

Ultra Speed  
Model

# 3D AXI

AUTOMATED X-RAY INSPECTION

## TR7600 SV SERIES



High-Speed Robust Platform,  
20% Performance Improvement\*



AI-Powered Inspection Algorithms



Smart Factory Ready for  
Easy MES Connectivity



EtherCAT - Faster  
Communication

7-25  
 $\mu\text{m}$   $\mu\text{m}$

Multi-Resolution



Smart Board  
Warpage



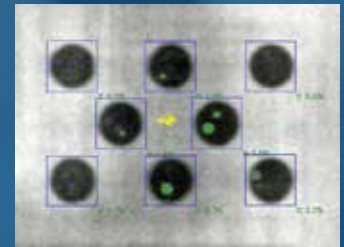
**TRI**  
innovation

\*Compared to previous model, TR7600 SIII.

# TR7600 SV SERIES

## High-Performance 3D AXI

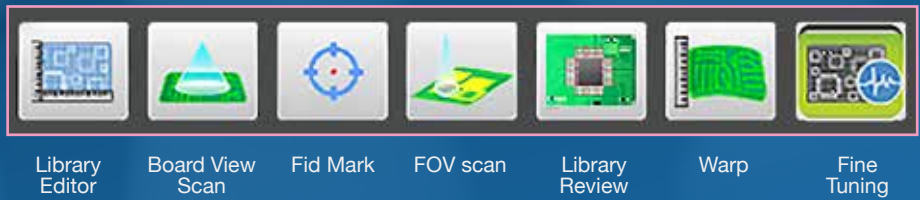
The TR7600 SV series is the newly released line scan 3D AXI, with up to 20% performance improvement compared to the award-winning TR7600 SIII series. Powered by AI Algorithms, the high-speed 3D AXI can precisely detect Void defects. With 7  $\mu\text{m}$  high-resolution, the TR7600 SV series delivers a high yield rate inspection. The robust platform is capable of fast image reconstruction and defect detection in BGA, THT, SiP, and more.



BGA Void Inspection

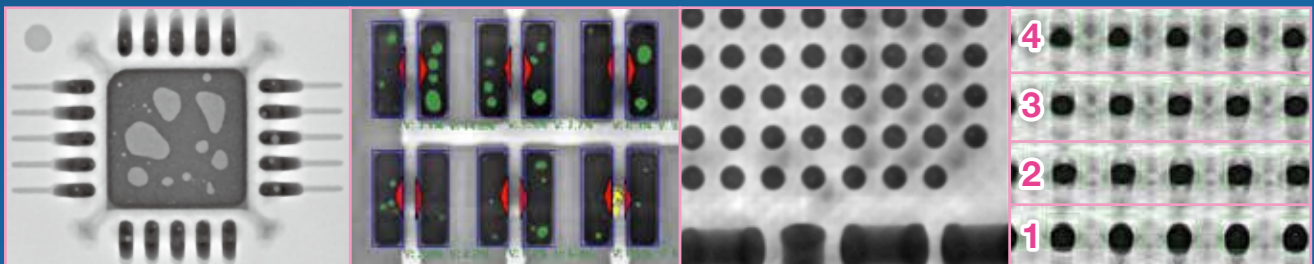
## Smart Programming

The new 3D AXI intuitive software helps set up inspection programs based on CAD data. The TR7600 SV series is equipped with TRI's extensive smart component library, reducing engineer workload and minimizing production downtime.



## High-Resolution Design for Maximum Defect Detection

The TR7600 SV series 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.

