

Pressure Measurement

Transmitters for general requirements

SITRANS P DS III
for differential pressure and flow

Technical specifications

SITRANS P, DS III for differential pressure and flow		PROFIBUS PA and FOUNDATION Fieldbus		
	HART			
Input				
Measured variable	Differential pressure and flow			
Spans (infinitely adjustable) or nominal measuring range and max. permissible operating pressure	Span	Maximum operating pressure	Nominal measuring range	Maximum operating pressure
	0.4 ... 8 inH ₂ O (1 ... 20 mbar)	464 psi (32 bar)	8 inH ₂ O (20 mbar g)	464 psi (32 bar)
	0.4 ... 24 inH ₂ O (1 ... 60 mbar)	2320 psi (160 bar)	24 inH ₂ O (60 mbar)	2320 psi (160 bar)
	1 ... 100 inH ₂ O (2.5 ... 250 mbar)		100 inH ₂ O (250 mbar)	
	2.4 ... 240 inH ₂ O (6 ... 600 mbar)		240 inH ₂ O (600 mbar)	
	6.4 ... 642 inH ₂ O (16 ... 1600 mbar)		642 inH ₂ O (1600 mbar)	
	20 ... 2000 inH ₂ O (50 ... 5000 mbar)		2000 inH ₂ O (5 bar)	
	4.35 ... 435 psi (0.3 ... 30 bar)		435 psi (30 bar)	
	1 ... 100 inH ₂ O (2.5 ... 250 mbar)	6091 psi (420 bar)	100 inH ₂ O (250 mbar)	6091 psi (420 bar)
	2.4 ... 240 inH ₂ O (6 ... 600 mbar)		240 inH ₂ O (600 mbar)	
6.4 ... 642 inH ₂ O (16 ... 1600 mbar)		642 inH ₂ O (1600 mbar)		
20 ... 2000 inH ₂ O (50 ... 5000 mbar)		2000 inH ₂ O (5 bar)		
4.35 ... 435 psi (0.3 ... 30 bar)		435 psi (30 bar)		
Lower measuring limit				
• Measuring cell with silicone oil filling	-100% of max. span (-33% with 435 psi (30 bar) measuring cell or 0.44 psi (30 mbar a))			
Upper measuring limit	100% of max. span (for oxygen version and inert filling liquid; max. 2320 psi g (160 bar g))			
Output				
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 communication	$R_B \leq (U_H - 10.5 \text{ V})/0.023 \text{ A}$ in Ω , U_H : Power supply in V	-		
• With HART communication	$R_B = 230 \dots 500 \Omega$ (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.			
Measuring accuracy	Acc. to EN 60770-1			
Reference conditions (All error data refer always refer to the set span)	Increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil filling, room temperature 25 °C (77 °F) r: Span ratio (r = max. span / set span)			
Error in measurement and fixed-point setting (including hysteresis and repeatability)				
• Linear characteristic				≤ 0.075 %
- r ≤ 10	≤ (0.0029 · r + 0.071) %			
- 10 < r ≤ 30	≤ (0.0045 · r + 0.071) %			
- 30 < r ≤ 100	≤ (0.005 · r + 0.05) %			
• Square-rooted characteristic (flow > 50 %)				≤ 0,1 %
- r ≤ 10	≤ 0.1 %			
- 10 < r ≤ 30	≤ 0.2 %			

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	HART	PROFIBUS PA and FOUNDATION Fieldbus
• Square-rooted characteristic (flow > 25 ... 50 %)		≤ 0.2
- r ≤ 10	≤ 0.2 %	
- 10 < r ≤ 30	≤ 0.4 %	
Long-term drift (temperature change ± 30 °C (±5 4 °F))	≤ (0.25 · r)% every 5 years static pressure max. 1015 psi g (70 bar g)	≤ 0.25 % every 5 years static pressure max. 1015 psi g (70 bar g)
• 0.29 psi (20 mbar)-measuring cell	≤ (0.2 · r) per year	≤ 0.2 per year
• 0.29, 0.87, 2.32 and 7.25 psi (250, 600, 1600 and 5000 mbar)-measuring cell	≤ (0.125 · r) per year	≤ 0.125 per year
Influence of ambient temperature		
• at -10 ... +60 °C (14 ... 140 °F)	≤ (0.08 · r + 0.1) %	≤ 0.3 %
• at -40 ... -10 °C and 60 ... 85 °C (-40 ... +14 °F and 140 ... 185 °F)	≤ (0.1 · r + 0.15)%/10 K (Twice the value with 0.29 psi (20-mbar) measuring cell)	≤ 0.25 %/10 K
Influence of static pressure		
• on the zero point (PKN)	≤ (0.15 · r)% per 1015 psi (70 bar)	≤ 0.15 % per 1015 psi (70 bar)
- 0.29 psi (20 mbar)-measuring cell	≤ (0.15 · r)% per 464 psi (32 bar)	≤ 0.15 % per 464 psi (32 bar)
• on the span (PKS)	≤ 0.2 % per 1015 psi (70 bar)	-
- 0.29 psi (20 mbar)-measuring cell	≤ 0.2 % per 464 psi (32 bar)	-
Measured Value Resolution	-	3 · 10 ⁻⁵ of nominal measuring range
Rated conditions		
Degree of protection (to EN 60529)	IP65	
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		
- Digital indicator	-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 EN 61326 and NAMUR NE 21	
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	
Measuring cell filling	Silicone oil or inert filling liquid (maximum value with oxygen measurement pressure 1740 psi a) (120 bar a)) at 60 °C (140 °F))	
Process connection	Female thread ¼-18 NPT and flange connection with mounting thread M10 to DIN 19213 or 7/16-20 UNF to 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		
Terminal voltage on transmitter	10.5 ... 45 V DC 10.5 ... 30 V DC in intrinsically-safe mode	-
Separate 24 V power supply necessary	-	No
Bus voltage		
• Not Ex	-	9 ... 32 V
• With intrinsically-safe operation	-	9 ... 24 V

