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.

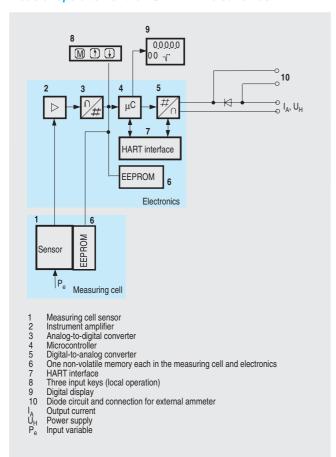
At the top of the housing is a plastic cover (5), which hides the input keys.

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.

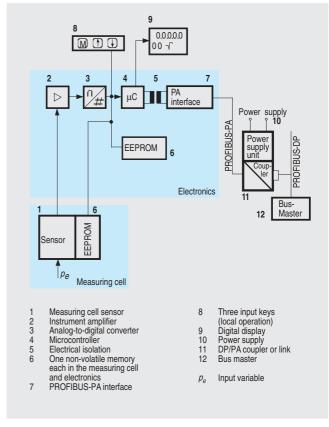
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The one memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced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

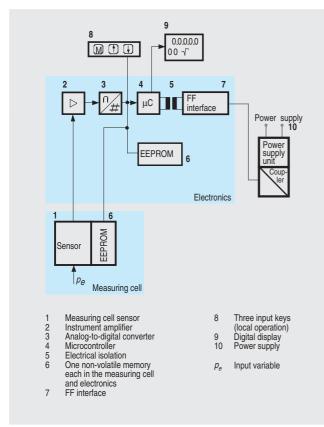
Using the three input keys (8) you can parameterize the pressure transmitter directly at the point of measurement. The input keys can also be used to control the view of the results, the error messages and the operating modes on the digital display (9).

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).

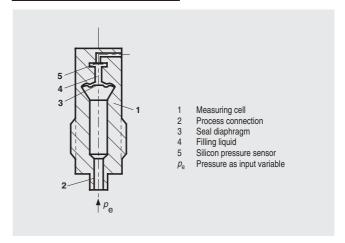
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The one memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced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

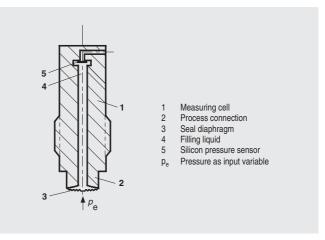
Measuring cell for gage pressure



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

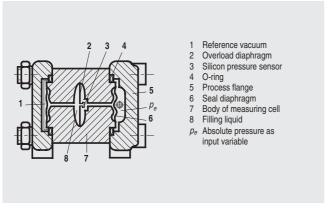
Measuring cell for absolute pressure from gage pressure series

1 Measuring cell
2 Process connection
3 Seal diaphragm
4 Filling liquid
5 Silicon absolute pressure sensor
pe Absolute pressure as input variable

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



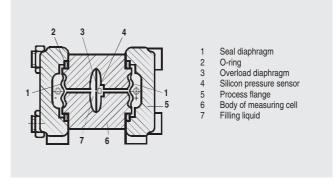
Measuring cell for absolute pressure from differential pressure series, function diagram

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



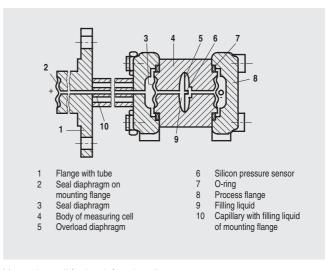
Measuring cell for differential pressure and flow, function diagram

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

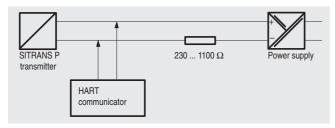
Depending on the version, there are a range of options for parameterizing the pressure transmitter and for setting or scanning the parameters.

Parameterization using the input keys (local operation)

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

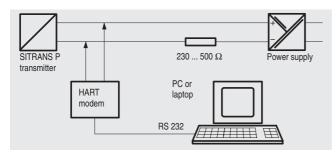
Parameterization using HART communication

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

¹⁾ Cancel apart from write protection

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

lable style. Teerifical sp	Comoations 2
Physical variable	Physical dimensions
Pressure (setting can also be made in the factory)	Pa, MPa, kPa, bar, mbar, torr, atm, psi, g/cm^2 , kg/cm^2 , inH_2O , inH_2O (4 °C), mmH_2O , ftH_2O (20 °C), $inHg$, $mmHg$
Level (height data)	m, cm, mm, ft, in
Volume	m ³ , dm ³ , hl, yd ³ , ft ³ , in ³ , US gallon, lmp. gallon, bushel, barrel, barrel liquid
Mass	g, kg, t, lb, Ston, Lton, oz
Volume flow	m ³ /d, m ³ /h, m ³ /s, I/min, I/s, ft ³ /d, ft ³ /min, ft ³ /s, US gallon/min, US gallon/s
Mass flow	t/d, t/h, t/min, kg/d, kg/h, kg/min, kg/s, g/d, g/h, g/min, g/s, lb/d, lb/h, lb/min, lb/s, LTon/d, LTon/h, STon/d, STon/h, STon/min
Temperature	K, °C, °F, °R
Miscellaneous	%, mA

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)	Х	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	Х	Х
Input of characteristic		Х
Freely-programmable LCD		Х
Diagnostics functions		Х

²⁾ Only differential pressure

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 variable	Physical dimensions
Pressure (setting can also be made in the factory)	MPa, kPa, Pa, bar, mbar, torr, atm, psi, g/cm², kg/cm², mmH ₂ O, mmH ₂ O (4 °C), inH ₂ O, inH ₂ O (4 °C), ftH ₂ O (20 °C), mmHg, inHg
Level (height data)	m, cm, mm, ft, in, yd
Volume	m ³ , dm ³ , hl, yd ³ , ft ³ , in ³ , US gallon, lmp. gallon, bushel, barrel, barrel liquid
Volume flow	m³/s, m³/min, m³/h, m³/d, l/s, l/min, l/h, l/d, Ml/d, ft³/s, ft³/min, ft³/h, ft³/d, US gallon/s, US gallon/min, US gallon/h, US gallon/d, bbl/s, bbl/min, bbl/h, bbl/d
Mass flow	g/s, g/min, g/h, g/d, kg/s, kg/min, kg/h, kg/d, t/s, t/min, t/h, /t/d, lb/s, lb/min, lb/h, lb/d, STon/s, STon/min, STon/h, STon/d, LTon/s, LTon/min, LTon/h, LTon/d
Total mass flow	t, kg, g, lb, oz, LTon, STon
Temperature	K, °C, °F, °R
Miscellaneous	%

DS III series for gage pressure

Technical specifications

SITRANS P, DS III series for gage pressure)			
	HART		PROFIBUS PA or Fou	ındation Fieldbus
Input				
Measured variable	Gage pressure			
Spans (infinitely adjustable) or nominal measuring range and	Span	Max. perm. test pressure	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	a)		
 Measuring cell with inert filling liquid 	30 mbar a (0.435 psi a	n)		
Upper measuring limit	100% of max. span (m	nax. 160 bar g (2320 psi g)	with oxygen measureme	ent and inert liquid)
Output				
Output signal			Digital PROFIBUS PA or Foundation Field nal	
 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	$R_{\rm B} = 230 \dots 500 \ \Omega \ ({\rm SIM}) \ R_{\rm B} = 230 \dots 1100 \ \Omega \ ({\rm H}) \ R_{\rm B} = 230 \ \Omega \ ({\rm H}) \ R_{\rm B$		-	
Physical bus	-		IEC 61158-2	
With polarity reversal protection	-		Yes	
Accuracy	To EN 60770-1			
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)				
Linear characteristic			≤ 0,075%	
- r ≤ 10	$\leq (0.0029 \cdot r + 0.071)\%$	6		
- 10 < r ≤ 30	$\leq (0.0045 \cdot r + 0.071)\%$	6		
- 30 < r ≤ 100	≤ (0.005 · r + 0.05)%			
Long-term drift (temperature change ± 30 °C (± 54 °F))	≤ (0.25 · r)% every 5 ye	ears	≤ 0.25% every 5 years	3
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 me	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 61326 and NAMUR NE 21	
Design		
Weight (without options)	≈ 1.5 kg (≈ 3.3 lb)	
Housing material	Poor in copper die-cast aluminium, GD-AlSi12	or stainless steel precision casting, mat. No. 1.4408
Wetted parts materials		
Connection shank	Stainless steel, mat. No. 1.4404/316L or Hastell	loy C4, mat. No. 2.4610
Oval flange	Stainless steel, mat. No. 1.4404/316L	
Seal diaphragm	Stainless steel, mat. No. 1.4404/316L or Hastell	loy C276, mat. No. 2.4819
Measuring cell filling	Silicone oil or inert filling liquid (max. 160 bar (2	2320 psi g) with oxygen measurement)
Process connection	Connection shank G½A to DIN EN 837-1, fema (MWP 2320 psi g)) to DIN 19213 with mounting	le thread $\frac{1}{2}$ -14 NPT or oval flange (PN 160 thread M10 or $\frac{7}{16}$ -20 UNF to EN 61518
Power supply $U_{\mathbb{H}}$		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 P, DS III series for gage pressure		
	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 group graph 3 (sound engineering practice)	up 1; complies with requirements of Article 3, para-
Explosion protection		
• Intrinsic safety "i"	PTB 99 ATEX 2122	
- Identification	Ex II 1/2 G EEx ia/ib IIB/IIC T6	
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperature class -40 +70 °C (-40 +158 °F) temperature class -40 +60 °C (-40 +140 °F) temperature class	T5;
- Connection	To certified intrinsically-safe circuits with maximum values: $ U_i = 30 \text{ V, } I_i = 100 \text{ mA,} \\ P_i = 750 \text{ mW; } R_i = 300 \Omega $	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: $\begin{array}{l} U_i=30 \text{ V, } I_i=100 \text{ mA,} \\ P_i=750 \text{ mW, } R_i=300 \Omega \end{array}$	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	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{i} = 7 \mu H, C_{i} = 1.1 nF$
• 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 EI 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 EF T4T6; CL II, DIV 2, GP FG; CL III	FG; 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 gage pressure

HART communication	1
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HART communication $230 \dots 1100 \Omega$ Protocol HART Version 5.x 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 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

ic process variables

- Simulation function

- 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

Yes, one upper and lower warning - Limit monitoring

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 gage pressure

	ng data		Orde				
SITRANS P pressure			7 M F	4	0 3	3 -	
pressure, series DS II	HAKI				-		
Measuring cell filling				П			
	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)		С				
0.16 16 bar g	(2.32 232 psi g)		D				
0.63 63 bar g	(9.14 914 psi g)		E				
1.6 160 bar g	(23.2 2320 psi g)		F				
4.0 400 bar g	(58.0 5802 psi g)		G				
Wetted parts material							
Seal diaphragm	Process connection						
Stainless steel	Stainless steel		Δ	١.			
Hastelloy	Stainless steel		В	3			
Hastelloy	Hastelloy		C	;			
Version as diaphragm	seal ^{2) 3)}		Υ				
Process connection							
 Connection shank G¹ 	∕₂A to EN 837-1	•		0			
 Female thread ½-14 	NPT			1			
 Oval flange made of 							
max. span 160 bar g	(2320 psi g)						
	16-20 UNF to EN 61518			2			
- Mounting thread M				3			
Non-wetted parts mat							
 Housing made of die 					0		
Housing stainless ste	eel precision casting ⁴⁾				3		
Version							
 Standard version 						1	
						•	
• International version,	English label inscription	ıs, 🕨				2	
documentation in 5 la	English label inscription anguages on CD	ıs, 🕨					
documentation in 5 la Explosion protection	English label inscription anguages on CD	ns, 🕨				2	
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►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) When the manufacture's certificate M (calibration certificate) has to be ordered for transmitters with diaphragm seals, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the <u>total</u> combination is certified here.
- 3) Whe the acceptance test certificate 3.1 for transmitters with direct-connected diaphragm seals is ordered, this certificate must also be ordered with the corresponding seals.
- 4) Not together with Electrical connection "Screwed gland Pg 13.5" and "Han7D plug".
- 5) Without cable gland, with blanking plug
- 6) With enclosed cable gland EEx ia and blanking plug
- 7) Not together with type of protection "Explosion-proof" and "n (zone 2)"
- 8) Cannot be used together with the following types of protection: "Explosion-proof" and "Intrinsic safety and explosion-proof"

DS III series for gage pressure

Selection and Orde	ering data	Order No.		
•	re transmitters for gage			
pressure	10 P4)	-W-4004		
DS III PA (PROFIBL	,	7MF4034-		
DS III FF series (Fo	oundation Fieldbus)	7 M F 4 0 3 5 -		
Measuring cell filli				
Ciliaana ail	cleaning			
Silicone oil Inert liquid ¹⁾	Standard Grease-free	1 3		
•		_3		
Nominal measuring	• •	В		
1 bar g 4 bar g	(14.5 psi g) (58 psi g)	C		
16 bar g	(232 psi g)	D		
63 bar g	(914 psi g)	E		
160 bar g	(2320 psi g)	F		
400 bar g	(5802 psi g)	G		
Wetted parts mater	rials			
Seal diaphragm	Process connection			
Stainless steel	Stainless steel	Α		
Hastelloy	Stainless steel	В		
Hastelloy	Hastelloy	С		
Version as diaphrag	ım seal ^{2) 3)}	Y		
Process connectio	n			
 Connection shank 		0		
• Female thread ½-		1		
Oval flange made may apan 160 ba				
max. span 160 ba	⁷ / ₁₆ -20 UNF to EN 61518	2		
	/16-20 ONI 10 LIN 01310	2		
- MOODUINO intead	M10 to DIN 19213	3		
	M10 to DIN 19213	3		
Non-wetted parts r	naterials	_ 3		
Non-wetted parts n Housing made of	naterials	_ 3 0 3		
Non-wetted parts r Housing made of Housing stainless	naterials die-cast aluminium	0		
Non-wetted parts r Housing made of the Housing stainless Version	naterials die-cast aluminium	0		
Non-wetted parts n Housing made of the Housing stainless Version Standard version	naterials die-cast aluminium	0 3		
Non-wetted parts n Housing made of o Housing stainless Version Standard version International version	materials die-cast aluminium steel precision casting	0 3		
Non-wetted parts in Housing made of a Housing stainless Version Standard version International version coumentation in security	materials die-cast aluminium steel precision casting on, English label inscriptions, 5 languages on CD	0 3		
Non-wetted parts in Housing made of a Housing stainless Version Standard version International version coumentation in s Explosion protection Without	materials die-cast aluminium steel precision casting on, English label inscriptions, 5 languages on CD on	0 3		
Non-wetted parts in Housing made of a Housing stainless Version Standard version International version coumentation in s Explosion protection Without With CENELEC, Ty	materials die-cast aluminium steel precision casting on, English label inscriptions, 5 languages on CD on ype of protection:	0 3 1 2		
Non-wetted parts n Housing made of o Housing stainless Version Standard version International version cocumentation in s Explosion protection Without With CENELEC, Ty - "Intrinsic safety (materials die-cast aluminium steel precision casting on, English label inscriptions, 5 languages on CD on /pe of protection: EEx ia)"	0 3 1 2 A B		
Non-wetted parts in Housing made of the Housing stainless Version Standard version International verside documentation in the Explosion protection Without With CENELEC, Ty "Intrinsic safety ("Explosion-proof	materials die-cast aluminium steel precision casting on, English label inscriptions, 5 languages on CD on //pe of protection: EEx ia)" (EEx d)" 4)	0 3 1 2 A B D		
Non-wetted parts n Housing made of thousing stainless Version Standard version International version documentation in the standard version Without With CENELEC, Ty "Intrinsic safety ("Explosion-proof "Intrinsic safety a	on, English label inscriptions, 5 languages on CD on //pe of protection: EEx ia)" ((EEx d)" 4) and explosion-proof enclosure	0 3 1 2 A B		
Non-wetted parts in Housing made of the Housing stainless Version Standard version International verside documentation in the Explosion protection Without With CENELEC, Ty "Intrinsic safety ("Explosion-proof	materials die-cast aluminium steel precision casting on, English label inscriptions, 5 languages on CD on //pe of protection: EEx ia)* (EEx d)* 4) and explosion-proof enclosure * 5)	0 3 1 2 A B D		
Non-wetted parts in Housing made of Housing stainless Version Standard version International version International version Without Without "Explosion-proof "Intrinsic safety of "Intrinsic safety af (EEx ia + EEx d) "In (Zone 2)" (plar "Intrinsic safety, e	contact a luminium steel precision casting con, English label inscriptions, I languages on CD concord	0 3 1 2 A B D P		
Non-wetted parts in Housing made of Housing stainless Version Standard version International versid documentation in Standard version Without With CENELEC, Ty Intrinsic safety (Explosion-proof Intrinsic safety a (EEx ia + EEx d) In (Zone 2)" (plan "Intrinsic safety, a dust explosion pointsides in the safety and the safe	on, English label inscriptions, 5 languages on CD on /pe of protection: EEx ia)" (EEx d)" 4) and explosion-proof enclosure and protection (EEx ia + EEx d +	0 3 1 2 A B D P		
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Non-wetted parts n Housing made of thousing stainless Version Standard version International version International version Without With CENELEC, Ty "Explosion-proof "Intrinsic safety (EEX ia + EEX d) "In (Zone 2)" (planter in (Zone 1D/2D)" 6) With FM + CSA, Ty "Intrinsic safety a	materials die-cast aluminium steel precision casting on, English label inscriptions, 5 languages on CD on /pe of protection: EEx ia)" (EEx d)" 4) and explosion-proof enclosure "5) explosion-proof enclosure and rotection (EEx ia + EEx d + (not for DS III FF) ype of protection:	0 3 1 2 A B D P E R		
Non-wetted parts n Housing made of o Housing stainless Version Standard version International versid documentation in secure without With CENELEC, Ty Intrinsic safety (Explosion-proof International versid (EEx ia + EEx d) In (Zone 2)" (plan Intrinsic safety, of dust explosion pone 1D/2D)" (6) With FM + CSA, Ty	materials die-cast aluminium steel precision casting on, English label inscriptions, 5 languages on CD on //pe of protection: EEx ia)" (EEx d)" 4) and explosion-proof enclosure "5) nned) explosion-proof enclosure and protection (EEx ia + EEx d + (not for DS III FF)	0 3 1 2 A B D P		
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Non-wetted parts n Housing made of o Housing stainless Version Standard version International version Without With CENELEC, Ty Intrinsic safety o (EEx ia + EEx d) In (Zone 2)" (plar Intrinsic safety, o dust explosion p Zone 1D/2D)" (1) With FM + CSA, Ty Intrinsic safety o (is + xp)" (1) Electrical connecti	materials die-cast aluminium steel precision casting on, English label inscriptions, 5 languages on CD on /pe of protection: EEx ia)" (EEx d)" ⁴⁾ and explosion-proof enclosure "5) explosion-proof enclosure and protection (EEx ia + EEx d + (not for DS III FF) //pe of protection: and explosion-proof on / cable entry	0 3 1 2 A B D P E R N C B		
Non-wetted parts n Housing made of o Housing stainless Version Standard version International version Without With CENELEC, Ty Intrinsic safety (Explosion-proof International version (EEx ia + EEx d) In (Zone 2)" (plan Intrinsic safety, of dust explosion proof bust explosion proof control (EEx ia + EEx d) In (Zone 2)" (plan Intrinsic safety, of dust explosion proof 1D/2D)" of control (is + xp)" of the proof of the pr	materials die-cast aluminium steel precision casting on, English label inscriptions, 5 languages on CD on /pe of protection: EEx ia)* (EEx d)* 4) and explosion-proof enclosure ** 5) nned) explosion-proof enclosure and orotection (EEx ia + EEx d + (not for DS III FF) // ype of protection: and explosion-proof on / cable entry 20x1.5 -14 NPT	0 3 1 2 A B D P E R		
Non-wetted parts in Housing made of elements of the Housing stainless Version Standard version International version International version Without With CENELEC, Ty Intrinsic safety (elements in Explosion-proof of the House in Explosion-proof of the House in (Eex ia + Eex d) In (Zone 2)" (planed in (Eex ia + Eex d) In (Zone 2)" (planed in (Eex ia + Eex d) Intrinsic safety, elements of the House in (is + xp)" for the House in (is + xp) in (is + xp)" for the House in (is + xp) in (is + xp)" for the House in (is + xp) in (is +	materials die-cast aluminium steel precision casting on, English label inscriptions, 5 languages on CD on /pe of protection: EEx ia)* (EEx d)* 4) and explosion-proof enclosure ** 5) nned) explosion-proof enclosure and orotection (EEx ia + EEx d + (not for DS III FF) // ype of protection: and explosion-proof on / cable entry 20x1.5 -14 NPT	0 3 1 2 A B D P E R N C B		
Non-wetted parts in Housing made of of Housing stainless Version Standard version International version Without With CENELEC, Ty "Intrinsic safety of (EEX ia + EEX d) "In (Zone 2)" (plan "Intrinsic safety, of dust explosion por 10/2D)" (is + xp)" (is +	materials die-cast aluminium steel precision casting on, English label inscriptions, 5 languages on CD on /pe of protection: EEx ia)* (EEx d)* 4) and explosion-proof enclosure ** 5) nned) explosion-proof enclosure and orotection (EEx ia + EEx d + (not for DS III FF) // ype of protection: and explosion-proof on / cable entry 20x1.5 -14 NPT	0 3 1 2 A B D P E R N C B C		
Non-wetted parts n Housing made of o Housing stainless Version Standard version International version Without With CENELEC, Ty Intrinsic safety (Explosion-proof International version (EEx ia + EEx d) 'n (Zone 2)" (plan Intrinsic safety of the dust explosion proof Untrinsic safety of the dust explosion proof Intrinsic safety of the dust explosion of D/2D)" (is + xp)" (is	materials die-cast aluminium steel precision casting on, English label inscriptions, 5 languages on CD on /pe of protection: EEx ia)" (EEx d)" 4) and explosion-proof enclosure "5) nned) explosion-proof enclosure and explosion-proof enclosure and explosion-proof enclosure and explosion-proof enclosure and explosion-proof on / cable entry 20x1.5 -14 NPT 6) splay hidden)	0 3 1 2 A B D P E R R C F		
Non-wetted parts n Housing made of o Housing stainless Version Standard version International version Without With CENELEC, Ty Intrinsic safety (Explosion-proof International version (EEx ia + EEx d) In (Zone 2)" (plar Intrinsic safety, of dust explosion proof 10/2D)" (is + xp)" (is +	materials die-cast aluminium steel precision casting on, English label inscriptions, 5 languages on CD on /pe of protection: EEx ia)" (EEx d)" 4) and explosion-proof enclosure "5) nned) explosion-proof enclosure and explosion-proof enclosure and explosion-proof enclosure and explosion-proof enclosure and explosion-proof on / cable entry 20x1.5 -14 NPT 6) splay hidden)	0 3 1 2 A B D P E R N C F		

