

Pressure Measurement

Transmitters for applications with advanced requirements (Advanced)

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

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Technical specifications

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

Input

Measured variable

Absolute pressure

Span (fully adjustable) or measuring range, max. operating pressure (in accordance with 2014/68/EU Pressure Equipment Directive) and max. test pressure (pursuant to DIN 16086)

HART

PROFIBUS PA/ FOUNDATION Fieldbus

Span	Nominal measuring range	Max. operating pressure MAWP (PS)	Max. perm. test pressure
8.3 ... 250 mbar a 0.83 ... 25 kPa a 3 ... 100 inH ₂ O a	250 mbar a 25 kPa a 100 inH ₂ O a	1.5 bar a 150 kPa a 21.8 psia	6 bar a 600 kPa a 87 psia
43 ... 1300 mbar a 4.3 ... 130 kPa a 17 ... 525 inH ₂ O a	1300 mbar a 130 kPa a 525 inH ₂ O a	2.6 bar a 260 kPa a 37.7 psia	10 bar a 1 MPa a 145 psia
160 ... 5000 mbar a 16 ... 500 kPa a 2.32 ... 72.5 psia	5000 mbar a 500 kPa a 72.5 psia	10 bar a 1 MPa a 145 psia	30 bar a 3 MPa a 435 psia
1 ... 30 bar a 0.1 ... 3 MPa a 14.5 ... 435 psia	30 bar a 3 MPa a 435 psia	45 bar a 4.5 MPa a 653 psia	100 bar a 10 MPa a 1450 psia
5.3 ... 160 bar a 0.53 ... 16 MPa a 76.9 ... 2321 psia	160 bar a 16 MPa a 2321 psi	167 bar a 16.7 MPa a 2422 psi	250 bar a 25 MPa a 3626 psi
13.3 ... 400 bar a 1.3 ... 40 MPa a 192.9 ... 5802 psia	400 bar a 40 MPa a 5802 psia	400 bar a 40 MPa a 5802 psia	600 bar a 60 MPa a 8702 psia
23.3 ... 700 bar a 2.33 ... 70 MPa a 338 ... 10153 psia	700 bar a 70 MPa a 10153 psia	800 bar a 80 MPa a 11603 psia	800 bar a 80 MPa a 11603 psia

Lower measuring limit

- Measuring cell with silicone oil filling

0 mbar a/0 kPa a/0 psia

- Measuring cell with inert filling liquid

- for process temperature $-20\text{ °C} < \vartheta \leq +60\text{ °C}$
($-4\text{ °F} < \vartheta \leq +140\text{ °F}$)

30 mbar a/3 kPa a/0.44 psia

- for process temperature
 $60\text{ °C} < \vartheta \leq +100\text{ °C}$ (max. 85 °C for measuring cell 30 bar)
($140\text{ °F} < \vartheta \leq +212\text{ °F}$ (max. 185 °F for measuring cell 435 psi))

30 mbar a + 20 mbar a · ($\vartheta - 60\text{ °C}$)/ $^{\circ}\text{C}$
3 kPa a + 2 kPa a · ($\vartheta - 60\text{ °C}$)/ $^{\circ}\text{C}$
0.44 psi a + 0.29 psi a · ($\vartheta - 140\text{ °F}$)/ $^{\circ}\text{F}$

Upper measuring limit

100 % of max. span
(for oxygen measurement max. 100 bar/10 MPa/1450 psi and 60 °C (140 °F) ambient temperature/process temperature)

Start of scale value

Between the measuring limits (fully adjustable)

Output

HART

PROFIBUS PA/FOUNDATION Fieldbus

Output signal

4 ... 20 mA

Digital PROFIBUS PA and FOUNDATION Fieldbus signal

- Lower limit (infinitely adjustable)

3.55 mA, factory preset to 3.84 mA

-

- Upper limit (infinitely adjustable)

23 mA, factory preset to 20.5 mA or optionally set to 22.0 mA

-

Load

- Without HART

$R_B \leq (U_H - 10.5\text{ V})/0.023\text{ A}$ in Ω
 U_H : Power supply in V

-

- With HART

$R_B = 230 \dots 500\ \Omega$ (SIMATIC PDM) or
 $R_B = 230 \dots 1100\ \Omega$ (HART Communicator)

-

Physical bus

-

IEC 61158-2

Protection against polarity reversal

Protected against short-circuit and polarity reversal.
Each connection against the other with max. supply voltage.

Electrical damping (step width 0.1 s)

Set to 2 s (0 ... 100 s)

