MPS series (submersible sensor)

Overview

SITRANS P pressure transmitters, MPS series (submersible sensor)

SITRANS P pressure transmitters, MPS series, are submersible sensors for hydrostatic level measurements.

The pressure transmitters of the MPS series are available for various measuring ranges and with explosion protection as an option.

A junction box and a cable hanger are available as accessories for simple installation.

Benefits

- Compact design
- Simple installation
- Small error in measurement (0.3%)
- Degree of protection IP 68

Application

SITRANS P pressure transmitters, MPS series, are used in the following branches for example:

- Oil and gas industries
- Shipbuilding
- Water supply

Design

SITRANS P pressure transmitters, MPS series, have a flush-mounted piezo-resistive sensor with stainless steel diaphragm.

These pressure transmitters are equipped with an electronic circuit fitted together with the sensor in a stainless steel housing. The cable also contains a strength cord and vent pipe.

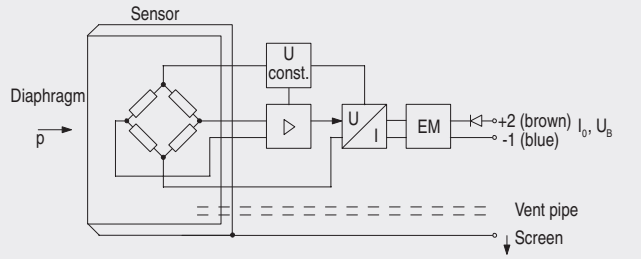
The diaphragm is protected against external influences by a protective cap.

The sensor, electronic circuit and cable are sealed in a common housing of small dimensions.

The pressure transmitter is temperature-compensated for a wide temperature range.

Function

SITRANS P pressure transmitters, MPS series, are for measuring the liquid levels in wells, tanks, channels and dams.



SITRANS P pressure transmitters, MPS series, mode of operation and wiring diagram

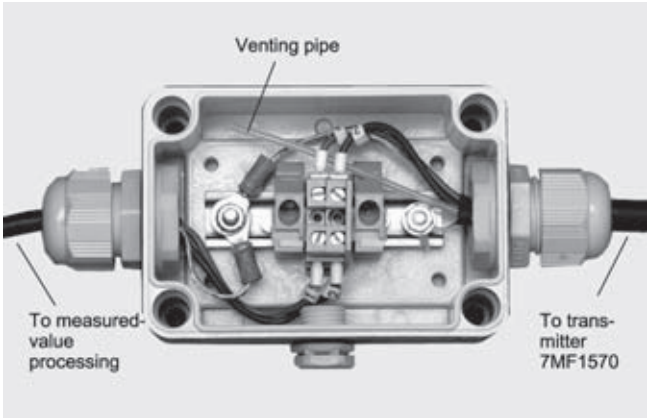
On one side of the sensor, the diaphragm is exposed to the hydrostatic pressure which is proportional to the submersion depth. This pressure is compared with atmospheric pressure. Pressure compensation is carried out using the vent pipe present in the connection cable.

The hydrostatic pressure of the liquid column acts on the sensor diaphragm, and transmits the pressure to the piezo-resistive bridge in the sensor.

The output voltage of the sensor is applied to the electronic circuit where it is converted into an output current of 4 to 20 mA.

The cable of the 7MF1570 transmitter must always be connected in the supplied junction box. The junction box has to be installed near the measuring point.

Integration



Junction box 7MF1570-8AA, opened

Transmitters for hydrostatic level

MPS series (submersible sensor)

