Xceed MICRO

Ultra-Precision Laser Scan 3D AOI for Semiconductor Packaging

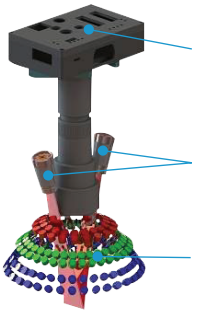
'Xceed MICRO' is a precise and high speed 2D & 3D AOI machine. It is optimized for inspections required in PCB, lead-frame, FC, and SiP assembly process such as die attach, cu clip attach, underfill, solder paste and ball attach. 'Xceed MICRO' delivers precise 2D inspection capability and at the same time it performs high speed 3D inspections (Height, Tilt, Lift, and Volume) with its highly focused laser beam. Additionally, 'Xceed MICRO' is the only machine capable of inspecting foreign material/contamination and warpage on the die surface, metal lead frame, and PCB substrates simultaneously.

Our patented 2D & 3D vision optics unit (TRSC) creates 2D color images by using a 3 channel RGB LED illumination system and 3D data with 2 channel laser sheet beam. The entire inspection is completed with only a single scan. It is possible to apply either 3.5μm or 7.0μm resolution vision unit selectively based on the required inspection application or measurement accuracy. PARMI's exclusive laser scan technology can accurately inspect highly specular components and materials such as bare die, IPD, and underfill fillet while other conventional AOI system reflect light away making inspection difficult. Since 3D data is created at a speed more than several hundred times faster than the laser pointer method, it is possible to perform 100% inspection and eliminate random sample inspection. PARMI also guarantees extremely low 'Escape' and 'False call' rates through outstanding laser optical triangulation method.

The required time to make a single teaching program with the user friendly designed UI (User Interface) and advanced intelligent algorithm is typically less than 30 minutes. Moreover, various software tools such as e-Map, SPC (Statistical Process Control), operator 2nd verification, remote control and monitoring, and offline software are available.

Key Features

- Extremely fast laser scan 2D & 3D AOI
- Highly focused 2 channel laser for 3D data generation
- 3D laser can inspect highly specular surfaces (Bare die, IPD, Die Attach, and Underfill fillet)
- High bandwidth on a broad range of colors, surface roughness, and materials
- Virtually zero escape & false call rates



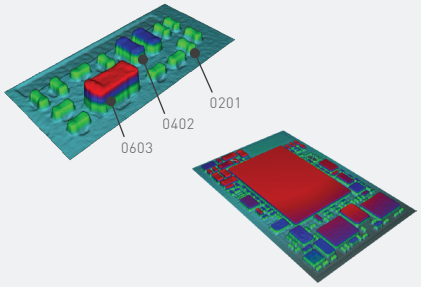
Ultra Fast 2D & 3D Sensor Signal Processing by FPGA

Shadow Free Dual Laser : 3D

7 Channel LED : Color 2D

SiP (System in Package)

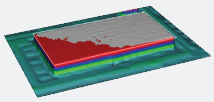
- Specular Die, IPD, Tiny Chip (0201~ : metric)
- Tilt, Dimension, Misalignment, Soldering, Bridge, Crack, FM/Contamination on substrate



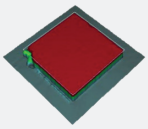
PARMI

Die Attach

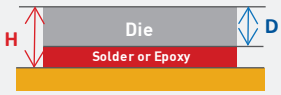
- BLT (Bond Line Thickness)
- Die Tilt, Misalignment, Chipping, Crack
- Epoxy Coverage, Fillet Height and Runout measurement
- FM/Contamination, RBO (Resin Bleed Out)



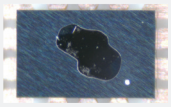
Die Tilt



Die Chipping



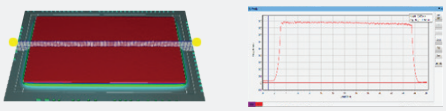
BLT= Die Height(H) – Die Thickness(D)



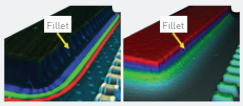
Die Contamination

Underfill

- Die and Package Tilt, Misalignment, Chipping, Crack
- UF Coverage, Fillet Height and Runout measurement
- FM/Contamination, RBO (Resin Bleed Out)



