Applications

Material microprocessing

Ophthalmology

Cold marking

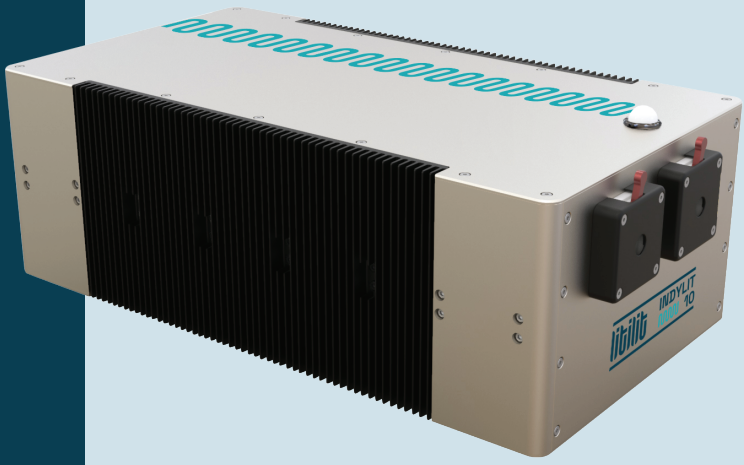
Dicing and scribing of semiconductors, glasses, ceramics

Display manufacturing

Scientific research

litilit INDYLIT 10

Industrial femtosecond laser for microprocessing
10 W at 1030nm, 5 W at 515nm, 450fs, 80kHz-1MHz



Features

Extremely robust and stable

High pulse energy and clean pulse shape

Maintenance-free & turn-key

Adjustable repetition rate, pulse duration, power

Passively air cooled

Two independent outputs for IR and green

Double wavelength - endless possibilities

Indylit 10 is high energy air-cooled laser suitable for a variety of ultrafast applications.

The laser head features an entirely passively-cooled design (patent pending), ensuring high stability of the optical parameters such as pulse duration, beam pointing and power.

Its mechanical construction can withstand almost everything you can throw at it, making Indylit a new kind of industrial femtosecond technology.

litilit
info@litilit.com +370 675 39583
Savanoriu ave 235, LT-02300 Vilnius, Lithuania
litilit.com

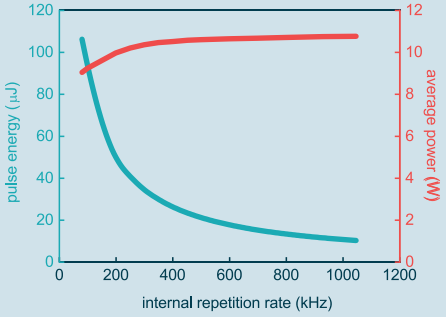
Specifications

	Model	
	Indylit 10	**Indylit 10 SH**
Central wavelength	1030 ± 2 nm	515 ± 1 nm
Average power [1)]	>10 W @ 1000 kHz	>5W @ 200kHz
Max. pulse energy [1)]	>100 µJ @ 80 kHz >10 µJ @1 MHz	>60uJ @ 80kHz >4uJ @ 1MHz
Pulse duration	<450 fs	
Pulse duration tunability	450 fs - 2 ps	N/A
Internal pulse repetition rate	80 kHz – 1 MHz, down to 20kHz in burst mode	
Pulse picker	integrated	
Triggering mode	Pulse picker control via TTL gate	
Burst length	1..20 pulses	1..20 pulses
Max. energy in burst	>400 µJ	>200 uJ
Power attenuation [2)]	100 - 0.1%	
Beam quality	M^2 <1.2	
Beam circularity [3)]	>0.87	>0.85
Beam diameter (at $1/e^2$ level)	2 ± 0.5 mm	1.7 ± 0.5 mm
Beam divergence (full angle)	< 1 mrad	
Beam pointing (pk-to-pk) [4)]	± 50 µrad	
Beam pointing vs temp. (pk-to-pk)	< 20 µrad/°C	
Pulse Energy Stability (RMS) [5)]	<1.0 %	<2 %
Power Stability (RMS) [6)]	<1.0 %	<2 %
Warm-up time (cold start)	<30 min	<30 min

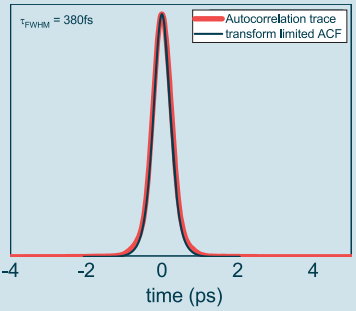
Warm-up time (warm start)	<90 s	<90 s
Laser control interface	CAN, USB	
Operating voltage	100...240 V AC, 47...63 Hz	
Average power consumption (after warm-up)	<300 W	
Operating temperature	15 – 35 °C	
Humidity	non condensing	
Transportation/storage temperature	-20 – +70 °C	
Dimensions: Laser head (LxWxH) Control unit (WxDxH)	 522 x 233 x 179 mm 449 x 368 x 140 mm	
Umbilical length	3 ± 0.3 m	
Colling: Laser head Control unit	 air (passive) forced air (fans)	