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Measuring accuracy	Acc. to IEC 60770-1
Reference conditions (All error data refer always refer to the set span)	<ul style="list-style-type: none"> • Increasing characteristic • Start-of-scale value 0 bar/kPa/psi • Stainless steel seal diaphragm • Silicone oil filling • Room temperature 25 °C (77 °F)
Measuring span ratio r (spread, Turn-Down)	$r = \text{max. measuring span/set measuring span or nom. pressure range}$
Error in measurement at limit setting incl. hysteresis and reproducibility	
• Linear characteristic	
- $r \leq 10$	$\leq 0.1 \%$
- $10 < r \leq 30$	$\leq 0.2 \%$
Influence of ambient temperature (in percent per 28 °C (50 °F))	
• 250 mbar a/25 kPa a/3.6 psia	$\leq (0.15 \cdot r + 0.1) \%$
• 1300 mbar a/130 kPa a/18.8 psia 5 bar a/500 kPa a/72.5 psia 30 bar a/3000 kPa a/435 psia 100 bar a/10 MPa a/1450 psia 160 bar a/16 MPa a/2321 psia 400 bar a/40 MPa a/5802 psia 700 bar a/50 MPa a/10152 psia	$\leq (0.08 \cdot r + 0.16) \%$
Long-term stability (temperature change ± 30 °C (± 54 °F))	$\leq (0.25 \cdot r) \%$ in 5 years
Effect of mounting position (in pressure per change in angle)	≤ 0.05 mbar/0.005 kPa/0.000725 psi per 10° inclination (zero point correction is possible with position error compensation)
Effect of auxiliary power supply (in percent per change in voltage)	0.005 % per 1 V
Measuring value resolution for PROFIBUS PA and FOUNDATION Fieldbus	$3 \cdot 10^{-5}$ of nominal measuring range
Rated conditions	
Degree of protection (to IEC 60529)	IP66 (optional IP66/IP68), NEMA 4X
Temperature of medium	
• Measuring cell with silicone oil filling	-40 ... +100 °C (-40 ... +212 °F) -20 ... +100 °C (-4 ... +212 °F) with 30 bar a measuring cell
• 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	
- Transmitter	-40 ... +85 °C (-40 ... +185 °F)
- Display readable	-30 ... +85 °C (-22 ... +185 °F)
• Storage temperature	-50 ... +85 °C (-58 ... +185 °F)
• Climatic class	
- Condensation	Relative humidity 0 ... 100 % Condensation permissible, suitable for use in the tropics
• Electromagnetic Compatibility	
- Emitted interference and interference immunity	Acc. to IEC 61326 and NAMUR NE 21

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

Weight (without options)	≈ 1.5 kg (≈ 3.3 lb)
Enclosure material	Low-copper die-cast aluminum, GD-AISI 12 or stainless steel precision casting, mat. no. 1.4408
Wetted parts materials	
• Connection shank	Stainless steel, mat. no. 1.4404/316L or Hastelloy C4, mat. no. 2.4602
• Oval flange	Stainless steel, mat. no. 1.4404/316L
• Seal diaphragm	Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819
Measuring cell filling	Silicone oil or inert filling liquid (maximum value with oxygen measurement pressure 100 bar (1450 psi) at 60 °C (140 °F))
Process connection	Connection shank G $\frac{1}{2}$ B to EN 837-1, female thread $\frac{1}{2}$ -14 NPT or oval flange (PN 160 (MAWP 2320 psia)) to DIN 19213 with mounting thread M10 or $\frac{7}{16}$ -20 UNF to IEC 61518/DIN EN 61518
Material of mounting bracket	
• Steel	Sheet-steel, Mat. No. 1.0330, chrome-plated
• Stainless steel	Sheet stainless steel, mat. no. 1.4301 (SS 304)

Power supply U_H

	HART	PROFIBUS PA/FOUNDATION Fieldbus
Terminal voltage on transmitter	10.5 ... 45 V DC 10.5 ... 30 V DC in intrinsically-safe mode	-
Power supply		Supplied through bus
Separate 24 V power supply necessary	-	No
Bus voltage		
• Not Ex	-	9 ... 32 V
• With intrinsically-safe operation	-	9 ... 24 V
Current consumption		
• Basic current (max.)	-	12.5 mA
• Start-up current \leq basic current	-	Yes
• Max. current in event of fault	-	15.5 mA
Fault disconnection electronics (FDE) available	-	Yes

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Certificates and approvals	HART	PROFIBUS PA/ FOUNDATION Fieldbus
Classification according to PED 2014/68/EU	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)	
Explosion protection		
• Intrinsic safety "i"	PTB 13 ATEX 2007 X	
- Marking	Ex II 1/2 G Ex ia/ib IIC T4/T5/T6 Ga/Gb	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +70 °C (-40 ... +158 °F) temperature class T5; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}$, $I_i = 100 \text{ mA}$, $P_i = 750 \text{ mW}$; $R_i = 300 \Omega$	FISCO supply unit: $U_o = 17.5 \text{ V}$, $I_o = 380 \text{ mA}$, $P_o = 5.32 \text{ W}$ Linear barrier: $U_o = 24 \text{ V}$, $I_o = 250 \text{ mA}$, $P_o = 1.2 \text{ W}$
- Effective internal inductance/capacitance	$L_i = 0.4 \text{ mH}$, $C_i = 6 \text{ nF}$	$L_i = 7 \mu\text{H}$, $C_i = 1.1 \text{ nF}$
• Explosion-proof "d"	PTB 99 ATEX 1160	
- Marking	Ex II 1/2 G Ex d IIC T4/T6 Gb	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To circuits with values: $U_H = 10.5 \dots 45 \text{ V DC}$	To circuits with values: $U_H = 9 \dots 32 \text{ V DC}$
• Dust explosion protection for zone 20	PTB 01 ATEX 2055	
- Marking	Ex II 1 D Ex ta IIIC T120°C Da Ex II 1/2 D Ex ta/tb IIIC T120°C Da/Db	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F)	
- Max. surface temperature	120 °C (248 °F)	
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}$, $I_i = 100 \text{ mA}$, $P_i = 750 \text{ mW}$, $R_i = 300 \Omega$	FISCO supply unit: $U_o = 17.5 \text{ V}$, $I_o = 380 \text{ mA}$, $P_o = 5.32 \text{ W}$ Linear barrier: $U_o = 24 \text{ V}$, $I_o = 250 \text{ mA}$, $P_o = 1.2 \text{ W}$
- Effective internal inductance/capacitance	$L_i = 0.4 \text{ mH}$, $C_i = 6 \text{ nF}$	$L_i = 7 \mu\text{H}$, $C_i = 1.1 \text{ nF}$
• Dust explosion protection for zone 21/22	PTB 01 ATEX 2055	
- Marking	Ex II 2 D Ex tb IIIC T120°C Db	
- Connection	To circuits with values: $U_H = 10.5 \dots 45 \text{ V DC}$; $P_{\max} = 1.2 \text{ W}$	To circuits with values: $U_H = 9 \dots 32 \text{ V DC}$; $P_{\max} = 1 \text{ W}$
• Type of protection "n" (zone 2)	PTB 13 ATEX 2007 X	
- Marking	Ex II 2/3 G Ex nA II T4/T5/T6 Gc Ex II 2/3 G Ex ic IIC T4/T5/T6 Gc	
- Connection (Ex nA)	$U_m = 45 \text{ V}$	$U_m = 32 \text{ V}$
- Connection (Ex ic)	To circuits with values: $U_i = 45 \text{ V}$	FISCO supply unit ic: $U_o = 17.5 \text{ V}$, $I_o = 570 \text{ mA}$ Linear barrier: $U_o = 32 \text{ V}$, $I_o = 132 \text{ mA}$, $P_o = 1 \text{ W}$
- Effective internal inductance/capacitance	$L_i = 0.4 \text{ mH}$, $C_i = 6 \text{ nF}$	$L_i = 7 \mu\text{H}$, $C_i = 1.1 \text{ nF}$
• Explosion protection acc. to FM	Certificate of Compliance 3008490	
- Identification (XP/DIP) or (IS); (NI)	CL I, DIV 1, GP ABCD T4...T6; CL II, DIV 1, GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4...T6; CL I, DIV 2, GP ABCD T4...T6; CL II, DIV 2, GP FG; CL III	
• Explosion protection to CSA	Certificate of Compliance 1153651	
- Identification (XP/DIP) or (IS)	CL I, DIV 1, GP ABCD T4...T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4...T6; CL I, DIV 2, GP ABCD T4...T6; CL II, DIV 2, GP FG; CL III	

