

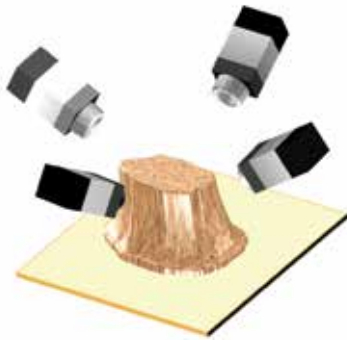
# TR7007QI SERIES



- Shadow Free 3D Quad Fringe Projection
- Accurate Optimized Stop-and-Go Design
- Automated SmartWarp Compensation
- 100% Solder Paste Defect Coverage

**3D SOLDER  
PASTE INSPECTION**

# TR7007QI FEATURES



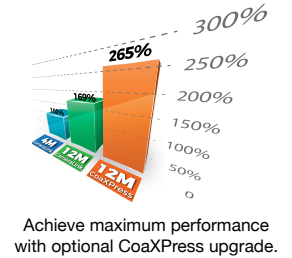
Quad Digital Projectors Ensure Shadow-free Inspection

## TR7007QI

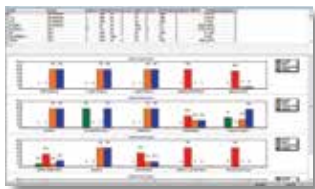
Highly Accurate stop-and-go 3D SPI solution with latest TRI quad/dual digital projector shadow-free technology and inspection route optimization for enhanced inspection performance. Easy programming with innovative software bring maximum value to your production line.

### Perfect Accuracy with Optimized Performance

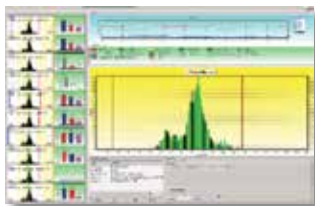
TR7007QI employs TRI's latest 3D projector technology combined with advanced scanning path optimization to achieve best available inspection accuracy while maintaining competitive inspection speed. Choose optional CoaXPRESS upgrade for highest performance.



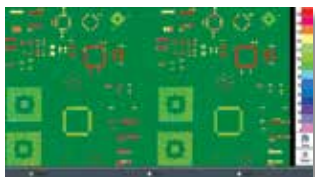
## SPC



Statistical Report



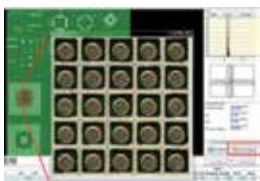
Multi-panel Histogram



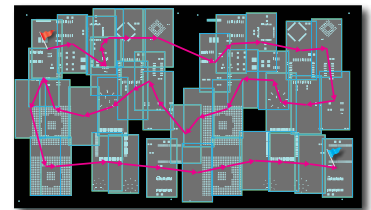
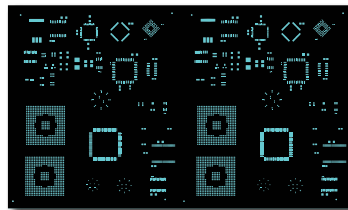
Solder Height Distribution



3D Color Image



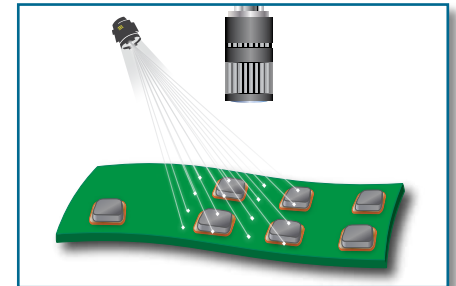
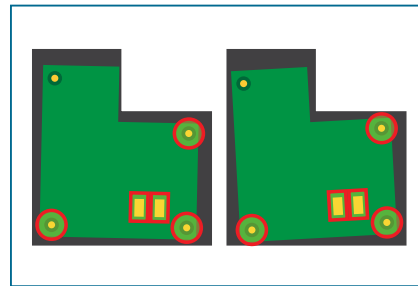
SPC 2D Real Image Query



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

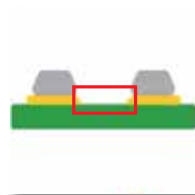
### Stable and Reliable Performance

Fully optimized for maximum stability, the TR7007QI 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.

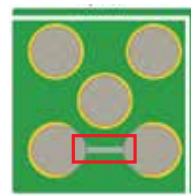


### Unique Low Bridge Inspection

World's first inspection of low solder paste bridges under 30  $\mu\text{m}$  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.