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	HART	PROFIBUS PA and FOUNDATION Fieldbus
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
Certificates and approvals		
Classification according to PED 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, paragraph 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 the TÜV Nord.	
Explosion protection		
• Intrinsic safety "i"	PTB 99 ATEX 2122	
- Marking	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 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 EEx d IIC T4/T6	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To circuits with values: $U_H = 10.5 \dots 45 \text{ V DC}$	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 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 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 IP65 T 120 °C	
- Connection	To circuits with values: $U_H = 10.5 \dots 45 \text{ V DC}$; $P_{\max} = 1.2 \text{ W}$	To circuits with values: $U_H = 9 \dots 32 \text{ V DC}$; $P_{\max} = 1.2 \text{ W}$
• Type of protection "n" (zone 2)	TÜV 01 ATEX 1696 X	Planned
- Marking	Ex II 3 G EEx nA L IIC T4/T5/T6	-
• 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

HART communication	230 ... 1100 Ω
Protocol	HART Version 5.x

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 measured value) or 10 (two measured values)
• Input byte	0, 1, or 2 (register operating mode and reset function for metering)
Internal preprocessing	
Device profile	PROFIBUS PA Profile for Process Control Devices Version 3.0, Class B
Function blocks	2
• Analog input	
- Adaptation to customer-specific process variables	Yes, linearly rising or falling characteristic
- Electrical damping T_{63} , adjustable	0 ... 100 s
- Simulation function	Input /Output
- Failure mode	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
- Characterizer	Max. 30 points
- 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

FOUNDATION Fieldbus communication

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} , adjustable	0 ... 100 s
- Simulation function	Output/input (can be locked within the device with a bridge)
- Failure mode	parameterizable (last good value, substitute value, incorrect value)
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respectively
- Square-rooted characteristic for flow measurement	Yes
• PID	Standard FF function block
• Physical block	1 resource block
Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block LCD
• Pressure transducer block	
- Can be calibrated by applying two pressures	Yes
- Monitoring of sensor limits	Yes
- Simulation function: Measured pressure value, sensor temperature and electronics temperature	Constant value or over parameterizable ramp function

