

Pressure Measurement

Transmitters for applications with advanced requirements (Advanced)

SITRANS P DS III for gauge pressure

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Technical specifications

SITRANS P, DS III series for gauge pressure

Input		Gauge pressure			
		HART	PROFIBUS PA/ FOUNDATION Fieldbus		
Measured variable					
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) (for oxygen measurement, max. 100 bar/10 MPa/1450 psi and 60 °C (140 °F) ambient temperature/process temperature)		Span	Nominal measuring range	Max. operating pressure MAWP (PS)	Max. perm. test pressure
		8.3 ... 250 mbar 0.83 ... 25 kPa 0.12 ... 3.6 psi	250 mbar 25 kPa 3.6 psi	4 bar 400 kPa 58 psi	6 bar 600 kPa 87 psi
		0.01 ... 1 bar 1 ... 100 kPa 0.15 ... 14.5 psi	1 bar 100 kPa 14.5 psi	4 bar 400 kPa 58 psi	6 bar 600 kPa 87 psi
		0.04 ... 4 bar 4 ... 400 kPa 0.58 ... 58 psi	4 bar 400 kPa 58 psi	7 bar 0.7 MPa 102 psi	10 bar 1 MPa 145 psi
		0.16 ... 16 bar 16 ... 1600 kPa 2.3 ... 232 psi	16 bar 1600 kPa 232 psi	21 bar 2.1 MPa 305 psi	32 bar 3.2 MPa 464 psi
		0.63 ... 63 bar 63 ... 6300 kPa 9.1 ... 914 psi	63 bar 6300 kPa 914 psi	67 bar 6.7 MPa 972 psi	100 bar 10 MPa 1450 psi
		1.6 ... 160 bar 0.16 ... 16 MPa 23 ... 2321 psi	160 bar 16 MPa 2321 psi	167 bar 16.7 MPa 2422 psi	250 bar 25 MPa 3626 psi
		4 ... 400 bar 0.4 ... 40 MPa 58 ... 5802 psi	400 bar 40 MPa 5802 psi	400 bar 40 MPa 5802 psi	600 bar 60 MPa 8702 psi
		7 ... 700 bar 0.7 ... 70 MPa 102 ... 10153 psi	700 bar 70 MPa 10153 psi	800 bar 80 MPa 11603 psi	800 bar 80 MPa 11603 psi
Lower measuring limit (for 250mbar/25 kPa/3.6 psi measuring cells, the lower measuring limit is 750 mbar a/75 kPa a/10.8 psi a. The measuring cell is vacuum-resistant up to 30 mbar a/3 kPa a/0.44 psi a.)					
• Measuring cell with silicone oil filling		30 mbar a/3 kPa a/0.44 psia			
• Measuring cell with inert filling liquid		30 mbar a/3 kPa a/0.44 psia			
Upper measuring limit		100% of max. span (max. 100 bar/10 MPa/1450 psi for oxygen measurement) ambient temperature/process temperature 60 °C (140 °F)			
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) bzw. $R_B = 230 \dots 1100 \Omega$ (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	<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	
<ul style="list-style-type: none"> • Linear characteristic 	
- 250 mbar/25 kPa/3.6 psi	$r \leq 1.25 :$ $\leq 0.065 \%$ $1.25 < r \leq 30 :$ $\leq (0.008 \cdot r + 0.055) \%$
- 1 bar/100 kPa/3.6 psi 4 bar/400 kPa/58 psi 16 bar/1.6 MPa/232 psi 63 bar/6.3 MPa/914 psi 160 bar/16 MPa/2321 psi	$r \leq 5 :$ $\leq 0.065 \%$ $5 < r \leq 100 :$ $\leq (0.004 \cdot r + 0.045) \%$
- 400 bar/40 MPa/5802 psi 700 bar/70 MPa/10152 psi	$r \leq 3 :$ $\leq 0.075 \%$ $3 < r \leq 10 :$ $\leq (0.0029 \cdot r + 0.071) \%$ $10 < r \leq 100 :$ $\leq (0.005 \cdot r + 0.05) \%$
Influence of ambient temperature (in percent per 28 °C (50 °F))	
<ul style="list-style-type: none"> • 250 mbar/25 kPa/3.6 psi 	$\leq (0.16 \cdot r + 0.1) \%$
<ul style="list-style-type: none"> • 1 bar/100 kPa/3.6 psi 	$\leq (0.05 \cdot r + 0.1) \%$
<ul style="list-style-type: none"> • 4 bar/400 kPa/58 psi 16 bar/1.6 MPa/232 psi 63 bar/6.3 MPa/914 psi 160 bar/16 MPa/2321 psi 400 bar/40 MPa/5802 psi 	$\leq (0.025 \cdot r + 0.125) \%$
<ul style="list-style-type: none"> • 700 bar/70 MPa/10152 psi 	$\leq (0.08 \cdot r + 0.16) \%$
Long-term stability (temperature change ± 30 °C (± 54 °F))	
<ul style="list-style-type: none"> • 250 mbar/25 kPa/3.6 psi 	$\leq (0.25 \cdot r) \%$ per year
<ul style="list-style-type: none"> • 1 bar/100 kPa/3.6 psi 4 bar/400 kPa/58 psi 	$\leq (0.25 \cdot r) \%$ in 5 years
<ul style="list-style-type: none"> • 16 bar/1.6 MPa/232 psi 63 bar/6.3 MPa/914 psi 160 bar/16 MPa/2321 psi 400 bar/40 MPa/5802 psi 	$\leq (0.125 \cdot r) \%$ in 5 years
<ul style="list-style-type: none"> • 700 bar/70 MPa/10152 psi 	$\leq (0.25 \cdot r) \%$ in 5 years
Effect of mounting position	≤ 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

