



The G-Sub series is family of compact DPSS or/and flash lamp pumped Nd:YAG or Nd:YLF lasers producing emissions in the sub-nanosecond regime (0.5...0.1ns). Lasers are based on temporal pulse compression by backward stimulated Brillouin scattering (SBS). This ensures narrow spectral linewidth and transform limited sub-ns pulses. The lasers produces TEM00 near diffraction limited radiation at a variety of energies, wavelengths and repetition rates. Design features include a highly stable passively or EO Q-switched oscillators and amplifiers. SuperINVAR based resonator mounting is accomplished with multi-point active temperature distribution control of laser breadboard giving output energy stability only expected with more expensive diode pumped lasers.

## Typical Laser Ablation Spots and Energy Stability Diagrams

Typical Laser ablation spots (Scale 2:1)

1. Phase-Conjugated on the output from laser (120mJ, different neutral density filters applied):



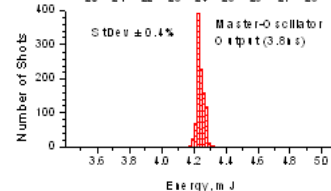
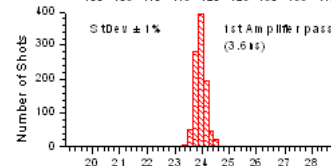
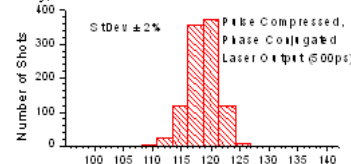
2. From the Amplifier, 1-st pass (25mJ, diffraction structure is clearly seen):



3. From the Master-Oscillator (4.2mJ; left - close, right - far):

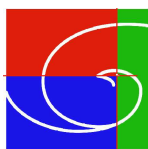


Shot-to-Shot Output Laser Energy Stability Diagrams (Measured at 5Hz repetition rate before the laser delivery)



## System Features

- Lasers design based on “SBS Beam Cleanup” and “SBS phase-conjugation” techniques
- PC control via RS232 using advanced Geola software or LabView drivers (optional)
- Unique cost efficient SLM Master-oscillator design based on self seeding technique
- Lasers are CE marked according to IEC 60825-1:2001/EN 60825-1:2001
- Low electrical consumption
- Variable pulse duration available on request



GEOLA

The G-Sub Series of SBS-pulse Compressed Nd:YAG/Nd:YLF Lasers

## Technical Parameters

Advised Model	G-SUB-x		
Output Wavelengths <sup>(1)</sup> :	1064 nm	532 nm	355 nm
	1053 nm	526.5 nm	351 nm
	1047 nm	523.5 nm	349 nm
Output Energy <sup>(2)</sup> :	100-500 mJ	50-240 mJ	20-140 mJ
Pulse Duration FWHM <sup>(3)</sup> :	500 / 300 / 150 / 100 ps		
Pulse duration stability at 1064 nm (Std. Dev.)	15 %		
Energy Stability (Std.Dev.) <sup>(4)</sup> :	~ 2.4 %	~ 4.2 %	~ 5.4 %
Beam Divergence:	Near Diffraction Limit for beam size		
Line width:	< 0.1 cm <sup>-1</sup>		
Beam Diameter (1/e <sup>2</sup> ):	~ 5...12 mm		
Beam Profile <sup>(5)</sup> :	Near Gaussian or Top-Hat		
Pulse Repetition Rate <sup>(6)</sup> :	5 ... 50 Hz		
Beam Pointing:	~ 150 μrad		
Optical Pulse buildup time <sup>(7)</sup> :	< 100 ns		
Polarization:	Horizontal or Vertical, > 1:100		
Q-Switching Type:	Passive or E-O		
Optical Pulse Jitter <sup>(8)</sup> :	< 5 μs for Passive Q-Switch and 1 ns for E-O Q-Switch		
Triggering:	External / Internal		
	<b>DIMENSIONS</b>		
Laser Head: (L x W x H)	~ 860 x 350 x 180 mm		
Power & Cooling Cabinet: (L x W x H)	~ 600 x 550 x 550 mm		
Umbilical length:	3 m		
	<b>ENVIRONMENTAL REQUIREMENTS</b>		
Cooling requirements:	< 10 litres/minute (Water flow for 20 °C water temperature)		
Room Temperature:	18 - 25 °C (recommended)		
Relative Humidity:	< 70% (non-condensing)		
Mains Voltage:	210...240 VAC, single phase 50/60 Hz		
Power Consumption:	~ 2 ... 3.5 kW		

Geola Digital reserves the right to change specification without notice

<sup>(1)</sup> The 4th harmonic is available.

<sup>(2)</sup> Automatic output energy attenuation available.

<sup>(3)</sup> Variable pulse duration available.

<sup>(4)</sup> Std.Dev., for 350 shots at 5Hz repetition rate.

<sup>(5)</sup> Either Top-Hat or Quasi-Gaussian should be chosen on order.

<sup>(6)</sup> Other repetition rates are available.

<sup>(7)</sup> In respect to External syncpulse signal.

<sup>(8)</sup> Std.Dev., in respect to External syncpulse signal.

## Manufacturer

GEOLA DIGITAL uab

Address: 41 Naugarduko, LT-03227 Vilnius, Lithuania

Phone: +370 5 2132 737

[www.geola.com](http://www.geola.com)

Fax: +370 5 2132 838

[info@geola.com](mailto:info@geola.com)