SUB-Nanosecond Laser

The SUB300T laser DATASHEET, **February 2024**

Tunable pulse duration SUB-NANOSECOND E-O Q-SWITCHED LASER

The **SUB300T** model is a water-cooled Electro-Optically Q-switched DPSS laser, which have electronically tunable pulse duration ranging **350…2200 ps.** Laser delivers up to **300 mJ** energy at 1064nm wavelengths at **50 Hz** repetition rate. Laser design comprising short cavity MO-PA in conjunction with power amplifiers based on long lasting **VCSEL pump** technology. The laser design assures extremely stable output parameters performance, where **≤200 ps optical jitter** is welcome point for laser use in any scientific and industrial application. Due to relatively high output energy, good **M^2≤1.3** parameter and short sub-ns pulse duration, laser delivers peak power up to **857 MW** (1064 nm), **457 MW** (532 nm) and **257 MW** (355nm)**.** The harmonic conversion module to green (532 nm) and ultraviolet (355 nm) are available in default laser configuration.

Typical Laser Specifications*)

Model	SUB300T
Wavelength[1)]	1064/532/355 nm
Pumping type AMPL	VCSEL
Output Energy (1064/532/355nm)	up to 300/160/85 mJ
Pike power @ 350ps 300/160/90 mJ relatively	857/457/257 MW
Tunable pulse duration[2)]	350…2000 ps
Pulse to pulse energy stability[3)]	< 1 % RMS
Power drift [4)]	± 3.0 %
Pulse repetition rate [5)]	50 Hz
Beam profile	Close to Super-Gaussian
M^2	≤1.3
Beam divergence [6)]	< 5 mrad
Polarization vs harmonics	Linear, P/S/P
Spectral linewidth	SLM
Beam pointing stability [7)]	≤ 50 µrad
Typical beam diameter [8)]	~9 mm
Optical jitter[9)]	≤ 200 ps RMS
Dimensions (preliminary)	
Laser head (W×L×H)	600 x 552 x 673 mm
Controller unit (W×L×H)	1302 x 445 x 217 mm
Umbilical length	1.5 m
Operating requirements	
Cooling requirements	Water/Air Chiller
Ambient temperature	23 – 25 °C
Relative humidity (non-condensing)	10 – 80 %
Mains voltage[10)]	230 VAC, single phase, 50-60 Hz
Power consumption	< 900 W

**) Typical specifications are illustrative; they are indications of typical performance and will vary with each unit we manufacture. Due to continuous improvements all specifications are subject to change. Unless stated otherwise all specifications are measured at 1064nm.*

1) Other wavelengths may be also available on request

2) Electronically tunable FWHM level at 1064 nm.

3) Averaged from 60 seconds time interval.

4) Over 5-hour period after max 5 minutes of warm-up when ambient temperature variation is less than ±1°C.

5) Factory-set pulse repetition rate is fixed at max repetition rate.

6) Full angle measured at the $1/e^2$ level.

7) RMS value measured from 60 seconds time interval.

8) Beam diameter is measured at 20 cm distance from laser output at the $1/e^2$ level.

9) In respect to external Q-switch triggering rising edge pulse.

10) Laser can be powered from appropriate different mains on request. Inquire for details.

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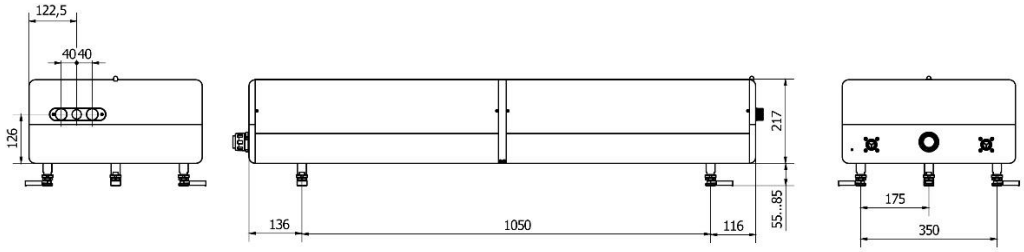
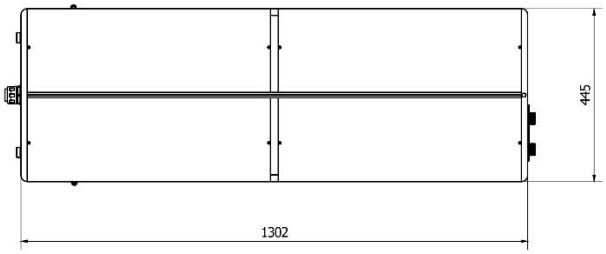
Application