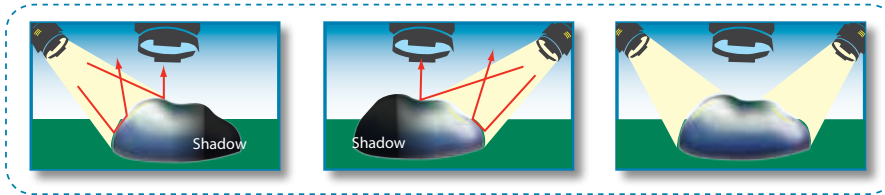
## Intelligent Easy Programming Interface

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



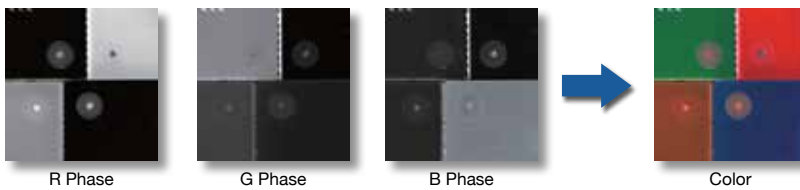
## Shadow Free Inspection Technology

Quad/Dual digital projector design and intelligent software ensure the TR7007QI delivers completely shadow-free inspection results and eliminates image noise issues.



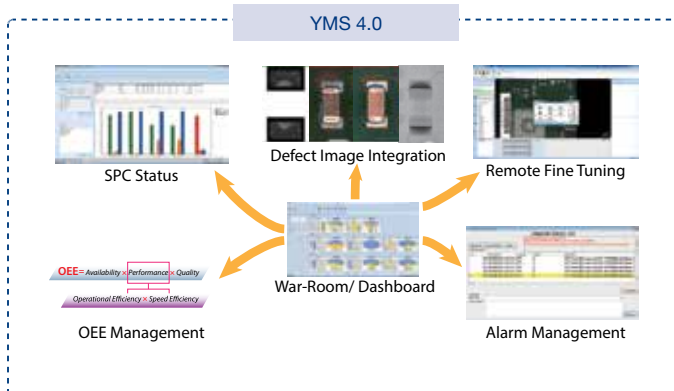
## Multi-Color Vision for any PCB

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



## 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.



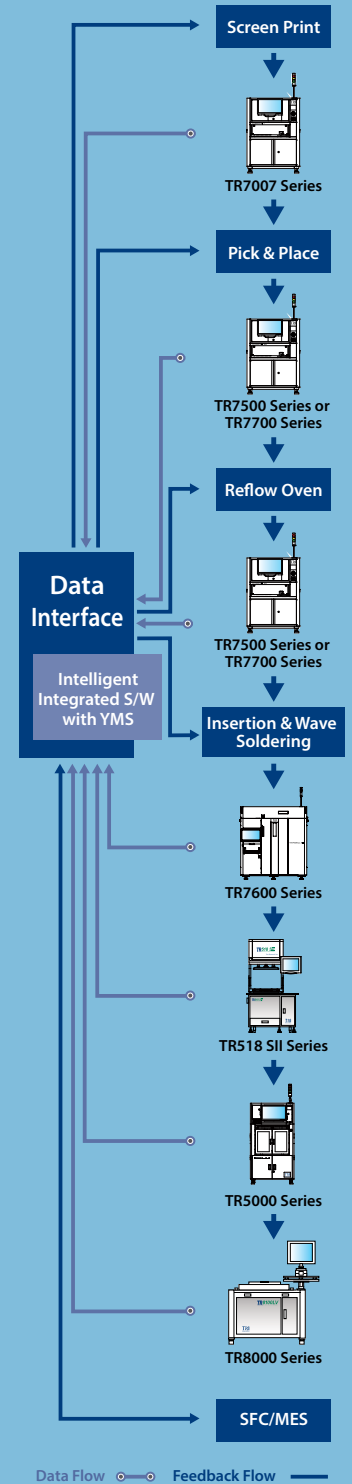
## Closed Loop Function

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

## 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

## 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	Quad/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 TR7007QI 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 3σ)	<1% on TRI calibration target
Height Repeatability	Calibration Target (at 3σ) Solder GR&R (± 50% Tolerance)	<1% on TRI calibration target <<10% at 6σ
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

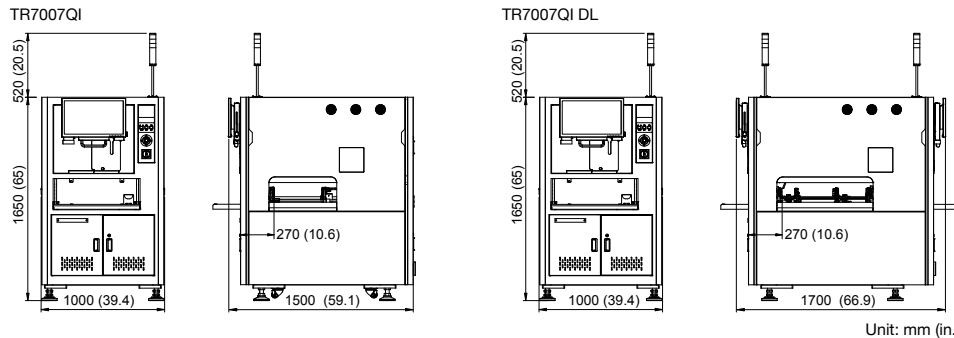
XY-axis ball screw with DSP-based motion controller	
XY Resolution	0.5 μm with linear encoder
Z Resolution	0.5 μm with linear encoder

## PCB and Conveyor System

	TR7007QI	TR7007QI 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 TR7007QI, the Max. PCB size is 330 x 310 mm

## Dimensions



	TR7007QI	TR7007QI 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, CoaXPress Module Upgrade

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