

# NL210 SERIES



## High Energy kHz Pulsed Cavity Dumped DPSS Nd:YAG Lasers

### FEATURES

- ▶ **10 mJ** at 1064 nm
- ▶ **1 kHz** pulse repetition rate
- ▶ **All-solid-state** design
- ▶ Internal/external triggering
- ▶ Short warm-up time
- ▶ Air cooled
- ▶ Optional temperature stabilized second, third and fourth harmonic generators
- ▶ Remote control via keypad or PC with supplied LabVIEW™ drivers

### BENEFITS

- ▶ High 10 mJ pulse energy and nanosecond pulse-width ensures strong nonlinear response
- ▶ Smooth beam profile with optimal  $M^2$  value suitable for OPO pumping
- ▶ 1 kHz repetition rate enables fast material processing and data collection
- ▶ Air cooling, cost-effective and reliable end-pumping technology and amplifier-free DPSS design guarantee easy operation and alignment, simple installation and low maintenance costs
- ▶ Variety of control interfaces: USB, RS232, LAN and WLAN ensures easy control and integration with laboratory or OEM equipment

### APPLICATIONS

- ▶ OPO pumping
- ▶ Laser spectroscopy
- ▶ Remote sensing
- ▶ Material ablation
- ▶ Micromachining

NL210 series diode pumped Q-switched lasers produce up to 10 mJ at 1000 Hz pulse repetition rate. The laser is designed to produce high intensity, high brightness pulses and is targeted for applications like OPO pumping, nonlinear spectroscopy, material ablation, micromachining, and other tasks.

Employing electro-optical type of the cavity dumping, the master oscillator can produce pulses with a short pulse duration of 3 – 4 ns, the uniform beam profile and low divergence. The  $M^2$  factor of 3 – 4 and uniform beam profile is useful for OPO pumping.

Angle-tuned LBO and/or BBO crystals mounted in temperature stabilized heaters are used for optional second, third or fourth harmonic generation. The harmonic separation system is designed to ensure a high spectral purity of radiation directed to separate output ports.

For customer convenience the laser can be controlled from a remote control pad or PC. The remote pad allows easy control of all parameters and features a backlit display that is easy to read even wearing laser safety eyewear. Alternatively, the laser can be controlled from a personal computer with supplied software for a Windows™ operating system, LabVIEW™ drivers are supplied as well.

SPECIFICATIONS <sup>1)</sup>

Model	NL210
<b>MAIN SPECIFICATIONS</b>	
Pulse energy:	
at 1064 nm	10 mJ
at 532 nm <sup>2)</sup>	5 mJ
at 355 nm <sup>3)</sup>	3 mJ
at 266 nm <sup>4)</sup>	1 mJ
Pulse to pulse energy stability <sup>5)</sup>	
at 1064 nm	< 1.0 % rms
at 532 nm <sup>2)</sup>	< 2.0 % rms
at 355 nm <sup>3)</sup>	< 2.5 % rms
at 266 nm <sup>4)</sup>	< 4.0 % rms
Pulse duration <sup>6)</sup>	3 – 4 ns
Pulse repetition rate	1000 Hz
Beam profile	multimode
Elipticity	0.9 – 1.1 at 1064 nm
M <sup>2</sup>	< 4
Beam divergence <sup>7)</sup>	< 2 mrad
Beam pointing stability, StDev	< 50 μrad
Polarization	linear, > 95 %
Typical beam diameter <sup>8)</sup>	2 mm
Pulse jitter wrt to SYNC OUT, StDev <sup>9)</sup>	< 0.5 ns
Pulse jitter wrt to ext. trigger, StDev <sup>10)</sup>	< 0.5 ns
<b>PHYSICAL CHARACTERISTICS</b>	
Laser head (W × L × H)	456 × 1031 × 260 mm
Power supply unit (W × L × H)	520 × 400 × 290 mm
Umbilical length	3 m
<b>OPERATING REQUIREMENTS</b>	
Cooling <sup>11)</sup>	Built-in chiller
Ambient temperature	18–27 °C
Relative humidity	20–80 % (non-condensing)
Power requirements	100–240 V AC, single phase, 50/60 Hz
Power consumption	< 1 kVA

<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> For NL210 with -SH option. Outputs are not simultaneous.

<sup>3)</sup> For NL210 with -SH/TH option. Outputs are not simultaneous.

<sup>4)</sup> For NL210 with -SH/FH option. Outputs are not simultaneous.

<sup>5)</sup> Averaged from pulses, emitted during 30 sec time interval.

<sup>6)</sup> FWHM.

<sup>7)</sup> Full angle measured at the 1/e<sup>2</sup> point at 1064 nm.

<sup>8)</sup> Beam diameter is measured at 1064 nm at the 1/e<sup>2</sup> point.

<sup>9)</sup> Optical pulse jitter with respect to SYNC OUT in internal triggering mode.

<sup>10)</sup> Optical pulse jitter with respect to QSW IN in external triggering mode.

<sup>11)</sup> Air cooled



PERFORMANCE

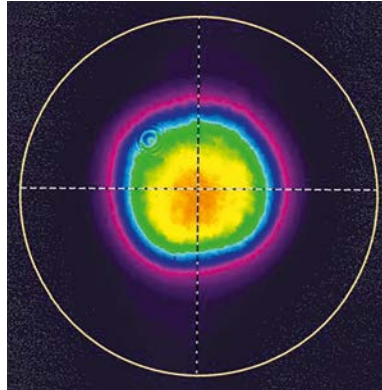


Fig 1. Typical near field beam profile of NL210 series laser

OUTLINE DRAWINGS

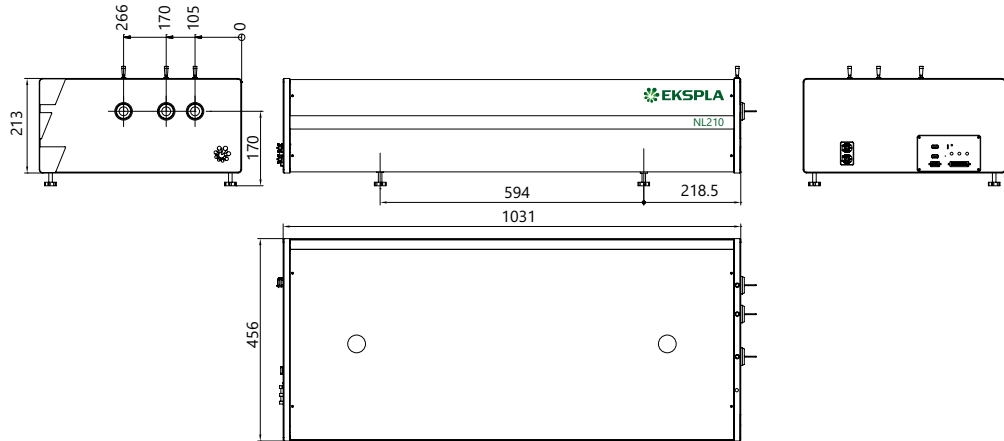


Fig 2. NL210 series laser head dimensions

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.

<b>NL210-SH</b>	
Model	Harmonic generator options:
	SH → second harmonic
	SH/TH → third harmonic
	SH/FH → fourth harmonic