LIMATA

X1000

Powered by

PX technology

About X1000

A versatile and compact DI system with minimum footprint designed for manual or automated process set-ups.

Supports short-run production, mid- to high-volume (turnkey automated), and a wide range of resist and solder mask applications - all on one system platform.

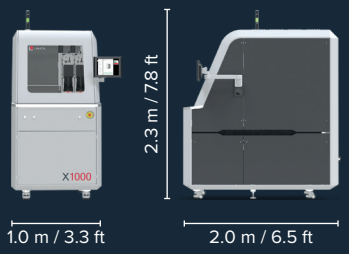
Key Benefits

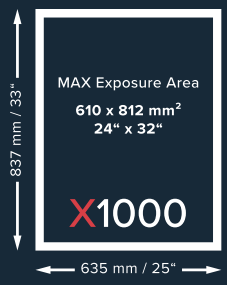
- Unparalleled manufacturing flexibility
- Highest imaging speed and efficiency („prints / head“)
  Powered by PX-Technology
- Fully digitized workflow and real-time process control
- Best-in-class OEE and TCO over the equipment lifefycle

X1000 | Specifications

1. Basic Machine Specification

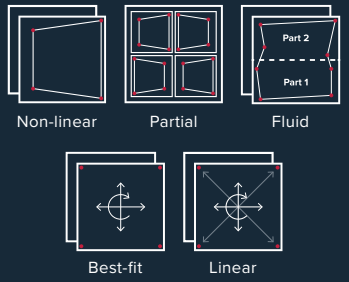
Facilities	External dimensions (W x D x H)	1.0 m x 2.0 m x 2.3 m (3.3 ft x 6.5 ft x 7.8 ft)
	Manufacturing footprint (floorplan / W x D)	ca. 3.0 m x 4.0 m (10 ft x 13 ft) (incl. space for ancillaries and service)
	Weight	1500 kg
	Power (DI + Vacuum system)	380 - 400 VAC 50-60 Hz 32 A / 3 Ph (Std) 480 VAC 50-60 Hz 32 A / 3 Phase (US)
	Power consumption (DI + Vacuum system)	< 6 KW in full in exposure mode
	Safe operating temperature / humidity range	Optimal 18°-25°, 40-60 % humidity
	Compressed air supply (vacuum table)	6-8 bar I 1.5 m^3/min
Motion	Mechanical (X,Y)	High-precision XY- linear axis system on granite base
	Position repeatability (motion axis system)	+/- 100 nm (Robax glass encoder system)
Panel Handling	Table system	Single table 1 vacuum table (anti-stick coated with integrated pressure sensorics)
	Max. panel size	635 mm x 711 mm (25“ x 28“) Standard 635 mm x 837 mm (25“ x 33“) XL option
	Max. exposure area	610 mm x 660 mm (24“ x 26“) Standard 610 mm x 812 mm (24“ x 32“) XL option
	Max. panel thickness	Up to 6 mm (0.23“) Optional up to 15 mm (0.6“)
Compliance	Base machine Electro-mechanical	CE / UL certified





2. Registration

Scaling and Registration	Advanced transformation and scaling modes	• Best Fit • Linear Scaling • Non-linear Scaling • Partial multi-point alignment • Fluid scaling (XXL boards)
	Registration system	CCD HD Cameras with telecentrical optics Camera Lightning: RGB / IR
	Target recognition types	Mechanical and laser drilled holes, etched fiducials, UV markers, punch marks etc.
	Optional target generation	UV markers (in vacuum table)
	Registration accuracy (front-to-back) [3σ / 4 targets]	+/- 10 µm



3. Digital Imaging

3.1. PX-Light Engines

PX technology	**DMD_DLP Chipset**	4K_Ultra HD **PX 4K** UV_Ultra **PX UV**
	UV-LED Illumination	**3-wavelength spectrum** (UV, standard) 365 / 385 / 405 nm **4-wavelength spectrum** (UV and white, optional) 365 / 385 / 405 nm + [420 nm]
	Advanced optical lens systems	+/- 500 µm optical D.o.F (PX_4K_30) +/- 200 µm optical D.o.F (PX_UV_15)
PX LUVIR technology	**IR-Laser add-on (UV+IR imaging)**	Fiber-coupled IR laser
Imaging accuracy and consistency	**Stitching**	Fully automated stitching adjustment and control
	Autofocus	Individual autofocus per light engine (+/- 10 mm)
	Alignment	Automated head-to-head alignment
	Calibration	Auto-calibration mode

3.2. Imaging Features and Applications

Resist patterning	Applications	**MLB (Inner-/Outer) HDI, CM**	**Adv HDI | mSAP FPC, CM**	**mSAP | ICS**
	PX Light-Engine models	PX 4K [30]	PX UV [15]	PX 4K [10]
	Min. Resolution (Line and Space)	30 µm L/S	15 µm L/S	10 µm L/S
	Optical depth of focus (DoF)	+/- 500 µm	+/- 200 µm	+/- 150 µm

Solder Mask Imaging	Solder Mask types	**DI Solder Mask**	**Conventional SM**
	PX Light-Engine models	PX 4K [30]	PX LUVIR
	Min. Dam / SRO	50 µm / 75 µm	30 µm / 50 µm
	Most suitable Energy ranges	50 - 250 mJ/cm²	250 - 1500 mJ/cm² (UV+IR)

