

TRONIK®

TRI  
innovation

# TR7710 SERIES



AUTOMATED  
OPTICAL INSPECTION

# TR7710 FEATURES

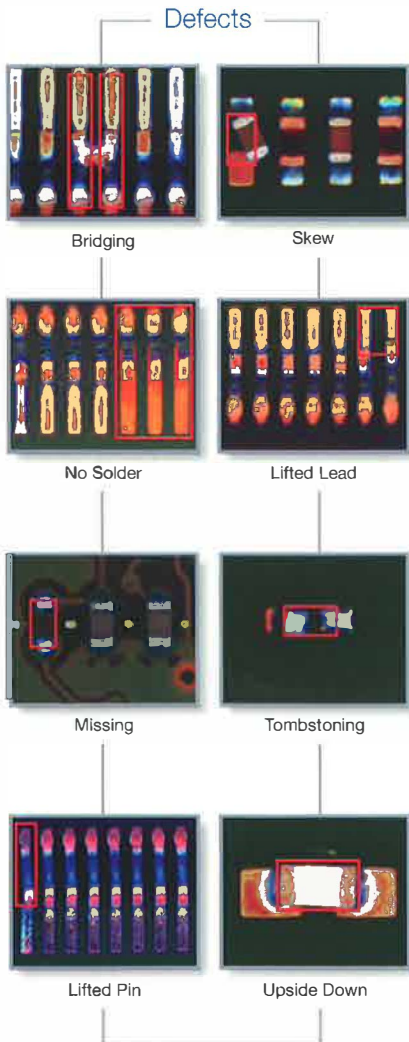
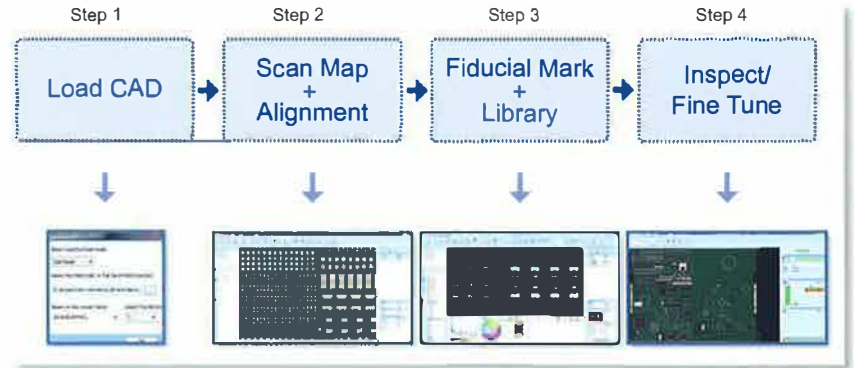
## Economical Customizable AOI Solution

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 optional 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

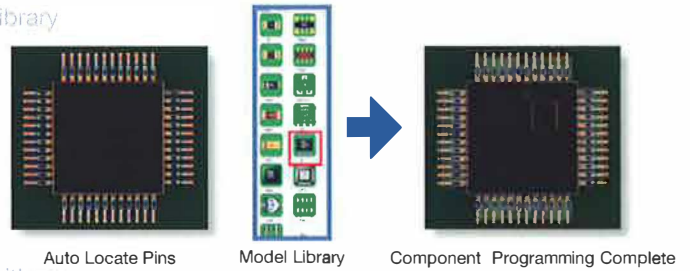
New intelligent programming process significantly reduces programming time using automated component library and integrated board warp compensation.

### Programming Flowchart



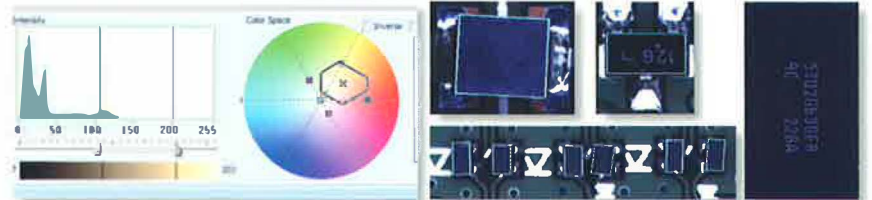
### Auto Library + Model Library

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.



