

# TR7600 SII SERIES

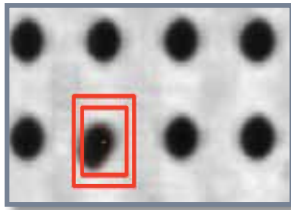


- High Performance 3D Inline AXI
- Rapid Intelligent Programming
- Automated Defect Evaluation
- Optional 3D CT Upgrade

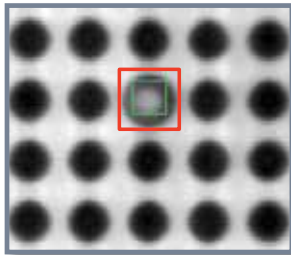
**AUTOMATED  
X-RAY INSPECTION**

# TR7600 SII FEATURES

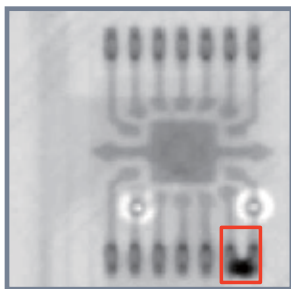
## Defect Symptom Images



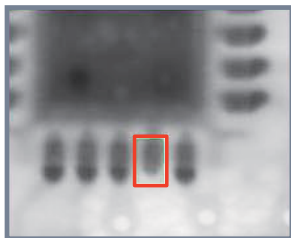
BGA Head-In-Pillow



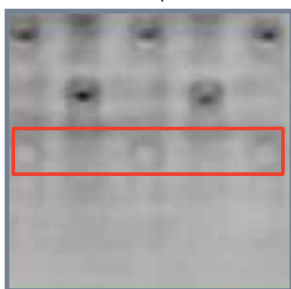
BGA Void



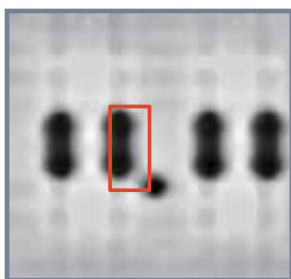
Bridging



QFN Open



PressFit Pin Defect



Solder Ball

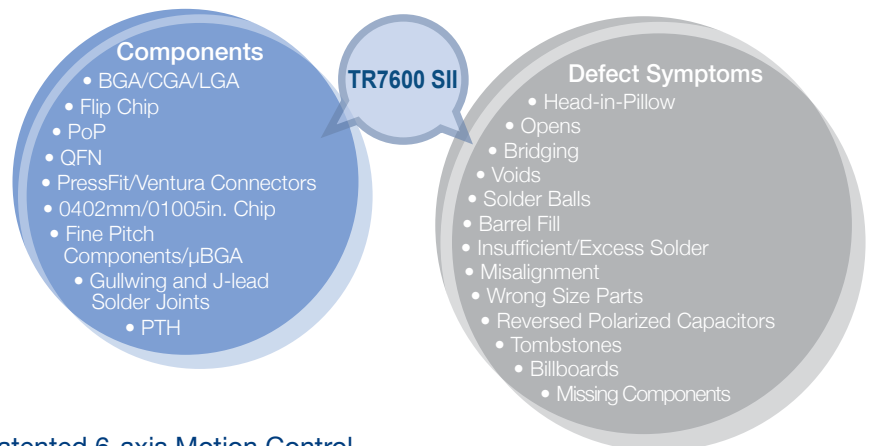
## High Performance Inline 3D Automated X-ray Inspection

- Ultra-fast inline automated X-ray inspection of PCBAs
- 2D + 3D images using multiple angled cameras
- High speed dynamic imaging
- Automated inspection and pass/fail evaluation
- User selectable X-ray power up to 130 kV/ 300  $\mu$ A
- Patented 6-axis motion control for maximum flexibility
- Edge-to-edge large board inspection up to 900 x 460 mm
- Hardware and software upgrade for 3D CT capability

## Intelligent Software Solution

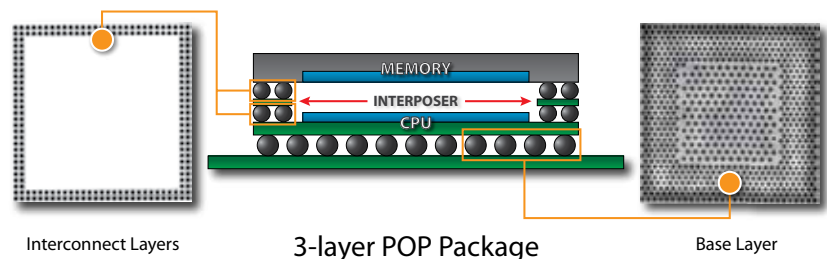
- Intelligent CAD or image-based programming wizard
- Intelligent detection of solder and assembly defects
- Automatic image quality enhancement for overlapping components and complex defects
- Automatic board warp compensation
- Automated 3D slice extraction

## Defect Detection Capability



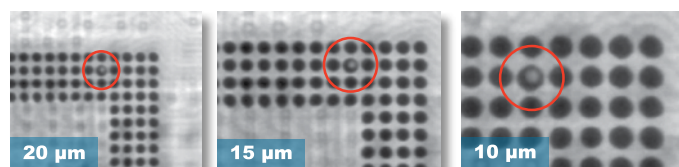
## Patented 6-axis Motion Control

TRI's unique motion control system provides clearest images of multi-layer PCBAs and overlapping components, enabling reliable automated inspection of dual-side PCB assemblies without typical shadowing issues.



