

Pressure Measurement

Pressure transmitters

for applications with advanced requirements (Advanced)

SITRANS P410

for differential pressure and flow

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Technical specifications

SITRANS P410 for differential pressure and flow

Input		Differential pressure and flow	
Measured variable	Differential pressure and flow	HART	PROFIBUS PA/ FOUNDATION Fieldbus
Span (fully adjustable) or measuring range, max. operating pressure (in accordance with 2014/68/EU Pressure Equipment Directive)		Span	Nominal measuring range
			Max. operating pressure MAWP (PS)
		2.5 ... 250 mbar 0.2 ... 25 kPa 1 ... 100 inH ₂ O	250 mbar 25 kPa 100 inH ₂ O
		6 ... 600 mbar 0.6 ... 60 kPa 2.4 ... 240 inH ₂ O	600 mbar 60 kPa 240 inH ₂ O
		16 ... 1600 mbar 1.6 ... 160 kPa 6.4 ... 642 inH ₂ O	1600 mbar 160 kPa 642 inH ₂ O
		50 ... 5000 mbar 5 ... 500 kPa 20 ... 2000 inH ₂ O	5000 mbar 500 kPa 2000 inH ₂ O
		0.3 ... 30 bar 0.03 ... 3 MPa 4.35 ... 435 psi	30 bar 3 MPa 435 psi
		6 ... 600 mbar 0.6 ... 60 kPa 2.4 ... 240 inH ₂ O	600 mbar 60 kPa 240 inH ₂ O
		16 ... 1600 mbar 1.6 ... 160 kPa 6.4 ... 642 inH ₂ O	1600 mbar 160 kPa 642 inH ₂ O
		50 ... 5000 mbar 5 ... 500 kPa 20 ... 2000 inH ₂ O	5000 mbar 500 kPa 2000 inH ₂ O
		0.3 ... 30 bar 0.03 ... 3 MPa 4.35 ... 435 psi	30 bar 3 MPa 435 psi
			160 bar 16 MPa 2320 psi
			420 bar 42 MPa 6091 psi
Lower measuring limit			
• Measuring cell with silicone oil filling			-100 % of max. span (-33 % with measuring cell 30 bar/3 MPa/435 psi) or 30 mbar a/3 kPa a/0.44 psi a
Upper measuring limit			100 % of max. span
Start of scale value			Between the measuring limits (fully adjustable)
Output		HART	PROFIBUS PA/ FOUNDATION Fieldbus
Output signal		4 ... 20 mA	Digital PROFIBUS PA and FOUNDATION Fieldbus signal
• Lower limit (infinitely adjustable)		3.55 mA, factory preset to 3.84 mA	-
• Upper limit (infinitely adjustable)		23 mA, factory preset to 20.5 mA or optionally set to 22.0 mA	-
Load			
• Without HART		$R_B \leq (U_H - 10.5 \text{ V})/0.023 \text{ A}$ in Ω , U_H : Power supply in V	-
• With HART		$R_B = 230 \dots 500 \Omega$ (SIMATIC PDM) or $R_B = 230 \dots 1100 \Omega$ (HART Communicator)	-
Physical bus		-	IEC 61158-2
Protection against polarity reversal			Protected against short-circuit and polarity reversal. Each connection against the other with max. supply voltage.
Electrical damping (step width 0.1 s)			Set to 2 s (0 ... 100 s)

SITRANS P410 for differential pressure and flow**Measuring accuracy**

Reference conditions	Acc. to IEC 60770-1
Measuring span ratio r (spread, Turn-Down)	<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) $r = \text{max. measuring span/set measuring span or nom. pressure range}$
Error in measurement at limit setting incl. hysteresis and reproducibility	
<ul style="list-style-type: none"> Linear characteristic - 250 mbar/25 kPa/3.63 psi 600 mbar/60 kPa/8.7 psi 1600 mbar/160 kPa/23.21 psi 5 bar/500 kPa/72.5 psi 30 bar/3 MPa/435 psi 	$r \leq 5 :$ $\leq 0.04 \%$ $5 < r \leq 100 :$ $\leq (0.004 \cdot r + 0.045) \%$
<ul style="list-style-type: none"> Square-rooted characteristic (flow > 50 %) - 250 mbar/25 kPa/3.63 psi 600 mbar/60 kPa/8.7 psi 1600 mbar/160 kPa/23.21 psi 5 bar/500 kPa/72.5 psi 30 bar/3 MPa/435 psi 	$r \leq 5 :$ $\leq 0.04 \%$ $5 < r \leq 100 :$ $\leq (0.004 \cdot r + 0.045) \%$
<ul style="list-style-type: none"> Square-rooted characteristic (flow > 25 ... 50 %) - 250 mbar/25 kPa/3.63 psi 600 mbar/60 kPa/8.7 psi 1600 mbar/160 kPa/23.21 psi 5 bar/500 kPa/72.5 psi 30 bar/3 MPa/435 psi 	$r \leq 5 :$ $\leq 0.08 \%$ $5 < r \leq 100 :$ $\leq (0.008 \cdot r + 0.09) \%$
Influence of ambient temperature (in percent per 28 °C (50 °F))	
<ul style="list-style-type: none"> 250 mbar/25 kPa/3.63 psi 600 mbar/60 kPa/8.7 psi 1600 mbar/160 kPa/23.21 psi 5 bar/500 kPa/72.5 psi 30 bar/3 MPa/435 psi 	$\leq (0.025 \cdot r + 0.125) \%$
Influence of static pressure	
<ul style="list-style-type: none"> on the zero point (PKN) - 250 mbar/25 kPa/3.63 psi 600 mbar/60 kPa/8.7 psi 1600 mbar/160 kPa/23.21 psi - 5 bar/500 kPa/72.5 psi 30 bar/3 MPa/435 psi 	$\leq (0.1 \cdot r) \%$ per 70 bar (zero offset is possible with position error adjustment) $\leq (0.2 \cdot r) \%$ per 70 bar (zero offset is possible with position error adjustment)
<ul style="list-style-type: none"> on the span (PKS) - 250 mbar/25 kPa/3.63 psi 600 mbar/60 kPa/8.7 psi 1600 mbar/160 kPa/23.21 psi 5 bar/500 kPa/72.5 psi 30 bar/3 MPa/435 psi 	$\leq 0.14 \%$ per 70 bar
Long-term stability (temperature change ± 30 °C (± 54 °F))	Static pressure max. 70 bar/7 MPa/1015 psi
<ul style="list-style-type: none"> 250 mbar/25 kPa/3.63 psi 600 mbar/60 kPa/8.7 psi 1600 mbar/160 kPa/23.21 psi 5 bar/500 kPa/72.5 psi 	$\leq (0.125 \cdot r) \%$ in 5 years
<ul style="list-style-type: none"> 30 bar/3 MPa/435 psi 	$\leq (0.25 \cdot r) \%$ in 5 years
Effect of mounting position (in pressure per change in angle)	≤ 0.7 mbar/0.07 kPa/0.028 inH ₂ O per 10° inclination (zero offset is possible with position error adjustment)
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	IP66 (optional IP66/IP68)
<ul style="list-style-type: none"> • according to EN 60529 • according to NEMA 250 	Type 4X
Temperature of medium	
<ul style="list-style-type: none"> • Measuring cell with silicone oil filling 	-40 ... +100 °C (-40 ... +212 °F) -20 ... +100 °C (-4 ... +212 °F) with 30 bar measuring cell
<ul style="list-style-type: none"> • In conjunction with dust explosion protection 	-20 ... +60 °C (-4 ... +140 °F)
Ambient conditions	
<ul style="list-style-type: none"> • Ambient temperature <ul style="list-style-type: none"> - Transmitter - Display readable • Storage temperature • Climatic class <ul style="list-style-type: none"> - Condensation 	-40 ... +85 °C (-40 ... +185 °F) -30 ... +85 °C (-22 ... +185 °F) -50 ... +85 °C (-58 ... +185 °F)
<ul style="list-style-type: none"> • Electromagnetic Compatibility <ul style="list-style-type: none"> - Emitted interference and interference immunity 	Relative humidity 0 ... 100 % Condensation permissible, suitable for use in the tropics Acc. to IEC 61326 and NAMUR NE 21

