

# TR7600F2D SERIES

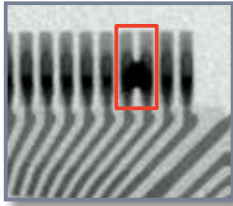


- Inline Ultra-high-resolution Inspection
- Shadow-free Block Scan imaging
- Automated Inspection for High-Mix productions

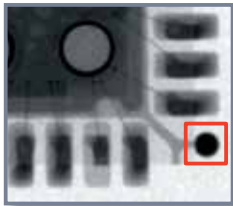
**AUTOMATED  
X-RAY INSPECTION**

# TR7600F2D FEATURES

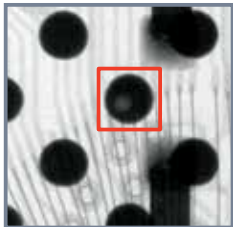
## Defect Symptom Images



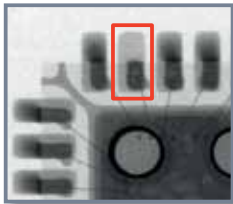
IC Lead Bridging



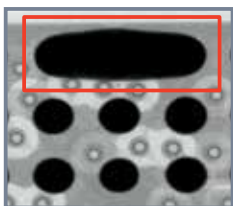
Solder Ball



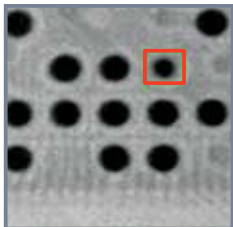
BGA Void



QFN Open



BGA Bridging



BGA Open



Solder Void

## Ultimate Image Quality AXI

Focused on delivering the best image quality at top speeds, the TR7600F2D offers a flexible, reliable AXI platform designed for single layer PCB assembly inspection. Smart programming reduces changeover time and operator workload, making the TR7600F2D an ideal solution for high mix productions.

## Special Solution for NPI productions

Featuring both automated inline inspection and standalone real-time X-ray imaging, the TR7600F2D is an ideal solution for high mix, low volume productions which require maximum flexibility and high image quality. The powerful hardware platform and flexible imaging options make sure production engineers obtain desired images in minimum time, while delivering high throughput in automated inline mode.

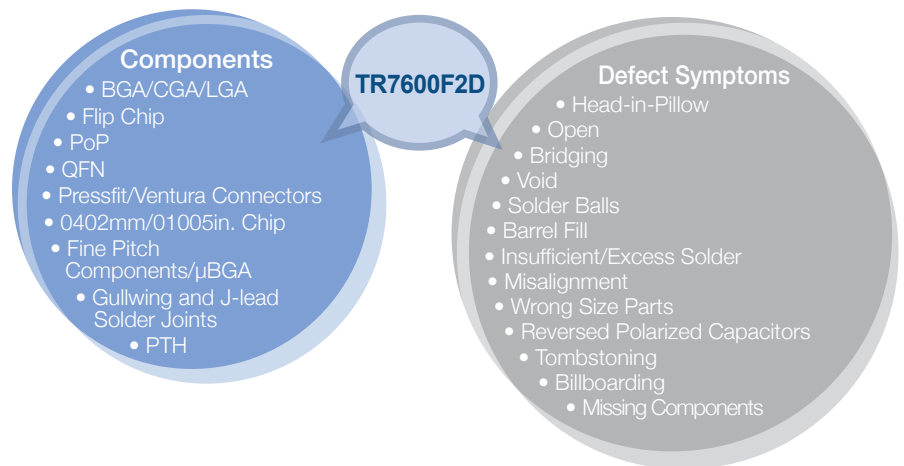
## Inline 2.5D Automated X-ray Inspection

- Fast Inline Automated Inspection for Single layer PCBAs
- Ultra-high resolution imaging for ultimate quality at high speed
- Automated Inspection and Pass/Fail Evaluation
- User selectable X-ray power up to 130 kV/300  $\mu$ A
- Patented 6-axis motion control for maximum flexibility
- Edge-to-edge board inspection up to 900 x 460 mm
- Real-time X-ray view for on-demand inspection

## Intelligent Software Solution

- Smart CAD-based or manual programming with auto tuning
- Intelligent detection of solder and assembly defects
- Automatic image quality enhancement
- Automated board warp compensation

## Defect Detection Capability

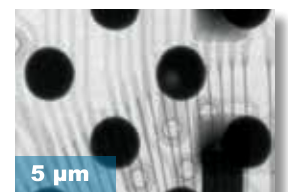
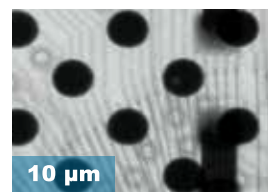
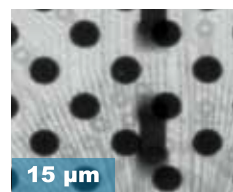


## Patented 6-axis Motion Control

TRI's unique motion control system helps provide clearest images of shielded or overlapping components, enabling reliable automated PCBA inspection and eliminating most shadowing issues.

