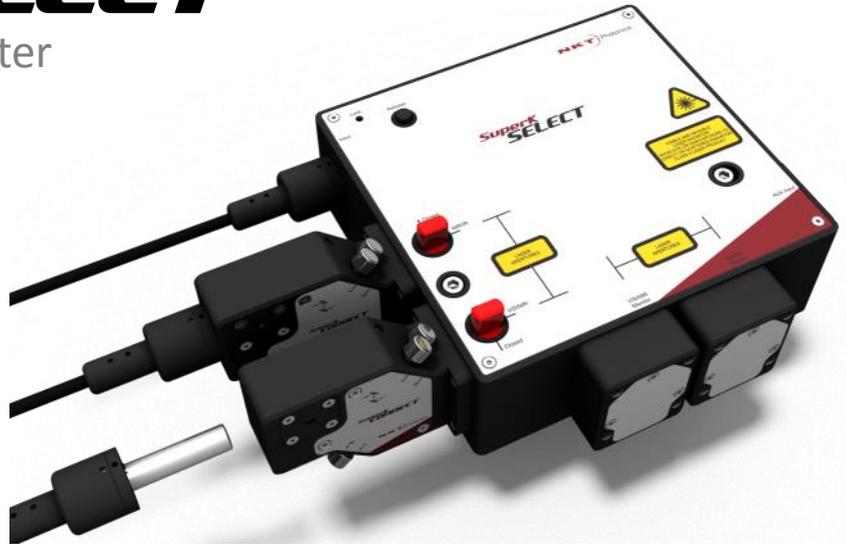# SuperK SELECT

Multi channel tunable AOTF filter

- Wavelength tuning over 400-2400 nm
- 8 simultaneous, freely tunable channels
- Dual VIS/nIR, VIS/IR, nIR/IR port access
- Easy connection to SuperK EXTREME
- Fiber or free space output
- Easy to use software interface

Applications

- Fluorescence imaging
- Spectroscopy
- Replaces single line lasers

The SuperK SELECT is a tunable wavelength filter based on Acousto-optic Tunable Filters (AOTF). AOTFs tune over one octave of optical frequency and the SuperK SELECT can integrate two AOTF crystals to provide wide spectral coverage, thereby giving easy to use and flexible access any wavelength in the spectrum of our SuperK supercontinuum sources.

The SuperK SELECT has on-board intelligence. When connected to the SuperK EXTREME, the SuperKontrol software automatically recognizes and initializes the SELECT. No drivers or configuration are needed.

SuperK SELECT also features a built-in RF switch for toggling between the two AOTFs without physical cable connection changes.
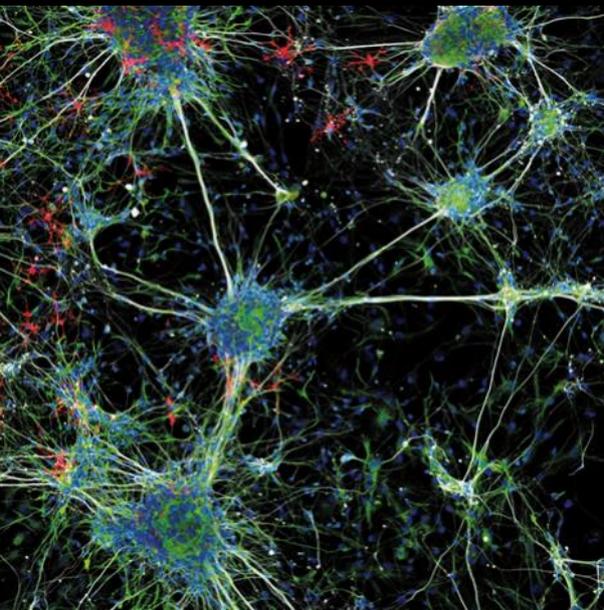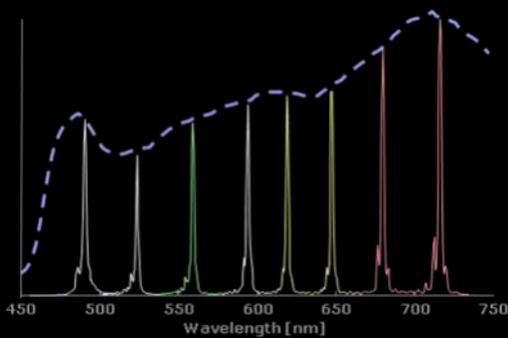
Features and Options

