

Intelligent non-contact instruction manual**XKC-Y23A**

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1st. Overview

The intelligent non-contact liquid level sensor (hereinafter referred to as the liquid level sensor) adopts advanced signal processing technology and high-tech integrated chip, which breaks through the influence of the container wall thickness and realizes the true non-contact of the liquid level in the closed container. Contact detection. The liquid level sensor (probe) is installed on the upper and lower sides of the outer wall of the container to be tested (the high and low levels of the liquid level). The non-metallic container does not need to be opened, and the installation is simple and does not affect production. It can detect the level of various toxic substances, strong acids, strong bases and various liquids in high-pressure airtight containers. The liquid level sensor has no special requirements for the material of the liquid medium and container, and can be widely used.

2nd.Product Features

The non-contact liquid level sensor is suitable for the outer wall of non-metallic containers without direct contact with the liquid. It will not be corroded by strong acids and alkalis and other corrosive liquids, and will not be affected by scale or other debris.

The detection is accurate and stable, and the boiling water level can be detected.

Pure electronic circuit structure, non-mechanical working mode, stable performance and durability.

High stability, high sensitivity, strong anti-interference ability, free from external electromagnetic interference, special treatment for power frequency interference and common mode interference, to be compatible with 5V power adapters on the market.

Strong compatibility, penetrates various non-metallic containers, such as plastic, glass, ceramic and other containers, the sensing distance can reach 15mm; liquid, powder, and particulate matter can be detected.

High and low level output mode, suitable for connecting various circuits and product applications.

3rd.Product Applications

The intelligent non-contact liquid level sensor uses the sensing capacitance of water to detect the presence of liquid. When there is no liquid close to the sensor, the sensor has a certain static capacitance to the ground due to the distributed capacitance on the sensor. When the liquid level slowly rises and approaches the sensor, the parasitic capacitance of the liquid will be coupled to this static capacitance, making the final capacitance value of the sensor larger, and the changed capacitance signal is then input to the control IC for signal conversion, which will change The capacitance is converted into a change of a certain electrical signal, and then a certain algorithm is used to detect and judge the degree of this change. When the change exceeds a certain threshold, it is considered that the liquid level has reached the sensing point.

4th.Product parameter

Project name	Parameters
Supply voltage (Vin)	DC 5V
Ripple and noise voltage	<100mVp-p
electric current	5mA±2mA
Output mode	NPN, High and low level
Output current	≤100mA
Response time	500mS
Working temperatu	-20~105°C
Induction thickness	≤15mm

(Sensitivity) range	
Liquid level accuracy	±3mm
humidity	≤100%
Material	PC-V0 Fireproof material
Waterproof performance	IP67
Safety standard certification	CE
Environmental protection certification	ROHS-2.0

5th. Application conditions

(1) Input voltage requirements

The input voltage of the non-contact liquid level sensor of this product is DC 5V, and the ripple and noise voltage requirements of the input voltage are less than 100mVp-p. The ripple and noise voltage is the sum of the peak-to-peak voltage of the fingerprint wave and the peak-to-peak value of the noise. When using this product, the user should first confirm the stability of the power supply voltage and the ripple and noise voltage is less than 100mVp-p. Unstable power supply voltage or excessive ripple and noise voltage may affect the unstable operation of the sensor.

