

SuperK FIANIUM

Pulsed white light fiber laser



Easy-to-operate white light source

Ideal for bioimaging and characterization of nanomaterials

Built on the World’s best-selling supercontinuum laser, the SuperK EXTREME, the SuperK FIANIUM has upgraded electronics and new fiber technology giving you improved performance and reliability. And now it is even easier to use.

The lasers deliver high brightness diffraction-limited light in the entire 390-2400 nm range. Add one of our filter solutions to convert it into an ultra-tunable laser.



SuperK FIANIUM

Applications

Microscopy

Fluorescence

Lifetime Imaging

Optical Coherence Tomography

Spectroscopy

White light interferometry

Hyperspectral imaging

Plasmonics & meta materials

Ease of use

The future-proof choice for innovators

As a scientist, you may not know what you need tomorrow. Address the unexpected with the highly versatile SuperK FIANIUM. The modular design makes it easy to upgrade features and performance to ensure that you are always prepared for the future.

Wide spectral coverage and high brightness

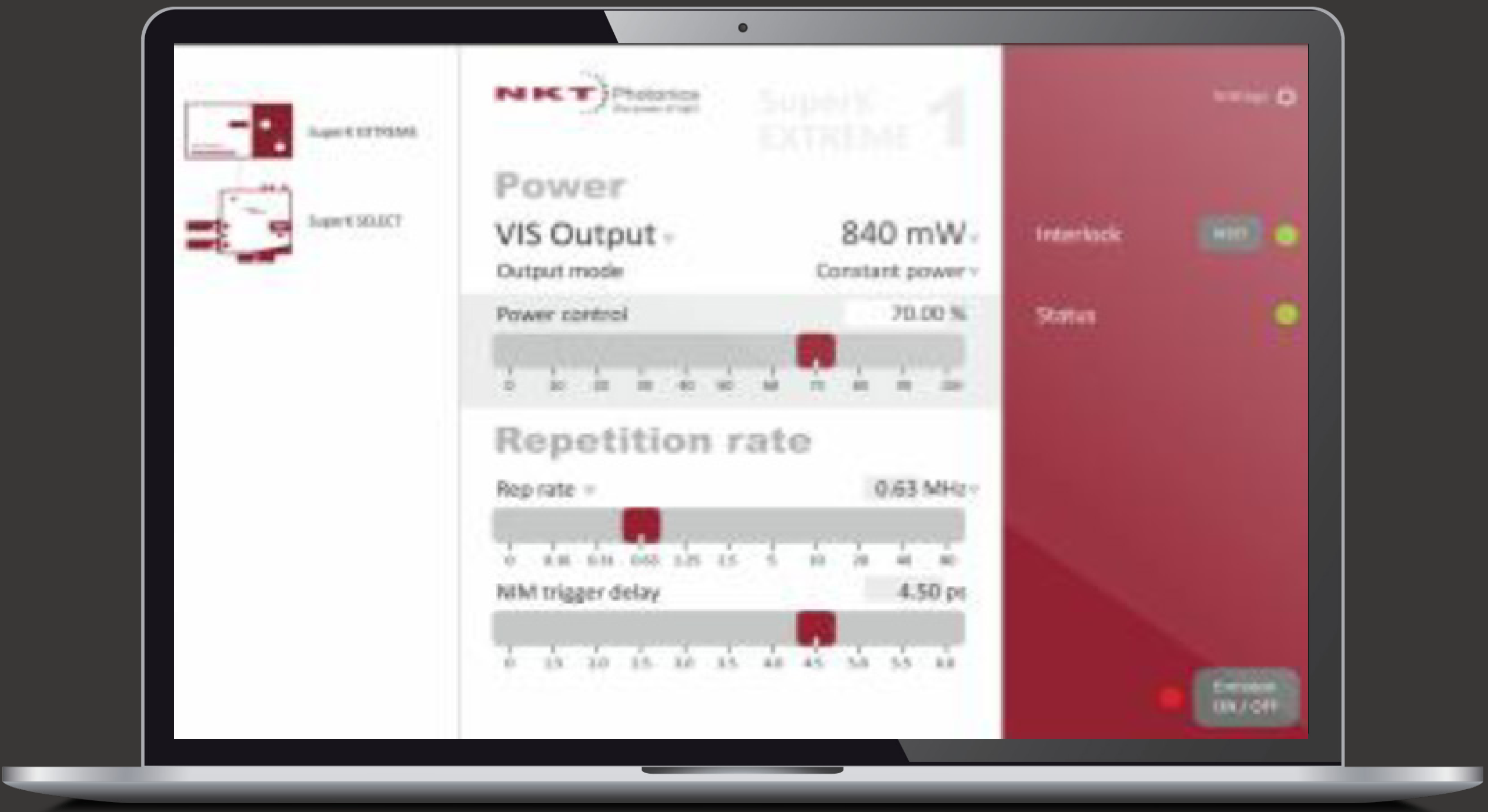
Our SuperK supercontinuum sources deliver a wide spectral output covering hundreds of nanometers while keeping the high brightness and mode quality known from single line lasers.

A maintenance-free lifetime of thousands of hours

The SuperK series is based on NKT Photonics’ world-renowned Crystal Fibre technology that has reliably delivered supercontinuum to all fields for over 15 years. Our lasers are fully fiber monolithic which ensures excellent reliability and a lifetime of thousands of hours - as well as maintenance-free and alignment-free operation. For scientific applications, we offer a 2-year warranty.

Easy to operate

Operating the SuperK FIANIUM is easy for users from any discipline, no laser expertise is needed. The SuperK CONTROL graphical user interface on your PC gives intuitive control of all functions in the laser. The system is fully modular, allowing easy operation and service. Accessory modules can be added without configuration—all plug & play. Change a large number of parameters on-the-fly, without powering down the system.



SuperK FIANIUM

NKT Photonics CONTROL

Like other NKT Photonics lasers, the SuperK FIANIUM can be controlled by our intuitive CONTROL software that gives easy access to all laser functions. The software automatically detects all units attached to the computer.

You can control the source and any filtering accessories from CONTROL. It is easy to use and supports touch input as well as traditional mouse + keyboard control.

Options

Variable Repetition Rate (Pulse Picker)

The pulse picker option allows the repetition rate of the SuperK FIANIUM to be easily changed on-the-fly while the system is running at full output.

Repetition rates of 0.15-78 MHz are available as standard, giving the user ultimate choice for lifetime measurement applications such as FLIM.

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 delay box.



SuperK FIANIUM

Support and warranty

Before shipping, all our SuperK lasers undergo an extensive burn-in to ensure performance and conformity to specifications. Our systems boast over 10,000 hours of continuous lifetime and underlines the high reliability of our NKT Photonics Crystal Fiber technology.

