NT242 SERIES

Broadly Tunable kHz Pulsed DPSS Lasers

FEATURES

- *Integrates DPSS pump laser and OPO into a single housing*
- *Hands-free no-gap wavelength tuning from **210** to **2600 nm***
- ***1000 Hz** pulse repetition rate*
- *More than **60 µJ** output pulse energy in UV*
- *Less than 5 cm^{-1} linewidth*
- ***3–6 ns** pulse duration*
- *Remote control via key pad or PC*
- *Optional separate output for the OPO pump beam 355 nm, 532 nm or 1064 nm*

BENEFITS

- *High repetition rate 1000 Hz enables fast data collection*
- *End pumping with diode technology ensures high reliability and low maintenance costs*
- *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*
- *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 NT242 systems into various experimental environments*

APPLICATIONS

- *Laser-induced fluorescence spectroscopy*
- *Pump-probe spectroscopy*
- *Non-linear spectroscopy*
- *Time-resolved spectroscopy*
- *Photobiology*
- *Remote sensing*
- *Determination of the telescope throughput*

NT242 series lasers produce pulses at an unprecedented 1 kHz pulse repetition rate, tunable over a broad spectral range. Integrated into a single compact housing, the diode pumped Q-switched Nd:YAG laser and OPO offers hands-free, no-gap tuning from 210 to 2600 nm. With its 1000 Hz repetition rate, the NT242 series laser establishes itself as a versatile tool for many laboratory applications, including laser induced fluorescence, flash photolysis, photobiology, metrology, remote sensing, etc.

NT242 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 display that is easy to read even with laser safety eyewear.

Thanks to a DPSS pump source, the laser requires little maintenance. It is equipped with air-cooled built-in chiller, which further reduces running costs. A built-in OPO pump energy monitor allows monitoring of pump laser performance without the use of external power meters. The optional feature provides a separate output port for the 1064, 532 or 355 nm beam.

SPECIFICATIONS [1]

Model	NT242	NT242-SH	NT242-SF	NT242-SH/SF
OPO				
Wavelength range				
Signal	405–710 nm			
Idler	710–2600 nm			
SH and SF	—	210–300 nm	300–405 nm	210–405 nm
Pulse energy [2]				
OPO	450 µJ			
SH and SF	—	40 µJ at 230 nm	60 µJ at 320 nm	
Pulse repetition rate	1000 Hz			
Pulse duration [3]	3–6 ns			
Linewidth [4]	< 5 cm^{-1}			
Tuning resolution [5]				
Signal	1 cm^{-1}			
Idler	1 cm^{-1}			
SH and SF	—	2 cm^{-1}		
Polarization				
Signal	horizontal			
Idler	vertical			
SH and SF	—	vertical		
Typical beam diameter [6]	3 × 6 mm			
PUMP LASER				
Pump wavelength [7]	355 nm		355 / 1064 nm	
Typical pump pulse energy [8]	3 mJ		3 / 1 mJ	
Pulse duration [3]	4–6 ns at 1064 nm			
PHYSICAL CHARACTERISTICS				
Unit size (W × L × H)	456 × 1040 × 297 mm			
Power supply size (W × L × H)	520 × 400 × 286 mm			
Umbilical length	2.5 m			
OPERATING REQUIREMENTS				
Cooling	built-in 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	< 1.5 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) See tuning curves for typical outputs at other wavelengths.

3) Measured at FWHM level with photodiode featuring 1 ns rise time and 300 MHz bandwidth oscilloscope.

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

5) For manual input 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 and SF.

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

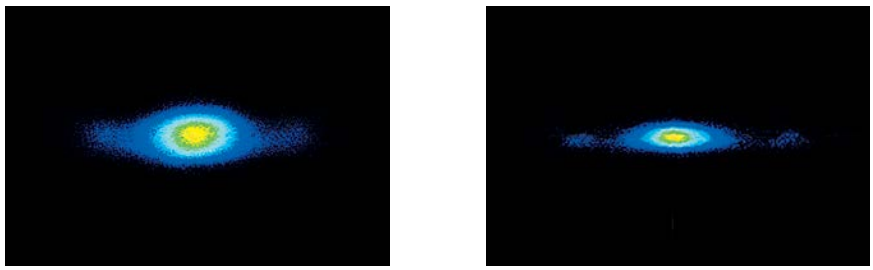
7) Separate output port for the 3rd and other harmonic is optional.

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

Accessories and optional items

Option	Features
-SH	Tuning range extension in UV range (210–300 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 harmonics and sum-frequency generator outputs for maximum possible pulse energy
-SCU	Spectral filtering accessory for improved spectral purity of pulses
-H, -2H, -3H	1064, 532 and 355 nm output via separate port
-FC	Fiber coupler
-Attn	Attenuator option

PERFORMANCE



Near field Far field

Fig 1. Typical beam profiles of NT242 series lasers at 500 nm

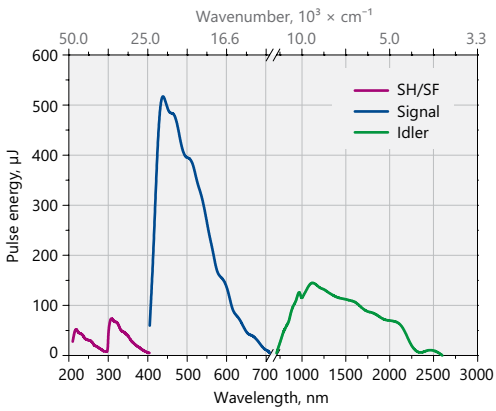


Fig 2. Typical output pulse energy of NT242 series tunable laser

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OUTLINE DRAWINGS

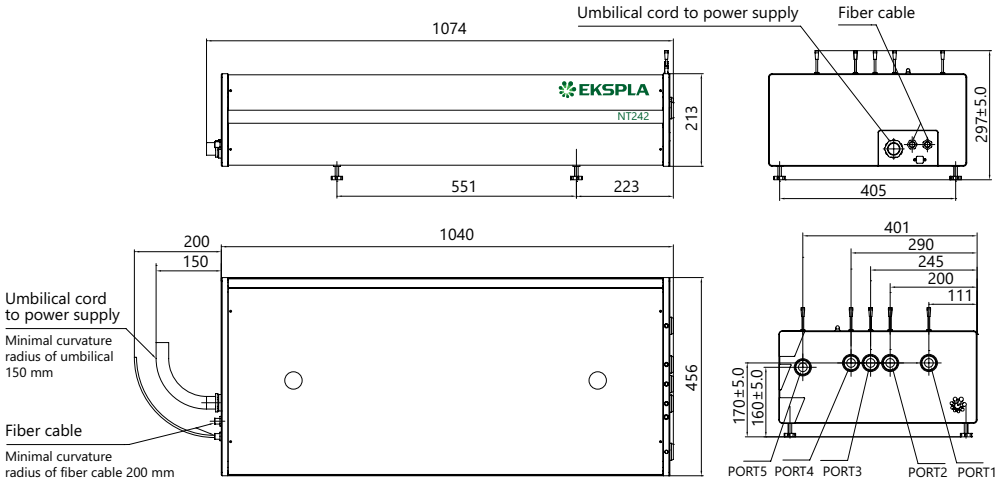

Fig 3. NT242 series laser head dimensions

ORDERING INFORMATION

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

NT242-SH-H-2H-SCU

Model

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

Options:
H → extra 1064 nm output
2H → extra 532 nm output
SCU → spectral filtering accessory