TRI innovation

I-TRONIK

TR7007DI
S E R I E S

- Shadow-free Dual Digital Fringe projectors
- Accurate Stop-and-Go Design
- SmartWarp Local PCB Compensation
- 100% Solder Paste Defect Coverage
- Low Bridge Defect Detection

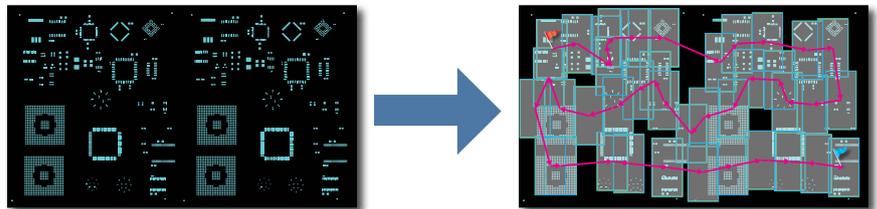3D SOLDER
PASTE INSPECTION

TR7007DI

Highly Accurate stop-and-go 3D SPI solution with latest TRI dual digital projector shadow-free technology and inspection route optimization for enhanced inspection performance. Easy programming with innovative software bring maximum value to your production line.

Perfect Accuracy with Optimized Performance

TR7007DI employs TRI's latest 3D projector technology combined with advanced scanning path optimization to achieve best available inspection accuracy while maintaining competitive inspection speed. Choose optional CoaXPress upgrade for highest performance.
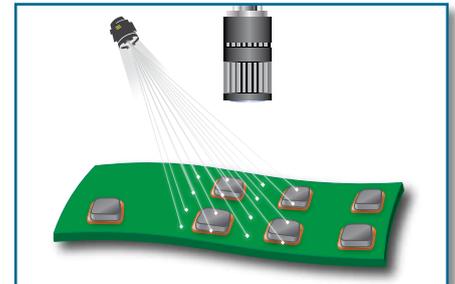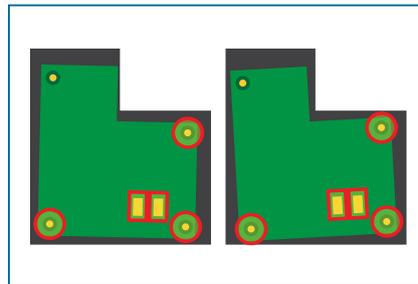
Achieve maximum performance with optional CoaXPress upgrade.

SPC

Statistical Report

Multi-panel Histogram

Solder Height Distribution

3D Color Image

SPC 2D Real Image Query

TRI's intelligent route optimization reduces the number of FOVs necessary to inspect every board, saving inspection cycle time.

Stable and Reliable Performance

Fully optimized for maximum stability, the TR7007DI delivers reliable inspection results 24 hours a day. Innovative SmartWarp technology automatically compensates for local board warpage and local fiducial marks help eliminate any impact of manufacturing tolerances.
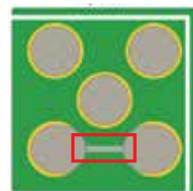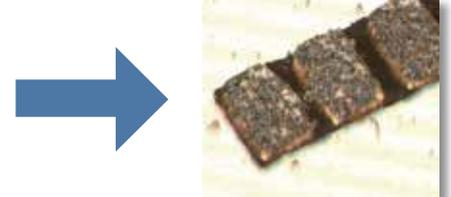
Unique Low Bridge Inspection

World's first inspection of low solder paste bridges under 30 μm ensures no printing defects are missed, and guarantees accurate results under any conditions.
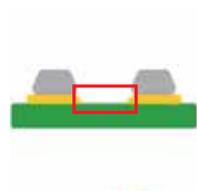
3D Height Profile cannot reveal low bridges
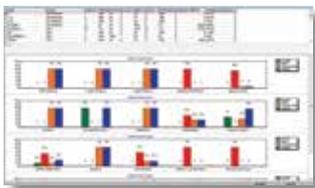
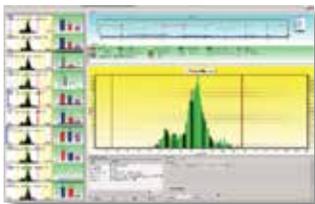Top Color View

2D+3D Image with clear low bridge defect

Intuitive SPC Display

Full panel maps and real color images allow engineers to quickly monitor and diagnose problematic areas on the stencil, saving management time and reducing rework costs.
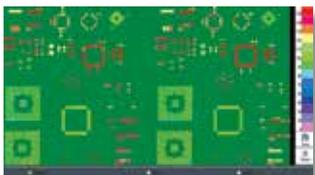
Intelligent Easy Programming Interface

Rapid intelligent 5-step programming interface ensures fast changeovers, minimal idle time and helps reduce operator work load.


