NT230 SERIES

High Energy Broadly Tunable DPSS Lasers

BENEFITS

- *Hands-free wavelength tuning – no need for physical intervention*
- *The system is widely tunable; 192 – 2600 nm and delivers high pulse energy (up to 15 mJ) which allows investigation of an extensive range of materials*
- *High repetition rate (up to 100 Hz) and output power enable fast data collection and intensive excitation of materials*
- *Narrow linewidth (down to 3 cm^{-1}) and superior tuning resolution (1 – 2 cm^{-1}) allow recording of high quality spectra*
- *High integration level saves valuable space in the laboratory*
- *Diode pumping reduces maintenance frequency*
- *Automatic electromechanical output shutters ensure high level of safety*
- *User friendly extendable handles ease transportation and repositioning of laser*
- *In-house design and manufacturing of complete systems, including pump lasers, guarantees on-time warranty and post warranty services and spares supply*
- *Variety of control interfaces: USB, RS232, LAN and WLAN ensures easy control and integration with other equipment*
- *Attenuator and fiber coupling options facilitate incorporation of NT230 systems into various experimental environments*

FEATURES

- *Customers recognized reliability*
- *Two years warranty*
- *Integrates DPSS pump laser and OPO into a single housing*
- *Hands-free no-gap wavelength tuning **from 192 to 2600 nm****
- *Up to **15 mJ** pulse energy from OPO*
- *Up to **100 Hz** pulse repetition rate*
- *Up to **2 mJ** output pulse energy **in UV***
- *Less than **5 cm^{-1}** linewidth*
- ***2–5 ns** pulse duration*
- *Electromechanical output shutters*
- *Transportation handles*
- *355 nm & 1064 nm laser outputs*
- *532 nm output (optional)*
- *Remote control via key pad or PC*

** Automatic wavelength scan is programmable*

APPLICATIONS

- *Laser-induced fluorescence*
- *Flash photolysis*
- *Photobiology*
- *Remote sensing*
- *Metrology*
- *Non-linear spectroscopy*
- *Photo acoustic imaging*

NT230 series lasers deliver high up to 10 mJ energy pulses at 100 Hz pulse repetition rate, tunable over a broad spectral range. Integrated into a single compact housing, the diode pumped Q-switched Nd:YAG laser and Optical Paramteric Oscillator (OPO) offers hands free, no-gap tuning from 192 to 2600 nm. With its 100 Hz repetition rate, the NT230 series laser establishes itself as a versatile tool for many laboratory applications, as laser induced fluorescence, flash photolysis, photobiology, metrology, remote sensing, etc.

Due to the innovative diode pumped design, NT230 series lasers feature maintenance-free laser operation for an extended period of time and improved stability (compared with flash-lamp pumped counterparts).

NT230 series systems can be controlled from a remote control pad or/and a computer. The control pad allows easy control of all parameters and features on a backlit system display that is easy to read even with laser safety eyewear.

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SPECIFICATIONS [1]

Model	NT230-50	NT230-100
OPO		
Wavelength range		
Signal	405–710 nm	
Idler	710–2600 nm	
SH and SF	210–405 nm [2]	
DUV	192–210 nm	
Pulse energy [3]		
OPO	15 mJ	10 mJ
SH and SF [4]	1.8 mJ	1.3 mJ
DUV	0.4 mJ	0.27 mJ
Pulse repetition rate	50 Hz	100 Hz
Pulse duration [5]	2–5 ns	
Linewidth [6]	<5 cm^{-1}	
Minimal tuning step [7]		
Signal	1 cm^{-1}	
Idler	1 cm^{-1}	
SH/SF/DUV	2 cm^{-1}	
Polarization		
Signal	horizontal	
Idler	vertical	
SH/SF	horizontal	
DUV	vertical	
OPO beam divergence [8]	<2 mrad	
Typical beam diameter [9]	5 mm	
PUMP LASER		
Pump wavelength [10]	355 nm	
Typical pump pulse energy [11]	50 mJ	35 mJ
Pulse duration [6]	2–5 ns	
PHYSICAL CHARACTERISTICS		
Unit size (W × L × H)	451 × 705 × 172 mm	
Power supply size (W × L × H)	449 × 376 × 140 mm	
External chiller	inquire	
Umbilical length	2.5 m	
OPERATING REQUIREMENTS		
Cooling	external chiller	
Room temperature	18–30 °C	
Relative humidity	20–80 % (non-condensing)	
Power requirements	100–240 V AC, single phase, 50/60 Hz	
Power consumption	<1.8 kW	
Cleanliness of the room	not worse than ISO Class 9	

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 450 nm and for basic system without options.

2) Separate –SH and –SF options are available.

3) See tuning curves for typical outputs at other wavelengths.

4) Measured at 260 nm wavelength.

5) FWHM measured with photodiode featuring 1 ns rise time and 300 MHz bandwidth oscilloscope.

6) Linewidth is <8 cm^{-1} for 210 – 405 nm range.

7) When wavelength is controlled from PC. When wavelength is controlled from keypad, tuning resolution is 0.1 nm for signal, 1 nm for idler and 0.05 nm for SH, SF and DUV.

8) Full angle measured at the FWHM level at 450 nm.

9) Beam diameter is measured at 450 nm at the $1/e^2$ level and can vary depending on the pump pulse energy.

