NT242 SERIES

Tunable Wavelength Lasers Operating at kHz Repetition Rate

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 195 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 user-friendly 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 cooled by a stand alone 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. A standard feature includes a separate output port for the 355 nm pump beam.

FEATURES

- *Integrates DPSS pump laser and OPO into a single housing*
- *Hands-free no-gap wavelength tuning from **195** to **2600 nm***
- ***1000 Hz** pulse repetition rate*
- *More than **40 µJ** output pulse energy in UV*
- *Less than 5 cm^{-1} linewidth*
- ***3–6 ns** pulse duration*
- *Remote control pad*
- *PC control via USB port (RS232 is optional) and LabVIEW™ drivers*
- *Separate output for the OPO pump beam (355 nm)*

APPLICATIONS

- *Laser-induced fluorescence*
- *Flash photolysis*
- *Photobiology*
- *Remote sensing*
- *Metrology*
- *Non-linear spectroscopy*
- *Other laser spectroscopy applications*

Accessories and optional items

Option	Features
-SH	Tuning range extension in UV range (210–355 nm) by second harmonics generation
-SFG	Tuning range extension in 300–405 nm range by sum-frequency generation
-SH/SFG	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	1064 nm or 532 nm output via separate port
-DUV	Deep UV option in 195–209.9 nm range

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SPECIFICATIONS [1]

Model	NT242	NT242-SH	NT242-SFG	NT242-SH/SFG-DUV
OPO				
Wavelength range				
Signal	405–709 nm			
Idler	710–2600 nm			
SH and SFG	—	210–405 nm [2]	300–405 nm [2]	210–405 nm [2]
DUV	—	—	—	195–209.9 nm
Pulse energy [3]				
OPO	450 µJ			
SH and SFG	—	40 µJ at 240 nm	40 µJ at 320 nm	40 µJ at 320 nm
DUV	—	—	—	1 µJ at 200 nm
Pulse repetition rate [4]	1000 Hz			
Pulse duration [5]	3–6 ns			
Linewidth [6]	<5 cm^{-1}			
Scanning step				
Signal	0.1 nm			
Idler	1 nm			
SH and SFG	—	0.05 nm		—
DUV	—			0.05 nm
Polarization				
Signal	horizontal			
Idler	vertical			
SH and SFG	—	vertical		—
DUV	—			vertical
Typical beam diameter [7]	2.5 mm			
PUMP LASER				
Pump wavelength [8]	355 nm		355 / 1064 nm	
Max pump pulse energy [9]	3 mJ		3 / 1 mJ	
Pulse duration [5]	6–8 ns at 1064 nm			
PHYSICAL CHARACTERISTICS				
Unit size (W × L × H)	455 × 1030 × 260 mm			
Power supply size (W × L × H)	365 × 395 × 290 mm			
Umbilical length	2.5 m			
OPERATING REQUIREMENTS				
Cooling	stand-alone chiller			
Room temperature	15–30 °C			
Relative humidity	20–80 % (non-condensing)			
Power requirements	90–240 V AC, single phase 50/60 Hz			
Power consumption	<1 kVA			

1) 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 450 nm.

2) Tuning range of 210–405 nm is provided by SH/SFG option.

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

4) Inquire for other pulse repetition rates.

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

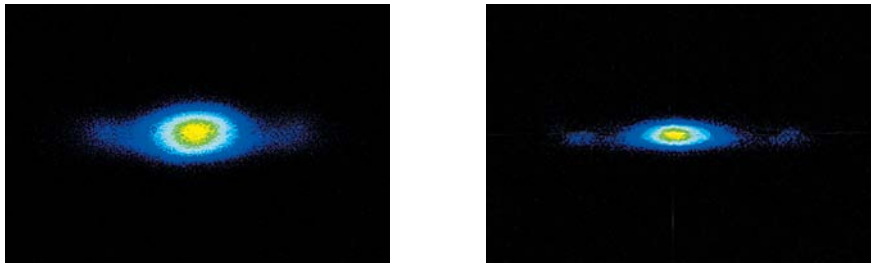
6) Linewidth is <8 cm^{-1} for 210–405 nm range and <10 cm^{-1} for 195–209 nm.

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

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

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

PERFORMANCE



Near field Far field

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

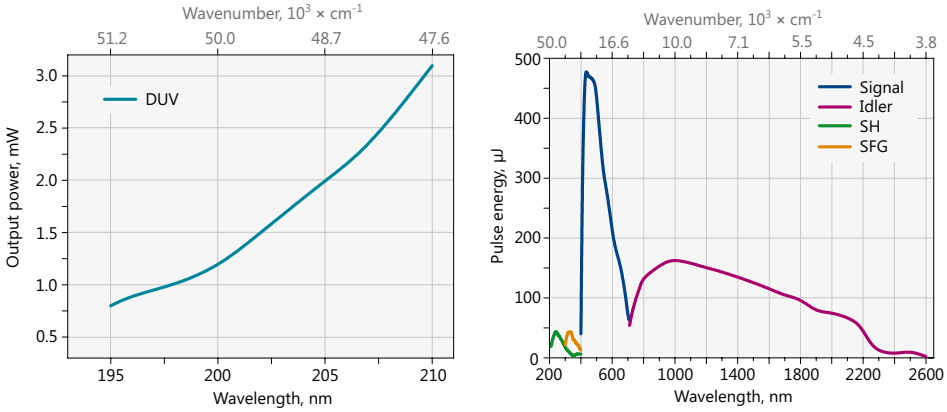


Fig 2. Typical output pulse energy of NT242 series tunable laser

OUTLINE DRAWINGS

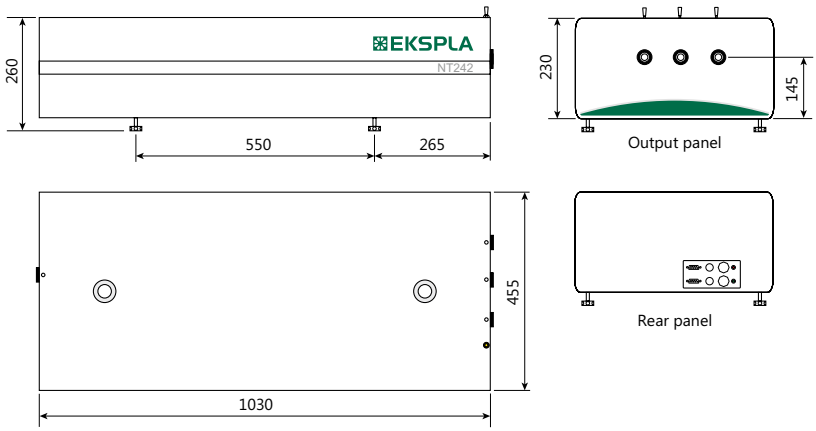


Fig 3. NT242 series laser head dimensions

ORDERING INFORMATION

NT242-SH-1K-2H/3H/SCU

Model

Optional tuning range extension:
SH → 210–405 nm
SF → 300–405 nm
SH/SFG → 210–405 nm
DUV → 195–209.9 nm

Pulse repetition rate in kHz:
1K=1 kHz

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

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