

# User Manual

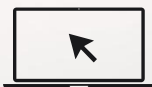
## ZKAM10 & ZKAM10A

Date: September 2022

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English

Thank you for choosing our product. Please read the instructions carefully before operation. Follow these instructions to ensure that the product is functioning properly. The images shown in this manual are for illustrative purposes only.



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## About the Company

ZKTeco is one of the world's largest manufacturer of RFID and Biometric (Fingerprint, Facial, Finger-vein) readers. Product offerings include Access Control readers and panels, Near & Far-range Facial Recognition Cameras, Elevator/Floor access controllers, Turnstiles, License Plate Recognition (LPR) gate controllers and Consumer products including battery-operated fingerprint and face-reader door locks. Our security solutions are multi-lingual and localized in over 18 different languages. At the ZKTeco state-of-the-art 700,000 square foot ISO9001-certified manufacturing facility, we control manufacturing, product design, component assembly, and logistics/shipping, all under one roof.

The founders of ZKTeco have been determined for independent research and development of biometric verification procedures and the productization of biometric verification SDK, which was initially widely applied in PC security and identity authentication fields. With the continuous enhancement of the development and plenty of market applications, the team has gradually constructed an identity authentication ecosystem and smart security ecosystem, which are based on biometric verification techniques. With years of experience in the industrialization of biometric verifications, ZKTeco was officially established in 2007 and now has been one of the globally leading enterprises in the biometric verification industry owning various patents and being selected as the National High-tech Enterprise for 6 consecutive years. Its products are protected by intellectual property rights.

## About the Manual

This manual introduces the operations of **ZKAM10 & ZKAM10A**.

All figures displayed are for illustration purposes only. Figures in this manual may not be exactly consistent with the actual products.

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# 1 Overview

## 1.1 Introduction

EAS (Electronic Article Surveillance) system, also known as Electronic Article Theft Prevention System, is one of the commodity security measures widely used in the large-scale retail industry. EAS system is mainly composed of three parts: detector, deactivator and electronic tag. Antenna is installed in the exit of store. Tag contains a tiny electronic circuit. When the tag appears in the detection range, antenna gives an alarm. Therefore, when customers enter the store, it is easier for you to make eye contact with them and provide a good shopping experience.

