



# Vari- $\Delta\lambda$ Tunable Bandpass Filters

The *Vari- $\Delta\lambda$  TBF<sup>TM</sup>* series is a bandwidth variable tunable bandpass filter based on Kent Optronics' proprietary design using liquid crystal for active tuning. The *Vari- $\Delta\lambda$  TBF<sup>TM</sup>* provides the most agile means for light spectrum selection with user controlled bandwidth. The center wavelength of such a single filter can be electrically tuned across a broad spectral region from 300 to 1000 nm in the visible and infrared, with a user varied bandwidth of a few to hundreds of nanometers.

The product series provides customers with an excellent E-O component for serving as a tunable light illuminator, spectrum discriminator/selector, in the envisioned photonics systems, such as spectrum analytical instruments, remote sensing, spectral imaging, vision-aid devices, etc.

As compared to the state-of-the-art tunable bandpass filters, the *Vari- $\Delta\lambda$  TBF<sup>TM</sup>* series offers the following unprecedented performance specifications:

- Much broader tuning range over 300 to 1,000nm,
- Variable spectrum bandwidth from 5nm to 100's nm,
- ~30% in-band transmittance,
- <1% out-band light leakage, and
- <0.5 ms/nm tuning speed.

The product comes with a compact power supply. Customers have the options to choose the filter aperture, spectrum tuning range, spectrum bandwidth, as well as operation/controlling interfaces.



*Packaged Vari- $\Delta\lambda$  TBF<sup>TM</sup> filter*

#### Contact Info:

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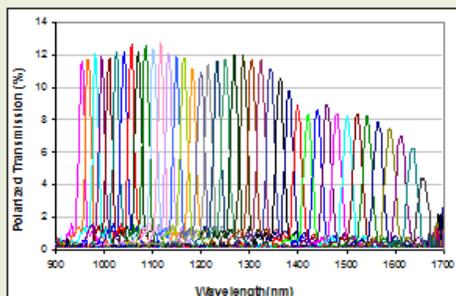
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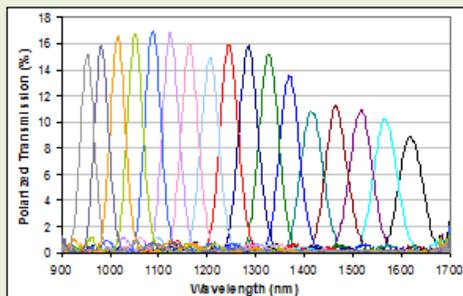
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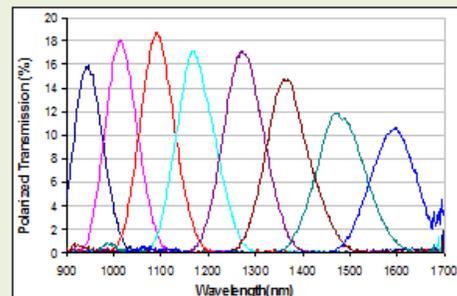
# Vari- $\Delta\lambda$ Tunable Bandpass Filters



*Narrow bandwidth*



*Medium bandwidth*



*Broad bandwidth*

## NP-TNF<sup>TM</sup> Specifications

Parameter	Specification	Parameter	Specification
Spectral tuning region	0.4 – 2.7 $\mu\text{m}$	Wavefront distortion	< 0.5 wavelength at 633 nm
Spectral bandwidth	5 – 100 nm	Parallelism	< 2 arcminutes
In-band transmittance	~40%	Tuning speed	<1 ms/nm
Out-band transmittance	<1%	Rate of change of temperature	Survive a rate of change of temperature of 3 $^{\circ}\text{C}$ per minute
Polarizing properties	Linear polarization	Computer interface	USB interface w/PC
Repeatability and precision	< $\pm 1$ nm	Substrate material	Glass, quartz
Angular acceptance	~ 25 $^{\circ}$ in air	Input power to the driver	110V or 220V/50-60Hz AC
Spectral uniformity	<0.1nm	Filter power consumption	<1mW/cm <sup>2</sup>
Clear aperture	Diameter: 5 - 50 mm (circular) Area: 5 $\times$ 5 to 50 $\times$ 50 mm <sup>2</sup> (square)	Weight	< 100g (filter only)
Operating temperature range	-5 $^{\circ}\text{C}$ to 70 $^{\circ}\text{C}$ without heating mechanism; -40 $^{\circ}\text{C}$ to 70 $^{\circ}\text{C}$ with heating mechanism	UV stability	Stable under UV-A&B
Survival temperature range	-51 $^{\circ}\text{C}$ to 120 $^{\circ}\text{C}$		