X-RAY Introduction

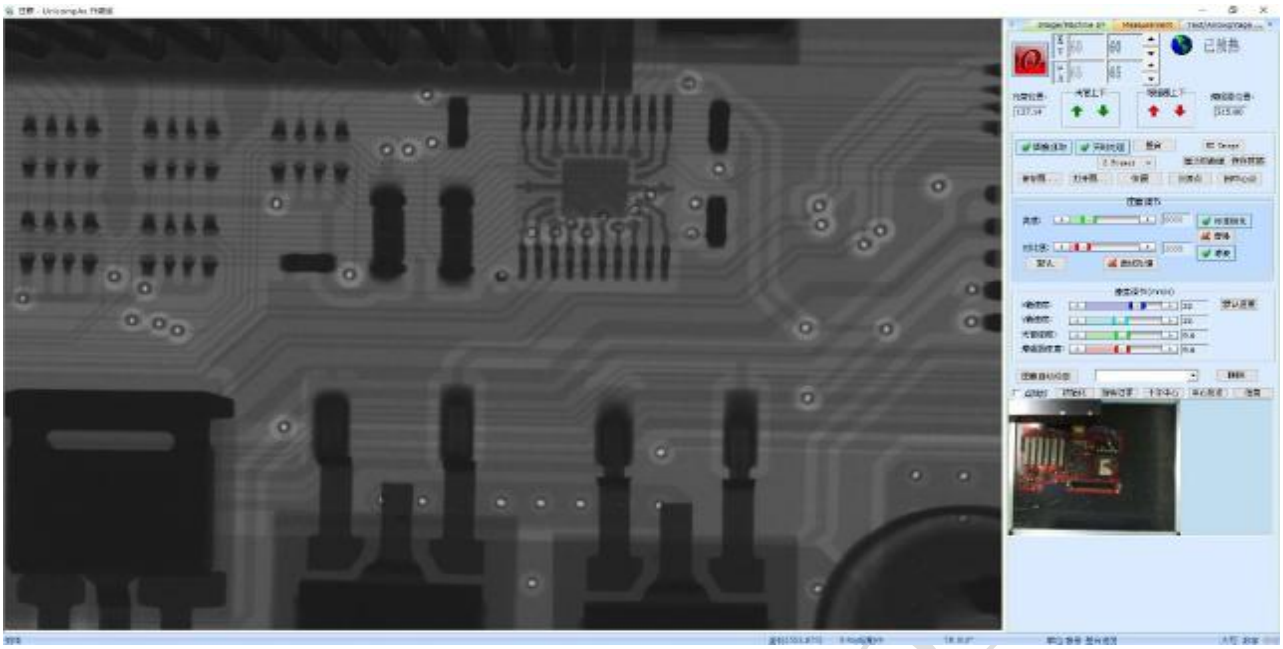
This is our X-Ray equipment - AX8200 in our SMT workshop, which utilizes a maintenance-free, long-life enclosed X-ray source. It supports optional image intensifiers and high-definition FPD, providing a system magnification of 600X for high-definition real-time imaging, helping us a lot in soldering issue inspection.

AX8200 X-ray offers exceptional cost-effectiveness and is widely applicable in the following areas:

- Semiconductor, SMT, DIP, and electronic component inspection.
- IC, BGA, CSP, and various package types inspection, including inverted chips.
- Automotive component and aluminum die-casting mold inspection.
- LED, battery, and photovoltaic industry for new energy inspection.
- Special industries such as molded plastics and ceramic products.

The equipment adopts an advanced modular control system, which is centrally controlled and managed by the computer software, making maintenance and servicing easier. It features powerful image processing capabilities and can detect solder joint bubble and void ratios. The system comes with a rotating lift control console, enabling comprehensive operation by the staff from different angles.

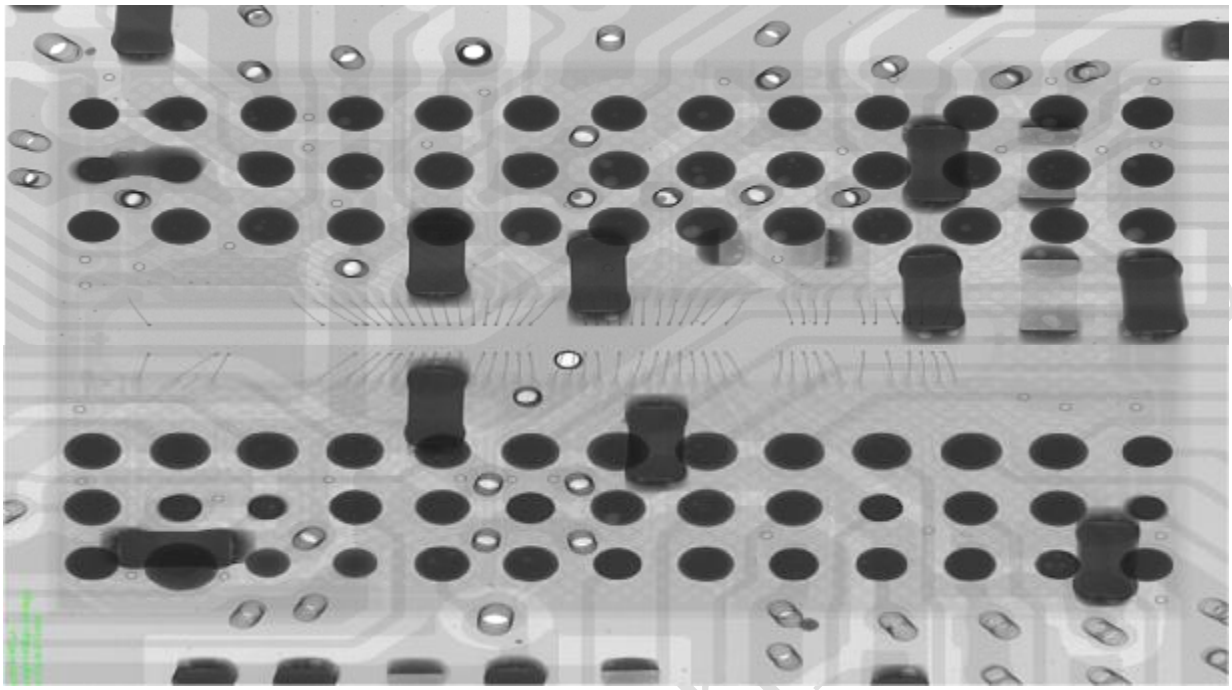
The main view of the equipment's operating interface:

