

Orbotech Apeiron™ 800 Series

UV Laser Drilling for Flex PCB

Drill More. Drill Flex.

Orbotech Apeiron provides best-in-class, high speed UV drilling for roll-to-roll (R2R) and sheet-by-sheet panel manufacturing of flexible printed circuits.

Leveraging two new KLA technologies—Roll Inside™ and Continuous Beam Uniformity (CBU)™—together with its field-proven Multi-Path™ technology, Orbotech Apeiron enables manufacturers to achieve continuously high quality, high accuracy drilling of the smallest vias with maximum throughput. Orbotech Apeiron is designed for a wide variety of drilling applications including blind vias (BV), through hole vias (THV) and routing.



Benefits

High Throughput

- High speed drilling powered by KLA's field-proven Multi-Path technology
- ~100% laser pulse utilization with up to 4 drilling channels
- Large drilling area of 65mm x 65mm per head

Superior Drilling Quality and Accuracy

- Built-in beam validation tools for size, roundness and energy distribution with KLA's CBU technology
- Built-in automated accuracy tool enables registration accuracy down to $\pm 12\mu\text{m}$
- Multiple beam shapes for high quality, high throughput drilling

Optimized for Flex R2R

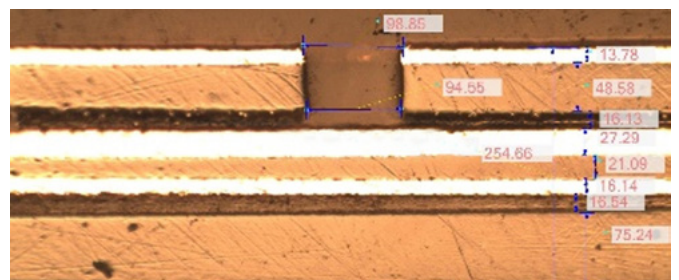
- Fully integrated, internal R2R solution enabled by KLA's proprietary Roll Inside technology
- Clean process with minimal handling damage
- Small total footprint (5.1m²)

Top Drilling Throughput for Flex Sheets

- Supports 2 x 260mm sheets drilled side by side
- Utilizes 4 drilling heads in parallel
- Features automation-ready sheet handling



High quality through hole via in multi-layer flex



High quality blind via in multi-layer flex with adhesive

Technologies



Multi-Path™ Technology



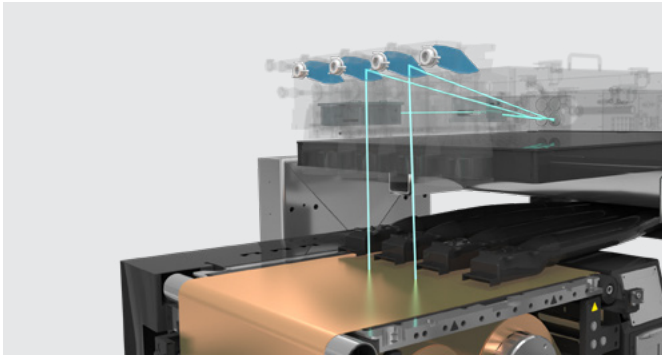
Roll Inside™ Technology



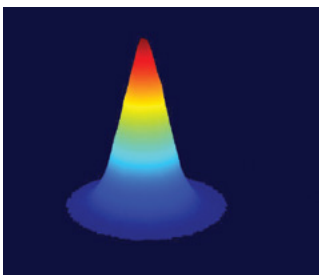
CBU™ Technology

High Throughput

With ~100% laser pulse utilization and up to 4 drilling channels, Orbotech Apeiron maximizes throughput.

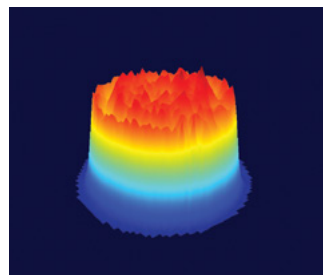


Multiple beam shapes for high throughput and high quality drilling.



Gaussian beam profile

- 15µm beam size
- Opens copper in trepan mode



Top hat beam profile

- Fast drilling in punch mode
- No penetration of the landing pads

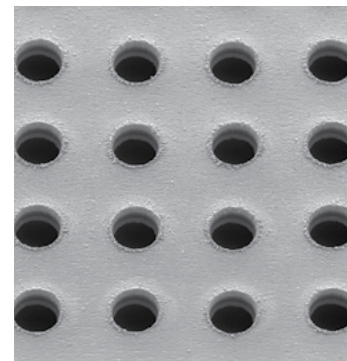
Designed for Efficient Flex Drilling

KLA's new, innovative Roll Inside technology makes Orbotech Apeiron an optimal solution for flex R2R drilling in a small 5.1m² footprint. Orbotech Apeiron supports 260mm and 520mm rolls and sheet panels.



Superior Quality Drilling

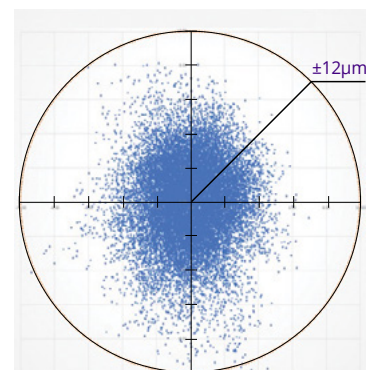
Optimized beam quality throughout the panel area with built-in beam validation tools for size, uniformity, roundness and energy distribution.



Superior quality drilling 50µ BV

Outstanding Drilling Accuracy Down to ±12µm

Built-in and patented accuracy tools enable online calibration of laser beam positioning. Via patterns are marked on an erasable plate and their position is measured in reference to the fixed black spots.



Specifications

	Orbotech Apeiron 800	Orbotech Apeiron 800ST	Orbotech Apeiron 800XT
Technology	Multi-Path technology		
Drilling Channels	2	4	4
Accuracy (3σ)	±12μm		
Laser Scan Field	65mm x 65mm		
Integrated R2R	Roll Inside technology		
Maximum Roll Width	Up to 260mm	Up to 260mm	Up to 520mm
Maximum Panel Size	1 x 260mm x 520mm	2 x 260mm x 520mm	2 x 260mm x 520mm
Number of Sheets on Table		1 x 520mm x 520mm	1 x 520mm x 520mm
Dimensions (including R2R)	Height: 1,700mm* Depth: 2,200mm Width: 2,330mm		
Weight (including R2R)	4,500Kg		
Materials	Suitable for polyimide, liquid crystal polymer (LCP), adhesive-less copper-clad polyimide laminate, copper-clad polyimide laminate with adhesive and coverlay		
*Height with open hood 2,200mm			
The above specifications are subject to change without notification			

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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Rev 6.1_4-01-2022