



User Manual of X-ray Baggage Scanner



Read before Operation

Before operation this machine, please read this manual thoroughly, and keep a copy with the machine for future reference. This manual is to be considered part of your machine.

Model: NG-708



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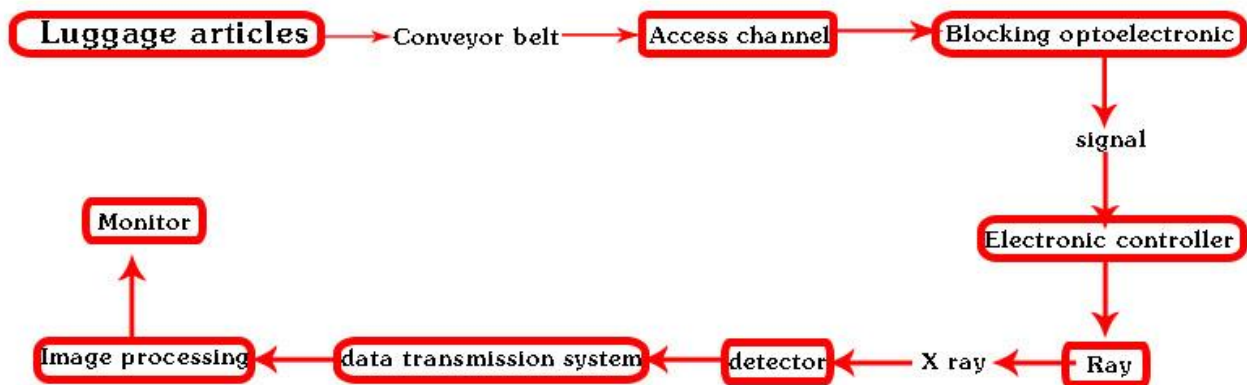


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1. System principle and technical index

1.1 Working principle

The X-ray safety inspection device is completed by sending the checked luggage into a crawler channel with the aid of a conveyor belt. After the luggage enters the channel, the light barrier is blocked, the detection signal is sent to the control unit, and the trigger ray source launches the X ray beam. A fan-shaped X-ray beam X beam through a very narrow collimator penetration on the conveyor belt luggage to the detector, the detector X ray received into the electrical signal, the current signal is very weak to be directly quantified, transmitted through the universal serial bus to industrial control computer for further processing, after computing and imaging processing complex after get the high quality image. Its working principle is shown in the following diagram:



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1.2 Technical indicators

☆Basic parameter index:

Channel size Model 5030: 500 (wide) * 300 (high) mm

Model 6550: 650 (wide) * 500 (high) mm

Model 8065: 800 (wide) * 650 (high) mm

Model 10080: 1000 (wide) * 800 (high) mm

Conveyor belt speed: 0.12-0.20m/s

Conveyor belt rated load: 100 kg

Resolution diameter: 1mm Metal wire

Penetrating force: 12mm steel plate

Film safety Safety of ISO15030 film

Leakage dose: <0.5 μ Gy/h

☆X ray generator:

Ray beam direction Bottom illumination / Apex

Luggage and other items to enter the channel to block the optical barrier electronic controller

Ray

detector

data transmission

system

Image processing

Display display

Conveyor belt signal

X ray

Tube current 0.4~1.0mA (Adjustable)

Tube voltage 70--140KV (Adjustable)

Ray beam spread Angle 60° / 80°

Cooling / The cycle time Sealed oil cooling / 100%

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☆Image processing system:

X-ray sensor L Photodiode array detector, The depth of the 12bit.

Graphoscope high resolution 19 inch liquid crystal display

Color image display according to material material, 24 bit true color display

Edge enhancement The edge of the object is clearer

Image enhancement The details of the image are clearer

High penetration display Improve the contrast of the bright area in the image, make the zone clearer.

Low penetration display The contrast of the dark area in the image is improved, and the difficult area is clearer.

Brightening / dimming Increase the luminance of the image's brightness / darkening image.

Image pullback/Pull front The first 20 images are displayed and any image processing can be performed on the current image.

Image restoration Image display is restored to its original state

Image storage The arbitrary image is saved in real time, and any image processing can be carried out, and the image can be saved continuously.

☆Image processing system:

Pseudo color Organic matter is shown as orange, Inorganic substance is blue, The mixture is shown as green (Double energy)

audible and visual alarm Make sound and alarm signal when the condition is satisfied.

☆Use of the environment:

working temperature / humidity: 0°C~45°C / 20%~95% (not condensing)

Storage temperature / humidity: -20°C~60°C / 20%~95% (not condensing)

working voltage: 220VAC(±10%) 50±3Hz

power loss: 1.0KW (maximum value)

Noise level: <65dB

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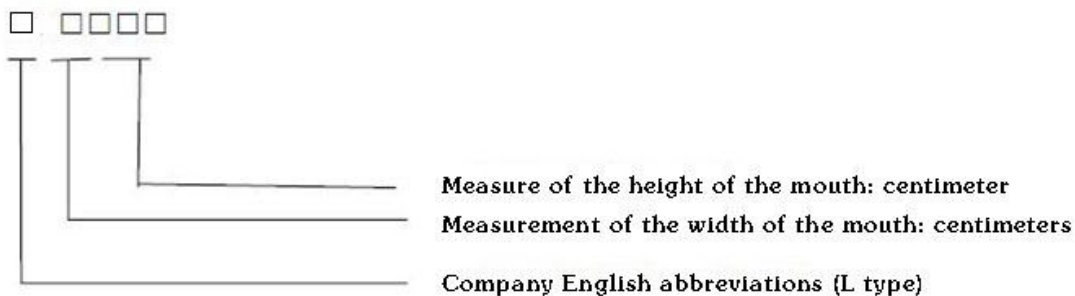


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☆Unique features:

- ★Radiation is safer: Automatic control of radiographic emission, Avoid false launch.
- ★One key shutdown control: When you turn off the machine, you only need to rotate the key, and the equipment is automatically and safely shut down. It is more concise and convenient.
- ★Fault self diagnosis: Automatically judge the fault and give prompt information for easy maintenance.

1.3 The composition and representative significance of the model



1.4 Main uses and scope of application

The newly designed and powerful X ray safety inspection device adopts the latest image technology, showing higher resolution and clearer image, and it can detect all kinds of dangerous goods quickly and effectively. Widely used in government agencies, embassies, public security judicature, the procuratorate, court, prison, government office, reception center of Civil Affairs petition Department, caretaker, detoxification Institute, salvage station, shelter ; airport, conference Center, Expo, Scenic spot, sport and cultural place, stadiums and stadiums for large competitions, Post Office, market, hotel, school and so on. Suitable for small bag、suitcase、handbag small packet class detection.



