

ANL SERIES

High Energy and High Repetition Rate DPSS Nanosecond Lasers

Highly Customizable
to Meet Customer
Needs



ANL series electro-optically Q-switched nanosecond Nd:YAG lasers deliver high energy pulses at high repetition rates.

A diode-pumped Q-switched nanosecond laser, based on industry-tested technology is used as a master oscillator of the system. It produces high-intensity, high-brightness pulses and is well suited for further amplification in linear amplifiers for high-energy flat-top output pulses. Employing electro-optical cavity dumping, the master oscillator can produce pulses which are as short as several ns with uniform beam profile and low divergence.

Power amplifiers are a chain of low-maintenance diode-pumped single and double pass amplifiers

where pulses are amplified up to the required energy. During amplification, spatial beam shaping is employed in order to get a flat top shape at the output. Optional second and third harmonic generators are based on angle-tuned nonlinear crystals placed in heaters.

For convenience, PC software for Windows™ (LabVIEW™ drivers are supplied as well) is used for laser operation, monitoring and internal system diagnostics.

To tailor the laser for specific applications or requirements, various customization possibilities are available such as industrial grade, portable laser housing with integrated power supplies and cooling units.

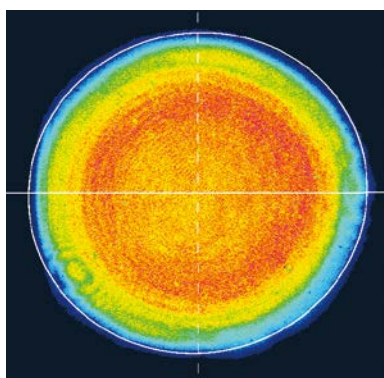
FEATURES

- ▶ Up to **1 J** at **1064 nm** output pulse energy
- ▶ Up to **1 kHz** repetition rate
- ▶ **2 – 4 ns** or **5 ns** pulse duration
- ▶ Spatial flat top beam profile
- ▶ Low maintenance costs
- ▶ Various customizing possibilities to tailor for specific applications
- ▶ Optional second and third harmonics generators
- ▶ High efficiency diode pumping chambers
- ▶ **1×2 m** laser head footprint
- ▶ Internal system diagnostics
- ▶ Optional industrial grade, portable laser housing with integrated power supplies and cooling units

SPECIFICATIONS ¹⁾

Model	ANL 2001k	ANL 4001k	ANL 1k200
MAIN SPECIFICATIONS			
Pulse energy			
at 1064 nm	> 200 mJ	> 400 mJ	> 1000 mJ
at 532 nm ²⁾		–	
Pulse energy stability (StdDev): ³⁾			
at 1064 nm		1.5 %	
at 532 nm		–	
Power drift ⁴⁾		± 2 %	
Pulse duration ⁵⁾	2 – 4 ns		~ 5 ns
Repetition rate	1000 Hz		200 Hz
Polarization at 1064 nm		horizontal	
Optical pulse jitter ⁶⁾		–	
Linewidth		–	
Beam profile	Hat-Top (at laser output), without diffraction rings		
Typical beam diameter ⁷⁾	~6 mm		~10 mm
Beam divergence ⁸⁾	< 1.0 mrad		< 0.5 mrad
Beam pointing stability		± 30 µrad ³⁾	
PHYSICAL CHARACTERISTICS			
Laser head (W × L × H)		1000 × 2000 × 490 mm	
Power supply unit (W × L × H)		553 × 600 × 700 mm	
Umbilical length		2.5 m	
OPERATING REQUIREMENTS			
Facility water consumption (max 20° C)	10 l/min	14 l/min	10 l/min
Ambient temperature		22 ± 2 °C	
Relative humidity		20 – 80 % (non-condensing)	
Power requirements ⁹⁾	208, 380 or 400 V AC, three phase, 50/60 Hz		
Power consumption	<10 kW	<12 kW	<6 kW

- ¹⁾ Due to continuous improvement, all specifications subject to change without notice. Parameters marked typical may vary with each unit we manufacture. Unless stated otherwise, all specifications are measured at 1064 nm and for basic system without options.
- ²⁾ For NL94X-SH harmonic generator option. Harmonic outputs are not simultaneous; only single wavelength beam is present at the output at once.
- ³⁾ Standard deviation value averaged over 30 s after 20 minutes of warm-up.
- ⁴⁾ Deviation from average value measured over 8 hours of operation when room temperature variation is less than ±2 °C.
- ⁵⁾ Measured with photodiode with 100 ps rise time and oscilloscope with 600 MHz bandwidth.
- ⁶⁾ Standard deviation value, measured with respect to triggering pulse.
- ⁷⁾ Beam diameter is measured at 1064 nm at laser output at the 1/e² level and can vary with each unit we manufacture.
- ⁸⁾ Full angle measured at the 1/e² level at 1064 nm.
- ⁹⁾ Mains voltage should be specified when ordering.



Typical beam profile of ANL4001k laser