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Rated conditions

Degree of protection (to EN 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	
- 1 bar/100 kPa/3.6 psi	-40 ... +85 °C (-40 ... +185 °F)
4 bar/400 kPa/58 psi	
16 bar/1.6 MPa/232 psi	
63 bar/6.3 MPa/914 psi	
- 160 bar/16 MPa/2321 psi	-20 ... +100 °C (-4 ... +212 °F)
400 bar/40 MPa/5802 psi	
700 bar/70 MPa/10152 psi	
• 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

Design

Weight (without options)	Die-cast aluminum: ≈ 2.0 kg (≈ 4.4 lb) Stainless steel precision casting: ≈ 4.6 kg (≈ 10.1 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 DIN EN 837-1, female thread $\frac{1}{2}$ -14 NPT or oval flange (PN 160 (MAWP 2320 psi) 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	-	Not necessary
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		
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: $U_o = 24 \text{ V}$, $I_o = 174 \text{ mA}$, $P_o = 1 \text{ W}$
- 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-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: $U_o = 24 \text{ V}$, $I_o = 250 \text{ mA}$, $P_o = 1 \text{ W}$
- 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)	$U_m = 45 \text{ V}$	$U_m = 32 \text{ V}$
- Connections (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	

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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 ... 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 transmitter for gauge pressure, SITRANS P DS III with HART ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7MF4033-	Pressure transmitter for gauge pressure, SITRANS P DS III with HART	7MF4033-
Measuring cell filling Silicone oil Inert liquid ¹⁾	1 3	Explosion protection • None • With ATEX, Type of protection: - "Intrinsic safety (Ex ia)" - "Explosion-proof (Ex d) ⁷⁾ " - "Intrinsic safety and flameproof enclosure (Ex ia + Ex d) ⁸⁾ " - "Ex nA/ic (Zone 2) ⁹⁾ " - "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia + Ex d + Zone 1D/2D) ⁸⁾¹⁰⁾ " • FM + CSA intrinsic safe (is) ¹¹⁾ • FM + CSA (is + ep) + Ex ia + Ex d (ATEX) + Zone 1D/2D ⁸⁾¹⁰⁾¹¹⁾ • With FM + CSA, Type of protection: - "Intrinsic Safe and Explosion Proof (is + xp) ⁷⁾¹¹⁾ "	A B D P E R F S NC
Measuring cell cleaning normal grease-free to cleanliness level 2		Electrical connection / cable entry • Screwed gland M20 x1 .5 • Screwed gland ½-14 NPT • Han 7D plug (plastic housing) incl. mating connector ¹²⁾ • M12 connectors (stainless steel) ¹²⁾¹³⁾	B C D F
Measuring span (min. ... max.) 8.3 ... 250 mbar (0.12 ... 3.6 psi) 0.01 ... 1 bar (0.15 ... 14.5 psi) 0.04 ... 4 bar (0.58 ... 58 psi) 0.16 ... 16 bar (2.32 ... 232 psi) 0.63 ... 63 bar (9.14 ... 914 psi) 1.6 ... 160 bar (23.2 ... 2320 psi) 4.0 ... 400 bar (58.0 ... 5802 psi) 7.0 ... 700 bar (102.0 ... 10153 psi)	A B C D E F G J	Display • 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
Wetted parts materials Seal diaphragm Process connection Stainless steel Stainless steel Hastelloy Stainless steel Hastelloy Hastelloy Version for diaphragm seals in conjunction with process connector "female thread ½-14 NPT" (recommended version) ^{2) 3) 4) 5)} Version for diaphragm seals in conjunction with process connector "G½B connection shank" ^{2) 3) 4) 5)}	A B C Y1 Y0	Power supply units see Chap. 7 "Supplementary Components". A quick-start guide is included in the scope of delivery of the device.	
