

## SFYX CW 1.0 $\mu\text{m}$ SINGLE-FREQUENCY HIGH POWER FIBER LASER



Standard Wavelengths:

**1030, 1064, 1107 nm**

Custom Wavelengths:

**Any within the range 1030 – 1122 nm**

Wavelength Tuning Range:

**0.5 nm**

Output Power:

**Up to 15 W**

The Optromix SFYX is a single-frequency high output power Ytterbium fiber laser with an ultra-narrow linewidth. SFYX is a turn-key system where a control electronics and power supply are integrated with a seed laser and a power amplifier. SFYX is available in a benchtop or in a 19" rack housing.

SFYX provides a precise wide-range thermal wavelength tuning and a fast piezo tuning using an external PZT driver. A powerful fiber amplifier allows achieving up to 15 W output power with a 10-100% adjustment range.

### Key Features

- Ultra Narrow Linewidth
- Thermal Wavelength Tuning
- Fast Piezo Wavelength Tuning
- High Beam Quality
- High Power Stability
- Low RIN Level

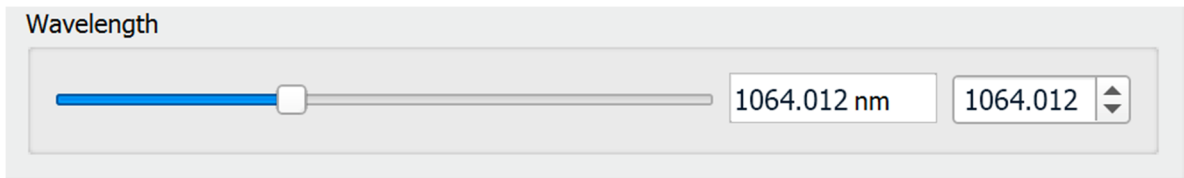
### Applications

- Atomic Trapping and Cooling
- Quantum Optics and Computing
- Optical Sensing
- Nonlinear Pump Source
- High Precision Spectroscopy

# FEATURES

## THERMAL WAVELENGTH TUNING

SFEX allows for the thermal wavelength tuning is carried out using a temperature adjustment of the seed-laser temperature. The allowable wavelength tuning range is  $> 0.5$  nm. Wavelength stabilization occurs approximately 0.1 seconds after setting a new value.



## FAST WAVELENGTH TUNING AND MODULATION

SFYX is equipped with a piezo-actuator for the fast wavelength tuning using an external PZT driver. The allowable voltage is 0 – 100 V. Typical values of the tuning factor are  $\sim 60$ -80 MHz/V (DC voltage). The allowable signal modulation is up to 10 kHz.

## OUTPUT POWER ADJUSTMENT. APC/ACC MODES OF OPERATION. OUTPUT POWER STABILITY.

This laser model allows for output power adjusting in the range of 10 – 100 % of the nominal output power. The laser can operate in Automatic Power Control (APC) as well as in Automatic Current Control (ACC) modes. SFYX provides excellent longterm power stability.

## OPTICAL OUTPUT TYPE

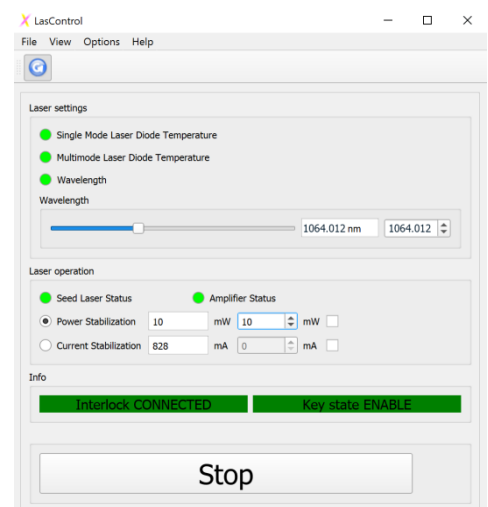
Depending on the output power, a standard model is equipped with a PM output fiber cable terminated by an FC/APC connector or a Collimator. A Narrow Key of the FC/APC connector is aligned to the output polarization. When using the collimator, the polarization direction is indicated on the collimator's housing. Optionally, the laser can be equipped with an additional low power TAP output for the wavelength control.

## COMPUTER CONTROL

The standard SFYX model allows controlling the laser using a computer via a USB port. The original Optromix software is provided along with the laser.

