

Overview



SITRANS P310 pressure transmitters are digital pressure transmitters with a high level of operating convenience. With a measurement accuracy of 0.075 %, they complement the SITRANS P DS III and round off the portfolio. The parameterization is performed using input buttons or the HART interface.

Extensive functionality enables the pressure transmitter to be precisely adapted to the plant's requirements. Operation is very simple in spite of the numerous setting options.

Transmitters with type of protection "Intrinsic safety" and "Explosion-proof" may be installed within potentially explosive atmospheres (zone 1) or in zone 0. The transmitters are provided with an EC type examination certificate and comply with the corresponding 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 P310 pressure transmitters are available in various versions for measuring:

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

Benefits

- High quality and service life
- High reliability even under extreme chemical and mechanical loads
- For aggressive and non-aggressive gases, vapors and liquids
- Extensive diagnosis and simulation functions
- Good long-term stability
- Wetted parts made of high-grade materials (stainless steel, Hastelloy)
- Infinitely adjustable spans from 0.01 bar to 700 bar (0.15 psi to 10153 psi)
- Measuring accuracy 0.075 %
- Parameterization over input buttons and HART interface

Application

SITRANS P310 pressure transmitters are particularly suited for use in the industrial areas of Energy, Oil & Gas as well as Water/Wastewater. Electromagnetic compatibility in the range 10 kHz to 1 GHz makes them suitable for locations with high electromagnetic emissions.

Pressure transmitters with type of protection "Intrinsic safety" and "Explosion-proof" may be installed within potentially explosive atmospheres (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 interface.

Pressure transmitter for gauge pressure

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

Span (infinitely adjustable):
0.01 bar to 700 bar (0.15 psi to 10153 psi)

Pressure transmitters for differential pressure and flow

Measured variables:

- Differential pressure
- Small positive or negative pressure
- Flow $q \sim \sqrt{\Delta p}$ (together with a primary differential pressure device (see Chapter "Flow Meters"))

Span (infinitely adjustable):
1 mbar ... 30 bar (0.0145 ... 435 psi)

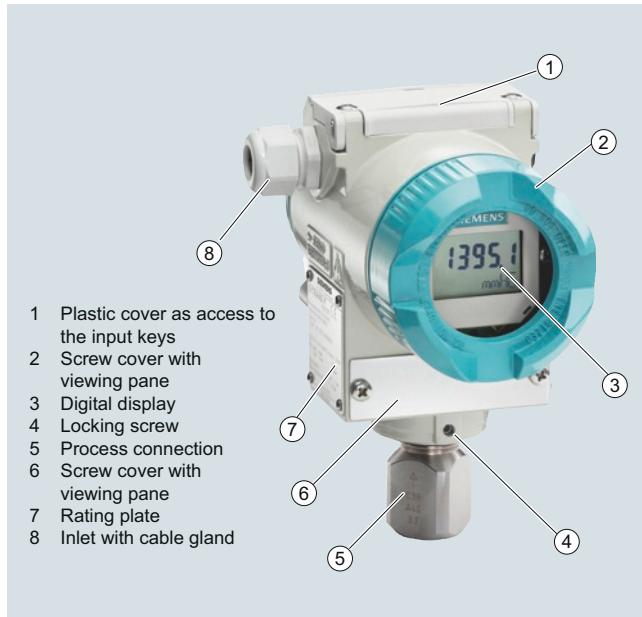
Pressure Measurement

Transmitters for applications with basic requirements (Basic)
SITRANS P310

Technical description

1

Design



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).

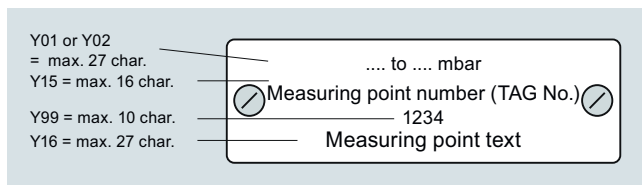
The approval label is located on the opposite side.

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.

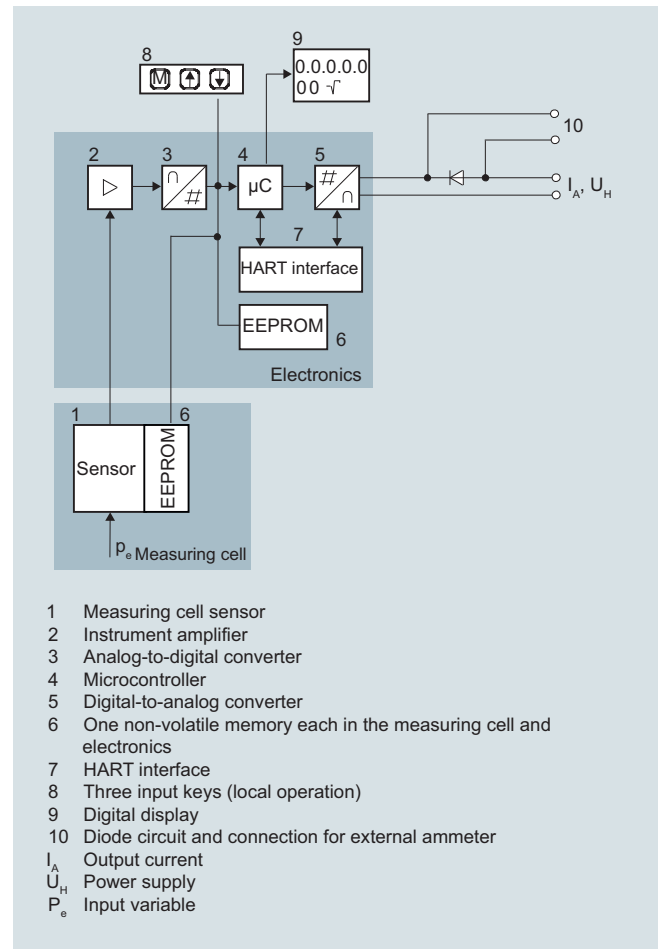
At the top of the housing is a plastic cover (1), which hides the input keys.

Example for an attached measuring point label



Function

Operation of electronics with HART communication



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.

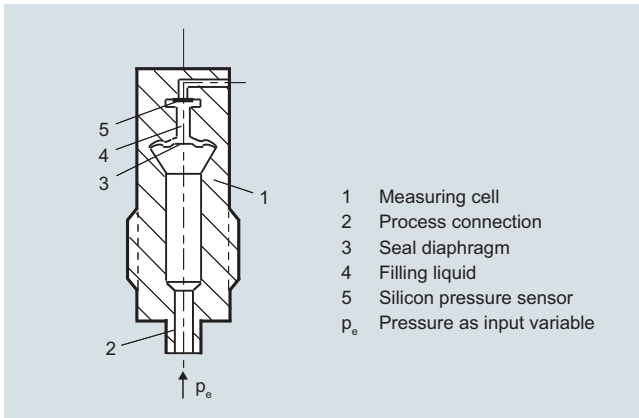
The diode circuit (10) protects against incorrect polarity.

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).

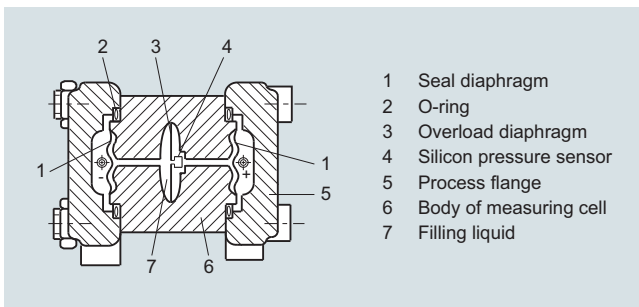
The HART modem (7) permits parameterization using a protocol according to the HART specification.

