ► G 0.3 30 bar (4.35 435 psi) ► H Wetted parts materials (stainless steel process flanges) Seal diaphragm Parts of measuring cell Stainless steel Stainless steel ► A Hastelloy Stainless steel ► B Hastelloy Hastelloy C Tantalum³) Tantalum E Monel³0 Monel Gold³0 Gold L Version for diaphragm seal Process connection Female thread ¼-18 NPT with flange connection • Sealing screw opposite process connection • Mounting thread M10 to DIN 19213 ► 0 • Mounting thread M10 to DIN 19213 ► 0 • Mounting thread M10 to DIN 19213 ► 0 • Mounting thread M10 to DIN 19213 ► 0 • Mounting thread M10 to DIN 19213 ► 0 • Non-wetted parts materials Process flange screws Electronics housing Stainless steel Die-cast aluminium ≥ 2 Stainless steel Die-cast aluminium ≥ 2 Stainless steel Die-cast sluminium ≥ 2 Stainless steel Die-cast sluminium ≥ 2 Stainless steel Die-cast aluminium ≥ 2 * Wersion • Standard version • International version, English label inscriptions, ≥ documentation in 5 languages on CD Explosion protection • Without • With ATEX, Type of protection: • "Intrinsic safety (EEx ia)" • "Explosion-proof (EEx d)"⁴ • "Explosion-proof (EEx d)"⁴ • "Intrinsic safety, explosion-proof enclosure ▶ (EEx ia + EEx d) + Zone 1D/2D)* • With FM + CSA, Type of protection: • "Intrinsic safety and explosion-proof (is + xp)"⁴ Electrical connection / cable entry • Screwed gland M20x1.5	1 60 mbar	(0.4015 24.09 inH ₂ O) ▶	С			
16 1600 mbar (6.424 642.4 inH ₂ O)	2.5 250 mbar	(1.004 100.4 inH ₂ O) ►	D			
50 5000 mbar (20.08 2008 inH ₂ O) G 0.3 30 bar (4.35 435 psi) H Wetted parts materials (stainless steel process flanges) Seal diaphragm Parts of measuring cell Stainless steel Stainless steel A Hastelloy Stainless steel B Hastelloy Hastelloy C Tantalum³) Tantalum E Monel³ Monel H Gold³) Gold L Version for diaphragm seal Y Process connection Female thread ¼-18 NPT with flange connection • Sealing screw opposite process connection • Sealing screw opposite process connection • Mounting thread M10 to DIN 19213						
O.3 30 bar (4.35 435 psi)			F			
Wetted parts materials (stainless steel process flanges) Seal diaphragm Parts of measuring cell Stainless steel Stainless steel A Hastelloy Stainless steel B Hastelloy Hastelloy C Tantalum ³⁾ Tantalum E Monel ³⁾ Monel Gold ³⁾ Gold L Version for diaphragm seal Y Process connection Female thread ¼-18 NPT with flange connection • Sealing screw opposite process connection • Mounting thread M10 to DIN 19213 0 • Mounting thread M10 to DIN 19213 0 • Mounting thread M10 to DIN 19213 4 • Mounting thread M10 to DIN 19213 4 • Mounting thread M10 to DIN 19213 4 • Mounting thread M10 to DIN 19213 5 • Went on side of process flange 2) • Mounting thread M10 to DIN 19213 4 • Mounting thread M10 to DIN 19213 4 • Mounting thread M10 to DIN 19213 5 • Non-wetted parts materials Process flange screws Electronics housing Stainless steel Die-cast aluminium 2 Stainless steel Die-cast aluminium 2 Stainless steel Stainless steel precision casting Version • Standard version		_ ·				
(stainless steel process flanges) Seal diaphragm Parts of measuring cell Stainless steel Stainless steel A Hastelloy Stainless steel B Hastelloy Hastelloy C Tantalum ³) Tantalum E Monel ³) Monel H Gold ³) Gold L Version for diaphragm seal Y Process connection Female thread ¼-18 NPT with flange connection • Sealing screw opposite process connection • Mounting thread M10 to DIN 19213 0 • Mounting thread M10 to DIN 19213 4 • Mounting thread M10 to DIN 19213 5 • Non-wetted parts materials Process flange screws Electronics housing Stainless steel Die-cast aluminium 2 Stainless steel Stainless steel precision casting Version • Standard version, English label inscriptions, cocumentation in 5 languages on CD Explosion protection • With ATEX, Type of protection: - "Intrinsic safety (EEx ia)" 5 - "n (Zone 2)"	0.3 30 bar	(4.35 435 psi)	Н			
Seal diaphragm Parts of measuring cell Stainless steel Stainless steel B Hastelloy Stainless steel B Hastelloy Hastelloy C Tantalum³ Tantalum Monel³ Monel Gold³ Gold Version for diaphragm seal Process connection Female thread ¼-18 NPT with flange connection • Sealing screw opposite process connection • Mounting thread M10 to DIN 19213 • Mounting thread M10 to D	Wetted parts materials	}				
Stainless steel Stainless steel A B Hastelloy Stainless steel B B Hastelloy Hastelloy C C Tantalum E Monel Gold H Gold Gold L Version for diaphragm seal Y Process connection Female thread ¼-18 NPT with flange connection • Sealing screw opposite process connection - Mounting thread M10 to DIN 19213 0 - Mounting thread M10 to DIN 19213 0 - Mounting thread M10 to DIN 19213 4 - Mounting thread M10 to DIN 19213 5 - Mounting thread M10 to DIN 19213 4 - Mounting thread M10 to DIN 19213 5 - Mounting thread M10	\	flanges)				
Hastelloy Stainless steel Hastelloy Hastelloy Tantalum³) Tantalum Monel³) Monel Gold³) Gold Version for diaphragm seal Process connection Female thread ¼-18 NPT with flange connection • Sealing screw opposite process connection - Mounting thread M10 to DIN 19213 - Mounting thread M10 to DIN 19	Seal diaphragm	Parts of measuring cell				
Hastelloy Tantalum ³⁾ Tantalum Monel ³⁾ Monel Gold ³⁾ Gold Version for diaphragm seal Process connection Female thread ½-18 NPT with flange connection • Sealing screw opposite process connection • Mounting thread M10 to DIN 19213 • Mounting thread 7/ ₁₆ -20 UNF to EN 61518 • Vent on side of process flange 2 • Mounting thread M10 to DIN 19213 • Mounting thread	Stainless steel	Stainless steel	Α			
Tantalum ³⁾ Tantalum Monel ³⁾ Monel Gold ³⁾ Frocess connection Female thread 1/-18 NPT with flange connection • Sealing screw opposite process connection • Sealing screw opposite process connection • Mounting thread M10 to DIN 19213 • Stainless steel Die-cast aluminium • 2 Stainless steel Die-cast aluminium • 2 Stainless steel precision • St	Hastelloy	Stainless steel	В			
Monel ³⁾ Monel Gold ³⁾ Gold Version for diaphragm seal Process connection Female thread ¼-18 NPT with flange connection • Sealing screw opposite process connection - Mounting thread M10 to DIN 19213 - Mounting thread M10 to	Hastelloy	Hastelloy	С			
Gold ³⁾ Gold Version for diaphragm seal Process connection Female thread ½-18 NPT with flange connection • Sealing screw opposite process connection • Mounting thread M10 to DIN 19213 • Stainless steel Die-cast aluminium • Stainless steel precision casting Version • Stainless steel precision • Stainless steel precision casting Version • Stainless steel precision • Stainless steel precision • Stainless steel precision casting * A • With ATEX, Type of protection: • "Intrinsic safety (EEx ia)" • "Explosion-proof (EEx d)"4) • "Explosion-proof (EEx d)"4) • "Intrinsic safety and explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)"5) • With FM + CSA, Type of protection: • "Intrinsic safety and explosion-proof (Ex ia + EEx d + Zone 1D/2D)"5) • With FM + CSA, Type of protection: • "Intrinsic safety and explosion-proof (Ex ia + EEx d + Zone 1D/2D)"5) • With FM + CSA, Type of protection: • "Intrinsic safety and explosion-proof (Ex ia + EEx d + Zone 1D/2D)"5) • With FM + CSA, Type of protection: • "Intrinsic safety and explosion-proof (Ex ia + EEx d + Zone 1D/2D)"5) • Screwed gland M20x1.5 • Screwed gland M20x1.5 • Screwed gland M20x1.5 • Screwed gland M20x1.5	Tantalum ³⁾	Tantalum	E			
Version for diaphragm seal Process connection Female thread ¼-18 NPT with flange connection • Sealing screw opposite process connection • Mounting thread M10 to DIN 19213 • Stainless steel Die-cast aluminium • Stainless steel precision casting Version • Standard version • Stainless steel precision casting Version • Standard version • Stainless steel precision casting Version • Standard version • International version, English label inscriptions, documentation in 5 languages on CD Explosion protection • With ATEX, Type of protection: - "Intrinsic safety (EEx ia)" - "Explosion-proof (EEx d)"4) - "Intrinsic safety and explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)"5) • With FM + CSA, Type of protection: - "Intrinsic safety and explosion-proof (is + xp)"4) • Screwed gland Pg 13.56) • Screwed gland M20x1.5		Monel	Н			
Process connection Female thread ¼-18 NPT with flange connection • Sealing screw opposite process connection • Mounting thread M10 to DIN 19213 • Mounting thread M10 to DIN 19213 • Vent on side of process flange ²) • Mounting thread M10 to DIN 19213 • Mounting thread F ₁₆ -20 UNF to EN 61518 Non-wetted parts materials Process flange screws Electronics housing Stainless steel Die-cast aluminium • Stainless steel Stainless steel precision casting Version • Standard version • International version, English label inscriptions, documentation in 5 languages on CD Explosion protection • Without • With ATEX, Type of protection: - "Intrinsic safety (EEx ia)" - "Explosion-proof (EEx d)" ⁴) - "Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d)" - "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)" • With FM + CSA, Type of protection: - "Intrinsic safety and explosion-proof (is + xp)" ⁴) Plectrical connection / cable entry • Screwed gland Pg 13.56) • Screwed gland M20x1.5 • Screwed gland ½-14 NPT Process flange connection • Connection • With FM + CSA, Type of protection: - "Intrinsic safety and explosion-proof - "Intrinsic safety and explo	Gold ³⁾	Gold	L			
