User Manual

ZKAM20 & ZKAM20A

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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.

For further details, please visit our Company's website www.zkteco.com.

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The product will be updated from time to time without prior notice. The latest operation procedures and relevant documents are available on http://www.zkteco.com.

If there is any issue related to the product, please contact us.

ZKTeco Headquarters

Address ZKTeco Industrial Park, No. 32, Industrial Road,
Tangxia Town, Dongguan, China.

Phone +86 769 - 82109991

Fax +86 755 - 89602394

For business related queries, please write to us at: sales@zkteco.com.

To know more about our global branches, visit www.zkteco.com.

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 **ZKAM20 & ZKAM20A**.

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

Table of Contents

1 Overview

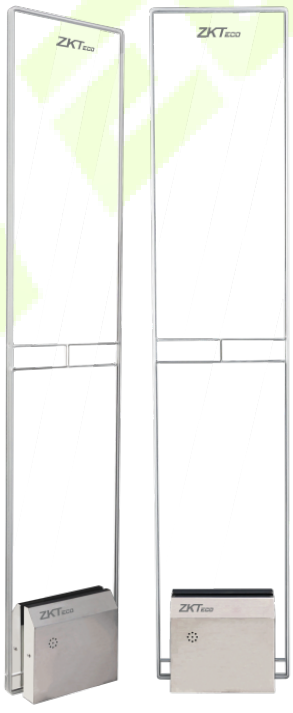
1.1 Introduction

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

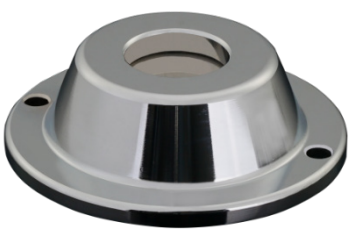
1.2.1 Detector

ZKAM20



ZKAM20A

1.2.2 Deactivator and Detacher

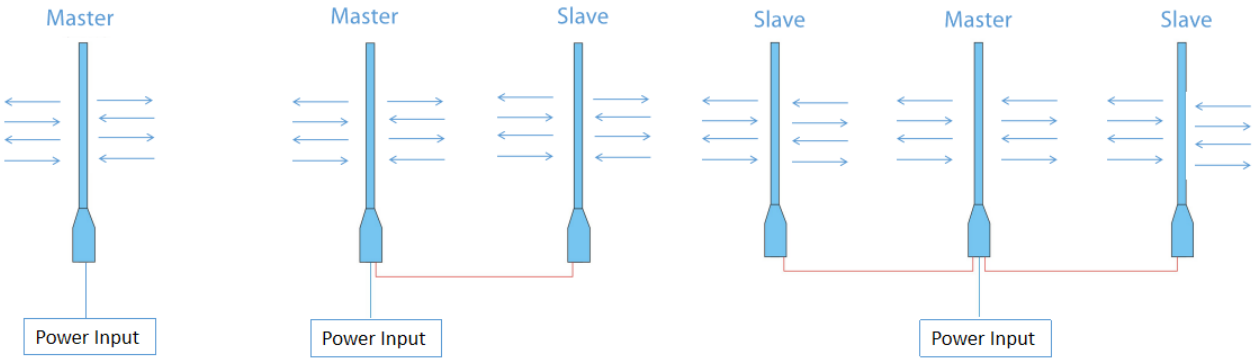


1.2.3 Electronic Tag

There are electronic tags with different appearances to choose from.

1.3 System Introduction

The AM system is designed with the low power consumption, low transmit power, and excellent at detecting 58kHz electronic tags. Designed with acrylic material, with built-in LED light bead, the overall lighting is excellent, and it is aesthetically outstanding and perfectly matches the interior of your store. It provides maximum detection of soft tags and hard tags in challenging store environments. Low power consumption design, only 10W; low transmit power, no high voltage design; high detection rate, zero false alarms; stable performance, strong anti-interference ability. A master unit in the AM system can support up to two slaves at the same time, allowing for the cost-effective operation of large numbers of exits.



