

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.

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.

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

LLE Series

Liquid Level Sensors

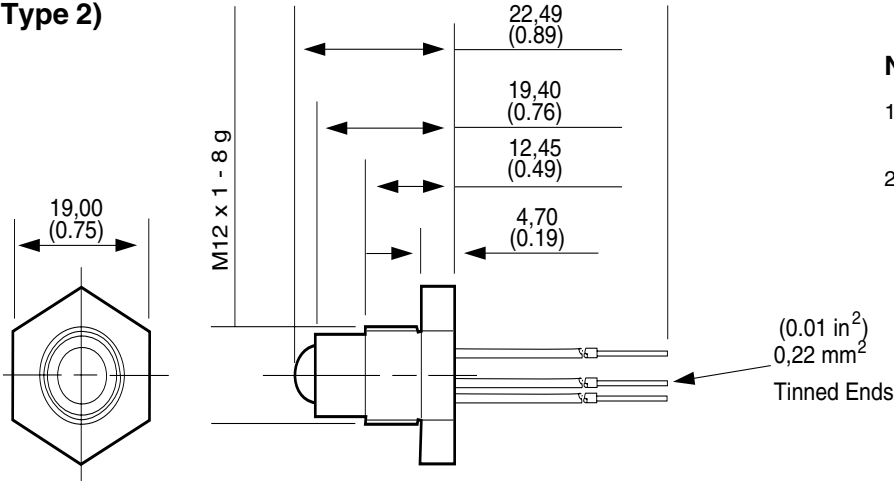
Technical information	
Specifications	
Operation mode	User defined single point on/off switch
Repeatability (mm)	± 1
Hysteresis (mm)	2 (dependent on liquid)
Response time	Rising liquid level - 50 µs Falling liquid level - 1 s max (in ethanol) Response in other liquids dependent on viscosity
Mechanical	
Mounting	Type 2 - mounted from outside; Type 5 - mounted from inside
Termination	250 mm flying leads
	Blue 0 V
	Red +5 V supply
	Green Output
Material [Note 1]	Polysulphone
Dimensions	Dome 3,5 mm radius
Thread	M12x1
Hex	19 mm (See mounting drawing on page 3)
Environmental	
Operating temperature (°C)	-25 to 80
Storage temperature (°C)	-30 to 85
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) [Note 2]	0 to 5
Ambient IR light limit (@ 940 nm) [Note 3]	10 mW/cm ² in operation
Electrical	
Supply voltage (Vcc)	5 Vdc ± 5 %
Supply current (mA)	15 mA nominal
Output sink current [Note 4]	@ 25 °C 10 mA max @ 80 °C 3 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.

Order guide	
Description	Catalogue Listing
Screw In M12 Thread (Type 2)	LLE102000
Push In (Type 5)	LLE105000

LLE Series Liquid Level Sensors

Mounting drawing (in mm and inches)

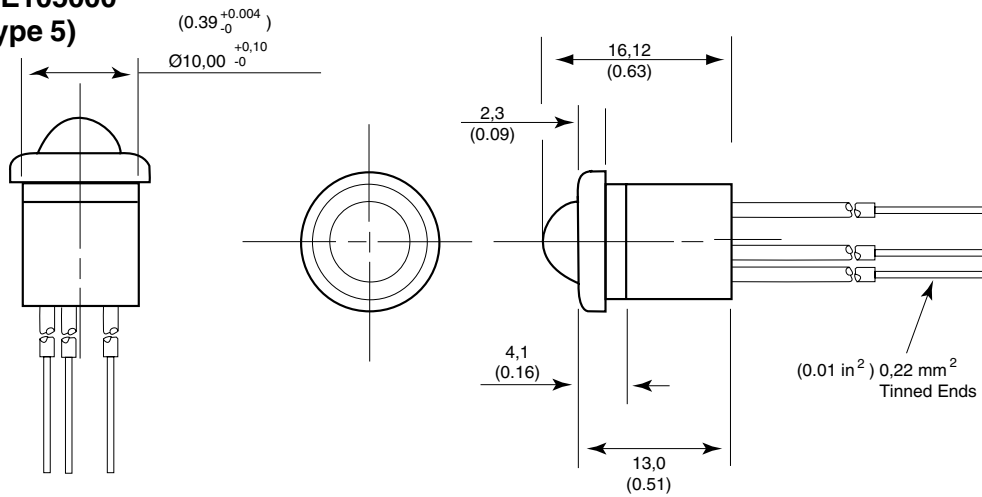
LLE102000 (Type 2)