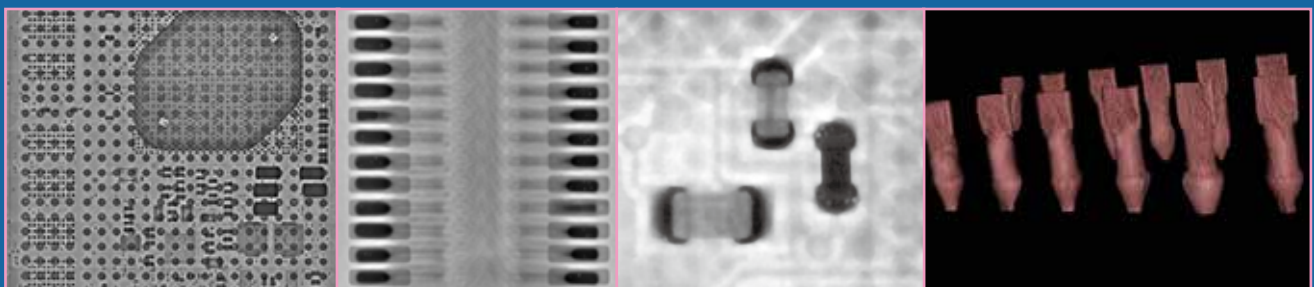


QFN Void Detection

LED Void

PoP Inspection

PTH Inspection - Slides



LGA Void

DIMM Connector Inspection

Chip Inspection

THT 3D CT Inspection

### Inline Fine Tuning

Optimize the Programming and Fine Tune the false calls while the machine is operating. This can be done from the AXI, reducing operators, and enabling manufacturing to take action without affecting the cycle time or yield rate.



### Board Warpage Control

The AXI solution uses multiple laser sensors to measure PCB assembly deformations and adjusts component inspection parameters to compensate for the board warpage.



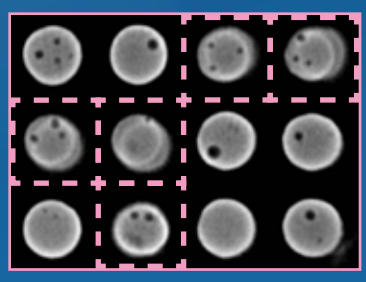
### Ease of Maintenance

The high-reliability robust platform and advanced automatic/scheduled calibration with detail reporting ensure ease of maintenance.



### High Accuracy BGA Inspection

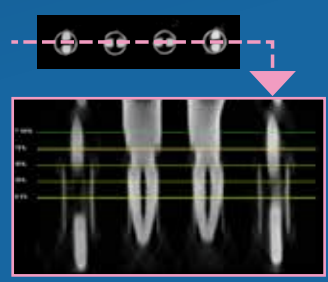
TRI solutions can inspect individual slices' absolute area, shape, and compare it to the nearest BGA. The HiP defect algorithm considers multiple slices simultaneously, quantifying, and comparing the profile of the BGA.



BGA HiP Defect

### Press-Fit Inspection

The telecommunications industry commonly uses press-fit connectors because they assure electrical and mechanical reliability. TRI's AXI solutions can accurately inspect and detect missing, insufficient penetration, and askew in press-fit connectors.



Press-fit Cross Section Inspection



Press-fit 3D CT Inspection

### AOI/AXI Integrated Review System

AOI and AXI results are combined in one Repair Station, easing AOI-AXI communication and lowering labor costs by reducing headcount.



### AI-Powered Inspection

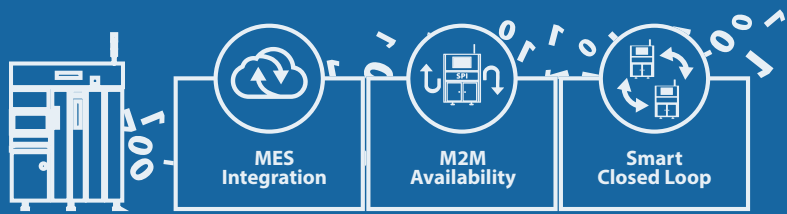
TRI's AXI are equipped with AI algorithms, which are superior to the commonly used gray-level based algorithms. The AI algorithm can accurately detect void and open defects.