Design

Weight (without options)	Die-cast aluminum: ≈ 4.5 kg (≈ 9.9 lb) Stainless steel precision casting: ≈ 7.1 kg (≈ 15.6 lb)
Enclosure material	Low-copper die-cast aluminum, GD-AISI12 or stainless steel precision casting, mat. no. 1.4408
Wetted parts materials	
<ul style="list-style-type: none"> • Seal diaphragm • Process flanges and sealing screw • O-Ring 	Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819 Stainless steel, mat. no. 1.4408, Hastelloy C4, mat. no. 2.4602 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	Female thread 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	
<ul style="list-style-type: none"> • Steel • Stainless steel 304 • Stainless steel 316L 	Sheet-steel, Mat. No. 1.0330, chrome-plated Sheet stainless steel, mat. no. 1.4301 (SS 304) 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		
<ul style="list-style-type: none"> • Not Ex • With intrinsically-safe operation 	- -	9 ... 32 V 9 ... 24 V
Current consumption		
<ul style="list-style-type: none"> • Basic current (max.) • Start-up current ≤ basic current • Max. current in event of fault 	- - -	12.5 mA Yes 15.5 mA
Fault disconnection electronics (FDE) available	-	Yes

SITRANS P410 for differential pressure and flow**Certificates and approvals**

Classification according to PED 2014/68/EU

Explosion protection

• Intrinsic safety "i"

- Marking
- Permissible ambient temperature

- Connection

- Effective internal inductance/capacitance

• Explosion-proof "d"

- Marking
- Permissible ambient temperature

- Connection

• Dust explosion protection for zone 20 (pending)

- Marking

- Permissible ambient temperature
- Max. surface temperature

- Connection

- Effective internal inductance/capacitance

• Dust explosion protection for zone 21/22 (pending)

- Marking

- Connection

• Type of protection "n" (zone 2)

- Marking

- Connection (Ex nA)

- Connection (Ex ic)

- Effective internal inductance/capacitance

• Explosion protection acc. to FM (pending)

- Identification (XP/DIP) or (IS); (NI)

• Explosion protection to CSA (pending)

- Identification (XP/DIP) or (IS)

HART

For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)

PTB 13 ATEX 2007 X

Ex II 1/2 G Ex ia/ib IIC T4/T5/T6 Ga/Gb

-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

To certified intrinsically-safe circuits with peak values:
 $U_i = 30\text{ V}$, $I_i = 100\text{ mA}$, $P_i = 750\text{ mW}$;
 $R_i = 300\ \Omega$

 $L_i = 0.4\text{ mH}$, $C_i = 6\text{ nF}$

PTB 99 ATEX 1160

Ex II 1/2 G Ex d IIC T4/T6 Ga/Gb

-40 ... +85 °C (-40 ... +185 °F) temperature class T4;
 -40 ... +60 °C (-40 ... +140 °F) temperature class T6

To circuits with values: $U_H = 10.5 \dots 45\text{ V}$ DC

PTB 01 ATEX 2055

Ex II 1 D Ex ta IIIC T120°C Da

Ex II 1/2 D Ex ta/tb IIIC T120°C Da/Db

-40 ... +85 °C (-40 ... +185 °F)

120 °C (248 °F)

To certified intrinsically-safe circuits with peak values:
 $U_i = 30\text{ V}$, $I_i = 100\text{ mA}$,
 $P_i = 750\text{ mW}$, $R_i = 300\ \Omega$

 $L_i = 0.4\text{ mH}$, $C_i = 6\text{ nF}$

PTB 01 ATEX 2055

Ex II 2 D Ex tb IIIC T120°C Db

To circuits with values: $U_H = 10.5 \dots 45\text{ V}$ DC; $P_{\max} = 1.2\text{ W}$

PTB 13 ATEX 2007 X

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

 $U_m = 45\text{ V}$ To circuits with values:
 $U_i = 45\text{ V}$ $L_i = 0.4\text{ mH}$, $C_i = 6\text{ nF}$