Female thread ¼-18 NPT with flange connection Sealing screw opposite process connection Mounting thread M10 to DIN 19213 Mounting thread ⁷ / ₁₆ -20 UNF to EN 61518 Vent on side of process flange ²⁾ Mounting thread M10 to DIN 19213 Mounting thread M10 to DIN 19213 Mounting thread ⁷ / ₁₆ -20 UNF to EN 61518 Non-wetted parts materials Process flange screws Electronics housing Stainless steel Die-cast aluminium Stainless steel Stainless steel precision casting Version Stainless steel Precision 3 Stainless steel Stainless steel precision casting Version Standard version, English label inscriptions, cocumentation in 5 languages on CD Explosion protection Without With ATEX, Type of protection: "Intrinsic safety (EEx a)" "Explosion-proof (EEx d)" ⁴¹⁾ "Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d)" ⁵⁾ "In (Zone 2)" "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)" ⁵⁾ With FM + CSA, Type of protection: "Intrinsic safety and explosion-proof (is + xp)" ⁴⁾ Electrical connection / cable entry Screwed gland Pg 13.5 ⁶⁾ Screwed gland M20x1.5 Screwed gland ½-14 NPT Response connection / Cable entry Screwed gland ½-14 NPT Connection / Cable entry Screwed gland ½-14 NPT	Version for diaphragm s	eal	Υ			
Process flange screws Electronics housing Stainless steel Die-cast aluminium Stainless steel Stainless steel precision casting Version Standard version International version, English label inscriptions, cocumentation in 5 languages on CD Explosion protection Without With ATEX, Type of protection: - "Intrinsic safety (EEx ia)" - "Explosion-proof (EEx d)" ⁴) - "Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d)" ⁵) - "n (Zone 2)" - "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)" ⁵) With FM + CSA, Type of protection: - "Intrinsic safety and explosion-proof (is + xp)" ⁴) Electrical connection / cable entry Screwed gland Pg 13.5 ⁶) Screwed gland M20x1.5 Screwed gland M20x1.5 Screwed gland V2-14 NPT	 Mounting thread M1¹ Mounting thread ⁷/₁₆ Vent on side of proces Mounting thread M1¹ 	0 to DIN 19213 -20 UNF to EN 61518 as flange ²⁾ 0 to DIN 19213	2			
Stainless steel Die-cast aluminium Stainless steel Stainless steel precision casting Version Standard version International version, English label inscriptions, cocumentation in 5 languages on CD Explosion protection Without With ATEX, Type of protection: - "Intrinsic safety (EEx ia)" - "Explosion-proof (EEx d)" ⁴) - "Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d)" ⁵) - "n (Zone 2)" - "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)" ⁵) With FM + CSA, Type of protection: - "Intrinsic safety and explosion-proof (is + xp)" ⁴) With FM + CSA, Type of protection: - "Intrinsic safety and explosion-proof (sex ia + EEx d + Zone 1D/2D)" ⁵) With FM + CSA, Type of protection: - "Intrinsic safety and explosion-proof (sex ia + EEx d + Zone 1D/2D)" ⁵) With FM + CSA, Type of protection: - "Intrinsic safety and explosion-proof (sex ia + EEx d + Zone 1D/2D)" ⁵) With FM + CSA, Type of protection: - "Intrinsic safety and explosion-proof (sex ia + EEx d + Zone 1D/2D)" ⁵) With FM + CSA, Type of protection: - "Intrinsic safety and explosion-proof (sex ia + EEx d + Zone 1D/2D)" ⁵) Screwed gland Pg 13.5 ⁶) Screwed gland M20x1.5 Screwed gland M20x1.5 Screwed gland M20x1.5	Non-wetted parts mate	erials				
Stainless steel Stainless steel precision casting Version Standard version International version, English label inscriptions, cocumentation in 5 languages on CD Explosion protection Without With ATEX, Type of protection: - "Intrinsic safety (EEx ia)" - "Explosion-proof (EEx d)" ⁴) - "Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d)" ⁵) - "n (Zone 2)" - "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)" ⁵) With FM + CSA, Type of protection: - "Intrinsic safety and explosion-proof (is + xp)" ⁴) With FM + CSA, Type of protection: - "Intrinsic safety and explosion-proof (Secure and Company and Electrical Connection / Cable entry Screwed gland Pg 13.56) Screwed gland M20x1.5 Screwed gland ½-14 NPT C	Process flange screws	Electronics housing				
• Standard version • International version, English label inscriptions, ▶ documentation in 5 languages on CD Explosion protection • Without • With ATEX, Type of protection: - "Intrinsic safety (EEx ia)" - "Explosion-proof (EEx d)" ⁴) - "Intrinsic safety and explosion-proof enclosure ▶ (EEx ia + EEx d)" ⁵) - "n (Zone 2)" - "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)" ⁵) • With FM + CSA, Type of protection: - "Intrinsic safety and explosion-proof (is + xp)" ⁴) • Screwed gland Pg 13.5 ⁶) • Screwed gland M20x1.5 • Screwed gland ½-14 NPT A 1 1 1 1 1 2 2 2 2 3 4 A 5 5 5 6 6 6 6 6 6 6 6 7 6 7 7 7		Stainless steel precision				
• International version, English label inscriptions, documentation in 5 languages on CD Explosion protection • Without • With ATEX, Type of protection: - "Intrinsic safety (EEx ia)" - "Explosion-proof (EEx d)" ⁴) - "Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d)" ⁵) - "n (Zone 2)" - "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)" ⁵) • With FM + CSA, Type of protection: - "Intrinsic safety and explosion-proof (is + xp)" ⁴) • Screwed gland Pg 13.5 ⁶) • Screwed gland M20x1.5 • Screwed gland ½-14 NPT A 2 2 2 2 2 3 4 5 5 6 6 6 6 6 6 6 6 6 7 6 7 7	Version					
documentation in 5 languages on CD Explosion protection Without With ATEX, Type of protection: - "Intrinsic safety (EEx ia)" - "Explosion-proof (EEx d)" ⁴⁴ - "Intrinsic safety and explosion-proof enclosure P(EEx ia + EEx d)" ⁵⁾ - "n (Zone 2)" - "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)" ⁵⁾ With FM + CSA, Type of protection: - "Intrinsic safety and explosion-proof (is + xp)" ⁴⁾ Electrical connection / cable entry Screwed gland Pg 13.5 ⁶⁾ Screwed gland M20x1.5 Screwed gland ½-14 NPT C	 Standard version 			1		
Without With ATEX, Type of protection: - "Intrinsic safety (EEx ia)" - "Explosion-proof (EEx d)" ⁴) - "Intrinsic safety and explosion-proof enclosure P(EEx ia + EEx d)" ⁵) - "n (Zone 2)" - "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)" ⁵) With FM + CSA, Type of protection: - "Intrinsic safety and explosion-proof (is + xp)" ⁴) Electrical connection / cable entry Screwed gland Pg 13.5 ⁶) Screwed gland M20x1.5 B Screwed gland ½-14 NPT A B C C			_	2		
• With ATEX, Type of protection: - "Intrinsic safety (EEx ia)" - "Explosion-proof (EEx d)" ⁴⁾ - "Intrinsic safety and explosion-proof enclosure ▶ (EEx ia + EEx d)" ⁵⁾ - "n (Zone 2)" - "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)* ⁵⁾ • With FM + CSA, Type of protection: - "Intrinsic safety and explosion-proof (is + xp)" ⁴⁾ • Electrical connection / cable entry • Screwed gland Pg 13.5 ⁶⁾ • Screwed gland M20x1.5 • Screwed gland ½-14 NPT B B B B B B C C				۸		
- "Intrinsic safety (EEx ia)" - "Explosion-proof (EEx d)" ⁴) - "Intrinsic safety and explosion-proof enclosure ► (EEx ia + EEx d)" ⁵) - "n (Zone 2)" - "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)* ⁵) • With FM + CSA, Type of protection: - "Intrinsic safety and explosion-proof (is + xp)" ⁴) Electrical connection / cable entry • Screwed gland Pg 13.5 ⁶) • Screwed gland M20x1.5 • Screwed gland ½-14 NPT B D B B C B C C B C C B C C C		otection:		^		
- "Explosion-proof (EEx d)" ⁴⁾ - "Intrinsic safety and explosion-proof enclosure ► (EEx ia + EEx d)" ⁵⁾ - "n (Zone 2)" - "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)* ⁵⁾ • With FM + CSA, Type of protection: - "Intrinsic safety and explosion-proof (is + xp)" ⁴⁾ • Electrical connection / cable entry • Screwed gland Pg 13.5 ⁶⁾ • Screwed gland M20x1.5 • Screwed gland ½-14 NPT				В		
- "Intrinsic safety and explosion-proof enclosure ► (EEx ia + EEx d)" ⁵⁾ - "n (Zone 2)" - "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)* ⁵⁾ • With FM + CSA, Type of protection: - "Intrinsic safety and explosion-proof (is + xp)" ⁴⁾ Electrical connection / cable entry • Screwed gland Pg 13.5 ⁶⁾ • Screwed gland M20x1.5 • Screwed gland ½-14 NPT C						
(EEx ia + EEx d)****O - "n (Zone 2)" - "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)**5) • With FM + CSA, Type of protection: - "Intrinsic safety and explosion-proof (is + xp)**4) • Electrical connection / cable entry • Screwed gland Pg 13.56) • Screwed gland M20x1.5 • Screwed gland ½-14 NPT Electrical condition of the entry • C	- "Intrinsic safety and e	explosion-proof enclosure				
- "n (Zone 2)" - "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)*5) • With FM + CSA, Type of protection: - "Intrinsic safety and explosion-proof (is + xp)*4) Electrical connection / cable entry • Screwed gland Pg 13.56) • Screwed gland M20x1.5 • Screwed gland ½-14 NPT	(EEx ia + EEx d)" ⁵⁾	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -				
dust explosion protection (EEx ia + EEx d + Zone 1D/2D)*5) • With FM + CSA, Type of protection: - "Intrinsic safety and explosion-proof (is + xp)*4) Electrical connection / cable entry • Screwed gland Pg 13.56) • Screwed gland M20x1.5 • Screwed gland ½-14 NPT C	- "n (Zone 2)"			E		
Zone 1D/2D)*5) • With FM + CSA, Type of protection: - "Intrinsic safety and explosion-proof (is + xp)*4) Electrical connection / cable entry • Screwed gland Pg 13.56) • Screwed gland M20x1.5 • Screwed gland ½-14 NPT C				R		
 With FM + CSA, Type of protection: "Intrinsic safety and explosion-proof (is + xp)"⁴) Electrical connection / cable entry Screwed gland Pg 13.5⁶) Screwed gland M20x1.5 Screwed gland ½-14 NPT 		ction (EEX ia + EEX d +				
- "Intrinsic safety and explosion-proof (is + xp)" ⁴) Electrical connection / cable entry • Screwed gland Pg 13.5 ⁶) • Screwed gland M20x1.5 • Screwed gland ½-14 NPT C	. ,	of mustastic -				
(is + xp)"4) Electrical connection / cable entry • Screwed gland Pg 13.5 ⁶) • Screwed gland M20x1.5 • Screwed gland ½-14 NPT C				NO		
Electrical connection / cable entry • Screwed gland Pg 13.5 ⁶⁾ • Screwed gland M20x1.5 • Screwed gland ½-14 NPT C	 Intrinsic safety and (is + xn)⁴ 	explosion-proof		NC		
 Screwed gland Pg 13.5⁶) Screwed gland M20x1.5 Screwed gland ½-14 NPT 		aabla ant…				
 Screwed gland M20x1.5 Screwed gland ½-14 NPT 	Sorowood clond De 12	capie entry		^		
• Screwed gland ½-14 NPT						
Han 7D plug (plastic housing) incl. mating connector ⁶⁾						
connector ⁶⁾	Han 7D plug (plastic h	nousing) incl. mating				
0000101	connector ⁶⁾	5, 3				

