Instructions for use for non-contact level sensor

(Intelligent external paste testing liquid level series products)

Type XKC-Y29A model number

catalogue

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1. Product overview

Intelligent non-contact liquid level sensor (hereinafter referred to as liquid level sensor) adopts the advanced signal processing technology and high speed signal processing chip, broke the influence of container wall thickness, Y29A series capacitor sensor is designed by non-metal container wall detection of liquid level, it can automatically adapt to a certain thickness of plastic or glass wall (container wall thickness up to 10mm), realizes the height of liquid level in the closed container real contact detection. The liquid level sensor (probe) is installed on the upper and lower part of the outer wall of the tested vessel (high and low level of the liquid level). The non-metal container does not need to be opened and easy to assemble the whole machine.

The XKC-Y 29A series of products is developed for container level detection of non-metallic materials, in the medical, food and beverage, agriculture and water treatment industries. This series of liquid level sensors has two signal output control modes, namely high and low level output interface and NPN output interface; the two signal output modes correspond to the following two models:

order number	model	signal interface
1	XKC-Y29A -V	High-and low-level output interface
2	XKC-Y29A -NPN	NPN output interface

2. product features

1. The XKC-Y29A series is a non-contact level sensor that automatically calibrates the level sensitivity in the form of buttons.
2. Can support high and low level output, NPN (selection and manufacturer instructions).
3. The detection liquid level is accurate and stable, and the cold, hot and boiling liquid can be detected.
4. Pure electronic circuit structure, non-mechanical working mode, stable performance, long continuous service life.
5. High stability, high sensitivity, strong anti-interference ability, not by external electromagnetic interference, for power frequency interference and common mode interference has done special treatment.

6. The power supply is equipped with reverse connection protection, short circuit protection, overcurrent protection and overvoltage protection; compatible with all 12-24V power adapters on the market.

7. used in medical and food industries, with strong induction ability, can penetrate and detect the liquid level of various non-metallic containers, such as plastic, glass, ceramic and other containers, induction distance (container wall thickness) up to 10mm; liquid, powder, particles can be detected.

8. Open collector output mode, wide voltage range (12-24V), suitable for connecting various circuits and product applications.

3. major function

1. Detection of water-based fluid in flat containers, water-based solvent. The liquid level in the container or pipe can be detected without direct contact with the medium itself.

2. It can reliably detect the medium, with high stability; compensate for the residual water, milk, honey, latex, body fluids (blood), acid or alkaline solution in the container, to achieve the function of actual differentiation level.

3. Black line can replace the sensor button calibration function, play the role of remote calibration sensor sensitivity.

4. Product technical parameters

project name	parameter	
Product specifications and models	XKC-Y29A -V	XKC-Y29A -NPN
Output method	High and low level	Switch quantity (low effective)
DC input voltage	DC 12V-24V	
Power ripple requirements	≤10%V	
Power consumption	≤10mA	
Power delay	≤500mS	
response time	≤100mS	
operating ambient temperature	-25~85℃	
humidity	30%~80% (no condensation)	
Induced thickness (Sensitivity)	10mm (container wall thickness)	
The temperature drift	≤20% (-25℃~+60℃)	
Check the electrical conductivity of the liquid	≤50ms	
Liquid level accuracy	±3mm	
wire length	500MM (± 10MM) (batch customizable)	

Line end definition	Brown VCC, yellow OUT signal output, blue GND, and black MARK sensitivity calibration line
material quality	The PC-V0 fireproof material
Waterproof performance	IP67
Safety standards certification	CE
Environmental certification	ROHS-2.0

5. product types choosing

order number	model	signal interface
1	XKC-Y29A -V (DC 12V-24V)	High-and low-level output interface
2	XKC-Y29A -NPN（DC 12V-24V)	NPN output interface

6. Space requirements between the contact surface of the sensor (or probe) and the outer wall of the vessel

Between the contact surface of the sensor (or probe) and the outer wall of the container, it is best to use AB adhesive or other durable glue tightly. If there are special requirements, the gap should be less than 0.5mm, preferably no gap, otherwise it will affect the measurement accuracy.

