**Cobolt 04-01 Series**

Powerful single frequency CW diode pumped lasers

- CW power up to 400 mW in a perfect beam
- Ultra-robust, hermetically sealed packages
- True fiber pigtailed option
- Low noise, <0.25 % rms
- 457 nm, 473 nm, 491 nm, 515 nm, 532 nm, 561 nm, 594 nm, 660 nm, and 1064 nm
- 24 months warranty, unlimited hours

The Cobolt 04-01 Series lasers are continuous-wave diode-pumped laser (DPL) devices operating at a fixed wavelength between 457 nm and 1064 nm. The lasers are built using proprietary HTCure™ manufacturing technology for ultra-robustness in a compact hermetically sealed package which has been shown to withstand 6G mechanical shocks in operation as well as extreme storage temperature shocks (-30 to +100 degC) without any sign of degraded performance.

The lasers emit a very high quality laser beam with stable characteristics over a wide range of operating conditions. Single frequency operation provides a narrow spectral bandwidth and long coherence length. The lasers are designed and manufactured to ensure a high level of reliability.

The Cobolt 04-01 Series lasers are intended for stand-alone use in laboratory environments or for integration as an OEM component in instruments for applications including fluorescence microscopy, flow cytometry, DNA sequencing, HCA, Raman spectroscopy, interferometry, holography and particle analysis.
**Cobalt 04-01 Series**

**Data Sheet** - D0344-C - October 2016

**Options & Accessories**

- Customized controller cable
- Permanent SM/PM fiber pigtailing*
- Modulated DPSSL with Integrated AOM *
- Mount for external fiber coupling
- Two lasers in one with Dual Line Combiner
- Integrated optical isolator *
- Laser head heatsink

*Not available for all wavelength and power combinations, see www.cobolt.se for more information

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### Cobolt 04-01 Series

<table>
<thead>
<tr>
<th>Wavelength (nm)</th>
<th>Twist™</th>
<th>Blues™</th>
<th>Calypso™</th>
<th>Fandango™</th>
<th>Samba™</th>
<th>Jive™</th>
<th>Mambo™</th>
<th>Flamenco™</th>
<th>Rumba™</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wavelength (nm)</td>
<td>457.0 ± 0.3</td>
<td>473.0 ± 0.3</td>
<td>491.5 ± 0.3</td>
<td>514.4 ± 0.3</td>
<td>532.1 ± 0.3</td>
<td>561.2 ± 0.3</td>
<td>593.6 ± 0.3</td>
<td>659.6 ± 0.3</td>
<td>1064.2 ± 0.6</td>
</tr>
</tbody>
</table>

#### Available Power Levels (mW)

<table>
<thead>
<tr>
<th></th>
<th>25</th>
<th>50</th>
<th>25</th>
<th>50</th>
<th>25</th>
<th>50</th>
<th>100</th>
<th>150</th>
<th>25</th>
<th>50</th>
<th>100</th>
<th>150</th>
<th>200</th>
<th>500</th>
<th>1000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>25</td>
<td>50</td>
<td>25</td>
<td>50</td>
<td>25</td>
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<td>100</td>
<td>150</td>
<td>25</td>
<td>50</td>
<td>100</td>
<td>150</td>
<td>200</td>
<td>500</td>
<td>1000</td>
</tr>
</tbody>
</table>

#### Noise, 20 Hz - 20 MHz (pk-pk)

- < 2%, typical < 1.5%
- < 2%, typical < 1.5%
- < 2%, typical < 1.5%
- < 2%, typical < 1.5%
- < 2%, typical < 1.5%
- < 2%, typical < 1.5%
- < 2%, typical < 1.5%
- < 2%, typical < 1.5%

#### Noise, 20 Hz - 20 MHz (rms)

- < 0.25%, typical < 0.15%
- < 0.25%, typical < 0.15%
- < 0.25%, typical < 0.15%
- < 0.25%, typical < 0.15%
- < 0.25%, typical < 0.15%
- < 0.25%, typical < 0.15%
- < 0.25%, typical < 0.15%
- < 0.25%, typical < 0.15%

#### Long-term power stability (8 hrs ± 3°C)

- < 3%< 3%
- < 3%< 3%
- < 3%< 3%
- < 3%< 3%

#### Beam divergence (full angle, mrad)

- < 1.2< 1.2< 1.3< 1.5< 1.6

#### Spatial mode (TEM00)

- M² < 1.1M² < 1.2

#### Beam diameter at aperture (µm)

- 700 ± 501000 ± 50

#### Spectral linewidth (FWHM)

- < 1 MHz

#### Wavelength stability (after warm-up)

- 2 pm over ± 2 °C and 8 hrs

#### Beam pointing stability (over 10-40°C)

- < 10 µrad / °C, typical 5 µrad / °C

#### Polarization ratio (linear, vertical)

- > 100:1

#### Total system power consumption

- < 35 W, typical < 15 W

#### Operating temperature

- 10-40°C

#### Maximum laser head baseplate temp.

- 50 °C

#### Heat sink thermal resistance

- 0.6 K/W or 0.4 K/W *
- 0.4 K/W

#### Laser head dimensions

<table>
<thead>
<tr>
<th>(mm)</th>
<th>(inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>102 x 60 x 40</td>
<td>4.0 x 2.4 x 1.6</td>
</tr>
</tbody>
</table>

#### Controller dimensions

<table>
<thead>
<tr>
<th>(mm)</th>
<th>(inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>190 x 72 x 28</td>
<td>7.6 x 2.9 x 1.1</td>
</tr>
</tbody>
</table>

#### Communication

- RS-232 or USB

#### Model number structure

<table>
<thead>
<tr>
<th>Model number structure</th>
<th>CDRH/CE (key-switch for on/off)</th>
<th>OEM (auto-start mode)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS-232 Controller</td>
<td>wave-04-xy-pwr-500</td>
<td>wave-04-xy-pwr-600</td>
</tr>
<tr>
<td>USB Controller</td>
<td>wave-04-xy-pwr-700</td>
<td>wave-04-xy-pwr-800</td>
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</table>

#### Warranty

- 24 months

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**For Twist™, Samba™ and Mambo™ models of Jive™, Flamenco™, and Rumba™ models**
Mechanical Specifications

Cobolt 04-01 Laser head dimensions

Electrical Interface

<table>
<thead>
<tr>
<th>Interfaces</th>
<th>Connector</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input power</td>
<td>Kycon KPJX-45, 4-pin</td>
<td>Power supply to Controller</td>
</tr>
<tr>
<td>Laser Head to Controller</td>
<td>HD-sub 26-pin, male</td>
<td>Connection to Laser Head</td>
</tr>
<tr>
<td>Controller to Laser Head</td>
<td>HD-sub 26-pin, female</td>
<td>Connection to Controller</td>
</tr>
<tr>
<td>Data port</td>
<td>USB-type mini B</td>
<td>Control and monitoring via control commands</td>
</tr>
<tr>
<td>Remote interlock &amp; Analog signals</td>
<td>Molex 90130-3206</td>
<td>Analog input 5 – 12 V =&gt; Laser ON</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Analog input &lt;2.7 V =&gt; Laser OFF</td>
</tr>
<tr>
<td>Warm-up time</td>
<td></td>
<td>2 min</td>
</tr>
</tbody>
</table>

Controller dimensions