Liquid Level Sensor

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- Function
  1. Non-contact liquid level detection
  2. Single-direction detecting
  3. IO output
  4. LED warning
  5. 1.25mm-3Pin connector
  6. Support shape container
  7. Dielectric Constant range (known)：20~88。
  8. The wall thickness of the container：Temperature 25 ˚, Acrylic 6~7mm (Actual wall thickness depends on environment)。
- Application
  1. Non-contact liquid level detection: Liquid level detection for coffee machine, Water dispensers and potted plants.
  2. Metal/charged material is prohibited.
  3. Should be【Liquid】, and meet Dielectric Constant range。
- Feature
  1. This module can be used to detect the water level changes in non-metallic containers without having contact with the liquid, such as the water level detection of internal water containers in coffee machine and water dispensers, which can replace the traditional floating ball type water level detection.
  2. In actual use of this module, when the water level is higher or lower than the sensing position, there will be corresponding signal changes.
  3. When the water level is higher than or equal to the sensing area, output will be Low，LED light will be OFF.
  4. When the water level is lower than the sensing area, output will be High, LED light will be ON.

No.1, Jingke 3rd Rd., Nantun Dist.,
Taichung City 40852, Taiwan
http://www.oncque.com

Tel: +886-4-2358-8178
Fax: +886-4-2358-3555
E-mail: oncque@oncque.com.tw

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- Patents
  1. Taiwan Patent No. M 505609
  2. Taiwan Patent No. I 613420
  3. China Patent No. ZL 201520368287.3
  4. China Patent No. ZL 201520186018.5

- Dielectric Constant

  1、Allowable container material and Dielectric Constant form as below (known)：

Container	Thickness(mm)	Result	Note
Carton	7	O	
Mouse pad	6	O	
Acrylic	7	O	
Plastic board	7	O	

Liquid	Temp.(°C)	Dielectric Constant	Result
Water	0	88	O
Water	100	55	O
Pure water	25	—	O
Acetone	25	20	O
Industrial alcohol	25	16~31	O
Petrol	25	1.9	X
Engine oil	25	—	X
Cooking oil	25~200	2.5~4	X

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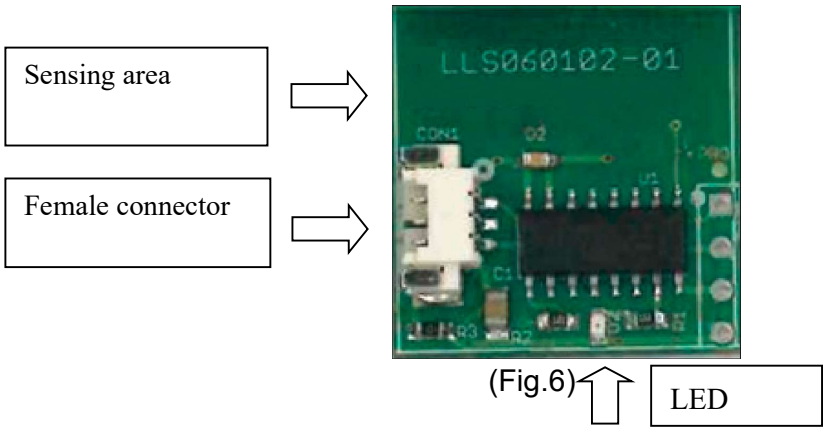
● Electrical Characteristics, Pin Assignment, Connection, Calibration, and Operation

1、Module description：



(Fig.6)

2、Foot Description：

3P connector
1. Positive power supply
2. Negative power supply
3. IO signal

(Fig. 6-1)

Number	Name	Function
1	Positive power supply	external supply 3.3V / 5V
2	Negative power supply	external supply GND
3	IO Signal	According to water level The High / Low signal is generated.