Lifetime and service

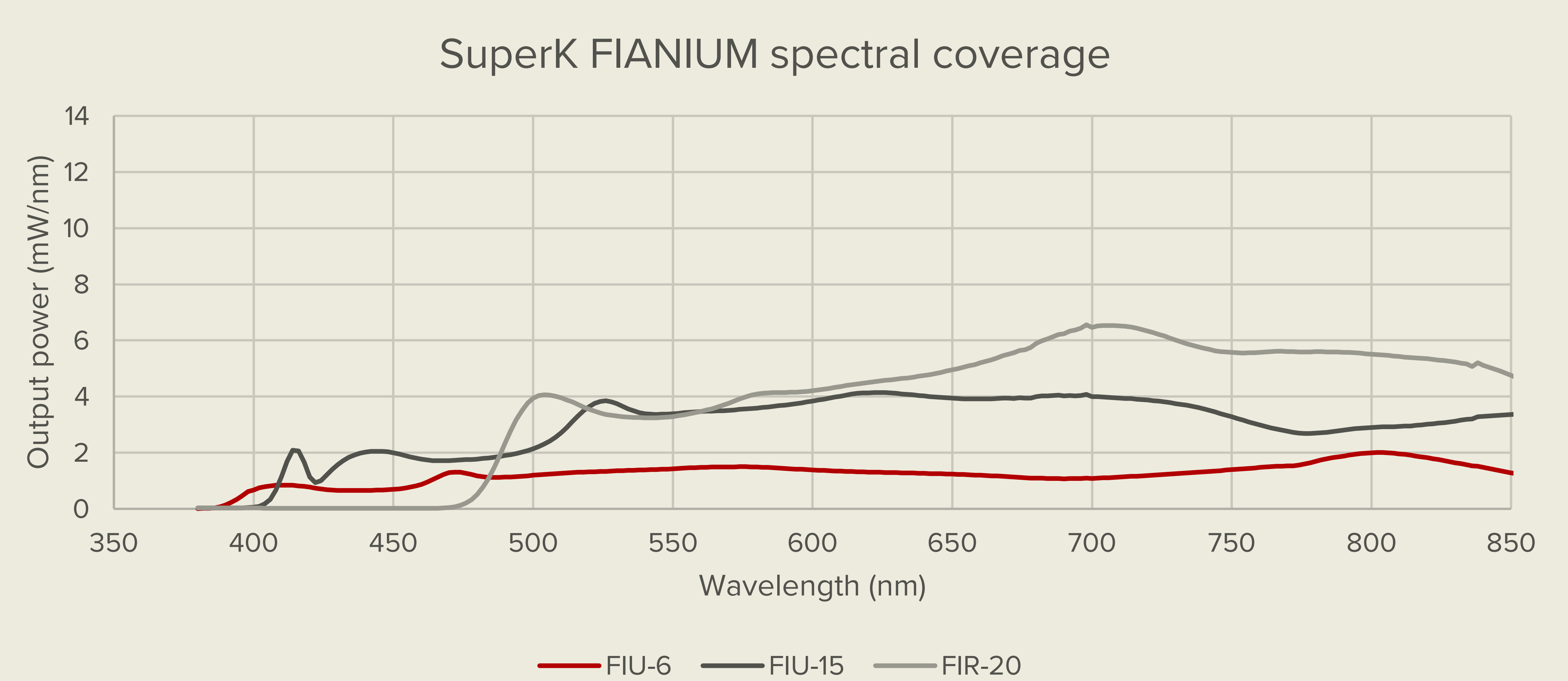
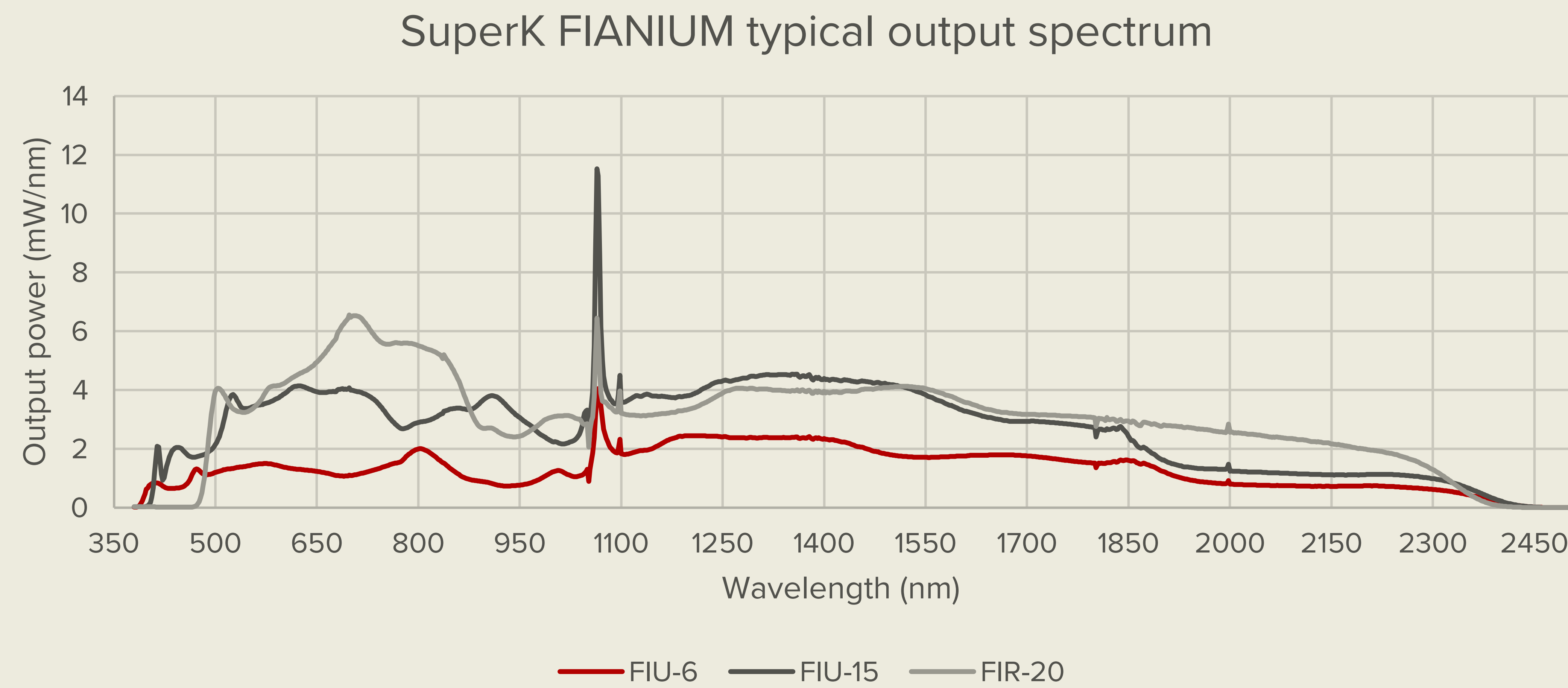
The solid-state, all-fiber architecture ensures a stable 24/7 operation and a maintenance-free lifetime of thousands of hours. Intended for industrial use, its rugged and compact design make it easy to mount and handle.

Repetition rate (fixed) ¹	78 MHz
Variable repetition rate (optional) ¹	0.15 - 78 MHz
Pulse suppression ratio	> 1:10,000
Repetition rate switching time	< 1 s
Trigger out signals	NIM, logic, analogue
Trigger signal jitter	< 20 ps
Adjustable trigger delay ²	Up to 9.2 ns
Adjustable trigger delay resolution	15 ps

¹ Can be modified upon request.
² The electrical output trigger signal can be delayed up to 9.2 ns in steps of 15 ps.

