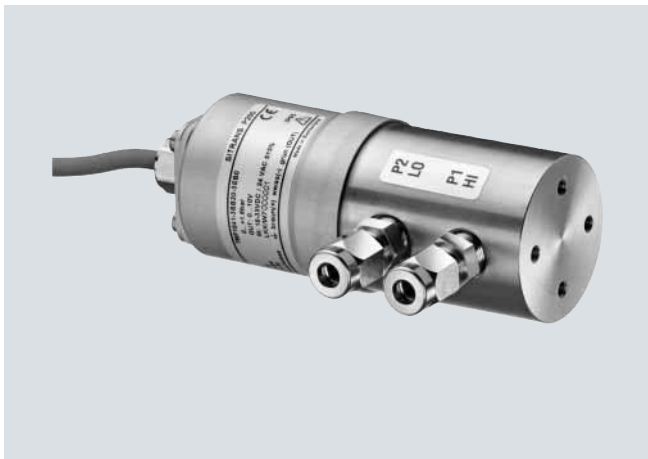


SITRANS P measuring instruments for pressure

Transmitters for gauge, absolute and differential pressure

SITRANS P250 for differential pressure

Overview



SITRANS P250 transmitter for differential pressure

The SITRANS P250 transmitter measures the differential pressure of liquids and gases.

Benefits

- High measuring accuracy
- Sturdy stainless steel enclosure
- For aggressive and non-aggressive media
- For the measurement of the differential pressure of liquids and gases
- Temperature-compensated measuring cell
- Compact design

Application

The SITRANS P250 transmitter for differential pressure is primarily used in the following industries:

- Chemical industry
- Pharmaceutical industry
- Food industry
- Mechanical engineering
- Shipbuilding
- Water supply

Design

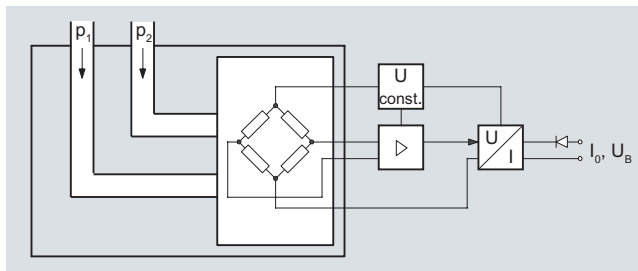
Main components:

- Stainless steel enclosure with piezo-resistive ceramic measuring cell and (temperature-compensated) electronics module.
- Process connection made of stainless steel in diverse designs (see Selection and ordering data)
- Electrical connection through connectors acc. to EN 175301-803-A and round connectors M12, as well as with permanently fixed cable

Function

The pressure transmitter measures the differential pressure of liquids and gases.

Mode of operation



SITRANS P250 pressure transmitter, function diagram

The piezo-resistive ceramic measuring cell (membrane) has a Wheatstone bridge circuit, on which the operating pressure P1 and P2 of the media acts at both ends.

The voltage output from the measuring cell is converted by an amplifier into an output current of 4 to 20 mA or an output voltage of 0 to 5 or 10 V DC.

The output current and voltage are linearly proportional to the input pressure.

Technische Daten

SITRANS P250 differential pressure transmitter	
Application	Differential pressure transmitter
	Liquids and neutral gases
Mode of operation	Measuring principle
	Piezo-resistive measuring cell (ceramic diaphragm)
Input	Measured variable
	Differential pressure
	Measuring range
	0 ... 0.1 to 0 ... 25 bar (0 ... 1.45 to 0 ... 363 psi)
	Operating pressure
	≤ 25 bar (363 psi) at a differential pressure range < 6 bar (87 psi) ≤ 50 bar (725 psi) at a differential pressure range > 10 bar (145 psi)
	Burst pressure
	1.5 x operating pressure
Output	Output signal
	• Current output signal
	4 ... 20 mA
	• Voltage output signal
	0 ... 5 V and 0 ... 10 V DC
	Load
	3-wire
	> 10 kΩ
	2-wire
	≤ (U _H - 11 V) / 0.02 A
Measuring accuracy	Dynamic behavior (at 25°C (77°F), including conformity error, hysteresis and repeatability)
	≤ 1 % of typical full-scale value, see "Measuring range" table
	Long-term drift acc. to IEC 60770
	≤ 0.5 % of full-scale value/year
	Influence of ambient temperature
	• Start of scale
	≤ 0.6 %/10 K of full-scale value (≤ 1.2 %/10 K for measuring cell 0 ... 0.1 bar (1.45 psi))
	• Full-scale value
	≤ 0.22 %/10 K of full-scale value (≤ 0.37 %/10 K for measuring cell 0 ... 0.1 bar (1.45 psi))
	Dynamic behavior
	Suitable for static and dynamic measurements
	Response time T ₉₉
	< 5 ms
	Load variation
	< 50 Hz

