

NT342 SERIES



The NT342 series tunable wavelength nanosecond laser seamlessly integrates the nanosecond optical parametric oscillator and the Nd:YAG Q-switched nanosecond laser – all in a compact housing.

The main system features are: hands-free wavelength tuning from UV to IR, high conversion efficiency, optional fiber-coupled output and separate output port for pump laser beam.

Narrow bandwidth models have a linewidth of less than 5 cm^{-1} , which is ideal for many spectroscopic applications.

The laser is designed for convenient use. It can be controlled from remote keypad or from a PC through an RS232 interface using LabVIEW™ drivers that are supplied with the system. The remote keypad features a backlit display that is easy to read even through laser safety goggles. The OPO pump energy monitoring system helps to control pump laser parameters. Replacement of laser flashlamps can be done without misalignment of the laser cavity and/or deterioration of laser performance.

High Energy Broadly Tunable Lasers

FEATURES

- ▶ Hands-free no gap wavelength tuning from **192 to 2600 nm**
- ▶ Up to **50 mJ** pulse energy in visible spectral range
- ▶ Up to **10 mJ** pulse energy in UV spectral range
- ▶ Less than 5 cm^{-1} linewidth
- ▶ **3–5 ns** pulse duration
- ▶ Up to **30 Hz** pulse repetition rate
- ▶ Remote control pad
- ▶ PC control via RS232 and LabVIEW™ drivers
- ▶ Optional separate shared output port for 355/532/1064 nm beam
- ▶ OPO pump energy monitoring
- ▶ Replacement of flashlamps without misalignment of the laser cavity
- ▶ Hermetically sealed oscillator cavity protects non-linear crystals from dust and humidity

APPLICATIONS

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

Tuning range extending optional add-ons

| Option | Features |
|--------|---|
| -SH | Second harmonic generator for 210–409 nm range |
| -SF | Sum-frequency generator for 300–409 nm range with high pulse energy |
| -SH/SF | Combined option for highest pulse energy in 210–409 nm range |
| -DUV | Deep UV option for 192–209 nm range |

Accessories and other optional add-ons

| Option | Features |
|---------|--|
| -FC | Fiber coupled output in 350–2000 nm range |
| -ATTN | Pulse energy attenuator |
| -H, -2H | Separate shared output port for Nd:YAG pump laser harmonics (532 or 1064 nm wavelengths) |
| -AW | Air cooled power supply |

SPECIFICATIONS ¹⁾

| Model | NT342A | NT342B | NT342C |
|--|-----------------------------------|--------|--------|
| OPO | | | |
| Wavelength range ²⁾ | | | |
| Signal | 410–709 nm ³⁾ | | |
| Idler | 710–2600 nm | | |
| SH generator (optional) | 210–409 nm | | |
| SH/SF generator (optional) | 210–409 nm | | |
| DUV generator (optional) | 192–209 nm | | |
| Output pulse energy | | | |
| OPO ⁴⁾ | 15 mJ | 30 mJ | 50 mJ |
| SH generator (optional) ⁵⁾ | 2 mJ | 4 mJ | 6.5 mJ |
| SH/SF generator (optional) ⁶⁾ | 3 mJ | 6 mJ | 10 mJ |
| DUV generator (optional) ⁷⁾ | 0.3 mJ | 0.6 mJ | 1 mJ |
| Linewidth | <5 cm ⁻¹ ⁸⁾ | | |
| Scanning step ⁹⁾ | | | |
| Signal (410–709 nm) | 0.1 nm | | |
| Idler (710–2600 nm) | 1 nm | | |
| SH/SF/DUV beam (192–409 nm) | 0.05 nm | | |
| Pulse duration ¹⁰⁾ | 3–5 ns | | |
| Typical beam diameter ¹¹⁾ | 4 mm | 5 mm | 7 mm |
| Typical beam divergence ¹²⁾ | <2 mrad | | |
| Polarization | | | |
| Signal beam | horizontal | | |
| Idler beam | vertical | | |
| SH/SF beam | horizontal | | |
| DUV beam | vertical | | |

SPECIFICATIONS ¹⁾

| Model | NT342A | NT342B | NT342C |
|--|--|-------------|--------|
| PUMP LASER ¹³⁾ | | | |
| Pump wavelength | 355 nm | | |
| Max pump pulse energy | 50 mJ | 100 mJ | 150 mJ |
| Pulse duration | 4–6 ns | | |
| Beam quality | Hat-top in near field, without hot spots | | |
| Beam divergence | <0.6 mrad | | |
| Pulse energy stability (StdDev) | <3.5 % | | |
| Pulse repetition rate | 10 or 20 Hz ¹⁴⁾ | 10 or 20 Hz | 10 Hz |
| PHYSICAL CHARACTERISTICS | | | |
| Unit size (W × L × H) ¹⁵⁾ | 452 × 800 × 270 mm | | |
| Power supply size (W × L × H) | 330 × 490 × 585 mm | | |
| Umbilical length | 2.5 m | | |
| OPERATING REQUIREMENTS | | | |
| Water consumption (max 20 °C) ¹⁶⁾ | 6 l/min | | |
| Room temperature | 15–30 °C | | |
| Relative humidity | 20–80 % (non-condensing) | | |
| Power requirements | 208 or 240 V AC, single phase 50/60 Hz | | |
| Power consumption ¹⁷⁾ | 1.8 / 3.4 kVA | | |

