

## Technical specifications

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

Input		Absolute pressure	
		HART	PROFIBUS PA/ FOUNDATION Fieldbus
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)		Span	Nominal measuring range
		8.34 ... 250 mbar a 0.834 ... 25 kPa a 3 ... 100 inH <sub>2</sub> O a	250 mbar a 25 kPa a 100 inH <sub>2</sub> O a
		43.34 ... 1300 mbar a 4.33 ... 130 kPa a 17 ... 525 inH <sub>2</sub> O a	1300 mbar a 130 kPa a 525 inH <sub>2</sub> O a
		170 ... 5000 mbar a 17 ... 500 kPa a 2.43 ... 72.5 psi a	5000 mbar a 500 kPa a 72.5 psi a
		1 ... 30 bar a 0.1 ... 3 MPa a 14.6 ... 435 psi a	30 bar a 3 MPa a 435 psi a
		5.3 ... 100 bar a 0.5 ... 10 MPa a 76.9 ... 1450 psi a	100 bar a 10 MPa a 1450 psi a
			Max. operating pressure MAWP (PS)
			32 bar a 3.2 MPa a 464 psi a
			32 bar a 3.2 MPa a 464 psi a
			32 bar a 3.2 MPa a 464 psi a
Lower measuring limit		0 mbar a/0 kPa a/0 psi a	
• Measuring cell with silicone oil filling		30 mbar a/3 kPa a/0.44 psi a	
• Measuring cell with inert filling liquid		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	
- for process temperature -20 °C < θ ≤ +60 °C (-4 °F < θ ≤ +140 °F)			
- 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))			
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		$R_B \leq (U_H - 10.5 \text{ V})/0.023 \text{ A}$ in Ω, $U_H$ : Power supply in V	-
• Without HART		$R_B = 230 \dots 500 \text{ } \Omega$ (SIMATIC PDM) or $R_B = 230 \dots 1100 \text{ } \Omega$ (HART Communicator)	-
• With HART			
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

Pressure transmitters

for applications with advanced requirements (Advanced)

SITRANS P DS III

for absolute pressure (from differential pressure series)

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### Measuring accuracy

Reference conditions

(All error data refer always refer to the set span)

Acc. to IEC 60770-1

- 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)

$r = \max.$  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 psi a

$\leq (0.15 \cdot r + 0.1) \%$

- 1300 mbar a/130 kPa a/18.8 psi a  
5 bar a/500 kPa a/72.5 psi a  
30 bar a/3000 kPa a/435 psi a  
100 bar a/10 MPa a/1450 psi a

$\leq (0.08 \cdot r + 0.16) \%$

Long-term stability

(temperature change  $\pm 30$  °C ( $\pm 54$  °F))

$\leq (0.25 \cdot r) \%$  in 5 years

Effect of mounting position (in pressure per change in angle)

$\leq 0.7$  mbar/0.07 kPa/0.010 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

- according to EN 60529

IP66 (optional IP66/IP68)

- according to NEMA 250

Type 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

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##### Design

Weight (without options)	≈ 4.5 kg (≈ 9.9 (lb))
Enclosure material	Low-copper die-cast aluminum, GD-AlSi12 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 304	Sheet stainless steel, mat. no. 1.4301 (SS 304)
• Stainless steel 316L	Sheet stainless steel, mat. no. 1.4404 (SS 316L)

##### 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

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### Certificates and approvals

	HART	PROFIBUS PA/ FOUNDATION Field-bus
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	PTB 13 ATEX 2007 X	
• Intrinsic safety "i"	Ex II 1/2 G Ex ia/ib IIC T4/T5/T6 Ga/Gb	
- Marking	-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	
- Permissible ambient temperature		
- 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: $U_o = 24 \text{ V}$ , $I_o = 250 \text{ mA}$ , $P_o = 1.2 \text{ W}$ $L_i = 7 \mu\text{H}$ , $C_i = 1.1 \text{ nF}$
- Effective internal inductance/capacitance	$L_i = 0.4 \text{ mH}$ , $C_i = 6 \text{ nF}$	
• 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: $U_o = 24 \text{ V}$ , $I_o = 250 \text{ mA}$ , $P_o = 1.2 \text{ W}$ $L_i = 7 \mu\text{H}$ , $C_i = 1.1 \text{ nF}$
- Effective internal inductance/capacitance	$L_i = 0.4 \text{ mH}$ , $C_i = 6 \text{ nF}$	
• 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 IIC T4/T5/T6 Gb/Gc Ex II 2/3 G Ex ic IIC T4/T5/T6 Gb/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: $U_o = 32 \text{ V}$ , $I_o = 132 \text{ mA}$ , $P_o = 1 \text{ W}$ $L_i = 7 \mu\text{H}$ , $C_i = 1.1 \text{ nF}$
- Effective internal inductance/capacitance	$L_i = 0.4 \text{ mH}$ , $C_i = 6 \text{ nF}$	
• 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
<b>PROFIBUS PA communication</b>		- 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		

