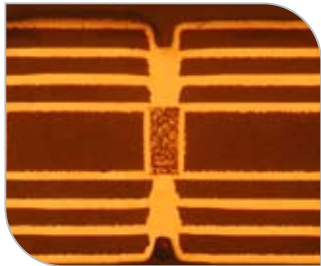


Paragon™ Family Laser Direct Imaging Solutions



Paragon™ Family

Orbotech's Paragon family of Laser Direct Imaging (LDI) systems provides powerful performance for high-volume imaging of HDI, Flex and Rigid-Flex applications. Paragon leverages Large Scan Optics (LSO) Technology™, and a combination of high LDI throughput and registration accuracy for superior imaging results of even the most challenging PCB applications.



High accuracy leading to minimal offset between layers



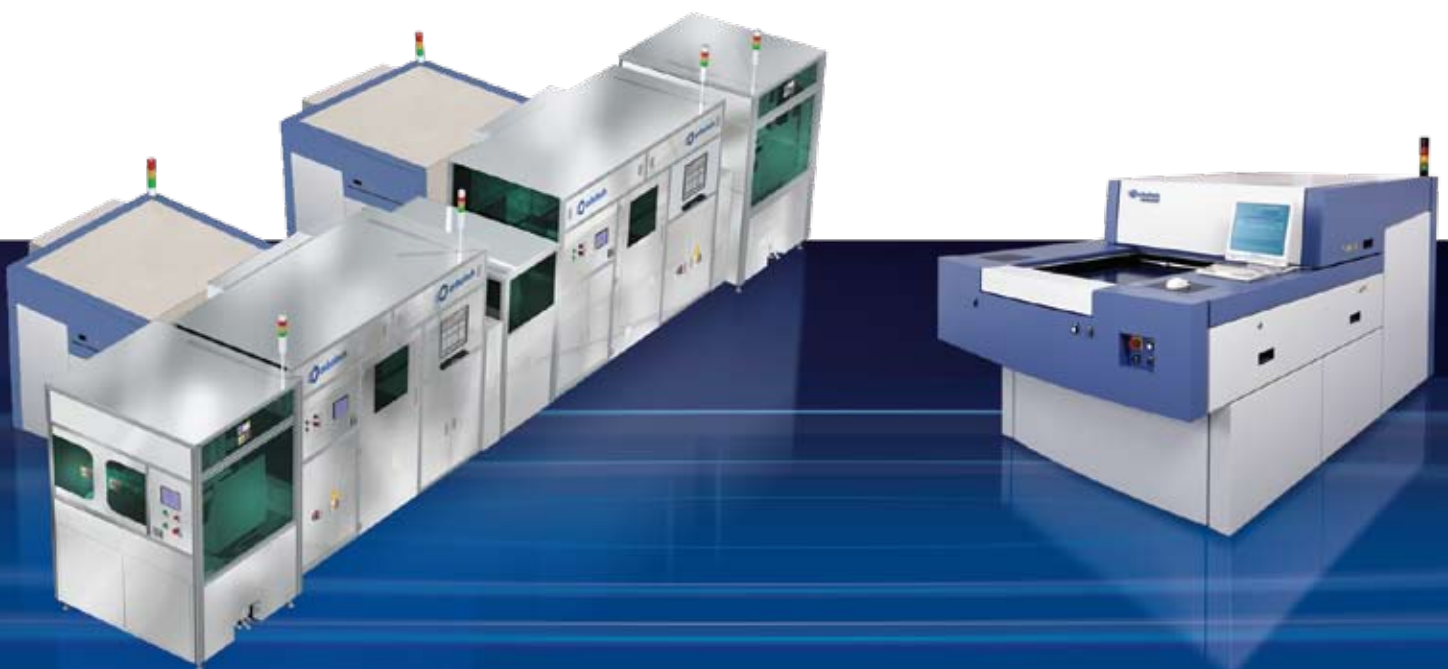
High accuracy registration results in imaging smaller annular rings

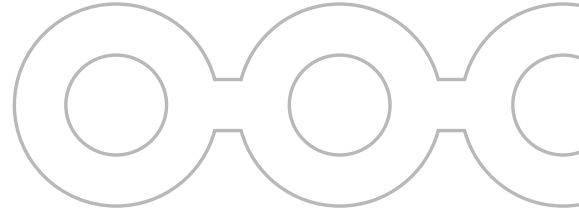


Fine lines down to 25µm/1mil for advanced HDI designs

Benefits

- Maskless imaging to save time, money and increase image quality
- Tight accuracy down to $\pm 10\mu\text{m}$ for high-end HDI designs
- Dynamic imaging modes to match panel distortion
- Seamlessly automated with the vendor of your choice, in any configuration
- High depth-of-focus of $\geq \pm 300\mu\text{m}$ for single scan on Rigid-Flex
- Multiple traceability options on panels
- High resolution down to 25µm/1mil for advanced HDI designs
- Intuitive and user-friendly interface for fast and easy set-up





No Mask

- Minimizes time-to-market - the shortest imaging process
- Reduces complexity and improves yields by removing the phototool and film preparation processes
- Improves image quality: eliminates contamination or damage caused by the photo-tool
- Saves on phototool costs such as: labor, material, electricity, etc.

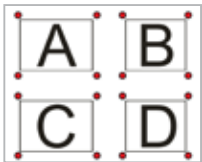
Registration Accuracy

- Side-to-side registration: enables maximum accuracy down to 20 μ m for inner layers
- Annular ring: down to $\pm 10\mu$ m accuracy, ensures microvias can be stacked with greater precision
- Tight solder mask clearance and wider solder dams possible

Dynamic Imaging Modes

- Adjustment per panel: each individual panel can be scaled according to its own distortion
- Different scale factors in one panel: a panel can be subdivided for scaling purposes
- User feedback: the results of each image can be used to improve future image results

Partial Scaling



CAM Data



The Panel



Imaging

Seamless Automation

- Fully automated panel handling
- Optimized utilization of machine capabilities
- No damage from panel handling
- Maximum flexibility of configuration and choice of automation vendor

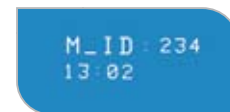
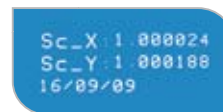
Depth-of-Focus (D.o.F)

- D.o.F. up to $\geq \pm 300\mu$ m for overcoming the most challenging surface topography issues
- Single scan for Rigid-Flex, allows uniform imaging of the entire panel

Traceability

Enables panel tracking and distortion feedback by adding to each panel alphanumeric, 1D barcode or 2D barcode (DMC-Data Matrix Code):

- Serial number stamp
- Date and time stamps
- Scaling stamp
- Machine ID



Ease-of-use

- Intuitive and user friendly interface for fast and easy set-up
- Recognizes a wide array of different target types
- Option for target generation with integrated UV marker system
- High image quality with both conventional resists and LDI resists