

Capacitance Proximity Switch

Model: GAL 100100, AC

LEVELITE

Installation & Operation Instructions

Introduction:

The Capacitance Proximity Switches provide single point alarming and switching for applications such as high/low level, reorder and leak sensing in dual containment piping. They are easily installed on the outside of plastic tanks, pipes and site glasses and have the ability to "see" through the wall in most cases. AC units can be used with an optional relay assembly to provide hard contacts and AC switching capabilities. Level control with the Capacitance Proximity Switches is limited to liquids with dielectrics above 10 and dry density above 10-lbs/cu. ft. This would include most aqueous (water) based liquids and many granular or powdered materials such as plastics and grains. We do not recommend using these switches in areas where the face of the switch or the tank wall will become coated with a conductive/high dielectric material.

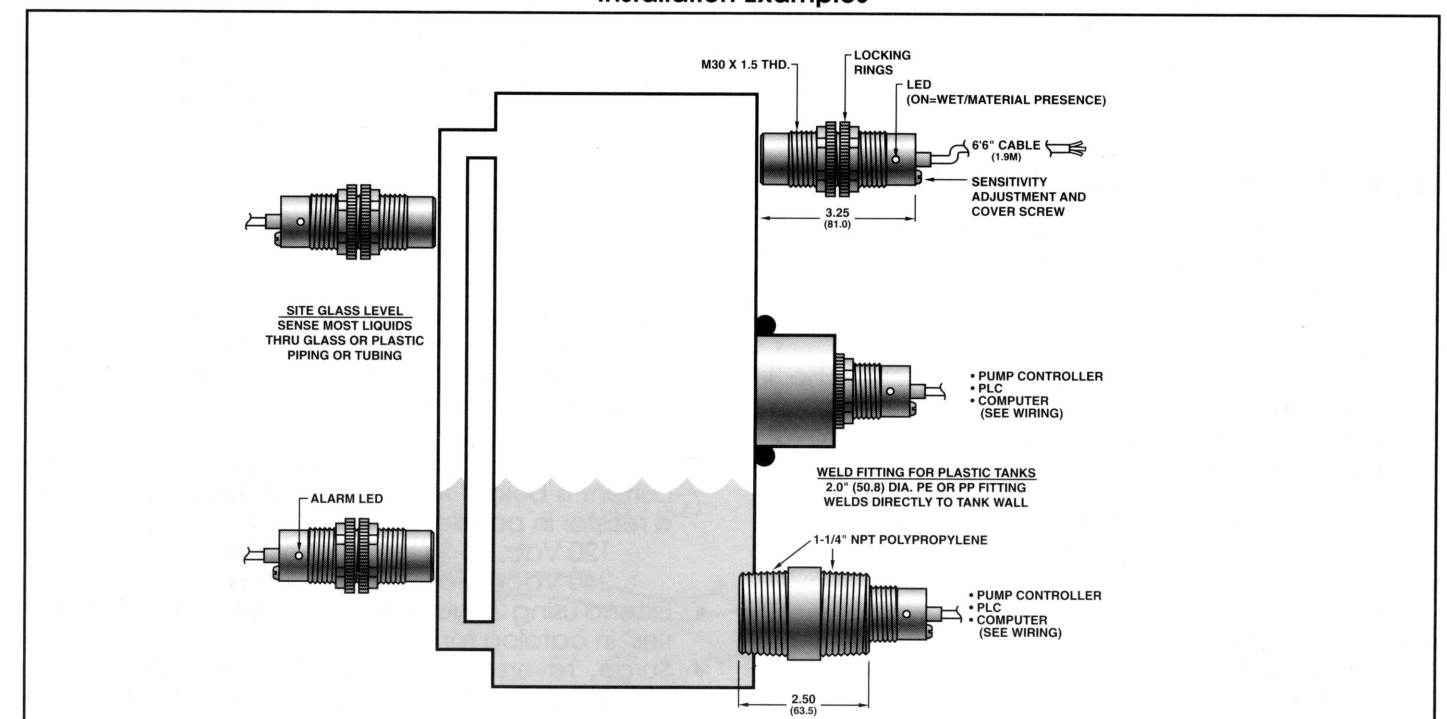
Accessories are available to assist in mounting on plastics tanks, metal tanks and for hard contact output:

Weld Fittings - Provides a threaded mounting for plastic tanks. Must be welded on the outside with plastic welding equipment. Polyethylene Fitting, Part No. GAL 110102; Polypropylene Fitting, Part No. GAL 110101.

Well for Metal Tanks - Provides a thread for mounting switch and isolates the switch from tank contents. Requires a 1-1/4" NPT coupling for installation. Polypropylene Well, Part No. GAL 110100.

