The main feature of NL740 series is the output of ultra-stable tunable duration (2 – 10 ns) narrow bandwidth nanosecond pulses based on temporally driven CW diode laser seeder and amplification stages. Start of the system is the single mode DFB laser with temporal output power modulator. Such front-end ensures reliable generation of SLM mode that is highly beneficial for formation of low temporal modulation ultra-stable pulses. Then light is amplified in diode pumped regenerative amplifier in order to reach energy sufficient to amplify in diode pumped amplifiers. Power amplifier is a chain of double pass amplifiers where pulse is amplified up to 100 mJ energy at 100 Hz repetition rate. Before amplification spatial beam shaping is employed in order to get flat top shape at the output. The harmonic generators are based on angle tuned nonlinear crystals placed in a heater. All diode pumped design ensures reliable operation of system at high repetition rates as well as simple and convenient maintenance.
NANOSECOND LASERS

SPECIFICATIONS 1)

<table>
<thead>
<tr>
<th>Model</th>
<th>Pulse energy (for 5 ns pulse 2)</th>
<th>Pulse energy stability (StdDev) 3</th>
<th>Power drift 4</th>
<th>Pulse duration 5</th>
<th>Repetition rate</th>
<th>Polarization at 1064 nm</th>
<th>Optical pulse jitter 6</th>
<th>Linewidth</th>
<th>Beam profile</th>
<th>Typical beam diameter 7</th>
<th>Beam divergence 8</th>
<th>Beam pointing stability (StdDev) 9</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>at 1064 nm 2 mJ</td>
<td>at 1064 nm &lt; 0.5 %</td>
<td>± 2 %</td>
<td>3 – 10 ns</td>
<td>100 Hz</td>
<td>vertical, &gt; 98 %</td>
<td>&lt; 150 ps</td>
<td>&lt; 0.1 cm⁻¹</td>
<td>Gaussian</td>
<td>~2 mm</td>
<td>1.0 mrad</td>
<td>&lt; 30 µrad</td>
</tr>
<tr>
<td></td>
<td>at 532 nm NA</td>
<td>at 532 nm &lt; 1.0 %</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Top-Hat</td>
<td>~5 mm</td>
<td>0.7 mrad</td>
<td></td>
</tr>
<tr>
<td></td>
<td>at 355 nm NA</td>
<td>at 355 nm &lt; 1.5 %</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>without</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>diffraction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>rings</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PHYSICAL CHARACTERISTICS

Laser head (W × L × H) 456 × 1031 × 249 mm
Power supply unit (W × L × H) 85 × 170 × 41 mm
Umbilical length 2.5 m (other length on request)

OPERATING REQUIREMENTS

Cooling air-cooled
Ambient temperature stabilized; from range 18 – 25 °C
Relative humidity 20 – 80 % (non-condensing)
Power requirements 9) 100 – 240 V AC, single phase 50/60 Hz
Power consumption < 200 W < 1.5 kW

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 1064 nm and for basic system without options.
2) Harmonic outputs are not simultaneous; only single wavelength beam is present at the output at once. Manual reconfiguration is required to switch wavelength.
3) Standard deviation value averaged from pulses, emitted during 30 sec time interval after 20 minutes of warm-up.
4) Deviation from average value measured over 8 hours of operation when room temperature variation is less than ±2 °C.
5) FWHM. Measured with photodiode with 100 ps rise time and oscilloscope with 600 MHz bandwidth.
6) Standard deviation value, measured with respect to triggering pulse.
7) Beam diameter is measured at 1064 nm at laser output at the 1/e² level.
8) Full angle measured at the 1/e² level at 1064 nm.
9) Mains voltage should be specified when ordering.

PERFORMANCE

Note: Laser must be connected to the mains electricity all the time. If there will be no mains electricity for longer that 1 hour then laser (system) needs warm up for a few hours before switching on.

1) NL740 Series
2) FWHM. Measured with photodiode with 100 ps rise time and oscilloscope with 600 MHz bandwidth.
3) Standard deviation value, measured with respect to triggering pulse.
4) Beam diameter is measured at 1064 nm at laser output at the 1/e² level.
5) Full angle measured at the 1/e² level at 1064 nm.
6) Mains voltage should be specified when ordering.