

### Return Policy

Returns are accepted on stock items up to 30 days from date of order. You must contact our Returns Department for a Return Authorization (RA) number. Return the goods - freight pre-paid - in the original container and include original packing slip. C. O. D. returns are not accepted. Gems reserves the right to apply restocking charges.

**Tel: 860-793-4357**  
**Fax: 860-793-4563**

### Important Points:

- Highly aerated or carbonated fluids and condensation may affect sensor performance. Fully test and evaluate before use.
- Gems products must be maintained and installed in strict accordance with the National Electrical Code and the applicable Gems product instruction Bulletin that covers installation, operation and proper maintenance. Failure to observe this information may result in serious injury or damages.
- For hazardous area applications involving such things as, but not limited to, ignitable mixtures, combustible dust and flammable materials, use an appropriate explosionproof enclosure or intrinsically safe interface device.
- Please adhere to the specification limitations shown throughout this bulletin for our level sensors. These limitations must not be exceeded.
- Our sensors have been designed to resist shock and vibration. However, shock and vibration should be minimized.
- Our sensors must not be field-repaired.
- Physical damage sustained by product may render it unserviceable.

### Technology Background

The ExOsense™ sensor incorporates proprietary transducer technology employing piezoelectric material. When piezoelectric material is excited, it creates an acoustic signal as a function of the natural resonance of the material. The sensor generates this acoustic signal, directs through the bottle wall and senses the reflected pulse.

Combining a unique piezoresonant transducer design, container coupling techniques and a proprietary electronic impulse and control circuit, (Patent Pending), we are able to precisely detect liquid levels, non-intrusively, at locations determined by simple sensor placement on the outside of your container. No need to worry about sensor compatibility, media debris or sensor maintenance.