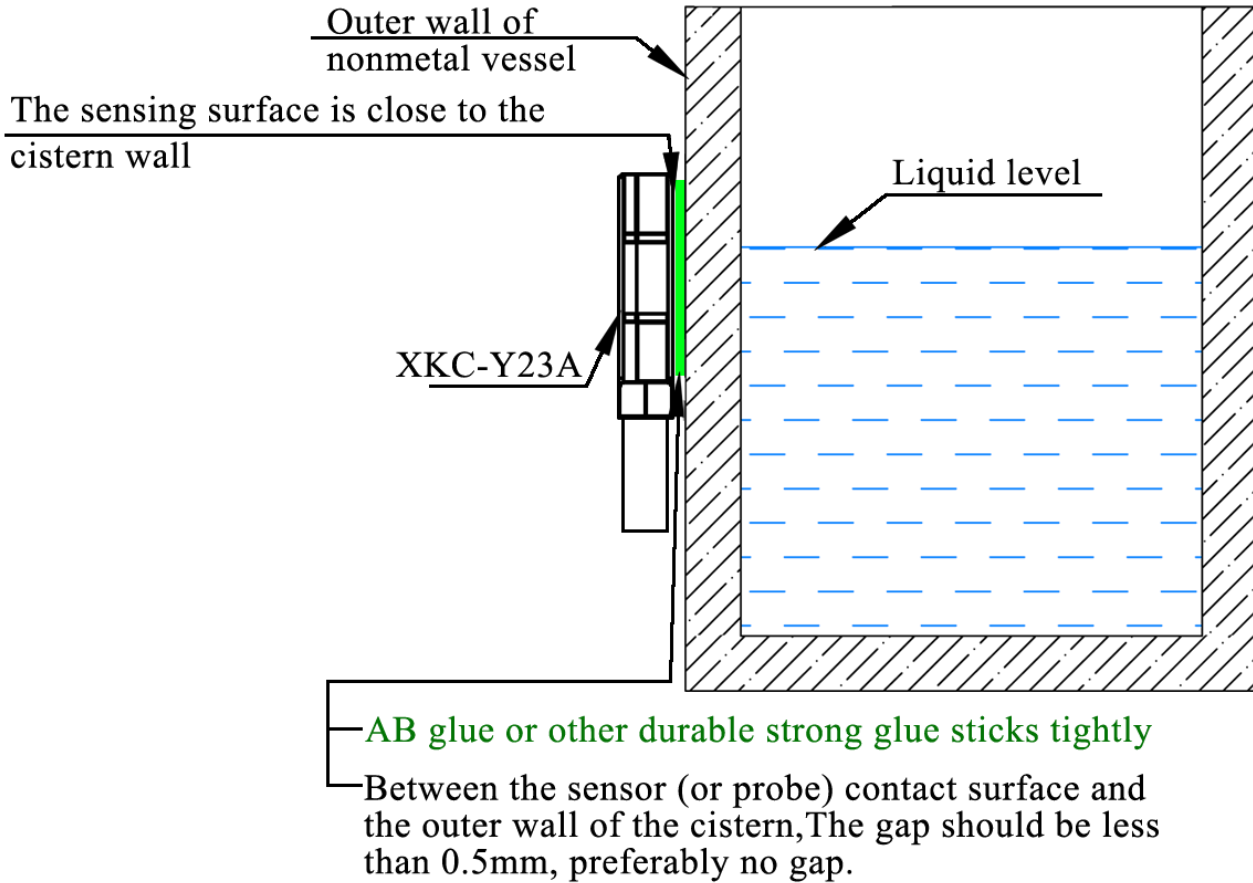
(2) Sensitivity

The factory setting standard of XKC-Y23A-NPN non-contact liquid level sensor is: use the sensor to measure the water level of a 5mm thick acrylic sink at room temperature, the sensor is close to the outer wall of the sink, and the water level line just rises to the level and aligns with the center line of the two screw holes of the sensor. Nearby ±3mm, the sensor signal line level jumps.

Capacitive liquid level sensors have different sensitivity to the water level of containers of different materials and thicknesses. Users contact the manufacturer before bulk purchase, the manufacturer can set the factory sensitivity parameters according to the user's different use conditions.