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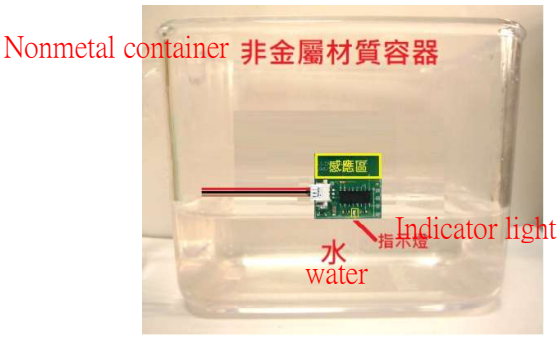
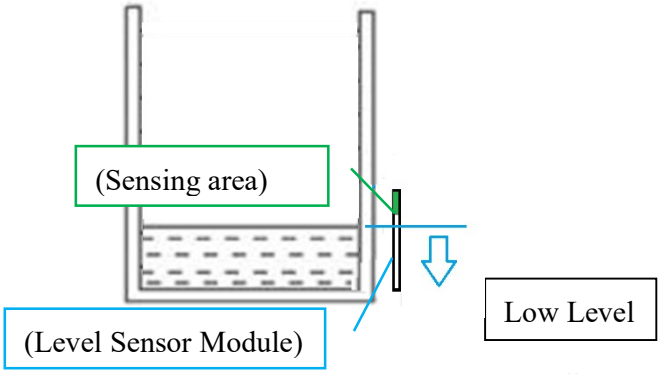
3. Liquid level change and signal output
During usage, when the liquid level changes, the IO signal will change accordingly. The changes will be shown as below:

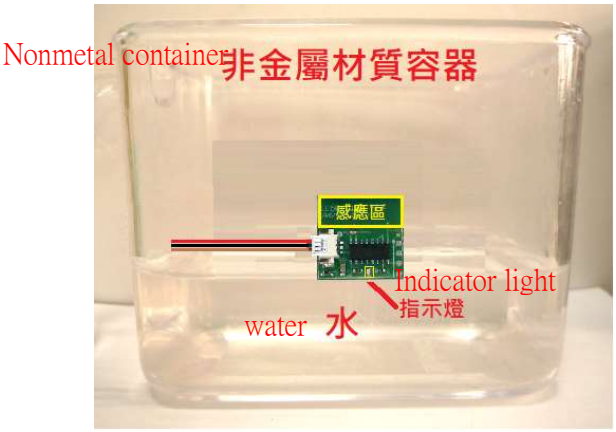
3.1、When the liquid level is lower than the sensing area, the indicator light will be on and the IO signal is high (H).

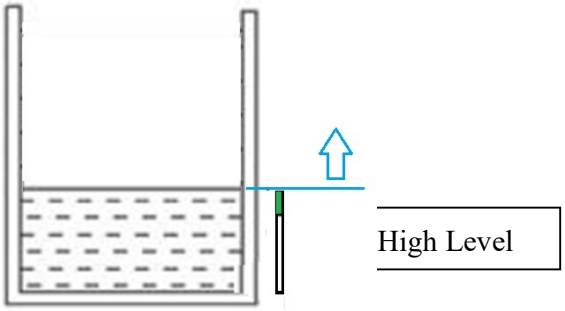




(Fig.6-2)

3.2、When the liquid level is higher than the sensing area, the indicator light will be off and the IO signal is low (L).





(Fig.6-3)

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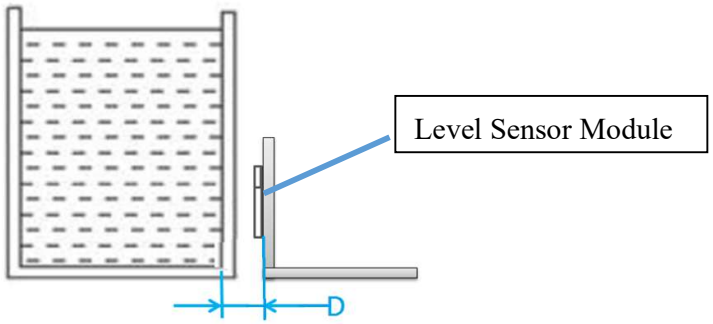
3.3、Remarks: The sensing result of the module will be affected by the wall thickness of the container, the material of the container and the material of the liquid.

- Maximum sensing distance D (at 25°C water temperature): about 7.0 mm (wall thickness of vessel)



(Fig.7)

- Installation Procedure

1、To make sure container must be no liquid, and module without metal material within 0.5 cm.。

2、Install this module with stick.

3、Product (with module) power transmission.

4、Modules have initialization time, which is completed within 5 seconds , after that, LED will be ON.

5、Installed

6、Inject the water level according to the demand and start to detect

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- Notice for use

  1、The module has a power-off memory function. If restoration of power without intentional power-off，the module will automatically return to the water level state before the power-off.