## 1.2 Appearance

### 1.2.1 Detector

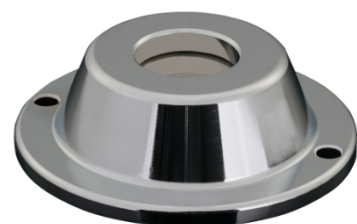


ZKAM10



ZKAM10A

### 1.2.2 Deactivator and Detacher



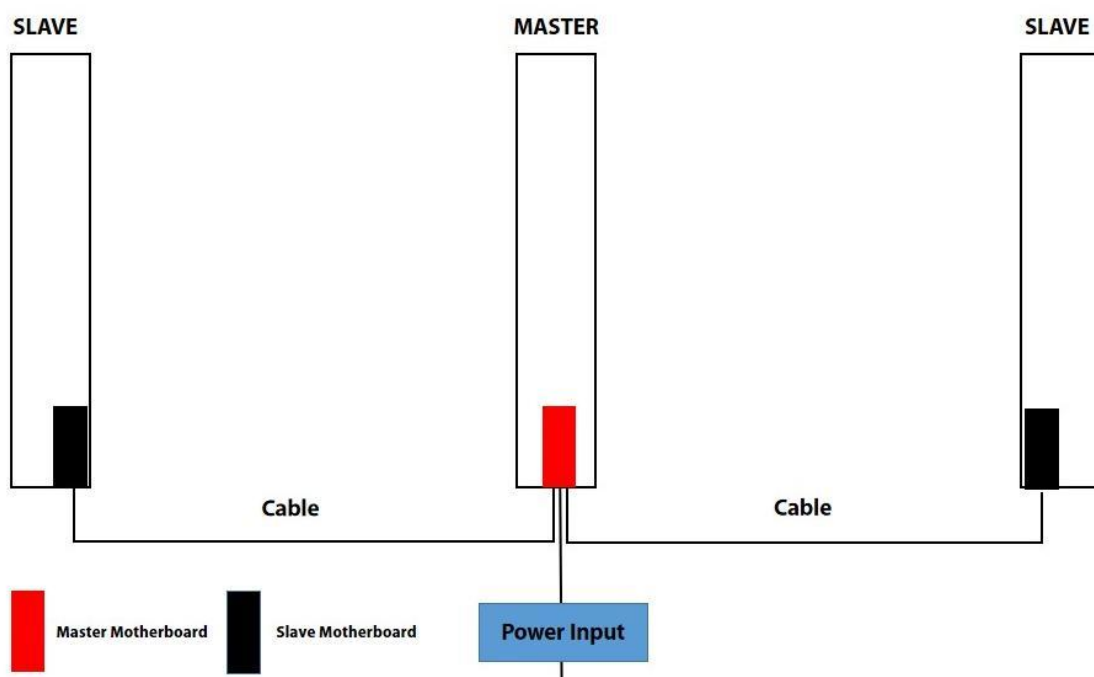
### 1.2.3 Electronic Tag

There are electronic tags with different appearances to choose from.



### 1.3 System Introduction

The AM system is a software-based system capable of detecting 58Khz electronic tags, making it an excellent choice for any store. Using the AM system, a master unit can support up to two slaves at the same time, which makes it feasible for large numbers of exits to be operated at cost effective.



AM system is aesthetically superior, match perfectly with your store interior and fulfill their task non-obstructively. It provides maximum detection of soft tags and hard tags in challenging store environments. The AM system features a high sensitivity for soft tags, stable performance, and strong anti-interference capabilities and easy installation.

- **Tag Detection Distance**



## 1.4 Product Specifications

Model	ZKAM10	ZKAM10A
<b>Detection Range</b>	0.7m to 2.2m (Depend on tag)	0.7m to 2.2m (Depend on tag)
<b>Power</b>	AC110 ~ 220V, 50 ~ 60hz	AC110 ~ 220V, 50 ~ 60hz
<b>Rated Power</b>	80W	80W
<b>Center Frequency</b>	58Khz	58Khz
<b>Working Mode</b>	TX+RX or MONO	TX+RX or MONO
<b>Dimensions</b>	1560 * 420 * 40 (mm)	1550 * 390 * 20 (mm)
<b>Dimensions With Packaging</b>	1590 * 465 * 210 (mm)	1610 * 450 * 170 (mm)
<b>Net Weight</b>	11.6 Kg / ctn	17 Kg / ctn
<b>Weight With Packaging</b>	15.5 Kg / ctn	23.5 Kg / ctn
<b>Packing Unit</b>	2 pcs / ctn	1 pcs/ctn