Shadow Free Inspection Technology

Quad/Dual digital projector design and intelligent software ensure the TR7007DI delivers completely shadow-free inspection results and eliminates image noise issues.
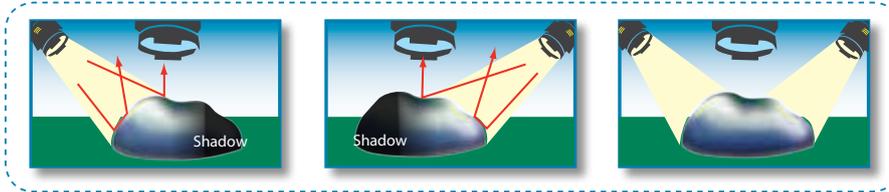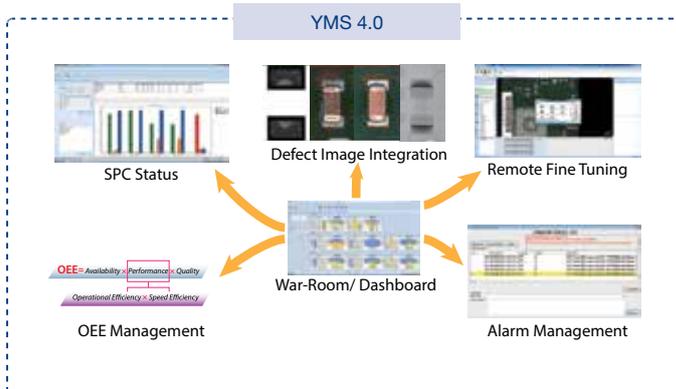

Multi-Color Vision for any PCB

Multi-phase color lighting guarantees accurate inspection results on any PCB color and finish combination at high inspection speed.

R Phase   G Phase   B Phase   Color
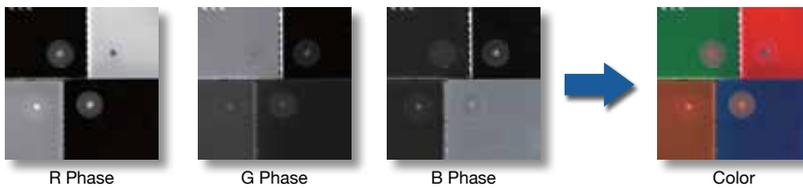
Industry 4.0 Production Line Integration

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.

YMS 4.0

SPC Status

Defect Image Integration

Remote Fine Tuning

$OEE = Availability \times Performance \times Quality$

$Operational\ Efficiency \times Speed\ Efficiency$

OEE Management
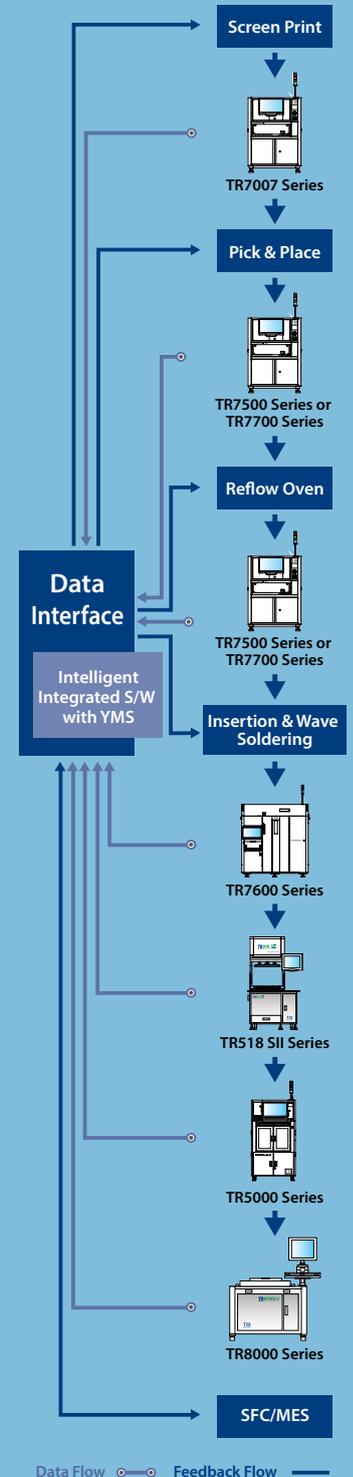
War-Room/ Dashboard

Alarm Management

Closed Loop Function

TRI SPI systems share inspection results with connected SMT line equipment to help improve production yields and stabilize production quality while minimizing line stops and reducing production costs.

