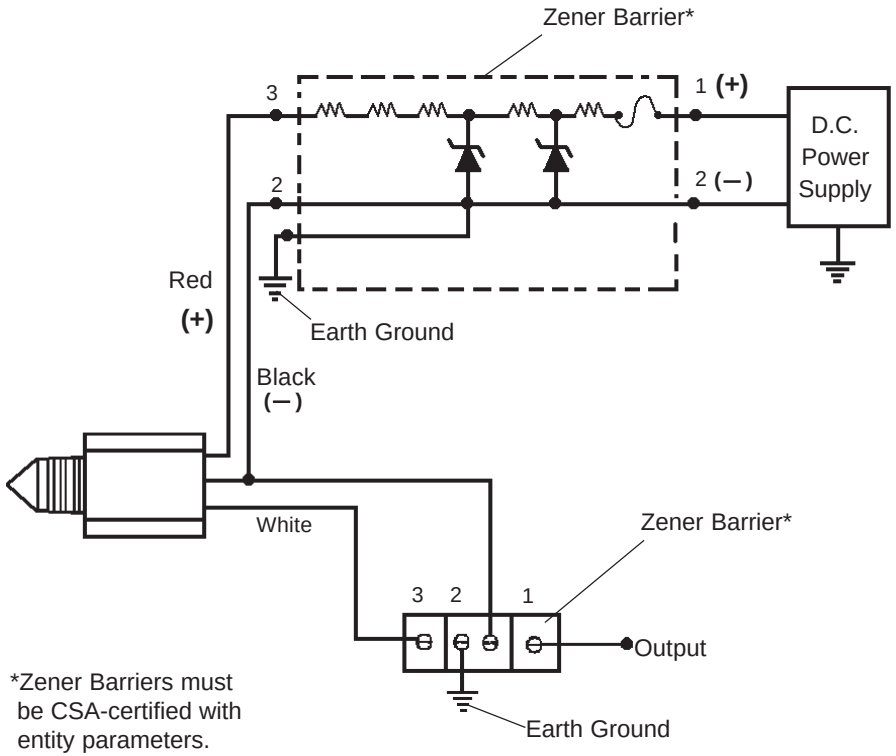
Zener Barrier Wiring Diagram



Notes:

1. Source voltage not greater than 250 VAC. Zener Barriers must be installed in accordance with barrier manufacturer's instructions.

Maintenance . . .

Sensor may require a periodic cleaning of prism surface. **Chlorinated hydrocarbons *must not be used* for cleaning.** A mild detergent may be used to clean prism surface.

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148745
Rev. G

Electro-Optic Level Switch
ELS-1100 I.S. Series

P/N 148936, 148937, 148938, 148939, 148940, 148941, 148942, 148943

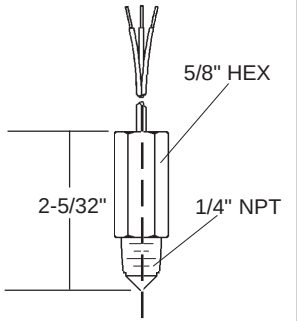
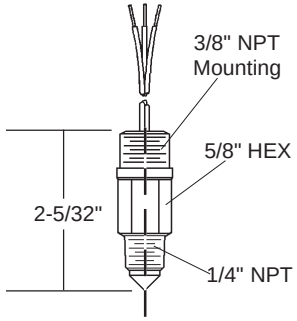
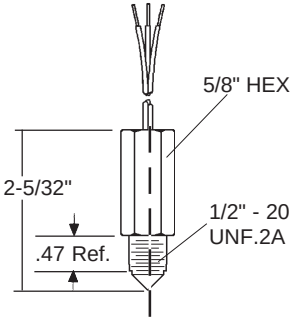
Instruction Bulletin No. 148745

(10-22 VDC Input Voltage Versions)

When installed in accordance with this guide, the sensor is suitable for use in Class I, Division 1, Groups C and D.