Process connection • 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) - 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	0 1 2 3 4 5 6	<ol style="list-style-type: none"> 1) For oxygen application, add Order code E10. 2) 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. 3) 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. 4) The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF403-...Y-... and 7MF4900-1-...-B 5) The standard measuring cell filling of configurations with remote seals (Y) is silicone oil. 6) Not in conjunction with Electrical connection "Han7D plug". 7) Without cable gland, with blanking plug 8) With enclosed cable gland Ex ia and blanking plug 9) Configurations with HAN and M12 connectors are only available in Ex ic. 10) Only in connection with IP66. 11) Explosion protection acc. to FM/CSA: suitable for installations according to NEC 500/505. 12) Only in connection with Ex approval A, B or E. 13) M12 delivered without cable socket 	
Non-wetted parts materials • Housing made of die-cast aluminium • Housing stainless steel precision casting ⁶⁾	0 3		
Version • 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 All versions include DVD with compact operating instructions in various EU languages.	1 2 3		

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Selection and Ordering data		Article No.
Pressure transmitter for gauge pressure		
SITRANS P DS III with PROFIBUS PA (PA)		7 MF 4 0 3 4 -
SITRANS P DS III with FOUNDATION Fieldbus (FF)		7 MF 4 0 3 5 -
		
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
Measuring cell filling	Measuring cell cleaning	
Silicone oil	normal	1
Inert liquid ¹⁾	grease-free to cleanliness level 2	3
Nominal measuring range		
250 mbar	(3.6 psi)	A
1 bar	(14.5 psi)	B
4 bar	(58 psi)	C
16 bar	(232 psi)	D
63 bar	(914 psi)	E
160 bar	(2320 psi)	F
400 bar	(5802 psi)	G
700 bar	(10153 psi)	J
Wetted parts materials		
Seal diaphragm	Process connection	
Stainless steel	Stainless steel	A
Hastelloy	Stainless steel	B
Hastelloy	Hastelloy	C
Version for diaphragm seals in conjunction with process connector "female thread 1/2-14 NPT" (recommended version) ^{2) 3) 4) 5)}		Y 1
Version for diaphragm seals in conjunction with process connector "G1/2B connection shank" ^{2) 3) 4) 5)}		Y 0
Process connection		
• Connection shank G1/2B to EN 837-1		0
• Female thread 1/2-14 NPT		1
• Stainless steel oval flange with process connection (Oval flange has no female thread) ⁶⁾		
- 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 1/2 -14 NPT		6
Non-wetted parts materials		
• Housing made of die-cast aluminium		0
• Housing stainless steel precision casting		3
Version		
• Standard version, German label inscription, setting of pressure unit: bar		1
• International version, English label inscription, setting of pressure unit: psi		2
• Chinese version, English label inscription, setting of pressure unit: kPa		3
All versions include DVD with compact operating instructions in various EU languages.		