7. Applicable container medium and installation method

The following is the installation method of the XKC-Y29A series of products

Requirements and installation methods of the tested containers

The tested containers are divided into 3 categories according to the material:

Category I: Insulation material containers

Containers made of non-metallic materials with smooth surface, uniform thickness and good insulation; such as glass, plastic, non-absorbing ceramics, acrylic, rubber or composite materials thereof.

method of erection:

1. If the wall of the container where the measuring probe is installed is multi-layer material, the layers should be in close contact without bubbles or gas interlayer. The inner and outer surfaces of the container wall shall be flat.

2. Wall thickness: 0-10mm

3, Tank type: ball pot, horizontal tank, vertical tank, etc.

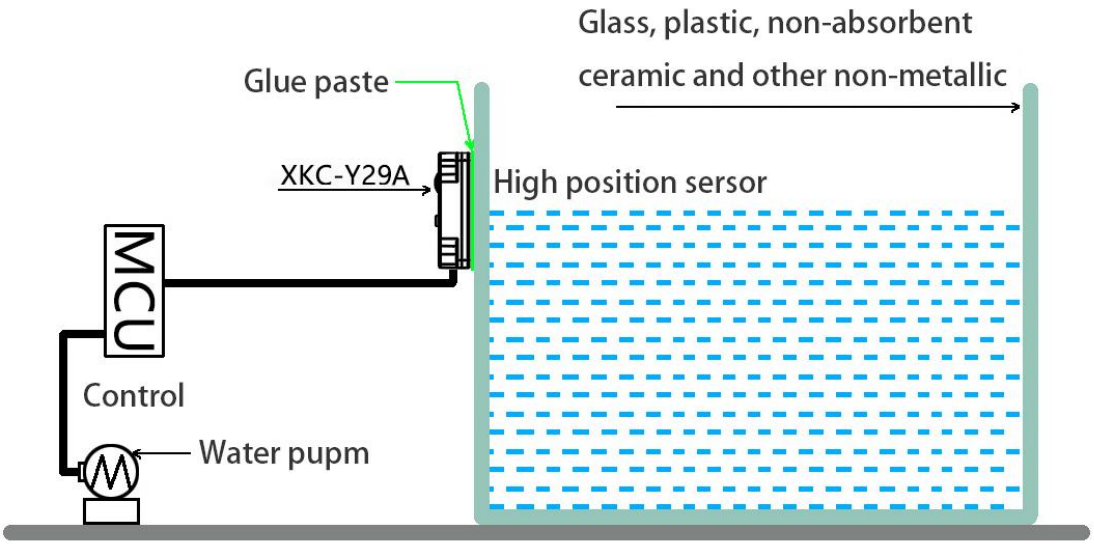
4. The installation method of such material containers is as shown in the figure;

The probe can be fixed with the glue or fixed on the outer wall of the container with a non-metallic stent.