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

Mode of operation of the measuring cellsMeasuring 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 absolute 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.

Parameterization SITRANS P310

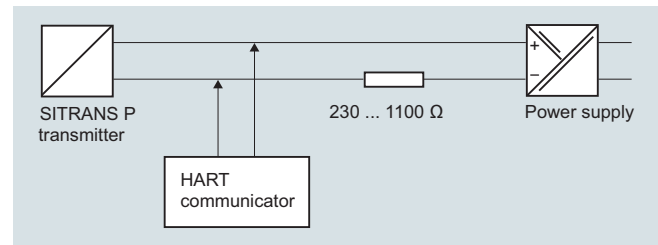
Depending on the version, there are a range of options for parameterizing the pressure transmitter and for setting or scanning the parameters.

Parameterization using the input buttons (local operation)

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

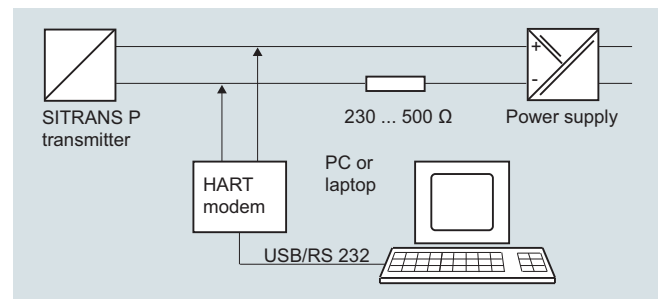
Parameterization using HART

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, DS III with HART

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

¹⁾ Cancel apart from write protection

²⁾ Only differential pressure

Pressure Measurement

Transmitters for applications with basic requirements (Basic)
SITRANS P310

Technical description

Available physical units of display for SITRANS P310 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	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

Pressure Measurement

Transmitters for applications with basic requirements (Basic)

SITRANS P310

for gauge pressure

1

Technical specifications**SITRANS P310 for gauge pressure****Input**

Measured variable	Gauge pressure		
Span (fully adjustable), max. operating pressure (in accordance with 2014/68/EU Pressure Equipment Directive) and max. test pressure (pursuant to DIN 16086)	Span	Max. operating pressure MAWP (PS)	Max. perm. test pressure
	0.01 ... 1 bar	4 bar	6 bar
	1 ... 100 kPa	400 kPa	600 kPa
	0.15 ... 14.5 psi	58 psi	87 psi
	0.04 ... 4 bar	7 bar	10 bar
	4 ... 400 kPa	0.7 MPa	1 MPa
	0.58 ... 58 psi	102 psi	145 psi
	0.16 ... 16 bar	21 bar	32 bar
	16 ... 1600 kPa	2.1 MPa	3.2 MPa
	2.3 ... 232 psi	305 psi	464 psi
	0.63 ... 63 bar	67 bar	100 bar
	63 ... 6300 kPa	6.7 MPa	10 MPa
	9.1 ... 914 psi	972 psi	1450 psi
	1.6 ... 1 bar	167 bar	250 bar
	0.16 ... 16 MPa	16.7 MPa	25 MPa
	23 ... 2321 psi	2422 psi	3626 psi
	4 ... 400 bar	400 bar	600 bar
	0.4 ... 40 MPa	40 MPa	60 MPa
	58 ... 5802 psi	5802 psi	8700 psi
	7 ... 700 bar	800 bar	800 bar
	0.7 ... 70 MPa	80 MPa	80 MPa
	102 ... 10153 psi	11603 psi	11603 psi
Lower measuring limit	30 mbar a/3 kPa a/0.44 psi a		
• Measuring cell with silicone oil filling			
Upper measuring limit	100 % of max. span		
Start of scale value	Between the measuring limits continuously adjustable		

Output

Output signal	4 ... 20 mA
• Lower limit (infinitely adjustable)	3.55 mA, factory preset to 3.84 mA
• Upper limit (infinitely adjustable)	23 mA, factory preset to 20.5 mA or optionally set to 22.0 mA
Load	
• Without HART	$R_B \leq (U_H - 10.5 \text{ V})/0.023 \text{ A in } \Omega$ U_H : Power supply in V
• With HART	$R_B = 230 \dots 500 \Omega$ (SIMATIC PDM) or $R_B = 230 \dots 1100 \Omega$ (HART Communicator)
Protection against polarity reversal	Protected against short-circuit and polarity reversal. Each connection against the other with max. supply voltage.
Electrical damping (step width 0.1 s)	Set to 2 s (0 ... 100 s)

Pressure Measurement

Transmitters for applications with basic requirements (Basic)

SITRANS P310

for gauge pressure

1

SITRANS P310 for gauge pressure	
Measuring accuracy	Acc. to IEC 60770-1
Reference conditions	<ul style="list-style-type: none"> Increasing characteristic Start-of-scale value 0 bar/kPa/psi Stainless steel seal diaphragm Silicone oil filling Room temperature 25 °C (77 °F)
Measuring span ratio r (spread, Turn-Down)	$r = \text{max. measuring span/set measuring span}$
Error in measurement at limit setting incl. hysteresis and reproducibility	
<ul style="list-style-type: none"> Linear characteristic 	
<ul style="list-style-type: none"> - 1 bar/100 kPa/3.6 psi - 4 bar/400 kPa/58 psi - 16 bar/1.6 MPa/232 psi - 63 bar/6.3 MPa/914 psi - 160 bar/16 MPa/2321 psi 	$r \leq 5 :$ $\leq 0.075 \%$ $5 < r \leq 100 :$ $\leq (0.005 \cdot r + 0.07) \%$
<ul style="list-style-type: none"> - 400 bar/40 MPa/5802 psi - 700 bar/70 MPa/10152 psi 	$r \leq 3 :$ $\leq 0.075 \%$ $3 < r \leq 100 :$ $\leq (0.005 \cdot r + 0.07) \%$
Influence of ambient temperature (in percent per 28 °C (50 °F))	
<ul style="list-style-type: none"> at -40 ... +85 °C (-40 ... 185 °F) 	$\leq (0.15 \cdot r + 0.25) \%$
Long-term stability (temperature change ± 30 °C (± 54 °F))	$\leq (0.25 \cdot r) \%$ in 5 years
Effect of mounting position	≤ 0.05 mbar/0.005 kPa/0.000725 psi per 10° inclination (zero point correction is possible with position error compensation)
Effect of auxiliary power supply (in percent per change in voltage)	0.005 % per 1 V
Rated conditions	
Degree of protection	
<ul style="list-style-type: none"> according to EN 60529 according to NEMA 250 	IP66 (optional IP66/IP68) Type 4X
Temperature of medium	
<ul style="list-style-type: none"> Measuring cell with silicone oil filling In conjunction with dust explosion protection 	-40 ... +100 °C (-40 ... +212 °F) -20 ... +60 °C (-4 ... +140 °F)
Ambient conditions	
<ul style="list-style-type: none"> Ambient temperature - Transmitter - Display readable Storage temperature Climatic class - Condensation 	-40 ... +85 °C (-40 ... +185 °F) -30 ... +85 °C (-22 ... +185 °F) -50 ... +85 °C (-58 ... +185 °F) Relative humidity 0 ... 100 % Condensation permissible, suitable for use in the tropics
<ul style="list-style-type: none"> Electromagnetic Compatibility - Emitted interference and interference immunity 	Acc. to IEC 61326 and NAMUR NE 21
Design	
Weight (without options)	Die-cast aluminum: ≈ 2.0 kg (≈ 4.4 lb) Stainless steel precision casting: ≈ 4.6 kg (≈ 10.1 lb)
Enclosure material	Low-copper die-cast aluminum, GD-AISI 12 or stainless steel precision casting, mat. no. 1.4408
Wetted parts materials	
<ul style="list-style-type: none"> Connection shank Seal diaphragm 	Stainless steel, mat. no. 1.4404/316L or Hastelloy C4, mat. no. 2.4602 Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819
Measuring cell filling	Silicone oil
Process connection	Connection shank G $\frac{1}{2}$ B to DIN EN 837-1, female thread $\frac{1}{2}$ -14 NPT or male thread M20 x 1.5
Material of mounting bracket	
<ul style="list-style-type: none"> Steel Stainless steel 304 Stainless steel 316L 	Sheet-steel, Mat. No. 1.0330, chrome-plated Sheet stainless steel, mat. no. 1.4301 (SS 304) Sheet stainless steel, mat. no. 1.4404 (SS 316L)
Power supply U_H	
Terminal voltage on transmitter	10.5 ... 45 V DC 10.5 ... 30 V DC in intrinsically-safe mode

