

NT340 SERIES

High Energy Tunable Wavelength Lasers



The NT340 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.

NT340 series available models

Model	Features
NT341x	Broad bandwidth models are based on type 1 BBO OPO
NT342x	Narrow bandwidth models are based on type 2 BBO OPO

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 225–409 nm range
-DUV	Deep UV option for 192–210 nm range

Accessories and other optional add-ons

Option	Features
-FC	Fiber coupled output in 350–700 nm range
-ATTN	Pulse energy attenuator
-H, -2H	Separate shared output port for Nd:YAG pump laser harmonics (532 or 1064 nm wavelengths)
-MPR	Simultaneous UV/VIS (210–709 nm) and IR (710–2600 nm) output
-AW	Air cooled power supply

SPECIFICATIONS ¹⁾

Model	NT341A	NT341B	NT342A	NT342B	NT342C
OPO					
Wavelength range ²⁾					
Signal	410–680 nm	410–680 nm	410–709 nm ³⁾	410–709 nm ³⁾	
Idler	740–2600 nm	740–2600 nm	710–2600 nm	710–2600 nm	
SH generator (optional)	–	–	210–409 nm	210–409 nm	
SH/SF generator (optional)	–	–	225–409 nm	225–409 nm	
DUV generator (optional)	–	–	192–210 nm	192–210 nm	
Output pulse energy					
OPO ⁴⁾	20 mJ	40 mJ	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	10–350 cm ⁻¹			<5 cm ⁻¹ ⁸⁾	
Wavelength set precision 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	4 mm	5 mm	7 mm
Typical beam divergence ¹²⁾	<6 mrad			<2 mrad	
Polarization					
Signal beam	horizontal				
Idler beam	horizontal			vertical	
SH/SF/DUV beam	–			vertical	

SPECIFICATIONS ¹⁾

Model	NT341A	NT341B	NT342A	NT342B	NT342C
PUMP LASER ¹³⁾					
Pump wavelength	355 nm				
Max pump pulse energy	70 mJ	135 mJ	70 mJ	135 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 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 not specifications. 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 300–409 nm range. See tuning curves for typical outputs at other wavelengths.

⁷⁾ Measured at 200 nm.

⁸⁾ Linewidth is <8 cm⁻¹ 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 ~1 cm⁻¹ in OPO range and ~2 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⁾ Version with DUV generator has dimensions of 452 × 1020 × 270 mm (W × L × H).

¹⁶⁾ At 10 Hz pulse repetition rate. Air cooled power supply is available.

¹⁷⁾ At 10/20 Hz pulse repetition rate.



PERFORMANCE

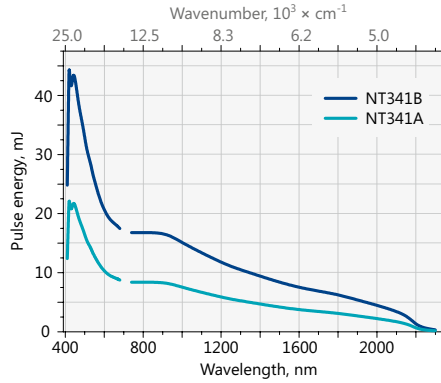


Fig 1. Typical output energy of the NT341 series tunable wavelength systems

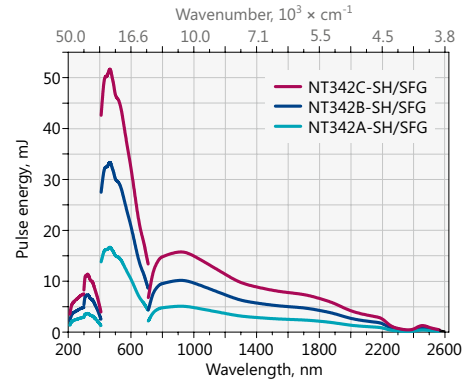


Fig 2. Typical output energy of the NT342 series tunable wavelength systems

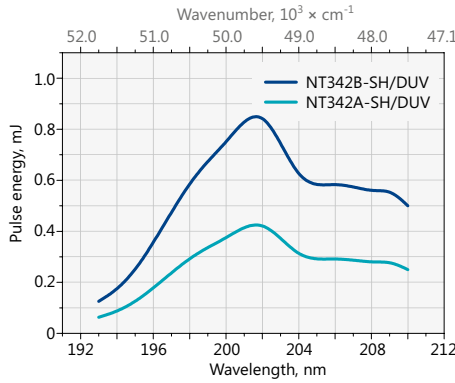


Fig 3. Typical output energy of the NT342 series tunable wavelength systems with SH/DUV extension

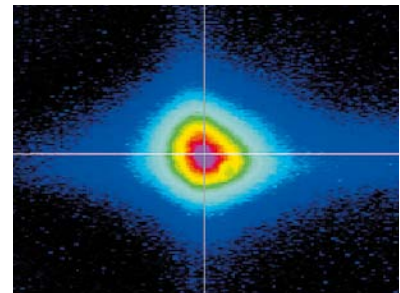


Fig 4. Typical far field beam profile of NT342 laser

OUTLINE DRAWINGS

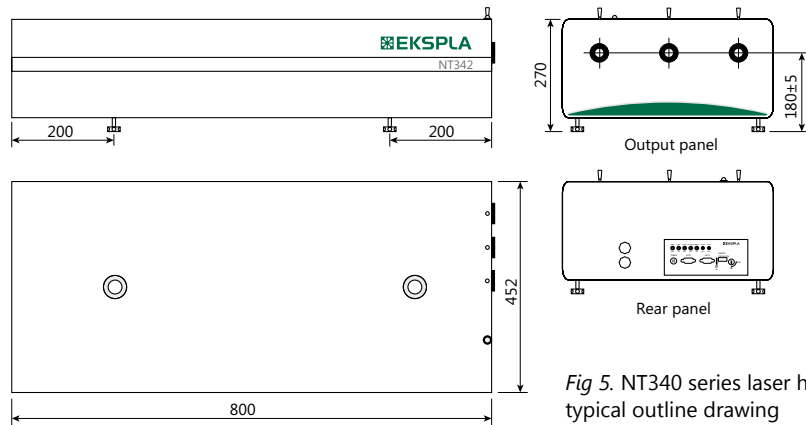


Fig 5. NT340 series laser head typical outline drawing

ORDERING INFORMATION