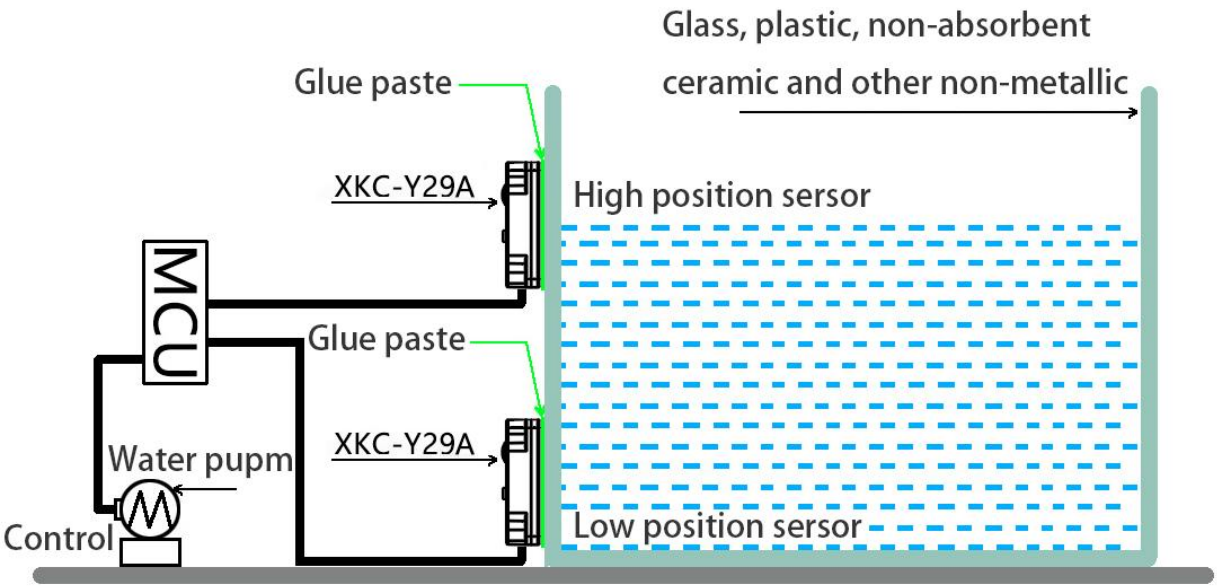
The probe is installed to avoid metal and other parts, so as not to affect the detection.

The installation site of the probe should avoid the location of the liquid flow

There should be no silt or other debris inside the container facing the low level probe, so as not to affect the detection;



