



# Orbotech Ultra Dimension™ LV

Automated Optical Inspection (AOI)

## Orbotech Ultra Dimension LV 3-in-1 AOI Solution

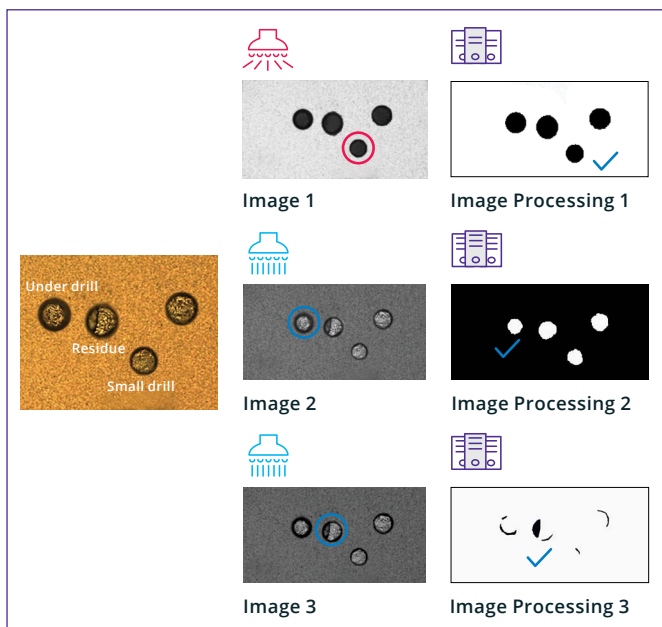
Orbotech Ultra Dimension LV is an innovative solution combining AOI, 2D laser via measurement, and next-generation remote multi-image verification pro (RMIV Pro) capabilities for laser vias. Powered by KLA's Triple Vision™ technology, Orbotech Ultra Dimension LV is designed to meet the market's constantly evolving requirements for quality and reliability in advanced PCB production, including SLP/mSAP, advanced HDI, advanced flex and IC substrates.



## Benefits

### Unique Inspection Capabilities

- Advanced solution for laser via (LV) inspection and 2D LV measurement in a single scan, enabled by KLA's Triple Vision technology
- Inspection and measurement of various stages of LV production, including direct laser drilling (DLD) after desmear, DLD after plating and more



### Integrated, Automated 2D LV Measurement

- Advanced and accurate on-the-fly measurement of the laser via's 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

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

- Smart enhancement of defect image quality powered by artificial intelligence
- Major reduction in quantity of standard verification stations and operators
- Optimized productivity enabled by simultaneous grabbing of defect multi-images

### Low Total Cost of Ownership (TCO)

- Significant reduction in verification stations
- Lower labor costs
- High productivity resulting from fast, simultaneous inspection and measurement

## Advanced AOI Solutions for Laser Vias in a Single System

Orbotech Ultra Dimension LV combines three advanced solutions for laser via production in a single system - LV inspection, 2D LV measurement and RMIV Pro. Combined, these solutions simplify the AOI room workflow, enabling manufacturers to improve their production quality, yield and cost-efficiency.

### Unique Inspection Capabilities

Orbotech Ultra Dimension LV is an advanced AOI solution enabling laser via inspection and 2D laser via measurement in a single scan. Powered by KLA's proprietary Triple Vision technology, it delivers superior inspection results at various stages of laser via production, including DLD after desmear, DLD after plating and more.

Based on simultaneous inspection and analysis of three different types of images using varied light settings and thresholds as required, Triple Vision technology enables the highly accurate detection and classification of a wide variety of defect types, including laser via under/over drilling, missing via, laser via shifts, residue, roundness and more. It also enables false alarm reduction and a decreased set up time.

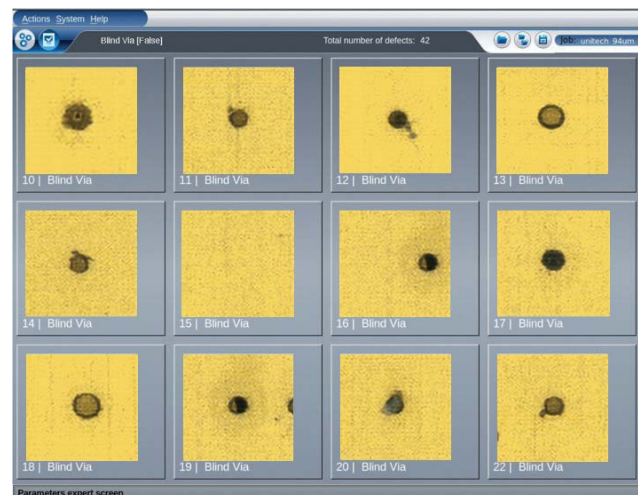
### Integrated, Automated 2D Laser Via Measurement

KLA's 2D LV measurement enables automated on-the-fly measurement of the diameters of both the top and bottom via, as well as the via's location, roundness and taper in seconds. This highly accurate measurement solution meets the industry's growing demand for the quality control necessary for advanced manufacturing technologies, including SLP/mSAP, advanced HDI, automotive and advanced flex applications. The fully automated process ensures fast, accurate and repeatable measurement with a high sampling rate in a single scan. Complete digitalization of the process means that it is Industry 4.0-ready, fully supporting traceability, data analysis and statistics.