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Selection and Ordering data		Order No.
SITRANS P DS III HART pressure transmitters for differential pressure and flow, MWP 464/2320 psi (PN 32/160)		7MF4433 -
Measuring cell filling	Measuring cell cleaning	
Silicone oil	normal	1
Inert liquid ¹⁾	Grease-free	3
Measuring span		
MWP 464 psi (PN 32)		
0.4015 ... 8.03 inH ₂ O ²⁾ (1 ... 20 mbar) ²⁾		B
MWP 2320 psi (PN 160)		
0.4015 ... 24.09 inH ₂ O (1 ... 60 mbar)		C
1.004 ... 100.4 inH ₂ O (2.5 ... 250 mbar)		D
2.409 ... 240.9 inH ₂ O (6 ... 600 mbar)		E
6.424 ... 642.4 inH ₂ O (16 ... 1600 mbar)		F
20.08 ... 2008 inH ₂ O (50 ... 5000 mbar)		G
4.35 ... 435 psi (0.3 ... 30 bar)		H
Wetted parts materials		
(stainless steel process flanges)		
Seal diaphragm	Parts of measuring cell	
Stainless steel	Stainless steel	A
Hastelloy	Stainless steel	B
Hastelloy	Hastelloy	C
Tantalum ³⁾	Tantalum	E
Monel ³⁾	Monel	H
Gold ³⁾	Gold	L
Version for diaphragm seal ⁴⁾⁵⁾		Y
Process connection		
Female thread 1/4-18 NPT with flange connection		
• Sealing screw opposite process connection		
- Mounting thread 7/16-20 UNF to EN 61518		2
- Mounting thread M10 to DIN 19213 (only for replacement requirement)		0
• Vent on side of process flange ²⁾		
- Mounting thread 7/16-20 UNF to EN 61518		6
- Mounting thread M10 to DIN 19213 (only for replacement requirement)		4
Non-wetted parts materials		
process flange screws	Electronics housing	
Stainless steel	Die-cast aluminum	2
Stainless steel	Stainless steel precision casting ⁶⁾	3
Version		
• Standard versions		1
• International version, English label inscriptions, documentation in 5 languages on CD		2
Hazardous area rating		
• General purpose		A
• ATEX Hazardous approval		
- "Intrinsically safe (EEx ia)"		B
- "Explosion-proof (EExd)" ⁷⁾		D
- "Intrinsically safe and explosion-proof (EEx ia + EEx d)" ⁸⁾		P
- use in zone 2		E
- "Intrinsically safe, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + zone 1D/2D)" ⁸⁾		R
• FM/CSA Hazardous approval		
- "Intrinsically Safe und explosion proof (is + xp)" ⁷⁾		NC

Selection and Ordering data		Order No.
SITRANS P DS III HART pressure transmitters for differential pressure and flow, MWP 464/2320 psi (PN 32/160)		7MF4433 -
Electrical connection / cable entry		
• Screwed gland Pg 13.5 ⁹⁾		A
• Screwed gland M20 x 1.5		B
• 1/2-14 NPT		C
• Han 7D plug (plastic housing) incl. mating connector ⁹⁾¹⁰⁾		D
• M12 connectors (metal) ¹¹⁾		F
Indicator		
• Without indicator		0
• Without indicator (digital display hidden, setting: mA)		1
• With indicator (digital display visible, setting: mA)		6
• With indicator (digital display visible, settings as specified, Order Code "Y21"/"Y22" required)		7

Power supply units see Chap. 8 "Supplementary Components".

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 cleaning application, add Order code E10.
- 2) Not suitable for connection of remote seal. Position of the top vent valve in the process flanges (see dimensional drawing).
- 3) Not in conjunction with max. span 20 and 60 mbar (8.03 und 24.09 inH₂O))
- 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) Not in conjunction with Electrical connection "Screwed gland Pg 13.5" and "Han7D plug".
- 7) Without cable gland, with blanking plug
- 8) With enclosed cable gland EEx ia and blanking plug
- 9) Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".
- 10) Permissible only for crimp-contact of conductor cross-section 1 mm²
- 11) M12 delivered without cable socket

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Selection and Ordering data		Order No.
Pressure transmitters for differential pressure and flow MWP 464/2320 psi (PN 32/160)		
SITRANS P DS III PA (PROFIBUS PA)		7MF4434-
SITRANS P DS III FF (FOUNDATION Fieldbus)		7MF4435-
Measuring cell filling	Measuring cell cleaning	
Silicone oil	normal	1
Inert liquid ¹⁾	Grease-free	3
Nominal measuring range		
MWP 464 psi (PN 32)		
8.03 inH ₂ O ²⁾	(20 mbar) ²⁾	B
MWP 2320 psi (PN 160)		
24.09 inH ₂ O	(60 mbar)	C
100.4 inH ₂ O	(250 mbar)	D
240.9 inH ₂ O	(600 mbar)	E
642.4 inH ₂ O	(1600 mbar)	F
2008 inH ₂ O	(5 bar)	G
435 psi	(30 bar)	H
Wetted parts materials		
(stainless steel process flanges)		
Seal diaphragm	Parts of measuring cell	
Stainless steel	Stainless steel	A
Hastelloy	Stainless steel	B
Hastelloy	Hastelloy	C
Tantalum ³⁾	Tantalum	E
Monel ³⁾	Monel	H
Gold ³⁾	Gold	L
Version as diaphragm seal ⁴⁾⁵⁾		Y
Process connection		
Female thread 1/4-18 NPT with flange connection		
• Sealing screw opposite process connection		
- Mounting thread 7/16-20 UNF to EN 61518		2
- Mounting thread M10 to DIN 19213 (only for replacement requirement)		0
• Venting on side of process flanges ²⁾		
- Mounting thread 7/16-20 UNF to EN 61518		6
- Mounting thread M10 to DIN 19213 (only for replacement requirement)		4
Non-wetted parts materials		
process flange screws	Electronics housing	
Stainless steel	Die-cast aluminum	2
Stainless steel	Stainless steel precision casting	3
Version		
• Standard versions		1
• International version, English label inscriptions, documentation in 5 languages on CD		2
Hazardous area rating		
• General purpose		A
• ATEX Hazardous approval		
- "Intrinsically safe (EEx ia)"		B
- "Explosion-proof (EExd)" ⁶⁾		D
- "Intrinsically safe and explosion-proof (EEx ia + EEx d)" ⁷⁾		P
- use in zone 2		E
- "Intrinsically safe, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + zone 1D/2D)" ⁷⁾		R
• FM/CSA Hazardous approval		
- "Intrinsically Safe und explosion proof (is + xp)" ⁶⁾		NC

