

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.

NT342 has 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 **20 Hz** pulse repetition rate
- ▶ Remote control pad
- ▶ PC control via RS232 and LabVIEW™ drivers
- ▶ Optional separate shared output port for 532/1064 nm beam (separate output port for the 355 nm beam is standard)
- ▶ 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 210–410 nm range
-SF	Sum-frequency generator for 300–410 nm range with high pulse energy
-SH/SF	Combined option for highest pulse energy in 210–410 nm range
-DUV	Deep UV option for 192–210 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 harmonic (532 or 1064 nm wavelengths)
-AW	Air cooled power supply

SPECIFICATIONS ¹⁾

Model	NT342B	NT342C
OPO		
Wavelength range ²⁾		
Signal	410–710 nm ³⁾	
Idler	710–2600 nm	
SH generator (optional)	210–410 nm	
SH/SF generator (optional)	210–410 nm	
DUV generator (optional)	192–210 nm	
Output pulse energy		
OPO ⁴⁾	30 mJ	50 mJ
SH generator (optional) ⁵⁾	4 mJ	6.5 mJ
SH/SF generator (optional) ⁶⁾	6 mJ	10 mJ
DUV generator (optional) ⁷⁾	0.6 mJ	1 mJ
Linewidth	< 5 cm ⁻¹ ⁸⁾	
Tuning resolution ⁹⁾		
Signal (410–710 nm)	1 cm ⁻¹	
Idler (710–2600 nm)	1 cm ⁻¹	
SH/SF/DUV beam (192–410 nm)	2 cm ⁻¹	
Pulse duration ¹⁰⁾	3–5 ns	
Typical beam diameter ¹¹⁾	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	NT342B	NT342C
PUMP LASER ¹³⁾		
Pump wavelength	355 nm	
Max pump pulse energy	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	10 Hz
PHYSICAL CHARACTERISTICS		
Unit size (W × L × H) ¹⁴⁾	456 × 821 × 270 mm	
Power supply size (W × L × H)	330 × 490 × 585 mm	
Umbilical length	2.5 m	
OPERATING REQUIREMENTS		
Water consumption (max 20 °C) ¹⁵⁾	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 ¹⁶⁾	1.8 / 3.4 kVA	

¹⁾ 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.

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 – 410 nm range. See tuning curves for typical outputs at other wavelengths.

⁷⁾ Measured at 200 nm.

⁸⁾ In signal and idler range. Linewidth is 8 cm^{-1} for 210 – 410 nm range.

⁹⁾ When wavelength is controlled 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, SF and DUV.

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 1/e² 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⁾ Length from 821 to 1220 mm depending on configuration.

¹⁵⁾ At 10 Hz pulse repetition rate. Air cooled power supply is available.

¹⁶⁾ At 10/20 Hz pulse repetition rate.



PERFORMANCE

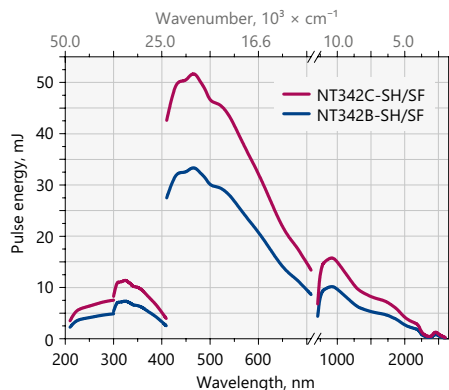


Fig 1. Typical output energy of the NT342 series tunable wavelength systems

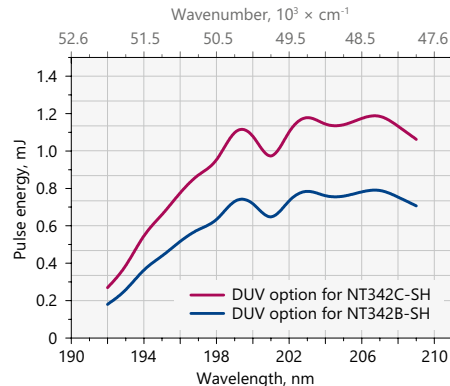


Fig 2. Typical output energy of the NT342 series tunable wavelength systems with SH/DUV extension

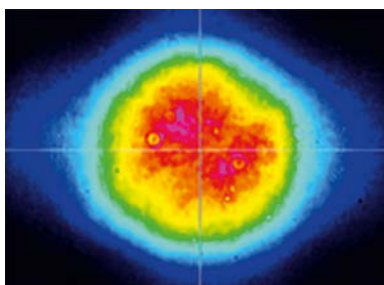


Fig 3. Typical far field beam profile of NT342 laser

OUTLINE DRAWINGS

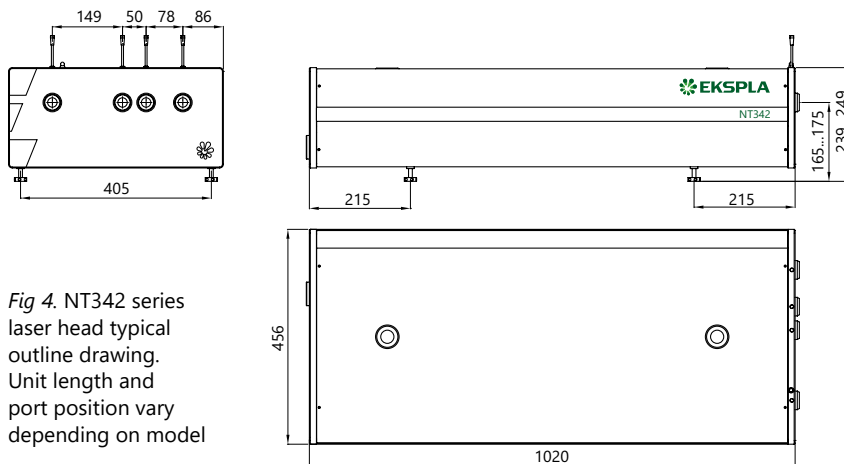


Fig 4. NT342 series laser head typical outline drawing. Unit length and port position vary depending on model

ORDERING INFORMATION

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.

NT342B-SH-10-AW-H/2H