Void Defect      Gray-level Based      AI Algorithm

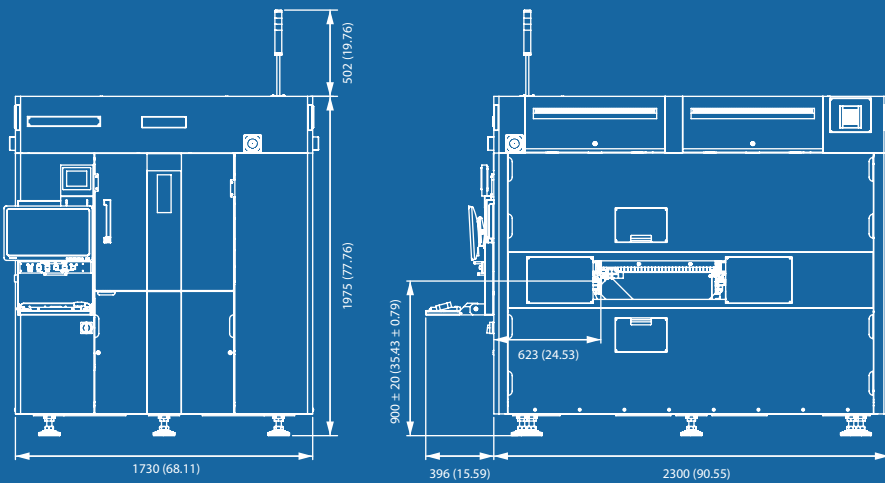
### Smart Factory Ready

TRI's Smart Factory Solutions promote full data exchange and traceability by generating Big Data for your preferred MES application, which is essential for optimizing your yield rate, enabling the Connected Factory. TRI's solutions comply with the latest Industry 4.0 standards, such as IPC-Hermes-9852, the IPC-DPMX, and the Connected Factory Exchange (IPC-CFX).



		TR7600LL SV
Model		Ultra-High Speed Line-Scan CCD Cameras 3 or 5 Units (9 or 15 Sensors)
Imaging System	Camera	60 - 130 kV
	X-ray Source	7 μm - 25 μm
	Imaging Resolution	2D, 2.5D, 3D Slicing, Planar CT (Optional)
	Inspection Method	BGAs, Barrel fill, Capacitors, Chips, Components Under RF shields, CSPs, DIMM Connectors, Flip-Chips, Ground Pads, Gullwing, Heat sinks, J-Leads, LED Chips, LGAs, Paladin Connector, Resistor, RNET, SiP, SMT Connectors, SOIC, SOT, Thermal Pad, QFNs, QFP and THTs
Inspection Functions	Components	Missing, Misalignment, Tombstone, Billboard, Tantalum Polarity, Rotation, Foreign Material, Insufficient/Excess Solder, Bridging, Open, Solder Ball, Non-Wetting, Void and Lifted Lead
	Defects	Linear Servo Motor with Motion Controller
X-Axis Control		High-Precision Ballscrew + AC-Servo Controller
Y-Z-Axis Control		1000 x 660 mm (39.37 x 25.98 in.)
Max PCB Size		0.4 - 7 mm (0.02 - 0.28 in.)
PCB Thickness		880 - 920 mm (34.65 - 36.22 in.)
PCB Transport Height		12 kg (26.46 lb)
Max PCB Weight		Step Motor Driven / Pneumatic Clamping
PCB Carrier / Fixing		7 μm                      10 μm                      15 μm                      20 μm                      25 μm
Clearance	Top	7 mm (0.28 in.)    15 mm (0.59 in.)    30 mm (1.18 in.)                      50 mm (1.97 in.)
	Bottom	70 mm (2.76 in.)                      55 mm (2.17 in.)
	Edge	3 mm (0.12 in.) or 5 mm (0.20 in.)
Weight		4900 kg (10,802.65 lb)
Power Requirement		200 - 240 VAC, Single Phase, 50 / 60 Hz, 4 kVA
X-ray Leakage		< 0.5 μSV/h
Air Requirement		72 psi - 87 psi (5 - 6 bar)
Optional Features		Barcode Scanner, Repair Station, Offline Editor, Yield Management System (YMS 4.0), CAD Converter and CT Imaging, AI Solutions

Unit: mm (in.)



TR7600LL SV

## Global Network

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