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

Technical description

Overview



SITRANS P410 pressure transmitters are digital pressure transmitters with a high level of operating convenience. Technically, they are based on the SITRANS P DS III but offer an increased measuring accuracy of 0.04%. This means the SITRANS P 410 is perfectly suited for measuring tasks with increased accuracy requirements. The parameterization is performed using input buttons or via HART or via PROFIBUS PA or FOUNDATION Fieldbus interface.

The comprehensive functionality makes for precise adjustment of the pressure transmitter to the requirements of the plant. Operation is very simple, despite the variety of setting options.

Pressure transmitters with type of protection "Intrinsic safety" and "Explosion-proof" may be installed in hazardous areas (zone 1) or in zone 0. The transmitters are provided with an EC type examination certificate and comply with the respective harmonized European standards (ATEX).

The transmitters can be equipped with various designs of remote seals for special applications such as the measurement of highly viscous substances.

SITRANS P410 pressure transmitters are available in various versions for measuring:

- Gauge pressure
- Differential pressure
- Volume flow
- · Mass flow

Benefits

- · High quality and service life
- For aggressive and non-aggressive gases, vapors and liquids
- · Extensive diagnostics and simulation functions
- Minimal conformity error
- Good long-term stability
- Wetted parts made of high-grade materials (e.g., stainless steel, Hastelloy)
- Infinitely adjustable spans from 0.01 bar to 160 bar (0.15 psi to 2321 psi) for P410 with HART interface
- Nominal measuring ranges from 1 bar to 160 bar (14.5 psi to 2321 psi) for P410 with PROFIBUS PA and FOUNDATION Fieldbus interface
- · High measuring accuracy
- Parameterization over input buttons and HART, PROFIBUS PA or FOUNDATION Fieldbus interface.

Application

SITRANS P410 pressure transmitters can be used in industrial areas with extreme chemical and mechanical loads. Electromagnetic compatibility in the range 10 kHz to 1 GHz makes the P410 suitable for locations with high electromagnetic emissions.

Pressure transmitters with type of protection "Flameproof enclosure" may be installed in hazardous areas (zone 1) or in zone 0. The pressure transmitters are provided with an EC type examination certificate and comply with the corresponding harmonized European standards (ATEX).

Pressure transmitters with the type of protection "Intrinsic safety" for use in zone 0 may be operated with power supply units of category "ia" and "ib".

The transmitters can be equipped with various designs of remote seals for special applications such as the measurement of highly viscous substances.

The pressure transmitter can be operated locally over 3 input buttons or programmed externally over HART or over PROFIBUS PA or FOUNDATION Fieldbus interface.

Pressure transmitter for gauge pressure

Measured variable: Gauge pressure of aggressive and non-aggressive gases, vapors and liquids.

Span (infinitely adjustable)

for P410 with HART: 0.01 bar to 160 bar (0.15 psi to 2321 psi)

Nominal measuring range for P410 with PROFIBUS PA and FOUNDATION Fieldbus:

1 bar to 160 bar (14.5 psi to 2321 psi)

Pressure transmitters for differential pressure and flow

Measured variables:

- Differential pressure
- Small positive or negative pressure
- Flow q ~ √Δp (together with a primary differential pressure device (see Chapter "Flow Meters"))

Span (infinitely adjustable)

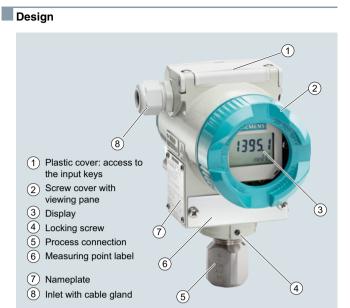
for P410 with HART: 1 mbar ... 30 bar (0.0145 ... 435 psi)

Nominal measuring range

for P410 with PROFIBUS PA and FOUNDATION Fieldbus: 20 mbar ... 30 bar (0.29 ... 435 psi)

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Technical description



Front view

The transmitter consists of various components depending on the order. The possible versions are listed in the ordering information. The components described below are the same for all transmitters.

The rating plate (7, Figure "Front view") with the Article No. is located on the side of the housing. The specified number together with the ordering information provide details on the optional design details and on the possible measuring range (physical properties of built-in sensor element).

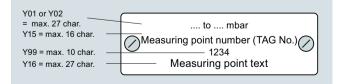
The approval label is located on the opposite side.

The housing is made of die-cast aluminium or stainless steel precision casting. A round cover (6) is screwed on at the front and rear of the housing. The front cover can be fitted with a viewing pane so that the measured values can be read directly on the display. The inlet (8) for the electrical connection is located either on the left or right side. The unused opening on the opposite side is sealed by a blanking plug. The protective earth connection is located on the rear of the housing.

The electrical connections for the power supply and screen are accessible by unscrewing the rear cover. The bottom part of the housing contains the measuring cell with process connection (5). The measuring cell is prevented from rotating by a locking screw (4). As the result of this modular design, the measuring cell and the electronics can be replaced separately from each other. The set parameter data are retained.

At the top of the housing is a plastic cover (1), which hides the input keys.

Example for an attached measuring point label

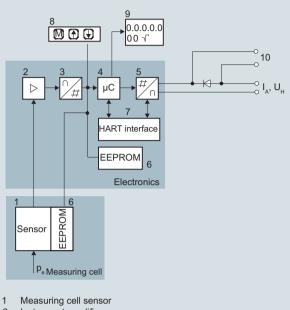


Technical description

Function

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

Operation of electronics with HART communication



- 2 Instrument amplifier
- 3 Analog-to-digital converter
- 4 Microcontroller
- 5 Digital-to-analog converter
- 6 One non-volatile memory each in the measuring cell and electronics
- HART interface 7
- Three input keys (local operation) 8
- 9 Digital display
- 10 Diode circuit and connection for external ammeter
- Output current
- I Û Power supply
- P Input variable

Function diagram of electronics

The bridge output voltage created by the sensor (1, Figure "Function diagram of the electronics") is amplified by the measuring amplifier (2) and digitized in the analog-to-digital converter (3). The digital information is evaluated in a microcontroller, its linearity and temperature response corrected, and converted in a digital-to-analog converter (5) into an output current of 4 to 20 mA.

The diode circuit (10) protects against incorrect polarity.

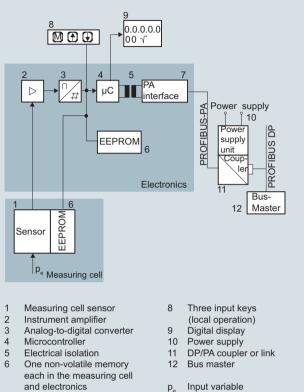
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The one memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced separately from each other.

Using the 3 input keys (8) you can parameterize the pressure transmitter directly at the measuring point. The input buttons can also be used to control the view of the results, the error messages and the operating modes on the display (9)

The HART modem (7) permits parameterization using a protocol according to the HART specification.

The pressure transmitters with spans \leq 63 bar measure the input pressure compared to atmosphere, transmitters with spans ≥ 160 bar compared to vacuum.





- **PROFIBUS-PA** interface 7
- Function diagram of electronics

The bridge output voltage created by the sensor (1, Figure "Function diagram of the electronics") is amplified by the measuring amplifier (2) and digitized in the analog-to-digital converter (3). The digital information is evaluated in the microcontroller, its linearity and temperature response corrected, and provided on the PROFIBUS PA through an electrically isolated PA interface (7).

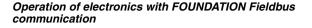
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The one memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced separately from each other.

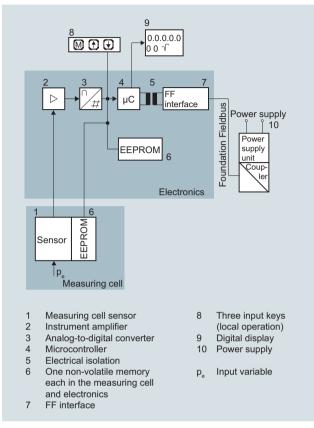
Using the three input buttons (8) you can parameterize the pressure transmitter directly at the measuring point. The input buttons can also be used to control the view of the results, the error messages and the operating modes on the display (9).

The results with status values and diagnostic values are transferred by cyclic data transmission on the PROFIBUS PA. Parameterization data and error messages are transferred by acyclic data transmission. Special software such as SIMATIC PDM is required for this.

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

Technical description





Function diagram of electronics

The bridge output voltage created by the sensor (1, Figure "Function diagram of electronics") is amplified by the measuring amplifier (2) and digitized in the analog-to-digital converter (3). The digital information is evaluated in the microcontroller, its linearity and temperature response corrected, and provided on the FOUNDATION Fieldbus through an electrically isolated FOUNDATION Fieldbus interface (7).

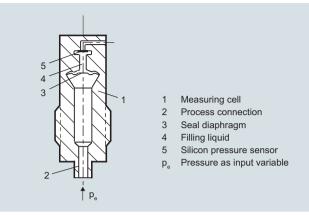
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The one memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced separately from each other.

Using the three input buttons (8) you can parameterize the pressure transmitter directly at the measuring point. The input buttons can also be used to control the view of the results, the error messages and the operating modes on the display (9).

The results with status values and diagnostic values are transferred by cyclic data transmission on the FOUNDATION Fieldbus. Parameterization data and error messages are transferred by acyclic data transmission. Special software such as National Instruments Configurator is required for this.

Mode of operation of the measuring cells

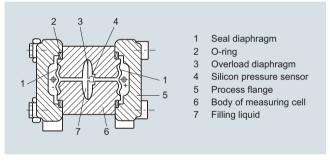
Measuring cell for gauge pressure



Measuring cell for gauge pressure, function diagram

The pressure p_e is applied through the process connection (2, Figure "Measuring cell for gauge pressure, function diagram) to the measuring cell (1). This pressure is subsequently transmitted further through the seal diaphragm (3) and the filling liquid (4) to the silicon pressure sensor (5) whose measuring diaphragm is then flexed. This changes the resistance of the four piezo-resistors fitted in the diaphragm in a bridge circuit. This change in resistance results in a bridge output voltage proportional to the differential pressure.

Measuring cell for differential pressure and flow



Measuring cell for differential pressure and flow, function diagram

The differential pressure is transmitted through the seal diaphragms (1, Figure "Measuring cell for differential pressure and flow, function diagram") and the filling liquid (7) to the silicon pressure sensor (4).

The measuring diaphragm is flexed by the applied differential pressure. This changes the resistance of the four piezo-resistors fitted in the diaphragm in a bridge circuit. This change in resistance results in a bridge output voltage proportional to the differential pressure.

An overload diaphragm is installed to provide protection from overloads. If the measuring limits are exceeded, the overload diaphragm (3) is flexed until the seal diaphragm rests on the body of the measuring cell (6), thus protecting the silicon pressure sensor from overloads.

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

Technical description

Parameterization SITRANS P410

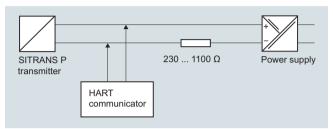
Depending on the version, there are a range of options for parameterizing the pressure transmitter and for setting or scanning the parameters.

Parameterization using the input buttons (local operation)

With the input buttons you can easily set the most important parameters without any additional equipment.

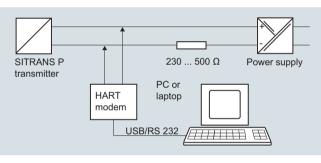
Parameterization using HART

Parameterization using HART is performed with a HART Communicator or a PC.



Communication between a HART Communicator and a pressure transmitter

When parameterizing with the HART Communicator, the connection is made directly to the 2-wire cable.



HART communication between a PC communicator and a pressure transmitter

When parameterizing with a PC, the connection is made through a HART modem.

The signals needed for communication in conformity with the HART 5.x or 6.x protocols are superimposed on the output current using the Frequency Shift Keying (FSK) method.

Adjustable parameters, SITRANS P410 with HART

Parameters	Input keys (DS III HART)	HART communication
Start of scale	X	x
Full-scale value	x	x
Electrical damping	х	х
Start-of-scale value without applica- tion of a pressure ("Blind setting")	х	х
Full-scale value without application of a pressure ("Blind setting")	Х	х
Zero adjustment	х	х
current transmitter	х	х
Fault current	х	х
Disabling of buttons, write protec- tion	Х	x ¹⁾
Type of dimension and actual dimension	х	х
Characteristic (linear / square- rooted)	x ²⁾	x ²⁾
Input of characteristic		х
Freely-programmable LCD		х
Diagnostic functions		х
1) Ocean of the second former works and the second second		

Cancel apart from write protection
 Only differential pressure

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Diagnostic functions for SITRANS P410 with HART

- · Zero correction display
- Event counter
- Limit transmitter
- Saturation alarm
- Slave pointer
- Simulation functions
- Maintenance timer

Available physical units of display for SITRANS P410 with HART

Physical variable	Physical dimensions
Pressure (setting can also be made in the factory)	Pa, MPa, kPa, bar, mbar, torr, atm, psi, g/cm ² , kg/cm ² , inH ₂ O, inH ₂ O (4 °C), mmH ₂ O, ftH ₂ O (20 °C), inHg, mmHg
Level (height data)	m, cm, mm, ft, in
Volume	m ³ , dm ³ , hl, yd ³ , ft ³ , in ³ , US gallon, Imp. gallon, bushel, barrel, barrel liquid
Mass	g, kg, t, lb, Ston, Lton, oz
volume flow	$\rm m^{3}/d,m^{3}/h,m^{3}/s,l/min,l/s,ft^{3}/d,ft^{3}/min,ft^{3}/s,US$ gallon/min, US gallon/s
Mass flow	t/d, t/h, t/min, kg/d, kg/h, kg/min, kg/s, g/d, g/h, g/min, g/s, lb/d, lb/h, lb/min, lb/s, LTon/d, LTon/h, STon/d, STon/h, STon/min
Temperature	K, °C, °F, °R
Miscellaneous	%, mA

Parameterization through PROFIBUS PA interface

Fully digital communication through PROFIBUS PA, profile 3.0, is particularly user-friendly. Through the PROFIBUS the DS III with PROFIBUS PA is connected to a process control system, e.g. SIMATIC PSC 7. Communication is possible even in a potentially explosive environment.