Certificate of Compliance 3008490

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

Certificate of Compliance 1153651

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

PROFIBUS PA/ FOUNDATION FieldbusFISCO supply unit:
 $U_o = 17.5\text{ V}$, $I_o = 380\text{ mA}$, $P_o = 5.32\text{ W}$ Linear barrier:
 $U_o = 24\text{ V}$, $I_o = 250\text{ mA}$, $P_o = 1.2\text{ W}$ $L_i = 7\ \mu\text{H}$, $C_i = 1.1\text{ nF}$ To circuits with values: $U_H = 9 \dots 32\text{ V}$ DCFISCO supply unit:
 $U_o = 17.5\text{ V}$, $I_o = 380\text{ mA}$, $P_o = 5.32\text{ W}$ Linear barrier:
 $U_o = 24\text{ V}$, $I_o = 250\text{ mA}$, $P_o = 1\text{ W}$ $L_i = 7\ \mu\text{H}$, $C_i = 1.1\text{ nF}$ To circuits with values: $U_H = 9 \dots 32\text{ V}$ DC;
 $P_{\max} = 1\text{ W}$ $U_m = 32\text{ V}$ FISCO supply unit ic:
 $U_o = 17.5\text{ V}$, $I_o = 570\text{ mA}$ Linear barrier:
 $U_o = 32\text{ V}$, $I_o = 132\text{ mA}$, $P_o = 1\text{ W}$ $L_i = 7\ \mu\text{H}$, $C_i = 1.1\text{ nF}$

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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 PC	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.	Order Code
SITRANS P410 with HART pressure transmitters for differential pressure and flow, PN 160 (MAWP 2320 psi)	7MF4433-	-Z C41
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
Measuring cell filling		
Silicone oil		
Measuring cell cleaning		
normal		
Measuring span (min. ... max.)		
2.5 ... 250 mbar (1.004 ... 100.4 inH ₂ O)	D	
6 ... 600 mbar (2.409 ... 240.9 inH ₂ O)	E	
16 ... 1600 mbar (6.424 ... 642.4 inH ₂ O)	F	
50 ... 5000 mbar (20.08 ... 2008 inH ₂ O)	G	
0.3 ... 30 bar (4.35 ... 435 psi)	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
Version for diaphragm seal ^{1) 2) 3) 4)}	Y	
Process connection		
Female thread 1/4-18 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 ⁵⁾		
- Mounting thread 7/16-20 UNF to IEC 61518/DIN 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 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.		
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⁾		R
• FM + CSA intrinsic safe (is) (pending) 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

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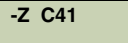
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Selection and Ordering data	Article No.	Order Code
SITRANS P410 with HART pressure transmitters for differential pressure and flow, PN 160 (MAWP 2320 psi)	7MF4433-  - 	-Z C41
Electrical connection/cable entry <ul style="list-style-type: none"> Screwed gland M20 x 1.5 Screwed gland ½-14 NPT Device plug Han 7D (plastic housing) incl. mating connector¹²⁾¹³⁾ Device plugs M12 (stainless steel)¹⁴⁾¹⁵⁾ 		B C D F
Display <ul style="list-style-type: none"> Without display Without visible display (display concealed, setting: mA) With visible display (setting: mA) with customer-specific display (setting as specified, Order code "Y21" or "Y22" required) 		0 1 6 7

Power supply units see Chap. 7 "Supplementary Components".

Included in delivery of the device:

- Quick-start guide
- Sealing plug(s) or sealing screw(s) for the process flanges(s)

- 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.
- 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.
- The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF443.-.Y.-..... and 7MF4900-1...-B
- The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.
- Not suitable for connection of remote seal. Position of the top vent valve in the process flange (see dimensional drawing).
- Not in conjunction with Electrical connection "device plug Han 7D".
- Without cable gland, with blanking plug
- With enclosed cable gland Ex ia and blanking plug
- Configurations with device plugs Han and M12 are only available in Ex ic.
- Only in connection with IP66.
- Explosion protection acc. to FM/CSA: suitable for installations according to NEC 500/505.
- Only in connection with Ex approval A, B or E.
- Permissible only for crimp-contact of conductor cross-section 1 mm²
- Only in connection with Ex approval A, B, E or F.
- M12 delivered without cable socket.

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Selection and Ordering data	Article No.	Order code
Pressure transmitters for differential pressure and flow PN 160 (MAWP 2320 psi)		
SITRANS P410 with PROFIBUS PA (PA)	➤ 7MF4434-	-Z C41
SITRANS P410 with FOUNDATION Fieldbus (FF)	➤ 7MF4435-	-Z C41
➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
Measuring cell filling		
Silicone oil		
Measuring cell cleaning		
normal		
Nominal measuring range		
250 mbar (100.4 inH ₂ O)	D	
600 mbar (240.9 inH ₂ O)	E	
1600 mbar (642.4 inH ₂ O)	F	
5 bar (2008 inH ₂ O)	G	
30 bar (435 psi)	H	
Wetted parts materials		
(stainless steel process flanges)		
Seal diaphragm	Parts of measuring cell	
Stainless steel	Stainless steel	A
Hastelloy	Stainless steel	B
Hastelloy	Hastelloy	C
Version as diaphragm seal 1) 2) 3) 4)		Y
Process connection		
Female thread 1/4-18 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	
• Venting on side of process flanges 5)		
- Mounting thread 7/16-20 UNF to IEC 61518/DIN 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 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.		
Explosion protection		
• None		A
• With ATEX, Type of protection:		
- "Intrinsic safety (Ex ia)"		B
- "Explosion-proof (Ex d)" ⁶⁾		D
- "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d) ⁷⁾		P
- "Ex nA/ic (Zone 2)" ⁸⁾		E
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia + Ex d + Zone 1D/2D) ^{7) 9)} (not for DS III FF)		R
• FM + CSA intrinsic safe (is) (pending) ¹⁰⁾		F
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX) + Zone 1D/2D ⁷⁾⁹⁾¹⁰⁾		S
• With FM + CSA, Type of protection:		
- "Intrinsic Safe and Explosion Proof (is + xp)" ⁸⁾¹⁰⁾		NC
Electrical connection/cable entry		
• Screwed gland M20 x 1.5		B
• Screwed gland 1/2-14 NPT		C
• Device plugs M12 (stainless steel) ^{11) 12)}		F

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Selection and Ordering data

Article No.