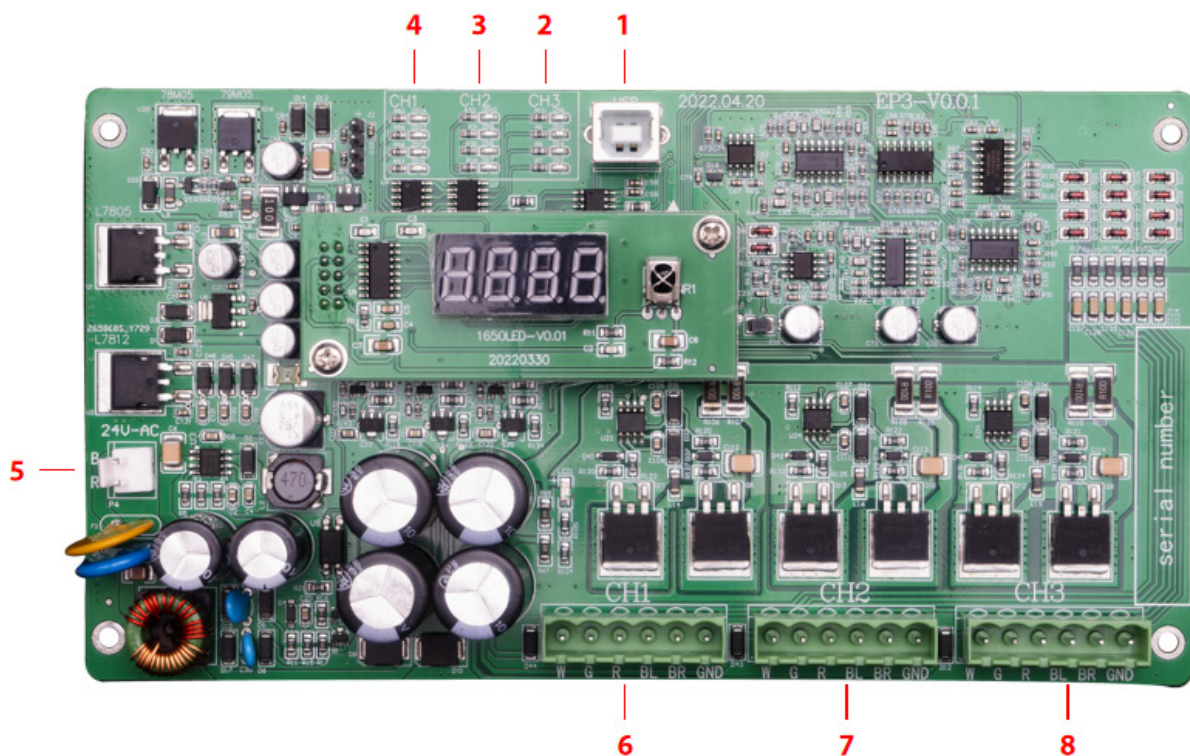
## 2 Performance and Technical Features

### 2.1 Features

- High flexibility, accuracy, anti-interference and stable performance.
- Superior Digital Signal Processing (DSP) technology.
- Effective solutions for multi aisle scenario.
- Software based anti-interference tuning and adjustment.
- Stable structure ensures long-lasting durability.

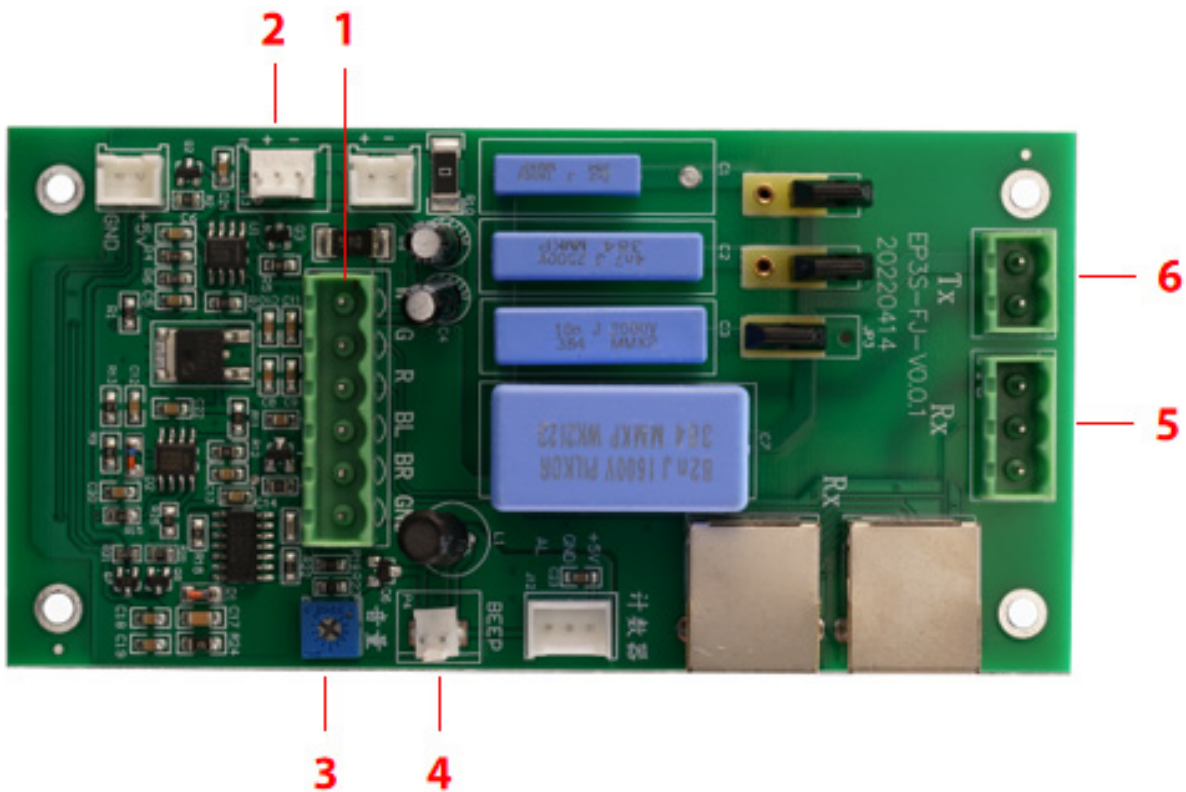
### 2.2 Transmitter Motherboard Schematic