## BlockScan Customized Imaging

BlockScan module enhances AXI test program coverage by re-scanning selected areas of the tested board using customized system settings. This improves image quality and automated defect detection for most complex PCBAs, including fine pitch  $\mu$ BGAs, PressFit and metal shielded components. Using BlockScan, TRI AXI can reliably inspect up to 3-layer PoP packages.



Multiple Resolutions in One Program

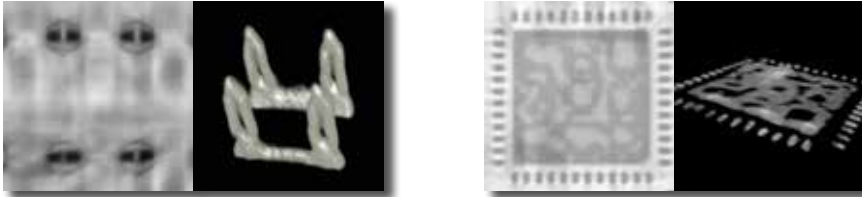
### 3D CT Inspection Optional Upgrade

Enhanced 3D inspection with planar CT imaging can recreate a complete 3D model of each solder joint, enabling clear analysis of shape irregularities, head-in-pillow and voiding problems. Vertical cross-section CT images help with reliable visual review of borderline and buried solder joints.



### Enhanced Defect Visualization with CT

CT data processing helps clearly visualize solder defects such as voiding, bridging and deformities.



3D CT displays solder joints and defects in much more detail than traditional 3D X-ray slicing

### Eliminate Board Warp Issues

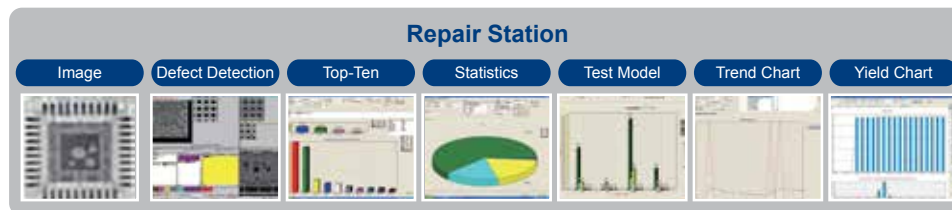
The TR7600 SII uses multiple laser sensors to accurately measure any PCB assembly deformation and automatically adjusts component inspection parameters to compensate for local board warpage. This ensures reliable inspection of the most complex boards with overlapping and multi-layered components and heavy PressFit connectors.

### Radiation Safe Design

Designed with safety in mind, TRI's AXI systems have full lead shielding which prevents harmful exposure in everyday use and reduces X-ray leakage below background radiation levels of 0.5  $\mu$ Sv/hr. The certified safety design conforms to USFDA Code of Federal Regulations Title 21, Part 1020.40.

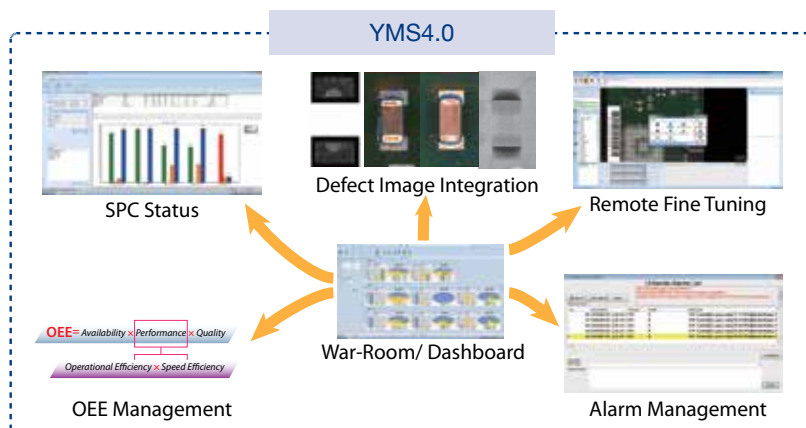
### Repair Station

The TR7600 SII collects a wide range of inspection data to offer instantaneous process monitoring and analysis. This integrated approach offers clear statistical feedback that improves defect management and enhances the efficiency of the inspection process.