# Pressure Measurement

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Selection and Ordering data		Article No.	Selection and Ordering data		Article No.
<b>Pressure transmitters for absolute pressure from differential pressure series, SITRANS P DS III with HART</b>		<b>7MF4333-</b>	<b>Pressure transmitters for absolute pressure from differential pressure series, SITRANS P DS III with HART</b>		<b>7MF4333-</b>
<a href="#">Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</a>			<b>Electrical connection/cable entry</b>		
<b>Measuring cell filling</b>	<b>Measuring cell cleaning</b>		<ul style="list-style-type: none"> <li>Screwed gland M20 x 1.5</li> <li>Screwed gland 1/2-14 NPT</li> <li>Device plug Han 7D (plastic housing) incl. mating connector<sup>14)</sup></li> <li>Device plugs M12 (stainless steel)<sup>15) 16)</sup></li> </ul>		<b>B</b> <b>C</b> <b>D</b> <b>F</b>
Silicone oil	normal	1	<b>Display</b>		<b>0</b> <b>1</b> <b>6</b> <b>7</b>
Inert liquid <sup>1)</sup>	grease-free to cleanliness level 2	3	<ul style="list-style-type: none"> <li>Without display</li> <li>Without visible display (display concealed, setting: mA)</li> <li>With visible display (setting: mA)</li> <li>with customer-specific display (setting as specified, Order code "Y21" or "Y22" required)</li> </ul>		
<b>Measuring span (min. ... max.)</b>			<b>Power supply units</b> see Chap. 7 "Supplementary Components".		
8.34 ... 250 mbar a	(0.13 ... 3.63 psi a)	D	<b>Included in delivery of the device:</b>		
43.34 ... 1300 mbar a	(0.63 ... 18.86 psi a)	F	<ul style="list-style-type: none"> <li>Quick-start guide</li> <li>Sealing plug(s) or sealing screw(s) for the process flanges(s)</li> </ul>		
0.17 ... 5 bar a	(2.43 ... 72.5 psi a)	G	<ol style="list-style-type: none"> <li>For oxygen applications, add Order code E10.</li> <li>Version 7MF4333-1DY... only up to max. span 200 mbar a (2.9 psi a).</li> <li>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.</li> <li>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.</li> <li>The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF433-...Y... and 7MF4900-1...-B</li> <li>The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.</li> <li>Not for span "5.3 ... 100 bar a (76.9 ... 1450 psi a)". Position of the top vent valve in the process flange (see dimensional drawing).</li> <li>Not in conjunction with Electrical connection "device plug Han 7D".</li> <li>Without cable gland, with blanking plug</li> <li>With enclosed cable gland Ex ia and blanking plug</li> <li>Configurations with device plugs Han and M12 are only available in Ex ic.</li> <li>Only in connection with IP66.</li> <li>Explosion protection acc. to FM/CSA: suitable for installations according to NEC 500/505.</li> <li>Only in connection with Ex approval A, B or E.</li> <li>Only in connection with Ex approval A, B, E or F.</li> <li>M12 delivered without cable socket.</li> </ol>		
1 ... 30 bar a	(14.6 ... 435 psi a)	H			
5.3 ... 100 bar a	(76.9 ... 1450 psi a)	KE			
<b>Wetted parts materials</b>					
Seal diaphragm	Parts of measuring cell				
Stainless steel	Stainless steel	A			
Hastelloy	Stainless steel	B			
Hastelloy	Hastelloy	C			
Tantalum	Tantalum	E			
Monel	Monel	H			
Gold	Gold	L			
Version for diaphragm seal <sup>2) 3) 4) 5) 6)</sup>		Y			
<b>Process connection</b>					
Female thread 1/4-18 NPT with flange connection					
<ul style="list-style-type: none"> <li>Sealing screw opposite process connection</li> <li>- Mounting thread 7/16"-20 UNF to IEC 61518/DIN EN 61518</li> <li>- Mounting thread M10 to DIN 19213 (only for replacement requirement)</li> <li>Vent on side of process flange<sup>7)</sup></li> <li>- Mounting thread 7/16"-20 UNF to IEC 61518/DIN EN 61518</li> <li>- Mounting thread M10 to DIN 19213 (only for replacement requirement)</li> </ul>		2 0 6 4			
<b>Non-wetted parts materials</b>					
process flange screws	Electronics housing				
Stainless steel	Die-cast aluminum	2			
Stainless steel	Stainless steel precision casting <sup>8)</sup>	3			
<b>Version</b>					
<ul style="list-style-type: none"> <li>Standard version, German plate inscription, setting for pressure unit: bar</li> <li>International version, English plate inscription, setting for pressure unit: bar</li> <li>Chinese version, English plate inscription, setting for pressure unit: Pascal</li> </ul> All versions include DVD with compact operating instructions in various EU languages.	1 2 3				
<b>Explosion protection</b>					
<ul style="list-style-type: none"> <li>None</li> <li>With ATEX, Type of protection:                             <ul style="list-style-type: none"> <li>"Intrinsic safety (Ex ia)"</li> <li>"Explosion-proof (Ex d)"<sup>9)</sup></li> <li>"Intrinsic safety and flameproof enclosure" (Ex ia + Ex d)"<sup>10)</sup></li> <li>"Ex nA/ic (Zone 2)"<sup>11)</sup></li> <li>"Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia+ Ex d + Zone 1D/2D)"<sup>10)12)</sup></li> </ul> </li> <li>FM + CSA intrinsic safe (is)<sup>13)</sup></li> <li>FM + CSA (is + ep) + Ex ia + Ex d (ATEX) + Zone 1D/2D<sup>10)12)13)</sup></li> <li>With FM + CSA, Type of protection:                             <ul style="list-style-type: none"> <li>"Intrinsic Safe and Explosion Proof (is + xp)"<sup>9)13)</sup></li> </ul> </li> </ul>	A B D P E R F S NC				

