

MSV 100

Laser ablation R&D tool



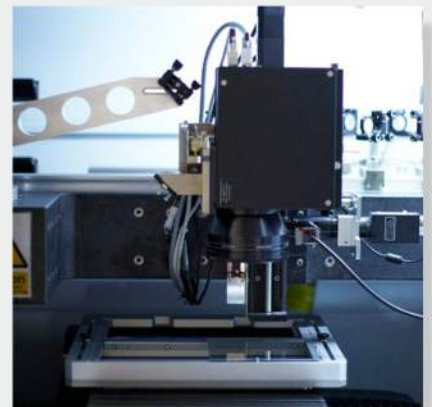
Overview

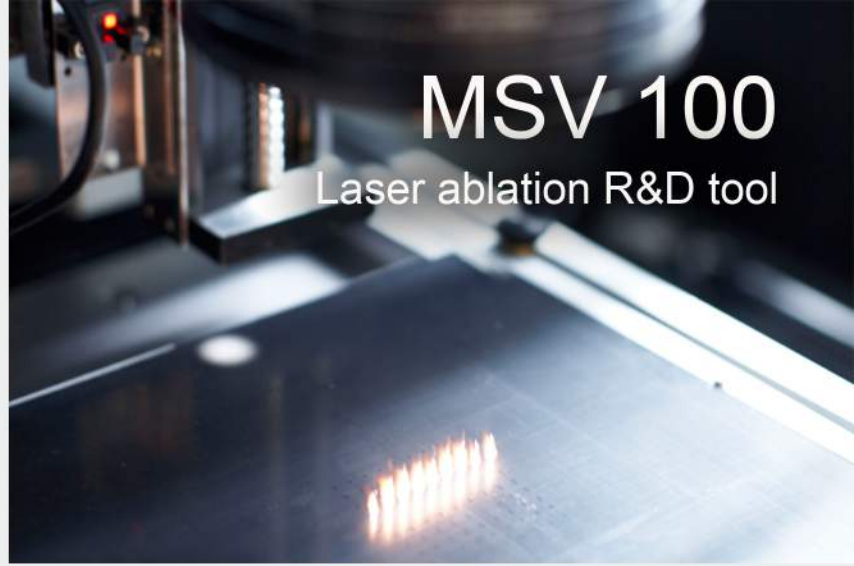


The MSV-100 platform is a high accuracy and resolution ablative laser micromachining tool, designed for advanced laser processing research and development or for production of small parts. The MSV 100 utilises a modular platform to which a wide range of lasers, optical delivery systems and process diagnostics can be specified according to the required purpose or application.

The MSV-100 represents a cost effective solution to process development in microelectronics, thin film or Transparent Conducting oxide patterning and removal such as ITO. Photovoltaic crystalline cell scribing, drilling, cutting and patterning is also a popular application for this adaptable machinery.

Based on a granite slab with a granite bridge above, mounted on vibration isolators and a steel frame, the granite structure ensures thermal and mechanical stability of the system and excellent damping of external vibrations from the environment. An x,y stage set with 300mm x 300mm travel is mounted on the granite slab and a 150mm x 150mm porous vacuum chuck is typically mounted on the stages.





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APPLICATIONS

- R&D
- Pilot or low volume production
- Laser ablation for printed electronics

PROCESS

- UV Laser photo-ablation of material
- Single step, environmentally friendly, dry process
- Rapid and flexible change of circuit design

CAPABILITIES/FEATURES

- High accuracy laser processing ($\pm 5\mu\text{m}$)
- Beam conditioning optics (application specific)
- Fully digital processing
- Auto-alignment $< 10\mu\text{m}$
- Capable for R&D or pilot production
- Fully flexible process optimisation.

LASER/OPTICS

- Laser: wide range of DPSS and fibre lasers can be integrated
- Beam conditioning options:
 - auto or manual adjustable beam expander
 - beam shaping optics
- Scanner: Galvanometer scan heads, up to aperture 20mm
- Range of optics available to give laser spot size down to $\sim 1\mu\text{m}$ or scan area up to $\sim 150\text{mm} \times 150\text{mm}$

CONTROL

- Laser firing synchronised to stage or scanner movements
- Camera + machine vision for alignment and/or inspection
- Integrated software

STAGES

Stages: *X-Y Axis (CNC)

- Drive: Precision linear rails + ball screw + linear encoder + servo motor
- Travel: 300mm x 300mm
- Speed: 500mm/s
- Repeatability: $\pm 2\mu\text{m}$
- Accuracy: $\pm 2\mu\text{m}$
- Resolution: $0.5\mu\text{m}$

Stages: *Z Axis (CNC) Focus control

- Drive: Precision linear rails + ball screw + encoder + braked servo motor
- Travel: 200mm
- Repeatability: $\pm 3\mu\text{m}$
- Accuracy: $25\mu\text{m}$
- Resolution: $2\mu\text{m}$

* Standard specification. Alternative specifications and additional axis available to suit customer requirements upon request.

MACHINE ARCHITECTURE

- Ultra stable granite structure
- Vibration isolated machine core
- Class 1 laser safe, interlocked enclosure
- Enclosed electronics within tool footprint
- Dimensions: 1.8m(H) x 1.7m(W) x 1.05m(D)
- Weight: 1600kg

In addition to the standard configuration, many options are available such as power meters, focus sensors, bespoke chucks, multiple beam paths and extra axes, please contact us to find out more.



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