Selection and Ordering data		Article No.
Pressure transmitter for gauge pressure		
SITRANS P DS III with PROFIBUS PA (PA)		7 MF 4 0 3 4 -
SITRANS P DS III with FOUNDATION Fieldbus (FF)		7 MF 4 0 3 5 -
		
Explosion protection		
• None		A
• With ATEX, Type of protection:		
- "Intrinsic safety (Ex ia)"		B
- "Explosion-proof (Ex d) ⁷⁾ "		D
- "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d) ⁸⁾		P
- "Ex nA/ic (Zone 2) ⁹⁾ "		E
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia + Ex d + Zone 1D/2D) ^{8) 10)} (not for DS III FF)		R
• FM + CSA intrinsic safe (is) ¹¹⁾		F
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX) + Zone 1D/2D ^{8) 10) 11)}		S
• With FM + CSA, Type of protection:		
- "Intrinsic Safe and Explosion Proof (is + xp) ^{7) 11)} "		NC
Electrical connection/cable entry		
• Screwed gland M20 x 1.5		B
• Screwed gland 1/2-14 NPT		C
• M12 connectors (stainless steel) ^{12) 13)}		F
Display		
• Without display		0
• Without visible display (display concealed, setting: bar)		1
• With visible display (setting: bar)		6
• with customer-specific display (setting as specified, Order code "Y21" required)		7
A quick-start guide is included in the scope of delivery of the device.		
<ol style="list-style-type: none"> 1) For oxygen application, add Order code E10. 2) 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 <u>total</u> combination is certified here. 3) 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. 4) The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF403-...Y... and 7MF4900-1...-B 5) The standard measuring cell filling of configurations with remote seals (Y) is silicone oil. 6) M10 fastening thread: Max. span 160 bar (2320 psi) 7/16-20 UNF and M12 fastening thread: Max. span 400 bar (5802 psi) 7) Without cable gland, with blanking plug. 8) With enclosed cable gland Ex ia and blanking plug. 9) Configurations with HAN and M12 connectors are only available in Ex ic. 10) Only in connection with IP66. 11) Explosion protection acc. to FM/CSA: suitable for installations according to NEC 500/505. 12) M12 delivered without cable socket. 13) Only in connection with Ex approval A, B, E or F. 		