Spectral power density

SuperK
FIANIUM



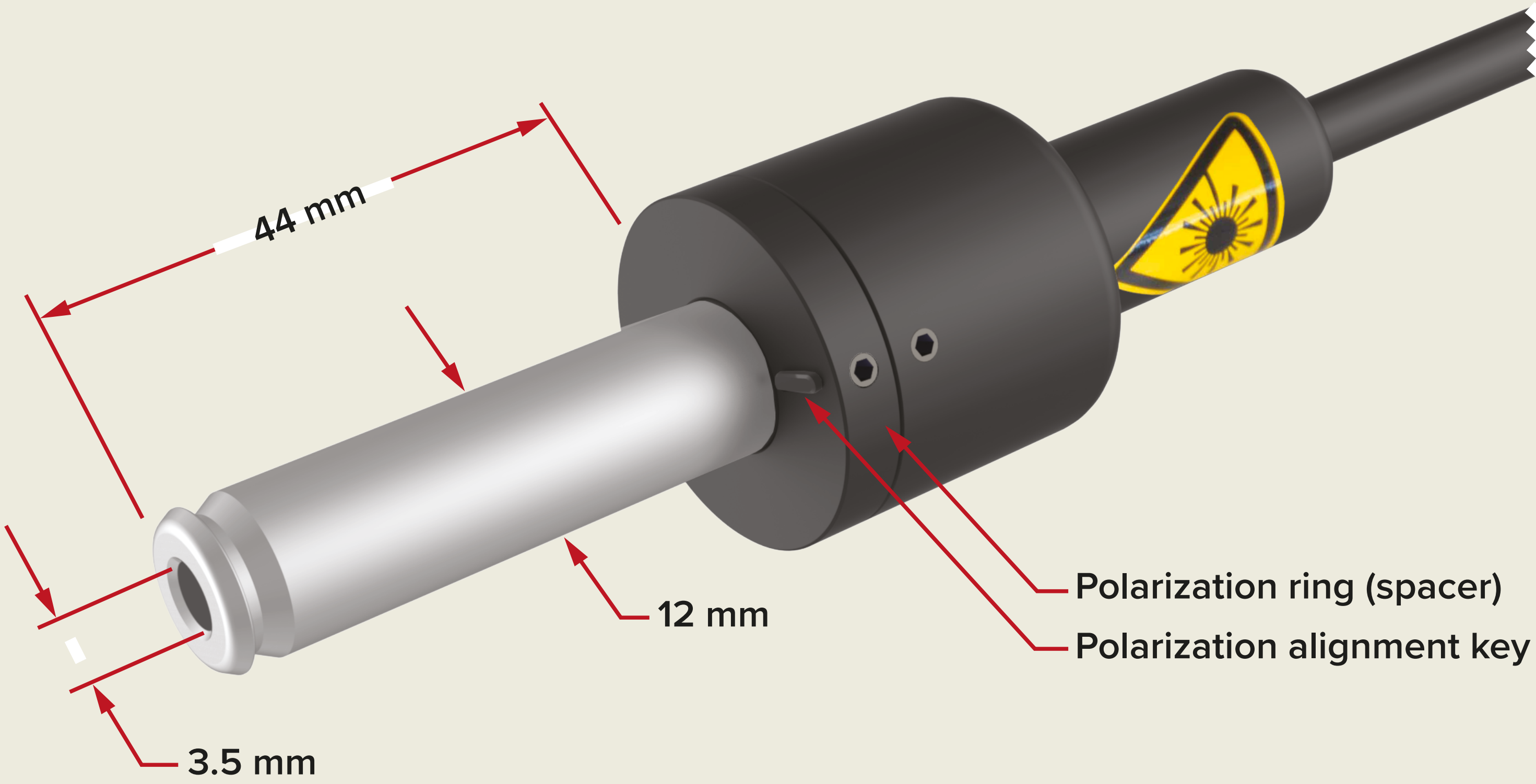
Collimator

SuperK
FIANIUM

The optical output of the laser is a collimator at the end of an armored fiber cable.

A collimated beam exits the collimator from a steel sleeve connector designed for insertion into a receptacle of a target optical device such as, for example, a SuperK accessory, holder, or specifically engineered optical device.

Once inserted, the substantial construction of the collimator maintains the output beam alignment.



Specifications

SuperK
FIANIUM

Optical

Model	FIU-6	FIU-15	FIR-20
Repetition rate [MHz]	78	78	78
Variable repetition rate [MHz] (optional)	0.15 - 78	0.15 - 78	0.15 - 78
Spectral power density [mW/nm]	0.6 @ 450 nm	2.0 @ 450 nm	N.A
	1.3 @ 532 nm	4.0 @ 532 nm	3.2 @ 532 nm
	1.2 @ 650 nm	4.0 @ 650 nm	4.7 @ 650 nm
	1.8 @ 780 nm	2.5 @ 780 nm	5.4 @ 780 nm
	2.0 @ 800 nm	2.8 @ 800 nm	5.2 @ 800 nm
Total power [W]	≈ 2.2	≈ 5.5	≈ 6.5
Visibe power (350-850 nm) [W]	≈ 0.6	≈ 1.5	≈ 2.0
Power stability [%] ¹	± 0.5	± 0.5	± 0.5
Cut-in wavelength (>0.1mW/nm) [nm]	400	415	475
Polarization	Random	Random	Random
Beam quality	M2 < 1.1	M2 < 1.1 ²	M2 < 1.1
Beam diameter (collimated version) [mm]		≈ 1 @ 532 nm	
		≈ 2 @ 1100 nm	
		≈ 3 @ 2000 nm	

Beam pointing accuracy [mrad] ³	< 1
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¹ Average of a 2-hour measurement of the visible spectrum.
The note stability per filtered line may vary with wavelengths.
² For >450 nm.
³ Measured relative to the mechanical axis running through the center of the collimator.

Specifications

Electrical/Mechanical

Computer interface	USB 2.0/RS-232/Ethernet
Operation voltage [Hz]	100-240 VAC 50/60
Power consumption [W]	< 100 (<120 with pulse picker)
Door interlock connector ¹	2-pin LEMO
External bus interface ²	15-pin sub-D
System cooling	Air-cooled
Length of output fiber [m]	1.5
Operation temperature [°C]	18 - 30
Storage temperature [°C]	-10 - 55
Dimensions (WxHxL) [mm]	440 x 251 x 400
Weight [kg]	18 (19 with pulse picker)

¹ The SuperK FIANIUM is a Class ⁴ laser and is required to be connected to a door interlock/circuit
² External communication and power supply port for accessories