SITRANS P, DS III series for gauge pressure**Certificates and approvals**

Classification according to PED 2014/68/EU	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)
Explosion protection	
• Intrinsic safety "i"	PTB 13 ATEX 2007 X
- Marking	Ex II 1/2 G Ex ia/ib IIC T4/T5/T6 Ga/Gb
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +70 °C (-40 ... +158 °F) temperature class T5; -40 ... +60 °C (-40 ... +140 °F) temperature class T6
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}$, $I_i = 100 \text{ mA}$, $P_i = 750 \text{ mW}$; $R_i = 300 \Omega$
- Effective internal inductance/capacitance	$L_i = 0.4 \text{ mH}$, $C_i = 6 \text{ nF}$
• Explosion-proof "d"	PTB 99 ATEX 1160
- Marking	Ex II 1/2 G Ex d IIC T4/T6 Gb
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +60 °C (-40 ... +140 °F) temperature class T6
- Connection	To circuits with values: $U_H = 10.5 \dots 45 \text{ V DC}$
• 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: $U_i = 30 \text{ V}$, $I_i = 100 \text{ mA}$, $P_i = 750 \text{ mW}$, $R_i = 300 \Omega$
- Effective internal inductance/capacitance	$L_i = 0.4 \text{ mH}$, $C_i = 6 \text{ nF}$
• 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: $U_H = 10.5 \dots 45 \text{ V DC}$; $P_{\max} = 1.2 \text{ W}$
• Type of protection "n" (zone 2)	PTB 13 ATEX 2007 X
- Marking	Ex II 2/3 G Ex nA IIC T4/T5/T6 Gb/Gc Ex II 2/3 G Ex ic IIC T4/T5/T6 Gb/Gc
- Connection (Ex nA)	$U_m = 45 \text{ V}$
- Connections (Ex ic)	To circuits with values: $U_i = 45 \text{ V}$
- Effective internal inductance/capacitance	$L_i = 0.4 \text{ mH}$, $C_i = 6 \text{ nF}$
• Explosion protection acc. to FM (pending)	Certificate of Compliance 3008490
- Identification (XP/DIP) or (IS); (NI)	CL I, DIV 1, GP ABCD T4...T6; CL II, DIV 1, GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4...T6; CL I, DIV 2, GP ABCD T4...T6; CL II, DIV 2, GP FG; CL III
• Explosion protection to CSA (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
HART communication	
HART	230 ... 1100 Ω
Protocol	HART Version 5.x
Software for computer	SIMATIC PDM

Pressure Measurement

Transmitters for applications with basic requirements (Basic)

SITRANS P310

for gauge pressure

1

Selection and Ordering data		Article No.
Pressure transmitter for gauge pressure, SITRANS P310 with HART		7 MF 2 0 3 3 -
<p>Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</p>		
Measuring cell filling	Measuring cell cleaning	
Silicone oil	normal	1
Measuring span (min. ... max.)		
0.01 ... 1 bar	(0.15 ... 14.5 psi)	B
0.04 ... 4 bar	(0.58 ... 58 psi)	C
0.16 ... 16 bar	(2.32 ... 232 psi)	D
0.63 ... 63 bar	(9.14 ... 914 psi)	E
1.6 ... 160 bar	(23.2 ... 2320 psi)	F
4.0 ... 400 bar	(58.0 ... 5802 psi)	G
7.0 ... 700 bar	(102.0 ... 10153 psi)	J
Wetted parts materials		
Seal diaphragm	Process connection	
Stainless steel	Stainless steel	A
Hastelloy	Stainless steel	B
Version for diaphragm seals in conjunction with process connector "female thread 1/2-14 NPT" (recommended version) ^{1) 2) 3) 4)}		Y 1
Version for diaphragm seals in conjunction with process connector "G1/2B connection shank" ^{1) 2) 3) 4)}		Y 0
Process connection		
• Connection shank G1/2B to EN 837-1		0
• Female thread 1/2-14 NPT		1
• Male thread M20 x 1.5		5
Non-wetted parts materials		
• Housing made of die-cast aluminium		0
• Housing stainless steel precision casting ⁵⁾		3
Version		
• Standard version, German plate inscription, setting for pressure unit: bar		1
• International version, English plate inscription, setting for pressure unit: bar		2
• Chinese version, English plate inscription, setting for pressure unit: Pascal		3
All versions include DVD with compact operating instructions in various EU languages.		
Explosion protection		
• None		A
• With ATEX, Type of protection:		
- "Intrinsic safety (Ex ia)"		B
- "Explosion-proof (Ex d)" ⁶⁾		D
- "Ex nA/ic (Zone 2)" ⁷⁾		E
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia + Ex d + Zone 1D/2D)" ^{8) 9)} (pending)		R
• FM + CSA intrinsic safe (is) (pending) ¹⁰⁾		F
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX) + Zone 1D/2D ^{8) 9) 10)} (pending)		S
• With FM + CSA, Type of protection:		
- "Intrinsic Safe and Explosion Proof (is + xp)" ^{6) 10)} (pending)		NC
Electrical connection / cable entry		
• Screwed gland M20 x1 .5		B
• Screwed gland 1/2-14 NPT		C
• Han 7D device plug (plastic housing) incl. mating connector ¹¹⁾		D

Selection and Ordering data		Article No.
Pressure transmitter for gauge pressure, SITRANS P310 with HART		7 MF 2 0 3 3 -
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".		
A quick-start guide is included in the scope of delivery of the device.		
<p>1) When the manufacturer's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.</p> <p>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.</p> <p>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</p> <p>4) The standard measuring cell filling of configurations with remote seals (Y) is silicone oil.</p> <p>5) Not in conjunction with Electrical connection "Han 7D device plug".</p> <p>6) Without cable gland, with blanking plug</p> <p>7) Configurations with Han and M12 device plugs are only available in Ex ic.</p> <p>8) With enclosed cable gland Ex ia and blanking plug.</p> <p>9) Only in connection with IP66.</p> <p>10) Explosion protection acc. to FM/CSA: suitable for installations according to NEC 500/505.</p> <p>11) Only in connection with Ex approval A, B or E.</p>		

Pressure Measurement

Transmitters for applications with basic requirements (Basic)