  2、If the module is in the state of [water detected] for more than 10 sec., the water level will be lowered, which shows [with water] will remain temporarily phenomenon lasts for 10~15sec, after that the module shows [without water], this is a normal phenomenon.

  3、If LED signal misjudgment，please refer to【Troubleshooting】。

- Troubleshooting

  This module is sensed by dielectric coefficients, and some unpredictable behaviors (for example, after completing the initial installation process, fingers and metals are close to the module, and module sensing misjudgment), resulting in abnormal lights, which can be excluded through the following process:

  1、The module power off and short circuit module with the tweezer from the red circle.

  2、When the module is powered, the module LED begins to flash.

  3、Tweezers remove from the red circle of the module and cut off of supply.

  4、Proceed to【Installation Procedure】。

(Fig.10)

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● ELECTRICAL CHARACTERISTIC

Parameter	SYM.	Min.	Typ.	Max.	Unit
Operating Voltage	Vdd	4.5	5.0	5.5	Volt

● Absolute Maximum Rating （Ta=25°C）

Operating Temperature	Topr	0~+60	℃
Storage Temperature	Tstg	-40~+85	℃

*Note：

1. The module is used to detect the existence of liquid by sensing the capacitance, and the capacitance of liquid will be changed with temperature, especially water. Auto calibration will be started while sensing big changing of capacitance.

2、If the liquid will have been sensed the change in temperature, please be noted that the maximum sensing distance D will be also changed. Therefore, if fixed sensing distance, the sensed height of liquid level can vary due to the impact of liquid temperature. In practice, the change in the height of liquid level should be determined by actual measurement。

● Dimensions (Unit: mm, Tolerance: ±0.25mm)

The maximum size of the appearance：

21.6(L) * 21.0(W) *5.1 (H) mm

(Fig.13)

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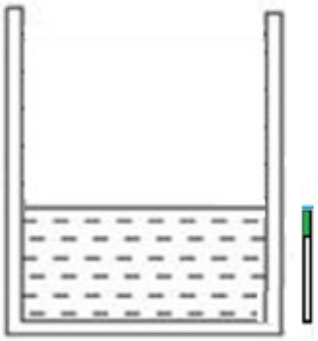
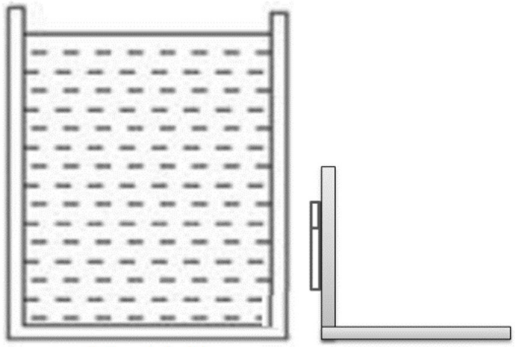
- Installation Form
  1. Stick on the container (Figure 14-1): Stick it outside the container with the components facing out.
  2. Stick on the bracket (Figure 14-2): Stick it on the bracket, the components face inward (this product does not have a fixed bracket)。



(Fig.14-1)



(Fig.14-2)

- Attention: This level sensor module uses the embedded sensing capacitance to detect the change of liquid level; therefore, it must keep all metal articles or human body influencing the capacitance far away from the sensing area to avoid the disoperation. There should be a certain distance between metal article or human body and sensing area. The distance should be determined by actual measurement.

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● Packing

	Part Number	Package	Quantity	Total	Dimension (mm)
1.	LLS060102	Bubble bag	1 pcs	1 pcs	55L*35W*8H
		Inner box	100 pcs	100 pcs	348L*191W*85H
		Carton	3 boxes	300 pcs	364L*278W*213H

※ **Package shown as below for reference.(Temporary)**

Bubble bag → Inner box → Carton

● Notes

For the continued product improvement as one of the company policies, specifications may change or update without notice. The latest information can be obtained through our sales offices. Normally, all products are supplied under our standard conditions.

● Cautions

1. If the product is intended to be used for other endurance equipment requiring higher safety and reliability such as life support system, aerospace devices, disaster prevention and safety system, it's necessary to ensure the reliability or contact us before using.
2. Please do not exceed the rated load as there will be a risk of disabling the product function.

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