PROCESS TECHNOLOGY

ESP Capacitive Proximity Sensor

ESP Capacitive Proximity Sensors are 2-wire, capacitive sensors that can detect most liquids through non-metallic tanks. For Installation, Wiring and Calibration, refer to these instructions.

Installation

1. Securely mount ESP directly against the plastic tank wall (maximum of 1" [25mm] thick). Ensure you have access for calibration on opposite side.

- ESP will not detect objects through metal tank walls. Do not mount within 2" (50mm) of any metal object.
- ESP Nuts Maximum Torque Limits - 5.5ft.lbs (7.5Nm)

2. Connect ESP to a load that is within the Output max load and min load limits. See ESP Specifications table for details.

3. Continue to page 2.

Caution

Do not connect ESP directly to power or to any load outside the min and max load limits; this will cause malfunction or irreparable damage.

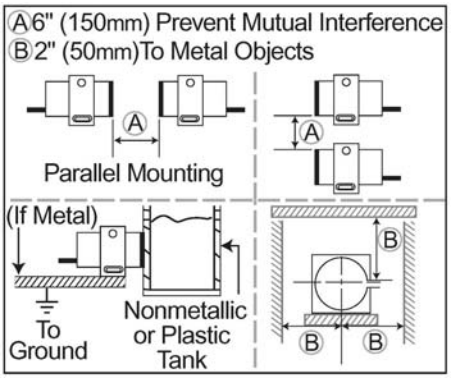

Figure 1: Maintain Minimum Clearance

ESP Specifications		
Sensor Type		Capacitive
Housing Rating		IP67 Nema 3,4,6
Ambient Operating Temp*		-25° to +80°C -13° to +176°F
Ambient Temp Drift		≤10% Variation
Sensitivity		Adjustable
Housing Diameter		30mm (1.18")
Effective Max Detecting Distance (std. target)		4–25mm (0.16–0.98")
Detectable Object Type		Metallic/ Non-metallic
Hysterisis Detecting Distance		4–20%
Supply Voltage		20–250VAC, 50–60Hz C/DC
Current Consumption		≤ 2.5mA max @ 240VAC
Output (Control Action N/O or N/C, Field Selectable)	max load	350mA AC 250mA DC
	min load	10mA
	max leakage current	(off-state) ≤ 2.5mA@ 240VAC
	max on-state voltage drop	≤ 10VAC @ ≥ 20mA
Operating Frequency		25Hz
Output Short Circuit Protection		Not Provided
Immunity	Weld Field	Provided
	RFI	Provided
Output Indicator		Red LED
Housing Materials		Polyester
Mounting Block		Acetal
Cable Jacket		Vinyl
Mounting Bracket		Included
Connections Prewired		2m (6.5 ft), two conductor cable
Approx. Weight (w/cable)		150g (4.5oz)

*ESP must be cooled if the surrounding temperature exceeds 176°F (80°C).

Wiring

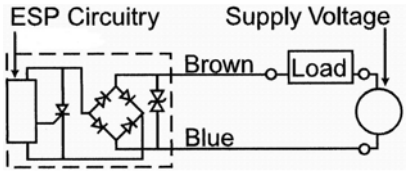

Figure 2: ESP Wiring

Calibration

1. Ensure ESP is securely mounted against an empty, non-metallic tank at the desired level, and wired correctly.
2. Turn the sensitivity adjustment screw fully counterclockwise. The screw is attached to a 20-turn potentiometer (you can feel the disengaging end stop).
3. Energize ESP–if LED lights, check for metallic or conductive materials near the sensing face. If present, remove and retest. Objects such as conductive fillers, anodes, racks or plating deposits affect operation and are a fire hazard. If LED remains on, consult factory.
4. Fill the tank with liquid with the level is at least ½" above the bottom of the sensor face. Slowly turn the sensitivity adjustment screw clockwise from the off position until the LED turns on. Then rotate the screw ½ turn further clockwise.
5. Remove the liquid from in front of the ESP sensor. The LED should turn off. Check to see that the difference between the ON point and OFF is stable; slowly rotate the sensitivity adjustment screw clockwise one and a half turns. The LED should remain off at the end of this adjustment. If not, consult factory.

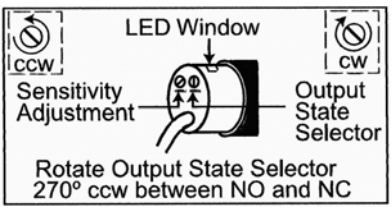

Figure 3: ESP Sensitivity Adjustment

6. Fill the tank with liquid so that the level is at least ½" above the bottom of the sensor face. LED should turn on.
7. Rotate sensitivity adjustment screw counterclockwise until LED turns off.
8. Slowly turn the sensitivity adjustment screw clockwise until LED turns on again. Then, rotate the screw ½ turn further clockwise.
9. Remove liquid from in front of the sensor face. LED should turn off at this point. If not, consult factory. Do not operate ESP if switching operation is not stable.
Ideally, sensitivity screw will have 1½ complete revolutions between switch states (normally open-to-closed, or normally closed-to-open). This setting provides a buffer for sensitivity drift due to environmental factors. Periodic testing/ calibration is recommended for proper operation.

Surge Protection

ESP circuitry is EMI and surge resistant.

- In cases where very large EMI or surge conditions exist, additional protection may be required.
- If power lines are routed with ESP sensor wires, install either shielded sensor wire or metallic conduit to prevent inductive coupling.
- ESP and its associated circuitry installation must be in accordance with the National Electric Code and other pertinent local codes or industry standards. Failure in compliance can result in hazardous conditions to life

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