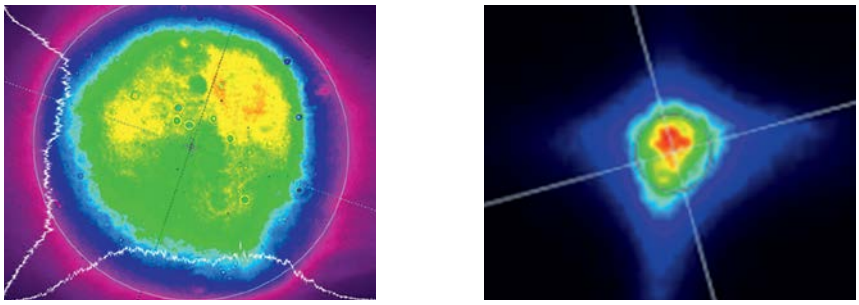
10) Separate output port for the fundamental and 3rd harmonic beam is standard. Output ports for other harmonic are optional.

11) The pump laser pulse energy will be optimized for best OPO performance and can vary with each unit we manufacture.

Accessories and optional items

Option	Features
-SH	Tuning range extension in UV range (210–405 nm) by second harmonic generation
-SF	Tuning range extension in 300–405 nm range by sum-frequency generation
-SH/SF	Tuning range extension in 210–405 nm range by combining second harmonic and sum-frequency generator outputs for maximum possible pulse energy
-DUV	Deep UV option for 192 – 210 nm range output
-2H	532 nm output
-FC	Fiber coupled output in 350–2000 nm range
-ATTN	Attenuator output in 350–2600 nm range
-SCU	Spectral filtering accessory for improved spectral purity of pulses
-FWS	Fast wavelength scanning for signal or idler ranges, wavelength shift time <30 ms

PERFORMANCE



Near field Far field

Fig 1. Typical beam profiles of NT230 series lasers at 450 nm

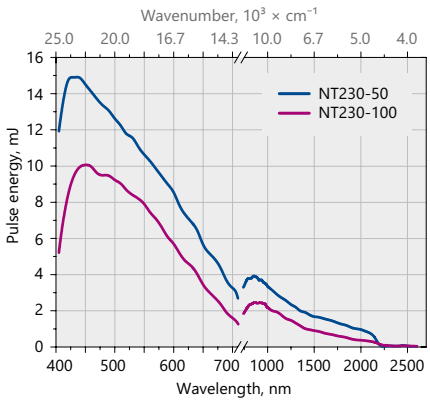


Fig 2. Typical output pulse energy of NT230 laser

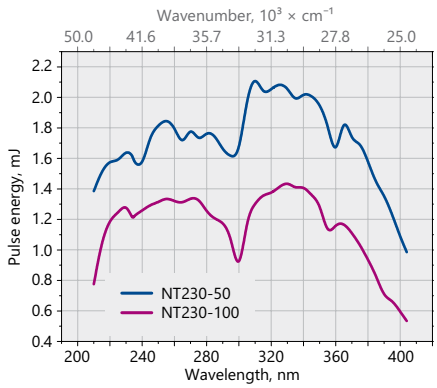


Fig 3. Typical output pulse energy of NT230 laser with SH/SF extension

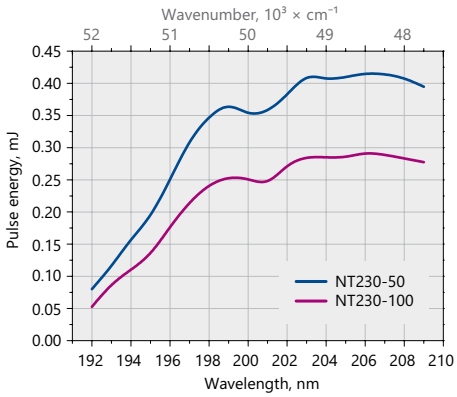


Fig 4. Typical output pulse energy of NT230 laser with DUV extension

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OUTLINE DRAWINGS

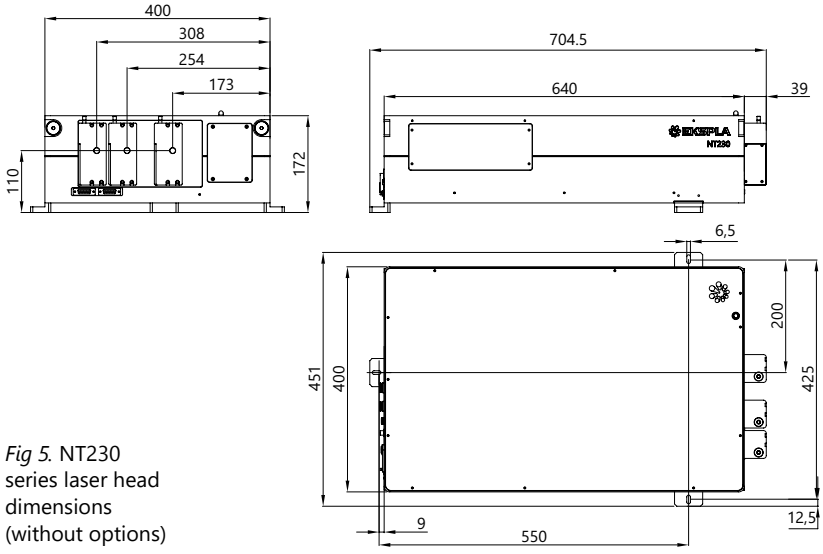

Fig 5. NT230 series laser head dimensions (without options)

Fig 6. For easier transportation laser features integrated carrying handles, which can be hidden inside, when not in need

ORDERING INFORMATION

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

NT230-50-SH-2H-SCU

Model

Pulse repetition rate in Hz

Options:
2H → extra 532 nm output
SCU → spectral filtering accessory

Optional tuning range extension:
SH → 210–405 nm
SF → 300–405 nm
SH/SF → 210–405 nm
DUV → 192–210 nm