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

- 1) For oxygen application, add Order code E10.
- When the manufacture's certificate M (calibration certificate) has to be ordered for transmitters with diaphragm seals, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.
- 3) Whe the acceptance test certificate 3.1 for transmitters with direct-connected diaphragm seals is ordered, this certificate must also be ordered with the corresponding seals.
- 4) Without cable gland, with blanking plug.
- With enclosed cable gland EEx ia and blanking plug.
 Cannot be used together with the following types of protection: "Explosion-proof" and "Intrinsic safety and explosion-proof"

DS III series for gage pressure

Selection and Ordering data	Order	code		
Further designs Add "-Z" to Order No. and specify Order code.		HART	PA	FF
Pressure transmitter with mounting bracket made of:				
SteelStainless steel	A01 A02	1	1	1
Plug	AUZ	•	ľ	ľ
Han 7D (metal, gray)Han 8U (instead of Han 7D)	A30 A31	1		
Cable sockets for M12 connectors (metal)	A50	1	1	1
Rating plate inscription				
(instead of German) • English	B11	1	1	1
• French	B12	✓	1	1
SpanishItalian	B13 B14	V	1	1
• Italian English rating plate	B14 B21	\ \ \	1	1
Pressure units in inH ₂ O or psi	D2 I			ľ
Manufacturer's test certificate M (calibration certificate) ¹⁾ To DIN 55350, Part 18 and to ISO 8402	C11	✓	✓	1
Acceptance test certificate ²⁾	C12	✓	1	1
To EN 10204-3.1 Factory certificate	C14	~	✓	1
To EN 10204-2.2 "Functional Safety (SIL)" certificate	C20	1		
"PROFIsafe" certificate and protocol	C21		1	
Setting of upper limit of output signal to 22.0 mA	D05	✓		
Manufacturer's declaration acc. to NACE	D07	/	1	1
Type of protection IP68 (not together with 7D/ Han 8U plug, cable gland Pg 13.5)	D12	✓	√	1
Digital indicator alongside the input keys (only together with the devices 7MF40330A.6 orA.7-Z, Y21 or Y22 + Y01)	D27	*	✓	1
Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flange	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
Oxygen application (max. 160 bar g (2320 psi g) for oxygen measurement and inert liquid)	E10	*	✓	1
Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)	E25	✓	✓	✓
Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4	E55	*	✓	1
Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)	E56	✓	✓	1
Explosion-proof "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)	E57	1	✓	1

√	* *	√ ✓	
√ ✓			
✓	√	√	
	**** * * * * * * * * * * * *	*** * *	
✓	V	√	
✓	✓	✓	
✓	✓		
✓	✓	✓	
✓	1		
√	·		
√ ✓	* *	√ ✓	
√	√	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	_
✓	✓	✓	
✓	✓	✓	
✓	√	✓	
✓	✓	√	
√	✓	√	
✓	√	√	
1	1	1	

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

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

Selection and Ordering data	Order	code		
Additional data Add "-Z" to Order No. and specify Order code.		HART	PA	FF
Measuring range to be set Specify in plain text (max. 5 digits): Y01: up to mbar, bar, kPa, MPa, psi	Y01	*		
Measuring point number (TAG No.) Max. 16 characters, specify in plain text: Y15:	Y15	*	√	✓
Measuring point text Max. 27 characters, specify in plain text: Y16:	Y16	*	1	✓
Entry of HART address (TAG) Max. 8 characters, specify in plain text: Y17:	Y17	*		
Setting of pressure indication in pressure	Y21	1	✓	✓
units Specify in plain text (standard setting: mA): Y21: mbar, bar, kPa, MPa, psi, Note: The following pressure units can be selected: bar, mbar, mm H ₂ O*), inH ₂ O*), ftH ₂ O*), mmHG, inHG, psi, Pa, kPa, MPa, g/cm², kg/cm², 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" is essential, unit with max. 5 characters)	Y22 + Y01	✓		
Preset bus address Specify in plain text: Y25:	Y25		✓	

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

✓ = available

Ordering example

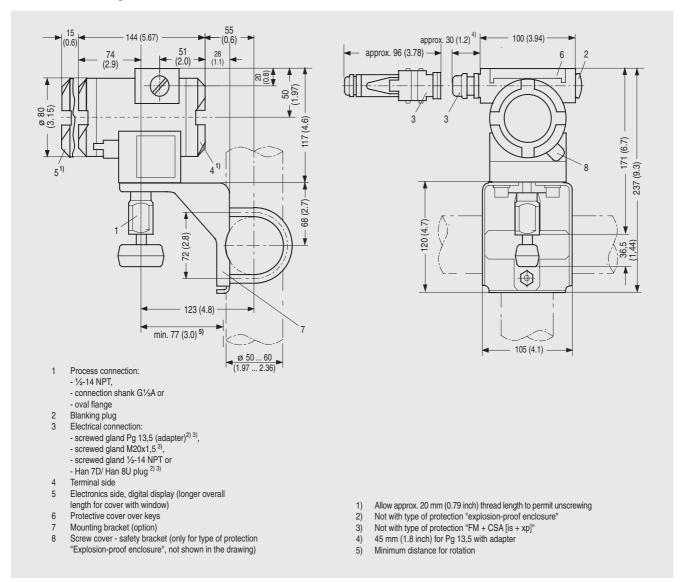
7MF4033-1EA00-1AA7-Z Item line: B line: A01 + Y01 + Y21

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

C line: Y21: bar (psi)

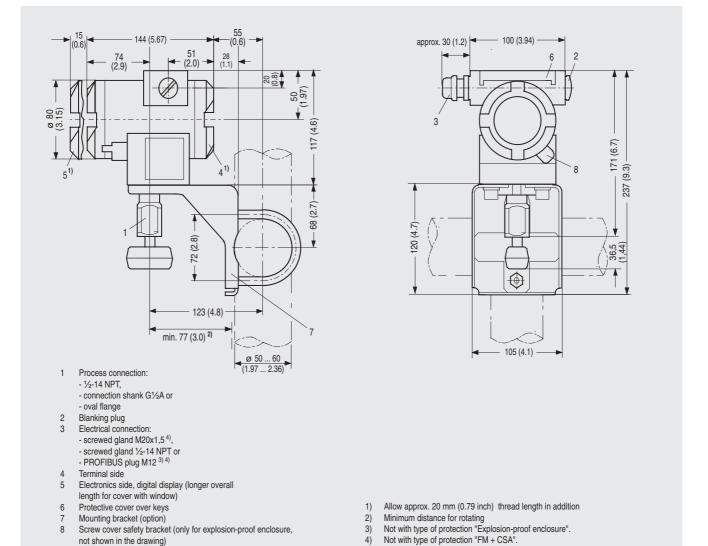
DS III series for gage pressure

Dimensional drawings



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

DS III series for gage pressure



3)

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

Screw cover safety bracket (only for explosion-proof enclosure,

not shown in the drawing)

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 Foundation Field			
Input						
Measured variable	Gage pressure					
Spans (infinitely adjustable) or nominal measuring range and	Span	Max. perm. test pressure	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		'		1		
Measuring cell with silicone oil filling	100 mbar a (1.45 psi a	a)	1			
Upper measuring limit	100% of max. span					
Output						
Output signal	4 20 mA		Digital PROFIBUS PA signal	or Foundation Fieldbus		
• Lower limit (infinitely adjustable)	3.55 mA, factory prese	et 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	$R_{\rm B} \leq (U_{\rm H}$ - 10.5 V)/0.023 A in Ω , $U_{\rm H}$: Power supply in V		-			
With HART communication	$R_{\rm B}$ = 230 500 Ω (SIMATIC PDM) or $R_{\rm B}$ = 230 1100 Ω (HART Communicator)		-			
Physical bus	-		IEC 61158-2			
With polarity reversal protection	-		Yes			
Accuracy	To EN 60770-1					
Reference conditions		tic, start-of-scale value 0 25 °C (77 °F)) r: Span ra		diaphragm, silicone oil fill- pan)		
Error in measurement and fixed-point setting (including hysteresis and repeatability)						
Linear characteristic			≤ 0,075%			
- r ≤ 10	≤ (0.0029 · r + 0.071)%	6				
- 10 < r ≤ 30	$\leq (0.0045 \cdot r + 0.071)\%$	6				
- 30 < r ≤ 100	≤ (0.005 · r + 0.05)%					
Long-term drift (temperature change ± 30 °C (± 54 °F))	≤ (0.25 · r)% every 5 ye	ears	≤ 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 ł	<	≤ 0.25%/10 K			
Influence of mounting position	0.1 mbar g (0.00145 psi g) per 10° inclination					
Measured Value Resolution	- 3 · 10 ⁻⁵ of nom			⁵ of nominal measuring range		

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 61326 and NAMUR NE 21	
Design		
Veight (without options)	≈ 1.5 kg (≈ 3.3 lb)	
Housing material	Poor in copper die-cast aluminium, GD-AlSi12	or stainless steel precision casting, mat. No. 1.4
Vetted parts materials	Stainless steel, mat. No. 1.4404/316L	
Measuring cell filling	Silicone oil or inert filling liquid	
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) available	-	Yes
Certificate and approvals		
Classification according to pressure equipment lirective (DRGL 97/23/EC)	For gases of fluid group 1 and liquids of fluid paragraph 3 (sound engineering practice)	group 1; complies with requirements of Article 3

Hygiene version

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

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

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

commun	

HART communication $230 \dots 1100 \Omega$ 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,

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)

Class B

- 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

for flow measurement

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

- Square-rooted characteristic

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 $T_{63}\,,$ adjust- $\,0\,\dots\,100\,s$

- 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

for gage pressure, with front-flush diaphragm

Selection and Orderin	g data	Orde	er No).	
SITRANS P pressure transmitters for gage		7 M F	7MF4133-		
pressure, front-flush r series DS III HART	oressure, front-flush membrane, series DS III HART			-	
Measuring cell filling	Measuring cell cleaning		П		
Silicone oil	Standard	1			
Inert liquid	Grease-free	3			
Span					
0.01 1 bar g ¹⁾	(0.15 14.5 psi g) ¹⁾	В			
0.04 4 bar g	(0.58 58 psi g)	С			
0.16 16 bar g	(2.32 232 psi g)	D			
0.63 63 bar g	(9.14 914 psi g)	Е			
Wetted parts materials	3				
Seal diaphragm	Connection shank				
Stainless steel	Stainless steel	P	1		
Process connection					
 Flange version with O 	rder code M or N		7		
Non-wetted parts mate	erials	_			
 Housing made of die- 			0		
 Housing stainless stee 			3		
Version	·	-			
Standard version				1	
International version, English label inscriptions,				2	
documentation in 5 la	nguages on CD			_	
Explosion protection					
• Without				Α	
• With ATEX, Type of pr	otection:				
- "Intrinsic safety (EE)				В	
- "Explosion-proof (EE	Ex d)" ²⁾			D	
	osion-proof enclosure and			R	
dust explosion prote	ection (EEx ia + EEx d +				
• With FM + CSA, Type					
- "Intrinsic safety and				NC	
(is + xp)"2) (available	e soon)				
Electrical connection	/ cable entry	_			
Inner thread M20x1.5				В	
 Female thread ½-14 NPT 				C	
• M12 connectors (meta-	al) ⁴⁾			F	
Display					
• without (digital indicate	tor hidden, setting: mA)			1	
• with visible digital ind	ication, setting: mA			6	
with customer-specific	digital indication (setting			7	
as specified, Order or required)					

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) Only with "Standard" process connection
- 2) Without cable gland, with blanking plug.
- 3) With enclosed cable gland EEx ia and blanking plug.
- 4) Cannot be used together with the following types of protection: "Explosion-proof" and "Intrinsic safety and explosion-proof"

Selection and Order	ring data	Order No.
SITRANS P pressur	e transmitters for gage	2.40
pressure, front-flus		
DS III PA series (PR	OFIBUS PA)	7MF4134-
DS III FF series (For	undation Fieldbus)	7 M F 4 1 3 5 -
Measuring cell fillin	g Measuring cell cleaning	
Silicone oil	Standard	1
Inert liquid	Grease-free	3
FDA compliant fill flui		
 Neobee oil 	Standard	4
Nominal measuring	- 1	
1 bar g ¹⁾	(14.5 psi g) ¹⁾	В
4 bar g	(58 psi g)	С
16 bar g	(232 psi g)	D
63 bar g	(914 psi g)	E
Wetted parts materi Seal diaphragm	als Connection shank	
Stainless steel	Stainless steel	Δ
		^
Process connection Flange version with 	Order code M or N	7
Non-wetted parts m		
Housing made of d	0	
•	steel precision casting	3
Version		- "
 Standard version 		1
 International versio 	2	
documentation in 5		
Explosion protectio	n	
• Without		Α
 With ATEX, Type of "Intrinsic safety (E 	•	В
- "Explosion-proof (·	D
	xplosion-proof enclosure and	B
dust explosion pr	otection (EEx ia + EEx d +	"
• With FM + CSA, Typ		
- "Intrinsic safety ar	•	NC
(is + xp) ²⁾ (availa	able soon)	
Electrical connection	on / cable entry	
 Screwed gland M2 	В	
 Screwed gland ½-1 		B C F
 M12 connectors (m 	netal) ⁴⁾	F
Display		
 Without (digital disp 	-	1
With visible digital of the state of th		6
	cific digital display (setting as	7
specified, Order co	de "Y21" or required)	

Included in delivery of the device:

- Brief instructions (Leporello)
- CD-ROM with detailed documentation
- 1) Only with "Standard" process connection
- 2) Without cable gland, with blanking plug.
- 3) With enclosed cable gland EEx ia and blanking plug.
- Cannot be used together with the following types of protection:
 "Explosion-proof" and "Intrinsic safety and explosion-proof"

for gage pressure, with front-flush diaphragm

Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add "-Z" to Order No. and specify Order code.				
Cable sockets for M12 connectors (metal)	A50	✓	✓	1
Rating plate inscription (instead of German)				
• English	B11	✓	✓	✓
• French	B12	✓	V	1
Spanish Italian	B13 B14	✓	1	1
	B21		· /	\
English rating plate Pressure units in inH ₂ O or psi	B21	•	•	*
Manufacturer's test certificate M (calibration certificate)	C11	✓	✓	1
To DIN 55350, Part 18 and to ISO 8402				
Acceptance test certificate To EN 10204-3.1	C12	✓	√	-
Factory certificate	C14	✓	✓	1
To EN 10204-2.2				
Flanges to EN 1092-1 • DN 25, PN 40	M11	1	1	/
• DN 25, PN 100	M21	/	1	· /
• DN 40, PN 40	M13	✓	✓	✓
• DN 40, PN 100	M23	✓	✓	✓
• DN 50, PN 16	M04	1	1	1
DN 50, PN 40DN 80, PN 16	M14 M06	1	1	✓
• DN 80, PN 40	M16	V	1	/
Flanges to ASME B16.5				
Stainless steel flange 1" class 150	M40	✓	✓	✓
 Stainless steel flange 1½" class 150 	M41	✓	✓	✓
Stainless steel flange 2" class 150	M42	✓	1	V
Stainless steel flange 2" class 300 Chairless steel flange 2" class 370	M47	1	1	1
 Stainless steel flange 3" class 150 Stainless steel flange 3" class 300 	M43 M48	1	✓	1
Stainless steel flange 3 class 500 Stainless steel flange 4" class 150	M44	\ \ \ \ \	1	\ \
• Stainless steel flange 4" class 300	M49	1	1	1
Sanitary process connection according DIN 11851 (Dairy connection)				
• DN 50, PN 25	N04	1	1	1
• DN 80, PN 25	N06	✓	1	✓
Tri-Clamp connection according DIN 32676/ISO 2852				
• DN 50/2", PN 16	N14	1	1	1
• DN 65/3", PN 10	N15	✓	✓	1
Varivent connection				
 etified to EHEDG Type N = 68 for Varivent housing DN 40 125 and 1½" 6", PN 40 	N28	✓	✓	1
Temperature decoupler up to 200 °C ¹⁾ for version with front-flush diaphragm	P00	✓	✓	1
Bio-Control (Neumo) sanitary connection				
certified to EHEDG	OF2		1	1
• DN 50, PN 16	Q53	Y	V	

Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add "-Z" to Order No. and specify Order				
code.				
Sanitary process connection to DRD	Maa	/	1	1
• 65 mm, PN 40	M32	'	•	"
Sanitary process connection to NEUMO Bio-Connect screw connection				
certified to EHEDG	OOF	1	1	
DN 50, PN 16DN 65, PN 16	Q05 Q06	\ \ \	1	V
• DN 80, PN 16	Q07		1	1
• DN 100, PN 16	Q08	/	1	1
• DN 2", PN 16	Q13	1	1	1
• DN 2½", PN 16	Q14	1	1	1
• DN 3", PN 16	Q15	1	1	1
• DN 4", PN 16	Q16	1	1	1
Sanitary process connection to				
NEUMO Bio-Connect flange connection				
certified to EHEDG	Q23	1	./	1
DN 50, PN 16DN 65, PN 16	Q23	\ \ \ \	1	1
• DN 80, PN 16	Q24 Q25	*	1	1
• DN 100, PN 16	Q26	/	1	1
• DN 2", PN 16	Q20 Q31	/	1	1
• DN 2½", PN 16	Q32	/	1	1
• DN 3", PN 16	Q33	/	1	1
• DN 4", PN 16	Q34	/	1	1
Sanitary process connection to NEUMO Bio-Connect clamp connection				
certified to EHEDG				
• DN 50, PN 16	Q39	✓	✓	✓
• DN 65, PN 10	Q40	✓	✓	✓
• DN 80, PN 10	Q41	✓	✓	✓
• DN 100, PN 10	Q42	✓	✓	1
• DN 2½", PN 16	Q48	✓	✓	✓
• DN 3", PN 10	Q49	✓	✓	✓
• DN 4", PN 10	Q50	✓	✓	✓
Sanitary process connection to NEUMO				
Connect S flange connection				
certified to EHEDG	Q63		1	1
DN 50, PN 16DN 65, PN 10	Q64	\ \ \	1	/
•	Q64 Q65	\ \ \	∀	1
DN 80, PN 10DN 100, PN 10	Q66	✓	∀	1
• DN 2", PN 16	Q72	\ \ \ \ \	1	1
• DN 2½", PN 10 • DN 2½", PN 10	Q73	\ \ \	∀	V
• DN 3", PN 10	Q74	*	1	V
• DN 4", PN 10	Q75	\ \ \	1	1
- DIN 4 , LIN IO	G(13)	· ·		

 $^{^{1)}\,}$ The maximum temperatures of the medium depend on the respective cell

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

Selection and Ordering data	Order	code		
Additional data		HART	PA	FF
Add "-Z" to Order No. and specify Order code.				
Measuring range to be set Specify in plain text (max. 5 digits): Y01: up to mbar, bar, kPa, MPa, psi	Y01	V		
Measuring point number (TAG No.) Max. 16 characters, specify in plain text: Y15:	Y15	*	√	✓
Measuring point text Max. 27 characters, specify in plain text: Y16:	Y16	*	✓	✓
Setting of pressure indicator in pressure units Specify in plain text (standard setting: mA):	Y21	*	✓	✓
Y21: mbar, bar, kPa, MPa, psi, Note: The following pressure units can be selected:				
bar, mbar, mm H ₂ O ^{*)} , inH ₂ O ^{*)} , ftH ₂ O ^{*)} , mmHG, inHG, psi, Pa, kPa, MPa, g/cm ² , kg/cm ² , Torr, ATM oder % *) ref. temperature 20 °C				

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

✓ = available

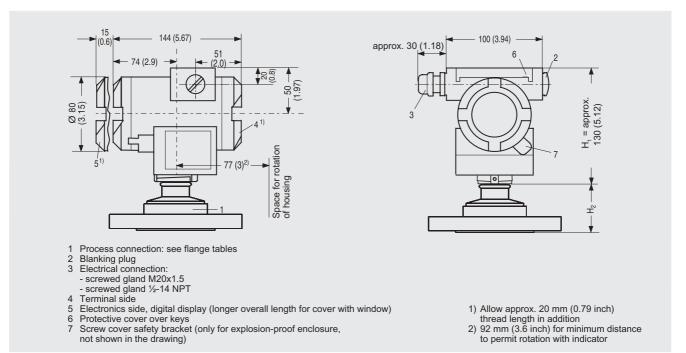
Ordering example

Item line: 7MF4133-1DB20-1AB7-Z

A22 + Y01 + Y21
C line: Y01: 1 ... 10 bar (14.5 ... 145 psi)
C line: Y21: bar (psi)

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

Dimensional drawings



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 DS III up to a defined cross-section

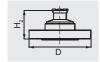
 H_2 = Height of the flange up to this defined cross-section

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

Flanges to EN and ASME

Flanges to EN

EN 1092-1



DN	PN	ØD	H_2
25	40	115 mm (4.5")	Approx.
25	100	140 mm (5.5")	52 mm (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

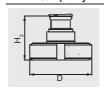


DN	class	ØD	H_2
1"	150	110 mm (4.3")	Approx.
1"	300	125 mm (4.9")	52 mm (2")
1½"	150	130 mm (5.1")	
1½"	300	155 mm (6.1")	_
2"	150	150 mm (5.9")	_
2"	300	165 mm (6.5")	_
3"	150	190 mm (7.5")	_
3"	300	210 mm (8.1")	_
4"	150	230 mm (9.1")	_
4"	300	255 mm (10.0")	_

NuG and pharmaceutical flange

Connections to DIN

DIN 11851 (Dairy connection)



,			
DN	PN	ØD	H ₂
50	25	92 mm (3.6")	Approx.
80	25	127 mm (5.0")	- 52 mm (2")

Tri-Clamp according DIN 32676



DN	PN	ØD	H_2
50	16	64 mm (2.5")	Approx.
65	16	91 mm (3.6")	- 52 mm (2")

Other connections

Varivent connection

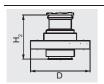


DN	PN	ØD	H ₂
40 125	40	84 mm (3.3")	Approx. 52 mm (2")

for gage pressure, with front-flush diaphragm

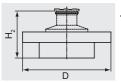
Bio-Control connections

Bio-Control connection



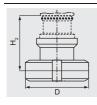
DN	PN	ØD	H_2
50	16	90 mm (3.5")	Approx.
65	16	120 mm (4.7")	- 52 mm (2")

Sanitary process connection to DRD



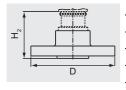
DN	PN	ØD	H ₂
65	40	105 mm (4.1")	Approx. 52 mm (2")

Sanitary process screw connection to NEUMO Bio-Connect



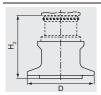
DN	PN	ØD	H ₂
50	16	82 mm (3.2")	Approx.
65	16	105 mm (4.1")	-52 mm (2")
80	16	115 mm (4.5")	_
100	16	145 mm (5.7")	_
2"	16	82 mm (3.2")	_
21/2"	16	105 mm (4.1")	_
3"	16	105 mm (4.1")	_
4"	16	145 mm (5.7")	_

