

SPECIFICATIONS

Optical & Imaging System

Top View Camera	6.5 Mpix high speed color camera
Lighting	Multi-phase RGB+W LED
Optical Resolution	10 or 12.5 µm
Imaging Method	Stop-and-Go

Imaging/Inspection Speed

12.5 µm	51.2 cm ² /sec (7.9 in ² /sec)
10 µm	32.8 cm ² /sec (5.1 in ² /sec)

Pre-/Post-Reflow Inspection Functions

Component	Missing, Tombstoning, Billboarding, Polarity, Rotation, Shift, Wrong Marking (OCV), Defective, Upside Down, Extra Component, Foreign Material
Solder Joint	Excess Solder, Insufficient solder, Bridging, Through-hole Pins, Lifted Lead, Golden Finger Scratch/Contamination

X-Y Table & Control

Ballscrew + AC servo with motion controller	
X-Y Axis Resolution	1 µm

PCB & Conveyor System Options

	TR7710		TR7710 DL	
	12.5 µm	10 µm	12.5 µm	10 µm
Optical Resolution	12.5 µm	10 µm	12.5 µm	10 µm
Min. PCB Size	50 x 50 mm (1.97 x 1.97 in)			
Max. PCB Size				
Speed mode	400 x 400 mm (15.7 x 15.7 in)	330 x 250 mm (13.0 x 9.8 in)	n/a	n/a
Normal mode	510 x 460 mm (20.0 x 18.1 in)	510 x 460 mm (20.0 x 18.1 in)	510 x 310 mm x 2 lanes (20.1 x 12.2 in) 510 x 590 mm x 1 lane (20.1 x 23.2 in)	510 x 310 mm x 2 lanes (20.1 x 12.2 in) 510 x 590 mm x 1 lane (20.1 x 23.2 in)
PCB Thickness	0.6 - 5 mm			
PCB Transport Height	880 - 920 mm (34.6 - 36.2 in)			
Max. PCB Weight	3 kg (6.61 lbs)			
PCB Carrier/Fixing	Step motor driven & pneumatic clamping			
Clearance				
Top	25 mm (0.98 in) [48 mm optional]			
Bottom	40 mm (1.58 in) [100 mm optional]			
Edge	3 mm (0.12 in) [5 mm optional]			

Dimensions

Dimensions (W) x (D) x (H)	1000 x 1400 x 1647 mm (39.3 x 55.1 x 64.8 in) (not including signal tower, sieight: 520 mm)	1000 x 1500 x 1647 mm (39.3 x 59.1 x 64.8 in) (not including signal tower, sieight: 520 mm)
Weight	600 kg (1323 lbs)	650 kg (1433 lbs)
Power Requirement	200 - 240 V, 15 A, single phase, 50/60 Hz 3 kVA	
Air Requirement	0.6 MPa (87 psi)	

Options

Barcode Scanner, Repair Station, Offline Editor, OCR, Yield Management System 4.0 (YMS 4.0), YMS Lite, Support Pin, Dual Lane

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TRI
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TRONIK



AUTOMATED
OPTICAL INSPECTION

TR7710 FEATURES

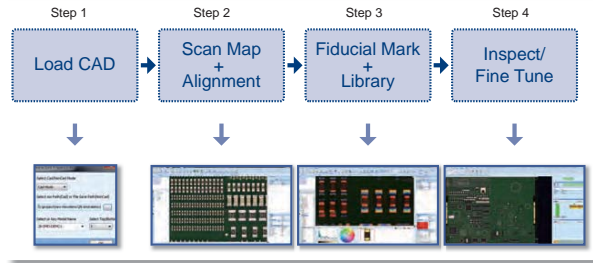
Economical Customizable AOI Solution

TR7710 combines a precise high resolution camera system and TRI's exclusive multi-phase lighting to capture detailed PCB panel images. New optical solution offers increased DOF range for tall components with optimal high clearance. TRI Series III AOI-compatible inspection software combines excellent defect detection and easy automated CAD-based programming into a cost effective, customizable AOI solution designed to fit any budget.

Intelligent Easy Programming Interface

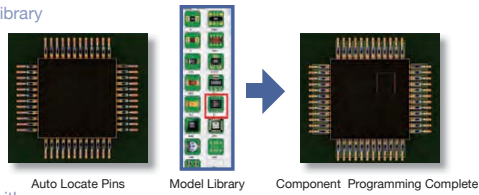
New intelligent programming process significantly reduces programming time using automated component library and integrated board warp compensation.

Programming Flowchart



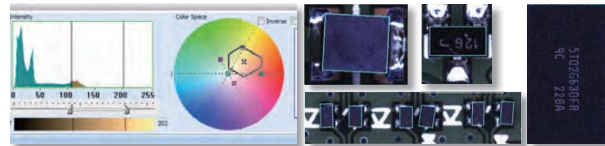
Auto Library + Model Library

Auto Library speeds up programming by automatically allocating inspection windows for IC leads.



New Color Space Algorithms

TRI's new adaptive algorithms use color space processing to increase inspection accuracy, reduce false calls and improve inspection results while reducing time necessary for inspection fine tuning and the number of alternative images required.



