

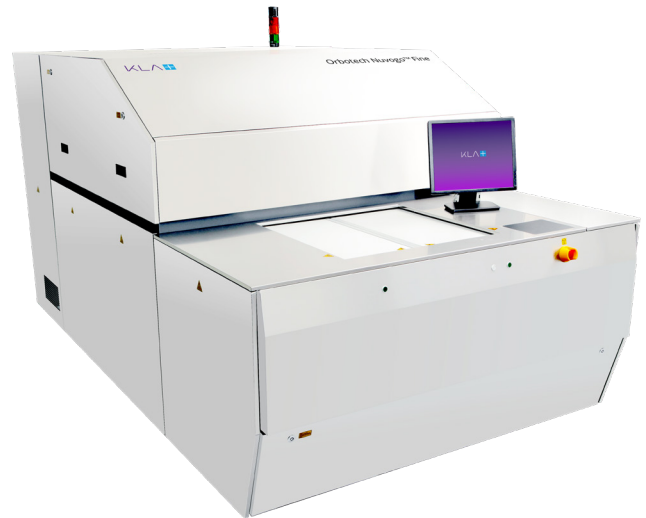
Orbotech Nuvogo™ Fine Series

Fine Line, Mass Production Direct Imaging (DI)



Orbotech Nuvogo Fine Series

Orbotech Nuvogo™ Fine 8 and Orbotech Nuvogo™ Fine 10 are industry-leading Direct Imaging (DI) solutions for the advanced HDI & Flex PCB market. Providing total synergy between KLA's state-of-the-art optics, mechanics and electronics, Orbotech Nuvogo Fine offers fine resolution with superior imaging quality and exceptional throughput. It incorporates KLA's field-proven Large Scan Optics (LSO)™ technology, delivering high depth-of-focus (DOF), and imaging uniformity. In addition, it is powered by KLA's MultiWave Laser™ technology which provides optimal patterning flexibility. Orbotech Nuvogo Fine is equipped with advanced software infrastructure, enabling a wide range of advanced registration targets support and superior scaling. With its dual table mechanism and outstanding target acquisition speed, this powerful solution offers an unrivaled cost-per-print.



Benefits

Leading Mass Production Digital Imaging

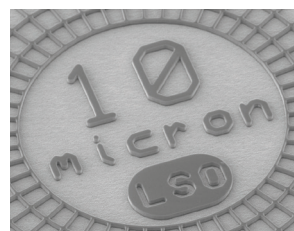
- Up to 5,500 panels/day/line (240 panels per hour, per line)
- Fast target acquisition and scaling algorithms enabling fast setup and reducing TACT
- Seamless production through fully-integrated in-line automation solution
- Optimized imaging time with dual table transportation mechanism
- Effective job queue management for optimal nonstop production

Best Line Quality in the Market

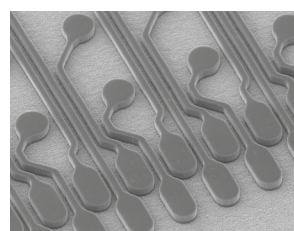
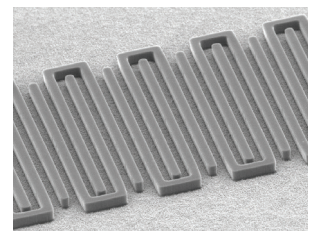
- Optimal line structure and uniformity for advanced mSAP process production through unique optics design
- Depth-of-focus (DOF) for best line quality on varying surface topographies
- Optimal patterning on a wide range of materials through MultiWave Laser technology
- Advanced scaling modes for remarkable registration of $\pm 7.5\mu\text{m}$

Lower Total Cost of Ownership (TCO)

