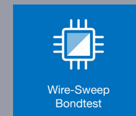
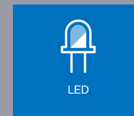
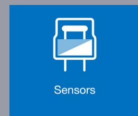
XS-series Semi Backend setup

High speed X-ray inspection system with minimal footprint

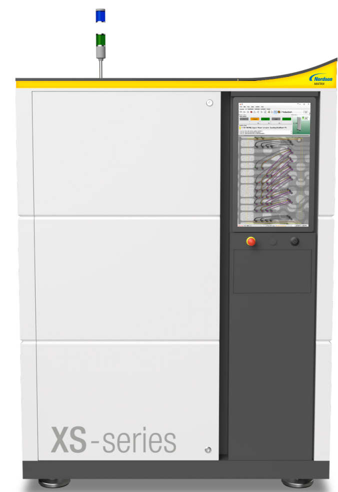






The Nordson MATRIX XS-series with Semi-Backend setup is an automated inspection system platform designed for sophisticated high speed inspection of semiconductor-backend products on stripes or in Jedec trays (e.g. overlapping wires or wire dense areas). The following setups are available:

High Resolution Setup	Super High Resolution Setup	Ultra High Resolution Setup
2,5-3 µm all gold-wires, CU-wires down to 1,5mil diameter / die-attach voiding	1,5-2 µm all gold-wires, CU-wires down to 1,5mil diameter / die-attach voiding	< 1µm all gold-wires, CU wires down to 0,8mil diameter / die attach and µbump voiding down 70µ bump sizes



The Nordson MATRIX system solutions present a modular inspection concept.
The platforms feature up to 4 advanced technologies in one system: Transmission X-ray imaging (2D) with patented Slice-Filter-Technique™ (SFT), Off-Axis technology (2.5D) and 3D SART (**S**imultaneous **A**lgebraic **R**econstruction **T**echnique).

The XS-series platform is available in the following configurations:

XS-2 **Transmission (2D) + SFT™**
XS-2.5 **Transmission (2D) + SFT™ + Off-Axis (2.5D)**
XS-3 **Transmission (2D) + SFT™ + Off-Axis (2.5D) + 3D SART**

Features and Benefits

- High speed AXI system for inline setups
- Microfocus X-ray tube (sealed tube / maintenance free)
- Up to 5-axes programmable motion system with servo drives (X-Y sample tray, Z-axes, X-ray tube, U/V detector)
- Digital CMOS flatpanel detector
- Automatic grey-level and geometrical calibration
- Inline pass through board handling with automatic width adjustment
- Full product traceability via customized MES-Interface

Inspection & Process Software

- PC-Station with multi-core processor setup
- Windows 10 platform

MIPS Inspection Platform

- Advanced algorithm library
- CAD import for automatic inspection list generation
- Simultaneous Algebraic Reconstruction Technique (3D SART; XS-3 only)
- Automatic Tree Classifcation (ATC) for Auto-Rule-Generation
- Offline programming for AXI program generation & simulation, tuning and defect reference catalogue

Verification & process control

- MIPS Verify link with closed loop repair
- MIPS Process with real time SPC

Nordson MATRIX

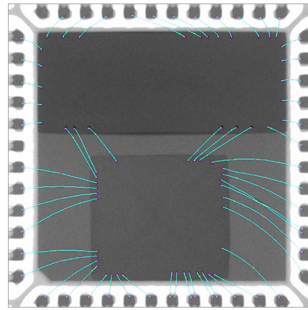
XS-series Semi Backend setup

Applications

SEMICONDUCTOR / WIRE BOND TESTING

A unique advanced algorithm library is available for inspection of:

- Semiconductor applications
- Wire bond Test (pre & post)
- Light, but complex PCB's
- Flex circuits
- Die-Attach Voiding



Specifications

Facilities	
Dimensions:	1760 mm (H) x 1300 mm (W) x 1600 mm (D)
Weight:	2.320 kg
Safe Operating Temperature:	15° - 28 °C optimal 20° - 25° C
Power Consumption:	max. 6 kW
Line Voltage:	208 / 400 VAC, 50/60 Hz 3 phase, 24/16 A
Air:	5-7 Bar, < 2 l/min, filtered (30µ), dry, oil free, non-condensing

X-ray Image Chain			
X-ray Source (sealed tube)			
Energy:	**High resolution Setup** 100 kV / 20 W	**Super High Resolution Setup** 110 kV / 16 W	**Ultra High Resolution Setup** 160 kV / 20 W
Focal Spot Size:	4 µm	2 µm	<1 µm
Object resolution @ min. FoV:	2,5-3 µm	1,5-2 µm	1-1,5 µ
Detector Types:			
CMOS Flatpanel Detector	50/75 µm pixel size		
Grey resolution:	14/16 Bit		

Motion System	
Multiple axes programmable motion system	
Installed axes	
x,y (linear drives)	sample table
z (servo)	magnification
u,v (linear-drives)	detector movement
Conveyor setup	
pass through	single lane
in-out same side	dual lane

X-ray inspection setup		
Off-Axis capability.	**Angle shot capability:**	0 – 30 dgr
FoV range:	**Transmission FoV:**	5 mm to 25 mm
Sample Inspection Parameter		
Standard setup:	**Max. sample size:**	300 mm x 250 mm (depending on tube and magnification)
	Min. sample size	> 60 mm x 25 mm
	Max. inspection area (Transmission):	300 mm x 250 mm
Assembly Clearance	**Topside (incl. board thickness):**	+/- 25 mm
	Bottom side (excl. board thickness):	+/- 25 mm
	Edge clearance for clamping:	> 2,5 mm
Sample- Warpage Compensation	**Optional item**	Top-clamp or Vacuum Jig Technique

Inspection speed	
Transmission (XS-2, XS-2.5, XS-3)	up to 6 views /s
Off-Axis (XS-2.5, XS-3)	up to 5 views /s
3D SART (XS-3)	up to 1 position /s

Options
Barcodereader
Substrate Handling setup with Magazine loader/un-loader/laser-marker
Top-clamp warpage compensation

For more information, speak with your Nordson MATRIX representative.

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