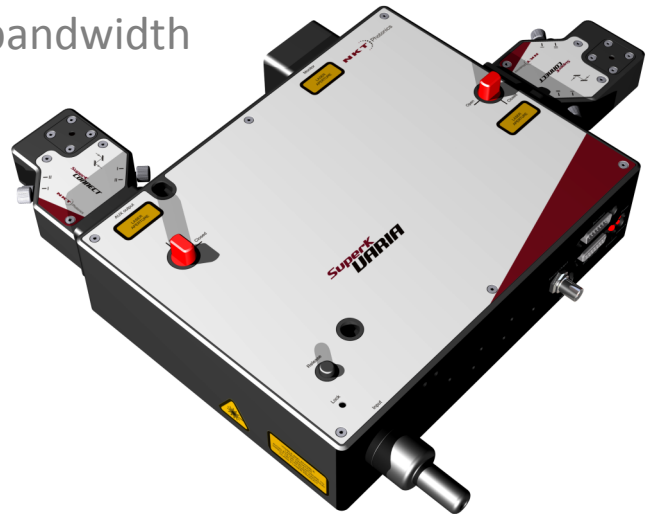


SuperK VARIA

Tunable wavelength filter with variable bandwidth

- 400-840nm tuning range, 10-100nm bandwidth
- > 50 dB out-of-band suppression
- High transmission, no polarization loss
- Easy Plug'n'Play connection source
- Full computer control
- SuperK Fiber Delivery
- Tested and approved for FLIM
- IR pass-through port



Applications

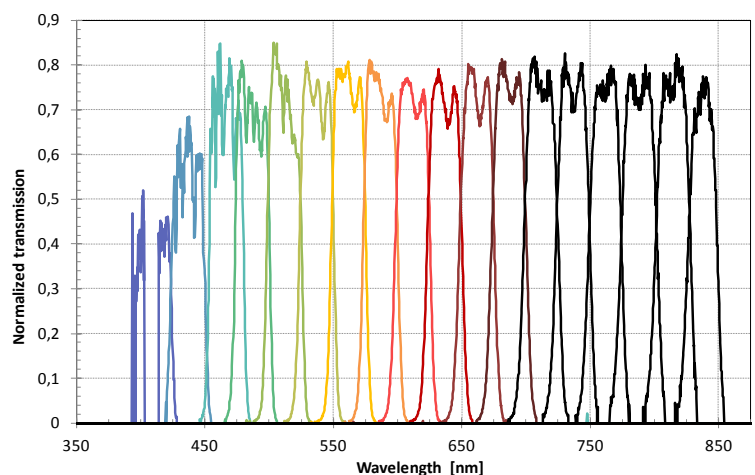
- Fluorescence imaging
- Characterization of nanostructures
- Test & Measurement



The SuperK VARIA is a unique filtering solution which allows tuning of both the center wavelength and the bandwidth of the filtered light.

The VARIA suffers no polarization loss and thus delivers high power throughput. For example, over 50mW per wavelength across the full visible spectrum is easily achieved with the VARIA and the SuperK EXTREME EXW-12 using only a 10 nm bandwidth.

The VARIA is controlled through the SuperControl GUI and the optical output can be a free-space collimated beam or single mode fiber delivery via the SuperK CONNECT fiber delivery range. The output from the VARIA is co-linear for all wavelengths.



Typical transmission through the SuperK VARIA High measured with an SuperK

Out of Band Suppression

The SuperK VARIA has an industry leading 50 dB out-of-band suppression— i.e. the signal difference between the transmitted light within the selected wavelength region and the light leaking through outside the filter bandwidth. This makes the VARIA suitable for use with high sensitivity detectors and photon counting setups.

Features and Options

Fiber Delivery

SuperK CONNECT is a high performance fiber delivery system complete with broadband fibers and a range of termination options such as FC/PC connectors or high quality collimators. Interfacing is handled by the CONNECT fiber coupling block that ensure easy and stable single-mode coupling that can be disconnected and reconnected without alignment.

Typical Coupling Efficiency	70-80%
Output Fiber Mode	Single Mode
Termination options	Collimator, FC/PC or FC/APC
Fiber Length	2.5 m (5 or 10m available upon request)
Polarization	PM or non-PM

Power Lock (external feedback)

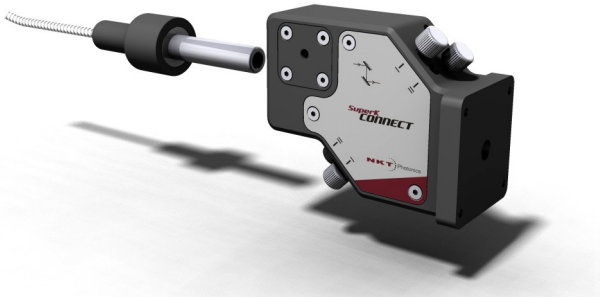
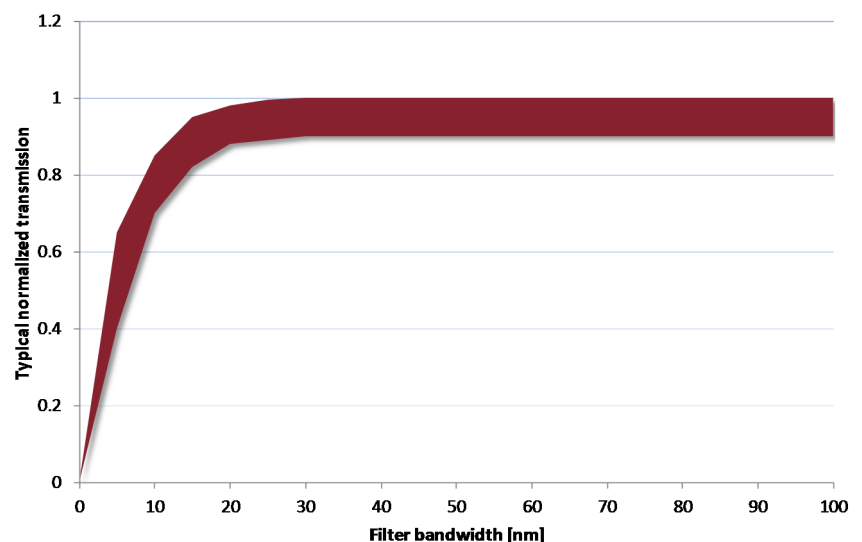
The Power Lock options enables you to lock the power output of the SuperK VARIA via a build in photo detector. Simply connect the detector to the External Feedback BNC connector of the SuperK. Activate locking from the control panel and the SuperK will now lock the power output of the VARIA. The long term stability of a locked output will typically be better than $\pm 0.5\%$ (over many hours) - depending on the wavelength.

