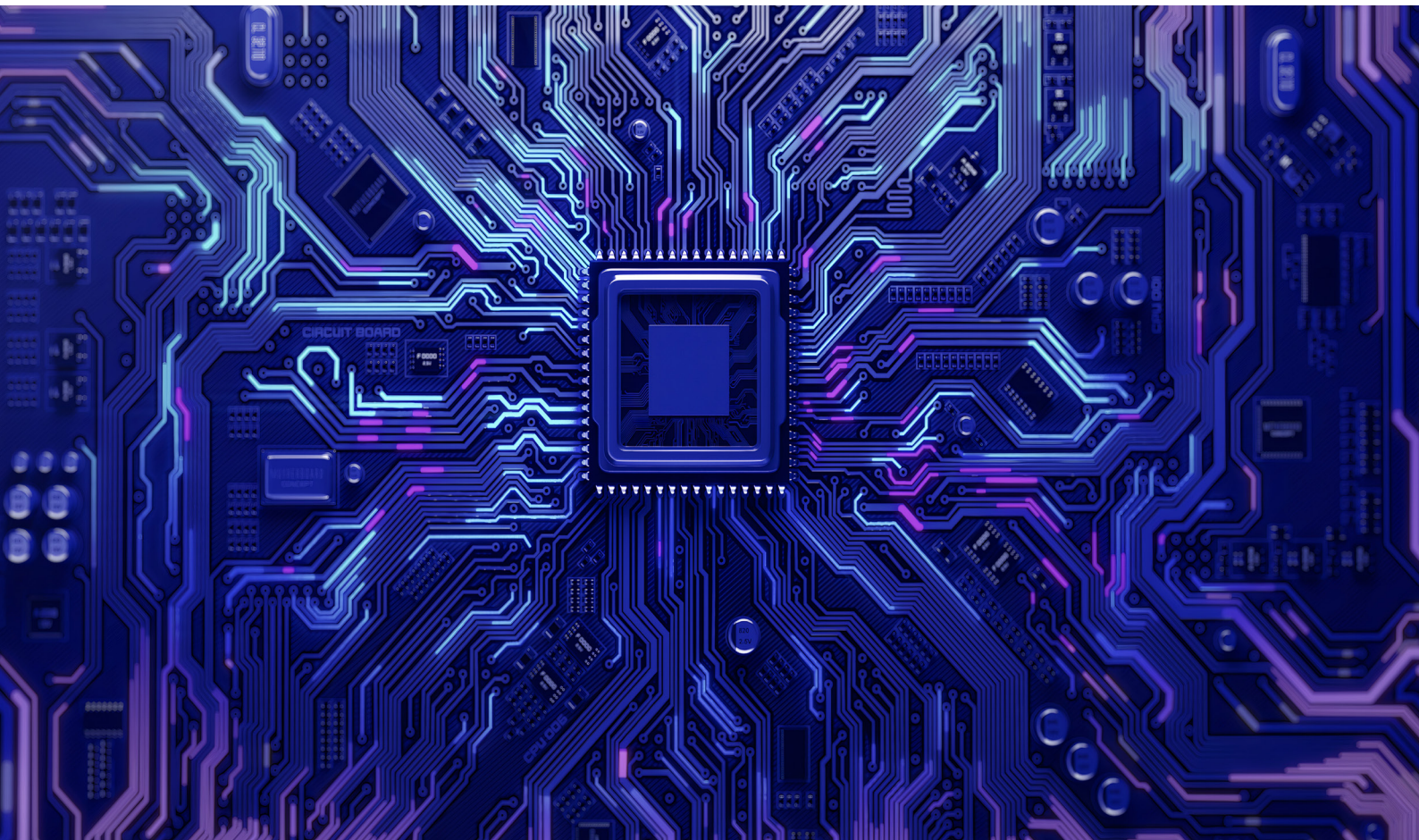
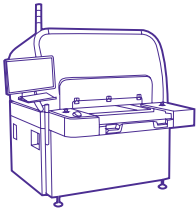


# PCB & ICS PRODUCT OVERVIEW



## Orbotech Ultra Dimension™ AOI



Magic™ Technology



Triple Vision™ Technology

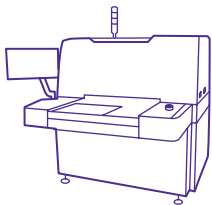
- Unique inspection capabilities—powered by Triple Vision™ and Magic™ technologies
- Next generation remote multi-image verification (RMIV Pro)
- Integrated, automated 2D metrology
- Low total cost of ownership (TCO), Industry 4.0-ready