For parameterization through PROFIBUS you need suitable software, e.g. SIMATIC PDM (Process Device Manager).

Parameterization through FOUNDATION Fieldbus interface

Fully digital communication through FOUNDATION Fieldbus is particularly user-friendly. Through the FOUNDATION Fieldbus the DS III with FOUNDATION Fieldbus is connected to a process control system. Communication is possible even in a potentially explosive environment.

For parameterization through the FOUNDATION Fieldbus you need suitable software, e.g. National Instruments Configurator.

Adjustable parameters for SITRANS P410 with PROFIBUS PA and FOUNDATION Fieldbus

Parameters	Input keys	PROFIBUS PA and FOUNDATION Field- bus interface
Electrical damping	х	х
Zero adjustment (correction of posi- tion)	х	x
Buttons and/or function disabling	х	х
Source of measured-value display	х	х
Physical dimension of display	х	х
Position of decimal point	х	х
Bus address	х	х
Adjustment of characteristic	х	х
Input of characteristic		х
Freely-programmable LCD		х
Diagnostics functions		х

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

Technical description

Diagnostic functions for SITRANS P410 with PROFIBUS PA and FOUNDATION Fieldbus

- Event counter
- Slave pointer
- Maintenance timer
- Simulation functions
- Display of zero correction
- Limit transmitter
- Saturation alarm

Physical dimensions availa	able for the display
Physical variable	Physical dimensions
Draggurg (actting can also be	MDa kDa Da har mhar tarr

Pressure (setting can also be made in the factory)	MPa, kPa, Pa, bar, mbar, torr, atm, psi, g/cm ² , kg/cm ² , mmH ₂ O, mmH ₂ O (4 °C), inH ₂ O, inH ₂ O (4 °C), ftH ₂ O (20 °C), mmHg, inHg
Level (height data)	m, cm, mm, ft, in, yd
Volume	m ³ , dm ³ , hl, yd ³ , ft ³ , in ³ , US gallon, Imp. gallon, bushel, barrel, barrel liquid
volume flow	$m^3/s,m^3/min,m^3/h,m^3/d,l/s,l/min,l/h,l/d,Ml/d,ft^3/s,ft^3/min,ft^3/h,ft^3/d,US gallon/s,US gallon/min,US gallon/h,US gallon/d,bbl/s,bbl/min,bbl/h,bbl/d$
Mass flow	g/s, g/min, g/h, g/d, kg/s, kg/min, kg/h, kg/d, t/s, t/min, t/h, /t/d, lb/s, lb/min, lb/h, lb/d, STon/s, STon/min, STon/h, STon/d, LTon/s, LTon/min, LTon/h, LTon/d
Total mass flow	t, kg, g, lb, oz, LTon, STon
Temperature	K, °C, °F, °R
Miscellaneous	%

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

for gauge pressure

Technical specifications

SITRANS P410 for gauge pressure

Input				
Measured variable	Gauge pressure			
Span (fully adjustable) or measuring range, max. operating pressure (in accordance with 2014/68/EU Pressure Equipment Directive) and max. test pressure (pursuant to DIN 16086)	HART	PROFIBUS PA/ FOUNDATION Fieldbus		
	Span	Nominal measuring range	Max. operating pres- sure MAWP (PS)	Max. perm. test pressure
	0.01 1 bar 1 100 kPa 0.15 14.5 psi	1 bar 100 kPa 14.5 psi	4 bar 400 kPa 58 psi	6 bar 600 kPa 87 psi
	0.04 4 bar 4 400 kPa 0.58 58 psi	4 bar 400 kPa 58 psi	7 bar 0.7 MPa 102 psi	10 bar 1 MPa 145 psi
	0.16 16 bar 16 1600 kPa 2.3 232 psi	16 bar 1600 kPa 232 psi	21 bar 2.1 MPa 305 psi	32 bar 3.2 MPa 464 psi
	0.63 63 bar 63 6300 kPa 9.1 914 psi	Pa 6300 kPa 6.7MPa		100 bar 10 MPa 1450 psi
	1.6 160 bar 0.16 16 MPa 23 2321 psi	160 bar 16 MPa 2321 psi	167 bar 16.7 MPa 2422 psi	250 bar 2.5 MPa 3626 psi
Lower measuring limit			!	
 Measuring cell with silicone oil filling 	30 mbar a/3 kPa a/0.44 psi a			
Upper measuring limit	100 % of max. span			
Output	HART PROFIBUS PA/FOUNDATION Field			NDATION Fieldbus
Output signal	4 20 mA		Digital PROFIBUS PA Fieldbus signal	and FOUNDATION
 Lower limit (infinitely adjustable) 	3.55 mA, factory pre	eset 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 ≤ (<i>U</i> _H - 10.5 V)/0.023 A in Ω, <i>U</i> _H : Power supply in V		-	
With HART	$R_{\rm B}$ = 230 500 Ω (SIMATIC PDM) or $R_{\rm B}$ = 230 1100 Ω (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.		ection against the	
Electrical damping (step width 0.1 s)	Set to 2 s (0 100 s	3)		

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

for gauge pressure

SITRANS P410 for gauge pressure	
Measuring accuracy	Acc. to IEC 60770-1
Reference conditions	 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	
- 1 bar/100 kPa/14.5 psi 4 bar/400 kPa/58 psi 16 bar/1.6 MPa/232 psi 63 bar/6.3 MPa/914 psi 160 bar/16 MPa/2321 psi	$ \begin{array}{ll} r \leq 5: & \leq 0.04 \ \% \\ 5 < r \leq 100: & \leq (0.004 \cdot r + 0.045) \ \% \end{array} $
Influence of ambient temperature (in percent per 28 °C (50 °F))	
• 1 bar/100 kPa/14.5 psi	$\leq (0.05 \cdot r + 0.1) \%$
• 4 bar/400 kPa/58 psi 16 bar/1.6 MPa/232 psi 63 bar/6.3 MPa/914 psi 160 bar/16 MPa/2321 psi	≤ (0.025 · r + 0.125) %
Long-term stability (temperature change \pm 30 °C (\pm 54 °F))	
• 1 bar/100 kPa/14.5 psi 4 bar/400 kPa/58 psi	\leq (0.25 · r) % in 5 years
• 16 bar/1.6 MPa/232 psi 63 bar/6.3 MPa/914 psi 160 bar/16 MPa/2321 psi	\leq (0.125 · r) % in 5 years
Effect of mounting position	\leq 0.05 mbar/0.005 kPa/0.000725 psi per 10° inclination (zero point correction is possible with position error compensation)
Effect of auxiliary power supply (in percent per change in voltage)	0.005 % per 1 V
Measuring value resolution for PROFIBUS PA and FOUNDATION Fieldbus	3 · 10 ⁻⁵ of nominal measuring range

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

for gauge pressure

SITRANS P410 for gauge pressure			
Rated conditions			
Degree of protection			
according to EN 60529	IP66 (optional IP66/IP68)		
according to NEMA 250	Type 4X		
Temperature of medium	туре 47		
·	40 · 100 °C (40 · 212 °E)		
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 us	se in the tropics	
Electromagnetic Compatibility			
- Emitted interference and interference immunity	Acc. to IEC 61326 and NAMUR NE 21		
Design			
Weight (without options)	Die-cast aluminum: $\approx 2.0 \text{ kg}$ ($\approx 4.4 \text{ lb}$) Stainless steel precision casting: $\approx 4.6 \text{ kg}$ ($\approx 10.1 \text{ lb}$)		
Enclosure material	Low-copper die-cast aluminum, GD-AlSi 12 or stainless steel precision casting, mat. no. 1.4408		
Wetted parts materials			
Connection shank	Stainless steel, mat. no. 1.4404/316L or Hastelloy C4, mat. no. 2.4602		
• Oval flange	Stainless steel, mat. no. 1.4404/316L		
• Seal diaphragm	Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819		
Measuring cell filling	Silicone oil or inert filling liquid (maximum value with oxygen measurement pressure 100 bar (1450 psi) at 60 °C (140 °F))		
Process connection	Connection shank G½B to DIN EN 837-1, female thread ½ -14 NPT or oval flange (PN 160 (MAWP 2320 psi)) to DIN 19213 with mounting thread M10 or $^{7}/_{16}$ -20 UNF to IEC 61518/DIN EN 61518		
Material of mounting bracket			
• Steel	Sheet-steel, Mat. No. 1.0330, chrome-pla	ted	
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 $U_{ m H}$	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			
-		0 22.1/	
Not ExWith intrinsically-safe operation		9 32 V 9 24 V	
	-	924 V	
Current consumption			
Basic current (max.)	-	12.5 mA	
 Start-up current ≤ basic current 	-	Yes	
Max. current in event of fault	-	15.5 mA	
Fault disconnection electronics (FDE) available	-	Yes	

Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P410

for gauge pressure

Certificates and approvals				
Classification according to PED 2014/68/EU	For gases of fluid group 1 and liquids of article 4, paragraph 3 (sound engineering)	fluid group 1; complies with requirements on g practice)		
Explosion protection				
 Intrinsic safety "i" 	PTB 13 ATEX 2007 X	PTB 13 ATEX 2007 X		
- Marking	Ex II 1/2 G Ex ia/ib IIC T4/T5/T6 Ga/Gb	Ex II 1/2 G Ex ia/ib IIC T4/T5/T6 Ga/Gb		
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperatu -40 +70 °C (-40 +158 °F) temperatu -40 +60 °C (-40 +140 °F) temperatu	ure class T5;		
- Connection	To certified intrinsically-safe circuits with peak values: $U_{\rm i}$ = 30 V, $l_{\rm i}$ = 100 mA, $P_{\rm i}$ = 750 mW; $R_{\rm i}$ = 300 Ω	FISCO supply unit: $U_0 = 17.5 \text{ V}, I_0 = 380 \text{ mA}, P_0 = 5.32 \text{ W}$ Linear barrier: $U_0 = 24 \text{ V}, I_0 = 174 \text{ mA}, P_0 = 1 \text{ W}$		
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{\rm i}$ = 7 µH, $C_{\rm i}$ = 1.1 nF		
• Explosion-proof "d"	PTB 99 ATEX 1160			
- Marking	Ex II 1/2 G Ex d IIC T4/T6 Ga/Gb			
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperatu -40 +60 °C (-40 +140 °F) temperatu			
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC	/ To circuits with values: $U_{\rm H}$ = 9 32 V D0		
 Dust explosion protection for zone 20 (pending) 	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: $U_i = 30 V, I_i = 100 \text{ mA},$ $P_i = 750 \text{ mW}, R_i = 300 \Omega$	FISCO supply unit: $U_0 = 17.5 \text{ V}, I_0 = 380 \text{ mA}, P_0 = 5.32 \text{ W}$ Linear barrier: $U_0 = 24 \text{ V}, I_0 = 250 \text{ mA}, P_0 = 1 \text{ W}$		
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4$ mH, $C_{\rm i} = 6$ nF	$L_i = 7 \mu H, C_i = 1.1 nF$		
Dust explosion protection for zone 21/22 (pending)	PTB 01 ATEX 2055	$L_1 = T \mu H, O_1 = 1.1 H$		
- Marking	Ex II 2 D Ex tb IIIC T120°C Db			
- Connection	To circuits with values:	To circuits with values:		
• Type of protection "n" (zone 2)	$U_{\rm H} = 10.5 \dots 45$ V DC; $P_{\rm max} = 1.2$ W PTB 13 ATEX 2007 X	$U_{\rm H} = 9 \dots 32 \text{ V DC}; P_{\rm max} = 1 \text{ W}$		
- 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)	$U_{\rm m} = 45 \text{ V}$	$U_{\rm m} = 32 \text{ V}$		
- Connections (Ex ic)	To circuits with values: $U_i = 45 \text{ V}$	FISCO supply unit ic: $U_0 = 17.5 \text{ V}, I_0 = 570 \text{ mA}$ Linear barrier: $U_0 = 32 \text{ V}, I_0 = 132 \text{ mA}, P_0 = 1 \text{ W}$		
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{\rm i} = 7 \mu\text{H}, C_{\rm i} = 1.1 \text{nF}$		
• Explosion protection acc. to FM (pending)	Certificate of Compliance 3008490			
- Identification (XP/DIP) or (IS); (NI)		/ 1, GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC CL II, DIV 2, GP FG; CL III		
 Explosion protection to CSA (pending) 	Certificate of Compliance 1153651			
	CL I, DIV 1, GP ABCD T4T6; CL II, DIV DIV 2, GP ABCD T4T6; CL II, DIV 2, G	1, GP EFG; CL III; Ex ia IIC T4T6; CL I,		

for gauge pressure

FOUNDATION Fieldbus

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

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

3 function blocks analog input, 1 function block PID

Yes, linearly rising or falling characteristic

0 ... 100 s

Output/input (can be locked within the device with a bridge)

parameterizable (last good value, substitute value, incorrect value)