- LIBS (Light Induced Breakdown Spectroscopy)
- Mass Spectroscopy (Time of flight mass spectrometry)
- LIF (Light Induced Fluorescence)
- LIDAR (Light Detection and Ranging)
- Nonlinear spectroscopy
- Remote Sensing
- Satellite ranging
- Material processing

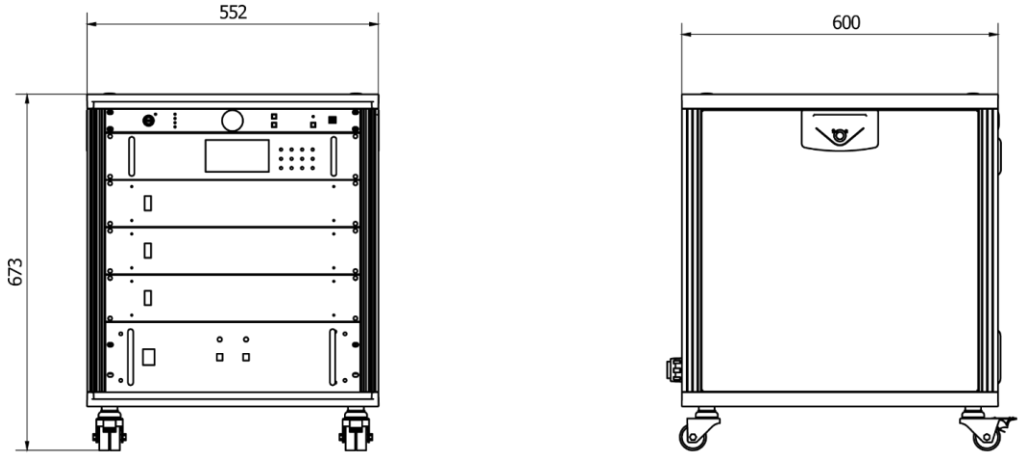