High Production Value = Maximum Cost Savings

- Industry Leading Inspection Speed
- Early Defect Detection
- 98% Rework Cost Reduction
- Stable and Reliable Results
- Enhanced 100% Defect Coverage

Yield Management System

Screen Print

TR7007 Series

Pick & Place

TR7500 Series or TR7700 Series

Reflow Oven

TR7500 Series or TR7700 Series

Insertion & Wave Soldering

TR7600 Series

TR518 SII Series

TR5000 Series

TR8000 Series

SFC/MES

Data Interface

Intelligent Integrated S/W with YMS

Data Flow ○—○   Feedback Flow ——

- 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

SPECIFICATIONS

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Optical & Imaging System

Camera Type	4 or 12 Mpix camera (factory setting)	
Optical Resolution	6 µm or 10 µm or 15 µm (factory setting)	
3D Projection	Dual Digital Fringe Projectors	

Field of View	4 Mpix	12 Mpix
6 µm*	n/a	24.4 x 18.4mm (0.96 x 0.72 in.)
10 µm	20.3 x 20.3mm (0.80 x 0.80 in.)	40.8 x 30.7mm (1.61 x 1.21 in.)
15 µm	30.5 x 30.5mm (1.20 x 1.20 in.)	61.2 x 46.1mm (2.41 x 1.81 in.)

* 6 µm is not available for TR7007DI DL

Inspection Functions

Defects Detected	Insufficient Paste, Excessive Paste, Shape Deformity, Missing Paste & Bridging
Measurement	Height, area, volume and offset

Inspection Speed

Camera Resolution	4 Mpix	12 Mpix Camera Link	12 Mpix CoaXPress**
Imaging Speed FOV/sec*	3	2	3

* Inspection speed depends on PCB and inspection conditions
** With optional CoaXPress upgrade

Inspection Performance

Volume Repeatability	Calibration Target (at 3 σ)	<1% on TRI calibration target
Height Repeatability	Calibration Target (at 3 σ)	<1% on TRI calibration target
	Solder GR&R ($\pm$ 50% Tolerance)	<<10% at 6 σ
Height Accuracy	1.5 µm on calibration target	

Optical Resolution	6 µm	10 µm/15 µm
Height Resolution	0.22 µm	0.4 µm
Max. Solder Height	210 µm/420 µm	420 µm/840 µm

Mechanical Stage

XY-axis ball screw with DSP-based motion controller

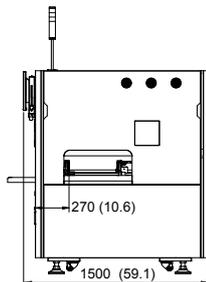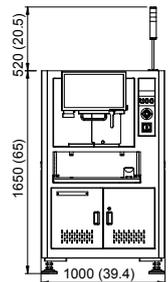|	
XY Resolution	1 µm (up to 0.5 µm with optional linear encoder)
Z Resolution	1 µm (up to 0.5 µm with optional linear encoder)

PCB and Conveyor System

	TR7007DI	TR7007DI DL
Min. PCB Size	50 x 50 mm (1.97 x 1.97 in.)	
Max. PCB SIze	510 x 460 mm* (20.1 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)
PCB Thickness	0.6 - 5 mm (0.02 - 0.20 in.)	
PCB Transport Height	880 - 920 mm (34.6 - 36.2 in.)	
Max. PCB Weight	3 kg (6.61 lbs)	
PCB Carrier/Fixing	Belt/Pneumatic	
Clearance		
Top	25 mm	
Bottom	40 mm	
Edge	3 mm	

** 6 µm is only available for TR7007DI, the Max. PCB size is 330 x 310 mm

Dimensions

TR7007DI

520 (20.5)
1650 (65)
1000 (39.4)
1500 (59.1)
270 (10.6)

TR7007DI DL

520 (20.5)
1650 (65)
1000 (39.4)
1700 (66.9)
270 (10.6)
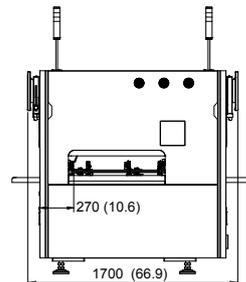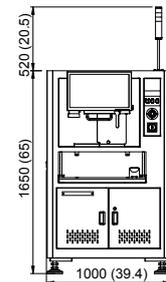
Unit: mm (in.)

	TR7007DI	TR7007DI DL
Weight	675 kg (1489 lbs)	685 kg (1511 lbs)
Power Requirement	200 - 240 VAC, single phase, 50/60 Hz, 3 kVA	
Air Requirement	72 psi – 87 psi (5 – 6 bar)	

Optional

SPC, Offline Editor, Gerber Tool, Barcode Scanner (linear & 2D) and Support Pins, Closed Loop Function, Yield Management System (YMS 4.0), YMS Lite, Linear Encoder, CoaXPress Module Upgrade

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