2. Operation safety guidance

2.1 Protect

The security machine is a X - ray equipment with radiation. In the design, It has made great efforts to ensure the high safety of the system, and in any case can protect the safety of the operation and maintenance personnel. However, in the use, installation and maintenance of the equipment, the following safety rules must be observed:

Conforming regulations requirements and conditions of use:

GB 15208—2005 《Micro dose X ray safety inspection equipment》

GB 4208—93 《Shell protection level (IP code)》

GB 18871—2002 《Basic standards for protection of ionizing radiation and safety of radiant sources》

Law on the prevention and control of radioactive pollution in People's Republic of China

2.2 Basic security rules

Although X - ray safety inspection equipment is easy to operate, we still suggest that you read the handbook before you start, And abide by the following rules:

★ Equipment that has not been used for more than 6 months please don't start at once! It is necessary to check the whole machine first, is it clean or dirty, whether there is a broken line, is there any mildew, Is there any bad situation, Before the electricity is used, check and remove the abnormal parts carefully. Otherwise, it may cause damage to the equipment.

★ Prior to the operation of X - ray safety inspection equipment, You should understand relevant regulations on radiation protection !

★ If anyone else wants to operate your X - ray safety inspection device, it is necessary to ensure that he is a qualified operator , understand all safety instructions, laws and regulations.

★ The installation of the X - ray safety inspection equipment, the electrical connection and the replacement of the mechanical and electrical components can only be carried out by experienced professional technicians.

★ If the shell parts, cables, or conveyor belts of the X - ray safety inspection equipment are damaged, the operation must be stopped immediately!

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- ★ The shell and parts of the X - ray safety inspection equipment can only be opened by qualified professional technicians.
- ★ It is prohibited to modify or change any part of the system's security. The installation, commissioning, or maintenance of the equipment can only be completed by qualified personnel who have been trained.
- ★ X - ray safety inspection equipment can only be used to check items! It is strictly forbidden to check the human body or other creatures!
- ★ It is forbidden to sit or stand on a conveyor belt.
- ★ No part of the body enters the inspection channel when the X - ray safety inspection equipment is started!
- ★ Ensure that the luggage is not stacked in the inspection channel or at the exit. If the baggage blocked the inspection channel, Turn off the machine before cleaning and dredging.
- ★ Prevent various liquids from flowing into the machine. If this happens, it should be shut down the machine immediately.
- ★ X - ray safety inspection equipment and the radiator on the display can not be blocked!
- ★ The system must be grounded before the system works. The main power outlet and installation site must be equipped with reliable grounding configuration.
- ★ When the equipment is working, try to avoid standing near the exit and entrance of the channel.
- ★ When the lead curtain is damaged or opened, the equipment can not be allowed to work.
- ★ Although the X - ray dose is small, non workers are still trying to get away from the equipment as far as possible.

2.3 How to carry out a safety inspection of the equipment

- ★ The system must check whether the lead door curtain at the entrance and exit of the channel at the entrance and outlet of the channel is in good condition, and should be replaced immediately if the X ray is damaged.
- ★ Check whether there is an object blocking the light barrier.
- ★ Check whether the conveyor is in good condition, Are there any spines and stains



endanger the checked luggage, Whether the conveyor belt is deviated or stuck.

- ★ Check if the shell, display, keyboard, and cable of your X - ray safety check equipment are damaged.
- ★ All cover boards have been covered.

2.4 Safety protection of X ray

X - ray safety inspection equipment has taken reliable protection measures for the radiation of X rays, effectively ensuring the safety of the operation and the inspectors.

These measures are:

- ★ The X ray source used in the system is an active component. It can only transmit X rays only under the condition of high voltage. Therefore, there will be no X ray when there is no power supply, such as transportation and preservation.
- ★ The single dose detection system is only a very small amount, and around the collimator using lead shielding cabinet, and ports are equipped with lead curtain, can effectively prevent the X rays.
- ★ In order to ensure the safety of the maintenance personnel, the conveyor belt stops running and the X ray does not launch when there is no goods in the channel, so that the maintenance personnel are protected from the damage of X rays.
- ★ the equipment in a number of locations to set the grounding wire, can effectively avoid personnel electric shock and equipment damage.
- ★ the internal installation of overload, over current and other multiple protection, the possibility of accident and danger will be reduced to a minimum.
- ★ The X - ray security inspection system produced by our company is fully in conformity with the security requirements of the X - ray national standard GB15208-2005.1.

The design of X - ray safety inspection equipment can protect the safety of operation and maintenance personnel in any case. The system has very low X ray dose, and at the same time, it can ensure enough penetrability to the examined objects, and the photosensitive materials, foods, drugs and tapes are not affected, even many times. The equipment is equipped with a large area of lead shielding to prevent X ray leakage. A set of lead curtain almost reduces the radiation of the rays to zero. The equipment is equipped with a safe interlocking switch on the exit of the X ray and the detector box, and



the control circuit can monitor the working conditions of these interlocking switches at any time. Any interlocking switch is disconnected, and the device will automatically cut off the AC power supply of the X - ray controller to turn off the X - ray. The X ray source of the equipment can not launch X rays after the power supply is cut off.

2.5 Informed notification

- ★ Any equipment that produces X rays is harmful. Therefore, please minimize the time exposed in the radiation environment and pay attention to the protection.
- ★ The external power grid and power supply provided must have good grounding and must be truly connected to the earth.

3. System structure

3.1 Form

The system consists of two parts: hardware and software:

3.1.1 hardware component

- (1) X ray generator controller
- (2) X ray detector
- (3) data acquisition device
- (4) mechanical structure

3.1.2 Software part

- (1) system control part
- (2) image processing section

3.2 system components and sub components

The components and subcomponents included in the system are as follows:

- (1) X ray source
- (2) control and drive of X ray source
- (3) X ray detector array box



- (4) electronic controller
- (5) embedded industrial control machine
- (6) display
- (7) key switch
- (8) heat dissipating fan
- (9) conveyor belt
- (10) light barrier
- (11) power supply board

3.3 function description of system components and subcomponents

3.3.1 X ray source

The X ray source consists of three parts:

- (1) high voltage generator (two high voltage doubling and feedback circuit)
- (2) X ray tube
- (3) collimator

The X-ray tube and a high pressure generator consisting of two voltage voltage and feedback circuits are placed in a shell filled with oil and has a lead shield. The cable WS9 provides filament and high voltage driving signal to the X ray source, and feedback the sampling signal of the high voltage and the anode current to the X ray control and driving box, so as to maintain the stability of the high voltage and the anode current during inspection. The collimator's function is to turn the X ray beam into a fan beam.

3.3.2 XRay detector array box

The two detector arrays form the shape of the L to solve the problem of detecting dead angles. The vertical side (hereinafter referred to as the side detection box) has a number of block probe plates, and there are several block detectors in the horizontal side (later called the bottom detection box). Each plate contains multiple channels. The high energy analog signals are digitized on the probe board after being amplified and transmitted to the industrial control computer for processing.