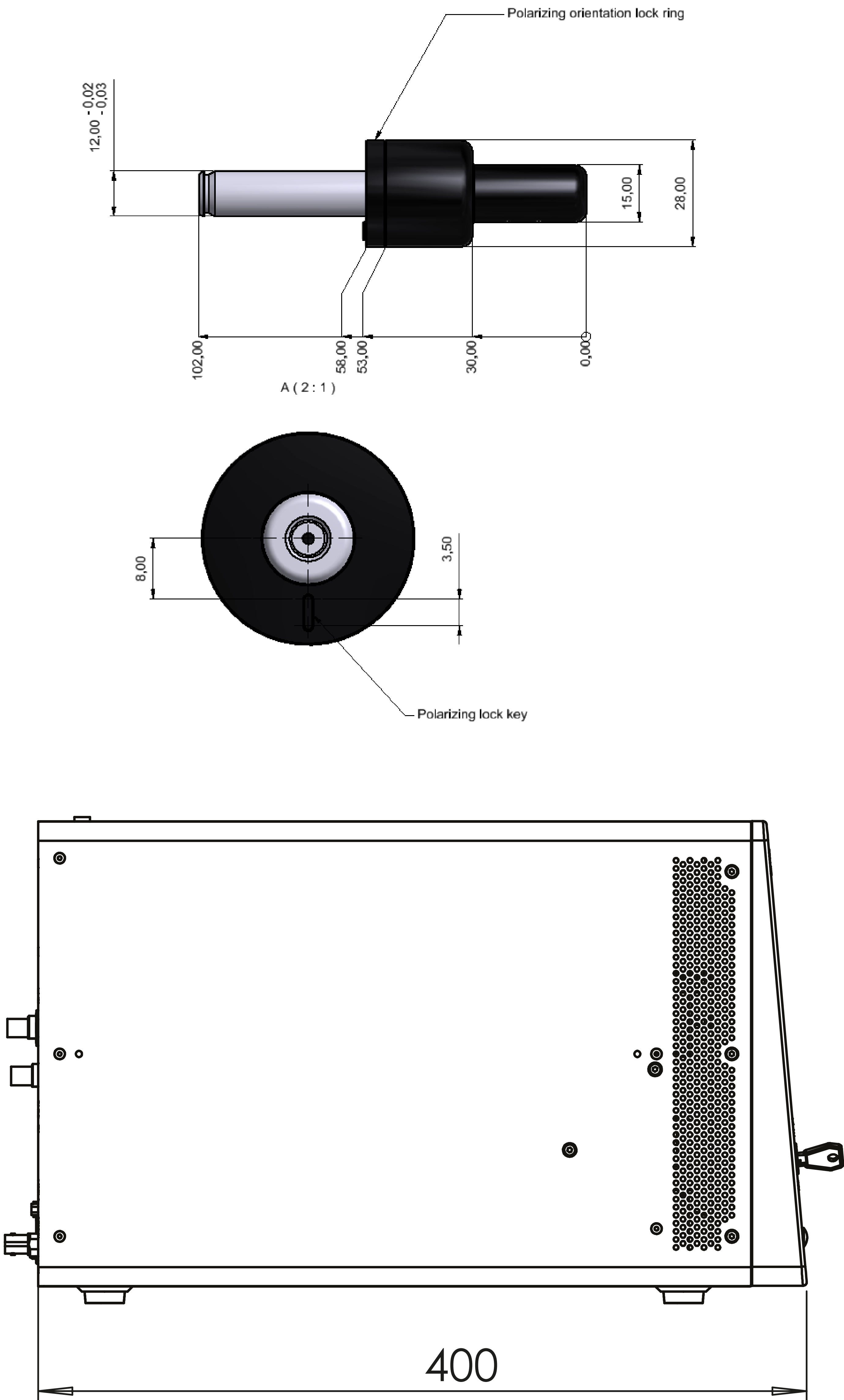
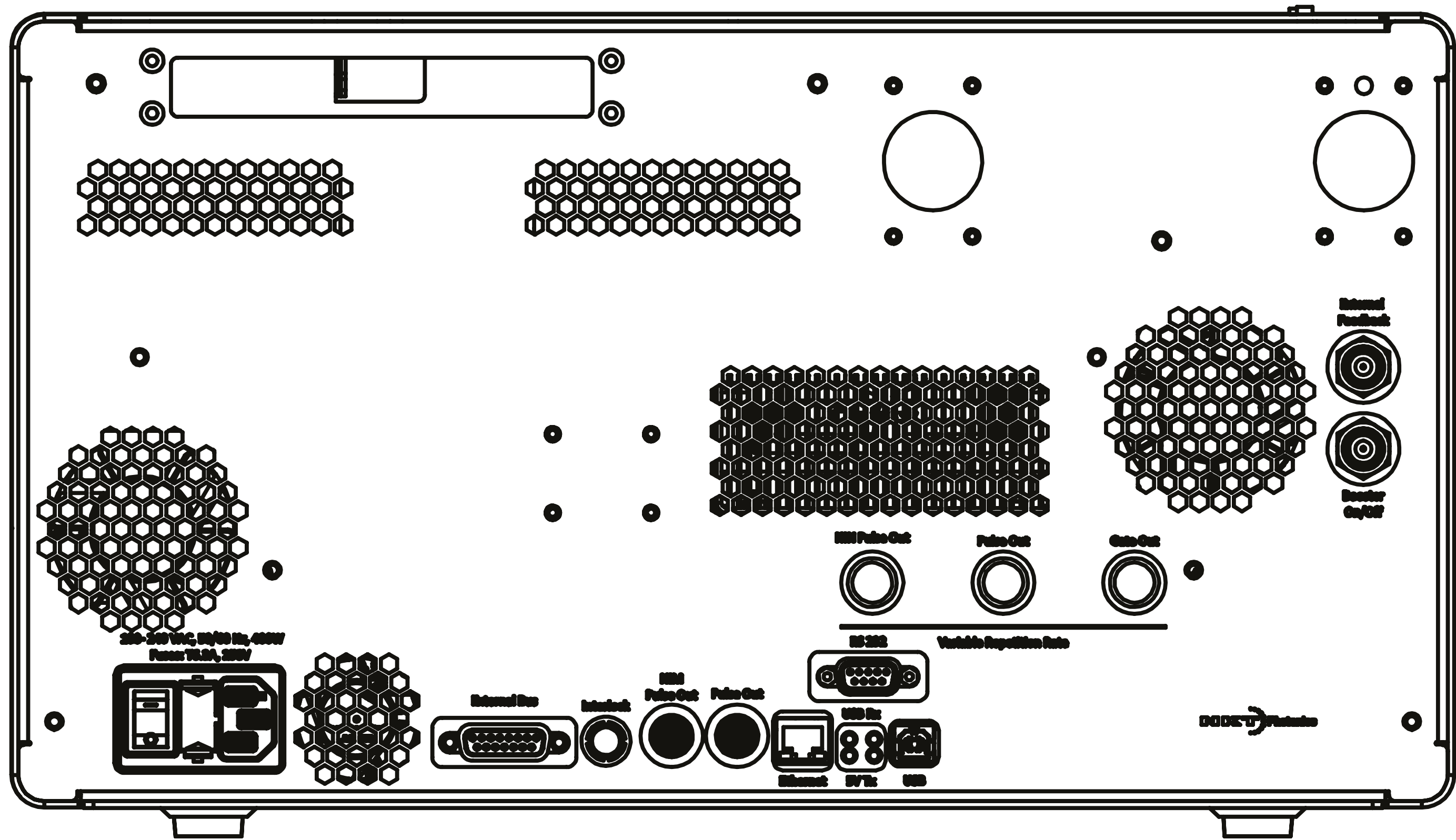
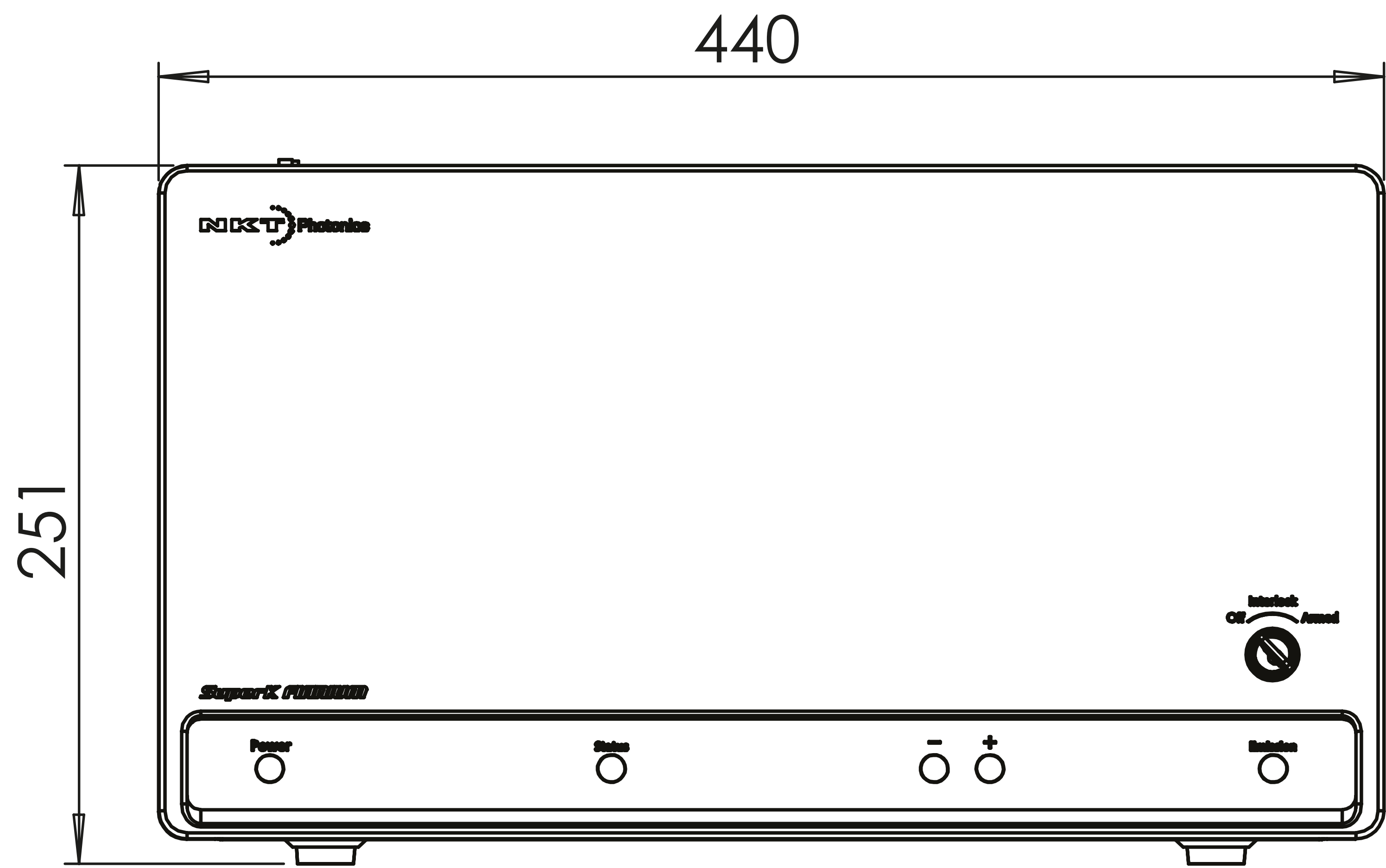
SuperK FIANIUM