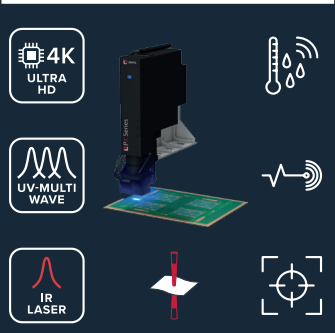
3.3. Imaging Performance by Application and System Configuration

Resist patterning	**Exposure cycle time** * per side of a panel (24“ x 18“)	**1-Head**	**2-Head**	**3-Head**
PX 4K [30]	Resolution: 30 µm L/S Energy: 30 mJ / cm²	< 12 sec	< 7 sec	< 5 sec

Solder Mask Imaging	**Exposure cycle time** * per side of a panel (24“ x 18“)	**1-Head**	**2-Head**	**3-Head**
DI Solder Mask PX 4K [30]	Dam/SRO: 50µm / 75µm Energy: 150 mJ/cm²	< 35 sec	< 25 sec	< 15 sec
Conventional SM PX LUVIR	Dam/SRO: 30µm / 50µm Energy: 600 mJ/cm² (IR) IR: Included	< 75 sec	< 40 sec	< 30 sec

* excluding registration / depending on resist and solder type and process

PX technology



Real-time monitoring and control

Enabled by embedded sensor systems and software algorithms

- Temperature and humidity sensoric
- UV-power and focus measurement sensor system
- Sensorics for automated stitching and calibration

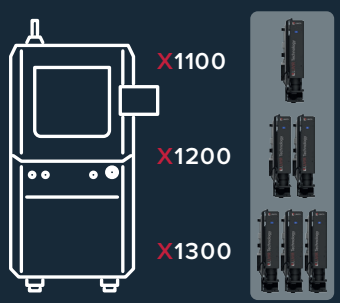
Wide resist material capability

Eternal · DUPONT · Elga · RESONAC · ELECTRA · KOLON · AsahiKASEI

All ink types, brands and colors

TAIYO · peters · SunChemical · NPT · TAMURA · TECHNIC · SEKISUI · ELECTRA

Modular Scalable Imaging
[1-3 PX heads]



Field-upgrade options with minimum downtime

4. Software

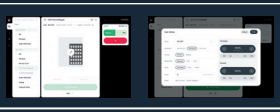
PC-Hardware	Machine PC	Industrial System PC incl. GPU
	PX Imaging PC	External (server rack) or integrated PC 1 PC per additional imaging head (max. 2)
	Operating System	Windows 11 LTSC (ITAR compliant)
	Communication Interface	Ethernet (GigE)
Software Data Connectivity	CAM data import	Extended Gerber RS-274X (standard) ODB++, DPF, DXF etc. Support of many further data formats
	Job Preparation Software	LIMATA Path-X Desktop PC App, on machine or external server
	HMI (Human-Machine-Interface)	LIMATA Print-X 15“ touchscreen or mouse / keyboard + 8 operator languages
Software Options	Traceability	Support of multiple serialization levels and complex formats (Reading and Writing) QR-Code I DataMatrix I Dot or Drill DMC I Barcode
	Real-time machine data and connectivity	All in one database Data connectivity with factory systems (MES)

5. X1000 Automation Options I Island of Automation or In-Line

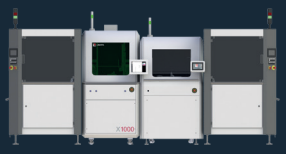
X1000 A DF Single or Twin DI	Rigid and Flex-Sheets / Max. panel size	610 mm x 610 mm (24“ x 24“)
	Application(s)	DF (Inner- / Outer Layer)
	Dimensions (W x D x H)	4.7 m x 2.3 m x 2.0 m (15.5 ft x 7.5 ft x 6.6 ft)
	Options	Extended in-line transportation options
X1000 A DF SM Single or Twin DI	Rigid and Flex-Sheets / Max. panel size	Standard max. 610 mm x 610 mm (24“ x 24“) Optional 610 mm x 765 mm (24“ x 30“)
	Application(s)	DF (Inner- / Outer Layer) SM (Solder Mask layer)
	Dimensions (W x D x H)	5.3 m x 2.3 m x 2.0 m (17.3 ft x 7.5 ft x 6.6 ft)
	Options	Extended in-line transportation options
X1000 A R2R	Application(s)	FPC (roll-to-roll) Dry-film imaging
	Max. exposure area Max. feed length	610 mm x 610 mm (24“ x 24“) 765 mm / (30“) (without stitching)
	Dimensions (W x D x H)	1.4 m x 4.9 m x 2.3 m (4.6 ft x 16.0 ft x 7.6 ft)

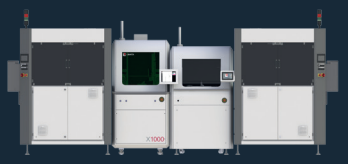
6. Other Options

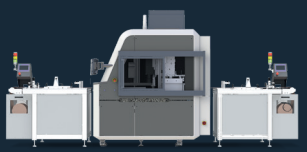
Clamping	Mechanical clamping system for fixation of warped panels (in addition to vaccuum table)	Max. exposure area (with clamping): 610 mm x 660 mm (24“ x 26“)



X1000 A







Get in touch:
info@limata.de

Address
Limata GmbH
Gutenbergstr. 4
85737 Ismaning
Germany

Phone
+49.89.219091-130
Mail and Web
info@limata.de
www.limata.com

LinkedIn
www.linkedin.com/company/limata-gmbh

limata.com