## BlockScan Customized Imaging

BlockScan module enhances the AXI test program coverage by optimizing imaging resolution, overlapping, X-ray power and timing for each FOV. This allows operators to get the best possible image quality and reduces the possibility of false calls on  $\mu$ BGAs, QFNs, and shielded parts.



Multiple Resolutions in One Program

### Accurate Inspection Results

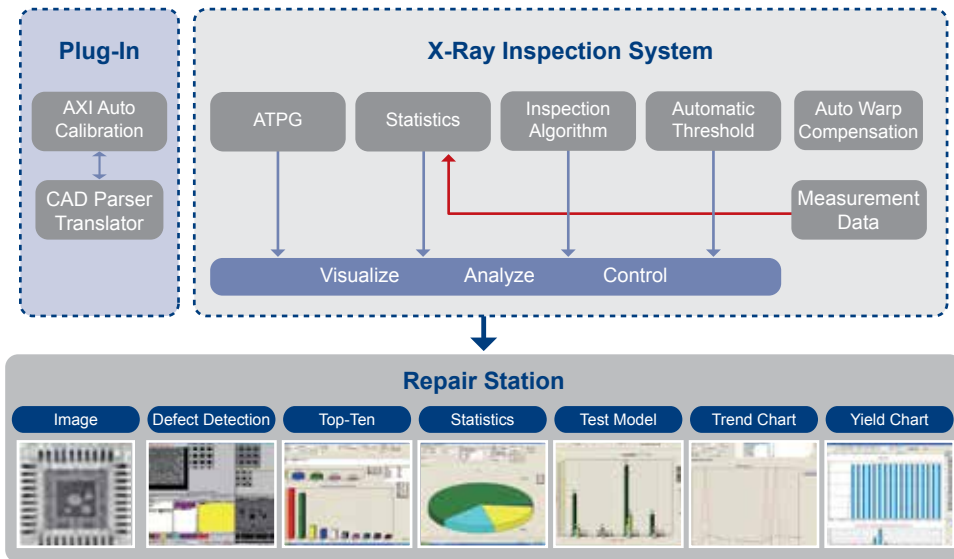
TRI's X-ray systems use intelligent analysis of X-ray data to reliably identify various solder and component defects on a range of components. By combining smart algorithms with ultra-clear imaging quality, the TR7600F2D is designed to provide the most accurate inspection results of BGAs, QFNs, IC lead solder joints and combined Flex-PCB assemblies with microphones and other atypical components.

### Radiation Safe Design

Designed with safety in mind, TRI's AXI systems have full lead shielding which prevents harmful exposure in everyday use and reduces X-ray leakage below background radiation levels of 0.5 µSv/hr. The certified safety design conforms to USFDA Code of Federal Regulations Title 21, Part 1020.40.

### Repair Station

The TR7600F2D collects a wide range of inspection data to offer instantaneous process monitoring and analysis. This integrated approach offers clear statistical feedback that improves defect management and enhances the efficiency of the inspection process.



### Yield Management System 4.0

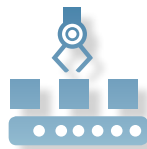
YMS 4.0 provides a M2M centralized inspection monitoring and remote access fine tuning throughout the SMT line. Built-in support for SPI, AOI, AXI and ICT systems helps track Alarms and SPC data to simplify production line quality monitoring. YMS 4.0 is TRI's Industry 4.0 closed loop software to assure your production line inspection quality and efficiency.



**INCREASE EFFICIENCY**



**REDUCE MANPOWER**

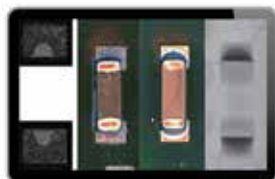


**LEANER PRODUCTION LINE**

The Yield Management System allows operators to aggregate information from individual TRI inspection systems for statistical analysis of production line defect rates, reviewing and fine-tuning inspection results, and identifying component defect trends and emerging production issues.



