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 µA/mil]*
	1.00 V/mm *[25.4 mV/mil]*
• Accuracy	According to correction factor
• Repeatability	± 5%
• Bandwidth	DC to 500 Hz (-3dB)
• Load at Current Output	500 Ω max.
• Load at Voltage Output	10 kΩ 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

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• Submersible Integral Cable	
Type	4-wire x 0.22mm^2 *[24 AWG]*
Outer Jacket	PUR / ø 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
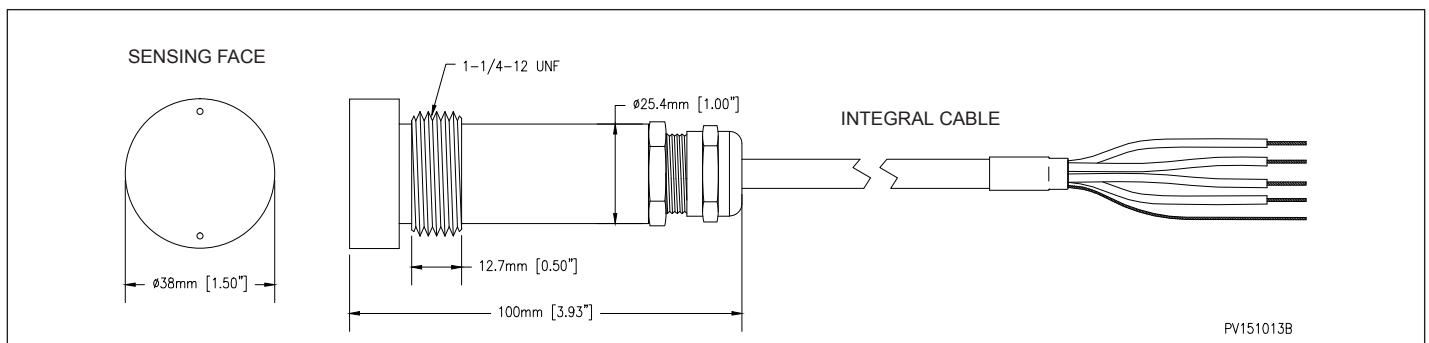
Environment

• 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	Ertalyte® PET-P

Typical Response Comparison (Steel vs. Stainless Steel)
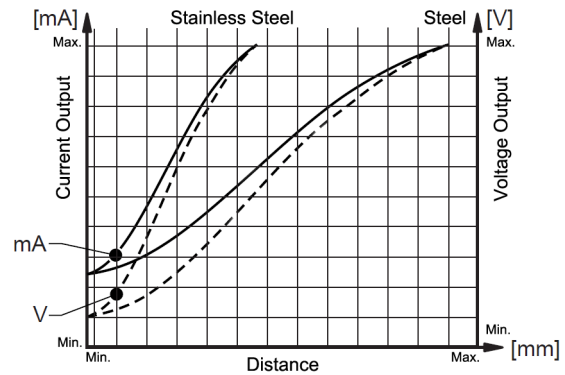
⚠️ **Warning**: Response of inductive sensors varies with target material, as shown in the graph above. A site calibration is required to calculate the appropriate correction factor to be applied.

Dimensions

SENSING FACE
1-1/4-12 UNF
ø25.4mm [1.00"]
INTEGRAL CABLE
ø38mm [1.50"]
12.7mm [0.50"]
100mm [3.93"]
PV151013B

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