

ELS-900—Our Smallest Optic Yet. Handles Temperatures to 257°F!

The smallest electro optic sensor in our arsenal, the ELS-900 also carries the highest temperature capability of any of our optic sensors. Its Polyethersulfone housing extends this sensor's compatibility and is very affordable in high volumes. Excellent for industrial OEMs preferring optics with high temperature and small space requirements.

Typical Applications

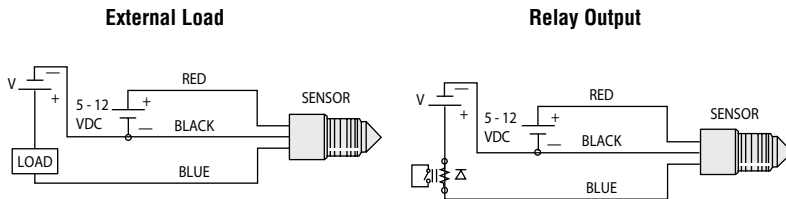
- Coolant reservoir monitoring and warning
- Medical diagnostic, sterilizer, washers and dialysis equipment
- Low lubricant warning on machine tools, generator sets, on- or off-highway vehicles
- Low level warning in hydraulic reservoirs
- Plastic over flow bottles, plastic radiators

Specifications

Housing Material	Polyethersulfone
Operating Pressure	0 to 250 PSI (17 bar), Maximum
Operating Temperature*	-40°F to +257°F (-40°C +125°C)
Current Consumption	4 mA, for 5 Vdc (No Load) 10 mA for 12 Vdc (No Load)
Output	May Sink 40 mA. max., up to 30 VDC
Repeatability	±1 mm
EMI	CE approved per EN 61000
Shock Tested	Per MIL-Std-202 Method 204
Vibration Tested	Per MIL-Std-202 Method 213B

* These switches are not for use in freezing liquids

Wiring Diagrams



How To Order

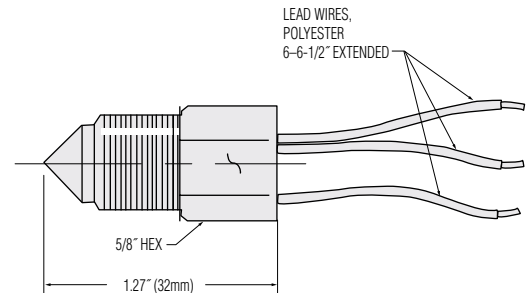
Specify Part Number based on Input and Output Condition required.

Input Power	Condition	1/4" NPT	1/2"-20 SAE #5	M12x1-8
5 V	Wet	207200 ⚡	208993	208997
	Dry	207300 ⚡	208994	208998
12 V	Wet	205200 ⚡	208991	208995
	Dry	205300 ⚡	208992	208996

⚡ – Stock Items.



Dimensions



Extended Power and Switching Capabilities of 12 VDC Models with Gems.

Converts TTL output signal to 5 Amp relay output. Available as open circuit board or mounted in a NEMA 4X enclosure (pictured). See Page A-35.



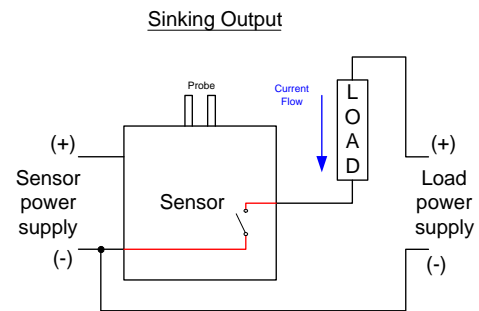
ELS-900 Electro-Optic Level Switch

Frequently Asked Questions

Can you explain what the sinking output means?

Sinking and sourcing are terms used to describe how an associated load (the device being turned on or off by the sensor) is powered in relation to the sensor.

Sinking, the more widely used of the two, involves the switching of load current (power) supplied by a power source *external* to the sensor. In a sinking configuration, current passes through the load first, through the output switch of the sensor second and lastly to ground. A sensor with a sinking output switches the ground, or negative, leg of the circuit.



What's the difference between wet sink and dry sink?

Wet sink means the load is energized ("ON") as long as the sensor tip is immersed in fluid.

Dry sink means the load is energized as long as the sensor tip is dry (i.e. not immersed in fluid).

How does ambient light affect the sensor?

Ambient light, especially in the Infrared spectrum at modest intensities can cause the sensor to switch to the "on" state. Precautions should be made to prevent this situation.

How close to a reflective surface can you mount the sensor?

If the sensor is mounted within 2" of a highly reflective surface (i.e. polished stainless steel, mirror, etc.), it can switch to the "on" state. Blackening or dulling these surfaces can reduce this effect.

Can I get a different output?

The ELS-900 is currently available in 5 or 12 VDC, wet or dry sink. If you require a different output, please contact AEL to see what we have in development.

Does the ELS-900 offer reverse voltage protection?

Yes.

Is there a time delay?

The ELS-900 does not offer a time delay. If you require a time delay, use the ELS-1100 series.

What are the EMI susceptibility specifications?

The ELS-900 has been approved to CE EN 61000.

Can you use the ELS-900 in dirty liquids, such as old engine coolant?

Yes. The ELS-900 will perform in milky, cloudy and/or dirty liquids. Coating liquids are NOT recommended.

