

Measuring instruments for pressure

SITRANS P transmitters for pressure and absolute pressure

Z series

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Fig. 1/1 Pressure transmitters 7MF1562 and 7MF1563

Application

The transmitter 7MF1562 is used to measure the relative pressure of gases, liquids and steam, the transmitter 7MF1563 to measure the absolute and relative pressures or the level of liquids and gases.

They are used in the chemical, pharmaceutical and food industries, in mechanical engineering, shipbuilding, water supply and conservation etc.

An application example for the 7MF1562 is the measurement of compressed air containing oil in compressors or compressor stations.

Design

Transmitter 7MF1563 (< 1 bar (< 14.5 psi))

- The transmitter 7MF1563 (< 1 bar (< 14.5 psi)) consists of a piezo-resistive measuring cell with stainless steel diaphragm and an electronics board, fitted together in a stainless steel housing.
- The transmitter has a process connection G $\frac{1}{2}$ A (male thread) to DIN EN 837 made of stainless steel.

Transmitters 7MF1562 and 7MF1563 (≥ 1 bar (≥ 14.5 psi))

- The transmitters 7MF1562 and 7MF1563 (≥ 1 bar (≥ 14.5 psi)) consist of a thin-film cell with ceramic diaphragm, which can also be used for corrosive media, and an electronics board, fitted together in a brass housing (7MF1562) or stainless steel housing (7MF1563, ≥ 1 bar (≥ 14.5 psi)).
- The transmitters have a process connection G $\frac{1}{2}$ A (male thread) or G1/8A (female thread) to DIN EN 837 made of brass (7MF1562) or stainless steel (7MF1563, ≥ 1 bar (≥ 14.5 psi)).

The electrical connection for all types is via a plug (DIN 43 650) with Pg 9 cable inlet.

Mode of operation

Transmitter 7MF1563 (< 1 bar (< 14.5 psi))

- The silicon measuring cell of the transmitter 7MF1563 (< 1 bar (< 14.5 psi)) has a piezo-resistive bridge on which the operating pressure is transmitted via silicone oil and a stainless steel seal diaphragm.

Transmitters 7MF1562 and 7MF1563 (≥ 1 bar (≥ 14.5 psi))

- The transmitters 7MF1562 and 7MF1563 (≥ 1 bar (≥ 14.5 psi)) have a thin-film strain gauge which is mounted on a ceramic diaphragm.

Every measuring cell is temperature-compensated.

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

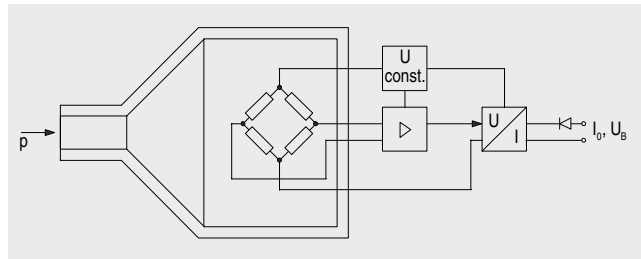


Fig. 1/2 Pressure transmitters 7MF1562 and 7MF1563, mode of operation

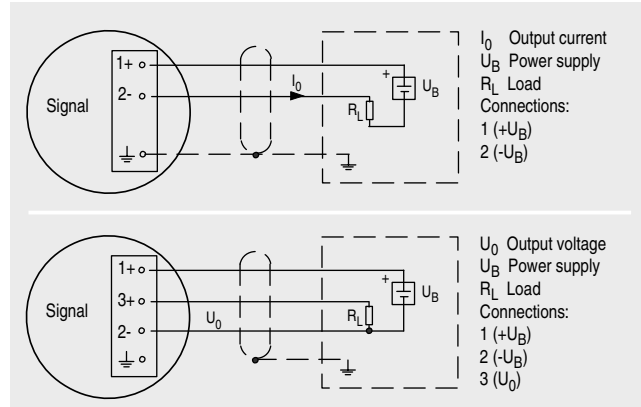


Fig. 1/3 Pressure transmitters 7MF1562 and 7MF1563 with current output (top) and 7MF1563 with voltage output (bottom), connection diagram

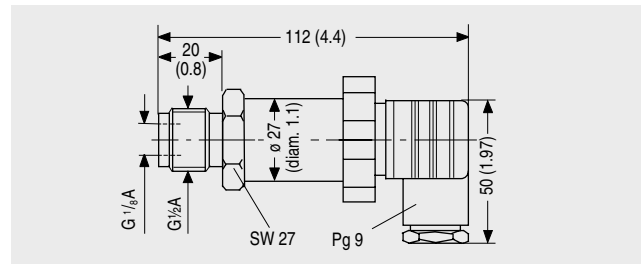


Fig. 1/4 Pressure transmitter 7MF1562, dimensions in mm (inches)

