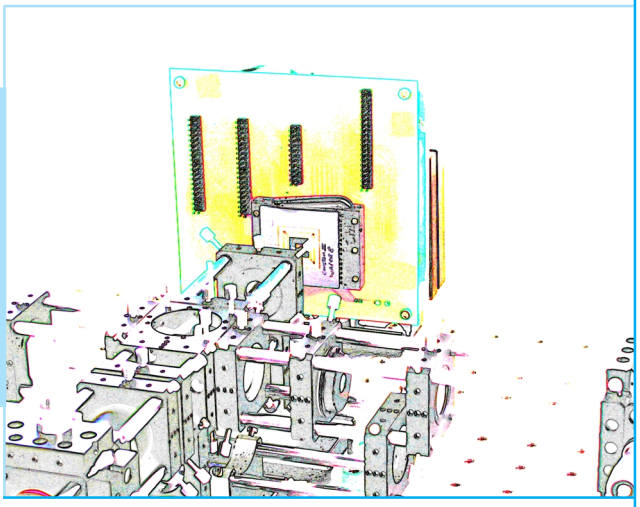
BMC Boston Micromachines Corporation

µSLM

Micro Spatial Light Modulators

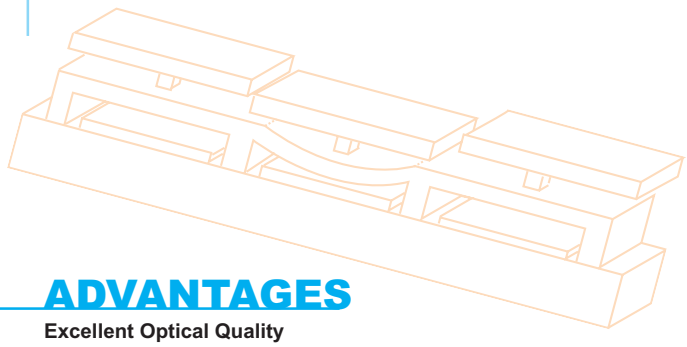
Boston Micromachines supplies and develops fast, compact, low cost, and highly reflective micro spatial light modulators (µSLM) using MEMS technology. The primary function of an SLM is to alter the phase of reflected light, which can be accomplished by deflecting individual mirror pixels. Applications of SLM include optical information processing, high definition displays, and optical correlation.

Our MEMS technology SLMs feature high frame rates, high fill factor (>98%), and no polarization effects. They were developed through a contract by the Defense Advanced Research Projects Agency, Tactical Technology Office.



STRUCTURE

The BMC µSLM is a fast, compact, and reliable product with excellent optical quality. It consists of an array of electrostatic parallel-plate actuators that are directly coupled to square mirror pixels through mechanical attachment posts. The device is fabricated using a three layer, polysilicon, surface micromachining process.



PRODUCTS

µSLM140 140 Pixels, 3.3 mm Square Aperture

µSLM1024 1024 Pixels, 10 mm Square Aperture

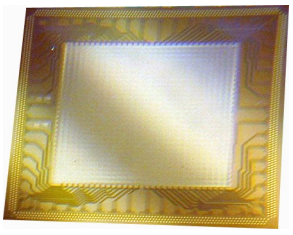


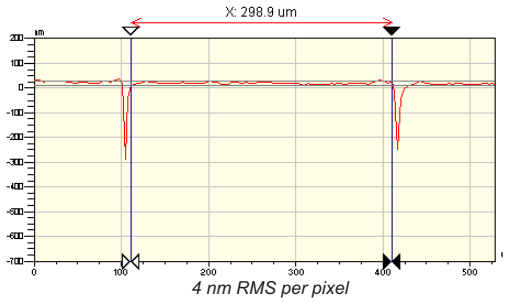
Photo of µSLM1024

ADVANTAGES

Excellent Optical Quality
~ 20 nm RMS surface flatness.
Highly reflective metallic coating in aluminum or gold

