

# NT240 series



## BENEFITS

- ▶ Hands-free wavelength tuning – no need for physical intervention
- ▶ 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  $3 \text{ cm}^{-1}$ ) and superior tuning resolution ( $1 - 2 \text{ cm}^{-1}$ ) allow recording of high quality spectra
- ▶ High integration level saves valuable space in the laboratory
- ▶ 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 NT240 systems into various experimental environments

NT240 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 NT240 series laser establishes itself as a versatile tool for many laboratory applications, including laser induced fluorescence, flash photolysis, photobiology, metrology, remote sensing, etc.

NT240 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

## 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  $\mu\text{J}$**  output pulse energy in UV
- ▶ Less than **5  $\text{cm}^{-1}$**  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

\* Automatic wavelength scan is optional

### APPLICATIONS

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

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 <sup>1)</sup>

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 <sup>2)</sup>				
OPO	450 μJ			
SH and SF	—	40 μJ at 230 nm	60 μJ at 320 nm	
Pulse repetition rate	1000 Hz			
Pulse duration <sup>3)</sup>	3–6 ns			
Linewidth <sup>4)</sup>	< 5 cm <sup>–1</sup>			
Tuning resolution <sup>5)</sup>				
Signal	1 cm <sup>–1</sup>			
Idler	1 cm <sup>–1</sup>			
SH and SF	—	2 cm <sup>–1</sup>		
Polarization				
Signal	horizontal			
Idler	vertical			
SH and SF	—	vertical		
Typical beam diameter <sup>6)</sup>	3 × 6 mm			
PUMP LASER				
Pump wavelength <sup>7)</sup>	355 nm		355 / 1064 nm	
Typical pump pulse energy <sup>8)</sup>	3 mJ		3 / 1 mJ	
Pulse duration <sup>3)</sup>	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 kW			
Cleanliness of the room	not worse than ISO Class 9			

<sup>1)</sup> 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.

<sup>2)</sup> See tuning curves for typical outputs at other wavelengths.

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

<sup>4)</sup> Linewidth is <8 cm<sup>-1</sup> for 210–405 nm range.

<sup>5)</sup> 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.

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

<sup>7)</sup> Separate output port for the 3rd and other harmonic is optional.

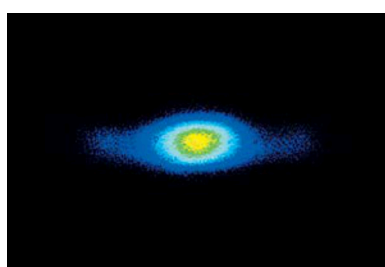
<sup>8)</sup> The pump laser pulse energy will be optimized for best OPO performance. The actual pump laser output can vary with each unit we manufacture.



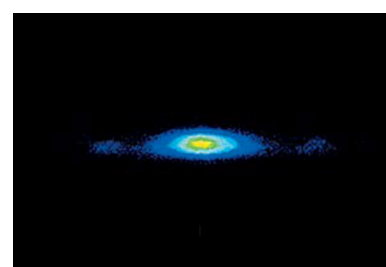
### Accessories and optional items

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

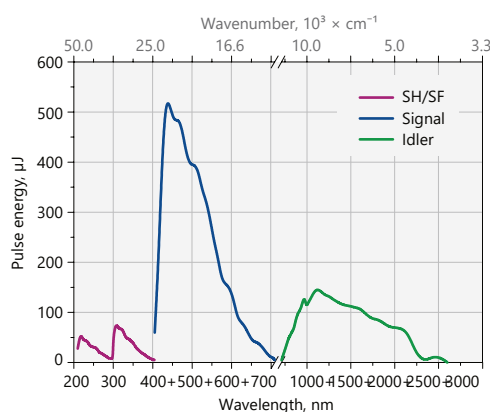


Fig 2. Typical output pulse energy of NT242 series tunable laser

## OUTLINE DRAWINGS

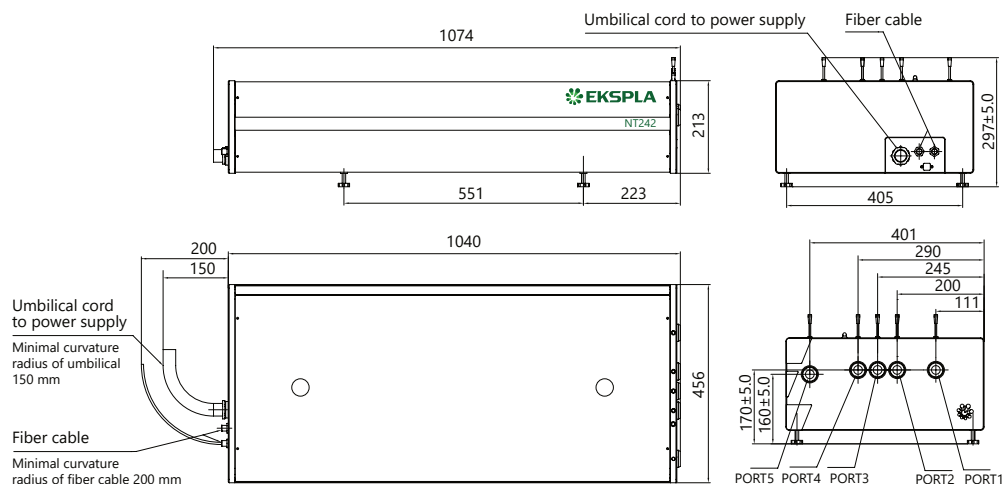


Fig 3. NT242 series laser head dimensions

## ORDERING INFORMATION

**Note:** Laser must be connected to the mains electricity all the time. If there will be no mains electricity for longer than 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