Order code

Pressure transmitters for differential pressure and flow PN 160 (MAWP 2320 psi)

SITRANS P410 with PROFIBUS PA (PA)

7MF4434- - -Z C41

SITRANS P410 with FOUNDATION Fieldbus (FF)

7MF4435- - -Z C41

Display

- Without display
- Without visible display (display concealed, setting: bar)
- With visible display (setting: bar)
- With customer-specific display (setting as specified, Order code "Y21" required)

0
1
6
7

Included in delivery of the device:

- Quick-start guide
- Sealing plug(s) or sealing screw(s) for the process flanges(s)

- 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) The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF443-...Y... and 7MF4900-1...-B
- 4) The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.
- 5) Not suitable for connection of remote seal. Position of the top vent valve in the process flange (see dimensional drawing).
- 6) Without cable gland, with blanking plug.
- 7) With enclosed cable gland Ex ia and blanking plug.
- 8) Configurations with device plugs Han and M12 are only available in Ex ic.
- 9) Only in connection with IP66.
- 10) Explosion protection acc. to FM/CSA: suitable for installations according to NEC 500/505.
- 11) Only in connection with Ex approval A, B, E or F.
- 12) M12 delivered without cable socket

Selection and Ordering data	Order code				Selection and Ordering data	Order code			
<i>Further designs</i> Add "-Z" to Article No. and specify Order code.		HART	PA	FF	<i>Further designs</i> 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:					Setting of the upper saturation limit of the output signal to 22.0 mA	D05	✓		
• Steel	A01	✓	✓	✓	Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009) (only together with seal diaphragm made of Hastelloy and stainless steel)	D07	✓	✓	✓
• Stainless steel 304	A02	✓	✓	✓	Degree of protection IP66/IP68 (only for M20 x 1.5 and ½-14 NPT)	D12	✓	✓	✓
• Stainless steel 316L	A03	✓	✓	✓	Supplied with oval flange set (2 items), PTFE packings and screws in thread of process flanges	D37	✓	✓	✓
O-rings for process flanges (instead of FPM (Viton))					Capri cable gland 4F CrNi and clamping device (848699 + 810634) included	D59	✓	✓	✓
• PTFE (Teflon)	A20	✓	✓	✓	TAG plate empty (no inscription)	D61	✓	✓	✓
• FEP (with silicone core, approved for food)	A21	✓	✓	✓	Use in or on zone 1D/2D⁴⁾ (only together with type of protection "Intrinsic safety" (transmitter 7MF4...-.....-B.. Ex ia)" and IP66)	E01	✓	✓	✓
• FFPM (Kalrez, for measured medium temperatures -15 ... 100 °C (5 ... 212 °F))	A22	✓	✓	✓	Dual seal	E24	✓	✓	✓
• NBR (Buna N)	A23	✓	✓	✓	Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4...-.....-B..)	E55 ⁵⁾	✓	✓	✓
Device plugs¹⁾					Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4...-.....-D..)	E56 ⁵⁾	✓	✓	✓
• Han 7D (metal)	A30	✓			Explosion-proof "Zone 2" to NEPSI (China) (only for transmitter 7MF4...-.....-E..)	E57 ⁵⁾	✓	✓	✓
• Han 8D (instead of Han 7D)	A31	✓			Ex protection „Ex ia", „Ex d" and „Zone 2" to NEPSI (China) (only for transmitter 7MF4...-.....-R..)	E58 ⁵⁾	✓	✓	✓
• Angled	A32	✓			"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (pending) (only for transmitter 7MF4...-.....-[B, D]..-Z + E11)	E70 ⁵⁾	✓	✓	✓
• Han 8D (metal)	A33	✓			Ex-protection Ex ia according to EAC Ex (Russia)	E80	✓	✓	✓
Sealing screws (2 units) ¼-18 NPT, with valve in mat. of process flanges	A40	✓	✓	✓	Ex-protection Ex d according to EAC Ex (Russia)	E81	✓	✓	✓
Cable sockets for device plugs M12 (metal (CuZn))	A50	✓	✓	✓	Ex-protection Ex nA/ic (Zone 2) according to EAC Ex (Russia)	E82	✓	✓	✓
Rating plate inscription (instead of German)					Ex-protection Ex ia + Ex d + Zone 1D/2D according to EAC Ex (Russia)	E83	✓	✓	✓
• English	B11	✓	✓	✓	Two coats of lacquer on casing and cover (PU on epoxy)	G10	✓	✓	✓
• French	B12	✓	✓	✓	Interchanging of process connection side	H01	✓	✓	✓
• Spanish	B13	✓	✓	✓	Vent on side for gas measurements	H02	✓	✓	✓
• Italian	B14	✓	✓	✓	Stainless steel process flanges for vertical differential pressure lines (not together with K01, K02 and K04 ⁶⁾)	H03	✓	✓	✓
English rating plate Pressure units in inH ₂ O and/or psi	B21	✓	✓	✓					
Quality Inspection Certificate (5-point characteristic curve test) according to IEC 60770-2²⁾	C11	✓	✓	✓					
Inspection certificate³⁾ to EN 10204-3.1	C12	✓	✓	✓					
Factory certificate to EN 10204-2.2	C14	✓	✓	✓					
Acceptance certificate (EN 10204-3.1) PMI test of parts in contact with medium	C15	✓	✓	✓					
Functional safety (SIL2) (pending) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	C20	✓							
Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	C23	✓							
Increased measuring accuracy (mandatory specification for SITRANS P410)	C41	✓	✓	✓					
PED for Russia with initial calibration mark	C99	✓	✓	✓					

Pressure Measurement

Pressure transmitters

for applications with advanced requirements (Advanced)

SITRANS P410

for differential pressure and flow

1

Selection and Ordering data	Order code	HART	PA	FF
Further designs Add "-Z" to Article No. and specify Order code.				
Transient protector 6 kV (lightning protection)	J01	✓	✓	✓
Chambered graphite gasket for process flange	J02	✓	✓	✓
Chambered PTFE graphite gasket	J03	✓	✓	✓
EPDM O-rings for process flange with approval (WRC/WRAS)	J05	✓	✓	✓
Vent valve or blanking plug of process flange welded-in (orientation: on right when viewing the display)⁷⁾	J08	✓	✓	✓
Vent valve or blanking plug of process flange welded-in (orientation: on left when viewing the display)⁷⁾	J09	✓	✓	✓
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	✓	✓	✓

Factor valve block mounting for SITRANS P410 is possible. Depending on the available P410 variants, please see the configuration options for SITRANS P DS III (page 1/254).

