

NT370 SERIES



NT370 series tunable laser seamlessly integrates in a compact housing the nanosecond optical parametric oscillator and Nd:YAG Q-switched laser. Pumped by fundamental harmonics output the lasers provides tuning in mid- and far-infrared spectral range.

NT373-XIR model uses IR crystal based cascade OPO for tunable output in 4400–18000 nm range. Customized tuning ranges are available by request. The linewidth of NT373-XIR model is nearly constant across tuning range and it is less than 8 cm⁻¹.

NT377 model produces tunable output in 2500–4400 nm range. Pulse energy is exceeding 10 mJ for wavelengths shorter than 3600 nm, while linewidth is below 10 cm⁻¹ for the wavelengths longer than 3000 nm. Because of narrow linewidth of output radiation (typically in 6–10 cm⁻¹ range) the laser is suitable for many infrared spectroscopic applications, for example cavity ring-down spectroscopy, gas detection and remote sensing.

The device is controlled from the remote keypad or from PC through RS232 interface using LabVIEW™ drivers that are supplied together with the system. The remote pad features a backlit display that is easy to read even while wearing laser safety glasses.

System is designed for easy and cost-effective maintenance. Replacement of flashlamps can be done without misalignment of the laser cavity and deterioration of laser performance. OPO pump energy monitoring system helps to increase lifetime of the optical components.

Accessories and optional add-ons

Option	Features
-AW	Water-air cooling option
-20	20 Hz PRR option
-H	Optional 1064 nm output

High Energy IR Range Tunable Lasers

FEATURES

- ▶ Hands-free, automated wavelength tuning
- ▶ Up to **15 mJ** pulse energy in **mid-IR** spectral range
- ▶ Less than **10 cm⁻¹** linewidth for most of the tuning range
- ▶ **3–5 ns** pulse duration
- ▶ **10 or 20 Hz** pulse repetition rate
- ▶ Remote control pad
- ▶ PC control via RS232 and LabView™ drivers
- ▶ Separate output port for 1064 nm pump beam
- ▶ OPO pump energy monitoring
- ▶ Replacement of the flashlamps is done without misalignment of the laser cavity

APPLICATIONS

- ▶ Infrared spectroscopy
- ▶ Cavity ring-down spectroscopy
- ▶ Remote sensing
- ▶ Material processing
- ▶ Non-linear spectroscopy
- ▶ Other laser spectroscopy applications

SPECIFICATIONS ¹⁾

Model	NT377	NT373-XIR
OPO		
Wavelength range	2 500–4 400 nm	5 500–18 000 nm ²⁾
Output pulse energy ³⁾	12.5 mJ	1 mJ
Linewidth ⁴⁾	< 10 cm ⁻¹	< 8 cm ⁻¹
Scanning step	1 nm	
Typical pulse duration ⁵⁾	3–5 ns	
Typical beam diameter ⁶⁾	6 mm	8 mm
Polarization	horizontal	
PUMP LASER ⁷⁾		
Pump wavelength	1064 nm	
Max pump pulse energy	300 mJ	
Pulse duration	4–6 ns	
Beam quality	"Hat-Top" in near field	
Beam divergence	< 0.5 mrad	
Pulse energy stability (StdDev)	< 1 %	
Pulse repetition rate	10 or 20 Hz	
PHYSICAL CHARACTERISTICS		
Unit size (W × L × H)	452 × 1020 × 270 mm	
Power supply size (W × L × H)	330 × 520 × 670 mm	
Umbilical length	2.5 m	
OPERATING REQUIREMENTS		
Water consumption (max 20 °C) ⁸⁾ ⁹⁾	10 l/min	
Room temperature	18–27 °C	
Relative humidity	20–80 % (non-condensing)	
Power requirements ¹⁰⁾	208 or 240 V AC, single phase, 50/60 Hz	
Power consumption ¹¹⁾	1.5 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 3000 nm for NT377 unit and at 7000 nm for NT373-XIR units.

²⁾ Please contact Ekspla for more detailed specifications.

³⁾ Output is specified at wavelengths defined in note 1. See tuning curves for typical outputs at other wavelengths.

⁴⁾ Linewidth is specified at wavelengths defined in note 1. See graph below for typical linewidth at other wavelengths.

⁵⁾ Estimate, assuming that pulse duration from OPO is by approx 1 ns shorter than one from pump laser.

⁶⁾ Beam diameter is measured at the FWHM level at the output aperture and can vary depending on the pump pulse energy.

⁷⁾ Laser output will be optimized for OPO operation and specification may vary with each unit we manufacture.

⁸⁾ Air cooled power supply is available as option.

⁹⁾ For 10 Hz PRR.

¹⁰⁾ Should be specified when ordering.



PERFORMANCE

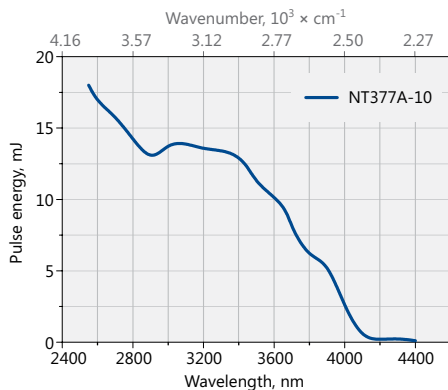


Fig 1. Typical output energy of the NT377A-10 tunable wavelength laser

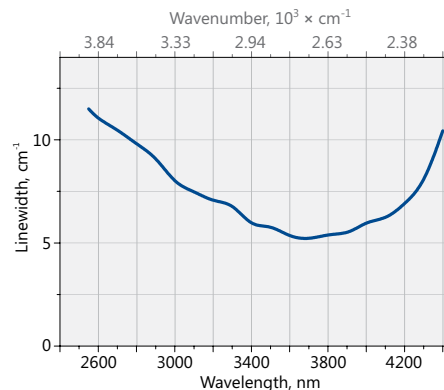


Fig 2. Typical linewidth of the NT377 tunable wavelength laser

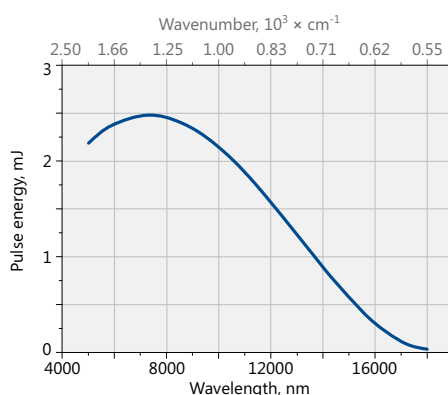


Fig 3. Typical output pulse energy of the NT373-XIR tunable wavelength laser