

# NT242 SERIES



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 cooled by a 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.

## 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 harmonic 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   |

## 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<sup>-1</sup> linewidth
- ▶ 3–6 ns pulse duration
- ▶ Remote control pad
- ▶ PC control via USB or RS232 port and LabVIEW™ drivers
- ▶ Optional separate output for the OPO pump beam (355 nm)

### APPLICATIONS

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

**SPECIFICATIONS <sup>1)</sup>**

| Model                               | NT242                               | NT242-SH           | NT242-SF        | NT242-SH/SF |
|-------------------------------------|-------------------------------------|--------------------|-----------------|-------------|
| <b>OPO</b>                          |                                     |                    |                 |             |
| 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 240 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                            |                                     |                    |                 |             |
| <b>PUMP LASER</b>                   |                                     |                    |                 |             |
| Pump wavelength <sup>7)</sup>       | 355 nm                              |                    | 355 / 1064 nm   |             |
| Max pump pulse energy <sup>8)</sup> | 3 mJ                                |                    | 3 / 1 mJ        |             |
| Pulse duration <sup>3)</sup>        | 4–6 ns at 1064 nm                   |                    |                 |             |
| <b>PHYSICAL CHARACTERISTICS</b>     |                                     |                    |                 |             |
| Unit size (W × L × H)               | 456 × 1040 × 297 mm                 |                    |                 |             |
| Power supply size (W × L × H)       | 520 × 400 × 286 mm                  |                    |                 |             |
| Umbilical length                    | 2.5 m                               |                    |                 |             |
| <b>OPERATING REQUIREMENTS</b>       |                                     |                    |                 |             |
| 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                           |                    |                 |             |

<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 are optional.

<sup>8)</sup> 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

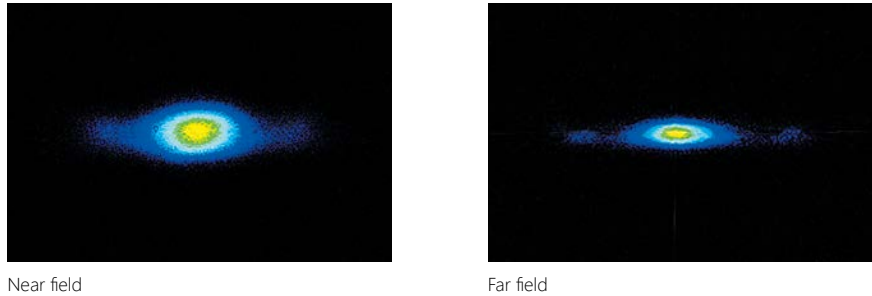


Fig 1. Typical beam profiles of NT242 series lasers at 500 nm

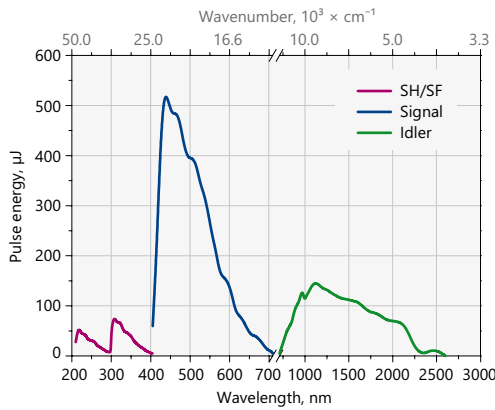


Fig 2. Typical output pulse energy of NT242 series tunable laser

OUTLINE DRAWINGS

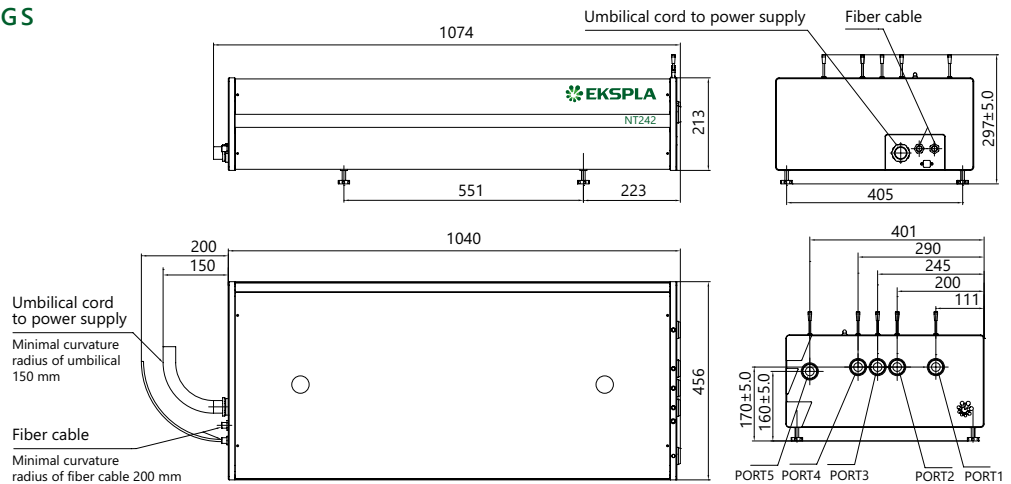


Fig 3. NT242 series laser head dimensions

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                            | Options:                           |
| Optional tuning range extension: | H → extra 1064 nm output           |
| SH → 210–300 nm                  | 2H → extra 532 nm output           |
| SF → 300–405 nm                  | SCU → spectral filtering accessory |
| SH/SF → 210–405 nm               |                                    |