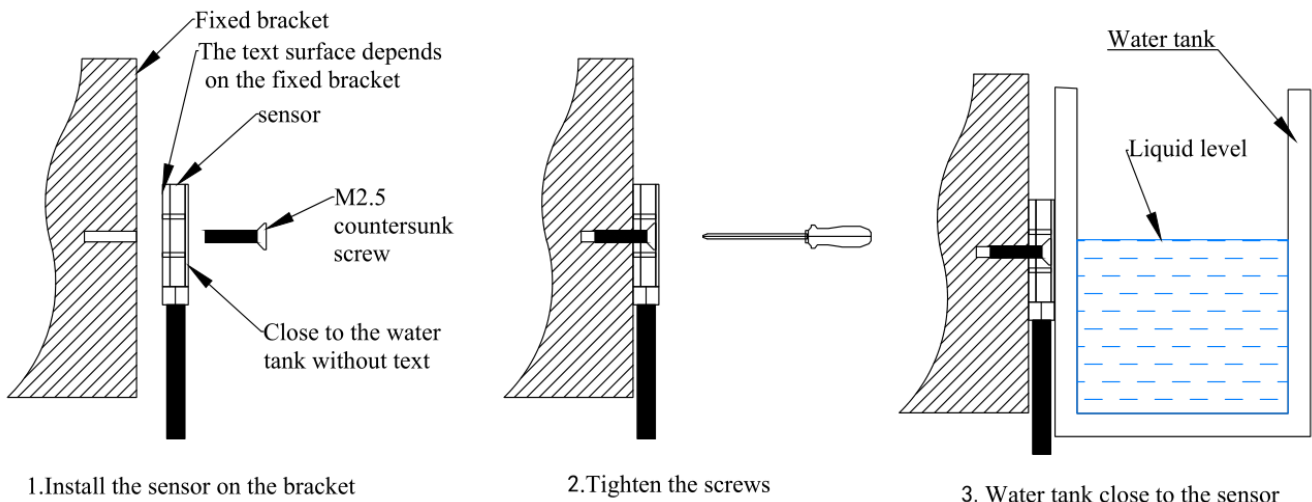
6th. Clearance requirements

Requirements for the clearance between the contact surface of the sensor (or probe) and the outer wall of the container. The contact surface of the sensor (or probe) and the outer wall of the container should be tightly pasted with AB or other solid-resistant glue. If there are special requirements, the gap should be less than 0.5mm, preferably no gap, otherwise it may affect the measurement accuracy.

