Rev. 4.02

OPL Series

Optical Liquid Level Sensors

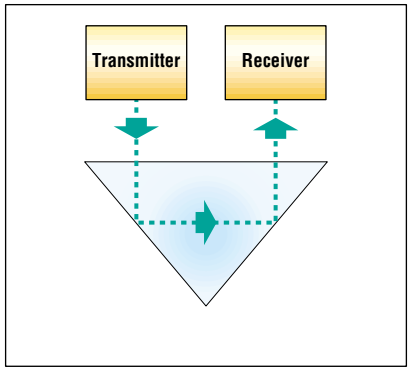
- Very small OEM type optical level sensors
- Standard rubber grommet fitting for commercial applications
- Optional NPT or BSP threaded fittings for industrial or OEM vehicle applications
- Estel sensor material suitable for pure water and most oils
- Polysulphone sensor material option for acids and alkalines or high temperatures
- DC powered at 5 VDC, other voltages are available on request
- PNP transistor output

Operational Description

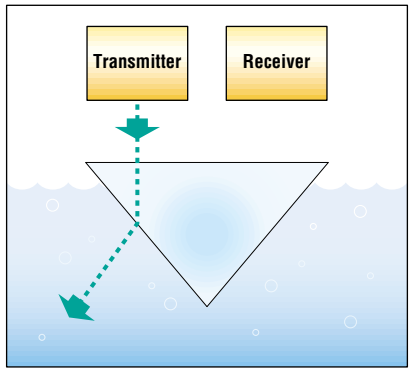
The OPL series utilizes the optical principles of a prism to detect the presence or absence of a liquid as compared with air. The sensor contains a small infrared LED and a phototransistor light receiver. Light from the LED is directed into the prism at the tip of the sensor. When the container is empty, light from the LED is reflected within the prism back to the receiver. As the liquid rises to cover the sensor, light is refracted out into the liquid and is not returned to the receiver. The change in state is detected and results in an output signal.

The OPL is designed to meet standards set by major food and health agencies around the world. It conforms to the Japan Ministry of Health and Welfare and to the FDA standards in the USA.

UL approved components are used in construction of the sensor. Specific UL or CSA approval on the sensor is available on request.



Sensor in Air



Sensor in Liquid

To Assist Your Selection Process
See the level and flow control engineering form located at www.automationsensors.com/6259 (or fax back #6259).

■ Applications

The OPL series of sensors are designed for low cost liquid level monitoring and leak detection. Typical industries served are: semiconductor, clean water, pharmaceutical, automotive OEM, machine tool, home appliances such as oil fitted heaters, and electrical equipment such as liquid insulated transformers and capacitors.

The optical principle employed is suitable for pure liquids (no suspended solids to coat sensor and block optical beam). Typical liquids sensed are: petroleum and vegetable oils (diesel, kerosene, gasoline, hydraulic, lubricant, transmission fluid), alcohols (ethyl, methyl), ethylene glycol (antifreeze) and pure water (DI or distilled water).

■ Options

Polysulphone sensor body will allow for use in caustic liquids such as acids and alkalines. Check chemical compatibility tables at the STI website or other sources for specific compatibility. Special fittings and mounting are available on request, as are special voltage input and output. Cabling and connectors can be specified.