- **Tag Detection Distance**

1.4 Product Specifications

Model	ZKAM20	ZKAM20A
Detection Range	0.9m to 2.2m (Depend on tag)	0.9m to 2.2m (Depend on tag)
Power	AC110 ~ 220V, 50 ~ 60hz	AC110 ~ 220V, 50 ~ 60hz
Rated Power	10W	10W
Center Frequency	58Khz	58Khz
Working Mode	TX+RX or MONO	TX+RX or MONO
Dimensions	1550 * 410 * 140 (mm)	1520 * 300 * 25 (mm)
Dimensions With Packaging	1570 * 470 * 230(mm)	1570 * 350 * 150 (mm)
Net Weight	10.2 Kg / ctn	16.5 Kg / ctn
Weight With Packaging	12 Kg / ctn	18 Kg / ctn
Packing Unit	2 pcs / ctn	1 pcs/ctn

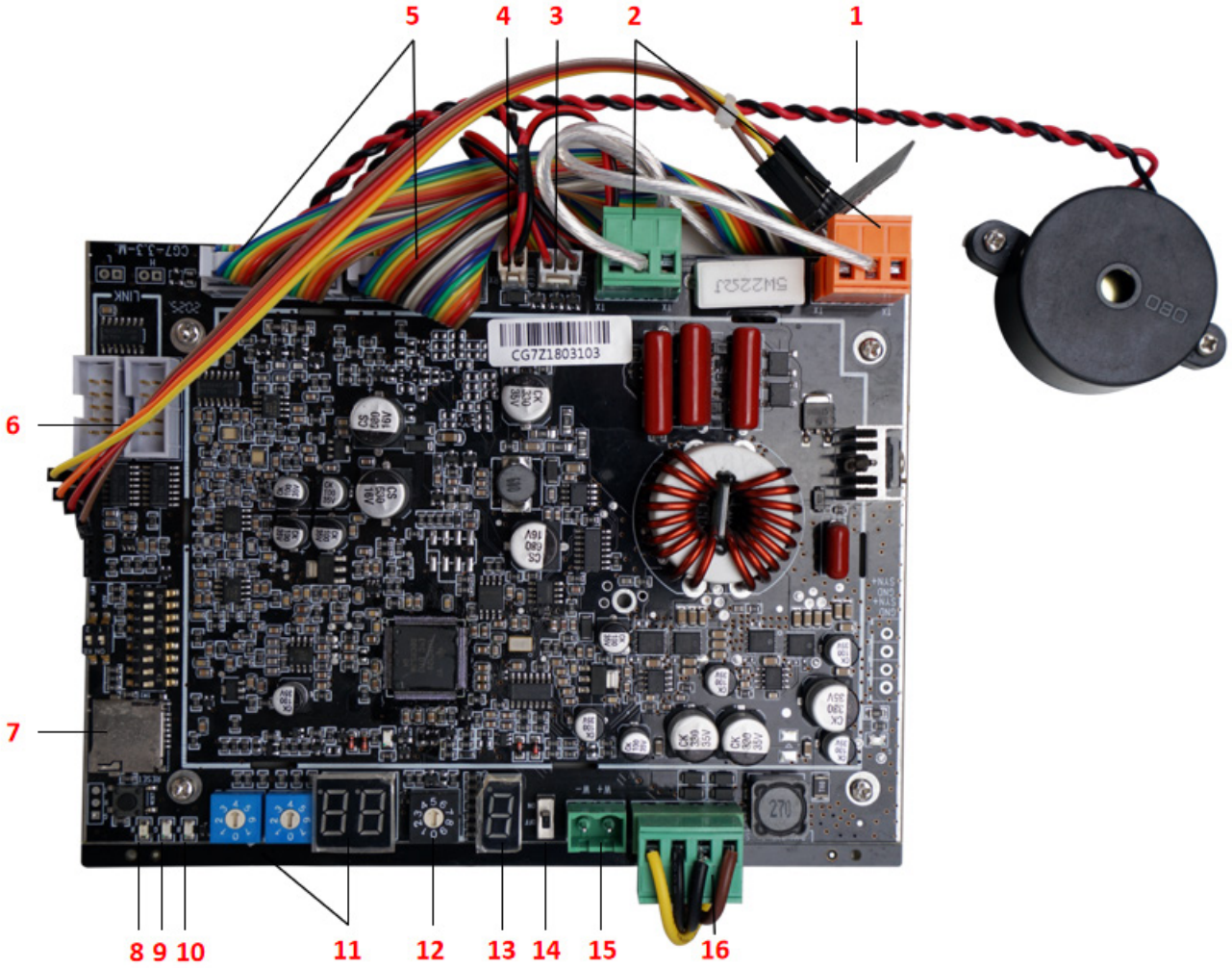
2 Performance and Technical Features

2.1 Features

- High flexibility, accuracy, anti-interference and stable performance.
- Low-Power Design.
- 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.
- Acrylic board built-in LED lamp bead.