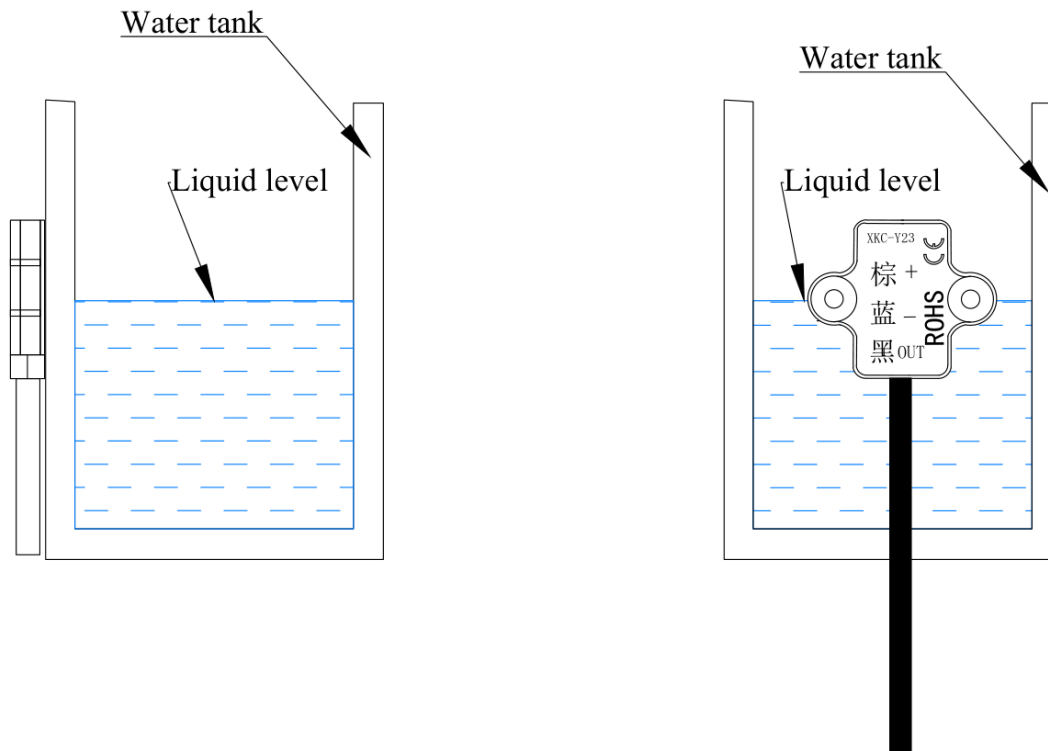


7th. Installation method

1. Screw fixing installation method



2. Paste installation method



The paste installation method is shown in the figure, and it can be directly pasted on the outer wall of the plastic container.

Pasting materials can be glass glue, 704 silica gel, waterproof 3M double-sided tape, etc.

Precautions:

1. Double-sided tape made of foam cotton cannot be used.
2. The material of the container must be insulating material.
3. Try to use materials that are uniform and do not contain air interlayer, air bubbles, water absorption, and dielectric constant that is not easy to change as the container.