**PRODUCTION ANALYSIS**

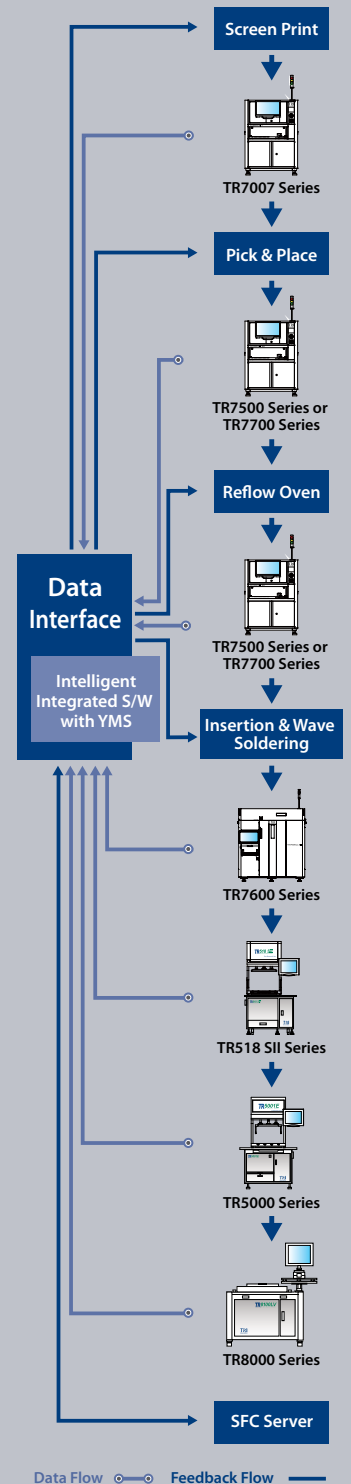


**CENTRALIZED INSPECTION CENTER**



**REAL TIME SPC TREND**

### Yield Management System



- Inspection results and data integration
- Real time SPC and production yield management
- Quality reports and close loop tracking
- Support defect component analysis and improvements
- Knowledge Management (KM)
- Productivity and Quality Management

## X-Ray & Imaging System

X-ray Source	130 kV max (user adjustable)
Image Resolutions	5 µm, 10 µm, 15 µm (factory setting)
Camera	High resolution flat panel camera

## Inspection Functions

Component Level Defects	Missing, Misalignment, Tombstoning, Billboarding, Tantalum Polarity, Rotation
Joint Level Defects	Insufficient Solder, Excess Solder, Bridging, Open, Solder Ball, Non-wetting, Void, Lifted Lead

## X-Y Table & Control

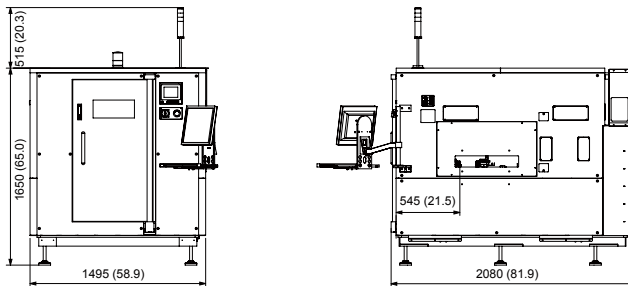
High-precision ball screw/servo motor with DSP-based motion controller

## PCB & Conveyor System

Max. PCB Size	900 x 460 mm (35.4 x 18.1 in.)
PCB Thickness	0.6 - 5 mm
PCB Transport Height	880 - 920 mm (34.6 - 36.2 in.)*
Max. PCB Weight	3 kg (7 lbs) [8 kg (18 lbs) optional]
PCB Carrier/Fixing	Motor Driven/Clamping
Clearance	
Top	15 µm      30 mm (1.18 in.) 10 µm      20 mm (0.79 in.) 5 µm        10 mm (0.39 in.)
Bottom	40 mm (1.58 in.)
Edge	3 mm (0.11 in.)

\* SMEMA Compatible

## Dimensions



Unit: mm (in.)

Weight	3250 kg (7165 lbs)
Power Requirement	200 - 240 VAC single phase, 50/60 Hz, 4 kVA
Air Requirement	72 psi - 87 psi (5 - 6 bar)

## Optional Accessories

Barcode Scanner, Repair Station, Offline Editor & Yield Management System (YMS 4.0)

TRI has a patent in System and Method for Laminography Inspection

## Headquarters

7F., No.45, Dexing West Rd.,  
Shilin Dist., Taipei City  
11158, Taiwan  
TEL: +886-2-2832-8918  
FAX: +886-2-2832-0598  
E-Mail: sales@tri.com.tw  
http://www.tri.com.tw

## Shenzhen, China

5F.3, Guangxia Rd.,  
Shang-mei-lin Area,  
Fu-Tian Dist., 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,  
470 Guiping Rd., Xuhui Dist.,  
Shanghai, 200233, China  
TEL: +86-21-54270101  
FAX: +86-21-64957923  
E-mail: shanghai@cn.tri.com.tw

## USA

832 Jury Court, Suite 4,  
San Jose, CA 95112 U.S.A  
TEL: +1-408-567-9898  
FAX: +1-408-567-9288  
E-mail: triusa@tri.com.tw

## Europe

Gugelstr. 32,  
90443 Nuremberg,  
Germany  
TEL: +49-911-9401-7827  
FAX: +49-911-9400-6181  
E-mail: trieurope@tri.com.tw

## Japan

4-26-10 Ishiwara, Sumida-ku,  
Tokyo, 130-0011 Japan  
TEL: +81-3-6273-0518  
FAX: +81-3-6273-0519  
E-mail: trijp@tri.com.tw

## Korea

Daewoo-Technopia No. 207,  
296, Sandan-Ro, Danwon-Gu,  
Ansan-Si, Gyeonggi-Do,  
Republic of 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

## Vietnam

Shop House 01, Duong Kinh  
Duong Vuong, Phuong Vu Ninh,  
Tp Bac Ninh, Tinh Bn, Vietnam  
TEL: +84-2227300003  
FAX: +84-2227300002  
E-mail: trivn@tri.com.tw

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