



ULS-50 Intrinsically Safe Single Point Ultrasonic Level Switch

Principle of Operation

An ultrasonic wave is generated from a piezoelectric transducer located in one side of the sensing tip's gap. A second transducer, located in the other side of the tip, acts as a receiver to pick up the sound wave. In air, most of the sound wave is attenuated, but when a liquid bridges the gap, the wave is strong enough to trigger the receiving transducer.

Installation

Installation should be in accordance with CEC Part I, or NFPA 70. All intrinsically safe wiring must have .01 inch minimum insulation thickness. Non-intrinsically safe wiring cannot be run in conduit or open raceways together with intrinsically safe wiring.

Cable length may be extended up to a maximum of 1,000 feet using properly insulated 20-gauge shielded wire.

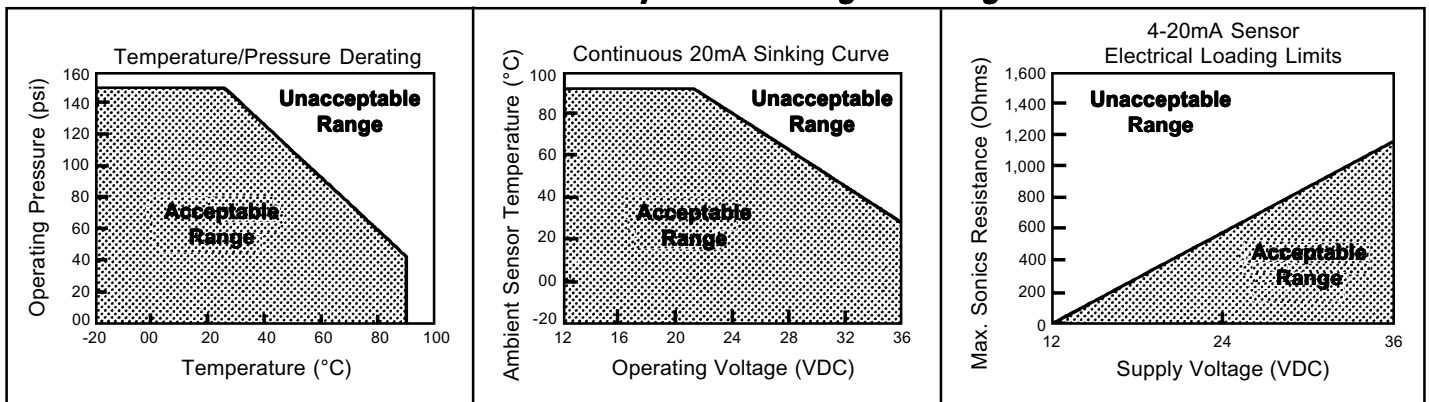
Mounting

The ULS-50 may be mounted vertically, horizontally, or at an angle. Use a proper sealant to ensure that there are no leaks. (Use Teflon tape or Permatex #80725 plastic pipe sealant.) Do not overtighten beyond a maximum of 80 in-lbs torque (no more than 1-2 turns past hand-tight using 15/16" wrench flat).

Specifications

Mounting and Sensor Material	Polypropylene or PFA Teflon
Mounting Thread	3/4" NPT
Input Power	+12 to 36 VDC
Output	FET; SMA (Dry); 19mA (Wet) ±1mA
Accuracy	± 1 mm in Water
Repeatability	± 0.5 mm in Water
Operating Temperature	-40°F to 194°F
Pressure Range	150 psi @ 25°C derated @ 1.67 psi per °C above 25°C
Cable	8 Ft. 4-Wire, 22 AWG with Polypropylene or PFA jacket
CE Compliance	EN 50082-2 Immunity; EN 55011 Emission
Approval	CSA Class I, Groups A, B, C & D; Class II, Groups E, F & G; Class III