**Orbotech Ultra Dimension™ 900** – ultra fine pattern and laser-via (LV) inspection and operational efficiency for IC substrate AOI-AOS suite

**Orbotech Ultra Dimension™ LV** – inspection and measurement of LV panels in a single scan down to 30µm laser via diameter

**Orbotech Ultra Dimension™ 800/700** – pattern and laser via inspection in a single scan for SLP/mSAP, advanced HDI, flex and ICS down to 10/15µm L/S accordingly

## Orbotech Precise™ AOS



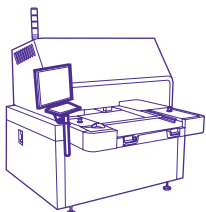
3DS™ Technology



CLS™ Technology

- One-stop automated solution for shaping open and short defects
- Significant yield and savings increase by eliminating scrap PCBs
- High-quality shaping enabled by proprietary 3D Shaping (3DS)™ and Closed Loop Shaping (CLS)™ technologies
- For mass production of SLP/mSAP, advanced HDI, HDI and MLB down to 30µm L/S for open defects and 25µm L/S for short defects
- All-defect coverage, including inner and outer layers, multiple lines, corners and pads

## Orbotech PerFix™ AOS



CLS™ Technology

- Scrap saving - enables excess copper defect shaping
- High quality with Closed Loop Shaping (CLS)™ technology
- High speed automated shaping

**Orbotech Ultra PerFix™ 500P** – for the most advanced IC substrates and fine line applications down to 5µm L/S

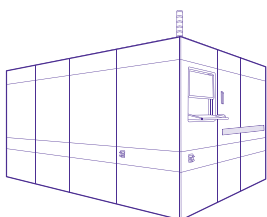
**Orbotech Ultra PerFix™ 170i** – for advanced IC substrates and fine line applications down to 7µm L/S

**Orbotech Ultra PerFix™ 120N** – high throughput for IC substrates, SLP/mSAP and advanced flex down to 10µm L/S

**Orbotech PerFix™ 200S/200S XL** – for mass production of multi-layer and complex HDI and MLB boards down to 30µm L/S, supporting up to 30" x 36.5" (XL model)

**Orbotech PerFix™ R2R** – for flex PCB production with roll-to-roll automation and sheet-by-sheet mode down to 25µm L/S

## Orbotech Corus™ DI



DSI™ Technology



LSO™ Technology



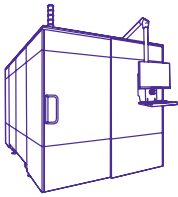
MultiWave Laser™ Technology

- Innovative fully automated, double-sided imaging solution that replaces a complete DI line
- Super-fine line; high depth-of-focus for best line quality on varying surface topographies
- High-speed, multi-target acquisition for any layout, ensuring high productivity
- Exceptional positioning accuracy enabled by high precision design and scaling algorithms
- Closed and compact solution for maximum cleanliness and efficiency (capacity per m<sup>2</sup>)

**NEW Orbotech Corus™ 8M** – fine-line (down to 8 µm) mass production DI for advanced HDI and IC substrates

**NEW Orbotech Corus™ 15M** – mass production DI (down to 10µm) for HDI and advanced MLB

## Orbotech Infinitem™ DI



DDI™ Technology

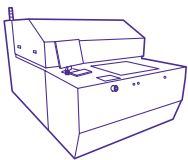
LSO™ Technology

MultiWave Laser™ Technology

- Groundbreaking roll-to-roll direct imaging solution for mass production of flex PCBs
- Unique drum-based R2R DI driven by KLA's Drum Direct Imaging (DDI)™ technology for optimal material handling and high yield
- High throughput enabled by high-speed, continuous imaging and on-the-fly registration
- Superior line quality and uniformity achieved by KLA's field-proven Large Scan Optics (LSO)™ and MultiWave Laser™ technologies
- All-in-one - compact, clean, closed and eco-friendly for extreme efficiency and cleanliness

**Orbotech Infinitem™ 10/10XT** - up to 260mm/520mm roll width

## Orbotech Nuvogo™ DI



LSO™ Technology

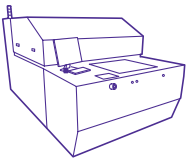
MultiWave Laser™ Technology

- High imaging quality with Large Scan Optics (LSO)™ technology - fine feature imaging, high uniformity and high depth of focus
- MultiWave Laser™ technology for high resist flexibility
- High throughput enabled by dual table mechanism and high-speed target acquisition
- Advanced scaling modes for high registration accuracy

**Orbotech Nuvogo™ Fine Series** - fine resolution mass production for SLP/mSAP, advanced HDI and flex applications with high imaging quality and throughput