Selection and ordering data	Order No.	
SITRANS P pressure transmitters for differential pressure and flow, Series DS III HART PN 32/160 (MWP 464/2320 psi)	7 M F 4 4 3 3 -	
Display without (digital indicator hidden, setting: mA) With visible digital indication With customer-specific digital indication (setting as specified, Order Code "Y21" or required)	1 6 7	5

Available ex stock

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
- Sealing plug(s) or sealing screw(s) for the process flanges(s)
- 1) For oxygen application, add Order code E10.
- 2) Not suitable for connection of remote seal
- 3) Only together with max. spans 250, 1600, 5000 and 30000 mbar (100.4, 240.9, 2008 inH₂O and 435 psi)
- 4) Without cable gland, with blanking plug
- 5) With enclosed cable gland EEx ia and blanking plug
- 6) Not together with type of protection "Explosion-proof"

DS III series for differential pressure and flow

Further designs Order Code				
.dd "-Z" to Order No. and pecify Order Code.		HART	PA	FF
ressure transmitter with mounting				
racket made of:				
Steel	A01	🗸	1	V
Stainless steel	A02	✓	✓	✓
rings for process flanges				
nstead of FPM (Viton))	400			
PTFE (Teflon) FEP (with silicone core, approved for food)	A20 A21	✓	✓	1
FFPM (Kalrez, compound 4079)	A21	🗸	1	V
NBR (Buna N)	A23		1	1
lug				
Han 7D (metal, gray)	A30	/		
Han 8U (instead of Han 7D)	A31	1		
ealing screws				
1-18 NPT, with valve in material of process	A40	✓	1	1
anges				
ating plate inscription				
nstead of German)				
English -	B11	✓	1	1
French	B12	1	1	V
Spanish Italian	B13 B14	1	1	1
nglish rating plate (calibration certificate) ressure units in inH ₂ O or psi	B21	/	√	1
lanufacturer's test certificate M	C11	/	1	1
DIN 55350, Part 18 and to ISO 8402	CII	*	•	•
	C12	//	1	1
cceptance test certificate EN 10 204-3.1	CIZ	*	•	•
	C14	/	1	1
actory certificate DEN 10 204-2.2	C14	*	•	•
	000			
Functional Safety (SIL)" certificate	C20	 		
etting of upper limit of output signal to 2.0 mA	D05	✓		
anufacturer's declaration acc. to NACE	D07	//	1	1
only together with seal diaphragm made of	DU	*	•	ľ
astelloy and stainless steel)				
/pe of protection IP68	D12	/	1	1
not together with 7D/				
an 8Ŭ plug, cable gland Pg 13.5)				
igital indicator alongside the input keys	D27	✓	1	✓
only together with the devices 7MF4433-				
0A.6 orA.7-Z, Y21 or Y22 + Y01)				
rocess flange screws made of Monel	D34	✓	✓	V
max. nominal pressure PN20)	B			,
upplied with oval flange set 2 items), PTFE packings and screws in	D37	✓	✓	V
read of process flanges				
lse in or on zone 1D/2D	E01	/	1	1
only together with type of protection	_01			ĺ
trinsic safety (EEx ia)")				
se on zone 0	E02	✓	1	1
only together with type of protection				
ntrinsic safety (EEx ia)")				
ÜV approval to AD/TRD	E06	✓		
verfilling safety device for flammable	E08	✓	1	1
nd non-flammable liquids				
nax. PN 32 (MVWP 464 psi), basic device ith type of protection "Intrinsic safety				
EEx ia)", to WHG and VbF, not together with				
neasuring cell filling "inert liquid")				
xygen application	E10	✓	1	V
nax. 160 bar (2320 psi) with oxygen				

Further designs	Order	Code		
Add "-Z" to Order No. and specify Order Code.		HART	PA	FF
Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)	E25	4	1	1
Explosion-proof "Intrinsic safety" to NEPSI (China)	E55	✓	✓	1
(only for transmitter 7MF4				
Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)	E56	V	✓	√
Explosion-proof "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)	E57	✓	✓	✓
Interchanging of process connection side	H01	1	1	1
Vent on side for gas measurements	H02	✓	✓	1
Stainless steel process flanges for vertical differential pressure lines (not together with K01, K02 and K04) ¹⁾	H03	✓	✓	✓
Process flange				
Hastelloy	K01	V	1	1
Monel Stainless steel with PVDF insert	K02 K04	1	1	1
max. PN 10 (MWP 145 psi), max. temperature of medium 90 °C (194 °F)				,
Additional data				
Measuring range to be set				
Specify in plain text:With linear characteristic:	Y01	1		
Y01: up to mbar, bar, kPa, MPa, psi With square-rooted characteristic: Y01: up to mbar, bar, kPa, MPa, psi	Y02	✓		
Measuring point number/identification Max. 16 characters, specify in plain text: Y15:	Y15	✓	✓	✓
Measuring point text Max. 27 characters, specify in plain text:	Y16	✓	✓	✓
Y16: Entry of HART address (TAG) Max. 27 characters, specify in plain text: Y17:	Y17	~		
Setting of pressure indicator in pressure	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 ₂ O*), inH ₂ O*), ftH ₂ O*), mmHG, inHG, psi, Pa, kPa, MPa, g/cm ² , kg/cm ² , mA, Torr, ATM oder % *) ref. temperature 20 °C				
Setting of pressure indicator in	Y22	✓		
non-pressure units Specify in plain text: Y22: up to I/min, m³/h, m, USgpm, (specification of measuring range in pressure units "Y01" or "Y02" is essential, unit with	Y01 or Y02			
max. 5 characters) Preset bus address	Y25		1	
Specify in plain text: Y25:	120			