SITRANS P measuring instruments for pressure

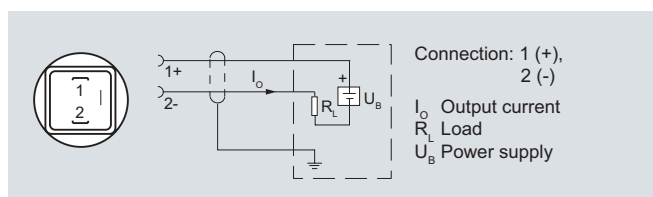
Transmitters for gauge, absolute and differential pressure

SITRANS P250 for differential pressure

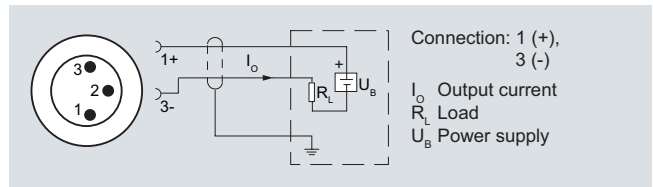
Conditions of use	
Ambient conditions	
• Temperature of medium	-15 ... +85 °C (5 ... 185 °F)
• Ambient temperature	-15 ... +85 °C (5 ... 185 °F)
• Storage temperature	-40 ... +85 °C (-40 ... +185 °F)
Degree of protection acc. to EN 60529	IP65
Mounting position	Any
Mounting	Mounting bracket, included in delivery
Design	
Weight	Approx. 430 g (approx. 0.95 lb)
Enclosure material	Stainless steel 1.4305/AISI 303
Electrical connection	<ul style="list-style-type: none"> • Plug EN 175301-803-A • Circular plug EN 60130-9 • Cable 1.5 m
Process connection	<ul style="list-style-type: none"> • Hose sleeve Ø 4 mm/6 mm • Pipe union Ø 6 mm/8 mm • Male thread 7/16-20 UNF, G1/8 • Female thread 1/8-27 NPT • (Standard), G1/8
Wetted parts materials	Stainless steel 1.4305/AISI 303, CuZn nickel-plated
• Process connection	Approx. 430 g (approx. 0.95 lb)
• Diaphragm	Ceramic Al ₂ O ₃ (96 %)
• Sealing material	FPM (standard), EPDM, NBR, MVQ, CR
Power supply U_H	
Terminal voltage on pressure transmitter	
• 2-wire, 4 ... 20 mA	11 ... 33 V DC
• 3-wire, 0 ... 5 V DC	11 ... 33 V DC/ 24 V AC ±15 %
• 3-wire, 0 ... 10 V DC	18 ... 33 V DC/ 24 V AC ±15 %
Current consumption at nominal pressure	
• 2-wire	< 20 mA
• 3-wire	< 5 mA
Protection against polarity reversal	Protected against short-circuit and polarity reversal. Each connection against the other with max. supply voltage.
Certificates and approvals	
Approval	CE conformity

Measuring range		Max. permissible operating pressure (on either side)	Burst pressure	Max. permissible operating pressure (on one side)	Accuracy
[bar]	[psi]				
0 ... 0.1	0 ... 1.45	25 bar (363 psi)	37,5 bar (544 psi)	0.6 bar (8.7 psi)	≤ 1,0 %
0 ... 0.2	0 ... 2.9	25 bar (363 psi)	37,5 bar (544 psi)	0.6 bar (8.7 psi)	≤ 1,0 %
0 ... 0.25	0 ... 3.63	25 bar (363 psi)	37,5 bar (544 psi)	0.6 bar (8.7 psi)	≤ 0,5 %
0 ... 0.3	0 ... 4.35	25 bar (363 psi)	37,5 bar (544 psi)	0.6 bar (8.7 psi)	≤ 0,5 %
0 ... 0.4	0 ... 5.8	25 bar (363 psi)	37,5 bar (544 psi)	1.2 bar (17.4 psi)	≤ 0,8 %
0 ... 0.5	0 ... 7.25	25 bar (363 psi)	37,5 bar (544 psi)	1.2 bar (17.4 psi)	≤ 0,5 %
0 ... 0.6	0 ... 8.7	25 bar (363 psi)	37,5 bar (544 psi)	1.2 bar (17.4 psi)	≤ 0,5 %
0 ... 1.0	0 ... 14.5	25 bar (363 psi)	37,5 bar (544 psi)	2 bar (29 psi)	≤ 0,5 %
0 ... 1.6	0 ... 23.2	25 bar (363 psi)	37,5 bar (544 psi)	3.2 bar (46.4 psi)	≤ 0,5 %
0 ... 2.5	0 ... 36.3	25 bar (363 psi)	37,5 bar (544 psi)	5 bar (72.5 psi)	≤ 0,5 %
0 ... 4	0 ... 58	25 bar (363 psi)	37,5 bar (544 psi)	8 bar (116 psi)	≤ 0,5 %
0 ... 6	0 ... 87	25 bar (363 psi)	37,5 bar (544 psi)	12 bar (174 psi)	≤ 0,5 %
0 ... 10	0 ... 145	50 bar (725 psi)	75 bar (1088 psi)	20 bar (290 psi)	≤ 0,5 %
0 ... 16	0 ... 232	50 bar (725 psi)	75 bar (1088 psi)	32 bar (464 psi)	≤ 0,5 %
0 ... 25	0 ... 363	50 bar (725 psi)	75 bar (1088 psi)	50 bar (725 psi)	≤ 0,5 %

