UCL-210
Ultrasonic Continuous Level Transmitter
(6' and 12' Fixed Ranges)

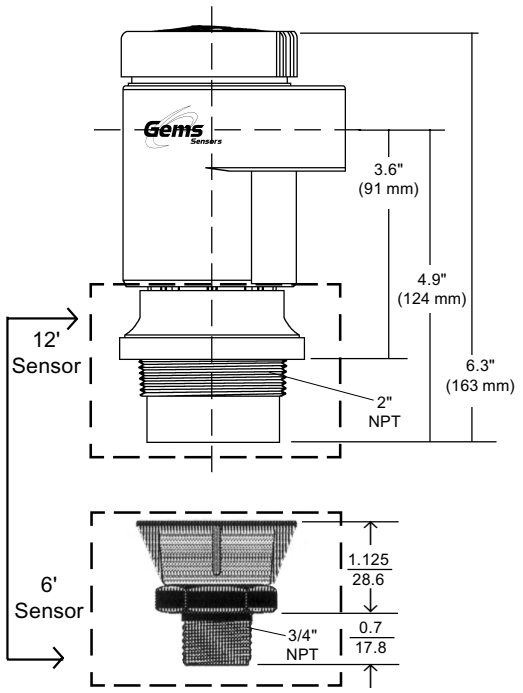
Principle of Operation

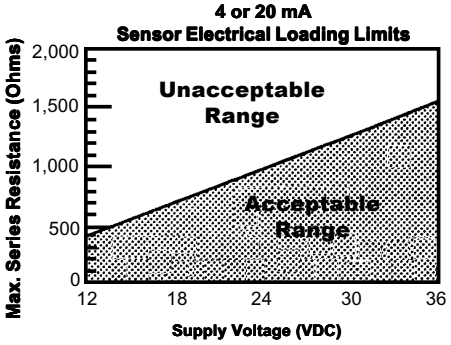
An ultrasonic sound wave is transmitted from the base of the transducer. This sound wave is reflected off the process medium and returned to the transducer. The sensor's electronics calculate the travel time the sound wave requires and determines the distance between the transducer and the medium.

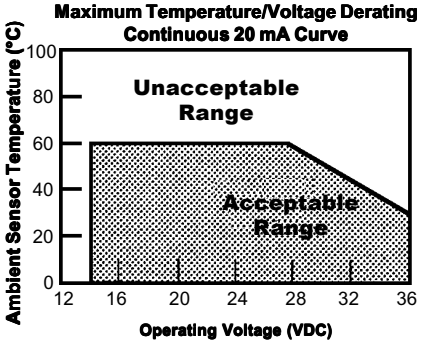
Specifications

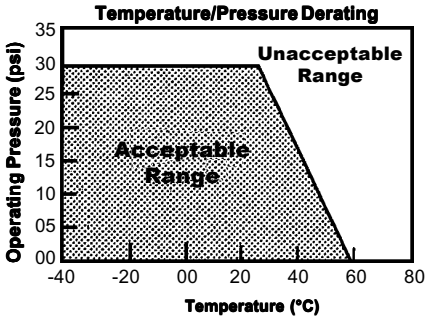
Operating Temperature	-40°F to 140°F
Operating Pressure	30 psi @ 25°C ***(See chart below)***
Input Voltage	12 to 36 VDC
Output	4-20 mA (2-Wire)
Range	3.6" to 72" (6') - 6" to 144" (12')
Accuracy	± 0.25% of span in air
Resolution	0.125" (3 mm)
Beam Width	8° Conical
Max Loop Resistance	600 Ohms @ 36 VDC
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









Mounting

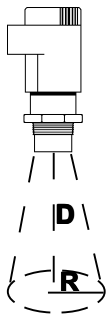
The unit must be mounted vertically above the process medium (liquid) to be measured.

1. The maximum measurable distance is 72" or 144"
2. There is a "dead zone" less than 6" or 3.6" from the end of the transducer. The transducer cannot meaure less than 6" or 3.6" 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 diagrams.***

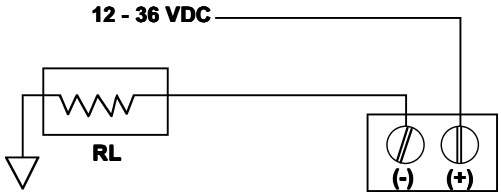
Important Notes

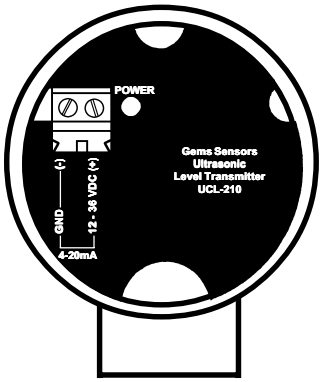
1. **Avoid interference with the beam from the side of the tank and obstructions in the tank.**
2. **Do not install the transducer at an angle.**
3. **The transducer will not operate in a vacuum.**
4. **The transducer will not operate properly with the presence of vapors or foam.**
5. **Use proper sealant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

Depth Range (In Feet)	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



Wiring





1. Remove junction box cap
2. Remove terminal block (pulls off)
3. Wire (through conduit port) positive supply (12 - 36 VDC) to right screw terminal (+) and negative to left terminal (-)
4. Reattach terminal block
5. Replace cover

Operation

The LED indicator labelled "POWER" should be on continuously during normal operation. This indicates that the sensor has power and is functioning. A flashing LED indicates that the device has gone into its fail-safe mode. At this time, the output will increase to 22 mA. This condition is due to the ultrasonic return signal being too weak.

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.

Distance vs Current

Distance Inches	Current mA 6 Ft Range	Current mA 12 Ft Range
3.6	20	
6	19.4	20
12	18	19.3
18	16.6	18.6
24	15.2	17.9
30	13.8	17.2
36	12.4	16.5
42	11	15.8
48	9.6	15.1
54	8.2	14.4
60	6.8	13.7
66	5.4	13
72	4	12.3
78		11.7
84		11
90		10.3
96		9.6
102		8.9
108		8.2
114		7.5
120		6.8
126		6.1
132		5.4
138		4.7
144		4

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.
- 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
- 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.
- 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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