



MEZMERIZ<sup>INC.</sup>

## 1D SCANNING MICROMIRROR

- 
- Robust Carbon Fiber MEMS
- Wide laser beam deflection
- Low drive voltages: 1V to 30V
- Efficient reflectance up to 96%
- Scanning both large angles and high speeds
  - 100Hz to 8,000Hz
  - Deflection: up to 180° optical scan
  - Mirror diameters from 0.5 to 2 mm
- Unique technology from Cornell University research.



### 1. OVERVIEW

The Mezmeriz scanning micromirror is a MEMS system with a small oscillating mirror that can sweep across a wide deflection angle. These mirrors can be used to redirect a collimated light source (ie. Laser) across a wide field of view at a high rate of speed.

The key parameters of Scanning Micromirrors are mirror diameter (clear aperture) and the oscillation frequencies (scanning speed) and angles of deflection (scanning amplitude). Mirror shape is usually round though elliptical, square, rectangular or any other shape is also possible.

The oscillation of the mirror plate is always resonant. This leads to the extraordinary stability and accuracy of the devices. Furthermore, this resonant motion makes the system require only nominal energy to keep it in motion, resulting low power consumption through millions of cycles.

The design of the Mezmeriz MEMS mirror is based on the unique design which includes high-strength carbon fiber into the design as a structural element. This carbon fiber element makes the mirror system superior for applications that required:

- Simultaneous wide scan angles and high speed motion
- Billions of cycles
- Low power consumption

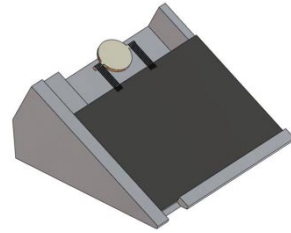
Scanning Micromirrors are used in numerous applications, such as

- Pico projectors, including cell phone projectors
- Rapid range finding with a wide field of view
- Laser printers
- Scanners that use Infrared and Ultraviolet simultaneously

There are many more applications that are currently enabled by these mirrors, or that are waiting to be invented.

## 2. A UNIQUE DESIGN MODULE

Mezmeriz's core demonstration module is optimized to demonstrate the capabilities of a carbon fiber MEMS mirror system. The unique properties of the system open up new design possibilities for engineers and designers.



This unit encompasses the core 1D- device into a package designed for direct integration into engineer design prototypes. With this module, engineering teams will better understand the advantages and capabilities of carbon fiber MEMS in a oscillating mirror system.

If your application is still more demanding Mezmeriz's engineering team would like to learn more about how we can get you a scanning micromirror with the outstanding performance you need.

## 3. PERFORMANCE

The following table is meant to give you an idea of the typical and possible parameters. We can extend almost any of the listed parameters and limits if necessary for your application.

	Min.	Typ.	Max.	Unit
Mirror diameter	<0.5	1	5	mm
Max optical scan range	30	120	180	degrees
Oscillation frequency	100	4000	8000	Hz
Bandwidth (67% scan range)	0	300	500	Hz
Optical resolution (diffraction limited spot)	720	2800	4400	pixels
Drive voltage	1	5	30	V
Resistive load		50		Ohms
Capacitive load		---		pF
Reflectance	73	84	96	%
Reflected power		250	1000	mW
Curvature		1		m
RMS deformation		40		nm
Operating temperature	-20	25	60	Celsius

## 4. CONTACT INFORMATION

Contact us for more detailed information, for purchasing demo-sets, and quoting custom devices and for finding the best way to products that make you and your customers successful.

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