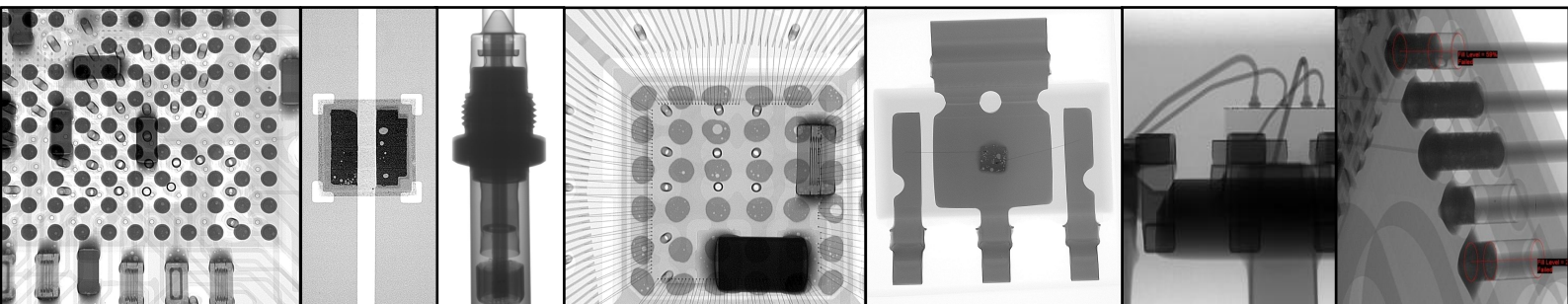


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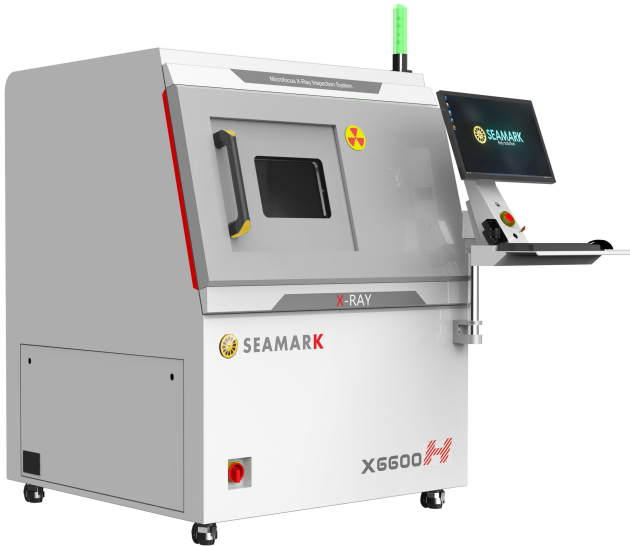
Offline X-ray Inspection Equipment

SEAMARK
Ray solution



X-Ray Offline Inspection Equipment

Shenzhen Zhuomao Technology Co., Ltd.
SEAMARK ZM Technology Group (HK) Co., Ltd.



X6600H

X6600H is a cost-effective general-purpose offline precision micro-focus X-ray inspection equipment, suitable for the inspection of various types of factory offline products. It has the characteristics of high magnification, multi-angle inspection, and large-area inspection platform.

Application Advantage

- ◆ Meets general X-ray inspection needs, with a wide range of application
- ◆ High-resolution design to get the best image fast
- ◆ Laser automatic navigation and positioning, quickly select the shooting position
- ◆ CNC inspection mode for fast automatic inspection of multi-point arrays
- ◆ Multi-angle tilting inspection makes it easier to detect sample defects
- ◆ Software operation is simple and easy to use, low operating cost
- ◆ The X-ray tube and flat panel can be rotated at the same time(0-60°),making the inspection image clearer and more intuitive
- ◆ Real-time monitoring of radiation value, multiple protection of operator's personal safety
- ◆ Rocker mechanism, easy to operate and good maneuverability

X-ray Tube Specification

Tube Type	Reflective Sealed Micro-Focus X-Ray Tube
Voltage Range	40-90KV
Electricity Range	10-200 μA
MAX Output Power	8 W
Micro Focus Size	5-15μm

Flat Panel Detector Specification

Detector Type	Amorphous silicon flat panel detector
Pixel Matrix	1536×1536
Field of View	130mm×130mm
Resolution	5.8Lp/mm
Frame (1×1)	20fps
AD Conversion Bit	16bits

