

Orbotech Ultra PerFix™ 120N

Automated Optical Shaping (AOS)

Orbotech Ultra PerFix 120N

Make it Perfect

Orbotech Ultra PerFix 120N automatically shapes excess copper defects down to 10µm, enabling manufacturers to cut operational costs, save scrap, improve yields and achieve a competitive return on investment (ROI). Designed for fine-line IC substrate and advanced HDI production, Orbotech Ultra PerFix 120N achieves high quality results on complex designs in minimal time.



Benefits

Maximum Scrap Saving

- Perfect shaping of shorts and excess copper defects down to 10µm
- Major yield improvement on advanced HDI and IC substrate arrays
- High quality results on advanced HDI, CSP, FC-CSP, BGA and FC-BGA designs

Superior Quality with Closed Loop Shaping (CLS)™ technology

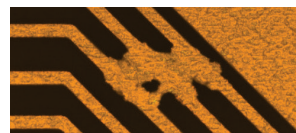
- Automated, iterative and controlled process
- Automatic comparison to CAM data
- Minimum penetration of the laminate

Robust Performance

- Utilization of KLA's patented, high performance laser technologies
- Typical shaping of 2 defects per minute*
- Fast setup enabling switching jobs easily
- Push to Shape - automated defect handling providing consistent results with significant operational cost savings

Connectivity

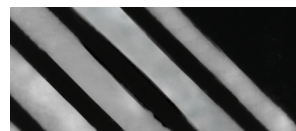
- Seamless connectivity with KLA's AOI, RMIV Pro and verification systems
- Connectivity with third-party solutions



Before shaping



After shaping white light image



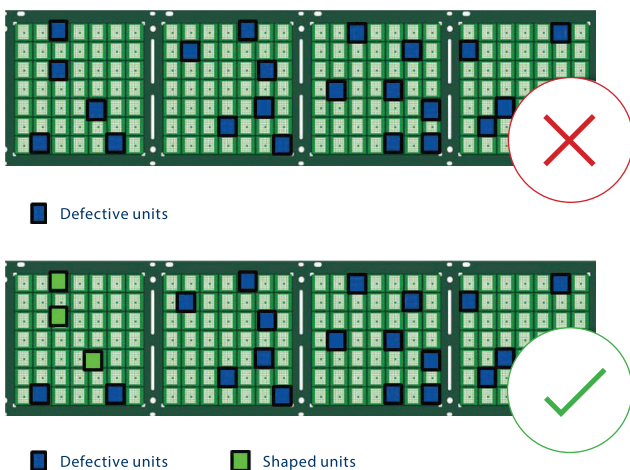
After shaping UV light image



Maximum Scrap Saving

Increasing production yields on even the most advanced HDI, CSP, FC-CSP, BGA and FC-BGA jobs, Orbotech Ultra PerFix 120N saves on advanced HDI and IC substrates that would otherwise have to be scrapped. Utilizing state-of-the-art technologies, the solution shapes any type of short or excess copper defect, including those on multiple lines, corners and ball areas, without damaging the shaping area. Thoroughly tested to meet the highest industry standards, Orbotech Ultra PerFix 120N compares the defect to the CAM data in real time and shapes the panel according to its original design and functionality. The solution's results meet strict manufacturing specifications including electrical characteristics and durability.

Orbotech Ultra PerFix 120N significantly increases IC substrate yields by shaping defects and saving the whole strip from scrap.



Superior Quality with CLS technology

CLS technology is the key to Orbotech Ultra PerFix 120N's exceptional accuracy and speed. KLA's proven image acquisition captures precise images of the defect area. A set of specialized analysis algorithms compares the images to the CAM data in real time, automatically locates the copper to be shaped, and then guides the integrated laser as it accurately ablates excess copper. The full, 3-step cycle of image acquisition, image analysis and laser ablation is repeated until the shaping is perfect, with no damage to conductors and minimum penetration of the laminate.

Significant Operational Cost Savings with Push to Shape

Push to Shape (P2S)[™] technology enables a fully automated shaping process at a single press of a button. With P2S, the operator only needs to load/unload the panel and press "Shape". As a result, one operator can manage several systems simultaneously thereby saving manpower, enhancing productivity and reducing operational costs and total cost of ownership (TCO). P2S is also an enabler for a fully automated production environment with no human intervention. Furthermore, P2S utilizes CLS technology, enabling repeatable and consistent high quality results every time.

Robust Performance

Orbotech Ultra PerFix 120N can typically shape more than 120 fine line defects per hour. The advanced laser system design emits high-frequency pulses combined with patented, ultra-fast moving mirrors for optimal control. An innovative optical mechanism maximizes laser intensity and accuracy to ensure superior laser performance on a variety of materials. Orbotech Ultra PerFix 120N's fast setup enables easy switching between jobs.

Connectivity

Orbotech Ultra PerFix 120N becomes the shaping center for all excess copper defects detected along the advanced HDI and IC substrate production line. In mass production mode, defect coordinates are automatically received from KLA AOI or verification stations for maximum speed. Orbotech Ultra PerFix 120N can also receive coordinates from other types of third-party equipment.

Specifications

Technology Range	Down to 0.4mil (10µm) line/space		
Shaping Defects	Any excess copper including: shorts, protrusions, copper splashes, minimum space violations, excess features, wrong-larger size of features, under-etched features, under solder mask defects		
Material	Laminate type: FR4, FR5, Tetra function, ABF, BT, polyimide; minimum laminate thickness: 30 microns, Copper thickness: 0-70 microns		
Shaping Products	Inner layers: signal, power & ground, mixed, cross shielding, inner with holes, build-up Outer layers: signal, mixed, cross-shielding, build-up		
Panel Dimensions	Max. panel size/shaping area: 30" x 24" (762mm x 610mm) Panel thickness: 50-10,000µm		
Throughput*	Copper Thickness	Defect Size (µm)	Shapings per Hour
	18µm	15 x 50	125
		30 x 50	115
		50 x 50	105
Image Processing Methods	Full reference comparison - SIP™ technology - Adaptable sensitivity for accurate results		
Ablation Method	KLA's CLS technology		
Setup Data Sources	CAM inspection and classification criteria from KLA AOI, RMIV and verification stations		
Connectivity	Automatic connectivity to KLA's AOI and verification systems Connectivity with other solutions is supported		
Panel Registration Method	Pinless registration - panel edge alignment, pin alignment		
Options	Remote image verification (RIV), barcode reader, control center, automation ready		
Verification Stations Supported	Orbotech VeriSmart™, Orbotech VeriSmart™-A, Orbotech VeriFine™, Orbotech VeriFine™-A, Orbotech VeriWide™, Orbotech VeriWide™-A, Orbotech Ultra VeriFine™-A as well as third party verification systems		
Dimensions (W x D x H)	161cm x 184cm x 186cm		
Weight	800Kg		

* Based on a test panel with ABF laminate, ≥3 defects/side, including L/U

Specifications are subject to change without notice
Orbotech Ultra PerFix 120N system is a class-1 laser product

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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KLA Corporation
One Technology Drive
Milpitas, CA 95035
www.kla.com

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