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

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Selection and Ordering data		Article No.	Selection and Ordering data		Article No.
Pressure transmitters for absolute pressure from gauge pressure series SITRANS P DS III with HART		7 MF 4 2 3 3 -	Pressure transmitters for absolute pressure from gauge pressure series SITRANS P DS III with HART		7 MF 4 2 3 3 -
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.			Electrical connection/cable entry		
Measuring cell filling	Measuring cell cleaning		<ul style="list-style-type: none"> Screwed gland M20x1.5 Screwed gland ½-14 NPT Han 7D plug (plastic housing) incl. mating connector¹⁴⁾ M12 connectors (stainless steel)^{15) 16)} 		B C D F
Silicone oil	normal	1	Display		
Inert liquid ¹⁾	grease-free to cleanliness level 2	3	<ul style="list-style-type: none"> Without display Without visible display (display concealed, setting: mA) With visible display (setting: mA) with customer-specific display (setting as specified, Order code "Y21" or "Y22" required) 		0 1 6 7
Measuring span (min. ... max.)			Power supply units see Chap. 7 "Supplementary Components".		
8.3 ... 250 mbar a	(0.12 ... 3.62 psia)	D	A quick-start guide is included in the scope of delivery of the device.		
43 ... 1300 mbar a	(0.62 ... 18.85 psia)	F	1) For oxygen application, add Order code E10.		
0.16 ... 5 bar a	(2.32 ... 72.5 psia)	G	2) Available soon		
1 ... 30 bar a	(14.5 ... 435 psia)	H	3) Version 7MF4233-1DY... only up to max. span 200 mbar a (80 inH ₂ O a).		
5,3 ... 160 bar a ²⁾	(76.9 ... 2 321 psia)	L	4) When the manufacturer's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here. If the acceptance test certificate 3.1 is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.		
13,3 ... 400 bar a ²⁾	(192.9 ... 5 802 psia)	M	5) If the acceptance test certificate 3.1 is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.		
23,3 ... 700 bar a ²⁾	(338 ... 10 153 psia)	N	6) The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF423-...Y... and 7MF4900-1...-B		
Wetted parts materials			7) The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.		
Seal diaphragm	Process connection		8) Not in conjunction with Electrical connection "Han7D plug".		
Stainless steel	Stainless steel	A	9) Without cable gland, with blanking plug.		
Hastelloy	Stainless steel	B	10) With enclosed cable gland Ex ia and blanking plug.		
Hastelloy	Hastelloy	C	11) Configurations with HAN and M12 connectors are only available in Ex ic.		
Version for diaphragm seals in conjunction with process connector "female thread ½-14 NPT" (recommended version) ^{3) 4) 5) 6) 7)}		Y 1	12) Only in connection with IP66.		
Version for diaphragm seals in conjunction with process connector "G½B connection shank" ^{3) 4) 5) 6) 7)}		Y 0	13) Explosion protection acc. to FM/CSA: suitable for installations according to NEC 500/505.		
Process connection			14) Only in connection with Ex approval A, B or E.		
<ul style="list-style-type: none"> Connection shank G½B to EN 837-1 Female thread ½-14 NPT Stainless steel oval flange with process connection (Oval flange has no female thread) <ul style="list-style-type: none"> Mounting thread 7/16"-20 UNF to IEC 61518/DIN EN 61518 Mounting thread M10 to DIN 19213 Mounting thread M12 to DIN 19213 Male thread M20 x 1.5 Male thread ½-14 NPT 		15) Only in connection with Ex approval A, B, E or F.			
		0	16) M12 delivered without cable socket		
		1			
		2			
		3			
		4			
		5			
		6			
Non-wetted parts materials					
<ul style="list-style-type: none"> Housing made of die-cast aluminium Housing stainless steel precision casting⁸⁾ 		0			
		3			
Version					
<ul style="list-style-type: none"> Standard version, German plate inscription, setting for pressure unit: bar International version, English plate inscription, setting for pressure unit: bar Chinese version, English plate inscription, setting for pressure unit: Pascal 		1			
		2			
		3			
All versions include DVD with compact operating instructions in various EU languages.					
Explosion protection					
<ul style="list-style-type: none"> None With ATEX, Type of protection: <ul style="list-style-type: none"> "Intrinsic safety (Ex ia)" "Explosion-proof (Ex d)"⁹⁾ "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d)"¹⁰⁾ "Ex nA/ic (Zone 2)"¹¹⁾ "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia + Ex d + Zone 1D/2D)"¹⁰⁾¹²⁾ FM + CSA intrinsic safe (is)¹³⁾ FM + CSA (is + ep) + Ex ia + Ex d (ATEX) + Zone 1D/2D¹⁰⁾¹²⁾¹³⁾ With FM + CSA, Type of protection: <ul style="list-style-type: none"> "Intrinsic Safe and Explosion Proof (is + xp)"⁹⁾¹³⁾ 		A			
		B			
		D			
		P			
		E			
		R			
		F			
		S			
		NC			

