Amplitude SYSTEMES

t-Pulse

Diode pumped femtosecond oscillator

A new generation of ultrafast lasers

t-Pulse is a compact, reliable and turn-key femtosecond laser oscillator with high average power, exceptional energy per pulse and excellent pulse-to-pulse stability.

t-Pulse benefits from extensive developments in the field of laser materials and femtosecond technology, achieving new levels of performance and ease of use.

t-Pulse takes full advantage of high quality Ytterbium doped materials. Directly diode-pumping of Ytterbium lasers offers reliability, efficiency, a small footprint, a very high thermal efficiency, as well as the capability to generate femtosecond pulses with a high average power.

The exceptional specifications and high efficiency of the laser are the result of high performance pumping optics, a compact laser resonator, a self-starting, all solid-state mode-locking technology.

With its low electrical consumption and its internal cooling system, the **t-Pulse** is designed for simple daily operation, a short warm-up time and an excellent repeatability.

It is the laser of choice for many demanding applications, such as multiphoton microscopy, photo-acoustic studies, amplifier seeding, or non linear optics.

Application examples:

> Multiphoton microscopy

> Photoacoustics

> Terahertz imaging

> Photopolymerization

> Nano-surgery

> Nano-machining

t-Pulse

Diode pumped
femtosecond oscillator

Application example:

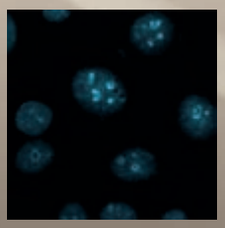
Multiphoton microscopy

Multiphoton microscopy is a powerful and versatile technique, applied in numerous fields in biology, such as neurology or embryology. It relies on an ultrafast laser to excite fluorescent molecules or proteins.

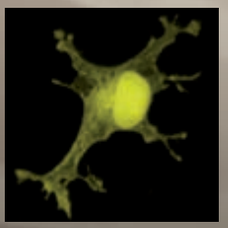
t-Pulse is an ideal excitation source for multiphoton microscopy. In addition to its small size and ease of use, its infrared wavelength minimizes autofluorescence, scattering in biological tissues and cell toxicity.

t-Pulse is optimized for new fluorophores such as DsRed, while maintaining a high efficiency on GFP. Moreover, **t-Pulse** optional wavelength extension, based on photonics crystal fibers, broadens the emission wavelength and enables the excitation of a wider range of fluorophores.

t-Pulse high energy per pulse improves signal to noise ratio and is ideal for in-depth imaging.



DAPI



YFP

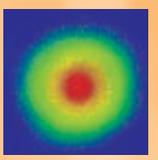
Specifications:

	t-Pulse 50	t-Pulse 200	t-Pulse 500
Average power	> 2.5 W	> 2 W	> 5 W
Pulse duration	< 200 fs	< 400 fs	< 500 fs
Pulse energy	50 nJ	200 nJ	500 nJ
Repetition rate	50 MHz	10 MHz	10 MHz
Wavelength	1030 nm	1030 nm	1030 nm
Beam quality	TEM_{00}	TEM_{00}	TEM_{00}
Dimensions	60 cm x 20 cm	60 cm x 20 cm	60 cm x 30 cm

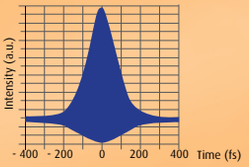
Other specifications available on request. Please contact us.

Typical data:

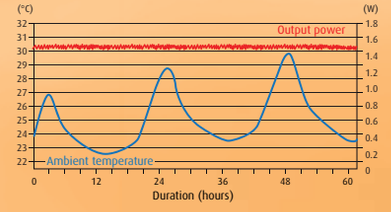
TEM_{00} beam profile



Pulse duration < 200 fs



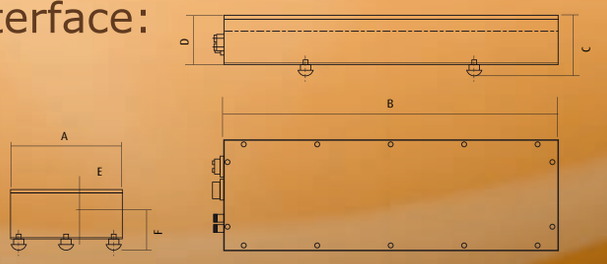
Long term stability



Options:

- Second and third harmonic generation
- Repetition rate synchronization and stabilization
- Dual laser system for optical sampling
- Sub-50 fs pulse compression
- Continuum generation
- Fiber output

Mechanical interface:



	A	B	C	D	E	F
t-Pulse 20	194 mm	585 mm	102 mm	87 mm	72,35 mm	75 mm
t-Pulse 200	194 mm	585 mm	118 mm	104 mm	72,35 mm	75,5 mm
t-Pulse 500	294 mm	585 mm	118 mm	104 mm	80 mm	75,5 mm

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