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

Powered by Triple Vision technology, Orbotech Ultra Dimension LV enables the remote verification of multiple images that are automatically and simultaneously grabbed during the LV inspection process. RMIV Pro next-generation verification

solution is driven by advanced algorithms that enables 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 less than a second.



### Low Total Cost of Ownership (TCO)

By combining three advanced solutions in a single system, Orbotech Ultra Dimension LV enables high productivity for laser via inspection and measurement. This new system dramatically reduces the number of machines required, freeing up valuable floor space in the AOI room. As a result of its fast, simultaneous inspection and measurement as well as the reduced number of verification stations needed, Orbotech Ultra Dimension LV enables manufacturers to significantly lower their labor costs and their overall TCO.

### Full Compatibility with Industry 4.0 standards

KLA's web-based traceability and analytics solutions provide users with valuable insights to help them better understand and improve their production processes. Orbotech Ultra Dimension LV is connected to Frontline InShop™ solution, and communicates inspection results, defect reports, RMIV Pro images, measurement results and more.



## Specifications

Technology Range	Down to 1.2 mil (30µm) laser via diameter		
Inspected Products	Direct laser drilling (DLD), laser vias with conformal mask, LV after plating, resin-plugged via		
LV (laser vias) Production Stages	Laser via after drilling, desmear or plating		
Inspected Materials	<ul style="list-style-type: none"> <li>- SLP/HDI: Copper (shiny, matte), laminates including FR4, Tetra function, Teflon, Roger, Ceramic etc.</li> <li>- Flex: Copper (shiny, matte), polyimide, polyester</li> <li>- ICS: Copper (shiny, matte), ABF, BT, polyimide</li> </ul>		
Detected Defects	Missing LV, over/under drill, drill oversize & undersize, residue, contamination, LV shift, shape violation/circularity		
Inspection Methods	<p>Full reference comparison</p> <ul style="list-style-type: none"> <li>- <b>Triple Vision technology</b> - simultaneous inspection and analysis of three different types of images for LV inspection &amp; measurement ensuring highest detection rate &amp; accurate measurement results <ul style="list-style-type: none"> <li>- Model-based, contour comparison and specific criteria per feature</li> <li>- Full multi-layer panel understanding (SIP based)</li> </ul> </li> </ul>		
Panel Dimensions	<p><b>Thickness range:</b> 1-300 mil (25-7500µm)</p> <p><b>Maximum panel size/inspected area:</b> 24" x 30" (610mm x 762mm)</p>		
Defect Verification	<ul style="list-style-type: none"> <li>- RMIV Pro ready</li> <li>- <b>Verification and repair stations:</b> Orbotech VeriSmart™, Orbotech VeriWide™, Orbotech VeriFine™, Orbotech VeriSmart™-A, Orbotech VeriWide™-A, Orbotech VeriFine™-A, Orbotech Ultra VeriFine-A</li> <li>- <b>On-system verification:</b> built-in HD video camera</li> </ul>		
2D Laser Via Measurement	Top & bottom via diameter, location, roundness & taper		
Setup Data Sources	CAM		
Panel Registration Method	Pinless registration - panel edge alignment and online dynamic registration		
Options	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <ul style="list-style-type: none"> <li>- RMIV Pro seat</li> <li>- Stamper</li> <li>- 2D barcode reader</li> </ul> </td> <td style="width: 50%; vertical-align: top;"> <ul style="list-style-type: none"> <li>- R2R kit</li> <li>- Automation kit</li> <li>- Large table: 27" x 30", 36.5" x 30"</li> </ul> </td> </tr> </table>	<ul style="list-style-type: none"> <li>- RMIV Pro seat</li> <li>- Stamper</li> <li>- 2D barcode reader</li> </ul>	<ul style="list-style-type: none"> <li>- R2R kit</li> <li>- Automation kit</li> <li>- Large table: 27" x 30", 36.5" x 30"</li> </ul>
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Dimensions (W x D x H)	161cm x 178cm x 186cm		
Weight	900Kg		

\*This table size option is not field upgradeable

Specifications are subject to change without notice.  
Orbotech Ultra Dimension LV 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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