toscano

SLP-CW-300

Submersible Level Sensor for very Deep Boreholes

Main features

Water level measurement, control and process (stable or moving) for wells and boreholes in thermal or oxidizing waters.

The level measurement is performed through the differential pressure measurement between liquid surface and the submersible sensor. The water column height (pressure) is converted into electrical signal by piezoelectric gauge to provide a 4-20mA output signal on 2 wires.

Installation

The implementation does not need any adjustment of transmitter (factory calibrated), although it must be taken into account:

- Do not obstruct or pressurize the cable used for the atmospheric pressure of the transmitter.
- The cable end should never be immersed or placed in an area susceptible of flooding.
- When installing the transmitter, take care that the cable does not touch elements that can damage it and avoid using sharp tools in the assembly or disassembly of the clamps, which could cause a risk of water leakage through the cable.
- Observe polarity when wiring: its reversal is not destructive, but the reading will be 0 mA.
- Connect the surge protector to a high quality ground line (SP30V).
- The supply voltage must be enough to compensate the voltage drop on the line and get at least 6 volts at the transmitter terminals: Measure the total resistance of the line and apply the following formula:

  U(min. supply) = 6V + (R line x 0.02 A).

A supply of 12V or 24V is recommended.

WARNING: Depending on the surge protector model supplied with the transmitter (SP43V or SP30V), the maximum value of the supply voltage shall not exceed 38V (SP43V) or 27V (SP30V).

Trouble-shooting procedure

Transmitter checking:

Disconnect the transmitter from the system. Connect the transmitter to a 9V battery and introduce a milliamperemeter in the loop.

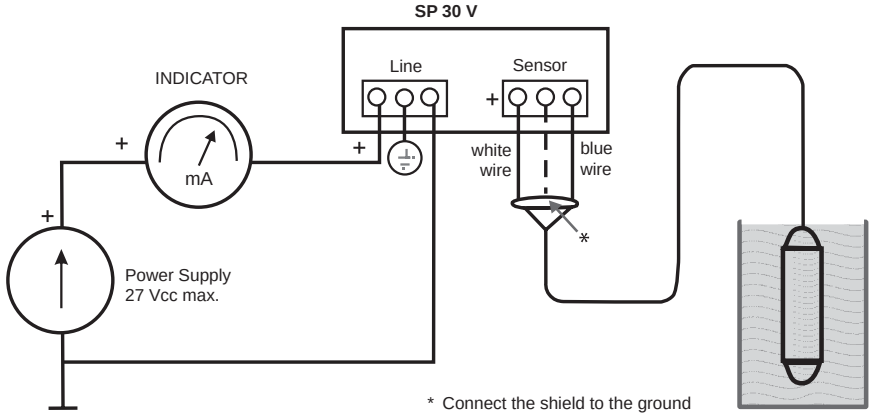
Check the value of the signal in milliamperes:

The signal must be equal to 4 mA (transmitter out of water and atmospheric pressure equal to 20mA) for a column of water equal to the full scale of measurement.

For intermediate value:
Height (m.) = (Signal (mA) – 4 mA) x FS(m.) / 16

And conversely:
Signal (mA) = ((Height (m) / FS(m)) x 16) + 4 mA.

Connection



* Connect the shield to the ground in case of electrical disturbances

Technical data

Water column range	Full-scale (F.S.) between 5 m to 300 m. (20mA full scale, factory set to the required value)
Equivalent pressure	0.5 to 30 bars. P(bars) = H(metres) / 10.197
Hysteresis	0.10 % F.S. (constant temperature)
Non-linearity	0.15 % F.S. (constant temperature)
Working temperature range	+2°...+80° C

Technical features

Housing	Stainless steel 316L
Cable	2 wires + internal tube in shielded PU cable, strengthened with Kevlar
Sensor	piezo-resistive gauge with silicone coating
Diameter	21.5 mm
Height	180 mm. (without cable)
Weight	250 g. (without cable). Supplied normally with 10 meters of shielded cable (525 g) or more upon request
Fitting	By the suspension cable supplied with a hanging system KITCAB
Output signal	4-20mA output signal on 2 loop wires, 4mA for 0m and 20mA for the full-scale
Power supply	Voltage supply between 6 to 38 volts DC input. (Don't forget to integrate the voltage drop-out in the current loop) Check the voltage specification of the protector unit
EMC Conformity	EN 50 081-2, EN 50 082-2
Consumption	miliamperes (mA)