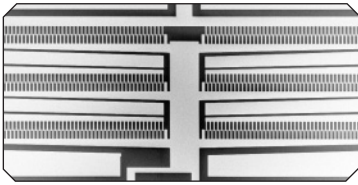
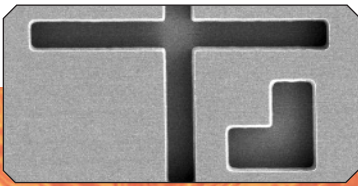


μ PG 101

*The Tabletop
Laser Pattern Generator*



maskless lithography



HEIDELBERG
INSTRUMENTS

μPG 101

The μPG 101 is an extremely economical and easy to use micro pattern generator for direct writing applications and low volume mask making. The system can be used for applications like MEMS, BioMEMS, Integrated Optics, Micro Fluidics or any other application that requires high precision, high resolution microstructures.

The μPG 101 offers a very small footprint of only 60 x 75 cm², featuring a compact design with all electronic components integrated into the system. A small separate unit provides electric power and is used to regulate the vacuum and compressed air. A personal computer is used for system control.

This tabletop system represents the perfect tool for writing features down to 3 μm size on areas of up to 100 x 100 mm² or optional even down to 1 μm on areas of up to 30 x 30 mm². It provides an easy and fast way to create the microstructures needed for your business or research.

The standard system is equipped with a diode laser at 405 nm, which presents a reliable laser source with a long lifetime. This laser can be used to expose the standard photoresists that are used in lithography. Alternatively, the system can be equipped with a laser diode at 375 nm, making it possible to expose standard resists and UV resists like SU8.

The system offers a raster-scan and vector exposure mode for high resolution 2D patterns and in addition it is also possible to create complex 3D structures in thick photoresist with a single pass. To ensure the quality of the produced structures, the μPG 101 utilizes a fixed optical path, a high precision mechanical structure and an air-bearing stage, driven by linear motors. During exposure the stage position is constantly monitored by a high resolution linear encoder system.

Key features and options

- Substrates up to 100 x 100 mm²
- Structures down to 1 μm
- Address grid down to 40 nm
- Vector and Raster exposure mode
- 3D exposure mode
- Standard or UV laser source
- Multiple data input formats (DXF, CIF, BMP)
- Camera system for alignment
- Software development kit

The camera of the μPG 101 enables the user to perform manual position measurements on the substrate as well as manual alignment. The optional automatic alignment system provides tools for an advanced alignment to already existing structures on the substrate, making it possible to perform multi-layer overlay exposures with a high accuracy.

The standard control software makes it easy for the user to convert the designs, do a manual or automatic alignment and start the exposure. To increase the flexibility of the system, an optional Software Development Kit is available. It provides a software library, which makes it possible to access certain functions of the system directly. This enables the user to modify the control software to his needs and to create new control sequences, making it possible to adjust the systems control software to specific tasks.

Specifications

Write Mode	3-Micron-Mode	1-Micron-Mode
Address Grid [nm]	100	40
Minimum Structure Size [μm]	3	1
Write Speed [mm ² /minute]	30	3
Edge Roughness [3σ, nm]	200	120
Line Width Uniformity [3σ, nm]	400	200
Maximum Write Area [mm x mm]	100 x 100	30 x 30