Yes, one upper and lower warning limit and one alarm limit respectively

Yes

Standard FOUNDATION Fieldbus function block

1 resource block

1 transducer block Pressure with calibration, 1 transducer block LCD

Yes

Yes

Constant value or over parameterizable ramp function

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

tor	GE	hra	ssure
	ાના		551916

Selection and Ordering	l data	Article No.		Order co
Pressure transmitter for	or gauge pressure, SITRANS P410 with HART	7MF4033-		-Z C41
↗ Click on the Article N	o. for the online configuration in the PIA Life Cycle Portal.			
Measuring cell filling	Measuring cell cleaning			
Silicone oil	normal	1		
Measuring span (min.	max.)			
0.01 1 bar (0.15	. 14.5 psi)	В		
	. 58 psi)	C		
	. 232 psi)	D		
•	. 914 psi)	E		
1.6 160 bar (23.2	. 2320 psi)	F		
Wetted parts materials				
Seal diaphragm	Process connection			
Stainless steel	Stainless steel	A		
Hastelloy	Stainless steel	В		
Hastelloy	Hastelloy	С		
Version for diaphragm s (recommended versio r	eals in conjunction with process connector "female thread ½-14 NPT"	Y 1		
		X O		
	eals in conjunction with process connector "G1/2B connection shank" 1) 2) 3) 4)	Y 0		
Process connection				
Connection shank G ¹ / ₂		0		
 Female thread ½-14 N 		1		
	nge with process connection (Oval flange has no female thread)	0		
	-20 UNF to IEC 61518/DIN EN 61518	2		
 Mounting thread M10 Mounting thread M12 		3		
 Male thread M20 x 1.5 		5		
 Male thread ½ -14 NP 		6		
Non-wetted parts mate		_		
 Housing made of die-or 			D	
 Housing made of ale- Housing stainless stee 			3	
Version		_		
	man plate inscription, setting for pressure unit: bar		1	
	English plate inscription, setting for pressure unit: bar		2	
	h plate inscription, setting for pressure unit: Pascal		3	
) with compact operating instructions in various EU languages.		Ū	
Explosion protection		-		
None			А	
 With ATEX, Type of pro 	tection:		^	
- "Intrinsic safety (Ex ia			в	
- "Explosion-proof (Ex			D	
	lameproof enclosure" (Ex ia + Ex d)" ⁷⁾		Р	
- "Ex nA/ic (Zone 2)"8)	· · ·		E	
- "Intrinsic safety, expl	psion-proof enclosure and dust explosion protection		R	
(Ex ia + Ex d + Zone				
• FM + CSA intrinsic saf			F	
	Ex ia + Ex d (ATEX) + Zone 1D/2D ⁷⁾⁹⁾¹⁰⁾		S	
With FM + CSA, Type				
	xplosion Proof (is + xp) ^{*6)10)}		NC	
Electrical connection /				
 Screwed gland M20 x 			В	
 Screwed gland ½-14 N 			С	
 Device plug Han 7D (p Device plugs M12 (state) 	plastic housing) incl. mating connector ¹¹⁾		D F	

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

for gauge pressure

Selection and Ordering data	Article No.	Order code
Pressure transmitter for gauge pressure, SITRANS P410 with HART	7MF4033-	-Z C41
Display		
Without display		0
Without visible display (display conserved)		1
(display concealed, setting: mA)		
 With visible display (setting: mA) 		6
 with customer-specific display (setting as specified, Order code "Y21" or "Y22" required) 		7

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

A quick-start guide is included in the scope of delivery of the device.

- 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 7MF403.-.Y.-... and 7MF4900-1...-.B
- 4) The standard measuring cell filling of 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) M12 delivered without cable socket

Pressure transmitters

			auge press
Selection and Ordering	data	Article No.	Order coo
Pressure transmitter fo	r gauge pressure		
SITRANS P410 with PRC	OFIBUS PA (PA)	7MF4034-	-Z C41
SITRANS P410 with FOU	NDATION Fieldbus (FF)	7MF4035-	-Z C41
↗ Click on the Article No.	o. for the online configuration in the PIA Life Cycle Portal.		
Measuring cell filling Silicone oil	Measuring cell cleaning normal	1	
Nominal measuring rar 1 bar (14.5 psi) 4 bar (58 psi) 16 bar (232 psi) 53 bar (914 psi) 160 bar (2320 psi)	ıge	B C D E	
Wetted parts materials Seal diaphragm	Process connection		
Stainless steel Hastelloy Hastelloy Version for diaphragm se (recommended version	Stainless steel Stainless steel Hastelloy als in conjunction with process connector "female thread ½-14 NPT") (1 2) (3) (4) (2) (2) (4)	A B C Y 1	
Process connection	eals in conjunction with process connector "G½B connection shank" $^{(1)}$ $^{(2)}$ $^{(3)}$ $^{(4)}$	Y 0	
	PT nge with process connection (Oval flange has no female thread) ⁵⁾ 20 UNF to IEC 61518/DIN EN 61518 0 to DIN 19213 2 to DIN 19213	0 1 2 3 4 5 6	
Non-wetted parts mate • Housing made of die-c • Housing stainless stee	ast aluminium	0 3	
 International version, E Chinese version, Englis 	nan label inscription, setting of pressure unit: bar inglish label inscription, setting of pressure unit: psi h label inscription, setting of pressure unit: kPa with compact operating instructions in various EU languages.	1 2 3	
Explosion protection			
• None		A	
- "Ex nA/ic (Zone 2)" ⁸⁾	i)" d)" ⁶⁾ lameproof enclosure" (Ex ia + Ex d)" ⁷⁾ psion-proof enclosure and dust explosion protection 1D/2D)" ^{7) 9)}	B D P E R	
	Ex ia + Ex d (ATEX) + Zone 1D/2D ⁷⁾⁹⁾¹⁰⁾	s	
• With FM + CSA, Type of		N	0
Electrical connection/c • Screwed gland M20 x • Screwed gland ½-14 N • Device plugs M12 (sta	able entry 1.5 IPT	-	B C F

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for gauge pressure

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

Selection and Ordering data	Article No.	Order code
Pressure transmitter for gauge pressure		
SITRANS P410 with PROFIBUS PA (PA)	7MF4034-	-Z C41
SITRANS P410 with FOUNDATION Fieldbus (FF)	7MF4035-	-Z C41
Display		
Without display	0	
Without visible display (display concealed, setting: bar)	1	
With visible display (setting: bar)	6	5
 with customer-specific display (setting as specified, Order code "Y21" required) 	7	

A quick-start guide is included in the scope of delivery of the device.

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 7MF403.-..Y..-... and 7MF4900-1...-.B

⁴⁾ The standard measuring cell filling of configurations with remote seals (Y) is silicone oil.
 ⁵⁾ M10 fastening thread: Max. span 160 bar (2320 psi) 7/16-20 UNF and M12 fastening thread: Max. span 400 bar (5802 psi)

- 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⁾ M12 delivered without cable socket.
- ¹²⁾ Only in connection with Ex approval A, B, E or F.

Pressure transmitters

for applications with advanced requirements (Advanced)

SITRANS P410 for gauge pressure

Clubber designs Add "-Z" to Article No. and specify Order code.HART PAFFAdd "-Z" to Article No. and specify Order code.HART PAFFPressure transmitter with mounting bracket (1x fixing angle, 2x nut, 2x U-washer) made of:A01YY2x U-washer) made of:A02YYYStainless steel 304A02YYYStainless steel 316LA03YYYDevice plugs ¹)Han 7DA31YYHan 8D (instead of Han 7D)A31YYYHan 8D (instead of Han 7D)A33YYYHan 8D (instead of German)B11YYYEnglish enscription (instead of German)B13YYYFrenchB12YYYPressure units in inHg0 and/or psiC11YYYQuality Inspection Certificate (5-point characteristic curve test) according to IEC 6770-221C12YYInspection certificate (EN 10204-3.1)C15YYYPressure units in inHg0 and/or psiC11YYYCuciton I 10204-2.2Acce to EN 10204-3.1C15YYFunctional safety (SIL2) (pending) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declarationC23YYPurices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declarationC23YYPurices suitable for use accor	Selection and Ordering data	Order	code			
Add '-Z' to Article No. and specify Order code.Image: Stain less steel 304 Add '-Z' to X' *Pressure transmitter with mounting bracket (1x fixing angle, 2 x nut, 2 x U-washer of 1 x bracket, 2 x nut, 2 x V 3 x VStainless steel 304A03x VxHan 3D (metal)A33x VxAngledA32x VxHan 8D (metal)A33x VxCable sockets for device plugs M12 (mstead of German)B11x VxEnglish ating plateB11x VxxPressure units in inH_20 and/or psiC11x VxxQuality Inspection Certificate (5-point chacce to EN 10204-3.1C12x VxFacco to EN 10204-3.1C15x VxxAcc. to EN 10204-3.2C14 <td></td> <td>order</td> <td></td> <td>D٨</td> <td>FF</td> <td></td>		order		D٨	FF	
bracket (1x fixing angle, 2 x nut, 2 x U-washer of 1 x bracket, 2 x nut, 2 x 1 x -washer of 1 x bracket, 2 x nut, 2 x 1 x -washer of 1 x bracket, 2 x nut, 2 x 1 x -washer of 1 x bracket, 2 x nut, 2 x 1 x -washer of 1 x bracket, 2 x nut, 2 x 1 x -washer of 1 x -was	Add "-Z" to Article No. and specify Order					
2 x U-washer or 1 x bracket, 2 x nut, SitelA01✓✓✓• Stainless steel 304A02✓✓✓• Stainless steel 316LA03✓✓✓Device plugs ''A30✓✓✓• Han 7D (metal)A31✓✓✓• Han 8D (instead of Han 7D)A31✓✓✓• Han 8D (metal)A33✓✓✓• Han 8D (metal)A33✓✓✓• FendedB12✓✓✓• English (instead of German)B11✓✓• English (instead of German)B11✓✓• SpanishB13✓✓• ItalianB14✓✓English rating plateB21✓✓• ItalianB14✓✓✓Pressure units in inH ₂ 0 and/or psiC11✓✓Ouality Inspection Certificate (5-point characteristic curve test) according to IEC 60770-2°C12✓✓Inspection certificate (EN 10204-3.1)C15✓✓✓PMI test of parts in contact with mediumC11✓✓✓Functional safety (SIL2/) (pending)C20✓✓✓Devices suitable for use according to IEC 61508 and IEC 6151. Includes SIL conformity declaration✓✓Functional safety (SIL2/2) (pending to IEC 61508 and IEC 6151. Includes SIL conformity declarationC11✓✓Purices suitable for use according to IEC 61508 and IEC 6151. Includes SIL conformi	Pressure transmitter with mounting					
SteelA01✓✓✓✓Stainless steel 304A02✓✓✓✓Stainless steel 316LA03✓✓✓✓Device plugs ¹)Han 7D (metal)A30✓✓✓Han 8D (instead of Han 7D)A31✓✓✓✓Han 8D (instead of Han 7D)A31✓✓✓✓Han 8D (instead of Han 7D)A33✓✓✓✓Han 8D (instead of Han 7D)A33✓✓✓✓Han 8D (instead of German)B11✓✓✓✓EnglishB11✓✓✓✓✓FrenchB12✓✓✓✓SpanishB13✓✓✓✓ItalianB14✓✓✓✓Pressure units in inH ₂ 0 and/or psiC11✓✓✓Quality Inspection Certificate (5-point Characteristic curve test) according to IEC 60770-2°C11✓✓Inspection certificate ³ C12✓✓✓Acc. to EN 10204-3.1C15✓✓✓Functional safety (SIL2) (pending)C20✓✓✓PWI test of parts in contact with mediumC15✓✓✓Functional safety (SIL2/3)C23✓✓✓✓Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declarationC99✓✓✓Setting of the upper saturati	2 x U-washer or 1 x bracket, 2 x nut,					
Stainless steel 304A02✓✓✓Stainless steel 316L.A03✓✓✓✓Device plugs 1)A30✓✓✓✓Han 7D (metal)A31✓✓✓✓Han 8D (instead of Han 7D)A31✓✓✓✓Han 8D (metal)A32✓✓✓✓Cable sockets for device plugs M12A50✓✓✓✓(instead of German)B11✓✓✓✓EnglishB12✓✓✓✓✓FrenchB12✓✓✓✓✓SpanishB13✓✓✓✓✓ItalianB14✓✓✓✓✓Inspection certificate (S-point characteristic curve test) according to IEC 60770-2 ² C11✓✓✓Inspection certificate (S-point characteristic curve test) according to IEC 60770-2 ² C12✓✓✓Inspection certificate (SL) 10204-3.1C15✓✓✓✓Factory certificate (EN 10204-3.1)C15✓✓✓✓Functional safety (SIL2) (pending)C20✓✓✓✓Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declarationC99✓✓✓Increased measuring accuracy (mandatory specification for SITRANS P410)D05✓✓✓Device suitable for use according to IEC 61508 and IEC 61511. Includes SIL	,	4.01				
Stainless steel 316LA03✓✓✓Device plugs ¹⁾ A30✓✓✓Han 7D (metal)A30✓✓✓Han 8D (instead of Han 7D)A31✓✓✓AngledA32✓✓✓✓Han 8D (metal)A33✓✓✓✓Cable sockets for device plugs M12A50✓✓✓(instead of German)B11✓✓✓✓EnglishB13✓✓✓✓SpanishB13✓✓✓✓ItalianB14✓✓✓✓English rating plateB14✓✓✓✓ItalianB14✓✓✓✓Coulity Inspection Certificate (5-point characteristic curve test) according toC11✓✓✓IEC 60770-2 ²)Inspection certificate (S-point characteristic curve test) according toC12✓✓✓Powies suitable for use according toC14✓✓✓✓Puvices suitable for use according toC20✓✓✓✓Euctional safety (SIL2) (pending)C23✓✓✓✓Devices suitable for use according toC23✓✓✓✓Euctional safety (SIL2)(Demding)C23✓✓✓✓Devices suitable for use according toC23✓✓✓✓IEC 61508 and IEC 61511. Includes SIL conformit					*	
Device plugs 1RoteRoteRoteRoteRoteHan 7D (metal)A30-Han 8D (instead of Han 7D)A31-AngledA32-Han 8D (metal)A33-Cable sockets for device plugs M12A50(metal (CuZn))A50Rating plate inscription (instead of German)B11(instead of German)B12EnglishB11ItalianB14English rating plateB21Pressure units in inH ₂ 0 and/or psiC11Quality Inspection Certificate (5-point Characteristic curve test) according to IEC 60770-22C12Spacino certificateC14Acc. to EN 10204-3.1C15Factory certificateC14PMI test of parts in contact with mediumC20Purces suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declarationC23Functional safety (SIL23) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration for SITRANS P410)D05PED for Russia with initial calibration markD05 <t< td=""><td></td><td></td><td></td><td>· /</td><td>1</td><td></td></t<>				· /	1	
Han 7D (metal)A30✓Han 8D (instead of Han 7D)A31✓AngledA32✓Han 8D (metal)A33✓Cable sockets for device plugs M12 (mstead of German)A50✓✓Rating plate inscription (instead of German)B11✓✓• EnglishB11✓✓✓• FrenchB12✓✓✓• SpanishB13✓✓✓• ItalianB14✓✓✓Pressure units in inH20 and/or psiC11✓✓✓Quality Inspection Certificate (5-point Characteristic curve test) according to IEC 60770-221C12✓✓Factory certificate Acc. to EN 10204-3.1C14✓✓✓PMI test of parts in contact with mediumC15✓✓✓Functional safety (SIL2) (pending) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declarationC20✓✓Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declarationD05✓PED for Russia with initial calibration markC99✓✓✓Manufacturer's declaration acc. to NACE (Mn 103-2012 and MR 0175-2009)D05✓✓Degree of protection IP66/IP68 (Inte output signal to 22.0 mAD12✓✓✓Manufacturer's declaration acc. to NACE (Inte output signal to 22.0 mAD37✓✓✓Manufacturer's dec		A00	•	•	•	
Han 8D (instead of Han 7D)A31✓AngledA32✓Han 8D (metal)A33✓Cable sockets for device plugs M12 (instead of German)A50✓✓EnglishB11✓✓✓FrenchB12✓✓✓SpanishB13✓✓✓ItalianB14✓✓✓Coulity Inspection Certificate (5-point Che 60770-2 ²)C11✓✓Inspection certificate ³) Acc. to EN 10204-3.1C12✓✓Functional safety (SIL2) (pending) Devices suitable for use according to IEC 61511. Includes SIL conformity declarationC20✓Functional safety (SIL2) (pending)C21✓✓✓Persesue units in initial calibration markC99✓✓✓Setting of the upper saturation for SITRANS P410)D05✓✓✓PE or Russia with initial calibration markD95✓✓✓Supplied with oval flange (Initigh of the upper saturation Iffered (Initigh of the upper sat		A30	~			
• AngledA32✓• Han 8D (metal)A33✓Cable sockets for device plugs M12 (metal (CuZn))A50✓✓Rating plate inscription (instead of German)B11✓✓• EnglishB11✓✓✓• FrenchB12✓✓✓• SpanishB13✓✓✓• ItalianB14✓✓✓English rating plateB11✓✓✓Pressure units in inH20 and/or psiC11✓✓✓Quality Inspection Certificate (5-point Characteristic curve test) according to IEC 60770-221C12✓✓Inspection certificate3C12✓✓✓Acc. to EN 10204-3.1C14✓✓✓PMI test of parts in contact with mediumC15✓✓✓Functional safety (SIL2) (pending) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declarationC23✓✓Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration for SITRANS P410)D05✓✓PED for Russia with initial calibration markD05✓✓✓Manufacturer's declaration IImit of the output signal to 22.0 mAD07✓✓✓Manufacturer's declaration IImit of the output signal to 22.0 mAD07✓✓✓Manufacturer's declaration IImit of the output signal to 22.0 mAD07✓ <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>						
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device (848699 + 810634) included	Supplied with oval flange (1 item), PTFE packing and screws in	D37	✓	~	1	
TAG plate empty (no inscription)D61✓✓		D59	~	~	~	
	TAG plate empty (no inscription)	D61	1	✓	~	