Sanitary connection to NEUMO Bio-Connect flange connection



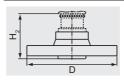
DN	PN	ØD	H ₂
50	16	110 mm (4.3")	Approx.
65	16	140 mm (5.5")	–52 mm (2") –
80	16	150 mm (5.9")	_
100	16	175 mm (6.9")	_
2"	16	100 mm (3.9")	_
21/2"	16	110 mm (4.3")	_
3"	16	140 mm (5.5")	_
4"	16	175 mm (6.9")	_

Sanitary onnection to NEUMO Bio-Connect clamp connection



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

Sanitary connection to NEUMO Bio-Connect S flange connection



DN	PN	ØD	H ₂
50	16	125 mm (4.9")	Approx.
65	10	145 mm (5.7")	– 52 mm (2")
80	10	155 mm (6.1")	_
100	10	180 mm (7.1")	_
2"	16	125 mm (4.9")	_
21/2"	10	135 mm (5.3")	_
3"	10	145 mm (5.7")	_
4"	10	180 mm (7.1")	_

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

Technical specifications

	HART		PROFIBUS PA or Fou	ındation Fieldbus
Input			1	
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 mbar a (0.62 18.9 psi a)	10 bar a (145 psi a)	1300 mbar a (18.9 psi a)	10 bar a (145 psi a)
	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 Fieldbus sig
• Lower limit (infinitely adjustable)	3.55 mA, factory preset 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	$R_{\rm B} \leq (U_{\rm H} - 10.5 \text{ V})/0.02$ $U_{\rm H}$: Power supply in V		-	
With HART communication	$R_{\rm B} = 230 \dots 500 \Omega$ (SIN $R_{\rm B} = 230 \dots 1100 \Omega$ (H	MATIC PDM) or IART Communicator)	-	
Physical bus	-		IEC 61158-2	
With polarity reversal protection	-		Yes	
Accuracy	To EN 60770-1			
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)				
Linear characteristic			≤ 0.1%	
- 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 ł	<	≤ 0.25%/10 K	
Measured Value Resolution	-		3 · 10 ⁻⁵ of nominal me	asuring range

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	sure (from the gage 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 61326 and NAMUR NE 21	
Design		
Weight (without options)	≈ 1.5 kg (≈ 3.3 lb)	
Housing material	Poor in copper die-cast aluminium, GD-AlSi12	or stainless steel precision casting, mat. No. 1.4408
Wetted parts materials		
Connection shank	Stainless steel, mat. No. 1.4404/316L or Hastell	loy C4, mat. No. 2.4610
Oval flange	Stainless steel, mat. No. 1.4404/316L	
Seal diaphragm	Stainless steel, mat. No. 1.4404/316L or Hastell	loy 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 G½A to DIN EN 837-1, fema (MWP 2320 psi a)) to DIN 19213 with mounting	le thread $\frac{1}{2}$ -14 NPT or oval flange (PN 160 thread M10 or $\frac{7}{16}$ -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

2/80 Siemens FI 01 · 2007 Modification 01/2007

DS III series for absolute pressure (from 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 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 T4; -40 +70 °C (-40 +158 °F) temperature class T5; -40 +60 °C (-40 +140 °F) temperature class T6		
- Connection	To certified intrinsically-safe circuits with maximum values: $ U_{\rm i} = 30 \ {\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	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{\rm i} = 7 \mu \text{H}, C_{\rm i} = 1.1 \text{nF}$	
• 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 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: $U_{H} = 9 \dots 32 \text{ V DC}$	
• 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	$L_{i} = 0.4 \text{ mH}, C_{i} = 6 \text{ nF}$	$L_i = 7 \mu\text{H}, C_i = 1.1 \text{nF}$	
• Dust explosion protection for zone 21/22	PTB 01 ATEX 2055	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 EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4T6; CL I, DIV 2, GP ABCD T4T6; CL II, DIV 2, GP FG; CL III		
• Explosion protection to CSA	Certificate of Compliance 1153651		
- Identification (XP/DIP) or (IS)	CL I, DIV 1, GP ABCD T4T6; CL II, DIV 1, GP 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	communication

HART communication $230 \dots 1100 \Omega$ 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

ic process variables

- Adaptation to customer-specif- 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 Yes

two pressures

- Monitoring of sensor limits

- Specification of a container characteristic with

- Square-rooted characteristic for flow measurement

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

- Simulation function for measured pressure value and sen-

sor temperature

Parameterizable

Max. 30 nodes

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-specif- Yes, linearly rising or falling charic process variables

- 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

acteristic

- 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

Yes

• Pressure transducer block

- Can be calibrated by applying Yes

two pressures

- Monitoring of sensor limits

Constant value or over parameterizable ramp function

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

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

Selection and Ordering			er No.
SITRANS P pressure transmitters for absolute pressure, from the pressure series DS III HART		7 M F 4 2 3 3 -	
Measuring cell filling	Measuring cell cleaning		
Silicone oil	Standard	1	
Inert liquid ¹⁾	Grease-free	3	
Span			
8.3 250 mbar a	(0.12 3.63 psi a)	D	
43 1300 mbar a	(0.62 18.9 psi a)	F	
0.16 5 bar a	(2.32 72.5 psi a)	G	
1 30 bar a	(14.5 435 psi a)	Н	
Wetted parts material Seal diaphragm	Process connection		
Stainless steel	Stainless steel	٨	
Hastelloy	Stainless steel	B	
Hastelloy	Hastelloy	C	
Version for diaphragm	seal ^{2) 3) 4)}	C	
Process connection			
 Connection shank G¹ 			0
• Female thread ½-14			1
Oval flange made of may span 160 bar a			
max. span 160 bar g	(2320 psi a) ₁₆ -20 UNF to EN 61518		2
- Mounting thread M	10 to DIN 19213		3
 Housing made of die Housing stainless ste 	-cast aluminium	_	0
 Housing made of die Housing stainless ste Version Standard version International version, 	-cast aluminium pel precision casting ⁵⁾ English label inscriptions,	_	
 Housing made of die Housing stainless ste Version Standard version International version, documentation in 5 la Explosion protection 	-cast aluminium pel precision casting ⁵⁾ English label inscriptions,	_	1 2
Housing made of die Housing stainless ste Version Standard version International version, documentation in 5 la Explosion protection Without	-cast aluminium eel precision casting ⁵⁾ English label inscriptions, anguages on CD	_	3
 Housing made of die Housing stainless ste Version Standard version International version, documentation in 5 la Explosion protection Without With ATEX, Type of p 	-cast aluminium pel precision casting ⁵⁾ English label inscriptions, anguages on CD	-	3 1 2
 Housing made of die Housing stainless ste Version Standard version International version, documentation in 5 la Explosion protection Without With ATEX, Type of p - "Intrinsic safety (EE 	-cast aluminium pel precision casting ⁵⁾ English label inscriptions, anguages on CD rotection: x ia)"	_	1 2
 Housing made of die Housing stainless ste Version Standard version International version, documentation in 5 le Explosion protection Without With ATEX, Type of p "Intrinsic safety (EE "Explosion-proof (E 	-cast aluminium sel precision casting ⁵⁾ English label inscriptions, anguages on CD rotection: x ia)* Ex d)* ⁶⁾	_	3 1 2 A B
Housing made of die Housing stainless ste Version Standard version International version, documentation in 5 le Explosion protection Without With ATEX, Type of p Intrinsic safety (EE Explosion-proof (E Intrinsic safety and (EEx ia + EEx d)" Housing stainless steely	-cast aluminium pel precision casting ⁵⁾ English label inscriptions, anguages on CD rotection: x ia)"		3 1 2 A B D P
Housing made of die Housing stainless ste Version Standard version International version, documentation in 5 le Explosion protection Without With ATEX, Type of p "Intrinsic safety (EE "Explosion-proof (E "Intrinsic safety and (EEx ia + EEx d)" 7) "In (Zone 2)"	-cast aluminium pel precision casting ⁵⁾ English label inscriptions, anguages on CD rotection: x ia)* Ex d)* 6) explosion-proof enclosure		3 1 2 A B D P E
 Housing made of die Housing stainless ste Version Standard version International version, documentation in 5 le Explosion protection Without With ATEX, Type of p "Intrinsic safety (EE "Explosion-proof (E "Intrinsic safety and (EEx ia + EEx d)" (Zone 2)" "Intrinsic safety explosions as a property of the company of the c	-cast aluminium pel precision casting ⁵ English label inscriptions, anguages on CD rotection: x ia)* Ex d)* explosion-proof enclosure		3 1 2 A B D P
 Housing made of die Housing stainless ste Version Standard version International version, documentation in 5 la Explosion protection Without With ATEX, Type of p - "Intrinsic safety (EE - "Explosion-proof (E - "Intrinsic safety and (EEx ia + EEx d)" 7) - "n (Zone 2)" - "Intrinsic safety, explusion prot Zone 1D/2D)" 7) 	-cast aluminium pel precision casting ⁵ English label inscriptions, anguages on CD rotection: x ia)" Ex d)" 6) explosion-proof enclosure plosion-proof enclosure and ection (EEx ia + EEx d +		3 1 2 A B D P E
 Housing made of die Housing stainless ste Version Standard version International version, documentation in 5 la Explosion protection Without With ATEX, Type of p - "Intrinsic safety (EE - "Explosion-proof (E - "Intrinsic safety and (EEx ia + EEx d)" 7) - "n (Zone 2)" - "Intrinsic safety, explusion prot Zone 1D/2D)" 7) 	-cast aluminium pel precision casting ⁵ English label inscriptions, anguages on CD rotection: x ia)" Ex d)" 6) explosion-proof enclosure plosion-proof enclosure and ection (EEx ia + EEx d + e of protection:		3 1 2 A B D P E
 Housing made of die Housing stainless ste Version Standard version International version, documentation in 5 la Explosion protection Without With ATEX, Type of p - "Intrinsic safety (EE - "Explosion-proof (E - "Intrinsic safety and (EEx ia + EEx d)" 7) - "n (Zone 2)" - "Intrinsic safety, exp dust explosion prot Zone 1D/2D)" 7) With FM + CSA, Type - "Intrinsic safety and (is + xp)" 6) Electrical connection 	-cast aluminium pel precision casting ⁵⁾ English label inscriptions, anguages on CD rotection: x ia)" Ex d)" 6) explosion-proof enclosure plosion-proof enclosure and ection (EEx ia + EEx d + explosion-proof		A B D P E R
Housing made of die Housing stainless ste Version Standard version International version, documentation in 5 la Explosion protection Without With ATEX, Type of p "Intrinsic safety (EE - "Explosion-proof (E - "Intrinsic safety and (EEx ia + EEx d)" 7) - "n (Zone 2)" Intrinsic safety, exp dust explosion prot Zone 1D/2D)" 7 With FM + CSA, Type - "Intrinsic safety and (is + xp)" 6 Electrical connection Screwed gland Pg 13	-cast aluminium pel precision casting ⁵ English label inscriptions, anguages on CD rotection: x ia)" Ex d)" 6) explosion-proof enclosure plosion-proof enclosure and ection (EEx ia + EEx d + Ex d) e of protection: I explosion-proof / cable entry 3.5 8)		A B D P E R
Housing made of die Housing stainless ste Version Standard version International version, documentation in 5 la Explosion protection Without With ATEX, Type of p "Intrinsic safety (EE "Explosion-proof (E "Intrinsic safety and (EEx ia + EEx d)" 7) "In (Zone 2)" Intrinsic safety, explusion prot zone 1D/2D)" 7 With FM + CSA, Type "Intrinsic safety and (is + xp)" 6) Electrical connection Screwed gland Pg 13 Screwed gland M20x	-cast aluminium pel precision casting ⁵⁾ English label inscriptions, anguages on CD rotection: x ia)" Ex d)" 6) explosion-proof enclosure plosion-proof enclosure and ection (EEx ia + EEx d + explosion-proof dection: I explosion-proof / cable entry 3.5 8) 1.5		A B D P E R
Housing made of die Housing stainless ste Version Standard version International version, documentation in 5 la Explosion protection Without With ATEX, Type of p "Intrinsic safety (EE "Explosion-proof (E "Intrinsic safety and (EEx ia + EEx d)" 7) "In (Zone 2)" "Intrinsic safety, exp dust explosion protection 1D/2D)" 7) With FM + CSA, Type - "Intrinsic safety and (is + xp)" 6) Electrical connection Screwed gland Pg 13 Screwed gland M20x Screwed gland 1/2-14	-cast aluminium sel precision casting ⁵) English label inscriptions, anguages on CD rotection: x ia)" Ex d)" 6) explosion-proof enclosure closion-proof enclosure and ection (EEx ia + EEx d + Ex d + Ex d) explosion-proof dection:		A B D P E R
Housing made of die Housing stainless ste Version Standard version International version, documentation in 5 le Explosion protection Without With ATEX, Type of p "Intrinsic safety (EE "Explosion-proof (E "Intrinsic safety and (EEx ia + EEx d)" 7) "In (Zone 2)" "Intrinsic safety, exp dust explosion prot Zone 1D/2D)" 7) With FM + CSA, Type of "Intrinsic safety and (is + xp)" 6) Electrical connection Screwed gland Pg 13 Screwed gland M20 Han 7D plug (plastic)	-cast aluminium sel precision casting ⁵) English label inscriptions, anguages on CD rotection: x ia)" Ex d)" 6) explosion-proof enclosure closion-proof enclosure and ection (EEx ia + EEx d + Ex d + Ex d) explosion-proof dection:		A B D P E R
Housing made of die Housing stainless ste Version Standard version International version, documentation in 5 le Explosion protection Without With ATEX, Type of p "Intrinsic safety (EE "Explosion-proof (E "Intrinsic safety and (EEx ia + EEx d)" 7) "In (Zone 2)" "Intrinsic safety, exp dust explosion prot Zone 1D/2D)" 7) With FM + CSA, Type of the trinsic safety and (is + xp)" 6) Electrical connection Screwed gland M20x Screwed gland M20x Screwed gland M20x Screwed gland M20x Han 7D plug (plastic connector 8)	-cast aluminium sel precision casting ⁵) English label inscriptions, anguages on CD rotection: x ia)" Ex d)" 6) explosion-proof enclosure closion-proof enclosure and ection (EEx ia + EEx d + Ex d + Ex d) explosion-proof dection:		A B D P E R
Housing made of die Housing stainless ste Version Standard version International version, documentation in 5 la Explosion protection Without With ATEX, Type of p "Intrinsic safety (EE "Explosion-proof (E "Intrinsic safety and (EEx ia + EEx d)" 7) "In (Zone 2)" Intrinsic safety, exp dust explosion prot Zone 1D/2D)" 7) With FM + CSA, Type "Intrinsic safety and (is + xp)" 6) Electrical connection Screwed gland Pg 13 Screwed gland M20x Screwed gland M20x Screwed gland 1½-14 Han 7D plug (plastic connector 8) Plug M12 (metal) 9)	-cast aluminium sel precision casting ⁵) English label inscriptions, anguages on CD rotection: x ia)" Ex d)" 6) explosion-proof enclosure closion-proof enclosure and ection (EEx ia + EEx d + Ex d + Ex d) explosion-proof dection:		A B D P E R NC
Housing made of die Housing stainless ste Version Standard version International version, documentation in 5 la Explosion protection Without With ATEX, Type of p Intrinsic safety (EE Explosion-proof (E Intrinsic safety and (EEx ia + EEx d)" / land (EEx ia + EEx d)" / la	-cast aluminium sel precision casting ⁵) English label inscriptions, anguages on CD rotection: x ia)" Ex d)" 6) explosion-proof enclosure elosion-proof enclosure and ection (EEx ia + EEx d + e of protection: d explosion-proof / cable entry 3.5 8) x1.5 NPT housing) incl. mating		A B D P E R NC
Housing stainless state Version Standard version International version, documentation in 5 la Explosion protection Without With ATEX, Type of p "Intrinsic safety (EE "Explosion-proof (E "Intrinsic safety and (EEx ia + EEx d)" /) "In (Zone 2)" "Intrinsic safety, exp dust explosion protection of the company of the comp	-cast aluminium sel precision casting ⁵) English label inscriptions, anguages on CD rotection: x ia)" Ex d)" 6) explosion-proof enclosure elosion-proof enclosure and ection (EEx ia + EEx d + e of protection: d explosion-proof / cable entry 3.5 8) x1.5 NPT housing) incl. mating		3 1 2 A B D P E R NC

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) Version 7MF4233-1DY... only up to max. span 200 mbar a (2.9 psi a)
- $^{\rm 3)}\,$ When the manufacture's certificate M (calibration certificate) has to be ordered for transmitters with diaphragm seals, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the <u>total</u> combination is certified here.
- 4) Whe the acceptance test certificate 3.1 for transmitters with direct-connected diaphragm seals is ordered, this certificate must also be ordered with the corresponding seals.
- 5) Not together with Electrical connection "Screwed gland Pg 13.5" and "Han7D plug".
- 6) Without cable gland, with blanking plug.
- 7) With enclosed cable gland EEx ia and blanking plug.
- 8) Not together with type of protection "Explosion-proof" and "n (zone 2)"
- 9) Not together with types of protection "Explosion-proof" or "Intrinsic safety and explosion-proof

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

Selection and Orderin	<u> </u>	Orde	er No.	
SITRANS P pressure pressure (from the ga	transmitters for absolute ge pressure series)			
DS III PA series (PROFIBUS PA)		7 M F 4 2 3 4 -		
DS III FF series (Foun	dation Fieldbus)	7 M F	4235-	
Measuring cell filling	Measuring cell			
	cleaning			
Silicone oil	Standard	1		
Inert liquid ¹⁾	Grease-free	3		
Nominal measuring ra	•			
250 mbar a 1300 mbar a	(3.63 psi a) (18.9 psi a)	D F		
5 bar a	(72.5 psi a)	G		
30 bar a	(435 psi a)	Н		
Wetted parts material				
Seal diaphragm	Process connection			
Stainless steel	Stainless steel	A		
Hastelloy	Stainless steel	E		
Hastelloy	Hastelloy	C		
Version as diaphragm	seal ^{2) 3) 4)}	١		
Process connection	/A . EN 007 :			
 Connection shank G½ Female thread ½-14 I 			0	
 Female thread ½-14 i Oval flange made of 			1	
max. span 160 bar g	(2320 psi a)			
- Mounting thread ⁷ / ₁	6-20 UNF to EN 61518		2	
- Mounting thread M			3	
Non-wetted parts mat	erials			
Housing made of die-			0	
 Housing stainless ste 	ei precision casting		3	
Version			,	
Standard version	English label inscriptions,		1 2	
documentation in 5 la			2	
Explosion protection				
• Without			Α	
 With CENELEC, Type "Intrinsic safety (EE) 			В	
- "Intrinsic safety (EE:- "Explosion-proof (EI			D	
- "Intrinsic safety and	explosion-proof enclosure		P	
(EEx ia + EEx d)" 6)				
- "n (Zone 2)" (planne			E	
	losion-proof enclosure and		R	
dust explosion protection (EEx ia + EEx d + Zone 1D/2D)" ⁶⁾ (not for DS III FF)				
• With FM + CSA, Type of protection:				
- "Intrinsic safety and explosion-proof			NC	
(is + xp)" ⁵⁾				
Electrical connection				
Screwed gland M20x1.5 Screwed gland 1/2-14 NPT			B	
 Screwed gland ½-14 NPT Plug M12 incl. mating connector ⁷⁾ 			F	
	, 001/1100101	-	· ·	
DisplayWithout (digital display	av hidden)		1	
Without (digital display hidden)With visible digital indicator			6	
With customer-specific digital indicator (setting)			7	
as specified Order c	ode "Y21" or required)			

Included in delivery of the device:

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

- 1) For oxygen application, add Order code E10.
- Version 7MF4233-1DY... only up to max. span 200 mbar a (2.9 psi a).
- $^{\rm 3)}\,$ When the manufacture's certificate M (calibration certificate) has to be ordered for transmitters with diaphragm seals, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the <u>total</u> combination is certified here.
- 4) Whe the acceptance test certificate 3.1 for transmitters with direct-connected diaphragm seals is ordered, this certificate must also be ordered with the corresponding seals.
- 5) Without cable gland, with blanking plug.
- 6) With enclosed cable gland EEx ia and blanking plug.
- 7) Not together with types of protection "Explosion-proof" or "Intrinsic safety and explosion-proof"

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

Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add "-Z" to Order No. and specify Order				
code.				
Pressure transmitter with mounting				
bracket made of: • Steel	A01	1	1	/
Stainless steel	A02	\ \ \	1	\ \
Plua				
• Han 7D (metal, gray)	A30	✓		
 Han 8U (instead of Han 7D) 	A31	✓		
Cable sockets for M12 connectors (metal)	A50	✓	1	✓
Rating plate inscription				
(instead of German)				
English French	B11 B12	/	√	1
• Spanish	B13	\ \ \	1	/
• Italian	B14	✓	1	1
English rating plate	B21	1	1	1
Pressure units in inH ₂ O or psi				
Manufacturer's test certificate M	C11	✓	1	✓
(calibration certificate) ¹⁾				
To DIN 55350, Part 18 and to ISO 8402				_ ا
Acceptance test certificate ²⁾ To EN 10204-3.1	C12	✓	√	V
	C14	//	1	
Factory certificate To EN 10204-2.2	C14	•	•	•
"Functional Safety (SIL)" certificate	C20	/		
"PROFIsafe" certificate and protocol	C21	,	1	
·		/	·	
Setting of upper limit of output signal to 22.0 mA	D05	•		
Manufacturer's declaration acc. to NACE	D07	1	1	1
Type of protection IP68	D12	/	1	/
(not together with Han 7D / Han 8U plug,				
Pg 13.5 screwed gland)				
Digital indicator alongside the input keys	D27	✓	√	✓
(only together with the devices 7MF42330A.6 orA.7-Z, Y21 or Y22 + Y01).				
Supplied with oval flange	D37	//	1	/
(1 item), PTFE packing and screws in thread	D01	,	·	ľ
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	Enn		./	
(only together with type of protection "Intrinsic	E02	•	•	•
safety (EEx ia)")				
Oxygen application	E10	✓	1	1
(max. 160 bar a (2320 psi a) with oxygen				
measurement and inert liquid)				١,
Explosion-proof "Intrinsic safety" to INMETRO (Brazil)	E25	✓	V	V
(only for transmitter 7MF4B)				
Explosion-proof "Intrinsic safety" to NEPS	E55	1	1	1
(China)				
(only for transmitter 7MF4B)				
	E56	✓	1	1
Explosion protection "Explosion-proof" to				
Explosion protection "Explosion-proof" to NEPSI (China)				
Explosion protection "Explosion-proof" to	F57	1	1	1

Selection and Ordering data	Order	code		
Additional data		HART	PA	FF
Add "-Z" to Order No. and specify Order code.				
Measuring range to be set	Y01	✓		
Specify in plain text (max. 5 digits): Y01: up to mbar, bar, kPa, MPa, psi				
Measuring point number (TAG No.)	Y15	✓	1	1
Max. 16 characters, specify in plain text: Y15:				
Measuring point text	Y16	1	1	1
Max. 27 characters, specify in plain text:				
Y16:				
Entry of HART address (TAG)	Y17	✓		
Max. 8 characters, specify in plain text:				
Y17:				
Setting of pressure indication in pressure	Y21	✓	1	✓
units Specify in plain text (standard setting: mA):				
Y21: mbar, bar, kPa, MPa, psi,				
Note:				
The following pressure units can be selected:				
bar, mbar, mm H_2O^* , in H_2O^* , ft H_2O^* ,				
mmHG, inHG, psi, Pa, kPa, MPa, g/cm ² , kg/cm ² , Torr, ATM oder %				
*) ref. temperature 20 °C				
Setting of pressure indication in	Y22 +	1	1	1
non-pressure units	Y01			
Specify in plain text:				
Y22: up to I/min, m ³ /h, m, USgpm, (specification of measuring range in pressure				
units "Y01" is essential, unit with				
max. 5 characters)				
Preset bus address	Y25		1	
Specify in plain text:				
Y25:				
Only "Y01" "Y21" "Y22" "Y25" and "D05" can b	ne facto	rv nresi	_t	

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

^{✓ =} available

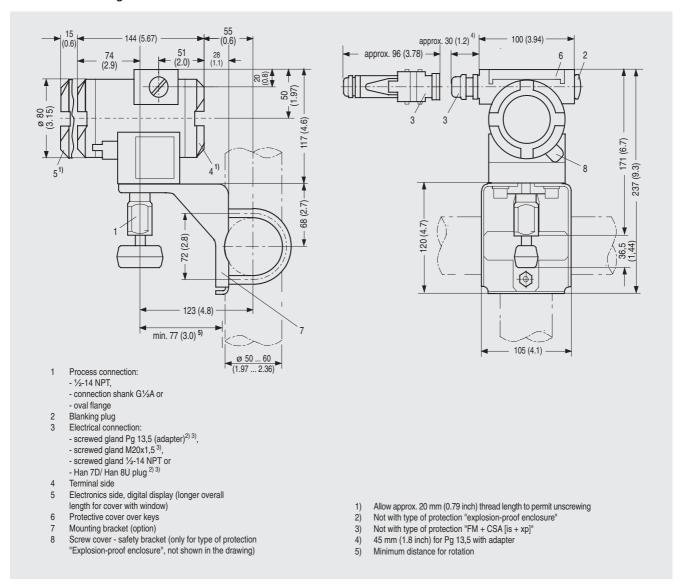
¹⁾ When the manufacture's certificate M (calibration certificate) has to be ordered for transmitters with diaphragm seals, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring

accuracy of the <u>total</u> combination is certified here.

