LIMATA

X3000 *series*

LASER DIRECT IMAGING SOLUTION FOR THE EFFICIENT PRODUCTION OF OVERSIZED PRINTED CIRCUIT BOARDS

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The **LIMATA X3000 LDI Series** is a laser direct imaging system designed for the efficient imaging (patterning) of oversized PCB panels. The X3000 is standerdly equipped with an automatic door mechanism and can be complemented by load and unload automation options.

This unique system is capable to image panels with board sizes of up to **96" x 48"** at highest LDI precision levels (registration and resolution).

Best in class registration of the panel is guaranteed by using a 64-point sub-registration (each pattern is warped within the software to suit individual geometry).

The use of a Multi-wavelength laser technology provides for the rapid structuring of both, standard dry films and solder resists. Cost-efficient high energy UV diode-lasers with lifetimes (MTBF) of over 25,000 h are supporting lower total costs of ownership.

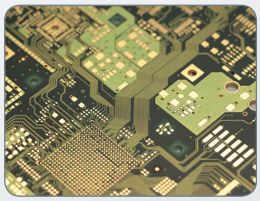
The new **UV/IR exposure technology** (patent applied) offers highest throughput and best in class quality for solder mask imaging. **Several versions of LDI and conventional solder masks** from different suppliers were qualified successfully.

Features and Benefits

- **Working area of 96" x 48** enables extreme large panel manufacturing
- **+25.000 hours' laser lifetime** ensures lowest maintenance costs
- **Highest optical depth of focus** +/- 500µm thanks to laser technology guarantees constant resolution without limitation
- **UV/IR Imaging Technology** supports high exposure energy especially for solder mask imaging
- **Redundancy leads to safety** Every laser-module is redundant which enables 24h express service to end-customer
- **RGB & INFRARED CAMERA** possible to improve fiducial detection even with covered solder mask
- **Ease-of-use operator** friendly handling and data interface

Applications

- **Industrial, Military**
  Special large panels
- **Clean Energy**
  Flex panels for wiring
- **Consumer Electronics**
  Div. special applications



System Features	
Market:	Medium to high-volume
	PCB production
Operating table:	Single table
Vacuum table:	Included
Mechanical system:	XY Linear drive gantry system
Base:	Full granite
Weight:	ca. 6.000 kg
Dimensions:	4,1m x 2,8m x 2,6m / 162“ x 110“ x 102“
Footprint:	11,5 m^2
Communication interface:	Ethernet
Power supply:	400 VAC 50Hz / 3+1 Phase
Upgradeable:	Up to 4 heads possible
Max. image size:	2438 x 1220 mm2 / 96“ x 48“
Max. panel thickness:	25µm - 15 mm / 1mil - 0.6“

Imaging Features	
UV Light engine:	Diode lasers
UV Laser wavelength:	400 - 410nm
UV & IR Lifetime laser [typ.]:	> 25.000 h
UV Lasers per head:	4 - 6
Number of heads (exposure units):	1 - 4 heads
Depth of focus:	+/- 500µm / 20mil

Resolution Accuracy**	
Min. Lines:	50 µm / 2 mil
Min. Space:	50 µm / 2 mil
Max. edge roughness:	+/- 10% min. res.
Max line width tolerance:	+/- 10% min. res.

Registration Features	
Reg. System:	HD Camera(s)
Camera Lighting:	RGB
Top to bottom layout [typ.]:	up to +/- 10 µm / 0.4 mil

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* depending on fiducial and layout quality
** depending on solder mask material and thickness

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System options

HD-Option

- Variable laser-spot size adjustment for highest resolution

Multi-Point Registration

- Detection of multiple fiducials for max. registration quality

Traceability

- Individual QR-Codes / Barcodes or serial numbers can be imaged on the fly

Pin-Less UV-marking System

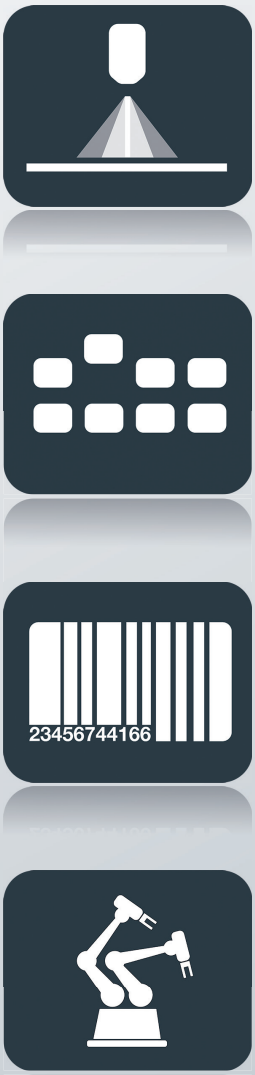
- Detection of inner layers without any holes

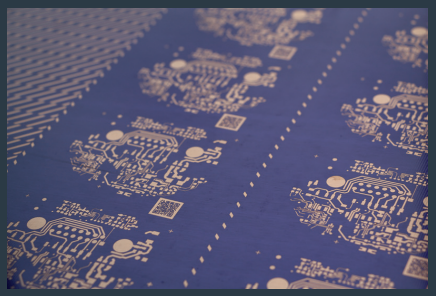
Solder Mask Option

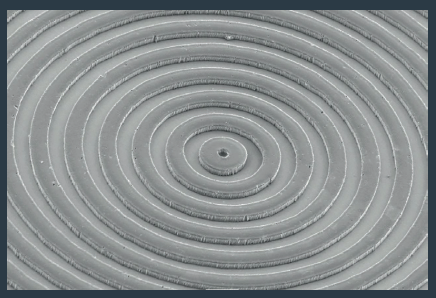
- The UV/IR imaging technology images LDI and conventional solder masks with high throughput and best quality

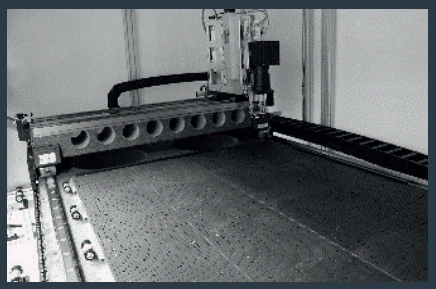
Automation

- The X3000 platform can be complemented by a robotic set-up for a fully automated and less labor intensive LDI in-line operation

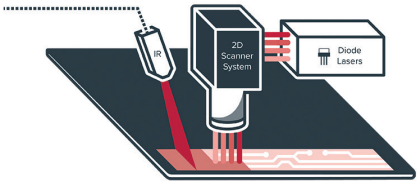
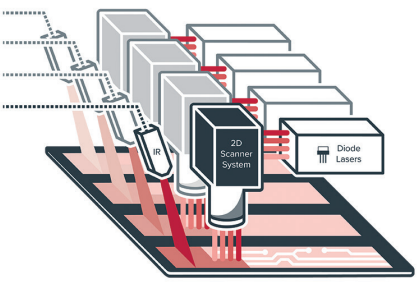








X3000 System configurations

LDI System family	X3200	X3300	X3400
UV laser heads	2	3	4
UV diode lasers per head	4/6	4/6	4/6
Total UV lasers	8/12	12/18	16/24

Modularity