Selection and Ordering data		Order No.
Pressure transmitters for differential pressure and flow MWP 464/2320 psi (PN 32/160)		
SITRANS P DS III PA (PROFIBUS PA)		7MF4434-
SITRANS P DS III FF (FOUNDATION Fieldbus)		7MF4435-
Electrical connection / cable entry		
• Screwed gland M20 x 1.5		B
• 1/2-14 NPT		C
• M12 connectors (metal) ⁸⁾		F
Indicator		
• Without indicator		0
• Without indicator (digital display hidden, setting: mA)		1
• With indicator (digital display visible, setting: mA)		6
• With indicator (digital display visible, settings as specified, Order Code "Y21"/"Y22" 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 cleaning application, add Order code E10.		
2) Not suitable for connection of remote seal. Position of the top vent valve in the process flanges (see dimensional drawing).		
3) Not in conjunction with max. span 20 and 60 mbar (8.03 und 24.09 inH ₂ O))		
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) Without cable gland, with blanking plug		
7) With enclosed cable gland EEx ia and blanking plug		
8) M12 delivered without cable socket		

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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 (2 shackles, 4 nuts, 4 U-plates, 1 angle) made of:				
• Steel	A01	✓	✓	✓
• Stainless steel	A02	✓	✓	✓
O-rings for process flanges (instead of FPM (Viton))				
• PTFE (Teflon)	A20	✓	✓	✓
• FEP (with silicone core, approved for food)	A21	✓	✓	✓
• FFP (Kalrez, compound 4079)	A22	✓	✓	✓
• NBR (Buna N)	A23	✓	✓	✓
plug				
• Han 7D (metal, gray)	A30	✓		
• Han 8U (instead of Han 7D)	A31	✓		
• Angled	A32	✓		
Sealing screws (2 unit(s))	A40	✓	✓	✓
¼-18 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	✓	✓	✓
• Spanish	B13	✓	✓	✓
• Italian	B14	✓	✓	✓
English rating plate	B21	✓	✓	✓
Pressure units in inH ₂ O and/or psi				
Factory calibration certificate¹⁾	C11	✓	✓	✓
Material traceability certificate²⁾	C12	✓	✓	✓
Factory certificate of conformance	C14	✓	✓	✓
SIL2 certificate per IEC 61508 / 61511	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	✓	✓	✓
Degree of protection IP68 (only for M20 x 1.5 and ½-14 NPT)	D12	✓	✓	✓
Process flange screws made of Monel (max. nominal pressure PN20)	D34	✓	✓	✓
Supplied with oval flange set (2 items), PTFE packings and screws in thread of process flanges	D37	✓	✓	✓
Brad Harrison Connector	D40	✓	✓	✓
Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (Ex ia)")	E01	✓	✓	✓
TÜV approval to AD/TRD (only together with type of protection "Intrinsic safety (Ex ia)")	E06	✓		

Selection and Ordering data	Order code			
Further designs		HART	PA	FF
Add "-Z" to Order No. and specify Order Code.				
Overfilling safety device for flammable and non-flammable liquids (max. PN 32 (MWVP 464 psi), basic device with type of protection "Intrinsic safety (Ex ia)", to WHG and VbF, not together with measuring cell filling "inert liquid")	E08	✓	✓	✓
Oxygen application (In the case of oxygen measurement and inert liquid max. 120 bar a (1740 psi a) at 60°C (140 °F))	E10	✓	✓	✓
Two coats of lacquer on casing and cover (PU on epoxy)	G10	✓	✓	✓
Interchanging of process connection side	H01	✓	✓	✓
Vent on side for gas measurements	H02	✓	✓	✓
Stainless steel process flanges for vertical differential pressure lines (not together with K01, K02 and K04) ³⁾	H03	✓	✓	✓
Process flange				
• Hastelloy	K01	✓	✓	✓
• Monel	K02	✓	✓	✓
• Stainless steel with PVDF insert max. PN 10 (MWP 145 psi), max. temperature of medium 90 °C (194 °F)	K04	✓	✓	✓
Surge Protection				
External, ½" NPT	J01			
Manifold Mounting				
Assembled for 3-valve manifold 7MF9411-5BA-Z+K36, Chromized steel screws, PTFE-gaskets, and pressure test	U01			
Assembled for 3-valve manifold 7MF9411-5BA-Z+K46, Stainless steel screws, PTFE-gaskets, and pressure test	U02			
Assembled for 5-valve manifold 7MF9411-5CA-Z+K36, Chromized steel screws, PTFE-gaskets, and pressure test	U03			
Assembled for 5-valve manifold 7MF9411-5CA-Z+K46, Stainless steel screws, PTFE-gaskets, and pressure test	U04			
Factory mounting of valve manifolds, see accessories.				
Supplementary electronics for 4-wire connection, see accessories.				
For ½-14 NPT inner process connection on the side in the middle of the process flanges, vent valve not possible				
✓ = available				
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⁾ Not suitable for connection of remote seal				

