

ESP Capacitive Proximity Sensor

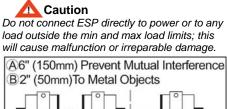
ESP Capacitive Proximity Sensors are 2wire, capacitive sensors that can detect most liquids through non-metallic tanks. For Installation, Wiring and Calibration, refer to these instructions.

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)

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



| B2" (50mm)To Metal Ob | ojects | | |
|--------------------------------------|--------|--|--|
| | | | |
| Parallel Mounting | | | |
| (If Metal) | | | |
| Figure 1. Maintain Minimum Clearance | | | |

Figure 1: Maintain Minimum Clearance

| Sensor TypeCapacitiveHousing RatingIP67 Nema 3,4,6Ambient Operating Temp*-25° to +80°CAmbient Temp Drift<10% VariationSensitivityAdjustableHousing Diameter30mm (1.18")Effective Max Detecting Distance (std. target)4-25mm (0.16-0.98")Detectable Object TypeMetallic/ Non-metallicHysterisis Detecting Distance4-20%Supply Voltage20-250VAC, 50-60Hz C/DCCurrent Consumption $4250mA AC$ loadOutput Fieldmax max atae on state voltageOperating Frequency Output Short Circuit Protection $510VAC$ @ 240VACOutput Short Circuit ProvidedNot ProvidedImmunityKell FieldMed ImmunityProvidedMed FieldProvidedMunting BlockAcetalConnections Prewired $2m (6.5 ft), twoconductor cableMounting BracketIncludedAmounting Bracket150g (4.5oz)$ | ESP Specifications | | | |
|--|--------------------|------------|-----------------|--|
| Ambient Operating Temp* -25° to $+80^{\circ}C$ -13° to $+176^{\circ}F$ Ambient Temp Drift $\leq 10\%$ VariationSensitivityAdjustableHousing Diameter $30mm (1.18")$ Effective Max Detecting Distance (std. target) $4-25mm$ ($0.16-0.98"$)Detectable Object TypeMetallic/ Non-metallicHysterisis Detecting Distance $4-20\%$ Supply Voltage $20-250VAC$, $50-60Hz C/DC$ Current Consumption $\leq 2.5mA$ max @ $240VAC$ Output (Control Action N/O Selectable)max Istate voltageOutput Fieldmax on- state voltageOperating Frequency Output Short Circuit Protection $\leq 10VAC$ @ $\geq 20mA$ Output Indicator RFIRed LED ProvidedImmunityWeld FieldMed ImmunityProvidedMed Cable JacketVinylMounting Block Connections PrewiredAcetal Cable JacketApprox. Weight $150c$ ($4.5c_2$) | Sensor Type | | | |
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| Protection Not Provided Immunity Weld Field Provided Qutput Indicator Ref LED Housing Materials Polyester Mounting Block Acetal Cable Jacket Vinyl Mounting Bracket Included Connections Prewired 2m (6.5 ft), two conductor cable Approx. Weight 150g (4.5 cz) | Operating Fre | equency | 25HZ | |
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| Connections Prewired2m (6.5 ft), two conductor cableApprox. Weight150g (4 50g) | | | | |
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| | | | | |

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



ESP Capacitive Proximity Sensor

ESP Capacitive Proximity Sensors are 2wire, 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)

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

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.

A6" (150mm) Prevent Mutual Interference B2" (50mm) To Metal Objects Parallel Mounting (If Metal) Nonmetallic To or Plastic Ground Tank Figure 1: Maintain Minimum Clearance

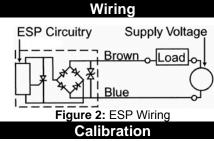
| | SP Specifi | cations |
|------------------------------------|---------------|-------------------------------------|
| Sensor Type | | Capacitive |
| Housing Rati | ng | IP67 Nema 3,4,6 |
| Ambient Operating | | -25° to +80°C |
| Temp* | - | -13° to +176°F |
| Ambient Tem | p Drift | ≤10% Variation |
| Sensitivity | • | Adjustable |
| Housing Diar | neter | 30mm (1.18") |
| Effective Max Detecting | | 4–25mm |
| Distance (std | . target) | (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 350mA AC |
| | max | |
| | load | 250mA DC |
| Output | min load | 10mA |
| (Control | max | (off-state) |
| Action N/O | leakage | ≤ 2.5mA@ |
| or N/C, | current | 240VAC |
| Field | max on- | |
| Selectable) | state | ≤ 10VAC @ |
| | voltage | ≥ 20mA |
| Operating Fr | drop | 2511- |
| Operating Fre | Circuit | 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) |
| (wicable) | | I |

FSP Specifications

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

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1. Ensure ESP is securely mounted against an empty, non-metallic tank at the desired level, and wired correctly.

 Turn the sensitivity adjustment screw fully counterclockwise. The screw is attached to a 20-turn potentiometer (you can feel the disengaging end stop).
 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 $\frac{1}{2}$ " 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 $\frac{1}{2}$ 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.

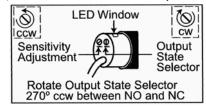


Figure 3: ESP Sensitivity Adjustment

6. Fill the tank with liquid so that the level is at least ¹/₂" 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 ¹/₂ 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 1¹/₂ 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

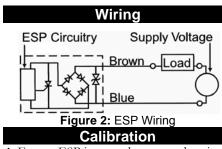
ESP circuitry is EMI and surge resistant.

- 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

Contact Information U.S./Canada: (800) 621-1998 7010 Lindsay Dr. Mentor, OH 44060 U.S.A. Phone: (440) 974-1300 Fax: (440) 974-9561

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ESP Manual



1. Ensure ESP is securely mounted against an empty, non-metallic tank at the desired level, and wired correctly.

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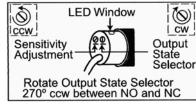


Figure 3: ESP Sensitivity Adjustment

M-37-05 Revision – Date: 00 – 05/01/08 2 6. Fill the tank with liquid so that the level is at least ¹/₂" 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 ¹/₂ 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 1¹/₂ 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.

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Contact Information

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