3.3.3 Electronic control box



The control board is responsible for receiving the PC command and forwarding the industrial control computer to control the motor running and stopping. Monitoring the state of optical barrier, judging the entry and departure of the luggage, controlling the emission and closing of the X ray, and monitoring the normal work of the X - ray control module.

3.3.4 Image processing system

The equipment has 1 digital image processing machines, that is, the embedded industrial control machine. The industrial control machine receives the detector signal from the X ray source to deal with the sampled data.

(1) image processing function

The equipment provides basic image processing functions, such as edge enhancement, super image enhancement, pseudo color, amplification and so on.

(2) data storage and retrieval function

The device provides the functions of storing images, retrieving images, and recording the operating conditions of the operator.

3.3.5 Display function

The system uses a 19 inch high resolution liquid crystal display, which can display color images and black and white images according to the needs. In the information, the actual value of the information is calculated by PC, and the function of the device control and image processing is realized.

3.3.6 Conveyor

The conveyor system includes:

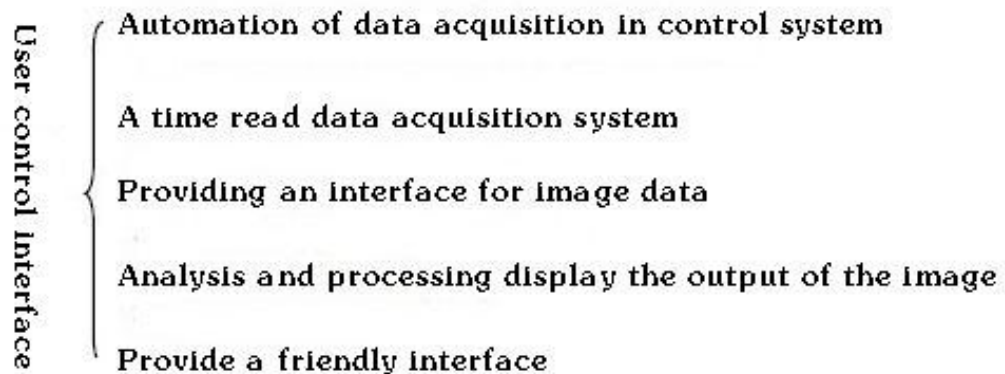
- (1) conveyor belt;
- (2) an electric (driving) roller at the outlet of the conveyor;
- (3) a modified roller at the entrance of the conveyor;
- (4) a roller with two steering belts running under the equipment.

The electric roller contains a single phase motor. The driving torque of the motor is transmitted to the surface of the roller through the gear reducer, forming the force of the driving belt. The roller is used to adjust the tension of the belt.



3.3.7 light barrier

A light barrier is installed in the entrance of the channel (the photoelectric switch), for detecting forward when transferred into the channel check baggage, if the luggage is blocking the light barrier, light barrier receiver output signal to the electronic controller, starting from the electronic controller informs the emission of X ray ray controller.



3.4 software system

3.4.1 Software running environment

Windows 7/32-bit

3.4.2 Software composition

- (1) Dedicated driver
- (2) User control interface



4. Equipment operation and part of electrical module

4.1 Electrical control part

The electric system is an important part of security system, mainly to supply the power to the whole security system, at the same time when the accident happens, can provide the corresponding electrical protection system, equipment operation personnel in operating equipment to control the operation of the equipment, the principle diagram of the electrical part of figure 4.1:

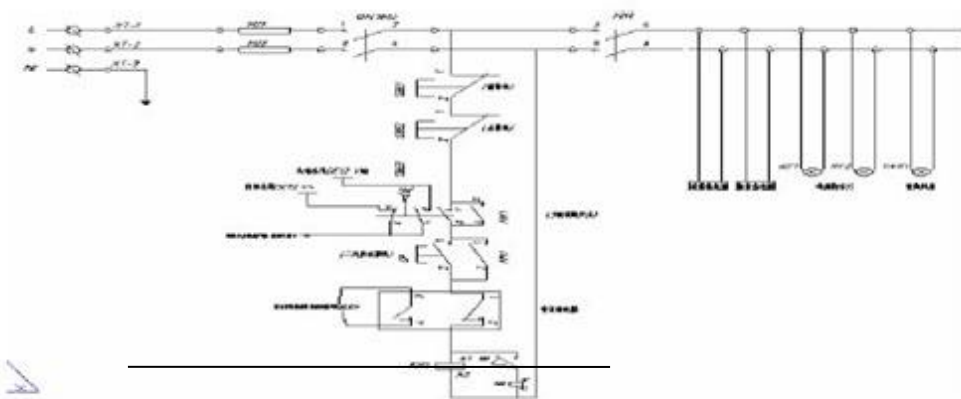


图 4.1 Schematic diagram of electrical structure (一)

4.1.1 the original diagram of the electrical part (1)

The main function of the electrical part is to realize the following functions:

4.1.2 over current protection

Figure 4.1 diagram of the original electrical part (a), FU1 were solid fuse 5A, the actual power equipment for the maximum value of 1000W, followed by the fuse is behind the circuit breaker, so in the back of the case of a short circuit, instantaneous tripping, play a protective role, the reasons for the internal short circuit because of the insulation aging terminal connection, loose power short circuit caused by the cause and human factors.

4.1.3 emergency protection

Fig. 4.1, the electrical part of the original map (1), SBE1 is the tight stop button. The switch is placed near the operator and the security inspection equipment shell, and it can be



immediately cut off when the emergency occurs. In the control part of the main circuit, the selected model of the diameter is 22 and the current is 10A, which satisfies the demand of the equipment.

4.1.4 authority control

This equipment is operated by trained and full-time staff. Non staff can not operate, so there must be a permission control. There are two ways to carry out. One is in electrical, two in software, and the other is the electrical key, which is realized by the SW key switch in the original part of the electrical part 4.1. It is connected in series to the main control loop, and the choice is 2 often open 1 closed switches. Only if you get the key switch, you can use the equipment to prevent other people from triggering the device by mistake.

4.1.5 remote start control

The remote start control mode is used to place the control buttons on the operation table and separate them from the main equipment. The operation table can be placed in a room or anywhere else, extending the control through the power extension line, so that it can be controlled remotely.

4.1.6 one key shutdown control

In practical applications, the above key switch has such a situation: the operator misoperation, directly turn the key switch reverse, resulting in the main circuit power failure. The key switch is broken by or unintentionally. This has a great impact on the load, such as the computer, suddenly power off. My company design products, when the real shutdown, can be realized only with a key switch a rotation, can safely shut down, the realization of a key shutdown function.

4.1.7 motor positive inversion control

During normal operation, the motor is required to rotate forward and backward. When self checking, if an object blocks the light barrier, the belt needs to rotate forward or reverse according to the situation, or when it passes through the object, it can't see clearly. It needs to see clearly and need to reverse it to realize the reverse function. The circuit part



is realized through an intermediate commutation relay.