#### 2.2.1 Master Motherboard



Number	Port	Function
1	Debug Serial Port	Used to connect the computer USB port with the debugging software installed.
2/3/4	CH3/CH2/CH1 Interference Indicator	Respectively displays the interference intensity of each corresponding antenna environment or the signal strength of the tag.
5	Transformer Interface	Make sure that the operating voltage of the device is stable.
6/7/8	CH1/CH2/CH3 Interface	CH1 connects the Master, and CH2 and CH3 connect to the slave through connecting wires.

## 2.2.2 Slave Motherboard



Number	Port	Function
1	Slave Interface	One master supports up to two slaves.
2	Alarm Indicator	Alarm indicator interface.
3	Sound Adjustment Knob	Adjust the volume of the device alarm sound. Turn it clockwise to make the sound louder.
4	Buzzer	Buzzer interface.
5	Receive Antenna	Receiving antenna interface.
6	Transmit Antenna	Transmitting antenna interface.

## 2.3 Remote Control Debugging and Software Debugging

Connect the device to the power supply and the EAS product will function normally. Both remote control debugging and software debugging are only used in special circumstances. When the product leaves the plant, it has already set the working parameters. It is not recommended that the client perform any debugging while the device is working normally.

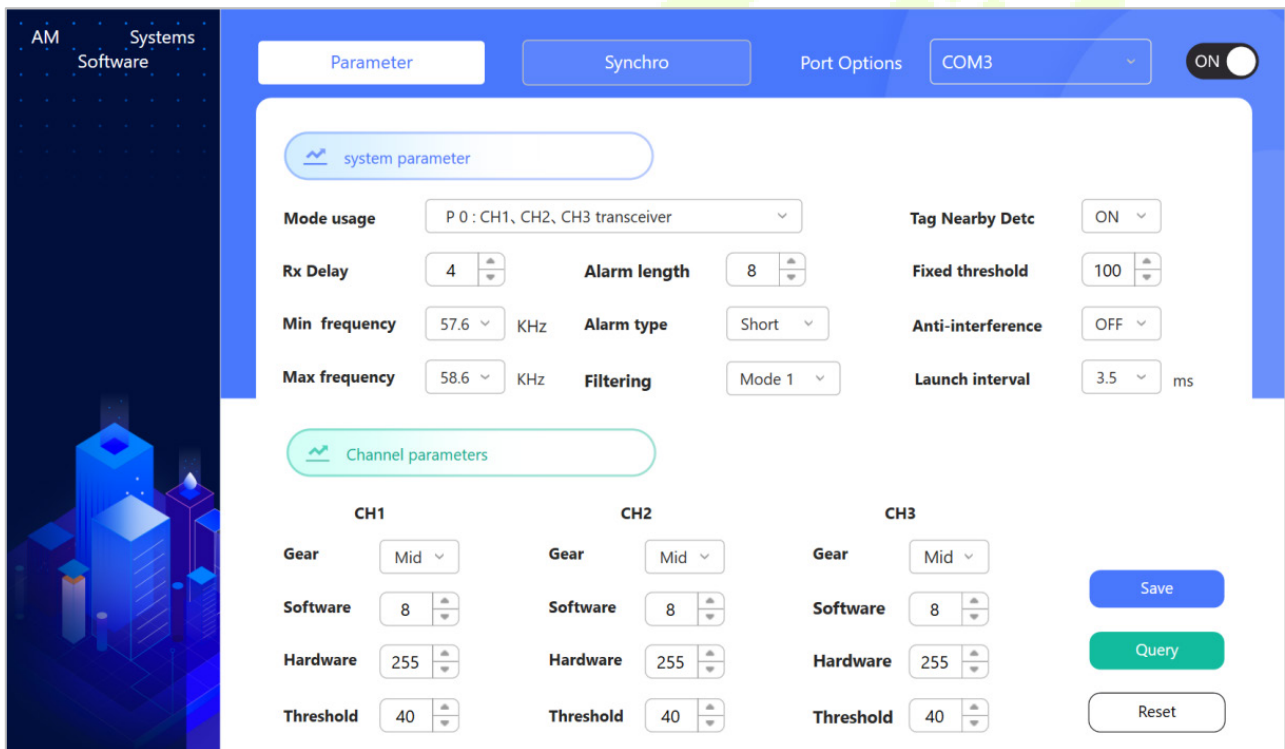
Here is a working mode with one master and two slaves, where CH1 represents the master and CH2 and CH3 represent the two slaves. The following is a brief introduction to the debugging function, and there will be special debugging materials.

