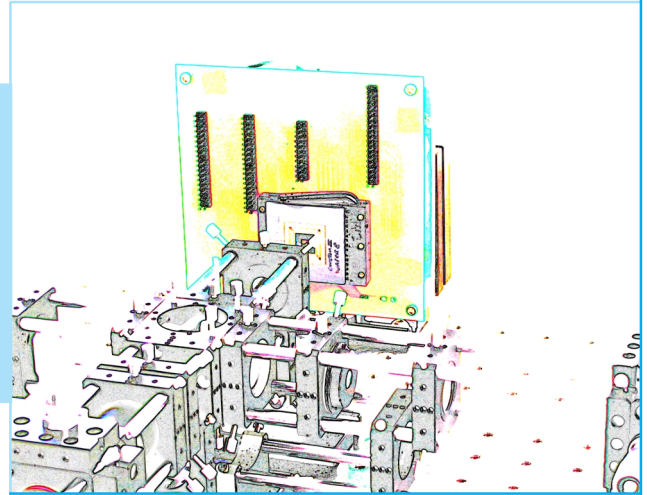


μSLM

Micro Spatial Light Modulators

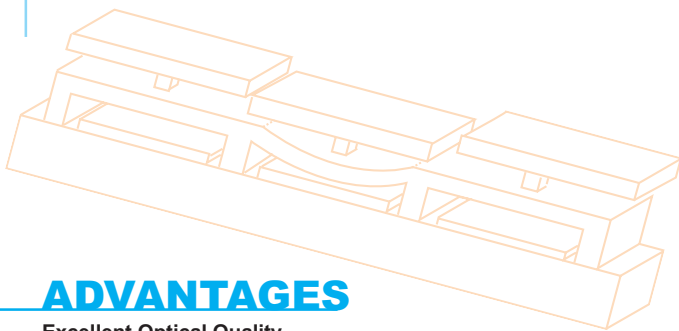
Boston Micromachines supplies and develops fast, compact, low cost, and highly reflective micro spatial light modulators (μSLM) using MEMS technology. The primary function of an SLM is to alter the phase of reflected light, which can be accomplished by deflecting individual mirror pixels. Applications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



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 bandwidth in vacuum

Reliable Electronics

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

PRODUCTS

μSLM140 140 Pixels, 3.3 mm Square Aperture

μSLM1024 1024 Pixels, 10 mm Square Aperture

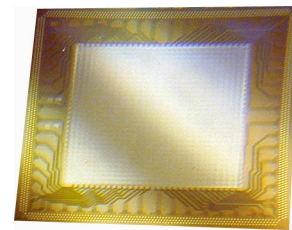
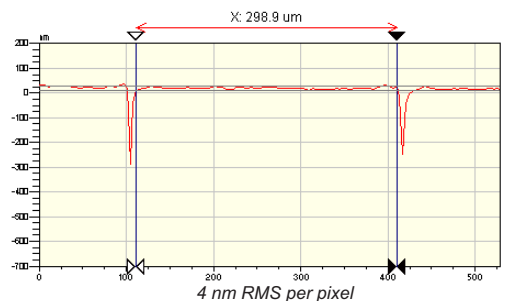
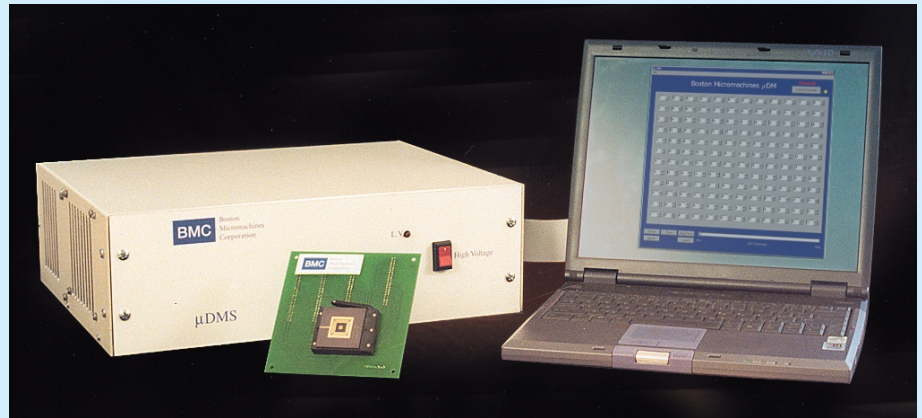


Photo of μSLM1024



SYSTEM SPECIFICATIONS

The BMC μ SLM140 System (shown) consists of a 140 channel HV Driver, PC controller, μ Drive™ software, mirror mount, and μ SLM. The BMC μ SLM1024 System (not shown) consists of a 1024 channel HV Driver, PC controller, μ Drive software, mirror mount, and μ SLM.



HV DRIVER

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

PC CONTROLLER

Windows® NT compatible
Integrated array driver and test software
(μ Drive™)

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

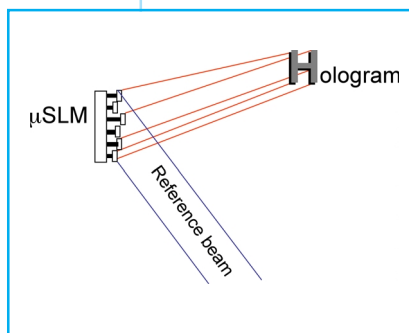
Identification Systems

Machine Vision

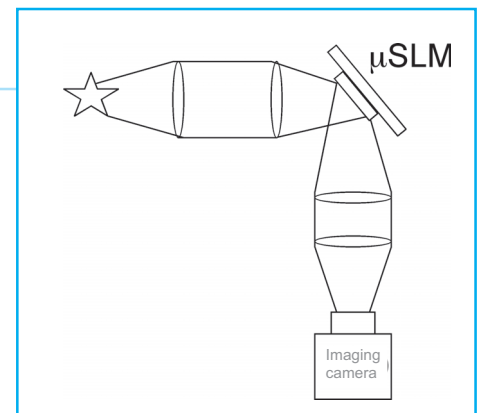
Long Range Laser Communication

Holographic Encryption

Optical Tweezers



Holographic encryption on a μ SLM regenerates a 3D projection using a previously recorded interference pattern of an image and a reference beam.



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