Heat protection of

4.1.8 motor

In practice, the motor will cause overcurrent because of too long time or too much load, so that the motor must be protected. When the current reaches a certain level, it will be protected.

4.1.9 stroke switch

The travel switch machine is mainly to protect human security settings, because the ray is dangerous, when the human body touches the X ray emission device, need to immediately stop the X ray emission limit switch installed in the control X ray generator side, connected to the X ray generating device, to short-circuit protection effect.

4.1.10 indicator light parts

Each light part needs to be installed on the outer surface of the equipment and plays an indicator for the users. They are X - ray indicator and power indicator respectively.

1) power indicator lamp: after opening the key switch, make the system electric and start the equipment. The green power indicator on the front panel of the channel is lit immediately.

2) ray emission indicator light: the X - ray emission indicator is mounted on the entrance and exit panel of the inspection channel.

4.1.11 terminal module

At the time of a system connection, the terminals use the imported terminal UK3.5, which is mounted on a galvanized circuit board with a guide slot. Wire grooves are used around the wiring.



5. Image processing and discrimination

This chapter describes the software operation and use of this device in detail.

5.1 Open the machine

Insert the key into the key, rotate clockwise, and press the green start button to hear the start of the device and wait for the start.

The power is turned on the indicator light on the equipment. Wait for the light to turn on.

The system automatically enters the software application interface.

5.2 Inspection of articles

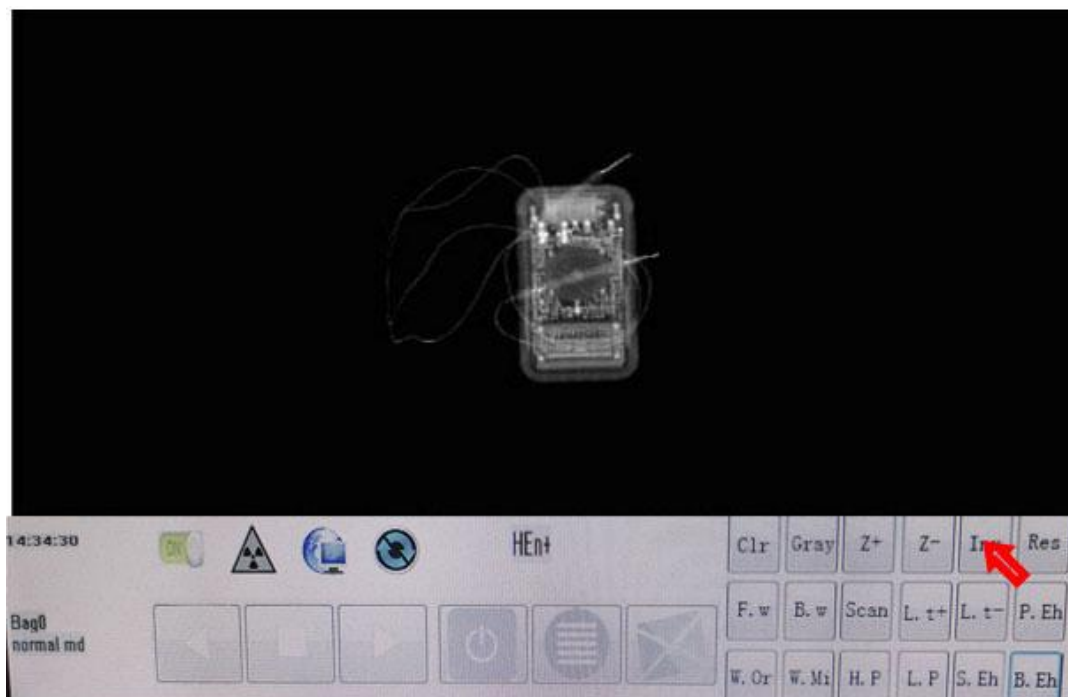
Check the items to be checked on the conveyor belt.

Press the "belt forward" button to control the operation of the motor and start the conveyor belt.

Once the object enters the inspection channel, the X ray generator is started by blocking the optical barrier first.

When the item passes through the inspection channel, the device will scan it on line. The corresponding detection image will be displayed on the screen in real time and refreshed continuously, so that the image will be transmitted from right to left.

1)color image



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In the image display, the object with high absorption rate of X light is generally dark black, and the object with low absorptivity is shown as the image display.

Bright white. The highlight in the opposite. Click the color button, display switch can be positive or negative

In this way, smaller or thinner high density objects (such as wire) will become clearer.

2) black and white / color

Click on the color and black and white, two colors can be selected, the image scanning system default goods obtained is 256 different from black to white brightness level (grayscale) 8 bit grayscale image displayed. Its gray value is proportional to the intensity of the incident light of the X light source and the actual absorption characteristics of the scanned object to the X light, and the objects with different absorptivity correspond to the different gray levels. When clicking the "color / black and white" button, the color image and the gray image can be displayed.





3) penetration enhancement

When the test contains certain thickness and texture of the metal items such as cans, coil, because it is difficult to be X ray penetration, the X light image will be dark. At this time, the user can get the best contrast and brightness by clicking the "edge enhancement" button on the image through enhancement display.



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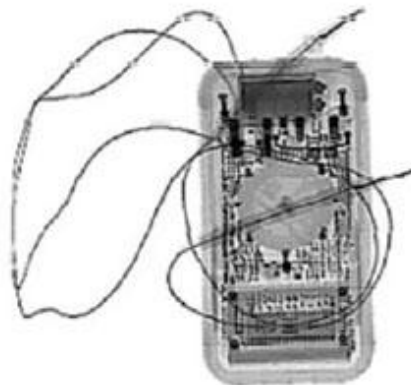
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When the ray penetrates, the X-ray image will be darker. At this time the user can pass through.

The image has a penetrating enhancement display to obtain the best contrast and brightness.

4) image magnification

The "image magnification" button can be amplified and displayed for the current image and can be moved to observe.



5) exit off the shutdown

(A) to ensure that no baggage is left on the conveyor belt. If necessary, carry the conveyor belt forward or backward until it is confirmed that no items are left on the conveyor belt.

(B) rotating the key switch directly to the left, the computer will be safe and close, without any other operation, simple and convenient, humanized

(C) pull out the key, work or hand over the work.