Schematic installation of 1 probe in the container



Schematic installation of the 2 probes in the container

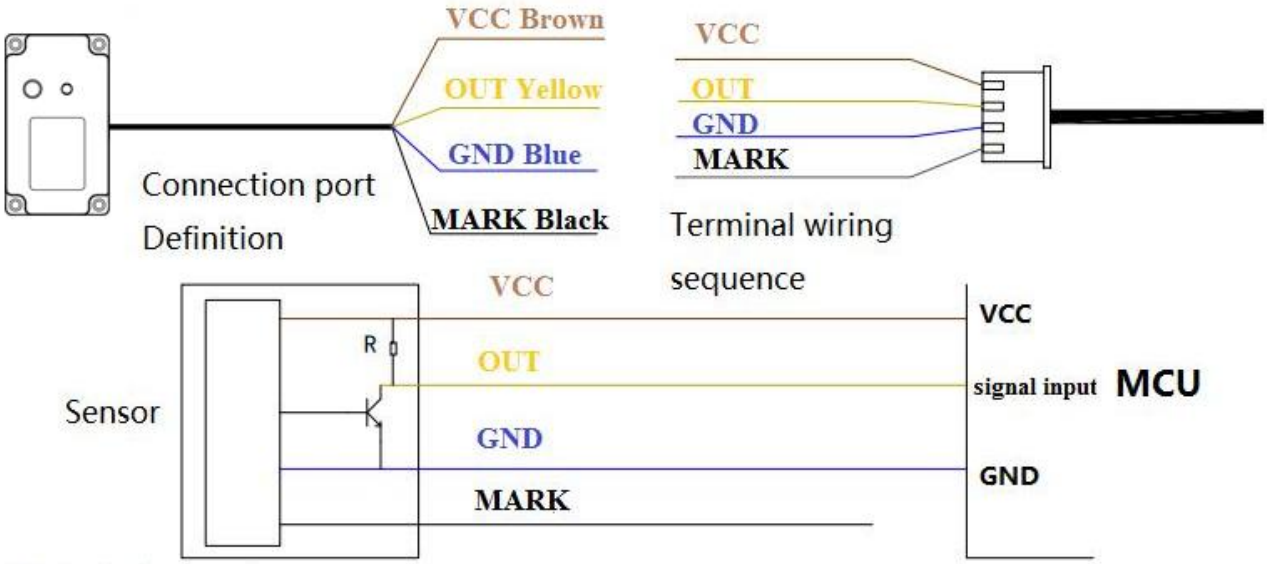
8. Application environment

XKC-Y29A -V、XKC-Y29A -NPN

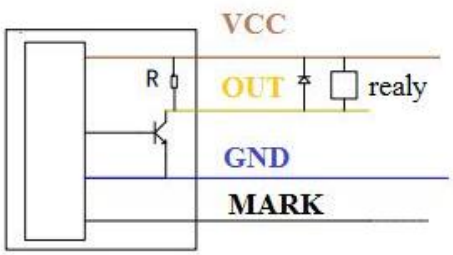
The Y29A model is carefully designed for the harsh industrial environment. Professional EMC components, such as spike absorption, electromagnetic compatibility, and transient suppression and surge protection, are added. Can be directly docking PLC, electromagnetic relay, etc. Has a very strong anti-interference ability, suitable for a variety of harsh industrial application environment.

9. Output principle and recommended wiring method

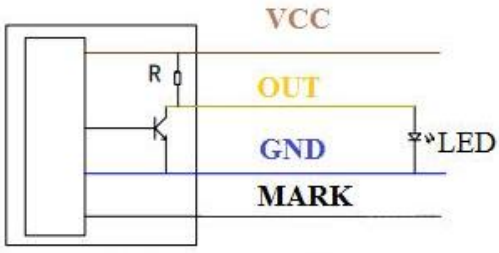
1. Wiring method for XKC-Y29A-V



Method of connecting a sensor to a controller



Method of connecting a sensor to a relay



Method of connecting sensor to LED

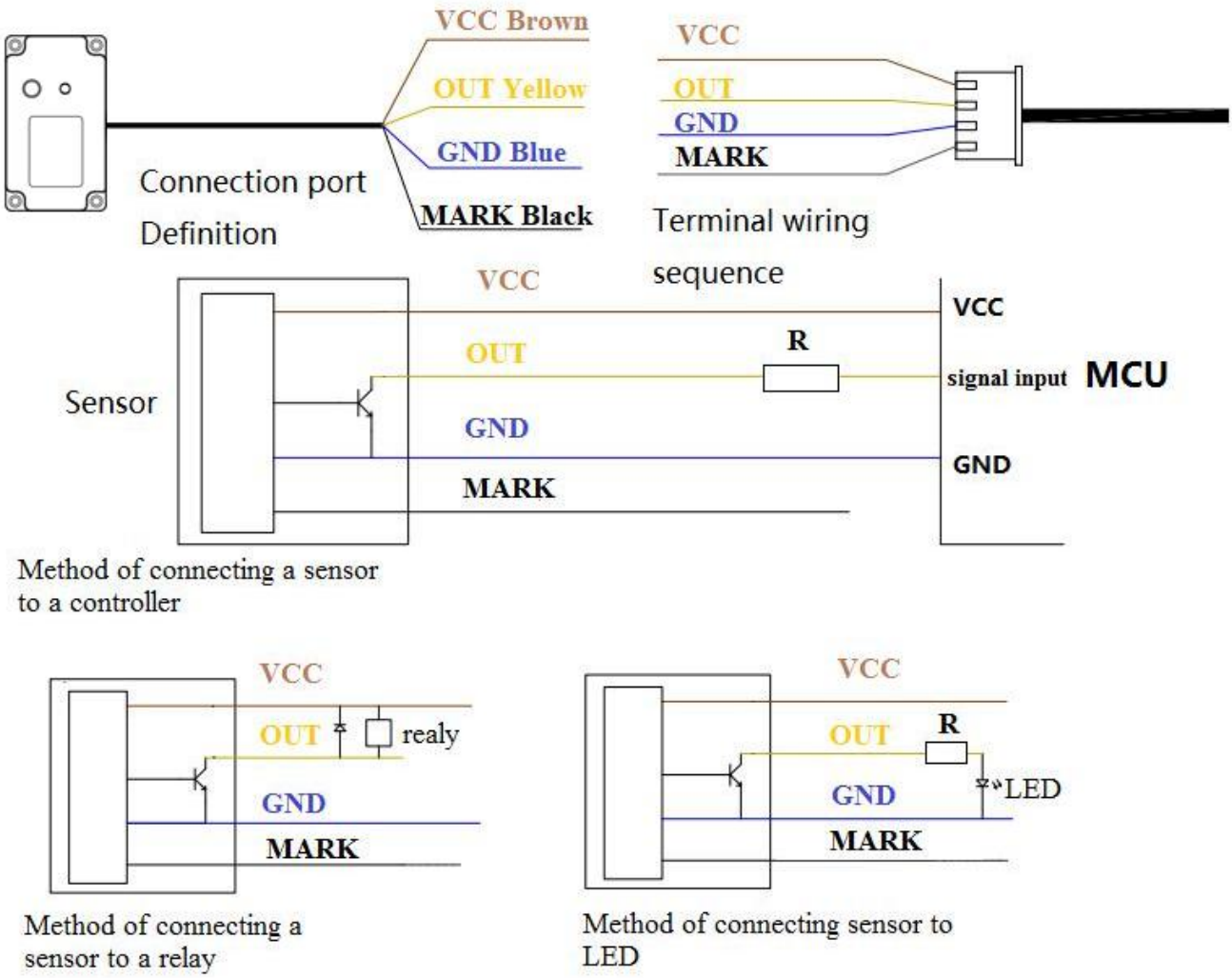
High and low level drive principle (relay drive current 100 mA)