Selection and Ordering data	Order			
<i>Further designs</i> Add "- Z " to Article No. and specify Order code.		HART	PA	FF
Use in or on zone 1D/2D ⁴⁾	E01	✓	✓	✓
(only together with type of protection "Intrinsic safety" (transmitter 7MF4B Ex ia)" and IP66)				
CRN approval Canada (Canadian Registration Number)	E22 ⁵⁾	1	~	~
Dual seal	E24	✓	✓	✓
Explosion-proof "Intrinsic safety" to NEPSI (China)	E55 ⁶⁾	~	✓	~
(only for transmitter 7MF4B)				
Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)	E56 ⁶⁾	1	~	~
Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)	E57 ⁶⁾	*	~	~
Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China)	E58 ⁶⁾	~	~	*
(only for transmitter 7MF4R)				
"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (pending) (only for transmitter	E70 ⁶⁾	1	•	•
7MF4[B, D]Z + E11) Ex-protection Ex ia according to EAC Ex	E80	~	✓	~
(Russia) Ex-protection Ex d according to EAC Ex (Russia)	E81	~	✓	~
Ex-protection Ex nA/ic (Zone 2) according to EAC Ex (Russia)	E82	~	~	~
Ex-protection Ex ia + Ex d + Zone 1D/2D according to EAC Ex (Russia)	E83	~	✓	~
Two coats of lacquer on casing and cover (PU on epoxy)	G10	~	1	~
Transient protector 6 kV (lightning pro- tection)	J01	1	✓	~
Oval flange NAM (ASTAVA)	J06	✓	✓	✓
Marine approvals				
Det Norske Veritas Germanischer Lloyd (DNV-GL)	S10	~	~	~
Lloyds Register (LR)	S11	~	1	1
 French marine classification society Bureau Veritas (BV) 	S12	1	~	~
American Bureau of Shipping (ABS)	S14	1	1	✓
 Russian Maritime Register (RMR) Korean Register of Shipping (KR) 	S16 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).

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 <u>total</u> combination is certified here.

³⁾ If the acceptance test certificate 3.1.is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.

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

⁵⁾ Cannot be ordered with remote seal.

⁶⁾ 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.

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

for gauge pressure				
Selection and Ordering data	Order	code		
Additional data Please add "-2" to Article No. and specify Order code(s) and plain text.		HART	PA	FF
Measuring range to be set Specify in plain text (max. 5 characters): Y01: up to mbar, bar, kPa, MPa, psi	Y01	1	√ 1)	
Stainless steel tag plate and entry in device variable (measuring point description) Max. 16 characters, specify in plain text: Y15:	Y15	*	•	•
Measuring point text (entry in device variable) Max. 27 characters, specify in plain text: Y16:	Y16	1	~	~
Entry of HART address (TAG)	Y17	1		
Max. 8 characters, specify in plain text: Y17:				
Setting of pressure indication in pres- sure units	Y21	~	✓	1
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				
Setting of pressure indication in non-pressure units ²) Specify in plain text: Y22: up to I/min, m ³ /h, m, USgpm, (specification of measuring range in pres-	Y22 + Y01	1		

(specification of measuring range in pres-sure units "Y01" is essential, unit with max. 5 characters)

✓ = available

Ordering example

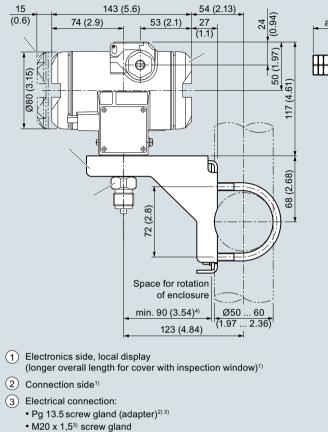
Item line:	7MF4033-1EA00-1AA7-Z C41
B line:	A01 + Y01 + Y21
C line:	Y01: 10 20 bar (145 290 psi)
C line:	Y21: bar (psi)

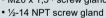
Measuring accuracies for PROFIBUS PA transmitters with Option Y01 are calculated in the same way as for HART devices.
 Preset values can only be changed over SIMATIC PDM.

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

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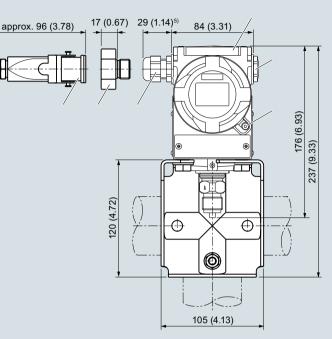
for gauge pressure





- Han 7D/Han 8D^{2) 3)} device plug
- 4 Harting adapter
- 1) In addition, allow approx. 20 mm (0.79 inch) for the thread length
- Not with "flameproof enclosure" type of protection 2)
- 3) Not for type of protection "FM + CSA" [is + XP]"
- 4) Minimum distance for rotating
- 5) For Pg 13.5 with adapter, approx. 45 mm (1.77 inch)

SITRANS P410 pressure transmitters for gauge pressure, dimensions in mm (inch)



- (5) Cover over buttons
- 6 Blanking plug
- (7)Safety catch (only for "flameproof enclosure" type of protection; not shown in the drawing)
- (8) Process connection: G1/2B connection pin or oval flange
- (9) Mounting bracket (optional)

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

for differential pressure and flow

Technical specifications

SITRANS P410 for differential pressure and flow

Input			
Measured variable	Differential pressure	and flow	
Span (fully adjustable) or measuring range, max. operating pressure (in accordance with 2014/68/EU Pressure Equipment Directive)	HART	PROFIBUS PA/ FOUNDATION Fieldbus	
	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	160 bar 16 MPa 2320 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 1.6160 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	420 bar 42 MPa 6091 psi
	16 1600 mbar 1.6160 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	
Lower measuring limit			
Measuring cell with silicone oil filling	-100 % of max. spar or 30 mbar a/3 kPa		ng cell 30 bar/3 MPa/435 psi)
Upper measuring limit	100 % of max. span	l .	
Start of scale value	Between the measu	ring limits (fully adjust	able)
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 pre	eset to 3.84 mA	-
Upper limit (infinitely adjustable)	23 mA, factory pres optionally set to 22.0		-
Load			
Without HART	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0$ $U_{\rm H}$: Power supply in	.023 A in Ω, i V	-
With HART	$R_{\rm B} = 230 \dots 500 \ \Omega \ (R_{\rm B} = 230 \dots 1100 \ \Omega \ tor)$	SIMATIC PDM) or (HART Communica-	-
Physical bus	-		IEC 61158-2
Protection against polarity reversal	Protected against sl Each connection ag	hort-circuit and polarit jainst the other with m	y reversal. ax. supply voltage.
Electrical damping (step width 0.1 s)	Set to 2 s (0 100 s	s)	

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

for differential pressure and flow

SITRANS P410 for differential pressure and flow		
Measuring accuracy	Acc. to IEC 60770-	1
Reference conditions	 Increasing chara Start-of-scale validities Stainless steel se Silicone oil filling Room temperature 	ue 0 bar/kPa/psi eal diaphragm
Measuring span ratio r (spread, Turn-Down)	r = max. measurin	g span/set measuring span or nom. pressure range
Error in measurement at limit setting incl. hysteresis and reproducibility		
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 ≤ 5 : 5 < r ≤ 100 :	≤ 0.04 % ≤ (0.004 · r + 0.045) %
 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 ≤ 5 : 5 < r ≤ 100 :	≤ 0.04 % ≤ (0.004 · r + 0.045) %
• 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 ≤ 5 : 5 < r ≤ 100 :	≤ 0.08 % ≤ (0.008 · r + 0.09) %
Influence of ambient temperature (in percent per 28 °C (50 °F))		
 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 	≤ (0.025 · r + 0.125	5) %
Influence of static pressure		
• 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	\leq (0.1 \cdot r) % per 70 (zero offset is poss	bar ible with position error adjustment)
- 5 bar/500 kPa/72.5 psi 30 bar/3 MPa/435 psi	\leq (0.2 \cdot r) % per 70 (zero offset is poss	bar ible with position error adjustment)
• 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	≤ 0.14 % per 70 ba	ar
Long-term stability (temperature change ± 30 °C (± 54 °F))	Static pressure ma	x. 70 bar/7 MPa/1015 psi
• 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	≤ (0.125 · r) % in 5	years
• 30 bar/3 MPa/435 psi	$\leq (0.25 \cdot r)$ % in 5 y	rears
Effect of mounting position (in pressure per change in angle)		$^{2}a/0.028$ inH $_{2}$ O per 10° inclination ible 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 · 10 ⁻⁵ of nominal	measuring range

