**NT230 series**

**NANosecond Laser**

**Features**
- Integrates DPSS pump laser and OPO into a single housing
- Hands-free no-gap wavelength tuning from 192 to 2600 nm
- High, up to 15 mJ pulse energy from OPO
- 100 Hz pulse repetition rate
- More than 1.8 mJ output pulse energy in UV
- Less than 5 cm⁻¹ linewidth
- 2–5 ns pulse duration
- Auto-calibration
- Electromechanical output shutters
- Integrated energy meter
- Transportation handles
- 355 nm & 1064 nm laser outputs
- Remote control via key pad or PC
- Optional separate output port for 532/1064 nm beam

**Applications**
- Laser-induced fluorescence
- Flash photolysis
- Photobiology
- Remote sensing
- Metrology
- Non-linear spectroscopy

**Benefits**
- The system is widely tunable: 192–2600 nm and delivers high pulse energy (up to 15 mJ) which allows investigation of an extensive range of materials
- High repetition rate (up to 100 Hz) and output power enable fast data collection and intensive excitation of materials
- Narrow linewidth (down to 3 cm⁻¹) and superior tuning resolution (1–2 cm⁻¹) allow recording of high quality spectra
- High integration level saves valuable space in the laboratory
- Diode pumping reduces maintenance frequency
- Auto-calibration makes easy operation and maintenance
- Integrated energy meter verifies energy data readings
- Automatic electromechanical output shutters ensure high level of safety
- User-friendly extendable shutters handle easy transportation and repositioning of laser
- 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
- Attenuator and fiber coupling options facilitate incorporation of NT230 systems into various experimental environments
- NT230 series lasers deliver high up to 10 mJ energy pulses at 100 Hz pulse repetition rate, tunable over a broad spectral range. Integrated into a single compact housing, the diode pumped Q-switched Nd:YAG laser and Optical Parametric Oscillator (OPO) offers hands-free, no-gap tuning from 192 to 2600 nm. With its 100 Hz repetition rate, the NT230 series laser establishes itself as a versatile tool for many laboratory applications, as laser induced fluorescence, flash photolysis, photobiology, metrology, remote sensing, etc.

Due to the innovative diode-pumped design, NT230 series lasers feature maintenance-free laser operation for an extended period of time and improved stability (compared with flash-lamp pumped counterparts).

NT230 series systems can be controlled from a remote control pad or a computer using supplied LabVIEW™ drivers. The control pad allows easy control of all parameters and features on a backlit system display that is easy to read even with laser safety eyewear.
# Nanosecond Tunable Lasers

## Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>NT230-50</th>
<th>NT230-100</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OPO</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wavelength range</td>
<td>405–710 nm</td>
<td>710–2600 nm</td>
</tr>
<tr>
<td><strong>SH and SF</strong></td>
<td>210–405 nm</td>
<td>192–210 nm</td>
</tr>
<tr>
<td><strong>DUV</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pulse energy</td>
<td>15 mJ</td>
<td>10 mJ</td>
</tr>
<tr>
<td><strong>SH and SF</strong></td>
<td>1.8 mJ</td>
<td>1.3 mJ</td>
</tr>
<tr>
<td><strong>DUV</strong></td>
<td>0.25 mJ</td>
<td>0.15 mJ</td>
</tr>
<tr>
<td>Pulse repetition rate</td>
<td>50 Hz</td>
<td>100 Hz</td>
</tr>
<tr>
<td>Pulse duration</td>
<td>2–5 ns</td>
<td></td>
</tr>
<tr>
<td>Linewidth</td>
<td>&lt;5 cm⁻¹</td>
<td></td>
</tr>
<tr>
<td>Tuning resolution</td>
<td>1 cm⁻¹</td>
<td>2 cm⁻¹</td>
</tr>
<tr>
<td><strong>PUMP LASER</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pump wavelength</td>
<td>355 nm</td>
<td></td>
</tr>
<tr>
<td>Typical pump pulse energy</td>
<td>50 mJ</td>
<td>35 mJ</td>
</tr>
<tr>
<td>Pulse duration</td>
<td>2–5 ns</td>
<td></td>
</tr>
</tbody>
</table>

## Operating Requirements

- **Cooling**: external chiller
- **Room temperature**: 18–27 °C
- **Relative humidity**: 20–80 % (non-condensing)
- **Power requirements**: 100–240 V AC, single phase, 50/60 Hz
- **Power consumption**: <1.8 kW
- **Cleanliness of the room**: not worse than ISO Class 9

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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 and for basic system without options.
2. Separate -SH and -SF options are available.
3. See tuning curves for typical outputs at other wavelengths.
4. Measured at 260 nm wavelength.
5. FWHM measured with photodiode featuring 1 ns rise time and 300 MHz bandwidth oscilloscope.
6. Linewidth is <8 cm⁻¹ for 210–405 nm range.
7. 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.
8. Full angle measured at the FWHM level at 450 nm.
9. Beam diameter is measured at 450 nm at the 1/e² level and can vary depending on the pump pulse energy.
10. Separate output port for the 3rd harmonic beam is standard. Output ports for other harmonics are optional.
11. The pump laser pulse energy will be optimized for best OPO performance and can vary with each unit we manufacture.
## Accessories and optional items

<table>
<thead>
<tr>
<th>Option</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>-SH</td>
<td>Tuning range extension in UV range (210–405 nm) by second harmonic generation</td>
</tr>
<tr>
<td>-SF</td>
<td>Tuning range extension in 300–405 nm range by sum-frequency generation</td>
</tr>
<tr>
<td>-SH/SF</td>
<td>Tuning range extension in 210–405 nm range by combining second harmonic and sum-frequency generator outputs for maximum possible pulse energy</td>
</tr>
<tr>
<td>-DUV</td>
<td>Deep UV option for 192 – 210 nm range output</td>
</tr>
<tr>
<td>-2H</td>
<td>532 nm output</td>
</tr>
<tr>
<td>-FC</td>
<td>Fiber coupled output in 300–2000 nm range</td>
</tr>
<tr>
<td>-ATTN</td>
<td>Attenuator</td>
</tr>
<tr>
<td>-SCU</td>
<td>Spectral filtering accessory for improved spectral purity of pulses</td>
</tr>
</tbody>
</table>

## PERFORMANCE

![Near field](Fig 1. Typical beam profiles of NT230 series lasers at 450 nm)

![Far field](Fig 2. Typical output pulse energy of NT230 laser)

![Fig 3. Typical output pulse energy of NT230 laser with SH/SF extension](Fig 4. Typical output pulse energy of NT230 laser with DUV extension)
### 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.

**NT230-50-SH-H-2H-SCU**

<table>
<thead>
<tr>
<th>Model</th>
<th>Options:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>H → extra 1064 nm output</td>
</tr>
<tr>
<td></td>
<td>2H → extra 532 nm output</td>
</tr>
<tr>
<td></td>
<td>SCU → spectral filtering accessory</td>
</tr>
</tbody>
</table>

Optional tuning range extension:

- SH → 210–405 nm
- SF → 300–405 nm
- SH/SF → 210–405 nm
- DUV → 192–210 nm

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**Fig 5.** NT230 series laser head dimensions (without options)

**Fig 6.** For easier transportation laser features integrated carrying handles, which can be hidden inside, when not in need.