

Polarizer-Free Tunable Notch Filters



The *NP-TNFTM* series is a polarizer-free tunable notch filter made from Kent Optronics' proprietary liquid crystal materials. The NP-TNF provides the most agile means for light spectral notch. The notch wavelength of a single NP-TNF, with a bandwidth of a few tens to hundreds of nanometers, can be electrically tuned across a broad spectral region from 300 to 1000 nm in the visible and infrared for light blocking or routing.

The product series provides customers with an excellent E-O component for serving as a tunable laser beam director, laser blocker, beam splitter, etc., in the envisioned photonics systems, such as laser protection devices, remote sensing, spectral imaging, vision-aid devices, and broadband light routing.

As compared to the state-of-the-art tunable notch filters, the NP-TNF series offers the following unprecedented performance specifications:

- Much broader tuning range over 300 to 1,000nm,
- >3 optical density (OD) at the notch wavelength,
- >80% out notch transmittance, and
- <0.5 ms/nm tuning speed .

The product comes with a compact power supply that can be either battery or 110/220 V wall-plug powered. Customers have the options to choose the filter substrate material, shape, aperture, pixel format and the operation mode (i.e., manual or computer controlled). All products are offered at a competitive price. Contact us for a price quote with your specific application requirements.



Manually operated



PC operated

Contact Info:

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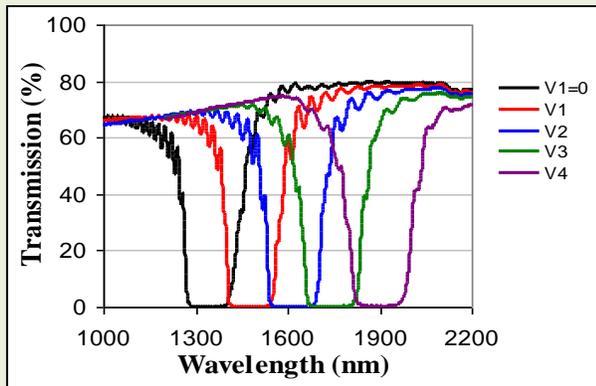
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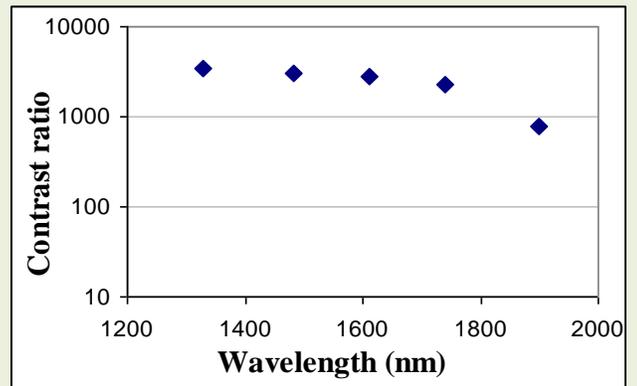
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NP-TNF™ Tunable Notch Filters



NP-TNF™ tuning spectrum characteristics (SWIR)



NP-TNF™ Contrast ratio (SWIR)

NP-TNF™ Specifications

Parameter	Specification	Parameter	Specification
Spectral region	0.4 – 2.7 μm	Laser damage threshold	>1 J/cm ² (5ns pulsed @ 532nm) >1kW/cm ² (CW @ 532nm)
Out notch band transmittance	~80%	Uniformity of retardance	<0.1 OD across the clear aperture
Polarizing properties	Polarization insensitive	Wavefront distortion	< 0.5 wavelength at 633 nm
Tuning range	300-1,000 nm (continuously tunable blocking)	Parallelism	< 2 arcminutes
Repeatability and precision	< ± 1 nm	Tuning speed	<0.7 ms/nm
Tunable narrowband blocking optical density	OD> 3 over the bandwidth	Rate of change of temperature	Survive a rate of change of temperature of 3 $^{\circ}\text{C}$ per minute
Angular range for broadband transmission (parallel light operation)	> 25 $^{\circ}$ in air	Driving voltage	Up to 350 V
Angular range for tunable narrowband blocking (parallel light operation)	> 25 $^{\circ}$ in air	Computer interface	USB interface w/PC
Spectral bandwidth	50–300nm	Weight	< 100g (filter only)
Spectral uniformity	<2nm	Substrate material	Glass, quartz and plastic (PC)
Clear aperture	Diameter: 5 - 50 mm (circular) Area: 5 \times 5 to 50 \times 50 mm ² (square)	Cable length	1 m
Thickness	< 10mm	Input power to the driver	110V or 220V/50-60Hz AC or 9V battery
Operating temperature range	-5 $^{\circ}\text{C}$ to 55 $^{\circ}\text{C}$ without heating mechanism; -40 $^{\circ}\text{C}$ to 55 $^{\circ}\text{C}$ with heating mechanism	Filter power consumption	<6mW/cm ²
Survival temperature range	-51 $^{\circ}\text{C}$ to 120 $^{\circ}\text{C}$	Power Supply Weight	200g
UV stability	Stable under UV-B at 40mW/cm ² for 3000 hours		