Honeywell

LLE Series Liquid Level Sensors



Features

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

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.

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.**

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

WARNING

MISUSE OF DOCUMENTATION

- The information presented in this product sheet (or catalogue) is for reference only. DO NOT USE this document as product installation information.
- Complete installation, operation and maintenance information is provided in the instructions supplied with each product.

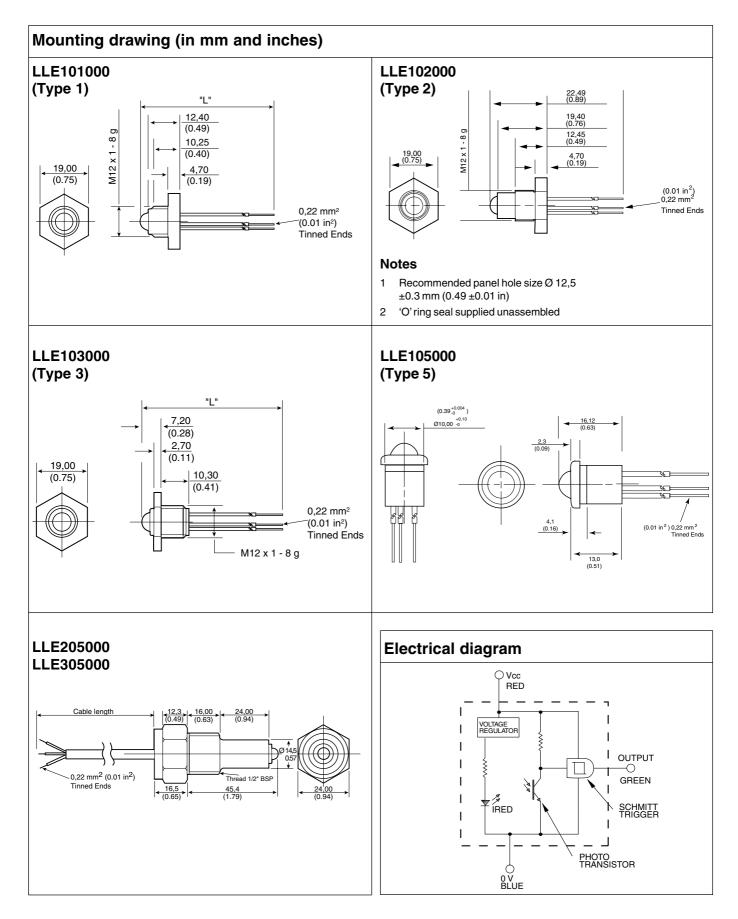
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LLE Series Liquid Level Sensors

Technical information

Specifications							
Operation mode		Liser defined single poin	t on/off switch (Output is high in air)				
Repeatability (mm)		± 1					
Hysteresis (mm)		2 (dependent on liquid)					
Response time		Rising liquid level - 50 µ					
		Falling liquid level - 1 s r					
		Response in other liquic	Is dependent on viscosity				
Mechanical							
		Type 1 and 2 mounted	from outside: Type 2 and 5 mounted from inside				
Mounting Termination		Type 1 and 2 - mounted from outside; Type 3 and 5 - mounted from inside					
		250 mm flying leads					
		Blue 0 V					
		Red +5 V to +1	2 V supply				
		Green Output					
Material [Note 1]		Polysulphone					
Dimensions		<u>Plastic</u>	Metal				
		LLE101/102/103000	LLE205/305000				
	Dome		dius (includes LLE105000)				
	Thread	M12x1	1/2 in BSPT				
	Hex	19 mm	24 mm (See mounting drawings on page 3)				
Environmental							
Operating temperatu	ure (°C)	-25 to 80					
Storage temperature	e (°C)	-30 to 85	-30 to 85				
Thermal testing		As per BS EN60068-2-33					
Humidity		As per BS EN60068-2-3					
Vibration		As per BS EN60068-2-6					
Mechanical shock		As per BS EN60068-2-2					
	١	•	0 to 5 (plastic housing) [Note 2]				
Pressure range (bar)			0 to 25 (metal housing)				
Ambient ID links limit							
Ambient IR light limit (@ 940 nm) [Note 3		10 mW/cm ² in operation					
(
Electrical							
Supply voltage (Vcc)	+5 Vdc to +12 Vdc ± 5 %	+5 Vdc to +12 Vdc ± 5 %				
Supply current (mA)		15 mA nominal @ +5 Vo	15 mA nominal @ +5 Vdc				
Output sink current [Note 4]	@ 25 °C 10 r					
		@ 80 °C 3 mA max					
Notes:							
[Note 1]		nformation available on request.					
[Note 2]	Threaded sensors only						
[Note 3] [Note 4]			e sensor under application conditions to verify compatibility. Ir interfacing to logic systems. For interfacing with other types of circuitry an				
	appropriate buffer circu		in internacing to logic systems. For internacing with other types of circuity an				
Order guide							
Description			Catalogue Listing				
	ad. Plastic	(Type 1)	LLE101000				
			LLE101000				
Screw In, M12 Threa		(Type 2)					
		$(T_{y} = 2)$					
Screw In, M12 Threa		(Type 3)	LLE103000				
Screw In, M12 Threa Push In, Plastic		(Type 5)	LLE105000				
Screw In, M12 Threa	d						

