LIMATA

X1000 *series*

FLEXIBLE LASER DIRECT IMAGING SOLUTION
FOR PCB INNER- AND OUTER LAYER
AND SOLDER MASK APPLICATIONS

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The X1000 series is an universal and cost-efficient Laser Direct Imaging (LDI) system platform designed for the use in high-mix/low-volume PCB manufacturing environments. The system is flexible deployable to the dry-film patterning or solder mask imaging process.

The new X1000 LDI system platform ensures maximum efficiency and throughput - i.e. from the use of LIMATA's proprietary **LUVIR Technology** (UV/IR) imaging technology for solder mask imaging - at lowest possible Costs of Ownership over the equipment life-cycle.

Ideal for PCB manufacturers (or special PCB divisions of larger PCB makers) with high-mix/low-volume production mixes or imaging output requirements of up to 500 panels per day in a multi-shift operational mode (HDI, standard-rigid, flex). An optimized system operations footprint further provides for an easier placement and system movement within each facility.

Complementary customized X1000 automation features for the fully-automated direct imaging of i.e. reel-to-reel flex PCB's are available upon request.

X1000 with reel - to reel automation for Flex-PCB

Features and Benefits

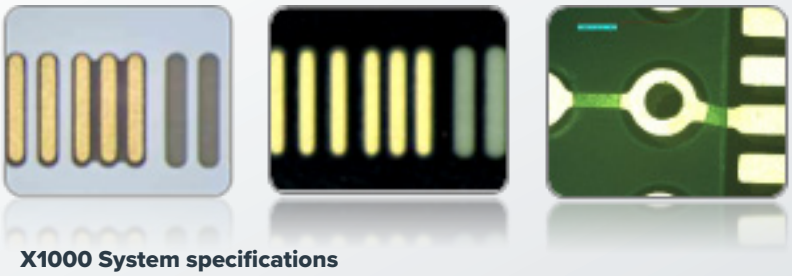
- **Flexible LDI platform** for dry-film patterning and solder mask applications available in two imaging capacity configurations (X1100 / X1200)
- **UV-laser diode wavelength set-up combined with IR laser LUVIR Technology** ensures fastest solder mask process speed and throughput capacities of up to 500 panels per day *
- **Highly-accurate panel registration** (multi-point sub-registration approach)
- **Longer lifetime of imaging unit and lower TCO's** through use of UV-laser diodes and galvo-scanning mirror technology
- **Ease of use** operator friendly handling and data interface
- **Small and compact operational machine footprint** ensures fast placement and deployment to all PCB manufacturing environments

* based on conventional ink types and 3-shift operational mode

Applications

- **Standard / HDI / FLEX PCB production**

Solder Mask imaging examples



X1000 System specifications	
Market:	High-mix / flexible PCB production
Operating table:	Single drawer system
Vacuum table:	Included
Mechanical system:	XY Linear motor
Base:	Full granite
Weight:	ca. 1,500 kg
Dimensions:	2,4 m x 1,2 m x 1,8 m / 94“ x 47“ x 71“
Footprint:	2 m^2
Communication interface:	Ethernet
Power supply:	230 VAC 50Hz / 1 Phase
Upgradeable:	Up to 2 heads (X1200)
Max. image size:	660 x 610 mm^2 / 26" x 24"
Extended working area (option):	812 x 610 mm^2 / 32“ x 24“
Max. panel thickness:	20µm - 15 mm / 0.8 mil - 0.6"

Imaging Features	
UV Light engine:	Diode lasers
UV Laser wavelength:	400-410 nm
IR Light engine:	IR fiber laser
UV & IR Lifetime laser [typ.:]	> 25.000 h
UV Lasers per head:	4 - 6
Number of heads (exposure units):	1 - 2
Depth of focus:	+/- 500µm / 20mil

Resolution Accuracy**	**Solder Mask**
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.

Resolution Accuracy**	**Dry-Film**
Min. Lines (HD-Option):	25 µm / 1 mil
Min. Space (HD-Option):	25 µm / 1 mil
Max. edge roughness:	+/- 10% min. res.
Max line width tolerance:	+/- 10% min. res.

Registration Features	
Reg. System:	Up to 2 x HD Cameras
Camera Lighting:	RGB / IR (option)
Registration accuracy:	
Outer layer to solder layer [typ.]: *	< +/- 25 µm / 1.0 mil
Registration accuracy:	
Top to bottom [typ.]:	< +/- 15 µm / 0.6 mil

For more information
please contact us:

Limata GmbH

Adress
Gutenbergstr. 4
85737 Ismaning
Germany

Phone
+49.89.219091-130

Email
info@limata.de

* depending on fiducial and layout quality
** depending on resist material

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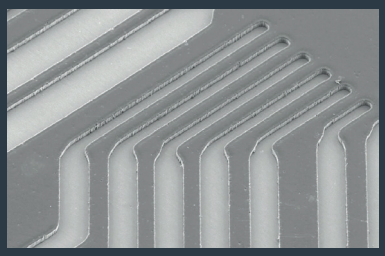
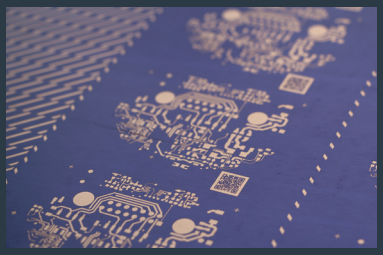
Solder Mask Option (LUVIR Technology)

- 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

LUVIR Technology





Standard system features

HD-Option

- Adjustable laser spot size for advanced HDI production
- Processing of lines / spaces down to 1 mil /25 um

Multi-Point Registration

- Detection of multiple fiducials for max. registration quality

Traceability & MES - Interfaces

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

Automation options

- **NEW:** R2R automation
- Single robot automation

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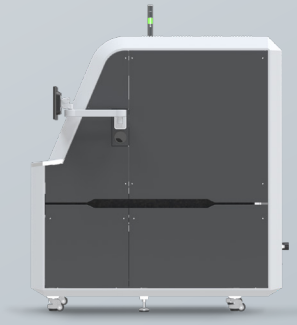
MES data interface programming options

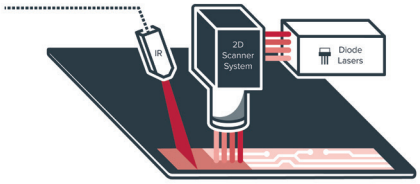
- Customized interface programming (ERP / production data bases)

X1000 modular system capacity configurations

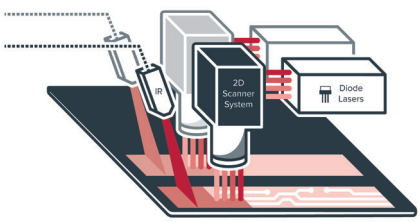


LDI System family	X1100	X1200
UV laser heads	1	2
UV diode lasers / spots per head	4/6	4/6
Total UV lasers / spots	4/6	8/12
IR Laser Modules (Solder mask)	1	2

Modularity



X1100



X1200