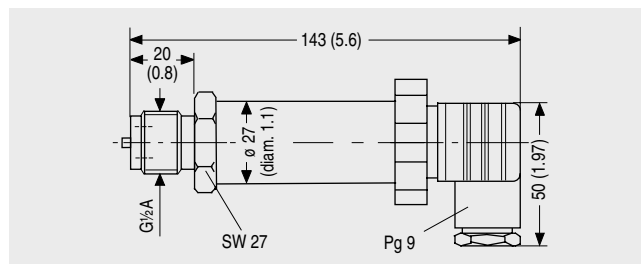


Fig. 1/5 Pressure transmitter 7MF1563 for measuring range < 1 bar (< 14.5 psi), dimensions in mm (inches)

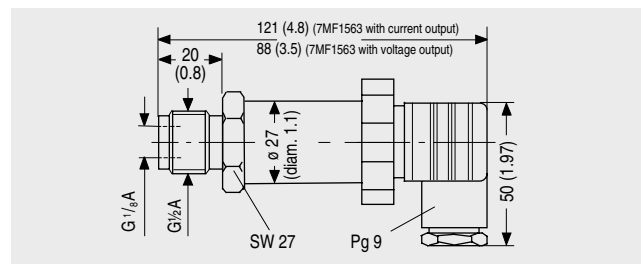


Fig. 1/6 Pressure transmitter 7MF1563 for measuring range ≥ 1 bar (≥ 14.5 psi), dimensions in mm (inches)

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Technical data

	7MF1562	7MF1563	
		< 1 bar (< 14.5 psi)	≥ 1 bar (≥ 14.5 psi)
Application		See page 1/3	
Mode of operation and system design		See page 1/3	
Measuring principle	Thin-film strain gauge	Piezo-resistive	Thin-film strain gauge
Input			
Measured variable	Pressure	Pressure and absolute pressure	
Measuring range	0 to 25 bar (0 to 363 psi)	0 to 400 bar (0 to 5802 psi) for pressure 0 to 16 bar (0 to 232 psi) for absolute pressure	
Output			
Current output signal	4 to 20 mA		
• Load	$(U_B - 10 \text{ V}) / 0.02 \text{ A}$		
Voltage output signal	-	-	DC 0 to 10 V
• Load	-	-	≥ 10 kΩ
Characteristic	Linear rising		
Accuracy			
Error in measurement (at 25 °C (77 °F), including conformity error, hysteresis and repeatability)	0.5% of full-scale value - typical	0.25% of full-scale value - typical	
Response time T_{99}	< 0.1 s		
Long-term drift			
• Start-of-scale value	0.3% of full-scale value/year - typical	0.25% of full-scale value/year	
• Span	0.3% of full-scale value/year - typical	0.25% of full-scale value/year	
Ambient temperature effect			
• Start-of-scale value	0.3%/10 K (0.3%/18 °F) of full-scale value - typical	0.25%/10 K (0.25%/18 °F) of full-scale value	
• Span	0.3%/10 K (0.3%/18 °F) of full-scale value - typical	0.25%/10 K (0.25%/18 °F) of full-scale value	
Vibration influence	0.05%/g to 500 Hz in all directions (to IEC 68-2-64)		
Power supply influence	0.01%/V		
Rated operating conditions			
Ambient conditions			
• Ambient temperature	-25 to +85 °C (-13 to +185 °F)		
• Storage temperature	-50 to +100 °C (-58 to +212 °F)		
• Degree of protection (to EN 60 529)	IP 65		
• Electromagnetic compatibility			
- Emitted interference	To EN 61 326 and NAMUR NE 21		
- Noise immunity	To EN 61 326 and NAMUR NE 21		
Medium conditions			
• Process temperature limits	-30 to +120 °C (-22 to +248 °F)		
• Maximum working pressure	See ordering data on page 1/5		
Design			
Weight (without options)	Approx. 0.2 kg (0.44 lb)	Approx. 0.25 kg (0.55 lb)	
Dimensions	See dimensional drawings on page 1/3		
Material			
• Wetted parts materials			
- Measuring cell	Al ₂ O ₃ - 96%	Stainless steel, mat. No. 1.4571/316Ti	Al ₂ O ₃ - 96%
- Process connection	Brass, mat. No. 2.0402	Stainless steel, mat. No. 1.4571/316Ti	
- O-ring	Viton		
• Non-wetted parts materials			
- Housing	Brass, mat. No. 2.0402	Stainless steel, mat. No. 1.4571/316Ti	
- Plug connector	Plastic housing, to DIN 43 650, form A		
Process connection	G $\frac{1}{2}$ A - male thread G $\frac{1}{8}$ A - female thread	G $\frac{1}{2}$ A - male thread	G $\frac{1}{2}$ A - male thread G $\frac{1}{8}$ A - female thread
Electrical connection (to DIN 43 650)	Pg 9		
Power supply			
Terminal voltage on transmitter			
• For current output	DC 10 to 36 V		
• For voltage output	-	-	DC 15 to 36 V

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Technical data (continued)