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

- available
- ot suitable for connection of remote seal
- ot together with over-filling safety device for flammable and on-flammable liquids (Order Code "E08")

DS III series for differential pressure and flow

Selection and orderin	-	Order No.
SITRANS P pressure transmitters for differential pressure and flow, Series DS III HART PN 420 (MWP 6092 psi)		7 M F 4 5 3 3 -
Measuring cell filling	Measuring cell	
Silicone oil	cleaning Standard	1
	Stariuaru	
Span		
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
Wetted parts material		
(stainless steel proces	<i>G</i> ,	
Seal diaphragm	Parts of measuring cell	
Stainless steel	Stainless steel	Α
Hastelloy	Stainless steel	В
Gold ¹⁾	Gold	L
Process connection		
	PT with flange connection	
	ite process connection	
- Mounting thread M	12 to DIN 19213	1
 Mounting thread ¹/₂ 	₁₆ -20 UNF to EN 61518	3
 Venting on side of present 		
- Mounting thread M		5
- Mounting thread '/-	₁₆ -20 UNF to EN 61518	7
Non-wetted parts mate Process flange screws		
Stainless steel	Die-cast aluminium	2
Stainless steel	Stainless steel precision	3
	casting	
Version		
 Standard version 		1
 International version, documentation in 5 la 	English label inscriptions,	2
Explosion protection	99	-
• Without		Α
 With ATEX, Type of p 	rotection:	
- "Intrinsic safety (EE		В
- "Explosion-proof (E	Ex d)" ²⁾	D
- "Intrinsic safety and	explosion-proof enclosure	P
(EEx ia + EEx d)"3)		
- "n (Zone 2)"		E
 "Intrinsic safety, exp dust explosion prot Zone 1D/2D)"³⁾ 	olosion-proof enclosure and ection (EEx ia + EEx d +	R
• With FM + CSA, Type		
- "Intrinsic safety and		NC
(is + xp)"2), max PN		NC
Electrical connection	/ cable entry	
 Screwed gland Pg 13 	3.5 ⁴⁾	A
 Screwed gland M20x 		В
 Screwed gland ½-14 	NPT	C
 Han 7D plug (plastic connector⁴⁾ 	housing) incl. mating	D
Display		
 without (digital indicate) 		1
without (digital indical)With visible digital indical		1 6 7

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

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

- 1) Not together with max. span 600 mbar (240.9 $\mathrm{inH_2O}$)
- 2) Without cable gland, with blanking plug
- 3) With enclosed cable gland EEx ia and blanking plug
- 4) Not together with type of protection "Explosion-proof"

DS III series for differential pressure and flow

Further designs	Order	Code		
Add "-Z" to Order No. and specify Order Code.		HART	PA	FF
Pressure transmitter with mounting bracket made of: • Steel • Stainless steel	A01 A02	*	*	* *
O-rings for process flanges (instead of FPM (Viton)) • PTFE (Teflon) • FEP (with silicone core, approved for food) • FFPM (Kalrez, compound 4079) • NBR (Buna N)	A20 A21 A22 A23	* * * * * *		* * * *
Plug • Han 7D (metal, gray) • Han 8U (instead of Han 7D) Sealing screws 1/4-18 NPT, with valve in material of process flanges	A30 A31 A40	* *	✓	*
Rating plate inscription (instead of German) • English • French • Spanish • Italian English rating plate Pressure units in inH ₂ O or psi Manufacturer's test certificate M	B11 B12 B13 B14 B21	****		****
(calibration certificate) To DIN 55350, Part 18 and to ISO 8402 Acceptance test certificate To EN 10204-3.1	C12	✓	✓	√
Factory certificate To EN 10204-2.2	C14	✓	✓	1
"Functional Safety (SIL)" certificate Setting of upper limit of output signal to	C20 D05	✓		
22.0 mA Manufacturer's declaration acc. to NACE (only together with seal diaphragm made of Hastelloy and stainless steel)	D07	✓	✓	√
Type of protection IP68 (not together with Han 7D / Han 8U plug, Pg 13.5 screwed gland)	D12	✓	✓	1
Digital indicator alongside the input keys (only together with the devices 7MF45332A.6 orA.7-Z, Y21 or Y22 + Y01)	D27	✓	✓	✓
Supplied with oval flange set (2 items), PTFE packings and screws in thread of process flanges	D37	✓	✓	✓
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
Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)	E25	✓	✓	1
Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4	E55	✓	✓	✓
Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)	E56	~	✓	1

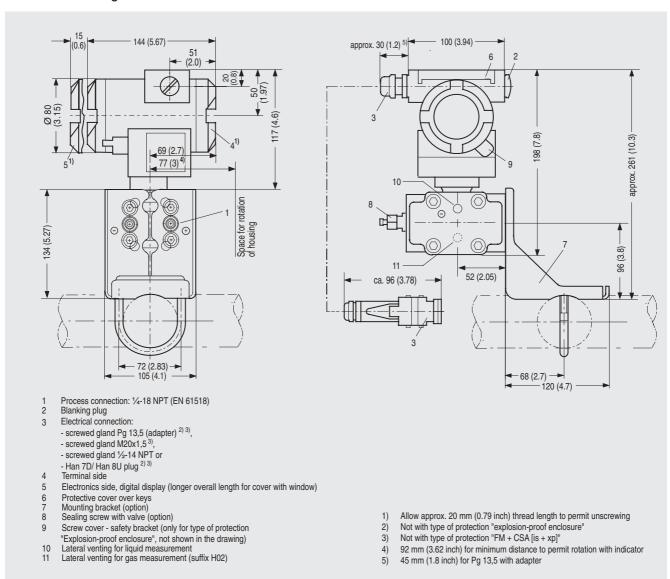
Further designs	Order	Code		
Add "-Z" to Order No. and specify Order Code.		HART	PA	FF
Explosion-proof "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)	E57	√	1	1
Interchanging of process connection side	H01	✓	✓	✓
Stainless steel process flanges for vertical differential pressure lines	H03	V	✓	V
Additional data				
Measuring range to be set Specify in plain text: • With linear characteristic: Y01: up to mbar, bar, kPa, MPa, psi	Y01	*	V	
 With square-rooted characteristic: Y01: up to mbar, bar, kPa, MPa, psi 	Y02	V	✓	
Measuring point number/identification Max. 16 characters, specify in plain text:	Y15	✓	✓	1
Measuring point text Max. 27 characters, specify in plain text: Y16:	Y16	✓	✓	✓
Entry of HART address (TAG) Max. 27 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,	Y21	✓	✓	✓
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/cm², kg/cm², mA, Torr, ATM oder % *) ref. temperature 20 °C				
Setting of pressure indication in non-pressure units Specify in plain text: Y22: up to I/min, m³/h, m, USgpm, (specification of measuring range in pressure units "Y01" or "Y02" is essential, unit with max. 5 characters)	Y22 + Y01 or Y02	✓		
Preset bus address Specify in plain text: Y25:	Y25		1	

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

✓ = available

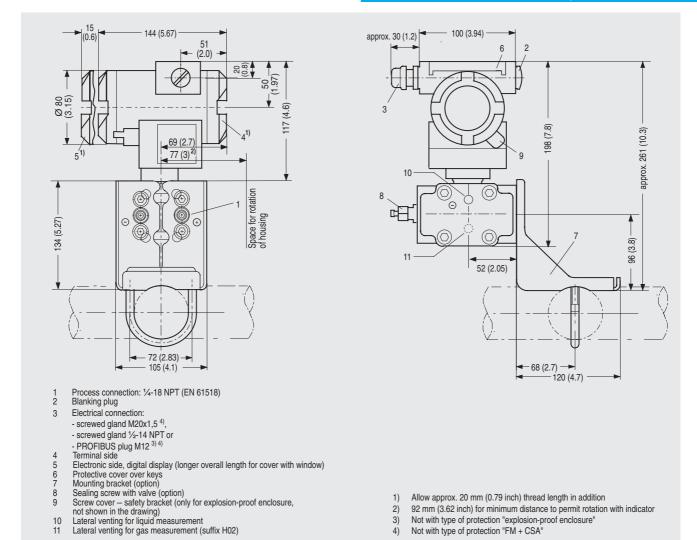
DS III series for differential pressure and flow