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

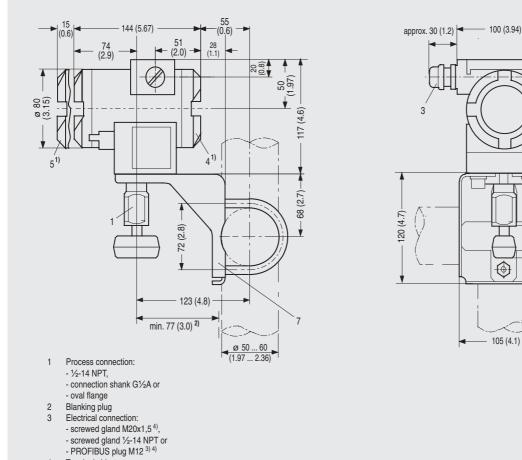
DS III series for absolute pressure (from gage pressure series)

Dimensional drawings



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)



length for cover with window) Protective cover over keys

Screw cover safety bracket (only for explosion-proof enclosure,

Mounting bracket (option)

not shown in the drawing)

- 171 (6.7) (8.3) 237 105 (4.1)
- Terminal side Electronics side, digital display (longer overall
 - Allow approx. 20 mm (0.79 inch) thread length in addition Minimum distance for rotating 2)
 - 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

SITRANS P, DS III series for absolute pres	sure (from the different	ial pressure series)			
	HART	HART PROFIBUS PA or Foundation Field		ındation Fieldbus	
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 (77 1450 psi a)	160 bar a (2320 psi a) (for connection thread M10 and ⁷ / ₁₆ -20 UNF in the process flanges)	100 bar a (1450 psi a)	160 bar a (2320 psi a) (for connection thread M10 and ⁷ / ₁₆ -20 UNF in the process flanges)	
Lower measuring limit		•	•	•	
Measuring cell with silicone oil filling	0 mbar a (0 psi a)				
Upper measuring limit	100% of max. span				
Output					
Output signal	4 20 mA		Digital PROFIBUS PA or Foundation Fieldbus signal		
 Lower limit (infinitely adjustable) 	3.55 mA, factory prese	et to 3.84 mA	-		
Upper limit (infinitely adjustable)	23 mA, factory preset to 22.0 mA	to 20.5 mA or optionally set	-		
Load			ı		
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	$R_{\rm B} = 230 \dots 500 \Omega$ (SII) $R_{\rm B} = 230 \dots 1100 \Omega$ (H	MATIC PDM) or ART Communicator)	-		
Physical bus	-	IEC 61158-2			
With polarity reversal protection	-		Yes		
Accuracy	To EN 60770-1				
Reference conditions	Increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil filli room temperature 25 °C (77 °F)) r: Span ratio (r = max. span / set span)			aphragm, silicone oil filling,	
Error in measurement and fixed-point setting (including hysteresis and repeatability)			1		
Linear characteristic	≤ 0.1%				
- r ≤ 10	≤ 0.1%				
- 10 < r ≤ 30	≤ 0.2%				
Long-term drift (temperature change ±30 °C (±54 °F))	$\leq (0.1 \cdot r)\%/\text{year}$ $\leq 0.1\%/\text{year}$				
Influence of ambient temperature			1		
• 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 ł	<	≤ 0.25%/10 K		
Measured Value Resolution	- 3 · 10 ⁻⁵ of nominal measuring range			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 61326 and NAMUR NE 21	
Design		
Weight (without options)	≈ 4.5 kg (≈ 9.9 lb)	
Housing material	Poor in copper die-cast aluminium, GD-AlSi12	or stainless steel precision casting, mat. No. 1.440
Wetted parts materials		
Seal diaphragm	Stainless steel, mat. No. 1.4404/316L or 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 $ extbf{ extit{U}}_{eta}$		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 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 group graph 3 (sound engineering practice)	up 1; complies with requirements of Article 3, para-		
Explosion protection				
• Intrinsic safety "i"	PTB 99 ATEX 2122			
- Identification	Ex II 1/2 G EEx ia/ib IIB/IIC T6			
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperature class T4; -40 +70 °C (-40 +158 °F) temperature class T5; -40 +60 °C (-40 +140 °F) temperature class T6			
- Connection	To certified intrinsically-safe circuits with maximum values: $\begin{array}{l} U_i = 30 \text{ V, } I_i = 100 \text{ mA,} \\ P_i = 750 \text{ mW; } P_i = 300 \Omega \end{array}$	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	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{\rm i} = 7 \mu \text{H}, C_{\rm i} = 1.1 \text{nF}$		
• Explosion-proof "d"	PTB 99 ATEX 1160			
- Identification	Ex II 1/2 G EEx d IIC T4/T6			
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperature class -40 +60 °C (-40 +140 °F) temperature class	T4; T6		
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC	To circuits with values: $U_{\rm H}$ = 9 32 V DC		
Dust explosion protection for zone 20	PTB 01 ATEX 2055			
- Identification	Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C			
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F)			
- Max.surface temperature	120 °C (248 °F)			
- Connection	To certified intrinsically-safe circuits with maximum values: $\begin{array}{l} U_i = 30 \text{ V, } I_i = 100 \text{ mA,} \\ P_i = 750 \text{ mW, } R_i = 300 \Omega \end{array}$	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	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{\rm i} = 7 \mu \text{H}, C_{\rm i} = 1.1 \text{nF}$		
• 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 EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4T6; CL I, DIV 2, GP ABCD T4T6; CL II, DIV 2, GP FG; CL III			
• Explosion protection to CSA	Certificate of Compliance 1153651			
- Identification (XP/DIP) or (IS)	CL I, DIV 1, GP ABCD T4T6; CL II, DIV 1, GP EF T4T6; CL II, DIV 2, GP FG; CL III	FG; CL III; Ex ia IIC T4T6; CL I, DIV 2, GP ABCD		

SITRANS P measuring instruments for pressure

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

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

commun	

HART communication $230 \dots 1100 \Omega$ 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

2

Transducer blocks 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

sor temperature

- 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)

Can be parameterized (last good

value, substitute value, incorrect

- Limit monitoring

- Failure mode

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

SITRANS P measuring instruments for pressure

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

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

Selection and Ordering			Orc			
SITRANS P pressure to pressure, from the diff series DS III HART	ransmitters for absolute erential pressure,		7 M			3 3 -
	Moosuring call					
Measuring cell filling	Measuring cell cleaning					
Silicone oil	Standard		1			
Inert liquid ¹⁾	Grease-free		3			
·		_				
Span	(0.40 0.00 ')	_/	_			
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)		Н			
5.3 100 bar a	(76.9 1450 psi a)		K	Ε		
Wetted parts materials Seal diaphragm	Parts of measuring cell					
		-				
Stainless steel	Stainless steel			A		
Hastelloy	Stainless steel			В		
Hastelloy	Hastelloy			С		
Tantalum	Tantalum			E		
Monel	Monel	E)		Н		
Gold	Gold			L		
Version for diaphragm s	eal ^{2) 3) 4)}			Υ		
Process connection						
Female thread 1/4-18 NP	T with flange connection					
 Sealing screw opposit 	e process connection					
- Mounting thread M10	0 to DIN 19213			0)	
- Mounting thread ⁷ / ₁₆	-20 UNF to EN 61518			2		
 Vent on side of proces 						
- Mounting thread M10				4		
- Mounting thread ⁷ / ₁₆				6		
Non-wetted parts mate						
Process flange screws	Electronics housing					
Stainless steel	Die-cast aluminium	-			2	
Stainless steel	Stainless steel precision casting ⁶⁾				3	
Version						
 Standard version 						1
 International version, E documentation in 5 lar 	English label inscriptions, nguages on CD					2
Explosion protection	-					
• Without						Α
With ATEX, Type of pro "Intringia aufaty (FFy)						
- "Intrinsic safety (EEx	ia) 					В
- "Explosion-proof (EE	x a) - ' /					D
- "Intrinsic safety and e	explosion-proof enclosure					Р
(EEx ia + EEx d)" 8)						_
- "n (Zone 2)"	oion proof analas: == ===					E
	osion-proof enclosure and ction (EEx ia + EEx d +	ı				R
Zone 1D/2D)" 8)	S.SII (EEN IG I EEN G T					
 With FM + CSA, Type 	of protection:					
						NC
- "Intrinsic safety and (is + xp)" ⁷⁾	P **					
Electrical connection /						
 Screwed gland Pg 13. 	5 ⁹⁾					Α
 Screwed gland M20x1 						В
	JPT					B
 Screwed gland ½-14 N 	NI I					
 Han 7D plug (plastic h 						D
 Screwed gland ½-14 N Han 7D plug (plastic hannector g) Plug M12 (metal) 10) 						

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) When the manufacture's certificate M (calibration certificate) has to be ordered for transmitters with diaphragm seals, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.
- 4) Whe the acceptance test certificate 3.1 for transmitters with direct-connected diaphragm seals is ordered, this certificate must also be ordered with the corresponding seals.
- ⁵⁾ Not for span "5.3 ... 100 bar a (76.9 ... 1450 psi a)"
- 6) Not together with Electrical connection "Screwed gland Pg 13.5" and "Han7Ď plug".
- 7) Without cable gland, with blanking plug
- 8) With enclosed cable gland EEx ia and blanking plug
 9) Not together with type of protection "Explosion-proof" and "n (zone 2)"
- ¹⁰⁾ Not together with types of protection "Explosion-proof" or "Intrinsic safety and 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)

	g data		Orc	der	No).	
	ransmitters for absolute erential pressure series						
DS III PA series (PROF	IBUS PA)		7 M	F	4 3	3 4	-
DS III FF series (Found	dation Fieldbus)		7 M	F	4 3	3 5	
	,						
Measuring cell filling	Measuring cell				+		-
measuring cen mining	cleaning						
Silicone oil	Standard		1				
Inert liquid ¹⁾	Grease-free		3				
Nominal measuring ra	nge						
250 mbar a	(3.63 psi a)	E)	D				
1300 mbar a	(18.9 psi a)	E)	F				
5 bar a	(72.5 psi a)	E)	G				
30 bar a	(435 psi a)		Н				
100 bar a	(1450 psi a)		K	Ε			
Wetted parts materials	i						
Seal diaphragm	Parts of measuring cell						
Stainless steel	Stainless steel	-		Α			
Hastelloy	Stainless steel			В			
Hastelloy	Hastelloy			C			
Tantalum	Tantalum			Ē			
Monel	Monel	E)		Н			
Gold	Gold	-,		L			
Version as diaphragm s				Υ			
Process connection		_					
	T with flange connection						
 Sealing screw opposit Mounting thread M1 	0 to DIN 19213				0		
- Mounting thread ⁷ / ₁₆				1	2		
 Vent on side of proces 							
 Mounting thread M1 				•	4		
- Mounting thread ⁷ / ₁₆	3-20 UNF to EN 61518				6		
Non-wetted parts mate	erials	_					
Process flange screws							
	Liectronics nousing						
	Die-cast aluminium	-			2		
Stainless steel		-			2		
Stainless steel Stainless steel Version	Die-cast aluminium Stainless steel precision	-					
Stainless steel Stainless steel Version Standard version	Die-cast aluminium Stainless steel precision casting	_				1	
Stainless steel Stainless steel Version Standard version	Die-cast aluminium Stainless steel precision casting English label inscriptions,	_				1 2	
Stainless steel Stainless steel Version Standard version International version, I documentation in 5 lar Explosion protection	Die-cast aluminium Stainless steel precision casting English label inscriptions,	_					A
Stainless steel Stainless steel Version Standard version International version, I documentation in 5 lar Explosion protection Without With CENELEC, Type	Die-cast aluminium Stainless steel precision casting English label inscriptions, nguages on CD of protection:	_					A
Stainless steel Stainless steel Version Standard version International version, I documentation in 5 lar Explosion protection Without With CENELEC, Type "Intrinsic safety (EEx	Die-cast aluminium Stainless steel precision casting English label inscriptions, nguages on CD of protection: .ia)"	_					В
Stainless steel Stainless steel Version Standard version International version, I documentation in 5 lar Explosion protection Without With CENELEC, Type "Intrinsic safety (EEx "Explosion-proof (EE	Die-cast aluminium Stainless steel precision casting English label inscriptions, nguages on CD of protection: .ia)" (x d)" 6)						B D
Stainless steel Stainless steel Version Standard version International version, I documentation in 5 lar Explosion protection Without With CENELEC, Type "Intrinsic safety (EEx "Explosion-proof (EE "Intrinsic safety and	Die-cast aluminium Stainless steel precision casting English label inscriptions, nguages on CD of protection: .ia)"						В
Stainless steel Stainless steel Version Standard version International version, I documentation in 5 lar Explosion protection Without With CENELEC, Type "Intrinsic safety (EEx "Explosion-proof (EE "Intrinsic safety and (EEx ia + EEx d)" 7)	Die-cast aluminium Stainless steel precision casting English label inscriptions, nguages on CD of protection: . ia)" (x d)" 6) explosion-proof enclosure						B D P
Stainless steel Stainless steel Stainless steel Version Standard version International version, I documentation in 5 lai Explosion protection Without With CENELEC, Type Intrinsic safety (EEx Explosion-proof (EE Intrinsic safety and (EEx ia + EEx d)) 7 In (Zone 2)" (planned	Die-cast aluminium Stainless steel precision casting English label inscriptions, nguages on CD of protection: ia)" ix d)" 6) explosion-proof enclosure d)	•					B D P
Stainless steel Stainless steel Stainless steel Version Standard version International version, I documentation in 5 lar Explosion protection Without With CENELEC, Type "Intrinsic safety (EEx "Explosion-proof (EE "Intrinsic safety and (EEx ia + EEx d)" 7) "In (Zone 2)" (plannee "Intrinsic safety, expl	Die-cast aluminium Stainless steel precision casting English label inscriptions, nguages on CD of protection: ia)" ix d)" 6) explosion-proof enclosure d) posion-proof enclosure and	•					B D P
Stainless steel Stainless steel Stainless steel Version Standard version International version, I documentation in 5 lar Explosion protection Without With CENELEC, Type "Intrinsic safety (EEx "Explosion-proof (EE "Intrinsic safety and (EEx ia + EEx d)" 7) "In (Zone 2)" (planned "Intrinsic safety, explodust explosion protein	Die-cast aluminium Stainless steel precision casting English label inscriptions, nguages on CD of protection: ia)" x d)" 6) explosion-proof enclosure d) osion-proof enclosure and ction (EEx ia + EEx d +	•					B D P
Stainless steel Stainless steel Stainless steel Version Standard version International version, I documentation in 5 lar Explosion protection Without With CENELEC, Type "Intrinsic safety (EEx "Explosion-proof (EE "Intrinsic safety and (EEx ia + EEx d)" 7) "In (Zone 2)" (plannee "Intrinsic safety, expludust explosion prote Zone 1D/2D)" 7) (not	Die-cast aluminium Stainless steel precision casting English label inscriptions, nguages on CD of protection: ia)" ix d)" 6) explosion-proof enclosure d) osion-proof enclosure and action (EEx ia + EEx d + for DS III FF)	•					B D P
Stainless steel Stainless steel Stainless steel Version Standard version International version, I documentation in 5 lar Explosion protection Without With CENELEC, Type "Intrinsic safety (EEx "Explosion-proof (EE "Intrinsic safety and (EEx ia + EEx d)" 7) "In (Zone 2)" (planned "Intrinsic safety, expludust explosion prote Zone 1D/2D)" 7) (not With FM + CSA, Type	Die-cast aluminium Stainless steel precision casting English label inscriptions, nguages on CD of protection: ia)" x d)" 6) explosion-proof enclosure d) osion-proof enclosure and ection (EEx ia + EEx d + for DS III FF) of protection:	•					B D P E R
Stainless steel Stainless steel Stainless steel Version Standard version International version, I documentation in 5 lar Explosion protection Without With CENELEC, Type "Intrinsic safety (EEx "Explosion-proof (EE "Intrinsic safety and (EEx ia + EEx d)" 7) "In (Zone 2)" (planned "Intrinsic safety, expludust explosion prote Zone 1D/2D)" 7) (not With FM + CSA, Type "Intrinsic safety and	Die-cast aluminium Stainless steel precision casting English label inscriptions, nguages on CD of protection: ia)" x d)" 6) explosion-proof enclosure d) osion-proof enclosure and ection (EEx ia + EEx d + for DS III FF) of protection:	•					B D P
Stainless steel Stainless steel Stainless steel Version Standard version International version, I documentation in 5 lar Explosion protection Without With CENELEC, Type "Intrinsic safety (EEx "Explosion-proof (EE "Intrinsic safety and (EEx ia + EEx d)" 7) "In (Zone 2)" (plannee "Intrinsic safety, expludust explosion prote Zone 1D/2D)" 7) (not With FM + CSA, Type "Intrinsic safety and (is + xp)" 6)	Die-cast aluminium Stainless steel precision casting English label inscriptions, nguages on CD of protection: ia)" ix d)" 6) explosion-proof enclosure d) osion-proof enclosure and oction (EEx ia + EEx d + for DS III FF) of protection: explosion-proof	•					B D P E R
Stainless steel Stainless steel Stainless steel Version Standard version International version, I documentation in 5 lar Explosion protection Without With CENELEC, Type "Intrinsic safety (EEx "Explosion-proof (EE "Intrinsic safety and (EEx ia + EEx d)" 7) "In (Zone 2)" (planner "Intrinsic safety, expludust explosion prote Zone 1D/2D)" 7) (not With FM + CSA, Type "Intrinsic safety and (is + xp)" 6) Electrical connection in	Die-cast aluminium Stainless steel precision casting English label inscriptions, nguages on CD of protection: (a)" (x d)" 6) explosion-proof enclosure d) osion-proof enclosure and oction (EEx ia + EEx d + for DS III FF) of protection: explosion-proof	•					B D P E R
Stainless steel Stainless steel Stainless steel Version Standard version International version, I documentation in 5 lar Explosion protection Without With CENELEC, Type "Intrinsic safety (EEx "Explosion-proof (EE "Intrinsic safety and (EEx ia + EEx d)" 7) "In (Zone 2)" (plannee "Intrinsic safety, expludust explosion prote Zone 1D/2D)" 7) (not With FM + CSA, Type "Intrinsic safety and (is + xp)" 6)	Die-cast aluminium Stainless steel precision casting English label inscriptions, nguages on CD of protection: (a)" (x d)" 6) explosion-proof enclosure d) osion-proof enclosure and oction (EEx ia + EEx d + for DS III FF) of protection: explosion-proof	•					B D P E R

Selection and Ordering data	Order No.	
SITRANS P pressure transmitters for absolute pressure (from the differential pressure series)		
DS III PA series (PROFIBUS PA)	7 M F 4 3 3 4 -	
DS III FF series (Foundation Fieldbus)	7 M F 4 3 3 5 -	
Display		
 Without (digital display hidden) 	1	
 With visible digital indicator 	6	
 With customer-specific digital indicator (setting as specified, Order code "Y21" or required) 	7	

Included in delivery of the device:

- Brief instructions (Leporello)
- CD-ROM with detailed documentation
- Sealing plug(s) or sealing screw(s) for the process flanges(s)
- For oxygen application, add Order code E10.
- 2) Version 7MF4334-1DY... only up to max. span 200 mbar a (2.9 psi a).
- $^{\rm 3)}\,$ When the manufacture's certificate M (calibration certificate) has to be ordered for transmitters with diaphragm seals, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the <u>total</u> combination is certified here.
- 4) Whe the acceptance test certificate 3.1 for transmitters with direct-connected diaphragm seals is ordered, this certificate must also be ordered with the corresponding seals.
- 5) Not for nominal measuring range 100 bar a (1450 psi a).
- 6) Without cable gland, with blanking plug
- 7) With enclosed cable gland EEx ia and blanking plug
- 8) Cannot be used together with the following types of protection: "Explosion-proof" and "Intrinsic safety and 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)