When the sensor senses the liquid, the sensor yellow line (OUT) output high level, the relay is disconnected and not suction;

When the sensor does not sense the liquid, the sensor yellow line output low level and the relay energon.

Note: wiring can not be charged, the sensor black MARK sensitivity calibration line can only be suspended or connected to the key switch, can not be directly connected to the positive or negative electrode of the power supply. for details, please refer to the sensitivity setting step 3 of the black line

2. XKC-Y29A-NPN, wiring method



NPN type drive principle (relay drive current 100 mA)

When the sensor senses the liquid, the sensor yellow line (OUT) output low level, the relay power suction;

When the sensor does not sense the liquid, the yellow line of the sensor is high resistance, the relay does not suction.

Note: wiring can not be charged, the sensor black MARK sensitivity calibration line can only be suspended or connected to the key switch, can not be directly connected to the positive or negative electrode of the power supply. for details, please refer to the sensitivity setting step 3 of the black line.

10. Sensitivity setting steps

The product calibration sensitivity strictly follows the standard; the factory calibration is suitable for plastic tank wall with thickness of about 0.5 to 6 mm and glass walls with thickness of about 0.5 to 4 mm. Glass or plastic should be a non-conductive material.

In the actual use process, according to the different field environment, the sensor sensitivity should be adjusted through the operation calibration process to achieve a better experience effect. The calibration mode is divided into full fluid calibration and empty fluid calibration; the calibration operation can be performed by pressing the keys or controlling the MARK line.

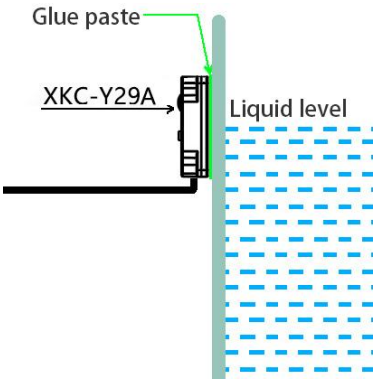


Figure 1,

Figure 2,

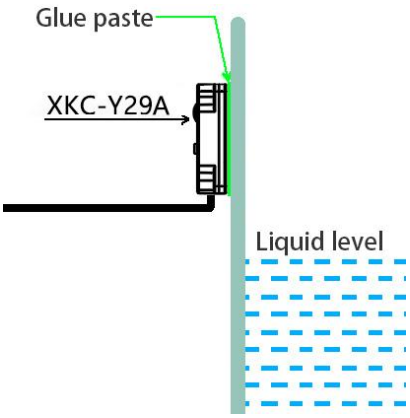


Figure 3

Full liquid calibration

1, hold the liquid level in the container horizontal to the sensor center according to Figure 1.