Dimensional drawings



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

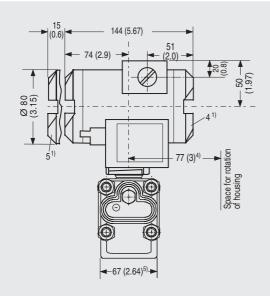
DS III series for differential pressure and flow



Not with type of protection "explosion-proof enclosure"

Not with type of protection "FM + CSA"

DS III series for differential pressure and flow



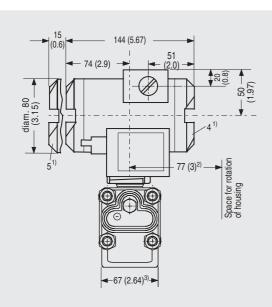
approx. 96 (3.78) approx. 217 (8.54)7) Ð Θ approx. 84,6 (3.33)-

- Process connection: 1/4-18 NPT (EN 61518) Blanking plug
- Electrical connection:
 - screwed gland Pg 13,5 (adapter) 2) 3),
 - screwed gland M20x1,5 3),
 - screwed gland 1/2-14 NPT or
 - Han 7D/ Han 8U plug 2) 3)
- Terminal side
- Electronics side, digital display (longer overall length for cover with window)
- Protective cover over keys 6
- Mounting bracket (option)
- 8 Sealing screw with valve (option)
 - Screw cover safety bracket (only for type of protection "Explosion-proof enclosure", not shown in the drawing)

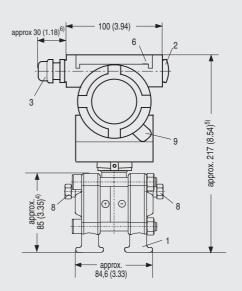
- Allow approx. 20 mm (0.79 inch) thread length to permit unscrewing
- Not with type of protection "explosion-proof enclosure"
- Not with type of protection "FM + CSA [is + xp]"
- 92 mm (3.6 inch) for minimum distance to permit rotation with indicator
- 74 mm (2.9 inch) for PN \geq 420 (MWP \geq 6092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

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

DS III series for differential pressure and flow

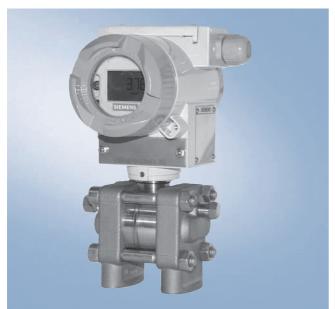


- Process connection 1/4-18 NPT (EN 61 518)
- 2 Blanking plug
- Electrical connection: screwed gland M20x1.5, screwed gland 1/2-14 NPT or PROFIBUS plug M12
- Terminal side
- Electronics side, digital display (longer overall length for cover with window)
- 6 Protective cover over keys
- Mounting bracket (option)
- Sealing screw with valve (option) 8
- Screw cover safety bracket (only for explosion-proof enclosure, not shown in the drawing)



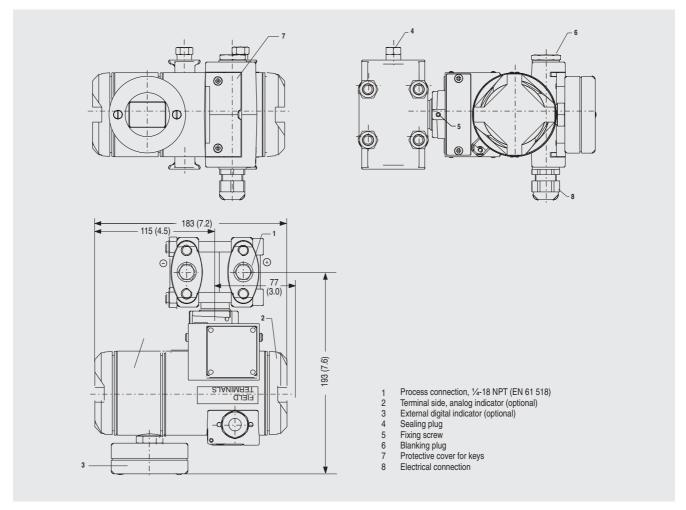
- Allow approx. 20 mm (0.79 inch) thread length in addition
- 92 mm (3.6 inch) for minimum distance to permit rotation without indicator
- 74 mm (2.9 inch) for PN \geq 420 (MWP \geq 6092 psi)
- 4) 91 mm (3.6 inch) for PN \geq 420 (MWP \geq 6092 psi)
- 5) 219 mm (8.62 inch) for PN \geq 420 (MWP \geq 6092 psi)
- Approx. 45 mm (1.77 inch) for Pg 13.5 with adapter

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



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

DS III series for differential pressure and flow



SITRANS P pressure transmitters, DS III FF series for differential pressure and flow, with digital indicator beside control keys, dimensions in mm (inch)