### Options

- Up to 1 nm Wavelength Tuning Range
- Additional Optical Monitor Output
- Up to 5 m length optical output cable
- Seeder + Fiber Amplifier Design (independent housings design)



# SPECIFICATION

## OPTICAL

Parameter	Optromix SFEX
Operating Mode	CW, Single-frequency, TEM <sub>00</sub>
Standard Wavelength	1030.0 nm, 1064.0 nm, 1107.4 nm
Custom Wavelength	1030 – 1122 nm
Thermal Wavelength Tuning Range <sup>1</sup>	0.5 nm
Linewidth (FWHM)	< 100 kHz
Nominal Output Power	1, 2, 5, 10, 15 W
Output Power Tunability	10 – 100%
Power Stability <sup>2</sup>	< 1% (typical <0.5%)
Beam quality (M <sup>2</sup> )	< 1.05 (typical <1.02)
Piezo Tuning Range <sup>3</sup>	> 80 MHz/V, 0 – 100 VDC
Wavelength Modulation <sup>3</sup>	Up to 10 kHz
Polarization	Linear (PER > 23dB)
RIN level (peak:app 0.7 MHz)	< -110dB/Hz@peak, < -140dB/Hz@10MHz
Output Optical Isolator	Built-in
Optical Output <sup>4</sup>	Armed fiber cable terminated be Collimator or FC/APC connector

### Notes

1. Optionally up to 1 nm
2. Over 8 Hours with base temperature constant within 0.2 °C after 30 minute warm-up
3. External PZT Driver 0-100V, Modulation up to 10 kHz
4. Optional Output: The output type can be replaced by the customers' request

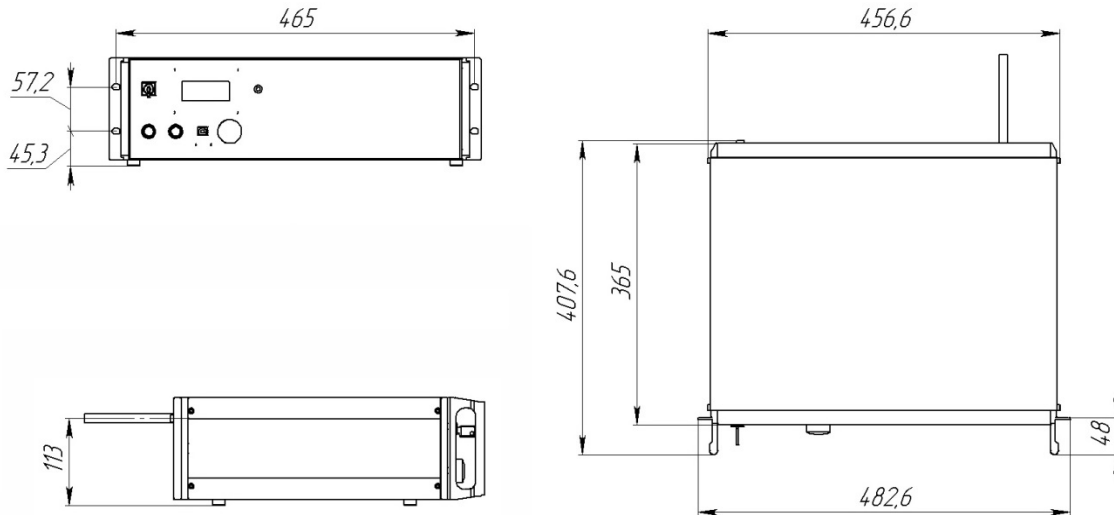
## ELECTRICAL/MECHANICAL/ENVIRONMENTAL

Parameter	Optromix-SFE
Power Supply Requirements	100–240V, 50–60Hz, Single Phase
Power Consumption (10W output)	< 500 W
Cooling	Forced Air
Control Connector <sup>1</sup>	USB
Dimensions (WxHxL)	465 mm x 132 mm x 365 mm
Standard Output Cable Length <sup>2</sup>	1.2 m
Weight	< 18 kg
Operation temperature	15 – 35 °C
Storage temperature	- 40 – +70 °C
Operation Humidity	10 – 85 %
MTBF	> 10.000 Hrs

### Notes

1. Optional Connectors: RS232, Ethernet
2. Optional length: Up to 5 m

## DIMENSIONS



Product code:  
Optromix SFYX-1xxx-yyyyy-cc

xxxx: Wavelength(nm)  
yyyyy: Outputpower(mW)  
cc: Opticaloutput: FA-FC/APC, FO-fiber without termination,  
CL-Collimator

Standard Warranty – 12 months from the date of delivery.

Information in this document is a subject to change without notice.

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