Software Development Kit (SDK)

The free software development kit (SDK) enables control of the SuperK FIANIUM laser using third party software and hardware.

The SDK contains a full description of the communication protocols as well as LabView drivers and C++/C# source code.

Technical Drawings



SuperK FIANIUM

All NKT Photonics products are produced under our quality management system certified in accordance with the ISO 9001:2015 standard.



SuperK FIANIUM OCT

Low-noise supercontinuum white light laser



Broadband output and low noise

Ideal for Optical Coherence Tomography

The SuperK FIANIUM OCT series is a supercontinuum source optimized for ultra-high resolution Optical Coherence Tomography and multimodality applications.

The ultra-broad output and low noise makes SuperK supercontinuum lasers ideal OCT sources when micron resolution or a special wavelength range is needed.



SuperK FIANIUM OCT

Applications

Optical Coherence Tomography

White light interferometry

Multimodality OCT applications:

- **Autofluorescence**
- **Spectroscopy**
- **Doppler OCT**

Ease of use

Optimized for ultra-high resolution OCT

The new SuperK FIANIUM OCT series from NKT Photonics is a supercontinuum source optimized for ultra-high resolution OCT and multimodality applications.

The SuperK FIANIUM OCT series have the market’s lowest noise. It is optimized for low-noise performance to yield high-contrast, low-noise images in OCT systems.

Combined with a broadband spectrometer, the SuperK FIANIUM OCT can power Optical Coherence Tomography systems down to 1-2 µm axial resolution.

Replaces expensive Ti:Sapphire lasers

Due to its low noise and broadband output, it matches the performance of the bulky and costly Ti:Sapphire lasers.

Model	FIU-6 OCT	FIR-9 OCT
Cut-in wavelength	≈ 425 nm	≈ 640 nm
Visible power	≈ 600 mW	≈ 900 mW

Features

Low noise

Broadband output

True single-mode output

Multimodal OCT light source

Replaces Ti:Sapphire lasers and SLEDs

Unsurpassed reliability and lifetime

OCT optimized filter option



SuperK FIANIUM OCT

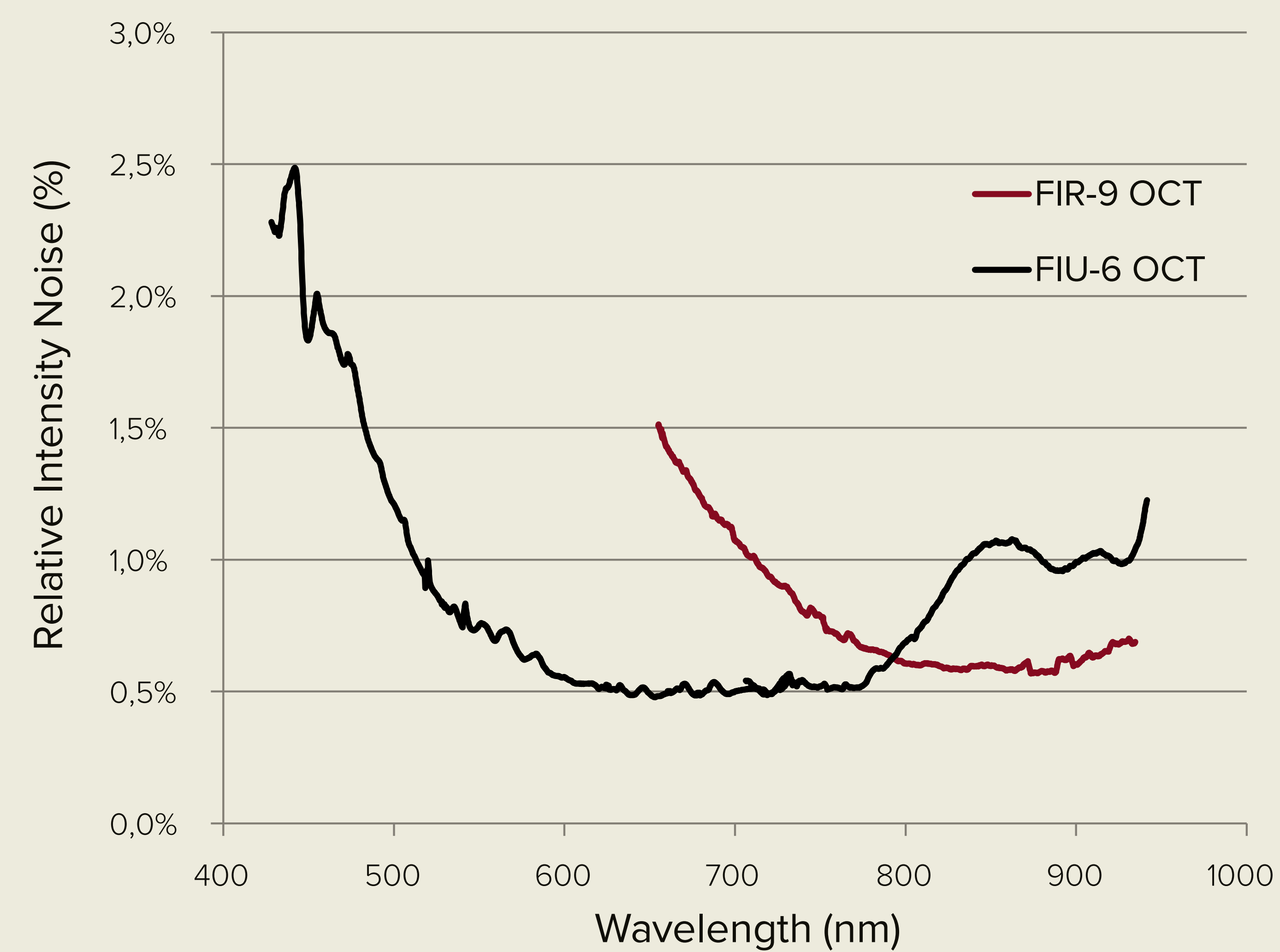
NKT Photonics CONTROL

Like other NKT Photonics lasers, the SuperK EVO can be controlled by our intuitive CONTROL software that gives easy access to all laser functions. The software automatically detects all units attached to the computer.

