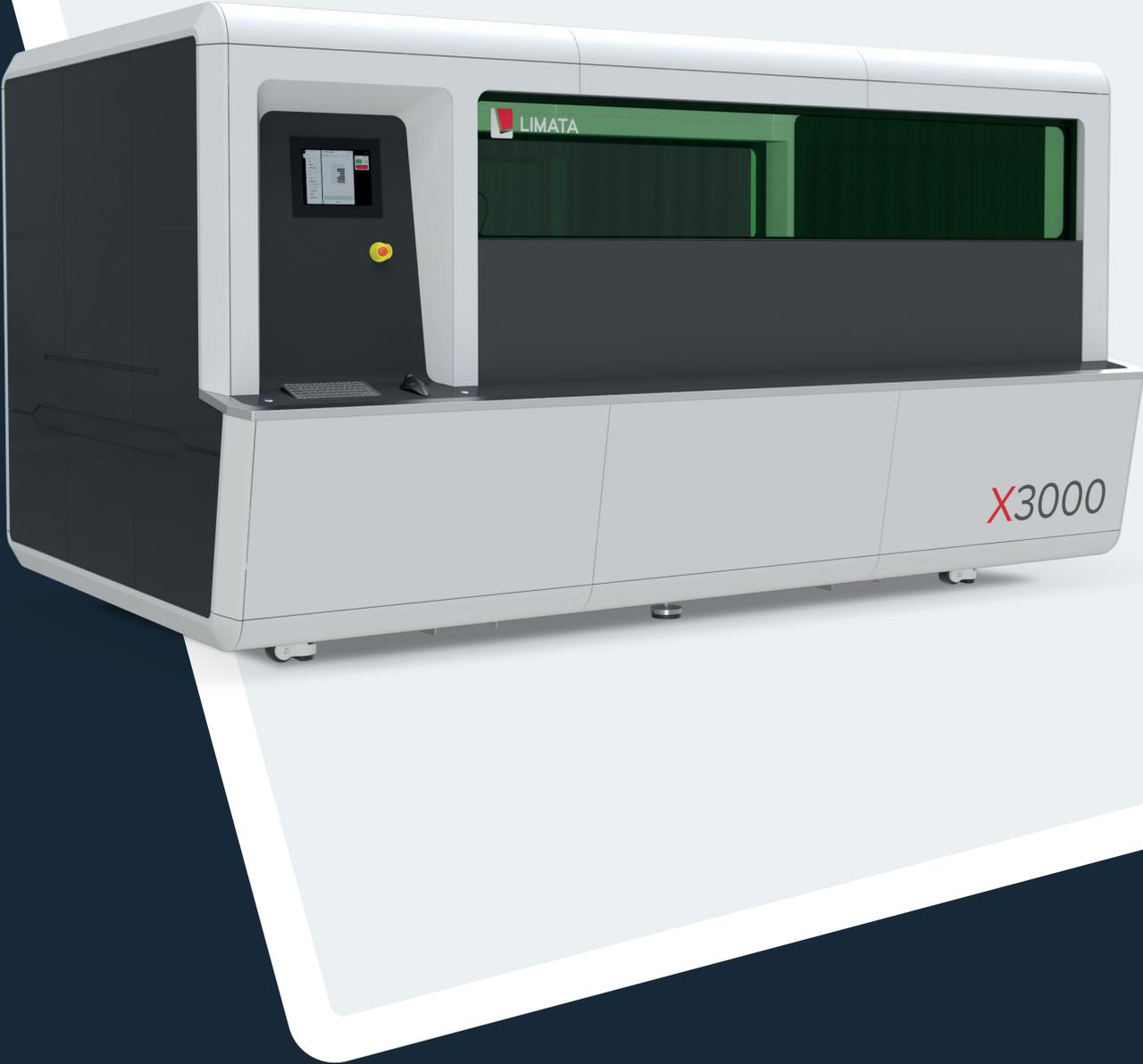


LIMATA



Powered by



X3000

About X3000

World's largest DI system supporting the digital imaging of oversized panels and substrates up to 48" x 110" or multiple panels in one imaging run.

High-speed imaging of a wide range of panel sizes with no compromises on imaging quality, resolution and accuracy.