SITRANS P310

for gauge pressure

1

Selection and Ordering data	Order code	Selection and Ordering data	Order code
Further designs Add "-Z" to Article No. and specify Order code.		Further designs 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:		Transient protector 6 kV (lightning protection)	J01
• Steel	A01	Marine approvals	
• Stainless steel 304	A02	• Det Norske Veritas Germanischer Lloyd (DNV-GL)	S10
• Stainless steel 316L	A03	• Lloyds Register (LR)	S11
Device plugs¹⁾		• French marine classification society Bureau Veritas (BV)	S12
• Han 7D (metal)	A30	• American Bureau of Shipping (ABS)	S14
• Han 8D (instead of Han 7D)	A31	• Russian Maritime Register (RMR)	S16
• Angled	A32	• Korean Register of Shipping (KR)	S17
• Han 8D (metal)	A33		
Rating plate inscription (instead of German)		1) Han device plug IP65	
• French	B12	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.	
• Spanish	B13	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.	
English rating plate	B21	4) 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 units in inH ₂ O and/or psi			
Quality Inspection Certificate (5-point characteristic curve test) according to IEC 60770-2²⁾	C11		
Inspection certificate³⁾	C12		
Acc. to EN 10204-3.1			
Factory certificate	C14		
Acc. to EN 10204-2.2			
Acceptance certificate (EN 10204-3.1)	C15		
PMI test of parts in contact with medium			
Functional safety (SIL2) (pending)	C20		
Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration			
Functional safety (SIL2/3)	C23		
Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration			
PED for Russia with initial calibration mark	C99		
Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009)	D07		
Degree of protection IP66/IP68 (only for M20x1.5 and ½-14 NPT)	D12		
Cable gland and sealing plug made of metal	D32		
TAG plate empty (no inscription)	D61		
Export approval Korea	E11		
CRN approval Canada (Canadian Registration Number)	E22		
Dual seal	E24		
Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF2033-.....-B..)	E55⁴⁾		
Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF2033-.....-D..)	E56⁴⁾		
Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF2033-.....-E..)	E57⁴⁾		
Ex-protection Ex ia according to EAC Ex (Russia) (only for transmitter 7MF2.....-B..)	E80		
Ex-protection Ex d according to EAC Ex (Russia) (only for transmitter 7MF2.....-D..)	E81		
Ex-protection Ex nA/ic (Zone 2) according to EAC Ex (Russia) (only for transmitter 7MF2.....-E..)	E82		
		Selection and Ordering data	Order code
		Additional data Please add "-Z" to Article No. and specify Order code(s) and plain text.	
		Measuring range to be set	Y01
		Specify in plain text (max. 5 characters): Y01: ... up to ... mbar, bar, kPa, MPa, psi	
		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 characters, specify in plain text: Y16:	
		Entry of HART address (TAG)	Y17
		Max. 8 characters, specify in plain text: Y17:	
		Setting of pressure indication 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 indication in non-pressure units¹⁾	Y22 + Y01
		Specify in plain text: Y22: up to l/min, m ³ /h, m, USgpm, ... (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	
		Ordering example	
		Item line: 7MF2033-1EA00-1AA7-Z	
		B line: A01 + Y01 + Y21	
		C line: Y01: 10 ... 20 bar (145 ... 290 psi)	
		C line: Y21: bar (psi)	

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

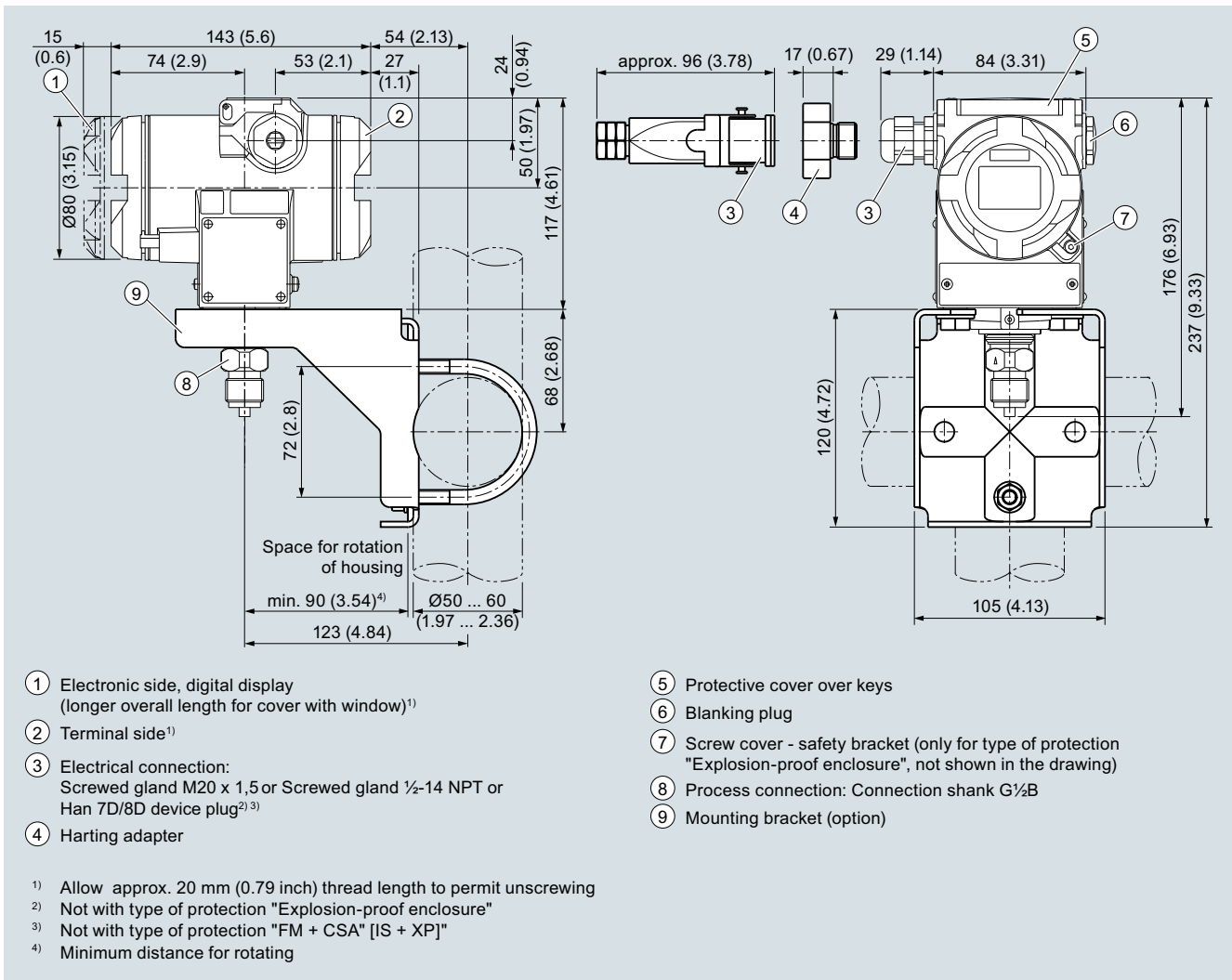
Pressure Measurement

Transmitters for applications with basic requirements (Basic)

SITRANS P310

for gauge pressure

Dimensional drawings



SITRANS P310 pressure transmitters for gauge pressure, dimensions in mm (inch)

Technical specifications**SITRANS P310 for differential pressure and flow****Input**

