



# ELS-1200 Series Electro-Optic Level Switch (DC Version)

**Installation**

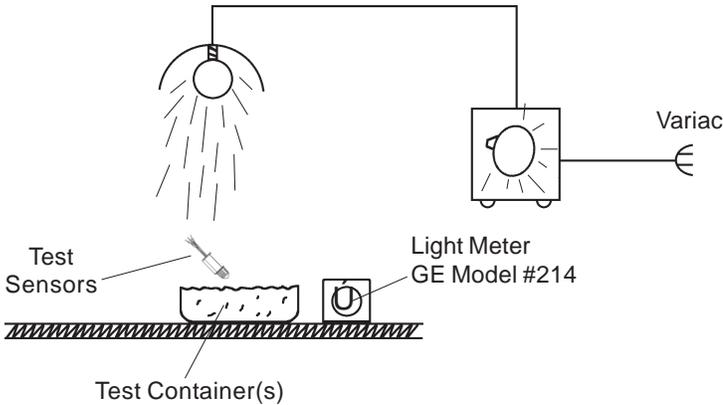
- 1a. **3/4" Straight Thread Switch\***: Thread sensor into tank wall and tighten by hand. Tighten to a maximum torque of 15 ft-lbs.
- 1b. **1/2" NPT Switch\***: Apply a curing type thread sealant (such as Loctite #565 with primer "N"), which is compatible with the liquid media. Tighten one-to-two turns (Max.) from hand-tight engagement.
  - \***Caution: Do not tighten unit via the conduit connection.**
- 2. Thread unit into a properly sized fitting. Thread to a hand-tight engagement. Torque unit one to two turns (maximum) past the hand-tight engagement.
- 3. Sensor may be installed **horizontally** or **up to 45° from horizontal**, only. (See Figure 1)
- 4. Do not install sensor close to infrared sources.
- 5. Prism surface must be at least 2" from any reflective surfaces.
- 6. Connect appropriate voltage supply to red lead. For 12 VDC units, connect to 12 VDC ±5%. For 5 VDC units, connect to 5 VDC ±5%.
- 7. **Current Consumption**: Approximately 45mA
- 8. **Output Specifications**: 5V TTL/CMOS - Maximum current sink of 18mA
- 9. **Output Configuration**: (See Figures 2 and 3)
- 10. Teflon (TFE) tape or Permatex #80725 plastic pipe sealant may be used for conduit connection thread.

**Specifications**

<b>Materials</b>	
<b>Housing</b>	
ELS-1200	Zinc/Nickel-Plated Carbon Steel
ELS-1200CR	Stainless Steel and Hastelloy®-C
<b>Prism</b>	Fused Glass
<b>Operating Pressure</b>	0 to 2500 psig, Max.
<b>Operating Temperature</b>	-40°F to +212°F (-40°C to +100°C)
<b>Current Consumption</b>	~45 mA
<b>Output</b>	TTL/CMOS Compatible, Transistor Output with 10K Pull Up Resistor. May sink 18 mA. 12 VDC Input power units switch a maximum 5 VDC on output.
<b>Electrical Termination</b>	22 AWG, Polymeric, 12" to 14" Extended Lead Wires
<b>Repeatability</b>	±1 mm
<b>Approvals</b>	Units labeled  U.L. file E180359

**Note: Not for use in freezing liquids**

The test depicted below was performed to determine the sensor immunity level to ambient light. The recorded ambient is the maximum level at which the sensor performs/detects normally.



Sensor Type	Black Container	Opaque Container
ELS-1100 Polysulfone	300 Ft-Cd	45 Ft-Cd
ELS-1100 TFE	100 Ft-Cd	25 Ft-Cd
ELS-1100HT Isoplast	500 Ft-Cd	250 Ft-Cd
ELS-1200 RE	250 Ft-Cd	25 Ft-Cd
ELS-1200 Polysulfone	>1,000 Ft-Cd	700 Ft-Cd
ELS-1100 Polysulfone	400 Ft-Cd	25 Ft-Cd
ELS-1100 Polysulfone	65 Ft-Cd	25 Ft-Cd

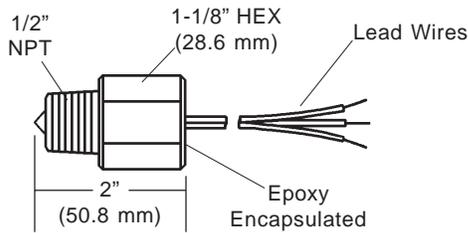
**Note:** 1 Ft-Cd = 10.7 Lux

Above testing is based on minimum readings of at least two (2) samples.

