

NT260 SERIES

Narrow Linewidth 10 kHz Tunable Lasers



FEATURES

- ▶ Hands-free no gap wavelength tuning in 210 – 2600 nm range
- ▶ High repetition rate 10 kHz
- ▶ Narrow linewidth down to 1.5 cm^{-1}
- ▶ Up to 0.7 W output
- ▶ Monolithic rugged frame
- ▶ Motorized output shutters
- ▶ Mixed Q-switched/ mode-locked operation
- ▶ Easy control via keypad or PC

BENEFITS

- ▶ Super reliable
- ▶ Wide tuning range 210 – 2600 nm without gaps
- ▶ Output peak in VIS range (useful for popular applications, like LIF)
- ▶ Hands-free wavelength tuning – no need for physical intervention

NT262 is a unique narrow linewidth 10 kHz OPO. Pioneering patented technology enables powerful up to 0.7 W output in 210 – 2600 nm wavelengths range while maintaining $< 3 \text{ cm}^{-1}$ (typically $< 2 \text{ cm}^{-1}$ at most wavelengths) linewidth that is highly beneficial for traditional and specific applications requiring narrow linewidth and high spectral brightness pulses. Thus, besides the most of popular applications, like fluorescence and pump-probe, the system is also suitable for such demanding applications where high resolution and narrow linewidth are required, like the calibration of detectors and spectroradiometers, metrology or gas

spectroscopy. High 10 kHz repetition rate and hands-free wavelength tuning makes easy and fast experiment data collection as never before. The system is highly stable, ensures excellent short and long-term energy and power stability, has smaller M^2 value if compared with traditional OPO systems.

In addition to superior specifications, the laser is highly reliable due to low generation threshold and easy running regime. The system fits into monolithic, rugged housing that ensure high reliability and low costs of maintenance.

APPLICATIONS

- ▶ Laser-induced fluorescence spectroscopy
- ▶ Photoacoustic microscopy
- ▶ Metrology & equipment calibration
- ▶ Pump-probe spectroscopy, photolysis
- ▶ Mass spectroscopy
- ▶ Environment monitoring, LIDAR

SPECIFICATIONS ¹⁾

Model	NT262
OPO	
Wavelength range ²⁾	
Signal	405 – 710 nm
Idler	710 – 2600 nm
SH/SF generator (optional)	210 – 405 nm
Output pulse energy/ average power	
OPO ³⁾	70 µJ / 700 mW
SH/SF generator (optional) ⁴⁾	6 µJ / 60 mW
Tuning resolution ⁵⁾	
Signal (405 – 710 nm)	0.5 cm ⁻¹
Idler (710 – 2600 nm)	1 cm ⁻¹
SH/SF (210 – 405 nm)	1 cm ⁻¹
Pulse and beam parameters	
Pulse duration ⁶⁾	~7 ns
Linewidth	<3 cm ⁻¹
Typical beam diameter ⁷⁾	4.5 mm × 2.5 mm
Beam pointing stability ⁸⁾	≤ 50 µrad StDev
Polarization	
Signal beam	Horizontal
Idler beam	Horizontal
SH/SF	Horizontal
PUMP LASER ⁹⁾	
Pump wavelength	355 nm
Typical pump pulse energy	0.3 mJ
Pulse duration	~7 ns
Beam quality	Near Gaussian in near and far fields
Beam divergence	< 1.5 mrad
Pulse energy stability (StdDev)	< 2.5 %
Pulse repetition rate	10 kHz
Nominal lifetime for pump diodes	20 000 hours
Typical warm-up time ¹⁰⁾	15 min
PHYSICAL CHARACTERISTICS	
Laser head size (W × L × H)	400 × 790 × 166 ± 3 mm
Power supply unit size (W × L × H)	553 × 510 × 529 ±3 mm
Umbilical length	3 m
OPERATING REQUIREMENTS	
Cooling ¹¹⁾	Built-in chiller
Clean air purge	Built-in
Room temperature	18 – 27 °C
Ambient temperature stability	±2°C
Relative humidity	20 – 80 % (non-condensing)
Power requirements	100 – 240 VAC, single phase 50/60 Hz
Power consumption	<1 kW
Cleanliness of the room	Not worse than ISO Class 9

Options

Option	Features
-SH/SF	Tuning range extension in 210 – 405 nm range by combining second harmonics and sum-frequency generator outputs for maximum possible pulse energy
-H	1064 nm output via separate port

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 210 nm to 2600 nm. Wavelengths values at margins are rounded.

