IPG PHOTONICS®

IX-280-F

Sapphire and Silicon Wafer Cutting

NEW PRODUCT

Applications

- Cutting and Shaping: Sapphire, Silicon Wafers, Ceramics and Metals
- Patterning of ITO and other Thin-films
- Selective Material Removal: Parylene, Polyimide, Polymers
- 3-D Micromachining Glass/ Polymer Microfluidics

Features

- Substrate Thickness from
- 50 microns to 3 mm
- 300 mm x 300 mm Processing Area
- Polished and Up-polished Substrate Compatibility
- Downsizing of Silicon, Sapphire and GaAs Wafers
- Compatible with Wide Range of IPG's Fiber Delivery Lasers

IPG’s IX-280-F is a Class 1 workstation optimized for thermal processing applications such as cutting of sapphire, silicon wafers, ceramics and metal foils. Configurable with a selection of fiber delivery lasers, the system incorporates a high-precision X-Y gantry stage system and dual magnification vision system for highly precise part positioning and machining.

The systems are designed with IPG Microsystems' Class 1 laser processing workstations and combine IPG's advanced fiber laser technologies with production-grade optics and precision mechanical modules, fully integrated with easy-to-use operating software.

Systems can be configured for single-part batch processing, multi-laser head high throughput and fully automated robotic-loading operation. Standard and custom designed products are available. Fiber lasers, cutting heads and workstations are manufactured by IPG in the USA and supported by the IPG Photonics worldwide network of applications, service and support centers.

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Characteristics

Base Platform	Class 1 laser system with integrated laser, heavy duty weldment frame, all-granite vibration isolation platform and beam delivery support structure in a 960 mm x 1220 mm footprint
Base Delivery System	Laser operating at 1064 nm; 3-axis motion (including laser fire) control system; single camera, Z-axis manual controls, fiber laser beam forming optics and demag or expansion optics, precision X-Y stage for 300 mm x 300 mm diameter parts; LED part illumination with dimmer control and standard chuck and debris extraction

System Specifications

Part Handling

Motion Control Electronics	Additional 4- or 8-axes of motion, required for some options
X-Y Stage Specifications	300 mm x 330 mm; Accuracy: ±5 µm over 125 µm travel (±3 µm Optional); Repeatability: <1.0 µm
Z-theta Adjust	Choice of standard or high performance manual or motorized Z-theta stages
Lathe Stage (Optional)	Rotary stage for round parts up to 10 mm diameter; mounts to standard X-Y stage
IAP (Optional)	Automated part handling for uninterrupted production

Beam Formation and Scanning

Beam Delivery	Fiber delivery to cutting head
Laser Optics	Beam demagnification or expansion optics to support target application
Thermal Cutting/ Weld Head	Integrated gas jet assembly, two process gasses supported, options include lens focal lengths and nozzle diameters

Beam Characterization

Power Meter	On-target power meter and data logging enables programmable measurement and adjustment

Process Quality and Speed

Sapphire Thickness	Typical Cutting Speed
0.4 mm	10-14 mm/sec
1.0 mm	8-10 mm/sec
3.0 mm	3-8 mm/sec

+1 (603) 518-3200
sales.ipgm@ipgphotonics.com
www.ipgphotonics.com/microsystems

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