

Femtosecond Microjoule Class Fiber Laser FemtoLux 3

Preliminary



FemtoLux 3 is a modern industrial femtosecond laser aimed for micromachining, engraving and ophthalmologic surgery applications. Laser delivers up to 3 W of average power and up to 2 μJ femtosecond pulse energy. *FemtoLux 3* is a flexible platform which allows to optimize output parameters for the desired

process. The repetition rate as well as the output power can be easily changed with integrated pulse picker. With burst mode enabled *FemtoLux 3* can generate bursts of pulses with energy above 10 μJ with burst shape pre-programmed or controlled in real time. Pulse duration can also be programed up to 5 ps.

FEATURES

- ▶ Up to 3 W output power
- ▶ 300 fs ... 5 ps tunable pulse duration
- ▶ Up to 2 μJ /pulse and 10 μJ /burst
- ▶ Excellent beam quality $M^2 < 1.2$
- ▶ Individual pulse control
- ▶ Burst shape control
- ▶ Passive cooling (convective)
- ▶ 24/7 operation

APPLICATIONS

- ▶ Marking and structuring
- ▶ Micromachining
- ▶ Ophthalmologic surgery
- ▶ Photopolymerization
- ▶ Biological Imaging
- ▶ Pumping femtosecond OPO/OPA

SPECIFICATIONS ¹⁾

Model	FemtoLux3
Central wavelength	1030 nm
Min pulse duration	< 300 fs
Pulse duration control	300 fs ... 5 ps
Average output power	3 W
M^2	< 1.2
Laser repetition rate (PRR _L) ²⁾	1 – 5 MHz
Pulse repetition rate after pulse picker ³⁾	$PRR = PRR_L / N, N=1, 2, 3, \dots, 10^6$
Pulse energy	2 μJ
Burst mode ⁴⁾	up to 10 pulses
Burst energy	up to 10 μJ
Burst shape control	internal ⁵⁾ or external ⁶⁾
Laser head dimensions	400 × 267 × 105 mm
Control unit dimensions	483 × 436 × 140 mm (19" rack)
Cooling	passive (convective)

¹⁾ Due to continuous improvement all specifications are subject to change without notice.

²⁾ When pulse picker is set to transmit every pulse.

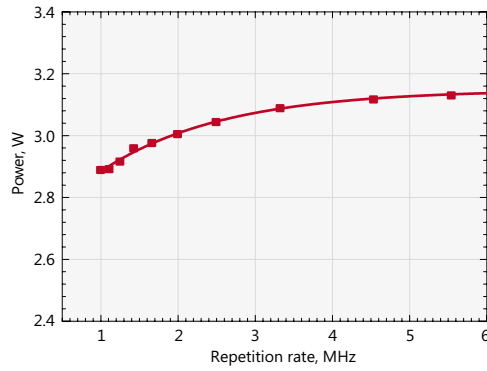
³⁾ At fixed laser repetition rate.

⁴⁾ Time interval between the pulses is about 20 ns.

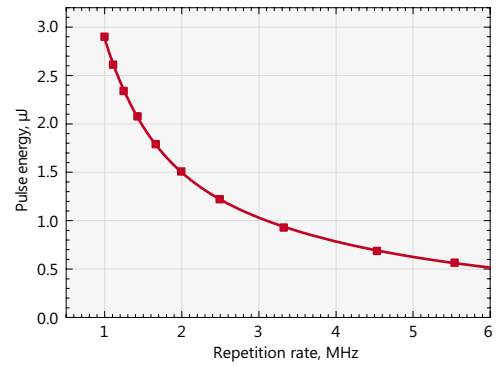
⁵⁾ Using provided software for burst shape control (slow control).

⁶⁾ By user provided signal using analog input (real time).

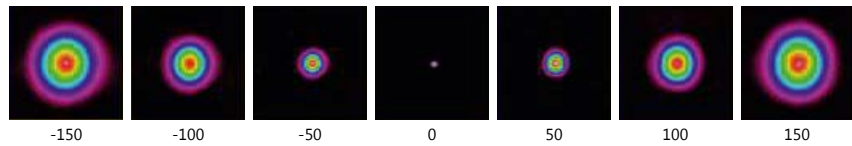
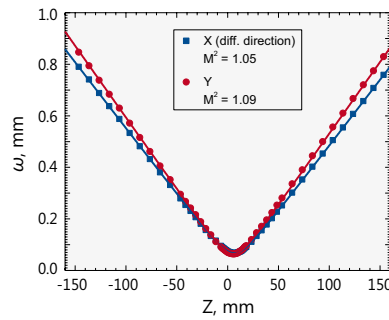
PERFORMANCE



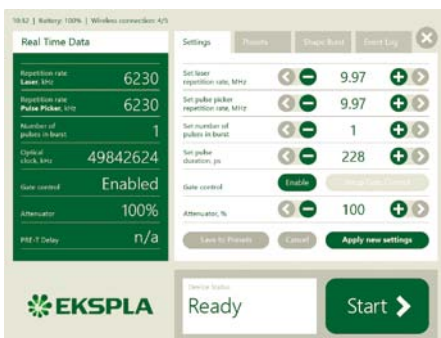
Typical output power



Typical pulse energy

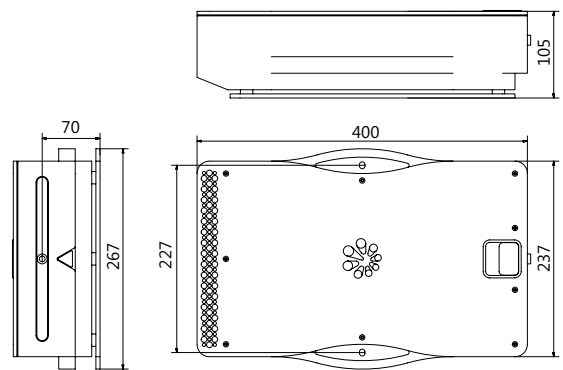


SOFTWARE

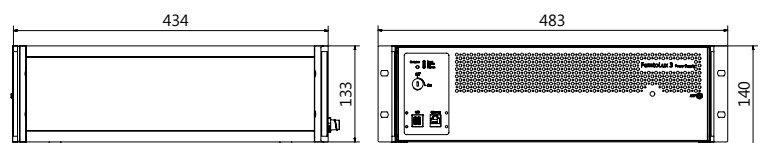


Example of FemtoLux 3 control software

DRAWINGS



Outline drawing of FemtoLux 3 laser head



Outline drawing of FemtoLux 3 control unit