Pressure Measurement

Transmitters for general requirements

SITRANS P DS III for differential pressure and flow

Selection and Ordering data		Order code		
Additional data		HART	PA	FF
Please add "-Z" to Order No. and specify Order code(s) and plain text.				
Calibrated range				
Specify in plain text:				
• in the case of linear characteristic curve (max. 5 characters): Y01: X to Y psi, inH ₂ O, ftH ₂ O...	Y01	✓		
• in the case of square rooted characteristic (max. 5 characters): Y02: ... up to ... mbar, bar, kPa, MPa, psi	Y02	✓		
Tag number/identification (max. 16 characters), specify in plain text: Y15:	Y15	✓	✓	✓
Tag description (max. 27 characters), specify in plain text: Y16:	Y16	✓	✓	✓
Entry of HART (TAG) (max. 8 characters), specify in plain text: Y17:	Y17	✓		
Pressure units for digital display specify in plain text: Y21: psi, inH ₂ O, ftH ₂ O ...	Y21	✓	✓	✓
Pressure units for digital display				
Non-Pressure units for digital display¹⁾ (measuring range in pressure units ("Y01"/"Y02") mandatory) specify in plain text: Y22: X to y GPM, MGD, Feet ...	Y22²⁾+ Y01 or Y02	✓		
Preset bus address possible between 1 and 126 Specify in plain text: Y25:	Y25		✓	

Factory mounting of valve manifolds, see accessories.

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

✓ = available

¹⁾ Preset values can only be changed over SIMATIC PDM.

²⁾ Not in conjunction with over-filling safety device for flammable and non-flammable liquids (Order Code "E08")

Pressure Measurement

Transmitters for general requirements

SITRANS P DS III
for differential pressure and flow

Selection and Ordering data		Order No.
SITRANS P DS III HART pressure transmitters for differential pressure and flow, MWP 6092 psi (PN 420)		7MF4533-
Measuring cell filling	Measuring cell cleaning	
Silicone oil	normal	1
Measuring span		
1.004 ... 100.4 inH ₂ O	(2.5 ... 250 mbar)	D
2.409 ... 240.9 inH ₂ O	(6 ... 600 mbar)	E
6.424 ... 642.4 inH ₂ O	(16 ... 1600 mbar)	F
20.08 ... 2008 inH ₂ O	(50 ... 5000 mbar)	G
4.35 ... 435 psi	(0.3 ... 30 bar)	H
Wetted parts materials		
(stainless steel process flanges)		
Seal diaphragm	Parts of measuring cell	
Stainless steel	Stainless steel	A
Hastelloy	Stainless steel	B
Gold ¹⁾	Gold	L
Connection of remote seal possible on request		
Process connection		
Female thread 1/4-18 NPT with flange connection		
- Sealing screw opposite process connection - Mounting thread 7/16-20 UNF to EN 61518 - Mounting thread M12 to DIN 19213 (only for replacement requirement) - Venting on side of process flanges, location of vent valve at top of process flanges (see dimensional drawing) - Mounting thread 7/16-20 UNF to EN 61518 - Mounting thread M12 to DIN 19213 (only for replacement requirement)		3 1 7 5
Non-wetted parts materials		
process flange screws	Electronics housing	
Stainless steel	Die-cast aluminum	2
Stainless steel	Stainless steel precision casting ²⁾	3
Version		
- Standard versions - International version, English label inscriptions, documentation in 5 languages on CD		1 2
Hazardous area rating		
- General purpose - ATEX Hazardous approval "Intrinsically safe (EEx ia)" "Explosion-proof (EExd)"³⁾ "Intrinsically safe and explosion-proof (EEx ia + EEx d)"⁴⁾ - use in zone 2 "Intrinsically safe, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + zone 1D/2D)"⁴⁾ - FM/CSA Hazardous approval "Intrinsically Safe und explosion proof (is + xp)"³⁾		A B D P E R NC
Electrical connection / cable entry		
- Screwed gland Pg 13.5⁵⁾ - Screwed gland M20x1.5 1/2-14 NPT - Han 7D plug (plastic housing) incl. mating connector^{5/6)} - M12 connectors (metal)⁷⁾		A B C D F

