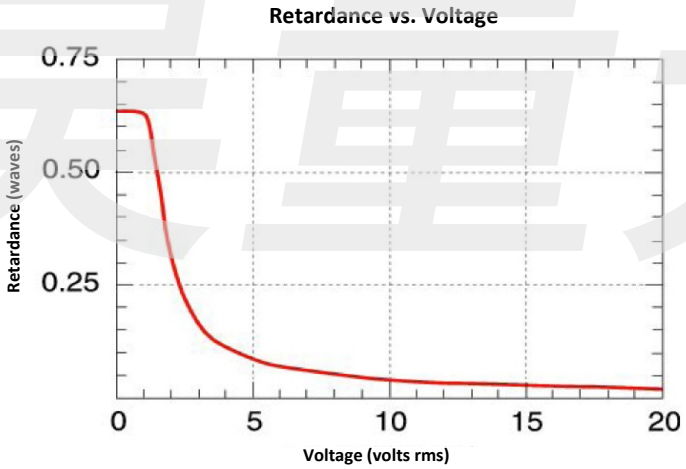
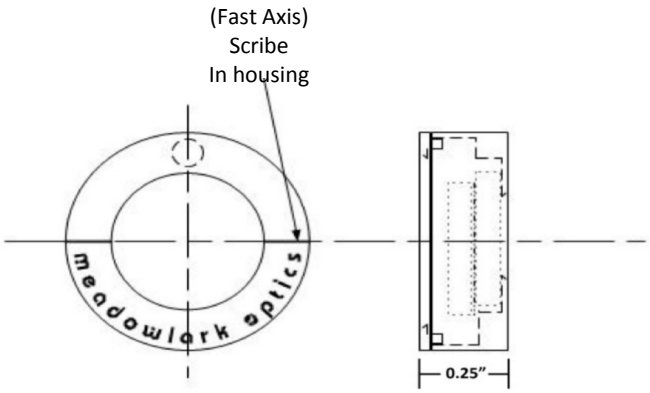
meadowlark optics

OEM Liquid Crystal Variable Retarder

Meadowlark Optics is pleased to announce a small, mounted liquid crystal family of products intended for space constrained or OEM applications. By removing the temperature control circuitry, the overall dimensions of the housing can be significantly reduced. For even tighter mechanical constraints, un-mounted cells are also available with flying leads or custom connectors.

A Liquid Crystal Variable Retarder (*LCVR*, also called a phase retarder or rotator) is a liquid crystal filled waveplate device placed in the light path of an optical system to allow its electronic modulation, by phase retardation or rotation of the plane of polarization. LCVRs are filled with a solution of nematic liquid crystal (LC) molecules which rotate the plane of polarization of transmitted light. Two transparent conductive films allow an AC voltage to be applied across the optics cell. As the voltage is increased, the default orientation of the LC molecules is disrupted, changing the degree of rotation or optical phase retardation of transmitted polarized light.





Key Features

- Precision control at lower cost
- Scalable quantities
- Thin housing
- Large clear aperture
- Usable from 450 to 1800 nm

Liquid Crystal Suite

Variable Retarders
- Liquid Crystal Variable Retarder
- UV Variable Retarder
- MWIR Variable Retarder
- OEM LCVR

Rotators
- Achromatic High Speed Rotator
- Binary Rotator
- Polarization Rotator

Shutters / Attenuators
- Achromatic High Speed Shutter
- High Contrast Shutter
- Variable Attenuator

Controllers
- Analog Controller
- FLC Controller
- LC Digital Interface Controller
- Temperature Controller
- Two Channel High Voltage Controller

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SPECIFICATIONS	
Retarder Material	Nematic liquid crystal
Substrate Material	Optical quality synthetic fused silica
Wavelength Range	450 – 1800 nm (please specify)
Retardance Range	~30 nm to λ/2 custom ranges are available
Transmitted Wavefront Distortion	λ/2 (P-V @ 633) λ/8 (RMS @ 633)
Surface Quality	80 – 50 scratch-dig
Beam Deviation	3 arc min
Reflectance (per surface)	0.5% at normal incidence
Diameter Tolerance	± 0.005 in.
Temperature Range	0˚C to 50˚C
Laser Damage Threshold	500 W/cm^2, CW 300 mJ/cm^2, 10 ns, visible

ORDERING INFORMATION

Diameter in. (mm)	*Clear Aperture in. (mm)*	*Thickness in. (mm)*	*Part Number*
1.00 (25.4 mm)	0.49 (12.5 mm)	0.25 (6.35 mm)	LVT – 100

We offer standard liquid crystal variable retarders to cover four spectral regions:

VIS: 450 – 700 nm
IR 1: 650 – 950 nm
IR 2: 900 – 1250 nm
IR 3: 1200 – 1700 nm

Please specify a spectral region when placing your order.