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

DS III series for level

Technical specifications

Maximum working Nominal measuring Nomina	SITRANS P, DS III series for level					
Level		HART		PROFIBUS PA or Foundation Fieldbus		
Span Maximum voxing Maximum voxing Processure Span Maximum voxing Processure Span Maximum voxing Processure Span Maximum voxing Processure Span Spa	Input			•		
Description Pressure Press	Measured variable	Level				
25201 mbar g 26201 mb	nominal measuring range and	suring range and pressure				
(0.368.7 psi g)	max. pemissible working pressure		See "Mounting flange"		See "Mounting flange"	
(0.77 23 / 2 psi g) 10			See "Mounting flange"		See "Mounting flange"	
Care			See "Mounting flange"	1600 mbar g (23.2 psi g)	See "Mounting flange"	
• Measuring cell with silicone oil filling -100% of max. span or 30 mbar (0.435 psi a), depending on mounting flange Upper limit (infinitely adjustable) 4 20 mA Digital PROFIBUS PA or Foundation Fieldbus signal • Lower limit (infinitely adjustable) 3.55 mA, factory preset to 3.84 mA - • Lower limit (infinitely adjustable) 28 mA, factory preset to 2.0 mA - Load • Without HART communication Rg ≤ (U _H + 10.5 V)0.023 Å in Ω, U _H + Power supply in V - • With HART communication Rg = 230 500 Ω (SIMATIC PDM) or Rg = 230 500 Ω			See "Mounting flange"		See "Mounting flange"	
Object measuring limit 100% of max. span 100% of the max. nominal measuring range Output Output signal 4 20 mA Digital PROFIBUS PA or Foundation Fieldbus signal • Lower limit (infinitely adjustable) 3.55 mA, factory preset to 20.5 mA or optionally set to 22.0 mA - Load • Without HART communication PB ≤ (U+ 10.5 V)/0.023 A in Q UH; Flower supply in V PB = 230 1100 Q (HART Communicator) - Physical bus - Increasing characteristic start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil filling, room temperature 25 °C (77 °F)) r: Span ratio (r = max. span / set span) Error in measurement and fixed-point setting (including hysteresis and repeatability) - Linear characteristic - r ≤ 10	Lower measuring limit					
Output Output signal 4 20 mA Digital PROFIBUS PA or Foundation Fieldbus signal • Lower limit (infinitely adjustable) 3.55 mA, factory preset to 3.84 mA 23 mA, factory preset to 20.5 mA or optionally signal Load • Without HART communication Pa ≤ (U _H - 10.5 V)(0.023 A in Q U _H : Power supply in V • With HART communication Pa ≤ 230 \$00 Q (SIMATIC PDM) or Pa ∈ 230 \$100 Q (HART Communicator) • Pa ∈ 230 Q	Measuring cell with silicone oil filling	-100% of max. span or	30 mbar (0.435 psi a), d	epending on mounting fla	ange	
Output signal 4 20 mA Digital PROFIBUS PA or Foundation Fieldbus signal • Lower limit (infinitely adjustable) 3.55 mA, factory preset to 20.5 mA or optionally set to 22.0 mA - • Without HART communication Pig ≤ (U _H - 10.5 V)/0.023 A in Ω U _H ; Power supply in V - • With HART communication Pig ≤ (U _H - 10.5 V)/0.023 A in Ω U _H ; Power supply in V - • With HART communication Pig = 230 100 Ω (SIMATIC PDM) or Pig = 230 1100 Ω (HART Communicator) - Physical bus - - • With polarity reversal protection - Ves Accuracy - 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) • Linear characteristic - - ≤ 0.075% • Linear characteristic - ≤ 0.075% ≤ 0.075% • Long-term drift (temperature change ±30 °C (±54 °F) ≤ (0.25 r)% every 5 years static pressure max. 70 bar g (1015 psi g) static prossure max. 70 bar g (1015 psi g) Influence of ambient temperature = (0.5 r + 0.2)% (0.4 instead of 0.2 with 10 < r ≤ 30)	Upper measuring limit	100% of max. span		100% of the max. nomi	nal measuring range	
Lower limit (infinitely adjustable) • Lower limit (infinitely adjustable) • Upper limit (infinitely adjustable) • Without HART communication • With HART communication • Re = 230 500 Ω (SIMATIC PDM) or Re = 230 500 Ω (SIMATIC PDM) or Re = 230 500 Ω (SIMATIC PDM) or Re = 230 1100 Ω (HART Communicator) Physical bus • IEC 61158-2 With polarity reversal protection • Accuracy Reference conditions Error in measurement and fixed-point setting (including hysteresis and repeatability) • Linear characteristic • $r \le 10$ • $10 < r \le 30$ • $30 < r \le 100$ Long-term drift (temperature change ± 30 °C (5.5 °F + 0.075)% • $(5.4 °F)$) Influence of ambient temperature • $4.1 < 0 + 60 °C (14 + 140 °F)$ • 250 -mbar (3.63 psi) measuring cell • 600 -mbar (8.7 psi) measuring c	Output			1		
• Upper limit (infinitely adjustable) 23 mA, factory preset to 20.5mA or optionally set to 22.0mA • Without HART communication • With HART communication • Physical bus • With polarity reversal protection • Cacuracy Reference conditions • Increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil filling, room temperature $25 ^{\circ}\text{C} (77 ^{\circ}\text{F}) \text{r. Span ratio } (r = \text{max. span } / \text{set span)}$ • Uninear characteristic • r \leq 10 • 10 < r \leq 30 • 30 < r \leq 100 • 20,075% • (1.25 · r + 0.075)% • (0.25 · r + 0.075)% • (0.4 instead of 0.2 with $10 < r \le 30$) • (0.4 instead of 0.2 with $10 < r \le 30$) • (0.4 instead of 0.2 with $10 < r \le 30$) • (0.5 · r + 0.2)% • (0.4 instead of 0.2 with $10 < r \le 30$) • (0.5 · r + 0.2)% • (0.4 instead of 0.2 with $10 < r \le 30$) • (0.5 · r + 0.15)%/ 10 K • (0.25 · r + 0.15)%/ 10 K • (0.15 · r + 0.15	Output signal	4 20 mA			r Foundation Fieldbus	
Load set to 22.0 mA • Without HART communication P _B ≤ (U _H - 10.5 V)0.023 A in Ω, U _H : Power supply in V - • With HART communication P _B = 230 500 Ω (SIMATIC PDM) or P _B = 230 1100 Ω (HART Communicator) IEC 61158-2 Physical bus - IEC 61158-2 With polarity reversal protection 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) 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) ≤ 0,15% ≤ 0,075% • Linear characteristic ≤ 0,15% ≤ 0,075% ≤ 0,075% • Linear characteristic ≤ 0,33% ≤ 0,075% ≤ (0,25 ° + 0.075)% ≤ (0,25 ° + 0.075)% ≤ (0,25 ° + 0.075)% ≤ (0,25 ° + 0.075)% ≤ (0,25 ° + 0.075)% ≤ (0,25 ° + 0.075)% ≤ (0,25 ° + 0.075)% ≤ (0,25 ° + 0.075)% ≤ (0,25 ° + 0.075)% ≤ (0,25 ° + 0.075)% ≤ (0,25 ° + 0.075)% ≤ (0,25 ° + 0.075)% ≤ (0,25 ° + 0.075)% ≤ (0,25 ° + 0.075)%	 Lower limit (infinitely adjustable) 	3.55 mA, factory prese	t to 3.84 mA	-		
• Without HART communication $P_{B} \le (U_{H} - 10.5 \text{ V})/0.023 \text{ A in } \Omega$, $U_{H} : \text{Power supply in V}$ - $P_{B} = 230 \dots 500 \Omega$ (SIMATIC PDM) or $P_{B} = 230 \dots 1100 \Omega$ (HART Communicator) - $P_{$	• Upper limit (infinitely adjustable)	23 mA, factory preset t set to 22.0 mA	o 20.5 mA or optionally	-		
• With HART communication $R_{\rm B} = 230 \dots 500 \Omega$ (SIMATIC PDM) or $R_{\rm B} = 230 \dots 1100 \Omega$ (HART Communicator) - IEC 61158-2 With polarity reversal protection - IEC 61158-2 Yes Accuracy Reference conditions Increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil filling, room temperature $25 ^{\circ} \mathrm{C} (77 ^{\circ} \mathrm{F}) \mathrm{r}$. Span ratio $(r = \max$, span / set span) increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil filling, room temperature $25 ^{\circ} \mathrm{C} (77 ^{\circ} \mathrm{F}) \mathrm{r}$. Span ratio $(r = \max$, span / set span) increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil filling, room temperature $25 ^{\circ} \mathrm{C} (77 ^{\circ} \mathrm{F}) \mathrm{r}$. Span ratio $(r = \max$, span / set span) increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil filling, room temperature $25 ^{\circ} \mathrm{C} (77 ^{\circ} \mathrm{F}) \mathrm{r}$. Span ratio $(r = \max$, span / set span) increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil filling, room temperature $25 ^{\circ} \mathrm{C} (77 ^{\circ} \mathrm{F}) \mathrm{r}$. Span ratio $(r = \max$, span / set span) increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil filling, room temperature $25 ^{\circ} \mathrm{C} (77 ^{\circ} \mathrm{F}) \mathrm{r}$. Span ratio $(r = \max$, span / set span) increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil filling, room temperature $25 ^{\circ} \mathrm{C} (77 ^{\circ} \mathrm{F}) \mathrm{r}$. Span ratio $(r = \max$, span / set span) including in the span ratio $(r = \max$, span / set span) including in the span ratio $(r = \max$, span / set span) including in the span ratio $(r = \max$, span ratio $(r = \max$, span ratio $(r = \max$, span / set span) including in the span ratio $(r = \max$, sp	Load			1		
Physical bus - \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Without HART communication	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0,02$ $U_{\rm H}$: Power supply in V	3 A in Ω,	-		
Accuracy Perence conditions Increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil filling, room temperature 25 °C (77 °F)) r. Span ratio (r = max. span / set span) Error in measurement and fixed-point setting (including hysteresis and repeatability) 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) • Linear characteristic ≤ 0,15% - 10 < r ≤ 30	With HART communication			-		
Accuracy Reference conditions Error in measurement and fixed-point setting (including hysteresis and repeatability) • Linear characteristic - r ≤ 10 - 10 < r ≤ 30 - 30 < r ≤ 100 Long-term drift (temperature change ±30 °C (±54 °F)) - 250-mbar (3.63 psi) measuring cell - at 1 +10 °C (14 +18 °C (-40 +18 °C (-40 +14 °F and 140 185 °F) - 250-mbar (3.63 psi) measuring cell - at 1 +10 °C and +60 +85 °C (-40 +14 °F and 140 185 °F) - 250-mbar (3.63 psi) measuring cell - 600-mbar (8.7 psi) measuring cell - 600 mbar (23.2 and 72.5 psi)	Physical bus	-		IEC 61158-2		
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) 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) Linear characteristic	With polarity reversal protection	-		Yes		
Error in measurement and fixed-point setting (including hysteresis and repeatability) • Linear characteristic • r ≤ 10 • 10 < r ≤ 30 • 30 < r ≤ 100 Long-term drift (temperature change ±30 °C (±54 °F)) Influence of ambient temperature • at -10 +60 °C (14 140 °F) • 250-mbar (3.63 psi) measuring cell • 1600 and 5000 mbar (23.2 and 72.5 psi) measuring cell • at -4010 °C and +60 +85 °C (-40 +14 °F and 140 185 °F) • 250-mbar (3.63 psi) measuring cell • at -4010 °C and +60 +85 °C (-40 +14 °F and 140 185 °F) • 250-mbar (3.63 psi) measuring cell • 600-mbar (8.7 psi) measuring cell • at -4010 °C and +60 +85 °C (-40 +14 °F and 140 185 °F) • 250-mbar (3.63 psi) measuring cell • 600-mbar (8.7 psi) measuring cell • (0.25 · r + 0.15)%/10 K double values with 10 < r ≤ 30 • (0.25 · r +0.15)%/10 K double values with 10 < r ≤ 30 • (0.33 · r +0.25)% (-25 · r +0.15)%/10 K double values with 10 < r ≤ 30 • (0.25 · r +0.15)%/10 K double values with 10 < r ≤ 30 • (0.25 · r +0.15)%/10 K double values with 10 < r ≤ 30 • (0.25 · r +0.15)%/10 K double values with 10 < r ≤ 30 • (0.25 · r +0.15)%/10 K double values with 10 < r ≤ 30 • (0.25 · r +0.15)%/10 K double values with 10 < r ≤ 30	Accuracy			<u>'</u>		
 Linear characteristic - r ≤ 10	Reference conditions					
$ \begin{array}{llllllllllllllllllllllllllllllllllll$						
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	Linear characteristic			≤ 0,075%		
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	- r ≤ 10	≤ 0,15%				
Long-term drift (temperature change ±30 °C (±54 °F)) Influence of ambient temperature • at -10 +60 °C (14 140 °F) - 250-mbar (3.63 psi) measuring cell • 600-mbar (8.7 psi) measuring cell • at -4010 °C and +60 +85 °C (-40 +14 °F and 140 185 °F) - 250-mbar (3.63 psi) measuring cell • at -4010 °C and +60 +85 °C (-40 +14 °F and 140 185 °F) - 250-mbar (3.63 psi) measuring cell • (0.25 · r + 0.2)% (0.4 instead of 0.2 with 10 < r ≤ 30) ≤ (0.25 · r + 0.2)% (0.4 instead of 0.2 with 10 < r ≤ 30) ≤ (0.25 · r + 0.2)% (0.4 instead of 0.2 with 10 < r ≤ 30) ≤ (0.25 · r + 0.2)% (0.4 instead of 0.2 with 10 < r ≤ 30) ≤ (0.25 · r + 0.15)%/10 K double values with 10 < r ≤ 30 ≤ (0.25 · r + 0.15)%/10 K double values with 10 < r ≤ 30 ≤ (0.25 · r + 0.15)%/10 K double values with 10 < r ≤ 30 ≤ (0.25 · r + 0.15)%/10 K ≤ 0.3%/10 K ≤ 0.3%/10 K	- 10 < r ≤ 30	≤ 0,3%				
(±54 °F)) static pressure max. 70 bar g (1015 psi g) static pressure max. 70 bar g (1015 psi g) • at -10 +60 °C (14 140 °F) ≤ (0.5 · r + 0.2)% (0.4 instead of 0.2 with 10 < r ≤ 30)	- 30 < r ≤ 100	≤ (0.0075 · r + 0.075)%				
 • at -10 +60 °C (14 140 °F) - 250-mbar (3.63 psi) measuring cell - 600-mbar (8.7 psi) measuring cell - 600-mbar (8.7 psi) measuring cell - 1600 and 5000 mbar (23.2 and 72.5 psi) measuring cells - 1600 and 5000 mbar (23.2 and 72.5 psi) measuring cells - at -4010 °C and +60 +85 °C (-40 +14 °F and 140 185 °F) - 250-mbar (3.63 psi) measuring cell - 600-mbar (8.7 psi) measuring cell - 600-mbar (8.7 psi) measuring cell - 1600 and 5000 mbar (23.2 and 72.5 psi) - 1600 and 5000 mbar (23.2 and 72.5 psi) - 1600 and 5000 mbar (23.2 and 72.5 psi) - 1600 and 5000 mbar (23.2 and 72.5 psi) 						
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	Influence of ambient temperature					
(0.4 instead of 0.2 with 10 < r ≤ 30) = 600-mbar (8.7 psi) measuring cell = 1600 and 5000 mbar (23.2 and 72.5 psi) measuring cells • at -4010 °C and +60 +85 °C (-40 +14 °F and 140 185 °F) = 250-mbar (3.63 psi) measuring cell • 600-mbar (8.7 psi) measuring cell = 600-mbar (8.7 psi) measuring cell = 600-mbar (23.2 and 72.5 psi) = 1600 and 5000 mbar (23.2 and 72.5 psi) (0.4 instead of 0.2 with 10 < r ≤ 30) ≤ (0.25 · r + 0.2)% (0.4 instead of 0.2 with 10 < r ≤ 0.45% ≤ (0.25 · r + 0.15)%/10 K double values with 10 < r ≤ 30 ≤ (0.15 · r + 0.15)%/10 K double values with 10 < r ≤ 30 ≤ (0.3%/10 K ≤ 0.3%/10 K ≤ 0.27%/10 K	• at -10 +60 °C (14 140 °F)					
(0.4 instead of 0.2 with 10 < r ≤ 30) - 1600 and 5000 mbar (23.2 and 72.5 psi) measuring cells • at -4010 °C and +60 +85 °C (-40 +14 °F and 140 185 °F) - 250-mbar (3.63 psi) measuring cell - 600-mbar (8.7 psi) measuring cell - 600-mbar (23.2 and 72.5 psi) - 1600 and 5000 mbar (23.2 and 72.5 psi) (0.4 instead of 0.2 with 10 < r ≤ 30) ≤ (0.25 · r + 0.15)%/10 K double values with 10 < r ≤ 30 ≤ (0.15 · r +0.15)%/10 K double values with 10 < r ≤ 30 ≤ (0.12 · r +0.15)%/10 K ≤ 0.27%/10 K	- 250-mbar (3.63 psi) measuring cell	` ,	10 < r ≤ 30)	≤ 0,7%		
measuring cells • at -4010 °C and +60 +85 °C (-40 +14 °F and 140 185 °F) - 250-mbar (3.63 psi) measuring cell • 600-mbar (8.7 psi) measuring cell • 600 and 5000 mbar (23.2 and 72.5 psi) ≤ 30) ≤ (0.25 · r +0.15)%/10 K double values with 10 < r ≤ 30 ≤ (0.15 · r +0.15)%/10 K double values with 10 < r ≤ 30 ≤ (0.12 · r +0.15)%/10 K ≤ 0.27%/10 K	- 600-mbar (8.7 psi) measuring cell					
$ \begin{array}{llllllllllllllllllllllllllllllllllll$						
double values with 10 < r ≤ 30 - 600-mbar (8.7 psi) measuring cell \leq (0.15 · r +0.15)%/10 K double values with 10 < r ≤ 30 - 1600 and 5000 mbar (23.2 and 72.5 psi) \leq (0.12 · r +0.15)%/10 K \leq 0.27%/10 K						
double values with 10 < r ≤ 30 - 1600 and 5000 mbar (23.2 and 72.5 psi) ≤ (0.12 · r +0.15)%/10 K ≤ 0.27%/10 K	- 250-mbar (3.63 psi) measuring cell			≤ 0.4%/10 K		
	- 600-mbar (8.7 psi) measuring cell			≤ 0.3%/10 K		