✓ = available

- 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) Option does not contain gas explosion protection; only dust explosion protection: Use in or at Zone 1D/2D
- 5) 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.
- 6) Not suitable for connection of remote seal.
- 7) Blanking plug is standard configuration. Order option A40 if a vent valve is required instead of a blanking plug.

Selection and Ordering data	Order code	HART	PA	FF
Additional data Please add "-Z" to Article No. and specify Order code(s) and plain text.				
Measuring range to be set Specify in plain text: • in the case of linear characteristic curve (max. 5 characters): Y01: ... up to ... mbar, bar, kPa, MPa, psi • in the case of square rooted characteristic (max. 5 characters): Y02: ... up to ... mbar, bar, kPa, MPa, psi	Y01 Y02	✓ ✓	✓ ¹⁾ ✓	
Stainless steel tag plate and entry in device variable (measuring point description) Max. 16 characters, specify in plain text: Y15:	Y15	✓	✓	✓
Measuring point text (entry in device variable) Max. 27 char., specify in plain text: Y16:	Y16	✓	✓	✓
Entry of HART address (TAG) Max. 8 char., specify in plain text: Y17:	Y17	✓		
Setting of pressure indicator in pressure units Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi, ... Note: The following pressure units can be selected: bar, mbar, mm H ₂ O [*] , inH ₂ O [*] , ftH ₂ O [*] , mmHG, inHG, psi, Pa, kPa, MPa, g/cm ² , kg/cm ² , Torr, ATM or % *) ref. temperature 20 °C	Y21	✓	✓	✓
Setting of pressure indicator in non-pressure units²⁾ Specify in plain text: Y22: up to l/min, m ³ /h, m, USgpm, ... (specification of measuring range in pressure units "Y01" or "Y02" is essential, unit with max. 5 characters)	Y22 ³⁾ + Y01 or Y02	✓		
Preset bus address possible between 1 and 126 Specify in plain text: Y25:	Y25		✓	✓
Damping adjustment in seconds (0 ... 100 s)	Y30	✓	✓	✓

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) Preset values can only be changed over SIMATIC PDM.
- 3) Not in conjunction with over-filling safety device for flammable and non-flammable liquids (Order code "E08")

Pressure Measurement

Pressure transmitters
for applications with advanced requirements (Advanced)
SITRANS P410

for differential pressure and flow

1

Selection and Ordering data	Article No.	Order code
SITRANS P DS III with HART pressure transmitters for differential pressure and flow, PN 420 (MAWP 6092 psi)	7MF4533-	-Z C41
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
Measuring cell filling Silicone oil	1	
Measuring cell cleaning normal		
Measuring span (min. ... max.)	E F G H	
6 ... 600 mbar (2.4 ... 240 inH ₂ O)		
16 ... 1600 mbar (6.4 ... 642 inH ₂ O)		
50 ... 5000 mbar (20 ... 2000 inH ₂ O)		
0.3 ... 30 bar (4.35 ... 435 psi)		
Wetted parts materials (stainless steel process flanges)	A B Y	
Seal diaphragm Parts of measuring cell		
Stainless steel Stainless steel		
Hastelloy Stainless steel		
Version for diaphragm seal ^{1) 2) 3) 4)}		
Process connection	3 1	
Female thread 1/4-18 NPT with flange connection		
• Sealing screw opposite process connection		
- Mounting thread 7/16-20 UNF to IEC 61518/DIN 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 IEC 61518/DIN EN 61518	7	
- Mounting thread M12 to DIN 19213 (only for replacement requirement)	5	
Non-wetted parts materials	2 3	
process flange screws Electronics housing		
Stainless steel Die-cast aluminum		
Stainless steel Stainless steel precision casting ⁵⁾		
Version	1 2 3	
• 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.		
Explosion protection	A B D P E R F S NC	
• None		
• With ATEX, Type of protection:		
- "Intrinsic safety (Ex ia)"		
- "Explosion-proof (Ex d)" ⁶⁾		
- "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d)" ⁷⁾		
- "Ex nA/ic (Zone 2)" ⁸⁾		
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia+ Ex d + Zone 1D/2D)" ⁷⁾⁹⁾		
• FM + CSA intrinsic safe (is) (pending) ¹⁰⁾		
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX) + Zone 1D/2D ⁷⁾⁹⁾¹⁰⁾		
• With FM + CSA, Type of protection:		
- "Intrinsic safety and explosion-proof (is + xp)" ⁶⁾¹⁰⁾ , max PN 360		
Electrical connection/cable entry	B C D F	
• Screwed gland M20x1.5		
• Screwed gland 1/2-14 NPT		
• Device plug Han 7D (plastic housing) incl. mating connector ^{11) 12)}		
• Device plugs M12 (stainless steel) ¹³⁾¹⁴⁾		

Pressure Measurement

Pressure transmitters

for applications with advanced requirements (Advanced)

SITRANS P410

for differential pressure and flow

1

Selection and Ordering data

Article No.

Order code

SITRANS P DS III with HART pressure transmitters for differential pressure and flow, PN 420 (MAWP 6092 psi)

7MF4533-

■■■■■ - ■■■■

-Z C41

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)

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Power supply units see Chap. 7 "Supplementary Components".

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

- 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) The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF453-...Y.-... and 7MF4900-1...-B
- 4) The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.
- 5) Not in conjunction with Electrical connection "device plug Han 7D".
- 6) Without cable gland, with blanking plug
- 7) With enclosed cable gland Ex ia and blanking plug
- 8) Configurations with device plugs Han and M12 are only available in Ex ic.
- 9) Only in connection with IP66.
- 10) Explosion protection acc. to FM/CSA: suitable for installations according to NEC 500/505.
- 11) Only in connection with Ex approval A, B or E.
- 12) Permissible only for crimp-contact of conductor cross-section 1 mm²
- 13) Only in connection with Ex approval A, B, E or F.
- 14) M12 delivered without cable socket.

