InterElectronic

PRODUCT CATALOGUE 2026

X-Ray Inspection Systems

SEAMARK

Microfocus X-ray inspection from Seamark: offline machines for laboratories and failure analysis, inline systems with AI-based automatic defect recognition, high-speed CT inspection, and an X-ray reel counter for the component store. Non-destructive inspection of BGA, QFN, THT and power-device solder joints, voids and hidden defects.



AXI9000



X5600



X6600



X6600B



X7600B



X1200



XL5800



XL6500B



XC1000

OVERVIEW

The Seamark range

Microfocus X-ray inspection from Seamark: offline machines for laboratories and failure analysis, inline systems with AI-based automatic defect recognition, high-speed CT inspection, and an X-ray reel counter for the component store. Non-destructive inspection of BGA, QFN, THT and power-device solder joints, voids and hidden defects.

	**AXI9000** High-Speed CT X-Ray Fully Automatic Inspection System	Inline 3D/CT · < 2 s per FOV · CT Resolution down to 6 µm/pixel · PCB up to 610 × 510 mm · In-House AI Algorithms
	**X5600** High-Precision Offline Microfocus X-Ray Inspection System	Microfocus X-Ray · Tilt & Rotate · Automatic Defect Detection · Ideal for IC, BGA, CSP & Small Components
	**X6600** High-Precision Offline Microfocus X-Ray Inspection System	High Magnification · Multi-Angle Inspection up to 65° · Large Inspection Platform · CNC Mode
	**X6600B** 6-Axis Offline Microfocus X-Ray Inspection Machine	6 Axes · T-Axis Tilt Imaging · Rotary Stage · 620 × 620 mm Sample Size · Fingerprint Access
	**X7600B** High-End Offline X-Ray Inspection Machine with 2.5D Imaging	2.5D Oblique Imaging · 360° Rotation · 60° Detector Tilt · Maintenance-Free Sealed Tube · Multi-Layer Safety
	**X1200** Offline X-Ray Inspection Machine for Large Boards	Inspection Area 1200 × 600 mm · CNC Automatic Inspection · Sealed Microfocus Tube · < 1 µSv/h
	**XL5800** Compact Inline X-Ray Inspection with AI Algorithms	Inline Automatic Inspection · 7–17" Reels, 8–80 mm Width · Automatic Sorting and Marking · Small Footprint
	**XL6500B** Inline X-Ray Inspection Machine with AI Inspection	Inline Automatic Inspection · 130 kV Sealed Microfocus Tube · AI Defect Detection · Barcode Traceability · Safety Interlocks
	**XC1000** Microfocus X-Ray Automatic Reel Counter	AI-Powered Counting · No Unpacking Required · 99.99% Accuracy · MES Integration

X-RAY INSPECTION

SEAMARK AXI9000

High-Speed CT X-Ray Fully Automatic Inspection System

Inline 3D/CT | < 2 s per FOV | CT Resolution down to 6 µm/pixel | PCB up to 610 × 510 mm | In-House AI Algorithms



OVERVIEW

The **Seamark AXI9000** is a fully automatic high-speed 3D/CT X-ray inspection system for SMT and THT assemblies, built for inline use. Its 3D/CT reconstruction inspects one field of view in less than 2 seconds and finds hidden solder defects that 2D X-ray and AOI cannot separate, such as voids and open joints under BGAs or the fill rate of through-hole joints.

A sealed microfocus source (50–130 kV), a 1536 × 1536 flat panel detector and a three-layer gantry driven by linear motors deliver CT resolution of 6–50 µm/pixel on boards up to 610 × 510 mm.

KEY FEATURES

High-speed 3D/CT
unique reconstruction technology with inspection speed below 2 s per field of view

Intelligent inspection algorithms
in-house software for high-precision detection of open joints, voids and DIP fill rate

High-speed CT scanning
three-layer gantry driven by linear motors with grating scales

Flexible inspection
projection number and resolution can be combined to suit each application

Wide component range
BGA, POP, LGA, QFP, CSP, CHIP, QFN, DIP through-hole components and IGBT modules

Detected defects
missing components, misalignment, solder bridging, open joints, insufficient solder, voids, tombstoning and DIP fill rate

TECHNICAL SPECIFICATIONS

Inspection Method	High-speed 3D/CT
Inspection Speed	< 2 s per FOV
X-Ray Tube	Reflection-type sealed microfocus source
Tube Voltage	50–130 kV
Tube Current	0–500 μA
Max. Output Power	65 W
Detector	Flat panel detector, 1536 × 1536 pixels, 16-bit A/D, 30 fps (1×1)
Field of View	154 × 154 mm
Detector Resolution	5.0 Lp/mm
CT Resolution	6–50 μm/pixel (3 μm optional)
PCB Size	50 × 50 – 610 × 510 mm
PCB Thickness	0.5–10 mm
Component Height	Top ≤ 50 mm, bottom ≤ 40 mm
Scan Structure	Three-layer gantry with linear motors and grating scales
Control System	Professional GPU imaging workstation
X-Ray Leakage	< 0.5 μSv/h
Air Supply	0.45–0.65 MPa
Power Supply	220 V, 10 A, 50–60 Hz
Dimensions (L×W×H)	1630 × 1950 × 1600 mm
Net Weight	4000 kg

Specifications according to Seamark. Subject to change without notice.