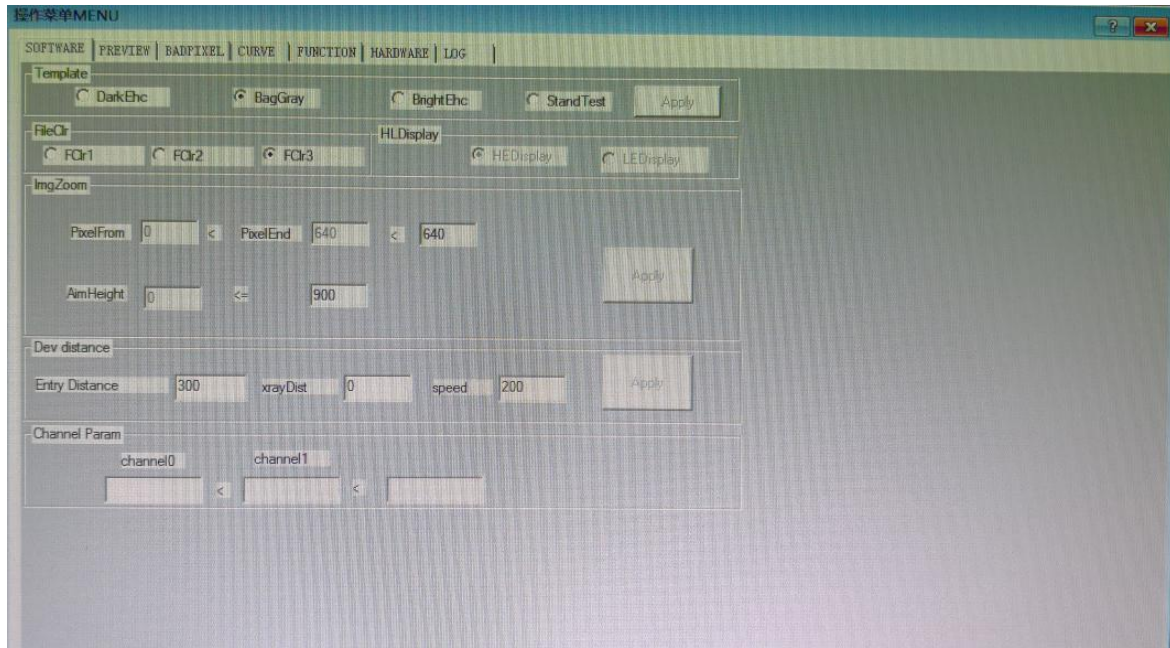
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6) menu function

(A) click on the menu button on the desktop and pop up the upper dialog box.



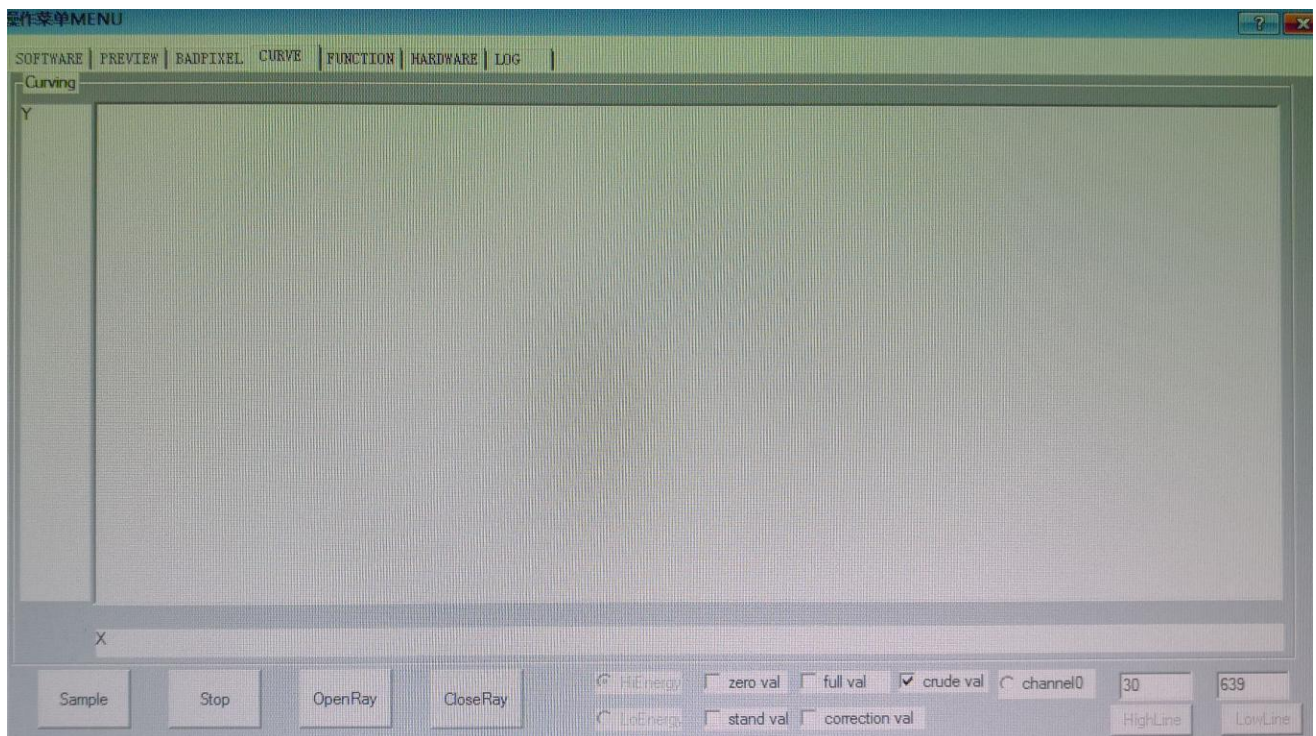
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(B) click the function button in the menu bar to appear on the upper interface, and it is generally recommended not to change it.

(C) click on the real-time curve, which is the data collected on the sounding board. This curve is an auxiliary debugging software for diagnostic function, and there is a certain relationship between the curve data and the image quality.



