

# FLINT

## Femtosecond Yb Oscillators

OSCILLATORS



### FEATURES

- Sub-80 fs without any additional pulse compressor
- 125 nJ pulse energy
- 10 W output power
- 76 MHz is standard
- Practically no amplified spontaneous emission
- Rugged, industrial grade mechanical design
- Automated harmonic generator (515 nm)
- Optional CEP stabilization
- Possibility to lock to external clock

The FLINT oscillator is based on Yb crystal end-pumping by high brightness laser diode module. Generation of femtosecond pulses is provided by Kerr lens mode-locking. Once started, mode-locking remains stable over a long period of time and

is immune to minor mechanical impact. Piezo-actuator can be implemented in customized oscillators in order to control the cavity length. FLINT oscillator can also be equipped with Carrier Envelope Phase (CEP) stabilization system.

### SPECIFICATIONS

Model	FLINT 1.0	FLINT 2.0	FLINT 4.0	FLINT 6.0	FLINT 10	FLINT SP
Max. average power	> 1 W	> 2 W	> 4 W	> 6 W	> 10 W <sup>1)</sup>	> 600 mW
Pulse duration (assuming Gaussian pulse shape)	< 80 fs		< 100 fs		< 120 fs	< 40 fs
Pulse energy	> 12 nJ	> 25 nJ	> 50 nJ	> 75 nJ	> 125 nJ	> 7 nJ
Repetition rate	76 ± 0.5 MHz <sup>2)</sup>					
Centre wavelength	1035 ± 10 nm <sup>3)</sup>					
Output pulse-to-pulse stability	< 0.5 % rms over 24 hours <sup>4)</sup>					
Polarization	Linear, horizontal					
Beam pointing stability	< 10 μrad/°C					
Beam quality	TEM <sub>00</sub> ; M <sup>2</sup> < 1.2					
Optional integrated 2H generator	Conversion efficiency > 30 % at 517 nm					

### PHYSICAL DIMENSIONS

Laser head (L × W × H)	430 × 195 × 114 mm
Laser head with 2H (L × W × H)	442 × 270 × 114 mm
Power supply and chiller rack (4HU, 19") (L × W × H)	640 × 520 × 420 mm
Chiller (<100 W)	Different options

### UTILITY REQUIREMENTS

Electric	110 V AC, 50–60 Hz, 2 A or 220 V AC, 50–60 Hz, 1 A
Room temperature	15–30 °C (air conditioning recommended)
Relative humidity	20–80 % (non-condensing)

<sup>1)</sup> Higher powers are available. Please contact Light Conversion for more information.

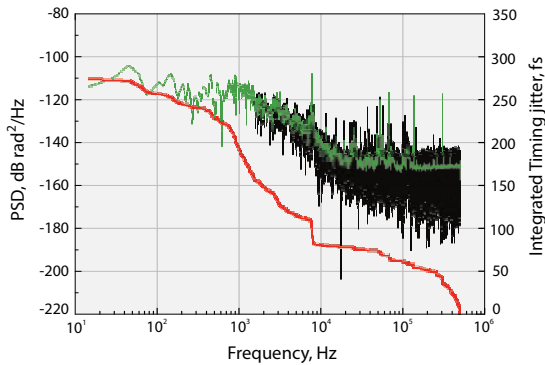
<sup>2)</sup> Other repetition rates are available in the range from 64 MHz to 84 MHz.

<sup>3)</sup> The center wavelength can be specified with tolerance ±2 nm for customized oscillators.

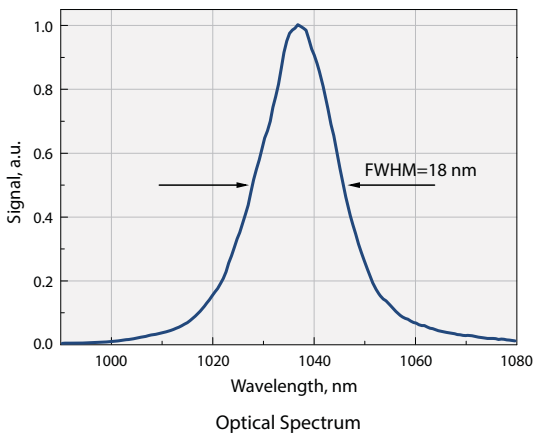
<sup>4)</sup> With enabled power-lock, under stable environment.

### LOCKING OF THE OPTICAL PULSE TO AN EXTERNAL SIGNAL

PHAROS oscillator can be equipped with piezo actuators for precise control of the cavity length.

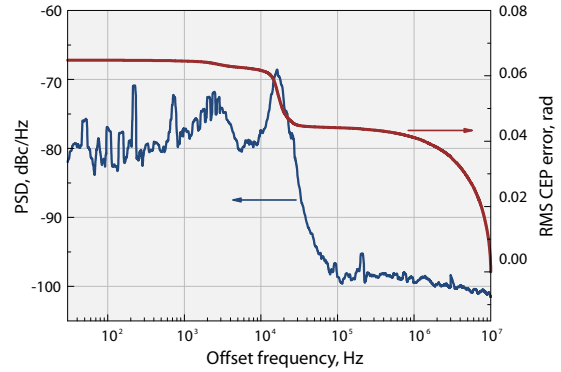


Timing jitter between oscillator pulse and external clock signal in 10 Hz – 500 kHz frequency range.



### CARRIER ENVELOPE PHASE (CEP) STABILIZATION

PHAROS oscillator can be equipped with nonlinear interferometer and feedback loop throughout the pump current of the laser diode bar for CEP stabilization. The figure on the right shows typical measurement of power spectrum density and integrated CEP phase error. The integrated phase error in the frequency range from 50 Hz to 10 MHz is <70 mrad (in loop measurement).



Single side power spectral density of  $f_{ceo}$  phase noise (in loop) and the integrated phase jitter.

### OPTIONAL EQUIPMENT

Harmonics generator **HIRO**

see p. 22