Pressure Measurement

Pressure transmitters
for applications with advanced requirements (Advanced)
SITRANS P410

for differential pressure and flow

1

Selection and Ordering data	Article No.	Order Code
Pressure transmitters for differential pressure and flow, PN 420 (MAWP 6092 psi)		
SITRANS P410 with PROFIBUS PA (PA)	➤ 7MF4534-	-Z C41
SITRANS P410 with FOUNDATION Fieldbus (FF)	➤ 7MF4535-	-Z C41
➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
Measuring cell filling Measuring cell cleaning		
Silicone oil		normal
Nominal measuring range		
600 mbar		(240 inH ₂ O)
1600 mbar		(642 inH ₂ O)
5 bar		(2000 inH ₂ O)
30 bar		(435 psi)
Wetted parts materials		
(stainless steel process flanges)		
Seal diaphragm	Parts of measuring cell	
Stainless steel	Stainless steel	
Hastelloy	Stainless steel	
Version for diaphragm seal ^{1) 2) 3) 4)}		
Process connection		
Female thread 1/4-18 NPT with flange connection		
• Sealing screw opposite process connection		
- Mounting thread 7/16-20 UNF to IEC 61518/DIN 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 IEC 61518/DIN EN 61518		
- Mounting thread M12 to DIN 19213 (only for replacement requirement)		
Non-wetted parts materials		
Process flange screws	Electronics housing	
Stainless steel	Die-cast aluminum	
Stainless steel	Stainless steel precision casting	
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.		
Explosion protection		
• None		
• With ATEX, Type of protection:		
- "Intrinsic safety (Ex ia)"		
- "Explosion-proof (Ex d)" ⁵⁾		
- "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d) ⁶⁾		
- "Ex nA/ic (Zone 2)" ⁷⁾		
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia + Ex d + Zone 1D/2D)" ⁶⁾⁸⁾		
• FM + CSA intrinsic safe (is) (pending) ⁹⁾		
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX) + Zone 1D/2D ⁶⁾⁷⁾⁹⁾		
• With FM + CSA, Type of protection:		
- "Intrinsic safety and explosion-proof (is + xp)" ⁶⁾⁹⁾ , max PN 360		
Electrical connection/cable entry		
• Screwed gland M20 x 1.5		
• Screwed gland 1/2-14 NPT		
• Device plugs M12 (stainless steel) ^{10) 11)}		

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Pressure Measurement

Pressure transmitters

for applications with advanced requirements (Advanced)

SITRANS P410

for differential pressure and flow

1

Selection and Ordering data

Article No.

Order Code

Pressure transmitters for differential pressure and flow, PN 420 (MAWP 6092 psi)

SITRANS P410 with PROFIBUS PA (PA)

7MF4534- - -Z C41

SITRANS P410 with FOUNDATION Fieldbus (FF)

7MF4535- - -Z C41

Display

- Without (display hidden)
- Without visible display (display concealed, setting: bar)
- With visible display (setting: bar)
- With customer-specific display (setting as specified, Order code "Y21" required)

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Included in delivery of the device:

- Quick-start guide
- Sealing plug(s) or sealing screw(s) for the process flanges(s)

- 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) The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF453-...Y... and 7MF4900-1...-B
- 4) The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.
- 5) Without cable gland, with blanking plug.
- 6) With enclosed cable gland Ex ia and blanking plug.
- 7) Configurations with device plugs Han and M12 are only available in Ex ic.
- 8) Only in connection with IP66.
- 9) Explosion protection acc. to FM/CSA: suitable for installations according to NEC 500/505.
- 10) Only in connection with Ex approval A, B, E or F.
- 11) M12 delivered without cable socket