ELS-900 Series Electro-Optic Level Switch

Specifications

Materials	
Housing and Prism	Polyethersulfone
Operating Pressure	0 to 250 psig, Max.
Operating Temperature	-40°F to 257°F (-40°C to +125°C)
Current Consumption	18 mA, Approximately
Input Voltage	See Part Number Chart
Output Configuration	Open drain may sink 40mA max.
Current Consumption (No Load)	~ 4mA @ 5Vdc ~ 10mA @ 12 Vdc
Repeatability	±1 mm
Ambient Light Immunity	See Ambient Light Test
Approval Specifications	UL / CUL Pending CE approved per EN 61000 EMC

Part Number Chart

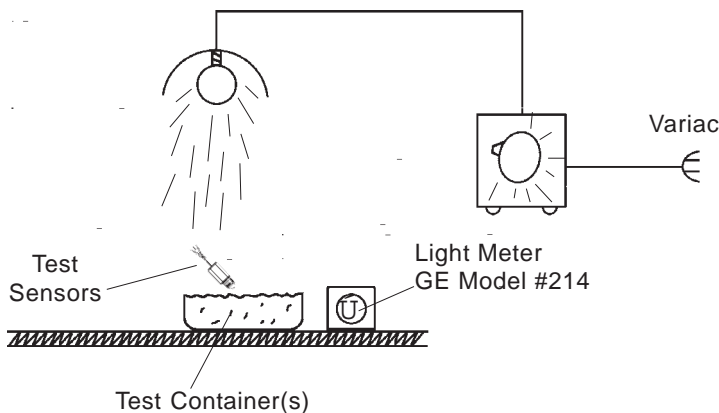
Thread	Part Number	Output State	Input Voltage
1/4" NPT	205200	Wet Sink	12V
	205300	Dry Sink	12V
	207200	Wet Sink	5V
	207300	Dry Sink	5V
1/2"-20 SAE	208991	Wet Sink	12V
	208992	Dry Sink	12V
	208993	Wet Sink	5V
	208994	Dry Sink	5V
M12X1-8	208995	Wet Sink	12V
	208996	Dry Sink	12V
	208997	Wet Sink	5V
	208998	Dry Sink	5V

Note: Not for use in freezing liquids

Installation

- For NPT threaded units, 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.
- Thread sensor into tank wall and tighten by hand. Further tighten an additional one to two threads past hand-tight. (Avoid overtightening, as this may damage threads)
- Sensor may be installed in horizontal or up to 45° from horizontal plane for best operation. Vertical mounting is possible, may be droplet sensitive, depending on viscosity of media.
- Caution:** Do not install sensor close to infrared sources or incandescent light. Reflective surfaces may interfere with proper operation of the optical sensor. (Consult Gems Sensors if prism is to be mounted less than 2" from any reflective surface.)
- Connect voltage supply (Vdc ± 10%) Between red (+) and black (-) of the unit.
Caution: Do not connect output (blue wire) to Vdc power without a load.
See wiring diagrams for output configuration.

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.



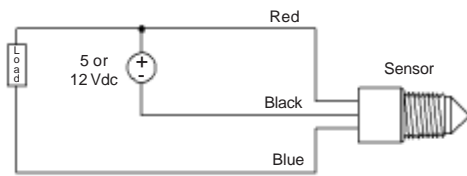
Max Ambient Light	
Black Container 390 FT-CD	Opaque Container 30 FT-CD

Note: 1 Ft-Cd = 10.7 Lux

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

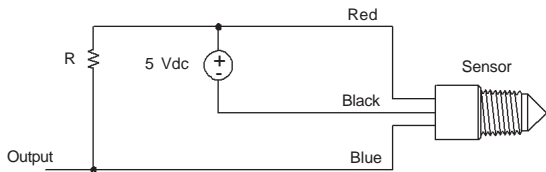
Typical Wiring Diagrams

External Load



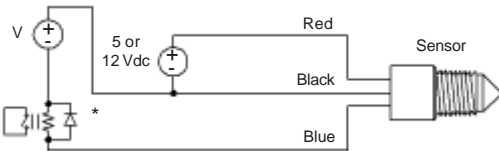
Note: May sink up to 40mA max. Use diode suppression for inductive loads.

CMOS / TTL Output



Max. current sink = 40mA
R = Pull-up Resistor (4.7K 1/4W)

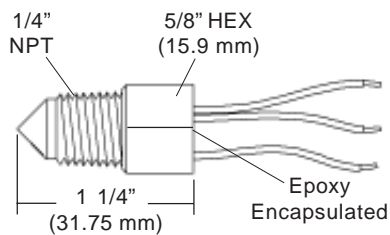
Relay Output



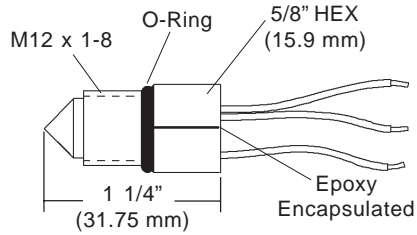
Note: * For inductive loads, use diode suppression

Dimensions

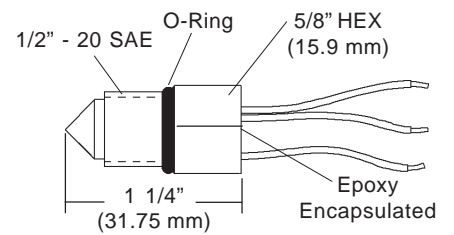
1/4" NPT Mounting



M12 x 1-8



1/2"-20 SAE



Electrical Termination: Lead Wires, 22 AWG, Polyester Jacketed, 6" to 6 1/2" Extended