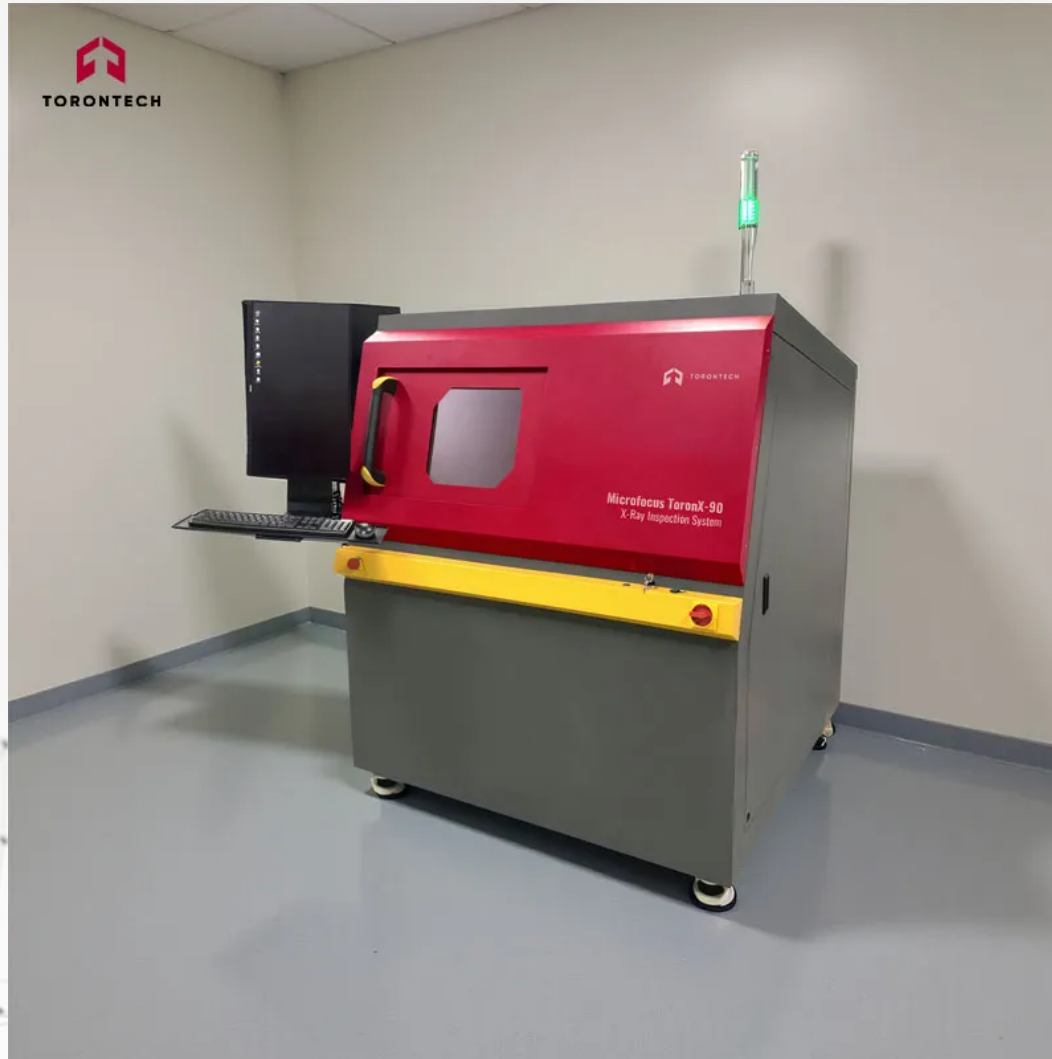


X-RAY INSPECTION SYSTEM - MICROFOCUS



X-Ray Inspection System – Microfocus ToronX™ 90 is a high-precision X-ray inspection system designed for fast, reliable defect detection. It features a Japanese-made Hamamatsu X-ray source, a tiltable HD flat panel detector, and a user-friendly interface ideal for high-volume inspection with minimal training.

APPLICATIONS

Working Principle

X-Ray Inspection System – Microfocus

Application Example

X-Ray Inspection System – Microfocus

BGA Solder Bridge

X-Ray Inspection System – Microfocus

BGA Solder Voids

X-Ray Inspection System – Microfocus

PCB Through-hole

X-Ray Inspection System – Microfocus

IC Voids and Gold Wire

X-Ray Inspection System – Microfocus

LED Solder Voids

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LED Gold Wire Crack

X-Ray Inspection System – Microfocus

Capacitor

X-Ray Inspection System – Microfocus

Inductor

X-Ray Inspection System – Microfocus

Sensor

X-Ray Inspection System – Microfocus

Thyristor Surge Suppressors

X-Ray Inspection System – Microfocus

Fiberglass

X-Ray Inspection System – Microfocus

Cable

X-Ray Inspection System – Microfocus

Diode

X-Ray Inspection System – Microfocus

Steel Pipe Welding Gap

X-Ray Inspection System – Microfocus

Automobile Electronics

FEATURES

X-Ray Inspection System – Microfocus ToronX™ 90

1. Sealed X-ray tube with over 10,000 hours of use; no maintenance needed
2. 5" HD digital flat panel detector (FPD)
3. FPD can tilt up to 60° without losing magnification
4. Auto-navigation feature moves the table to the clicked location
5. 530 × 530 mm table supports up to 10 kg
6. Five-axis system with adjustable speed
7. Custom inspection workflows for high-volume use
8. Easy to use — finds defects quickly; only 2 hours of training required