Measuring point setup, in principle

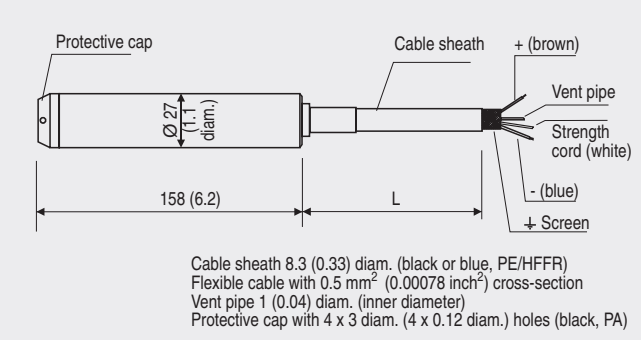
Technical specifications

SITRANS P pressure transmitters, MPS series (submersible sensor)	
Mode of operation	
Measuring principle	Piezo-resistive
Input	
Measured variable	Pressure
Measured range	Maximum working pressure
• 0 ... 2 mH_20 (0 ... 6 ftH_20)	• 1.4 bar (20.3 psi) (corresponds to 14 mH_20 (42 ftH_20))
• 0 ... 4 mH_20 (0 ... 12 ftH_20)	• 1.4 bar (20.3 psi) (corresponds to 14 mH_20 (42 ftH_20))
• 0 ... 6 mH_20 (0 ... 18 ftH_20)	• 3.0 bar (43.5 psi) (corresponds to 30 mH_20 (90 ftH_20))
• 0 ... 10 mH_20 (... 30 ftH_20)	• 3.0 bar (43.5 psi) (corresponds to 30 mH_20 (90 ftH_20))
• 0 ... 20 mH_20 (0 ... 60 ftH_20)	• 6.0 bar (87.0 psi) (corresponds to 60 mH_20 (180 ftH_20))
Output	
Output signal	4 ... 20 mA
Measuring accuracy	
Error in measurement (including non-linearity, hysteresis and repeatability, at 25 °C (77 °F))	0.3% of full-scale value (typical)
Influence of ambient temperature	
Zero and span	
• 1 ... 6 mH_2O (3 ... 18 ftH_2O)	0.45%/10 K (0.45%/18 °F) of full-scale value
• ≥ 6 mH_20 (≥ 18 ftH_2O)	0.3%/10 K (0.3%/18 °F) of full-scale value
Long-term drift	
Zero and span	
• 1 ... 6 mH_2O (3 ...18 ftH_2O)	0.25% of full-scale value
• ≥ 6 mH_20 (≥ 18 ftH_2O)	0.2% of full-scale value
Rated conditions	
Ambient conditions	
• Operating temperature	-10 ... +80 °C (+14 ... +176 °F)
• Storage temperature	-40 ... +100 °C (-40 ... +212 °F)
Degree of protection to DIN EN 60529	IP68
Design	
Weight	
• Pressure transmitter	≈ 0.4 kg (≈ 0.88 lb)
• Cable	0.08 kg/m (≈ 0.054 lb/ft)
Electrical connection	Cable with 2 conductors with screen and vent pipe, strength cord (max. 300 N (67.44 lbf))
Material	
• Sensor	Stainless steel, mat. No. 1.4571/316 Ti
• Housing	Stainless steel, mat. No. 1.4571/316 Ti
• Gasket	Viton
• Connecting cable	PE/HFFR sheath (non-halogen)
Power supply	
Terminal voltage on pressure transmitter (U_B)	10 ... 36 V DC
Certificate and approvals	
The transmitter is not subject to the pressure equipment directive (DGRL 97/23/EC)	
Explosion protection	
• Intrinsic safety "i"	TÜV 03 ATEX 2004X
- Identification	Ex II 1 G EEx ia IIC T4

Junction box	
Application	For connecting the transmitter cable
Design	
Weight	0.2 kg (0.44 lb)
Electrical connection	2x 3-way (28 ... 18 AWG)
Cable inlet	2x Pg 13.5
Enclosure material	Polycarbonate
Vent pipe for atmospheric pressure	
Screw for cable strength cord	
Rated conditions	
Degree of protection to DIN EN 60529	IP 54