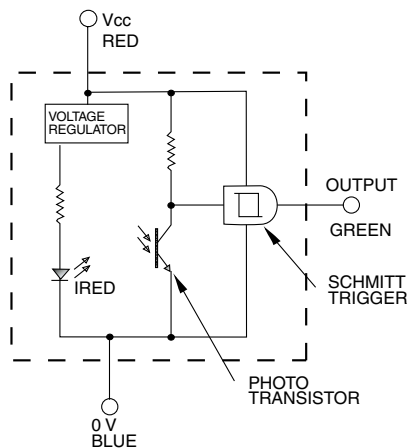
Notes

- 1 Recommended panel hole size $\text{Ø } 12,5 \pm 0.3$ mm (0.49 ± 0.01 in)
- 2 'O' ring seal supplied unassembled

LLE105000 (Type 5)



Electrical diagram



Warranty/Remedy

Honeywell warrants goods of its manufacture as being free of defective material and faulty workmanship. Contact your local sales office for warranty information. If warranted goods are returned to Honeywell during that period of coverage, Honeywell will repair or replace without charge those items it finds defective. The foregoing is Buyer's sole remedy and **is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose.**

While we provide application assistance, personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.

Specifications may change at any time without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

Sales and Service

Honeywell serves its customers through a worldwide network of sales offices and distributors. For application assistance, current specifications, pricing or name of the nearest Authorised Distributor, contact your local sales office or: INTERNET: www.honeywell.com/sensing
E-mail: info.sc@honeywell.com

ASIA PACIFIC

**Sensing & Control
Asia Pacific Headquarters**
Phone: +(65) 355-2828
Fax: +(65) 445-3033

Australia
Honeywell Limited
Phone: +(61) 2-9370-4500
FAX: +(61) 2-9370-4525
Toll Free 1300-36-39-36
Toll Free Fax: 1300-36-04-70

China – PRC - Beijing
Honeywell China Inc.
Phone: +(86-10) 6561-0208
Ext. 205
Fax: +(86-10) 6561-0618

China – PRC - Shanghai
Honeywell China Inc.
Phone: +(86-21) 6354-9181
Fax: +(86-21) 6354-2248

China - Hong Kong S.A.R.
Honeywell Ltd.
Phone: +(852) 2331-9133
Fax: +(852) 2331-9998

China – PRC - Chengdu
Honeywell China Inc.
Phone: +(86-28) 6786-348
Fax: +(86-28) 6787-061

China – PRC - Guangzhou
Honeywell China Inc.
Phone: +(86-20) 3879-1169
Fax: +(86-20) 3879-1269

China – PRC - Shenzhen
Honeywell China Inc.
Phone: +(86) 755-518-1226
Fax: +(86) 755-518-1221

Indonesia
Honeywell Indonesia Pte Ltd.
Phone: +(6221) 521-3330
FAX: +(6221) 521-3735

India
TATA Honeywell Ltd.
Phone: +(91) 20 6875-532 /
6875 534
Fax: +(91) 20 6875-992

Japan
Honeywell Inc
Phone: +(81) 3 5440 1395
Fax: +(81) 3 5440 1314

South Korea
Honeywell Korea Co Ltd
Phone: +(822) 799-6114
Fax: +(822) 792-9011

Malaysia
Honeywell Engineering Sdn
Bhd
Phone: +(60-3) 7958-4988
Fax: +(60-3) 7958-8922

New Zealand
Honeywell Limited
Phone: +(64-9) 623-5050
Fax: +(64-9) 623-5060
Toll Free (0800) 202-088

Philippines
Honeywell Systems
(Philippines) Inc.
Phone: +(63-2) 636-1649
Fax: +(63-2) 636-1650

Singapore
Honeywell South East Asia
Phone: +(65) 355-2828
Fax: +(65) 445-3033

Thailand
Honeywell Systems (Thailand)
Ltd.
Phone: +(662) 693-3099
FAX: +(662) 693-3085

Taiwan R.O.C.
Honeywell Taiwan Ltd.
Phone: +(886-2) 2245-1000
FAX: +(886-2) 2245-3242

EUROPE

Austria
Honeywell Austria GmbH
Phone: +(43) 1 727 80 366/246
FAX: +(43) 1 727 80 337

Belgium
Honeywell SA/NV
Phone: +(32) 2 728 2522
FAX: +(32) 2 728 2502

Bulgaria
Honeywell EOOD
Phone: +(359) 2 79 40 27
FAX: +(359) 2 79 40 90

Czech Republic
Honeywell spol. s.r.o.
Phone: +(420) 2 6112 3469/
3424
FAX: +(420) 2 6112 3461