Selection and Ordering data		Order No.
SITRANS P DS III HART pressure transmitters for differential pressure and flow, MWP 6092 psi (PN 420)		7MF4533-
Indicator		
- Without indicator - Without indicator (digital display hidden, setting: mA) - With indicator (digital display visible, setting: mA) - With indicator (digital display visible, settings as specified, Order Code "Y21"/"Y22" required)		0 1 6 7

Power supply units see Chap. 8 "Supplementary Components".

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

- Not in conjunction with max. span 600 mbar (240.9 inH₂O)
- Not in conjunction with Electrical connection "Screwed gland Pg 13.5" and "Han7D plug".
- Without cable gland, with blanking plug
- With enclosed cable gland EEx ia and blanking plug
- Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".
- Permissible only for crimp-contact of conductor cross-section 1 mm²
- M12 delivered without cable socket

Pressure Measurement

Transmitters for general requirements

SITRANS P DS III
for differential pressure and flow

2

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 (2 shackles, 4 nuts, 4 U-plates, 1 angle) made of:				
• Steel	A01	✓	✓	✓
• Stainless steel	A02	✓	✓	✓
O-rings for process flanges (instead of FPM (Viton))				
• PTFE (Teflon)	A20	✓	✓	✓
• FEP (with silicone core, approved for food)	A21	✓	✓	✓
• FFKM (Kalrez, compound 4079)	A22	✓	✓	✓
• NBR (Buna N)	A23	✓	✓	✓
plug				
• Han 7D (metal, gray)	A30	✓		
• Han 8U (instead of Han 7D)	A31	✓		
• Angled	A32	✓		
Sealing screws (2 unit(s))	A40	✓	✓	✓
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	✓	✓	✓
• Spanish	B13	✓	✓	✓
• Italian	B14	✓	✓	✓
English rating plate	B21	✓	✓	✓
Pressure units in inH ₂ O and/or psi				
Factory calibration certificate	C11	✓	✓	✓
Material traceability certificate	C12	✓	✓	✓
Factory certificate of conformance	C14	✓	✓	✓
SIL2 certificate per IEC 61508 / 61511	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	✓	✓	✓
Degree of protection IP68 (only for M20 x 1.5 and 1/2-14 NPT)	D12	✓	✓	✓
Brad Harrison Connector	D40	✓	✓	✓
Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (Ex ia)")	E01	✓	✓	✓

Selection and Ordering data	Order code			
Further designs		HART	PA	FF
Add "-Z" to Order No. and specify Order Code.				
Two coats of lacquer on casing and cover (PU on epoxy)	G10	✓	✓	✓
Interchanging of process connection side	H01	✓	✓	✓
Stainless steel process flanges for vertical differential pressure lines	H03	✓	✓	✓
Surge Protection				
External, 1/2" NPT	J01			
Manifold Mounting				
Assembled for 3-valve manifold 7MF9411-5BA-Z+K36, Chromized steel screws, PTFE-gaskets, and pressure test	U01			
Assembled for 3-valve manifold 7MF9411-5BA-Z+K46, Stainless steel screws, PTFE-gaskets, and pressure test	U02			
Assembled for 5-valve manifold 7MF9411-5CA-Z+K36, Chromized steel screws, PTFE-gaskets, and pressure test	U03			
Assembled for 5-valve manifold 7MF9411-5CA-Z+K46, Stainless steel screws, PTFE-gaskets, and pressure test	U04			
Additional data				
Please add "-Z" to Order No. and specify Order code(s) and plain text.				
Calibrated range				
Specify in plain text:				
• in the case of linear characteristic curve (max. 5 characters): Y01: X to Y psi, inH ₂ O, ftH ₂ O...	Y01	✓		
• in the case of square rooted characteristic (max. 5 characters): Y02: ... up to ... mbar, bar, kPa, MPa, psi	Y02	✓		
Tag number/identification (max. 16 characters), specify in plain text: Y15:	Y15	✓	✓	✓
Tag description (max. 27 characters), specify in plain text: Y16:	Y16	✓	✓	✓
Entry of HART (TAG) (max. 8 characters), specify in plain text: Y17:	Y17	✓		
Pressure units for digital display specify in plain text: Y21: psi, inH ₂ O, ftH ₂ O ...	Y21	✓	✓	✓
Pressure units for digital display				
Non-Pressure units for digital display¹⁾ (measuring range in pressure units ("Y01"/"Y02") mandatory) Specify in plain text: Y22: .X to Y GPM, MGD, Feet ...	Y22 + Y01 or Y02	✓		
Preset bus address possible between 1 and 126 Specify in plain text: Y25:	Y25		✓	

Factory mounting of valve manifolds, see accessories.