(from differential pressure series	-,			
Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add "-Z" to Order No. and specify Order code.				
Pressure transmitter with mounting				
bracket made of: • Steel	A01	1	1	1
Steel Stainless steel	A01	\ \ \	√	V
O-rings for process flanges	7102			
(instead of FPM (Viton))				
• PTFE (Teflon)	A20	✓	1	1
• FEP (with silicone core, approved for food)	A21	✓.	V	✓.
FFPM (Kalrez, compound 4079)NBR (Buna N)	A22 A23	4	1	1
,	AZS	ľ	•	ľ
• Han 7D (metal, gray)	A30	1		
Han 8U (instead of Han 7D)	A31	1		
Sealing screws	A40	1	1	1
1/4-18 NPT, with valve in material of process flanges				
Cable sockets for M12 connectors (metal)	A50	✓	✓	1
Rating plate inscription				
(instead of German)				
• English	B11	1	1	1
FrenchSpanish	B12 B13	1	1	1
• Italian	B14	1	1	1
English rating plate	B21	1	1	1
Pressure units in inH ₂ O or psi				
Manufacturer's test certificate M (calibration certificate) ¹⁾	C11	✓	✓	1
To DIN 55350, Part 18 and to ISO 8402	040	/	1	,
Acceptance test certificate ²⁾ To EN 10204-3.1	C12	V	V	•
Factory certificate To EN 10204-2.2	C14	✓	✓	✓
"Functional Safety (SIL)" certificate	C20	✓		
"PROFIsafe" certificate and protocol	C21		✓	
Setting of upper limit of output signal to 22.0 mA	D05	✓		
Manufacturer's declaration acc. to NACE	D07	1	1	1
(only together with seal diaphragm made of Hastelloy and stainless steel)				
Type of protection IP68	D12	1	1	1
(not together with Han 7D/Han 8U plug, cable gland PG 13.5)				
Digital indicator alongside the input keys	D27	✓	1	1
(only together with the devices 7MF43332A.6 orA.7-Z, Y21 or Y22 + Y01)				
Supplied with oval flange	D37	✓	1	1
(1 item), PTFE packing and screws in thread of process flange				
Use in or on zone 1D/2D	E01	1	✓	1
(only together with type of protection "Intrinsic safety (EEx ia)")				
Use on zone 0	E02	✓	1	1
(only together with type of protection "Intrinsic safety (FEV ia)")				
safety (EEx ia)")	E10		./	1
Oxygen application (max. 160 bar a (2320 psi a) with oxygen measurement and inert liquid)	L10	•		V
Explosion-proof "Intrinsic safety" to	E25		1	1
INMETRO (Brazil)	LZJ	•		Ť
(only for transmitter 7MF4B)				

Selection and Ordering data	Order	code		
Further designs	Oraci	HART	PA	FF
Add "-Z" to Order No. and specify Order code.			.,.	
Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)	E55	*	✓	1
Explosion protection "Explosion-proof" to NEPSI (China)	E56	✓	1	1
(only for transmitter 7MF4)				
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	1	1
Process flange	1604			,
Hastelloy Monel	K01 K02	1	1	1
Stainless steel with PVDF insert	K04	1	1	1
max. PN 10 (MWP 145 psi), max. temperature of medium 90 °C (194 °F)				
For ½-14 NPT inner process connection on				
the side in the middle of the process flange, vent valve not possible				
Additional data				
Add "-Z" to Order No. and specify Order code.				
Measuring range to be set Specify in plain text (max. 5 digits): Y01: up to mbar, bar, kPa, MPa, psi	Y01	1		
Measuring point number (TAG No.) Max. 16 characters, specify in plain text: Y15:	Y15	1	✓	1
Measuring point text Max. 27 characters, specify in plain text: Y16:	Y16	1	✓	1
Entry of HART address (TAG) Max. 8 characters, specify in plain text:	Y17	1		
Y17: Setting of pressure indication in pressure units	Y21	1	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/cm ² , kg/cm ² , Torr, ATM oder % *) ref. temperature 20 °C				
Setting of pressure indication in non-pressure units	Y22 + Y01	✓		
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)				
Preset bus address	Y25		1	
Specify in plain text: Y25:	123			
Only "Y01" "Y21" "Y22" "Y25" and "D05" can be	o footo	rv proc	o+	

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

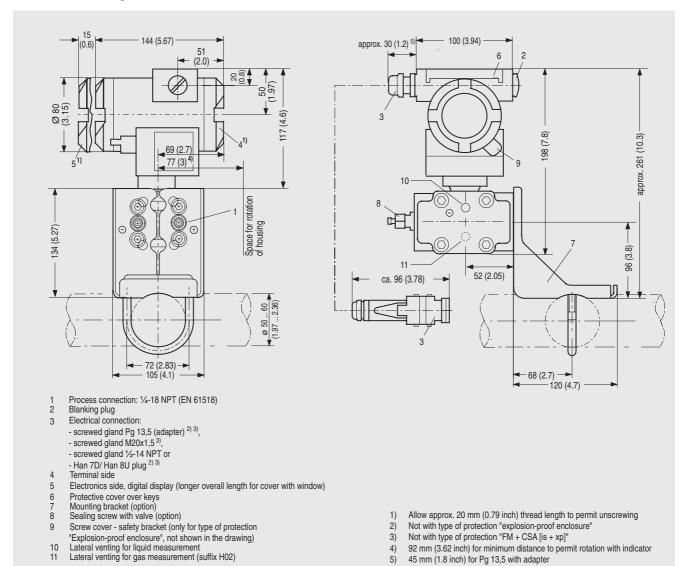
^{✓ =} available

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

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

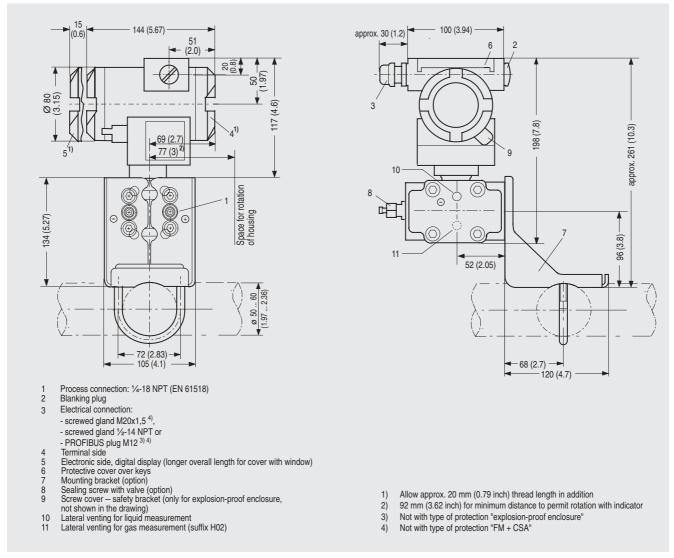
DS III series for absolute pressure (from differential pressure series)

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

SITRANS P, DS III series, for differential pre			1	
	HART		PROFIBUS PA or Fou	undation Fieldbus
Input				
Measured variable	Differential pressure and	flow		ı
Spans (infinitely adjustable) or nominal measuring range and max. pemissible working pressure	Span	Maximum working pressure	Nominal measuring range	Maximum working pressure
max. pemissible working pressure	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)	
Lower measuring limit		'		,
Measuring cell with silicone oil filling	-100% of max. span (-33	3% with 30 bar (435 psi) m	neasuring cell or 30 mb	ar a (0.44 psi))
Upper measuring limit	100% of max. span (for o	oxygen version and inert f	illing liquid; max. 160 b	ar g (2320 psi g))
Output				
Output signal	4 20 mA		Digital PROFIBUS PA signal	or Foundation Fieldbus
 Lower limit (infinitely adjustable) 	3.55 mA, factory preset t	to 3.84 mA	-	
Upper limit (infinitely adjustable)	23 mA, factory preset to to 22.0 mA	20.5 mA or optionally set	-	
Load			'	
Without HART communication	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.023$ $U_{\rm H}$: Power supply in V	A in Ω ,	-	
With HART communication	$R_{\rm B} = 230 \dots 500 \ \Omega \ ({\rm SIMAR_B} = 230 \dots 1100 \ \Omega \ ({\rm HAI})$		-	
Physical bus	-		IEC 61158-2	
With polarity reversal protection	-		Yes	
Accuracy	To EN 60770-1			
Reference conditions		c, start-of-scale value 0 ba (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	≤ (0.0029 · r + 0.071)%			
- 10 < r ≤ 30	≤ (0.0045 · r + 0.071)%			
	≤ (0.005 · r + 0.05)%			
- 30 < r ≤ 100	_ (0.000 1 1 0.00)/0		Í.	
	(0.000) 0.00//0		≤ 0,1%	
- 30 < r ≤ 100	≤ 0,1%		≤ 0,1%	

DS III series for differential pressure and flow

	HART	PROFIBUS PA or Foundation Fieldbus
• Square-root characteristic (flow 25 50%)		≤ 0,2
- r ≤ 10	≤ 0,2%	,
- 10 < r ≤ 30	≤ 0,4%	
Long-term drift (temperature change ± 30 °C (±54 °F))	≤ (0.25 · r)% every 5 years static pressure max. 70 bar g (1015 psi g)	≤ (0.25% every 5 years static pressure max. 70 bar g (1015 psi g)
• 20 mbar (0.29 psi)-measuring cell	≤ (0.2 · r) per year	≤ 0.2 per year
Influence of ambient temperature		1
• 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 (Twice the value with 20-mbar (0.29 psi) measuring cell)	≤ 0.25%/10 K
Influence of static pressure		
• on the zero point	≤ (0.15 · r)% per 100 bar (1450 psi)	≤ 0.15% je 100 bar (1450 psi)
- 20 mbar (0.29 psi)-measuring cell	≤ (0.15 · r)% per 32 bar (464 psi)	≤ 0.15% je 32 bar (464 psi)
on the span 20 mbar (0.29 psi)-measuring cell	≤ 0.2% je 100 bar (1450 psi) ≤ 0.2% je 32 bar (464 psi)	'
Measured Value Resolution	- 0.276 JC 02 Ball (404 poli)	3 · 10 ⁻⁵ of nominal measuring range
Rated operating conditions		o to ornormal moasuring range
Degree of protection (to EN 60529)	IIP65	
Process temperature		
Measuring cell with silicone oil filling	-40 +100 °C (-40 +212 °F)	
Measuring cell with inert filling liquid	-20 +100 °C (-4 +212 °F)	
In conjunction with dust explosion protec-	-20 +100 °C (-4 +212 °F)	
tion		
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 61326 and NAMUR NE 21	
Design		
Weight (without options)	≈ 4.5 kg (≈ 9.9 lb)	
Housing material	Poor in copper die-cast aluminium, GD-AlSi12 or	stainless steel precision casting, mat. No. 1.44
Wetted parts materials		
• Seal diaphragm	Stainless steel, mat. No. 1.4404/316L or Hastelloy tantalum or gold	
Measuring cell filling	Silicone oil or inert filling liquid (max. 160 bar (232	
Process connection	Female thread $\frac{1}{4}$ -18 NPT and flange connection v $\frac{7}{16}$ -20 UNF to EN 61518	vith mounting thread M10 to DIN 19213 or
Power supply $\emph{\textbf{U}}_{ ext{H}}$		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

DS III series for differential pressure and flow

SITRANS P, DS III series, for d	ifferential pressure and flow
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STRANS F, DS III Series, for differential pre	I	DDOEDLIS DA or Foundation Fieldhus			
0.1111	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 group 1; complies with requirements of Article 3, para- graph 3 (sound engineering practice)				
PN 420 (MWP 6092 psi)	For gases of fluid group 1 and liquids of fluid group 1; complies with basic safety requirements of Article 3, paragraph 1 (appendix 1); assigned to category III, conformity evaluation module H by TÜV Nord.				
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 -	Г5;			
- Connection	To certified intrinsically-safe circuits with maximum values: U _i = 30 V, I_i = 100 mA, P_i = 750 mW; R_i = 300 Ω	FISCO supply unit: $U_0=17.5$ V, $I_0=380$ mA, $P_0=5.32$ W Linear barrier: $U_0=24$ V, $I_0=250$ mA, $P_0=1.2$ W			
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{i} = 7 \mu H, C_{i} = 1.1 nF$			
• 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 ⁻				
- 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	'			
- 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	G; 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

HART c	ommunication
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HART communication $230 \dots 1100 \Omega$ 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

ic process variables

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

acteristic

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

Input /Output

- Failure mode

- Simulation function

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

2

Transducer blocks 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-specif- Yes, linearly rising or falling charic process variables

acteristic

- 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 parameterizable ramp function

SITRANS P measuring instruments for pressure

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

DS III series for differential pressure and flow

	ng data			No.	
SITRANS P pressure tial pressure and flow	transmitters for differen-	7 M	F 4	433-	
PN 32/160 (MWP 464/			۰	-	۰
Measuring cell filling			ĺ		ĺ
Silicone oil	cleaning Standard	1			
nert liquid ¹⁾	Grease-free	3			
·	Greate free	-			
Span PN 32 (MWP 464 psi)					
20 mbar ²⁾	(0.4015 8.03 inH ₂ O)	В			
PN 160 (MWP 2320 ps	ı) (0.4015 24.09 inH₂O) ►	С			
2.5 250 mbar	(1.004 100.4 inH ₂ O)	D			
6 600 mbar	(2.409 240.9 inH ₂ O)	E			
16 1600 mbar	(6.424 642.4 inH ₂ O)	F			
50 5000 mbar	(20.08 2008 inH ₂ O)	G			
).3 30 bar	(4.35 435 psi)	Н			
Netted parts material	s				
stainless steel process					
Seal diaphragm	Parts of measuring cell				
Stainless steel	Stainless steel		Α		
Hastelloy	Stainless steel		В		
Hastelloy	Hastelloy		С		
Fantalum ³⁾	Tantalum		E		
Monel ³⁾	Monel		Н		
Gold ³⁾	Gold		L		
Version for diaphragm	seal ^{-7 57}	_	Y		
Process connection					
	PT with flange connection				
	ite process connection				
- Mounting thread M			0		
 Mounting thread '/₁ 					
	6-20 UNF to EN 61518		2	4	
 Vent on side of proce 	ess flange ²⁾				
 Vent on side of proce Mounting thread M 	ess flange ²⁾ 10 to DIN 19213		4	ı	
 Vent on side of proce Mounting thread M Mounting thread ⁷/₁ 	ess flange ²⁾ 10 to DIN 19213 ₆ -20 UNF to EN 61518			ı	
 Vent on side of proce Mounting thread M Mounting thread ⁷/₁ Non-wetted parts materials	ess flange ²⁾ 10 to DIN 19213 ₆ -20 UNF to EN 61518 terials		4	ı	
 Vent on side of proce Mounting thread M Mounting thread ⁷/₁ Non-wetted parts mate Process flange screws 	ess flange ²⁾ 10 to DIN 19213 16-20 UNF to EN 61518 Electronics housing	_	4		
Vent on side of proce Mounting thread M Mounting thread ⁷ / ₁ Non-wetted parts mate Process flange screws Stainless steel	ess flange ²⁾ 10 to DIN 19213 16-20 UNF to EN 61518 terials Electronics housing Die-cast aluminium	_	4	2	
Vent on side of proce Mounting thread M Mounting thread ⁷ / ₁ Non-wetted parts mate Process flange screws Stainless steel	ess flange ²⁾ 10 to DIN 19213 16-20 UNF to EN 61518 Electronics housing	_	4		
Vent on side of proce Mounting thread M Mounting thread ⁷ / ₁ Non-wetted parts mate Process flange screws Stainless steel Stainless steel	ess flange ²⁾ 10 to DIN 19213 16-20 UNF to EN 61518 terials Electronics housing Die-cast aluminium Stainless steel precision	-	4	2	
Vent on side of proce Mounting thread M Mounting thread ⁷ / ₁ Non-wetted parts mate Process flange screws Stainless steel Stainless steel	ess flange ²⁾ 10 to DIN 19213 16-20 UNF to EN 61518 terials Electronics housing Die-cast aluminium Stainless steel precision	-	4	2	
Vent on side of proce Mounting thread M Mounting thread 7/1 Non-wetted parts material expression of the standard standard version	ess flange ²⁾ 10 to DIN 19213 16-20 UNF to EN 61518 terials Electronics housing Die-cast aluminium Stainless steel precision	_	4	2 3	
Vent on side of proce Mounting thread M Mounting thread 7/1 Non-wetted parts material expression of the standard standard version	ess flange ²⁾ 10 to DIN 19213 16-20 UNF to EN 61518 Electronics housing Die-cast aluminium Stainless steel precision casting ⁶⁾ English label inscriptions,	_	4	2 3	
Vent on side of proce - Mounting thread M' - Mounting thread 7/ Non-wetted parts mate Process flange screws Stainless steel Stainless steel Version International version, documentation in 5 le Explosion protection	ess flange ²⁾ 10 to DIN 19213 16-20 UNF to EN 61518 Electronics housing Die-cast aluminium Stainless steel precision casting ⁶⁾ English label inscriptions,	-	4	2 3	
Vent on side of proce - Mounting thread M' - Mounting thread 7/ Non-wetted parts mate Process flange screws Stainless steel Stainless steel Version Standard version International version, documentation in 5 la Explosion protection Without	ess flange ²⁾ 10 to DIN 19213 16-20 UNF to EN 61518 Electronics housing Die-cast aluminium Stainless steel precision casting ⁶⁾ English label inscriptions, anguages on CD	-	4	2 3	
Vent on side of proce Mounting thread M Mounting thread M Mon-wetted parts mate Process flange screws Stainless steel Stainless steel Version Standard version International version, documentation in 5 la Explosion protection Without With ATEX, Type of page 12.	ess flange ²⁾ 10 to DIN 19213 16-20 UNF to EN 61518 Electronics housing Die-cast aluminium Stainless steel precision casting ⁶⁾ English label inscriptions, anguages on CD	-	4	2 3 1 2	
Vent on side of proce - Mounting thread M' - Mounting thread 7/ Non-wetted parts mate Process flange screws Stainless steel Stainless steel Version - Standard version - International version, documentation in 5 la Explosion protection - Without - With ATEX, Type of procedure.	ess flange ²⁾ 10 to DIN 19213 16-20 UNF to EN 61518 Electronics housing Die-cast aluminium Stainless steel precision casting ⁶⁾ English label inscriptions, anguages on CD rotection: x ia)"	-	4	2 3 1 2	
Vent on side of proce - Mounting thread M' - Mounting thread 7/ Non-wetted parts mate Process flange screws Stainless steel Stainless steel Version - Standard version - International version, documentation in 5 la Explosion protection - Without - With ATEX, Type of process flanges afety (EE - "Explosion-proof (EI)	ess flange ²⁾ 10 to DIN 19213 16-20 UNF to EN 61518 Electronics housing Die-cast aluminium Stainless steel precision casting ⁶⁾ English label inscriptions, anguages on CD rotection: x ia)" Ex d)" ⁷⁾	-	4	2 3 1 2 A B	
Vent on side of proce - Mounting thread M' - Mounting thread 7/ Non-wetted parts mate Process flange screws Stainless steel Stainless steel Version - Standard version - International version, documentation in 5 la Explosion protection - Without - With ATEX, Type of process flanges afety (EE - "Explosion-proof (EI)	ess flange ²⁾ 10 to DIN 19213 16-20 UNF to EN 61518 Electronics housing Die-cast aluminium Stainless steel precision casting ⁶⁾ English label inscriptions, anguages on CD rotection: x ia)"	-	4	2 3 1 2	
Vent on side of proce - Mounting thread M' - Mounting thread 7/ ₁ Non-wetted parts mat Process flange screws Stainless steel Stainless steel Version Standard version International version, documentation in 5 le Explosion protection Without With ATEX, Type of p - "Intrinsic safety (EE - "Explosion-proof (EI - "Intrinsic safety and	ess flange ²⁾ 10 to DIN 19213 16-20 UNF to EN 61518 Electronics housing Die-cast aluminium Stainless steel precision casting ⁶⁾ English label inscriptions, anguages on CD rotection: x ia)" Ex d)" ⁷⁾	-	4	2 3 1 2 A B	
Vent on side of proces - Mounting thread M' - Mounting thread 7/ Non-wetted parts mate Process flange screws Stainless steel Stainless steel Stainless steel Stainless steel Version Standard version International version, documentation in 5 le Explosion protection Without With ATEX, Type of p - "Intrinsic safety (EE - "Explosion-proof (EE - "Intrinsic safety and (EEx ia + EEx d)"8) - "n (Zone 2)" - "Intrinsic safety, exp	ess flange ²⁾ 10 to DIN 19213 16-20 UNF to EN 61518 Electronics housing Die-cast aluminium Stainless steel precision casting ⁶⁾ English label inscriptions, anguages on CD rotection: x ia)" explosion-proof enclosure	-	4	2 3 1 2 A B D P	
Vent on side of proces Mounting thread M' Mounting thread A' Mon-wetted parts mate Process flange screws Stainless steel Stainless steel Stainless steel Version Standard version International version, documentation in 5 le Explosion protection Without With ATEX, Type of p - "Intrinsic safety (EE - "Explosion-proof (EI - "Intrinsic safety and (EEx ia + EEx d)"8) - "In (Zone 2)" "Intrinsic safety, expand dust explosion	ess flange ²⁾ 10 to DIN 19213 16-20 UNF to EN 61518 Electronics housing Die-cast aluminium Stainless steel precision casting ⁶⁾ English label inscriptions, anguages on CD Totection: x ia)" Ex d)" ⁷⁾ explosion-proof enclosure		4	2 3 1 2 A B D P	
• Vent on side of proces • Mounting thread M' • Mounting thread A' • Mon-wetted parts mate Process flange screws • Stainless steel Stainless steel Version • Standard version • International version, documentation in 5 le Explosion protection • With ATEX, Type of p • "Intrinsic safety (EE • "Explosion-proof (EI • "Intrinsic safety and (EEx ia + EEx d)" • "In (Zone 2)" • "Intrinsic safety, expand dust explosion (EEx ia + EEx d + Ze)	ess flange ²⁾ 10 to DIN 19213 16-20 UNF to EN 61518 Electronics housing Die-cast aluminium Stainless steel precision casting ⁶⁾ English label inscriptions, anguages on CD rotection: x ia)" Ex d)" ⁷⁾ explosion-proof enclosure polosion-proof enclosure protection Cone 1D/2D)" ⁸⁾	-	4	2 3 1 2 A B D P	
Vent on side of proces Mounting thread M' Mounting thread A' Non-wetted parts mate Process flange screws Stainless steel Stainless steel Standard version International version, documentation in 5 la Explosion protection Without With ATEX, Type of processes and (EEx ia + EEx d)** "Intrinsic safety and (EEx ia + EEx d)** "Intrinsic safety, expand dust explosion (EEx ia + EEx d + Z With FM + CSA, Type With FM + CSA, Type	ess flange ²⁾ 10 to DIN 19213 16-20 UNF to EN 61518 Electronics housing Die-cast aluminium Stainless steel precision casting ⁶⁾ English label inscriptions, anguages on CD rotection: x ia)" Ex d)" ⁷⁾ explosion-proof enclosure protection cone 1D/2D)" ⁸⁾ of protection:	-	4	2 3 1 2 A B D P E R	
• Vent on side of proce - Mounting thread M' - Mounting thread A' - Mon-wetted parts mate Process flange screws Stainless steel Stainless steel Stainless steel Stainless steel Version • Standard version • International version, documentation in 5 la Explosion protection • Without • With ATEX, Type of p - "Intrinsic safety (EE - "Explosion-proof (EI - "Intrinsic safety and (EEx ia + EEx d)*8) - "n (Zone 2)" - "Intrinsic safety, exp and dust explosion (EEx ia + EEx d + Z • With FM + CSA, Type - "Intrinsic safety and - "Intrinsic safety and	ess flange ²⁾ 10 to DIN 19213 16-20 UNF to EN 61518 Electronics housing Die-cast aluminium Stainless steel precision casting ⁶⁾ English label inscriptions, anguages on CD rotection: x ia)" Ex d)" ⁷⁾ explosion-proof enclosure protection cone 1D/2D)" ⁸⁾ of protection:	-	4	2 3 1 2 A B D P	С
Vent on side of proces Mounting thread M' Mounting thread A' Non-wetted parts mate Process flange screws Stainless steel Stainless steel Standard version International version, documentation in 5 la Explosion protection Without With ATEX, Type of process flange safety (EE - "Explosion-proof (EI - "Intrinsic safety and (EEx ia + EEx d)" " In (Zone 2)" "Intrinsic safety, expand dust explosion (EEx ia + EEx d + Z With FM + CSA, Type - "Intrinsic safety and (is + xp)"	ess flange ²⁾ 10 to DIN 19213 16-20 UNF to EN 61518 Electronics housing Die-cast aluminium Stainless steel precision casting ⁶⁾ English label inscriptions, anguages on CD rotection: x ia)" Ex d)" ⁷⁾ explosion-proof enclosure protection Cone 1D/2D)" ⁸⁾ of protection: L'explosion-proof	-	4	2 3 1 2 A B D P E R	c
Vent on side of proces Mounting thread M' Mounting thread A' Non-wetted parts mate Process flange screws Stainless steel Stainless steel Standard version International version, documentation in 5 la Explosion protection Without With ATEX, Type of process flange safety (EE - "Explosion-proof (EI - "Intrinsic safety and (EEx ia + EEx d)"8) - "in (Zone 2)" "Intrinsic safety, expand dust explosion (EEx ia + EEx d + Z With FM + CSA, Type - "Intrinsic safety and (is + xp)" "Intrinsic safety and (is + xp)" Electrical connection Mounting thread M' Version	ess flange ²⁾ 10 to DIN 19213 16-20 UNF to EN 61518 Electronics housing Die-cast aluminium Stainless steel precision casting ⁶⁾ English label inscriptions, anguages on CD rotection: x ia)" Ex d)" ⁷⁾ explosion-proof enclosure protection cone 1D/2D)" ⁸⁾ of protection: explosion-proof explosion-proof	-	4	2 3 1 2 A B D P E R	C
Vent on side of proces Mounting thread M' Mon-wetted parts mate Process flange screws Stainless steel Stainless steel Stainless steel Stainless steel Version Standard version International version, documentation in 5 la Explosion protection Without With ATEX, Type of process flange safety (EE - "Explosion-proof (EI - "Intrinsic safety and (EEx ia + EEx d)"	ess flange ²⁾ 10 to DIN 19213 16-20 UNF to EN 61518 Electronics housing Die-cast aluminium Stainless steel precision casting ⁶⁾ English label inscriptions, anguages on CD rotection: x ia)" Ex d)" ⁷⁾ explosion-proof enclosure protection Cone 1D/2D)" ⁸⁾ of protection: l explosion-proof / cable entry 3.5 ⁹⁾	-	4	2 3 1 2 A B D P E R	A
Vent on side of proces Mounting thread M' Mounting thread A' Non-wetted parts mate Process flange screws Stainless steel Stainless safety (EE - "Intrinsic safety and (EEx ia + EEx d)" Stainless safety and (EEx ia + EEx d + Z STAINLESS S	ess flange 2) 10 to DIN 19213 16-20 UNF to EN 61518 Electronics housing Die-cast aluminium Stainless steel precision casting ⁶) English label inscriptions, anguages on CD Totection: x ia)" Ex d)" ⁷) explosion-proof enclosure protection Cone 1D/2D)" ⁸) of protection: Lexplosion-proof Lexplosion-proof Lexplosion-proof Lexplosion-proof Lexplosion-proof Lexplosion-proof	-	4	2 3 1 2 A B D P E R	CABC
Vent on side of proces Mounting thread M' Mon-wetted parts mate Process flange screws Stainless steel Stainless steel Stainless steel Stainless steel Version Standard version International version, documentation in 5 la Explosion protection Without With ATEX, Type of process flange safety (EE - "Explosion-proof (EI - "Intrinsic safety and (EEx ia + EEx d)"	ess flange ²⁾ 10 to DIN 19213 16-20 UNF to EN 61518 Electronics housing Die-cast aluminium Stainless steel precision casting ⁶⁾ English label inscriptions, anguages on CD Totection: (x ia)" Ex d)" ⁷⁾ explosion-proof enclosure protection Cone 1D/2D)" ⁸⁾ e of protection: I explosion-proof I cable entry 3.5 ⁹⁾ 11.5 NPT	-	4	2 3 1 2 A B D P E R	A B