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

SITRANS P410 for differential pressure and flow	
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) -20 +100 °C (-4 +212 °F) with 30 bar measuring cell
 In conjunction with dust explosion protection 	-20 +60 °C (-4 +140 °F)
Ambient conditions	
Ambient temperature	
- Transmitter	-40 +85 °C (-40 +185 °F)
- Display readable	-30 +85 °C (-22 +185 °F)
Storage temperature	-50 +85 °C (-58 +185 °F)
Climatic class	
- Condensation	Relative humidity 0 100 % Condensation permissible, suitable for use in the tropics
Electromagnetic Compatibility	
- Emitted interference and interference immunity	Acc. to IEC 61326 and NAMUR NE 21
Design	
Weight (without options)	Die-cast aluminum: \approx 4.5 kg (\approx 9.9 lb) Stainless steel precision casting: \approx 7.1 kg (\approx 15.6 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
 Process flanges and sealing screw 	Stainless steel, mat. no. 1.4408, Hastelloy C4, mat. no. 2.4602
• 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	Female thread $^{1\!\!\!/}_{-18}$ 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 $U_{\rm H}$	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 Foult disconnection electronics (EDE) evaluates	- 15.5 mA
Fault disconnection electronics (FDE) available	- Yes

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Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P410

for differential pressure and flow

SITRANS P410 for differential pressure and flow		
Certificates and approvals	HART	PROFIBUS PA/ FOUNDATION Fieldbus
Classification according to PED 2014/68/EU	For gases of fluid group 1 and liquids of fl article 4, paragraph 3 (sound engineering	uid group 1; complies with requirements of g practice)
Explosion protection		
Intrinsic safety "i"	PTB 13 ATEX 2007 X	
- Marking	Ex II 1/2 G Ex ia/ib IIC T4/T5/T6 Ga/Gb	
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperatu -40 +70 °C (-40 +158 °F) temperatu -40 +60 °C (-40 +140 °F) temperatu	re class T5;
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}, l_i = 100 \text{ mA}, P_i = 750 \text{ mW};$ $R_i = 300 \Omega$	FISCO supply unit: $U_0 = 17.5 \text{ V}, I_0 = 380 \text{ mA}, P_0 = 5.32 \text{ W}$ Linear barrier: $U_0 = 24 \text{ V}, I_0 = 250 \text{ mA}, P_0 = 1.2 \text{ W}$
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{\rm i} = 7 \ \mu {\rm H}, \ C_{\rm i} = 1.1 \ {\rm nF}$
• Explosion-proof "d"	PTB 99 ATEX 1160	
- Marking	Ex II 1/2 G Ex d IIC T4/T6 Ga/Gb	
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperatu -40 +60 °C (-40 +140 °F) temperatu	
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC	To circuits with values: $U_{\rm H}$ = 9 32 V DC
 Dust explosion protection for zone 20 (pending) 	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: $U_i = 30 \text{ V}, l_i = 100 \text{ mA},$ $P_i = 750 \text{ mW}, R_i = 300 \Omega$	FISCO supply unit: $U_0 = 17.5$ V, $I_0 = 380$ mA, $P_0 = 5.32$ W Linear barrier: $U_0 = 24$ V, $I_0 = 250$ mA, $P_0 = 1$ W
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{\rm i} = 7 \ \mu {\rm H}, \ C_{\rm i} = 1.1 \ {\rm nF}$
 Dust explosion protection for zone 21/22 (pending) 	PTB 01 ATEX 2055	
- Marking	Ex II 2 D Ex tb IIIC T120°C Db	
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC; $P_{\rm max}$ = 1.2 W	To circuits with values: $U_{\rm H}$ = 9 32 V DC; $P_{\rm max}$ = 1 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)	$U_{\rm m} = 45 {\rm V}$	U _m = 32 V
- Connection (Ex ic)	To circuits with values:	FISCO supply unit ic:
	$U_{\rm i} = 45 \text{ V}$	$U_0 = 17.5 \text{ V}, I_0 = 570 \text{ mA}$ Linear barrier: $U_0 = 32 \text{ V}, I_0 = 132 \text{ mA}, P_0 = 1 \text{ W}$
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4$ mH, $C_{\rm i} = 6$ nF	$L_{\rm i} = 7 \mu {\rm H}, C_{\rm i} = 1.1 {\rm nF}$
• Explosion protection acc. to FM (pending)	Certificate of Compliance 3008490	
- Identification (XP/DIP) or (IS); (NI)		1, GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC _ II, DIV 2, GP FG; CL III
• Explosion protection to CSA (pending)	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

1

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

for differential pressure and	flow		
HART communication		FOUNDATION Fieldbus	
HART	230 1100 Ω	communication	
Protocol	HART Version 5.x	Function blocks	3 function blocks analog input, 1 function block PID
Software for PC	SIMATIC PDM	 Analog input 	
PROFIBUS PA communication		- Adaptation to customer-	Yes, linearly rising or falling
Simultaneous communication with master class 2 (max.)	4	specific process variables - Electrical damping, adjustable	characteristic 0 100 s
The address can be set using	Configuration tool or local opera- tion (standard setting address 126)	- Simulation function	Output/input (can be locked within the device with a bridge)
Cyclic data usage		- Failure mode	parameterizable (last good value, substitute value, incorrect
Output byte	5 (one measured value) or 10 (two measured values)		value)
Input byte	0, 1, or 2 (register operating mode and reset function for	- Limit monitoring	Yes, one upper and lower warn- ing limit and one alarm limit respectively
Internal preprocessing	metering)	 Square-rooted characteristic for flow measurement 	Yes
Device profile	PROFIBUS PA Profile for Pro- cess Control Devices Version	• PID	Standard FOUNDATION Field- bus function block
Function blocks	3.0, class B	 Physical block 	1 resource block
Analog input	2	Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block
- Adaptation to customer-specif- ic process variables	Yes, linearly rising or falling characteristic	Pressure transducer block	LCD
- Electrical damping, adjustable	0 100 s	- Can be calibrated by applying	Yes
- Simulation function	Input /Output	two pressures	
- Failure mode	value, substitute value, incorrect value)	 Monitoring of sensor limits Simulation function: Measured pressure value, sensor tem- 	Yes Constant value or over parame- terizable ramp function
- Limit monitoring	Yes, one upper and lower warn- ing limit and one alarm limit respectively	perature and electronics tem- perature	
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 respec- tively		
 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 mea-	Constant value or over parame-		

Constant value or over parameterizable ramp function

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Pressure transmitters

for applications with advanced requirements (Advanced) SITRANS P410

		for differential pressure	and flo
Selection and Ordering	data	Article No. O	rder Cod
SITRANS P410 with HA PN 160 (MAWP 2320 ps	RT pressure transmitters for differential pressure and flow, i)	7MF4433-	C41
· ·	o. for the online configuration in the PIA Life Cycle Portal.		
Measuring cell filling	Measuring cell cleaning		
Silicone oil	normal	1	
Measuring span (min	•		
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)	н	
Wetted parts materials			
(stainless steel process t			
Seal diaphragm	Parts of measuring cell		
Stainless steel	Stainless steel	A	
Hastelloy	Stainless steel	В	
Hastelloy	Hastelloy	С	
Version for diaphragm se	eal ^{1) 2) 3) 4)}	Y	
- Mounting thread M10 Non-wetted parts mate	-20 UNF to IEC 61518/DIN EN 61518) to DIN 19213 (only for replacement requirement) rials	6 	
process flange screws	Electronics housing		
Stainless steel	Die-cast aluminum	2	
Stainless steel	Stainless steel precision casting ⁶⁾	3	
Version			
	nan plate inscription, setting for pressure unit: bar	1	
	inglish plate inscription, setting for pressure unit: bar	2	
	h plate inscription, setting for pressure unit: Pascal	3	
	with compact operating instructions in various EU languages.		
Explosion protection			
None		А	
 With ATEX, Type of pro 			
- "Intrinsic safety (Ex ia		В	
- "Explosion-proof (Ex		D	
- "Intrinsic satety and f	lameproof enclosure" (Ex ia + Ex d)" ⁸⁾	P	
- "Ex nA/ic (Zone 2)" ⁹⁾		E	
 "Intrinsic safety, exploit (Ex ia+ Ex d + Zone") 		R	
	osion-proof enclosure and dust explosion protection ורכיסטי ⁸⁾¹⁰⁾		
	1D/2D) ^{*8)10)}	F	
 FM + CSA (is + en) + F 	1D/2D) ^{v8)10)} e (is) (pending) ¹¹⁾	F	
 FM + CSA (is + ep) + E With FM + CSA, Type c 	1D/2D)" ⁸⁾¹⁰⁾ e (is) (pending) ¹¹⁾ Ex ia + Ex d (ATEX) + Zone 1D/2D ⁸⁾¹⁰⁾¹¹⁾	FS	

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

for differential pressure and flow

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		
Screwed gland M20 x 1.5		B
• Screwed gland 1/2-14 NPT		C
 Device plug Han 7D (plastic housing) incl. mating connector¹²⁾¹³⁾ 		D
Device plugs M12 (stainless steel) ¹⁴⁾¹⁵⁾		F
Display		
Without display		0
 Without visible display (display concealed, setting: mA) 		1
 With visible display (setting: mA) 		6
• with customer-specific display (setting as specified, Order code "Y21" or "Y22" required)		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)

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 <u>total</u> 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) Not in conjunction with Electrical connection "device plug Han 7D".

7) Without cable gland, with blanking plug

⁸⁾ With enclosed cable gland Ex ia and blanking plug

⁹⁾ Configurations with device plugs Han and M12 are only available in Ex ic.

¹⁰⁾Only in connection with IP66.

¹¹⁾ Explosion protection acc. to FM/CSA: suitable for installations according to NEC 500/505.

¹²⁾ Only in connection with Ex approval A, B or E.

¹³⁾Permissible only for crimp-contact of conductor cross-section 1 mm²

¹⁴⁾Only in connection with Ex approval A, B, E or F.

¹⁵⁾M12 delivered without cable socket.

