



LIMATA



Winner of the
productronica
innovation award 2019



X2000SM *series*

LASER DIRECT IMAGING FOR
PCB SOLDER MASK APPLICATIONS



WWW.LIMATA.COM



X2000SM series

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The LIMATA **X2000-SM** Series is a laser direct imaging system designed for the imaging of sophisticated PCB solder mask applications in large-scale PCB production environments.

The **X2000** platform is standardly equipped with a **double drawer system including parallel registration**. With this feature, the PCB patterning process can be reduced from four process steps (including loading, registration, imaging, unloading) down to only one step (imaging). A fully automated **X2000 twin-set** option provides further capacity for high-volume PCB production.

Best in class registration of the panel is guaranteed by using a multi-point sub-registration approach without any loss in capacity and non-linear scaling. Up to 4 HD cameras with RGB light can detect the reference marks without influencing production throughput.

The **X2000-SM system** combines different laser diode wavelengths in one precise laser spot to harden the surface by simultaneously polymerizing the ink on the bottom.

Finest dashes and spaces are achieved by using a **variable beam shaping optic (HD / HR option)** which provides for an automatic laser spot size alignment during the imaging of standard PCB and HDI solder mask applications.

The UV polymerization process is accelerated by a regulated dose of heat. This unique **LUVIR Technology (UV/IR) approach** (patent applied) is especially suitable for the imaging of standard inks with high energy doses at higher throughput rates.

Availability of complementary **automation options** for a fully automated single or dual LDI system operation.

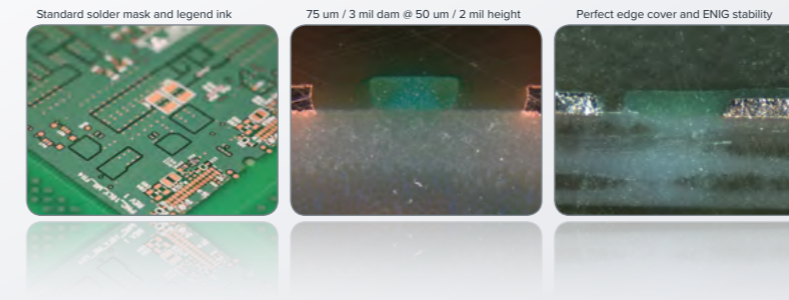
Features and Benefits

- **UV-laser diode wavelength set-up combined with IR laser (LUVIR Technology)** ensures fastest solder mask process speed and higher throughput capacities on all standard solder mask inks
- **Multi-wavelength laser diodes** combined within one precise laser spot
- **Highest optical depth of focus** for similar power distribution on copper and base material
- **No power limitation** facilitated by a laser mirror system with perfect power dissipation
- **Long lifetime of imaging unit** through use of laser diodes and galvo scanning mirror
- **RGB & IR camera lightning** for easier fiducial detection on all colors
- **Ease of use** operator friendly handling and data interface

Applications

- **Standard PCB and HDI production**
Consumer electronics, automotive, industrial, military, aerospace, medical
- **Custom PCB production**
Thick copper

Solder Mask imaging examples



System Features

Market:	Medium to high volume PCB production
Operating table:	Dual table
Vacuum table:	Included
Mechanical system:	XY Linear drive gantry system
Base:	Full granite
Weight:	ca. 4.500 kg
Dimensions:	1,5m x 3,2m x 1,95m / 59" x 126" x 76"
Footprint:	4,8 m ²
Communication interface:	Ethernet
Power supply:	400 VAC / 3+1 Phase
Upgradeable:	Up to 4 heads
Max. image size:	710 x 610 mm ² / 28" x 24"
Extended working area (option):	610 x 1250 mm ² / 24" x 49"
Max. panel thickness:	25µm - 15 mm / 1mil - 0.6"

Imaging Features

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

Resolution Accuracy**

Min. dams:	50 µm / 2 mil
Min. S.R.O.:	50 µm / 2 mil
Max. edge roughness:	+/- 10% min. res.
Max line width tolerance:	+/- 10% min. res.

Registration Features:

Reg. System:	up to 4 x HD Cameras
Camera Lighting:	RGB / IR
Registration accuracy:	up to +/- 10 µm / 0.4 mil
	Outer layer to solder layer [typ.:]*

For more information
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* depending on fiducial and layout quality
** depending on solder mask material and thickness

X2000SM series

LASER DIRECT IMAGING FOR
PCB SOLDER MASK APPLICATIONS

Solder Mask Module LUVIR Technology

- Unique UV/IR Laser setup for optimized and faster solder mask imaging (on all conventional ink types)
- All common colors can be processed with optimized speed & accuracy

System Options

Multi point registration

- Detection of multiple fiducials for max. registration quality
- No cycle time loss from registration due to parallel working HD camera systems and double drawer handling approach



HD-Option

- Adjustable laser spot size for advanced HDI production
- Improvement of power density-processing of dams and spaces down to 2 mil / 50 μm



Automation

- The X2000 platform can be complemented by a robotic set-up for a fully automated and less labor intensive LDI operation



LUVIR Technology



X2000 SM-modular system configurations



LDI System family	X2200-SM	X2300-SM	X2400-SM
UV laser heads	2	3	4
UV diode lasers spots per head	4/6	4/6	4/6
Total UV Lasers	8/12	12/18	16/24
IR laser sources	2	3	4

Modularity