[1] Please refer to the power and energy vs. pulse repetition rate curves for typical values.
[2] Attenuation can be controlled by a few different methods: a) via PC user interface, b) by CAN register, c) by analog input (0-1V, real time).
[3] Defined as the worst case ellipticity along the z-scan ($\pm 5xL_{Rayleigh}$) of the beam.
[4] At constant environmental temperature (temperature stability within ±1C).
[5] Measured within 10s time interval .
[6] Measured within a 24h time interval with integration time of <5s. Environment temperature stability should be within ±2C.

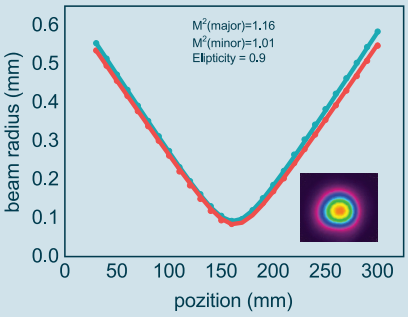
Performance



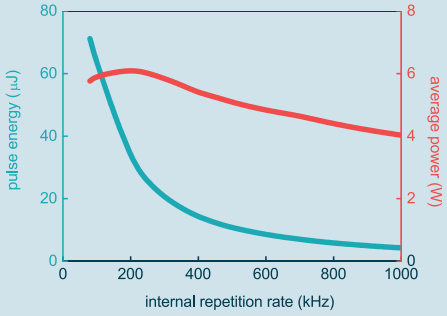
IR energy and power dependence on internal repetition rate of the Indylit 10 laser



Pulse autocorrelation trace of Indylit 10 laser 100μJ output energy



Beam diameter dependence on propagation distance (z-scan) of Indylit 10 laser and M^2 fit



SH energy and power dependence on internal repetition rate of Inylit 10 laser

info@litilit.com +370 675 39583
Savanoriu ave 235, LT-02300 Vilnius, Lithuania
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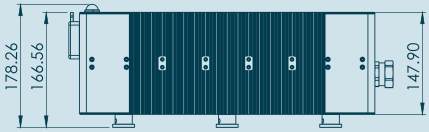
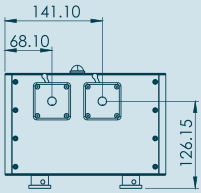
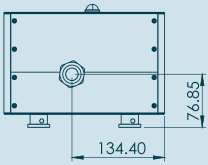
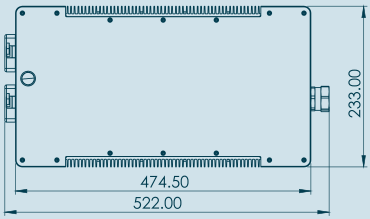
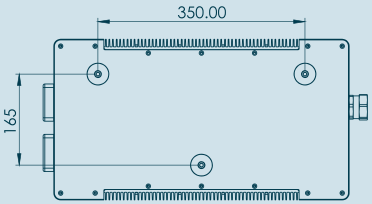
Drawings

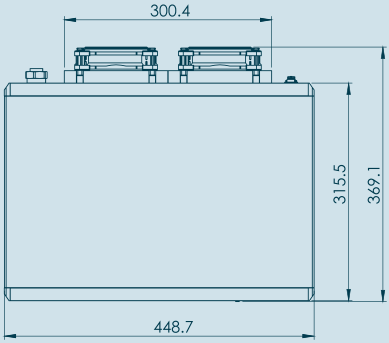


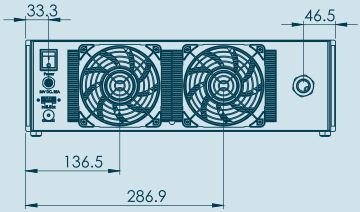


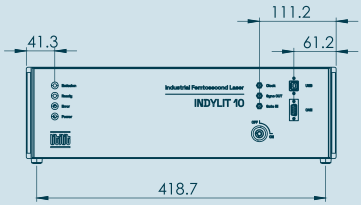


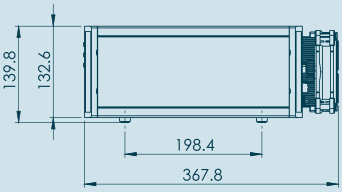












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