Sol  1064 nm

Compact Q-Switched DPSS Laser
Sol 1064 nm Platform – Main Features

Three available models: 4W - 10W - 20W @ 1064 nm
3 output powers for different Customer's needs

Complete Interchangeability:

- Same mechanical footprint: 235 x 105 x 96 mm$^3$
  Dimensions and fixing are the same for all Sol models

- Same I/O interface
  IO Connector (DB25) and driving signals compatible for all Sol models

- Same DC Supply Input
  All Sol models are 24 V DC powered (MAX power consumption 250W)
Sol 1064 nm Platform – Main Features

Rugged design for industrial environment

Permanently aligned, no optical fiber or RF cables, sealed and protected, no access to internal parts

Forced Air cooling with Thermostatic fan

Constant case temperature for better laser performances, more efficient heat dissipation, noise reduction

Beam Expander and Red Aiming Beam

Beam Expander and Aiming Beam already integrated in the unit for a better compactness
Sol 10W and 20W – Key features

Active Q-Switched DPSS laser

Electronic Pulse Energy Modulation resulting in:

- Variable shot time for special applications
- First Pulse Suppression (FPS)
- Automatic (and/or Gated) First Pulse Killing (FPK)
  - Pulse Amplitude Modulation for FPS or Grey Levels
- Optimized Laser Pulse Forming at every Rep-rate

Single Shot to 200 kHz extended frequency range
Sol 10W and 20W - Applications

- Material processing
- Metal / Plastic Marking
- Scribing
- Thin film removal
- Micro-machining
- Nonlinear optics
## Sol 10W and 20W

<table>
<thead>
<tr>
<th>Models</th>
<th>Sol 10 W 1064 nm</th>
<th>Sol 20 W 1064 nm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output power</td>
<td>&gt; 10 W</td>
<td>&gt; 20 W</td>
</tr>
<tr>
<td>Rep. Rate Range</td>
<td>10 to 100 kHz</td>
<td>(optional Single Shot to 200 kHz)</td>
</tr>
<tr>
<td>Laser Pulse Duration</td>
<td>6 to 60 ns</td>
<td></td>
</tr>
<tr>
<td>Pulse Energy</td>
<td>0.5 mJ</td>
<td>0.9 mJ</td>
</tr>
<tr>
<td>Peak Power</td>
<td>50 kW</td>
<td>140 kW</td>
</tr>
<tr>
<td>$M^2$</td>
<td>&lt; 2</td>
<td></td>
</tr>
<tr>
<td>Beam diameter (with BEX)</td>
<td>&lt; 8 mm</td>
<td></td>
</tr>
<tr>
<td>Polarization</td>
<td>Linear 100 : 1</td>
<td>(optional circular polarization)</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>&lt; 200 W</td>
<td>&lt; 250 W</td>
</tr>
<tr>
<td>Weight</td>
<td>4.5 kg</td>
<td></td>
</tr>
<tr>
<td>Cooling</td>
<td>Forced air cooling (120 CFM – 200 m³ / h)</td>
<td></td>
</tr>
</tbody>
</table>
Sol 10W Performances Curves

**Sol 10 W: Pulse Energy**

Energy [mJ] vs Repetition rate [kHz]

**Sol 10 W: Pulse Width**

Pulse width [ns] vs Repetition rate [kHz]

**Sol 10 W: Average Power**

Average power [W] vs Repetition rate [kHz]

**Sol 10 W: Peak Power**

Peak power [kW] vs Repetition rate [kHz]
Sol 20W Performances Curves

Sol 20 W: Pulse Energy

Sol 20 W: Pulse Width

Sol 20 W: Average Power

Sol 20 W: Peak Power
Sol 4 W – Key features

Easy to integrate and to use:

Power Level & Laser Gate signals only

Output Power > 4 W

Extremely cost-effective
# Sol 4W

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model</strong></td>
<td>Sol 4 W 1064 nm</td>
</tr>
<tr>
<td><strong>Output power</strong></td>
<td>&gt; 4 W</td>
</tr>
<tr>
<td><strong>Rep. Rate Range</strong></td>
<td>5 to 25 kHz</td>
</tr>
<tr>
<td><strong>Laser Pulse Duration</strong></td>
<td>60 to 90 ns</td>
</tr>
<tr>
<td><strong>Pulse Energy</strong></td>
<td>0.2 mJ</td>
</tr>
<tr>
<td><strong>Peak Power</strong></td>
<td>3 kW</td>
</tr>
<tr>
<td><strong>M²</strong></td>
<td>&lt; 1.5</td>
</tr>
<tr>
<td><strong>Beam diameter (with BEX)</strong></td>
<td>&lt; 8 mm</td>
</tr>
<tr>
<td><strong>Polarization</strong></td>
<td>Linear 100 : 1 (optional circular polarization)</td>
</tr>
<tr>
<td><strong>Power Consumption</strong></td>
<td>&lt; 150 W</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>4.5 kg</td>
</tr>
<tr>
<td><strong>Cooling</strong></td>
<td>Forced air cooling (90 CFM – 150 m³/h)</td>
</tr>
</tbody>
</table>
Sol 4W Performances Curves

**Ext. Level vs Pulse Width**

![Graph of Ext. Level vs Pulse Width]

**Ext. Level vs Average Power**

![Graph of Ext. Level vs Average Power]

**Ext. Level vs Rep. Rate**

![Graph of Ext. Level vs Rep. Rate]

**Ext. Level vs Peak Power**

![Graph of Ext. Level vs Peak Power]
Sol 4 W - Applications

- Material processing

- Metal / Plastic Marking

- Scribing

- Engraving
Sol Platform – Options

Red Aiming Beam:
- already integrated for Sol 10W and Sol 20W
- 2 mW @635nm
- TTL driving signal present on IO interface

External Beam Expanders:
- customized external BEX for different output diameters available on request

Monitoring Photodiode:
- constant diode power checking
- monitor signal present on IO interface
Sol Platform – Options

Mechanical Shutter:
- external mechanical shutter module
- TTL driving signal present on IO interface

- AC DC Power Supply:
  - external 24 V AC-DC power supply available only on request

- Extended Frequency Range:
  - from Single Shot to 200 kHz
  - only for Sol 10 W and Sol 20 W

- Water Cooled Version
Sol Platform – Warranty & Service

Warranty:
- 2-years full warranty (standard)
- 1-year warranty extension at …. TBD
- Back-up unit availability...TBD

Service and maintenance:
- periodical cleaning of fan and heatsink
- periodical check of laser output window

Spare part for on-field replacement:
- red aiming beam
- fan
- external beam expander
- external mechanical shutter
Sol Platform – Future Developments

- Sol 30 W 1064 nm in the same footprint (Release June 2012)

- Sol 5 W and 10 W @ 532 nm (Release June 2012)

- Sol 2 W @ 355 nm (Release August 2012)