Denmark
Honeywell A/S
Phone: +(45) 39 55 55 55
FAX: +(45) 39 55 55 58

Finland
Honeywell OY
Phone: +(358) 9 3480101
FAX: +(358) 9 34801375

France
Honeywell SA
Phone: +(33) 1 60 19 82 68
FAX: +(33) 1 60 19 81 73

Germany
Honeywell AG
Phone: +(49) 69 8064 444
FAX: +(49) 69 8064 442

Hungary
Honeywell Kft.
Phone: +(36 1) 451 4300
FAX: +(36 1) 451 4343

Italy
Honeywell S.p.A.
Phone: +(39) 02 92146 450/
456
FAX: +(39) 02 92146 490

The Netherlands
Honeywell B.V.
Phone: +(31) 20 565 69 11
FAX: +(31) 20 565 66 00

Norway
Honeywell A/S
Phone: +(47) 66 76 20 00
FAX: +(47) 66 76 20 90

Poland
Honeywell Sp. zo.o
Phone: +(48) 22 606 0900
FAX: +(48) 22 606 0901

Portugal
Honeywell Portugal Lda
Phone: +(351 21) 424 50 00
FAX: +(351 21) 424 50 99

Romania
Honeywell Bucharest
Phone: +(40) 1 2110076
FAX: +(40) 1 2103375

**Commonwealth of
Independent States (CIS)**
Z.A.O. Honeywell
Phone: +(7 095) 796 98 36
FAX: +(7 095) 796 98 93

Slovak Republic
Honeywell s.r.o.
Phone: +(421 7) 58247 403/
400
FAX: +(421 7) 58247 415

South Africa (Republic of)
Honeywell Southern Africa
Honeywell S.A. Pty. Ltd
Phone: +(27) 11 805 1211
FAX: +(27) 11 805 1354

Spain
Honeywell S.A.
Phone: +(34) 91 313 6100
FAX: +(34) 91 313 6129

Sweden
Honeywell AB
Phone: +(46) 8 775 55 00
FAX: +(46) 8 775 56 00

Switzerland
Honeywell AG
Phone: +(41) 1 855 24 40
FAX: +(41) 1 855 24 45

Turkey
Honeywell Turkey A.S.
Phone: +(90) 216 464 4764
FAX: +(90) 216 464 4794

United Kingdom
Honeywell Control Systems Ltd
Phone: +(44) 118 906 2600
FAX: +(44) 118 981 7513

**Mediterranean & African
Distributors**
Honeywell SpA
Phone: +(39) 2 921 46 232
FAX: +(39) 2 921 46 233

Middle East Headquarters
Honeywell Middle East Ltd.
Phone: +(9712) 272533
FAX: +(9712) 269539

NORTH AMERICA

Canada
Honeywell LTD
Phone: 1-800-737-3360
FAX: 1-800-565-4130

USA
Honeywell
Sensing and Control,
International Headquarters
Phone: 1-800-537-6945
1-815-235-6847
FAX: 1-815-235-6545
E-mail: info.sc@honeywell.com

LATIN AMERICA

Argentina
Honeywell S.A.I.C.
Phone: +(54-11) 4383-3637
FAX: +(54-11) 4325-6470

Brazil
Honeywell do Brasil & Cia
Phone: +(55-11) 7266-1900
FAX: +(55-11) 7266-1905

Chile
Honeywell Chile, S.A.
Phone: +(56-2) 233-0688
FAX: +(56-2) 231-6679

Columbia
Honeywell Columbia, S.A.
Phone: +(57-1) 623-3239/3051
FAX: +(57-1) 623-3395

Ecuador
Honeywell S.A.
Phone: +(593-2) 981-560/1
FAX: +(593-2) 981-562

Mexico
Honeywell S.A. de C.V.
Phone: +(52-5) 259-1966
FAX: +(52-5) 620-3285

Puerto Rico
Honeywell Inc.
Phone: +(809) 792-7075
FAX: +(809) 792-0053

Venezuela
Honeywell CA
Phone: +(58-2) 238-0211
FAX: +(58-2) 238-3391

This publication does not constitute a contract between Honeywell and its customers. The contents may be changed at any time without notice. It is the customer's responsibility to ensure safe installation and operation of the products. Detailed mounting drawings of all products illustrated are available on request.
© Honeywell 2001. All rights reserved.

Honeywell

Honeywell Control Systems Ltd

Newhouse Industrial Estate
Motherwell ML1 5SB
Scotland, UK

www.honeywell.com/sensing