Selection and Ordering data	Order code				Selection and Ordering data	Order code			
Further designs Add "-Z" to Article No. and specify Order code.		HART	PA	FF	Further designs Add "-Z" to Article No. and specify Order code.		HART	PA	FF
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 ⁵⁾	✓	✓	✓
• Stainless steel 316L	A03	✓	✓	✓	"Flameproof" explosion protection according to INMETRO (Brazil) (only for transmitter 7MF4...-.....-D..)	E26 ⁵⁾	✓	✓	✓
Plug					Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil) (only for transmitter 7MF4...-.....-P..)	E28 ⁵⁾	✓	✓	
• Han 7D (metal)	A30	✓			Ex Approval IEC Ex (Ex ia) (only for transmitter 7MF4...-.....-B..)	E45 ⁵⁾	✓	✓	✓
• Han 8D (instead of Han 7D)	A31	✓			Ex Approval IEC Ex (Ex d) (only for transmitter 7MF4...-.....-D..)	E46 ⁵⁾	✓	✓	✓
• Angled	A32	✓			Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4...-.....-B..)	E55 ⁵⁾	✓	✓	✓
• Han 8D (metal)	A33	✓			Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4...-.....-D..)	E56 ⁵⁾	✓	✓	✓
Cable sockets for M12 connectors (metal (CuZn))	A50	✓	✓	✓	Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4...-.....-E..)	E57 ⁵⁾	✓	✓	✓
Rating plate inscription (instead of German)					Ex protection „Ex ia“, „Ex d“ and „Zone 2“ to NEPSI (China) (only for transmitter 7MF4...-.....-R..)	E58 ⁵⁾	✓	✓	✓
• English	B11	✓	✓	✓	"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (only for transmitter 7MF4...-.....-[B, D]..-Z + E11)	E70 ⁵⁾	✓	✓	✓
• French	B12	✓	✓	✓	Ex-protection Ex ia according to EAC Ex (Russia) (only for transmitter 7MF4...-.....-B..)	E80	✓	✓	✓
• Spanish	B13	✓	✓	✓	Ex-protection Ex d according to EAC Ex (Russia) (only for transmitter 7MF4...-.....-D..)	E81	✓	✓	✓
• Italian	B14	✓	✓	✓	Ex-protection Ex nA/ic (Zone 2) according to EAC Ex (Russia) (only for transmitter 7MF4...-.....-E..)	E82	✓	✓	✓
• Cyrillic (russian)	B16	✓	✓	✓	Ex-protection Ex ia + Ex d + Zone 1D/2D according to EAC Ex (Russia) (only for transmitter 7MF4...-.....-R..)	E83	✓	✓	✓
English rating plate Pressure units in inH ₂ O and/or psi	B21	✓	✓	✓	Two coats of lacquer on casing and cover (PU on epoxy)	G10	✓	✓	✓
Quality Inspection Certificate (5-point characteristic curve test) according to IEC 60770-2¹⁾	C11	✓	✓	✓	Transient protector 6 kV (lightning protection)	J01	✓	✓	✓
Inspection certificate²⁾ Acc. to EN 10204-3.1	C12	✓	✓	✓	Process connection Astava	J06	✓	✓	✓
Factory certificate Acc. to EN 10204-2.2	C14	✓	✓	✓					
Acceptance certificate (EN 10204-3.1) PMI test of parts in contact with medium	C15	✓	✓	✓					
Functional safety (SIL2) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	C20	✓							
Functional safety (PROFIsafe) Certificate and PROFIsafe protocol	C21 ³⁾		✓						
Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	C23	✓							
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 M20x1.5 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 IP66)	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	✓	✓	✓					

Pressure Measurement

Transmitters for applications with advanced requirements (Advanced)

SITRANS P DS III for gauge pressure

1

Selection and Ordering data	Order code			
Further designs Add "-Z" to Article No. and specify Order code.		HART	PA	FF
Marine approvals				
• Det Norske Veritas Germanischer Lloyd (DNV-GL)	S10	✓	✓	✓
• Lloyds Register (LR)	S11	✓	✓	✓
• French marine classification society Bureau Veritas (BV)	S12	✓	✓	✓
• American Bureau of Shipping (ABS)	S14	✓	✓	✓
• Russian Maritime Register (RMR)	S16	✓	✓	✓
• Korean Register of Shipping (KR)	S17	✓	✓	✓

- 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 Please add "-Z" to Article No. and specify Order code(s) and plain text.		HART	PA	FF
Measuring range to be set Specify in plain text (max. 5 characters): Y01: ... up to ... mbar, bar, kPa, MPa, psi	Y01	✓	✓ ¹⁾	
Stainless steel tag plate and entry in device variable (measuring point description) Max. 16 characters, specify in plain text: Y15:	Y15²⁾	✓	✓	✓
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 ³⁾ , inH ₂ O ³⁾ , ftH ₂ O ³⁾ , 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) Only Y01, Y15, Y16, Y17, Y21, Y22, Y25 and D05 can be factory preset	Y30	✓	✓	✓