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

✓ = available

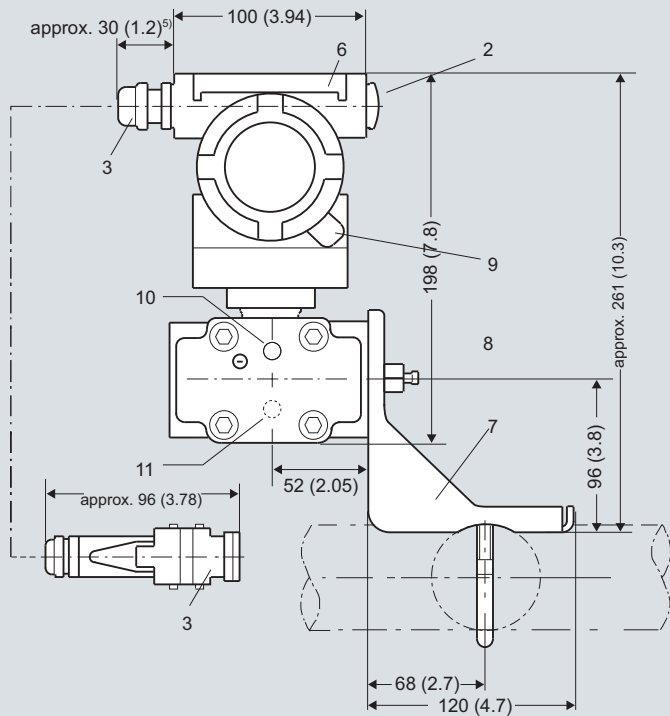
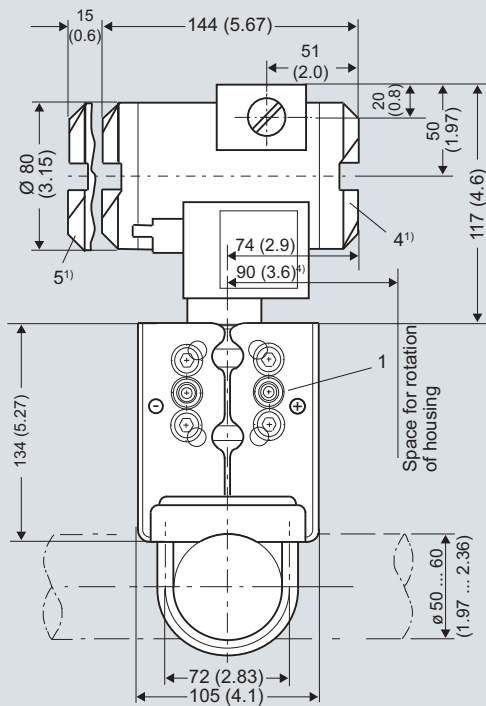
¹⁾ Preset values can only be changed over SIMATIC PDM.

Pressure Measurement

Transmitters for general requirements

SITRANS P DS III
for differential pressure and flow

Dimensional drawings



- 1 Process connection: 1/4-18 NPT (EN 61518)
- 2 Blanking plug
- 3 Electrical connection:
 - Screwed gland Pg 13,5 (adapter)^{2) 3)}, only DS III HART,
 - Screwed gland M20x1,5³⁾,
 - Screwed gland 1/2-14 NPT,
 - Han 7D/Han 8D^{2) 3)} plug, only DS III HART, or
 - M12 connector
- 4 Terminal side
- 5 Electronics side, digital display (longer overall length for cover with window)
- 6 Protective cover over keys
- 7 Mounting bracket (option)
- 8 Sealing screw with valve (option)
- 9 Screw cover - safety bracket (only for type of protection "Explosion-proof enclosure", not shown in the drawing)
- 10 Lateral venting for liquid measurement (Standard)
- 11 Lateral venting for gas measurement (suffix H02)

