

NT270 SERIES

Tunable Wavelength NIR-MIR Range DPSS Lasers



BENEFITS

- ▶ Hands-free wavelength tuning – no need for physical intervention
- ▶ Wide (2500 – 4475 nm) tuning range is highly useful for s-SNOM and other IR applications
- ▶ NT270 is the cost effective solution covering a wide tuning range from a single source
- ▶ End pumping with diode technology ensures high reliability and lots of fired shots leading to low maintenance costs
- ▶ High integration level saves valuable space in the laboratory
- ▶ Air cooling eliminates the need for water, ensuring easy operation and simple installation or integration
- ▶ In-house design and manufacturing of complete systems, including pump lasers, guarantees on-time warranty and post warranty services and spares supply
- ▶ Variety of control interfaces: USB, RS232, LAN and WLAN ensures easy control and integration with other equipment

FEATURES

- ▶ Integrates DPSS pump laser and OPO into single housing
- ▶ Separate output ports for the pump laser and OPO beams
- ▶ OPO output wavelength range from 2500 nm to 4475 nm
- ▶ Narrow linewidth
- ▶ Hands-free, fast wavelength tuning*
- ▶ <7 ns pulse duration
- ▶ Remote control via key pad or PC

* Including automatic wavelength scan

APPLICATIONS

- ▶ Scanning Near-field Optical Microscopy (s-SNOM) microscopy
- ▶ Single molecule vibrational spectroscopy
- ▶ IR spectroscopy
- ▶ Gas spectroscopy

NT270 series tunable laser systems integrate into a single compact housing a nanosecond Optical Parametric Oscillator (OPO) and Diode-Pumped Solid-State (DPSS) Q-switched pump laser.

Diode pumping enables fast data acquisition at high pulse repetition rates up to 1 kHz while avoiding frequent flashlamp changes that are common when flashlamp pumped lasers are used.

The pump lasers do not require water for cooling, thus further reducing running and maintenance costs.

All lasers feature motorized tuning across the specified tuning range. The output wavelength can be set from control pad with backlit display that is easy to read even while wearing laser safety glasses. Alternatively, the laser can be controlled also from personal computer using supplied LabVIEW™ drivers.

High conversion efficiency, stable output, easy maintenance and compact size make our systems excellent choice for lots of applications.

SPECIFICATIONS ¹⁾

| Model | | NT277 |
|---|-------------------------------------|-------|
| OPO | | |
| Wavelength range ²⁾ | | |
| Idler | 2500–4475 nm | |
| Pulse energy ³⁾ | | |
| Idler | 80 μJ at 3000 nm | |
| Pulse duration ⁴⁾ | 5–7 ns | |
| Pulse repetition rate | 1000 Hz | |
| Linewidth ⁵⁾ | <10 cm ⁻¹ | |
| Tuning resolution ⁶⁾ | | |
| Idler | 1 cm ⁻¹ | |
| Polarization | vertical | |
| Typical beam diameter ^{7) 8)} | 4 mm | |
| PUMP LASER | | |
| Pump wavelength | 1064 nm | |
| Typical pump pulse energy ⁹⁾ | 1.9 mJ | |
| Pulse duration ¹⁰⁾ | <10 ns | |
| Beam quality | fit to Gaussian >90% | |
| Pulse energy stability (StdDev) | <0.5 % | |
| PHYSICAL CHARACTERISTICS | | |
| Unit size (W × L × H) | 305 × 701 × 270 mm | |
| Power supply size (W × L × H) | 449 × 376 × 140 mm | |
| Umbilical length | 2.5 m | |
| OPERATING REQUIREMENTS | | |
| Cooling | by air | |
| Room temperature | 18–27 °C | |
| Relative humidity | 20–80 % (non-condensing) | |
| Power requirements | 100–240 V AC, single phase 50/60 Hz | |
| Power consumption | < 0.5 kW | |
| Cleanliness of the room | not worse than ISO Class 9 | |

- 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 3000 nm and for basic system without options.
- ²⁾ Available wavelength range. Inquire for custom IR option with tuning up to 12 μm.
- ³⁾ See tuning curves for typical outputs at other wavelengths.
- ⁴⁾ Measured at FWHM level with photodiode featuring 1 ns rise time and 300 MHz bandwidth oscilloscope.
- ⁵⁾ Higher energy 10 – 150 cm⁻¹ option is available for 2500 – 4475 nm tuning range. Narrow linewidth (<10 cm⁻¹) operation mode is impossible with this option.

- ⁶⁾ For manual input from PC. When wavelength is controlled from keypad, tuning resolution is 1 nm.
- ⁷⁾ Measured at the wavelength indicated in the “Pulse energy” specification row.
- ⁸⁾ Beam diameter is measured at the 1/e² level at the laser output and varies depending on the wavelength.
- ⁹⁾ The pump laser pulse energy will be optimized for the best OPO performance. The actual pump laser output can vary with each unit we manufacture.
- ¹⁰⁾ Measured at FWHM level with photodiode featuring 1 ns rise time and 300 MHz bandwidth oscilloscope.



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.

PERFORMANCE

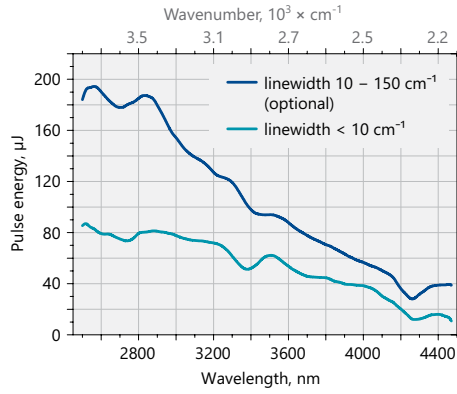


Fig 1. Typical output pulse energy of the NT277 and NT277-XIR tunable laser

OUTLINE DRAWINGS

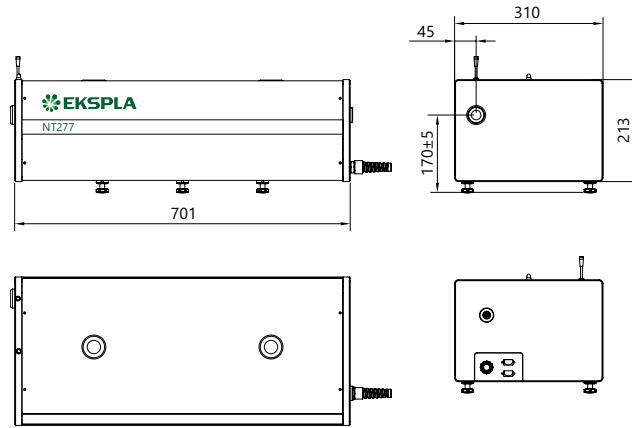


Fig 3. NT277 series laser head dimensions