Precise Mechanics
No hysteresis
2 µm stroke
10 nm repeatability
7 kHz bandwidth in air, 80 kHz bandwith in vacuum

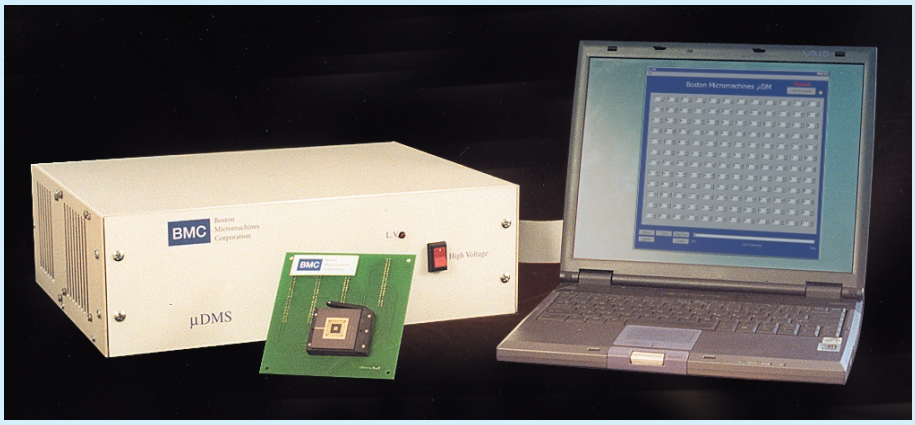
Reliable Electronics
140 or 1024 element driver
Device lifetime >500 M cycles at 1/2 full stroke
Low power consumption
PC based



4 nm RMS per pixel

SYSTEM SPECIFICATIONS

The BMC µSLM140 System (shown) consists of a 140 channel HV Driver, PC controller, µDrive™ software, mirror mount, and µSLM. The BMC µSLM1024 System (not shown) consists of a 1024 channel HV Driver, PC controller, µDrive software, mirror mount, and µSLM.



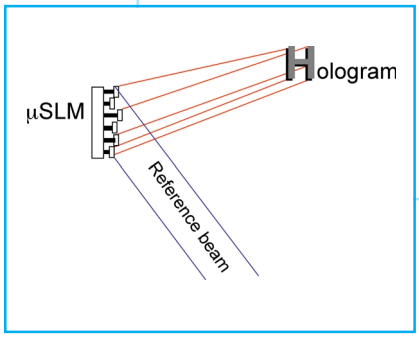
HV DRIVER
Modular 19" Rack mountable chassis
110 V, 60 Hz, 15 Amp

PC CONTROLLER
Windows® NT compatible
Integrated array driver and test software (µDrive™)

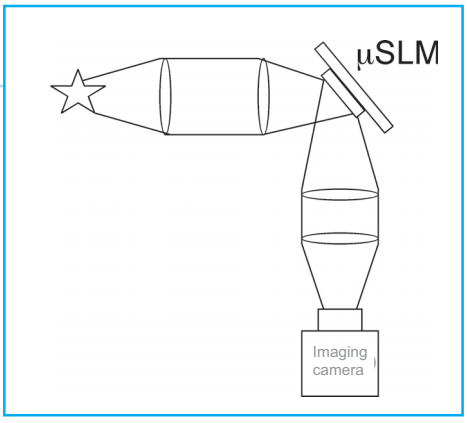
MIRROR ASSEMBLY
Pin grid array packaged
Zif socket mounted on a PCB

APPLICATIONS

- Maskless Optical Direct Writing
- Projection Displays
- Active Optics
- Optical Correlation
- Pattern/Face Recognition
- Identification Systems
- Machine Vision
- Long Range Laser Communication
- Holographic Encryption
- Optical Tweezers



Holographic encryption on a µSLM regenerates a 3D projection using a previously recorded inteference pattern of an image and a reference beam.



Optical correlator: µSLM used to compare the speckle image of objects.

BMC 108 Water Street, Watertown, MA 02472 | Tel 617-962-4178 | info@bostonmicromachines.com | www.bostonmicromachines.com