

# IX-6100

## Automated UV Laser Scribing and Dicing System



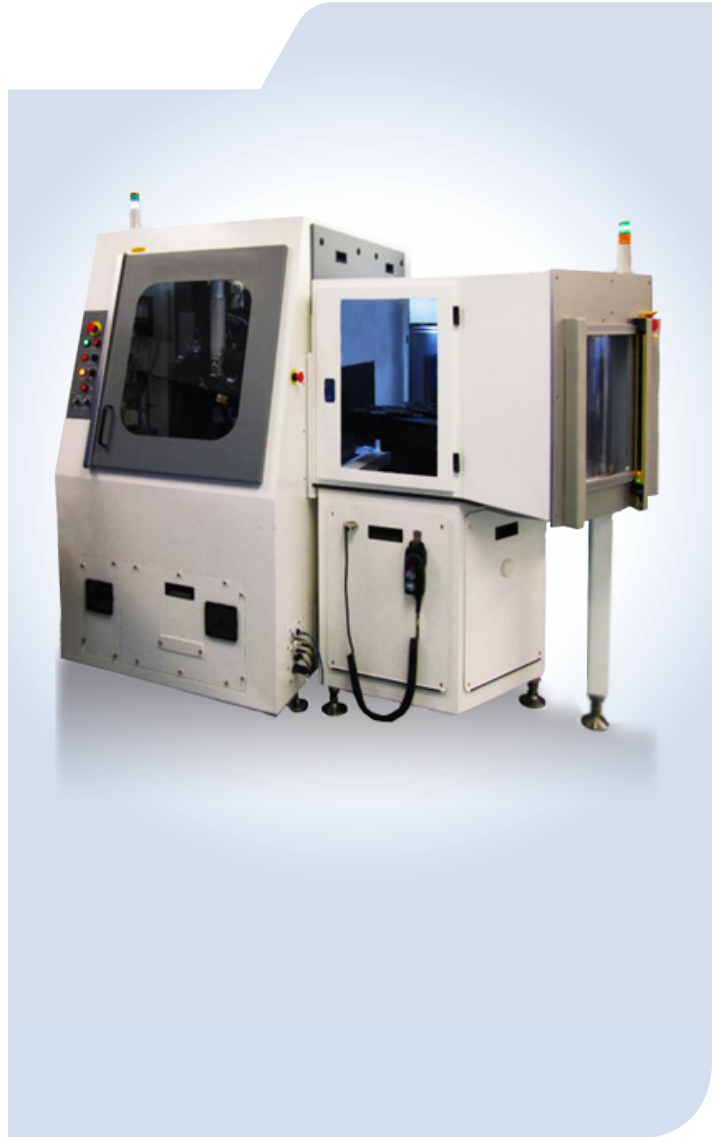
### Applications

- ▶ Scribing and Dicing of LED and Semiconductor Wafers
- ▶ Precision Foil and Film Cutting
- Sapphire, Si, SiC, GaAs and other Semiconductor Materials
- ▶ Metal Dicing Cu, Mo, Alloys



### Features

- ▶ Fully Automated: Including Part Load/ Unload and Pre-alignment for Unattended Operation
- ▶ X-Y Stages Compatible with Wafers up to 300 mm
- ▶ High Precision Z-Theta Stage for Precise Alignment Enables Scribing and Dicing of Small Die with Narrow Streets
- ▶ Low Cost: One IX-6100 Replaces Dozens of Dicing Saws or Diamond Scribers
- ▶ Reliable: Non-contact Technique Provides 24/7 Maintenance-free Operation
- ▶ Versatile: "Scribe & Break" or Dicing/ Cutting for GaAs, Si and Other Materials
- ▶ Patented Astigmatic Line Beam for Narrow Cuts- Down to 2.5  $\mu\text{m}$



**IPG Microsystems' IX-6100** solid state laser machining system delivers high-speed wafer singulation integrated with a state-of-the-art wafer loading system. Compatible with bare or film frame mounted wafers, the optional cassette load system permits uninterrupted high volume manufacturing capability. With low operation costs, combined with ultra narrow kerf widths, the IX-6100 sets a new benchmark in process speed, die yield and return on investment. Available with wavelengths from 266-1064 nm, the IX-6100 is ready for processing a variety of materials from Si to Sapphire; when equipped with IPG's patent-pending Wafer Debris nozzle, materials such as GaAs and InP are handled with ease. The IX-6100 is compatible with wafers up to 300 mm; the Integrated Automation Platform (IAP) is available in two-port or four-port configurations for unattended operation.

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## Automated UV Laser Scribing and Dicing System

### System Characteristics

Frame and Enclosure	Fully enclosed Class I laser system, heavy duty weldment frame integrates laser, beam delivery system and control electronics into a single 1 M x 1.9 M footprint; includes casters and leveling feet with vibration isolation pads
Available Wavelengths, nm	266, 355, 532, 1064
Beam Delivery System for Wafer Dicing	<b>All Granite Beam Delivery Support Structure</b> Patented optical beam delivery configuration for ultra narrow scribing kerf; Vibration isolating mounting platform for wafer stages and beam delivery optics; Stiffness and large thermal mass of granite structure prevent changes in beam delivery system alignment over time; Pneumatic, 2 position Laser Beam Stop; Precision optic mounts for stability and ease of adjustment; select grade UV optics

### System Specifications

Motion Control Electronics	Up to 12-axes of Servo or Step Motor Control, integrated into single interface for all motorized components as well as the laser fire mechanism
Air-bearing X-Y Part Positioning Stage	Linear Glass Scale Encoders; Linear Motor Servo Drive System
X-Y Stage Specifications	Travel: Up to 200 mm diameter processing area Optional Stages: Compatible up to 300 mm wafer processing Resolution: 0.1 $\mu\text{m}$ Accuracy: $\pm 3 \mu\text{m}$ over 150 mm travel Repeatability: $< 1 \mu\text{m}$ (bidirectional)
Z-theta Wafer Alignment Stage	Motorized Z-theta system
Z-axis Specifications	Travel: 10.0 mm; Resolution: 0.25 $\mu\text{m}$ Accuracy: 5.0 $\mu\text{m}$ ; Repeatability: 1.5 $\mu\text{m}$ (bidirectional)
Theta-axis Specifications	Travel: $\pm 175^\circ$ Resolution: 3.6 $\mu\text{rad}$ Accuracy: 300 $\mu\text{rad}$ overall. 25 $\mu\text{rad}/^\circ$ Repeatability: $\pm 5.0 \mu\text{rad}$
Video Microscope System	MicroTech Camera Assembly OXC Camera for On-target Process Viewing; High Magnification Inspection Camera
Optional Equipment**	Automated Cassette Load/ Unload System Wafer Pre-aligner Features Vision System with Automatic Part Alignment Database Connectivity Software; Dual Beam Profilometry On-target Power Meter; Laser Calibration Power Meter/ Beam Stop Debris Management System; Pulse Energy Monitor for Missing Pulse Detection ** Please discuss with your sales representative for more details

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