Pressure transmitters

Selection and Order	ing data	Article No.	Order coo
	rs for differential pressure and flow PN 160 (MAWP 2320 psi)	Article No.	Order coo
SITRANS P410 with P		7MF4434-	7 041
	OUNDATION Fieldbus (FF)	7MF4434-	
		7 INIT 4433-	-2 C41
	e No. for the online configuration in the PIA Life Cycle Portal.		
Measuring cell filling	g Measuring cell cleaning		
Silicone oil	normal	1	
Nominal measuring			
250 mbar (100.4 ir 600 mbar (240.9 ir		D	
600 mbar (240.9 ir 1600 mbar (642.4 ir		F	
5 bar (2008 inl		G	
30 bar (435 psi		Ĥ	
Wetted parts materi			
(stainless steel proce			
Seal diaphragm	Parts of measuring cell		
Stainless steel	Stainless steel	A	
Hastelloy	Stainless steel	В	
Hastelloy Version as diaphragn	Hastelloy	C	
Process connection	NPT with flange connection		
	osite process connection		
	7/ ₁₆ -20 UNF to IEC 61518/DIN EN 61518	2	
	V10 to DIN 19213 (only for replacement requirement)	Ō	
 Venting on side of p 			
- Mounting thread 7			
	7/ ₁₆ -20 UNF to IEC 61518/DIN EN 61518	6	
		6 4	
- Mounting thread Non-wetted parts m	7/ ₁₆ -20 UNF to IEC 61518/DIN EN 61518 M10 to DIN 19213 (only for replacement requirement) aterials		
- Mounting thread N Non-wetted parts m process flange screw	7/ ₁₆ -20 UNF to IEC 61518/DIN EN 61518 M10 to DIN 19213 (only for replacement requirement) aterials		
- Mounting thread Non-wetted parts m process flange screw Stainless steel	7/ ₁₆ -20 UNF to IEC 61518/DIN EN 61518 M10 to DIN 19213 (only for replacement requirement) aterials vs Electronics housing Die-cast aluminum	4	
- Mounting thread Non-wetted parts m process flange screw Stainless steel	7/ ₁₆ -20 UNF to IEC 61518/DIN EN 61518 M10 to DIN 19213 (only for replacement requirement) aterials vs Electronics housing	4	
- Mounting thread Non-wetted parts m process flange screw Stainless steel Stainless steel Version	7/ ₁₆ -20 UNF to IEC 61518/DIN EN 61518 M10 to DIN 19213 (only for replacement requirement) aterials vs Electronics housing Die-cast aluminum Stainless steel precision casting	4	
Mounting thread Non-wetted parts m process flange screw Stainless steel Stainless steel Version Standard version, G	7/ ₁₆ -20 UNF to IEC 61518/DIN EN 61518 M10 to DIN 19213 (only for replacement requirement) aterials vs Electronics housing Die-cast aluminum Stainless steel precision casting German plate inscription, setting for pressure unit: bar	4	1
Mounting thread N Non-wetted parts m process flange screw Stainless steel Stainless steel Version • Standard version, G • International version	7/ ₁₆ -20 UNF to IEC 61518/DIN EN 61518 M10 to DIN 19213 (only for replacement requirement) aterials vs Electronics housing Die-cast aluminum Stainless steel precision casting German plate inscription, setting for pressure unit: bar n, English plate inscription, setting for pressure unit: bar	4	1 2
Mounting thread N Non-wetted parts m process flange screw Stainless steel Stainless steel Version Standard version, G International version Chinese version, Eng	7/ ₁₆ -20 UNF to IEC 61518/DIN EN 61518 M10 to DIN 19213 (only for replacement requirement) aterials vs Electronics housing Die-cast aluminum Stainless steel precision casting German plate inscription, setting for pressure unit: bar n, English plate inscription, setting for pressure unit: bar glish plate inscription, setting for pressure unit: bar	4	1
Mounting thread N Non-wetted parts m process flange screw Stainless steel Version Standard version, G International version Chinese version, En All versions include E	7/16-20 UNF to IEC 61518/DIN EN 61518 M10 to DIN 19213 (only for replacement requirement) aterials /s Electronics housing Die-cast aluminum Stainless steel precision casting German plate inscription, setting for pressure unit: bar n, English plate inscription, setting for pressure unit: bar glish plate inscription, setting for pressure unit: Pascal DVD with compact operating instructions in various EU languages.	4	1 2
Mounting thread N Non-wetted parts m process flange screw Stainless steel Stainless steel Version Standard version, G International versior Chinese version, En All versions include E Explosion protectio	7/16-20 UNF to IEC 61518/DIN EN 61518 M10 to DIN 19213 (only for replacement requirement) aterials /s Electronics housing Die-cast aluminum Stainless steel precision casting German plate inscription, setting for pressure unit: bar n, English plate inscription, setting for pressure unit: bar glish plate inscription, setting for pressure unit: Pascal DVD with compact operating instructions in various EU languages.	4	1 2
Mounting thread N Non-wetted parts m process flange screw Stainless steel Stainless steel Version Standard version, G International version Chinese version, En All versions include E Explosion protectio None	7/ ₁₆ -20 UNF to IEC 61518/DIN EN 61518 M10 to DIN 19213 (only for replacement requirement) aterials vs Electronics housing Die-cast aluminum Stainless steel precision casting Aerman plate inscription, setting for pressure unit: bar n, English plate inscription, setting for pressure unit: bar glish plate inscription, setting for pressure unit: bar glish plate inscription, setting for pressure unit: bar DVD with compact operating instructions in various EU languages. n	4	1 2 3
Mounting thread N Non-wetted parts m process flange screw Stainless steel Stainless steel Version Standard version, G International version Chinese version, En All versions include E Explosion protectio None	7/ ₁₆ -20 UNF to IEC 61518/DIN EN 61518 M10 to DIN 19213 (only for replacement requirement) aterials /s Electronics housing Die-cast aluminum Stainless steel precision casting German plate inscription, setting for pressure unit: bar n, English plate inscription, setting for pressure unit: bar glish plate inscription, setting for pressure unit: bar glish plate inscription, setting for pressure unit: bar DVD with compact operating instructions in various EU languages. n protection:	4	1 2 3
Mounting thread N Non-wetted parts m process flange screw Stainless steel Version Standard version, G International version Chinese version, En All versions include E Explosion protectio None With ATEX, Type of - "Intrinsic safety (E - "Explosion-proof (7/ ₁₆ -20 UNF to IEC 61518/DIN EN 61518 M10 to DIN 19213 (only for replacement requirement) aterials /s Electronics housing Die-cast aluminum Stainless steel precision casting German plate inscription, setting for pressure unit: bar n, English plate inscription, setting for pressure unit: bar glish plate inscription, setting for pressure unit: bar glish plate inscription, setting for pressure unit: Pascal DVD with compact operating instructions in various EU languages. n protection: ix ia)" Ex d)" ⁶)	4	1 2 3 A
Mounting thread Non-wetted parts m process flange screw Stainless steel Stainless steel Version • Standard version, G • International version • Chinese version, En; All versions include E Explosion protection • None • With ATEX, Type of - "Intrinsic safety (E - "Explosion-proof (- "Intrinsic safety ar	7/ ₁₆ -20 UNF to IEC 61518/DIN EN 61518 M10 to DIN 19213 (only for replacement requirement) aterials ////////////////////////////////////	4	1 2 3 A B D P
Mounting thread N Non-wetted parts m process flange screw Stainless steel Stainless steel Version Standard version, G International version Chinese version, Eng All versions include E Explosion protectio None With ATEX, Type of "Intrinsic safety (E "Explosion-proof ("Intrinsic safety ar "Ex nA/ic (Zone 2)	7/ ₁₆ -20 UNF to IEC 61518/DIN EN 61518 M10 to DIN 19213 (only for replacement requirement) aterials ////////////////////////////////////	4	1 2 3 A B D P E
Mounting thread N Non-wetted parts m process flange screw Stainless steel Stainless steel Version Standard version, G International version Chinese version, Eng All versions include E Explosion protectio None With ATEX, Type of "Intrinsic safety (E "Explosion-proof ("Intrinsic safety ar "Ex nA/ic (Zone 2) "Intrinsic safety, ei	7/ ₁₆ -20 UNF to IEC 61518/DIN EN 61518 M10 to DIN 19213 (only for replacement requirement) aterials /s Electronics housing Die-cast aluminum Stainless steel precision casting Serman plate inscription, setting for pressure unit: bar n, English plate inscription, setting for pressure unit: bar glish plate inscription, setting for pressure unit: bar glish plate inscription, setting for pressure unit: Pascal DVD with compact operating instructions in various EU languages. n protection: ix ia)" Ex d)" ⁶⁾ of flameproof enclosure" (Ex ia + Ex d)" ⁷⁾ y [*] ⁸⁾ xplosion-proof enclosure and dust explosion protection	4	1 2 3 A B D P
 Mounting thread Non-wetted parts m process flange screw Stainless steel Stainless steel Version Standard version, G International version Chinese version, Eng All versions include E Explosion protection None With ATEX, Type of - "Intrinsic safety (E - "Explosion-proof (- "Intrinsic safety ar - "Ex nA/ic (Zone 2) - "Intrinsic safety, e: (Ex ia + Ex d + Zo 	7/ ₁₆ -20 UNF to IEC 61518/DIN EN 61518 M10 to DIN 19213 (only for replacement requirement) aterials /s Electronics housing Die-cast aluminum Stainless steel precision casting Aerman plate inscription, setting for pressure unit: bar n, English plate inscription, setting for pressure unit: bar glish plate inscription, setting for pressure unit: bar glish plate inscription, setting for pressure unit: Pascal DVD with compact operating instructions in various EU languages. n protection: ix ia)" Ex d)" ⁶⁾ nd flameproof enclosure" (Ex ia + Ex d)" ⁷⁾ " ⁸⁾ xplosion-proof enclosure and dust explosion protection one 1D/2D)" ^{7) 9)} (not for DS III FF)	4	1 2 3 A B D P E
 Mounting thread Non-wetted parts m process flange screw Stainless steel Stainless steel Version Standard version, G International version Chinese version, Engality All versions include D Explosion protection None With ATEX, Type of "Intrinsic safety ar "Explosion-proof ("Intrinsic safety ar "Ex nA/ic (Zone 2)) "Intrinsic safety, e: (Ex ia + Ex d + Zo 	7/ ₁₆ -20 UNF to IEC 61518/DIN EN 61518 M10 to DIN 19213 (only for replacement requirement) aterials /s Electronics housing Die-cast aluminum Stainless steel precision casting Serman plate inscription, setting for pressure unit: bar n, English plate inscription, setting for pressure unit: bar glish plate inscription, setting for pressure unit: bar glish plate inscription, setting for pressure unit: Pascal DVD with compact operating instructions in various EU languages. n protection: ix ia)" Ex d)" ⁶⁾ of flameproof enclosure" (Ex ia + Ex d)" ⁷⁾ y [*] ⁸⁾ xplosion-proof enclosure and dust explosion protection	4	1 2 3 A B D P E R
 Mounting thread M Non-wetted parts m process flange screw Stainless steel Stainless steel Version Standard version, G International version Chinese version, Engal All versions include E Explosion protection None With ATEX, Type of "Intrinsic safety (E "Explosion-proof ("Intrinsic safety ar "Ex nA/ic (Zone 2) "Intrinsic safety, e: (Ex ia + Ex d + ZC FM + CSA intrinsic FM + CSA, Type With FM + CSA, Type 	7/ ₁₆ -20 UNF to IEC 61518/DIN EN 61518 M10 to DIN 19213 (only for replacement requirement) aterials ////////////////////////////////////	4	1 2 3 A B D P E R F
 Mounting thread M Non-wetted parts m process flange screw Stainless steel Stainless steel Version Standard version, G International version Chinese version, Engality All versions include E Explosion protection None With ATEX, Type of "Intrinsic safety (E "Explosion-proof ("Intrinsic safety ar "Ex nA/ic (Zone 2) "Intrinsic safety, e: (Ex ia + Ex d + ZC FM + CSA intrinsic FM + CSA, Type With FM + CSA, Type 	7/ ₁₆ -20 UNF to IEC 61518/DIN EN 61518 M10 to DIN 19213 (only for replacement requirement) aterials ////////////////////////////////////	4	1 2 3 A B D P E R F
 Mounting thread Non-wetted parts m process flange screw Stainless steel Stainless steel Version Standard version, G International version Chinese version, Eng All versions include E Explosion protection None With ATEX, Type of "Intrinsic safety (E "Explosion-proof ("Intrinsic safety ar "Ex nA/ic (Zone 2) "Intrinsic safety, ez (Ex ia + Ex d + Zo FM + CSA (is + ep) With FM + CSA, Type "Intrinsic Safe and 	7/ ₁₆ -20 UNF to IEC 61518/DIN EN 61518 M10 to DIN 19213 (only for replacement requirement) aterials ////////////////////////////////////	4	1 2 3 A B D P E R F S
 Mounting thread Non-wetted parts m process flange screw Stainless steel Stainless steel Version Standard version, G International version Chinese version, Eng All versions include E Explosion protection None With ATEX, Type of - "Intrinsic safety (E - "Explosion-proof (- "Intrinsic safety ar - "Ex nA/ic (Zone 2) - "Intrinsic safety, e: (Ex ia + Ex d + Zc FM + CSA intrinsic FM + CSA (is + ep) With FM + CSA, Typ - "Intrinsic Safe and 	7/16-20 UNF to IEC 61518/DIN EN 61518 M10 to DIN 19213 (only for replacement requirement) aterials /// Electronics housing Die-cast aluminum Stainless steel precision casting Common plate inscription, setting for pressure unit: bar n, English plate inscription, setting for pressure unit: bar glish plate inscription, setting for pressure unit: bar glish plate inscription, setting for pressure unit: Pascal DVD with compact operating instructions in various EU languages. n protection: ix ia)" Ex d)" ⁶ nd flameproof enclosure" (Ex ia + Ex d)" ⁷ " ⁸ xplosion-proof enclosure and dust explosion protection one 1D/2D)" ⁷) ⁹ (not for DS III FF) safe (is) (pending) ¹⁰ + Ex ia + Ex d (ATEX) + Zone 1D/2D ⁷) ⁹) ¹⁰ co of protection: d Explosion Proof (is + xp)" ⁸) ¹⁰	4	1 2 3 A B D P E R F S
 Mounting thread M Non-wetted parts m process flange screw Stainless steel Stainless steel Version Standard version, G International version Chinese version, Eng All versions include E Explosion protection None With ATEX, Type of - "Intrinsic safety (E - "Explosion-proof (- "Intrinsic safety ar - "Ex nA/ic (Zone 2) - "Intrinsic safety, er (Ex ia + Ex d + ZC FM + CSA intrinsic FM + CSA, Typ - "Intrinsic Safe and With FM + CSA, Typ - "Intrinsic Safe and Explosion-proof (Screwed gland M2c 	7/16-20 UNF to IEC 61518/DIN EN 61518 M10 to DIN 19213 (only for replacement requirement) aterials ////////////////////////////////////	4	1 2 3 A B D P E R F S N C

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

for differential pressure and flow

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		0
 Without visible display (display concealed, setting: bar) 		1
With visible display (setting: bar)		6
With customer-specific display (setting as specified, Order code "Y21" required)		7