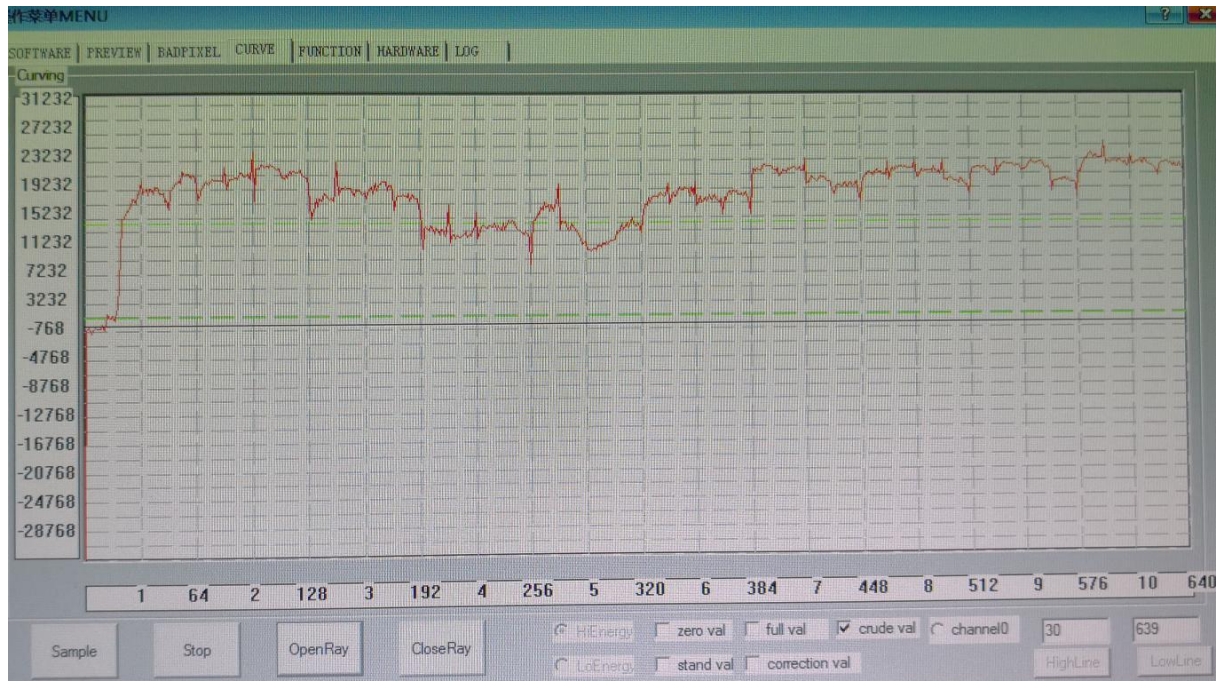
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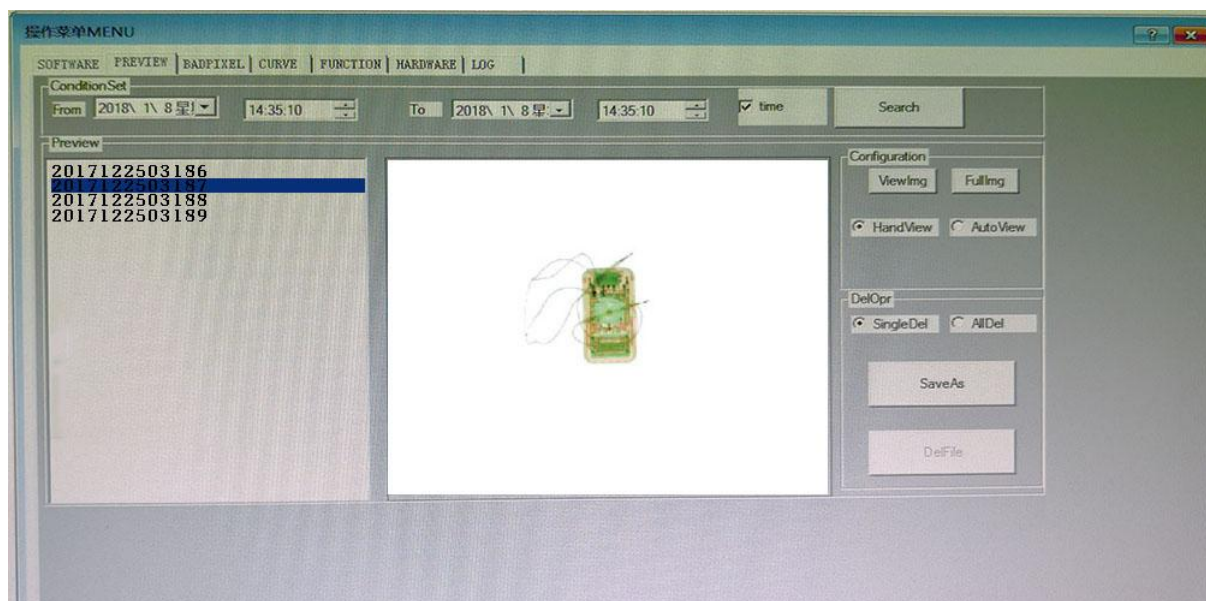
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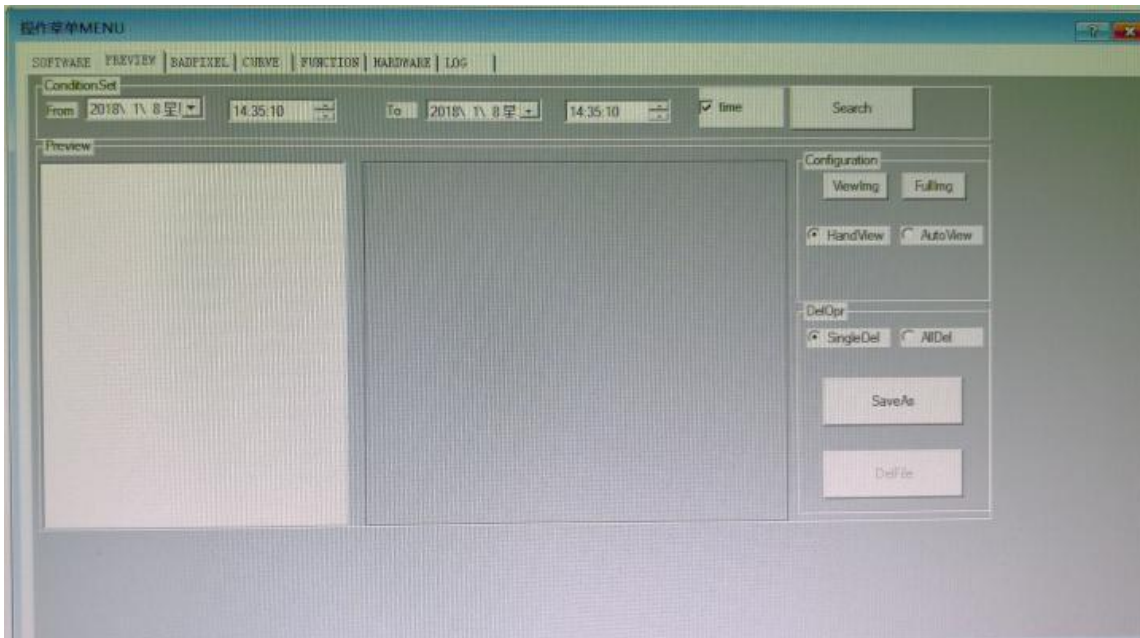
(D) It is the data on the acquisition sounding board. This curve is a auxiliary debugging software for diagnostic function.

There is a certain relationship between the data of the part curve and the quality of the image.



(E) point file setting is the historical record of the image, according to the conditions set, can find the original record of the record.





6. Maintenance

Ray safety inspection system is a high-tech mechanical and electrical combination of products. Therefore, users not only need to understand the technical performance, structural principles and operation rules of machines, but also be good at daily maintenance and maintenance, so as to give full play to their effectiveness, extend their useful life and ensure the safety of equipment and human body.

6.1 daily maintenance

In order to ensure that the actual working conditions of the equipment are consistent with the technical specifications in the instructions, the equipment should be regularly checked and adjusted.

