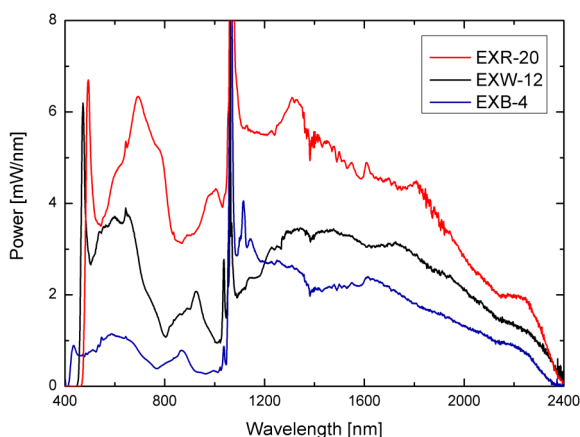


SuperK EXTREME Supercontinuum Fiber Laser Series

- 400-2400nm single mode spectrum
- Highest visible power
- Unsurpassed reliability and lifetime
- Blue, White or Red spectral options
- On-the-fly variable repetition rate
- Plug'n'Play intelligent accessories
- Flexible trigger functions with pulse picker
- Constant Power control as standard
- Advanced Powerlocking Functions
- Superior PC graphic user interface
- Operation at the press of a button
- Light "on-demand" within 20ms
- Technical service phone hotline support

The next generation SuperK EXTREME series is based on NKT Photonics world renowned Crystal Fibre technology that has reliably delivered supercontinuum to all fields for over 10 years. The new SuperK EXTREME ecosystem platform is intelligently modular, allowing modules and accessories to effortlessly connect to the SuperK EXTREME without the hassle of downloading drivers for any application. Operation is simple and "on the fly": no need for complicated powering procedures when changing functions such as repetition rate or wavelength control. The SuperK EXTREME Series provides high power and exceptional lifetime together with the highest of safety standards. The SuperKontrol graphic user interface ensures that users from any discipline or background finds the SuperK EXTREME an easy tool to use.



Blue (EXB), White (EXW) and Red (EXR) systems provide users with a comprehensive coverage of the supercontinuum spectrum with power levels from 1.5W to over 8W to meet any industrial or academic application.

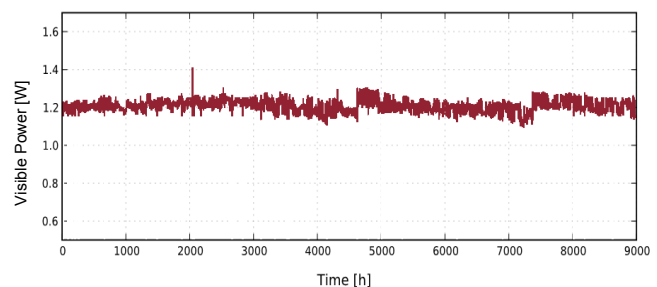


Options:

- Blue (EXB), White (EXW) or Red (EXR) spectrum
- 1.5-8W total power
- 100mW-2W Visible power
- Master repetition rate 40 MHz or 80 MHz
- On-the-fly variable repetition rate (pulse picker)
- Software Development Kit (SDK)
- 12 and 24 months warranty extension packages

Accessories:

- SELECT: Single/Twin AOTF wavelength tuning
- GAUSS: Optimized spectral output for OCT/WLI
- SPLIT: Spectral division in to sub-bands
- POLAR: Polarized output
- FIBER DELIVERY: Efficient single mode, broadband fiber coupling and guidance



Systems exhibiting over 10,000 hours of continuous lifetime underlines the high reliability of NKT Photonics PCF technology. High power systems delivering 8W of total power with 2W of visible power emphasize the high ratio of visible to total power of SuperK Extreme systems. This efficient generation of visible supercontinuum reinforces the high lifetime performance of the SuperK EXTREME Series.



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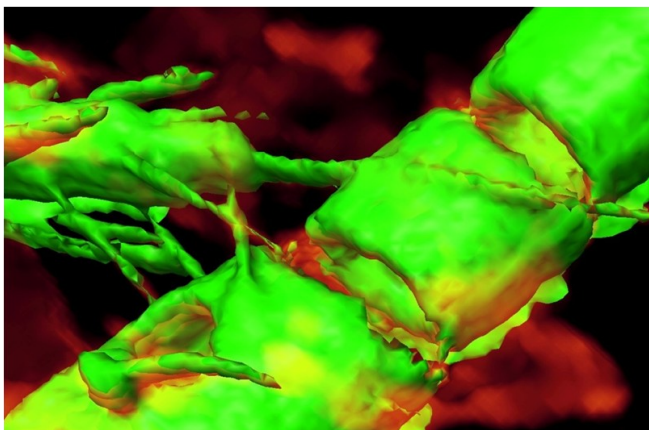
Pulse Picker Option