Selection and Ordering data		Article No.	Selection and Ordering data		Article No.
Pressure transmitters for absolute pressure from gauge pressure series			Pressure transmitters for absolute pressure from gauge pressure series		
SITRANS P DS III with PROFIBUS PA (PA)		7 M F 4 2 3 4 -	SITRANS P DS III with PROFIBUS PA (PA)		7 M F 4 2 3 4 -
SITRANS P DS III with FOUNDATION Fieldbus (FF)		7 M F 4 2 3 5 -	SITRANS P DS III with FOUNDATION Fieldbus (FF)		7 M F 4 2 3 5 -
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.					
Measuring cell filling	Measuring cell cleaning		Explosion protection		
Silicone oil	normal	1	• None		A
Inert liquid ¹⁾	grease-free to cleanliness level 2	3	• With ATEX, Type of protection:		B
			- "Intrinsic safety (Ex ia)"		D
			- "Explosion-proof (Ex d)" ⁸⁾		P
			- "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d) ⁹⁾		E
			- "Ex nA/ic (Zone 2)" ¹⁰⁾		R
			- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia + Ex d + Zone 1D/2D)" ^{9) 11)} (not for DS III FF)		F
Nominal measuring range		D	• FM + CSA intrinsic safe (is) ¹²⁾		S
250 mbar a	(3.62 psia)	F	• FM + CSA (is + ep) + Ex ia + Ex d (ATEX) + Zone 1D/2D ⁹⁾¹¹⁾¹²⁾		NC
1300 mbar a	(18.85 psia)	G	• With FM + CSA, Type of protection:		
5 bar a	(72.5 psia)	H	- "Intrinsic Safe and Explosion Proof (is + xp)" ⁸⁾¹²⁾		
30 bar a	(435 psia)	L			
160 bar a ²⁾	(2 321 psia)	M	Electrical connection/cable entry		
400 bar a ²⁾	(5 802 psia)	N	• Screwed gland M20 x 1.5		B
700 bar a ²⁾	(10 153 psia)		• Screwed gland ½-14 NPT		C
			• M12 connectors (stainless steel) ^{13) 14)}		F
Wetted parts materials			Display		
Seal diaphragm	Process connection		• Without display		0
Stainless steel	Stainless steel	A	• Without visible display (display concealed, setting: bar)		1
Hastelloy	Stainless steel	B	• With visible display (setting: bar)		6
Hastelloy	Hastelloy	C	• with customer-specific display (setting as specified, Order code "Y21" or "Y22" required)		7
Version for diaphragm seals in conjunction with process connector "female thread ½-14 NPT" (recommended version) ^{3) 4) 5) 6) 7)}		Y 1			
Version for diaphragm seals in conjunction with process connector "G½B connection shank" ^{3) 4) 5) 6) 7)}		Y 0			
Process connection					
• Connection shank G½B to EN 837-1		0			
• Female thread ½-14 NPT		1			
• Stainless steel oval flange with process connection (Oval flange has no female thread)					
- Mounting thread 7/16-20 UNF to IEC 61518/DIN EN 61518		2			
- Mounting thread M10 to DIN 19213		3			
- Mounting thread M12 to DIN 19213		4			
• Male thread M20 x 1.5		5			
• Male thread ½-14 NPT		6			
Non-wetted parts materials					
• Housing made of die-cast aluminium		0			
• Housing stainless steel precision casting		3			
Version					
• Standard version, German plate inscription, setting for pressure unit: bar		1			
• International version, English plate inscription, setting for pressure unit: bar		2			
• Chinese version, English plate inscription, setting for pressure unit: Pascal		3			
All versions include DVD with compact operating instructions in various EU languages.					
			A quick-start guide is included in the scope of delivery of the device.		
			1) For oxygen application, add Order code E10.		
			2) Available soon		
			3) Version 7MF4233-1DY... only up to max. span 200 mbar a (2.9 psia).		
			4) When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.		
			5) If the acceptance test certificate 3.1.is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.		
			6) The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF423.-.Y.-... and 7MF4900-1...-B		
			7) The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.		
			8) Without cable gland, with blanking plug.		
			9) With enclosed cable gland Ex ia and blanking plug.		
			10) Configurations with HAN and M12 connectors are only available in Ex ic.		
			11) Only in connection with IP66.		
			12) Explosion protection acc. to FM/CSA: suitable for installations according to NEC 500/505.		
			13) Only in connection with Ex approval A, B, E or F.		
			14) M12 delivered without cable socket.		