### 2.3.1 Remote Control Debugging

There are six different operating modes to select from. The default mode is P0, which means that both the master and the slave can transmit and receive signals at the same time.

Model	Function
P0	CH1, CH2, CH3, Transmit and Receive
P1	CH1 Receive; CH2 Transmit; CH3 Transmit
P2	CH1 Transmit; CH2 Receive; CH3 Receive
P3	CH1, CH3, Transmit and Receive; CH2 Transmit
P4	CH1, CH2, Transmit and Receive; CH3 Transmit
P5	CH1, Transmit and Receive; CH2, CH3, Off

### 2.3.2 Software Debugging



Connect the debugging interface on the motherboard to the computer and open the software. The following are the primary software functions:

System Parameter	
Mode Usage	P0-P5 working mode.
Tag Nearby Detc	Default is off; tuning is not recommended.
Rx Delay	The default is 4; if there are large metal objects near the device, you can adjust it to 5.
Alarm Length	Alarm time.

Fixed Threshold	The default value is 100; if the equipment is prone to false alarms in the field environment, you can increase the value.
Min Frequency	Minimum detection frequency; no adjustment allowed.
Alarm Type	Alarm types are divided into continuous and intermittent.
Anti-interference	Default is off; tuning is not recommended.
Max Frequency	Maximum detection frequency; adjustment is not allowed.
Filtering	The default mode is 1; the filter mode can be adjusted according to the complex scene environment to achieve better detection effect.
Launch Interval	Default is 3.5; tuning is not recommended.
<b>Channel Parameters</b>	
Gear	The default is Mid; according to the scene environment, select Low, Mid or High.
Software	The default value is 8; when the interference is small, the value can be adjusted appropriately, not less than 4.
Hardware	The default is 255; in the case of less interference, the value can be appropriately reduced.
Threshold	The default is 40; it is recommended to adjust between 10 and 60; the higher the value, the lower the false alarm rate.
Save	Save the set parameters.
Reset	Reset.



**Phase:** Defaults to 0. The range 0 to 480 is also known as the sync value. Simple phase processing uses different anti-theft products from the same class. Adjustment is not recommended.

**Channel Signal:** CH1, CH2, and CH3 correspond to different signal channels. When a tag passes by, the blue value represents the signal value received by the device; if no tag passes, the blue value represents the environmental interference value received by the device. The red value represents the device's ambient interference value. The blue signal value is normal if it is less than 100, and it is usually between 40 and 50. When the value exceeds 100, false positives may occur. Debugging is necessary at this time. This feature can also be used to detect if the product tag is too close to the anti-theft device.

A red signal value is normal if it is less than 100. When the number value exceeds 100, it indicates that the surrounding environment will interfere with the device to variable degrees. The lower the value, the worse the device's working environment. The interference indication light in the top left corner of the motherboard can also be used to check the on-site environment. The more lights that are on, the worse the device's working environment. The best working environment is one with no light. Debugging is necessary at this time.



## 3 Deactivator and Detacher

### 3.1 Deactivator

#### 3.1.1 Instruction

The AM(Acoustic Magnetic) deactivator is an accessory product of 58kHz AM detection system.Used to decode soft tags . It consists of 18V AC power adapter and decoder board.The green light on the decoding board represents the working indicator, which is always on in the standby state, and the red light is on and the buzzer sounds when decoding. Try to place the item as close to the center of the deactivator panel as possible while decoding, and try back and forth a few times until the buzzer does not sound. The deactivator is used in conjunction with the 58kHz AM detection system, and is generally installed on the cashier to decode the protected goods.