- 1-80MHz variable repetition rate
- Broad range of available repetition rates
- > 1:8000 Pulse Suppression ratio
- "On-the-Fly" change of repetition rate
- NIM standard trigger output
- Timing delay generator

The SuperK EXTREME now comes with a pulse picker option to allow variation of the repetition rate. The SuperK EXTREME allows a wide range of repetition rates to be chosen by a unique method of division. Repetition rates of 1-40MHz or 2-80MHz are available, giving the user ultimate choice for lifetime measurement applications. A further unique aspect of the SuperK EXTREME is the control of the repetition rate "on-the-fly". In contrast to other solutions available on the market, the SuperK EXTREME allows the repetition rate to be chosen without complicated power down procedures. Simply change the repetition rate on the front control panel or in the SuperControl GUI when required at anytime to see an immediate change in repetition rate. This on-demand function is just one of the highlights emphasizing the *ease-of-use* features, making it simple and intuitive to operate the SuperK EXTREME platform.

Applications:

- FLIM
- FRET
- Diffuse Optical Tomography
- TCSPC



FLIM image of scale insect antenna (non-stained)
Image was reconstructed from a 3-dimensional FLIM-z-stack
Courtesy of Kees Jalink

| Parameter | Value | Unit |
|---|------------------------|------|
| Master Seed Laser Repetition Rate | 80 (standard) or 40 | MHz |
| Repetition Rate Reduction | 80 – 2 (n=1 – n=40) | MHz |
| | 40 – 1 (n=1 – n=40) | |
| Suppression Ratio | > 1:8000 | --- |
| Operation Mode | Constant Pulse Energy | --- |
| Changing Repetition Rate ¹⁾ | < 1 | s |
| Timing Trigger Output Jitter | < 150 | ps |
| NIM Trigger Output (BNC) | 0.1 – 1 V peak | --- |
| Monitor Trigger Output (BNC) | 0 – 1 | V |
| Gate Trigger Output (BNC) | 0 – 1 | V |
| Delay Shift between Pulse Picker Ration ²⁾ | < ± 250 | ps |
| Adjustable Trigger Delay Timing ³⁾ | up to 9.2 | ns |
| Adjustable Trigger Delay Resolution ³⁾ | 15 | ps |

- 1) The system does not need to be electrical shutdown.
- 2) The delay between optical and electrical pulse may only change by less than ± 250 ps relative to the value obtained with 80MHz, when changing the output repetition rate by means of the pulse picker divisor.
- 3) The electrical output trigger signal can be delayed up to 9.2 ns in steps of 15 ps. This enables trigger delay optimization without the need for a expensive delay box.



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| Blue (EXB series) | White (EXW series) | Red (EXR series) | Visible power* | Total Power |
|-------------------|--------------------|------------------|----------------|-------------|
| EXB-1 | EXW-1 | EXR-1 | 100 mW | > 1W |
| EXB-4 | EXW-4 | EXR-4 | 400 mW | > 2.4W |
| - | EXW-6 | - | 600 mW | > 3W |
| - | EXW-9 | EXR-9 | 900 mW | > 4W |
| - | EXW-12 | - | 1200 mW | > 5W |
| - | - | EXR-15 | 1500 mW | > 6W |
| - | - | EXR-20** | 2000 mW | > 8W |