Maximum Temperature/Voltage Derating



CSA Entity Parameters

V _{max}	I _{max}	C _i	L _i
32 VDC	0.5 A	0	0

$$V_{max} \leq V_{oc}$$

$$I_{max} \leq I_{sc}$$

$$C_i + C_{cable} \geq C_a$$

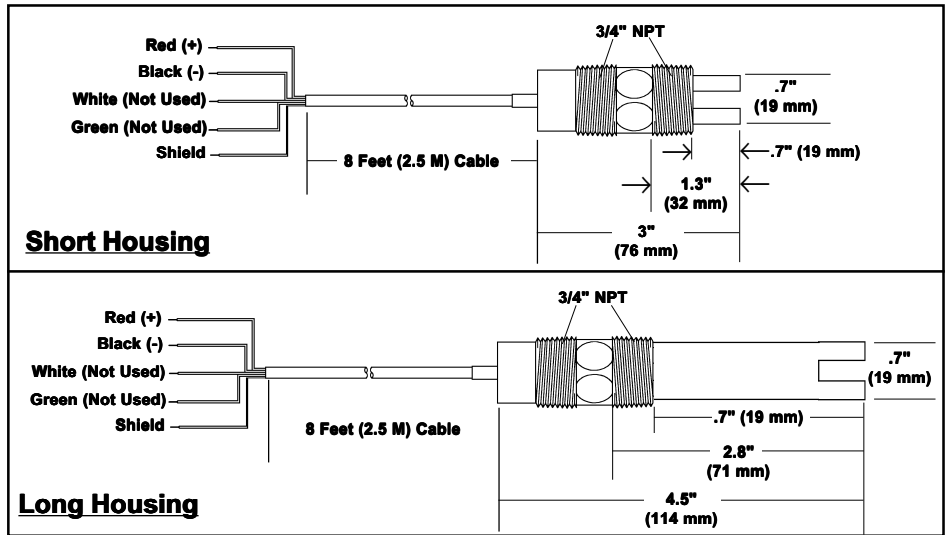
$$L_i + L_{cable} \geq L_a$$

Maintenance

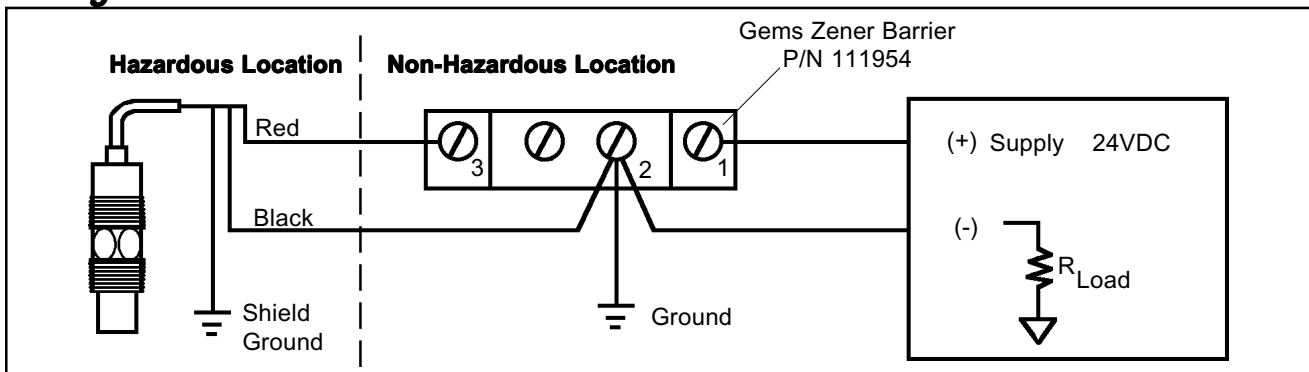
The ULS-50 requires no periodic maintenance, except cleaning as necessary when used with liquids that cause a build-up on the sensor.

Cleaning Procedure

1. Completely disconnect all power to the sensor.
2. If removing the sensor, make sure the tank is drained below the sensor mounting and carefully unthread.
3. Use a soft bristle brush and mild detergent to carefully wash the sensor. Do not use any harsh abrasives or solvents, which may damage the sensor's surface.
4. Follow installation procedures to reinstall.



Wiring



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.

Tel: 860-793-4357

Fax: 860-793-4563

Precautions are taken to ensure safe arrival of all shipments. Should you receive goods damaged in transport, you must file a claim with the carrier within 90 days or the claim is waived. Gems Sensors Inc. shall not be liable for any damage in case of late delivery or lost shipments.

Warranty

Gems Sensors Inc., the seller, warrants its products to be free from defects in material and workmanship in normal use and service for a period of one year from date of shipment. Gems reserves the right and option to refund the purchase price in lieu of repair or replacement upon evaluation of the returned original part. Modification, misuse, attempted repair by others, improper installation or operation shall render this guarantee null and void. Gems Sensors Inc. makes no warranty of merchantability or fitness for a part or purpose.

Limits of Liability

In no circumstances shall Gems Sensors Inc. be liable for special, consequential or exemplary damages of any kind or character, including contract, tort, and strict liability in tort and contract. Equipment sold by Gems Sensors Inc. not intended for use in a nuclear installation, nor shall it be used as a "Basic Component" as same as defined under Part 21, Title 10 of the Code of Federal Regulations. In the event of such use, you agree to indemnify and hold us harmless from any and all subsequent liabilities and responsibilities which might arise in connection with such use.

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.
- The supply voltage to the sensor should not exceed 36 VDC, Max. The rating for the relay is 60 VAC/VDC @ 1A.
- 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.
- Avoid overtightening when mounting
- The cable length may be extended to a maximum of 1,000 Ft.
- Not recommended for electrically charged liquids
- 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.



Gems Sensors Inc.

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