Relay Assembly - Use with the AC switch only to provide a hard contact output for pump/sole-noid control, light/horn driving or isolation. Relay must be located in a suitable panel to prevent exposure to open electrical terminals. Part No. GAL 110103.

Installation Examples



Caution! Do not install this device in hazardous areas and always follow N.E.C. or local guidelines during installation.

We appreciate your purchase. If you need assistance please give us a call. We want you to be 100% satisfied with your new level control.

Operation:

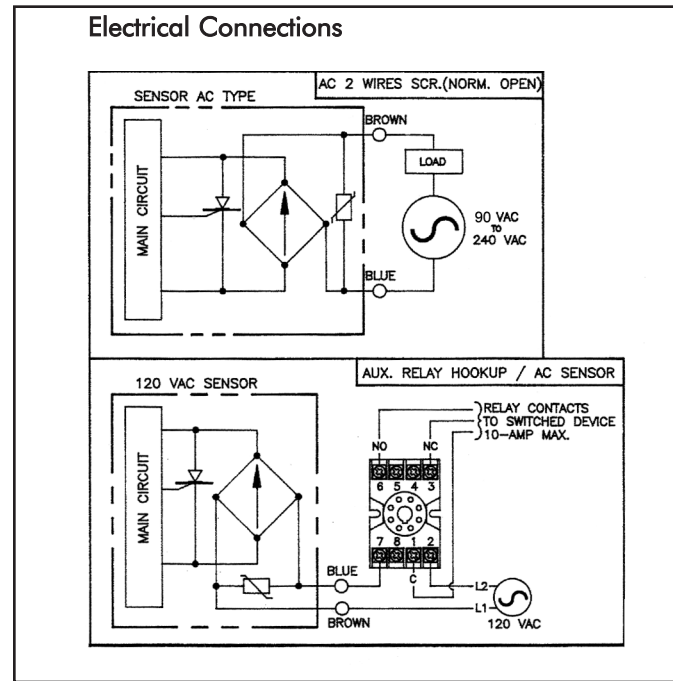
Capacitance Proximity Switches rely on a dielectric change to sense the presence of material. They are calibrated to a particular material water, and then sense the dielectric difference between the water (dielectric =80) and air (dielectric =1) as the water rises and falls in front of the face of the sensor. This change in dielectric creates an internal change in frequency in the sensing electrons and in turn is recognized as presence or absence of material. Because this change is required for operation, material with dielectric's close to air (below 10) and those that leave a coating on or near the face of the sensor, are not recommended. The advantage of this system lies in it's ability to "see" through low dielectric materials, like tank walls, to sense higher dielectric "on the other side". The proximity Switch will sense most liquids though up to 1" (25.4mm) of: Glass, PVC, CPVC, Polyethylene, Polypropylene, or Teflon.

All switches have a normally open (NO) output and red LED indicator. The output "closes" and LED lights on material presence. Direct wetting of the sensor face in not recommended. The sensor face may be exposed directly to dry materials if materials are compatible and excessive abrasion is not anticipated.

Application & Installation Considerations:

- Verify the unit is compatible with the process, including: pressure, temperature, construction, and area classification.
- Check the voltage before powering.
- Do not exceed the 200mA maximum load.
- Always supervise operation after calibration to check for possible problems.
- Calibrate sensors under actual operation conditions, whenever possible. Change in position, materials and temperatures can affect operation.

- Do not mount in the path of flowing material.
- Do not run sensor wiring with other high voltage wire.
- The sensor body is PBT or ABS plastic. Do not over tighten this or accessory fittings.
- A 4-Channel Alarm Indicator and Nema 4X (IP66) enclosure is available from The Levelite Store. Please refer to the "Accessory" section in our catalog or call Customer Service.



Electrical Hook-Up

Wiring:

