



Binned Optical Notch Filters

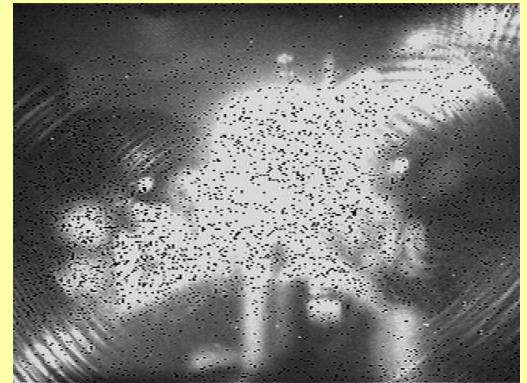
The **B-NFTM** series is an optically binned switchable notch filter made from Kent Optronics fast speed liquid crystal materials in thin film format. Each **B-NF** filter consists of ≥ 2 filter bins to cover a broad spectral region (e.g., > 100 nm from the visible to infrared) for light blocking or routing. Each individual filter bin has a customized notch bandwidth. The filter can be rapidly switched between transparent and reflection states.

The **B-NF** product series offers customers with an E-O component for purpose as an agile laser beam director, laser blocker, beam splitter, etc. in the envisioned photonics systems such as laser protection devices, remote sensing, vision-aid devices, and broadband light routing.

As compared to the state-of-the-art tunable notch filters containing passive polarizers, the **B-NF** series offers the following un-matchable performance specifications:

- 2X lower insertion loss in transparent state,
- >3 optical density (OD) at the notch wavelength,
- $>80\%$ out band transmittance, and
- ≤ 20 ms switching 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 and the operation mode (i.e., manual or computer controlled). All products are offered at a competitive price. A demo is available upon request.



Sensor jammed by lasers at 1330 and 1523 nm



Sensor recovered by blocking both the lasers at 1330 and 1523 nm

Contact Info:

Le Li, CEO

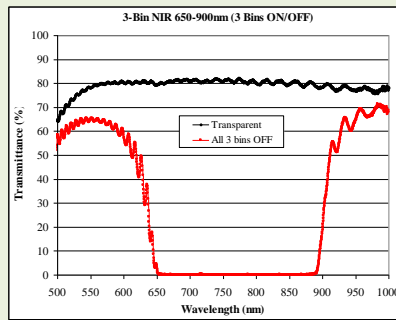
Tel: (845)897-0138

Fax: (845)897-0603

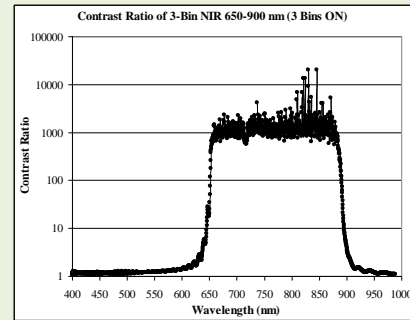
Email: leli@kentoptronics.com

www.kentoptronics.com

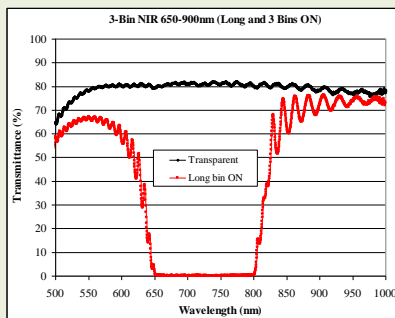
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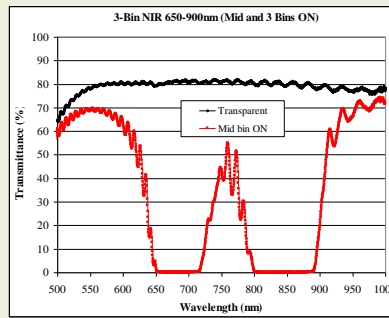
Example of 3-bin filter: all 3 bins are in reflection state



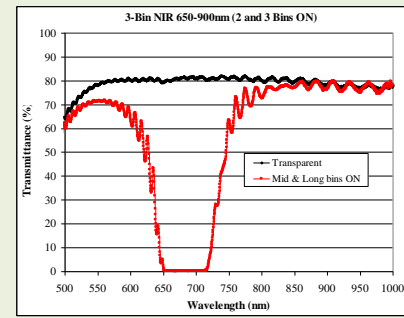
Contrast Ratio



Short & middle bins are in reflection state



Short & long bins are in reflection state



Short bins in reflection state

B-NFTTM Specifications

Parameter	Specification	Parameter	Specification
Spectral region	0.4 – 2.7 μm	Uniformity of retardance	<0.1 OD across the clear aperture
Transmittance (blocking inactive)	~80%	Wavefront distortion	< 0.5 wavelength at 633 nm
Scene spectral neutrality (blocking inactive)	Neutral	Parallelism	< 2 arcminutes
Polarizing properties	Polarization insensitive	Response time	5.3ms switching to blocking mode
Tunable narrowband blocking waveband	>300 nm (continuously tunable blocking)	Rate of change of temperature	Survive a rate of change of temperature of 3 $^{\circ}\text{C}$ per minute
Tunable narrowband blocking optical density	OD> 3 over the bandwidth	Driving voltage	Polarizer: 280V RMS Retarder: 0-1.5V RMS
Angular range for broadband transmission (parallel light operation)	> 25 $^{\circ}$ in air	Computer interface	USB interface w/PC
Angular range for tunable narrowband blocking (parallel light operation)	> 25 $^{\circ}$ in air	Weight	< 100g (filter only)
Clear aperture	Diameter: 5 - 50 mm (circular) Area: 5 \times 5 to 50 \times 50 mm ² (square)	Substrate material	Glass, quartz and plastic (PC)
Thickness	< 10mm	Cable length	1 m
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	Input power to the driver	110V or 220V/50-60Hz AC or 9V battery
Survival temperature range	-51 $^{\circ}\text{C}$ to 120 $^{\circ}\text{C}$	Total power consumption	< 4W
Laser damage threshold	>1 J/cm ² (5ns pulsed @ 532nm) >1kW/cm ² (CW @ 532nm)	Power Supply Weight	200g