

# 深圳市睿联传感科技有限公司

SHENZHEN REALUNION TECHNOLOGY CO., LTD.

## SPECIFICATION

(产品规格书)



型号: CL01DH05

电容式液位传感器  
(Capacitive Level Sensors)

版本 Version: V1.1

日期 Date: 2024/08/12

## ● 修订记录 / Revision History

| No. | 日期/Date  | 备注/Remark             | 修订/Revision |
|-----|----------|-----------------------|-------------|
| 1   | 20240812 | 发布版本/MP Version issue | A           |
|     |          |                       |             |
|     |          |                       |             |
|     |          |                       |             |
|     |          |                       |             |
|     |          |                       |             |

## ● 应用邻域 / Application

### 鱼缸/ fish tank

将传感器贴在鱼缸外侧，可用于检测鱼缸满水或者时预感缺水，也可用于控制鱼缸液位  
Attach the sensor to the outside of the fish tank, which can be used to detect when the tank is full or when it feels short of water, and can also be used to control the tank level

### 热水器/ water heater

在热水器的水箱外部安装此传感器，检测到水箱无水则可以提示或者停止加热，安全省心。

Install this sensor outside the water tank of the water heater. If it detects that there is no water in the tank, it can prompt or stop heating, which is safe and worry free

### 咖啡机/ Coffee machine

在咖啡机水箱外侧安装传感器，用于检测水箱的水位是否满足当前可使用的标准

Install sensors on the outside of the coffee machine water tank to detect whether the water level in the tank meets the current usable standards

### 小家电/ Household electrical appliances

空气蒸锅，检测水箱是否有水，当水箱无水的时候提示用户加水，否则不可以使用，防止干烧烧坏电器，或起火。洗衣机，可以检测洗衣液或其他物料是否存在，若洗衣液不够则提示用户添加洗衣液。印刷机检测墨油是否充足。

Air steamer, check if there is water in the water tank. When the water tank is empty, prompt the user to add water. Otherwise, it cannot be used to prevent dry burning, damage to electrical appliances, or fire. A washing machine can detect the presence of laundry detergent or other materials, and prompt the user to add laundry detergent if it is not enough. The printing machine checks whether the ink is sufficient.

需要检测液体的设备……/ Equipment that needs to be tested for liquids……

## ● 原理及优势/ Principle and Advantages

### 1. 原理 / Principle

电容式液位传感器是利用水和空气中存在的电荷不一样来感应并区分容器内是否有水的。当容器内无水，则电荷较少，此时等效于没有电容，当容器内有水，水中带有大量的电荷，此时相对于空气能有一点的容值变化，通过电路对信号的处理，再由算法的计算和判断这个变化，最终输出当前状态是否有水。

Capacitive liquid level sensors use the different charges present in water and air to sense and distinguish whether there is water in the container.

When there is no water in the container, the charge is relatively low, which is equivalent to not being in a capacitor. When there is water in the container and there is a large amount of charge in the water, there can be a slight change in capacitance value relative to air. The signal is processed by the circuit, and the algorithm calculates and judges this change, ultimately outputting whether there is water in the current state.

### 2. 优势/ Advantages

- 没有外部参考电容，准确性高（一般的电容液位传感器需要一个外部电容来调节灵敏度，而这个外部电容的精确的本身就无法控制，造成一般的电容式液位传感器在出厂时可用，但是到了一定条件下就不可用。容易造成大量返修）

Without an external reference capacitor, the accuracy is high (typical capacitive liquid level sensors require an external capacitor to adjust sensitivity, and the precision of this external capacitor itself cannot be controlled, resulting in general capacitive liquid level sensors being usable at the factory but unusable under certain conditions. This can easily lead to a large number of repairs)

- 电容式液位传感器在使用过程中可以不改变水箱的形状，只需贴合在水箱外侧，安装使用方便

The capacitive liquid level sensor can be used without changing the shape of the water tank, and only needs to be attached to the outside of the water tank for easy installation and use.