**Pressure Measurement**

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Selection and Ordering data		Article No.	Selection and Ordering data		Article No.
<b>Pressure transmitter for absolute pressure from differential pressure series</b>			<b>Pressure transmitter for absolute pressure from differential pressure series</b>		
<b>SITRANS P DS III with PROFIBUS PA (PA)</b>		7 MF 4 3 3 4 -	<b>SITRANS P DS III with PROFIBUS PA (PA)</b>		7 MF 4 3 3 4 -
<b>SITRANS P DS III with FOUNDATION Fieldbus (FF)</b>		7 MF 4 3 3 5 -	<b>SITRANS P DS III with FOUNDATION Fieldbus (FF)</b>		7 MF 4 3 3 5 -
<a href="#">Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</a>					
<b>Measuring cell filling</b>	<b>Measuring cell cleaning</b>		<b>Electrical connection/cable entry</b>		
Silicone oil	normal	1	• Screwed gland M20 x 1.5		B
Inert liquid <sup>1)</sup>	grease-free to cleanliness level 2	3	• Screwed gland ½-14 NPT		C
			• Device plugs M12 (stainless steel) <sup>13)14)</sup>		F
<b>Nominal measuring range</b>			<b>Display</b>		
250 mbar a	(3.63 psi a)	D	• Without display		0
1300 mbar a	(18.86 psi a)	F	• Without visible display (display concealed, setting: bar)		1
5 bar a	(72.5 psi a)	G	• With visible display (setting: bar)		6
30 bar a	(435 psi a)	H	• With customer-specific display (setting as specified, Order code "Y21" required)		7
100 bar a	(1450 psi a)	KE			
<b>Wetted parts materials</b>			Included in delivery of the device:		
Seal diaphragm	Parts of measuring cell		• Quick-start guide		
Stainless steel	Stainless steel	A	• Sealing plug(s) or sealing screw(s) for the process flanges(s)		
Hastelloy	Stainless steel	B			
Hastelloy	Hastelloy	C			
Tantalum	Tantalum	E			
Monel	Monel	H			
Gold	Gold	L			
Version as diaphragm seal <sup>2) 3) 4) 5) 6)</sup>		Y			
<b>Process connection</b>					
Female thread ¼-18 NPT with flange connection					
• Sealing screw opposite process connection					
- Mounting thread 7/16-20 UNF to IEC 61518/DIN EN 61518		2			
- Mounting thread M10 to DIN 19213 (only for replacement requirement)		0			
• Vent on side of process flange <sup>7)</sup>					
- Mounting thread 7/16-20 UNF to IEC 61518/DIN EN 61518		6			
- Mounting thread M10 to DIN 19213 (only for replacement requirement)		4			
<b>Non-wetted parts materials</b>					
process flange screws	Electronics housing				
Stainless steel	Die-cast aluminum	2			
Stainless steel	Stainless steel precision casting	3			
<b>Version</b>					
• 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.					
<b>Explosion protection</b>					
• None		A			
• With ATEX, Type of protection:					
- "Intrinsic safety (Ex ia)"		B			
- "Explosion-proof (Ex d)" <sup>8)</sup>		D			
- "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d) <sup>9)</sup>		P			
- "Ex nA/ic (Zone 2)" <sup>10)</sup>		E			
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia + Ex d + Zone 1D/2D)" <sup>9)11)</sup>		R			
• FM + CSA intrinsic safe (is) <sup>12)</sup>		F			
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX) + Zone 1D/2D <sup>9)11)12)</sup>		S			
• With FM + CSA, Type of protection:					
- "Intrinsic Safe and Explosion Proof (is + xp)" <sup>8)12)</sup>		NC			