■ Specifications

	OPL-003	OPL-004	OPL-006
PERFORMANCE			
Function:	Switch on low level	Switch on high level	Switch on low level
Sensor Output:	PNP open collector; 18 mA max. 500 mA PNP, AC SSR or mechanical relay on request	PNP open collector; 18 mA max. 500 mA PNP, AC SSR or mechanical relay on request	PNP open collector; 18 mA max. 500 mA PNP, AC SSR or mechanical relay on request
Approvals:	UL approved components; IS ratings for hazardous area on request	UL approved components; IS ratings for hazardous area on request	UL approved components; IS ratings for hazardous area on request
ELECTRICAL			
Supply Voltage:	5 VDC (±0.5 VDC) 10-30 VDC on request	5 VDC (±0.5 VDC) 10-30 VDC on request	5 VDC (±0.5 VDC) 10-30 VDC on request
Wiring:	#26 AWG, 3 cond. Connectors available	#26 AWG, 3 cond. Connectors available	#26 AWG, 3 cond. Connectors available
PHYSICAL			
Material:	Estel sensor (standard) Brass or SS316 (optional)	Estel sensor (standard) Brass or SS316 (optional)	Polysulphone (standard) Brass or SS316 (optional)
Potting Compound:	Epoxy	Epoxy	Silicone
Dimensions:	0.45 x 1.83 in. standard (11.5 dia. x 46.5 mm)	0.45 x 1.48 in. standard (11.5 dia. x 37.5 mm)	0.45 x 1.48 in. standard (11.5 dia. x 37.5 mm)
Rating:	NEMA 6P/IP67	NEMA 6P/IP67	NEMA 6P/IP67
Mounting:	Rubber grommet (standard) 1/4 in. NPT (optional) 3/8 in. NPT (optional) 1/2 in. NPT (optional) M12 (optional) BSP (optional)	Rubber grommet (standard) 1/4 in. NPT (optional) 3/8 in. NPT (optional) 1/2 in. NPT (optional) M12 (optional) BSP (optional)	Rubber grommet (standard) 1/4 in. NPT (optional) 3/8 in. NPT (optional) 1/2 in. NPT (optional) M12 (optional) BSP (optional)
ENVIRONMENTAL			
Operating Temperature:	-4 to 140°F (-20 to 60°C)	-4 to 140°F (-20 to 60°C)	-4 to 302°F (-20 to 150°C)
Storage Temperature:	-22 to 158°F (-30 to 70°C)	-22 to 158°F (-30 to 70°C)	-22 to 338°F (-30 to 170°C)
Maximum Pressure:	10 bar, 145 psi (1 Mpa)	10 bar, 145 psi (1 Mpa)	10 bar, 145 psi (1 Mpa)

For the Latest Information
Try Our Fax Back System at **1/916/431-6544**
On the Internet: **www.stiautomationproducts.com** E-mail: **sales@stiautomationproducts.com**

■ Corrosion Resistance Guide

Estel Body Material of Optic Level Sensor and Thermistor Level Sensor

This chart is intended as a general guide and has been complied from many sources believed to be reliable, however, no guarantee is implied. Because of the extensive scope of this field, the tabulation is not complete or conclusive. Corrosion rates vary widely with concentration, temperature and the presence of abrasives. Impurities or other trace elements common in industrial liquids may inhibit or accelerate the reaction of the material.

Key to Ratings:

A: No effect	Usable
B: Minor effect	Usable, but life my be shorter than usual
C: Fair to poor	Do not use
D: Not recommended	Do not use

Specifications are subject to change without notice.

Immersion test conditions:
73°F (23°C) x 672 hours

The estel material is chemically similar to DuPont Hytrel® (Reg TME.I. DuPont de Nemours & Co.)

Chemical		Rating
Acetic Acid	5%	B
Acetic Acid	10%	D
Acetone		C
Alcohols	Ethyl	A
	Methyl	A
Aromatic Solvents		C
ASTM Motor Fuel	A	A
	B	A
	C	C
ASTM Ref Oil	#1	A
	#2	A
	#3	A
Beer		A
Benzene		C
Bleaching Liquors	5%	A
	10%	C
Calcium Hydroxide		B
Calcium Hypochlorite	5%	A
	10%	C
Calcium Oxide		B
Chlorine Water		D
Chlorine		D
Cider (Apple Juice)		B
Ethanol		A
Ethylene Glycol		A
Fatty Acid		B
Ferric Chloride		C
Ferrous Sulfate		B
Fruit Juice		B
Gasoline		A
Glucose (Corn Syrup)		B
Glue, P.V.A.		B
Glycerin		A
Grease		A
n-Hexane		C
Hydrochloric Acid		D
Hydrogen Peroxide		D
Jet Fuel/ASTM-A		D
Kerosene		A
Lubricant Oil		A

