Sealed CO$_2$ Laser

Coherent's Diamond Cx-10 Series sealed CO$_2$ lasers are the best power–size ratio available in the market. Built on the highly acclaimed C-series platform, the Cx-10 utilizes a new state-of-the-art integrated RF power supply and a sealed waveguide design. This easy-to-integrate laser system enables high quality laser processing with low maintenance and operating cost. With its superior power stability and fast pulse fall times, the Cx-10 is the optimal choice for high volume laser marking, engraving and cutting applications.

The Cx-10 laser provides a rated output power of 120W designed for high reliability and easy serviceability. The liquid cooled modular platform provides cost effective optimization of operating wavelength from 9.3 µm to 10.6 µm enabling rapid adaptability to changing applications and market needs. The Cx-10 is completely compatible with the rest of the C-series lasers.

The C-Series and Cx-10 Series offer superior beam quality and power stability in a compact, flexible package. The Cx-10 Series CO$_2$ lasers deliver exceptional value, performance and reliability.

FEATURES

- 120W CO$_2$ Laser
- Compact design with the highest power/volume ratio in its class
- Superior beam quality, power stability and reliability
- Field serviceable modular design
- Available in four wavelengths: 9.3 µm, 9.6 µm, 10.2 µm and 10.6 µm

APPLICATIONS

- High volume marking, cutting, and engraving
- Film cutting and processing
- Process wide range of materials from acrylics, cardboard, ceramics, glass, polymer films, leather, paper, textiles, wood and PCBs.
# Diamond Cx-10 Series Datasheet

## Specifications

<table>
<thead>
<tr>
<th></th>
<th>Cx-10L 10.6</th>
<th>Cx-10L 10.2</th>
<th>Cx-10L 9.6</th>
<th>Cx-10L 9.3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Wavelength (µm)</strong></td>
<td>10.6 ± 0.03</td>
<td>10.2 ± 0.05</td>
<td>9.6 ± 0.05</td>
<td>9.3 ± 0.05</td>
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<tr>
<td><strong>CW Rated Power</strong></td>
<td>≥120</td>
<td>≥100</td>
<td>≥80</td>
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<tr>
<td><strong>Typical Output Power</strong></td>
<td>&gt;135</td>
<td></td>
<td>&gt;100</td>
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<tr>
<td><strong>Power/Volume</strong></td>
<td>≥15.23</td>
<td>≥12.69</td>
<td>≥10.16</td>
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<tr>
<td><strong>Cold Start Power Stability</strong></td>
<td>±4</td>
<td></td>
<td></td>
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<tr>
<td><strong>Power Stability</strong></td>
<td>±2</td>
<td></td>
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<tr>
<td><strong>Typical Pulse Fall Time</strong></td>
<td>≤60</td>
<td></td>
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<tr>
<td><strong>Beam Quality (M²)</strong></td>
<td>≤1.2</td>
<td></td>
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<tr>
<td><strong>Beam Diameter (mm)</strong></td>
<td>1.8 ± 0.2</td>
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<tr>
<td><strong>Beam Divergence (mrad)</strong> (full angle)</td>
<td>≤8.0</td>
<td></td>
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<tr>
<td><strong>Beam Ellipticity</strong></td>
<td>≥0.83, ≤1.2</td>
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<tr>
<td><strong>Pointing Stability</strong></td>
<td>±5/&lt;250</td>
<td></td>
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<tr>
<td><strong>Polarization</strong></td>
<td>Linear Horizontal ≥100:1</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Operating Frequency and Duty Cycle</strong></td>
<td>0 to 100 kHz, 2% to 100% DC</td>
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</table>

## Configuration & Facility Requirements

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<table>
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<tbody>
<tr>
<td><strong>Weight (kg)</strong></td>
<td>14.5 kg (32 lbs.)</td>
</tr>
<tr>
<td><strong>Dimensions (L x W x H)</strong></td>
<td>563 x 132 x 106 mm (22.2 x 5.2 x 4.2 in)</td>
</tr>
<tr>
<td><strong>Input Power</strong></td>
<td>48 VDC, 38A</td>
</tr>
<tr>
<td><strong>Heat Dissipation (W)</strong></td>
<td>≤1700</td>
</tr>
<tr>
<td><strong>Maximum Case Temperature</strong></td>
<td>&lt;60°C (140°F)</td>
</tr>
<tr>
<td><strong>Operating Environment</strong></td>
<td></td>
</tr>
<tr>
<td>Temperature</td>
<td>5 to 45°C (41 to 113°F)</td>
</tr>
<tr>
<td>Altitude</td>
<td>≤2000 m (6500 ft)</td>
</tr>
<tr>
<td>Humidity</td>
<td>Non-Condensing ≤95%</td>
</tr>
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</table>

## Shipping/Storage Environment

-10°C - +60°C (14 - 140°F), Non-condensing

**Coolant**

- Distilled water with 25-35% Dow Frost*
- Coolant Flow Rate: ≥5.7 l/min. (1.5 gpm)
- Maximum Coolant Pressure: 827 kPa (120 psig)
- Max. Pressure Differential (at 1.5 gpm): ≤206 kPa (30 psig)
- Coolant Temperature: 15°C - 30°C (59 - 86°F)

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1. Power measured at 25°C and derated by 1%/°C for higher laser head temperature.
2. Power/volume defined as (CW rated power in mW)/(L*W*H in cm³).
3. Power stability based on ±(P max - P min)/(2*P max) measured from cold start for 5 minutes at 25 kHz 99% DC.
4. Power stability based on ±(P max - P min)/(2*P max) measured for 10 minutes at 25 kHz 99% DC.
5. 10% and 90% of peak power fall points measured at 1.5 kHz PRF, 350 µs pulse width, after 5 minutes.

*Dow Frost is a trademark of the Dow Chemical Company.*
MECHANICAL SPECIFICATIONS

Laser Head

Front View

Top View

Side View

Bottom View

Rear View

Beam Output

Ground Connection

DC Input Control Connector

Coolant Outlet

Coolant Inlet

20X M4X0.7-6H
8.9 mm (0.35 in.) Max.

20X M8X1.0-6H
9.5 mm (0.37 in.) Max.

20X M6X1.0-6H
104.3 mm (4.11 in.)

117.0 mm (4.61 in.)

104.3 mm (4.11 in.)

117.0 mm (4.61 in.)

4X M6X1.0-6H
9.5 mm (0.37 in.) Max.

4X M8X1.0-6H
6.3 mm (0.25 in.)

69.4 mm (2.73 in.)

7.2 mm (0.28 in.)

29.2 mm (1.15 in.)

106.6 mm (4.20 in.)

153.3 mm (5.21 in.)

132.3 mm (5.21 in.)

42.5 mm (1.67 in.)

582.5 mm (22.15 in.)

583.6 mm (22.98 in.)

40.0 mm (1.57 in.)

17.9 mm (0.70 in.)

12.5 mm (0.49 in.)

463.5 mm (18.25 in.)

476.0 mm (18.74 in.)

474.0 mm (18.66 in.)

118.0 mm (4.65 in.)

476.0 mm (18.74 in.)

474.0 mm (18.66 in.)

118.0 mm (4.65 in.)

All specifications subject to change without notice. Coherent, Inc. warrants to the original purchaser for a period of two years from the date of delivery that the Diamond J-3 Series product is free from defects in material and workmanship. The warranty does not apply to any unit damaged by accident, abuse or operation in a manner inconsistent with the procedures and specifications outlined in the manual supplied with the laser.