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Selection and Ordering data	Order code			
<b>Further designs</b> Add "-Z" to Article No. and specify Order code.		HART	PA	FF
<b>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:</b>				
• Steel	A01	✓	✓	✓
• Stainless steel 304	A02	✓	✓	✓
• Stainless steel 316L	A03	✓	✓	✓
<b>O-rings for process flanges</b> (instead of FPM (Viton))				
• PTFE (Teflon)	A20	✓	✓	✓
• FEP (with silicone core, approved for food)	A21	✓	✓	✓
• FFPM (Kalrez, for measured medium temperatures -15 ... 100 °C (5 ... 212 °F))	A22	✓	✓	✓
• NBR (Buna N)	A23	✓	✓	✓
<b>Device plugs<sup>1)</sup></b>				
• Han 7D (metal)	A30	✓		
• Han 8D (instead of Han 7D)	A31	✓		
• Angled	A32	✓		
• Han 8D (metal)	A33	✓		
<b>Sealing screw</b> ¼-18 NPT, with valve in mat. of process flanges	A40	✓	✓	✓
<b>Cable sockets for device plugs M12 (metal (CuZn))</b>	A50	✓	✓	✓
<b>Rating plate inscription</b> (instead of German)				
• English	B11	✓	✓	✓
• French	B12	✓	✓	✓
• Spanish	B13	✓	✓	✓
• Italian	B14	✓	✓	✓
• Cyrillic (russian)	B16	✓	✓	✓
<b>English rating plate</b> Pressure units in inH <sub>2</sub> O and/or psi	B21	✓	✓	✓
<b>Quality Inspection Certificate (5-point characteristic curve test) according to IEC 60770-2<sup>2)</sup></b>	C11	✓	✓	✓
<b>Inspection certificate<sup>3)</sup></b> Acc. to EN 10204-3.1	C12	✓	✓	✓
<b>Factory certificate</b> Acc. to EN 10204-2.2	C14	✓	✓	✓
<b>Acceptance certificate (EN 10204-3.1)</b> PMI test of parts in contact with medium	C15	✓	✓	✓
<b>Functional safety (SIL2)</b> Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	C20	✓		
<b>Functional safety (PROFIsafe) Certificate and PROFIsafe protocol</b>	C21 <sup>4)</sup>		✓	
<b>Functional safety (SIL2/3)</b> Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	C23	✓		
<b>PED for Russia with initial calibration mark</b>	C99	✓	✓	✓

Selection and Ordering data	Order code			
<b>Further designs</b> Add "-Z" to Article No. and specify Order code.		HART	PA	FF
<b>Setting of the upper saturation limit of the output signal to 22.0 mA</b>	D05	✓		
<b>Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009)</b> (only together with seal diaphragm made of Hastelloy and stainless steel)	D07	✓	✓	✓
<b>Degree of protection IP66/IP68</b> (only for M20 x 1.5 and ½-14 NPT)	D12	✓	✓	✓
<b>Supplied with oval flange</b> (1 item), PTFE packing and screws in thread of process flange	D37	✓	✓	✓
<b>Capri cable gland 4F CrNi and clamping device (848699 + 810634) included</b>	D59	✓	✓	✓



