

DCT DirectLaser-S

Rigid & Flexible PCBs Depaneling with DCT DirectLaser Separation technology



- Physical contact free, mechanical stress-free
- Arbitrary shape, suitable for complex structures
- Very fine cutting gap, resulting full use of PCB space
- limited heat affected zone, components and pattern can be laid out very near to the edge
- Dust-free processing, no pollution to the working environment, no pollution to PCBs
- Turn key with software and hardware, plug and play, satisfy current needs, face future requirements
- Easy operation, easy management, worry-free service, ready for production at any time

With the rapid development of electronic technology, everything must be perfect. Manufacture with step and repeat and depaneling technology are important factors for quality and cost. Only by choosing suitable depaneling technology and equipment, it is possible to give full play to the advantages of the technology, improving the quality and reducing the cost simultaneously.

The traditional mechanical depaneling technology reduce designer's freedom with the design for manufacture limitation. The problems generated by depaneling is itchy spots for general product processing, it is hard to meet the needs of today's product processing. For high end products, it is even beyond its ability, and becoming the pain point, getting out of date. Laser, known as the sharpest knife and the most accurate ruler, is the general trend to replace traditional processing method and is becoming rigid demand of manufacturing industry. DCT DirectLaser depaneling technology and products, control laser with software, which can meet all kinds of demanding requirements in nature.



By mechanical processing, the mechanical impact and vibration on PCBs, which caused by tools toughing, leaving, cutting and milling of PCBs, may lead to connective failure of soldering point.

In order to complete high-speed radial feed without breaking, the larger diameter of the mechanical tool, the better. The millimeter cutting gap is too thick and cause wasting of lot of raw material.

Whether it is punching, routing, scribing, or engraving, there are essentially impact, extrusion and shearing effects on the workpiece, which will inevitably cause mechanical stress, resulting in tearing and delamination at the edge of the board. Therefore, the edge of the board cannot be laid out with

components, cannot be laid out conductive tracks and holes. Such limitations on design for manufacture, result in that valuable space of the board cannot be effectively used.

Mechanical processing will remove lots of material, and large amount of dust may produce during the processing, which will cause pollution to both the environment and the surface of PCBs. It reduces the reliability of PCBs accordingly. Especially, it causes contamination to sensitive and valuable components such as sensors.

The ideal depaneling technology should be: high quality, fast speed and low cost. DCT Directlaser depaneling equipment DirectLaser-S, just possess such features.

The separation by projection of laser beam, without any physical contact, no mechanical stress, no vibration. Thus, there is no mechanical stress on the connective soldering joint and sensitive substrate during the process of depaneling.

Decomposing, vaporizing and ablating material by focused high-energy laser beam, the side wall of the cutting is smooth, without tearing and delamination; and the heat-affected zone is small, thus the components, conductive tracks and holes can be laid out closer to the edge of the PCBs, and the PCBs can be designed smaller and lighter.

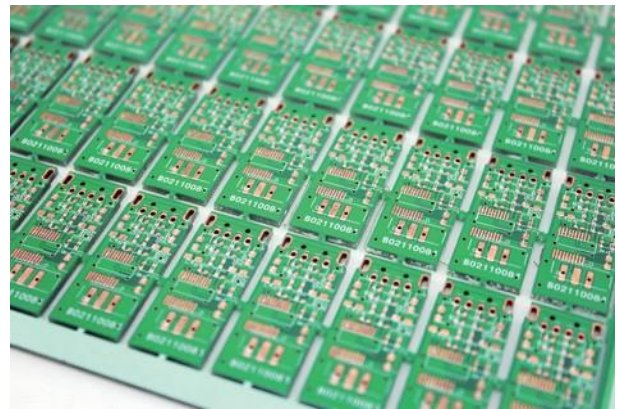
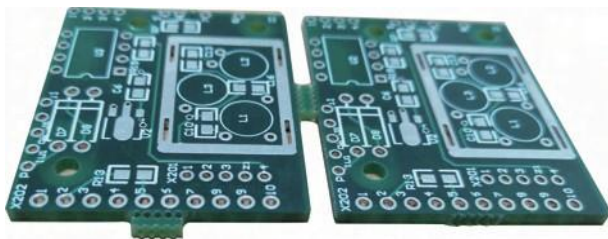


With fine focus of laser beam, the actual cutting gap can be as narrow as 10 microns, the removed material is less during processing, thus the depaneling is almost seamless and non-destructive. For the same size of raw materials, it wins more effective space with less material removal, save more material and reduce the total cost of the product.

