**BOSTON
MICROMACHINES
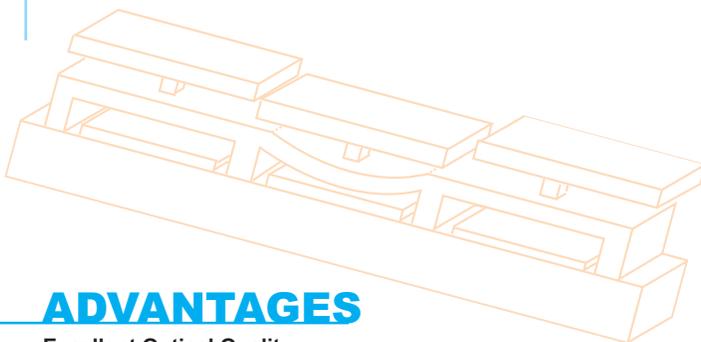CORPORATION**

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 7kHz frame rates, high fill factor (>98%), and no polarization effects.
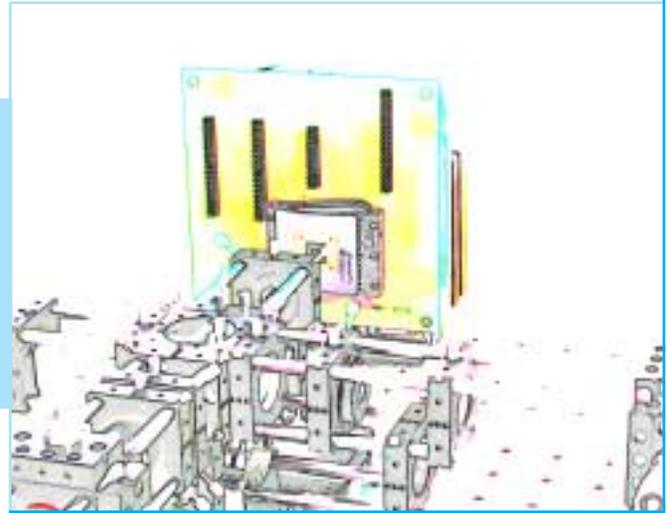
STRUCTURE

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

µSLM400   400   Pixels, 6 mm Square Aperture

µSLM1024 1024 Pixels, 10 mm Square Aperture

Microscopic view of µSLM400

4 nm RMS per pixel

ADVANTAGES

Excellent Optical Quality
4 nm RMS per pixel
Highly reflective metallic coating in aluminum or gold

Precise Mechanics
No hysteresis
2 µm stroke
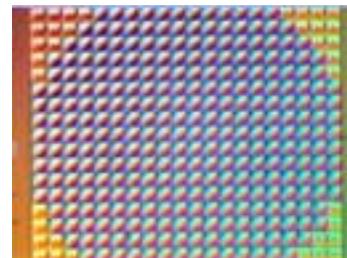4 nm repeatability
7 kHz bandwidth

Reliable Electronics
140 – 1024 electrostatic actuators
Device lifetime >500 M cycles at 1/2 full stroke
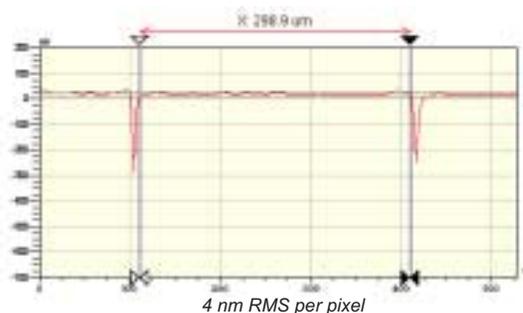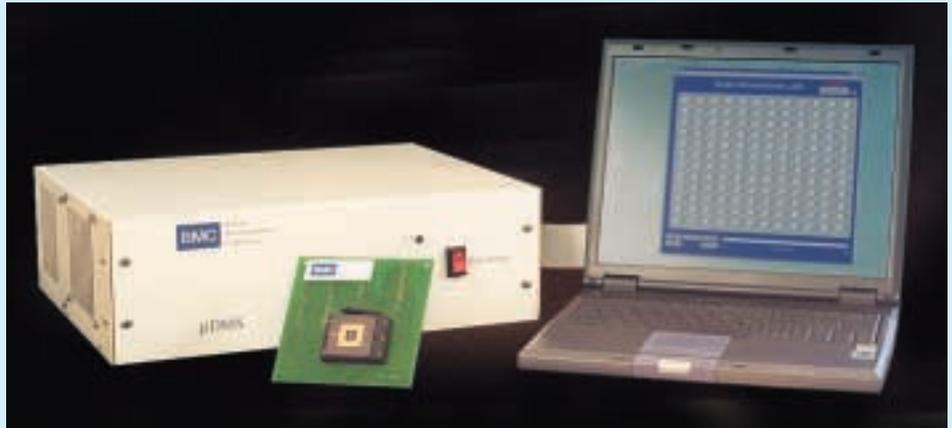Low power consumption
PC based

SYSTEM SPECIFICATIONS

The BMC µDM System consists of a 140 channel HV Driver, PC controller, µDrive™ software, mirror mount, and µDM.

HV DRIVER
Modular 19" Rack mountable chassis
140 Channel per box
110 V, 60 Hz, 3 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

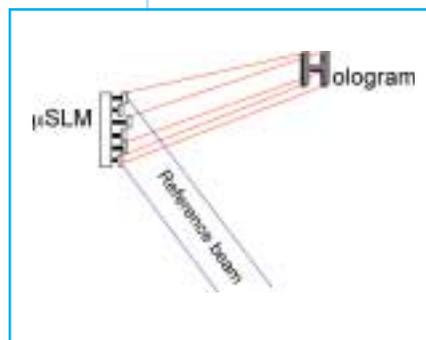Projection Displays

Active Optics

Optical Correlation
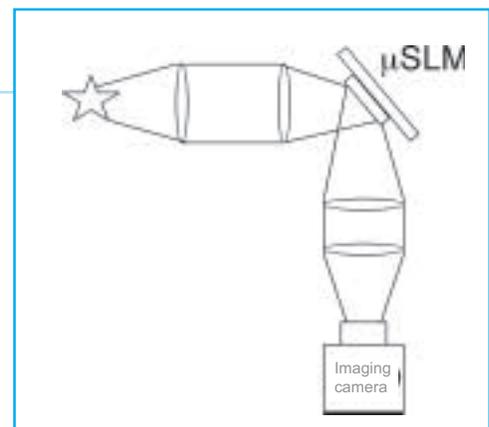
Pattern/Face Recognition

Identification Systems

Machine Vision

Long Range Laser Communication

Holographic Encryption

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.