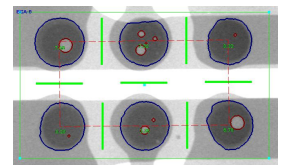
Equipment Specification

Dimensions	L1245mm×W1230mm×H1900mm
Input Power	220V 10A 50-60HZ
MAX Sample Size	540mm×440mm
Operation System	Industrial computer WIN10 64Bit
Net Weight	1170KG

Void Measurement

■ Void measuring function:

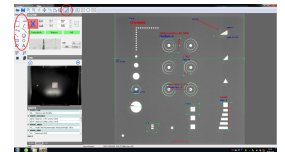
Preset parameter to identify the proportion of the inner void area and the proportion of the largest single void area of the detection area (ROI) ; Custom decision specification value; Save, modify and repeat call the void detection parameter.



Size Measurement

■ Measuring Tool:

Distance, distance ratio, angle, Center distance, point distance, circle (diameter, circumference, area), quadrilateral (length, width, area) measurement; Hand-drawn arrows, polygons, free graphics, and text (Chinese and English) marks are supported.



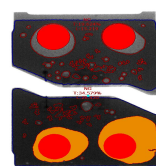
Defect Inspection

■ CNC Function

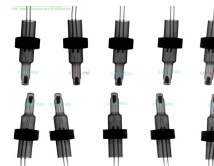
CNC supports 2 modes of free point bit and matrix point bit. After each point bit is detected, the detected image will be automatically saved; Support to save, modify and repeat call the CNC program.

■ Customizable Image Algorithm

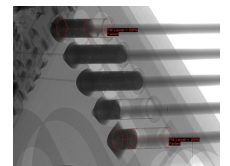
Develop specific software algorithms according to the customer's product characteristics and requirements, to realize the automatic defect recognition and inspection function, including the presence or absence, crack, broken line, offset, size, number and other recognition algorithms



LED Bonding Pad



Sensor Size



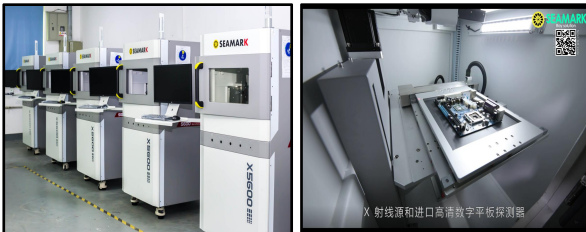
THT Solder

X5600

X5600 is a small precision micro-focus X-ray inspection equipment, suitable for R&D enterprise, laboratories, quality inspection rooms etc., it is the first choice for X-ray inspection of small parts.

Application Advantage

- ◆ Miniaturized equipment, easy to install and operate.
- ◆ Applicable to Chip, LED, BGA/CSP, Wafer, SOP/QFN, SMT and PTU packaging, Sensors, connectors, and precision Castings inspection.
- ◆ High resolution design to get the best image in a very short time.
- ◆ Infrared automatic navigation and positioning function can select the shooting location quickly.
- ◆ CNC inspection mode which can quickly and automatically inspect multi-point array.
- ◆ Inclined multi-angle inspection makes it easier to inspect sample defects.
- ◆ Simple software operation, low operating costs
- ◆ Long lifespan



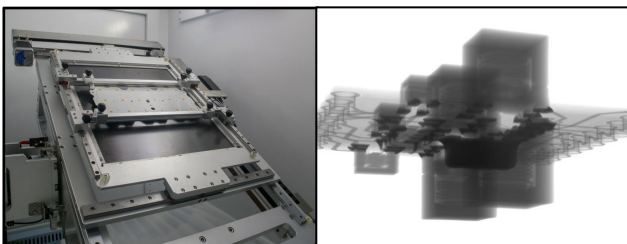
Tilt / Rotate Function

■ Tilt angle inspection function

The X5600 detector support a tilt angle of $\pm 30^\circ$. For cases where the photo taken on the front of a special device can't identify the defect feature, the tilt function can be used to observe the device features at multiple angles, making it easier to analyze and identify the defect.

■ 360° Rotating photo inspection function

Equipped with a rotating manipulator that can rotate 360° to take images, no dead angle for defects observation.