8th. output principle and recommended wiring method

XKC-Y23A-NPN (switch quantity type) principle and wiring method



Wiring port definition

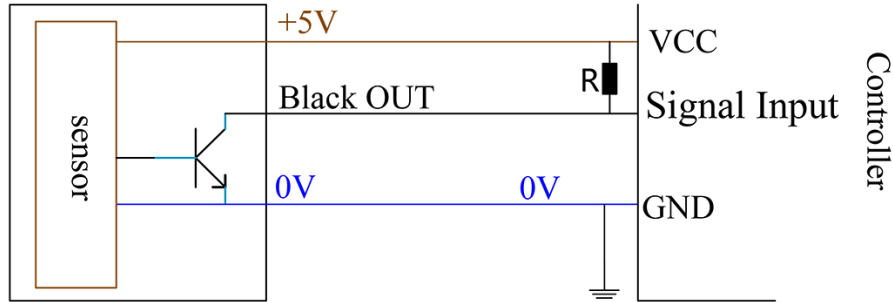
Brown +5V
Black OUT
Blue GND

1. Power supply positive brown

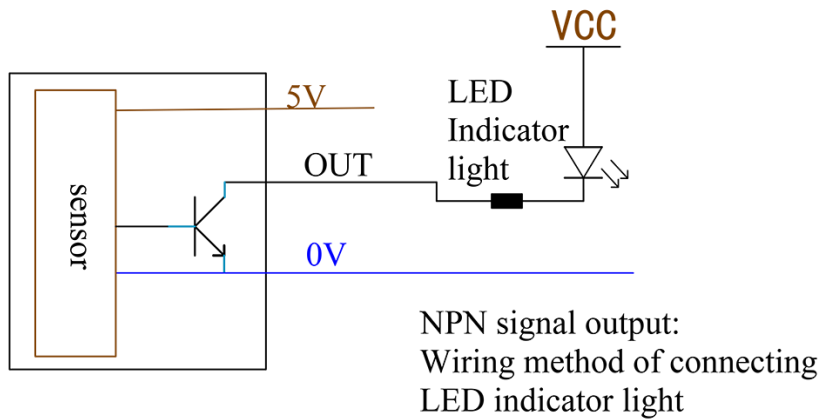
2. Signal output line black

3. Power negative pole blue

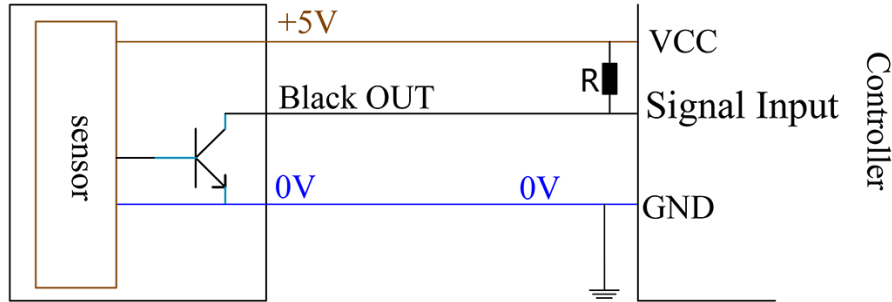
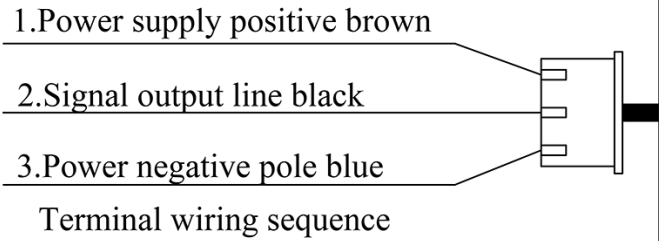
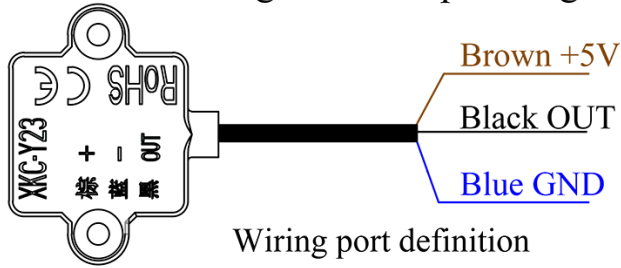
Terminal wiring sequence



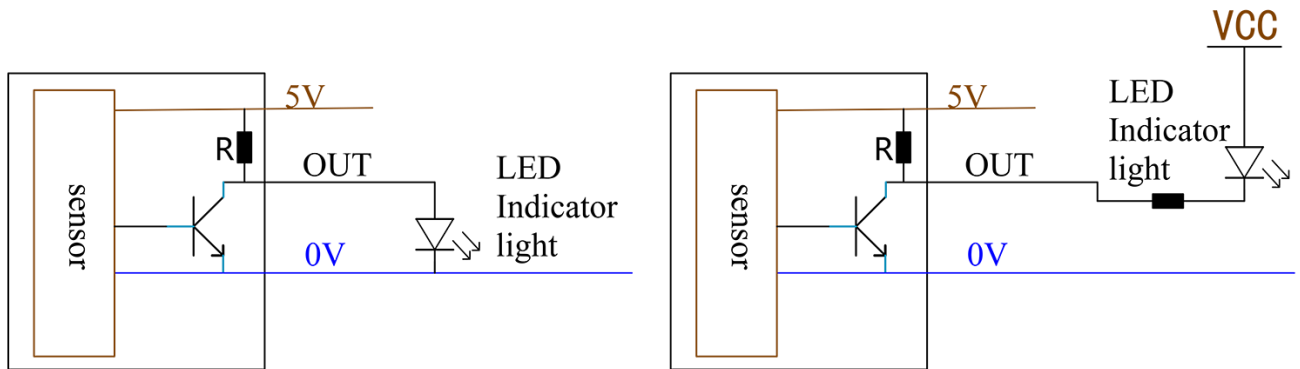
NPN signal output: wiring method to connect to controller or MCU



