



ULS-60

Ultrasonic Multi-Point Level Controller

(6' and 12' Ranges)

Shipping

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. is 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.

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.

Principle of Operation

An ultrasonic sound wave is transmitted from the base of the transducer. This sound wave is reflected off the process medium and returned to the transducer. The sensor's electronics calculate the travel time the sound wave requires and determines the distance between the transducer and the medium.

Specifications

Operating Temperature	-40°F to 140°F
Operating Pressure	30 psi @ 25°C (See Figure 1)
Input Voltage	18 to 30 VDC or 120 VAC
Relay	(2) SPDT, 10A, 250 VAC
Range	3.6" to 72" (6') - 6" to 144" (12')
Accuracy	± 0.25% of span in air
Resolution	0.125" (3 mm)
Beam Width	8° Conical
Enclosure Rating	NEMA 4X (IP65)
Enclosure Material	Polypropylene
Transducer Material	PVDF
Conduit connection	1/2" NPT
Mounting	3/4" NPT (6') - 2" NPT (12')

Dimensions

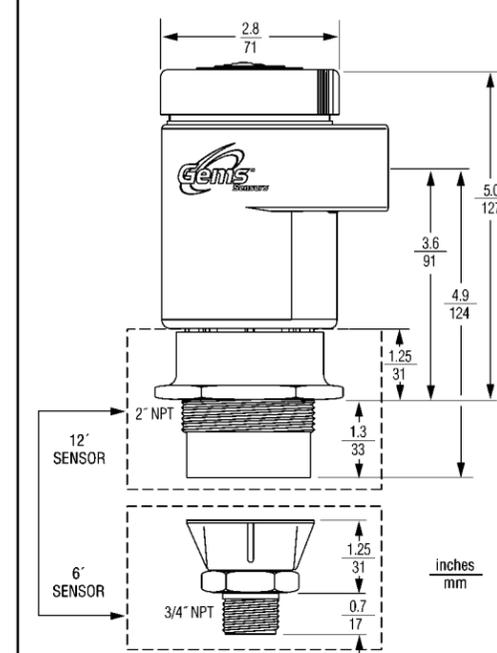


Figure 1

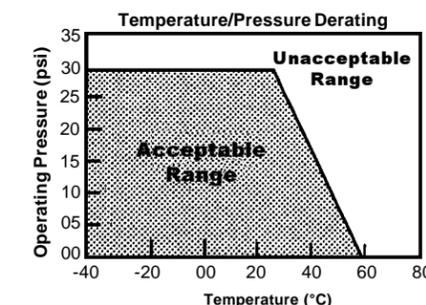


Figure 2

Mounting

The unit must be mounted vertically above the process medium (liquid).

1. The maximum sensing distance is 72" or 144".
2. There is a "dead zone" less than [3.6"(6' range) or 6"(12' range)] from the end of the transducer. The transducer cannot sense less than [3.6"(6' range) or 6"(12' range)] from its tip.
3. The transducer's ultrasonic signal is cone-shaped with an 8° beam angle. Care must be taken to ensure that there are no obstructions to the beam (wall of tank, ladder, etc.).

See Figure 2.

Important Notes

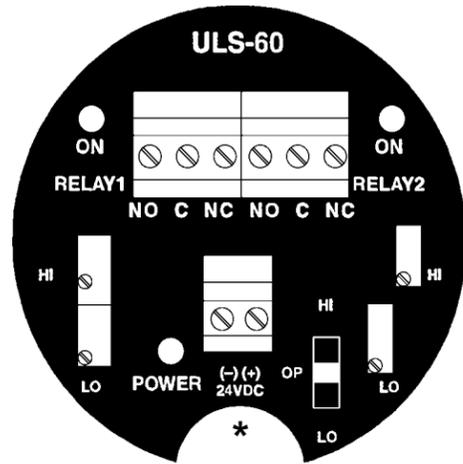
1. Avoid interference with the beam from the side of the tank and obstructions in the tank.
2. Do not install the transducer at an angle.
3. The transducer will not operate in a vacuum.
4. The transducer will not operate properly with the presence of vapors or foam.
5. Use proper sealant on threads.
6. Do not thread more than 1-2 turns past hand-tight.