X-ray Tube Specification

Tube Type	Reflective Sealed Micro-Focus X-Ray Tube
Voltage Range	40-90KV
Electricity Range	10-200 μ A
MAX Output Power	8 W
Micro Focus Size	5-15 μ m

Flat Panel Detector Specification

Detector Type	Amorphous silicon flat panel detector
Pixel Matrix	1536 \times 1536
Field of View	130mm \times 130mm
Resolution	5.8Lp/mm
Frame (1 \times 1)	20fps
AD Conversion Bit	16bits

Equipment Specification

Dimensions	L850mm \times W1000mm \times H1700mm
Input Power	220V 10A 50-60HZ
MAX Sample Size	280mm \times 320mm
Operation System	Industrial computer WIN10 64Bit
Net Weight	750KG

X6600M/BM

X6600M/BM is a 6-axis universal offline precision micro-focus X-ray inspection equipment. It has the characteristics of high magnification, multi-angle, and large-area inspection platform. At the same time, it has one-button door opening and closing, and real-time monitoring of radiation conditions around the equipment to ensure the safety of the environment and operators.

Product Features

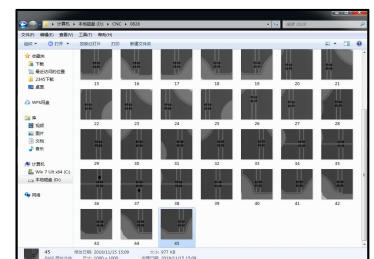
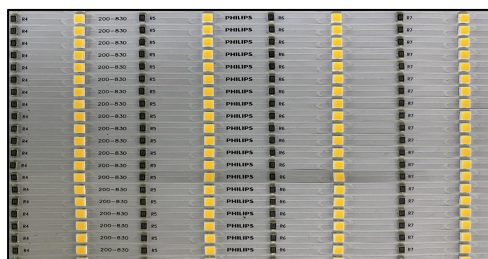
- ◆ The X and Y axes of the platform are driven by high-precision lead screws to ensure inspection accuracy
- ◆ With automatic calibration function
- ◆ Real-time monitoring of radiation value, multiple protection of operator's personal safety
- ◆ One-button automatic opening and closing of the movable door, convenient for personal to work
- ◆ Large inspection platform to ensure a wider range of equipment inspection sizes
- ◆ Fingerprint verification

Operation Performance

- Rocker, Fingerprint, Radiometer, T-axis Tilt to take Pictures:
 1. Fingerprint: Authorize someone to control the device.
 2. Rocker: The X/Y axis running control key of the platform is easy to operate
 3. Radiometer: monitor the radiation value in real time, if the set value is exceeded, the radiometer will automatically alarm, prompting the radiation state of the inspection equipment.
 4. T-axis tilt photo inspection: when the conventional vertical inspection cannot meet the requirements, the T-axis tilt inspection function can be used, and the inspection range is more comprehensive

CNC Automatic Running Inspection

- CNC Automatic Running Inspection
CNC supports two modes of free point bit and matrix point bit. After each point bit detection, the detection picture will be automatically saved. Support to save, modify and repeat call the CNC program.



X-ray Tube Specification

X-ray Tube Specification	X6600M / X6600BM
Tube Type	Reflective Sealed Micro-Focus X-Ray Tube
Voltage Range	40-90KV/40-130KV
Electricity Range	10-200 μA/10-300 μA
MAX Output Power	8 W/39W
Micro Focus Size	5-15μm

Flat Panel Detector Specification

Flat Panel Detector Specification	X6600M / X6600BM
Detector Type	IGZO Flat panel detector
Pixel Matrix	1648×1648
Field of View	160mm×160mm
Resolution	5.1Lp/mm
Frame (1×1)	30fps
AD Conversion Bit	16bits

Equipment Specification

Equipment Specification	X6600M / X6600BM
Dimensions	L1380mm×W1390mm×H1930mm
Input Power	220V 10A 50-60HZ
MAX Sample Size	620mm×620mm
Operation System	Industrial computer WIN10 64bit
Net Weight	1720KG/1845KG

X7600

X7600 is a more powerful high-end precision micro-focus X-ray inspection equipment, which can realize multi-angle and multi-directional photography, can be upgraded to 2.5D inspection function, and can realize 360° rotation of the product and 60° tilt of the detector for 3D photography. No blind spot to observe product defects, so that quality problems have nowhere to hide.