XKC-Y23A -High and low pulse signal output principle and wiring method



High and low pulse signal output: wiring method to connect to controller or MCU



High and low signal output
Two wiring methods for connecting LED indicators

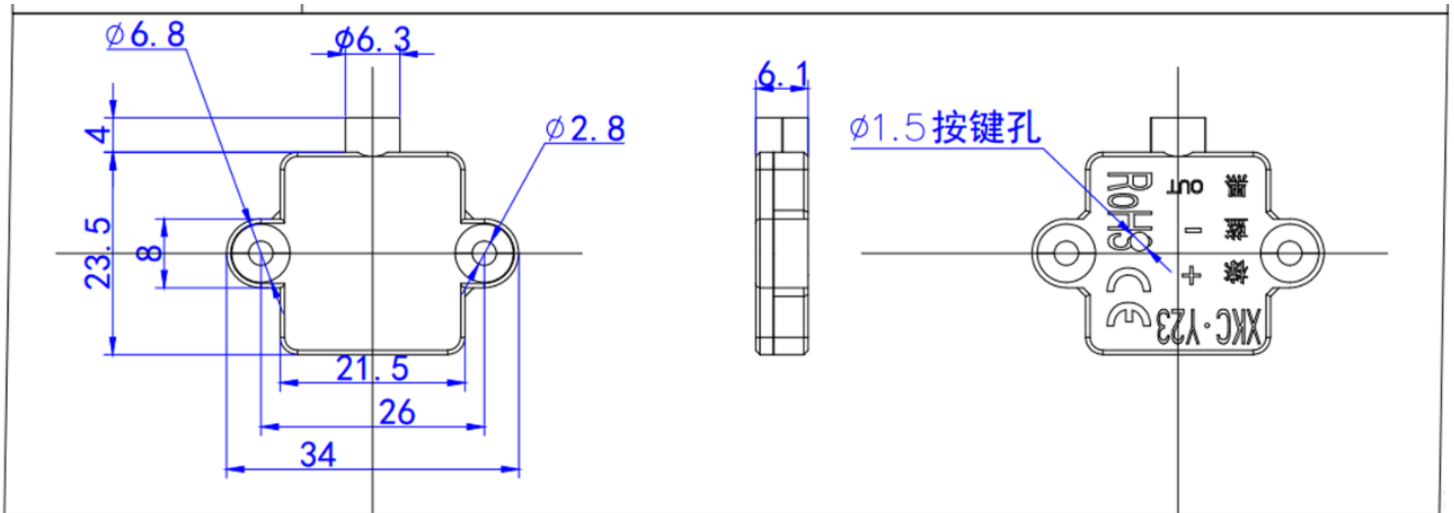
9th. Sensitivity adjustment:

If the non-contact liquid level sensor cannot detect or the detected liquid level deviates from the Y23A sensor,
Setting method:

You can click the sensitivity button with a toothpick, the LED indicator starts to flash, and the sensor starts to automatically adjust the sensitivity. After 3-5 seconds, the flashing stops, the LED indicator lights up, and the automatic adjustment is completed to reach the most suitable sensitivity required by the current position.

Note: There must be liquid in the detected position, and it cannot be empty, otherwise the setting will be invalid.

9th.Product size chart (single) and physical



Sensitivity adjustment tools,
such as toothpicks, pen nibs,
needles, etc.

Sensitivity adjust-
-ment button



10th. Other matters needing attention

(1) The viscosity of the measured liquid medium

When the dynamic viscosity is less than 10mPaS, it is measured normally. $10\text{mPaS} < \text{dynamic viscosity} < 30\text{mPaS}$ may affect the detection. When the dynamic viscosity is greater than 30mPaS, it cannot be measured because a large amount of liquid adheres to the container wall.

(2) Note: As the temperature increases, the viscosity decreases, and most high-viscosity liquids are more affected by temperature. Therefore, pay attention to the influence of liquid temperature when measuring viscous liquids.

(3) Pay attention to keeping the level gauge clean, try to prevent corrosion and avoid violent collisions and blows from other objects.

