



Orbotech Ultra Dimension™ 900

Automated Optical Inspection (AOI)

Orbotech Ultra Dimension 4-in-1 AOI Solution

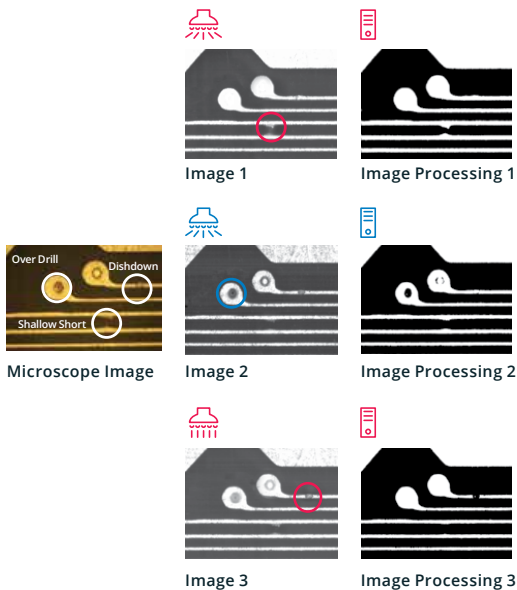
The Orbotech Ultra Dimension 900 continues the series' revolution of the AOI room workflow, now for the IC substrate market. Designed for ultra fine pattern inspection down to 5µm and superior laser via (LV) inspection accuracy and operational efficiency, the Orbotech Ultra Dimension 900 leverages field-proven inspection and measurement capabilities to meet the demanding, high precision requirements of automated optical inspection for IC substrate manufacturing.



Benefits

Exceptional Inspection Capabilities

- Unique combination of pattern and laser via (LV) inspection in a single scan, enabled by Triple Vision™ technology
- Dedicated inspection channels for different stages of LV production
- Significantly lower false alarms with no need for inspection masks enabled by Magic™ technology
- Unprecedented micro-defect detection based on advanced proprietary algorithms



Ultra Fine Inspection Performance Down to 5µm

- 3D illumination delivering full light coverage on the substrate surface
- Custom developed lens enabling variable resolution
- Dynamic focus ensuring high accuracy of warped panels
- Advanced throughput optimization according to line/space width and magnification

Remote Multi-Image Verification Pro (RMIV Pro) – New Generation of Verification

- Major reduction in quantity of standard verification stations and operators
- Smart enhancement of defect image quality
- Optimized productivity enabled by simultaneous 'grabbing' of defect multi-images enabled by Triple Vision technology

On-the-Fly Automated 2D Metrology for Laser Via

- Advanced, accurate on-the-fly measurement of the LV top and bottom diameter, location, roundness and taper, ensuring high reliability and tight quality control
- High sampling rates in a single scan enabled by automated measurements
- Industry 4.0-ready, including traceability, measurement analysis and statistics

4 Best-in-Class AOI Solutions in a Single System

Orbotech Ultra Dimension 900 combines four best-in-class solutions in a single system, delivering new capabilities that further improve quality, yield and cost-efficiency. Combined together, these solutions signify a revolution in the AOI room workflow, representing a new era in AOI efficiency.

Unique Inspection Capabilities

Orbotech Ultra Dimension 900 performs exceptional pattern and laser via inspection in a single scan. Powered by KLA's proprietary Triple Vision and Magic technologies, the solution delivers superior pattern inspection results across the board, from improving detection and reducing false alarms to decreasing set up time. It also delivers superior inspection results at different stages of LV production, including DLD after desmear, DLD after plating, and more.

Orbotech Ultra Dimension 900 provides manufacturers of advanced PCB processes with the flexibility to inspect a variety of applications and materials. Triple Vision technology enables the simultaneous inspection and analysis of three different types of images using varied light settings and thresholds.

Remote Multi-Image Verification Pro (RMIV Pro) - New Generation of Verification

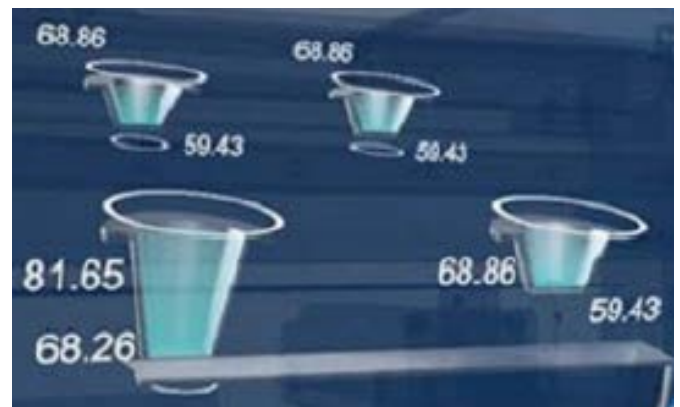
Powered by Triple Vision technology, Orbotech Ultra Dimension 900 enables the remote verification of multiple images that are automatically and simultaneously grabbed during the inspection process.