2, refer to Figure 2, press the button or connect the MARK line to the GND line to release 1S, the indicator light of the sensor flashes quickly (frequency 100 HZ), the flashing end means the calibration is completed and the indicator light is on (the sensor switch point will be set below the actual detection value).

Empty liquid calibration

1, place the sensor above the container according to Figure 3.

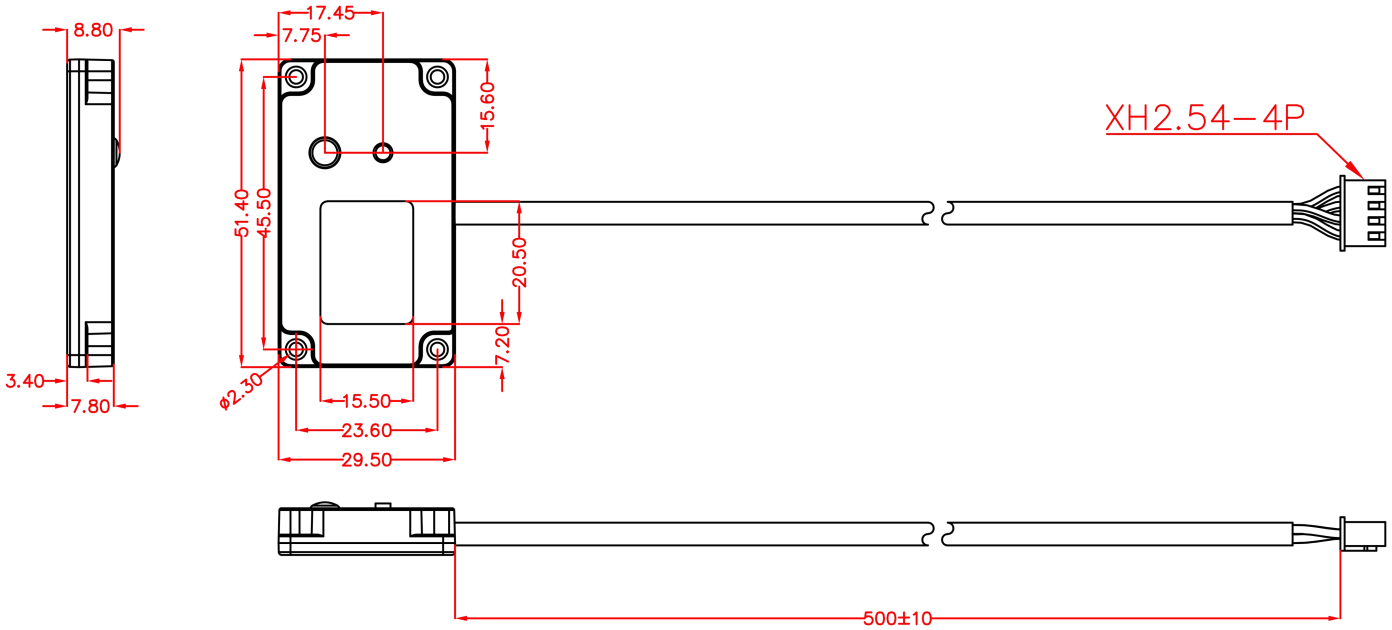
2, refer to Figure 2, press the button or connect the MARK line to the GND line for 5~6S, loosen the

sensor indicator light slowly flash (frequency 50 HZ), the flashing end means that the calibration is completed, the indicator light is off (the sensor switch point will be set above the actual detection value).

matters need attention

In most applications, full liquid calibration meets most of the detection requirements, especially in key applications of medium type and temperature variation, the calibration level covering approximately 50% of the sensor surface will be an advantage; the advantage of empty liquid calibration is a large amount of residual film, moisture, foam accumulation or the container wall thickness above 15mm, it can be calibrated with accumulation.

11. Product size



12. Other matters needing attention

Viscosity of the measured liquid medium

1. Normal measurement when the dynamic viscosity is <2 PaS.2 PaS may affect detection when PAS viscosity <6 PaS. The dynamic viscosity is> 2 PaS, because of the large amount of liquid attached to the wall of the vessel, it cannot be measured. (. Note: As the viscosity decreases, most of the liquid with high viscosity is more obviously affected by the temperature, so pay attention to the influence of the liquid temperature when measuring the viscosity liquid.)

