

NL200 SERIES



BENEFITS

- ▶ Continuous tuning of repetition rate while maintaining constant pulse energy, superior beam pointing and energy stability make the NL200 the first choice for micromachining, marking and thin film removal applications
- ▶ Close to Gaussian smooth beam profile with low value $M^2 < 1.3$ and good focusability are beneficial for applications such as LCD pixel repair
- ▶ Easy to transport and saves on valuable laboratory space due to compact and light design
- ▶ Fast wavelength selection is superior for applications where alternating wavelengths are required, like material ablation and LIBS
- ▶ 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

NL200 series DPSS Q-switched nanosecond lasers offer high pulse energy at kHz repetition rates. End-pumped design makes this laser compact and easy to integrate. Harmonic generation modules for 532 nm, 355 nm, 266 nm and 213 nm wavelengths are easily attached to the laser frame.

Featuring short pulse duration, variable repetition rate and external TTL triggering, nanosecond diode pumped NL200 series Q-switched lasers are excellent cost effective

sources for specific applications like pulsed laser deposition, ablation through mask or intravolume marking of transparent materials, when higher pulse energy is required. Excellent energy stability and a wide range of wavelength options make this laser a perfect tool for spectroscopy and remote sensing applications.

Mechanically stable and hermetically sealed design ensures reliable operation and long lifetime of laser components.

Compact Q-switched DPSS Lasers

FEATURES

- ▶ Up to **4 mJ** pulse energy at **1064 nm**
- ▶ Up to **2500 Hz** variable repetition rate
- ▶ **532 nm, 355 nm, 266 nm, 213 nm** wavelengths as standard options
- ▶ **<10 ns** pulse duration at 1064 nm
- ▶ Electro-optical Q-switching
- ▶ Turn-key operation
- ▶ Rugged sealed cavity
- ▶ Extremely compact size
- ▶ Simple and robust
- ▶ Air cooled
- ▶ External TTL triggering
- ▶ Remote control via keypad and/or PC with supplied LabVIEW™ drivers
- ▶ Remote control pad

APPLICATIONS

- ▶ Material processing
- ▶ LCD repair
- ▶ Marking
- ▶ Micromachining
- ▶ Engraving
- ▶ Laser deposition
- ▶ Laser cleaning
- ▶ Ablation
- ▶ Spectroscopy
- ▶ OPO pumping
- ▶ Remote sensing

SPECIFICATIONS ¹⁾

Model	NL201 ²⁾	NL202 ³⁾	NL204 ³⁾
Pulse energy			
at 1064 nm	0.9 mJ	2.0 mJ	4.0 mJ
at 532 nm	0.3 mJ	0.9 mJ	2.0 mJ
at 355 nm	0.2 mJ	0.6 mJ	1.3 mJ
at 266 nm	0.08 mJ	0.2 mJ	0.6 mJ
at 213 nm	0.04 mJ	0.1 mJ	0.2 mJ
Pulse to pulse energy stability (StdDev) ⁴⁾			
at 1064 nm	<0.5 %		
at 532 nm	<2.5 %		
at 355 nm	<3.5 %		
at 266 nm	<4.0 %		
at 213 nm	<5.0 %		
Typical pulse duration ⁵⁾			
7 – 10 ns			
Power drift ⁶⁾			
± 2 %			
Pulse repetition rate			
	10–2500 Hz	10–1000 Hz	500–1000 Hz
Beam spatial profile			
Close to Gaussian in near and far fields			
Ellipticity			
0.9–1.1 at 1064 nm			
M²			
<1.3			
Beam divergence ⁷⁾			
<3 mrad			
Polarization			
linear			
Typical beam diameter ⁸⁾			
0.7 mm			
Beam pointing stability (StDev) ⁹⁾			
≤10 μrad			
Optical jitter (StdDev) ¹⁰⁾			
<0.5 ns			

PHYSICAL CHARACTERISTICS

Laser head (W × L × H) ¹¹⁾	164 × 320 × 93 mm
Power supply unit (W × L × H)	365 × 415 × 290 mm
Umbilical length	3 m

OPERATING REQUIREMENTS

Cooling	air cooled
Ambient temperature	18–30 °C
Relative humidity	20–80 % (non-condensing)
Power requirements	100–240 V AC, single phase, 50/60 Hz
Power consumption	<600 W

¹⁾ Due to continuous improvement, all specifications are subject to change. Parameters marked typical are illustrative; 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⁾ Unless stated otherwise all specifications are measured at 2500 Hz pulse repetition rate.

