

NT230 SERIES



High Energy Broadly Tunable DPSS Lasers

FEATURES

- ▶ Integrates DPSS pump laser and OPO into a single housing
- ▶ Hands-free no-gap wavelength tuning from **192 to 2600 nm**
- ▶ High, up to **15 mJ** pulse energy from OPO
- ▶ **100 Hz** pulse repetition rate
- ▶ More than **1.8 mJ** output pulse energy in UV
- ▶ Less than 5 cm^{-1} linewidth
- ▶ **2–5 ns** pulse duration
- ▶ Remote control via key pad or PC
- ▶ Optional separate output port for 532/1064 nm beam

BENEFITS

- ▶ 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 ($1 - 2\text{ cm}^{-1}$) allow recording of high quality spectra
- ▶ High integration level saves valuable space in the laboratory
- ▶ Diode pumping reduces maintenance frequency
- ▶ 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

APPLICATIONS

- ▶ Laser-induced fluorescence
- ▶ Flash photolysis
- ▶ Photobiology
- ▶ Remote sensing
- ▶ Metrology
- ▶ Non-linear spectroscopy

NT230 series lasers deliver high up to 9 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 Parametric 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 using supplied LabVIEW™ drivers. 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.

Due to DPSS pump source, the laser requires little maintenance. It is cooled by a water-air chiller, which further reduces running costs. An OPO pump energy monitor allows monitoring of pump laser performance. A standard feature includes a separate output port for the 355 nm pump beam.

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	9 mJ	
SH and SF ⁴⁾	1.8 mJ	1.3 mJ	
DUV	0.25 mJ	0.15 mJ	
Pulse repetition rate	50 Hz	100 Hz	
Pulse duration ⁵⁾	2–5 ns		
Linewidth ⁶⁾	<5 cm ⁻¹		
Tuning resolution 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⁾	4 mm		
PUMP LASER			
Pump wavelength ¹⁰⁾	355 nm		
Typical pump pulse energy ¹¹⁾	50 mJ	35 mJ	
Pulse duration ⁶⁾	4–6 ns at 1064 nm		
PHYSICAL CHARACTERISTICS			
Unit size (W × L × H)	451 × 696 × 172 mm		
Power supply size (W × L × H)	471 × 391 × 147 mm		
External chiller	inquire		
Umbilical length	2.5 m		
OPERATING REQUIREMENTS			
Cooling	external chiller		
Room 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		

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/e² level and can vary depending on the pump pulse energy.

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

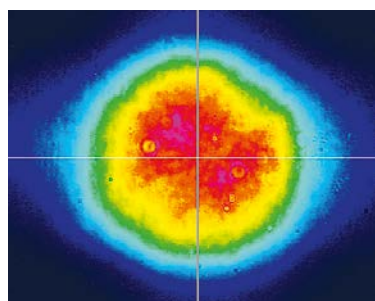
¹¹⁾ The pump laser pulse energy will be optimized for best OPO performance and can vary with each unit we manufacture.



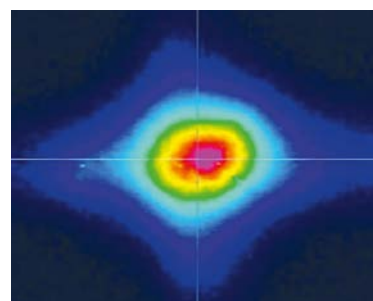
Accessories and optional items

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
-H, -2H	1064 nm or 532 nm output via separate port
-FC	Fiber coupled output in 300–2000 nm range
-ATTN/FC	Fiber coupled attenuator
-SCU	Spectral filtering accessory for improved spectral purity of pulses