Measured variable	Differential pressure and flow	
Span (fully adjustable), max. operating pressure (in accordance with 2014/68/EU Pressure Equipment Directive)	Span	Max. operating pressure MAWP (PS)
	1 ... 60 mbar 0.1 ... 6 kPa 0.4 ... 24 inH ₂ O 2.5 ... 250 mbar 0.2 ... 25 kPa 1 ... 100 inH ₂ O 6 ... 600 mbar 0.6 ... 60 kPa 2.4 ... 240 inH ₂ O 16 ... 1600 mbar 1.6 ... 160 kPa 6.4 ... 642 inH ₂ O 50 ... 5000 mbar 5 ... 500 kPa 20 ... 2000 inH ₂ O 0.3 ... 30 bar 0.03 ... 3 MPa 4.35 ... 435 psi	160 bar 16 MPa 2320 psi
Lower measuring limit	-100 % of max. measuring range (-33 % for 30 bar/3 MPa/435 psi cell) or 30 mbar a/3 kPa a/0.44 psi a	
• Measuring cell with silicone oil filling		
Upper measuring limit	100 % of max. span	
Start of scale value	Between the measuring limits continuously adjustable	
Output		
Output signal	4 ... 20 mA	
• Lower limit (infinitely adjustable)	3.55 mA, factory preset to 3.84 mA	
• Upper limit (infinitely adjustable)	23 mA, factory preset to 20.5 mA or optionally set to 22.0 mA	
Load		
• Without HART	$R_B \leq (U_H - 10.5 \text{ V})/0.023 \text{ A in } \Omega$ U_H : Power supply in V	
• With HART	$R_B = 230 \dots 500 \Omega$ (SIMATIC PDM) or $R_B = 230 \dots 1100 \Omega$ (HART Communicator)	
Protection against polarity reversal	Protected against short-circuit and polarity reversal. Each connection against the other with max. supply voltage.	
Electrical damping (step width 0.1 s)	Set to 2 s (0 ... 100 s)	

Pressure Measurement

Transmitters for applications with basic requirements (Basic)

SITRANS P310

for differential pressure and flow

1

SITRANS P310 for differential pressure and flow

Measuring accuracy

Reference conditions

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

Measuring span ratio r (spread, Turn-Down)

Error in measurement at limit setting incl. hysteresis and reproducibility

- Linear characteristic

- 60 mbar/6 kPa/0.87 psi

Acc. to IEC 60770-1

- Increasing characteristic
- Start-of-scale value 0 bar/kPa/psi
- Stainless steel seal diaphragm
- Silicone oil filling
- Room temperature 25 °C (77 °F)

$r = \text{max. measuring span/set measuring span or nom. pressure range}$

$r \leq 5$: $\leq 0.075 \%$
 $5 < r \leq 60$: $\leq (0.005 \cdot r + 0.07) \%$

- 250 mbar/25 kPa/3.6 psi
 600 mbar/60 kPa/8.7 psi
 1600 mbar/160 kPa/23.2 psi
 5000 mbar/500 kPa/72.5 psi
 30 bar/3000 kPa/435 psi

$r \leq 5$: $\leq 0.075 \%$
 $5 < r \leq 100$: $\leq (0.005 \cdot r + 0.07) \%$

- Square-rooted characteristic (flow > 50 %)

- 60 mbar/6 kPa/0.87 psi

$r \leq 5$: $\leq 0.075 \%$
 $5 < r \leq 60$: $\leq (0.005 \cdot r + 0.07) \%$

- 250 mbar/25 kPa/3.6 psi
 600 mbar/60 kPa/8.7 psi
 1600 mbar/160 kPa/23.2 psi
 5000 mbar/500 kPa/72.5 psi
 30 bar/3000 kPa/435 psi

$r \leq 5$: $\leq 0.075 \%$
 $5 < r \leq 100$: $\leq (0.005 \cdot r + 0.07) \%$

- Square-rooted characteristic (flow > 25 ... 50 %)

- 60 mbar/6 kPa/0.87 psi

$r \leq 5$: $\leq 0.15 \%$
 $5 < r \leq 60$: $\leq (0.01 \cdot r + 0.14) \%$

- 250 mbar/25 kPa/3.6 psi
 600 mbar/60 kPa/8.7 psi
 1600 mbar/160 kPa/23.2 psi
 5000 mbar/500 kPa/72.5 psi
 30 bar/3000 kPa/435 psi

$r \leq 5$: $\leq 0.15 \%$
 $5 < r \leq 100$: $\leq (0.01 \cdot r + 0.14) \%$

Influence of ambient temperature (in percent per 28 °C (50 °F))

- at -40 ... +85 °C (-40 ... +185 °F)

$\leq (0.15 \cdot r + 0.25) \%$

Influence of static pressure

- on the zero point

- 60 mbar/6 kPa/0.87 psi
 250 mbar/25 kPa/3.63 psi
 600 mbar/60 kPa/8.7 psi
 1600 mbar/160 kPa/23.21 psi

$\leq (0.15 \cdot r) \%$ per 70 bar
 (zero point correction is possible with position error compensation)

- 5 bar/500 kPa/72.5 psi
 30 bar/3 MPa/435 psi

$\leq (0.2 \cdot r) \%$ per 70 bar
 (zero point correction is possible with position error compensation)

- on the span

$\leq 0.14 \%$ per 70 bar/7 MPa/1015 psi

Long-term stability

(temperature change ± 30 °C (± 54 °F))

$\leq (0.25 \cdot r) \%$ in 5 years
 static pressure max. 70 bar/7 MPa/1015 psi

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

≤ 0.7 mbar/0.07 kPa/0.001015 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

Pressure Measurement

Transmitters for applications with basic requirements (Basic)

SITRANS P310

for differential pressure and flow

1

SITRANS P310 for differential pressure and flow**Rated conditions**

Degree of protection

- according to EN 60529
- according to NEMA 250

IP66 (optional IP66/IP68)

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
- Display readable

-40 ... +85 °C (-40 ... +185 °F)

-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: ≈ 4.5 kg (≈ 9.9 lb)
Stainless steel precision casting: ≈ 7.1 kg (≈ 15.6 lb)

Enclosure material

Low-copper die-cast aluminum, GD-AISI12 or stainless steel precision casting, mat. no. 1.4408

Wetted parts materials

- Seal diaphragm
- Process flanges and sealing screw
- O-Ring

Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819

Stainless steel, mat. no. 1.4408, Hastelloy C4, mat. no. 2.4602

FPM (Viton) or optionally: PTFE, FEP, FEPM and NBR

Measuring cell filling

Silicone oil

Process connection

Female thread 1/4-18 NPT and flange connection with mounting thread M10 to DIN 19213 or 7/16-20 UNF to IEC 61518/DIN EN 61518

Material of mounting bracket

- Steel
- Stainless steel 304
- Stainless steel 316L

Sheet-steel, Mat. No. 1.0330, chrome-plated

Sheet stainless steel, mat. no. 1.4301 (SS 304)

Sheet stainless steel, mat. no. 1.4404 (SS 316L)

Power supply U_H

Terminal voltage on transmitter

10.5 ... 45 V DC
10.5 ... 30 V DC in intrinsically-safe mode

Pressure Measurement

Transmitters for applications with basic requirements (Basic)
SITRANS P310

for differential pressure and flow

1

SITRANS P310 for differential pressure and flow

Certificates and approvals

Classification according to PED 2014/68/EU

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

Explosion protection

- Intrinsic safety "i"

PTB 13 ATEX 2007 X

- Marking

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

- Permissible ambient temperature

-40 ... +85 °C (-40 ... +185 °F) temperature class T4;
-40 ... +70 °C (-40 ... +158 °F) temperature class T5;
-40 ... +60 °C (-40 ... +140 °F) temperature class T6

- Connection

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

- Effective internal inductance/capacitance

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

- Explosion-proof "d"

PTB 99 ATEX 1160

- Marking

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

- Permissible ambient temperature

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

- Connection

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

- 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:
 $U_i = 30 \text{ V}$, $I_i = 100 \text{ mA}$, $P_i = 750 \text{ mW}$, $R_i = 300 \Omega$

- Effective internal inductance/capacitance

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

$L_i = 7 \mu\text{H}$, $C_i = 1.1 \text{ nF}$

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

PTB 01 ATEX 2055

- Marking

Ex II 2 D Ex tb IIIC T120 °C Db

- Connection

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

- Type of protection "n" (zone 2)