2. The electrical conductivity of the measured liquid is 50ms.

3. Pay attention to keep the sensor clean, try to prevent corrosion and avoid the violent collision of other objects.

4. During outdoor installation, avoid direct sunlight and rainwater, the main body of the sensor, stay away from high heat source and pay attention to ventilation. If the ambient temperature exceeds the rated temperature, corresponding cooling protection measures should be taken.

5. When the ambient temperature is too lower than the normal operating temperature range of the sensor, the instrument protection box or other protective rain cap device can be used for anti-freezing protection, and pay attention to keep the sensor dry. The sensors shall be inspected for regular maintenance.(The detection time interval shall be determined by the user unit according to the specific situation).

13. Troubleshooting

Fault condition	analysis of causes	countermeasure
There is no reaction after the liquid level sensor is energized (the water level reaches the induction point indicator light is not on, and the sensitivity adjustment is not responsive)	① power supply is not connected	Check and connect to the power supply
	② Positive and negative terminals of the power line	Correct wiring
	③ The power supply module is damaged	Replace the circuit board of the power module
	④ sensitivity is too low	Adjust the sensitivity to the appropriate gear
The indicator lights are always on	① The sensitivity gear is too high	Adjust the sensitivity to the appropriate gear
	② The initialization parameter is abnormally modified	Return to the factory for reinitialize
	③ The sensor has debris or other metal parts close to it	Clean up the debris and keep a certain distance from the metal parts

14. Product warranty terms and description

(I) Warranty service

1. Warranty maintenance: from the date of purchase, the product host is free for one year. The Company has the right to decide to repair or replace the faulty parts. If the replacement parts, the replacement parts may be new equipment or repair goods with the same category, function and quality. The replaced faulty parts shall be owned by the Company; the resale and maintenance of the products shall not affect the warranty period, and the products repaired or replaced shall continue to enjoy the original remaining warranty period; if less than three months after the end of the warranty period, the repaired or replaced products shall be repaired by customers.

2. Loss upon arrival (DOA) replacement: from the date of purchase, you can enjoy within 7 days of free replacement service of equipment. Products with the following problems are defined as

DOA equipment after the first unpacking; part or all of the components after the first opening (surface scratches or other defects that do not affect the function of the equipment are not included); other hardware faults identified by remote or local inspection by the engineers of the Company.

(2) Limitations of the application of the warranty

The Company does not assume any warranty liability for:

1. The product exceeds the warranty period; the product surface is fragile and damaged; the product appearance is seriously damaged, installation / use under abnormal environment, unauthorized disassembly, repair / modification, external power supply injury and other abnormal damage;

2. Damage caused by the wrong installation and use of the product if the user fails to follow the requirements of the manual;

3. Damage caused by natural disasters and man-made negligence (fire, lightning strike, water flooding, impact, etc.).

(3) The accessories and consumables are not covered by the warranty.

(4) Non-free warranty service

Within two years of the purchase of the product, for the products (including parts) not under warranty, you can choose the paid maintenance service (free of labor cost), and we will charge the transportation cost of the parts and accessories of the repair product according to the actual situation.

(5) Access to warranty services

Recommend you to contact the dealer to buy this product for warranty service, warranty please show valid warranty card (dealer stamp effective) or purchase invoice / receipt: if not show, the product free warranty period to product 12 months from the date of delivery, the latest DOA application period, to 7 days from the date of delivery.

(6) Statement

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5. Not all models are available in all countries

Please keep this instruction properly. Before using the product, please read the manual carefully. When using the product, please be sure to follow the manual. The company will not be responsible for the injuries and accidents caused.

(7) Environmental protection

The product meets the design requirements for environmental protection, and the storage, use and disposal of the product shall be conducted in accordance with the relevant national laws and regulations.

15. Manual version

version number	date of issue
V 11	2023-06-26