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

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
- Only together with max. spans 250, 1600, 5000 and 30000 mbar (100.4, 240.9, 2008 inH₂O and 435 psi)
- When the manufacture's certificate M (calibration certificate) has to be ordered for transmitters with diaphragm seals, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the <u>total</u> combination is certified here.
- 5) Whe the acceptance test certificate 3.1 for transmitters with direct-connected diaphragm seals is ordered, this certificate must also be ordered with the corresponding seals.
- 6) Not together with Electrical connection "Screwed gland Pg 13.5" and "Han7D plug".
- Without cable gland, with blanking plug
- 8) With enclosed cable gland EEx ia and blanking plug
- 9) Not together with type of protection "Explosion-proof" and "n (zone 2)"
- 10) Cannot be used together with the following types of protection: "Explosion-proof" and "Intrinsic safety and explosion-proof"

DS III series for differential pressure and flow

for differential pressure and flow					
Selection and Orderin	g data	Order No.			
SITRANS P pressure t	ransmitters				
for differential pressur PN 32/160 (MWP 464/2	re and flow				
DS III PA series (PROF	IBUS PA)	7 M F 4 4 3 4 -			
DS III FF series (Found	dation Fieldbus)	7 M F 4 4 3 5 -			
		BARAN BARA			
Measuring cell filling	Measuring cell				
0	cleaning				
Silicone oil Inert liquid ¹⁾	Standard Grease-free	1			
Nominal measuring ra					
PN 32 (MWP 464 psi)	nge				
20 mbar ²⁾	(8.03 inH ₂ O)	В			
PN 160 (MWP 2320 psi)				
60 mbar	(24.09 inH ₂ O)	С			
250 mbar	(100.4 inH ₂ O)	D			
600 mbar	(240.9 inH ₂ O)	E			
1600 mbar	(642.4 inH ₂ O)	F			
5 bar 30 bar	(2008 inH ₂ O) (435 psi)	G H			
Wetted parts materials	,				
(stainless steel process					
Seal diaphragm	Parts of measuring cell				
Stainless steel	Stainless steel	Α			
Hastelloy	Stainless steel	В			
Hastelloy	Hastelloy	С			
Tantalum ³⁾	Tantalum	E			
Monel ²⁾ Gold ²⁾	Monel Gold	H			
Version as diaphragm s		Y			
Process connection	- Cai				
	T with flange connection				
Sealing screw opposi	•				
- Mounting thread M1	·	0			
- Mounting thread ⁷ / ₁₆	₃ -20 UNF to EN 61518	2			
• Venting on side of pro	cess flanges ²⁾				
 Mounting thread M1 	0 to DIN 19213	4			
 Mounting thread ⁷/₁₆ 	₃ -20 UNF to EN 61518	6			
Non-wetted parts mate	erials				
Process flange screws					
Stainless steel	Die-cast aluminium	2			
Stainless steel	Stainless steel precision	3			
Varaian	casting				
Version • Standard version		1			
	English label inscriptions,	2			
documentation in 5 la					
Explosion protection					
• Without		А			
With CENELEC, Type "Intrinsis a sefet (FF)					
- "Intrinsic safety (EEx		B D			
- "Explosion-proof (EE	explosion-proof enclosure	P			
(EEx ia + EEx d)" ⁷⁾	evhingini-hinni etiningile				
- "n (Zone 2)" (planne	d)	E			
- "Intrinsic safety expl	osion-proof enclosure and	R			
dust explosion prote	for DS III FF)				
Zone 1D/2D)" (notWith FM + CSA, Type	of protection:				
- "Intrinsic safety and	explosion-proof	NC			
- "Intrinsic safety and (is + xp)" ⁶⁾	1 Fizz.				

Selection and Ordering data	Order No.
SITRANS P pressure transmitters for differential pressure and flow PN 32/160 (MWP 464/2320 psi)	
DS III PA series (PROFIBUS PA)	7 M F 4 4 3 4 -
DS III FF series (Foundation Fieldbus)	7 M F 4 4 3 5 -
Electrical connection / cable entry	
Screwed gland M20x1.5	В
• Screwed gland ½-14 NPT	C
 M12 connectors (metal)⁸⁾ 	F
Display	
 Without (digital display hidden) 	1
 With visible digital indication 	6
With customer-specific digital indication (setting as specified, Order code "Y21" or required)	7

Included in delivery of the device:

- Brief instructions (Leporello)
- CD-ROM with detailed documentation
- Sealing plug(s) or sealing screw(s) for the process flanges(s)
- 1) For oxygen application, add Order code E10.
- 2) 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) When the manufacture's certificate M (calibration certificate) has to be ordered for transmitters with diaphragm seals, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.
- 5) Whe the acceptance test certificate 3.1 for transmitters with direct-connected diaphragm seals is ordered, this certificate must also be ordered with the corresponding seals.
- 6) Without cable gland, with blanking plug.
- 7) With enclosed cable gland EEx ia and blanking plug.
- 8) Cannot be used together with the following types of protection: "Explosion-proof" and "Intrinsic safety and explosion-proof".

DS III series for differential pressure and flow

	0 1			
Selection and Ordering data	Order	code HART	PA	FF
Further designs Add "-Z" to Order No. and specify Order code.		HAKI	PA	FF
Pressure transmitter with mounting bracket made of:				
Steel	A01	1	1	1
Stainless steel	A02	✓	✓	✓
O-rings for process flanges				
(instead of FPM (Viton)) • PTFE (Teflon)	A20		1	
FEP (with silicone core, approved for food)	A20 A21	\ \ \	1	1
• FFPM (Kalrez, compound 4079)	A22	✓	✓	1
• NBR (Buna N)	A23	/	✓	-
Plug • Han 7D (metal, gray)	A30	/		
• Han 8U (instead of Han 7D)	A31	/		
Sealing screws	A40	1	1	1
1/4-18 NPT, with valve in mat. of process flanges				
Cable sockets for M12 connectors (metal)	A50	✓	✓	~
Rating plate inscription (instead of German) • English	B11		/	/
• French	B12	v	V	1
• Spanish	B13	✓	✓	1
Italian	B14	V	✓	V
English rating plate (calibration certificate) Pressure units in inH ₂ O or psi	B21	✓	✓	1
Manufacturer's test certificate M ¹⁾ To DIN 55350, Part 18 and to ISO 8402	C11	✓	✓	√
Acceptance test certificate ²⁾ To EN 10 204-3.1	C12	✓	✓	1
Factory certificate To EN 10 204-2.2	C14	✓	✓	1
"Functional Safety (SIL)" certificate	C20	✓		
"PROFIsafe" certificate and protocol	C21		✓	
Setting of upper limit of output signal to 22.0 mA	D05	✓		
Manufacturer's declaration acc. to NACE (only together with seal diaphragm made of Hastelloy and stainless steel)	D07	✓	✓	*
Type of protection IP68 (not together with 7D/	D12	✓	✓	1
Han 8U plug, cable gland Pg 13.5)				
Digital indicator alongside the input keys (only together with the devices 7MF44332A.6 orA.7-Z, Y21 or Y22 + Y01)	D27	√	✓	✓
Process flange screws made of Monel (max. nominal pressure PN20)	D34	✓	✓	1
Supplied with oval flange set	D37	✓	✓	1
(2 items), PTFE packings and screws in thread of process flanges				
Use in or on zone 1D/2D	E01	✓	✓	1
(only together with type of protection "Intrinsic safety (EEx ia)")				
Use on zone 0 (only together with type of protection "Intrinsic safety (EEx ia)")	E02	*	✓	√
TÜV approval to AD/TRD (only together with type of protection "Intrinsic safety (EEx ia)")	E06	✓		
Overfilling safety device for flammable and non-flammable liquids (max. PN 32 (MVWP 464 psi), basic device with type of protection "Intrinsic safety (EEx ia)", to WHG and VbF, not together with measuring cell filling "inert liquid")	E08	1	√	✓

Selection and Ordering data Order code				
Further designs Add "-Z" to Order No. and specify Order code.		HART	PA	FF
Oxygen application (max. 160 bar (2320 psi) with oxygen measurement and inert liquid)	E10	√	✓	✓
Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)	E25	*	✓	✓
Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)	E55	*	✓	1
Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)	E56	*	✓	✓
Explosion-proof "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)	E57	*	✓	✓
Interchanging of process connection side	H01	✓	✓	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) ³⁾	H03	*	✓	✓
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	* * *	* * *	* * *
For ½-14 NPT inner process connection on the side in the middle of the process flange, vent valve not possible				

✓ = available

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

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

³⁾ Not suitable for connection of remote seal

DS III series for differential pressure and flow

	0 1			
Selection and Ordering data	Order			
Additional data		HART	PA	FF
Add "-Z" to Order No. and specify Order code.				
Measuring range to be set Specify in plain text:				
With linear characteristic (max. 5 digits): Y01: up to mbar, bar, kPa, MPa, psi	Y01	✓		
With square-rooted characteristic (max. 5 digits):	Y02	/		
Y01: up to mbar, bar, kPa, MPa, psi				
Measuring point number (TAG No.) Max. 16 char., specify in plain text: Y15:	Y15	✓	✓	✓
Measuring point text	Y16	1	1	1
Max. 27 char., specify in plain text: Y16:				
Entry of HART address (TAG)	Y17	✓		
Max. 8 char., specify in plain text: Y17:				
Setting of pressure indicator in pressure	Y21	✓	✓	1
units Specify in plain text (standard setting: mA):				
Y21: mbar, bar, kPa, MPa, psi,				
Note:				
The following pressure units can be selected: bar, mbar, mm H ₂ O ^{*)} , inH ₂ O ^{*)} , ftH ₂ O ^{*)} , mmHG, inHG, psi, Pa, kPa, MPa, g/cm ² ,				
kg/cm ² , Torr, ATM oder % *) ref. temperature 20 °C				
Setting of pressure indicator in	Y22	1		
non-pressure units	1)+			
Specify in plain text:	Y01 or Y02			
Y22: up to I/min, m ³ /h, m, USgpm, (specification of measuring range in pressure	102			
units "Y01" or "Y02" 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

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

DS III series for differential pressure and flow

Selection and Ordering		Order No	
SITRANS P pressure t tial pressure and flow, PN 420 (MWP 6092 psi	ransmitters for differen- Series DS III HART)	7 M F 4 5	3 3 -
Measuring cell filling	Measuring cell		
Silicone oil	cleaning Standard	1	
Span			
2.5 250 mbar	(1.004 100.4 inH ₂ O)	D	
6 600 mbar	(2.409 240.9 inH ₂ O)	Е	
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 materials			
stainless steel process			
Seal diaphragm	Parts of measuring cell		
Stainless steel	Stainless steel	Α	
Hastelloy	Stainless steel	В	
Gold ¹⁾	Gold	L	
Process connection			
	T with flange connection		
 Sealing screw opposit 	•		
- Mounting thread M1		1	
- Mounting thread ⁷ / ₁₆		3	
 Venting on side of pro 			
- Mounting thread M1		5	
- Mounting thread ⁷ / ₁₆		7	
Non-wetted parts mate		- 1	
Process flange screws	Electronics housing		
Stainless steel	Die-cast aluminium	2	
Stainless steel	Stainless steel precision casting ²⁾	3	
Version		_	
 Standard version 			1
 International version, I documentation in 5 la 	English label inscriptions, nguages on CD		2
Explosion protection			
Without			Α
With ATEX, Type of pro			
- "Intrinsic safety (EEx	,		В
- "Explosion-proof (EE			D
	explosion-proof enclosure		Р
(EEx ia + EEx d)" ⁴⁾			
- "n (Zone 2)"			E
- "Intrinsic safety, expl	osion-proof enclosure and		R
dust explosion prote	ection (EEx ia + EEx d +		
• With FM + CSA, Type			
- "Intrinsic safety and			NC
(is + xp)" ³⁾ , max PN			.,,
Electrical connection /		_	
Screwed gland Pg 13			Α
			В
 Screwed gland M20x² 			С
 Screwed gland ½-14 l 	NPT		C
 Screwed gland ½-14 I 	NPT nousing) incl. mating		D
 Screwed gland M20x² Screwed gland ½-14 l Han 7D plug (plastic han 7D plug) M12 connectors (meta) 	nousing) incl. mating		

Selection and Ordering data	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 -	
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	

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

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

- $^{1)}$ Not together with max. span 600 mbar (240.9 inH $_2$ O)
- 2) Not together with Electrical connection "Screwed gland Pg 13.5" and "Han7D plug".
- 3) Without cable gland, with blanking plug

- Without caple giarid, with planting plug
 With enclosed cable gland EEx ia and blanking plug
 Not together with type of protection "Explosion-proof" and "n (zone 2)"
 Cannot be used together with the following types of protection: "Explosion-proof" and "Intrinsic safety and explosion-proof".