X-RAY INSPECTION

SEAMARK X5600

High-Precision Offline Microfocus X-Ray Inspection System

Microfocus X-Ray | Tilt & Rotate | Automatic Defect Detection | Ideal for IC, BGA, CSP & Small Components



OVERVIEW

The **Seamark X5600** is a compact, high-precision offline microfocus X-ray inspection system, ideal for R&D labs, quality departments and small-batch production.

It is designed for non-destructive internal inspection of IC chips, BGA, CSP, LED, sensors and other small electronic components.

KEY FEATURES

Microfocus X-ray tube
high-resolution tube with 15 µm spot size

Measurement tools
distance, angle, area and other size measurements

CNC inspection
multi-point automatic inspection mode

Safety
safety design with very low radiation, ≤ 0.5 µSv/h

BGA void analysis
automatic void ratio calculation for BGA

Automatic defect detection
missing, shifted and bridged components

Multi-angle viewing
tilt ±30° and 360° rotation, infrared navigation and positioning

TECHNICAL SPECIFICATIONS

X-Ray Tube	sealed microfocus, 40–90 kV, 10–200 µA
Spot Size	15 µm
Detector	TFT industrial dynamic FPD, 768 × 768
Field of View	65 × 65 mm
Resolution	5.8 Lp/mm
Max. Sample Size	280 × 320 mm
Tilt / Rotation	±30° / 360°
Radiation Leakage	≤ 0.5 µSv/h
Dimensions (L×W×H)	850 × 1000 × 1700 mm
Weight	approx. 750 kg

Specifications according to Seamark. Subject to change without notice.

X-RAY INSPECTION

SEAMARK X6600

High-Precision Offline Microfocus X-Ray Inspection System

High Magnification | Multi-Angle Inspection up to 65° | Large Inspection Platform | CNC Mode



OVERVIEW

The **Seamark X6600** is a cost-effective, general-purpose offline precision microfocus X-ray inspection system for a wide range of factory offline inspection tasks.

It is an excellent choice for inspecting small to medium-sized electronic components, ICs, BGAs, PCBs and other parts. For the current version see also the Seamark X6600B.

KEY FEATURES

Microfocus imaging
high-resolution microfocus X-ray imaging with high magnification and clear image quality

Multi-angle inspection
tilt up to 65°

Large platform
inspection platform for samples up to 540 × 440 mm

Navigation
infrared automatic navigation and positioning

CNC inspection
multi-point automatic inspection mode

Easy to use
simple, user-friendly software with low operating cost

TECHNICAL SPECIFICATIONS

X-Ray Tube	sealed microfocus, 90 kV / 130 kV
Spot Size	5–15 µm
Detector	TFT industrial dynamic FPD, 1536 × 1536
Field of View	130 × 130 mm
Max. Sample Size	540 × 440 mm
Tilt Angle	max. 65°
Dimensions (L×W×H)	1360 × 1240 × 1700 mm
Weight	approx. 1170 kg

Specifications according to Seamark. Subject to change without notice.

X-RAY INSPECTION

SEAMARK X6600B

6-Axis Offline Microfocus X-Ray Inspection Machine

6 Axes | T-Axis Tilt Imaging | Rotary Stage | 620 × 620 mm Sample Size | Fingerprint Access



OVERVIEW

The **Seamark X6600B** is a 6-axis universal offline microfocus X-ray inspection system with high magnification, multi-angle imaging and a large 620 × 620 mm inspection platform. It is ideal for BGA voids, solder joints, ICs and other electronic components.

One-button door control and real-time radiation monitoring around the machine protect the operator and the working environment.

