
Electronic Article Surveillance

(FOCUS series digital EAS)

User's Guide

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PREFACE

Thanks for your choosing EAS system series products of “hongtaian” at first. We do hope it can provide the convenience and efficiency for your work and management when you use our advanced EAS system.

The EAS of “hongtaian”, which is designed and produced specially according to more and more serious phenomenon of shoplifting today in supermarket and bookstores, etc., it will prevent the commodity from being stolen and increase your sales, because the shopper also feel free shopping space since you have installed the EAS.

The EAS of “hongtaian”, like as the other same products, is not the only standard to judge commodity stolen or not. It can only be regarded as a kind of the best electronic Anti shoplifting tool and reduce the stolen commodity.

Here we write the user’s Guide in order to help you use it more conveniently. As you know, whether EAS is fully used depends on how to install and adjust it. This User’s Guide has six parts: basic working principle & use illustration、 installation、 adjustment、 system maintenance& common trouble, etc.

You should read this User’s Guide carefully and make training plan for clerk according to the system and supermarket character.

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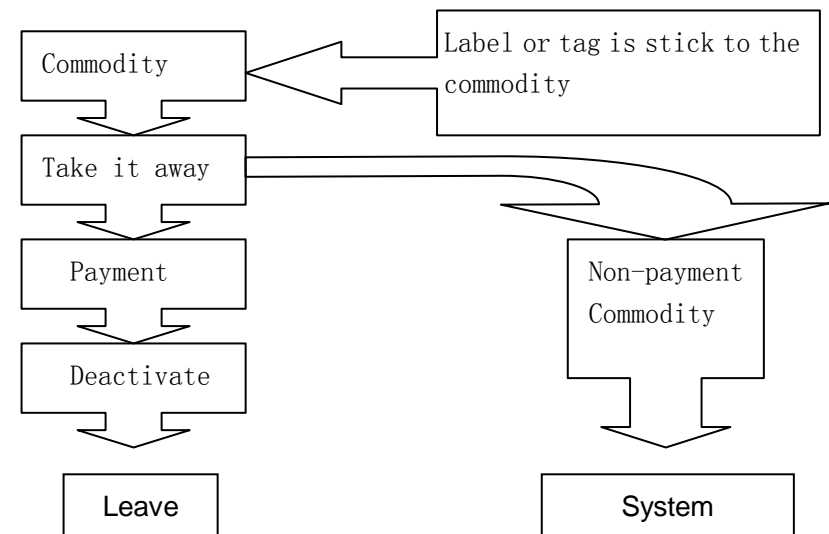
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Chapter 1: Basic working principal

1.1 RF EAS basic working principle

The basic working principle of Radio Frequency EAS System is: transmitter sends out the swept-band, there will be a scan area between the transmitter and receiver, and then the receiver receives it. Based on the principle of electromagnetic wave resonance to search the labels in special frequency range. It will be alert if any effectual labels exist in the range.

“hongtaian” Electronic Article Surveillance system would give you the solution for shoplifting. The effectual labels are stuck to the commodity and the sensors are installed in passage or gate, the label will be lapse by deactivator or detacher. The receiver will alarm when the non-payment and unchained commodity goes through the sensors.



Picture 1

1.2 EAS configuration

Electronic Article Surveillance System is consisted with Sensor(transmitter、receiver& special power supply), electronic labels (soft label and hard tags), instrument for deactivating(Deactivator/detacher).

1.2.1 Sensor

There will be a scan area between transmitter and receiver, it will scan the commodity passing through the sensors, and alert if the label with the commodity undetached.

1.2.2 ELECTRONIC LABELS

There are two kinds of electronic labels:

RF Soft Labels: used for one time and can be attached to all kinds of nonmetal commodity.

Hard Tags: repetition used and can be attached to clothes and bags and shoes.

1.2.3 Instruments for deactivating

A. Deactivator: deactivate over 15cm high. The 8.2MHz RF paper labels is deactivated when it is passed through the deactivating area. That is contactless deactivation.