The maintenance work must be carried out by the personnel approved by the company after the relevant training.

In the hardware maintenance process of the equipment, it is necessary to be able to do it after the power is broken.



6.1.1 normal maintenance work

- (1) the equipment should be installed in a ventilated, dusty and dry environment to avoid direct exposure to high temperature, moisture and sunlight.
- (2) cleaning the equipment first, cleaning the dust with brush and vacuum cleaner.
- (3) it is found that the element or the connection head is loose, and should be fastened immediately.
- (4) when the components are rusted, change is made when necessary.
- (5) if the components are damaged, the cause should be found out, and the new device should be replaced after the failure. After the replacement of the device, the related parameters should be adjusted, and then it can be used normally.
- (6) in maintenance, foreign objects or liquids can not be allowed to enter the equipment in order to prevent electricity leakage or cause accidents.

6.1.2 the specific contents of maintenance and maintenance

- (1) check the power indicator light above the equipment. When the equipment is on electricity, the green indicator lights up.
- (2) check the X - ray indicator above the equipment. When the rays are emitted, the red indicator lights up.
- (3) check the emergency stop button above the channel. Press the emergency stop button, the device can immediately power off. When the button is not reset, the device can not be restarted again.

- (4) check the key switch above the channel

When the key switch is turned on, if the key switch is not sensitive enough, the switch should be replaced.

- (5) check the light barrier at the entrance

An opaque object is placed on a running conveyor belt and the rays can be opened normally. After the power equipment, with a dry cloth will install the lens and wall light barrier on the clean glass.

- (6) check the electric roller

Press the corresponding button, the electric roller can run and stop in the desired direction. The noise of the drum is normal and no oil is leaking.



(9) check the deviation of the conveyor belt to check whether the conveyor belt has been deviated from the motor.

(10) check the radiator to check whether the radiator is blocked and to remove the dust on it.

6.2 precautions for the maintenance and adjustment of safety

6.2.1 in the process of maintenance, there can be no foreign objects or water drops into the equipment to avoid damage to equipment or safety accidents.

6.2.2 there are a large number of devices whose working voltage is 220V. The general maintenance must be carried out at the time of power failure. If we want to live electrified, we must be trained by trained personnel, and we must do well in preventing electric shock.

6.2.3 equipment has a large number of precision electronic devices, before maintenance to do a good preparation to prevent electrostatic damage devices.

6.2.4 there are many lead protection layers to prevent radiation leakage. During the operation, it is best to wear cotton gloves and gloves, and wash hands immediately after the work.

6.2.5 the equipment should be checked carefully before it is connected to confirm the connection is correct, there is no wrong connection and short connection.

6.2.6 before the ray is opened, cover the cover to avoid personal injury caused by the radiation of the rays.

6.3 replacement rollers and conveyor belts

6.3.1 the equipment should first break off the power, and then disconnect the motor cable.

6.3.2 disassemble the cover plate, screw down the conveyor and the frame fixed bolt,

6.3.3 can be dismantled and replaced for the electric roller or the adjusting roller.

Replacement of

6.3.4 conveyor belt

(1) cut out the damaged tape.

(2) purchase new tape according to the perimeter of the original tape

(3) assembly of new tape and conveyor in the field



6.4 change and adjust the optical barrier

The steps of adjusting the optical barrier are as follows:

- 6.4.1 device disconnects the power supply and opens the outer cover.
- 6.4.2 fault light barrier cable.
- 6.4.3 screw down two light barrier fixed bolts.
- 6.4.4 change the new light barrier, adjust the position of the light barrier by adjusting the upper and lower positions of the optical barrier, and fix it firmly.
- 6.4.5 the cable outlet of the optical barrier is welded to the connector according to the drawing.
- 6.4.6 connect the cable.
- 6.4.7 cover the cover of the equipment.

Connect the power supply, start the conveyor belt, put an opaque object on the conveyor belt, and test whether the rays can be opened normally.

6.5 replacement and adjustment of X ray source

The following steps should be carried out in the replacement and adjustment of X ray sources:

- 6.5.1 System power off, dismantling equipment outer cover
- 6.5.2 Disconnect the cable from the X ray source
- 6.5.3 Dismantling X ray source fastening screws
- 6.5.4 Take out the X ray source
- 6.5.5 install a new X ray source in sequence according to the above steps
- 6.5.6 Do not tighten fixed screws
- 6.5.7 System electrifying
- 6.5.8 enter the "main menu", and then enter the "real time curve" menu.
- 6.5.9 the X ray source is adjusted alternately, so that the signal on the oscilloscope is as high and uniform as possible.
- 6.5.10 after the end of the adjustment process, tighten the fastening screw of the ray source. It is determined that the correct waveform on the oscilloscope is not affected during the tightening process.
- 6.5.11 System power off.



6.6 common faults and their maintenance

This chapter provides the possible failures, causes and methods of exclusion.

Before repairing, please read the previous section carefully.

The maintenance work of the X - ray safety inspection equipment can only be used by the parts and spare parts produced by our company and for the specific conditions.

Our company is not responsible for any machine damage caused by any authorized maintenance or the repair damage caused by maintenance parts outside our company.

We reiterate that all maintenance and adjustment should be completed by special qualified maintenance personnel. The device is only on the circuit board all inserted into the correct position, before electric. Please note: it is necessary to turn off the power supply when pulling and inserting the printed board. According to the failure phenomenon, the cause analysis and elimination method are classified.

6.6.1 power supply

Fault 1: the system is unable to power up

Analysis of possible causes:

- (1) whether the local power supply is correct.
- (2) the keyless switch or the key switch is not put on.
- (3) fuse the fuse.
- (4) the circuit breaker is located at the disconnected position.
- (5) the emergency stop switch is in the lock state.
- (6) the terminal wiring is loosened.

Exclusion methods:

- (1) check the local power supply to meet the range of $220+10\%/-15\%V$, $50 + 3Hz$.
- (2) insert the key switch and rotate clockwise to the connection position.
- (3) replace a new fuse.
- (4) close the circuit breaker.
- (5) the clockwise rotation of the emergency stop button for the reset.
- (6) check the wiring and reconnect.

Note: before the system is charged, the equipment is confirmed to be normal.



Fault 2: power indicator light is not bright

Analysis of possible causes:

- (1) the equipment is not started.
- (2) the light cable is not connected.
- (3) the terminal wiring is loosened.
- (4) damage to the indicator light.

Exclusion methods:

- (1) starting equipment.
- (2) connect the indicator light cable.
- (3) check the wiring and reconnect.
- (4) change the indicator light.

Fault 3: the system can be energized, but there is no other function

Analysis of possible causes:

- (1) the power supply of the electronic controller or the ray source controller is not inserted in the socket.
- (2) damage of switching power supply.
- (3) there is no connection between the net and the net
- (4) the serial port line connected to the industrial control machine is not connected.