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Selection and Ordering data	Order code			Selection and Ordering data	Order code		
<i>Further designs</i>	HART	PA	FF	<i>Further designs</i>	HART	PA	FF
Add "-Z" to Article No. and specify Order code.				Add "-Z" to Article No. and specify Order code.			
Pressure transmitter with mounting bracket (1x fixing angle, 2 x nut, 2 x U-washer or 1 x bracket, 2 x nut, 2 x U-washer) made of:				CRN approval Canada (Canadian Registration Number)	E22 ⁴⁾	✓	✓
• Steel	A01	✓	✓	Dual seal	E24	✓	✓
• Stainless steel 304	A02	✓	✓	Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil) (only for transmitter 7MF4...-.....-B..)	E25 ⁴⁾	✓	✓
• Stainless steel 316L	A03	✓	✓	"Flameproof" explosion protection according to INMETRO (Brazil) (only for transmitter 7MF4...-.....-D..)	E26 ⁴⁾	✓	✓
Plug				Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil) (only for transmitter 7MF4...-.....-P..)	E28 ⁴⁾	✓	✓
• Han 7D (metal)	A30	✓		Ex Approval IEC Ex (Ex ia) (only for transmitter 7MF4...-.....-B..)	E45 ⁴⁾	✓	✓
• Han 8D (instead of Han 7D)	A31	✓		Ex Approval IEC Ex (Ex d) (only for transmitter 7MF4...-.....-D..)	E46 ⁴⁾	✓	✓
• Angled	A32	✓		Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4...-.....-B..)	E55 ⁴⁾	✓	✓
• Han 8D (metal)	A33	✓		Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4...-.....-D..)	E56 ⁴⁾	✓	✓
Cable sockets for M12 connectors (metal (CuZn))	A50	✓	✓	Explosion-proof "Zone 2" to NEPSI (China) (only for transmitter 7MF4...-.....-E..)	E57 ⁴⁾	✓	✓
Rating plate inscription (instead of German)				Ex protection „Ex ia", „Ex d" and „Zone 2" to NEPSI (China) (only for transmitter 7MF4...-.....-R..)	E58 ⁴⁾	✓	✓
• English	B11	✓	✓	"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (only for transmitter 7MF4...-.....-[B, D]..-Z + E11)	E70 ⁴⁾	✓	✓
• French	B12	✓	✓	Ex-protection Ex ia according to EAC Ex (Russia)	E80	✓	✓
• Spanish	B13	✓	✓	Ex-protection Ex d according to EAC Ex (Russia)	E81	✓	✓
• Italian	B14	✓	✓	Ex-protection Ex nA/ic (Zone 2) according to EAC Ex (Russia)	E82	✓	✓
• Cyrillic (russian)	B16	✓	✓	Ex-protection Ex ia + Ex d + Zone 1D/2D according to EAC Ex (Russia)	E83	✓	✓
English rating plate	B21	✓	✓	Two coats of lacquer on casing and cover (PU on epoxy)	G10	✓	✓
Pressure units in inH ₂ O and/or psi				Transient protector 6 kV (lightning protect.)	J01	✓	✓
Quality Inspection Certificate (5-point characteristic curve test) according to IEC 60770-2¹⁾	C11	✓	✓	Oval flange NAM (ASTAVA)	J06	✓	✓
Inspection certificate²⁾	C12	✓	✓	Marine approvals			
Acc. to EN 10204-3.1				• Det Norske Veritas Germanischer Lloyd (DNV-GL)	S10	✓	✓
Factory certificate	C14	✓	✓	• Lloyds Register (LR)	S11	✓	✓
Acc. to EN 10204-2.2				• French marine classification society Bureau Veritas (BV)	S12	✓	✓
Acceptance certificate (EN 10204-3.1)	C15	✓	✓	• American Bureau of Shipping (ABS)	S14	✓	✓
PMI test of parts in contact with medium				• Russian Maritime Register (RMR)	S16	✓	✓
Functional safety (SIL2)	C20	✓		• Korean Register of Shipping (KR)	S17	✓	✓
Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration							
Functional safety (PROFIsafe) Certificate and PROFIsafe protocol	C21 ³⁾		✓				
Functional safety (SIL2/3)	C23	✓					
Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration							
PED for Russia with initial calibration mark	C99	✓	✓				
Setting of the upper saturation limit of the output signal to 22.0 mA	D05	✓					
Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009)	D07	✓	✓				
Degree of protection IP66/IP68 (only for M20 x 1.5 and ½-14 NPT)	D12	✓	✓				
Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flange	D37	✓	✓				
Capri cable gland 4F CrNi and clamping device (848699 + 810634) included	D59	✓	✓				
Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety" (transmitter 7MF4...-.....-B.. Ex ia) and IP65)	E01	✓	✓				
Oxygen application (In the case of oxygen measurement and inert liquid max. 100 bar (1450 psi) at 60°C (140 °F))	E10	✓	✓				
Export approval Korea	E11	✓	✓				

¹⁾ When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.

²⁾ If the acceptance test certificate 3.1 is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.

³⁾ Profisafe transmitters can only be operated with the S7 F Systems V6.1 configuration software in combination with S7-400H.

⁴⁾ Cannot be ordered with remote seal.

⁵⁾ Option does not include ATEX approval, but instead includes only the country-specific approval.

Selection and Ordering data	Order code		
Additional data	HART	PA	FF
Please add "-Z" to Article No. and specify Order code(s) and plain text.			
Measuring range to be set Specify in plain text (max. 5 characters): Y01: ... up to ... mbar a, bar a, kPa _{abs} , MPa _{abs} , psia ²⁾	Y01	✓	✓ ¹⁾
Stainless steel tag plate and entry in device variable (measuring point description) Max. 16 characters, specify in plain text: Y15:	Y15	✓	✓
Measuring point text (entry in device variable) Max. 27 characters, specify in plain text: Y16:	Y16	✓	✓
Entry of HART address (TAG) Max. 8 characters, specify in plain text: Y17:	Y17	✓	
Setting of pressure indication in pressure units Specify in plain text (standard setting: bar): 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	Y21	✓	✓
Setting of pressure indication in non-pressure units³⁾ Specify in plain text: Y22: up to l/min, m ³ /h, m, USgpm, ... (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	Y22 + Y01	✓	
Preset bus address possible between 1 and 126 Specify in plain text: Y25:	Y25		✓
Damping adjustment in seconds (0 ... 100 s) Factory mounting of valve manifolds, see accessories. Only Y01, Y15, Y16, Y17, Y21, Y22, Y25 and D05 can be factory preset	Y30	✓	✓