- ¹⁾ Due to continuous improvement, all specifications are subject to change without notice. Parameters marked typical are indications of typical performance and will vary with each unit we manufacture. Unless stated otherwise, all specifications are measured at 450 nm.
- ²⁾ Hands-free tuning range is from 192 nm to 2600 nm.
- ³⁾ Tuning range extension to 400–709 nm is optional.
- ⁴⁾ Measured at 450 nm. See tuning curves for typical outputs at other wavelengths.
- ⁵⁾ Measured at 260 nm. See tuning curves for typical outputs at other wavelengths.
- ⁶⁾ Measured at 340 nm. SF generator is optimized for maximum output in 300–409 nm range. See tuning curves for typical outputs at other wavelengths.
- ⁷⁾ Measured at 200 nm.
- ⁸⁾ Linewidth is <math> <8 \text{ cm}^{-1}</math> for 210–409 nm range.
- ⁹⁾ Represents wavelength change quantum for manual input from control pad. When wavelength is controlled from PC, the wavelength set precision is $\sim 1 \text{ cm}^{-1}$ in OPO range and $\sim 2 \text{ cm}^{-1}$ in SH/SFG range.

- ¹⁰⁾ FWHM measured with photodiode featuring 1 ns rise time and 300 MHz bandwidth oscilloscope.
- ¹¹⁾ Beam diameter is measured at 450 nm at the FWHM level and can vary depending on the pump pulse energy.
- ¹²⁾ Full angle measured at the FWHM level at 450 nm.
- ¹³⁾ Separate output port for the 355 nm beam is standard. Outputs for 1064 nm and 532 nm beams are optional. Laser output will be optimised for OPO operation and specifications may vary with each unit we manufacture.
- ¹⁴⁾ 30 Hz version is available. Inquire for pulse energy specifications.
- ¹⁵⁾ Length from 821 to 1220 mm depending on configuration.
- ¹⁶⁾ At 10 Hz pulse repetition rate. Air cooled power supply is available.
- ¹⁷⁾ At 10/20 Hz pulse repetition rate.



PERFORMANCE

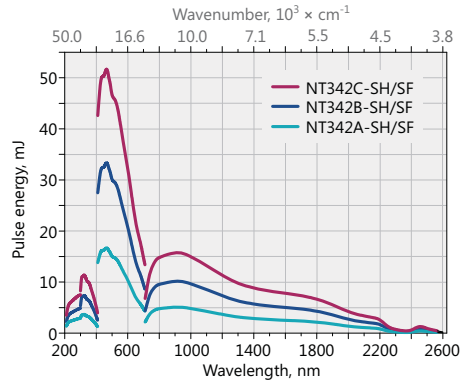


Fig 1. Typical output energy of the NT342 series tunable wavelength systems

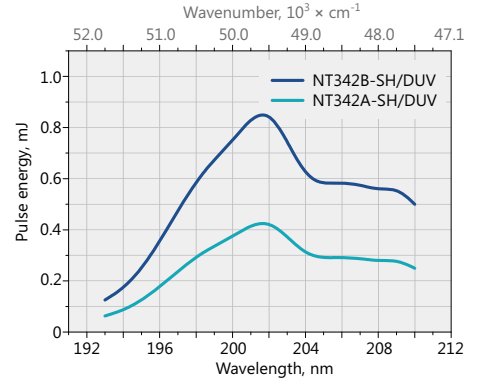


Fig 2. Typical output energy of the NT342 series tunable wavelength systems with SH/DUV extension

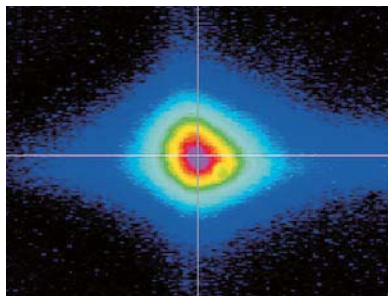


Fig 3. Typical far field beam profile of NT342 laser

OUTLINE DRAWINGS

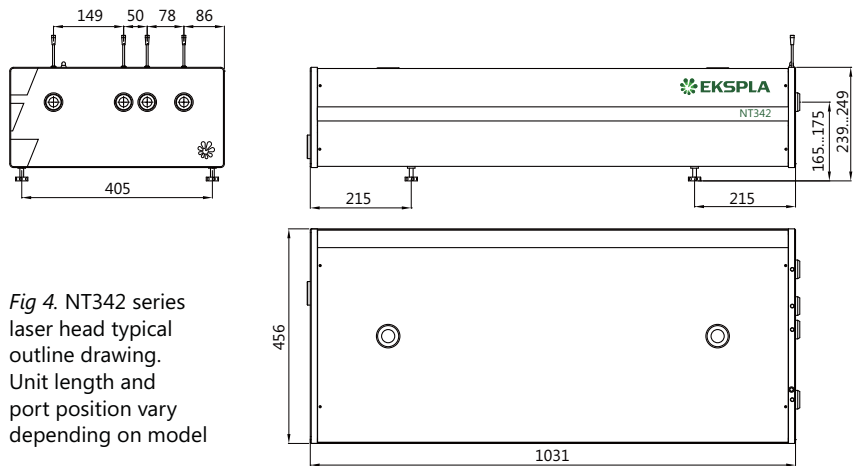


Fig 4. NT342 series laser head typical outline drawing. Unit length and port position vary depending on model

ORDERING INFORMATION