B. Detacher: Can detach the hard tags from commodity quickly, safely and conveniently.

Chapter 2 : Installation Guidance

I Main technical parameters

Transmitter:

Power supply	DC 24V
DC source	<300mA
Output current	180mA<JP1<240mA
Center frequency	8.2MHZ
Scan rate	180HZ \pm 1HZ
Antenna Output Power Adjustments	max. 70dbuv/m
Frequency Adjustments	8.170~8.190 MHz
Bandwidth Adjustments	\pm 50 kHz
Sweep Frequency Setting	150~180
Master/Slave	Master/Slave

Receiver:

Power supply	DC 24V
DC source	_____
in guard status	<380mA
in alarm status	<380mA
sensitivity	5 μ A

II Mounting tools instruments and meters

Name	Quantities
1、earth groove cutter	1
2、bumping electric hammer	1
3、hand electrical drill	1
4、adjustable wrench	1
5、iron hammer	1
6、clipper	1

7、bevel pliers	1
8、crosshead screwdriver	1
9、screwdriver for adjustment	1
10、universal meter	1



Installation notice points

- (1) EAS sensor must be upright with installation ground
- (2) Prohibit putting label and tag to the 30cm surrounding of power supply cable and synchronization cable
- (3) It is unfit to pile up a lot of metal things such as handcraft, metal door surround the EAS sensor, metal wall reinforcements, goods shelves, metal showcases, hand purchasing carts, etc.
- (4) EAS sensor must be kept away from these things at least 1.5 meters, such as POS system, the money machines, ID devices for credit cards, telephones, computers, data cables, neon lamps, air conditioners, heaters, etc. and deactivator
- (5) EAS sensor should keep 30cm distance away from metal counterpoint
- (6) The power supply wire must be used independently and fix hardly, prohibit using bad quality plug
- (7) When using linearity power supply, the linearity power supply must keep away from switch power supply, or it will cause disturbance
- (8) Power supply should use special line independently, don't share a power supply line together with light and high-power machine.

- (9) There shouldn't have strong disturbance resource around EAS sensor, especially 7.3~8.7MHz disturbance signal, or the system can't work normally
- (10) Please regulate the surrounding electronic equipment, which will cause disturbance, such as low quality energy saving light
- (11) When existing many TX antennas, only permit one TX as Master, the other can be set as slaver, the Master and Slaver can be connected with synchronization wire;
- (12) It will cause false alarm under strong electromagnetic disturbance, such as light from metal bounce, switch on light and so on, when disturbance eliminated, the system will return to normal.

III Environmental Conditions

1、Mounting position of EAS detector

EAS detector cannot be set up in the distance of 0.5m from a metal door or 1m from any metal objects inducing the metal wall reinforcements, goods shelves, metal showcases, hand purchasing carts, etc. It is also not allowed to mount this detector in 2m nearby the money machines, ID devices for credit cards, telephones, computers, data cables, neon lamps, air conditioners, heaters, etc.

2、To ensure the EAS operation reliability, at first it is necessary to detect the interference sources and set the system far away from these sources if they are difficult to be removed. Generally, there are two kinds of interference: the first is active in nature such as the various electric sparks, motors, blowers and fire due to improper contact, or interferences caused by serious noises of power source; the second is passive in nature such as the conduct rolls, pos machine on money acceptance desk, different

signal lines of printer power cords in roll and so on.

3、The power case of EAS detector uses 10A two poles and a grounding plug. A separate power source AC 120V is required to avoid the interference with the other appliance. The power socket must be conformed to the standard 10A double-pole socket with a grounding plug.

4、A pair of RF detectors are used to identify whether there exists an interference source. When they are in the pre-installation position, Look at the receiver lights:DS1, DS2, DS3, If the DS1 and DS2 are lighting, which shows the existence of serious interference, so it is necessary to remove the interference source according to the above 1,2 instructions or replace the power source, move the main unit into the building or change the suitable unit in order to match the environment.

5、There may be some limitation in use of EAS, since RF detector works on the principle of electronic harmony and the metal shield may become invalid. Users should be aware of the situation that some goods such as milk powder, chocolate, etc. In metal or metal film package may be not protected with the EAS tag adhered directly. In such a case, the dedicated binder tape or protective box is adopted for protection.

IV Mounting mode

The largest mounting distance of **FOCUS** RF detector is $\leq 95\text{cm}$ for the

P3 and P4 of the main transmitter are the synchronous output ports that can output simultaneously two ways of synchronous signal. On the secondary transmitter, P2 port is for the input, while P3 and P4 ports for the output of synchronizing signal. In the condition of link

soft tags, while $\leq 120\text{cm}$ for the “small square hard Tag” ($\leq 140\text{cm}$ for the “**eccentric** circular Tag”). This distance is checked under the condition that the transmitting antenna is mounted parallel with the receiving antenna, and the center point of the antenna pedestal is taken for the reference point of distance.

