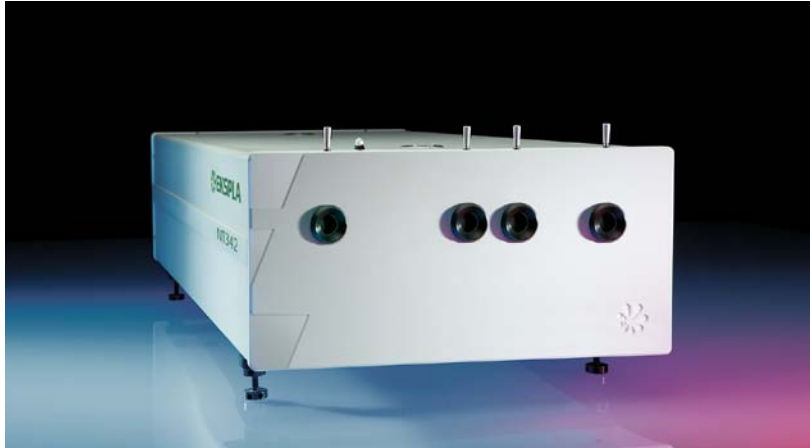


# NT342 SERIES



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  $5 \text{ cm}^{-1}$ , 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  $5 \text{ cm}^{-1}$  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 <sup>1)</sup>**

Model	NT342A	NT342B	NT342C
<b>OPO</b>			
Wavelength range <sup>2)</sup>			
Signal	410–709 nm <sup>3)</sup>		
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 <sup>4)</sup>	15 mJ	30 mJ	50 mJ
SH generator (optional) <sup>5)</sup>	2 mJ	4 mJ	6.5 mJ
SH/SF generator (optional) <sup>6)</sup>	3 mJ	6 mJ	10 mJ
DUV generator (optional) <sup>7)</sup>	0.3 mJ	0.6 mJ	1 mJ
Linewidth	<5 cm <sup>-1</sup> <sup>8)</sup>		
Scanning step <sup>9)</sup>			
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 <sup>10)</sup>	3–5 ns		
Typical beam diameter <sup>11)</sup>	4 mm	5 mm	7 mm
Typical beam divergence <sup>12)</sup>	<2 mrad		
Polarization			
Signal beam	horizontal		
Idler beam	vertical		
SH/SF beam	horizontal		
DUV beam	vertical		

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

Model	NT342A	NT342B	NT342C
<b>PUMP LASER</b> <sup>13)</sup>			
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 <sup>14)</sup>	10 or 20 Hz	10 Hz
<b>PHYSICAL CHARACTERISTICS</b>			
Unit size (W × L × H) <sup>15)</sup>	452 × 800 × 270 mm		
Power supply size (W × L × H)	330 × 490 × 585 mm		
Umbilical length	2.5 m		
<b>OPERATING REQUIREMENTS</b>			
Water consumption (max 20 °C) <sup>16)</sup>	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 <sup>17)</sup>	1.8 / 3.4 kVA		

<sup>1)</sup> 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.

<sup>2)</sup> Hands-free tuning range is from 192 nm to 2600 nm.

<sup>3)</sup> Tuning range extension to 400–709 nm is optional.

<sup>4)</sup> Measured at 450 nm. See tuning curves for typical outputs at other wavelengths.

<sup>5)</sup> Measured at 260 nm. See tuning curves for typical outputs at other wavelengths.

<sup>6)</sup> 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.

<sup>7)</sup> Measured at 200 nm.

<sup>8)</sup> Linewidth is <8 cm<sup>-1</sup> for 210–409 nm range.

<sup>9)</sup> Represents wavelength change quantum for manual input from control pad. When wavelength is controlled from PC, the wavelength set precision is ~1 cm<sup>-1</sup> in OPO range and ~2 cm<sup>-1</sup> in SH/SFG range.

<sup>10)</sup> FWHM measured with photodiode featuring 1 ns rise time and 300 MHz bandwidth oscilloscope.