Exclusion methods:

- (1) insert the electronic controller or the ray source controller plug into the corresponding socket.
- (2) change the switching power supply.
- (3) connect the wire to the industrial control machine.
- (4) connect the serial port line to the industrial control machine.

Note: incorrect voltage output will damage the device, and the power supply should be disconnected when changing and adjusting.



6.6.2 system control

Fault 1: the conveyor belt cannot run forward

Analysis of possible causes:

- (1) the RS232 line is not connected.
- (2) the electronic controller is damaged.
- (3) the cylinder controller is damaged.
- (4) the cable is loosened.
- (5) damage of the electric roller.
- (6) the conveyor belt is stuck.

Exclusion methods:

- (1) correctly connect the RS232 line.
- (2) replace the electronic controller.
- (3) replace the cylinder controller.
- (4) check the cable connection and re tighten the cable.
- (5) replace the electric roller.
- (6) adjust the conveyor belt.

Fault 2: conveyor belt ceaselessly

Analysis of possible causes:

- (1) the cylinder controller is damaged.
- (2) damage of main control board.

Exclusion methods:

- (1) replace the electronic controller.
- (2) restart the industrial control machine.

6.6.3 X ray control

All power and system control failures should be excluded before maintaining this part.

There are two kinds of faults related to X - ray control.



Failure 1:X ray source does not launch

Analysis of possible causes:

- (1) there is no object or item in the channel that does not block the light barrier.
- (2) the cover plate on the position of the interlocking switch is opened.
- (3) the power plug of the ray source controller is not plugged.
- (4) the X ray source is damaged.
- (5) the ray source controller is damaged.
- (6) the X ray source cable is not properly connected.
- (7) the optical barrier is not connected correctly.
- (8) damage of light barrier.
- (9) the electric roller has no operation.
- (10) the electronic controller is damaged.

Exclusion methods:

- (1) a large enough and opaque item in the channel.
- (2) cover the lid of the interlocking switch position.
- (3) plug the power plug of the ray source controller.
- (4) replace the X ray source.
- (5) replace the ray source controller.
- (6) reconnect the X ray source cable.
- (7) check the optical barrier cable and connect correctly.
- (8) change the light barrier.
- (9) start the electric roller.
- (10) replace the electronic controller.

Fault 2:X ray emission indicator

Analysis of possible causes:

- (1) X ray unfired.
- (2) damage of electronic control board.
- (3) the cable is not connected correctly.
- (4) damage to the indicator lamp.



Exclusion methods:

- (1) the starting roller is placed after placing the articles on the conveyor belt so that the radiation is emitted.
- (2) replacement of electronic control board.
- (3) check the cable and connect correctly.
- (4) change the indicator lamp.

6.6.4 image display

It is confirmed that the X ray generator has been properly adjusted both electrically and mechanically before the fault of the image system is found.

It is confirmed that the power supply voltage of the system meets the requirements (5V, + 5%; 12V, + +).

Fault 1: the display screen is not bright after the system is on the system

Analysis of possible causes:

- (1) the power supply of the display is not connected
- (2) the signal line of the display is not connected

Exclusion methods:

- (1) connect the power supply to the display
- (2) connect the signal line of the display

Fault 2: no image during baggage check

Analysis of possible causes:

- (1) the serial connection line of the control board and the industrial control machine
- (2) control board
- (3) light barrier

Exclusion methods:

- (1) replace the serial port line
- (2) replacement control board
- (3) replace the optical barrier



Fault 3: horizontal line appears in the luggage during the inspection (instruction, image 3-6 line is positive, the belt The body has 2 line).
Analysis of possible causes:
detector or sounding board

Exclusion methods:

(1) replace the detector or the corresponding sounding board

7. Daily storage

Storage conditions, time limit for storage and matters of attention.

The reverse process of the installation is repeated when the equipment needs to be dismantled before delivery.

7.1 X-ray inspection equipment should have a clean and dry place, and overheating and overtime will damage the system components. If the equipment is not used for a long time, it should be stored in the original packing box.

7.1.1 The storage environment conditions of the equipment

In the condition of transportation or storage, the equipment must be able to be placed under the following environmental conditions for less than 15 weeks:

Storage temperature: - 20 ~ +60 C (not condensed) humidity: 20% ~ 95%

7.1.2 the equipment that needs long-term storage should have good storage conditions. The storeroom should be clean, dry and well ventilated, and no corrosive gas is around. The relative humidity is no more than 80%. The equipment should be in the packing box.

7.2 manufacturer guarantee

We put technical support and after-sales service in the first place, and provide our customers with high quality service.



7.3 equipment acceptance

7.3.1 the user will inform the company after receiving the equipment. The company will arrange professional technical support engineer to assist the device's open box acceptance, and install and debug the equipment. The technical support engineer should, in the spirit of the user's responsibility, carefully check the order contract and the packing list to clear the equipment and accessories one by one. In case of damage and error leakage, the technical support engineer shall assist in handling the claim work, or immediately notify the company to correct and make up for it. The equipment is installed and debugged according to the technical specification.

7.3.2 During the installation and commissioning of the equipment, the user should cooperate actively to ensure that the system is put into operation as soon as possible.

7.3.3 equipment acceptance criteria: acceptance according to the standards and methods stipulated in the contract.

7.3.4 equipment acceptance period: the acceptance of equipment will be completed within 3 days after installation and commissioning, and the user will sign the acceptance report, and it will be determined as the date of the warranty period. The overdue company will not be responsible.

7.4 technical support and training

The technical training is divided into basic operation training and image recognition skills training. The company provides free basic operation training for users.

7.4.1 Objective: to understand the system composition of the equipment, and to master the operation of the mechanical and electrical parts of the equipment and the supporting software. At the same time, a preliminary evaluation of the quality of the equipment is made.

7.4.2 time: can be arranged according to the requirements of the user and the actual situation.

7.4.3 location: the operation training principle is arranged on the site of the equipment use.



8. Quality Assurance

I 、The guarantee period is 12 months (consumer goods and travel cost are not included).

II 、The main quality warranty maintenance certificate

1. Please keep this guarantee letter, if you lost it, please connect with us in a month.
2. If this guarantee letter has been altered or it has no our stamp, it is useless.

III、The following conditions need to pay reasonably even in the assurance period.

1. Natural reasons
2. Operating mistakes
3. Voltage is not fit for our operation instruction
4. Repack it without our guides
5. Damaged for borrowing to others
6. Damaged for authorized machine modification
7. Damaged for authorized calibration
8. Authorized transshipment mistake
9. Serve for long distance area

IV、Notes:

1. Where the original in Guangdong province installation of our products, if the product moved to outside Guangdong-area use, whether or not within the effective warranty period, the transportation and travel expenses of the service personnel should be paid by the client.
2. All customers outside of Guangdong province, whether or not in the warranty period, the service of transportation and travel expenses paid by the customer.