(4) During outdoor installation, avoid direct sunlight and rainwater directly flowing to the main body of the level gauge, and keep away from high heat sources 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 lower than the normal operating temperature range of the level gauge, an instrument protection box or other protective rain cap devices can be used for antifreeze protection, and pay attention to keeping the level gauge dry. The sensor should be regularly maintained and inspected. (The detection time interval is determined by the use unit according to the specific situation)

11th.Troubleshooting

Fault status	Analyze the reasons	Problem solving measures
After the liquid level sensor is energized, there is no response (the indicator light does not light when the water level reaches the sensing point, and the sensitivity adjustment has no response)	①The power cord is not connected	Check and connect the power
	② The positive and negative ends of the power cord are reversed	Correct wiring
	③The power module is damaged	Replace the circuit board where the power module is located
	④Sensitivity is too low	Adjust the sensitivity to the appropriate gear
The indicator light keeps on	①Sensitivity grade is too high	Adjust the sensitivity to the appropriate grade
	②The initialization parameters are abnormally modified	Return to the factory to reinitialize
	③The sensor has debris or other metal parts close to it	Clean up debris and keep a certain distance from metal parts

12th.Product warranty terms and instructions

(A) .Warranty service

1. Warranty period maintenance: from the date of purchase, the product host has a one-year free warranty. The company has the right to decide to repair or replace the faulty part. If it is replaced, the replacement part may be a new device or a repair product of the same category, function, and quality. The replaced faulty part belongs to the company; the product Resale and repair do not affect the warranty period. Products that have been repaired or replaced continue to enjoy the original remaining warranty period service. If the warranty period is less than three months after the repair, the repaired or replaced part shall be shipped from the date of delivery Warranty for three months; all products of the company are guaranteed for repair.

2. Loss upon arrival (DOA) replacement: From the day of purchase, you can enjoy a free replacement service within 7 days. Products with the following problems are defined as DOA equipment: the packing and packing list do not match after the first unpacking of the product; some or all of the components cannot be used normally after the first unpacking of the product (surface scratches or other things that do not affect the function of the device) Defects are not included); other hardware failures identified by our company's engineers remotely or locally.

(B). Applicable limitations of warranty

For the following situations, the company does not assume warranty responsibility:

1. The product is out of warranty; the surface of the product is fragile and damaged; the appearance of the product is seriously damaged, installation/use in abnormal environment, unauthorized disassembly and repair/modification, external power supply damage and other abnormal damage;
2. Damage caused by incorrect installation and use of the product by the user not following the requirements of the

manual;

3. Damage caused by natural disasters and human negligence (fire, lightning, flooding, impact, etc.).

(C) .Accessories and consumables are not covered by the warranty.

(D) .Non-free warranty service

Within two years of product purchase, for non-warranty product (including components) failures and damages, you can choose paid maintenance services (free labor costs), and we will charge the transportation cost of repairing parts and accessories according to the actual situation.

(E). Ways to obtain warranty service

It is recommended that you contact the dealer who purchased this product to obtain the warranty service. For the warranty, please present a valid warranty card (the dealer's stamp is required to take effect) or the purchase invoice/receipt: if you can't show it, the product's free warranty period 12 months from the product shipment date, and the latest DOA application deadline is 7 days from the product shipment date.

(F). Statement

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4. Due to product version upgrades or other reasons, the contents of this manual may change. Xingkechuang reserves the right to modify the contents of this manual without any notice or prompt. This manual is only used as a guide. Xingkechuang makes every effort to provide accurate information in this manual. However, Xingkechuang does not guarantee that the contents of the manual are completely free of errors. All statements, information and suggestions in this manual do not constitute any express or Implied guarantee.

5. Not all models are available in all countries/regions

Please keep this manual properly. Before using the product, please read this manual carefully. When using the product, please be sure to operate in accordance with this manual. The company is not responsible for injuries and accidents caused by operations that do not follow this manual.

(G).Environmental protection This product meets the design requirements for environmental protection.The storage, use and disposal should comply with relevant national laws and regulations.Seek to proceed.

13th. Manual version

Version	Release date
V16	September 28, 2020