✓ = available

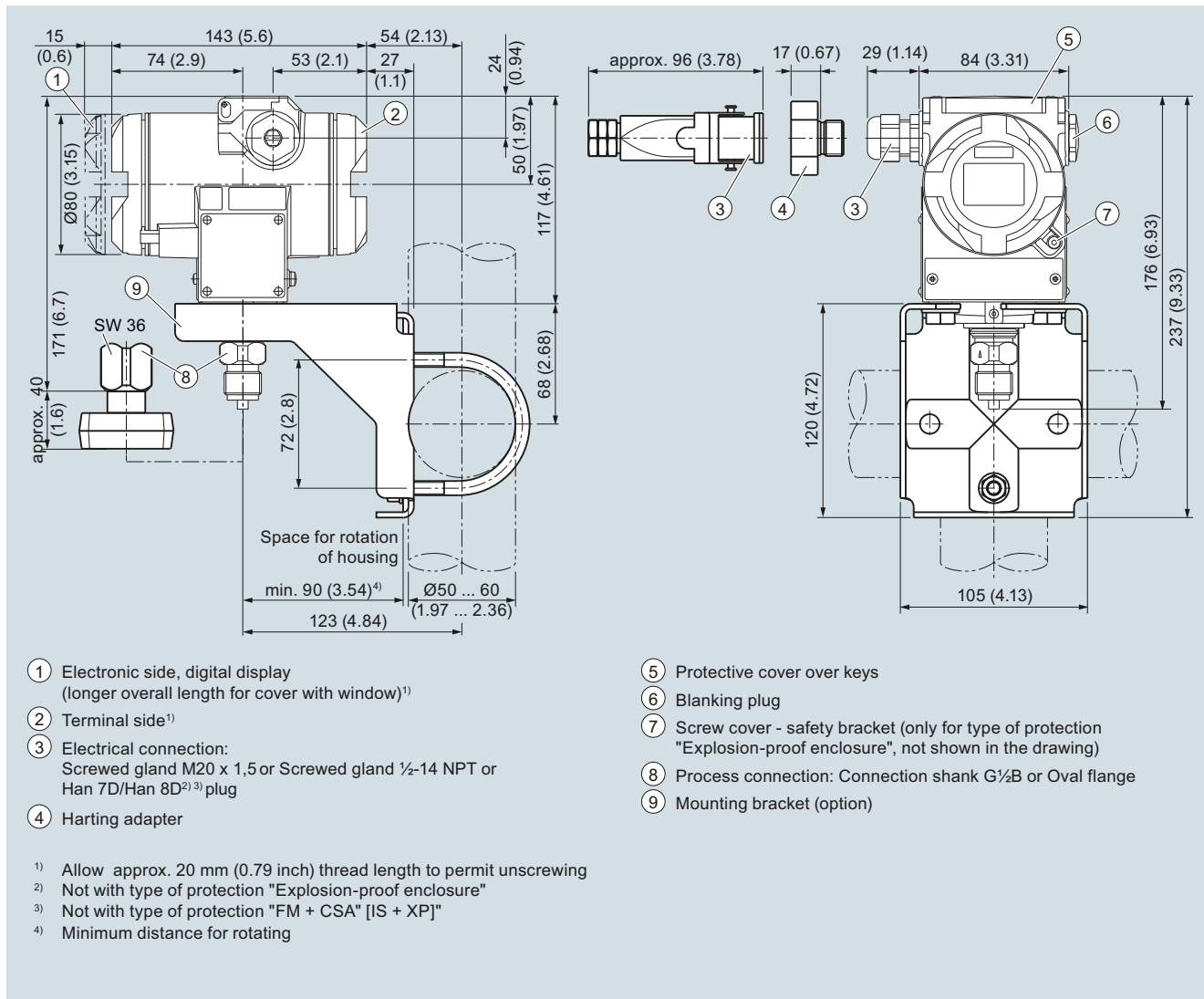
- 1) Measuring accuracies for PROFIBUS PA transmitters with Option Y01 are calculated in the same way as for HART devices.
- 2) Only absolute pressure units selectable. Negative pressure values not permitted.
- 3) Preset values can only be changed over SIMATIC PDM.

Pressure Measurement

Transmitters for applications with advanced requirements (Advanced)

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

Dimensional drawings



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

Pressure Measurement

Transmitters for applications with advanced requirements (Advanced)

