

IX-255-LLO

Laser Lift-off (LLO)



Applications

- ▶ Die Size Independent LLO
- ▶ Annealing
- ▶ Micro Drilling/ Via Drilling
- ▶ Thin-film Patterning
- ▶ Selective Material Removal



Features

- ▶ Pre-set Configurations for Laser Lift-off (LLO)
- ▶ Beam Size up to 500 x 500 μm
- ▶ Optional Mask Changer for Complex Micromachining
- ▶ 248 or 193 nm Laser Options Available
- ▶ Dual Magnification Vision System with Sub-micron Part Alignment
- ▶ Precision Stages with $\pm 5 \mu\text{m}$ Motion Control Accuracy



IPG Photonics' IX-255 is optimized for high repetition rate LLO with additional capability for multi-purpose, R&D and small-scale production applications. The system combines a Class 1 workstation integrated with a proprietary UV laser, optional tool shape selector and software for complex automation sequences. Beam Optional on-target and mask plane beam profometry can be added for additional process monitoring. Includes select grade homogenizer optics to provide uniform exposure over user selectable areas up to 500 x 500 μm .

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System Specifications

Motion Control Electronics	Up to 8-axes of Servo or Step Motor Control, Integrated into Single Interface for all Motorized Components as well as the Laser Fire Mechanism
X-Y Part Positioning Stage	Linear Glass Scale Encoders; Linear Motor Servo Drive System
X-Y Stage Specifications	Travel: Up to 125 mm Diameter Standard, Optional up to 150 mm Resolution: 0.1 μm Accuracy: $\pm 5 \mu\text{m}$ over 125 x 125 mm area Repeatability: $< 1.0 \mu\text{m}$ (bidirectional)
Z-theta Wafer Alignment Stage	Step Motor Drive System for both Z- and Theta-axes
Z-axis Specifications	Travel: 10.0 mm Resolution: 0.25 μm Accuracy: $\pm 5.0 \mu\text{m}$ Repeatability: $< \pm 4.0 \mu\text{m}$ (bidirectional)
Theta-axis Specifications	Travel: $\pm 175^\circ$ Resolution: 0.001 $^\circ$ Accuracy: $\pm 0.02^\circ$ Repeatability: $\pm 0.003^\circ$
Video Microscope System	MicroTech Camera Assembly OXC Camera for On-target Process Viewing High Magnification Inspection Camera

Optional Features

Extended Field Size	Beam Homogenizer Providing Controlled Beam Energy Uniformity over Larger Field Size; Optimized for $> 2x$ system throughput in Lower-fluence Applications
Programmable Rectangular Variable Aperture	Enabling Continuously Adjustable Size of Rectangular Shaped Beams
Stage Options	Air-bearing X-Y Stage Upgrade, Spindle Stage, Mask Positioner
Wavelength Conversion Kits	Laser Wavelength Conversion (Requires IPG Service Engineer Support)
Optional Components	Beam Profilometers, Pulse-to-pulse Energy Monitor, System Logging Capabilities, Power Conditioning Units

+1 (603) 518-3200

sales.ipgm@ipgphotonics.com

www.ipgphotonics.com/microsystems

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