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

Pressure transmitters

for differential pressure and flow

Selection and Ordering data	Order			_	Selection and Ordering data	Order			
Further designs 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	FI
Pressure transmitter with mounting bracket (1x fixing angle, 2 x nut, 2 x U-washer or 1 x bracket, 2 x nut,					Setting of the upper saturation limit of the output signal to 22.0 mA Manufacturer's declaration acc. to NACE	D05 D07	٠ ٠	7	
2 x U-washer) made of: • Steel	A01	1	1	1	(MR 0103-2012 and MR 0175-2009)	007	•	•	
Steel Stainless steel 304	A01	1	¥	~	(only together with seal diaphragm made of Hastelloy and stainless steel)				
Stainless steel 316L	A03	✓	✓	1	Degree of protection IP66/IP68	D12	~	1	
O-rings for process flanges					(only for M20 x 1.5 and ½-14 NPT)	5.2			
(instead of FPM (Viton)) • PTFE (Teflon)	A20	1	~	~	Supplied with oval flange set	D37	✓	✓	
• FEP (with silicone core, approved for food)	A21	✓	1		(2 items), PTFE packings and screws in thread of process flanges				
• FFPM (Kalrez, for measured medium tem-	A22	~	~	~	Capri cable gland 4F CrNi and clamping	D59	~	~	
peratures -15 100 °C (5 212 °F)) • NBR (Buna N)	A23	~	~	~	device (848699 + 810634) included				
Device plugs ¹⁾					TAG plate empty (no inscription)	D61	~	~	
• Han 7D (metal)	A30	✓			Use in or on zone 1D/2D ⁴⁾	E01	~	~	
Han 8D (instead of Han 7D)	A31 A32	√ √			(only together with type of protection "Intrinsic safety" (transmitter				
• Angled • Han 8D (metal)	A32 A33	↓			7MF4B Èx ia)"and IP66)				
Sealing screws (2 units)	A40	~	1	~	Dual seal	E24	~	~	
1/4-18 NPT, with valve in mat. of process flanges					Explosion-proof "Intrinsic safety" to NEPSI (China)	E55 ⁵⁾	~	1	
Cable sockets for device plugs M12	A50	✓	✓	✓	(only for transmitter 7MF4B)	====5)	,		
(metal (CuZn))					Explosion protection "Explosion-proof" to NEPSI (China)	E56 ⁵⁾	•	•	
Rating plate inscription (instead of German)					(only for transmitter 7MF4D)				
• English	B11	~	✓	~	Explosion-proof "Zone 2" to NEPSI	E57 ⁵⁾	✓	✓	
• French	B12	1	1	1	(China) (only for transmitter 7MF4E)				
• Spanish • Italian	B13 B14	√ √	√ √	√ √	Ex protection "Ex ia", "Ex d" and "Zone	E58 ⁵⁾	~	1	
English rating plate	B21	1		1	2" to NEPSI (China)				
Pressure units in inH ₂ O and/or psi					(only for transmitter 7MF4R)				
Quality Inspection Certificate (5-point characteristic curve test) according to	C11	~	~	1	"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (pending)	E70 ⁵⁾	~	~	
IEC 60770-2 ²⁾ Inspection certificate ³⁾ to EN 10204-3.1	C12	~	~	~	(only for transmitter 7MF4[B, D]Z + E11)				
Factory certificate to EN 10204-2.2	C14	✓	✓	1	Ex-protection Ex ia according to EAC Ex	E80	✓	✓	
Acceptance certificate (EN 10204-3.1) PMI test of parts in contact with medium	C15	~	1	~	(Russia) Ex-protection Ex d according to EAC Ex	E81	~	✓	
Functional safety (SIL2) (pending) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL	C20	1			(Russia) Ex-protection Ex nA/ic (Zone 2) according to EAC Ex (Russia)	E82	~	1	
conformity declaration Functional safety (SIL2/3) Devices avitable for use according to	C23	✓			Ex-protection Ex ia + Ex d + Zone 1D/2D according to EAC Ex (Russia)	E83	~	1	
Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration					Two coats of lacquer on casing and cover (PU on epoxy)	G10	~	1	
Increased measuring accuracy (mandatory specification for	C41	~	~	1	Interchanging of process connection side	H01	~	1	
SITRANS P410)		,	,		Vent on side for gas measurements	H02	✓	✓	
PED for Russia with initial calibration mark	C99	~	1	~	Stainless steel process flanges for verti- cal differential pressure lines	H03	~	1	

(not together with K01, K02 and K04)⁶⁾

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

for differential pressure and flow

Selection and Ordering data	Order	code		
Further designs Add "-Z" to Article No. and specify Order code.		HART	PA	FF
Transient protector 6 kV (lightning pro- tection)	J01	1	1	1
Chambered graphite gasket for process flange	J02	~	✓	✓
Chambered PTFE graphite gasket	J03	✓	✓	✓
EPDM O-rings for process flange with approval (WRC/WRAS)	J05	~	~	1
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	1	~	*
Marine approvals Det Norske Veritas Germanischer Lloyd (DNV-GL) 	S10	1	~	~
 Lloyds Register (LR) French marine classification society 	S11 S12	* *	√ √	√ √
 Bureau Veritas (BV) American Bureau of Shipping (ABS) Russian Maritime Register (RMR) Korean Register of Shipping (KR) 	S14 S16 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
- 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 <u>total</u> combination is certified here. 2)
- 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.
- Option does not contain gas explosion protection; only dust explosion pro-tection: 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		
Additional data Please add "-Z" to Article No. and specify Order code(s) and plain text.		HART	PA	FF
Measuring range to be set Specify in plain text:				
• in the case of linear characteristic curve (max. 5 characters): Y01: up to mbar, bar, kPa, MPa, psi	Y01	1	√ 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)	Y15	~	~	*
Max. 16 characters, specify in plain text: Y15:				
Measuring point text (entry in device variable)	Y16	~	~	~
Max. 27 char., specify in plain text: Y16:				
Entry of HART address (TAG) Max. 8 char., specify in plain text: Y17:	Y17	~		
Setting of pressure indicator in pressure units	Y21	~	✓	*
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				
Setting of pressure indicator in non- pressure units ²⁾	Y22 ³⁾	~		
Specify in plain text: Y22: up to l/min, m ³ /h, m, USgpm, (specification of measuring range in pres- sure units "Y01" or "Y02" is essential, unit with max. 5 characters)	Y01 or Y02			
Preset bus address possible between 1 and 126 Specify in plain text: Y25:	Y25		1	1
Damping adjustment in seconds	Y30	1	✓	✓

(0 ... 100 s) 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 transmitters

		for differential pre	
Selection and Ordering		Article No.	Order code
SITRANS P DS III with PN 420 (MAWP 6092 ps	HART pressure transmitters for differential pressure and flow, si)	7MF4533-	-Z C41
• •	lo. for the online configuration in the PIA Life Cycle Portal.		
Measuring cell filling	Measuring cell cleaning		
Silicone oil	normal	1	
Measuring span (min.			
6 600 mbar	(2.4 240 inH ₂ O)	E	
16 1600 mbar	(6.4 642 inH ₂ O)	F	
50 5000 mbar 0.3 30 bar	(20 2000 inH ₂ O) (4.35 435 psi)	G	
		_	
Wetted parts materials (stainless steel process			
Seal diaphragm	Parts of measuring cell		
Stainless steel	Stainless steel	A	
Hastelloy	Stainless steel	В	
Version for diaphragm s	eal ¹⁾ ²⁾ ³⁾ ⁴⁾	Y	
Process connection			
	T with flange connection		
 Sealing screw opposit 			
	-20 UNF to IEC 61518/DIN EN 61518	3	
0	2 to DIN 19213 (only for replacement requirement)	1	
 Venting on side of pro- (see dimensional draw 	cess flanges, location of vent valve at top of process flanges		
	-20 UNF to IEC 61518/DIN EN 61518	7	
	2 to DIN 19213 (only for replacement requirement)	5	
Non-wetted parts mate	rials		
process flange screws	Electronics housing		
Stainless steel	Die-cast aluminum	2	
Stainless steel	Stainless steel precision casting ⁵⁾	3	
Version			
	man plate inscription, setting for pressure unit: bar	1	
	English plate inscription, setting for pressure unit: bar	2	
	sh plate inscription, setting for pressure unit: Pascal D with compact operating instructions in various EU languages.	3	
	o with compact operating instructions in various EO languages.		
Explosion protectionNone			\
With ATEX, Type of pro	otection:		
- "Intrinsic safety (Ex ia		E	3
- "Explosion-proof (Ex	d)" ⁶⁾		2
- "Intrinsic safety and t	flameproof enclosure" (Ex ia + Ex d)"7)	-	
- "Ex nA/ic (Zone 2)" ⁸⁾		E	E
- "Intrinsic safety, expl	osion-proof enclosure and dust explosion protection	F	2
(Ex ia+ Ex d + Zone • FM + CSA intrinsic saf			
	Ex ia + Ex d (ATEX) + Zone $1D/2D^{7)9}^{10}$		
 With FM + CSA, Type 			
	explosion-proof (is + xp)" ⁶⁾¹⁰⁾ , max PN 360		NC
Electrical connection/c	cable entry		
 Screwed gland M20x1 	•		в
 Screwed gland ½-14 N 			c
Device plug Han 7D (plastic housing) incl. mating connector ^{11) 12)}		D
 Device plugs M12 (sta 	ainless steel) ¹³⁾¹⁴⁾		F

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

for differential pressure and flow

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		0
 Without visible display (display concealed, setting: mA) 		1
 With visible display (setting: mA) 		6
• with customer-specific display (setting as specified, Order code "Y21" or "Y22" required)		7

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.-.... 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 transmitters

Selection and Orderin	a data	Article No.	Order Cod
	for differential pressure and flow, PN 420 (MAWP 6092 psi)	744010 140.	
SITRANS P410 with PR		7MF4534-	-7 C41
	UNDATION Fieldbus (FF)	7MF4535-	
		7101 4555-	-2 041
	No. for the online configuration in the PIA Life Cycle Portal.		
Measuring cell filling Silicone oil	Measuring cell cleaning normal	1	
Nominal measuring ra	nde	_	
600 mbar	(240 inH ₂ O)	Е	
1600 mbar	(642 inH ₂ O)	F	
5 bar	(2000 inH ₂ O)	G	
30 bar	(435 psi)	Ĥ	
Wetted parts materials			
stainless steel process	-		
Seal diaphragm	Parts of measuring cell		
Stainless steel	Stainless steel	A	
Hastelloy	Stainless steel	В	
/ersion for diaphragm s	Seal 1/2/0/7/	Y	
Process connection			
	T with flange connection		
 Sealing screw opposition 			
	₅ -20 UNF to IEC 61518/DIN EN 61518 2 to DIN 19213 (only for replacement requirement)	3	
	cess flanges, location of vent valve at top of process flanges		
(see dimensional drav			
	₅ -20 UNF to IEC 61518/DIN EN 61518	7	
	2 to DIN 19213 (only for replacement requirement)	5	
Non-wetted parts mate			
Process flange screws	Electronics housing		
Stainless steel	Die-cast aluminum	2	
Stainless steel	Stainless steel precision casting	3	
Version			
	rman plate inscription, setting for pressure unit: bar		1
	English plate inscription, setting for pressure unit: bar		2
	sh plate inscription, setting for pressure unit: Pascal		3
	D with compact operating instructions in various EU languages.		
Explosion protection			
None	ataction		Α
 With ATEX, Type of pre- "Intringic cofety (Exilination)" 			P
 "Intrinsic safety (Ex i "Explosion-proof (Ex 			B
	flameproof enclosure" (Ex ia + Ex d) ^{*6)}		P
- "Ex nA/ic (Zone 2)" ⁷) (-1)		E
	losion-proof enclosure and dust explosion protection		B
(Ex ia + Ex d + Zone	$= 1D/2D)^{(6)8)}$		
• FM + CSA intrinsic sa			F
	Ex ia + Ex d (ATEX) + Zone 1D/2D ⁶⁾⁷⁾⁹⁾		S
 With FM + CSA, Type 			
- "Intrinsic safety and			NC
	explosion-proof (is + xp) ^{*6)9)} , max PN 360		
Electrical connection/	cable entry		
Electrical connection/ • Screwed gland M20 x	cable entry 1.5		в
Electrical connection/ Screwed gland M20 x Screwed gland ½-14 Device plugs M12 (sta	cable entry : 1.5 NPT		B C F

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

for differential pressure and flow

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)		0
 Without visible display (display concealed, setting: bar) 		1
With visible display (setting: bar)		6
 With customer-specific display (setting as specified, Order code "Y21" required) 		7

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 <u>total</u> 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.

The diaphragm seal is to be specified with a separate order number and must be included wiht the tranmitter 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

Pressure transmitters

SITRANS P410

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for differential pressure and flow

Selection and Ordering data	Order	code			1
Further designs	oraci	HART	PΔ	FF	
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:					
Steel	A01	1	~	~	
Stainless steel 304	A02	√	1	×.	
 Stainless steel 316L 	A03	~	~	~	
O-rings for process flanges (instead of FPM (Viton)) • PTFE (Teflon)	A20	✓	1	✓	
 FEP (with silicone core, approved for food) 	A21	✓	✓	✓	
 FFPM (Kalrez, for measured medium temperatures -15 100 °C (5 212 °F)) NBR (Buna N) 	A22 A23	√ √	✓ ✓	*	
Device plugs ¹⁾					
• Han 7D (metal)	A30	1			
Han 8D (instead of Han 7D)	A31	1			
• Angled	A32	✓			
Han 8D (metal)	A33	✓			
Sealing screws (2 units) 1/4-18 NPT, with valve in mat. of process flanges	A40	1	✓	✓	
Cable sockets for device plugs M12 (metal (CuZn))	A50	~	~	*	
Rating plate inscription (instead of German)					
• English	B11	✓	1	✓	
• French	B12	1	1	1	
• Spanish	B13	√.	1	1	
• Italian	B14	1	~	~	
English rating plate Pressure units in inH ₂ O and/or psi	B21	~	~	~	
Quality Inspection Certificate (5-point char- acteristic curve test) according to IEC 60770-2	C11	1	1	~	
Inspection certificate Acc. to EN 10204-3.1	C12	~	~	*	
Factory certificate Acc. to EN 10204-2.2	C14	~	~	*	
Functional safety (SIL2) (pending) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL con- formity declaration	C20	*			
Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL con- formity declaration	C23	*			
Increased measuring accuracy (mandatory specification for SITRANS P410)	C41	*	~	*	
PED for Russia with initial calibration mark	C99	✓	✓	✓	
Setting of the upper saturation limit of the output signal to 22.0 mA	D05	~			
Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009) (only together with seal diaphragm made of Hastelloy and stainless steel)	D07	*	1	1	
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	✓	✓	