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

1

Technical specifications

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

Input		Absolute pressure	
Measured variable	HART	PROFIBUS PA/ FOUNDATION Fieldbus	
Span (fully adjustable) or measuring range, max. operating pressure (in accordance with 2014/68/EU Pressure Equipment Directive) and max. test pressure (pursuant to DIN 16086)	Span	Nominal measuring range	Max. operating pressure MAWP (PS)
	8.3 ... 250 mbar a 0.83 ... 25 kPa a 3 ... 100 inH ₂ O a	250 mbar a 25 kPa a 100 inH ₂ O a	32 bar a 3.2 MPa a 464 psia
	43 ... 1300 mbar a 4.3 ... 130 kPa a 17 ... 525 inH ₂ O a	1300 mbar a 130 kPa a 525 inH ₂ O a	32 bar a 3.2 MPa a 464 psia
	160 ... 5000 mbar a 16 ... 500 kPa a 2.32 ... 72.5 psia	5000 mbar a 500 kPa a 72.5 psia	32 bar a 3.2 MPa a 464 psia
	1 ... 30 bar a 0.1 ... 3 MPa a 14.5 ... 435 psia	30 bar a 3 MPa a 435 psia	160 bar a 16 MPa a 2320 psia
	5.3 ... 100 bar a 0.5 ... 10 MPa a 76.9 ... 1450 psia	100 bar a 10 MPa a 1450 psia	160 bar a 16 MPa a 2320 psia
Lower measuring limit			
• Measuring cell with silicone oil filling	0 mbar a/0 kPa a/0 psia		
• Measuring cell with inert filling liquid			
- for process temperature -20 °C < ϑ ≤ +60 °C (-4 °F < ϑ ≤ +140 °F)	30 mbar a/3 kPa a/0.44 psia		
- for process temperature 60 °C < ϑ ≤ +100 °C (max. 85 °C for measuring cell 30 bar) (140 °F < ϑ ≤ +212 °F (max. 185 °F for measuring cell 435 psi))	30 mbar a + 20 mbar a · (ϑ - 60 °C)/°C 3 kPa a + 2 kPa a · (ϑ - 60 °C)/°C 0.44 psi a + 0.29 psi a · (ϑ - 140 °F)/°F		
Upper measuring limit	100 % of max. span (for oxygen measurement max. 100 bar/10 MPa/1450 psi and 60 °C (140 °F) ambient temperature/process temperature)		
Start of scale value	Between the measuring limits (fully adjustable)		
Output		HART	PROFIBUS PA/ FOUNDATION Fieldbus
Output signal	4 ... 20 mA		Digital PROFIBUS PA and FOUNDATION Fieldbus signal
• Lower limit (infinitely adjustable)	3.55 mA, factory preset to 3.84 mA		-
• Upper limit (infinitely adjustable)	23 mA, factory preset to 20.5 mA or optionally set to 22.0 mA		-
Load			
• Without HART	$R_B \leq (U_H - 10.5 \text{ V})/0.023 \text{ A}$ in Ω , U_H : Power supply in V		-
• With HART	$R_B = 230 \dots 500 \Omega$ (SIMATIC PDM) or $R_B = 230 \dots 1100 \Omega$ (HART Communicator)		-
Physical bus	-		IEC 61158-2
Protection against polarity reversal	Protected against short-circuit and polarity reversal. Each connection against the other with max. supply voltage.		
Electrical damping (step width 0.1 s)	Set to 2 s (0 ... 100 s)		

Pressure Measurement

Transmitters for applications with advanced requirements (Advanced)

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

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

Measuring accuracy	Acc. to IEC 60770-1
Reference conditions (All error data refer always refer to the set span)	<ul style="list-style-type: none"> • Increasing characteristic • Start-of-scale value 0 bar/kPa/psi • Stainless steel seal diaphragm • Silicone oil filling • Room temperature 25 °C (77 °F)
Measuring span ratio r (spread, Turn-Down)	$r = \text{max. measuring span/set measuring span or nom. pressure range}$
Error in measurement at limit setting incl. hysteresis and reproducibility	
• Linear characteristic	
- $r \leq 10$	$\leq 0.1 \%$
- $10 < r \leq 30$	$\leq 0.2 \%$
Influence of ambient temperature (in percent per 28 °C (50 °F))	
• 250 mbar a/25 kPa a/3.6 psia	$\leq (0.15 \cdot r + 0.1) \%$
• 1300 mbar a/130 kPa a/18.8 psia 5 bar a/500 kPa a/72.5 psia 30 bar a/3000 kPa a/435 psia 100 bar a/10 MPa a/1450 psia	$\leq (0.08 \cdot r + 0.16) \%$
Long-term stability (temperature change ± 30 °C (± 54 °F))	$\leq (0.25 \cdot r) \%$ in 5 years
Effect of mounting position (in pressure per change in angle)	$\leq 0.7 \text{ mbar}/0.07 \text{ kPa}/0.001015 \text{ psi}$ per 10° inclination (zero point correction is possible with position error compensation)
Effect of auxiliary power supply (in percent per change in voltage)	0.005 % per 1 V
Measuring value resolution for PROFIBUS PA and FOUNDATION Fieldbus	$3 \cdot 10^{-5}$ of nominal measuring range
Rated conditions	
Degree of protection (to IEC 60529)	IP66 (optional IP66/IP68), NEMA 4X
Temperature of medium	
• Measuring cell with silicone oil filling	-40 ... +100 °C (-40 ... +212 °F)
• Measuring cell with inert filling liquid	-20 ... +100 °C (-4 ... +212 °F)
• In conjunction with dust explosion protection	-20 ... +60 °C (-4 ... +140 °F)
Ambient conditions	
• Ambient temperature	
- Transmitter	-40 ... +85 °C (-40 ... +185 °F)
- Display readable	-30 ... +85 °C (-22 ... +185 °F)
• Storage temperature	-50 ... +85 °C (-58 ... +185 °F)
• Climatic class	
- Condensation	Relative humidity 0 ... 100 % Condensation permissible, suitable for use in the tropics
• Electromagnetic Compatibility	
- Emitted interference and interference immunity	Acc. to IEC 61326 and NAMUR NE 21