	7MF1562	7MF1563
		< 1 bar (14.5 psi) ≥1 bar (≥14.5 psi)
Certificates and approvals		
Classification according to pressure equipment directive (DGRL 97/23/EC):		For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)
Explosion protection		
• Intrinsically-safe version (only with current output)	-	
- Intrinsic safety "i"	-	TÜV 02 ATEX 1953X
- Identification	-	II 1/2G EEx ia IIC T4
- Permissible ambient temperature	-	- 25 to +85 °C (-13 to +185 °F)
- Connection to certified intrinsically-safe circuits with maximum values	-	U _i = 30 V, I _i = 100 mA, P _i = 750 mW
- Effective internal inductance/capacitance	-	L _i = 2.2 nH/C _i = 37.9 nF
Lloyd's Register of Shipping		
• Certificate No.	-	03/30003

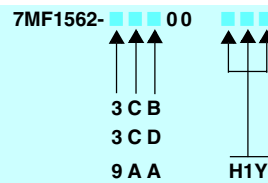
Ordering data

Transmitter 7MF1562, for pressure
Two-wire system, rising characteristic

Measuring range	Max. working pressure
0 to 16 bar (0 to 232 psi)	32 bar (464 psi)
0 to 25 bar (0 to 363 psi)	64 bar (928 psi)

Other version; add Order code and plain text:
for measuring range ≥ 1 bar (≥ 14.5 psi), measuring range: ... to ... bar (psi)

Order No. Order code



Ordering data

Transmitter 7MF1563, for pressure and absolute pressure
Two-wire or three-wire system, rising characteristic

Measuring range	Max. working pressure	Pressure	Absolute pressure
0 to 100 mbar (0 to 1.45 psi)	0.6 bar (8.7 psi)	▶ 3AA	-
0 to 160 mbar (0 to 2.32 psi)	0.6 bar (8.7 psi)	▶ 3AB	-
0 to 250 mbar (0 to 3.63 psi)	1 bar (14.5 psi)	▶ 3AC	-
0 to 400 mbar (0 to 5.80 psi)	1 bar (14.5 psi)	▶ 3AD	-
0 to 600 mbar (0 to 8.70 psi)	3 bar (43.5 psi)	▶ 3AG	▶ 5AG

Other version
for measuring range < 1 bar (< 14.5 psi).
Add Order code and plain text:
measuring range: ... to ... mbar (psi)

0 to 1 bar (0 to 14.5 psi)	7 bar (102 psi)	▶ 3BA	▶ 5BA
0 to 1.6 bar (0 to 23.2 psi)	7 bar (102 psi)	▶ 3BB	▶ 5BB
0 to 2.5 bar (0 to 36.3 psi)	12 bar (174 psi)	▶ 3BD	▶ 5BD
0 to 4 bar (0 to 58.0 psi)	12 bar (174 psi)	▶ 3BE	▶ 5BE
0 to 6 bar (0 to 87.0 psi)	25 bar (363 psi)	▶ 3BG	▶ 5BG
0 to 10 bar (0 to 145 psi)	25 bar (363 psi)	▶ 3CA	▶ 5CA
0 to 16 bar (0 to 232 psi)	50 bar (725 psi)	▶ 3CB	▶ 5CB
0 to 25 bar (0 to 363 psi)	120 bar (1740 psi)	▶ 3CD	-
0 to 40 bar (0 to 580 psi)	120 bar (1740 psi)	▶ 3CE	-
0 to 60 bar (0 to 870 psi)	250 bar (3626 psi)	▶ 3CG	-
0 to 100 bar (0 to 450 psi)	250 bar (3626 psi)	▶ 3DA	-
0 to 160 bar (0 to 2320 psi)	500 bar (7252 psi)	▶ 3DB	-
0 to 250 bar (0 to 3626 psi)	500 bar (7252 psi)	▶ 3DD	-
0 to 400 bar (0 to 5802 psi)	600 bar (8702 psi)	▶ 3DE	-

Other version
for measuring range ≥ 1 bar (≥ 14.5 psi).
Add Order code and plain text:
measuring range: ... to ... bar (psi)

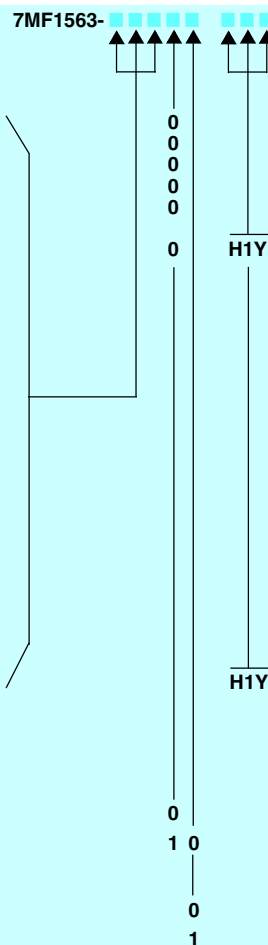
Output signal

- 4 to 20 mA; two-wire system; power supply DC 10 to 36 V ▶
- 0 to 10 V; three-wire system; power supply DC 15 to 36 V ▶

Explosion protection

- Without ▶
- With explosion protection EEx ia IIC T4 ▶

Order No. Order code



▶ Available ex stock