

NL120 SERIES



NL120 series electro-optically Q-switched nanosecond Nd:YAG lasers deliver up to 10 J per pulse with excellent stability. The innovative, diode-pumped, self-seeded master oscillator design results in Single Longitudinal Mode (SLM) output without the use of external expensive narrow linewidth seed diodes and cavity-locking electronics. Unlike more common designs that use an unstable laser cavity, the stable master oscillator cavity produces a TEM₀₀ spatial mode output that results in excellent beam properties after the amplification stages.

NL120 series Q-switched nanosecond lasers are an excellent choice for many applications, including OPO, OPCPA or dye laser pumping, holography, LIF spectroscopy, remote sensing, optics testing and other tasks.

For tasks that require a smooth and as close as possible to the Gaussian beam profile, models with improved Gaussian fit are available.

The low jitter of the optical pulse with respect to the Q-switch triggering pulse allows the reliable synchronization between the laser and external equipment.

The optional second (SH) (for 532 nm), third (TH) (for 355 nm) and fourth (FH) (for 266 nm) harmonic generators provide access to shorter wavelengths.

The laser is controlled by a supplied PC via USB port with application for Windows™ operating system.

In addition, the main settings of the laser can be controlled through an auxiliary remote control pad. The remote pad features a backlit display that is easy to read even when wearing laser safety eyewear.

SLM Q-switched Nd:YAG Lasers

FEATURES

- ▶ Up to **10 J** pulse energy
- ▶ Diode-pumped, self-seeded Single Longitudinal Mode (SLM) master oscillator
- ▶ Stable master oscillator cavity producing TEM₀₀ spatial mode output
- ▶ Excellent pulse energy stability
- ▶ Up to **10 Hz** pulse repetition rate
- ▶ **2 ns** pulse duration (7, 10 or 25 ns are optional)
- ▶ Temperature stabilized harmonic generator options
- ▶ Remote control via keypad
- ▶ Laser control from PC via USB port

APPLICATIONS

- ▶ Material processing
- ▶ OPO, OPCPA, Ti:Sapphire, dye laser pumping
- ▶ Holography
- ▶ Nonlinear laser spectroscopy
- ▶ Optics testing

SPECIFICATIONS ¹⁾

Model	NL125	NL128	NL129
Pulse energy ²⁾			
at 1064 nm	1600 mJ	5000 mJ	10000 mJ
at 532 nm ³⁾	700 mJ	2500 mJ	5000 mJ ⁴⁾
at 355 nm ⁵⁾	450 mJ	1300 mJ	2500 mJ
at 266 nm ⁶⁾	140 mJ	700 mJ	1500 mJ
Pulse energy stability (StdDev) ⁷⁾			
at 1064 nm	< 0.6 %		
at 532 nm ³⁾	< 1.0 %		
at 355 nm ⁵⁾	< 2.0 %		
at 266 nm ⁶⁾	< 3.0 %		
Pulse duration at 1064 nm (FWHM) ⁸⁾	2 ± 0.5 ns (7, 10 or 25 ns are optional)		
Pulse repetition rate	10 Hz		
Linewidth	≤ 0.02 cm ⁻¹ (SLM)		
Polarization at 1064 nm ⁹⁾	linear, > 90 %		
Optical pulse jitter (StdDev) ¹⁰⁾	< 0.2 ns		
Beam spatial profile ¹¹⁾	Hat-Top, > 70 % fit		
Typical beam divergence ¹²⁾	< 0.5 mrad		
Beam pointing stability ¹³⁾	< 25 μrad		
Typical beam diameter ¹⁴⁾	~ 12 mm	~ 20 mm	~ 25 mm

PHYSICAL CHARACTERISTICS

Laser head size (W × L × H)	455 × 1220 × 270 mm	600 × 1500 × 300 mm	600 × 2000 × 300 mm
Power supply size (W × L × H)	550 × 600 × 1030 mm	550 × 600 × 1030 mm 2 units	550 × 600 × 1650 mm 2 units
Umbilical length	2.5 m		

OPERATING REQUIREMENTS

Water consumption (max. 20 °C)	< 20 l/min		
Ambient temperature	22 ± 2 °C		
Relative humidity	10 – 80 % (non-condensing)		
Power requirements ¹⁵⁾	220, 380 or 400 V AC, three-phase 50/60 Hz		
Power consumption	< 5 kVA	< 8 kVA	< 10kVA

¹⁾ Due to continuous improvement, all specifications are subject to change without notice. Parameters marked typical are not specifications. They are indications of typical performance and will vary with each unit we manufacture. Unless stated otherwise, all specifications are measured at 1064 nm and for basic system without options.

²⁾ Outputs are not simultaneous.

³⁾ For NL12x-SH and NL12x-SH/FH options.

⁴⁾ Optional 7 000 mJ output available upon request.

⁵⁾ For NL12x-TH option.

⁶⁾ For NL12x-SH/FH option.

⁷⁾ Averaged over 30 s.

⁸⁾ Optional 7, 10 or 25 ns pulse duration. Inquire for pulse energy specifications.

⁹⁾ For models without harmonic generators.

¹⁰⁾ With respect to Q-switch triggering pulse.

¹¹⁾ Measured at 1 m distance from the laser output. Improved Gaussian fit beam profile is available (contact Ekspla for details).

¹²⁾ Full angle measured at the 1/e² point at 1064 nm.

¹³⁾ Full angle, rms measured over 30 s.

¹⁴⁾ Beam diameter is measured at 1064 nm at the 1/e² level.

¹⁵⁾ Voltage fluctuations allowed are +10% / -15% from nominal value. Mains should be specified when ordering.



OPTIONS

► **-P7, -P10 and -P25 options** — 7 ns, 10 ns or 25 ns pulse duration

For applications requiring longer pulse duration the laser master oscillator cavity can be modified to produce 7 ns, 10 ns or 25 ns pulses. Note: some of other specifications can be changed. Please contact Ekspla for detailed datasheets.

► **-G option.** Provides beam profile optimized for applications requiring smooth, without hot spots beam profile in the near and medium field. Pulse energies are typically lower in comparison to standard version.

ORDERING INFORMATION

Note: Laser must be connected to the mains electricity all the time. If there will be no mains electricity for longer than 1 hour then laser (system) needs warm up for a few hours before switching on.

