

High Performance
Model

3D SPI

AUTOMATED OPTICAL INSPECTION

TR7007D Plus SERIES



High Precision Platform for
Reliable Gauge R&R



Enhanced 2D Light for
Improved Imaging



Smart Programming:
Algorithm based Inspection



EtherCAT – Faster
Communication



Smart Board
Warpage
Control



Real Time SPC
Trends



TRI
innovation

TR7007D Plus SPI



High Performance 3D SPI Solution

The TR7007D Plus 3D SPI platform is equipped with an improved motion controller (EtherCat) and an enhanced 2D lighting module. The TR7007D Plus can accurately inspect low solder bridges and compensate board warpage for eliminating local PCB deformation.

Inspection for

- **Solder Paste**
- **Bumps**
- **Flux**
- **Bare Board**

New Lighting Module

The TR7007D Plus platform has an enhanced 2D Lighting module for improved imaging. The captured inspection images have higher contrast and higher uniformity.

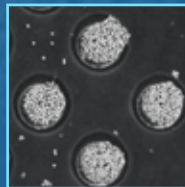


TR7007D



TR7007D Plus

Precise 3D Technology



Shadow-free Inspection

TRI's imaging technology provides an optimized 3D Shadow Free Fringe Pattern Technology with up to Dual Imaging Projectors. Total Solder Paste Defect coverage including low solder bridges inspection.

Smart Programming

Ready to Inspect in 5 Steps, quickly setup high-mix or low volume applications. TRI's SPI Software has preloaded Smart Inspection Libraries to ensure fast changeovers, minimal idle time and the reduction of operator's work load.



Load SPI File



Set Board Size



Set Board Offset



Set Fiducial Marks



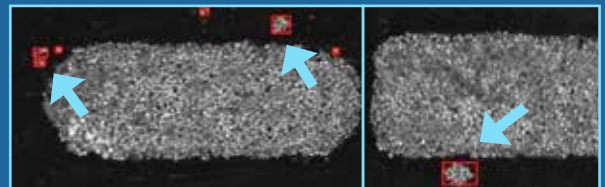
Set Thresholds

High Resolution Inspection

The 3D SPI can detect minute solder defects such as low solder paste bridges under $45\text{ }\mu\text{m}$ and detecting the presence of foreign objects.



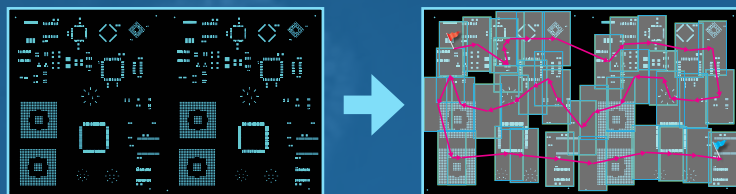
Low Solder Bridge Inspection



Foreign Object Inspection

Optimized Performance

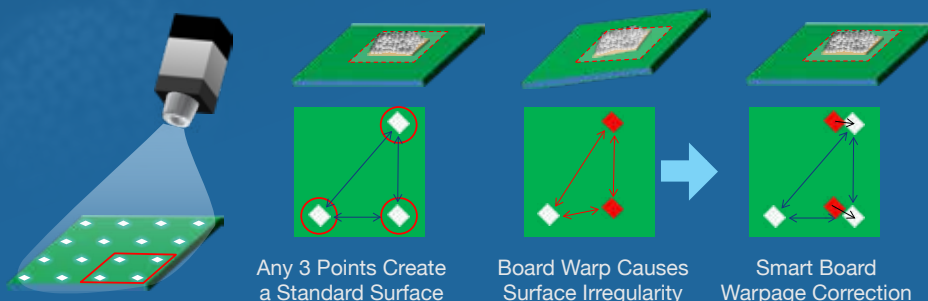
Accurately inspect your PCBs with Dynamic Imaging, TRI's Optimal Scanning Path, to achieve the best available inspection while maintaining competitive imaging speed. The smart route optimization reduces the number of FOVs necessary to inspect every board, saving inspection cycle time.



Smart Route Optimization

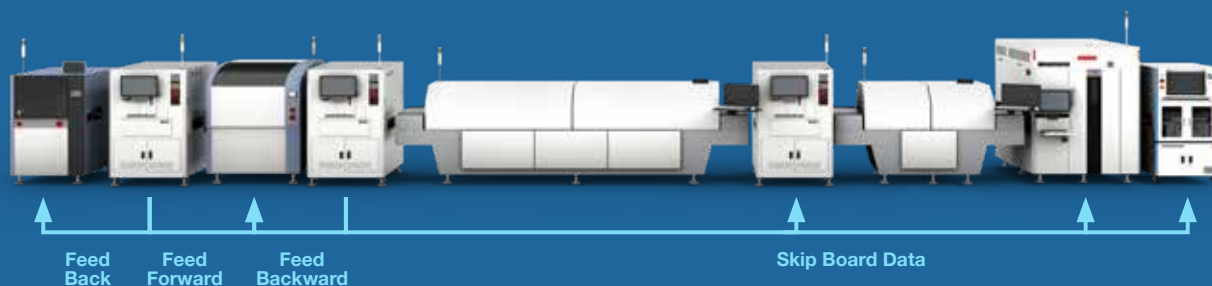
Smart Warpage Technology

Inspect with maximum stability with TRI's Smart Board Warpage compensation technology. TRI's Smart Warpage locates fiducial marks and compensates local board warpage.



