

FLINT

Femtosecond Oscillators

FEATURES

- < 40 fs pulse duration
- Up to 260 nJ pulse energy
- Up to 20 W output power
- 76 MHz repetition rate
- Industrial-grade design
- Automated second harmonic generator
- CEP stabilization option
- Repetition rate locking to an external source



FLINT-FL2

FLINT is a series of femtosecond Yb oscillators providing industrial-grade design and state-of-the-art output parameters such as 20 W output power at 76 MHz repetition rate and sub-40 fs pulse duration. FLINT oscillators are based on Kerr-lens mode-locking. Once started, the mode-locking

remains stable over a long time. Furthermore, oscillator cavity length can be adjusted with an optional piezo actuator. FLINT oscillators support carrier-envelope phase (CEP) stabilization and repetition rate locking to an external source.

SPECIFICATIONS

Model	FL1-02	FL1-08	FL2-12	FL2-20	FL2-SP	
Maximum output power	2 W	8 W	12 W	20 W	0.5 W	2 W
Pulse duration ¹⁾	< 100 fs	< 120 fs	< 120 fs	< 170 fs	< 40 fs	< 50 fs
Maximum pulse energy ²⁾	25 nJ	105 nJ	157 nJ	260 nJ	6 nJ	25 nJ
Repetition rate	≈ 76 MHz ³⁾		≈ 76 MHz		≈ 76 MHz ⁴⁾	
Center wavelength	1035 ⁵⁾ ± 10 nm	1030 ± 3 nm	1029 ± 3 nm	1026 ± 2 nm	1040 ± 10 nm	
Polarization	Linear, horizontal					
Beam quality	TEM ₀₀ ; M ² < 1.2					
Beam pointing stability	< 10 μrad/°C					
Pulse-to-pulse energy stability ⁶⁾	RMS deviation ⁷⁾ < 0.5% over 24 h					
Long-term power stability	RMS deviation ⁷⁾ < 0.5% over 100 h					
Internal 2H generator ⁸⁾	n/a		Optional; conversion efficiency > 30%			
Internal attenuator	n/a		Yes			

PHYSICAL DIMENSIONS

Laser head (L × W × H)	430 × 195 × 114 mm	542 × 322 × 146 mm
Power supply and chiller rack (L × W × H)	642 × 553 × 540 mm	642 × 553 × 673 mm
Chiller	Different options available. Contact sales@lightcon.com	

ENVIRONMENTAL & UTILITY REQUIREMENTS

Operating temperature	15 – 30 °C (air conditioning recommended)	
Relative humidity	< 80% (non-condensing)	
Electrical requirements	100 V AC, 7 A – 240 V AC, 3 A; 50 – 60 Hz	100 V AC, 12 A – 240 V AC, 5 A; 50 – 60 Hz
Rated power	200 W	
Power consumption	100 W	150 W
Power consumption (chiller)	200 W	200 W

¹⁾ Assuming Gaussian pulse shape.

²⁾ Depends on repetition rate. Approximate values are given for 76 MHz.

³⁾ Other repetition rates are available in the range from 60 to 100 MHz.

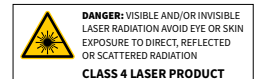
⁴⁾ Other repetition rates are available in the range from 70 to 80 MHz.

⁵⁾ Choice of a particular central wavelength with ±1 nm tolerance is available upon request.

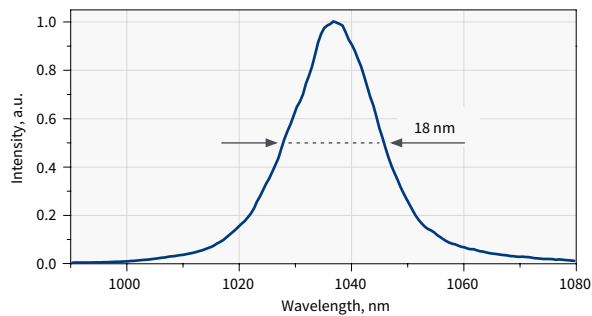
⁶⁾ With enabled power-lock, under stable environment.

⁷⁾ Normalized to average pulse energy, NRMSD.

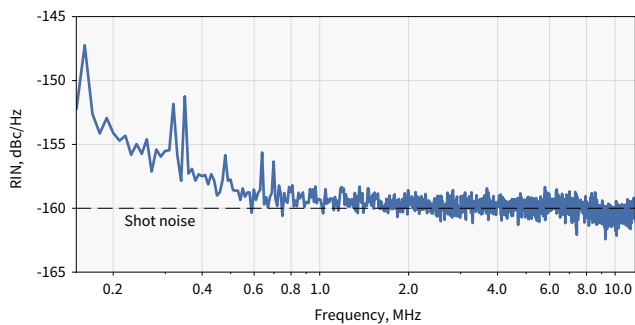
⁸⁾ For 3H or 4H generation, refer to HIRO for FLINT.



PERFORMANCE

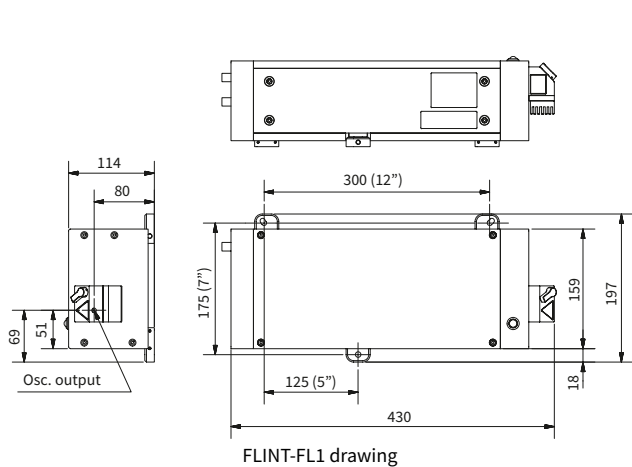


Typical FLINT optical spectrum

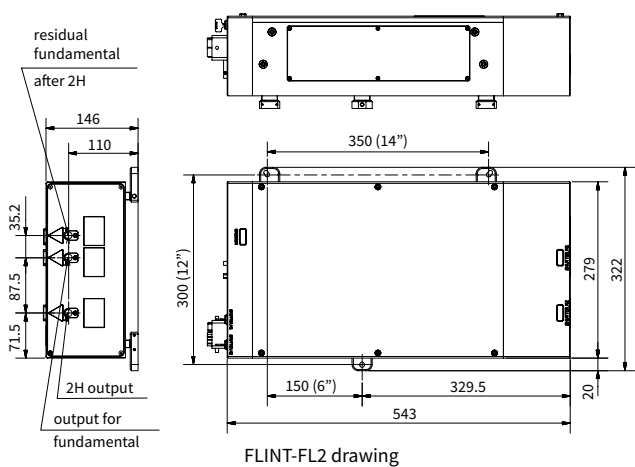


Relative intensity noise (RIN) of FLINT oscillator, shot-noise limited at -160 dBc/Hz above 1 MHz

DRAWINGS



FLINT-FL1 drawing



FLINT-FL2 drawing