



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):



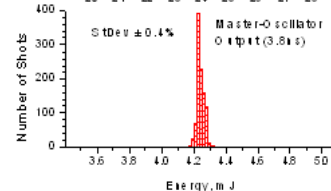
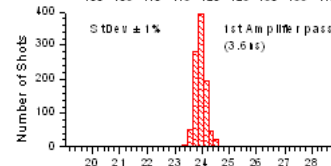
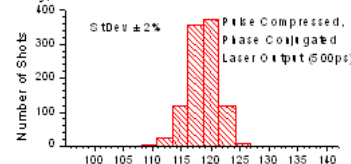
2. From the Amplifier, 1-st pass (25mJ, diffraction structure is clearly seen):



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

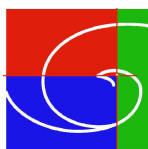


Shot-to-Shot Output Laser Energy Stability Diagrams (Measured at 5Hz repetition rate before the laser delivery)



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 ⁽¹⁾ :	1064 nm	532 nm	355 nm
	1053 nm	526.5 nm	351 nm
	1047 nm	523.5 nm	349 nm
Output Energy ⁽²⁾ :	100-500 mJ	50-240 mJ	20-140 mJ
Pulse Duration FWHM ⁽³⁾ :	500 / 300 / 150 / 100 ps		
Pulse duration stability at 1064 nm (Std. Dev.)	15 %		
Energy Stability (Std.Dev.) ⁽⁴⁾ :	~ 2.4 %	~ 4.2 %	~ 5.4 %
Beam Divergence:	Near Diffraction Limit for beam size		
Line width:	< 0.1 cm ⁻¹		
Beam Diameter (1/e ²):	~ 5...12 mm		
Beam Profile ⁽⁵⁾ :	Near Gaussian or Top-Hat		
Pulse Repetition Rate ⁽⁶⁾ :	5 ... 50 Hz		
Beam Pointing:	~ 150 μrad		
Optical Pulse buildup time ⁽⁷⁾ :	< 100 ns		
Polarization:	Horizontal or Vertical, > 1:100		
Q-Switching Type:	Passive or E-O		
Optical Pulse Jitter ⁽⁸⁾ :	< 5 μs for Passive Q-Switch and 1 ns for E-O Q-Switch		
Triggering:	External / Internal		
DIMENSIONS			
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		
ENVIRONMENTAL REQUIREMENTS			
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

⁽¹⁾ The 4th harmonic is available.

⁽²⁾ Automatic output energy attenuation available.

⁽³⁾ Variable pulse duration available.

⁽⁴⁾ Std.Dev., for 350 shots at 5Hz repetition rate.

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

⁽⁶⁾ Other repetition rates are available.

⁽⁷⁾ In respect to External syncpulse signal.

⁽⁸⁾ 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

Fax: +370 5 2132 838

info@geola.com