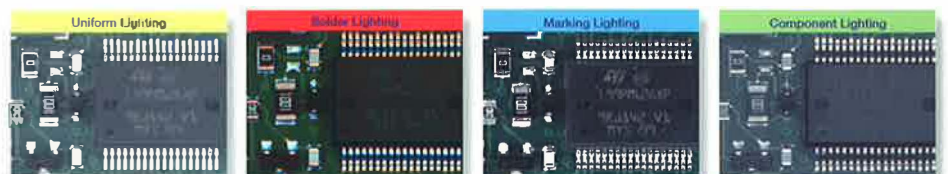
## Accurate Inspection with Multi-phase Lighting

### Inspection Speed

- 12.5  $\mu\text{m}$ : 51.2  $\text{cm}^2/\text{sec}$  (7.9  $\text{in}^2/\text{sec}$ )
- 10  $\mu\text{m}$ : 32.8  $\text{cm}^2/\text{sec}$  (5.1  $\text{in}^2/\text{sec}$ )

### Multi-phase Lighting

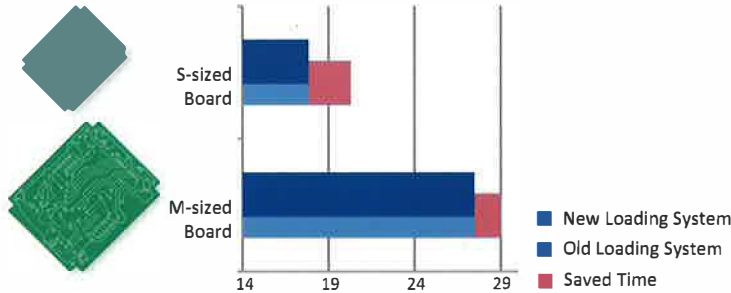
Four individual lighting phases improve inspection of individual defect types using specialized lighting conditions. High speed camera allows inspection at constant speed even with multiple lighting phases.



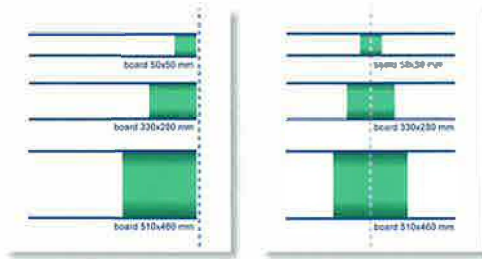
## Intelligent Auto Conveyor System (IACS)

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.

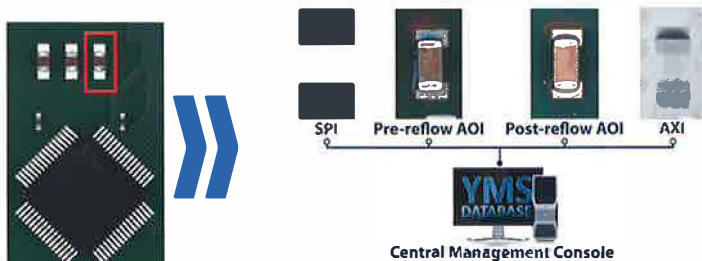
- Control Center

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.



- YMS Lite

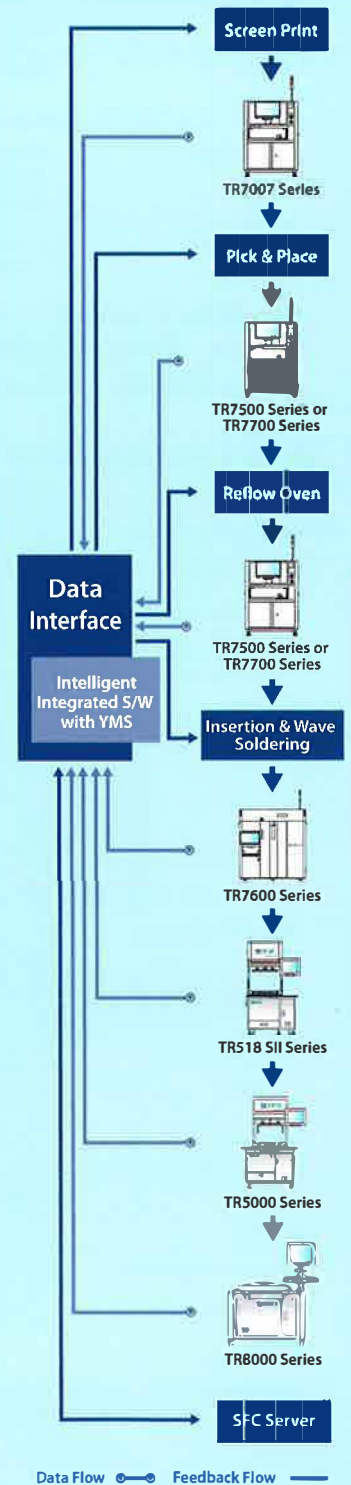
TRI's Yield Management System links inspection data from SPI, AOI and AXI systems to trace defect roots throughout the PCB assembly line. Modular architecture provides centralized inspection management, real time defect monitoring with analysis and defect knowledge management necessary to identify problems and implement solutions to maximize production yields.