#### 3.1.2 Power Supply

Name	Parameter
Input Power	18V, 1.5A(AC)
Power Insurance	250V, 1A
Decoding Height	maximum 12cm (soft tag)
Maximum Current	600mA (when decoding)
Quiescent Current	not more than 100mA

#### 3.1.3 Installation Preparation

- Determine the installation position, the hole's size is 196mm\*168mm.
- The product is divided into 110V and 220V, please confirm whether the voltage matches before use.

#### 3.1.4 Deactivator and Soft Tag



### 3.1.5 Power Connection

Plug and play, no setup required.

### 3.1.6 The Deactivator Uses

The deactivator has hard tag recognition. When an undecoded soft tag is used to enter the decoding area of the deactivator, the buzzer will send out Di-Di-Di (three short beeps), and the decoding is successful. If the hard tag enters the decoding area, the buzzer will beep (long tone) and give an alarm.

### 3.1.7 Precautions for the Use of Deactivator

Do not put liquids or soluble solids directly on the surface of the deactivator, and it should be wrapped to prevent liquids from invading the deactivator and burning the circuit board.

When the UPS is connected, if the AC power is not inverted to 50Hz~60Hz, the deactivator board system will not work.

### 3.1.8 Precautions for the Use of Soft Tags

There are three main factors that cause the soft tag to fail to alarm normally: metal shielding, human shielding and wrong use of tags. Therefore, the following details should be paid attention to in the use of soft tags:

- To protect the product, the soft tag must be attached to it.
- The soft tag's placement must be based on the principle of not damaging the product. Soft tags cannot be attached to leather or other materials due to their high stickiness.
- Do not press hard on the soft tag, as this will cause the tag to fail.
- Soft tags cannot be directly attached to metal products, tin foil-wrapped products, etc. Metal will directly shield the soft tag signal, resulting in no alarm.
- The tag cannot be used on the human body, nor can it be used on meat packaging, such as ham sausage, frozen meat, etc. The flesh and the human body will directly shield the soft tag signal, resulting in no alarm. At the same time, the electrostatic effect of the human body will also cause the soft tag to fail directly.
- The soft tag's sticking position must be flat, and the sticking curve must be as small as possible. It is not possible to fold it for usage. If the tag is bent too much, the frequency will change but no alert will sound.
- Soft tags cannot be attached to plastic bottles or glass bottles with liquids because most liquids contain trace metal particles, that will block the signals of soft tags. At the same time, the process of attaching the soft tag to the bottle will cause the tag to bend, which will also make the alarm impossible.
- Soft tags cannot be overlapped (more than two) and placed. The whole roll or the whole box cannot be used for the alarm, and it needs to be used in a single sheet, otherwise it is invalid.

## 3.2 Detacher

### 3.2.1 Instruction

The detacher can facilitate your use of hard tags.

#### ● Tag 1



1. Determine where to put tags on items.
2. Push the tag staple through the item, aligning with the hole location, pressing the tag.
3. Put the hard tag on the detacher as shown in the picture, the hard tag can be easily separated.

#### ● Tag 2



1. Determine where to put tags on items.
2. Push the tag staple through the item, aligning with the hole location, pressing the tag.
3. Put the hard tag on the detacher as shown in the picture, the hard tag can be easily separated.

#### ● Tag 3





1. Put lanyard through the item.
2. Align the nails to tag holes.
3. Put the hard tag on the detacher as shown in the picture. Hard tag removed.

#### ● Tag 4



1. Put the hard tag on the unlocked area of the detacher as shown in the picture. Press the button to unlock.
2. Rotate against the direction of the arrow or manually pull to open the hard tag
3. According to the size of the item, adjust the tag. Rotate the lock in the direction of the arrow. Press the button, and it will lock with an audible prompt.

### 3.2.2 Precautions for the Use of the Detacher

- Don't fall, or the magnet will lose its magnetism when broken.
- Do not put bank cards and mobile phones close to this product, it will cause degaussing of bank cards and damage to mobile phones.