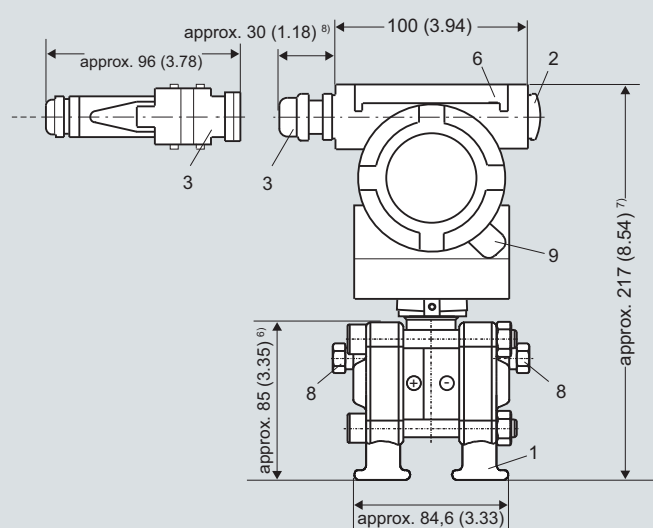
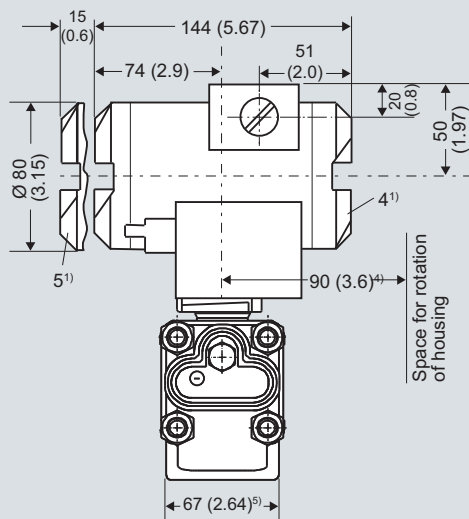
- 1) Allow approx. 20 mm (0.79 inch) thread length to permit unscrewing
- 2) Not with type of protection "explosion-proof enclosure"
- 3) Not with type of protection "FM + CSA [is + xp]"
- 4) 92 mm (3.62 inch) for minimum distance to permit rotation with indicator
- 5) 45 mm (1.8 inch) for Pg 13,5 with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

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

Pressure Measurement

Transmitters for general requirements

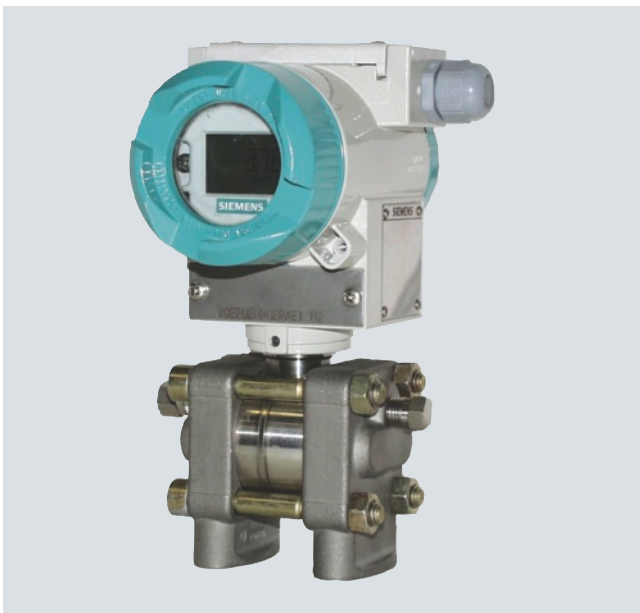
SITRANS P DS III
for differential pressure and flow



- 1 Process connection: 1/4-18 NPT (EN 61518)
- 2 Blanking plug
- 3 Electrical connection:
 - Screwed gland Pg 13,5 (adapter)^{2) 3)}, only DS III HART,
 - Screwed gland M20x1,5³⁾,
 - Screwed gland 1/2-14 NPT,
 - Han 7D/Han 8D^{2) 3)} plug, only DS III HART, or
 - M12 connector
- 4 Terminal side
- 5 Electronics side, digital display (longer overall length for cover with window)
- 6 Protective cover over keys
- 7 Mounting bracket (option)
- 8 Sealing screw with valve (option)
- 9 Screw cover - safety bracket (only for type of protection "Explosion-proof enclosure", not shown in the drawing)

- 1) Allow approx. 20 mm (0.79 inch) thread length to permit unscrewing
- 2) Not with type of protection "explosion-proof enclosure"
- 3) Not with type of protection "FM + CSA [is + xp]"
- 4) 92 mm (3.6 inch) for minimum distance to permit rotation with indicator
- 5) 74 mm (2.9 inch) for PN ≤ 420 (MWP ≤ 6092 psi)
- 6) 91 mm (3.6 inch) for PN ≤ 420 (MWP ≤ 6092 psi)
- 7) 219 mm (8.62 inch) for PN ≤ 420 (MWP ≤ 6092 psi)
- 8) 45 mm (1.8 inch) for Pg 13,5 with adapter

SITRANS P DS III pressure transmitters for differential pressure and flow, with process covers for vertical differential pressure lines, optional "H03", dimensional drawing, dimensions in mm (inch)



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