³⁾ Unless stated otherwise all specifications are measured at 1000 Hz pulse repetition rate.

⁴⁾ Averaged from pulses emitted during 30 sec time interval.

⁵⁾ FWHM at 1064 nm.

⁶⁾ Measured over 8 hour period after 20 min warm-up when ambient temperature variation is less than ±2 °C.

⁷⁾ Full angle measured at the 1/e² level at 1064 nm.

⁸⁾ Beam diameter is measured at 1064 nm at the 1/e² level.

⁹⁾ Beam pointing stability is evaluated as movement of the beam centroid in the focal plane of a focusing element.

¹⁰⁾ With respect to QSW IN or SYNC OUT pulse.

¹¹⁾ Without optional harmonic module.



PERFORMANCE

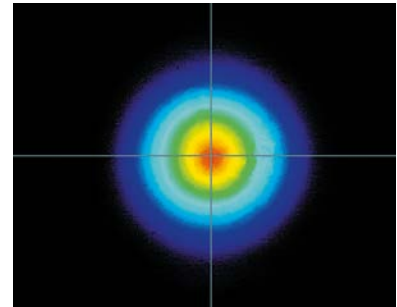
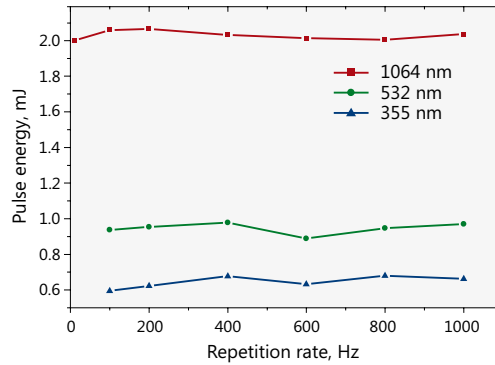


Fig 1. Typical performance data of model NL202 laser

Fig 2. Typical beam intensity profile in the far field

OUTLINE DRAWINGS

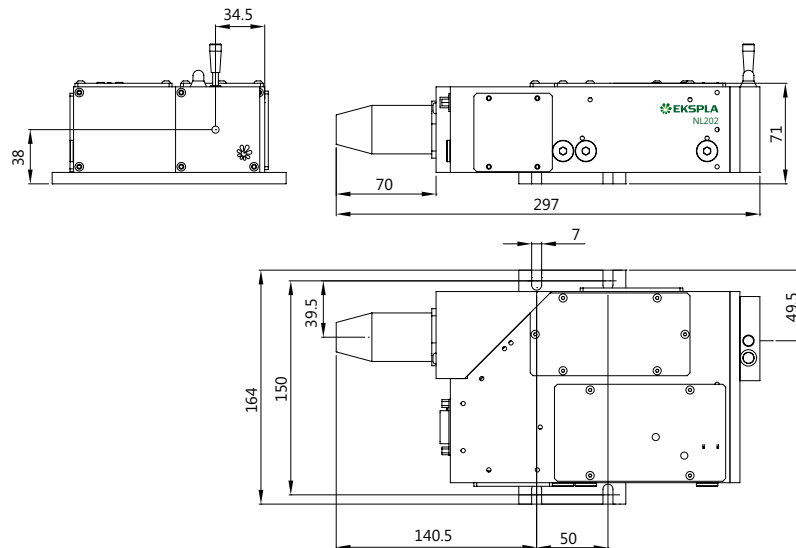


Fig 3. NL202 laser head drawing

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.

NL201-H200SHC

Model	Harmonic generator options:
	H200SHC → second harmonic
	H200THC → third harmonic
	H200FHC → fourth harmonic
	H200FiHC → fifth harmonic