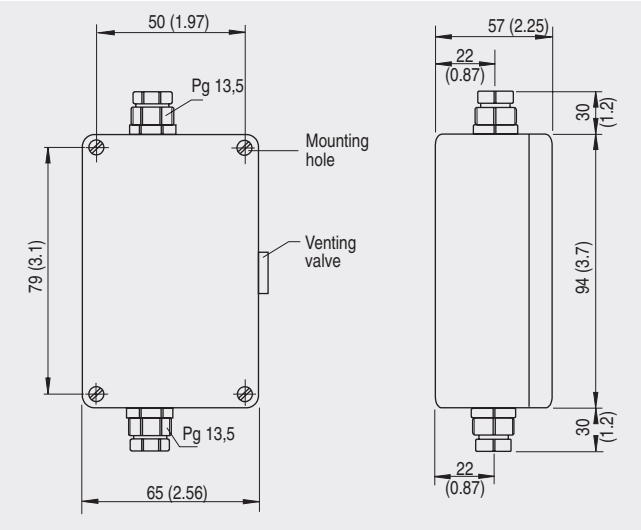
Cable hanger	
Application	For mounting the transmitter
Design	
Weight	0.16 kg (0.35 lb)
Material	Galvanized steel, polyamide

Dimensional drawings

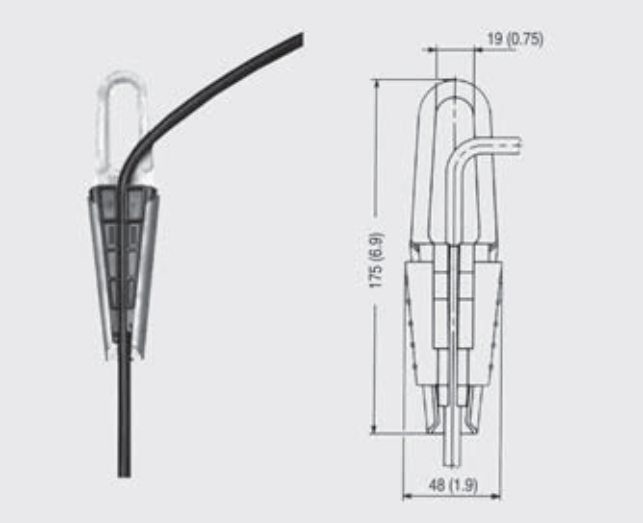


Cable sheath 8.3 (0.33) diam. (black or blue, PE/HFFR)
Flexible cable with 0.5 mm² (0.00078 inch²) cross-section
Vent pipe 1 (0.04) diam. (inner diameter)
Protective cap with 4 x 3 diam. (4 x 0.12 diam.) holes (black, PA)

SITRANS P pressure transmitters, MPS series, dimensions in mm (inch)



Junction box, dimensions in mm (inch)



Cable hanger, dimensions in mm (inch)

Selection and Ordering data

Order No.

SITRANS P pressure transmitters for pressure, MPS series (submersible sensor) — **7MF1570-1 ■ A0 ■**

2-wire system

Note: Junction box and cable hanger included in delivery

Measured range	Cable length L		
0 ... 2 mH_2O	10 m	▶	C
0 ... 4 mH_2O	10 m	▶	D
0 ... 6 mH_2O	25 m	▶	E
0 ... 10 mH_2O	25 m	▶	F
0 ... 20 mH_2O	25 m	▶	G
0 ... 6 ftH_2O	32 ft		K
0 ... 12 ftH_2O	32 ft		L
0 ... 18 ftH_2O	82 ft		M
0 ... 30 ftH_2O	82 ft		N
0 ... 60 ftH_2O	82 ft		P
Special measuring range/Special cable length [1]			X

Specify measuring range and cable length in plain text

Explosion protection

- without — 1
- with, type of protection "Intrinsic safety" (EEx ia IIC T4) — 2

Accessories (as spare parts)

Junction box — **7MF1570-8AA**
for connecting the transmitter cable

Cable hanger — **7MF1570-8AB**
for mounting the pressure transmitter

▶ Available ex stock

Power supply units see "SITRANS I power supply units and input isolators".

1) Special measuring ranges between 0 ... 1 mH_2O (0 ... 3 ftH_2O) and 0 ... 170 mH_2O (0 ... 510 ftH_2O) and special cable lengths up to 200 m (600 ft) are possible. With Ex versions the max. special cable length is 50 m (150 ft).