<sup>11)</sup> Beam diameter is measured at 450 nm at the FWHM level and can vary depending on the pump pulse energy.

<sup>12)</sup> Full angle measured at the FWHM level at 450 nm.

<sup>13)</sup> 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.

<sup>14)</sup> 30 Hz version is available. Inquire for pulse energy specifications.

<sup>15)</sup> Length from 821 to 1220 mm depending on configuration.

<sup>16)</sup> At 10 Hz pulse repetition rate. Air cooled power supply is available.

<sup>17)</sup> At 10/20 Hz pulse repetition rate.



**PERFORMANCE**

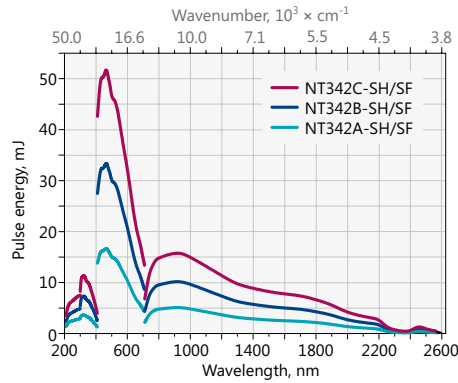


Fig 1. Typical output energy of the NT342 series tunable wavelength systems

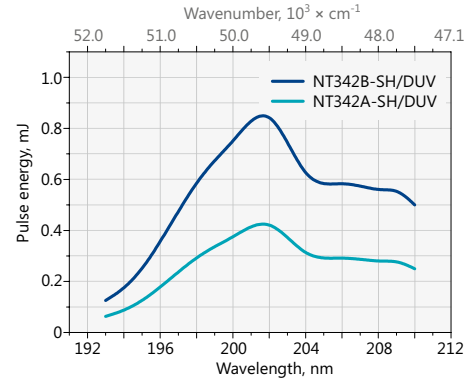


Fig 2. Typical output energy of the NT342 series tunable wavelength systems with SH/DUV extension

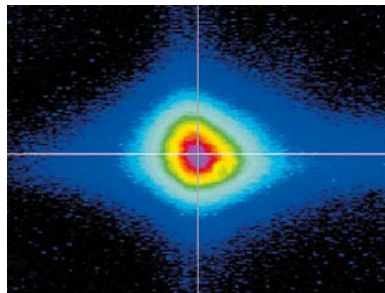


Fig 3. Typical far field beam profile of NT342 laser

**OUTLINE DRAWINGS**

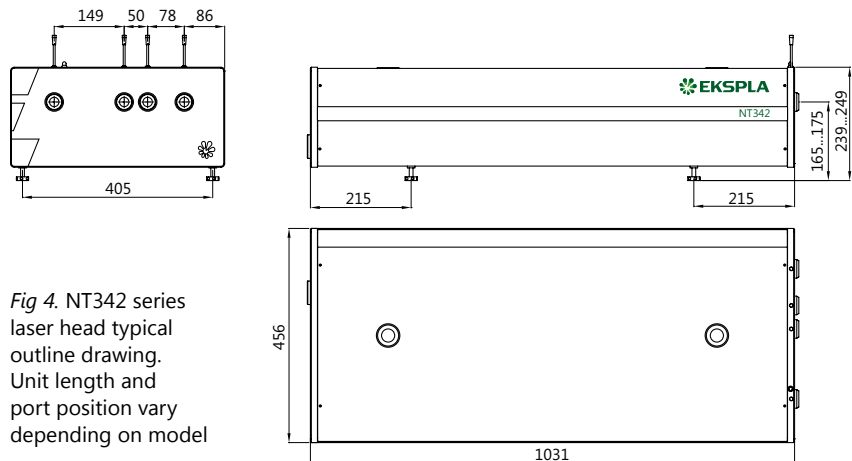


Fig 4. NT342 series laser head typical outline drawing. Unit length and port position vary depending on model

**ORDERING INFORMATION**

