Liquid Crystal Variable Attenuators

A Liquid Crystal Variable Attenuator can be configured with high efficiency calcite or beamsplitting polarizers to maximize light transmittance and increase damage threshold. With a linearly polarized input beam and a calcite polarizer, transmittance values exceed 90% at most wavelengths. Very high contrast ratios, in excess of 5000:1, can be achieved with custom double attenuators. In this design, two Liquid Crystal Variable Retarders are combined with three polarizers.

Custom devices for near infrared applications, utilizing appropriate dichroic polarizers, can also be manufactured. Please see the section on Polarizers for a selection of available polarizers.

Our Basic Controller and Four Channel Interface described on pages 59-61 offer the precision waveforms necessary to obtain accurate and repeatable intensity control for your application.

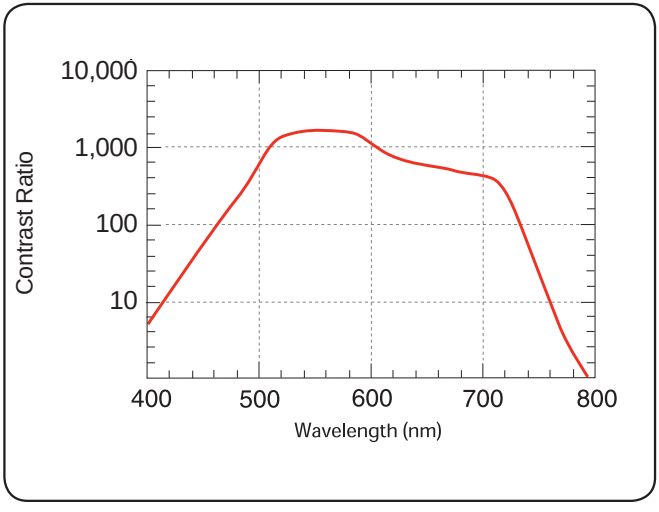

Fig. 4-14 Typical Contrast Ratio of a Liquid Crystal Variable Attenuator optimized at 550 nm

SPECIFICATIONS	
Retarder Material	Nematic liquid crystal with Birefringent polymer
Polarizer Material	Dichroic polymer
Substrate Material	Optical quality synthetic fused silica
Wavelength Range **Visible** **Near Infared 1** **Near Infared 2**	 450-700 nm 700-900 nm 900-1550 nm
Contrast Ratio	500:1 at single wavelength
Transmitted Wavefront Distortion (at 632.8 nm)	≤ λ/4 (each component)
Surface Quality	40-20 scratch and dig
Beam Deviation	≤ 2 arc min
Reflectance (per surface)	≤ 0.5% at normal incidence
Diameter Tolerance	±0.005 in.
Temperature Range	0° C to +50° C
Recommended Safe Operating Limit	1 W/cm², CW (with dichroic polarizers)

ORDERING INFORMATION

Diameter, D (in.)	*Clear Aperture,CA (in.)*	*Thickness t (in.)*	*Part Number*
1.00	0.37	1.23	LVA - 100-λ
2.00	0.70	0.75	LVA - 200-λ
3.00	1.60	1.00	LVA - 300-λ

Please specify operating wavelength λ in nanometers when placing your order.

Custom sizes are available.