

# UltraFlux



UltraFlux is the first compact high energy tuneable wavelength femtosecond laser system which incorporates the advantages of ultrafast fiber laser, solid-state and parametric amplification technologies in less than 1 square meter footprint box. Patent pending (application No. EP2924500) OPCPA front end technology uses the same picosecond fiber laser for seeding both picosecond DPSS pump laser and femtosecond parametric amplifier by spectrally broadened output. This approach greatly simplifies the system – excludes femtosecond regenerative amplifier and eliminates the need of pump and seed pulse synchronization. In addition to that, contrast of the output pulses in picosecond to nanosecond time scale is potentially increased.

System generates down to 35 fs pulses, which can be automatically tuned in 700 – 1010 nm wavelength range. Less than 10 fs pulses are obtained in a few-cycle operating regime. Up to 0.3 mJ output pulse energy with better than 1.5% pulse-to-pulse stability at 1 kHz repetition rate is achieved by using a state of the art OPCPA technology.

By incorporating parametric amplifier technology together with a novel ultrafast fiber laser helped to create and bring to the market a new tool for femtosecond pump probe, nonlinear spectroscopy, emerging high harmonic generation experiments and other femtosecond and nonlinear spectroscopy applications. With this laser ultrafast science breakthrough is closer to any photonics lab than ever before.

## Tunable Wavelength Femtosecond Laser System

### FEATURES

- ▶ Based on the novel OPCPA (Optical Parametric Chirped Pulse Amplification) technology – simple and cost-efficient operation
- ▶ Patented front-end design (patents no. EP2827461 and EP2924500)
- ▶ Hands free wavelength tuning from 700 to 1010 nm 35 – 60 fs pulse duration
- ▶ 1 kHz repetition rate
- ▶ 0.3 mJ pulse energy
  - Excellent pulse energy stability: < 1.5 % rms (measuring every pulse during 20 s period)
  - Excellent long-term average power stability:  $\pm 1\%$  (peak-to-peak) over > 12 hour period
- ▶ Small footprint
- ▶ High contrast pulses without any additional improvement equipment
- ▶ Compact picosecond pump laser

### APPLICATIONS

- ▶ Broadband CARS and SFG
- ▶ Femtosecond pump-probe spectroscopy
- ▶ Nonlinear spectroscopy
- ▶ High harmonic generation

### OPTIONS

- ▶ Amplified and compressed supercontinuum output (1  $\mu$ J, 10 fs, full spectrum of 680 – 960 nm, not tunable)
- ▶ Second harmonics: 350 – 480 nm
- ▶ Third harmonics: 245 – 320 nm
- ▶ Optically synchronized transform-limited ps output (50  $\mu$ J @ 1064 nm, 20  $\mu$ J @ 532 nm, 15 ps)
- ▶ Higher output energy available on request

SPECIFICATIONS <sup>1)</sup>

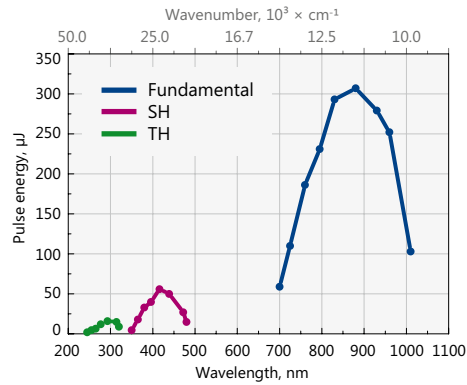
Model	UltraFlux FT2101
Max. pulse energy <sup>2)</sup>	0.3 mJ
Tunability	700 – 1010 nm
Pulse duration	35 – 60 fs
Pulse repetition rate	1 kHz
Beam quality	$M^2 < 1.5$
Pulse energy stability	< 1.5 % rms (20000 shots)
Long-term power stability	±1 % (>12 hour period)
Footprint	1.2 × 0.75 m

<sup>1)</sup> Due to continuous improvement, all specifications are subject to change without notice. Parameters marked typical may vary with each unit we manufacture.

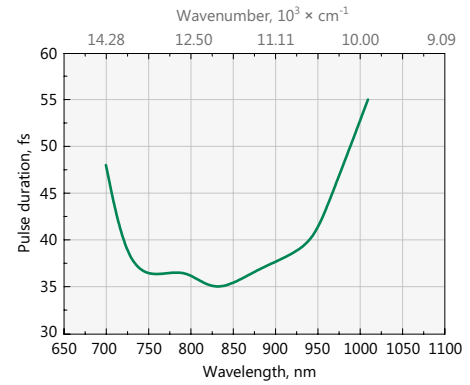
<sup>2)</sup> Inquire for higher energy options.



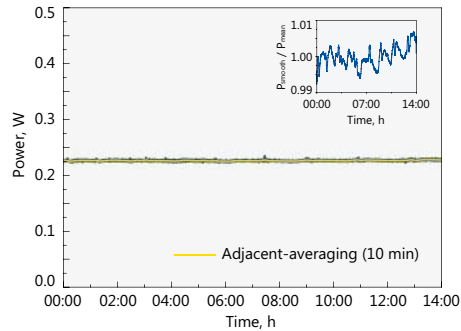
PERFORMANCE



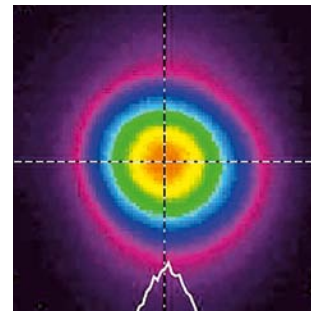
Typical output pulse energy



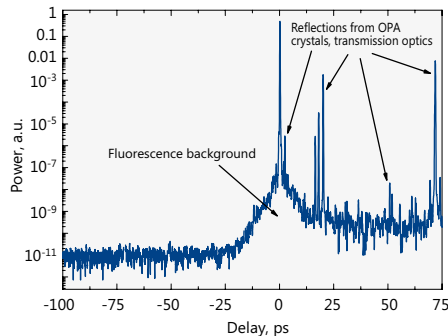
Typical output pulse duration



Long-term power stability measurement at 800 nm wavelength



Typical beam profile. Output pulse energy 0.3 mJ at 890 nm



High contrast pulses without any additional improvement equipment