Selection and Ordering data	Order code				Selection and Ordering data	Order code			
<b>Further designs</b> Add "-Z" to Article No. and specify Order code.					<b>Further designs</b> Add "-Z" to Article No. and specify Order code.				
<b>Use in or on zone 1D/2D<sup>5)</sup></b> (only together with type of protection "Intrinsic safety" (transmitter 7MF4...-.....-B.. Ex ia)" and IP66)	E01	✓	✓	✓	<b>Transient protector 6 kV (lightning protection)</b>	J01	✓	✓	✓
<b>Oxygen application</b> (In the case of oxygen measurement and inert liquid max. 100 bar (1450 psi) at 60°C (140 °F))	E10	✓	✓	✓	<b>Chambered graphite gasket for process flange</b>	J02	✓	✓	✓
<b>Export approval Korea</b>	E11	✓	✓	✓	<b>Chambered PTFE graphite gasket</b>	J03	✓	✓	✓
<b>CRN approval Canada</b> (Canadian Registration Number)	E22 <sup>6)</sup>	✓	✓	✓	<b>EPDM O-rings for process flange with approval (WRC/WRAS)</b>	J05	✓	✓	✓
<b>Dual seal</b>	E24	✓	✓	✓	<b>Vent valve or blanking plug of process flange welded-in (orientation: on right when viewing the display)<sup>9)</sup></b>	J08	✓	✓	✓
<b>Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-B..)	E25 <sup>7)</sup>	✓	✓	✓	<b>Vent valve or blanking plug of process flange welded-in (orientation: on left when viewing the display)<sup>9)</sup></b>	J09	✓	✓	✓
<b>"Flameproof" explosion protection according to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-D..)	E26 <sup>7)</sup>	✓	✓	✓	<b>Process flange</b>				
<b>Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil)</b> (only for transmitter 7MF4...-.....-P..)	E28 <sup>7)</sup>	✓	✓	✓	• Hastelloy	K01	✓	✓	✓
<b>Ex Approval IEC Ex (Ex ia)</b> (only for transmitter 7MF4...-.....-B..)	E45 <sup>7)</sup>	✓	✓	✓	• Monel	K02	✓	✓	✓
<b>Ex Approval IEC Ex (Ex d)</b> (only for transmitter 7MF4...-.....-D..)	E46 <sup>7)</sup>	✓	✓	✓	• Stainless steel with PVDF insert max. PN 10 (MAWP 145 psi), max. temperature of medium 90 °C (194 °F)	K04	✓	✓	✓
<b>Explosion-proof "Intrinsic safety" to NEPSI (China)</b> (only for transmitter 7MF4...-.....-B..)	E55 <sup>7)</sup>	✓	✓	✓	For ½-14 NPT inner process connection on the side in the middle of the process flange, vent valve not possible				
<b>Explosion protection "Explosion-proof" to NEPSI (China)</b> (only for transmitter 7MF4...-.....-D..)	E56 <sup>7)</sup>	✓	✓	✓	<b>Marine approvals</b>				
<b>Explosion-proof "Zone 2" to NEPSI (China)</b> (only for transmitter 7MF4...-.....-E..)	E57 <sup>7)</sup>	✓	✓	✓	• Det Norske Veritas Germanischer Lloyd (DNV-GL)	S10	✓	✓	✓
<b>Ex protection „Ex ia“, „Ex d“ and „Zone 2“ to NEPSI (China)</b> (only for transmitter 7MF4...-.....-R..)	E58 <sup>7)</sup>	✓	✓	✓	• Lloyds Register (LR)	S11	✓	✓	✓
<b>"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea)</b> (only for transmitter 7MF4...-.....-[B, D]..-Z + E11)	E70 <sup>7)</sup>	✓	✓	✓	• French marine classification society Bureau Veritas (BV)	S12	✓	✓	✓
<b>Ex-protection Ex ia according to EAC Ex (Russia)</b>	E80	✓	✓	✓	• American Bureau of Shipping (ABS)	S14	✓	✓	✓
<b>Ex-protection Ex d according to EAC Ex (Russia)</b>	E81	✓	✓	✓	• Russian Maritime Register (RMR)	S16	✓	✓	✓
<b>Ex-protection Ex nA/ic (Zone 2) according to EAC Ex (Russia)</b>	E82	✓	✓	✓	• Korean Register of Shipping (KR)	S17	✓	✓	✓
<b>Ex-protection Ex ia + Ex d + Zone 1D/2D according to EAC Ex (Russia)</b>	E83	✓	✓	✓					
<b>Two coats of lacquer on casing and cover (PU on epoxy)</b>	G10	✓	✓	✓					
<b>Interchanging of process connection side</b>	H01	✓	✓	✓					
<b>Vent on side for gas measurements</b>	H02	✓	✓	✓					
<b>Stainless steel process flanges for vertical differential pressure lines</b> (not together with K01, K02 and K04) <sup>8)</sup>	H03	✓	✓	✓					