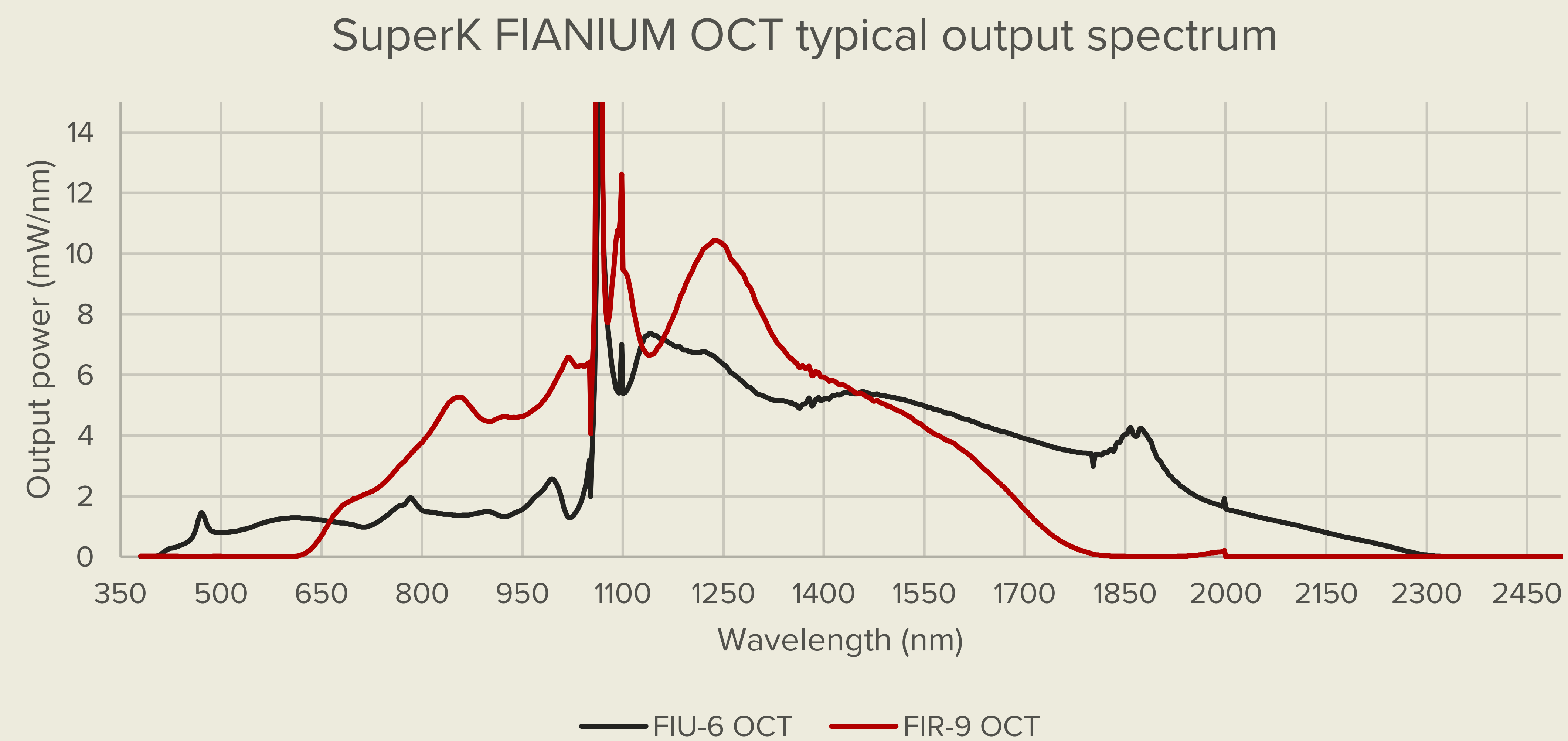
You can control the source and any filtering accessories from CONTROL. It is easy to use and supports touch input as well as traditional mouse + keyboard control.

SuperK FIANIUM OCT

Relative Intensity Noise



Typical output Spectrum



Support and warranty

Before shipping, all our SuperK lasers undergo an extensive burn-in to ensure performance and conformity to specifications. Our systems boast over 10,000 hours of continuous lifetime and underlines the high reliability of our NKT Photonics Crystal Fiber technology.

Lifetime and service

The all-fiber architecture ensures a stable 24/7 operation and a maintenance-free lifetime of thousands of hours. Intended for industrial use, its rugged and compact design make it easy to mount and handle.

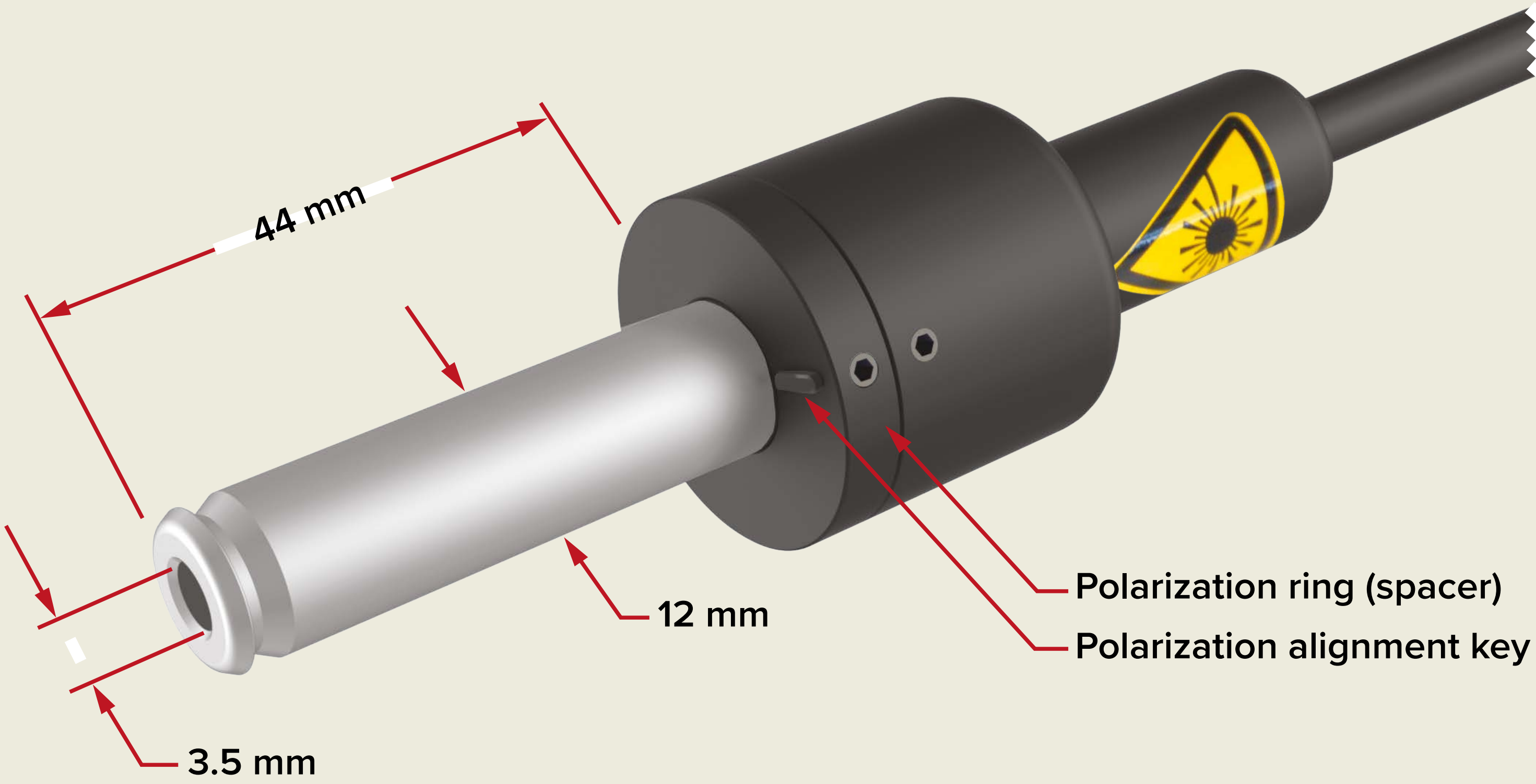
Collimator

SuperK FIANIUM OCT

The optical output of the laser is a collimator at the end of an armored fiber cable.

