SuperK
FIANIUM
Pulsed white-light fiber laser

HAMAMATSU

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 400-2400 nm range. Add one of our filter solutions to convert it into an ultra-tunable laser.

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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 our 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 and Play. Change a large number of parameters on-the-fly, without powering down the system.

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CONTROL SOFTWARE

Like other Hamamatsu 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 + keybord 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.

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.

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 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.

Spectral power density

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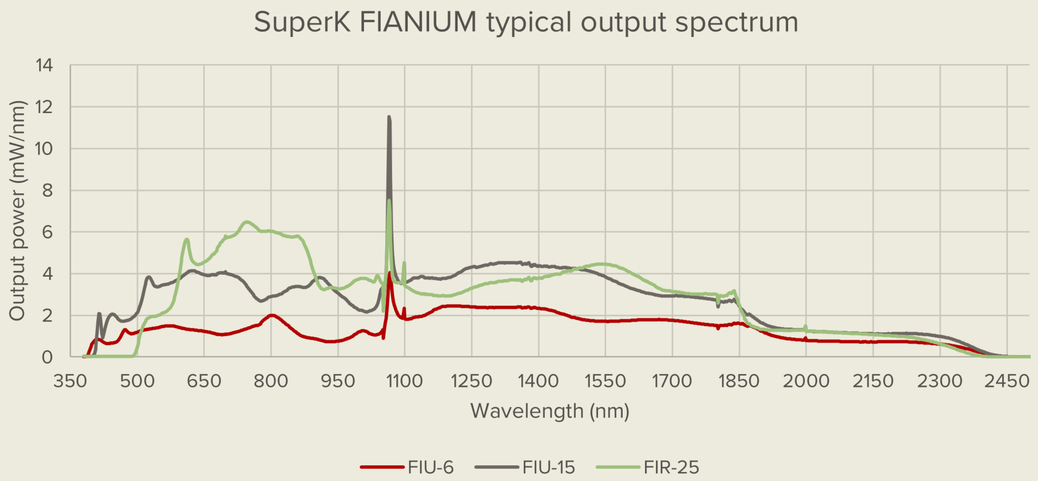
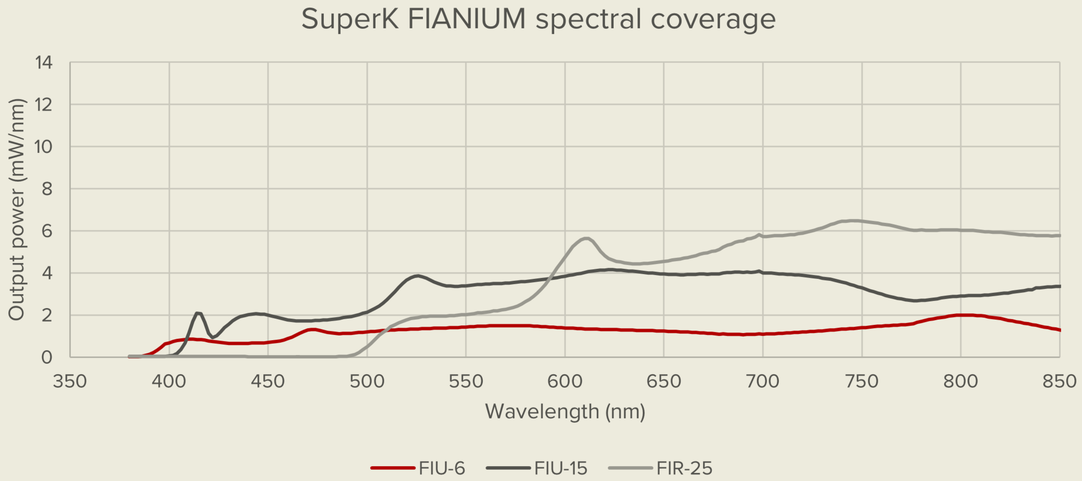


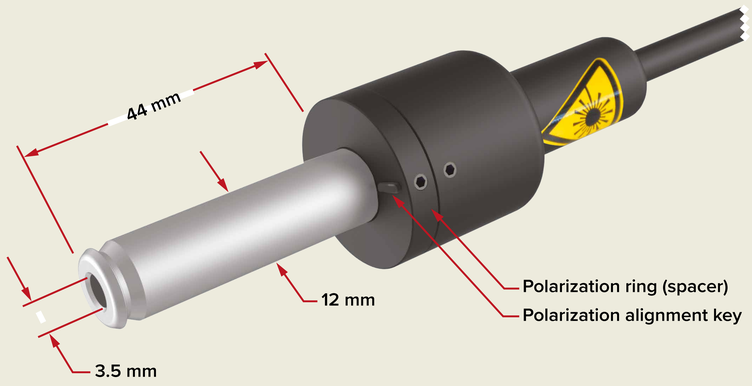


Collimator

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-25
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	≈ 7
Total visibe power (350-850 nm) [W]	≈ 0.6	≈ 1.5	≈ 2.5
Power stability [%] [1]	± 0.5	± 0.5	± 0.5
Cut-in wavelength (>0.1mW/nm) [nm]	400	415	495
Polarization	Random	Random	Random
Beam diameter (collimated version) [mm]		≈ 1 @ 532 nm	
		≈ 2 @ 1100 nm	
		≈ 3 @ 2000 nm	
Beam pointing accuracy [mrad] [2]		< 1	