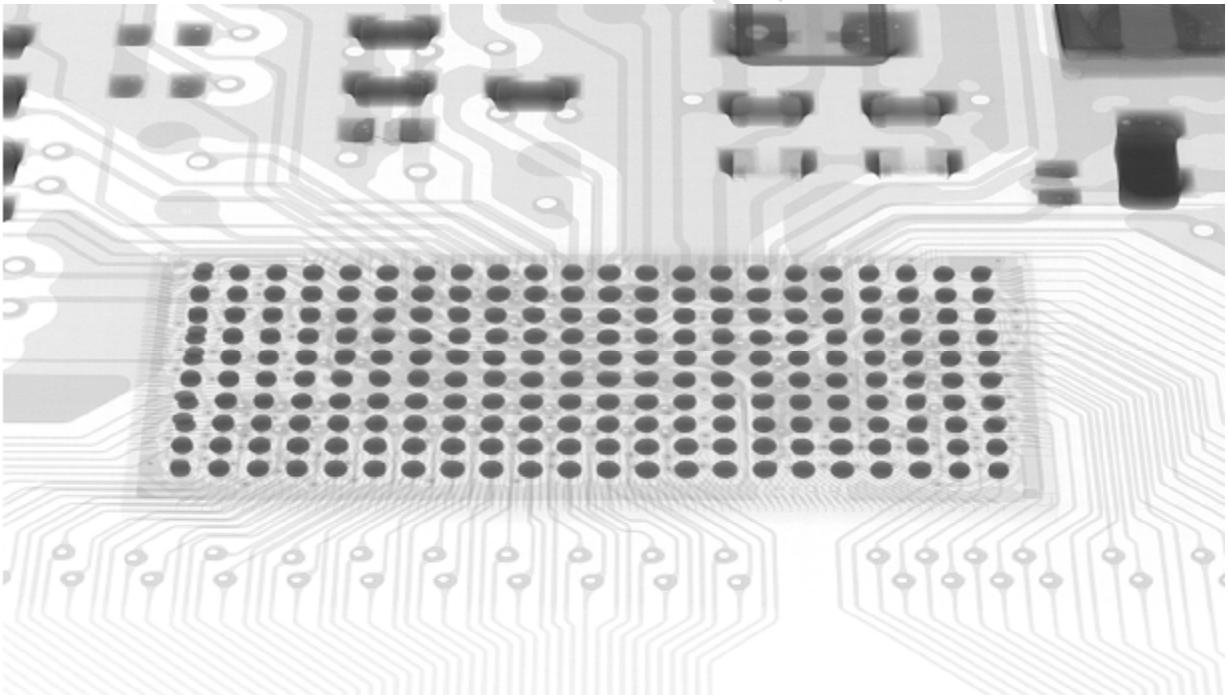


X-RAY Functionality

No.	Item	Detail
1.1	BGA calculate	Detect solder, bubble ratio of BGA
1.2	Irregular calculate	Detect irregular bubble ratio
1.3	IC calculate	Detect IC solder, bubble ratio, etc.
1.4	Image recover	Recover image to an unchanged state
1.5	Calibration	Calibrating magnification
1.6	Distance	Measure the straight-line distance between two points
1.7	Diameter	Measure the diameter of the area circle
1.8	Curvature	Measure the curvature of the area circle
1.9	Offset	Offset measurement
1.10	Soldering height	Measure soldering height
1.11	Pixel	Showcase pixel value of the mouse point
1.12	Histogram	Open the pixel statistics bar chart
1.13	Horizontal contour	Displays the pixel value outline of the horizontal pixel
1.14	Vertical profile	Displays the pixel value outline of the vertical pixel
1.15	Unit	Choose appropriate measure unit

Detection Effect Display





X-Ray Inspection Principle

1. X-ray inspection for PCBs works by transmitting X-rays through the board, capturing density variations, and generating images to assess solder joints and component integrity.
2. X-rays are generated using an X-ray tube, which consists of a cathode and an anode. When a high voltage is applied to the X-ray tube, electrons are accelerated from the cathode to the anode. Upon collision with the anode, the electrons produce X-ray photons. As the X-rays pass through the object, they are absorbed or attenuated differently by different materials. Dense materials, such as metals, absorb more X-rays, appearing as darker areas in the resulting X-ray image. Less dense materials, like plastics or air gaps, allow more X-rays to pass through, creating lighter areas in the image.
3. Standard high-performance X-ray tubes can detect defects as small as 5 micrometers, with certain X-ray inspection devices capable of detecting defects as small as 2.ss5 micrometers. System magnification can reach up to 1000 times, allowing for object manipulation and tilting. X-ray inspection equipment facilitates both manual and automated inspections, with automatic generation of inspection data reports.