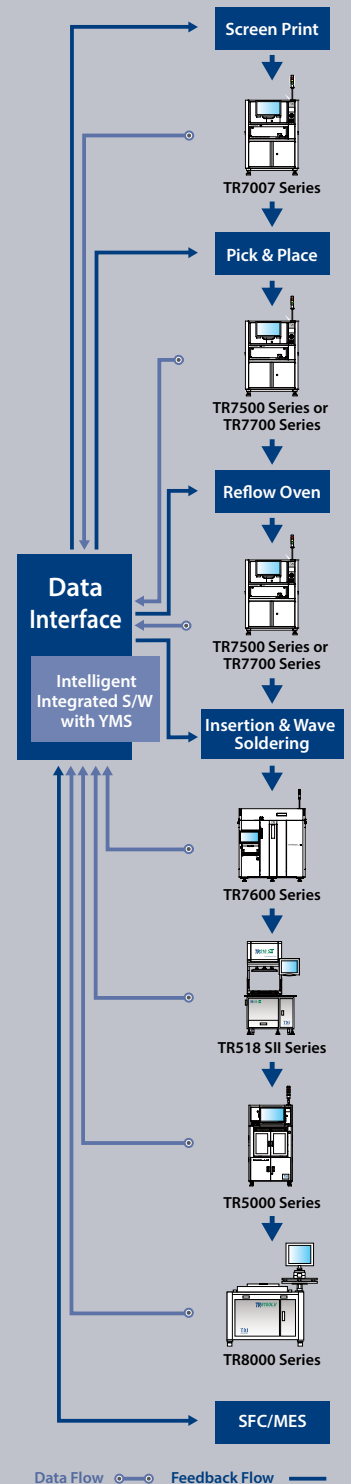


### Industry 4.0 Production Line Integration

YMS 4.0 lets TRI inspection solutions interface and share inspection data with the shop floor system and other inspection machines. With the central console an operator can control, track, analyze and optimize the inspection process across the entire production line and obtain real actionable data to optimize production quality in the Industry 4.0 environment.



### Yield Management System



- Inspection results and data integration
- Real time SPC and production yield management
- Quality reports and closed loop tracking
- Support defect component analysis and improvements
- Knowledge Management (KM)
- Productivity and Quality Management



## X-Ray & Imaging System

X-ray Source	130 kV max (user adjustable)
Image Resolutions	10 $\mu$ m, 15 $\mu$ m, 20 $\mu$ m (factory setting)
Camera	High-performance, ultra-sensitive line-scan cameras

## Inspection Functions

Component Level Defects	Missing, Misalignment, Tombstone, Billboard, Tantalum Polarity & Rotation
Joint Level Defects	Insufficient/Excess Solder, Bridging, Open, Solder Ball, Non-wetting, Void & Lifted Lead

## X-Y Table & Control

High-precision ball screw/servo motor with DSP-based motion controller

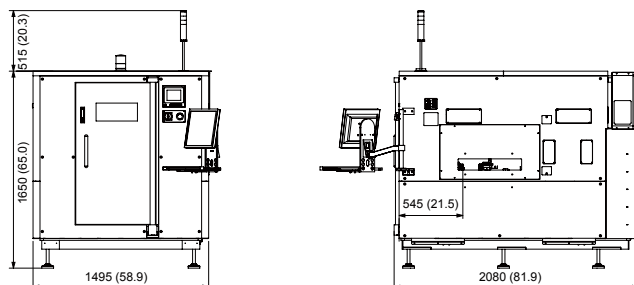
X-Y Axis Resolution	1 $\mu$ m
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## PCB & Conveyor System

Min. PCB Size	50 x 50 mm (1.97 x 1.97 in.)
Max. PCB Size	900 x 460 mm (35.4 x 18.1 in.)
PCB Thickness	0.6 - 5 mm
PCB Transport Height	880 - 920 mm (34.6 - 36.2 in.)*
Max. PCB Weight	3 kg (7 lbs) [8 kg (18 lbs) optional]
PCB Carrier/Fixing	Step motor driven conveyor & pneumatic clamping
Clearance	
Top 20 $\mu$ m	50 mm (1.97 in.)
15 $\mu$ m	30 mm (1.18 in.)
10 $\mu$ m	15 mm (0.59 in.)
Bottom	40 mm (1.58 in.)
Edge	3 mm (0.12 in.)

\* SMEMA Compatible

## Dimensions



Unit: mm (in.)

Weight	3250 kg (7165 lbs)
Power Requirement	200 - 240 VAC single phase, 50/60 Hz, 4 kVA
Air Requirement	72 psi - 87 psi (5 - 6 bar)

## Optional Accessories

Barcode Scanner, Repair Station, Offline Editor & Yield Management System (YMS 4.0), YMS Lite, 3D CT Upgrade Kit

TRI has a patent in System and Method for Laminography Inspection

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**TRI 德律 TRI INNOVATION**

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