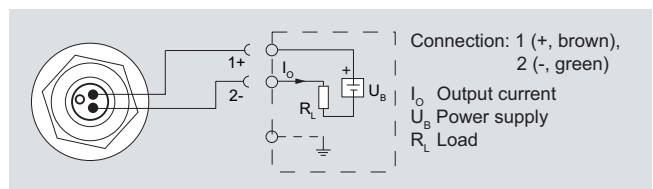
Schematics



Connection with current output 4 to 20 mA and plug to EN 175301-803-A



Connection with current output 4 to 20 mA and round connector



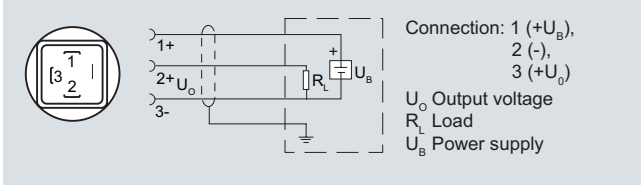
Connection with current output 4 to 20 mA and permanently fixed cable

SITRANS P measuring instruments for pressure

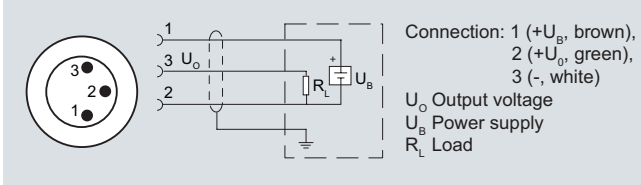
Transmitters for gauge, absolute and differential pressure

SITRANS P250 for differential pressure

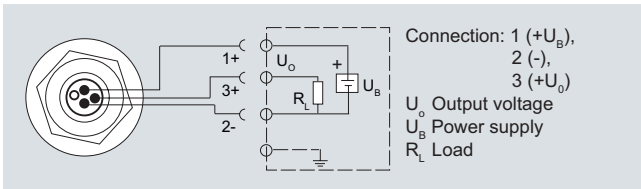
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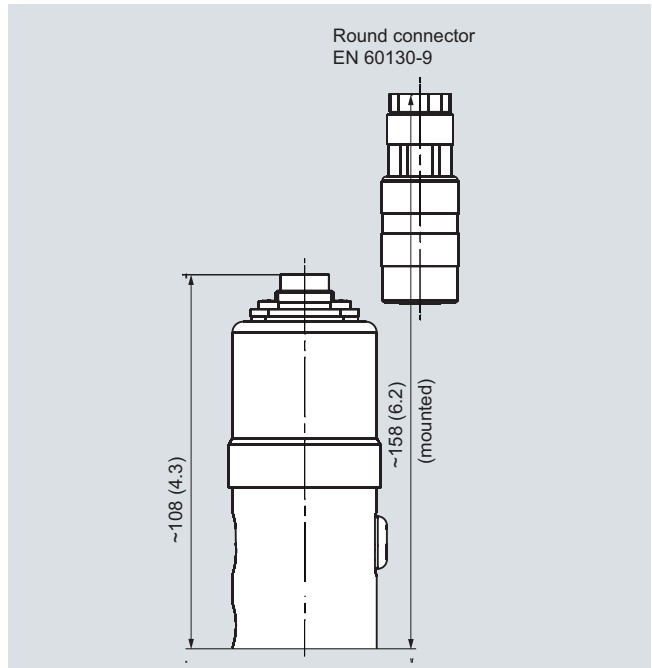
Connection with voltage output 0 to 5 V DC (0 to 10 V DC) and plug to EN 175301-803-A