1) Device plug Han IP65

2) 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.

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

5) Option does not contain gas explosion protection; only dust explosion protection: Use in or at Zone 1D/2D.

6) Cannot be ordered with remote seal.

7) When the additional ex option is selected, the ATEX marking on the device is omitted. Only the Ex option selected via the Z option is marked.

8) Not suitable for connection of remote seals.

9) Blanking plug is standard configuration. Order option A40 if a vent valve is required instead of a blanking plug.

# Pressure Measurement

Pressure transmitters

for applications with advanced requirements (Advanced)

SITRANS P DS III

for absolute pressure (from differential pressure series)

1

Selection and Ordering data	Order code			
<i>Additional data</i>		HART	PA	FF
Please add <b>"-Z"</b> to Article No. and specify Order code(s) and plain text.				
<b>Measuring range to be set</b> Specify in plain text (max. 5 characters): Y01: ... up to ... mbar a, bar a, kPa <sub>abs</sub> , MPa <sub>abs</sub> , psi a <sup>2)</sup>	<b>Y01</b>	✓	✓ <sup>1)</sup>	
<b>Stainless steel tag plate and entry in device variable (measuring point description)</b> Max. 16 characters, specify in plain text: Y15: .....	<b>Y15</b>	✓	✓	✓
<b>Measuring point text (entry in device variable)</b> Max. 27 characters, specify in plain text: Y16: .....	<b>Y16</b>	✓	✓	✓
<b>Entry of HART address (TAG)</b> Max. 8 characters, specify in plain text: Y17: .....	<b>Y17</b>	✓		
<b>Setting of pressure indication in pressure units</b> 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 <sub>2</sub> O <sup>*)</sup> , inH <sub>2</sub> O <sup>*)</sup> , ftH <sub>2</sub> O <sup>*)</sup> , mmHG, inHG, psi, Pa, kPa, MPa, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , Torr, ATM or % ) ref. temperature 20 °C	<b>Y21</b>	✓	✓	✓
<b>Setting of pressure indication in non-pressure units<sup>3)</sup></b> Specify in plain text: Y22: ..... up to ..... l/min, m <sup>3</sup> /h, m, USgpm, ... (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	<b>Y22 + Y01</b>	✓		
<b>Preset bus address</b> possible between 1 and 126 Specify in plain text: Y25: .....	<b>Y25</b>		✓	✓
<b>Damping adjustment in seconds (0 ... 100 s)</b>	<b>Y30</b>	✓	✓	✓