Dimensions SUB50A-700

Laser Head





Laser Controller



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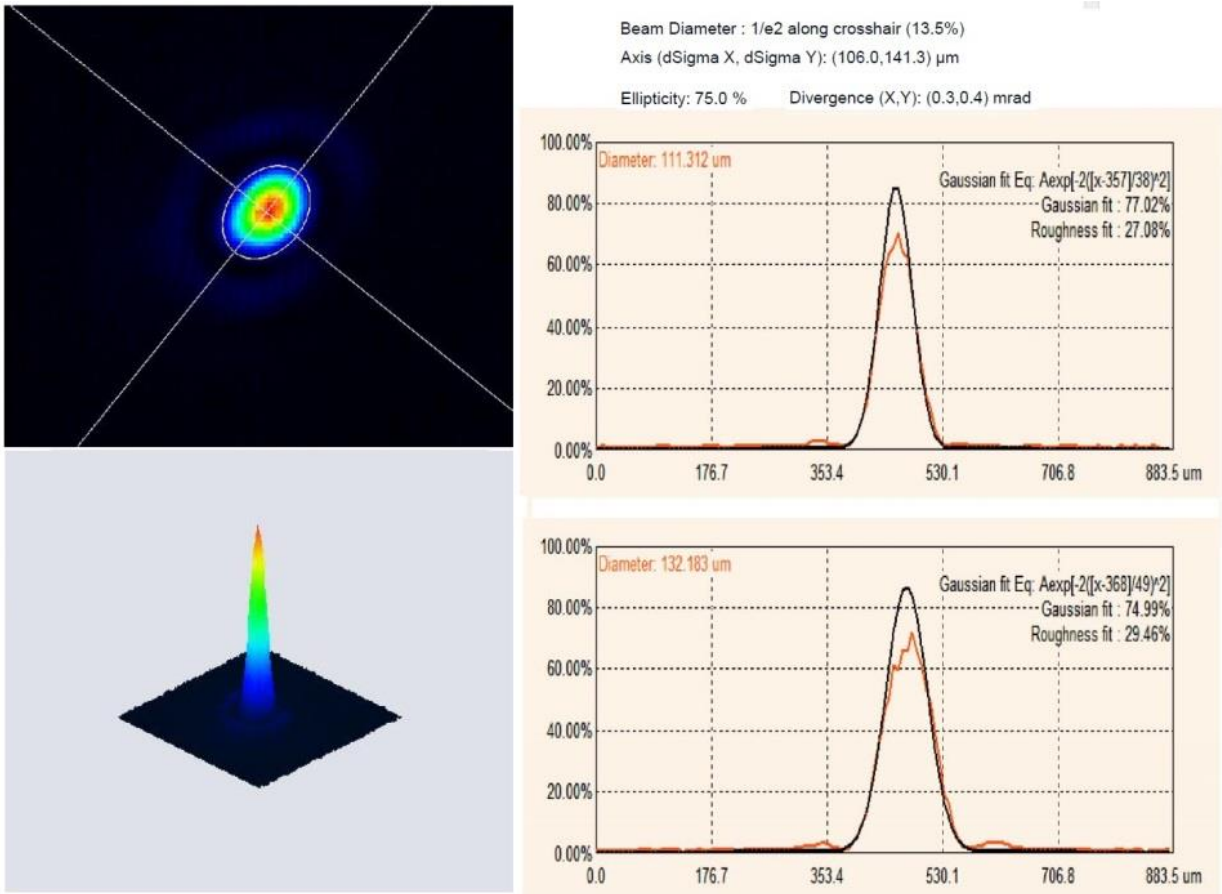
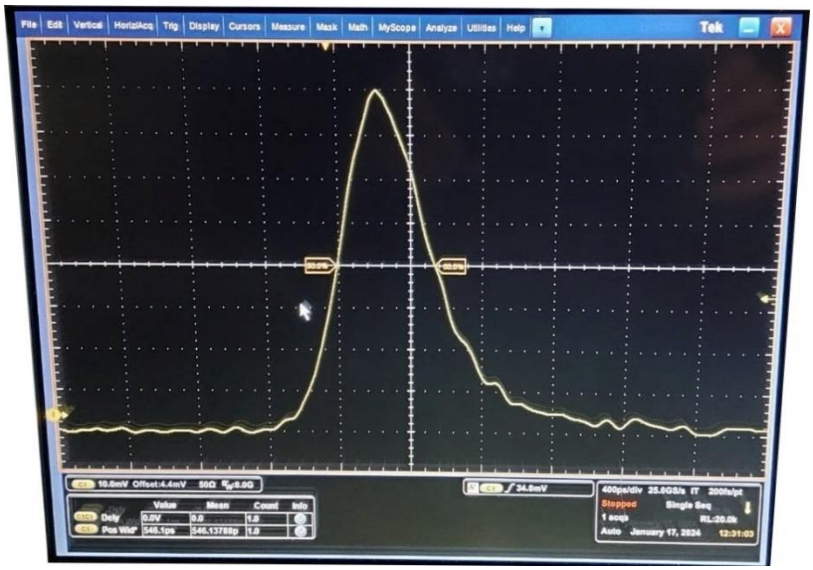
Transferal Beam Profile at Focal Plane



Temporal Beam Profile



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