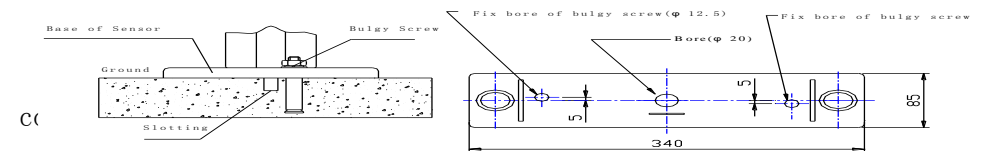
One transmitter corresponding to one receiver is considered the standard mode of mounting RF detector. When multiple systems are used together at a horizontal spacing $< 20\text{m}$ and vertical spacing $< 7\text{m}$, a link mounting of systems as shown below is demanded.

1、Mounting

Make a groove on the definite place to bury the power cords.

The rack base is fixed with the steel tight-fitting screws after drilling the holes (Fig. 2). Note that there should not be any carts or metal objects around the main unit. If the power cord comes in through the ceiling, it must be in 2m apart from the detector and the insulation layer grounded to avoid any interference. For power cord, the separate opening is required with good connection. A poor socket is not recommended because the improper contact may cause high-frequency spark resulting in unstable work of system and even misdetecting.

2、Wiring Open the detector panel as shown in Figs 3,4.



The sketch map of Sensor installation The plan of Sensor's pedestal
synchronizing signal to be input through P2 port and output from P3 and P4 ports.

5、Trial of the system after turning on the power

Before the power is supplied please do the following inspections:

- 1) Check the transmitters to confirm the jumper JP setting of the main transmitter(note: When the multiple transmitters are connected, specify one of them as the main transmitter : Set the Short Route at JP2(Master).
the secondary transmitter (note: When the multiple transmitters are connected, the other transmitters are considered as secondary ones : Set the Short Route at JP3(Slave).
- 2) check the receiver to confirm the jumper JP setting.
JP1:1-2; JP2:2-3; JP3:2-3; JP4:1-2
- 3、Turning on the power (pre-heating3 minutes)

Look at the lights on the PCB board of the receiver .If the light DS1 flash, this is caused by the environmental interference)
Sensitivity check pass through the detector with a tag in hand in the direction . If there will be no alarm or only a slow alarm sensitivity, it is required to handle according to the following instructions.

IV Inspection on site

- 1、 Repeat test of the transmitting board as follows.
 - A. Scanning center frequency (The setting for this item is completed by the manufacturer, so it does not require any adjustment)
When the probe of frequency meter contacts the transmitter TP6,with transmitter TP8 grounded and rheostat R15 adjusted, we have a meter reading 8.2MHZ.
 - B. RF output range
When the oscilloscope probe contacts the transmitter TP6,with transmitter TP8 grounded and rheostat R23 adjusted, we have a

sinusoid of 16-20Vp-p.With transmitter TP7 grounded there will be a sinusoid of $45 \pm 3V_{p-p}$.

2. Adjustment of the receiving board

A. RF signal range

When the oscilloscope probe contacts the transmitter TP1,with transmitter TP20 grounded, the RF signal range will be 6.5-8.5Vp-p.As the oscilloscope probe contacts the transmitter TP4,with transmitter TP21 grounded and rheostat VR1 adjusted, the static noise has its range $\leq 1V_{p-p}$,when there does exist any tag in the detection area.

B. Blocked level

When the oscilloscope probe contacts the transmitter TP22,with transmitter TP21 grounded and oscilloscope set on the DC step, adjust the rheostat VR2 to have the level suddenly change to +7.6V,then rotate for VR2 an angle of 70 degrees. When the pedestal bases of transmitting and receiving antennae are held by two hands simultaneously, the level of transmitter TP22 should not skip to 0V.

C. Threshold voltage value

With the universal meter set on DC step, the red pen contacting transmitter TP14,the black pen contacting transmitter TP6,thus the rheostat VR3 is adjusted such that the voltage value will be $0.75V \pm 0.03V$.While adjusting watch the lighting bars and wake them stop flashing.

D. Timing pulse width

With the oscilloscope probe contacting transmitter TP5, transmitter TP16 grounded and the resuming tag set and fixed in the center detection area, by adjusting rheostat VR4 the timing pulse width will be 100μ s.

VII Trial on site

1. Open the receiver cover and look at the light DS1 do not flash. In normal condition, the more no flash the light is, the better it will be.
2. If the light DS2 flash of blink, first to check whether there are any metal objects in 2m nearby the antenna, and the conduct labels as well. Please remove them if there are any in order to let the light DS2 do not be flashing.
3. The light DS2 blink because of the large ambient noise. In this situation, the light DS2 and DS1 can be obtained by rotating VR4 counterclockwise.