³⁾ Measured at 450 nm. See tuning curves for typical outputs at other wavelengths.

⁴⁾ Measured at 230 nm. See tuning curves for typical outputs at other wavelengths.

⁵⁾ For manual input from PC.

⁶⁾ FWHM measured with photodiode featuring 1 ns rise time and 300 MHz bandwidth oscilloscope.

⁷⁾ Beam diameter is measured at 450 nm at the 1/e² level and can vary depending on the pump pulse energy.

⁸⁾ Beam pointing stability is evaluated as movement of the beam centroid in the focal plane of a focusing element.

⁹⁾ Laser output will be optimized for OPO operation and specifications may vary with each unit we manufacture.

¹⁰⁾ Starting from 22 °C.

¹¹⁾ Air cooled. Water cooled under request.

Note: The laser and auxiliary units must be settled in such a place void of dust and aerosols. It is advisable to operate the laser in air conditioned room, provided that the laser is placed at a distance from air conditioning outlets. The laser should be positioned on a solid and flat worktable in horizontal position. Access from one side should be ensured. Intensive sources of vibration should be avoided near the laboratory (ex. railway station or similar).



PERFORMANCE

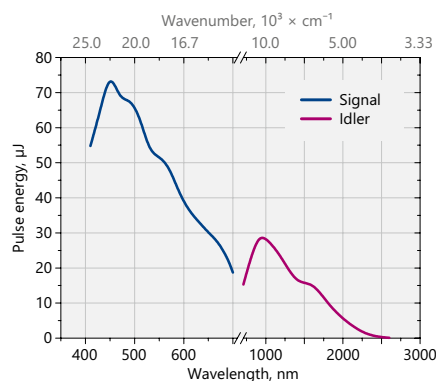


Fig 1. Typical (smoothed) NT262 laser tuning curves in signal (405 – 710 nm), idler (710 – 2600 nm) ranges

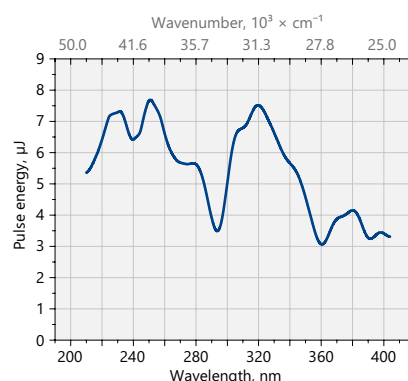


Fig 2. Typical (smoothed) NT262 laser output with -SH/SF option (210 – 405 nm) range

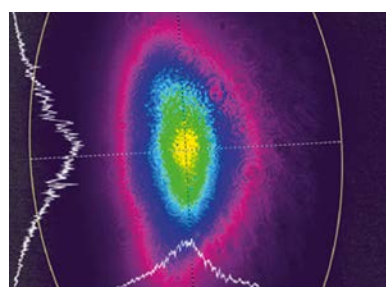


Fig 3. NT262 series laser beam profile at 450 nm in near field

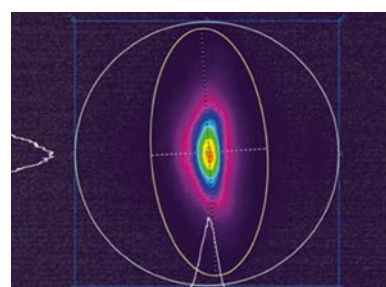


Fig 4. NT262 series laser beam profile at 450 nm in far field

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.

NT262-SH/SF-H

Model

Options:

H → extra 1064 nm output

Optional tuning range extension:

SH/SF → 210–405 nm

PHOTO TECHNICA www.phototechnica.co.jp
フォトテクニカ株式会社
 〒336-0017 埼玉県さいたま市南区南浦和 1-2-17
 TEL:048-871-0067 FAX:048-871-0068
 e-mail:voc@phototechnica.co.jp