Selection and Ordering data	Order code			Selection and Ordering data	Order code		
<i>Further designs</i>	HART	PA	FF	<i>Further designs</i>	HART	PA	FF
Add "-Z" to Article No. and specify Order code.				Add "-Z" to Article No. and specify Order code.			
Pressure transmitter with mounting bracket (1x fixing angle, 2 x nut, 2 x U-washer or 1 x bracket, 2 x nut, 2 x U-washer) made of:				Use in or on zone 1D/2D²⁾ (only together with type of protection "Intrinsic safety" (transmitter 7MF4...-.....-B.. Ex ia) and IP66)	E01	✓	✓
• Steel	A01	✓	✓	Dual seal	E24	✓	✓
• Stainless steel 304	A02	✓	✓	Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4...-.....-B..)	E55 ³⁾	✓	✓
• Stainless steel 316L	A03	✓	✓	Ex prot. "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4...-.....-D..)	E56 ³⁾	✓	✓
O-rings for process flanges (instead of FPM (Viton))				Explosion-proof "Zone 2" to NEPSI (China) (only for transmitter 7MF4...-.....-E..)	E57 ³⁾	✓	✓
• PTFE (Teflon)	A20	✓	✓	Ex protection „Ex ia", „Ex d" and „Zone 2" to NEPSI (China) (only for transmitter 7MF4...-.....-R..)	E58 ³⁾	✓	✓
• FEP (with silicone core, approved for food)	A21	✓	✓	"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (pending) (only for transmitter 7MF4...-.....-[B, D]..-Z + E11)	E70 ³⁾	✓	✓
• FFPM (Kalrez, for measured medium temperatures -15 ... 100 °C (5 ... 212 °F))	A22	✓	✓	Ex-protection Ex ia according to EAC Ex (Russia)	E80	✓	✓
• NBR (Buna N)	A23	✓	✓	Ex-protection Ex d according to EAC Ex (Russia)	E81	✓	✓
Device plugs¹⁾				Ex-protection Ex nA/ic (Zone 2) according to EAC Ex (Russia)	E82	✓	✓
• Han 7D (metal)	A30	✓		Ex-protection Ex ia + Ex d + Zone 1D/2D according to EAC Ex (Russia)	E83	✓	✓
• Han 8D (instead of Han 7D)	A31	✓		Two coats of lacquer on casing and cover (PU on epoxy)	G10	✓	✓
• Angled	A32	✓		Interchanging of process connection side	H01	✓	✓
• Han 8D (metal)	A33	✓		Vent on side for gas measurements	H02	✓	✓
Sealing screws (2 units) ¼-18 NPT, with valve in mat. of process flanges	A40	✓	✓	Stainless steel process flanges for vertical differential pressure lines	H03	✓	✓
Cable sockets for device plugs M12 (metal (CuZn))	A50	✓	✓	Transient protector 6 kV (lightning protection)	J01	✓	✓
Rating plate inscription (instead of German)				Chambered graphite gasket for process flange	J02	✓	✓
• English	B11	✓	✓	Chambered PTFE graphite gasket	J03	✓	✓
• French	B12	✓	✓	EPDM O-rings for process flange with approval (WRC/WRAS)	J05	✓	✓
• Spanish	B13	✓	✓	Vent valve or blanking plug of process flange welded-in (orientation: on right when viewing the display)⁴⁾	J08	✓	✓
• Italian	B14	✓	✓	Vent valve or blanking plug of process flange welded-in (orientation: on left when viewing the display)⁴⁾	J09	✓	✓
English rating plate Pressure units in inH ₂ O and/or psi	B21	✓	✓	Marine approvals			
Quality Inspection Certificate (5-point characteristic curve test) according to IEC 60770-2	C11	✓	✓	• Det Norske Veritas Germanischer Lloyd (DNV-GL)	S10	✓	✓
Inspection certificate Acc. to EN 10204-3.1	C12	✓	✓	• Lloyds Register (LR)	S11	✓	✓
Factory certificate Acc. to EN 10204-2.2	C14	✓	✓	• French marine classification society Bureau Veritas (BV)	S12	✓	✓
Functional safety (SIL2) (pending) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	C20	✓		• American Bureau of Shipping (ABS)	S14	✓	✓
Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	C23	✓		• Russian Maritime Register (RMR)	S16	✓	✓
Increased measuring accuracy (mandatory specification for SITRANS P410)	C41	✓	✓	• Korean Register of Shipping (KR)	S17	✓	✓
PED for Russia with initial calibration mark	C99	✓	✓	Factor valve block mounting for SITRANS P410 is possible. Depending on the available P410 variants, please see the configuration options for SITRANS P DS III (page 1/254).			
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) (only together with seal diaphragm made of Hastelloy and stainless steel)	D07	✓	✓				
Degree of protection IP66/IP68 (only for M20 x 1.5 and ½-14 NPT)	D12	✓	✓				
Capri cable gland 4F CrNi and clamping device (848699 + 810634) included	D59	✓	✓				
TAG plate empty (no inscription)	D61	✓	✓				

1) Device plug Han IP65

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

3) 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.

4) 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 P410

for differential pressure and flow

1

Selection and Ordering data	Order code		
<i>Additional data</i>	HART	PA	FF
Please add "-Z" to Article No. and specify Order code(s) and plain text.			
Measuring range to be set Specify in plain text:			
• in the case of linear characteristic curve (max. 5 characters): Y01: ... up to ... mbar, bar, kPa, MPa, psi	Y01	✓	✓ ¹⁾
• in the case of square rooted characteristic (max. 5 characters): Y02: ... up to ... mbar, bar, kPa, MPa, psi	Y02	✓	
Stainless steel tag plate and entry in device variable (measuring point description) Max. 16 characters, specify in plain text: Y15:	Y15	✓	✓
Measuring point text (entry in device variable) Max. 27 char., specify in plain text: Y16:	Y16	✓	✓
Entry of HART address (TAG) Max. 8 char., 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 ¹⁾ , inH ₂ O ¹⁾ , ftH ₂ O ¹⁾ , 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 units²⁾ Specify in plain text: Y22: up to l/min, m ³ /h, m, USgpm, ... (specification of measuring range in pressure units "Y01" or "Y02" is essential, unit with max. 5 characters)	Y22 + Y01 or Y02	✓	
Preset bus address possible between 1 and 126 Specify in plain text: Y25:	Y25		✓
Damping adjustment in seconds (0 ... 100 s)	Y30	✓	✓

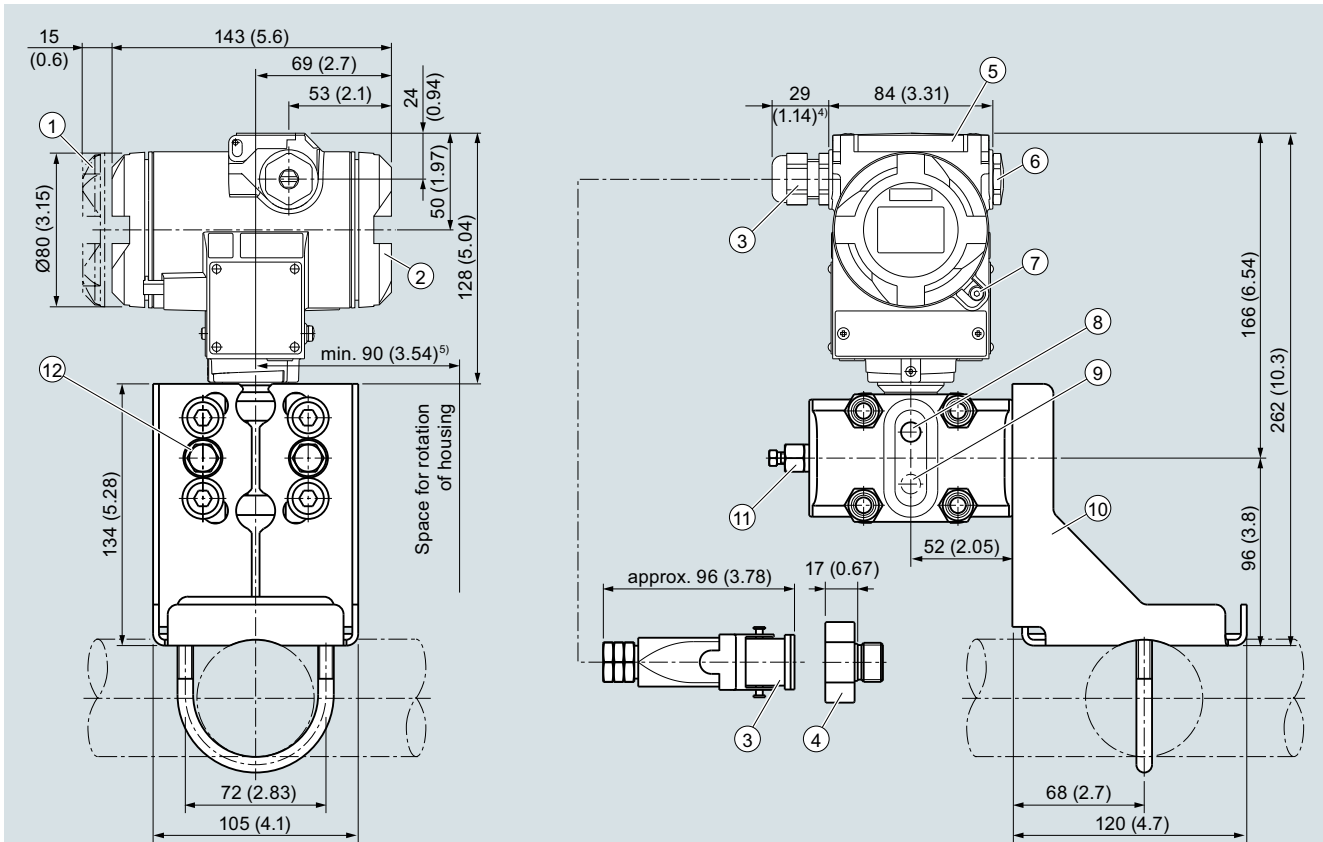
Only Y01, Y15, Y16, Y17, Y21, Y22, Y25 and D05 can be factory preset.