Color Differentiation Analysis for Black Resin Parts

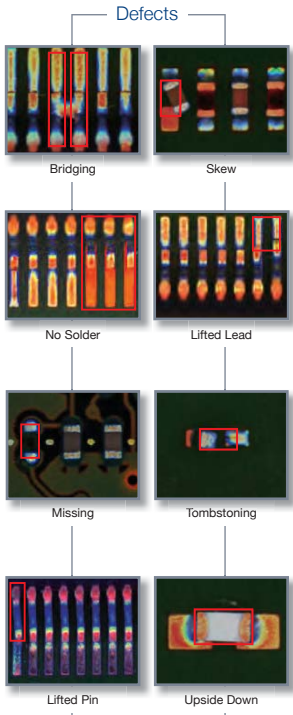
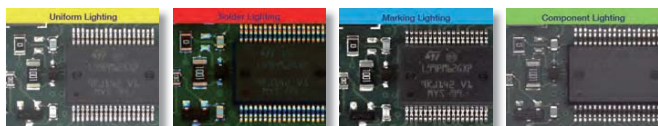
Accurate Inspection with Multi-phase Lighting

Inspection Speed

- 12.5 μm : 51.2 cm^2/sec (7.9 in^2/sec)
- 10 μm : 32.8 cm^2/sec (5.1 in^2/sec)

Multi-phase Lighting

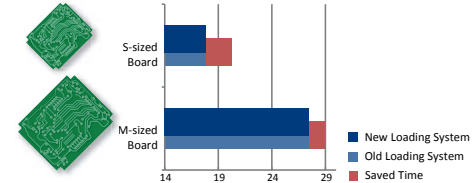
Four individual lighting phases improve inspection of individual defect types using specialized lighting conditions. High speed camera allows inspection at constant speed even with multiple lighting phases.



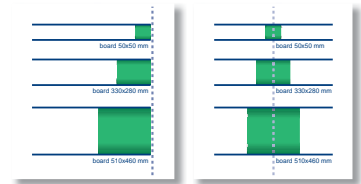
Intelligent Auto Conveyor System (IACS)

IACS automatically optimizes board stopping position in the conveyor, reducing load and unload time by up to 2.5 seconds, depending on board size.

- Reduced load & unload time (saves 0.5-2.5 sec. per board.)



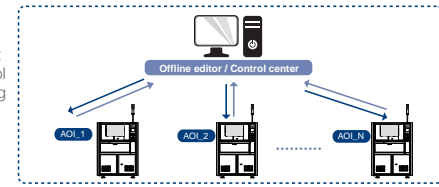
- Automatic adjustment of conveyor speed based on board size & weight saves time for manual adjustment and training.
- Automatic conveyor width adjustment (Optical direct adjustment system without returning to default position).



SMT Line Integration

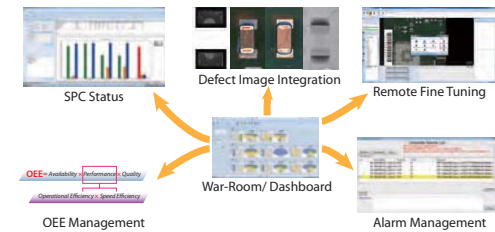
Centralized production line management increases operator productivity and response time. TRI's integrated solution includes the following four components.

- Offline Editor: This application allows for centralized independent adjustment and fine tuning of inspection algorithms on previously scanned images while providing immediate feedback. The completed program can then be uploaded to the in-line inspection machines to improve inspection stability and accuracy.
- Control Center: The core component at the heart of a production facility, the control center allows real-time monitoring and operation of multiple inspection machines across production lines.



- Yield Management System 4.0

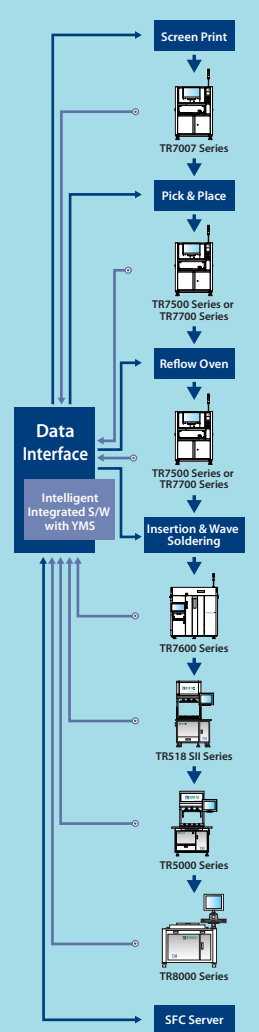
YMS 4.0 provides real-time inspection status across SPI, AOI and AXI systems and monitors SPC and Alarm status, and supports remote fine-tune throughout the SMT line. The centralized inspection management provides top 5 to 10 defects and defective images, OEE review and management, issues and root causes drill down line by line, by station and by process, which improves quality and productivity analysis. YMS 4.0 supports Industry 4.0 initiative.



- Quality Validation

Fully automated collection of good/failed images from a complete production run allows testing, tuning and verification of adjusted program parameters without reloading tested boards. This allows engineers to save inspection time when fine tuning and significantly speeds up New Product Introduction (NPI).

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
- * Optional