X1000 series
FLEXIBLE LASER DIRECT IMAGING SOLUTION FOR PCB INNER- AND OUTER LAYER AND SOLDER MASK APPLICATIONS
WWW.LIMATA.COM
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 750 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.

Features and Benefits

• Flexible LDI platform for dry-film patterning and solder mask applications available in three imaging capacity configurations (X1100 / X1200 / X1300)

• UV-laser diode wavelength set-up combined with IR laser

LUVIR Technology ensures fastest solder mask process speed and throughput capacities of up to 750 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

• Fully modular and flexible automation system X1000A available in single and twin configuration

Applications

• Standard / HDI / FLEX PCB production

Solder Mask imaging examples

X1000 System specifications

<table>
<thead>
<tr>
<th>Market:</th>
<th>High-mix / flexible PCB production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating table:</td>
<td>Single drawer system</td>
</tr>
<tr>
<td>Vacuum table:</td>
<td>Included</td>
</tr>
<tr>
<td>Mechanical system:</td>
<td>XY Linear motor</td>
</tr>
<tr>
<td>Base:</td>
<td>Full granite</td>
</tr>
<tr>
<td>Weight:</td>
<td>ca. 1,500 kg</td>
</tr>
<tr>
<td>Dimensions:</td>
<td>2.4 m x 1.2 m x 1.8 m / 94” x 47” x 71”</td>
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<tr>
<td>Footprint:</td>
<td>2 m²</td>
</tr>
<tr>
<td>Communication interface:</td>
<td>Ethernet</td>
</tr>
<tr>
<td>Power supply:</td>
<td>220-230 VAC 50/60Hz / 1 Phase</td>
</tr>
<tr>
<td>Upgradeable:</td>
<td>Up to 3 heads (X1300)</td>
</tr>
<tr>
<td>Max. image size:</td>
<td>660 x 610 mm² / 26” x 24”</td>
</tr>
<tr>
<td>Extended working area (option):</td>
<td>812 x 610 mm² / 32” x 24”</td>
</tr>
<tr>
<td>Max. panel thickness:</td>
<td>20µm - 15 mm / 0.8 mil - 0.6”</td>
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</tbody>
</table>

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 - 3
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 3 x HD Cameras
Camera Lighting: RGB / IR
Registration accuracy: Outer layer to solder layer [typ.]*: < +/- 25 µm / 1.0 mil
Registration accuracy: Top to bottom [typ.]: < +/- 10 µm / 0.4 mil

For more information please contact us!

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* depending on fiducial and layout quality  ** depending on resist material
X1000 series
FLEXIBLE LASER DIRECT IMAGING SOLUTION
FOR PCB INNER- AND OUTER LAYER
AND SOLDER MASK APPLICATIONS

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

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: X1000A Limata inhouse developed inline automation single and twin
- R2R automation
- Endless XXL option

MES data interface programming options
- Customized interface programming (ERP / production data bases)
- Industrie 4.0 realtime production overview and predictive maintenance capability

X1000 modular system capacity configurations

<table>
<thead>
<tr>
<th>LDI System family</th>
<th>X1100</th>
<th>X1200</th>
<th>X1300</th>
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</thead>
<tbody>
<tr>
<td>UV laser heads</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>UV diode lasers / spots per head</td>
<td>4/6</td>
<td>4/6</td>
<td>4/6</td>
</tr>
<tr>
<td>Total UV lasers / spots</td>
<td>4/6</td>
<td>8/12</td>
<td>12/18</td>
</tr>
<tr>
<td>IR Laser Modules (Solder mask)</td>
<td>1</td>
<td>2</td>
<td>3</td>
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Modularity