DS III series for level

SITRANS P, DS III series for level	luan .	Indication of the second
Influence of static procesure	HART	PROFIBUS PA or Foundation Fieldbus
Influence of static pressure		
• on the zero point	< (0.2 x)0/ par parainal pressure	< 0.20/ new newspal nyears we
- 250-mbar (3.63 psi) measuring cell	≤ (0.3 · r)% per nominal pressure	≤ 0.3% per nominal pressure
- 600-mbar (8.7 psi) measuring cell	≤ (0.15 · r)% per nominal pressure	≤ 0.15% per nominal pressure
- 1600 and 5000 mbar (23.2 and 72.5 psi) measuring cells	≤ (0.1 · r)% per nominal pressure	≤ 0.1% per nominal pressure
• on the span	≤ (0.1 · r)% per nominal pressure	≤ 0.1% per nominal pressure
Measured Value Resolution	-	3 ⋅ 10 ⁻⁵ of nominal measuring range
Rated operating conditions		
Degree of protection (to EN 60529)	IP65	
Process temperature	missible working pressure of the respective fla	max. permissible working temperature to max. per nge connection!
Measuring cell with silicone oil filling	-40 +100 °C (-40 +212 °F)	
- High-pressure side	$p_{abs} \ge 1bar: -40 \dots +175 ^{\circ}C (-40 \dots +347 ^{\circ}F)$ $p_{abs} \ge 1bar: -40 \dots +80 ^{\circ}C (-40 \dots +176 ^{\circ}F)$	
- Low-pressure side	-40 +100 °C (-40 +212 °F) -20 +60 °C (-4 +140 °F) in conjunction with	th dust explosion protection
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	To EN 50081-1	
- Interference immunity	To EN 61236 and NAMUR NE 21	
Design		
Weight (without options)		
• To EN (pressure transmitter with mounting flange, without tube)	≈ 11 13 kg (≈ 24.2 28.7 lb)	
• To ASME (pressure transmitter with mounting flange, without tube)	≈ 11 18 kg (≈ 24.2 39.7 lb)	
Wetted parts materials		
High-pressure side		
Seal diaphragm of mounting flange	Stainless steel, mat. No. 1.4404/316L, Monel, r Hastelloy C276, mat. No. 2.4819, Hastelloy C4	mat. No. 2.4360, Hastelloy B2, mat. No. 2.4617, , mat. No. 2.4610, tantalum, PTFE, ECTFE
Measuring cell filling	Silicone oil	
Process connection		
High-pressure side	Flange to EN and ASME	
• Low-pressure side	Female thread $\frac{1}{4}$ -18 NPT and flange connection $\frac{7}{16}$ -20 UNF to EN 61518	on with mounting thread M10 to DIN 19213 or
Power supply U_{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

DS III series for level

SITRANS P, DS III series for level							
	HART	PROFIBUS PA or Foundation Fieldbus					
Certificate and approvals		1					
Classification according to pressure equipment directive (DRGL 97/23/EC)	For gases of fluid group 1 and liquids of fluid grangraph 3 (sound engineering practice)	oup 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 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: $\begin{array}{l} U_{\rm i}=30~{\rm V},~l_{\rm i}=100~{\rm mA},\\ P_{\rm i}=750~{\rm mW};~R_{\rm i}=300~\Omega \end{array}$	FISCO supply unit: $U_{\rm o}=17.5$ V, $I_{\rm o}=380$ mA, $P_{\rm o}=5.32$ W Linear barrier: $U_{\rm o}=24$ V, $I_{\rm o}=250$ mA, $P_{\rm o}=1.2$ W					
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{\rm i} = 7 \mu \text{H}, C_{\rm i} = 1.1 \text{nF}$					
• 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: $\begin{array}{l} U_{\rm i}=30~{\rm V},~l_{\rm i}=100~{\rm mA},\\ P_{\rm i}=750~{\rm mW},~P_{\rm i}=300~\Omega \end{array}$	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	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{\rm i} = 7 \mu \text{H}, C_{\rm i} = 1.1 \text{nF}$					
• 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 I DIV 2, GP ABCD T4T6; CL II, DIV 2, GP FG; C	EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4T6; CL I, L III					
• Explosion protection to CSA	Certificate of Compliance 1153651						
- Identification (XP/DIP) or (IS)	CL I, DIV 1, GP ABCD T4T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4T6; CL I, DIV 2, GP ABCD T4T6; CL II, DIV 2, GP FG; CL III						