✓ = available

¹⁾ Measuring accuracies for PROFIBUS PA transmitters with Option Y01 are calculated in the same way as for HART devices.

²⁾ Preset values can only be changed over SIMATIC PDM.

Dimensional drawings



- ① Electronics side, local display
(longer overall length for cover with inspection window)¹⁾
- ② Connection side¹⁾
- ③ Electrical connection:
 - Pg 13.5 screw gland (adapter)^{2) 3)}
 - M20 x 1,5 screw gland
 - ½-14 NPT screw gland
 - Han 7D/Han 8D^{2) 3)} 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)

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

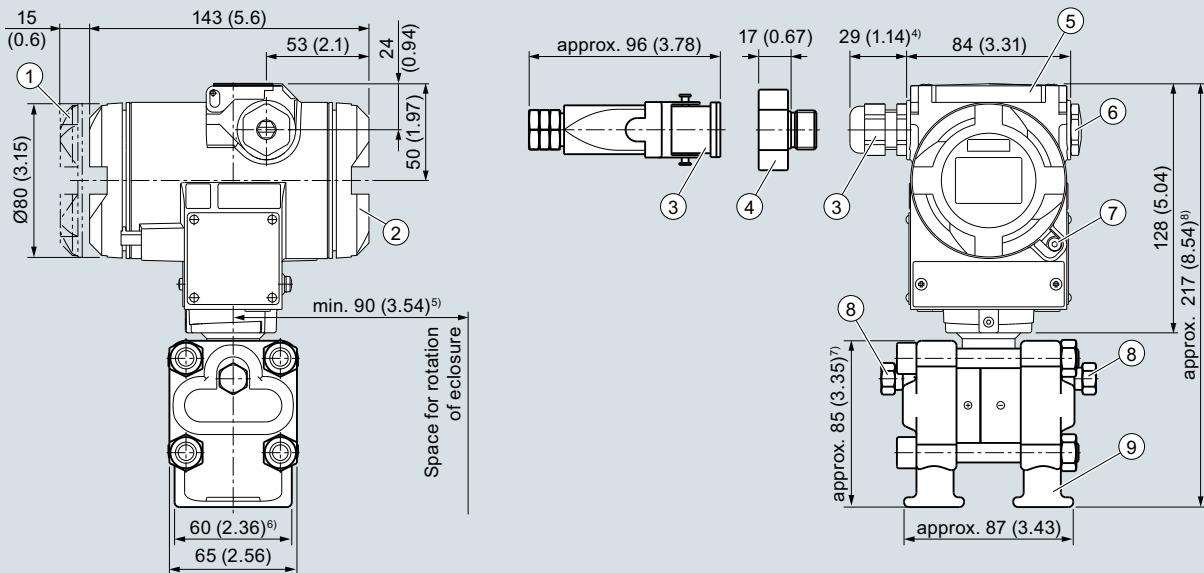
SITRANS P410 pressure transmitters for differential pressure and flow, dimensions in mm (inch)

Pressure Measurement

Pressure transmitters
for applications with advanced requirements (Advanced)
SITRANS P410

for differential pressure and flow

1



- ① Electronics side, local display (longer overall length for cover with inspection window)¹⁾
- ② Connection side¹⁾
- ③ Electrical connection:
 - Pg 13.5 screw gland (adapter)²⁾³⁾
 - M20 x 1,5 screw gland
 - ½-14 NPT screw gland
 - Han 7D/Han 8D²⁾³⁾ 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 Sealing plug with valve (optional)
- ⑨ Process connection: ¼-18 NPT (IEC 61518)

- ¹⁾ In addition, allow approx. 20 mm (0.79 inch) for the thread length
- ²⁾ Not with "flameproof enclosure" type of protection
- ³⁾ Not for type of protection "FM + CSA" [is + XP]"
- ⁴⁾ For Pg 13.5 with adapter, approx. 45 mm (1.77 inch)
- ⁵⁾ 92 mm (3.62 inch) minimum distance for rotating with indicator
- ⁶⁾ 74 mm (2.9 inch) for PN ≥ 420 (MAWP ≥ 6092 psi)
- ⁷⁾ 91 mm (3.6 inch) for PN ≥ 420 (MAWP ≥ 6092 psi)
- ⁸⁾ 219 mm (8.6 inch) for PN ≥ 420 (MAWP ≥ 6092 psi)

SITRANS P410 pressure transmitters for differential pressure and flow, with process covers for vertical differential pressure lines, optional "H03", dimensional drawing, dimensions in mm (inch)



SITRANS P410 pressure transmitters for differential pressure and flow, with process covers for vertical differential pressure lines