PERFORMANCE



At ~1.5 m distance from output



Far field

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

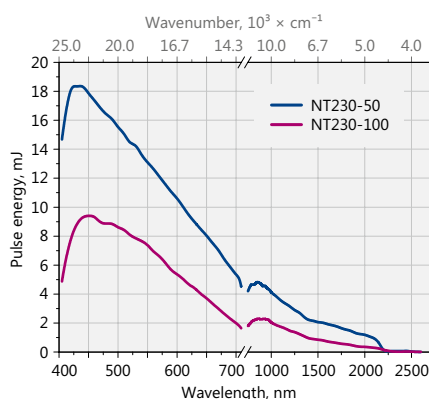


Fig 2. Typical output pulse energy of NT230 laser

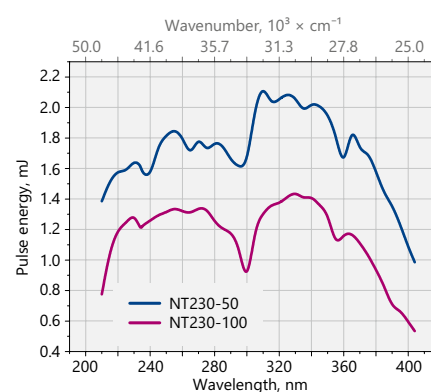


Fig 3. Typical output pulse energy of NT230 laser with SH/SF extension

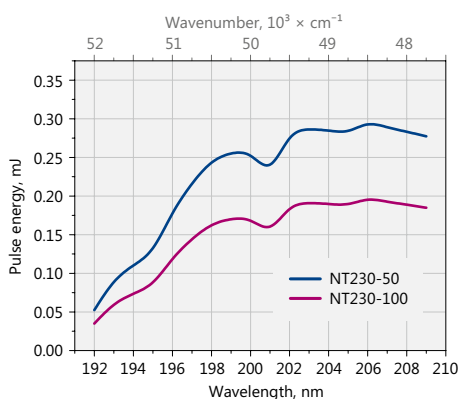


Fig 4. Typical output pulse energy of NT230 laser with DUV extension

OUTLINE DRAWINGS

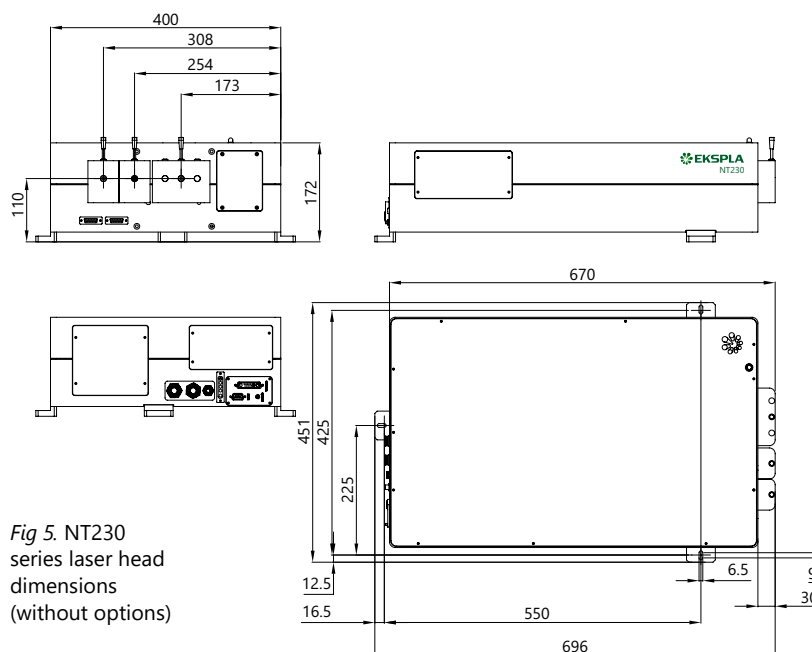


Fig 5. NT230 series laser head dimensions (without options)

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.

NT230-50-SH-H-2H-SCU

Model
Pulse repetition rate in Hz

Options:
H → extra 1064 nm output
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

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