- 无需与液体直接接触，不受水垢等液体的因素影响使用

No need to come into direct contact with liquids, and not affected by factors such as scale and other liquids when used.

- 灵敏度高，可由软件进行灵敏的调节，不用改变外围电路电容值

High sensitivity, can be adjusted sensitively by software without changing the capacitance value of peripheral circuits.

- 体积小，没有机械结构，无需担心使用寿命问题

Small size, no mechanical structure, no need to worry about lifespan issues.

- 客户直接在IO上进行检测即可。无需进行复杂的操作调试。

Customers can directly perform testing on IO. No need for complex operation and debugging.

● 选型表 / Selection Table

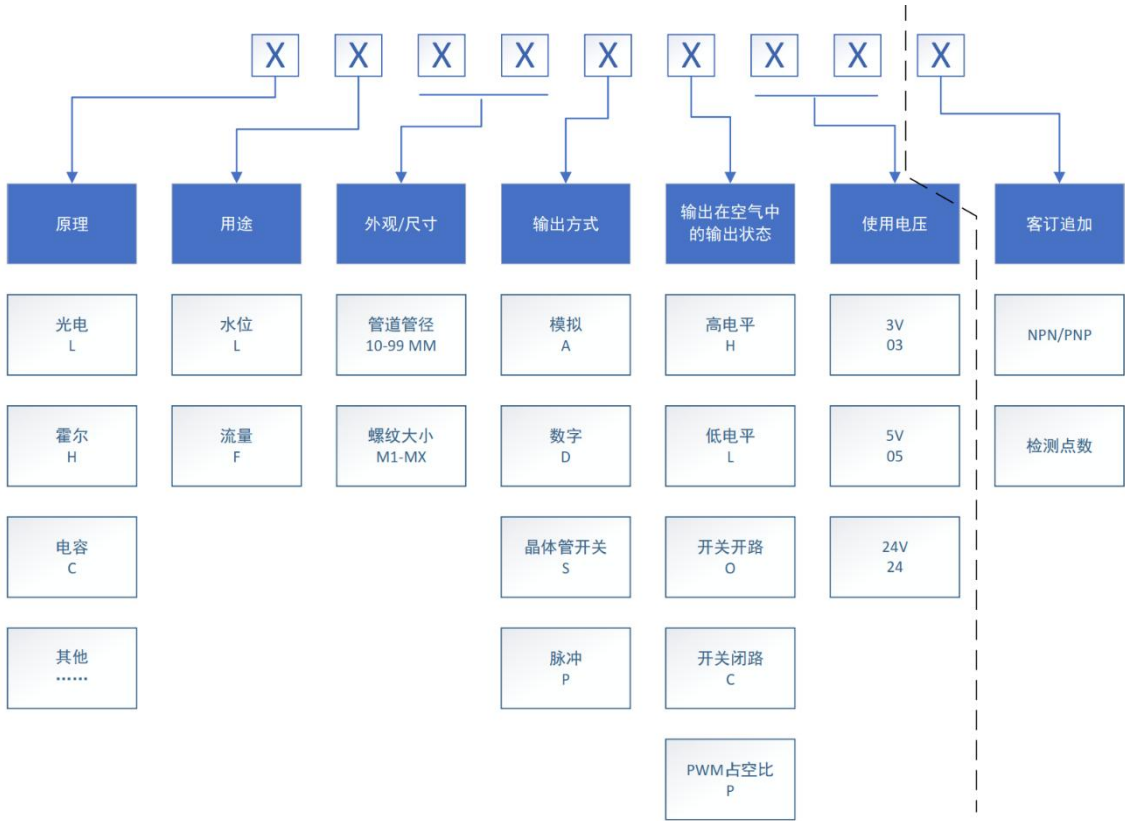
●

| <div>电压voltage</div> <div>外观编号/ type num</div> | 3V       | 5V       | 12V      | 24V      |
|------------------------------------------------|----------|----------|----------|----------|
| 款式01                                           | CL01DH03 | CL01DH05 | CL01DH12 | CL01DH24 |
|                                                |          |          |          |          |

由于每位客户的内置结构和空间都不一样，当前我们常规款式为01款，如果需要配合做结构，请与我司进行联系。可以为您调节最优的液位检测灵敏度，也可以进行多点位的定制。

Due to the different internal structures and spaces of each customer, our current standard style is 01. If you need to coordinate the structure, please contact our company. We can adjust the optimal liquid level detection sensitivity for you, and also customize multiple points.