DS III series for level

TOT TO VCT			
HART communication		Communication Foundation Field	lbus
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 	
		 Adaptation to customer-specific process variables 	Yes, linearly rising or falling characteristic
PROFIBUS PA communication	4	- Electrical damping T ₆₃ , adjust-	
Simultaneous communication with master class 2 (max.)	4	able	
The address can be set using	Configuration tool or local opera- tion (standard setting address	- Simulation function	Output/input (can be locked within the device with a bridge)
Cyclic data usage	126)	- 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) Yes, one upper and lower warning
• Input byte	0, 1, or 2 (register operating mode		limit and one alarm limit respec- tively
Internal preprocessing	and reset function for metering)	 Square-rooted characteristic for flow measurement 	Yes
Device profile	PROFIBUS PA Profile for Process	• PID	Standard FF function block
	Control Devices Version 3.0, Class B	 Physical block 	1 Resource block
Function blocks	2	Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block
Analog input		5	LCD
 Adaptation to customer-specific process variables 	Yes, linearly rising or falling characteristic	Pressure transducer block	V
 Electrical damping T₆₃, 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	 Simulation function: Measured pressure value, sensor temper- 	Constant value or over parameter- izable ramp function
	value, substitute value, incorrect value)	ature and electronics temperature	·
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respec- tively		
 Register (totalizer) 	Can be reset, preset, optional	Mounting flange	
	direction of counting, simulation function of register output	Nom. diam.	Nom. press.
- Failure mode	Can be parameterized (summation	• To EN 1092-1	
	with last good value, continuous summation, summation with incor-	- DN 80	PN 40
	rect value)	- DN 100	PN16, PN40
- Limit monitoring	One upper and lower warning limit	• To ASME B16.5	
• Physical block	and one alarm limit respectively	- 3 inch	Class 150, class 300
Physical block Transducer blocks	1	- 4 inch	Class 150, class 300
Transducer blocks • Pressure transducer block	2		
	Voc		
 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	Parameterizable		

Constant value or over parameter-

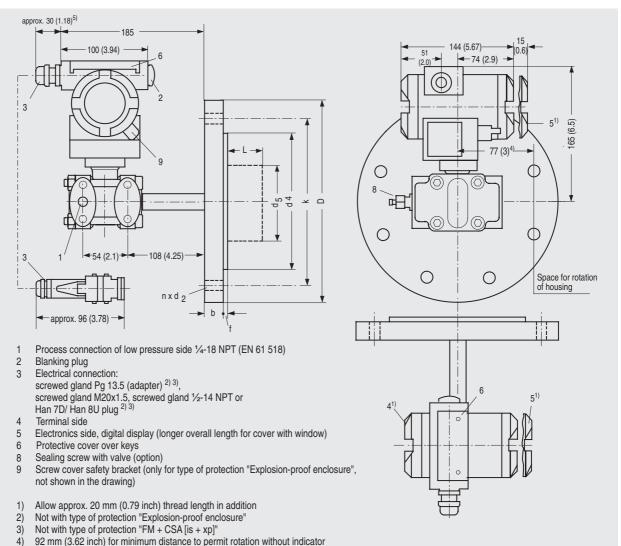
sured pressure value and sen- izable ramp function

and implementation point of square-root extraction - Simulation function for mea-

sor temperature

DS III series for level

Dimensional drawings



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

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

Connection to EN 1092-1

Nom. diam.	Nom. press.	b	D	d	d_2	d_4	d_5	d_{M}	f	k	n	L
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
DN 80	PN 40	24	200	90	18	138	76	72 ¹⁾	2	160	8	0, 50, 100,
DN 100	PN 40	20	220	115	18	158	94	89	2	180	8	150 or 200
	PN 40	24	235	115	22	162	94	89	2	190	8	

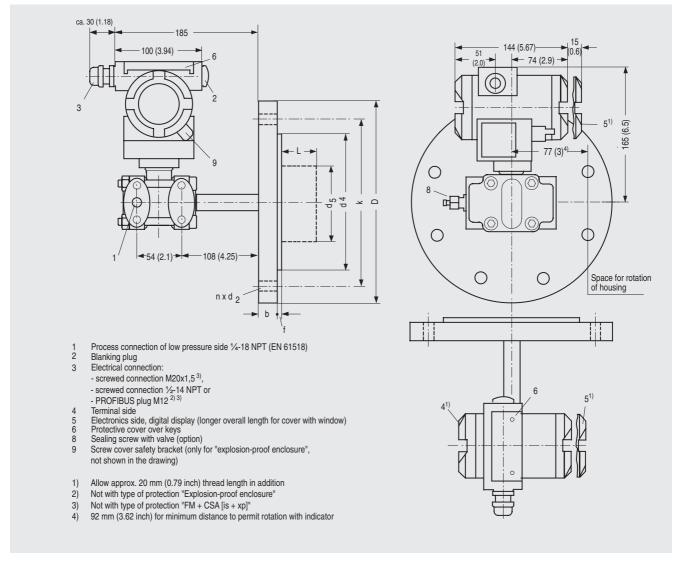
Connection to ASME B16.5

Nom. diam.	Nom. press.	b	D	d ₂	d ₄	d ₅	d _M	f	k	n	L
	lb/sq.in.	inch	inch	inch	inch	inch	inch	inch	inch		inch
		(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)		(mm)
3 inch	150	0.94 (23.8)	7.5 (190.5)	0.75 (19.0)	5 (127)	3 (76)	2.81 ¹⁾ (72)	0.06 (1.6)	6 (152.4)	4	0, 2, 3.94, 5.94 or 7.87 (0, 50, 100, 150 or 200)
	300	1.12 (28.6)	8.25 (209.5)	0.87 (22.2)	5 (127)	3 (76)	2.81 ¹⁾ (72)	0.06 (1.6)	6.69 (168.3)	8	_
4 inch	150	0.94 (23.8)	9 (228.5)	0.75 (19.0)	6.19 (157.2)	3.69 (94)	3.5 (89)	0.06 (1.6)	7.5 (190.5)	8	_
	300	1.25 (31.7)	10 (254)	0.87 (22.2)	6.19 (157.2)	3.69 (94)	3.5 (89)	0.06 (1.6)	7.88 (200)	8	_

d: Internal diameter of gasket to DIN 2690 d_M: Effective diaphragm diameter

^{1) 89} mm = $3\frac{1}{2}$ inch with tube length L = 0.

DS III series for level



SITRANS P pressure transmitters, DS III PA and FF series for level, including mounting flange, dimensions in mm (inch)

Connection to EN 1092-1

Nom. diam.	Nom. press.	b	D	d	d ₂	d ₄	d ₅	d _M	f	k	n	L
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
DN 80	PN 40	24	200	90	18	138	76	72 ¹⁾	2	160	8	0, 50, 100,
DN 100	PN 40	20	220	115	18	158	94	89	2	180	8	— 150 or 200
	PN 40	24	235	115	22	162	94	89	2	190	8	

Connection to ASME B16.5

Nom. diam.	Nom. press.	b	D	d_2	d_4	d_5	d_{M}	f	k	n	L
	lb/sq.in.	inch	inch	inch	inch	inch	inch	inch	inch		inch
		(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)		(mm)
3 inch	150	0.94 (23.8)	7.5 (190.5)	0.75 (19.0)	5 (127)	3 (76)	2.81 ¹⁾ (72)	0.06 (1.6)	6 (152.4)	4	0, 2, 3.94, 5.94 or 7.87 (0, 50, 100, 150 or 200)
	300	1.12 (28.6)	8.25 (209.5)	0.87 (22.2)	5 (127)	3 (76)	2.81 ¹⁾ (72)	0.06 (1.6)	6.69 (168.3)	8	_
4 inch	150	0.94 (23.8)	9 (228.5)	0.75 (19.0)	6.19 (157.2)	3.69 (94)	3.5 (89)	0.06 (1.6)	7.5 (190.5)	8	_
	300	1.25 (31.7)	10 (254)	0.87 (22.2)	6.19 (157.2)	3.69 (94)	3.5 (89)	0.06 (1.6)	7.88 (200)	8	_

d: Internal diameter of gasket to DIN 2690 d_M: Effective diaphragm diameter

 $^{^{1)}}$ 89 mm = $3\frac{1}{2}$ inch with tube length L = 0.