Cross section of Package & Underfill

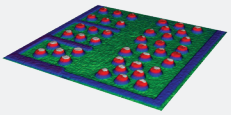


Fillet Height

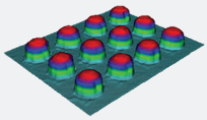
Foreign material

Solder paste and Bump

- Height, Area, Volume, Misalignment, Bridge, Coplanarity
- Substrate Warpage, FM/Contamination



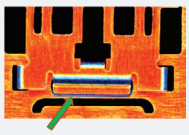
Solder paste



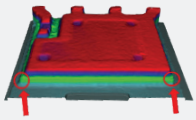
Solder ball

Cu Clip on die

- Die Misalignment, Tilt, BLT, Fillet Coverage and Height
- Cu Clip Height, Tilt, Warpage, Misalignment, Fillet Coverage and Height



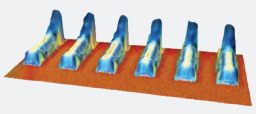
Solder Fillet Joint

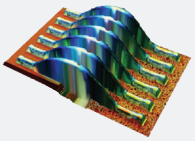


Misalignment

IGBT

- Die Position, Tilt, Contamination
- Wire loop Height, Misalignment, Bridge, Stitch





Specifications

Model	Xceed MICRO	
Vision Module	**TRSC-I×2**	**TRSC-I×2**
Measuring Principle	Shadow Free Dual Laser Optical Triangulation	
Camera	4M Image Sensor / Telecentric Lens	
Illumination	R.G.B LED 3 Stage Lightings	
Scan Speed (sq.cm/sec)	3.75	15
X-Y Resolution (μm)	**3.5 × 3.5**	**7 × 7**
Max. Component Height (mm)	5	15
Performance		
Height Repeatability	3 sigma < 3μm	
Height Accuracy	2μm	
Panel Dimension		
Min. Size (mm)	50 × 50	
Max. Size (mm)	**410 × 350**	
Thickness (mm)	0.08 ~ 5	
Max. Weight (kg)	2	
Top/Bottom Edge Clearance (mm)	2.5 / 3.3	
Top/Bottom Clearance (mm)	30 / 15	
System Dimension		
W×D×H (mm)	**850 × 1,205 × 1,525**	
Weight (kg)	730	
Conveyor Height (mm)	860 ~ 970	
Conveyor Speed Range (mm/sec)	300 ~ 800	
Panel Flow Direction	Left to Right, Right to Left (Factory Setting)	
Conveyor Width Adjusting	Auto	
Computer & Console		
CPU	i7-7800X or above	
Operating System	Windows 7 or above	
Display	24" Monitor	
Software		
Inspection Program	AOIworks	
Teaching Program	ePM (Gerber, BOM, Cad)	
SPC&Process Monitoring	SPCworksAOI, xNetHub	
Verification Program	Veriworks	
System Diagnosis	AOIManager, AOIDBManager	
Barcode(1D/2D) Recognition	Built in AOIworks	
(Option) Offline Teaching Program	AOIworks Offline	

※ Specifications in this catalog are subjected to change without notice for quality improvement. Rev.1

PARMI HQ
- Address : 32-18, Yuseong-daero 1596beon-gil, Yuseong-gu, Daejeon, 34054, Korea
- E-mail : parmi@parmi.com
- Tel : +82.42.478.9900
- Webpage : www.parmi.com

PARMI USA Inc. West (San Diego)
- E-mail : fsilva@parmiusa.com
- Tel : +1.858.683.0225

PARMI USA Inc. East (Boston)
- E-mail : jbashe@parmiusa.com
- Tel : +1.508.485.8120

PARMI China (Dongguan)
- E-mail : jordan@parmi.com
- Tel : +86.769.8150.1199

PARMI East China (Suzhou)
- E-mail : ycl@parmi.com
- Tel : +86.512.6280.5996

PARMI Japan (Tokyo)
- E-mail : parmijapan@parmi.com
- Tel : +81.3.6264.8744

PARMI Europe GmbH (Germany)
- E-mail : parmieurope@parmi.com
- Tel : +49.6102.799.098.0

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