Sensor Assembly Connector Cable



Container Electronics Module

### Specifications

**Accuracy:** ±1.6 mm

**Repeatability:** ±1 mm

**Supply Voltage:** 5 Vdc standard (4.75 to 5.25 Vdc) (8 Vdc – 30 Vdc with optional power module)

**Consumption:** ~40mA Typ. @ 5Vdc

**Output:** Open Collector, may sink 40mA @ 30 Vdc max (Factory configurable for Wet or Dry sink)

**Temperature Rating:** 0°C – 70°C process temperature 0°C – 65°C Electronics

**Tank Compatibility:** Plastic, with the exception of Teflon and PVDF (Factory Configured)

**Tank Thickness:** 0.030" – 0.125" (0.76mm - 3.1mm)

**Electronics Module:** Fully overmolded (IP-64)

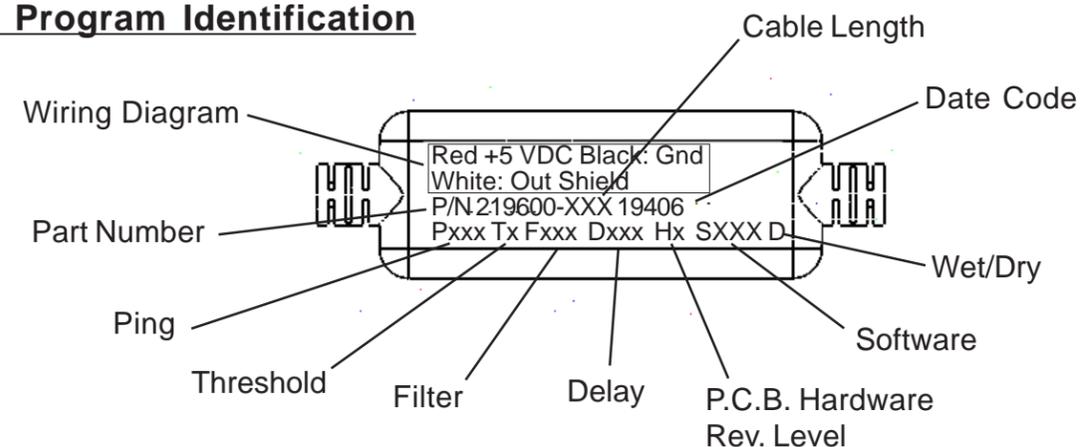
**Sensor Protection Rating:** IP-64

**Sensor Cable Type:** 6" long with a sealed USB style connection

**ECM Output:** .6m (24") or 2m (78") PVC, #22AWG 3 conductor

**Approvals:** CE Compliance : EN61000, EN61326: 2000 Class B, UL 508 (Pending)

### ECM Program Identification



## Container Preparation

1. Select a smooth and defect free surface. Surface should NOT have any parting lines or embossed lettering or surface irregularities.
2. Clean surface with a 90% minimum alcohol pad or suitable degreasing solvent to remove all surface contaminants. Allow surface to completely dry. (Fig. 1) Note: Gems Sensors recommends CleanTex Alco Pad™ #806.
3. Locate the desired vertical location (height) where the sensor(s) will be installed.
4. Mark the desired location for the sensor(s).
5. For multiple sensors on the same container, repeat steps 1 - 4.



Fig 1



Fig 2



Fig 3



Fig 4

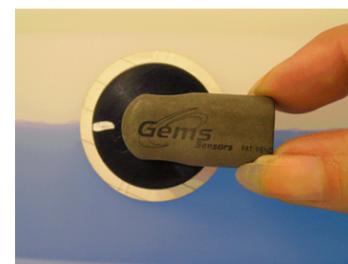


Fig 5

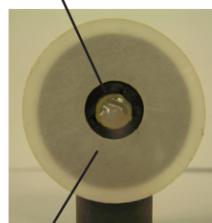
## Sensor Installation

1. Hold the sensor housing in one hand. Pull tab away from sensor with the other hand to remove the protective plastic guard. (Fig 2)
2. Completely remove the protective plastic guard from sensor to expose the adhesive surface. (DO NOT touch the couplant or adhesive). (Fig.3)

### CAUTION

**DO NOT touch or tamper with the adhesive or couplant.**

Couplant



Adhesive

i. The adhesive is designed for attachment to your plastic container and finger prints can impair the ability of the adhesive to adhere the sensor onto the container.

ii. The couplant is a proprietary designed gel material. Any contamination or reduction of material may compromise the full couplant effect of sensor.

3. Align the mark on sensor to the marked area on bottle. Carefully place the sensor onto desired bottle surface by securing edge of adhesive and rolling sensor onto bottle. (Figs.4 & 5)
4. Push firmly around the entire surface of sensor base in circular motion 3 times. Allow the adhesive to cure at least 5 minutes to test for sensor function and preferably 24 hours prior to use.

5. Orient connector cable so that the arrow is facing towards you. (Fig 6)
6. Firmly support sensor assembly with one hand and insert connector cable into the mating plug on the sensor assembly with other hand.



Fig 6

7. Make sure the connector cable is completely inserted and mated to the sensor assembly plug. (Fig 7)



Fig 7

8. It is recommended to test the sensor to insure it is making proper contact to the container. Refer to the wiring diagram and perform the following verification tests:

- a. Connect as per diagram C. The resistor is used as a pullup (10K ohms), since the output is open collector.
- b. Connect one side of the resistor to the white wire, the other side to + 5Vdc supply.
- c. Apply +5 Vdc to the red wire and the black wire goes to the return.
- d. Use a multimeter set on voltage scale and measure the voltage between the white wire and the black wire.

- e. Results should be as follows:

If unit is <b>DRY SINK</b> - Output: 0 - 0.5Vdc dry ~+5Vdc Wet	If unit is <b>WET SINK</b> - Output: 0 - 0.5 Vdc Wet ~+5Vdc Dry
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- f. To Improve noise immunity, the drain wire should be connected according to one of the following:

1. Equipment common or enclosure.
2. Equipment power supply negative terminal.
3. Earth Ground.

## Wiring Diagrams

