



SPES™-108

Underwater Eddy Current Proximity Sensor

The SPES-108 proximity sensor is designed to measure the relative distance of an underwater metallic target surface. It is usually used to measure blade tip clearance in Kaplan turbines as well as runner band clearance in Francis turbines. The sensor can sustain high levels of underwater pressure and is equipped with built-in conditioning circuitry allowing it to be directly connected to processing instrumentation.

General Specifications

Operation

- Measurement Type: Non-contact proximity, eddy current
- Measuring Range*: 0 to 8 mm [0 to 315 mils]
- Outputs*: 7.2 to 20 mA
2 to 10 V
- Sensitivity*: 1.60 mA/mm [40.6 μ A/mil]
1.00 V/mm [25.4 mV/mil]
- Accuracy: According to correction factor
- Repeatability: \pm 5%
- Bandwidth: DC to 500 Hz (-3dB)
- Load at Current Output: 500 Ω max.
- Load at Voltage Output: 10 k Ω min.
- Temperature Drift: < 10%
- Short Circuit Protection: Built-in

Power Requirements

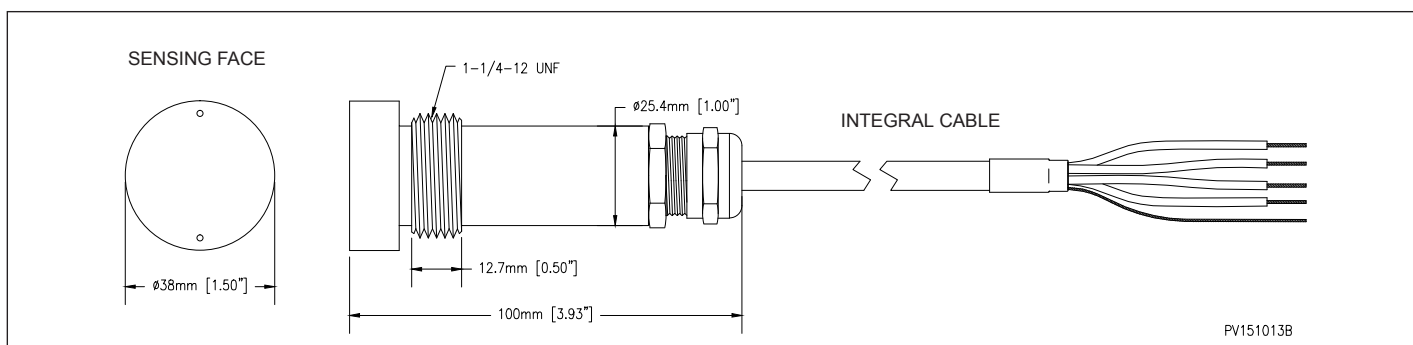
- Voltage: 15 to 30 Vdc
- Consumption: 30 mA max.
- Voltage Reversal Protection: Built-in
- Warm-up Time: 5 minutes

Connection

- Submersible Integral Cable
 - Type: 4-wire x 0.22mm² [24 AWG]
 - Outer Jacket: PUR / ϕ 7.5 mm [0.295 in]
 - Length: 20 m [66 ft]
 - Min. Bending Radius: 40 mm [1.57 in]
- Maximum Cable Length (Integral + Extension)
 - For Current Output: 300 m [984 ft]
 - For Voltage Output: 100 m [328 ft]

*Target material: FE360 steel

Dimensions



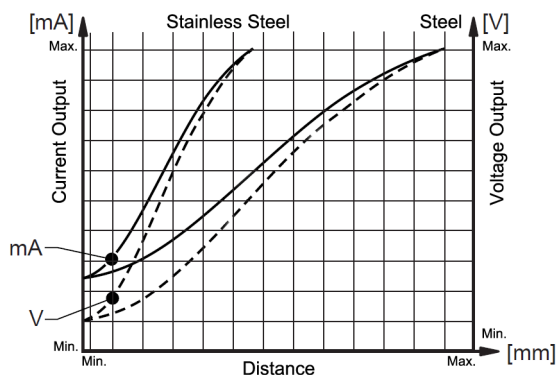
Environment

- Temperature Range
 - Operating: 0 to 45 °C [32 to 113 °F]
 - Storage: -25 to 70 °C [-13 to 158 °F]
- Max. Submersible Pressure: 10 Bar [150 psi]
- Protection Rating: IP69

Physical Characteristics

- Sealed Sensor Body: Ertalyle® PET-P

Typical Response Comparison (Steel vs. Stainless Steel)



Warning: Response of inductive sensors varies with target material, as shown in the graph above. A site calibration is required to calculate the appropriate correction factor to be applied.