[1] Average of a 2-hour measurement of the visible spectrum. The note stability per filtered line may vary with wavelengths.
[2] 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

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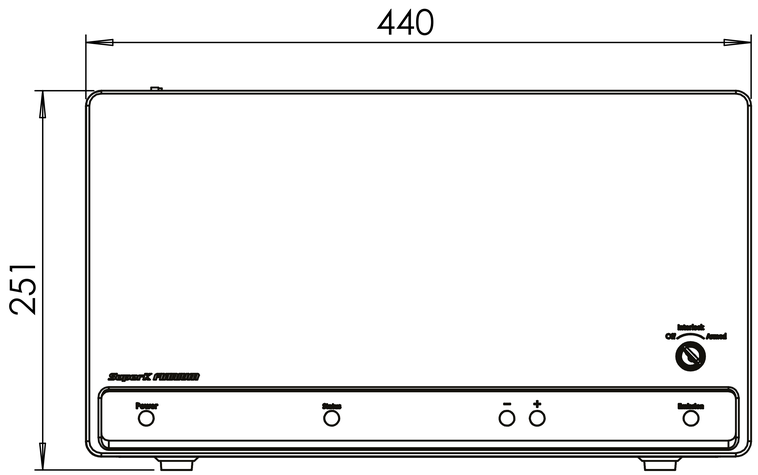
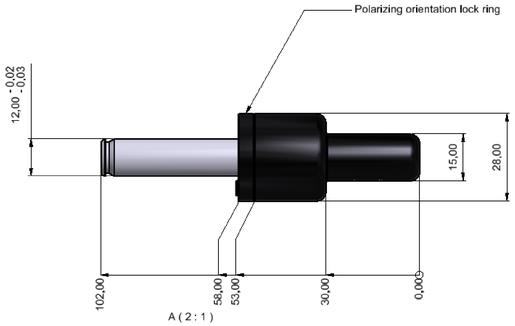
Software Development Kit (SDK)

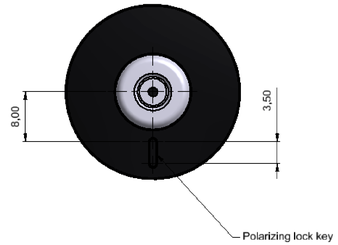
The free software development kit (SDK) enables control of the SuperK FIANIUM laser using third party software and hardware.

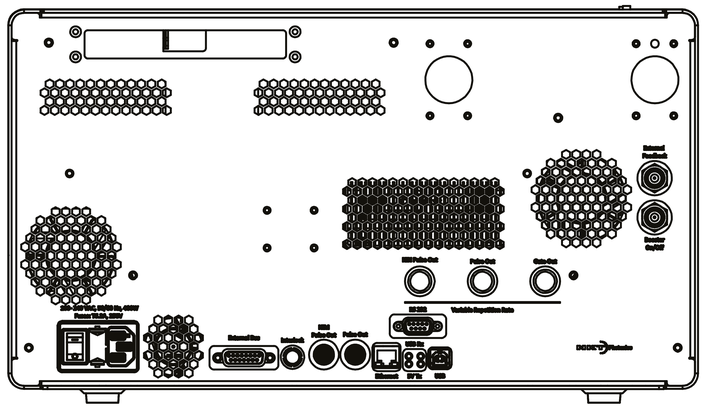
The SDK contains a full description of the communication protocols as well as LabView drivers and C++/C# source code.

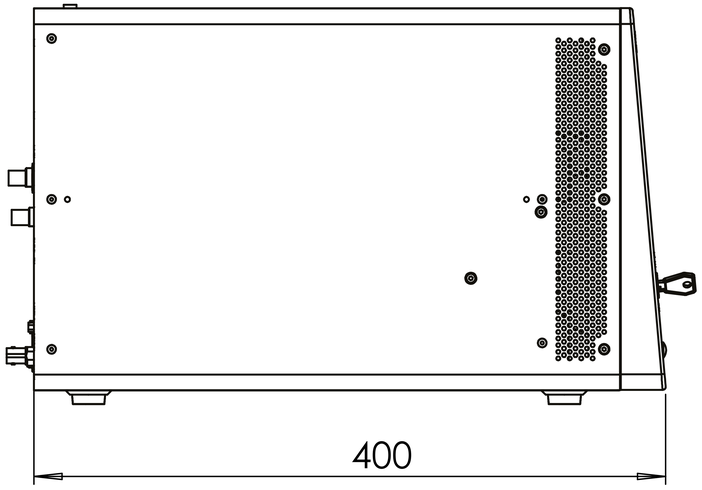
Technical Drawings











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

We're switching from NKT Photonics to Hamamatsu. Some documents and products still say NKT Photonics, others say Hamamatsu. The transition takes time, so please bear with us.

And rest assured, we're still the same people delivering the same high-quality fibers and lasers.

FORCE Certification
Systemcertificering
DS/EN ISO 9001 - Kvalitet

VISIBLE AND INVISIBLE LASER RADIATION
AVOID EYE OR SKIN EXPOSURE TO DIRECT OR SCATTERED RADIATION
CLASS 4 LASER PRODUCT

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