Application Advantage

- ◆ Observation at 60° tilt
- ◆ Upgradable 2.5D Module (Optional)
- ◆ High-definition inspection images:
offset/soldering/voids/cold soldering/wire bonding
- ◆ 360° platform rotation
- ◆ Color image navigation & Mapping navigation
- ◆ Support picture stitching function (optional)

X-ray Tube Specification

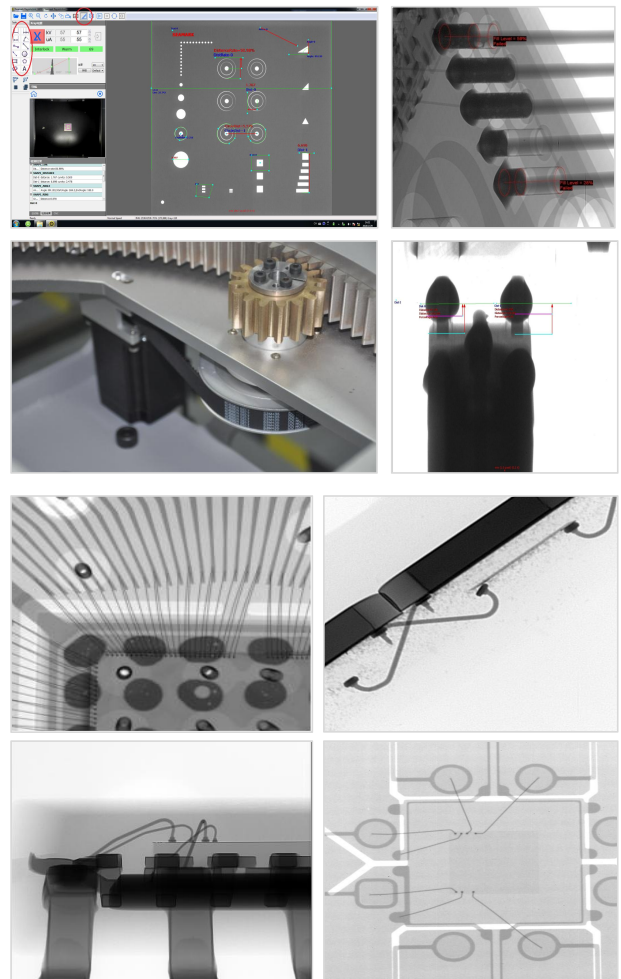
Tube Type	Reflective Sealed Micro-Focus X-Ray Tube
Voltage Range	40-90KV/40-130KV
Electricity Range	10-200 μA /10-300 μA
MAX Output Power	8 W /39W
Micro Focus Size	5-15μm

Flat Panel Detector Specification

Detector Type	Amorphous silicon flat panel detector
Pixel Matrix	1536×1536
Field of View	130mm×130mm
Resolution	5.8lp/mm
Frame (1×1)	20fps
AD Conversion Bit	16bits

Equipment Specification

Platform Size	510mm×510mm
Operation System	Industrial computer WIN10 64bit
Input Power	220V 10A 50-60HZ
Net Weight	2050KG
Dimensions	L1700mmxW1770mmxH1800mm





Radiation Safety



Safety Considerations for Operators

◆ Exemption by the Ministry of Ecological Environment of the People's Republic of China

This series of products have obtained the certificate of exemption from the registration of radioisotope and radiation devices issued by the Ministry of ecological environment, with the filing number of [yue fu Huo Bei [2020] No. 0035]. The radiation device using the product of our company can be exempted from the radiation safety license.

◆ Design of Ultra Micro Leakage

According to the basic standard for protection against ionizing radiation and safety of radiation sources (GB 18871-2002), the exemption standard of radiation protection is $\leq 1\text{usv/h}$, and the design standard of this product is $\leq 0.5\text{usv/h}$. The radiation amount received by the operator within one year is controlled within 0.18mSv, equivalent to 1 / 10 of the radiation amount in the natural environment

◆ Safety Element with Multiple Protection

It is equipped with Omron safety control element, triple safety protection sensor and direct connection control mode with radiation source, which fully conforms to CE specification and semi S2 / S8 specification of semiconductor industry.

Radiation Detecting Sites :



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