TECHNICAL SPECIFICATIONS

Technical Specifications

X-ray source	
Type	Closed, microfocus
Max tube voltage	90kV
Max tube current	200μA
Focal spot size	5μm
Function	Auto preheat
Flat panel detector	
Effective area	130mm × 130mm
Pixel size	85μm
Resolution	1536 × 1536
Frame rate	20fps
Tiltable angle	60°
Table	
Size	530mm × 530mm
Detectable area	500mm × 500mm
Max load	10kg
Equipment	

X-ray source	
Magnification	Geometry 200X System 1500X
Inspection speed	Max 3.0s/point
Dimensions	1360mm (L) × 1365mm (W) × 1730mm (H)
Weight	1200kg
Voltage	AC110-220V 50/60HZ
Max power	1500W
Industrial PC	I5 CPU, 8GB RAM, 500GB SSD
Displayer	24" HDMI LCD
Safety	
Radiation leakage	No leakage, international standard: $\leq 1\mu\text{Sv/h}$
Lead glass observation window	Transparent lead glass window shields radiation to observe the inner status.
Window and back door safety interlock	Once users open the window or back door, X-ray tube will power off immediately. When the window or back door is open, users can't turn on the X-ray.
Electromagnetic safety switch	Lock once the X-ray is on, users can't open the observation window.
Emergency stop	Next to the operation position, press to power off
Tube protection	User can't leave the software to if you don't close the X-ray tube.

Software Function

Function Module

Operation	Keyboard and mouse can finish all operations
X-ray tube control	Using mouse to click the X button can turn on or off the X-ray. The real-time tube voltage and current value will display beside, users can click up and down button, or drag the slider, or type to adjust.
Status bar	Indicates the interlock status, pre-heat status, and X-ray status by flashing alternately red and green.
Image effect adjustment	The brightness, contrast and gain of the image can be adjusted freely to achieve a satisfactory result.
Product list	Users can save the inspection parameters such as Z-axis position, brightness, contrast and gain, and can directly call the parameters when inspecting the same product, to improve the inspection efficiency.
Navigation window	After the camera takes a photo of the table, click anywhere in the photo, the table will move to the place you click and display on the screen.
Motion axis status	Display real-time coordinates.
Inspection result	The measurement results (voids rate, distance, area, etc., set by users) display in order.
Speed control	The movement speed of each axis can be adjusted to slow, normal and fast.

Voids rate measurement

Automatic calculation	Click on two points to determine a rectangle. The software automatically finds and measures the edge of the solder ball in the rectangle, the pad and the internal voids, and can get the data of the voids rate, the area of the solder ball, the circumference, the biggest void's rate, the length and the width, and indicates NG or OK by red and green.
Parameters adjustment	Users can adjust the grayscale threshold, pixel, contrast, size filtering and other parameters to get accurate results of automatic calculation.
Add voids manually	Users can draw a polygon or a free figure and calculate it as a void into the void rate.

Voids rate measurement

Save parameters

Users can save parameters such as grayscale threshold, pixel, contrast, size filtering and other parameters, and can directly call the parameters when detecting the same product, to improve the detection efficiency.

Other measurement function

Distance

Click the A and B points to set as the baseline, then click the C point to measure the vertical distance from the C point to the baseline.

Distance rate

It is mostly used to measure the soldering rate of the through-hole. Set one more point "D" than the distance. Divide the vertical distance from the D point to baseline by the vertical distance of the C point, to obtain the percentage ratio of the vertical distance of D to C.

Angle

Click the A and B points to set as the baseline, then click the C point to measure the angle between the BA and BC rays.

Radius

It is mostly used to measure round components such as solder balls. Click three points to determine a circle and measure the circumference, area and radius.

Perimeter

It is mostly used to measure square components, click two points to determine a square, measure the length, width and area.

Automatic inspection

Manual setting

Users can set any positions on the table as inspection points, the software will automatically inspect and save the picture.

Array

For the regular inspection points, users only need to set two of the inspection points and the number of rows and columns, the software will automatically inspect each point and save pictures.

Automatic identification

For inspection points with obvious features, the software automatically identifies the positions, takes measurements, and saves the image.



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