

Tunable Focus Mirror



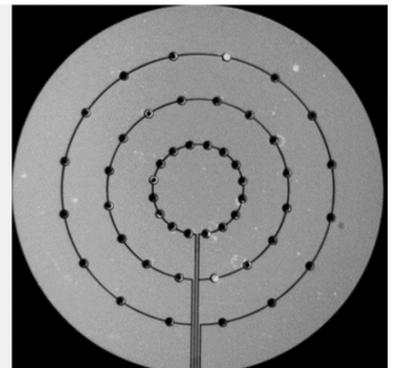
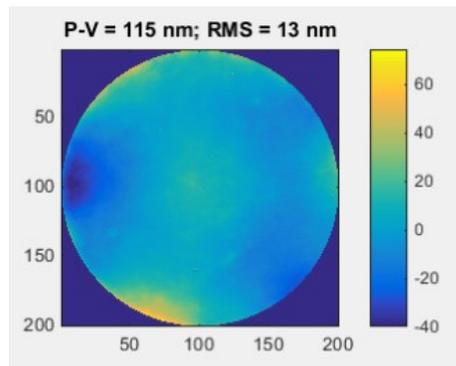
Revibro Optics' tunable focus mirrors are reflective optical elements with an electrically adjustable radius of curvature. A unique combination of large stroke and fast settling time make this adaptive optic ideally suited for focus scanning applications. Typical response times are < 200 *micro-seconds*. In addition to focus control, the mirror shape can be tuned to correct system and sample induced aberrations. A closed-loop controller ensures reliable operation over a wide range of conditions.

Features

- ▶ Fast, precise focus control
- ▶ Spherical aberration correction
- ▶ 4mm diameter standard aperture
- ▶ Fast response time $< 250\mu\text{s}$
- ▶ Variable focal length: $\infty < f < 56\text{mm}$
- ▶ Reflective metal coatings = no chromatic aberrations



Flatness map of Revibro's mirror for an unactuated device showing mirror flatness (left). Concentric electrodes enable surface shape changes for aberration correction (right).



Optical Specifications

Clear aperture	4mm (others possible)
Focal length range	$\infty < f < 56$ mm
Optical power range	0-18 diopters
Total stroke (sag)	18 μ m
Typical surface flatness	< 40 nm RMS
Settling time	< 200 μ s
Mirror coatings	Aluminum, Gold, Protected Silver

Mechanical Specifications

Clear aperture	4mm (others possible)
Rise time, full stroke, 10% - 90%	< 200 μ s
Settling time, small step, 5% final value	< 250 μ s
Settling time, large step, 5% final value	< 300 μ s
Mirror Housing dimensions (WxHxD, mm)	70x84x26
Mounting options	Cage (30mm), post (1/4-20)

Electrical Specifications

Interface	Analog (BNC), digital (USB)
Control input voltage	0-10 V
Mirror actuation voltage	0-400 V
Position out reference	0-10 V
Operating modes	Closed-loop defocus, 4-zone independent, others TBD
Controller size	2U rack enclosure, 300mm deep

