

Submersible Level Transmitter

DISCRIPTION

Submersible Level Transmitters make use of high-performance silicon piezo-resistive pressure sensor as sensing element. The transmitter measures the vertical depth of a column of liquid and converts this depth into the standard amplified analog signals. Our Submersible Level Transmitters feature a fully-welded structure and are made from 316 stainless steel. The cable used in these transmitters is anti-oil, water-proof and electromagnetic effect shielded PVC cable with vent hose for atmospheric pressure in. The environment protection grade of these transmitters is IP 68.

Submersible Level Transmitters are of integrated structure with sensing element and signal conditioning circuit located and sealed in the probe housing. In application the transmitter is merged in the measured liquid. No external adjustment or calibration is needed



WORKING PRINCIPLE

Low range pressure transmitters are integrated with a pressure sensor (PS). In application, a to-be-measured working pressure applied to the pressure diaphragm of this PS through a pressure port, causing a mechanical deformation of the diaphragm. This deformation is proportional to the working pressure: the higher the working pressure, the bigger the deformation.

The sensing element of the PS is a silicon sensor. This sensor is encapsulated in an oil-filled stainless steel case sealed with a pressure diaphragm. In application, a working pressure applied to the diaphragm is transferred from the diaphragm to the sensor by the filled oil. This structure provides a stable performance and long-term service life.

The sensor possesses a silicon membrane with four piezo-resistors diffused in the surface of this membrane. These four resistors are connected to form a balanced Wheatstone bridge circuit.

A working pressure is transferred to the silicon membrane, while a reference pressure (atmospheric pressure or/and a sealed pressure for gauge pressure measurement, vacuum for absolute pressure measurement) is applied to the other side of the silicon membrane through another mechanical channel. The pressure difference between the working pressure and reference pressure causes a deformation of the silicon membrane, and this deformation is proportional to the working pressure.

The piezo-resistive effect, the deformation causes resistance changes of the four resistors, resulting in unbalance of the Wheatstone bridge circuit. The unbalance of the Wheatstone bridge circuit leads to an electrical output signal and this electrical output signal is proportional to the working pressure.

PRIMARY AREA OF APPLICATION

Features:

Piezo-resistive technology; Measuring ranges: 0.2 to 200 mH₂O

Accuracy 0.25% FS0, 0.5% FS0 (standard)

Output : 4~20 mA

Housing environmental protection : IP 68

| Characteristics | Unit | Description |
|--------------------------|----------------------------|--|
| Pressure Ranges | mH ₂ O | 0~0.2, 0~0.4, 0~0.6, 0~1, 0~1.6, 0~2.5, 0~4, 0~6, 0~10, 0~16, 0~25, 0~40, 0~60, 0~100, 0~160, 0~200 |
| Overload pressure | %FS | 150 |
| Power Supply | Vdc | 12, ..., 36 |
| Output | transmitter, mA (2 wires) | 4~20 |
| | transmitter, Vdc (3 wires) | 1~5, 0~5 |
| Accuracy | %FSO | 0.1, 0.25(standard), 0.5 |
| Long-term stability | %FSO/year | <0.5 |
| Response time | ms | <2 |
| humidity | %RH | 0~100 |
| Storage temp. range | °C | -40~+100 |
| Operation temp. range | °C | 0~+80 |
| Compensated temp. range | °C | 0~+50 |
| TCZ | %FSO/°C | 0.03 |
| TCS | %FSO/°C | 0.03 |
| Insulation resistance | Mohm | >500@50Vdc |
| Load Resistance | Current output, Ohm | 250~1150 |
| | voltage output, Ohm | >5000 |
| Process Connection | thread for type I | male: ¼" NPT |
| | thread for type II | male: ½" NPT |
| Electrical Connection | connector/cable | 4-core, Φ7.6 mm shielded cable with vent hose which is mechanically strong enough for deep submersible liquid level measurements |
| Environmental Protection | IP rating | IP 68 |
| Material | diaphragm | 316L SS |
| | body | 316 SS |
| | housing for electronics | NA |
| Weight | g | ~200(probe head)+the weight of cable |

Continuous efforts for product development may necessitate changes in these details without notice

Authorised Dealer



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