***** Warning:** To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing.

Dimensional Data . . .

1/4" NPT	1/4" NPT with 3/8" Conduit	1/2" Straight Thread
		

Sensor Operating Principle . . .

The sensor contains an infrared LED source and a phototransistor detector. Light from the LED is directed into a prism, which forms the tip of the sensor. With no liquid present, light from the LED is reflected within the prism to the phototransistor. When rising liquid immerses the prism, the light is refracted out of the prism, leaving little or no light to reach the detector. Sensing this change, the detector actuates electronic switching with the unit to operate an external alarm or control circuit.

WARNING

The nature of the sensor is that it is a non-voltage producing device, containing no energy-storing components. However, since its primary use is in a hazardous location, an appropriate intrinsically safe interface device must be used and installed in strict accordance with the National Electrical Code and applicable GEMS technical brochure and instruction bulletin. Failure to observe this warning could result in serious injury or damages.

Installation . . .

1. Use Teflon (TFE) thread tape or Permatex #80725 plastic pipe sealant to seal thread. **Caution: Pipe sealant must not come in contact with prism surface.**

2. Thread sensor into tank wall and tighten by hand. Further tighten an additional one to two threads past hand-tightness. **(Avoid overtightening, as this may damage threads.**

3. Sensor may be installed in **horizontal** or **vertical** positions, only.

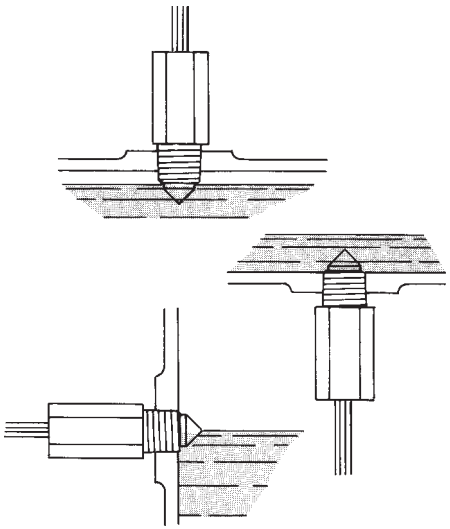
4. Do not install sensor close to infrared sources.

5. Prism surface must be at least 2" from any reflective surfaces.

6. Connect 10-22 VDC power to red lead; return (-) to black lead.

7. Output signal lead (white) should not be terminated to voltages greater than 13 VDC.

Typical Mounting Attitudes . . .



Note: Units must be mounted vertically or horizontally.

Temperature Range . . .

Temperature Range (°F)	Temperature Range (°C)
0°F to 176°F	-17.8°C to 80°C

Notes:
1. Not for use in freezing liquids.
2. Polysulfone or nylon construction.

Pressure Ranges . . .

0 - 150 psi, Max.

Running of Field Wire . . .

A. The conductors of the intrinsically safe circuit should be sealed in a rigid metal conduit at the point where the wiring enters the hazardous area. The wiring and contacting device should be such that conductive dusts in the area will not close the circuit in place of the contacts.

B. Hazardous area field wiring will store energy due to distributed capacitance and inductance in proportion to its length. The maximum run of cable has been defined at 750 feet between barrier and sensor.

For CSA intrinsic safety approval, the following Gems' barriers must be used: 111950 and 111954

U.L. Entity Parameters (Sensor)

Terminal	Vmax	Imax	Ci	Li
Red/Black	38V	150mA	.052µf	0
White/Black	38V	150mA	.052µf	0

Vmax ³ Voc (barrier)
Imax ³ Isc (barrier)
Ci + ^{C}cable £ ^{C}A(barrier)
Li + ^{L}cable £ ^{L}A(barrier)

C. Shielded cable is not required, but if used in the application, the shield must be returned to ground. The shield must be connected to barrier earth ground.

D. Intrinsically safe wiring must be installed in accordance with Article 504 of the NEC, ANSI/NFPA-70 or CEC Part 1, as applicable.. 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.