D Depth Range (In Feet)	R Beam Radius (In Inches)
1	1.2
2	2.1
4	3.7
6	5.4
8	7.1
10	8.8
12	10.4

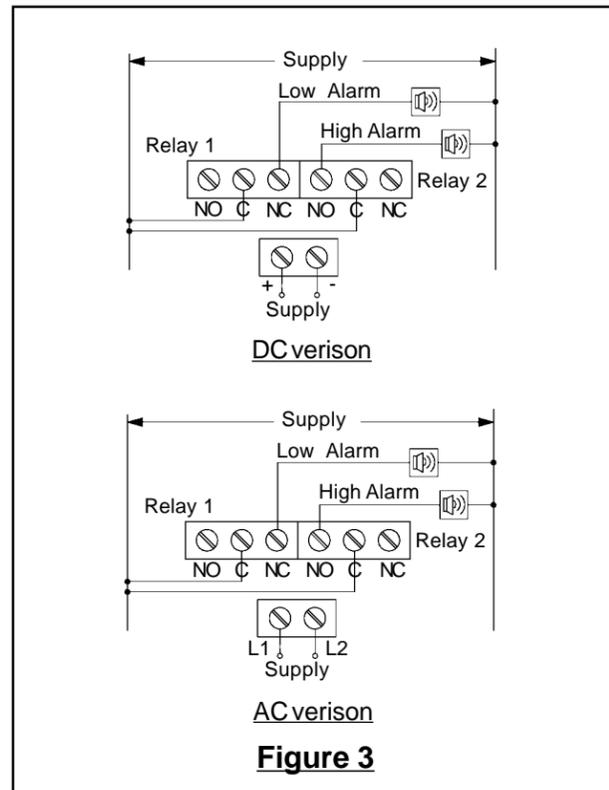


Gems Sensors Inc.
One Cowles Road
Plainville, CT 06062-1198
Toll-Free: 1-800-378-1600

Each relay can be configured for differential service OR for a single level alarm



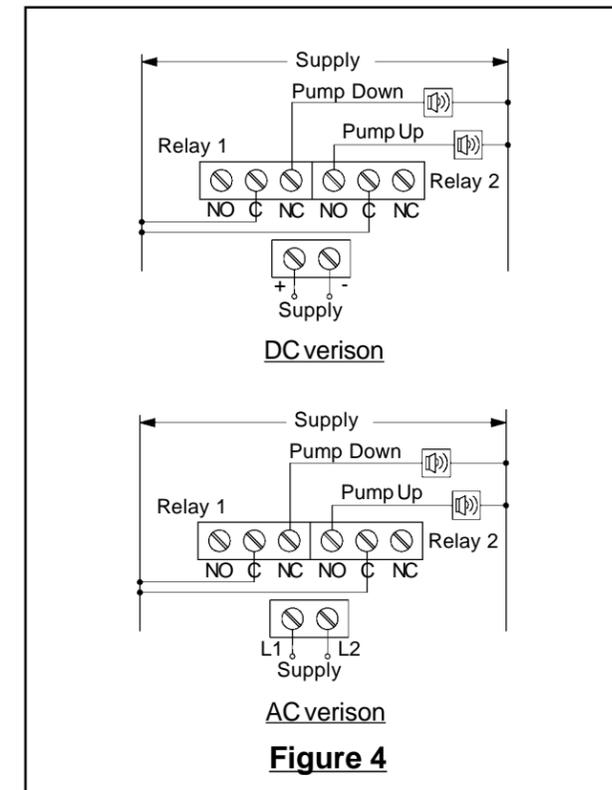
Note: DC version shown. AC version is marked with "L1", "L2" & "AC" in place of "+", "-", "24VDC"



Setting HI or LO alarm

The following procedure should be followed for both HI and LO alarm settings.

1. Connect power supply as shown in Figure 3. Do not connect load.
2. Turn the HI & LO potentiometer screws all the way clockwise (about 20 turns) on chosen relay. Verify relay LED is off.
3. Bring the liquid level to the trip point.
4. Set the selector switch to HI (even if it is a LO alarm being calibrated.)
5. Adjust the HI potentiometer counterclockwise until the LED just turns on.
6. Turn the LO potentiometer all the way counterclockwise. (about 20 turns)
7. Set the selector switch to LO.
8. Adjust the LO pot screw clockwise until the LO relay LED just turns OFF
9. Turn LO pot screw counterclockwise to the point where the LED just turns back on.
10. Set selector switch to OP
11. Repeat steps for other relay if required.
12. Connect load per Figure 3.



Setting Pump-Up or Pump-Down

The following procedure should be followed for both Pump-Up and Pump-Down settings.

1. Connect power supply as shown in Figure 4. Do not connect load.
2. Turn the HI & LO potentiometer screws all the way counterclockwise (about 20 turns) on the chosen relay. Verify relay LED is on.
3. Bring liquid to the low level point.
4. Set the selector switch to LO.
5. Turn the LO pot screw clockwise until the relay LED just turns off.
6. Turn the HI pot screw all the way clockwise. (about 20 turns)
7. Bring the liquid to the high level point.
8. Set the selector switch to HI.
9. Turn the HI pot screw counterclockwise until the relay LED just turns ON.
10. Set selector switch to OP.
11. Connect load per Figure 4.