



# ULS-11 Series Single Point Ultrasonic Solid-State Level Sensors

**Installation**

The ULS-11 can be side, top or bottom-mounted. **Important: Make sure that all wiring, conduit and electrical fittings conform to local electrical codes for the location selected.**

**Visual Inspection:** Unpack the control unit and sensor assemblies. Visually inspect them for any damage. Advise Factory immediately if any damage is detected.

**Preliminary Operational Check:**

Before installing the unit, a simple operational check should be performed as follows:

1. Fill a container with liquid.
2. See wiring diagram for making the proper wiring connections. **Warning! In a hazardous environment, never open housing cover or connect power leads without first disconnecting electrical power at the source.**
3. Apply power from the source.
4. Place the sensor in the liquid. Relay should energize
5. Remove sensor from the liquid. Relay will de-energize. System is functioning properly.
6. Disconnect power to the control unit.
7. Proceed to the final installation.

**(If the system does not function, notify the Factory immediately.)**

**Specifications**

Mounting and Sensor Material	316 Stainless Steel (Standard)
Mounting	3/4" NPT (Standard)
Input Power	9 VDC to 36 VDC (Optional AC versions available)
Leakage Current	Less than 50 $\mu$ A
Gain	300:1
Output	1 Amp, SPDT Relay Output
Repeatability	2mm Typical
Delay (On)	0.5 Seconds
Operating Temperature	-20°F to +160°F (-29°C to +71°C)
Pressure, PSIG Max.	1000
Protection	Transient Reverse Polarity
Lead Length	12" PVC (Standard)

**Final Installation**

1. Drill a suitable hole in the vessel or pipe wall and tap for 3/4" NPT. In thin-walled vessel or material not suitable for threading, weld or braze a bushing to accept the sensor.
2. Screw the sensor into the threaded section and **make sure there is a good seal.** Use a pipe compound or sealing tape to avoid excessive tightening. **Do not overtighten.**
3. Run the power and control wiring cables to the electronics control unit.

<b>Wiring Diagram</b>	<b>Dimensions</b>	<b>Switch Actuation</b>
<div style="text-align: center;"> </div> <p style="text-align: center;"><b>Color Code</b></p> <p>Power: Red (+)           Black (-)</p> <p>Relay: Common - White       N.O. - Blue       N.C. - Brown</p>	<div style="text-align: center;"> </div>	<div style="text-align: center;"> </div> <p style="text-align: right;">Switch actuation level (L1) is determined following the guidelines below: L1 = 2-1/4" (57.2 mm), Min.           99" (251.5 cm), Max.</p>

## **Maintenance**

Electronics are constructed with solid-state components and epoxy-potted. Periodically, check and clean the sensor when used with liquids which cause a coating build-up on the sensor. No other maintenance is required.

## **Cleaning**

If the pipe or vessel to which the unit is mounted is to be steam-cleaned or cleaned with abrasive detergents, remove the entire unit before cleaning by:

1. Disconnecting the power at source
2. Opening the housing cover
3. Removing power and control wiring cables
4. Unthreading the sensor

To reinstall, follow installation procedures

## **System Malfunction**

**Should the system malfunction, notify the Factory immediately.**

## ***Important Points:***

- 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 pressure and temperature limitations shown throughout this catalog for our level and flow sensors. These limitations must not be exceeded. These pressures and temperatures take into consideration possible system surge pressures/temperatures and their frequencies.
- Selection of materials for compatibility with the media is critical to the life and operation of Gems products. Take care in the proper selection of materials of construction, testing is required.
- NSF-approved sensors are made of materials approved for potable water applications according to Standard 61.
- Stainless steel is generally regarded as safe by NSF and FDA.
- Life expectancy of switch contacts varies with application. Contact Gems if life cycle testing is required.
- Ambient temperature changes do affect switch set points, since the gravity of a liquid can vary with temperature.
- Our sensors have been designed to resist shock and vibration. However, shock and vibration should be minimized.
- Filter liquid media containing particulate and/or debris to ensure the proper operation of our products.
- Electrical entries and mounting points in an enclosed tank may require liquid/vapor sealing.
- Our sensors must not be field-repaired.
- Physical damage sustained by product may render it unserviceable.

## ***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 prepaid - in the original container and include original packing slip. C. O. D. returns are not accepted. Gems reserves the right to apply restocking charges.

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