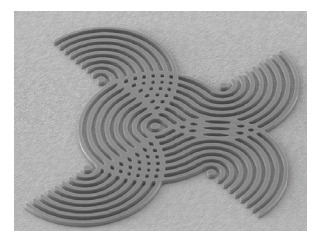
- Lower cost-per-print via superior throughput and effective job queue management
- Increased overall efficiency for significant long-term savings
- Suitable for a wide variety of resist types



Fine lines/spaces for the most advanced processes



Superior line quality and pattern uniformity in all orientations



Technologies



LSO™ Technology



MultiWave Laser™ Technology

Leading Mass Production Digital Imaging

Equipped with the industry's most advanced optics and electronics, Orbotech Nuvogo Fine's cutting-edge digital imaging solution is designed to achieve fine-line structures at speeds of up to 240 panels/hour per line (in an automated set of two systems). Orbotech Nuvogo Fine operates in a clean, hands-free environment, ensuring no handling damage. Its dual table transport mechanism achieves maximum use of system time for panel imaging. The unparalleled target acquisition speed enables fast system set-up, and its smooth job changes and unique job queue system further ensures nonstop production with no time loss between jobs.

MultiWave Laser Technology for Maximum Resist Flexibility

Powered by KLA's MultiWave Laser technology, Orbotech Nuvogo Fine offers maximal flexibility by matching any resist to fit all practices. The adaptable multi-wavelength laser offers unrivaled power and precision for superior uniformity of in-line structure quality.

Highest Imaging Quality with LSO Technology

Orbotech Nuvogo Fine incorporates KLA's field-proven Large Scan Optics (LSO) technology to deliver high depth-of-focus (DOF) and superb line uniformity which is achieved by a single panel scan. The high DOF delivers superior results on panels in varied applications (thin layers, Flex and other), while maintaining high throughput, even on challenging topographies.

Fine Precision by Advanced Scaling Modes and Registration Accuracy

The system offers registration accuracy of $\pm 7.5\mu\text{m}$ for high precision stacking of microvias. Driven by an advanced software infrastructure, Orbotech Nuvogo Fine enables improved and superior scaling and registration algorithms and options. KLA's leading scaling algorithms are now further enhanced (Auto Scaling; Fixed Scaling; Group Scaling; Wise Scaling and Advanced Scaling for sub-area registration).

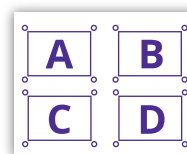
Ease-of-Use

- Operator-friendly, intuitive graphical user interface
- Seamless connectivity to CAM for fast and easy set-up
- Recognizes large variety of target types

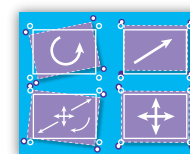
Unique Traceability Benefits for Panel Tracking

- Flexible serialization software for advanced serial stamping
- Supports multiple serialization levels and complex formats
- Can be presented by ASCII, 1D or 2D barcode

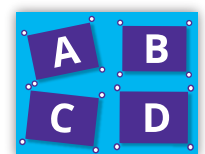
Advanced Scaling Modes



CAM data



Panel



Imaging

Specifications

	Orbotech Nuvogo Fine 8	Orbotech Nuvogo Fine 10
Maximum Throughput* (Imaging Size 25" x 18")	240 prints/h @ 24mj/cm ²	240 prints/h @ 48mj/cm ²
Minimum Line/Space*	10/15µm	
Imaging Energy Range	10 - 2,200mj/cm ²	25 - 2,200mj/cm ²
Address Resolution	1.25µm	
Registration Accuracy (FtG)**	±7.5µm	
Side-to-Side Registration (FtB)**	15µm	
Maximum Substrate Size***	26" x 26"	
Maximum Exposure Area***	25" x 26"	
Substrate Thickness	0.025mm - 8mm	

* Depends on photoresist properties

** All values are 3σ, any panel size, 4 targets

*** Orbotech Nuvogo Fine 8/10 is also available in XL format (Imaging size: 25" x 32" | Panel size: 26" x 32")

The above specifications are subject to change without notification.

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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