

DSEL CW 775 – 785 nm Single-Frequency Fiber Laser



Standard Wavelengths:

775.06, 778.15, 780.24 nm

Custom Wavelengths:

Any within the range 770 – 790 nm

Wavelength Tuning Range:

0.1 nm

Output Power:

Up to 2 W

The Optromix DSEL is a single-frequency Erbium fiber laser equipped with a frequency doubler unit. The DSEL core feature is an ultra-narrow linewidth (FWHM). DSEL provides a precise wide-range thermal wavelength tuning and a fast piezo tuning using an external PZT driver. The phase-matching temperature of an SHG crystal is automatically adjusted according to the fundamental wavelength settings. DSEL is a turn-key system where a control electronics and power supply are integrated with a seed laser and a power amplifier. DSEL is available in a benchtop or in a 19" rack housing connected with a laser head by an umbilical cable..

Key Features

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

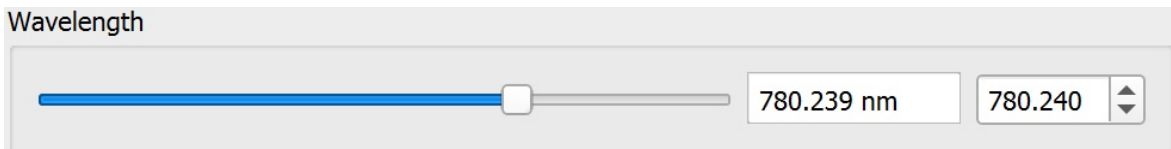
Applications

- Atomic Cooling and Trapping
- Quantum Optics
- High Precision Spectroscopy
- Frequency Standard
- Metrology

FEATURES

THERMAL WAVELENGTH TUNING

DSEL allows for the thermal wavelength tuning is carried out using a temperature adjustment of the seed-laser temperature. The allowable wavelength tuning range is > 0.08 nm. Wavelength stabilization occurs approximately 0.1 seconds after setting a new value.



FAST WAVELENGTH TUNING AND MODULATION

DSEL 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 ~100-120 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. DSEL provides excellent longterm power stability.

Options

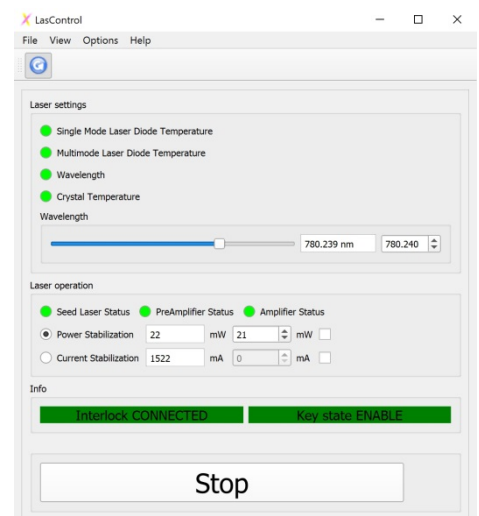
- Up to 0.2 nm Wavelength Tuning Range
- Additional Optical Monitor Output
- Up to 3 m umbilical cable length
- Seeder + Fiber Amplifier Design (independent housings design)
- Fiber coupling option

OPTICAL OUTPUT TYPE

DSYL provides a free space output from the laser head. It also can be equipped with a fiber port for fiber coupling using a patch cord with FC/APC connectors. Optionally, the laser can be equipped with an additional low power TAP output for the fundamental wavelength monitoring.

COMPUTER CONTROL

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



SPECIFICATION

OPTICAL

Parameter	Optromix SFEX
Operating Mode	CW, Single-frequency, TEM ₀₀
Standard Wavelength	775.06 nm, 778.15 nm, 780.24 nm
Custom Wavelength	770 – 785 nm
Thermal Wavelength Tuning Range ¹	> 0.08 nm
Linewidth (FWHM)	< 10 kHz
Nominal Output Power (Free Space)	50, 100, 200, 500, 1000, 1500, 2500 mW
Nominal Output Power (Fiber Coupled)	50, 100, 200, 500, 1000, 1500 mW
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	> 100 MHz/V
Polarization	Linear (PER > 23dB)
RIN level (peak:app 1.4 MHz)	< -105dB/Hz@peak, < -140dB/Hz@10MHz
Optical Output	Free space or FC/APC connector

Notes

1. Optionally up to 0.2 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

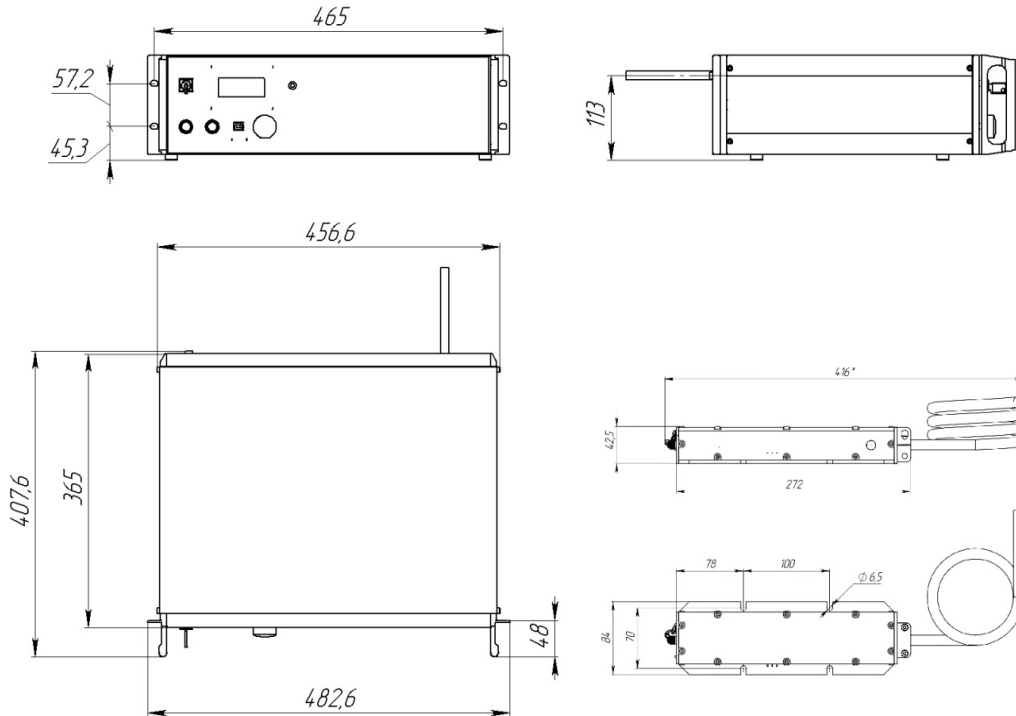
ELECTRICAL/MECHANICAL/ENVIRONMENTAL

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)	Electro-optical Unit: 465 x 140 x 365 mm Laser Head: 84 x 42.5 x 272 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 3 m

DIMENSIONS



Product code:
Optromix DSEL-7xx-yyyy-cc

xxxx: Wavelength(nm)
yyyy: Outputpower(mW)
cc - Opticaloutput: FS-Free Space, FP- Fiber Port,
FC/APC

Standard Warranty - 12 months from the date of delivery.

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

2020 Optromix Inc.
2464 Massachusetts Ave., Suite 220,
Cambridge, MA 02140 USA.
Phone: +1 617 558 9858
e-mail: info@optromix.com
www.optromix.com
www.lasers4lab.com



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