Key Benefits

- ▶ Wide range of panel sizes and applications
- ▶ Highest imaging speed and efficiency („prints / head“) Powered by PX-Technology
- ▶ Smart manufacturing Fully digitized end-to-end exposure workflow and traceability

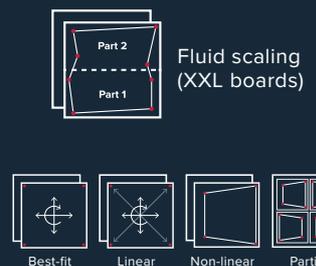
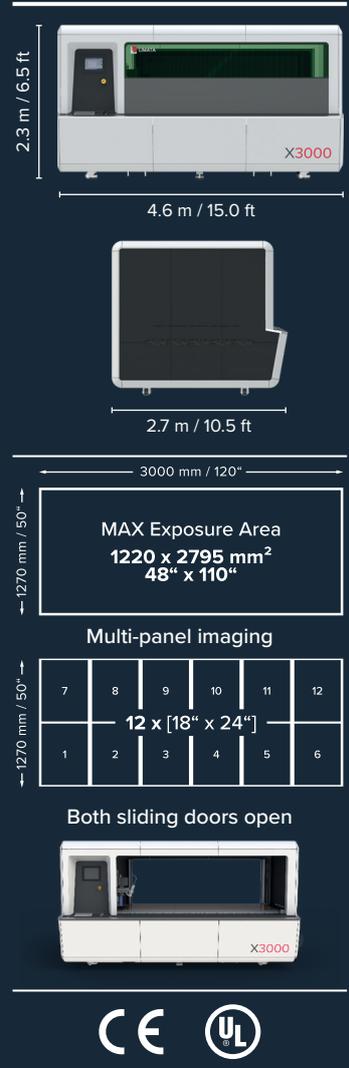
X3000 | Specifications

1. Basic Machine Specification

Facilities	External dimensions (W x D x H)	4.6 m x 2.7 m x 2.3 m (15.0 x 10.5 x 6.5 ft)
	Manufacturing footprint (floorplan / W x D)	ca. 6.0 m x 5.5 m (20 ft x 18 ft) (incl. space for ancillaries and service)
	Weight	approx. 8000 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)	< 18 KW in exposure mode max. exposure area (48" x 110")
	Safe operating temperature / humidity range	Optimal 18°-25°, 40-60 % humidity
	Compressed air supply (vacuum table)	6-8 bar 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
Panel Handling	Table system	Single table incl. 4 individual and addressable vacuum zones and tables (anti-stick coated with integrated pressure sensorics)
	Max. panel size	1270 mm x 3000 mm (50" x 120")
	Max. exposure area	1220 mm x 2795 mm (48" x 110")
	Max. panel thickness	Up to 6 mm (0.23") Optional up to 15 mm (0.6")
	Load and unload (XXL panels)	Automatic sliding door mechanism (front / back loading option)
Compliance	Base machine Electro-mechanical	CE / UL certified

2. Registration

Scaling and Registration	Advanced transformation and scaling modes	<ul style="list-style-type: none"> • Best Fit • Linear Scaling • Non-linear Scaling • Partial multi-point alignment • Fluid scaling (XXL boards)
	Registration system	CCD HD Cameras with telecentric optics Camera Lightning: RGB / IR
	Target recognition types	Mechanical and laser drilled holes, etched fiducials, UV markers, punch marks etc.
	Optional target generation	Up to 24 retractable pins and 48 UV markers (in vacuum table)
	Registration accuracy (front-to-back) [3σ / 4 targets]	+/- 15 μm



3. Digital Imaging

3.1. PX-Light Engines

	DMD_DLP Chipset	4K_Ultra HD UV_Ultra	PX 4K 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)	
	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	

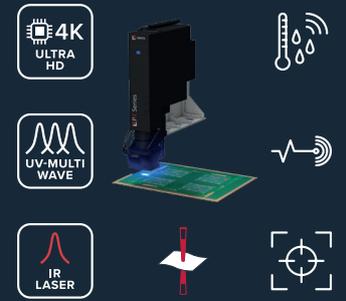
3.2. Imaging Features and Applications

Resist patterning	Applications	Standard PCB and Chemical Milling	Fineline
	PX Light-Engine models	PX 4K [30]	PX UV [15]
	Min. Resolution (Line and Space)	30 µm L/S	15 µm L/S
	Optical depth of focus (DoF)	+/- 500 µm	+/- 200 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/cm ²	250 - 1500 mJ/cm ² (UV+IR)

3.3. Imaging Performance by System Configuration

Resist patterning	Exposure cycle time * per side of a panel	Exposure area	1-Head	2-Head
PX 4K [30]	Resolution: 30 µm L/S Energy: 30 mJ / cm ²	24" x 18"	< 18 sec	< 12 sec
		48" x 48"	< 60 sec	< 35 sec
		48" x 96"	< 90 sec	< 55 sec

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



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



All ink types, brands and colors



Modular Scalable Imaging [1-3 PX heads]

X3100

X3200

X3300



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 PX PC's for 3 heads)
	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 DataMatrix Dot or Drill DMC Barcode
	Real-time machine data and connectivity	All in one database Data connectivity with factory systems (MES)



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