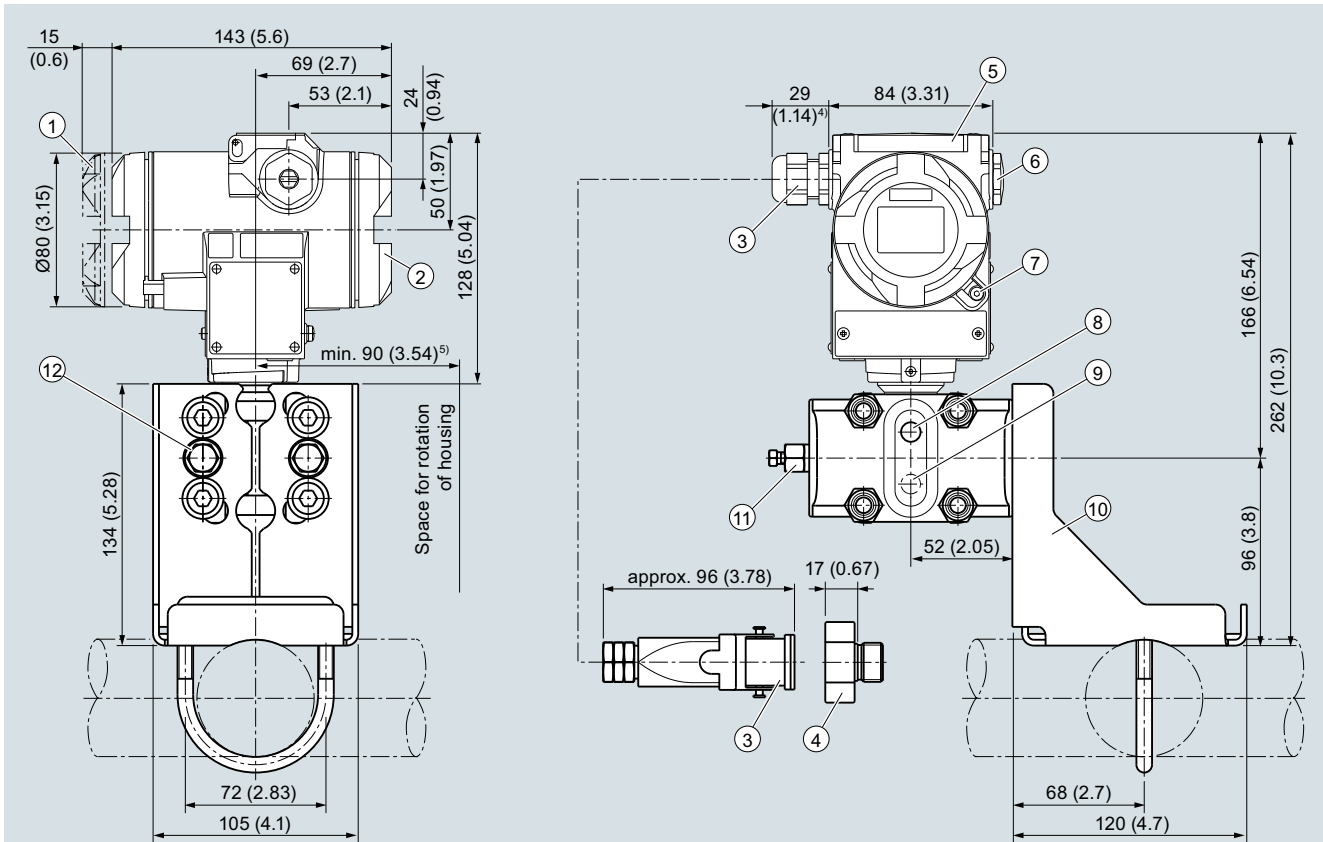
Factory mounting of valve manifolds, see accessories.

Only Y01, Y15, Y16, Y17, Y21, Y22, Y25 and D05 can be factory preset

✓ = 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.

## Dimensional drawings



- ① Electronics side, local display (longer overall length for cover with inspection window)<sup>1)</sup>
- ② Connection side<sup>1)</sup>
- ③ Electrical connection:
  - Pg 13.5 screw gland (adapter)<sup>2) 3)</sup>
  - M20 x 1,5 screw gland
  - ½-14 NPT screw gland
  - Han 7D/Han 8D<sup>2) 3)</sup> device plug
- ④ Harting adapter
- ⑤ Cover over buttons

- ⑥ Blanking plug
- ⑦ Safety catch (only for "flameproof enclosure" type of protection; not shown in the drawing)
- ⑧ Lateral ventilation for liquid measurement (Standard)
- ⑨ Lateral ventilation for gas measurement (order option H02)
- ⑩ Mounting bracket (optional)
- ⑪ Sealing plug with valve (optional)
- ⑫ Process connection: ¼-18 NPT (IEC 61518)

- <sup>1)</sup> In addition, allow approx. 20 mm (0.79 inch) for the thread length
- <sup>2)</sup> Not with "flameproof enclosure" type of protection
- <sup>3)</sup> Not for type of protection "FM + CSA" [is + XP]"
- <sup>4)</sup> For Pg 13.5 with adapter, approx. 45 mm (1.77 inch)
- <sup>5)</sup> 92 mm (3.62 inch) minimum distance for rotating with indicator

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