Connection with voltage output 0 to 5 V DC (0 to 10 V DC) and round connector

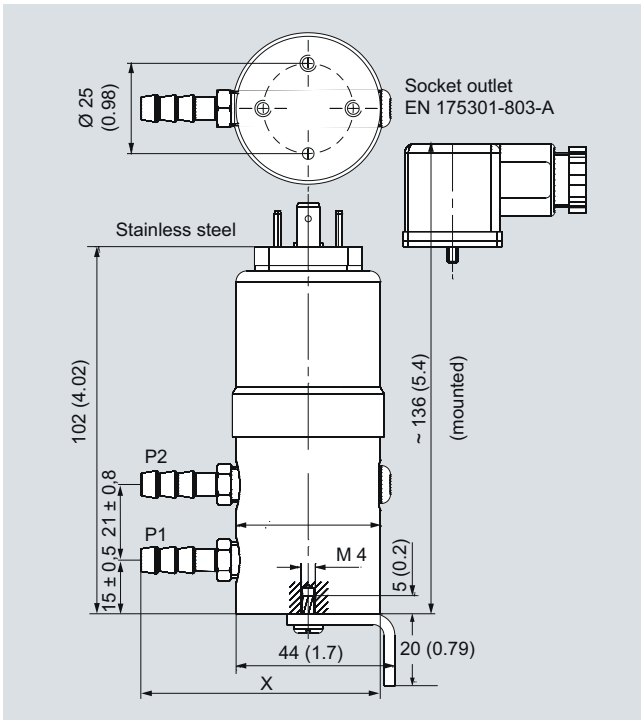


Connection with voltage output 0 to 5 V DC (0 to 10 V DC) and permanently fixed cable

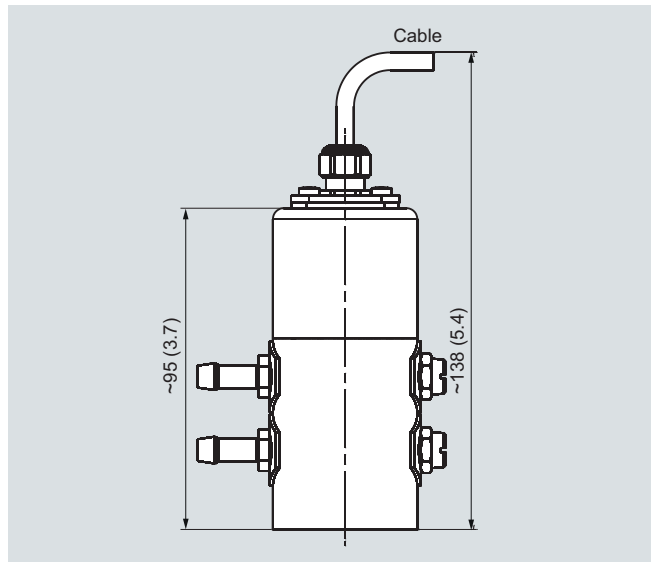


SITRANS P250 differential pressure transmitter with round connector to EN 60130-9, dimensions in mm (inch)

Dimensional drawings



SITRANS P250 differential pressure transmitter with socket outlet to EN 175301-803-A, dimensions in mm (inch)

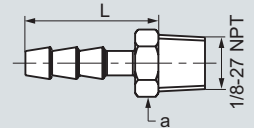
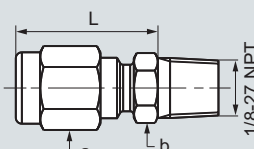
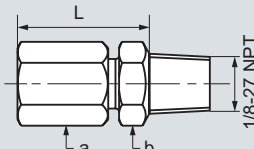
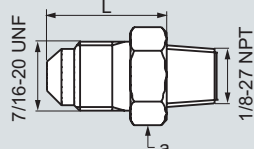
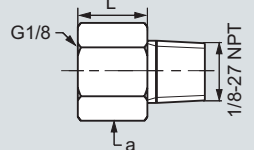
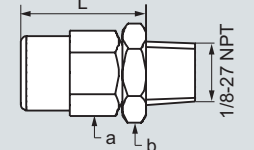


SITRANS P250 differential pressure transmitter with cable, dimensions in mm (inch)