PTB 13 ATEX 2007 X

- Marking

Ex II 2/3 G Ex nA IIC T4/T5/T6 Gb/Gc
Ex II 2/3 G Ex ic IIC T4/T5/T6 Gb/Gc

- Connection (Ex nA)

$U_m = 45 \text{ V}$

- Connection (Ex ic)

To circuits with values:
 $U_i = 45 \text{ V}$

- Effective internal inductance/capacitance

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

- Explosion protection acc. to FM (pending)

Certificate of Compliance 3008490

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

CL I, DIV 1, GP ABCD T4...T6; CL II, DIV 1, GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4...T6; CL I, DIV 2, GP ABCD T4...T6; CL II, DIV 2, GP FG; CL III

- Explosion protection to CSA (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

HART communication

HART

230 ... 1100 Ω

Protocol

HART Version 5.x

Software for PC

SIMATIC PDM

Pressure Measurement

Transmitters for applications with basic requirements (Basic)
SITRANS P310

for differential pressure and flow

1

Selection and Ordering data	Order code	Selection and Ordering data	Order code
Further designs Add "-Z" to Article No. and specify Order code.		Further designs 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:		Export approval Korea	E11
• Steel	A01	Dual seal	E24
• Stainless steel 304	A02	Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4...-.....-B..)	E55⁴⁾
• Stainless steel 316L	A03	Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4...-.....-D..)	E56⁴⁾
O-rings for process flanges (instead of FPM (Viton))		Explosion-proof "Zone 2" to NEPSI (China) (only for transmitter 7MF4...-.....-E..)	E57⁴⁾
• PTFE (Teflon)	A20	Ex-protection Ex ia according to EAC Ex (Russia) (only for transmitter 7MF2...-.....-B..)	E80
• FEP (with silicone core, approved for food)	A21	Ex-protection Ex d according to EAC Ex (Russia) (only for transmitter 7MF2...-.....-D..)	E81
• FFFM (Kalrez, compound 4079), for measured medium temperatures -15 ... 100 °C (5 ... 212 °F)	A22	Ex-protection Ex nA/ic (Zone 2) according to EAC Ex (Russia) (only for transmitter 7MF2...-.....-E..)	E82
• NBR (Buna N)	A23	Vent on side for gas measurements	H02
Device plugs¹⁾		Stainless steel process flanges for vertical differential pressure lines	H03
• Han 7D (metal)	A30	Transient protector 6 kV (lightning protection)	J01
• Han 8D (instead of Han 7D)	A31	Marine approvals	
• Angled	A32	• Det Norske Veritas Germanischer Lloyd (DNV-GL)	S10
• Han 8D (metal)	A33	• Lloyds Register (LR)	S11
Sealing screws (2 units) ¼-18 NPT, with valve in mat. of process flanges	A40	• French marine classification society Bureau Veritas (BV)	S12
Rating plate inscription (instead of German)		• American Bureau of Shipping (ABS)	S14
• French	B12	• Russian Maritime Register (RMR)	S16
• Spanish	B13	• Korean Register of Shipping (KR)	S17
English rating plate Pressure units in inH ₂ O and/or psi	B21		
Quality Inspection Certificate (5-point characteristic curve test) according to IEC 60770-2²⁾	C11		
Inspection certificate³⁾ to EN 10204-3.1	C12		
Factory certificate to EN 10204-2.2	C14		
Acceptance certificate (EN 10204-3.1) PMI test of parts in contact with medium	C15		
Functional safety (SIL2) (pending) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	C20		
Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	C23		
PED for Russia with initial calibration mark	C99		
Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009) (only together with seal diaphragm made of Hastelloy and stainless steel)	D07		
Degree of protection IP66/IP68 (only for M20 x 1.5 and ½-14 NPT)	D12		
Cable gland and sealing plug made of metal	D32		
Supplied with oval flange set (2 items), PTFE packings and screws in thread of process flanges	D37		
TAG plate empty (no inscription)	D61		

¹⁾ Han device plug IP65

²⁾ When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.

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

⁴⁾ 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.

Selection and Ordering data	Order code
Additional data	
Please add "-Z" to Article No. and specify Order code(s) and plain text.	
Measuring range to be set	
Specify in plain text:	
• in the case of linear characteristic curve (max. 5 characters): Y01: ... up to ... mbar, bar, kPa, MPa, psi	Y01
• 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)	Y17
Max. 8 char., specify in plain text: Y17:	
Setting of pressure indication 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 indication in non-pressure units¹⁾	Y22 + Y01 or Y02
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)	

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

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

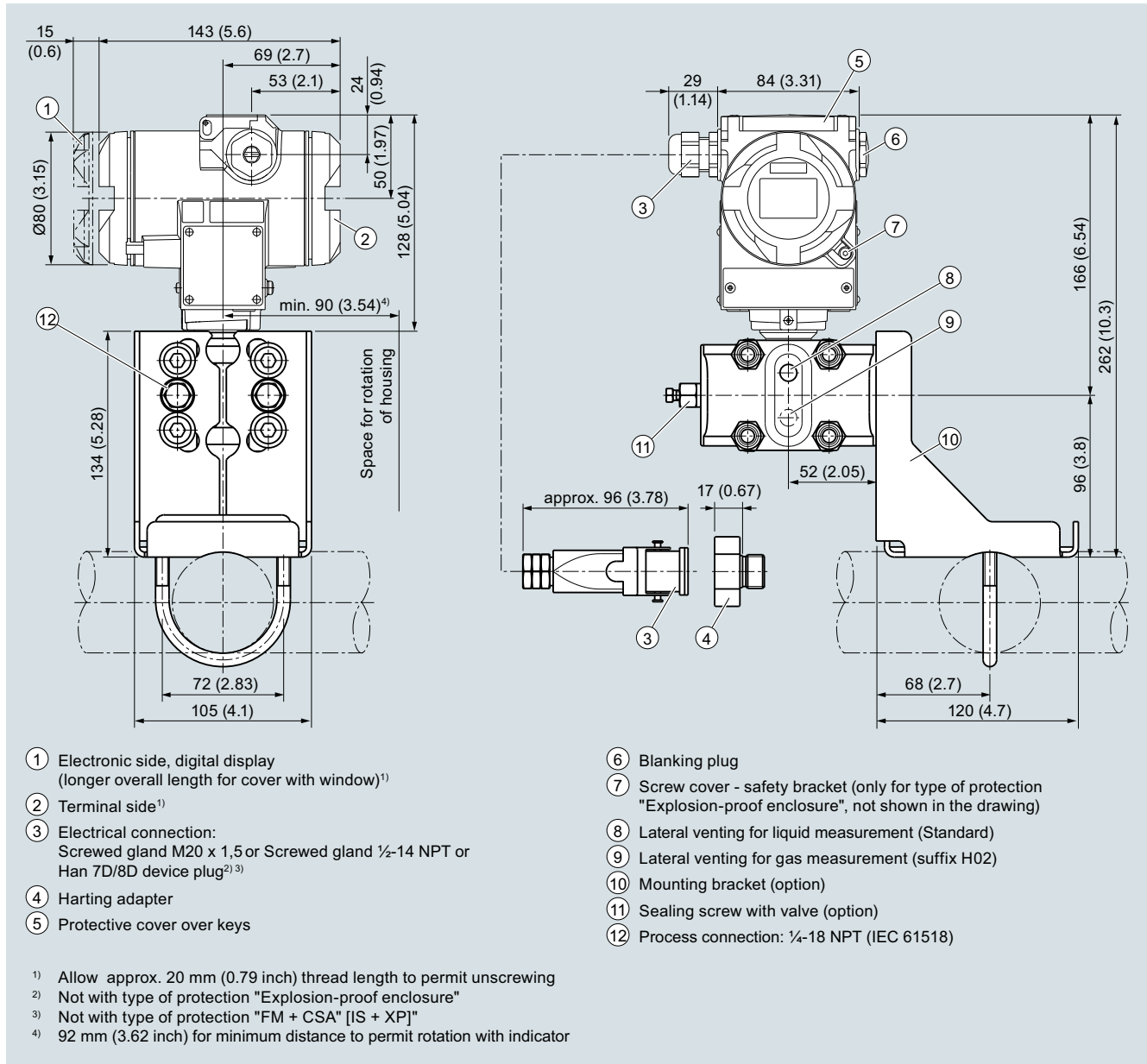
Pressure Measurement

Transmitters for applications with basic requirements (Basic)
SITRANS P310

for differential pressure and flow

1

Dimensional drawings



SITRANS P310 pressure transmitters for differential pressure and flow, dimensions in mm (inch)

