3D AUTOMATED OPTICAL INSPECTION

• High Accuracy Stop-and-Go 3D AOI
• 3D Height Range up to 30mm
• 0201mm Chip Inspection Ready
• Quad Digital Fringe Pattern Technology
TR7700QI - The High Performance 3D AOI Solution

The TR7700QI Automated Optical Inspection combines the latest of 2D and 3D technologies based on digital quad fringe pattern projection to revolutionize PCB assembly inspection.

Maximum Precision with 4-way Projection

TR7700QI combines a high resolution orthogonal camera and quad multi-angle digital fringe pattern projection for best inspection coverage.

- **1 High Speed Top Camera**
- **4-way Adaptive Digital Fringe Projection**
- **30 mm height inspection range**

Intuitive Inspection Results

Reviewing defects on TR7700QI is a breeze with intuitive profile visualization.

Four-Strategy Solder Inspection

TR7700QI analyzes several solder joint parameters to locate non-compliant soldering defects.

Smart Inspection Library

Ready to inspect in minutes, quickly setup your production line Inspection with TRI's preloaded Smart Inspection Library.

**Features**

- 1 High Speed Top Camera
- 4-way Adaptive Digital Fringe Projection
- 30 mm height inspection range

**Defects**

- Foreign Material
- Lifted Components
- Metal-cased Reflective Components
- Bridging
- Skew
- No Solder
- Lifter Lead
- Missing
- Tombstoning
- Bent Pin
- Upside Down

**IPC Compliance**

Solder Wetting Area + Coplanarity Check + Solder Fillet Height + Bare Copper Area

**Load CAD File** → **Scan Map + Alignment** → **Fiducial Mark and Library** → **Inspect/Fine Tune**
Reduce False Calls with Leading-edge 3D AOI Inspection

Angled 3D Laser Height Measurements for Reflective & Transparent Components. Bare silicon die inspection requires Coaxial Lighting to improve marking and body outline visibility.

Bare Silicon and Wafer Level Chip Scale Packaging (WLCSP)

Complete 3D PCB Assembly Inspection

TR7700QI ensures all visible solder joints meet IPC specifications or your chosen criteria.

Advanced SPC

TRI’s AOI software provides Real-time Monitoring and Statistical Process Control of production for Yield Improvement and quickly Reducing Rework Costs.

Smart Factory Solution

Improve the production’s print and placement performance with TRI’s Feedback and Forward Ready capabilities. Enjoy the benefits of YMS 4.0, TRI's Industry 4.0 Solution for Smart Factories. YMS 4.0 assures your Closed Loop process integration and optimization from Solder Inspection to MDA Testing.
### Optical & Imaging System
- **Top View Camera**: 4 or 12 MP camera (factory setting)
- **Lighting**: Multi-phase True Color LED
- **3D Projection**: Quad Digital Fringe Projectors
- **Optical Resolution**: 4 MP, 15 µm; 10 µm; 12 MP, 5.5 µm
- **3D Height Range**: 0 - 30 mm*; 0-30 mm*; 0-4 mm
- **Imaging Method**: Stop-and-Go
- ***Needs GPU card upgrade**

#### Imaging/Inspection Speed*

<table>
<thead>
<tr>
<th></th>
<th>4 MP</th>
<th>12 MP</th>
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<tr>
<td></td>
<td>15 µm</td>
<td>10 µm</td>
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<tr>
<td>Standard</td>
<td>21 cm²/sec</td>
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<tr>
<td>CoaXPress</td>
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*Depending on component distribution

#### Pre-/Post-Reflow Inspection Functions
- Component Missing, Tombstoning, Billboarding, Polarity, Rotation, Shift, Wrong Marking (OCV), Defective, Upside Down, Extra Component, Foreign Material, Lifted Component
- Solder Joint: Solder Fillet Height, Solder Volume %, Excess Solder, Insufficient Solder, Bridging, Through-hole Pins, Lifted Lead, Golden Finger Scratch/Contamination

#### X-Y-Z Table & Control*
- X-Y-Z Table & Control: 1 µm with linear encoder

* Z Axis is optional

### PCB & Conveyor System
- **Top View Camera**: TR7700QI, TR7700QI DL
- **Optical Resolution**: 4 MP, 10 µm, 5.5 µm; 4 MP, 15 µm
- **Min. PCB Size**: 90 x 50 mm (1.97 x 1.97 in.)
- **Max. PCB Size**: 510 x 460 mm (20.28 x 18.11 in.); 510 x 460 mm (20.28 x 18.11 in.); 330 x 330 mm* (12.99 x 12.99 in.); 510 x 310 mm x 2 lanes (20.28 x 12.20 in. x 2 lanes); 510 x 590 mm x 1 lane (20.28 x 23.23 in. x 1 lane)
- **PCB Thickness**: 0.6 - 5 mm
- **PCB Transport Height**: 880 - 920 mm (34.65 - 36.22 in.)
- **Max. PCB Weight**: 3 kg (6.61 lbs)
- **PCB Carrier/Fixing**: Step motor driven
- **Clearance**:
  - **Top**: 40 mm (1.57 in.); 50 mm (1.97 in.); 25 mm (0.98 in.); 40 mm (1.57 in.); 50 mm (1.97 in.)
  - **Bottom**: 40 mm (1.57 in.); Optional: 100 mm (3.94 in.)
  - **Edge**: 3 mm (0.12 in.); Optional: 50 mm (2.00 in.)

*Depending on component distribution, the available PCB size could be different

### Dimensions
- **TR7700QI**
  - **Weight**: 650 kg (1433 lbs)
  - **Power Requirement**: 685 kg (1510 lbs)
  - **Air Requirement**: 200 - 240 VAC, single phase, 50/60 Hz, 3 kVA
  - **Air Requirement**: 72 psi - 87 psi (5 - 6 bar)

### Options
- Barcode Scanner, Repair Station, Offline Editor, OCR, YMS Management System (YMS 4.0), YMS Lite, Support Pin, 3D Laser Module, Coaxial Lighting, CoaXPress Module Upgrade, GPU Card Upgrade

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