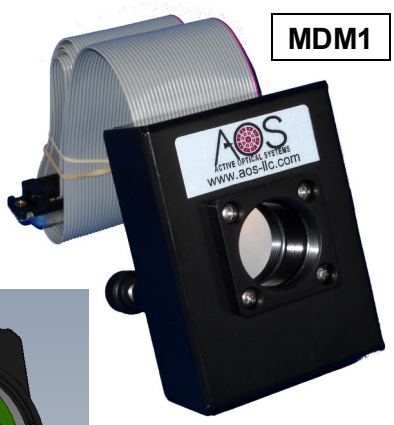
Membrane Deformable Mirrors

ACTIVE OPTICAL SYSTEMS

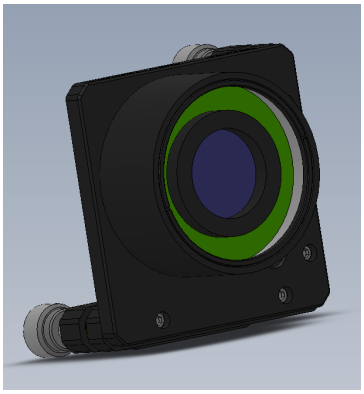
FEATURES

- High Optical Quality Continuous Surface
- Optional High Reflectivity Coatings (3 J/cm^2 Damage Threshold)
- >500 Hz Resonance at 25mm diameter
- Diameters from 12.5 to 100 mm
- Compatible with AOS Drive Electronics
- Customization Possible
- Resistant to damage from Snap-down
- Capable of 10 microns of focus at 300V
-
- Export possible to select countries
- Base Price: $1.5k

MDM1



MDM1 Beam Tube Packaging



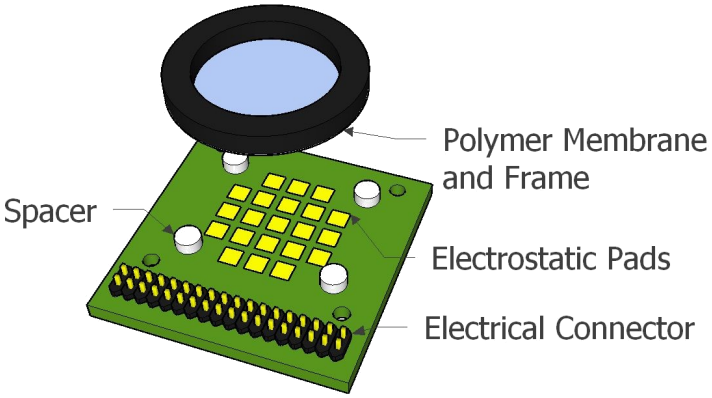
APPLICATIONS

- Laser Beam Shaping
- Astronomical Adaptive Optics
- Quasi-Static Aberration Compensation
- Laser Machining
- Active Focus Control

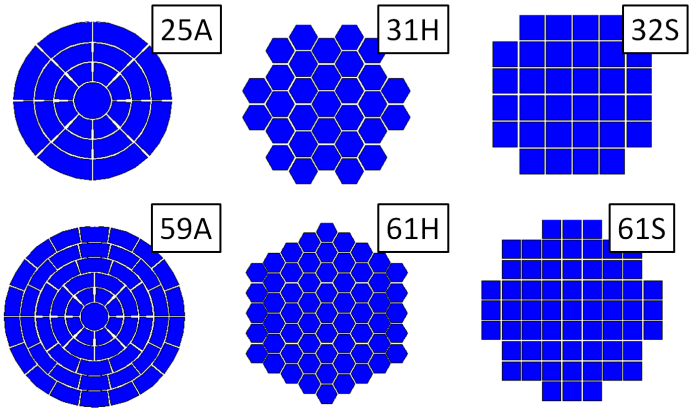
DESCRIPTION

The AOS deformable mirror technology offers a low-cost alternative to the MEMS deformable mirror technology that is scalable to large apertures. These mirrors are built using a polymer membrane material that has been used in the optics industry for decades. These membranes have been successfully coated with both metals and high reflectivity multi-layer dielectric (MLD) stacks. High reflectivity coated membranes have demonstrated a damage threshold of 3 J/cm^2 for 11 ns q-switched 1-um laser light. The mirrors are easily mounted onto an optical post.

Architecture



Standard Actuator Patterns



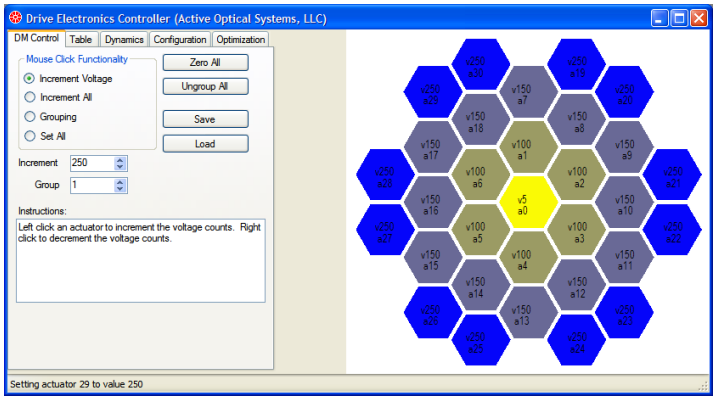
*Patent Pending

Membrane Deformable Mirrors

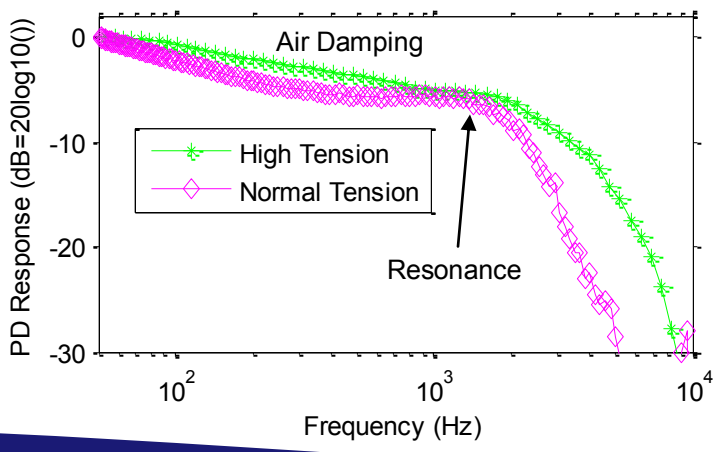
Typical Specifications

Parameter	MDM1	MDM2	Notes
Mechanical			
Diameter (mm)	25	50	6” diameter is possible
Number of Actuators	1 to 61	1 to 61	
Package Size (inches)	1.1x2.4x4.4	1.7x3.7x4.7	25 mm diameter
Weight with packaging / without packaging (g)	410 / 15	700 / 40	
Surface			
Aluminum Coating Reflectivity (Visible)	80%	80%	High Reflectivity Possible
Surface Quality	λ/2	λ	λ/2 per in (mostly astigmatism)
HR Coating Damage Threshold (J/cm^2)	3.3	3.3	Measured with a 11ns 1064 nm laser pulse
Approximate HR Coating Cost	$4500	$4500	Per Lot of ~10
Actuation			
Focus Throw (um) / Focal Length (m)	10μm / 3m		300 V, 25 mm diameter
Corner Frequency (Hz)	500 2000		25-mm diameter NC 25-mm diameter Polyimide

Windows Software for Drive Electronics



Frequency Response (MDM1)



*Patent Pending

2021 Girard Blvd. Ste 150, Albuquerque, NM 87106 - (505) 245-9970x184 - www.ActiveOpticalSystems.com