for differential pressure and flow

Selection and Ordering data SITRANS P pressure transmitters for differential pressure and flow, Series DS III HART PN 420 (MWP 6092 psi) DS III PA (PROFIBUS PA) series TMF 4 5 3 4 - DS III FF series (Foundation Fieldbus) Nominal measuring range 250 mbar (100.4 inH ₂ O) D60 mbar (240.9 inH ₂ O) E 1600 mbar (642.4 inH ₂ O) F 5 bar (2008 inH ₂ O) G G G Mbar (435 psi) H Wetted parts materials (stainless steel process flanges) Seal diaphragm Parts of measuring cell Stainless steel Stainless steel A Hastelloy Stainless steel Forcess connection Female thread '4-18 NPT with flange connection • Sealing screw opposite process connection • Mounting thread M12 to DIN 19213 1 • Mounting thread M12 to DIN 19213 1 • Mounting thread M12 to DIN 19213 5 • Wenting on side of process flanges Process flange screws Electronics housing Stainless steel Die-cast aluminium 5 Stainless steel Die-cast aluminium 2 Stainless steel Die-cast aluminium 2 Stainless steel Die-cast aluminium 5 Stainless steel Die-cast aluminium 6 • Standard version 5 • Intrinsic safety (EEx a)* • "Explosion-proof (EEx d)* • "Intrinsic safety (EEx a)* • "Explosion-proof (EEx d)* • "Intrinsic safety (EEx a)* • "Explosion-proof (EEx d)* • "Intrinsic safety and explosion-proof enclosure and dust explosion protection (EEx ia + EEx d)* • "Intrinsic safety and explosion-proof enclosure and dust explosion protection (EEx ia + EEx d)* • "Intrinsic safety and explosion-proof (is + xp)** • "With Ut (digital display hidden) • With visible digital indicator • With customer-specific digital indicator (setting as specified, Order code "V21" or required) • With cust				
tial pressure and flow, Series DS III HART PN 420 (MWP 6092 psi) DS III PA (PROFIBUS PA) series TMF 4 5 3 4 - DS III FF series (Foundation Fieldbus) Nominal measuring range 250 mbar (100.4 inH ₂ O)			Order	No.
Nominal measuring range 250 mbar (100.4 inH ₂ O)	tial pressure and flo	w, Series DS III HART		
Nominal measuring range 250 mbar (100.4 inH ₂ O)	DS III PA (PROFIBUS	S PA) series	7 M F 4	5 3 4 -
Nominal measuring range 250 mbar (100.4 inH ₂ O) D 600 mbar (240.9 inH ₂ O) E 1600 mbar (642.4 inH ₂ O) F 5 bar (2008 inH ₂ O) G 30 bar (435 psi) H Wetted parts materials (stainless steel process flanges) Seal diaphragm Parts of measuring cell Stainless steel process flanges) Seal diaphragm Parts of measuring cell Stainless steel Stainless steel Gold D Focess connection Female thread ½-18 NPT with flange connection - Sealing screw opposite process connection - Mounting thread M12 to DIN 19213 - Mounting thread M12 to DIN 19213 - Mounting thread M12 to DIN 19213 - Mounting thread flat to DIN 19213 -	DS III FF series (Fou	indation Fieldbus)	7 M F 4	535-
250 mbar (100.4 inH ₂ O) B (600 mbar (240.9 inH ₂ O) E (600 mbar (642.4 inH ₂ O) F (5 bar (2008 inH ₂ O) G (30 bar (435 psi) H			1	
250 mbar (100.4 inH ₂ O) B (600 mbar (240.9 inH ₂ O) E (600 mbar (642.4 inH ₂ O) F (5 bar (2008 inH ₂ O) G (30 bar (435 psi) H	Nominal measuring	range	_	
5 bar (2008 inH₂O) G 30 bar (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 Gold¹¹ Gold L Process connection Female thread ⅓-18 NPT with flange connection • Sealing screw opposite process connection • Sealing screw opposite process connection • Mounting thread M12 to DIN 19213 • Mon-wetted parts materials Process flange screws Electronics housing Stainless steel Die-cast aluminium Stainless steel Stainless steel precision casting Version • Standard version, English label inscriptions, documentation in 5 languages on CD Explosion protection • Without • Without • Without • Without • Without • Without • CENELEC, Type of protection: • "Intrinsic safety (EEx ia)" • "Explosion-proof (EEx d)"²²⟩ • "n (Zone 2)" (planned) • "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)*³³ (not for DS III FF) • With FM + CSA, Type of protection: • "Intrinsic safety and explosion-proof (iEx ia + EEx d + Zone 1D/2D)*³³ (not for DS III FF) • With FM + CSA, Type of protection: • "Intrinsic safety and explosion-proof (is + xp)*²² max PN 360 Electrical connection / cable entry • Screwed gland M2∞1.5 • Screwed gland M2∞1.	250 mbar 600 mbar	(100.4 inH ₂ O) (240.9 inH ₂ O)	E	
Wetted parts materials (stainless steel process flanges) Seal diaphragm Parts of measuring cell Stainless steel Stainless steel A Hastelloy Stainless steel B Gold¹¹ Gold L Process connection Female thread ¼-18 NPT with flange connection • Sealing screw opposite process connection • Mounting thread M12 to DIN 19213 1 • Mounting thread 7¹₁6-20 UNF to EN 61518 3 • Venting on side of process flanges • Mounting thread M12 to DIN 19213 5 • Mon-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 English label inscriptions, documentation in 5 languages on CD Explosion protection • Without • With CENELEC, Type of protection: - "Intrinsic safety (EEx ia)" 2 - "Explosion-proof (EEx d)*2² D - "Intrinsic safety (EEx ia)" B - "Intrinsic safety, explosion-proof enclosure (EEx ia + EEx d)*3² C - "In (Zone 2)" (planned) E - "Intrinsic safety and explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)*3³ (not for DS III FF) • With FM + CSA, Type of protection: - "Intrinsic safety and explosion-proof (is + xp)*2², max PN 360 Electrical connection / cable entry • Screwed gland M20x1.5 • Screwed gland M20x1.5 • Screwed gland M2-14 NPT C • Plug M12 incl. mating connector 4¹ • With visible digital indicator 1 • With visible digital indicator	5 bar	(2008 inH ₂ O)	G	
(stainless steel process flanges) Seal diaphragm Parts of measuring cell Stainless steel Stainless steel A Hastelloy Stainless steel B Gold Gold L Process connection Female thread ¼-18 NPT with flange connection • Sealing screw opposite process connection - Mounting thread M12 to DIN 19213 - Mounting thread 7/16-20 UNF to EN 61518 • Venting on side of process flanges - Mounting thread M12 to DIN 19213 - Mon-wetted parts materials Process flange screws Electronics housing Stainless steel Die-cast aluminium Stainless steel Stainless steel precision casting Version • Standard version, English label inscriptions, documentation in 5 languages on CD Explosion protection • Without • With CENELEC, Type of protection: - "Intrinsic safety (EEx ia)" - "Explosion-proof (EEx d)*2) - "Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d)*3) - "n (Zone 2)" (planned) - "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)*3 (not for DS III FF) • With FM + CSA, Type of protection: - "Intrinsic safety and explosion-proof (is + xp)**2, max PN 360 Electrical connection / cable entry • Screwed gland M20x1.5				
Seal diaphragm Parts of measuring cell Stainless steel Stainless steel Hastelloy Gold Process connection Female thread ¼-18 NPT with flange connection • Sealing screw opposite process connection • Mounting thread M12 to DIN 19213 • Stainless steel Pilutiness steel Stainless steel precision casting Version • Standard version • Standard version • Standard version • Without • With CENELEC, Type of protection: • "Intrinsic safety (EEx ia)" • "Explosion-proof (EEx d)" ²⁾ • "Intrinsic safety and explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)* ²³ (not for DS III FF) • With FM + CSA, Type of protection: • "Intrinsic safety and explosion-proof (is + xp)" ²⁾ , max PN 360 Electrical connection / cable entry • Screwed gland M20x1.5 • Screwed gland M20x1.5 • Screwed gland ½-14 NPT • Plug M12 incl. mating connector ⁴⁾ Display • Without (digital display hidden) • With visible digital indicator	•			
Hastelloy Gold Process connection Female thread ½-18 NPT with flange connection • Sealing screw opposite process connection - Mounting thread M12 to DIN 19213 • Mounting thread 7/ ₁₆ -20 UNF to EN 61518 • Venting on side of process flanges - Mounting thread M12 to DIN 19213 • Mounting thread M12 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 Die-cast aluminium Stainless steel Precision casting Version • Standard version • International version, English label inscriptions, documentation in 5 languages on CD Explosion protection • With CENELEC, Type of protection: - "Intrinsic safety (EEx ia)" - "Explosion-proof (EEx d)" ²⁾ - "Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d)" ³⁾ (EEx ia + EEx d)" ³⁾ (Fund for DS III FF) • With FM + CSA, Type of protection: - "Intrinsic safety and explosion-proof (is + xp)" ²⁾ , max PN 360 Electrical connection / cable entry • Screwed gland ½-14 NPT • Plug M12 incl. mating connector ⁴⁾ Display • Without (digital display hidden) • With visible digital indicator				
Gold 1) Frocess connection Female thread ¼-18 NPT with flange connection • Sealing screw opposite process connection • Mounting thread M12 to DIN 19213 • Mon-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 CENELEC, Type of protection: • "Intrinsic safety (EEx ia)" • "Explosion-proof (EEx di)*2) • "Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d)*3) • "n (Zone 2)" (planned) • "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)*3) (not for DS III FF) • With FM + CSA, Type of protection: • "Intrinsic safety and explosion-proof (is + xp)*2), max PN 360 Electrical connection / cable entry • Screwed gland ½-14 NPT • Screwed gland ½-14 NPT • Plug M12 incl. mating connector 4) Display • Without (digital display hidden) • With visible digital indicator	Stainless steel	Stainless steel	Α	
Process connection Female thread ¼-18 NPT with flange connection • Sealing screw opposite process connection • Mounting thread M12 to DIN 19213 • Mounting thread M12 to DIN 19213 • Venting on side of process flanges • Mounting thread M12 to DIN 19213 • Standard Version • Standard version • Stainless steel • Stainless steel precision • Stainless steel precision • Standard version • Standard version • Standard version • International version, English label inscriptions, documentation in 5 languages on CD Explosion protection • With CENELEC, Type of protection: • "Intrinsic safety (EEx ia)" • "Explosion-proof (EEx d)*²² • "Kaplosion-proof (EEx d)*²² • "In (Zone 2)" (planned) • "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)*³³ (not for DS III FF) • With FM + CSA, Type of protection: • "Intrinsic safety and explosion-proof (is + xp)*²², max PN 360 Electrical connection / cable entry • Screwed gland M20x1.5			В	
Female thread 1/4-18 NPT with flange connection Sealing screw opposite process connection Mounting thread M12 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 Standard version International version, English label inscriptions, documentation in 5 languages on CD Explosion protection Without With CENELEC, Type of protection: "Intrinsic safety (EEx ia)" "Explosion-proof (EEx d)*2) "Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d)*3) "In (Zone 2)" (planned) "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)*3)" (not for DS III FF) With FM + CSA, Type of protection: "Intrinsic safety and explosion-proof (is + xp)*2), max PN 360 Electrical connection / cable entry Screwed gland M20x1.5 Screwed gland M20x1.5 Screwed gland ½-14 NPT Plug M12 incl. mating connector 4) Display Without (digital display hidden) With visible digital indicator				
 Sealing screw opposite process connection - Mounting thread M12 to DIN 19213 - Mounting thread ⁷/₁₆-20 UNF to EN 61518 Venting on side of process flanges - Mounting thread M12 to DIN 19213 - Mounting thread M12 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 Stainless steel Precision Casting Version Stainless steel Stainless steel precision Casting Version Stainless steel Stainless steel Precision Casting Version Stainless steel Stainless steel Precision Casting Version Stainless steel Precision Stainless steel Precision Casting Without With CENELEC, Type of protection: - "Intrinsic safety (EEx ia)" - "Explosion-proof (EEx d)"²⁾ - "Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d)"³ - "In (Zone 2)" (planned) - "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)" (not for DS III FF) With FM + CSA, Type of protection: - "Intrinsic safety and explosion-proof (is + xp)" (not for DS III FF) With FM + CSA, Type of protection: - "Intrinsic safety and explosion-proof (is + xp)" (not for DS III FF) Screwed gland M20x1.5 - Screwed gland M20x1.5 - Without (digital display hidden) - Without (digital display hidden) - With visible digital indicator 				
- Mounting thread M12 to DIN 19213 - Mounting thread ⁷ / ₁₆ -20 UNF to EN 61518 • Venting on side of process flanges - Mounting thread M12 to DIN 19213 - Mounting thread M12 to DIN 19213 - Mounting thread M12 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 • Standard version • International version, English label inscriptions, documentation in 5 languages on CD Explosion protection • Without • With CENELEC, Type of protection: - "Intrinsic safety (EEx ia)" - "Explosion-proof (EEx d)* ²) - "Intrinsic safety, explosion-proof enclosure (EEx ia + EEx d)* ³) - "n (Zone 2)" (planned) - "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)* ³) (not for DS III FF) • With FM + CSA, Type of protection: - "Intrinsic safety and explosion-proof (is + xp)* ²), max PN 360 Electrical connection / cable entry • Screwed gland M20x1.5 • Screwed gland ½-14 NPT • Plug M12 incl. mating connector ⁴) Display • Without (digital display hidden) • With visible digital indicator		<u> </u>		
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• Standard version • International version, English label inscriptions, documentation in 5 languages on CD Explosion protection • Without • With CENELEC, Type of protection: - "Intrinsic safety (EEx ia)" - "Explosion-proof (EEx d)" ²⁾ - "Intrinsic safety and explosion-proof enclosure (EEx ia + EEx d)" ³⁾ - "n (Zone 2)" (planned) - "Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + Zone 1D/2D)" ³⁾ (not for DS III FF) • With FM + CSA, Type of protection: - "Intrinsic safety and explosion-proof (is + xp)" ²⁾ , max PN 360 Electrical connection / cable entry • Screwed gland M20x1.5 • Screwed gland M20x1.5 • Screwed gland ½-14 NPT • Plug M12 incl. mating connector ⁴⁾ Display • Without (digital display hidden) • With visible digital indicator		Stainless steel precision		
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dust explosion protection (EEx ia + EEx d + Zone 1D/2D)*3) (not for DS III FF) • With FM + CSA, Type of protection: - "Intrinsic safety and explosion-proof (is + xp)*2), max PN 360 Electrical connection / cable entry • Screwed gland M20x1.5 • Screwed gland ½-14 NPT CPlug M12 incl. mating connector 4) Fibisplay • Without (digital display hidden) • With visible digital indicator				E
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Display • Without (digital display hidden) • With visible digital indicator 6				
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With visible digital indicator		olav hidden)		1
With customer-specific digital indicator (setting	, , ,	,		
	• With customer-spec	cific digital indicator (setting		7

- Included in delivery of the device:
- Brief instructions (Leporello)
- CD-ROM with detailed documentation
- Sealing plug(s) or sealing screw(s) for the process flanges(s)

- Not together with max. span 600 mbar (240.9 inH₂O)
 Without cable gland, with blanking plug.
- 3) With enclosed cable gland EEx ia and blanking plug.
- 4) Not together with types of protection "Explosion-proof" and "Intrinsic safety and explosion-proof"

DS III series for differential pressure and flow

Selection and Ordering data	Order code			
Further designs		HART	PA	FF
Add "-Z" to Order No. and specify Order code.				
Pressure transmitter with mounting				
bracket made of:				_ ا
Steel Stainless steel	A01 A02	1	1	1
	AUZ	•	•	•
O-rings for process flanges (instead of FPM (Viton))				
PTFE (Teflon)	A20	1	1	1
• FEP (with silicone core, approved for food)	A21	✓	✓	✓
 FFPM (Kalrez, compound 4079) 	A22	✓	1	1
• NBR (Buna N)	A23	✓	✓	✓
Plug				
Han 7D (metal, gray)Han 8U (instead of Han 7D)	A30 A31	1		
,	A40	*	1	
Sealing screws 1/4-18 NPT, with valve in material of process flanges	A40	•	•	ľ
Cable sockets for M12 connectors (metal)	A50	1	1	1
Rating plate inscription				
(instead of German)				
• English	B11	✓	✓	✓
• French	B12	V	1	1
Spanish Italian	B13 B14	4	1	1
	B14 B21	/	v	1
English rating plate Pressure units in inH ₂ O or psi	DZ I	•	٧	•
Manufacturer's test certificate M	C11	✓	✓	1
(calibration certificate) To DIN 55350, Part 18 and to ISO 8402				
Acceptance test certificate To EN 10204-3.1	C12	✓	✓	1
Factory certificate To EN 10204-2.2	C14	✓	✓	1
"Functional Safety (SIL)" certificate	C20	//		
"PROFIsafe" certificate and protocol	C21		1	
·	D05		•	
Setting of upper limit of output signal to 22.0 mA	DUS	*		
Manufacturer's declaration acc. to NACE	D07	1	1	1
(only together with seal diaphragm made of Hastelloy and stainless steel)				
Type of protection IP68	D12	✓	1	1
(not together with Han 7D / Han 8U plug, Pg 13.5 screwed gland)				
Digital indicator alongside the input keys (only together with the devices 7MF45332A.6 orA.7-Z, Y21 or Y22 + Y01)	D27	✓	✓	1
Supplied with oval flange set	D37	1	1	1
(2 items), PTFE packings and screws in thread of process flanges	20,			
Use in or on zone 1D/2D	E01	1	✓	1
(only together with type of protection "Intrinsic safety (EEx ia)")				
Use on zone 0	E02	✓	✓	1
(only together with type of protection "Intrinsic safety (EEx ia)")				
Explosion-proof "Intrinsic safety" to	E25	✓	✓	1
INMETRO (Brazil) (only for transmitter 7MF4B)				
Explosion-proof "Intrinsic safety" to	E55	1	1	1
NEPSI (China)	_00			
(only for transmitter 7MF4B)				

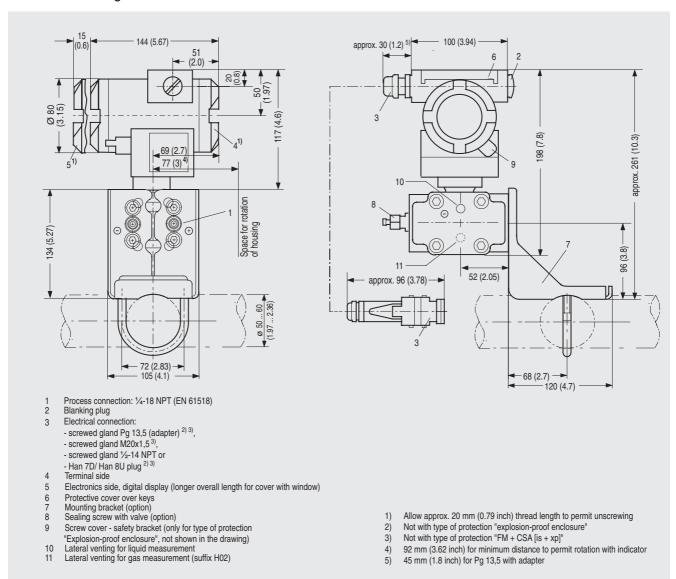
Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add "-Z" to Order No. and specify Order code.				
Explosion protection "Explosion-proof" to NEPSI (China)	E56	√	✓	1
(only for transmitter 7MF4				
Explosion-proof "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)	E57	✓	✓	✓
Interchanging of process connection side	H01	✓	1	1
Stainless steel process flanges for vertical differential pressure lines	H03	✓	✓	1
Additional data				
Add "-Z" to Order No. and specify Order code.				
Measuring range to be set				
Specify in plain text: • With linear characteristic (max. 5 digits):	Y01	✓	✓	
Y01: up to mbar, bar, kPa, MPa, psi With square-rooted characteristic (max. 5	Y02	1	1	
digits):				
Y01: up to mbar, bar, kPa, MPa, psi	V45		,	
Measuring point number (TAG No.) Max. 16 characters, specify in plain text: Y15:	Y15	v	•	•
Measuring point text	Y16	✓	1	1
Max. 27 characters, specify in plain text: Y16:				
Entry of HART address (TAG) Max. 8 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/cm ² ,				
kg/cm ² , Torr, ATM or % *) ref. temperature 20 °C				
Setting of pressure indication in	Y22 +	✓		
non-pressure units Specify in plain text:	Y01 or Y02			
Y22: up to I/min, m ³ /h, m, USgpm,				
(specification of measuring range in pressure units "Y01" or "Y02" is essential, unit with max. 5 characters)				
Preset bus address	Y25		1	
Specify in plain text:				
Y25:				

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

^{✓ =} available

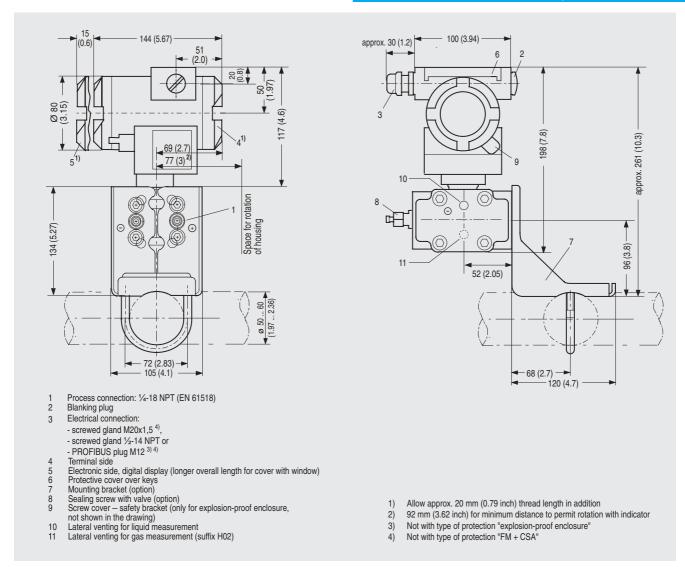
DS III series for differential pressure and flow

Dimensional drawings



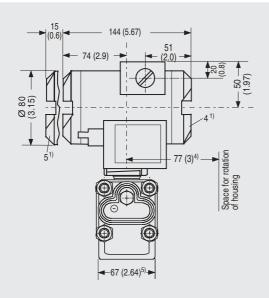
SITRANS P pressure transmitters, DS III HART series for differential pressure and flow, dimensions in mm (inch)

DS III series for differential pressure and flow



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

DS III series for differential pressure and flow



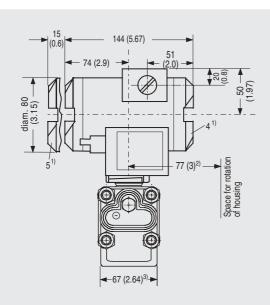
approx. 96 (3.78) approx. 217 (8.54)7) Ð Θ approx. 84,6 (3.33)-

- 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)

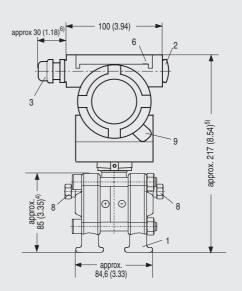
- Allow approx. 20 mm (0.79 inch) thread length to permit unscrewing
- Not with type of protection "explosion-proof enclosure"
- Not with type of protection "FM + CSA [is + xp]"
- 92 mm (3.6 inch) for minimum distance to permit rotation with indicator
- 74 mm (2.9 inch) for PN \geq 420 (MWP \geq 6092 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)



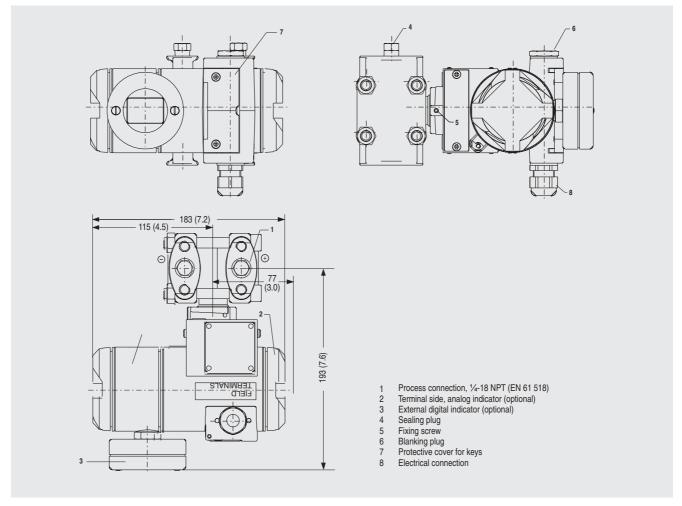
- Allow approx. 20 mm (0.79 inch) thread length in addition
- 92 mm (3.6 inch) for minimum distance to permit rotation without indicator
- 74 mm (2.9 inch) for PN \geq 420 (MWP \geq 6092 psi)
- 4) 91 mm (3.6 inch) for PN \geq 420 (MWP \geq 6092 psi)
- 5) 219 mm (8.62 inch) for PN \geq 420 (MWP \geq 6092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

