

LaserMill

Benchtop Laser Micro-machining System



A Turn-key Solution: The LaserMill's solid-state YAG laser, 2 1/2 -axis stages and video-microscope with zoom magnification are completely software controlled.

For prototyping, short-runs, R&D and pilot line development, the LaserMill is ready to use out of the crate.

With Tangible Returns: Perform many of the same functions on the LaserMill as contract job shops offer. Save time & money consumed by out-sourcing and protect your proprietary processes.

The Multi-wavelength Advantage:

Change wavelengths with one click to suit the material.

Examples	@ 532nm green	@ 355nm UV
LCD	ITO Chromium Filter-blue/green	Filter-blue/green
Semiconductor	Silicon Dioxide SOG Poly-silicon	Nitride Sapphire Ceramic
Metals	Aluminum Ti-Tungsten	Gold Aluminum Ti-Tungsten
Organics		Polyimide

Key Benefits

- This laser micro-machining system yields sharp & **repeatable** results from simple holes to complex patterns.
- **Intuitive** software controls are easy to master without training
- A compact, **solid-state** laser alternative to excimer's toxic gases & instability
- **Switchable** wavelengths to suit the material for optimal results
- The **lowest cost** of ownership

Cut • drill • ablate • weld • pattern • scribe • micro-channel • depassivate • direct-write • mark • mill

Capabilities

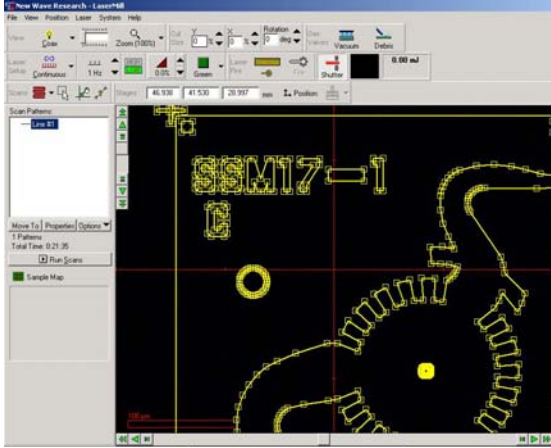
- View the work piece in-process for total control of the machining operation.
- Set the size and shape of cuts via a rotating, XY aperture down to 2µm width
- Import CAD/CAM .dxf files and machine complex patterns.
- Regulate the energy density up to 25J/cm² for the most challenging samples or near zero for the most delicate.
- Navigate the 100 X 100mm stage area using the Sample Mapping function
- Hold wafers, film and sheet stock flat with the optional vacuum chuck for uniform machining throughout.

Support

- A leader in laser material processing systems for the semiconductor and other industries.
- New Wave Research provides global support and services via its regional offices in U.S., Europe, Japan, Shanghai, and Taiwan.

User-friendly Software Interface

Reliable and user-friendly Windows® XP-based software allows for quick setup and real-time display of the actual machining operation.

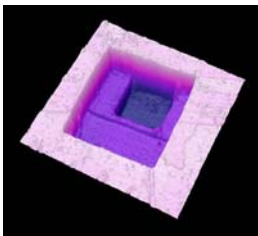


Specifications

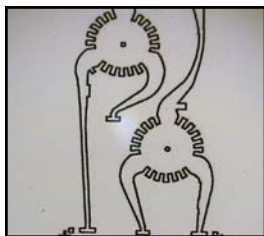
Laser	Self cooled, solid-state Nd:YAG
Energy density @ work piece	Variable from 0 to 25J/cm2 @ 532nm Variable from 0 to 7J/cm2 @ 355nm
Pulses per second	1-50Hz - single shot, burst & continuous
Cut sizes (rotating) XY apertures	Continuously adjustable
Video Microscope	With 6X zoom views features down to 2 μm
X-Y Stages	100 x 100mm travel ; 1 μm resolution
Z Stage (objective lens motion)*	25mm travel ; 1 μm resolution
Laser system classification	Class 1
System Dimensions	30" (762.0 mm) by 18" (457.2mm) footprint
Cart Dimensions (optional)	24" (609.6mm) by 33" (838.2mm) footprint
Vacuum chuck (optional)	2" (50.8 mm) diameter vacuum chuck— 3" (76.2mm) physical dimension

Applications

MEMS • bioMEMS • apertures • orifices • catheters • masks • micro-fluidics • sensors • ink-jet nozzles • filters • complex patterning



Example of 40μm x 40μm x 5μm of polyimide top layer removed with 355nm wavelength & a 20μm x 20 μm x 1 μm layer of Al removed with 532nm wavelength

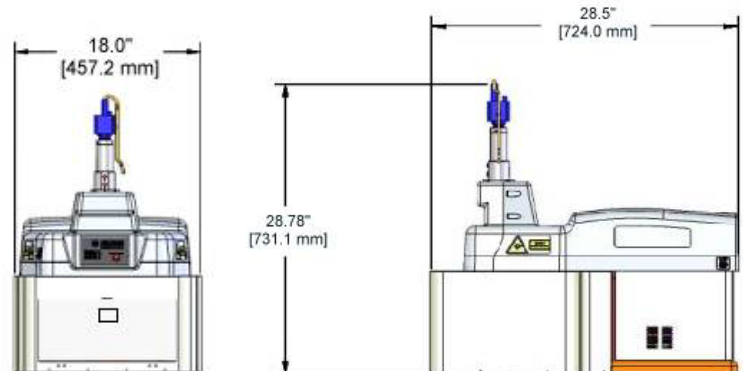


Direct-write Au on glass from DXF file at 355nm

Site Requirements

Power	100-120 or 200-240 VAC 50/60 Hz
Ambient Temperature	15° - 25° C (59° - 77° F)
Wafer vacuum	10-15 inches of Hg
Vacuum for debris removal	Flow rate: 10 cfm Vacuum level: 60" of water through a ½" ID tube.

Mechanical Specifications



* Note: measured without vacuum chuck installed.

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