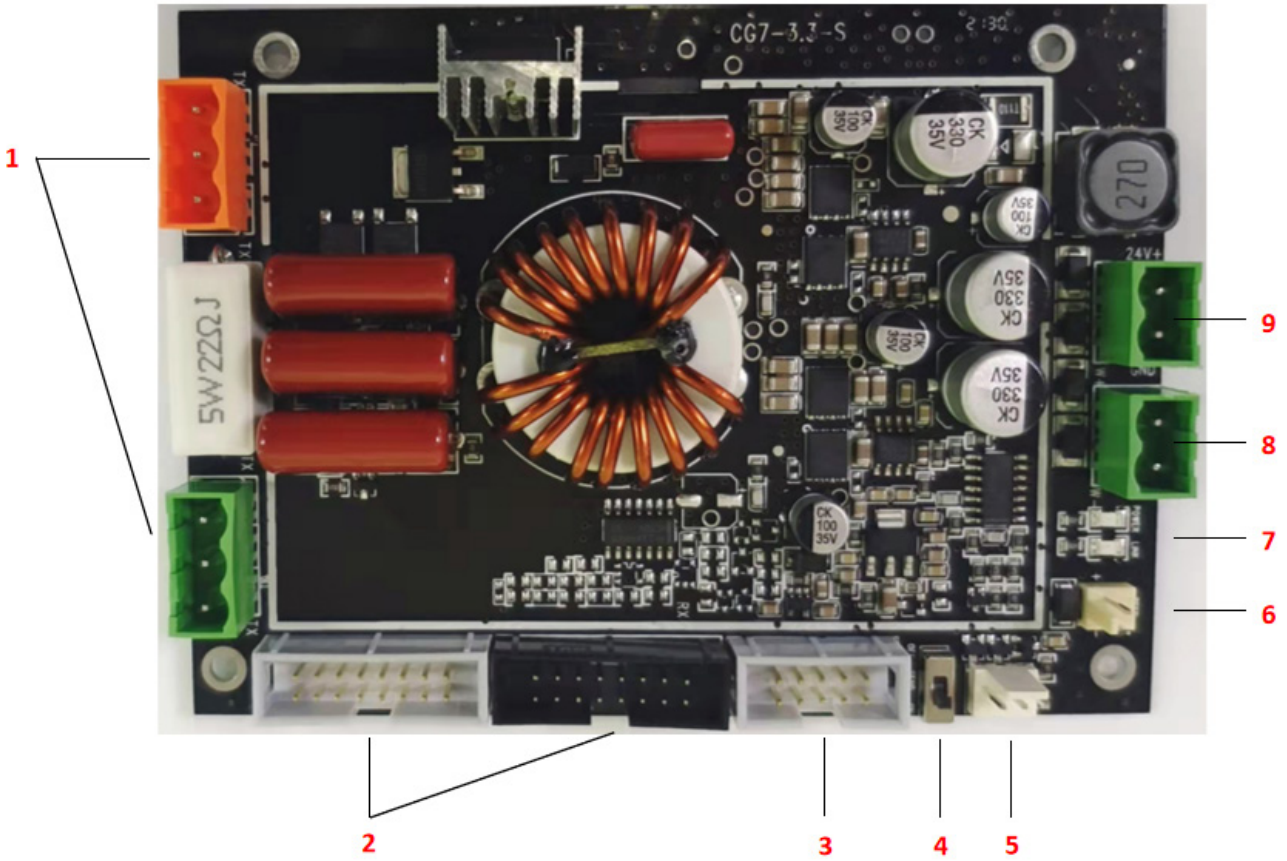
2.2 Transmitter Motherboard Schematic

2.2.1 Master Motherboard



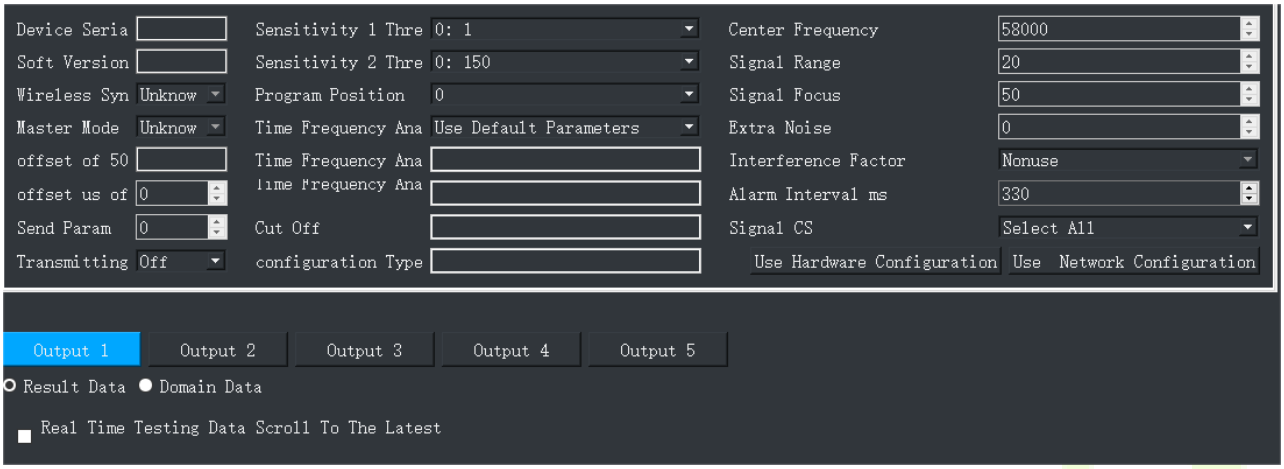
NO.	Port	Function
1	WIIFI Module	Connect the device through the APP for debugging.
2	Transmit Antenna	Transmitting antenna interface.
3	Alarm Indicator	Alarm indicator interface.
4	Buzzer	Buzzer interface.
5	Receive Antenna	Receiving antenna interface.
6	Slave Board Interface	One master supports up to two slaves.
7	TF Card Slot	For program upgrade.
8	Power Indicator	Red light on.
9	Slave Unit Indicator	The green light is on when the slave machine is working .
10	Master Unit Indicator	When the master is working, the blue light is on; just one device on the same set of internet lines has the blue light on.; if there is still a blue light on, it is necessary to check the internet line.
11	Sensitivity Indication and Threshold	Used to adjust the sensitivity of tag recognition.
12	Program Selection	Choose different programs to deal with different environmental disturbances.
13	Interference Indication	Digital display of surrounding environmental disturbances.
14	Transmit Switch	When plugged in, the transmit switch is turned on; when unplugged, the transmit switch is turned off.
15	Power Output	For slave power supply, light box power supply.
16	Power Interface	Power input interface.

2.2.2 Slave Motherboard



NO.	Port	Function
1	Transmit Antenna	Transmitting antenna interface.
2	Receive Antenna	Receiving antenna interface.
3	Slave Board Interface (Import)	Connect the slave port of the master.
4	Transmit Switch	When plugged in, the transmit switch is turned on; when unplugged, the transmit switch is turned off.
5	Alarm Indicator	Alarm indicator interface.
6	Buzzer	Buzzer interface.
7	LED Red Light	Slave machine interface indicator.
8	Power Output	For light box power supply.
9	Power Interface	Power input interface.

2.3 Background Software Management



Attach the device and connect it to the power supply for EAS products, and it will work normally. Only in cases where the problem cannot be identified on the spot will the equipment be brought online. Obtain the working data of the equipment using background management software, then analyze the data and assist in solving the resolution.

