

SFEX CW 1.5 μm SINGLE-FREQUENCY HIGH POWER FIBER LASER



Standard Wavelengths:

1550, 1556, 1560 nm

Custom Wavelengths:

Any within the range 1530 – 1580 nm

Wavelength Tuning Range:

0.5 nm

Output Power:

Up to 15 W

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

SFEX 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

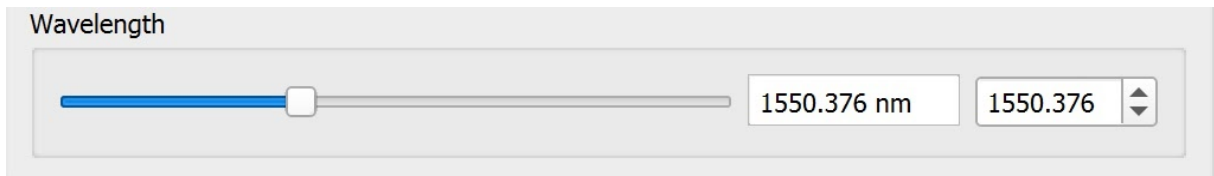
Applications

- Atomic Trapping and Cooling
- Quantum Optics and Computing
- Free Space Communications
- Optical Sensing
- Nonlinear Pump Source
- Coherent communication
- 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

SFEX 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 $\sim 60\text{--}80$ 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. SFEX provides excellent longterm power stability.

OPTICAL OUTPUT TYPE

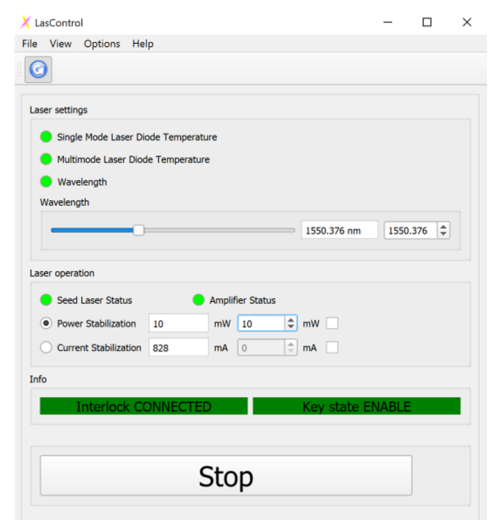
Depending on the output power, a standard model is equipped with a PM output fiber cable terminated by an FC/APC connector or a Collimator. A Narrow Key of the FC/APC connector is aligned to the output polarization. When using the collimator, the polarization direction is indicated on the collimator's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

COMPUTER CONTROL

The standard SFEX 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 ₀₀
Standard Wavelength	1550.12 nm, 1550.30 nm, 1560.48 nm
Custom Wavelength	1532 – 1580 nm
Thermal Wavelength Tuning Range ¹	0.5 nm
Linewidth (FWHM)	< 5 kHz
Nominal Output Power	1, 2, 5, 10, 15 W
Output Power Tunability	10 – 100%
Power Stability ²	< 1% (typical <0.5%)
Beam quality (M ²)	< 1.05 (typical <1.02)
Piezo Tuning Range ³	> 80 MHz/V
Wavelength Modulation ³	Up to 10 kHz
Polarization	Linear (PER > 23dB)
RIN level (peak:app 0.7 MHz)	< -105dB/Hz@peak, < -140dB/Hz@10MHz
Output Optical Isolator	Yes
Optical Output ⁴	Armed fiber cable terminated by 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

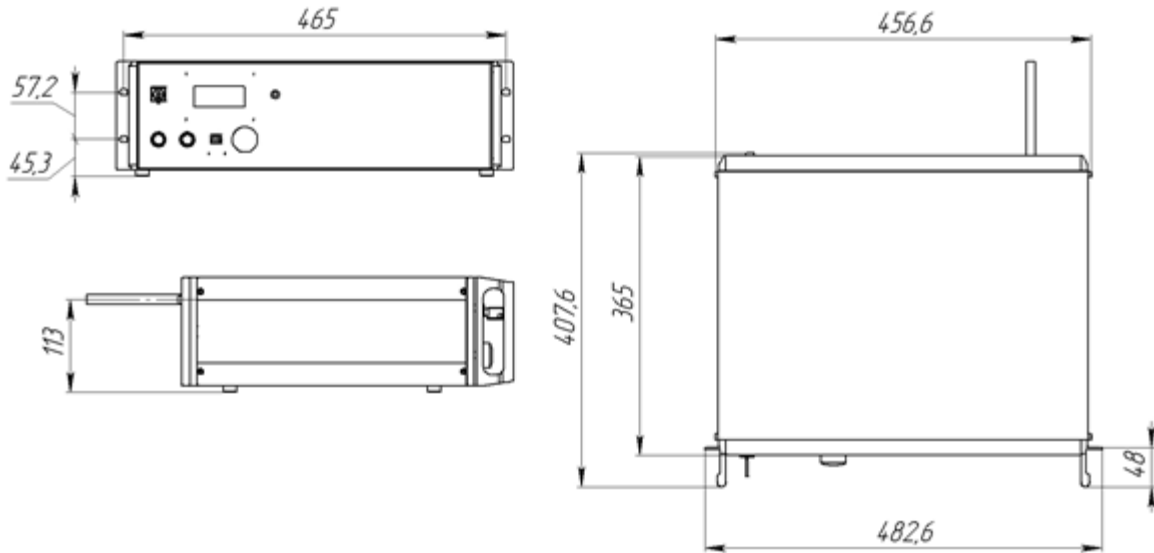
ELECTRICAL/MECHANICAL/ENVIRONMENTAL

Parameter	Optromix-SFE
Power Supply Requirements	100–240V, 50–60Hz, Single Phase
Power Consumption (10W output)	< 500 W
Cooling	Forced Air
Control Connector ¹	USB
Dimensions (WxHxL)	465 mm x 132 mm x 365 mm
Standard Output Cable Length ²	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 SFEX-xxxx-yyyyy-cc

xxxx: Wavelength(nm)
yyyyy: Outputpower(mW)
cc: Opticaloutput: FA-FC/APC, 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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