KEY FEATURES

Fingerprint access control
only authorised personnel can operate the system

Rotary sample stage
X and Y axes driven by high-precision ball screws for accurate inspection

T-axis tilted imaging
oblique inspection when vertical views are not enough, for more complete coverage

Multiple safety protection
real-time radiation level monitoring and several safeguards for operator safety

TECHNICAL SPECIFICATIONS

X-Ray Tube	Reflective sealed microfocus tube
Tube Voltage	40–130 kV
Tube Current	10–300 µA
Max. Output Power	39 W
Focal Spot Size	5 µm (at 4 W) – 40 µm
Detector	Amorphous silicon flat panel, 1536 × 1536 pixels, 16-bit A/D, 20 fps
Field of View	130 × 130 mm
Resolution	5.5 Lp/mm
Max. Sample Size	620 × 620 mm
Control System	Industrial PC, Windows 10 (64-bit)
Power Supply	220 V, 10 A, 50–60 Hz
Dimensions (L×W×H)	1380 × 1425 × 1951 mm
Net Weight	1800 kg

Specifications according to Seamark. Subject to change without notice.

X-RAY INSPECTION

SEAMARK X7600B

High-End Offline X-Ray Inspection Machine with 2.5D Imaging

2.5D Oblique Imaging | 360° Rotation | 60° Detector Tilt | Maintenance-Free Sealed Tube | Multi-Layer Safety



OVERVIEW

The **Seamark X7600B** is a high-end offline X-ray inspection system for semiconductor packaging, BGA and CSP voids, IGBT modules and SMT assemblies. 2.5D oblique imaging gives depth information that standard 2D inspection cannot provide.

360° sample rotation and up to 60° detector tilt show solder joints and bond wires from every side, while the maintenance-free sealed microfocus tube keeps the cost of ownership low.

KEY FEATURES

Advanced 2.5D oblique imaging
better depth perception and precise spatial localisation of defects

Multi-angle inspection
360° sample rotation and detector tilt up to 60°

Real-time image enhancement
clear images of misalignment, bridging, BGA voids, cold joints and wire bonds

Maintenance-free sealed tube
reflective sealed microfocus source for long, low-cost operation

Multi-layer safety interlocks
real-time radiation leakage monitoring and triple protection

TECHNICAL SPECIFICATIONS

X-Ray Tube	Reflective sealed microfocus tube, maintenance-free
Tube Voltage	40–130 kV
Tube Current	10–300 µA
Max. Output Power	39 W
Focal Spot Size	5 µm (at 4 W) – 40 µm
Detector	Amorphous silicon flat panel, 1536 × 1536 pixels, 16-bit A/D, 20 fps
Field of View	130 × 130 mm
Resolution	5.8 Lp/mm
Platform Size	510 × 510 mm
Control System	Industrial PC, Windows 10 (64-bit)
Power Supply	220 V, 10 A, 50–60 Hz
Dimensions (L×W×H)	1700 × 1770 × 1800 mm
Net Weight	2050 kg

Specifications according to Seamark. Subject to change without notice.

X-RAY INSPECTION

SEAMARK X1200

Offline X-Ray Inspection Machine for Large Boards

Inspection Area 1200 × 600 mm | CNC Automatic Inspection | Sealed Microfocus Tube | < 1 µSv/h



OVERVIEW

The **Seamark X1200** is a precision microfocus X-ray inspection system for large PCBs, 5G communication motherboards, LED light bars and other large-area products. Its effective inspection area of 1200 × 600 mm allows automatic inspection of very large boards.

The X-ray source and the flat panel detector move in X/Y over the whole area, and CNC inspection programs run the inspection and the judgement automatically.

KEY FEATURES

Large inspection area
1200 × 600 mm, the source and detector move in X/Y to cover the whole area

CNC automatic inspection
editable inspection programs for automatic inspection and judgement

Customisable
versions for different product sizes and automatic test plans available as options

Easy to use
simple software operation and low operating cost

TECHNICAL SPECIFICATIONS

X-Ray Tube	Sealed microfocus tube
Tube Voltage	40–90 kV (130 kV optional)
Tube Current	10–200 µA (300 µA)
Max. Output Power	8 W (39 W)
Focal Spot Size	5–15 µm
Detector	TFT industrial dynamic flat panel, 1536 × 1536 pixels, 16-bit A/D, 20 fps
Field of View	130 × 130 mm
Resolution	5.8 Lp/mm
Max. Sample Size	1200 × 600 mm
Control System	Industrial PC, Windows 7 / 10 (64-bit)
Power Supply	220 V 10 A / 110 V 15 A, 50–60 Hz
Radiation Leakage	< 1 µSv/h
Dimensions (L×W×H)	2040 × 1280 × 1870 mm
Net Weight	approx. 2350 kg

Specifications according to Seamark. Subject to change without notice.

