

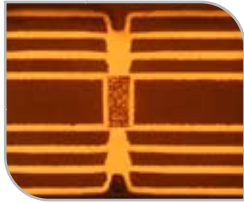
Paragon™ - 9800

Laser Direct Imaging Solution



ParagonTM - 9800

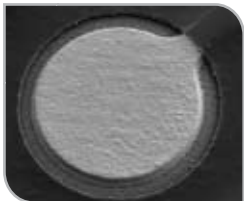
Orbotech's Paragon-9800 Laser Direct Imaging (LDI) system provides high accuracy and high volume imaging of HDI, Flex, Rigid-Flex and Solder-Mask applications. Based on Orbotech's field-proven Large Scan Optics (LSO) technology, Paragon-9800 ensures high yields and lower cost per panel while satisfying tight registration accuracy requirements with dynamic imaging modes.



High accuracy leading to minimal offset between layers



High accuracy registration results in imaging smaller annular rings



High registration accuracy to meet annular ring of 30µm

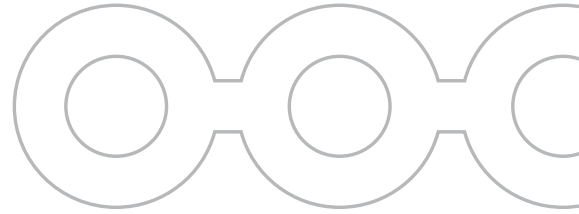


Fine lines down to 25µm/1mil for advanced HDI designs

Benefits

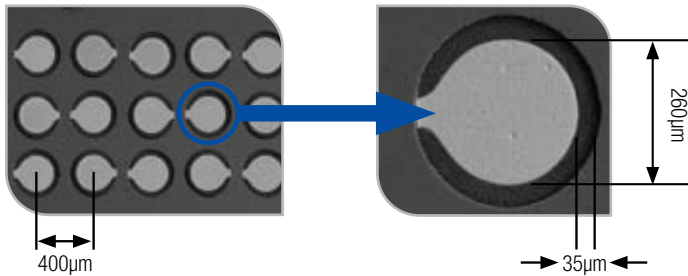
- Maskless imaging to save time, money and increase image quality
- Tight accuracy of $\pm 10\mu\text{m}$ for high-end HDI designs
- Dynamic imaging modes to match the panel's distortion
- Seamlessly automated solution: stand-alone and inline
- High depth-of-focus of $\geq \pm 300\mu\text{m}$ to overcome panel's surface topography distortions
- Multiple traceability options on panels
- High resolution down to 25µm/1mil for advanced designs
- Intuitive and user-friendly interface for fast and easy set-up





Registration Accuracy

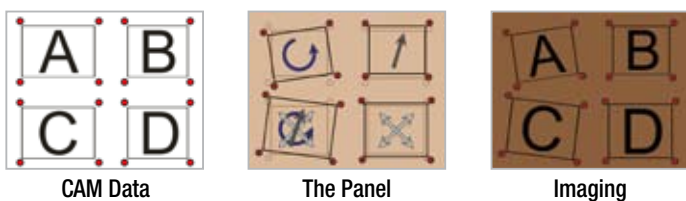
- Side-to-side registration: enables maximum accuracy of 20µm for inner layers
- Annular ring: with $\pm 10\mu\text{m}$ accuracy, microvias can be stacked with greater precision
- Tight solder mask clearance and wider solder dams possible



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



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: eliminating contamination or damage caused by the phototool
- Saves on phototool costs such as: labor, material, electricity, etc.

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

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

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

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 and 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