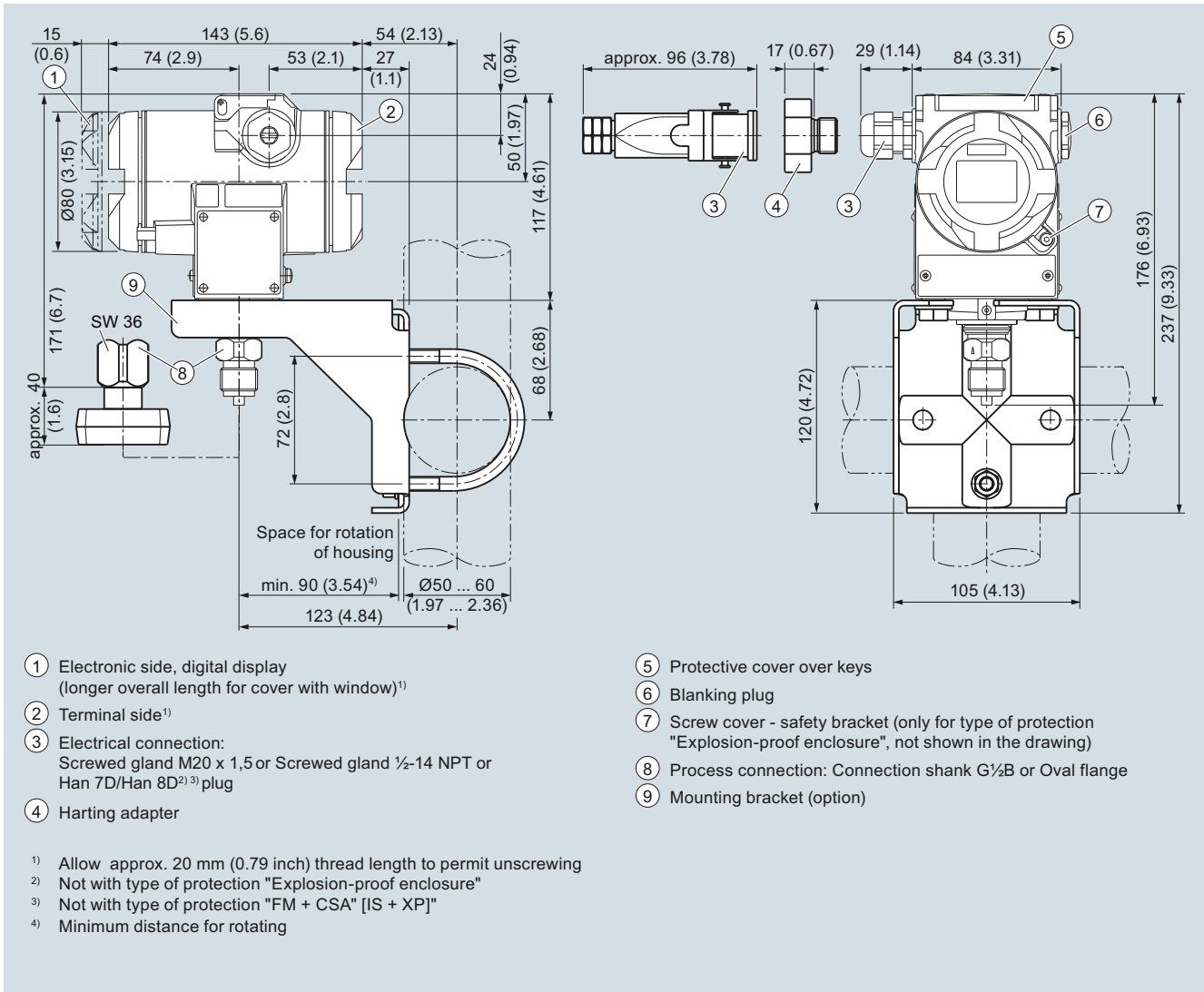
✓ = available

Ordering example

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

- 1) Measuring accuracies for PROFIBUS PA transmitters with Option Y01 are calculated in the same way as for HART devices.
- 2) If you do not wish to have any text engraved for Y15, then do not make any further text entries as "Y15:".
- 3) Preset values can only be changed over SIMATIC PDM.

Dimensional drawings



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