Wavelength ranges

The most important option for the SuperK SELECT is the choice of AOTF crystals as they must be selected to cover the needed wavelength range. 7 different crystals are available covering the wavelength range from 400 nm to 2000 nm. Possible crystal combinations are listed below with wavelength ranges for each crystal and combination.

AOTF1/AOTF2	VIS-nIR (500-900nm)	nIR1 (640-1100nm)	nIR2 (800-1400nm)	IR (1100-2000nm)
UV-VIS (400-650nm)	400-650nm / 690-900nm	400-650nm / 690-1100nm	450-650nm / 850-1400nm	450-650nm / 1100-2000nm
VIS (1x) (430-700nm)	-	430-670nm / 690-1100nm	450-700nm / 850-1400nm	450-700nm / 1100-2000nm
VIS (4x) (450-700nm)	-	450-670nm / 690-1100nm	450-700nm / 850-1400nm	450-700nm / 1100-2000nm
VIS-nIR (500-900nm)	-	-	500-800nm / 850-1400nm	500-900nm / 1150-2000nm
nIR1 (640-1100nm)	-	-	-	640-1100nm / 1200-2000nm
nIR2 (800-1400nm)	-	-	-	800-1100nm / 1200-2000nm

Options

- 7 different AOTF Crystals
- SuperK COMMAND fast wavelength switching
- Power Lock for ultra stable output

Other products

SuperK VARIA

Turn your supercontinuum laser into a high power tunable laser. Variable bandwidth single line filter tunable in the 400-840 nm range.
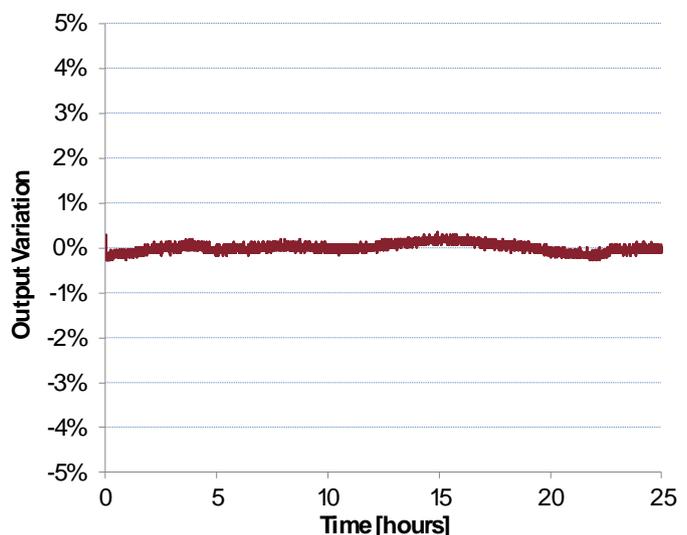
SuperK GAUSS

Gaussian spectral shaping filter ideal for OCT and white light interferometry applications. 200nm bandwidth in the 800nm or 1300nm range. Tunable to other ranges.

SuperK COMMAND (fast wavelength switching)

Wavelength sweeping or wavelength interrogation is important for a number of applications and can easily be obtained using a SuperK Supercontinuum sources with a SuperK SELECT equipped with the SuperK COMMAND fast wavelength switching box.

The main advantage of using the SuperK COMMAND is the ability to change wavelength or amplitude on a timescale shorter then <100 us. Up to 16 wavelength channels can be enabled simultaneously for very rapid color interrogation/switching. The Fast Wavelength Switching functionality can be utilized to high-frequency amplitude modulate the signal, thereby replacing e.g. a mechanical chopper. The advantage is that the frequency can be very high and free space coupling is avoided.