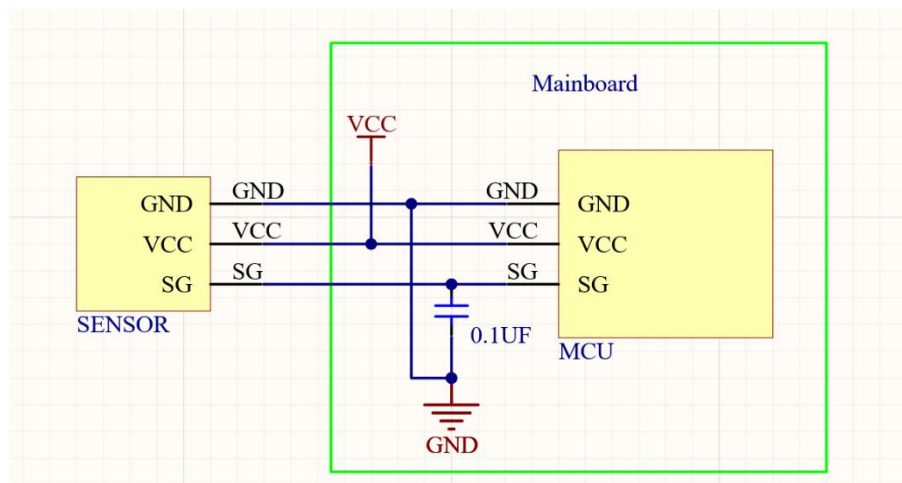
命名规则：



● 特性/Specification ( Ta=25°C )

| 参数//Parameter               | 符号/Symbol | 值/ value  | 单位/units |
|-----------------------------|-----------|-----------|----------|
| 工作电压/Working Voltage        | Vdd       | 5         | V        |
| 功率/Power consumption        | Pd        | 45-55     | mW       |
| 在液体中输出电压/Saturation Voltage | Vol       | TTL LOW   | -        |
| 在空气中输出电压/Saturation Voltage | Voah      | TTL HIGH  | -        |
| 输出特性/Output Specification   | Os        | 数字 IO     | -        |
| 工作温度/Operating Temperature  | Ot        | 0 ~ 50    | °C       |
| 存储温度/Storage Temperature    | St        | -20 ~ +85 | °C       |
| 工作寿命/ Operating life        | OI        | >50000    | H        |
| 相应时间/Response Time          | Rt        | <500      | Ms       |

● 推荐应用电路 / Recommended Application Circuit



注意/ attention:

信号线（SG）需要接主板的输入检测口，当传感器在液体中时，SG输出TTL 低电平。当传感器离开液体后，SG输出TTL高电压。

The signal line (SG) needs to be connected to the detection port of the motherboard, and when the sensor is in liquid, the SG output TTL low voltage. When the sensor leaves the liquid, the SG outputs TTL high voltage.

购买传感器时请与销售人员确认所需的电压

When purchasing a sensor, please confirm the required voltage with the sales representative

- 产品特性/ **Product features**

非接触，安装方便

**Non-contact and easy to install**

体积小，可靠性高，无机械卡死等问题，使用寿命长

**Small size, high reliability, no mechanical jamming and other problems, long service life**

能耗低

**Low energy consumption**

安装无需接触液面，不会污染监测源

**The installation does not require contact with the liquid level and will not contaminate the monitoring source**

不能检测金属水箱

**Metal water tanks cannot be detected**

无需用户处理复杂数据，使用方便

**It is easy to use without the need for users to deal with complex data**

- 尺寸和推荐安装 / **Outline Drawing and Recommended Installation**