IR pass-through

The IR pass-through port on the VARIA transmits the part of the SuperK spectrum above 900 nm without filtering. This IR output can then be used directly or coupled into another filter accessory like the Superk SELECT.

Transmission versus bandwidth

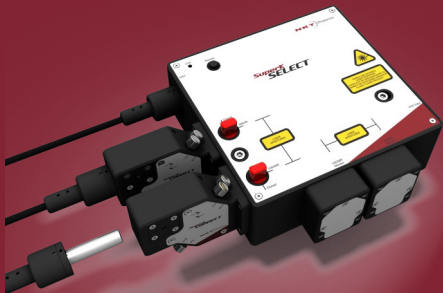
The transmission through the VARIA is largely independent of wavelength and bandwidth down to a bandwidth of 15-20nm below which is drops off as shown in the plot below.



Other filter accessories

SuperK SELECT multi channel

SuperK SELECT is a tunable wavelength filter based on acousto-optic tunable filter technology (AOTF). AOTFs tune over one octave of optical frequency and the SuperK SELECT allows the integration of two AOTF crystals to provide wide spectral coverage. Together with a range of unique features, the SuperK SELECT provides an easy to use, flexible and accurate tuning accessory to access any



SuperK GAUSS spectral shaping

SuperK GAUSS is a dual-output filter that transforms the wide spectral bandwidth of the SuperK EXTREME and provides a Gaussian-like spectrum.

For OCT, the SuperK GAUSS provides two high power spectral outputs centred at 800nm and 1300nm, with bandwidths of up to 200nm. Similar configurations are also available for WLI applications. The two Gaussian shaped spectra can be used simultaneously but independent from each other due to its unique design. The SuperK GAUSS even allows tuning of the center wavelength of each band over 200nm.



Specifications

Optical

Wavelength tuning range	400 – 840 nm
Minimum bandwidth FWHM	<10 nm
Maximum bandwidth FWHM	100 nm
Transmission through module (Average in 50nm bandwidth)	70-90 % (Un-polarized)
Out of band suppression (20nm from center wavelength in 400-900 nm range)*	> 50 dB
Output Polarization	Un-polarized or P-Polarized (adding output polarizer)
Tuning speed	> 10 nm/s
Repeatability of wavelength position**	< 0.2 nm
Absolute wavelength accuracy	+/- 5 nm
Wavelength temperature sensitivity	< 0.05nm/deg
Transmission temperature sensitivity	< 0.2 %/deg
Interlock	Collimator, lead
Output mode	Collimated free-space or SuperK CONNECT with FC-APC

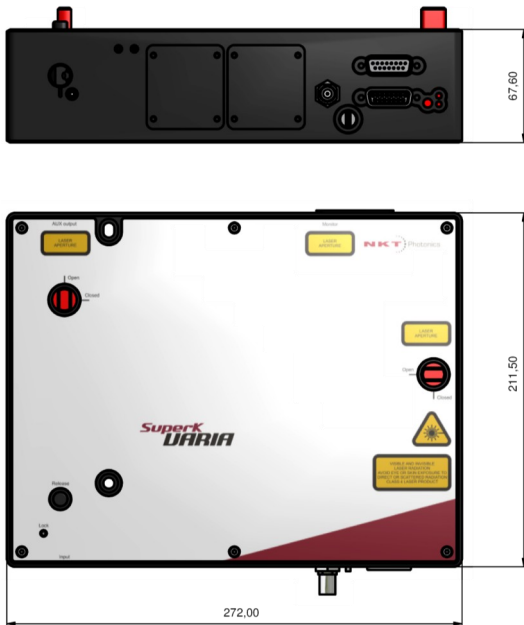
* With SuperK CONNECT single mode fiber delivery

** With collimator inserted. Wavelength position may shift if collimator is removed and reinserted.

Mechanical/Electrical

Weight	7.9 kg
Dimensions (LXBXH)	272X211.5X67.6 mm
Electrical interface	SuperK BUS interface Analog feedback signal

All NKT Photonics products are produced under our quality management system certified in accordance with the ISO 9001:2008 standard.



NKT Photonics A/S (Headquarters)
Blokken 84, 3460 Birkerød, Denmark
Phone: +45 4348 3900
Fax: +45 4348 3901

NKT Photonics GmbH
Schanzenstrasse 39, Bldg D9-D13
51063 Cologne, Germany
Phone: +49 221 99511-0
Fax: +49 221 99511-650

NKT Photonics Inc.
1400 Campus Drive West
Morganville NJ 07751, USA
Phone: +1 732 972 9937
Fax: +1 732 414 4094