Note that the timing sequence for the switching or modulation must be provided by a multifunction DAQ card (e.g. from National Instruments).

The SuperK COMMAND solution includes:

- Electrical COMMAND interface box
- 40 pin connection cable between RF Driver and Interface box
- Firmware supporting the SuperK COMMAND solution
- User interface (GUI) supporting the FSK solution
- Manual / Application note

Fore more information, please see the application note "Fast Wavelength Switching using a SuperK SELECT" available under application notes at our website www.nktphotonics.com/support

Power Lock (external power locking)

The Power Lock option enables you to lock the power output of the SuperK SELECT via a built-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 SELECT. Power Lock monitors are available for both output ports.

The long term stability of a locked output will typically be better than +/- 0.5 % (over many hours) - depending on the wavelength.

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 broadband collimators. Interfacing is handled by the CONNECT fiber coupling unit that ensure easy and stable single-mode coupling that can be disconnected and reconnected without alignment.
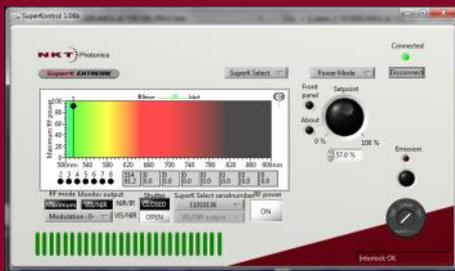
SuperKontrol software allows easy use of the SuperK SELECT

Specifications

Number of Tunable Lines	1 – 8 (per AOTF)
Filter Bandwidth* of AOTF (UV-VIS)	1,8 – 8,5nm
Filter Bandwidth* of AOTF (VIS 1x / VIS 4x)	0,5– 1,85nm / 2,5 – 8,5nm
Filter Bandwidth* of AOTF (VIS-nIR)	3,5 – 14nm
Filter Bandwidth* of AOTF (nIR 1 / nIR 2)	1,8 – 5nm / 2,6 – 9,6nm
Filter Bandwidth* of AOTF (IR)	6,4 – 19,8nm
AOTF Deflection Efficiency	> 90 % (1-8 channel operation)
Polarization	Linear
Output Mode	Fiber or free space collimated
Mechanical Shutter	Integrated for both ports
Laser Safety Interlock	Integrated

* Collimated free space output; FWHM bandwidth

SuperK CONNECT fiber delivery

Standard for fiber-to-fiber connections

AOTF1/AOTF2	VIS-nIR	nIR1	nIR2	IR
UV-VIS	FD1 + FD3	FD1 + FD3 (FD4)	FD1 + FD4 (FD5)	FD1 + FD5 (FD6)
VIS (1x)	-	FD2 + FD4 (FD3)	FD2 + FD4 (FD5)	FD2 + FD5 (FD6)
VIS (4x)	-	FD2 + FD4 (FD3)	FD2 + FD4 (FD5)	FD2 + FD5 (FD6)
VIS-nIR	-	-	FD2(FD3) + FD4 (FD5)	FD2(FD3) + FD5 (FD6)
nIR1	-	-	-	FD3(FD4) + FD5 (FD6)
nIR2	-	-	-	FD4(FD5) + FD5 (FD6)

Broadband for fiber to free-space connections

AOTF1/AOTF2	VIS-nIR	nIR1	nIR2	IR
UV-VIS	FD7	FD7	FD7 + FD9 (non-PM)	FD7 + FD8 (non-PM)
VIS (1x)	-	FD7	FD7 + FD9 (non-PM)	FD7 + FD8 (non-PM)
VIS (4x)	-	FD7	FD7 + FD9 (non-PM)	FD7 + FD8 (non-PM)
VIS-nIR	-	-	FD7 + FD9 (non-PM)	FD7 + FD8 (non-PM)
nIR1	-	-	-	FD7 + FD8 (non-PM)
nIR2	-	-	-	FD9 (non-PM) + FD8 (non-PM)

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