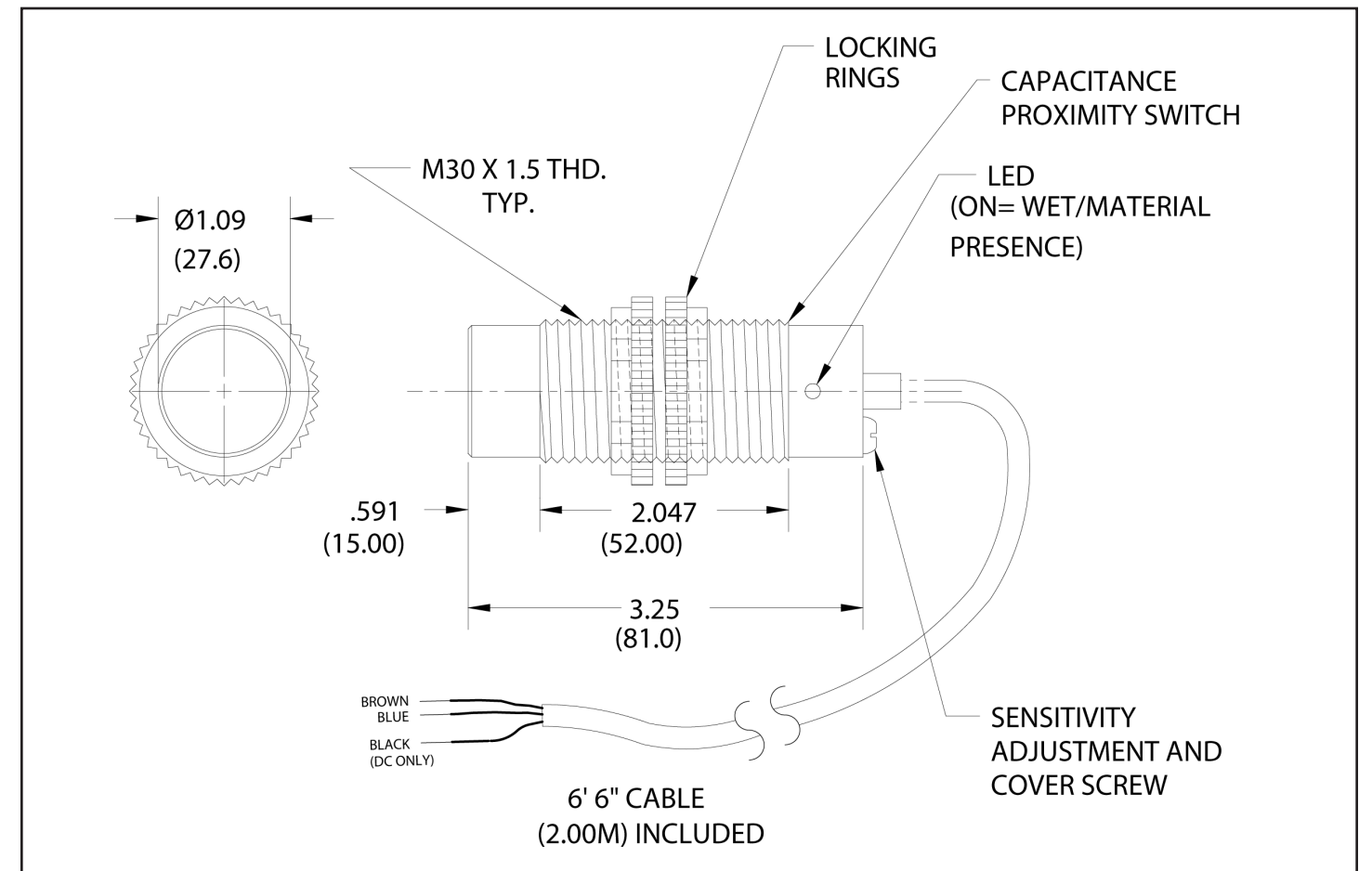
- Refer to the drawing above when wiring.
- Always install a load when testing or operating the AC sensor. Operation without a load will destroy the unit and is not warrantable.
- Do not exceed 200 mA load.
- Load on AC units should be 10-200 mA. If load current is below 10 mA increase load by installing a resistor in parallel with the load.
120 Vac, 10-18 K ohm, 1.5-3 W
240 Vac, 20-39 K ohm, 3-5 W
- Extend using 22 gauge or greater cable (see "accessories" in catalog for extra cable).
- Surge protection circuit will "lock up" system once initiated by a malfunction. Remove power to reset.

Calibration:

1. Install sensor making sure the material to be sensed is present (lower tank contents, push dry material away, etc.).
2. Remove Sensitivity Adjustment Cover Screw and rotate potentiometer clockwise (cw) until the red LED just turns ON.
3. Raise or place material in front of the sensor.
4. With material present, turn potentiometer counterclockwise (ccw), while counting the turns, until the LED just turns OFF (_____ turns between on and off).
5. Adjust the potentiometer halfway, between the On and Off points. In other words, turn the potentiometer clockwise (cw) half the amount recorded in step 4.

If the difference between the On and OFF points is 1-1/2 turns or more, you will have a very stable system. Operation with less than 1-1/2 turns may not cause adverse effects but operation should be verified over time before a final judgment is made.

Dimensions:



Problems/Solutions:

- Material not sensed/ Try grounding if possible and check dielectric or density
- Erratic operation/ Move switches further apart, check for condensation.
- Unit "locked on"/ shorted, suffered polarity reversal, or overloaded. Disconnect and reapply power.
- AC unit appears inoperable/ If power is applied without any load, sensor is destroyed.

Specifications:

- NEMA 4X (IP66) PBT body.
- 90-250 VAC, 2.5 mA max, leakage
- Normally open output, 200 mA maximum load
- For heavier loads, add the Relay Assembly to the AC sensor.

AC

P/N GAL100100