A collimated beam exits the collimator from a steel sleeve connector designed for insertion into a receptacle of a target optical device such as, for example, a SuperK accessory, holder, or specifically engineered optical device.

Once inserted, the substantial construction of the collimator maintains the output beam alignment.



Specifications

SuperK FIANIUM OCT

Optical

Model	FIU-6 OCT	FIR-9 OCT
Cut-in wavelength [nm]	< 425	< 640
Visible power (350-850 nm) [mW]	≈ 600	≈ 900
Spectral power density [mW/nm]	0.5 @ 450 nm	N.A
	0.9 @ 532 nm	N.A
	1.2 @ 650 nm	0.6 @ 650 nm
	2.0 @ 780 nm	3.2 @ 780 nm
	1.6 @ 800 nm	3.5 @ 800 nm
Total power [W]	< 6.5	< 6.5
Repetition rate [MHz]	312 ± 3	312 ± 3
Power stability [%]	< ± 0.5	< ± 0.5
Polarization	Random	Random
Beam quality	Diffraction limited	Diffraction limited
Collimated Beam diameter [mm]	≈ 1 @ 530 nm	≈ 1 @ 530 nm
	≈ 2 @ 1100 nm	≈ 2 @ 1100 nm
	≈ 3 @ 2000 nm	≈ 3 @ 2000 nm
Beam pointing accuracy [mrad] ¹	< 1	

¹ Measured relative to the mechanical axis running through the center of the collimator.

Specifications

Electrical/Mechanical

Computer interface	USB 2.0/RS-232/Ethernet
Operation voltage [Hz]	100-240 VAC 50/60
Power consumption [W]	< 100
Door interlock connector ¹	2-pin LEMO
External bus interface ²	16-pin sub-D
System cooling	Air-cooled
Length of output fiber [m]	1.5
Operation temperature [°C]	18 - 30
Storage temperature [°C]	-10 - 55
Dimensions (WxHxL) [mm]	440 x 251 x 400
Weight [kg]	18 (19 with pulse picker)

¹ The SuperK FIANIUM OCT is a Class 4 laser and is required to be connected to a door interlock/circuit