VIII Easy methods for troubleshooting

Troubles	Items tube checked	Remedy
The power lamp does not	Check that the power switch is turned on. Confirm that the play is connected; the fuse is perfect and not burned.	Turn on the power switch; firmly connect the plug and socket; replace the fuse with a new one.

light up.		
Super	Check that there are any tags around the detector. Confirm that the timing pulse width of the oscilloscope is 100μ s. Check with an oscilloscope whether any strong interfering signal exists in the static noise (for receivers TP4, TP2).	Remove the tags near the detector; adjust the timing pulse width to 100 μ s; Check that there are any limitless transmission devices such as the powerful stations, wireless telephones etc. Producing noise.
Alarm indicator lights up.	Check that there are any tags around the detector. Check with an oscilloscope whether the receiver static noise is larger than 1Vp-p.	Remove the tags all around. Remove the noise source, if not, then raise the value of alarm threshold voltage to satisfy the demand of alarm and anti-interference.
No alarm	Check the working status of detector: 1. Check that exists the modulating signal and the receiver TP17 has a	According to the trial regulations, make the trial for all parameters step by step till the requirements are

	<p>sinusoid of 180HZ.</p> <p>2. Check whether the scanning center frequency is 8MHZ and for TP7 it is larger than 45Vp-p. Checking mode: set the transmitter JP1 in 3-2 position, check the voltage and scanning center frequency > of TP7. When in normal use, JP7 is set in 1-2 position.</p> <p>3. Check that whether the receiving and transmitting RF range is excess low.</p> <p>4. Blocked level is of 7.6V</p>	satisfied.
	<p>5. Check the receiver TP14 to have its threshold voltage setting - 0.75V.</p> <p>6. Check that the timing pulse width for receiver TP5 is 100μ s.</p> <p>7. Confirm that the power supply works correctly.</p> <p>8. Confirm that all the wires</p>	

	are connected properly.	
Alarm sensitivity is low	<p>Check that the threshold voltage is set too high, the transmitting and receiving range are set too low, the tags are allocated reasonably. the static noise of oscilloscope is too high.</p>	<p>Adjust the threshold voltage value properly to satisfy the demand of alarm and anti-interference. Adjust the transmitting and Receiving RF range based on the trial regulations. Change the responding tags.</p> <p>Insulate the noise source.</p> <p>Note: At the time to reduce the threshold voltage of receiver and to raise the RF range, viewing the change of static noise with an oscilloscope can increase the alarm sensitivity and depress the noise effectively.</p>

Remark:

Contact the manufacturer or authorized representative when there is still any trouble after taking all the measures stated above. For cleaning please use the fresh water or alcohol, use a soft material to wipe lightly. It is prohibited to use any corrosive solvent. No liquid is allowed to come into the device box.

	3000 PCB (or 21CR PCB)		3800 PCB		3810 PCB		4800 (DSP PCB)	
	standard	maximum	standard	maximum	standard	maximum	standard	maximum
Soft tag	0.90m	0.95m	0.95m	1.00m	0.95m	1.10m	1.00m	1.20m
Mini Triangle Hard Tag, Flat Pencil Hard Tag,	1.00m	1.10m	1.05m	1.15m	1.15m	1.20m	1.20m	1.250m

Triangle bottle Tag								
Mini Dome Hard Tag, M40 Hard Tag, Hardest Hard Tag	1.05m	1.15m	1.15m	1.20m	1.20m	1.25m	1.25m	1.30m
small square hard Tag, Mini round Hard Tag, Small Golf Hard Tag, Mini UFO Hard Tag, Mini strawhat Hard Tag	1.15m	1.20m	1.20m	1.30m	1.30m	1.50m	1.40m	1.60m
Eccentric circular Hard Tag, 50 circular Hard Tag, Middle Golf Hard Tag, Samll flying disk Hard Tag, Wide rope bottle Tag	1.20m	1.30m	1.30m	1.50m	1.40m	1.60m	1.50m	1.70m
Big Golf Hard Tag, Big flying disk Hard Tag, Eccentric big flying disk Hard Tag	1.30m	1.50m	1.40m	1.60m	1.50m	1.70m	1.60m	1.80m
Big square Hard Tag	1.40m	1.60m	1.50m	1.70m	1.60m	1.80m	1.70m	2.20m
Remark:	"standard"-environment with less interference, DS1 signal flashing. "maximum"-environment without (or only a little) interference,DS1 signal doesn't flash.							

Detectable range

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC NOTICE

To comply with FCC Part 15 rules in the United States, the system must be professionally installed to ensure compliance with the Part 15 certification. It is the responsibility of the operator and professional installer to ensure that only certified systems are deployed in the United States. The use of the system in any other combination (such as co-located antennas transmitting the same information) is expressly forbidden.