**Orbotech Nuvogo™ Series** - high power mass production for HDI, flex, rigid-flex, MLB and QTA PCBs

## Orbotech Diamond™ DI for SM



SolderFast™ Technology

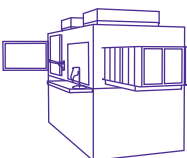
- High-capacity, high-throughput solder mask DI solution
- SolderFast™ technology for high throughput and excellent imaging quality
- Sophisticated optical mechanism enabling high depth of focus for image quality for the most challenging surface topographies
- Low total cost of ownership – long lifetime LEDs to reduce operational costs

**Orbotech Diamond™ 10/10XL** – mass production solder mask DI with 3-wavelength light source

**Orbotech Diamond™ 10W** – high-capacity, high-quality solution dedicated to white solder mask and optimized for miniLED production

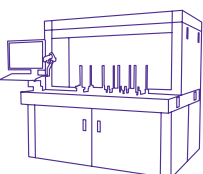
**Orbotech Diamond™ 10M/10MXL** – high-capacity, high-quality solution for both white and non-white solder masks

## Zeta™-6xx Panel 2D/3D Metrology



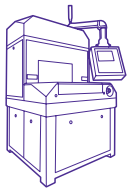
- Automated, fast and non-contact metrology
- True color 2D and 3D profiling with robust ZDot™ technology
- Direct thickness measurement of ABF and other non-transparent layers with ZIR technology
- High warpage panel handling by customizable advanced chuck

## ICOS™ T3/T8 Component Inspection and Metrology for Singulated IC Substrates



- Single platform for warpage measurement (pad coplanarity) and AVI (top and bottom)
- High resolution color imaging for optimal defect detection (cracks, particles, discoloration, dents, bulges, ...)
- High accuracy and repeatability for pad coplanarity measurements
- Optimal yield with AI-enabled automatic sorting

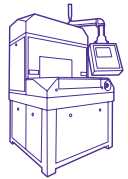
## Orbotech Magna™ Additive Printing



- Advanced inkjet printing for IC Packaging, dams, insulation layers and more
- Down to 75µm line width and high aspect ratio (>1:4) for multiple processes and applications
- Low Cost of Ownership - saving more than 30% vs traditional process
- Compact system supporting strip, panel, JEDEC tray, wafer

 **Structural Printing™** Technology

## Orbotech Jetext™ Inkjet for Marking and Serialization

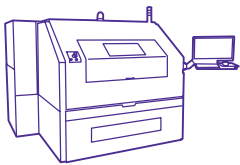


- Down to 0.3mm text size and 2D barcode
- High accuracy with no heating/solvent technology for safe and optimal printing on thin dies/package
- Raster printing enables constant high throughput on small dies and complex layouts
- Compact system supporting strip, panel, JEDEC tray, wafer

 **DotStream Pro™** Technology

 **DotStream Pro™** Technology

## Orbotech Apeiron™ UV Laser Drilling



- High-speed drilling powered by KLA's field-proven Multi-Path™ technology
- Fully integrated, internal R2R solution enabled by KLA's proprietary Roll Inside™ technology
- High capacity of flex sheet drilling of 2 side-by-side panels simultaneously
- Superior quality and accuracy - minimal spot size down to 15µm with high accuracy down to 12µm (3σ)
- Support of TH and BV drilling through copper, polyimide, liquid crystal polymer (LCP), adhesive and cover layers

 **Multi-Path™** Technology

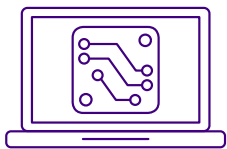
 **Roll Inside™** Technology

 **CBU™** Technology

**Orbotech Apeiron™ 800/800XT** – up to 260mm/520mm roll width

**Orbotech Apeiron™ 800SBS** – up to 1 sheet of 520mm x 520mm size or 2 sheets of 520mm x 260mm size

## Frontline CAM, Engineering and Data Analytics Software Solutions



### Frontline Cloud Services

- Cloud-Powered Drill Optimization
- Boost the PCB CAM workflow dramatically via a cloud-based solution

**Frontline InShop®** – CAM based data analytics for advanced manufacturing

**Frontline InCAM®Pro** – High throughput and high precision leading CAM solution

**Frontline InFlow®** – All-in-one engineering automation

**Frontline InSight PCB®** – Fast and accurate web-based pre-CAM solution for sales and engineering

### KLA SERVICES

From tool installation and system optimization to productivity enhancements and global supply chain management, KLA Services is a trusted partner to customers around the world — delivering an unrivaled experience focused on maximizing tool performance and availability.

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Rev 1.3\_10-16-2023