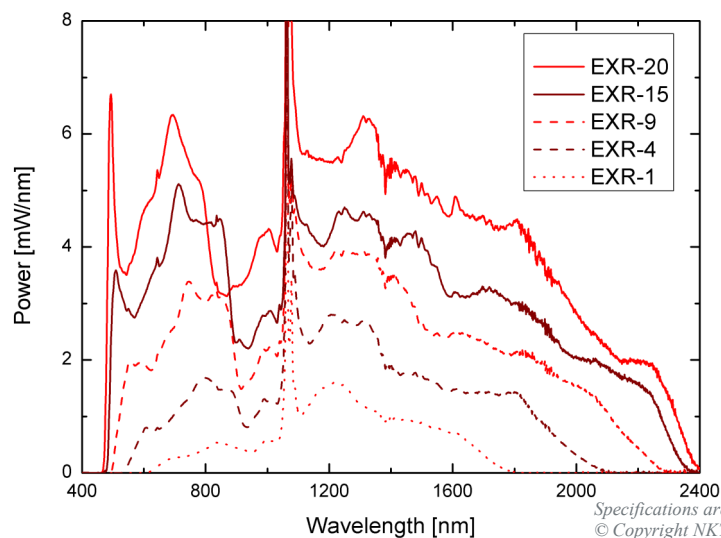
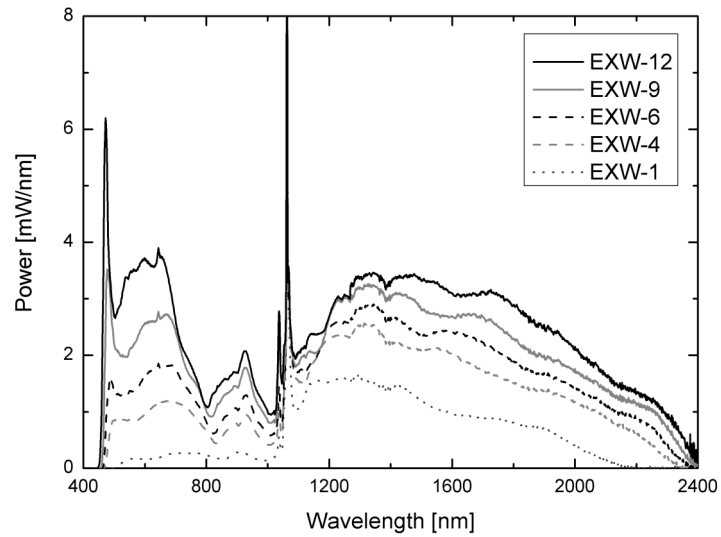
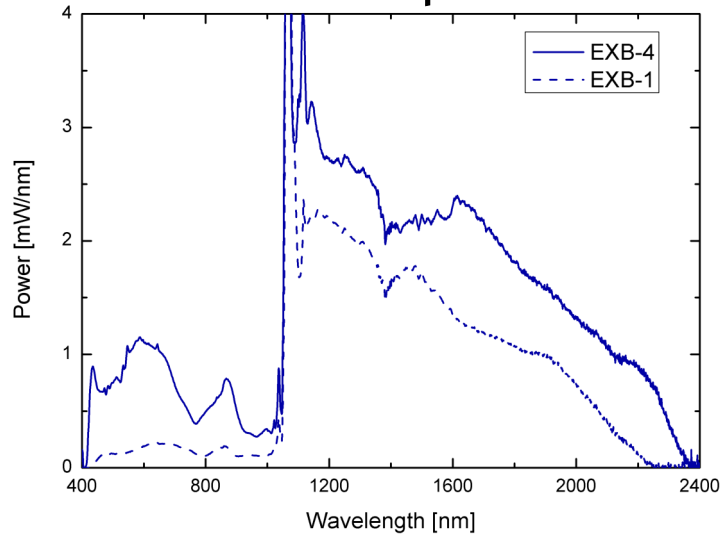
* For a thorough description of optical power measurement, see our application note on www.nktphotonics.com/superk_extreme_support.

** Available on custom request

| Common Optical Specifications | | Common Mechanical and Electrical Specifications | |
|---|--------------------------------|--|----------------------------|
| Master Rep Rate | 40MHz or 80MHz | Computer Interface | USB 2.0 |
| Master seed laser pulse | ~5ps | Operation Voltage | 100-240 VAC 50/60 Hz |
| Total power stability | +/-1.5% | Power Consumption ⁴⁾ | <100W (120W) |
| Polarisation | Unpolarized | Door Interlock Connector ⁵⁾ | 2-pin LEMO |
| Beam output | Gaussian, single mode | External Bus Communication Interface ⁶⁾ | 16-pin sub-D |
| M ² | < 1.1 | System Cooling | Air Cooled |
| Output options | Collimated or divergent output | Operation Temperature | +18° to +30°C |
| Length of output fiber | 1.5m | Storage Temperature | -10° to +60°C |
| Beam diameter | ~1mm at 530nm | Dimensions (WxHXL) | 440x243x380mm ³ |
| | ~2mm at 1100nm | | |
| | ~3mm at 2000nm | Weight ⁷⁾ | 18kg (19kg) |
| Beam Divergence ¹⁾ | < 5mrad | <ol style="list-style-type: none"> 1) Half angle beam divergence 2) The pointing accuracy is measured relative to the mechanical axis running through the center of the collimator 3) For example, the visible spectral range 4) Power consumption without and with Pulse Picker 5) SuperK Extreme is a Class 4 laser and is required to be connected to a door interlock/circuit 6) External communication and power supply port for accessories 7) The weight without and with the Pulse picker | |
| Beam Pointing Accuracy ²⁾ | < 1mrad | | |
| Beam Pointing Stability | < 50µrad | | |
| Single mode fiber coupling ³⁾ | >72% | | |
| Analog Master Seed Laser Trigger Output (BNC) | 0 – 3.3V | | |

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SuperK EXTREME Series - Spectral Power Density



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