Chemical		Rating
Methanol		A
Methyl Ethyl Ketone		B
Methyl Isobutyl Ketone		B
Milk		A
Naphtha		B
Nitric Acid		D
Oils	Aniline	D
	Castor	A
	Corn	A
	Diesel Fuel	A
	Fuel	A
	Mineral	A
	Silicone	A
	Transmission	A
	Vegetable	A
Petroleum		B
Propane (LPG)		B
Propylene Glycol		A
Salt Brine (NaCl Saturated)		A
Sea Water		A
Soap Solutions		A
Sodium Carbonate		B
Sodium Bicarbonate		B
Sodium Chloride		A
Sodium Hydroxide	10%	A
	20%	B
	50%	D
Sodium Hypochlorite	20%	A
	100%	D
Sulfuric Acid	10%	A
	25%	B
	50%	D
Toluene		C
Urea		B
Vinegar		C
Water	Fresh	A
	Salt	A
Whiskey		B
Wine		A
Xylene		C

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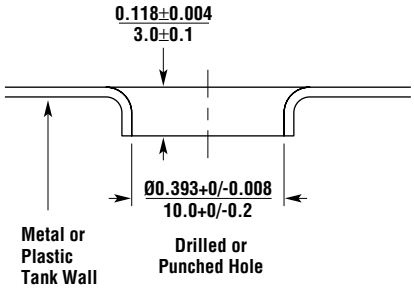
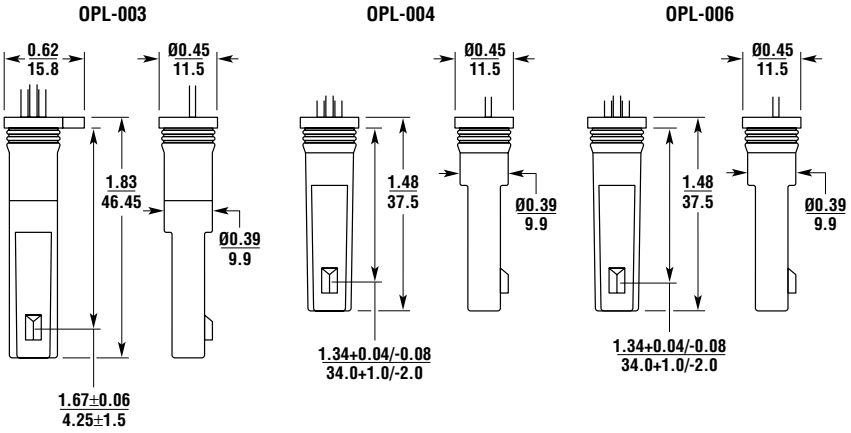
Installation

Standard rubber grommet mounting.

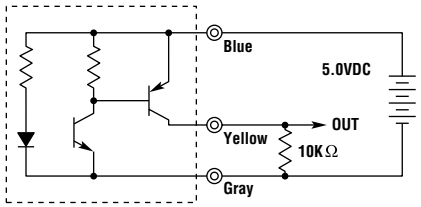


Dimensions

in.
mm



Wiring



Ordering Information

OPL – ☐ – ☐ – ☐ – ☐ – ☐ – ☐

Basic Function

003	Low level (switch ON when dry)
004	High level (switch ON when wet)
006	Low level (switch ON when dry); high temperature
007	High level (switch ON when wet); high temperature

Power

(null)	5 VDC standard voltage
S	12-30 VDC

Housing Material

(null)	Estel (standard)
P	Polysulfone (available on OPL-006 only)

Mounting Material

(null)	Rubber grommet (standard)
BR	Brass
SS	316SS

Mounting

(null)	Rubber grommet (standard)
T25	1/4 NPTM
T38	3/8 NPTM
T50	1/2 NPTM
M___	Other (specify)

Options

M___	Specify options such as cable, connector