## 4 Installation Setup

### 4.1 Installation Precautions

**Mention:** Please read it carefully before installing.

1. Please do a non-fixed test on the equipment at the installation site to make sure that the equipment works normally for about 30 minutes, and then perform fixed installation.
2. Large metal objects will interfere with EAS equipment. When installing, please try to stay away from metal doors, etc. At the same time, the inverter elevator and escalator will also interfere with the equipment, please adjust the installation distance according to the actual scene.
3. In the installation location of EAS equipment, it is recommended that clothes or commodities with anti-theft buckles should not be placed within 2 meters in diameter to avoid false alarms.
4. The power supply of EAS equipment must be independent. It is best not to share power with other electronic devices (such as neon lights, computers, electronic engines, cash registers), as this may cause interference and prevent the device from working properly.
5. The product uses sensitive electronic components inside, please make sure that the equipment is well grounded to avoid equipment damage caused by static electricity.
6. EAS equipment cannot be too close to the following situations: walls with wires, coiled coils (such as lanterns, Christmas trees, etc.), electrical equipment such as power distribution cabinets, high-voltage spotlights, large areas of metal, metal railings, metal shopping car, cashier, etc.

### 4.2 Installation Description

1. The system can work normally without a ground wire, but for long-term safe and reliable operation, the power supply must have a reliable grounding. Do not bring electricity to plug and unplug the cable between the master and the slave.
2. The power output is connected to the main board through the 5-core cable, and the master and slave are connected by an 8-core shielded cable.
3. The master uses the first channel of the board. When all three channels of the board are used (like one master and two slaves), the master antenna must be installed between the two slave antennas.
4. Antenna warning light and buzzer on the slave board.

## 5 Maintenance and Cleaning

### 5.1 Simple Troubleshooting

Under normal use conditions, radio frequency detectors generally can work stably for a long period of time, and system failures caused by component failures are less. Most of the faults are due to:

- Improper use.
- Poor electrical outlet contact.
- Excessive AC voltage fluctuations.
- Loose connection cable connections.
- Interference from surrounding electrical equipment and certain radio waves.
- Interference caused by wires, coils.
- Metal frames to equipment.

Carefully analyze the cause of the failure and then eliminate it one by one. Before the cause of the fault is not found, the settings and parameters of the system cannot be arbitrarily changed. Since all the indicators of the equipment are adjusted at the factory, they are in a better state.

### 5.2 System is not Working Properly

When each system is not working properly, such as the detection of reduced sensitivity, no alarm or frequent false alarms, etc., generally the following steps should be checked:

#### 1. Check power

When it is found that the system is not working properly, first check whether the system power is normal:

- 1) Whether the power indicator on the board is on;
- 2) Whether the printed board fuse (F1) is intact;
- 3) Whether the input power voltage is correct (24VAC);
- 4) Whether the power wiring is open or short circuited;
- 5) Whether the external power adapter is working properly;
- 6) Whether the power socket contacts are reliable;
- 7) Whether the input AC voltage fluctuates too much, etc.

#### 2. After troubleshooting the power supply, you can continue to check other system faults.

### 5.3 System Detection Sensitivity is Reduced

Under normal circumstances, due to the failure of components and components, the detection sensitivity of the system is reduced. Most of these types of failures are caused by interference between systems and interference, and the detection of interference caused by metal objects or electrical equipment near the antenna. For the detection of metal objects, electrical equipment, etc. near the antenna should take measures to remove, and try to keep it away from the detection antenna system.

### 5.4 System Does not Alarm

If the alarm light is not flashing and there is no alarm sound when detecting the label, first whether the frequency of the label is the same as the frequency of the emission center, check whether the warning light, the buzzer wiring is good, and whether the warning light or the buzzer itself is damaged. If there is no, check the indicator ALARM on the printed circuit board. "Bright" indicates that the system has alarmed, but there is no alarm output. At this time, some circuit faults (component failure or damage) should be considered.

**Note:** When the environmental interference is very serious (the noise level indicator lights up), the system will not work properly.

### 5.5 System Error Alarm

1. Field environmental noise interference.

Check whether there are high-power electrical appliances or motors, large area metal such as stainless steel guardrail, lamp rectifier and supercharger, weak communication line, distribution box and strong current near the equipment.

2. Too high or too low sensitivity.

Adjustment should be made according to the site environment.

3. The terminal head wiring is loose.
4. The motherboard is aging or broken.

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