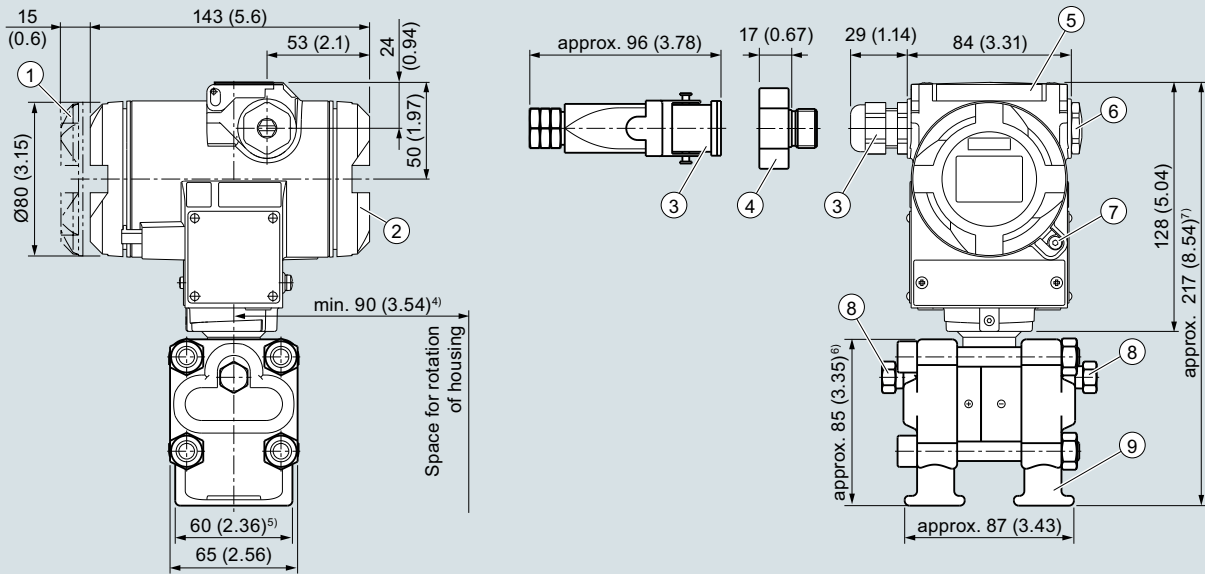
Pressure Measurement

Transmitters for applications with basic requirements (Basic)

SITRANS P310

for differential pressure and flow

1



- ① Electronic side, digital display (longer overall length for cover with window)¹⁾
- ② Terminal side¹⁾
- ③ Electrical connection: Screwed gland M20 x 1,5 or Screwed gland ½-14 NPT or Han 7D/8D device plug²⁾³⁾
- ④ Harting adapter
- ⑤ Protective cover over keys
- ⑥ Blanking plug
- ⑦ Screw cover - safety bracket (only for type of protection "Explosion-proof enclosure", not shown in the drawing)
- ⑧ Sealing screw with valve (option)
- ⑨ Process connection: ¼-18 NPT (IEC 61518)

- ¹⁾ Allow approx. 20 mm (0.79 inch) thread length to permit unscrewing
- ²⁾ Not with type of protection "Explosion-proof enclosure"
- ³⁾ Not with type of protection "FM + CSA" [IS + XP]"
- ⁴⁾ 92 mm (3.6 inch) for minimum distance to permit rotation with indicator
- ⁵⁾ 74 mm (2.9 inch) for PN ≥ 420 (MAWP ≥ 6092 psi)
- ⁶⁾ 91 mm (3.6 inch) for PN ≥ 420 (MAWP ≥ 6092 psi)
- ⁷⁾ 219 mm (8.62 inch) for PN ≥ 420 (MAWP ≥ 6092 psi)

SITRANS P310 pressure transmitters for differential pressure and flow, with process covers for vertical differential pressure lines, optional "H03", dimensional drawing, dimensions in mm (inch)



SITRANS P310 pressure transmitters for differential pressure and flow, with process covers for vertical differential pressure lines

Pressure Measurement

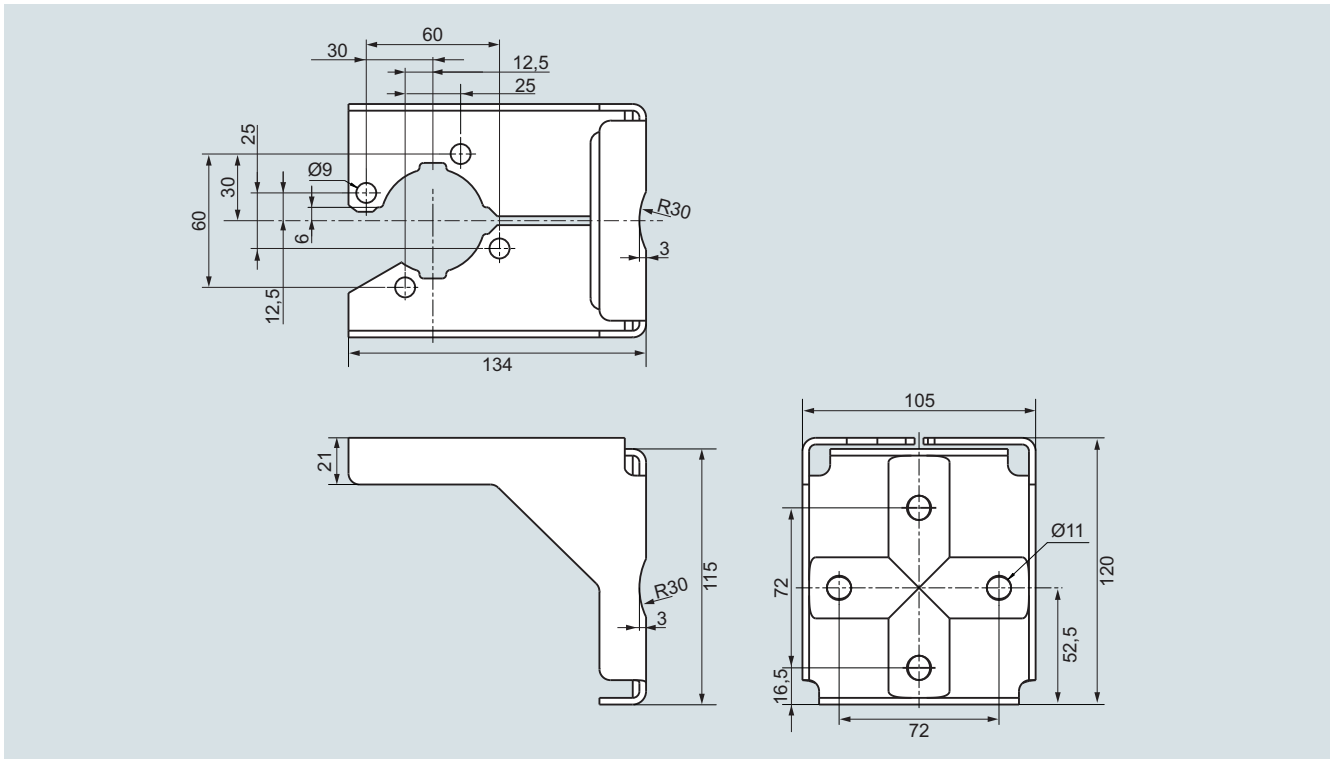
Transmitters for applications with basic requirements (Basic)
SITRANS P310

