

DIAMOND Cx-10 Series

Sealed CO₂ Laser

Coherent's DIAMOND Cx-10 Series sealed CO₂ lasers enable high quality marking, engraving, and cutting, while also offering low maintenance and operating costs. In addition, the lasers offer the best power-size ratio available, and are designed for high reliability and easy serviceability. The modular design allows a lower cost field replacement of the laser head assembly or RF Module assembly.

Superior processing results are possible because DIAMOND Cx-10 Series lasers combine excellent beam quality with exceptional power stability and fast pulse fall times. Together, these factors maximize process efficiency, and minimize the heat affected zone (HAZ). Plus, a variety of wavelengths, from 9.3 μm to 10.6 μm , allow laser output to be optimally matched to specific material absorption characteristics.

FEATURES & BENEFITS

- 120 W CO₂ laser
- Compact design with the highest power/volume ratio in its class
- Superior beam quality, power stability, and reliability
- Available in four wavelengths: 9.3 μm , 9.6 μm , 10.2 μm , and 10.6 μm
- Field-serviceable modular design
- Global logistics ensure delivery of replacement parts within 48 h in most geographies

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



SPECIFICATIONS	Cx-10L 10.6 μm	Cx-10L 10.2 μm	Cx-10L 9.6 μm	Cx-10L 9.3 μm
Wavelength (μm)	10.6 \pm 0.03	10.2 \pm 0.05	9.6 \pm 0.05	9.3 \pm 0.05
CW Rated Power ¹ (W)	\geq 120	\geq 100	\geq 80	
Typical Output Power ¹ (W)	$>$ 135		\geq 100	
Power/Volume ² (mW/cm ³)	\geq 15.23	\geq 12.69	\geq 10.16	
Cold Start Power Stability ³ (%)	\pm 4			
Power Stability ⁴ (%)	\pm 2			
Typical Pulse Fall Time ⁵ (μsec)	\leq 60			
Beam Quality (M^2)	\leq 1.2			
Beam Diameter (mm)	1.8 \pm 0.2			
Beam Divergence (mrad) (full angle)	\leq 8.0			
Beam Ellipticity	\geq 0.83, \leq 1.2			
Pointing Stability (% divergence/actual μrad)	\pm 5/ $<$ 250			
Polarization ⁶	Linear Horizontal \geq 100:1			
Operating Frequency and Duty Cycle	0 to 100 kHz, 2% to 100% DC			
CONFIGURATION AND FACILITY REQUIREMENTS				
Weight (kg)	14.5 kg (32 lbs)			
Dimensions (L x W x H)	563 x 132 x 106 mm (22.2 x 5.2 x 4.2 in.)			
Input Power	48 VDC, 38A			
Heat Dissipation (W)	\leq 1700			
Maximum Case Temperature	$<$ 60°C (140°F)			
Operating Environment				
Temperature	5°C to 45°C (41 to 113 °F)			
Altitude	\leq 2000 m (6500 ft)			
Humidity	Non-condensing \leq 95%			
Shipping/Storage Environment	-10°C to +60°C (14 to 140°F), Non-condensing			
Coolant	Distilled water with 25 to 35% Dow Frost*			
Coolant Flow Rate	\geq 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 to 30°C (59 to 86°F)			

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 $\pm(P_{\text{max}}-P_{\text{min}})/(2*P_{\text{max}})$ measured from cold start for 5 minutes at 25 kHz 99% DC.

⁴ Power stability based on $\pm(P_{\text{max}}-P_{\text{min}})/(2*P_{\text{max}})$ 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.

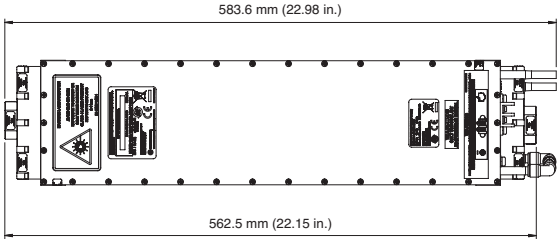
⁶ Refer to Mechanical Specifications for beam polarization orientation.

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

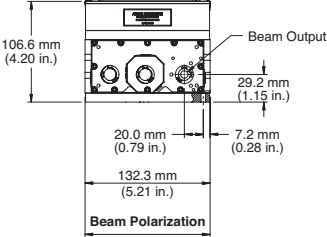
MECHANICAL SPECIFICATIONS

DIAMOND Cx-10

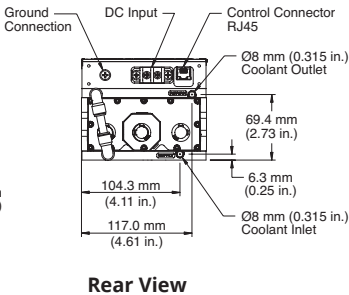
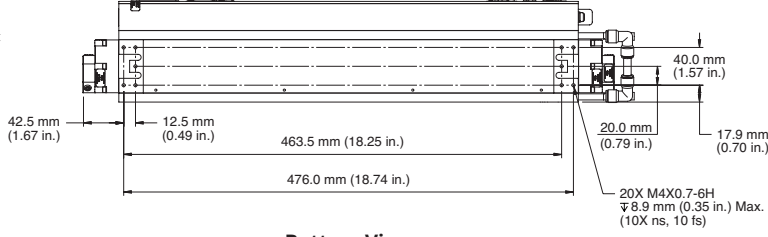
Top View



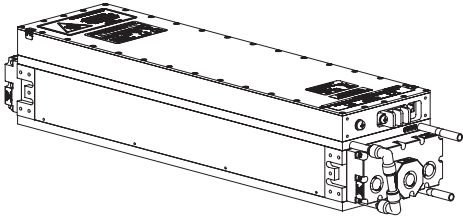
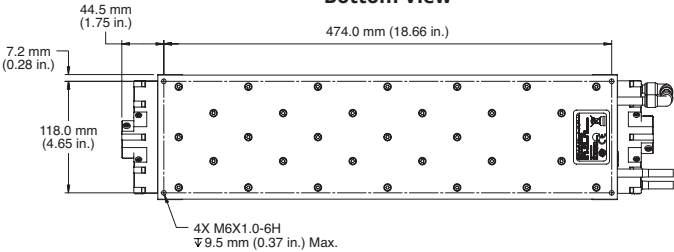
Front View



Side View



Bottom View



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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 Cx-10 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. The DIAMOND Cx-10 CO₂ laser is a component that does not include all safety features as required by the FDA and the Center for Devices and Radiological Health (CDRH). It is sold solely to qualified manufacturers who in their end product will supply all interlocks and indicators, and will comply fully with CDRH regulations and/or local regulatory agencies. MC-001-17-0M1119Rev.B Copyright ©2019 Coherent, Inc.