Closed Loop Ready

TRI SPI systems share inspection results with connected MES and SMT line equipment to help improve production yields and stabilize production quality while minimizing line stops and reducing production costs. TRI systems offer data feeds to a feedback and a feed-forward loop.



YMS 4.0

Yield Management System 4.0 (YMS 4.0) is TRI's Smart Central Monitoring Solution that interconnects test and inspection solutions from SPI, AOI, and AXI to ICT. YMS 4.0 promotes continuous improvement of the production line's yield rate by offering statistical analysis of production line defect rates, reviewing and fine-tuning inspection results, and identifying component defect trends and emerging production issues.

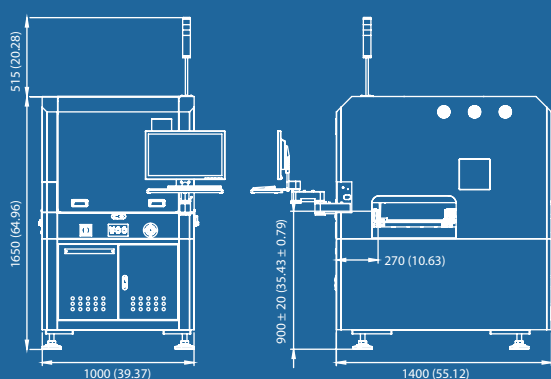


Specifications

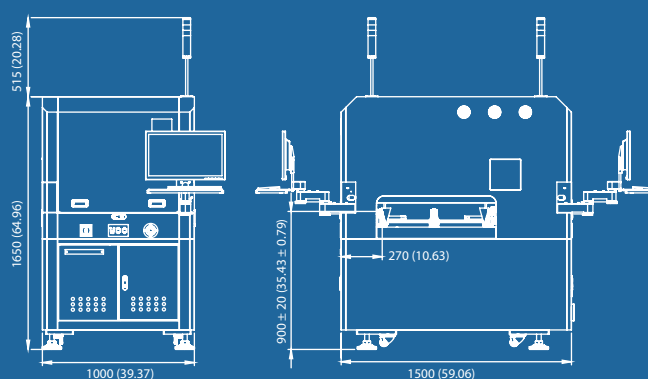
TR7007D Plus SERIES

Model		TR7007D Plus		TR7007D Plus DL			
Imaging System	Camera	4 MP		12 MP Camera Link		12 MP CoaXPress	
	Optical Resolution	10 μ m	15 μ m	5.5 μ m	10 μ m	15 μ m	6 μ m
	3D Technology	Dual Digital Fringe Pattern Projector					
	Lighting	Enhanced 2D Lights (RGB+W)					
	Field of View	20.3x20.3 mm (0.8 x 0.8 in.)	30.5x30.5 mm (1.2 x 1.2 in.)	22.5x16.5 mm (0.89x0.65 in.)	40.8x30.7 mm (1.61x1.21 in.)	61.2x46.1 mm (2.41x1.81 in.)	24.4x18.4 mm (0.96x0.72 in.)
Inspection Functions	Inspection Speed	Up to 3 FOV/sec					
	Defects Detected	Insufficient Paste, Excessive Paste, Shape Deformity, Missing Paste & Bridging					
	Measurement	Height, Area, Volume and Offset					
Mechanical Stage	Stage Type	XYZ-Axis Ball Screw					
	Motion Control	EtherCAT					
	XY Resolution	0.5 μ m					
	Z Resolution	1 μ m					
Inspect Performance	Volume Repeatability	Calibration Target (at 3 σ) <1%					
	Height Repeatability	Calibration Target (at 3 σ) <1%					
	Height Accuracy	Solder GR&R ($\pm$ 50% Tolerance) <<10% at 6 σ					
	Max. Solder Height	1.5 μ m on Calibration Target					
	Height Resolution	420 μ m/840 μ m					
PCB and Conveyor System	Min PCB Size	0.45 μ m					
	Max PCB Size	50 x 50 mm (1.97 x 1.97 in.)					
	PCB Thickness	5.5, 6 μ m: 400 x 330 mm (15.75 x 12.99 in.)					
	PCB Transport Height	10, 15 μ m: 510 x 460 mm (20.08 x 18.11 in.)					
	Max PCB Weight	10, 15 μ m: 510 x 460 mm (20.08 x 18.11 in.)					
Clearance	PCB Carrier / Fixing	510 x 590 mm (20.08 x 23.23 in.) x 1 Lane					
	Top	0.6 - 5 mm (0.02 - 0.20 in.)					
	Bottom	880 - 920 mm (34.65 - 36.22 in.)					
	Edge	3kg (6.61 lbs. Optional: 5 kg (11.02 lb))					
		Belt/Pneumatic					
Weight		50 mm (1.97 in.)	25 mm (0.98 in.)	50 mm (1.97 in.)	25 mm (0.98 in.)	50 mm (1.97 in.)	
Power Requirement		40 mm (1.57 in.)					
Air Requirement		3 mm (0.12 in.)					
Optional		750 kg (1653.47 lb)					
		830 kg (1829.84 lb)					
		200 - 240 VAC, Single Phase, 50 / 60 Hz, 3 kVA					
		72 psi - 87 psi (5 - 6 bar)					
		SPC, Offline Editor, Gerber Tool, Barcode Scanner (Linear & 2D) and Support Pins, Closed Loop Function, Yield Management System (YMS 4.0), Linear Encoder Module					

Unit: mm (in.)



TR7007D Plus



TR7007D Plus DL

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Shanghai, China
San Jose, USA
Nuremberg, Germany

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TRI 德律 TRI INNOVATION

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