² External communication and power supply port for accessories

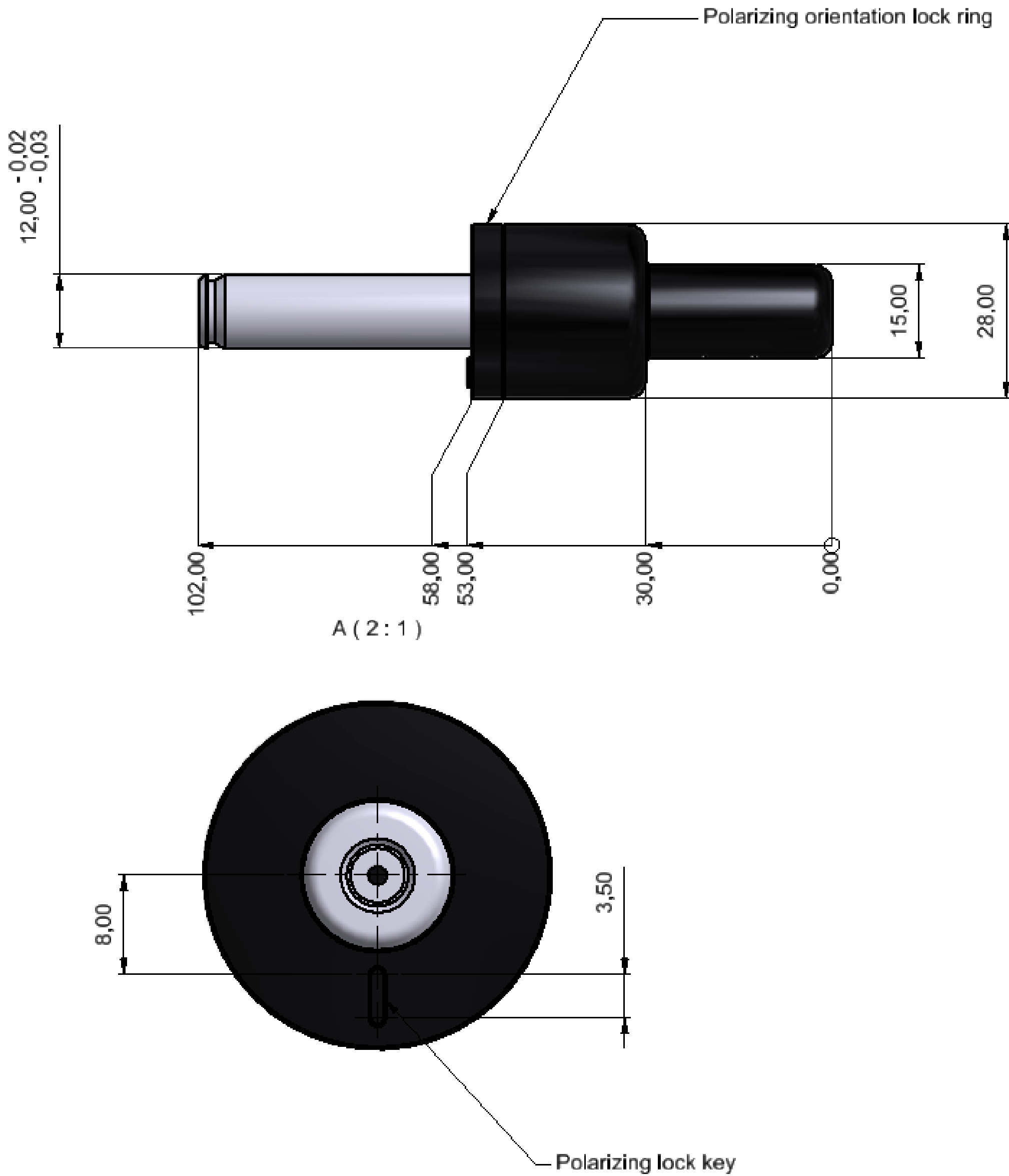
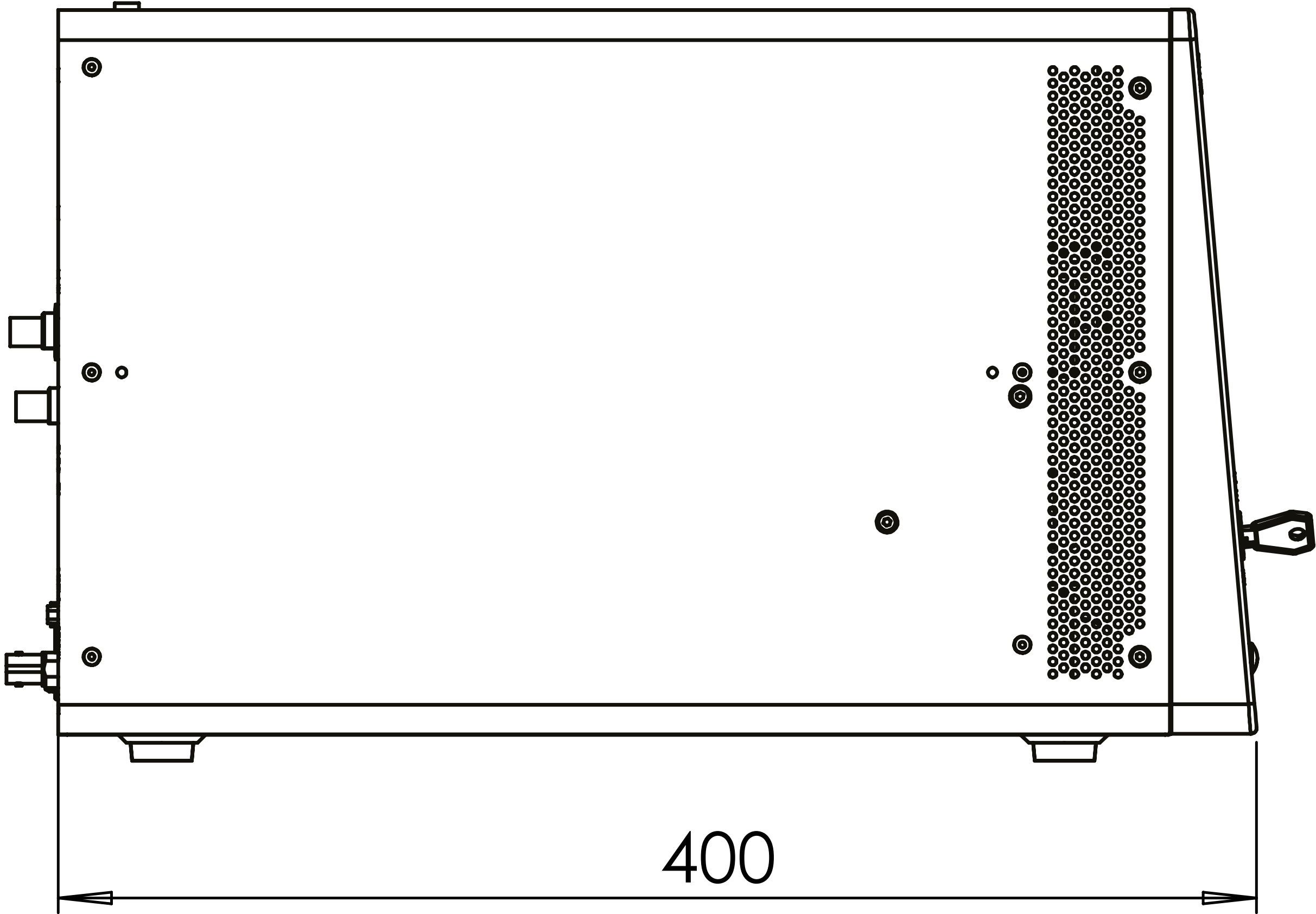
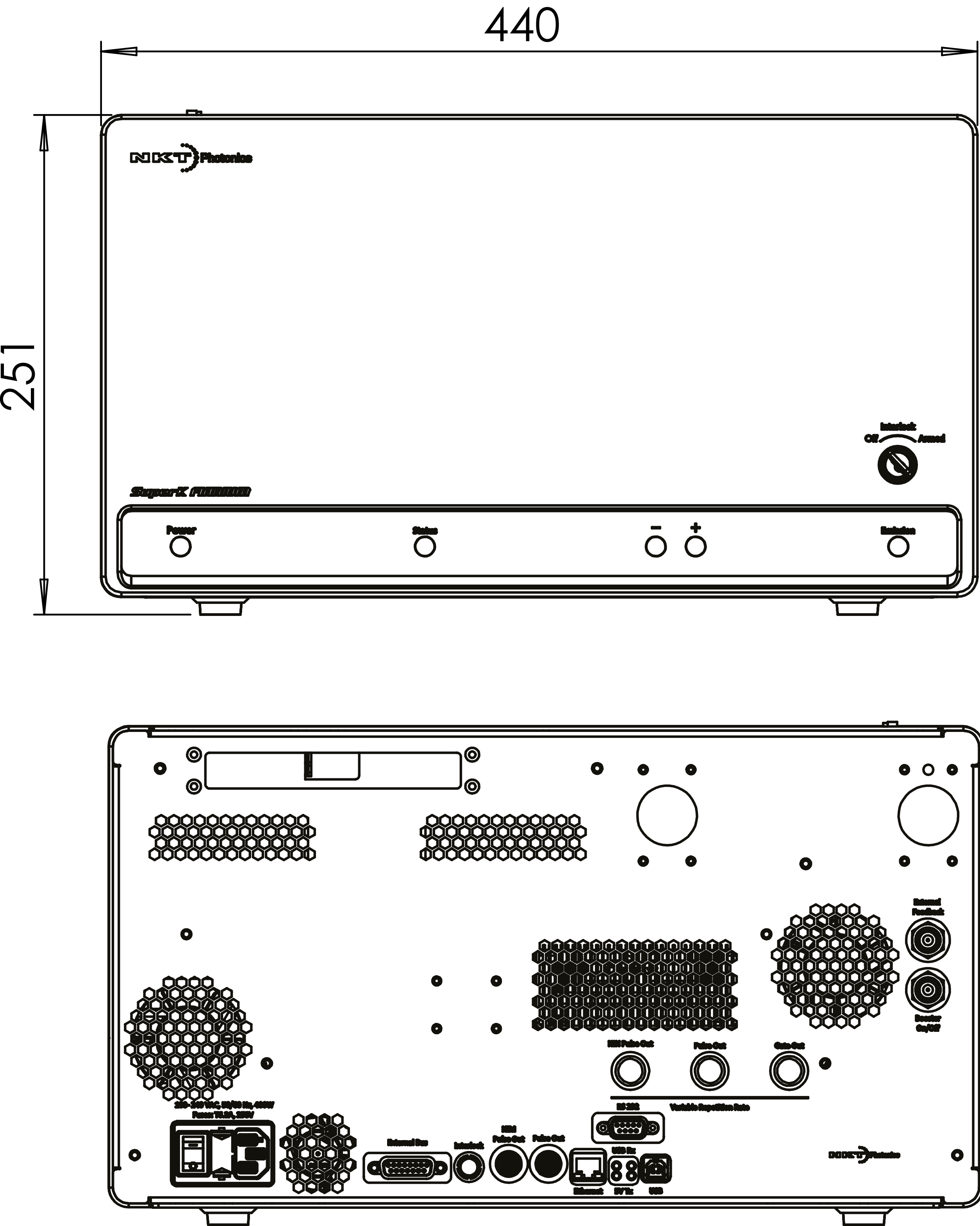
SuperK FIANIUM OCT

Software Development Kit (SDK)

The free software development kit (SDK) enables control of the SuperK FIANIUM OCT laser using third party software and hardware.

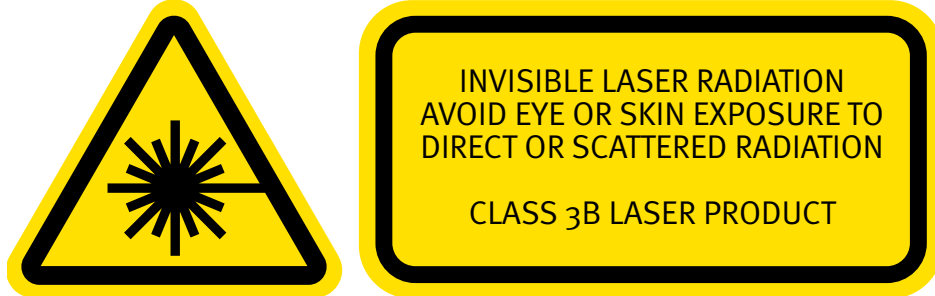
The SDK contains a full description of the communication protocols as well as LabView drivers and C++/C# source code.

Technical Drawings



SuperK FIANIUM OCT

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