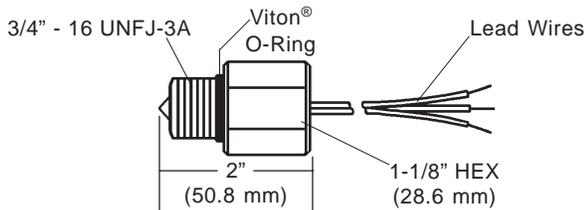
## Dimensions

### ELS-1200 Series

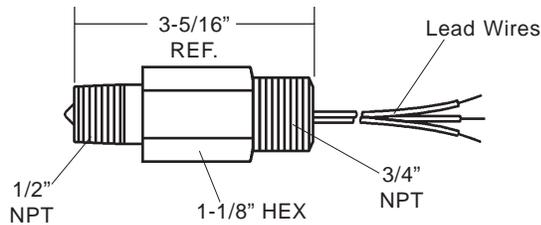
#### 1/2" NPT Mounting



#### 3/4" - 16 Straight Thread Mounting

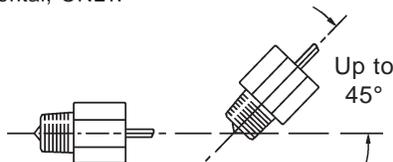


### ELS-1200CR Series



## Mounting Attitude

These units must be mounted horizontally or up to 45° from horizontal, ONLY.

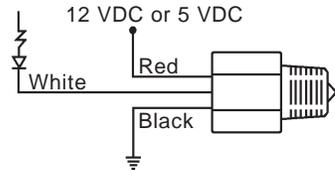


- Figure 1 -

## Wiring Diagrams

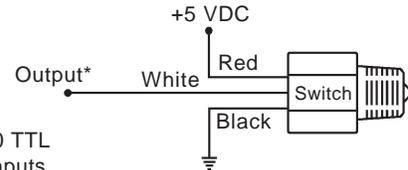
### ELS-1200 & ELS-1200CR

#### Transistor Output



- Figure 2 -

#### TTL Compatible Output



\*Can drive 10 TTL logic gate inputs

- Figure 3 -



This product complies with EN61326 Electrical Equipment for Measurement, Control and Laboratory use - EMC Requirements for Minimum Requirements and Industrial Locations. Special caution should be taken to meet EN61000-4-5 Surge Immunity if any of the following conditions apply to the installation: The product is installed outside; the cable is greater than 30 meters in length. In order to meet the Surge Immunity requirements, the following conditions must be followed during installation:

1. Shielded cable must be used, and the shield must be tied to earth ground (not power supply ground) on at least one end of the cable shield/drain wire. The shield must be maintained all the way from sensor to the power supply.
2. If unshielded cable is used, an earth grounded metal conduit can be used to replace the shielded cable.
3. For the sensor with metal body or enclosure the body/enclosure must be grounded to earth. If a protective metal housing is used, the metal housing should be grounded to earth.
4. If a protective plastic housing is used, the housing must be able to withstand at least 2 kV from the housing to earth ground.

## Maintenance

Sensor may require a periodic cleaning of prism surface. A mild detergent may be used to clean prism surface.

## 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

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## 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.
- For hazardous area applications involving such things as, but not limited to, ignitable mixtures, combustible dust and flammable materials, use an appropriate explosionproof enclosure or intrinsically safe interface device.
- 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.
- NSF-approved sensors are made of materials approved for potable water applications according to Standard 61.
- Stainless steel is generally regarded as safe by NSF and FDA.
- 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.



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