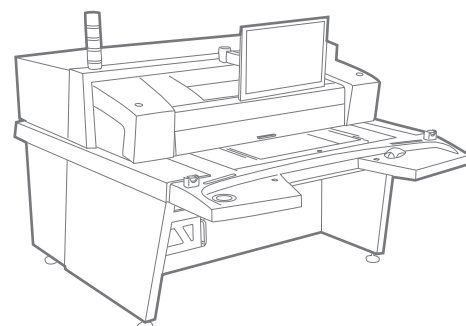


PerFix™ 200

Automated Optical Repair (AOR) System

PCB Production Solutions



PerFix™ 200 AOR System

Make it Perfect. Faster.



PerFix 200, Orbotech’s latest innovation in automated optical repair (AOR), perfectly repairs shorts in seconds. With speed much faster than any existing system, PerFix 200 enables top quality repair of most advanced PCB designs, including any-layer, HDI and complex multi-layer boards. Now more than ever, PerFix 200 moves the PCB industry closer to achieving zero scrap production.

Benefits

Maximum Scrap Saving

- Perfect repair of shorts and excess copper defects
- Resolution down to 30um line and space
- Minimum penetration to the laminate

Superior Quality with CLR Technology™

- Iterative and controlled process
- Automatic comparison to the CAM data

High Speed Automated Repair

- Up to 3 times faster than existing systems
- Utilizing Orbotech patented laser technologies
- More than 60 repairs per hour of typical HDI defects

Full Openness with Universal Access

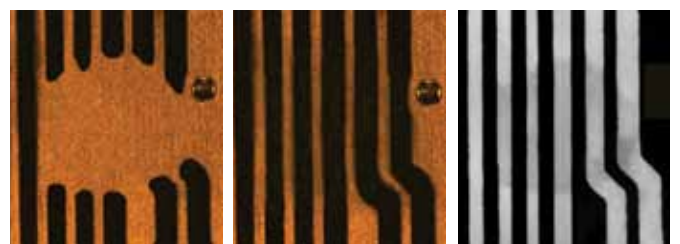
- Automatic connectivity to Orbotech’s AOI and verification systems
- Repair center for all excess copper defects
- Quick and easy navigation to any marked defect



Before repair

After repair
White light image

After repair
UV light image



Before repair

After repair
White light image

After repair
UV light image

Maximum Scrap Saving

Saving PCBs that otherwise would have to be scrapped, PerFix 200 significantly increase PCB production yield on even the most complex any layer, HDI and advanced MLB jobs. Utilizing state-of-the-art technologies, the system repairs any type of short or excess copper defects including those on multiple lines, BGA areas, corners and pads, without damaging the repair area.

Thoroughly tested to meet the highest industry standards, PerFix 200 performs perfect repairs just as if there were never a defect originally. The system's results meet strict manufacturing specifications such as electrical characteristics, durability to time and stress, and visual requirements.

Superior Quality with CLR Technology™

PerFix 200's CLR (closed-loop repair) Technology is the key to outstanding accuracy and speed. Orbotech's proven image acquisition captures precise images of the defect area. A set of specialized image analysis algorithms compares the images to the CAM data in real-time, automatically finds the copper to be removed then guides the system's laser as it accurately ablates excess copper.

The full, 3-step cycle of image acquisition, image analysis and laser ablation is repeated until the repair is perfect, with no damage to conductors and minimum penetration to the laminate.

High Speed Automatic Repair

Featuring breakthrough technology advancements, PerFix 200 achieves unmatched speed up to 3 times faster than existing systems.

A breakthrough laser system design emits high-frequency pulses coupled with patented, ultra-fast moving mirrors for optimal control. An innovative optical mechanism optimizes the laser intensity and enhance accuracy for superior laser performance on a variety of materials.

Full Openness with Universal Access

With Universal Access, PerFix 200 becomes the repair center for all excess copper defects detected along the PCB production line. In mass production, defects already classified by type and their coordinates are automatically received from Orbotech AOI or verification stations for maximum speed. In Universal Access mode, quick and easy navigation to any marked defect from other AOI systems and electrical testers is possible using a dedicated laser pointer.



Specifications

Technology Range	Down to 1.2mil (30µm) line & space		
Repaired Products	Inner layers: signal, power & ground, mixed, cross shielding, inner with holes, build-up Outer layers: signal, mixed, cross-shielding, build-up		
Material	Laminate type: FR4, FR5, Tetra function Minimum laminate thickness: 40 Microns, Copper: 0-50 Microns		
Repaired 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		
Panel Dimensions	Max. panel size/repaired area: 26" x 24" (660mm x 610mm) Panel thickness: 50-12000µm		
Throughput*	Copper Thickness	Defect Size (µm)	Repairs per Hour
	30µm	65x200	80
		300x300	55
		600x600	25
	40µm	65x200	55
		300x300	35
600x600		18	
Image Processing Methods	Full reference comparison <ul style="list-style-type: none"> ◦ SIP Technology™ ◦ Specific criteria per feature 		
Ablation Method	Orbotech's CLR (Closed Loop Repair) Technology™		
Setup Data Sources	CAM Inspection and classification criteria from AOI and verification stations		
Defect Access Tools	<ul style="list-style-type: none"> ◦ VeriSmart Defect File ◦ Universal Access (Defect Coordinates, Laser Pointer for marked defects) 		
Panel Registration Method	Pinless registration – panel edge alignment, Pin alignment		
Verification Stations Supported	Orbotech VeriSmart™, VeriSmart™-A, VeriFine™, VeriFine™-A, VeriWide™, VeriWide™-A, VRS-5, VRS-4Pro		

* Based on a test panel with FR4 laminate

◦ Specifications are subject to change without notice.

◦ The PerFix 200 system is a class 1 laser product.