

# 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 TEM<sub>00</sub> 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 netbook 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 TEM<sub>00</sub> spatial mode output
- ▶ Excellent pulse energy stability
- ▶ Up to **10 Hz** pulse repetition rate
- ▶ **2 ns** pulse duration (7 or 25 ns are optional)
- ▶ Temperature stabilized harmonic generator options
- ▶ Remote control via keypad
- ▶ Laser control from netbook PC via USB port

### APPLICATIONS

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

SPECIFICATIONS <sup>1)</sup>

Model	NL125	NL128	NL129
<b>Pulse energy <sup>2)</sup></b>			
at 1064 nm	1600 mJ	5000 mJ	10000 mJ
at 532 nm <sup>4)</sup>	700 mJ	TBA <sup>3)</sup>	TBA <sup>3)</sup>
at 355 nm <sup>5)</sup>	450 mJ	TBA <sup>3)</sup>	TBA <sup>3)</sup>
at 266 nm <sup>6)</sup>	140 mJ	TBA <sup>3)</sup>	TBA <sup>3)</sup>
<b>Pulse energy stability (StdDev) <sup>7)</sup></b>			
at 1064 nm		<1 %	
at 532 nm <sup>4)</sup>		<2 %	
at 355 nm <sup>5)</sup>		<3 %	
at 266 nm <sup>6)</sup>		<5 %	
Pulse duration at 1064 nm (FWHM) <sup>8)</sup>		2 ± 0.5 ns	
Pulse repetition rate		10 Hz	
Linewidth		≤0.02 cm <sup>-1</sup> (SLM)	
Polarization at 1064 nm <sup>9)</sup>		linear, >90 %	
Optical pulse jitter (StdDev) <sup>10)</sup>		<0.2 ns	
Beam spatial profile <sup>11)</sup>		Hat-Top, >70 % fit	
Typical beam divergence <sup>12)</sup>		<0.5 mrad	
Beam pointing stability <sup>13)</sup>		<25 μrad	
Typical beam diameter <sup>14)</sup>	~12 mm	~20 mm	~27 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		18–27 °C	
Relative humidity		10–80 % (non-condensing)	
Power requirements <sup>15)</sup>		208 or 380 V AC, three-phase 50/60 Hz	
Power consumption	<5 kVA	<8 kVA	<10kVA

<sup>1)</sup> 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.

<sup>2)</sup> Outputs are not simultaneous.

<sup>3)</sup> Contact EKSPLA for more information.

<sup>4)</sup> For NL12×-SH and NL12×-SH/FH options.

<sup>5)</sup> For NL12×-TH option.

<sup>6)</sup> For NL12×-SH/FH option.

<sup>7)</sup> Averaged from 300 pulses.

<sup>8)</sup> Optional 7 or 25 ns pulse duration. Inquire for pulse energy specifications.

<sup>9)</sup> For models without harmonic generators.

<sup>10)</sup> With respect to Q-switch triggering pulse.

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

<sup>12)</sup> Full angle measured at the 1/e<sup>2</sup> point at 1064 nm.

<sup>13)</sup> Full angle, 300 shots, RMS.

<sup>14)</sup> Beam diameter is measured at 1064 nm at the 1/e<sup>2</sup> level.

<sup>15)</sup> Mains should be specified when ordering.



## OPTIONS

▶ **-P7 and -P25 options** — 7 or 25 ns pulse duration

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

## 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.