LLE Series Liquid Level Sensors





PK XP-4059

Issue 3

Installation instructions for **LLE Series** Liquid level sensors

GENERAL DESCRIPTION

The LLE Series liquid level sensor provides a single point detection via a TTL compatible output. When liquid is present on the surface of the sensor the output sinks up to a maximum of 10 mA.

LED and phototransistor chips are sealed into the base of the plastic dome, in such a position that light is totally internally reflected from the dome boundary to the phototransistor. Thus the output is normally high. When liquid covers the dome, the change in refractive index at the boundary means light escapes into the liquid, so less light reaches the phototransistor which thus causes the output to switch low.

CLEANING

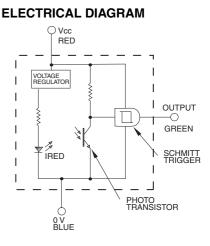
Proper fluids should be selected based on type of contaminant to be removed. Honeywell recommends freon and alcohol based solvents. Do not use chlorinated solvents such as trichlorethane as these are likely to attack the sensor material.

LIQUID MEDIA COMPATIBILITY

Before use check that the fluid in which you wish to use these devices is compatible with polysulphone.

ELECTRICAL SPECIFICATIONS

	Standard temperature	High temperature		
Supply voltage (Vcc)	+5 Vdc to +12 Vdc ± 5 %			
Supply current @ 25 °C (77 °F)	15 mA nominal	5 mA nominal		
Output sink current (Io)	10 mA max.	40 mA max.		
@ 25 °C (77 °F) @ 5 Vdc				
Operating temperature	-25 °C to 80 °C	-40 °C to 125 °C		
	(-13 °F to 176 °F)	(-40 °F to 257 °F)		
Storage temperature	-30 °C to 85 °C	-40 °C to 125 °C		
	(-22 °F to 185 °F)	(-40 °F to 257 °F)		



MOUNTING

	Catalogue Listing			
Standard temperature	LLE101000/102000/103000	LLE205000/305000	LLE105000	
High temperature	LLE101101/102101/103101	LLE205100/305100	LLE105100	
Thread	M12x1x8 g	1/2" BSPT		
Tightening torque	1,5 N m/13.26 in lb max.	85 N m/62.69 ft lb		
Pressure (using washer supplied)	5 bar max.	25 bar max.		
Mounting hole	—	—	10 mm	

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.

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CAUTION

- Do not exceed maximum supply voltage.
- Although the sensor is protected against supply reversal, it is not recommended.
- Do not overtighten screw-in type.
- Do not use chlorinated solvents.
- Do not mount with dome pointing downwards.

Failure to comply with these instructions may result in product damage.

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MOUNTING DIMENSIONS IN MM (INCHES) FOR REFERENCE ONLY