	0.1			
Selection and Ordering data	Order		-	
Further designs		HART	PA	FF
Add "-Z" to Article No. and specify Order code.				
Use in or on zone 1D/2D ²⁾ (only together with type of protection "Intrinsic safety" (transmitter	E01	~	~	~
"Intrinsic safety" (transmitter 7MF4B Ex ia)"and IP66)				
Dual seal	E24	✓	✓	1
Explosion-proof "Intrinsic safety" to NEPSI (China)	E55 ³⁾	~	1	~
(only for transmitter 7MF4B) Ex prot. "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)	E56 ³⁾	~	~	~
Explosion-proof "Zone 2" to NEPSI (China)	E57 ³⁾	✓	✓	~
(only for transmitter 7MF4E) Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China)	E58 ³⁾	~	✓	~
(only for transmitter 7MF4R)				
"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (pending) (only for transmitter 7MF4[B, D]Z + E11)	E70 ³⁾	*	•	1
Ex-protection Ex ia according to EAC Ex (Russia)	E80	✓	✓	~
Ex-protection Ex d according to EAC Ex (Russia)	E81	1	1	~
Ex-protection Ex nA/ic (Zone 2) according to EAC Ex (Russia)	E82	*	✓	~
Ex-protection Ex ia + Ex d + Zone 1D/2D according to EAC Ex (Russia)	E83	~	1	1
Two coats of lacquer on casing and cover (PU on epoxy)	G10	~	1	1
Interchanging of process connection side	H01	~	1	1
Vent on side for gas measurements	H02	1	1	1
Stainless steel process flanges for vertical differential pressure lines	H03	1	1	~
Transient protector 6 kV (lightning protec- tion)	J01	~	~	1
Chambered graphite gasket for process flange	J02	~	•	~
Chambered PTFE graphite gasket	J03	✓	✓	1
EPDM O-rings for process flange with approval (WRC/WRAS)	J05	1	~	~
Vent valve or blanking plug of process flange welded-in (orientation: on right when viewing the display) ⁴⁾	J08	~	~	*
Vent valve or blanking plug of process flange welded-in (orientation: on left when viewing the display)^{4)}	J09	1	1	1
Marine approvals				
Det Norske Veritas Germanischer Lloyd (DNV-GL)	S10	1	√	1
Lloyds Register (LR) Franch marine elegation acciety	S11		1	4
 French marine classification society Bureau Veritas (BV) 	S12	v	v	v
American Bureau of Shipping (ABS)	S14	1	1	1
 Russian Maritime Register (RMR) 	S16	1	✓	1
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).

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.

Update April 2020

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

for differential pressure and flow

Selection and Ordering data	Order code			
Additional data		HART	PA	FF
Please add "-Z" to Article No. and specify Order code(s) and plain text.				
Measuring range to be set				
 Specify in plain text: in the case of linear characteristic curve (max. 5 characters): 	Y01	~	√ 1)	
 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 	Y02	*		
Stainless steel tag plate and entry in device variable (measuring point descrip-	Y15	1	~	~
tion) Max. 16 characters, specify in plain text: Y15:				
Measuring point text (entry in device vari- able)	Y16	~	~	~
Max. 27 char., specify in plain text: Y16:				
Entry of HART address (TAG) Max. 8 char., specify in plain text: Y17:	Y17	1		
Setting of pressure indication in pressure	Y21	✓	✓	✓
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				
Setting of pressure indication in	Y22 +	1		
non-pressure units ²⁾ 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)	Y01 or Y02			
Preset bus address	Y25		✓	1
possible between 1 and 126 Specify in plain text: Y25:				
Damping adjustment in seconds	Y30	✓	✓	~

(0 ... 100 s)

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

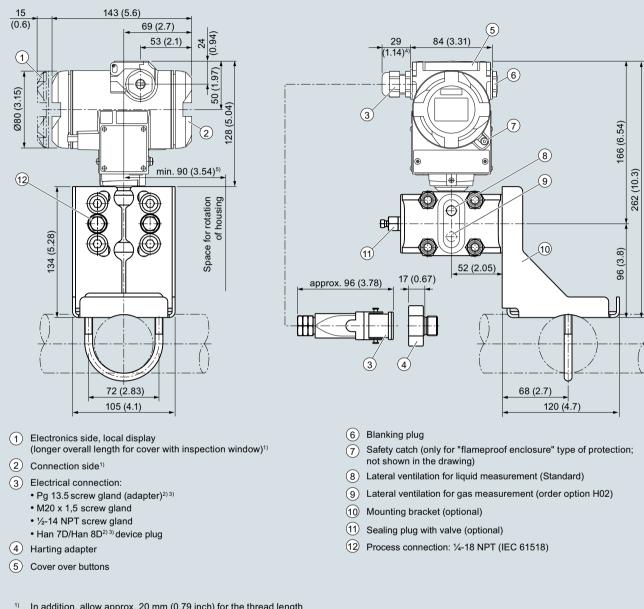
✓ = available

- Measuring accuracies for PROFIBUS PA transmitters with Option Y01 are calculated in the same way as for HART devices.
 Preset values can only be changed over SIMATIC PDM.

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

for differential pressure and flow

Dimensional drawings



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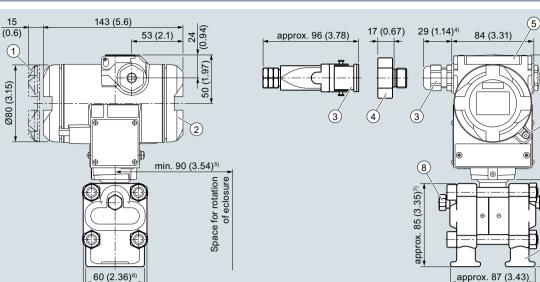
- In addition, allow approx. 20 mm (0.79 inch) for the thread length
- 2) Not with "flameproof enclosure" type of protection
- Not for type of protection "FM + CSA" [is + XP]" 3)
- 4) For Pg 13.5 with adapter, approx. 45 mm (1.77 inch)
- 5) 92 mm (3.62 inch) minimum distance for rotating with indicator

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

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Pressure Measurement

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



(1) Electronics side, local display (longer overall length for cover with inspection window)¹⁾

65 (2.56)

- 2 Connection side¹⁾
- (3) Electrical connection:
 - Pg 13.5 screw gland (adapter)^{2) 3)}
 - M20 x 1,5 screw gland
 - 1/2-14 NPT screw gland
 - Han 7D/Han 8D^{2) 3)} device plug
- (4) Harting adapter

- 5 Cover over buttons
- 6 Blanking plug
- Safety catch (only for "flameproof enclosure" type of protection; (7)not shown in the drawing)

(6)

128 (5.04)

(8)

9

(8.54)8)

217

approx

- 8 Sealing plug with valve (optional)
- (9) Process connection: 1/4-18 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 \ge 420 (MAWP \ge 6092 psi) 219 mm (8.6 inch) for PN \ge 420 (MAWP \ge 6092 psi) 8)

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

Pressure transmitters

e parts

Selection and Ordering data	Article No.	Selection and Ordering data	Article No.
Accessories/Spare parts		Mounting screws	
Mounting bracket and fastening parts		For measuring point label, grounding and con-	7MF4997-1
or pressure transmitters		nection terminals or for display (50 units)	
ITRANS P410 with HART, P410 with		Sealing screws	
ROFIBUS PA and P410 with FOUNDATION ieldbus (7MF403		(1 set = 2 units) for process flange	
made of steel	7MF4997-1AB	made of stainless steel	7MF4997-1
made of stainless steel 304/1.4301	7MF4997-1AH	made of Hastelloy	7MF4997-1
made of stainless steel 316L/1.4404	7MF4997-1AP	Sealing screws with vent valve	
Nounting bracket and fastening parts	_	Complete (1 set = 2 units) • made of stainless steel	7MF4997-1
or pressure transmitters		made of Hastellov	7MF4997-1
STRANS P410 with HART, P410 with		· · · · · · · · · · · · · · · · · · ·	-
ROFIBUS PA and P10with FOUNDATION		Connection board • for SITRANS P410	7MF4997-1
ieldbus (7MF403A.,B.,D. andF.)	71154007 440	• for SITRANS P410 • for SITRANS P410 with PROFIBUS PA and	7MF4997-1 7MF4997-1
made of steel	7MF4997-1AC	P410 with FOUNDATION Fieldbus	7101 4557-1
made of stainless steel 304/1.4301 made of stainless steel 316L/1.4404	7MF4997-1AJ 7MF4997-1AQ	O-rings for process flanges made of:	-
· · ·	/ WIF4557-TAQ	• FPM (Viton)	7MF4997-2
Nounting and fastening brackets		• PTFE (Teflon)	7MF4997-2
or differential pressure transmitters with ange thread M10		• FEP (with silicone core, approved for food)	7MF4997-2
SITRANS P410 with HART, P410 with		• FFPM (Kalrez)	7MF4997-2
PROFIBUS PA and P410 with FOUNDATION		• NBR (Buna N)	7MF4997-2
ieldbus (7MF443)		Sealing ring for process connection	see "Fittin
made of steel	7MF4997-1AD	Geaning ming for process connection	See Fillin
made of stainless steel 304/1.4301	7MF4997-1AK 7MF4997-1AR		
made of stainless steel 316L/1.4404	/WF499/-TAR		
Iounting and fastening brackets			
or differential pressure transmitters with			
ange thread M12 SITRANS P410 with HART, P410 with			
PROFIBUS PA and P410 with FOUNDATION			
Fieldbus (7MF453)			
made of steel	7MF4997-1AE		
made of stainless steel 304/1.4301	7MF4997-1AL		
made of stainless steel 316L/1.4404	7MF4997-1AS		
Nounting and fastening brackets			
For differential pressure transmitters with			
lange thread 7/16 -20 UNF SITRANS P410 with HART, P410 with			
PROFIBUS PA and P410 with FOUNDATION			
ieldbus (7MF443 and 7MF453)			
made of steel	7MF4997-1AF		
made of stainless steel 304/1.4301	7MF4997-1AM		
made of stainless steel 316L/1.4404	7MF4997-1AT		
Cover			
Aade of die-cast aluminum, including gasket,			
or SITRANS P410 with HART, P410 with PROFIBUS PA and P410 with FOUNDATION			
ieldbus.			
Compatible for Ex and non-Ex transmitters			
without window	7MF4997-1BB		
with window	7MF4997-1BE		
over			
lade of stainless steel, including gasket,			
r SITRANS P410 with HART, P410 with			
PROFIBUS PA and P410 with FOUNDATION			
Compatible for Ex and non-Ex transmitters			
without window	7MF4997-1BC		
with window	7MF4997-1BF		
Digital indicator	7MF4997-1BR		
ncluding mounting material, for SITRANS			
P410 with HART, P410 with PROFIBUS PA and			
410 with FOUNDATION Fieldbus			
leasuring point label			
without inscription (5 units)	7MF4997-1CA		
Printed (1 unit) Data according to Y01 or Y02, Y15, Y16 and	7MF4997-1CB-Z		
Data according to TUT OF TUZ, T15, T16 and	Y:		

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Pressure Measurement

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

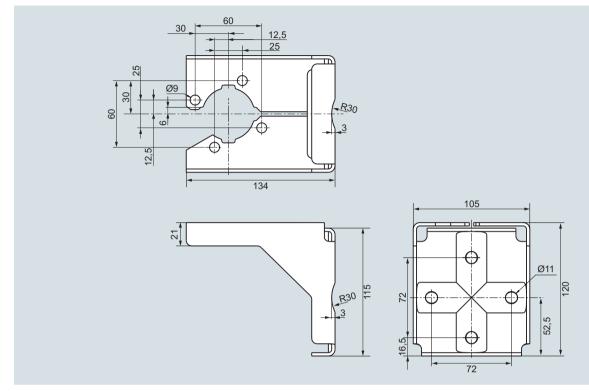
Accessories/Spare parts						
Selection and Ordering data	Article No.					
Documentation						
The entire documentation is available for download free-of-charge in various languages at: http://www.siemens.com/ processinstrumentation/documentation						
Compact operating instructions SITRANS P DS III/P410 • English, German, Spanish, French, Italian, Dutch	A5E03434626					
Certificates (order only via SAP) instead of Internet download	-					
 hard copy (to order) 	A5E03252406					
• on DVD (to order)	A5E03252407					
HART modem with USB interface	7MF4997-1DB					
WITH USD ITTETTACE	/WIF499/-IDB					

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

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

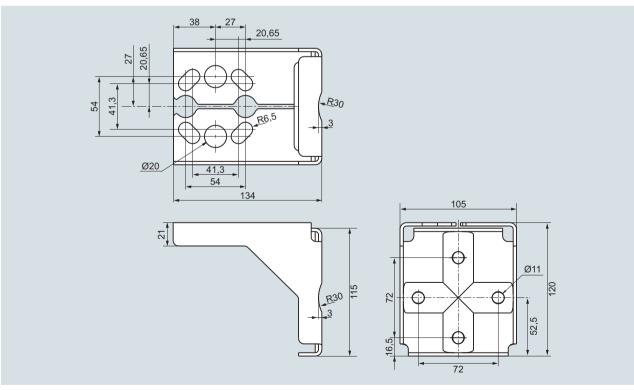
Accessories/Spare parts

Dimensional drawings



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Mounting bracket for SITRANS P410 gauge pressure-transmitters, dimensions in mm mounting bracket material: Sheet-steel Mat. No. 1.0330, chrome-plated, or stainless steel Mat. No. 1.4301 (304)



Mounting bracket for SITRANS P410 differential pressure transmitter, dimensions in mm mounting bracket material: Sheet-steel Mat. No. 1.0330, chrome-plated, or stainless steel Mat. No. 1.4301 (304)