The MatriX X2# is an flexible, automated inspection system designed for sophisticated high-speed inspection in SMT production. Transmission X-ray Technology with patented Slice-Filter-Technique (SFT) present a reliable solution for the in-line inspection of double-sided PCB assemblies. It features fully automated inspection based on a CAD compiled inspection list and uses an inspection model library for the test-strategy definition. The motion system as well as the image acquisition chain meets all demands of high-speed inspection.

MIPS_Tune is an off-line programming software package for test program generation with automatic CAD import and for graphical application parameter tuning. It features an automatic inspection list generation based on an advanced algorithm library for transmission and off-axis joint inspection. Proprietary Tree-Classification technique with integrated automatic rule generation, graphical measurement & yield display for program optimization.

The verification software module MIPS_Verify with its closed-loop repair concept is capable of in-line or off-line verification using a graphical board layout display and X-ray image with defect marking. Support of multiple inspection modes with parallel viewing of transmission oblique view and optical images of the same defect for easy and reliable defect verification.

### Features and Benefits

- High Speed AXI System for In-line and Off-Line setups
  - Transmission: 3-4 images/sec
- Microfocus X-RAY tube: 130kV/40W (wide beam) sealed tube / maintenance free
- 3-axes programmable motion system with servo drives
  - (X-Y sample table, Z-axes x-ray tube)
- Digital CMOS flatpanel detector (14 bit digital output) standard & hi-res setup
- Automatic grey-level and geometrical calibration
- In-line pass through board handling with automatic width adjust
- Barcode scanner (1D/2D) for serial number and product type selection
- Full product traceability via customized MES-Interface
- Optional: Combination with MatriX AOI module (high-speed line scan with SIM technology)

### Inspection & Process Software

- PC-Station with multi-core processor setup
- Windows 7 or Windows 10 platform
- CAD Import for automatic inspection list generation
- Advanced Algorithm Inspection Library for solder joint and component inspection
- Slice-Filter-Technique (SFT) for double-sided board inspection
- Automatic-Tree Classification (ATC) for Auto-Rule-Generatio
- Off-line programming for AXI program generation & simulation, tuning and defect reference catalogue.
- MIPS_Verify link with closed-loop repair
- MIPS_SPC for real-time process control
Flexible In-line X-Ray system

Specifications

Facilities

Dimensions:
1670 mm (H) x 3100 mm (W) x 1760 mm (D)
Adjustable conveyor height (SMEMA):
890 – 980 mm
Weight: 3.000 kg
Safe Operating Temperature:
15° - 32 °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

Part Handling / Motion

High-speed sample table
Driving distance x,y: 510 x 410 mm
X-Ray tube (z): 0 - 150 mm
X-Ray Source (sealed tube)
Energy: 130 kV/40 W
Focal Spot Size: 5 microns
X-Ray Tube Orientation: End window tube

X-ray Imaging

Grey value resolution: 14 bit
Video output: Camera link interface
Detector Type A: CMOS Detector (1,5 k x 1,5 k)
Active inspection area: 115 x 115 mm
Detector Type B: CMOS Detector (2,3 k x 2,3 k)
Active inspection area: 115 x 115 mm

Inspection features

Standard FoV setup
Transmission FoV: 10 mm to 40 mm
Object resolution (@min. FoV): 4-5 µm
High-resolution setup
Transmission FoV: 5 mm to 25 mm
Object resolution (@min. FoV): 2-3 µm
Sample Inspection Parameter
Standard SMT setup
Max. board size: 20"x 16" (510 x 410 mm)
Max. inspection area: 19"x16" (480 x 410 mm)
XL SMT setup
Max. board size: 24”x16” (610 x 410 mm)
Max board weight: 11 lbs (5 kg)
Board thickness: 0,03” – 0,2” (0,8-5 mm)
Assembly clearance
Topside: (incl. board thickness): 45 mm
Bottom side: (excl. board thickness): 50 mm
Edge clearance for clamping: 3 mm

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 and fine-pitch SMD components
- Advanced cooling plates/ heatsink
- Specific BGA and QFN algorithm
- Void inspection

For more information, speak with your Matrix representative.

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