

LLE Series

Liquid level sensors



DESCRIPTION

The enhanced series of liquid level sensors incorporates a photo-transistor trigger which provides a digital output that denotes the presence or absence of liquid.

The mode of operation is derived from the principle of total internal reflection. An LED and photo-transistor are housed within a plastic dome at the head of the device. When no liquid is present, light from the LED is internally reflected from

the dome to the photo-transistor. When liquid covers the dome, the effective refractive index at the dome-liquid boundary changes, allowing some light from the LED to escape. Thus the amount of light received by the photo-transistor is reduced and the output switches, indicating the presence of liquid. This method of liquid level sensing is very fast, and almost instantaneous for water.

FEATURES

- Solid state technology
- Small size
- Digital output
- Pre-wired
- Electrically robust

BENEFITS

- Accurate, repeatable switching point
- Can be mounted in applications where space is limited
- Microprocessor compatible
- Easy to install, saving assembly time
- Reverse polarity, over voltage, short circuit and transient protection

TYPICAL APPLICATIONS

- Home appliances
- Spa baths
- Vending machines
- Food and beverage
- Medical
- Compressors
- Machine tools
- Automotive

ORDER GUIDE

| Catalogue Listing | | | |
|-------------------------------|---------------------|----------------------|------------------|
| Description | | Standard temperature | High temperature |
| Screw In, M12 Thread, Plastic | (Type 1) | LLE101000 | LLE101101 |
| | (Type 2) | LLE102000 | LLE102101 |
| | (Type 3) | LLE103000 | LLE103101 |
| Push In, Plastic | (Type 5) | LLE105000 | LLE105100 |
| Screw In, ½ in, Metal | Nickel plated brass | LLE205000 | LLE205100 |
| | Stainless steel | LLE305000 | LLE305100 |

LLE Series

TECHNICAL INFORMATION

| Specifications | | |
|--|--|---|
| Operation mode | User defined single point on/off switch (Output is high in air) | |
| Repeatability (mm) | ± 1 | |
| Hysteresis (mm) | 2 (dependent on liquid) | |
| Response time | Rising liquid level - 50 µs Falling liquid level - 1 s max (in ethanol) Response in other liquids dependent on viscosity | |
| Mechanical | | |
| Mounting | Type 1 and 2 - mounted from outside; Type 3 and 5 - mounted from inside | |
| Termination | 250 mm flying leads (180 mm for metal versions) | |
| | Blue | 0 V |
| | Red | +5 V to +12 V supply |
| | Green | Output |
| Material [Note 1] | Polysulphone | |
| Dimensions | Plastic LLE101/102/103 Series | Metal LLE205/305 Series |
| | Dome 3,5 mm radius (includes LLE105 Series) | |
| | Thread M12x1 | ½ in BSPT |
| | Hex 19 mm | 24 mm (See mounting drawings on page 3) |
| Environmental | | |
| Standard temperature | | High temperature |
| Operating temperature (°C) | -25 to 80 (-13 °F to 176 °F) | -40 to 125 (-40 °F to 257 °F) |
| Storage temperature (°C) | -30 to 85 (-22 °F to 185 °F) | -40 to 125 (-40 °F to 257 °F) |
| Thermal testing | As per BS EN60068-2-33 | |
| Humidity | As per BS EN60068-2-30 | |
| Vibration | As per BS EN60068-2-6 Part S3: 1996 | |
| Mechanical shock | As per BS EN60068-2-27 Part 2 Ea: 1987 | |
| Pressure range (bar) | 0 to 5 (plastic housing) [Note 2] 0 to 25 (metal housing) | |
| Ambient IR light limit (@ 940 nm) [Note 3] | 10 mW/cm ² in operation | |
| Electrical | | |
| Standard temperature | | High temperature |
| Supply voltage (Vcc) | +5 Vdc to +12 Vdc ± 5 % | |
| Supply current (mA) | 15 mA nominal @ +5 Vdc | 5 mA nominal @ +5 Vdc |
| Output sink current [Note 4] @ 5 Vdc supply | @ 25 °C 10 mA max. | @ 25 °C 40 mA max. |
| | @ 80 °C 3 mA max. | @ 125 °C 7 mA max. |

Notes:

[Note 1] Material compatibility information available on request.

[Note 2] Threaded sensors only.