Accessories/Spare Parts

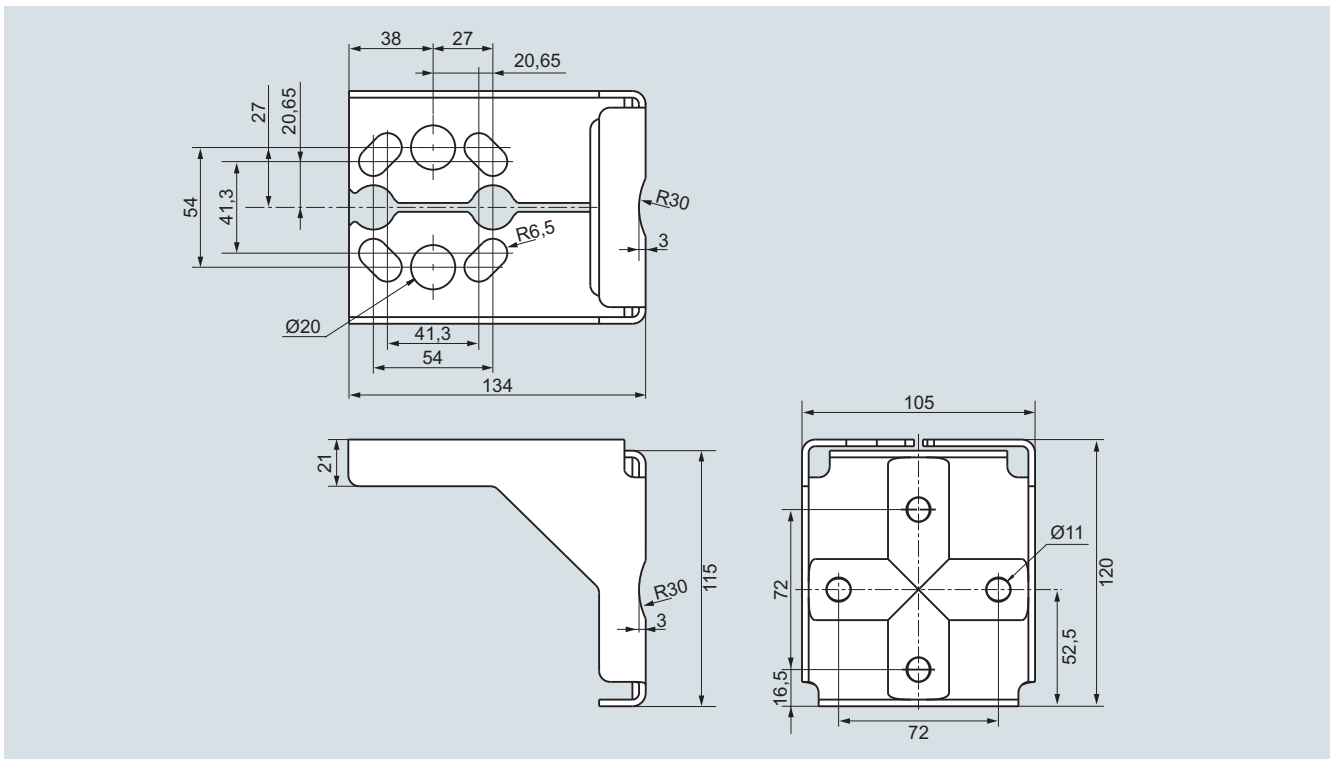
1

Selection and Ordering data	Article No.	Selection and Ordering data	Article No.
Spare parts/Accessories		Documentation	
Mounting bracket and fastening parts for pressure transmitters SITRANS P310 (7MF2033-.....-..C.) <ul style="list-style-type: none"> made of steel made of stainless steel 304/1.4301 made of stainless steel 316L/1.4404 	7MF4997-1AB 7MF4997-1AH 7MF4997-1AP	The entire documentation is available for download free-of-charge in various languages at: http://www.siemens.com/processinstrumentation/documentation	A5E35603949
Mounting bracket and fastening parts for pressure transmitters SITRANS P310 (7MF2033-.....-..A., ..B., ..D. and ..F.) <ul style="list-style-type: none"> made of steel made of stainless steel 304/1.4301 made of stainless steel 316L/1.4404 	7MF4997-1AC 7MF4997-1AJ 7MF4997-1AQ	Certificates (order only via SAP) instead of Internet download <ul style="list-style-type: none"> hard copy (to order) on DVD (to order) 	A5E03252406 A5E03252407
Mounting and fastening brackets For differential pressure transmitters with flange thread M10 SITRANS P310 (7MF2433-...) <ul style="list-style-type: none"> made of steel made of stainless steel 304/1.4301 made of stainless steel 316L/1.4404 	7MF4997-1AD 7MF4997-1AK 7MF4997-1AR	HART modem with USB interface	7MF4997-1DB
Mounting and fastening brackets For differential pressure transmitters with flange thread 7/16 -20 UNF SITRANS P310 (7MF2533-...) <ul style="list-style-type: none"> made of steel made of stainless steel 304/1.4301 made of stainless steel 316L/1.4404 	7MF4997-1AF 7MF4997-1AM 7MF4997-1AT	Power supply units see Chap. 7 "Supplementary Components".	
Cover Made of die-cast aluminum, including gasket. Compatible for Ex and non-Ex transmitters <ul style="list-style-type: none"> without window with window 	7MF4997-1BB 7MF4997-1BE		
Cover Made of stainless steel, including gasket. Compatible for Ex and non-Ex transmitters <ul style="list-style-type: none"> without window with window 	7MF4997-1BC 7MF4997-1BF		
Digital indicator Including mounting material	7MF4997-1BR		
Measuring point label <ul style="list-style-type: none"> without inscription (5 units) Printed (1 unit) Data according to Y01 or Y02, Y15, Y16 and Y99 (see "Pressure transmitters") 	7MF4997-1CA 7MF4997-1CB-Z Y...:		
Mounting screws For measuring point label, grounding and connection terminals or for display (50 units)	7MF4997-1CD		
Sealing screws (1 set = 2 units) for process flange <ul style="list-style-type: none"> made of stainless steel made of Hastelloy 	7MF4997-1CG 7MF4997-1CH		
Sealing screws with vent valve Complete (1 set = 2 units) <ul style="list-style-type: none"> made of stainless steel made of Hastelloy 	7MF4997-1CP 7MF4997-1CQ		
O-rings for process flanges made of: <ul style="list-style-type: none"> FPM (Viton) PTFE (Teflon) FEP (with silicone core, approved for food) FFPM (Kalrez, compound 4079) NBR (Buna N) 	7MF4997-2DA 7MF4997-2DB 7MF4997-2DC 7MF4997-2DD 7MF4997-2DE		
Sealing ring for process connection	see "Fittings"		

Dimensional drawings



Mounting bracket for SITRANS P310 gauge and absolute 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 P310 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)