RMIV Pro uses advanced algorithms to enable smart image enhancement, including better contrast, clarity, brightness and color. By integrating images from three channels into a single multicolor image, the solution enables operators to accurately differentiate between real and false defects in <1 second.

Integrated, Automated 2D Laser Via Measurement

Our 2D LV measurement enables automated on-the-fly measurement of the top and bottom via diameters, as well as the via's location, roundness and taper.

This highly accurate measurement solution meets the industry's growing demand for the quality control necessary for advanced IC substrate manufacturing technologies. The fully automated process ensures fast, accurate and repeatable measurement with a high sampling rate, all in a single scan. This fully digitalized process is Industry 4.0-ready and supports traceability, data analysis and statistics.



Robust Inspection Performance Down to 5µm

Orbotech Ultra Dimension 900 is ready for the challenging demands of the most advanced IC substrate production with fine resolutions down to 5µm line/space. With its custom-developed lens that enables variable resolution, the solution's dynamic focus ensures superior image quality on warped panel in high magnification. Special algorithms for IC substrates ensure best detection performance with low false alarms. Orbotech Ultra Dimension 900 is able to work on all IC substrate types, from the most advanced FCBGA to typical FCCSP applications, and optimizes inspection throughput according to each job's line/space features.

With patented, LED-based 3D illumination, Orbotech Ultra Dimension 900 ensures full uniformity light coverage over all objects on the IC substrate's surface, providing superior inspection clarity for complex designs.



Specifications

Technology Range	Technology range down to 5µm line & space, and 20µm LV diameter	
Inspected Products	Inner layers: Signal, power & ground, mixed, inner with holes, buildup Outer layers: Signal, mixed, buildup Chip carrier panels: FC-BGA, FC-CSP, BGA, CSP, PBGA, COF	
Inspected Materials	Conventional: Bare copper (shiny, matte), etched additive or plated copper, reverse treated foil (RTF), double-treated copper, gold-plated conductors Any laminate including ABF, BT, FR4 Photoresist: Blue, purple and brown	
Detected Defects	Shorts, opens, minimum line/space violations, nicks, protrusions, dishdowns, copper splashes, pinholes, missing or excess features, wrong size and position of features, blocked holes, annular ring violations, SMT violations, black spots, wire bonding pad defects, flip chip pad defects, defects in blind vias Laser via defects: missing drill, over drill, under drill, via shift, residue in the via, via size and shape	
Inspection Methods	Full reference comparison - Triple Vision technology – simultaneous inspection and analysis of three different types of images for pattern and LV inspection ensuring highest detection rate - Magic technology – state-of-the-art algorithms to smartly reduce false-alarm rate without any masks - Model-based, contour comparison and specific criteria per feature - Full multi-layer panel understanding (SIP-based)	
Panel Dimensions	Max. panel size/inspected area: 24" x 27.5" (609.6mm x 698.5mm) Thickness range: 1-300 mil (25-7,500µm)	
Defect Verification	- RMIV Pro Ready Verification and repair stations: Orbotech VeriFine™, Orbotech VeriFine™-A, Orbotech Ultra VeriFine™-A On-system verification: built-in video camera	
Metrology	LV measurement	
Automatic Defect Shaping	Orbotech Ultra PerFix™ 120N, Orbotech Ultra PerFix™ 170i, Orbotech Ultra PerFix™ 500	
Setup Data Sources	CAM	
Panel Registration Method	Pinless registration – panel edge alignment	
Options	RMIV Pro Seat LV measurement	Integrated 2D barcode reader Automation-ready
Dimensions (W x D x H)	161cm x 178cm x 186cm	
Weight	900Kg	

Specifications are subject to change without notice
 Orbotech Ultra Dimension 900 system is a class-1 laser product

KLA SUPPORT

Maintaining system productivity is an integral part of KLA's yield optimization solution. Efforts in this area include system maintenance, global supply chain management, cost reduction and obsolescence mitigation, system relocation, performance and productivity enhancements, and certified tool resale.

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