SITRANS P measuring instruments for pressure

Transmitters for gauge, absolute and differential pressure

SITRANS P250 for differential pressure

Process connections	Ø		Width across flats	L		X	
	[mm]	[inch]		[mm]	[inch]	[mm]	[inch]
 <p>Hose connection for hose (CuZn nickel-plated, PVDF)</p>	4	0.16	a = 10	20	0.79	61	2.40
	6	0.24	a = 10	25	0.99	66	2.60
 <p>Pipe union with screw-in nipple for outer pipe (CuZn nickel-plated)</p>	6	0.24	a = 10 b = 12	24	0.95	65	2.56
	8	0.32	a = 12 b = 14	25	0.99	66	2.60
 <p>Pipe union with screw-in nipple for outer pipe (stainless steel 1.4305/AISI 303)</p>	6	0.24	a = 10 b = 12	24	0.95	65	2.56
	8	0.32	a = 12 b = 14	26	1	67	2.64
 <p>Male thread G1/8 7/16-20 UNF (CuZn nickel-plated)</p>	-	-	a = 14	18	0.71	59	2.32
 <p>Female thread G1/8 (stainless steel 1.4305/AISI 303)</p>	-	-	a = 14	12	0.47	53	2
 <p>Male thread G1/8 (CuZn nickel-plated)</p>	-	-	a = 10 b = 12	20	0.79	61	2.40

SITRANS P measuring instruments for pressure

Transmitters for gauge, absolute and differential pressure

SITRANS P250 for differential pressure

Selection and ordering data

Order No.

Order code

SITRANS P 250 pressure transmitter for differential pressure

7MF1641 - 0 - 0

Accuracy ≤ 1 %, wetted parts ceramic/stainless steel 1.4301,
scope of delivery: transmitter, mounting bracket and instruction manual, without explosion protection

Measuring range

0 ... 0.1 bar	(0 ... 1.45 psi)	▶	3AA
0 ... 0.2 bar	(0 ... 2.90 psi)	▶	3AC
0 ... 0.25 bar	(0 ... 3.63 psi)	▶	3AD
0 ... 0.3 bar	(0 ... 5.35 psi)	▶	3AE
0 ... 0.4 bar	(0 ... 5.80 psi)	▶	3AF
0 ... 0.5 bar	(0 ... 7.25 psi)	▶	3AG
0 ... 0.6 bar	(0 ... 8.70 psi)	▶	3AH
0 ... 1.0 bar	(0 ... 14.5 psi)	▶	3BA
0 ... 1.6 bar	(0 ... 23.2 psi)	▶	3BB
0 ... 2.5 bar	(0 ... 36.3 psi)	▶	3BD
0 ... 4.0 bar	(0 ... 58.0psi)	▶	3BE
0 ... 6.0 bar	(0 ... 87.0 psi)	▶	3BG
0 ... 10.0 bar	(0 ... 145 psi)	▶	3CA
0 ... 16.0 bar	(0 ... 232 psi)	▶	3CB
0 ... 25.0 bar	(0 ... 363 psi)	▶	3CD

Output signal

4 ... 20 mA	▶	0
0 ... 5 V DC		1
0 ... 10 V DC		2

Electrical connection

Plug acc. to EN 175 301-803-A (suitable coupling included in scope of delivery)	▶	1
Round connector acc. to EN 60139-9		2
Cable 1.5 m with cable gland		3

Process connection

Without connections, female thread 1/8-27 NPT	▶	A
Hose connection		B
• CuZn nickel-plated, for hose Ø 4 mm		C
• CuZn nickel-plated, for hose Ø 6 mm		D
• PVDF, for hose Ø 6 mm		E
Pipe union		F
• CuZn nickel-plated, for pipe Ø 6 mm		G
• Stainless steel 1.4304, for pipe Ø 6 mm		H
• CuZn nickel-plated, for pipe Ø 8 mm		L
• Stainless steel 1.4304, for pipe Ø 8 mm		M
Male thread, 7/16-20 UNF (CuZn nickel-plated)		N
Adapter		
• Inner, G1/8 (stainless steel), for pipe Ø 6 mm		
• Outer, G1/8 (stainless steel), with union nut, for pipe Ø 6 mm		

sealing material

Fluoro rubber (Viton/FPM)	▶	A
Ethylene propylene diene monomer rubber (EPDM)		B
Nitrile butadiene rubber (NBR)		C
Silicone rubber (MVQ)		D
Neoprene (CR)		E

Further designs

Order Code

Please add "-Z" to Order No. and specify Order code(s).

Quality inspection certificate (Factory calibration) to IEC 60770-2 supplied

C11

▶ Available ex stock

2