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 to 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 magnets 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 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.

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 is intact.
   3) Whether the input power voltage is correct.
   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 tag.

1. Check whether the frequency of the tag is the same as that of the transmitting center.
2. Confirm that the transmit switch is turned ON.
3. Whether all the digital tubes on the circuit board are displayed.
4. Check whether the connecting wire plug on the circuit board is disconnected.
5. Whether the warning light or the buzzer itself is damaged.

If the alarm still cannot be confirmed after checking, some circuit faults (component failure or damage) should be considered at this time.

5.5 System False Negatives

Verify that the boards of the two devices per channel are installed "face to face" or "back to back".

- **Less interference**

Master board:

Less interference: letters are displayed in b, c or d, numbers are displayed within 5.

1. Adjust the numbers appropriately, such as (2, 2), (1, 3), etc. Press the reset key to take effect.
2. Confirm that the transmit switch is turned ON.

Slave board:

1. Confirm that the transmit switch is turned ON.
2. Confirm that the cable is connected properly.

- **Larger interference:**

Master board:

Larger interference: letters are displayed in E or F, numbers are displayed above 5.

1. Unplug the slave receiver line.
2. Plug in the slave to receiver, unplug the master to receiver.

3. Plug in the master to receive, and dial both to 2 at the same time.
4. Two dial back to 1 at the same time, the program will set to 7 or 8 and press the reset key to take effect.

5.6 System Error Alarm

1. Check whether there is a tag within 2m of the equipment.
2. Press the reset button to wait for the alarm, adjust the threshold gear to match the digital display, and press the reset button to take effect.
3. Set the program to 1 or 2, adjust the alarm threshold appropriately, and press the reset key to take effect.

ZKTeco Industrial Park, No. 32, Industrial Road,

Tangxia Town, Dongguan, China.

Phone : +86 769 - 82109991

Fax : +86 755 - 89602394

www.zkteco.com