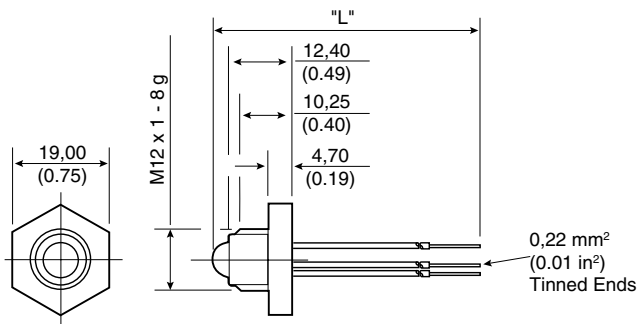
[Note 3] For other ambient light environments the user should test the sensor under application conditions to verify compatibility.

[Note 4] The output is intended as a TTL compatible output signal, for interfacing to logic systems. For interfacing with other types of circuitry an appropriate buffer circuit must be used.

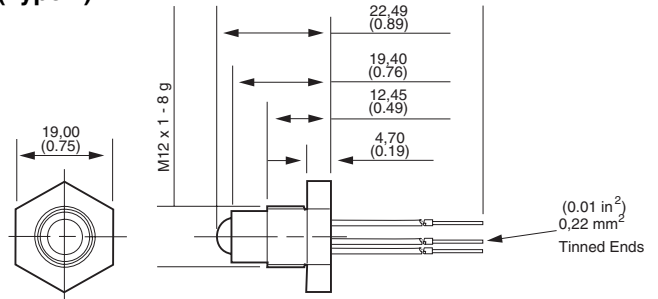
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MOUNTING DRAWING (IN MM AND INCHES)

LLE101000/LLE101101 (Type 1)



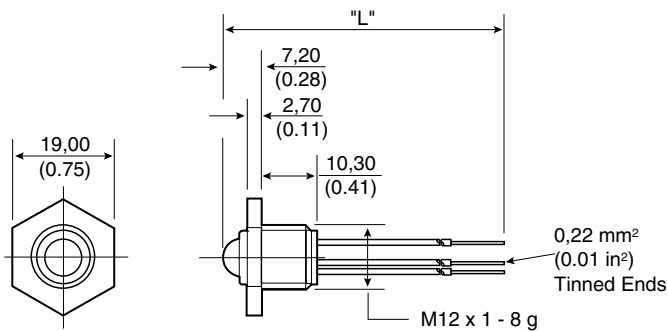
LLE102000/LLE102101 (Type 2)



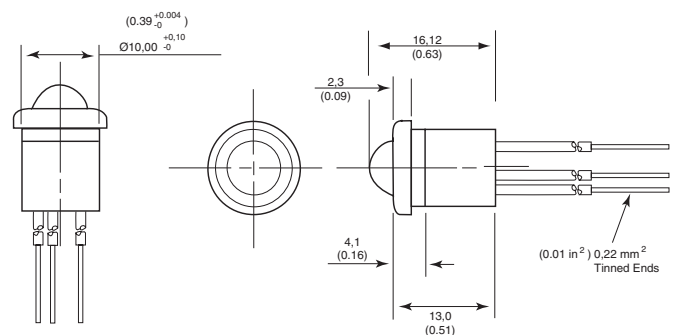
Notes

- 1 Recommended panel hole size \varnothing 12,5 \pm 0.3 mm (0.49 \pm 0.01 in)
- 2 'O' ring seal supplied Unassembled

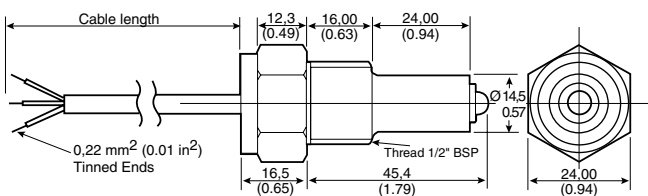
LLE103000/LLE103101 (Type 3)



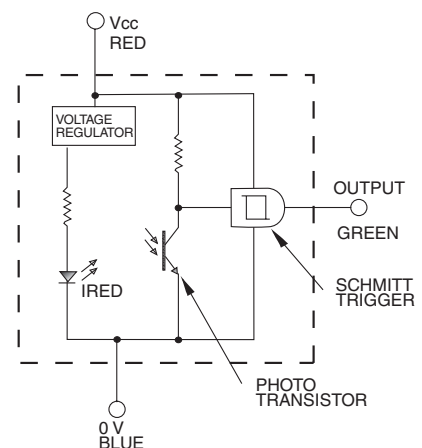
LLE105000/LLE105100 (Type 5)



LLE205000/LLE205100 LLE305000/LLE305100



ELECTRICAL DIAGRAM



 **WARNING**

MISUSE OF DOCUMENTATION

- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.

Failure to comply with these instructions could result in death or serious injury.

 **WARNING**

PERSONAL INJURY

DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

Failure to comply with these instructions could result in death or serious injury.