X-series SMT setup

Solder Joint Inspection · PTH · Power devices Cooling plates

High Speed Inline AXI Platform

With the **X-series platform** Nordson MATRIX presents a dedicated high speed automatic X-ray inspection system concept for the inspection of PCB-assembly boards for single/multipanels or samples in trays. All solder joints of SMD and PTH components are covered by a dedicated AXI algorithm library.

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 X-series platform is available in the following configurations:

X2   **Transmission (2D) + SFT™**

X2.5   **Transmission (2D) + SFT™ + Off-Axis (2.5D)**

X3   **Transmission (2D) + SFT™ + Off-Axis (2.5D) + 3D SART**

Inspection & Process Software

- PC-Station with multi-core processor setup
- Windows 10 platform
- MIPS 5 Inspection Platform
    - Advanced algorithm library
    - CAD import for automatic inspection list generation
    - Simultaneous Algebraic Reconstruction Technique (3D SART; X3 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

Features and Benefits

- High Speed AXI system for inline setups
- Microfocus X-ray tube (sealed tube / maintenance free)
- Multiple programmable motion system with linear motor axes
- Digital CMOS flatpanel detector
- Automatic grey-level and geometrical calibration
- Barcode scanner for serial number and product type selection
- Full product traceability via various Industry 4.0 MES-Interfaces
- IPC-CFX ready

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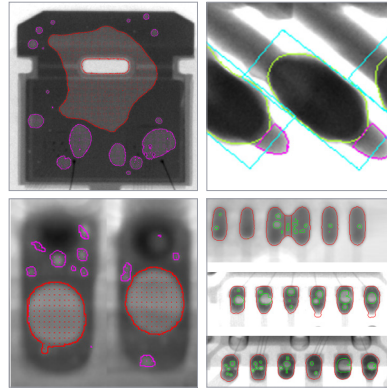
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Applications

Electronic components and solder joint

A unique advanced algorithm library is available for electronic applications, specifically for component and solder-joint inspection on PCB, hybrid or chip level assembly processes.

All standard SMD and THT/PTH components

- BGA & dedicated off-axis head-in-pillow (HIP) algorithm
- Comprehensive QFN & gullwing algorithm
- Robust solder / heatsink void inspection
- Pin in paste barrel fill measurement
- Discrete down to 1005 pitches

Specifications

Facilities

Dimensions:	1630 mm (H) x 1800 mm (W) x 1575 mm (D)
Adjustable conveyor height (SMEMA)	950 mm
Weight:	2.800 kg
Safe Operating Temperature:	15° - 28 °C optimal 20° - 25° C
Power Consumption:	max. 6 kW
Line Voltage:	400 VAC, 50/60 Hz 3 phase, 16 A/ 208 VAC, 50/60 Hz 3 phase, 25 A
Air:	5-7 Bar, < 2 l/min, filtered (30µ), dry, oil free

X-ray Image Chain

X-ray Source (sealed tube)

Energy:	**SMT-Setup** 130 kV/40 W
Grey resolution:	14 Bit

Detector Types:

CMOS Flatpanel Detector	50 µm pixel size (5 MPix) 75 µm pixel size (3 MPix)

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

Inline set-up	automatic width adjustment

Inspection features

Max. sample size:	460 mm x 360 mm
Max. inspection area:	460 mm x 360 mm
Min. sample size	80 mm x 80 mm
Sample thickness	0,8-10 mm
Max. sample weight:	5 kg
Angle shot capability:	up to 50 deg
Resolution	3-4 µm/pix

Assembly clearance

Topside (incl. sample thickness):	35 mm
Bottom side (excl. sample thickness):	35 mm
Min. edge clearance for clamping:	3 mm

Inspection speed

Transmission (X2, X2.5, X3)	up to 6 views /s
Off-Axis (X2.5, X3)	up to 5 views /s
3D SART (X3)	up to 1 s /FoV

Options

Barcodereader
Low-dose radiation filter
Auto BCR scanning station (x-y gantry)
Semi Compliance

Nordson MATRIX