SITRANS P, DS III for absolute pressure (from the differential pressure series)		
Design		
Weight (without options)	≈ 4.5 kg (≈ 9.9 (lb))	
Enclosure material	Low-copper die-cast aluminum, GD-AISI12 or stainless steel precision casting, mat. no. 1.4408	
Wetted parts materials		
• Seal diaphragm	Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819, Monel, mat. no. 2.4360, tantalum or gold	
• Process flanges and sealing screw	Stainless steel, mat. no. 1.4408, Hastelloy C4, mat. no. 2.4602 or Monel, mat. no. 2.4360	
• O-Ring	FPM (Viton) or optionally: PTFE, FEP, FEPM and NBR	
Measuring cell filling	Silicone oil or inert filling liquid (maximum value with oxygen measurement pressure 100 bar (1450 psi) at 60 °C (140 °F))	
Process connection	1/4-18 NPT and flange connection with mounting thread M10 to DIN 19213 or 7/16-20 UNF to IEC 61518/DIN EN 61518	
Material of mounting bracket		
• Steel	Sheet-steel, Mat. No. 1.0330, chrome-plated	
• Stainless steel	Sheet stainless steel, mat. no. 1.4301 (SS 304)	
Power supply U_H	HART	PROFIBUS PA/FOUNDATION Fieldbus
Terminal voltage on transmitter	10.5 ... 45 V DC 10.5 ... 30 V DC in intrinsically-safe mode	-
Power supply		Supplied through bus
Separate 24 V power supply necessary	-	No
Bus voltage		
• Not Ex	-	9 ... 32 V
• With intrinsically-safe operation	-	9 ... 24 V
Current consumption		
• Basic current (max.)	-	12.5 mA
• Start-up current ≤ basic current	-	Yes
• Max. current in event of fault	-	15.5 mA
Fault disconnection electronics (FDE) available	-	Yes

Pressure Measurement

Transmitters for applications with advanced requirements (Advanced)

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

SITRANS P, DS III for absolute pressure (from the differential pressure series)		
Certificates and approvals	HART	PROFIBUS PA/ FOUNDATION Fieldbus
Classification according to PED 2014/68/EU	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)	
Explosion protection		
• Intrinsic safety "i"	PTB 13 ATEX 2007 X	
- Marking	Ex II 1/2 G Ex ia/ib IIC T4/T5/T6 Ga/Gb	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +70 °C (-40 ... +158 °F) temperature class T5; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}$, $I_i = 100 \text{ mA}$, $P_i = 750 \text{ mW}$; $R_i = 300 \Omega$	FISCO supply unit: $U_o = 17.5 \text{ V}$, $I_o = 380 \text{ mA}$, $P_o = 5.32 \text{ W}$ Linear barrier: $U_o = 24 \text{ V}$, $I_o = 250 \text{ mA}$, $P_o = 1.2 \text{ W}$
- Effective internal inductance/capacitance	$L_i = 0.4 \text{ mH}$, $C_i = 6 \text{ nF}$	$L_i = 7 \mu\text{H}$, $C_i = 1.1 \text{ nF}$
• Explosion-proof "d"	PTB 99 ATEX 1160	
- Marking	Ex II 1/2 G Ex d IIC T4/T6 Gb	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To circuits with values: $U_H = 10.5 \dots 45 \text{ V DC}$	To circuits with values: $U_H = 9 \dots 32 \text{ V DC}$
• Dust explosion protection for zone 20	PTB 01 ATEX 2055	
- Marking	Ex II 1 D Ex ta IIIC T120°C Da Ex II 1/2 D Ex ta/tb IIIC T120°C Da/Db	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F)	
- Max. surface temperature	120 °C (248 °F)	
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}$, $I_i = 100 \text{ mA}$, $P_i = 750 \text{ mW}$, $R_i = 300 \Omega$	FISCO supply unit: $U_o = 17.5 \text{ V}$, $I_o = 380 \text{ mA}$, $P_o = 5.32 \text{ W}$ Linear barrier: $U_o = 24 \text{ V}$, $I_o = 250 \text{ mA}$, $P_o = 1.2 \text{ W}$
- Effective internal inductance/capacitance	$L_i = 0.4 \text{ mH}$, $C_i = 6 \text{ nF}$	$L_i = 7 \mu\text{H}$, $C_i = 1.1 \text{ nF}$
• Dust explosion protection for zone 21/22	PTB 01 ATEX 2055	
- Marking	Ex II 2 D Ex tb IIIC T120°C Db	
- Connection	To circuits with values: $U_H = 10.5 \dots 45 \text{ V DC}$; $P_{\max} = 1.2 \text{ W}$	To circuits with values: $U_H = 9 \dots 32 \text{ V DC}$; $P_{\max} = 1 \text{ W}$
• Type of protection "n" (zone 2)	PTB 13 ATEX 2007 X	
- Marking	Ex II 2/3 G Ex nA II T4/T5/T6 Gc Ex II 2/3 G Ex ic IIC T4/T5/T6 Gc	
- Connection (Ex nA)	$U_m = 45 \text{ V}$	$U_m = 32 \text{ V}$
- Connection (Ex ic)	To circuits with values: $U_i = 45 \text{ V}$	FISCO supply unit ic: $U_o = 17.5 \text{ V}$, $I_o = 570 \text{ mA}$ Linear barrier: $U_o = 32 \text{ V}$, $I_o = 132 \text{ mA}$, $P_o = 1 \text{ W}$
- Effective internal inductance/capacitance	$L_i = 0.4 \text{ mH}$, $C_i = 6 \text{ nF}$	$L_i = 7 \mu\text{H}$, $C_i = 1.1 \text{ nF}$
• Explosion protection acc. to FM	Certificate of Compliance 3008490	
- Identification (XP/DIP) or (IS); (NI)	CL I, DIV 1, GP ABCD T4...T6; CL II, DIV 1, GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4...T6; CL I, DIV 2, GP ABCD T4...T6; CL II, DIV 2, GP FG; CL III	
• Explosion protection to CSA	Certificate of Compliance 1153651	
- Identification (XP/DIP) or (IS)	CL I, DIV 1, GP ABCD T4...T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4...T6; CL I, DIV 2, GP ABCD T4...T6; CL II, DIV 2, GP FG; CL III	

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