

## Binary Liquid Crystal Rotator

An Optical Rotator is a two-state device used to rapidly switch between two orthogonal sites of linear polarization. One state has output linear polarization parallel to an input linear polarization state. This occurs when voltage is applied to the rotator. The other state has output polarization orthogonal to the input polarization and occurs when no voltage is applied.

Meadowlark Optics manufactures and sells liquid crystal based Optical Rotators for applications requiring active timing control of beam transmittance by using them in combination with high quality polarizers. Key features of our Optical Rotators include high-speed binary operation, high purity linear polarized output, and maximum extinction ratio performance. Since these devices are solid state – undesirable mechanical motion, associated noise, and vibration problems are eliminated.

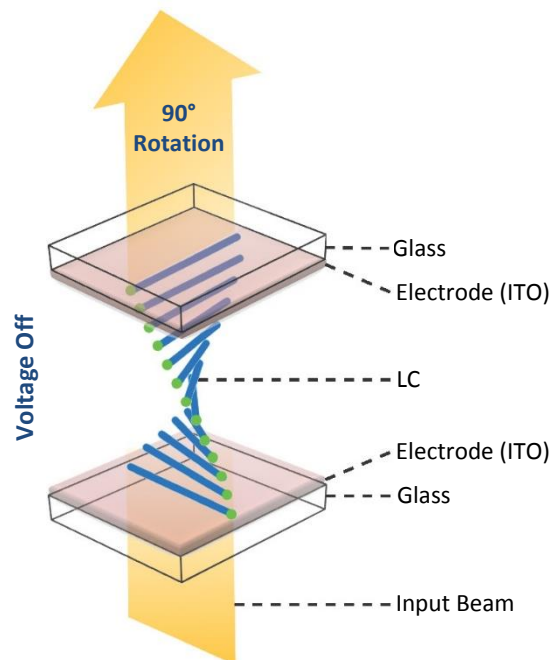
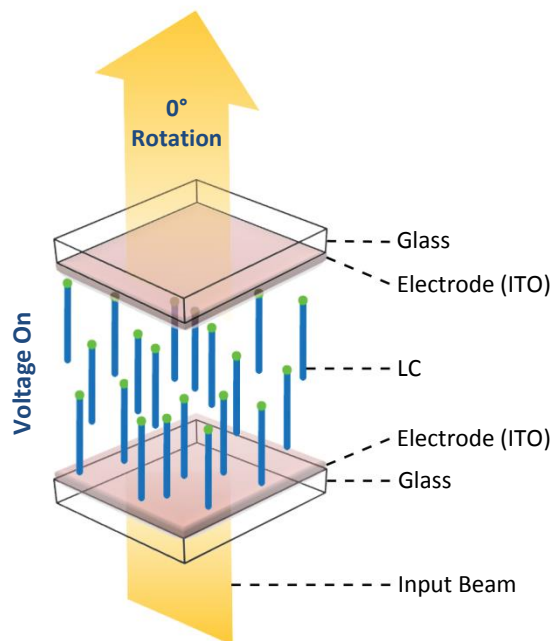
Binary LC Rotators deliver optimum extinction ratio performance, often greater than 10,000:1 across the visible wavelength range, when used with high quality polarizers. Even higher extinction performance is achieved over narrower bandwidths or for single laser line applications. Up to 100% duty cycle operation is standard. This Rotator has a broad operating temperature range, designed to meet applications requiring low cost components with negligible impact on performance.



### Binary LC Rotator Features

- High polarization purity
- Silent, vibration-free
- Low-voltage operation
- Broad thermal range
- Faster switching speeds than LCVRs

*(See our white paper "Twisted Nematic Liquid Crystal Devices" on our web site for details on the principles of operating these devices.)*



SPECIFICATIONS	
Retarder Material	Twisted Nematic liquid crystal
Substrate Material	Optical quality synthetic fused silica
Wavelength Range	400-1800 nm (specify)
Transmitted Wavefront Distortion	$\lambda/4$ (P-V @ 633) [ $\lambda/16$ (RMS @ 633)]
Response Time (VIS)	$\leq 5$ ms
Surface Quality	40-20 scratch-dig
Beam Deviation	2 arc min
Reflectance (per surface)	0.5% at normal incidence
Diameter Tolerance	$\pm 0.010$ in.
Temperature Range	10°C to 60°C (Operating) -40°C to 90°C (Storage)
Laser Damage Threshold	500 W/cm <sup>2</sup> , CW 300 mJ/cm <sup>2</sup> , 10 ns, visible
<i>Reflective rotators are available on a custom basis.</i>	

ORDERING INFORMATION			
Diameter in. [mm]	Clear Aperture in. [mm]	Thickness in. [mm]	Part Number
1.00 [25.4 mm]	0.37 [9.4 mm]	1.23 [31.24 mm]	LTN – 100 - $\lambda$
2.00 [50.8 mm]	0.70 [17.8 mm]	0.75 [19.05 mm]	LTN – 200 - $\lambda$
We offer Binary LC Rotators to cover four spectral regions:			
VIS: 450 – 700 nm IR 2: 900 – 1250 nm		IR 1: 650 – 950 nm IR 3: 1200 – 1700 nm	
<i>Please specify a spectral region when placing your order.</i>			