

ULS-1 Single Point Level Switches

- ▶ Compact 1/4" and 1/2" NPT versions
- ▶ All-Stainless Steel wetted materials
- ▶ IP65 ingress protection

Gems ultrasonic switches are an excellent choice for a broad range of liquids including those with light coating or scaling type characteristics.

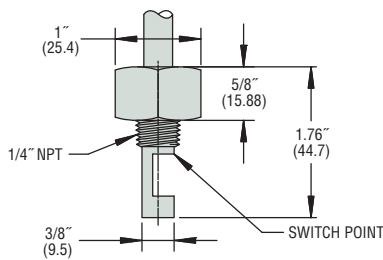
Relay output provides a reliable switch interface with remote devices such as a PLC, SCADA or alarm.

Specifications

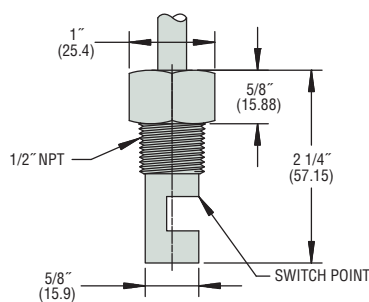
Wetted Material	316L Stainless Steel
Repeatability	2 mm (or better)
Protection	Transient Reverse Polarity
Leakage Current	<50µA
Delay	0.5 seconds
Input Power	5 VDC to 30 VDC
Output	See Ordering Table

Dimensions

1/4" NPT Mounting



1/2" NPT Mounting



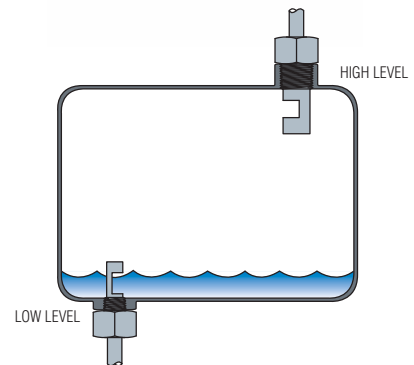
How To Order

Select a Part Number based on Mounting Size and Output.

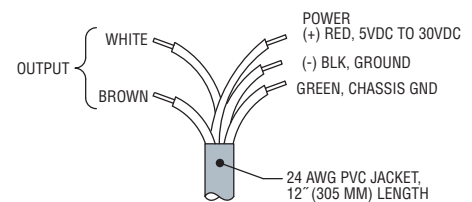
Mounting Size	Electronic Output	Part Number
1/4" NPT	Wet Sink	220901
	Wet Source	220902
	1A SPST Relay, Normally Closed	220903
1/2" NPT	Wet Sink	221485
	Wet Source	221486
	1A SPST Relay, Normally Closed	221487

Note: Other Electronic Output options are available. Please contact Gems. Stocked items highlighted.

- Standard units suitable for use up to 80°C.
 - High temperature versions also available - up to 100°C.

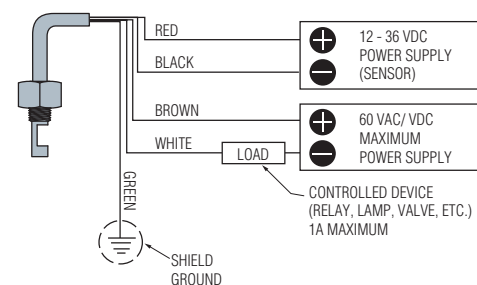


Wiring



Wiring Direct to a Load

N.C. Operation (Relay Signal Output)



Ultrasonic Switches Monitor the Toughest Applications

- ▶ Operates in a wide variety of liquids
- ▶ Handles pressures to 1000 psi
- ▶ Unaffected by foam, vapors, particulate or turbulence
- ▶ Lengths to 121 inches (307.3 cm)
- ▶ Can be side, top or bottom mounted
- ▶ Sized and priced for most applications
- ▶ Easy to install — simple to use

GEMS ULS Series of ultrasonic switches are designed for a broad spectrum of viscous to light liquids; including some of the most challenging liquids you may deal with: acids, freon, paints, lacquers, etc. Stainless steel units are built to withstand high temperatures and pressures with welded stainless steel sensor probes that have no seals to leak and no moving parts to wear out. ULS Series switches are unaffected by variation in temperature, pressure, density or type of liquid. ULS-10 and ULS-100 electronics are housed in cast aluminum, NEMA 4/NEMA 7 explosion proof and water tight enclosures.