MART PROFIBUS PA or Foundation Fieldbus	SITRANS P, DS III series for level					
Level Spans (infinitely adjustable) or normal measuring research max. peritisable working pressure 25 250 mbar g (0.36 36.9 ps g) (0.37 32.9 ps g) (0.37		HART		PROFIBUS PA or Four	ndation Fieldbus	
Span	Input			•		
Paragraphic processure Paragraphic pressure Paragraphic pres	Measured variable	Level				
Sec. 200 mag of Sec. 200 m	nominal measuring range and	Span				
(0.368.7 psi g)	max. pemissible working pressure		See "Mounting flange"		See "Mounting flange"	
(0.77. 2.3 2 psi g)			See "Mounting flange"		See "Mounting flange"	
Care			See "Mounting flange"		See "Mounting flange"	
• Measuring cell with silicone oil filling -100% of max. span or 30 mbar (0.435 psi a), depending on mounting flange Output 100% of max. span 100% of the max. nominal measuring range 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 2.05 mA or optionally signal - Load • Without HART communication Rg ≤ (U _H * 10.5 V)/0.023 Å in Ω - • With the the the the third of third o			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 3.84 mA 23 mA, factory preset to 20.5 mA or optionally set to 22.0 mA or optionally set to 20.0 mA or optionally set to 22.0 mA or optionally set to 20.0 mA or optionally set to 20	Lower measuring limit		1		1	
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	Measuring cell with silicone oil filling	-100% of max. span or	30 mbar (0.435 psi a), de	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 - • Upper limit (infinitely adjustable) 23 mA, factory preset to 20.5 mA or optionally set to 22.0 mA - • Without HART communication PB ≤ (U _H - 10.5 V)/0.023 A in Ω U _H : Power supply in V - • With HART communication PB = 230 1100 Ω (SIMATIC PDM) or PB = 230 1100 Ω (HART Communicator) - Physical bus - - • With polarity reversal protection - IEC 61158-2 Accuracy To EN 60770-1 Increasing characteristic. start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil filling, room temperature 25 °C (77 °F)) r: Span ratio (r = max. span / set span) • Linear characteristic - r ≤ 10 ≤ 0.075% • Linear characteristic - s ≤ 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 pressure max. 70 bar g (1015 psi g) Influence of ambient temperature ≤ (0.25 · 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) Upper limit (infinitely adjustable) 23 mA, factory preset to 2.9 mA or optionally 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 = 230 100 Ω (HART Communicator) Physical bus To EN 60770-1 Increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil filling, room temperature 25 °C (77 °F)) r: Span ratio (r = max. span / set span) Error in measurement and fixed-point setting (including hysteresis and repeatability) Linear characteristic - r ≤ 10 - 10 < 1 ≤ 0.3% - 30 < r ≤ 100 Long-term drift (temperature change ±30 °C (±64 °F)) Influence of ambient temperature 4 = 1-0 +60 °C (14 140 °F) - 250-mbar (3.83 psi) measuring cell - 600-mbar (8.7 psi) measuring cell -	Output			II.		
• Upper limit (infinitely adjustable) 23 mA, factory preset to 20.5 mA or optionally set to 22.0 mA • Without HART communication • With thart communication • With HART communication • With HART communication • With HART communication • With HART communication • Physical bus With polarity reversal protection • CEC 61158-2 With polarity reversal protection • To EN 60770-1 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 fatio ($r = \text{max. span}$) set span) • Linear characteristic • r \leq 10 • 10 < r \leq 30 • 30 < r \leq 100 Long-term drift (temperature change $\pm 30 ^{\circ}\text{C}$ ($\pm 30 ^{\circ}\text{C}$) • (\pm	Output signal	4 20 mA		3	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) - Physical bus - IEC 61158-2 With polarity reversal protection To EN 60770-1 Increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil filling, room temperature 25 °C (77 °F)) r. Span ratio (r = max. span / set span) Error in measurement and fixed-point setting (including hysteresis and repeatability) ≤ 0,15% ≤ 0,075% • Linear characteristic ≤ 0,15% ≤ 0,075% • 10 < ≤ 30 ≤ 0,3% ≤ 0,075% ≤ (0.25 · 19% 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) Influence of ambient temperature • at -10 +60 °C (14 140 °F) ≤ (0.25 · r + 0.2)% (0.4 instead of 0.2 with 10 < r ≤ 30) ≤ 0,7% • 600-mbar (8.7 psi) measuring cell ≤ (0.25 · r + 0.2)% (0.4 instead of 0.2 with 10 < r ≤ 30) ≤ 0,5% • 1600 and 5000 mbar (23.2 and 72.5 psi) measuring cell ≤ (0.25 · r + 0.15)%/10 K double values with 10 < r ≤ 30 ≤ 0.4%/10 K double values with 10 < r ≤ 30 • 250-mbar (3.63 psi) measuring cell <td> Lower limit (infinitely adjustable) </td> <td>3.55 mA, factory prese</td> <td>t to 3.84 mA</td> <td>-</td> <td></td>	 Lower limit (infinitely adjustable) 	3.55 mA, factory prese	t to 3.84 mA	-		
• Without HART communication $P_{8} \le (U_{H} - 10.5 \text{ V}) (0.023 \text{ A in } \Omega, U_{H} : \text{Power supply in V})$ • With HART communication $P_{8} = 230 \dots 500 \Omega, \text{GMMATIC PDM}) \text{ or } R_{8} = 230 \dots 500 $	Upper limit (infinitely adjustable)		o 20.5 mA or optionally	-		
• With HART communication $R_{B} = 230 \dots 500 \Omega (SIMATIC PDM) or \ R_{B} = 230 \dots 1100 \Omega (HART Communicator)$ - IEC 61158-2 Yes **With polarity reversal protection - IEC 61158-2 Yes **Accuracy** Reference conditions	Load					
Physical bus - \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Without HART communication	$R_{\rm B} \le (U_{\rm H}$ - 10.5 V)/0,02 $U_{\rm H}$: Power supply in V	3 A in Ω,	-		
Accuracy To EN 60770-1 Yes Reference conditions Increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil filling, room temperature 25 °C (77 °F)) r: Span ratio (r = max. span / set span) Error in measurement and fixed-point setting (including hysteresis and repeatability) 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 To EN 60770-1 Reference conditions Increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil filling, room temperature 25 °C (77 °F)) r. Span ratio (r = max. span / set span) Error in measurement and fixed-point setting (including hysteresis and repeatability) 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 < 50.15%	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		
ing, room temperature 25 °C (77 °F)) r: Span ratio (r = max. span / set span) ing, room temperature 25 °C (77 °F)) r: Span ratio (r = max. span / set span) ing, room temperature 25 °C (77 °F)) r: Span ratio (r = max. span / set span) ing, room temperature 25 °C (77 °F)) r: Span ratio (r = max. span / set span) ing, room temperature 25 °C (77 °F)) r: Span ratio (r = max. span / set span) ing, room temperature 25 °C (77 °F)) r: Span ratio (r = max. span / set span) ing, room temperature 25 °C (77 °F)) r: Span ratio (r = max. span / set span) ing, room temperature 25 °C (77 °F)) r: Span ratio (r = max. span / set span) ing, room temperature 25 °C (77 °F)) r: Span ratio (r = max. span / set span) ing, room temperature 25 °C (77 °F)) r: Span ratio (r = max. span / set span) ing, room temperature 25 °C (77 °F)) r: Span ratio (r = max. span / set span) ing, room temperature 25 °C (77 °F)) r: Span ratio (r = max. span / set span) ing, room temperature 25 °C (77 °F)) r: Span ratio (r = max. span / set span) ing, room temperature 25 °C (77 °F)) r: Span ratio (r = max. span / set span) ing, room temperature 25 °C (77 °F)) r: Span ratio (r = max. span / set span) ing, room temperature 25 °C (77 °F)) r: Span ratio (r = max. span / set span) ing, room temperature 25 °C (77 °F) r: Span ratio (r = max. span / set span) ing, room temperature 25 °C (77 °F) r: Span ratio (r = max. span / set span) ing, room temperature 25 °C (77 °F) r: Span ratio (r = max. span / set span / span span ratio (r = max. span / set span / span span span span span span span span	Accuracy	To EN 60770-1		II.		
(including hysteresis and repeatability)	Reference conditions					
$ \begin{array}{llllllllllllllllllllllllllllllllllll$						
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	Linear characteristic			≤ 0,075%		
	- 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 • 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 • (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 + 0.2)% (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 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	- 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)		≤ (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 · r + 0.2)% (0.4 instead of 0.2 with 10 < r ≤ 0.45% ≤ (0.45 · r + 0.15)%/10 K ≤ (0.25 · r + 0.15)%/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 (8.7 psi) measuring cell - 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		10 < r ≤ 30)	≤ 0,5%		
$ \begin{array}{llllllllllllllllllllllllllllllllllll$			instead of 0.2 with 10 < r	≤ 0,45%		
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		
				≤ 0.27%/10 K		

DS III series for level

SITRANS P, DS III series for level					
	HART	PROFIBUS PA or Foundation Fieldbus			
Influence of static pressure					
• on the zero point					
- 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	Note: Always take into account assignment of missible working pressure of the respective fla	f max. permissible working temperature to max. peange connection!			
Measuring cell with silicone oil filling	-40 +100 °C (-40 +212 °F)				
- High-pressure side	$p_{abs} \ge 1bar: -40 \dots +175 °C (-40 \dots +347 °F)$ $p_{abs} \ge 1bar: -40 \dots +80 °C (-40 \dots +176 °F)$				
- Low-pressure side	-40 +100 °C (-40 +212 °F)	illo di cata cum lociono producation			
Ambient conditions	-20 +60 °C (-4 +140 °F) in conjunction with dust explosion protection				
Ambient temperature					
1	00 05 00 (00 405 05)				
- Digital indicators	-30 +85 °C (-22 +185 °F)				
• Storage temperature	-50 +85 °C (-58 +185 °F)				
Climatic class					
- Condensation	Permissible				
• Electromagnetic compatibility	T. FN 50004 4				
- Emitted interference	To EN 50081-1				
- Interference immunity	To EN 61326 and NAMUR NE 21				
Design					
Weight (without options) To EN (pressure transmitter with mounting	≈ 11 13 kg (≈ 24.2 28.7 lb)				
flange, without tube) To ASME (pressure transmitter with mounting flange, without tube)	≈ 11 18 kg (≈ 24.2 39.7 lb)				
Wetted parts materials	Poor in conner die-cast aluminium GD-AlSi12	or stainless steel precision casting, mat. No. 1.4408			
Housing material	Tool in copper dic-cast aluminium, GD-Alonz	or starriess steer precision easting, mat. No. 1.4400			
High-pressure side					
• Seal diaphragm of mounting flange	Stainless steel, mat. No. 1.4404/316L, Monel, Hastelloy C276, mat. No. 2.4819, Hastelloy C4	mat. No. 2.4360, Hastelloy B2, mat. No. 2.4617,			
Measuring cell filling	Silicone oil	.,			
Process connection					
High-pressure side	Flange to EN and ASME				
• Low-pressure side		ion with mounting thread M10 to DIN 19213 or			
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		ı			
Not Ex	-	932 V			
With intrinsically-safe operation	-	924 V			
Current consumption		ı			
Basic current (max.)	-	12.5 mA			
, ,		Yes			
 Startup current ≤ basic current 	=	165			
 Startup current ≤ basic current Max. current in event of fault 	-	15.5 mA			

DS III series for level

SITRANS P, DS III series for level		
	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 graggraph 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: $\begin{array}{l} U_i = 30 \text{ V, } I_i = 100 \text{ mA,} \\ P_i = 750 \text{ mW; } P_i = 300 \Omega \end{array}$	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	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{i} = 7 \mu H, C_{i} = 1.1 \text{ nF}$
• 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	s T4; s T6
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC	To circuits with values: $U_{\rm H}$ = 9 32 V DC
Dust explosion protection for zone 20	PTB 01 ATEX 2055	
- Identification	Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C	
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F)	
- Max.surface temperature	120 °C (248 °F)	
- Connection	To certified intrinsically-safe circuits with maximum values: U_i = 30 V, I_i = 100 mA, P_i = 750 mW, R_i = 300 Ω	FISCO supply unit: $U_0 = 17.5 \text{ V}$, $I_0 = 380 \text{ mA}$, $P_0 = 5.32 \text{ W}$ 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	
- 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 EDIV 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 E 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 level

for level	
HART communication	
HART communication	230 1100 Ω
Protocol	HART Version 5.x
Software for computer	SIMATIC PDM
PROFIBUS PA communication	
Simultaneous communication with master class 2 (max.)	4
The address can be set using	Configuration tool or local operation (standard setting address 126)
Cyclic data usage	
Output byte	5 (one 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 T₆₃, 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
 Square-rooted characteristic for flow measurement 	Yes
- Gradual volume suppression and implementation point of square-root extraction	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 (la value, substitute value, invalue)					
- 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				

Mounting flange	
Nom. diam.	Nom. press.
• To EN 1092-1	
- DN 80	PN 40
- DN 100	PN16, PN40
• To ASME B16.5	
- 3 inch	Class 150, class 300
- 4 inch	Class 150 class 300

sured pressure value and sen- izable ramp function

square-root extraction - Simulation function for mea-

sor temperature

DS III series for level

Selection and Ordering	ng data	Orde	er No.
SITRANS P pressure	transmitters for level	7 M F	4633-
series DS III HART			
Measuring cell filling	Measuring cell		
0111	cleaning		
Silicone oil	Standard	_ 1	
Span	(0.000 0.00 ")		
25 250 mbar	(0.363 3.63 psi)	D	
25 600 mbar 53 1600 mbar	(0.363 8.70 psi)	E	
0.16 5 bar	(0.77 23.2 psi) (2.32 72.5 psi)	G	
		_	
Process connection of	•		
	PT with flange connection		
 Mounting thread M10 Mounting thread ⁷/₁₆ 			0
		_	2
Non-wetted parts ma			
Process flange screws			
Stainless steel	Die-cast aluminium		2
Stainless steel	Stainless steel precision casting ¹⁾		3
	- Casting	_	
Version • Standard version			
	English label inscriptions,		1 2
documentation in 5 la			2
Explosion protection		_	
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, explosion prot 	losion-proof enclosure and		R
Zone 1D/2D)" ³⁾	ection (EEx ia + EEx d +		
 With FM + CSA, Type 			
- "Intrinsic safety and	l explosion-proof		NC
$(is + xp)^{(2)}$			
Electrical connection			
 Screwed gland Pg 13 			Α
 Screwed gland M20x 			В
• Screwed gland ½-14			C
 Han 7D plug (plastic connector⁴⁾ 	nousing) incl. mating		D
 M12 connectors (me 	tal) ⁵⁾		F
- MILE CONTINUEDIOLS (INC	.ui,	_	•
DiI			
Display	stor hiddon sotting: m^\		
 without (digital indicate) 	ator hidden, setting: mA)		1
without (digital indicate)With visible digital indicate			1

Ordering information:

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

Ordering example:

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

Y01 B line:

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

Item line 2: 7MF4912-3GE01

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) Not together with Electrical connection "Screwed gland Pg 13.5" and "Han7D plug".
- 2) Without cable gland, with blanking plug.
- 3) With enclosed cable gland EEx ia and blanking plug.
- 4) Not together with type of protection "Explosion-proof" and "n (zone 2)".
- 5) Not together with types of protection "Explosion-proof" or "Intrinsic safety

DS III series for level

Selection and Orderin	n data	Ord	lor	Νı	`		
SITRANS P pressure	-	Oit	ıcı	140	J.		
for level	uansmiller						
DS III PA series (PROF	FIRITS DAY	7 1/1	F	16	3 4		
•	•						
DS III FF series (Foun	dation Fieldbus)	7 M	F 4	ł 6	3 5	٠.	
		1 -	Υ		-		
Nominal measuring ra	inge						
250 mbar	(3.63 psi)	D					
600 mbar	(8.70 psi)	Е					
1600 mbar	(23.2 psi)	F					
5 bar	(72.5 psi)	G					
Process connection of	f low-pressure side						
Female thread 1/4-18 NF	PT with flange connection						
• Mounting thread M10			()			
 Mounting thread ⁷/₁₆- 	20 UNF to EN 61518		2	2			
Non-wetted parts mat	erials						
Process flange screws	Electronics housing						
Stainless steel	Die-cast aluminium			2			
Stainless steel	Stainless steel precision			3			
	casting			Ī			
Version		-					
 Standard version 					1		
 International version, 	English label inscriptions,				2		
documentation in 5 la	inguages on CD						
Explosion protection		Ī					
• Without						Α	
• With CENELEC, Type	of protection:						
- "Intrinsic safety (EE)	k ia)"					В	
- "Explosion-proof (EB	Ex d)" ¹⁾					D	
- "Intrinsic safety and	explosion-proof enclosure					Р	
(EEx ia + EEx d)"2)							
- "n (Zone 2)"						E	
- "Intrinsic safety, exp	losion-proof enclosure and					R	
Zone 1D/2D) ² (not	ection (EEx ia + EEx d + for DS III FF)						
• With FM + CSA, Type							
- "Intrinsic safety and	•					NC	
$(is + xp)^{-2}$							
Electrical connection	/ cable entry						
• Screwed gland M20x	•					В	
• Screwed gland ½-14	NPT					C	
• Plug M12 incl. mating	connector ³⁾					F	
Display							
Without (digital display)	ıy hidden)						1
With visible digital inc	* '						6
• With customer-specifi	c digital indication (setting						7
as specified, Order of	ode "Y21" or required)						
Ordering information:							

Ordering information:

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

Ordering example

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

- Included in delivery of the device:
 Brief instructions (Leporello)
 CD-ROM with detailed documentation
- Sealing plug(s) or sealing screw(s) for the process flanges(s)
- 1) Without cable gland, with blanking plug.
- 2) With enclosed cable gland EEx ia and blanking plug.
 3) Not together with types of protection "Explosion-proof" and "Intrinsic safety and explosion-proof"

 Output

 Description:

Selection and Ordering data	Order	code				
Further designs		HART	PA	FF		
Add "-Z" to Order No. and specify Order code.						
O-rings for process flanges on						
low-pressure side (instead of FPM (Viton))						
• PTFE (Teflon)	A20	1	1	1		
• FEP (with silicone core, approved for food)	A21	✓	✓	1		
• FFPM (Kalrez, compound 4079)	A22	✓	1	1		
• NBR (Buna N)	A23	1	✓	✓		
Plug	400	/				
Han 7D (metal, gray)Han 8U (instead of Han 7D)	A30 A31	\ \ \				
Sealing screws						
1/4-18 NPT, with valve in material of process	A40	1	1	1		
flanges						
Cable sockets for M12 connectors (metal)	A50	✓	✓	1		
Rating plate inscription						
(instead of German)	D44		,			
English French	B11 B12	✓	1	1		
• Spanish	B13	V	1	1		
• Italian	B14	✓	✓	√ ✓		
English rating plate	B21	✓	✓	1		
Pressure units in inH ₂ O or psi						
Manufacturer's test certificate M	C11	✓	✓	1		
To DIN 55350, Part 18 and to ISO 8402						
Acceptance test certificate	C12	✓	1	1		
To EN 10204-3.1						
Factory certificate	C14	✓	✓	✓		
To EN 10204-2.2						
"Functional Safety (SIL)" certificate	C20	✓				
"PROFIsafe" certificate and protocol	C21		✓			
Setting of upper limit of output signal to 22.0 mA	D05	✓				
Type of protection IP68	D12	/	1	1		
(not together with PROFIBUS plug M12)						
Supplied with oval flange	D37	/	1	1		
(1 item), PTFE packing and screws in thread	ונט	ľ	•	·		
of process flange						
Use on zone 1D / 2D	E01	✓	✓	1		
(only together with type of protection "Intrinsic safety (EEx ia)")						
Use on zone 0	E02		1	1		
(only together with type of protection	LUZ	ľ	•	Ť		
"Intrinsic safety (EEx ia)")						
Overfilling safety device for flammable	E08	✓	✓			
and non-flammable liquids (max. PN 32 (MVWP 464 psi), basic device						
with type of protection "Intrinsic safety						
(EEx ia)")						
Explosion-proof "Intrinsic safety" to INMETRO (Brazil)	E25	✓	✓	1		
(only for transmitter 7MF4B)						
Explosion-proof "Intrinsic safety" to	E55	1	1	1		
NEPSI (China)						
(only for transmitter 7MF4						
Explosion protection "Explosion-proof" to	E56	✓	1	1		
NEPSI (China) (only for transmitter 7MF4D)						
Explosion-proof "Zone 2" to NEPSI (China)	E57	1	1	1		
(only for transmitter 7MF4)						
Interchanging of process connection side	H01		1	1		
Interchanging of process connection side	1101	¥	•	•		

DS III series for level

Colontian and Ordering data	Order	aada		
Selection and Ordering data	Order code			
Additional data Add "-Z" to Order No. and specify Order code.		HART	PA	FF
Measuring range to be set Specify in plain text (max. 5 digits): Y01: up to mbar, bar, kPa, MPa, psi	Y01	*		
Measuring point number (TAG No.) Max. 16 characters, specify in plain text: Y15:	Y15	✓	✓	*
Measuring point text Max. 27 characters, specify in plain text: Y16:	Y16	✓	✓	✓
Entry of HART address (TAG) Max. 8 characters, specify in plain text: Y17:	Y17	✓		
Setting of pressure indicator in pressure units Specify in plain text (standard setting: mA): Y21: mbar, bar, kPa, MPa, psi, Note: The following pressure units can be selected: bar, mbar, mm H ₂ O*), inH ₂ O*), ftH ₂ O*), mmHG, inHG, psi, Pa, kPa, MPa, g/cm², kg/cm², Torr, ATM or % *) ref. temperature 20 °C Setting of pressure indicator in	Y21	*	✓	*
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)	1) ₊ Y01			
Preset bus address Specify in plain text (standard setting: 126) Y25:	Y25		✓	

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

Selection and Ord	ering data	Orc	der N	o.Ord.	code
Mounting flange		7 M	IF 4 9	912-	
Directly mounted or SITRANS P pressur for level, for DS III s	e transmitter (converter part)	3			
Connection acc. to	EN 1092-1				
Nom. diam.	Nom. press.				
DN 80	PN 40	D			
DN 100	PN 16 PN 40	G H			
Connection acc. to	ASME B16.5				
Nom. diam.	Nom. press.				
3 inch	Class 150	Q			
	Class 300	R			
4 inch	Class 150	T			
Otherwise	Class 300	U			
Other version, add Order code and pla	ain text:	Z		J 1	ΙY
Nominal diameter:	; Nominal pressure:				
Wetted parts mate	rials				
 Stainless steel 31 	·-		Α		
 Coated with PFA 			D		
 Coated with PTF 			E 0		
- Coated with EC	TFE'		F		
 Monel 400, mat. N 	lo. 2.4360		G		
 Hastelloy B2, mat 			Н		
 Hastelloy C276, n 			J		
 Hastelloy C4, mat 	. No. 2.4610		U		
 Tantalum 			K		
Other version, add			Z	K	ΙY
Order code and pla	in text: contact with the medium:				
	echnical specifications"				
Tube length					
 Without 			0		
• 50 mm	(1.97 inch)		1		
• 100 mm	(3.94 inch)		2		
• 150 mm	(5.90 inch)		3		
• 200 mm	(7.87 inch)		4		
Other version: add	in toxt:		9	L.	ΙY
Order code and pla Tube length:	iiii text.				
Filling liquid					
• Silicone oil M5			1	1	
• Silicone oil M50			2	2	
High-temperature	oil		3		
Halocarbon oil (fc	r O ₂ measurements)			4	
 Glycerin / water²⁾ 			(6	
• Food oil (FDA-liste	ed)		7	7	
Other version, add			9	9 м	Υ
Order code and pla	ain text:				
filling liquid:					

¹⁾ For vacuum on request

^{✓ =} available

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

²⁾ Not suitable for use in low-pressure range

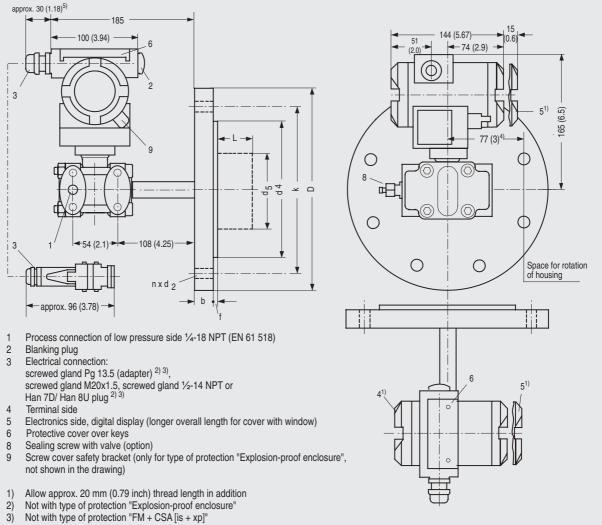
DS III series for level

Selection and Ordering data	Order co	ode	
Further designs Add "-Z" to Order No. and specify Order code.		HART	PA and FF
Flame flashover lock-out For mounting on zone 0 (including documentation)	A01	✓	1
Manufacturer's test certificate M To DIN 55350, Part 18 and to ISO 8402	C11	✓	√
Acceptance test certificate To EN 10204-3.1	C12	✓	✓
Vacuum-proof design (for use in low-pressure range)	V04	✓	✓
Calculation of span of associated pressure transmitter (enclose filled-in questionnaire with order) Note: suffix "Y01" required with pressure transmitter!	Y05	✓	✓

^{✓ =} available

DS III series for level

Dimensional drawings



92 mm (3.62 inch) for minimum distance to permit rotation without indicator

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

SITRANS P pressure transmitters, DS III HART 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	

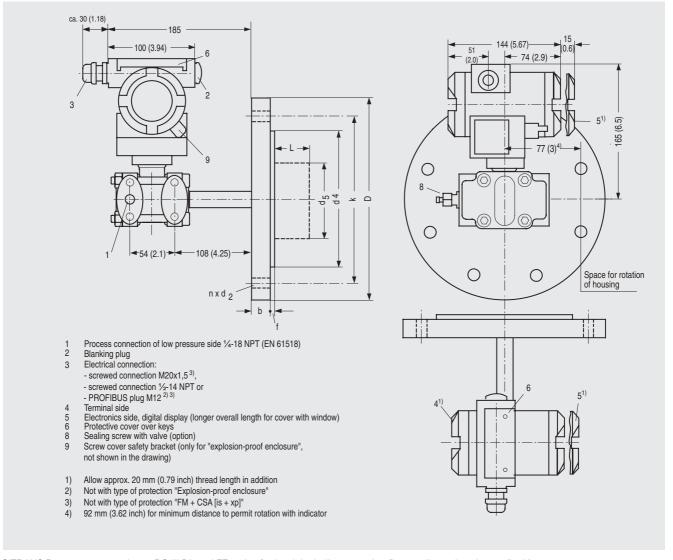
Connection to ASME B16.5

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.

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.