X-RAY INSPECTION

SEAMARK XL5800

Compact Inline X-Ray Inspection with AI Algorithms

Inline Automatic Inspection | 7–17" Reels, 8–80 mm Width | Automatic Sorting and Marking | Small Footprint



OVERVIEW

The **Seamark XL5800** is a compact inline X-ray inspection system with self-developed AI inspection algorithms. It feeds, inspects, sorts and marks defective products automatically.

The small footprint and automatic track width adjustment for 7–17 inch reels and 8–80 mm widths make it suitable for fully automatic inline inspection of reels and trays and for automatic line feeding.

KEY FEATURES

Compact design
small footprint, easy to place and use

AI automatic inspection
self-developed AI inspection algorithm, customisable to user needs

Wide compatibility
7–17 inch reels, 8–80 mm width, automatic track width adjustment

Fully automatic inline operation
automatic inspection, sorting and marking of defective products

TECHNICAL SPECIFICATIONS

X-Ray Tube	Reflective sealed microfocus tube
Tube Voltage	0–90 kV
Tube Current	0–200 µA
Max. Output Power	8 W
Focal Spot Size	10 µm
Detector	Amorphous silicon flat panel, 1536 × 1536 pixels, 16-bit A/D, 20 fps
Field of View	130 × 130 mm
Resolution	5.5 Lp/mm
Sample Width	8–80 mm reels, 7–17 inch reels
Control System	Industrial PC, Windows 10 (64-bit)
Power Supply	220 V 10 A / 110 V 15 A, 50–60 Hz
Dimensions (L×W×H)	2940 × 1100 × 1970 mm
Net Weight	1210 kg

Specifications according to Seamark. Subject to change without notice.

X-RAY INSPECTION

SEAMARK XL6500B

Inline X-Ray Inspection Machine with AI Inspection

Inline Automatic Inspection | 130 kV Sealed Microfocus Tube | AI Defect Detection | Barcode Traceability | Safety Interlocks



OVERVIEW

The **Seamark XL6500B** is an inline X-ray inspection system with strong penetration, high magnification, high resolution and a large inspection area. Self-developed inspection software and AI algorithms deliver fast, accurate automatic inspection.

It suits full inline inspection of semiconductors, SMT assemblies, IGBT modules and LEDs where quality requirements are high.

KEY FEATURES

Wide application range
semiconductors, SMT board assemblies, IGBT modules, LEDs and more

AI intelligent inspection
detects voids, insufficient solder and solder bridging; AI models customisable to user needs

Fast programming
wizard-based inspection template editing

Barcode traceability
inspection results linked to the barcode of each product

Multiple safety protections
safety interlocks and automatic X-ray source shutdown when idle

TECHNICAL SPECIFICATIONS

X-Ray Tube	Reflective sealed microfocus tube
Tube Voltage	40–130 kV
Tube Current	10–300 µA
Max. Output Power	39 W
Focal Spot Size	5–50 µm
Detector	Amorphous silicon flat panel, 1536 × 1536 pixels, 16-bit A/D, 20 fps
Field of View	130 × 130 mm
Resolution	5.8 Lp/mm
Max. Sample Size	510 × 600 mm
Control System	Industrial PC, Windows 10 (64-bit)
Power Supply	220 V 10 A / 110 V 15 A, 50–60 Hz
Dimensions (L×W×H)	1500 × 1550 × 2160 mm
Net Weight	2350 kg

Specifications according to Seamark. Subject to change without notice.

X-RAY INSPECTION

SEAMARK XC1000

Microfocus X-Ray Automatic Reel Counter

AI-Powered Counting | No Unpacking Required | 99.99% Accuracy | MES Integration



OVERVIEW

The **Seamark XC1000** is a high-precision microfocus X-ray automatic reel counter. Using X-ray imaging and an independently developed AI algorithm, it counts components on reels quickly and accurately without unpacking.

It also supports MES data upload and automatic label printing, which improves efficiency and reduces labour costs in the component store.

KEY FEATURES

No unpacking
reels are counted without unpacking or transferring them

Accuracy
counting accuracy over 99.99%

AI detection
innovative detection environment with AI function

All SMD components
suitable for all types of SMD components, 01005 and above

Reel sizes
reel diameters from 7 to 15 inches

Automation
automatic counting, label printing and MES integration for the smart factory

TECHNICAL SPECIFICATIONS

X-Ray Tube	sealed microfocus, 80 kV
Detector	TFT industrial dynamic FPD, 3072 × 3072
Field of View	427 × 427 mm
Max. Reel Size	7–15 inches
Dimensions (L×W×H)	800 × 1260 × 1950 mm
Weight	approx. 800 kg
Radiation Leakage	< 1 µSv/h

Configuration, demo and quotation

InterElectronic is the Seamark partner for Hungary and Central Europe: application advice, sample tests, installation, training and service.

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