Motion trails controlled by software and laser beam delivered by scanner mirrors, the laser processing speed has nothing to do with the complexity of geometry and shapes. It is suitable for cutting complex shapes with large curvature. The cutting edge is geometrical straight, sharp, smooth, fluent, clean and tidy at corner. It can process products with any geometrical shape and exquisite structure.

During laser direct vaporization, the vaporized and evaporated materials can be effectively collected and removed. It can not only protect the processed products clean, avoid pollution to the processed PCBs, precision and valuable components, but also protect the working environment from pollution, and keep optical components in a clean status in the long-term and free from frequent maintenance as well.

Equipped with CCD automatic fiducial mark recognition and positioning system. With this system, it is not needed to place the workpiece accurately, making the automatic loading and unloading possible, resulted much convenient, fast and efficient daily operation. With automatic processing data compensation on dimensional expansion and shrinking, the result of cutting is satisfying even for the most demanding tolerances and quality requirements.



Configured with standard industry interface, DCT laser equipment can be integrated into MES (Manufacturing Execution System), supporting operation data collection, machine assignment, product traceability, tracking and distribution monitoring. DCT DirectLaser-S can be equipped with internal conveying device, has SMEMA compatible interface, and can be directly connected with the automatic loading and unloading device.

The entire system, supplied all by DCT, plug and play, be ready to produce at any time. Equipped with DCT specially developed exhaust unit for depaneling, low noise and high efficiency, DCT DirectLaser-S system collects gas and dust generated during processing neatly and thoroughly. Equipped with data processing software CircuitCAM7 and driving software DreamCreaTor, powerful and easy to use, DCT Direct Laser-S afford an enjoyable operation experience.

DCT has professional service and application engineers, as well as application centres in Shenzhen, Suzhou, Tianjin and Chengdu. DCT service system is always ready to provide presales training and aftersales technical support for new and old customers.

For application reports and more information, welcome to contact DCT!

Parameters	DirectLaser-S2	DirectLaser-S5	DirectLaser-S6
Max. Working area	350mm×300mm	520mm×500mm	600mm x 600mm
Data input formats	Gerber, HPGL, Sieb & Meier, Excellon, ODB++		
Laser wavelength	355nm/532nm		
Laser pulse width	Nanosecond/Picosecond		
X/Y/Z resolution	0.5 μm		
Repetitive accuracy	± 2 μm		
Dimensions (WxHxD)	890mm x 1600mm x 1270mm	1560mm x 1610mm x1405mm	1745mm x 1610mm x 1405mm
Weight	approx. 750kg	approx. 1500kg	approx. 1700kg
Power supply	380VAC,50Hz, 3.0kW		
Ambient temperature	22℃±2		

Options	DirectLaser-S2	DirectLaser-S5	DirectLaser-S6
Data Processing Software	CircuitCAM 7	CircuitCAM 7	CircuitCAM 7
Driving software	DreamCreaTor 3	DreamCreaTor 3	DreamCreaTor 3
Automatic loading/ unloading system	optional	optional	optional
Laser height sensor	optional	optional	optional
CCD recognition positioning system	Included	Included	Included
Control PC	Included	Included	Included
workpiece is fixed	customized fixture	customized fixture	customized fixture
FFU cleaning device	optional	optional	optional

Note:

Suitable for stamp hole on FR4 with thickness up to 2mm, suitable for V-cut depaneling

Processing speed(30W ps laser):

V-cut 2mm FR4(V-cut 0.5mm): up to 8-10mm/s

stamp hole on 2mm FR4: 5mm/s or 1hole/s (width:5mm, 5 holes)



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