- 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



# SPECIFICATIONS

Test Research, Inc.

## 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 $\mu$ m
Imaging Method	Stop and Go

## Imaging/Inspection Speed

12.5 $\mu$ m	51.2 cm <sup>2</sup> /sec (7.9 in <sup>2</sup> /sec)
10 $\mu$ m	32.8 cm <sup>2</sup> /sec (5.1 in <sup>2</sup> /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 $\mu$ m

## PCB & Conveyor System Options

	TR7710		TR7710 DL	
Optical Resolution	12.5 $\mu$ m	12.5 $\mu$ m	10 $\mu$ m	10 $\mu$ m
Built-in RAM	32 GB			
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)	-	-
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 x 2 lanes) 510 x 590 mm x 1 lane (20.1 x 23.2 in x 1 lane)	510 x 310 mm x 2 lanes (20.1 x 12.2 in x 2 lanes) 510 x 590 mm x 1 lane (20.1 x 23.2 in x 1 lane)
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)			
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, signal tower height: 520 mm)		1000 x 1500 x 1647 mm (39.3 x 59.1 x 64.8 in) (not including signal tower, signal tower height: 520 mm)	
Weight	600 kg (1322 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, TRI's Yield Management System (YMS), YMS Lite, Support Pin, Dual Lane

## Headquarters

7F., No.45, Dexing West Rd.,  
Shilin Dist., Taipei City  
11158, Taiwan  
TEL: +886-2-2832-8918  
FAX: +886-2-2831-0567  
E-Mail: sales@tri.com.tw  
http://www.tri.com.tw

## Linkou, Taiwan

No.256, Huaya 2nd Rd.,  
Guishan Shiang, Taoyuan  
County 33383, Taiwan  
TEL: +886-2-2832-8918  
FAX: +886-3-328-6579

## Hsinchu, Taiwan

7F., No.47, Guangming 6th  
Rd., Zhubei City, Hsinchu  
County 30268, Taiwan  
TEL: +886-2-2832-8918  
FAX: +886-3-553-9786

## Shenzhen, China

5F.3, Guangxia Rd., Shang-mei-lin  
Area, Fu-Tian District, Shenzhen,  
Guangdong, 518049, China  
TEL: +86-755-83112668  
FAX: +86-755-83108177  
E-mail: shenzhen@cn.tri.com.tw

## Suzhou, China

B Unit, Building 4, 78 Xinglin  
St., Suzhou Industrial Park,  
215123, China  
TEL: +86-512-68250001  
FAX: +86-512-68096639  
E-mail: suzhou@cn.tri.com.tw

## Shanghai, China

Room 6C, Building 14, Aly. 470,  
Guiping Rd., Xuhui Dist.,  
Shanghai, 200233, China  
TEL: +86-21-54270101  
FAX: +86-21-64957923  
E-mail: shanghai@cn.tri.com.tw

## USA

1923 Hartog Drive  
San Jose, CA 95131 U.S.A  
TEL: +1-408-567-9898  
FAX: +1-408-567-9288  
E-mail: triusa@tri.com.tw

## Europe

O'Brien Strasse 14  
91126 Schwabach  
Germany  
TEL: +49-9122-631-2127  
FAX: +49-9122-631-2147  
E-mail: trieurope@tri.com.tw

## Japan

2-9-9 Midori, Sumida-ku,  
Tokyo, 130-0021 Japan  
TEL: +81-3-6273-0518  
FAX: +81-3-6273-0519  
E-mail: trijp@tri.com.tw

## Korea

No.207 Daewoo-Technopia, 768-  
1 Wonsi-Dong, Danwon-Gu,  
Ansan City, Gyeonggi-Do, Korea  
TEL: +82-31-470-8858  
FAX: +82-31-470-8859  
E-mail: trik@tri.com.tw

## Malaysia

C11-1, Ground Floor, Lorong  
Bayan Indah 3 Bay Avenue,  
11900 Bayan Lepas Penang,  
Malaysia  
TEL: +604-6461171  
E-mail: trimy@tri.com.tw

Specifications are subject to change without notice. Content may not be used as acceptance criteria. All trademarks are the property of their owners.

**TRI** 德律 TRI INNOVATION®

The absence of a product or service name or logo from this list does not constitute a waiver of TRI's trademark or other intellectual property rights concerning that name or logo. All other trademarks and trade names are the property of their owners.