Ultrasonic Switch

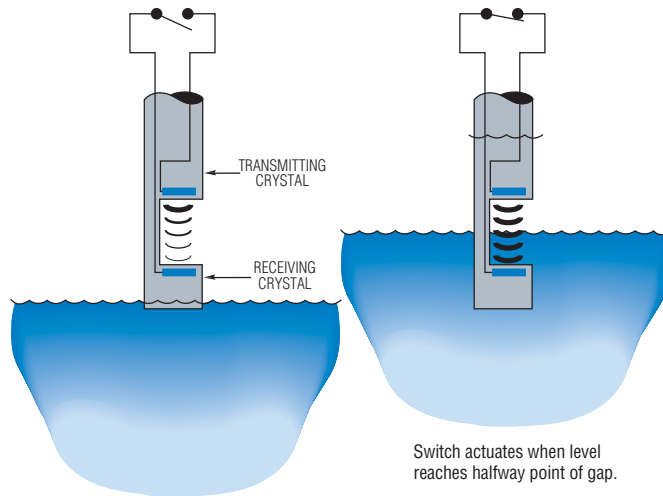
Selection Guide

	ULS-1	ULS-10	ULS-100	ULS-11
Single Point Sensing	•	•	•	•
Input Power:				
115 VAC / 230 VAC		•	•	
12/24 VDC		•	•	
9-36 VDC				•
12-36 VDC	•			
Output:				
10 Amp DPDT		•	•	
1 Amp SPDT	•			•
5 mA (dry), 10 mA (wet)	•			
4 mA / 20 mA Single 2-Wire		•		
FM-Approved Explosion Proof Option			•	
Sensor Material Options:				
316 Stainless Steel (standard)		•	•	•
316L Stainless Steel			•	
Monel®			•	
Hastelloy B®			•	
Hastelloy C®			•	
Teflon®	•		•	
Kynar®			•	
CPVC			•	
Polypropylene	•			



General Operating Principle

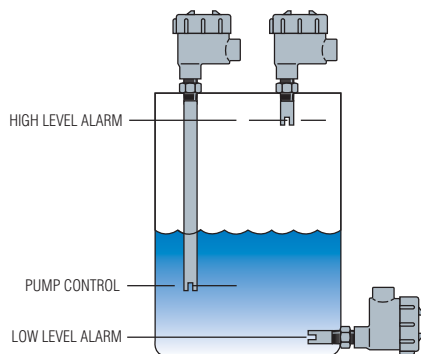
ULS Series switches operate using ultrasonic sound wave propagation. Ultrasonic sound waves are greatly attenuated when transmitted through air. Conversely, when liquid is present, transmission of the sound waves is greatly enhanced. The electronic control unit generates electrical signals that are converted to bursts of ultrasonic energy at the sensor. The ultrasonic bursts are transmitted across the liquid sensing gap. Upon receipt of a valid signal, the solid-state electronics generate a data enable condition, indicating liquid is present. This signal energizes a relay and provides an output condition.



Typical Installation

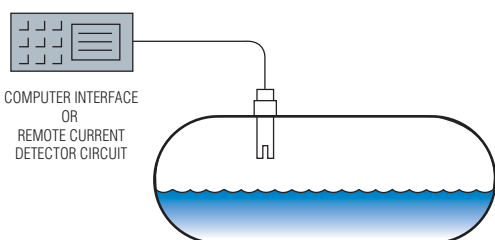
1. Drill a suitable hole in the vessel or pipe wall and tap for 3/4" NPT. In thin walled vessel or material not suitable for threading, weld or braze a bushing to accept the sensor.
2. Screw the sensor in the threaded section and make sure that there is a good seal. Use a pipe compound or sealing tape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

Vertical or Horizontal Mounting



Advantages of GEMS ULS-10 2-Wire Output Switches

1. No A.C. Power
2. No Coaxial Cable Required
3. Up to 1000 ft. or Longer Distance
4. Reduces Installation Cost



Secondary Containment Tanks and Piping Systems

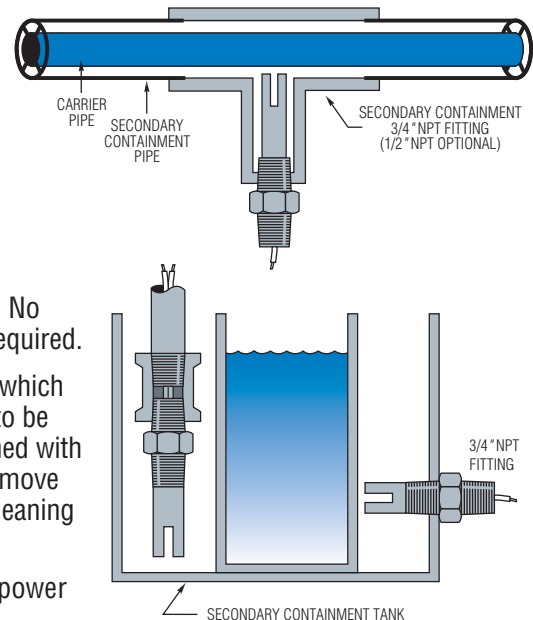
Maintenance

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.

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.



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