

DIAMOND C-55 Series

Low Power CO₂ OEM Lasers for Marking and Engraving Applications

The Coherent C-55 CO₂ laser provides 55 Watts of power with best-in-class reliability and package size, making it the OEM laser of choice for high volume laser marking and engraving systems. This production-ready, easy-to-integrate laser system enables high quality laser marking with low maintenance and operating costs. The C-55 is ideal for laser processing of many materials, including paper, plastics, wood, rubber, leather, cloth and more.

The C-55 is part of the Coherent C-Series family of products which offer a full range of power levels – from 20W to 70W. Based on a sealed waveguide and integrated RF power supply design, the C-55 boasts outstanding production-proven reliability, while delivering superior beam quality and power stability in a compact, flexible and integrated package. The modular platform design provides cost-effective optimization of operating wavelength (from 9.3 to 10.6 μm) and cooling configuration (air/liquid), enabling rapid adaptability to changing applications and market needs.



Superior Reliability & Performance

DIAMOND C-55 Series Features:

- Superior beam quality, power stability and reliability
- Industry leading compact size with integrated RF power supply
- Versatile power range and frequency control (CW or PWM)
- High quality laser processing on a wide range of materials
- Available in multiple wavelengths (9.3 μm to 10.6 μm) and cooling configurations (air or liquid)

DIAMOND C-55 Series Applications:

- Marking
- Engraving
- Cutting

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System Specifications¹

	C-55A (9.3 μm)	C-55A	C-55L (9.3 μm)	C-55L
Wavelength (μm)	9.24 to 9.35	10.55 to 10.63	9.24 to 9.35	10.55 to 10.63
Optical Output Power ¹ (W)	40	55	40	55
Power Stability ² (%)	±5		±3	
Mode Quality (M ²)	<1.2			
Beam Size (mm)	1.8 ±0.2			
Beam Divergence (mrad, full angle)	7.5 ±0.5			
Polarization	>100 to 1 (fixed linear, parallel to width dimension)			
Operating Frequency and Duty Cycle	0 to 25 kHz, 0 to 100% DC			

Configuration and Facility Requirements

Weight	10.0 kg (22.0 lbs.)	9.5 kg (21.0 lbs.)
Dimensions (L x W x H)	538 x 92.5 x 154.5 mm (21.2 x 3.64 x 6.08 in.)	579.6 x 92.5 x 104.1 mm (22.82 x 3.64 x 4.1 in.) ³
Input Power ⁴	48 VDC, 20A	
Cooling	Air	Liquid
Heat Dissipation (W)	<1200	
Maximum Case Temperature	<60°C (140°F)	
Operating Environment		
Temperature	5 to 40°C (41 to 113°F)	
Altitude	<2000 m (6500 ft.)	
Humidity	Non-condensing	
Shipping/Storage Environment	-10 to 60°C (14 to 140°F), non-condensing	
Coolant	Distilled water with 25 to 35% Dow Frost*	
Coolant Flow Rate	>3.8 lpm (1.0 gpm)	
Maximum Coolant Pressure	7 kg/cm ² (100 psig)	
Max. Pressure Differential (at 1.0 gpm)	3.2 bar (46 psig)	
Coolant Temperature	15 to 30°C (59 to 86°F)	

¹ Power measured at 25°C and derated by 1%/C for higher laser head temperatures.

² Power stability based on $\pm(P_{max} - P_{min}) / (2 * P_{max})$ average power measurement at constant duty cycle after 10-minute warm-up at operating condition.

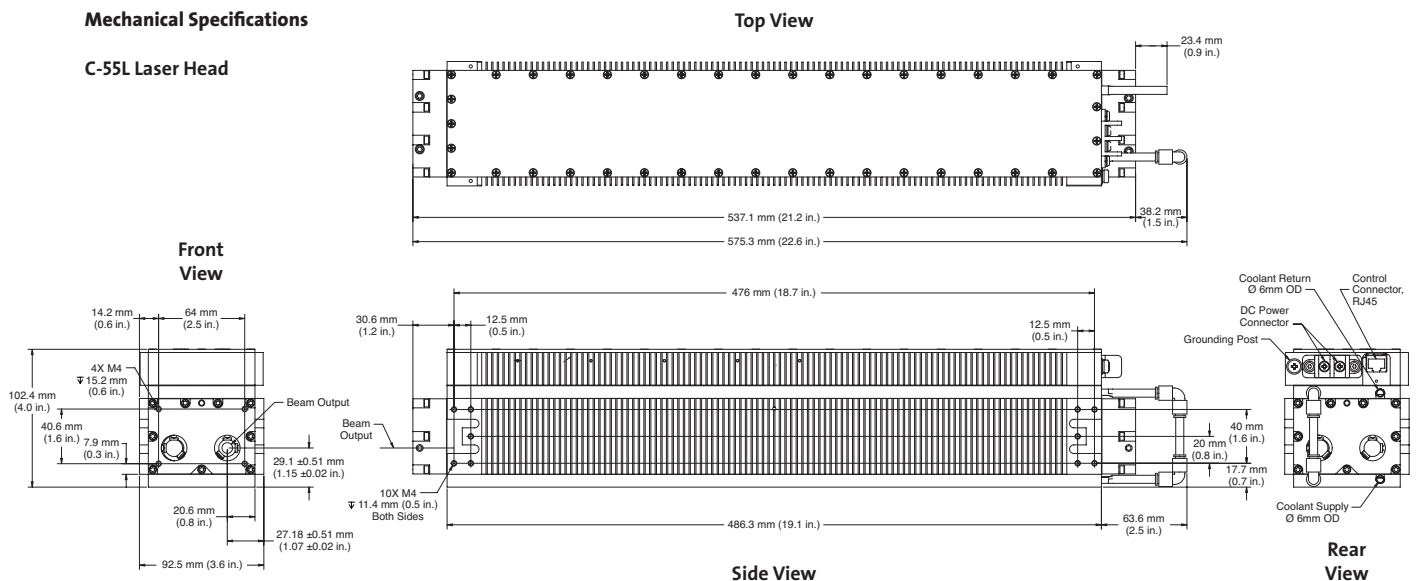
³ The overall height dimension is taller for the Dual Chillplate version of this item.

⁴ Optional fans add 1A.

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

Mechanical Specifications

C-55L Laser Head

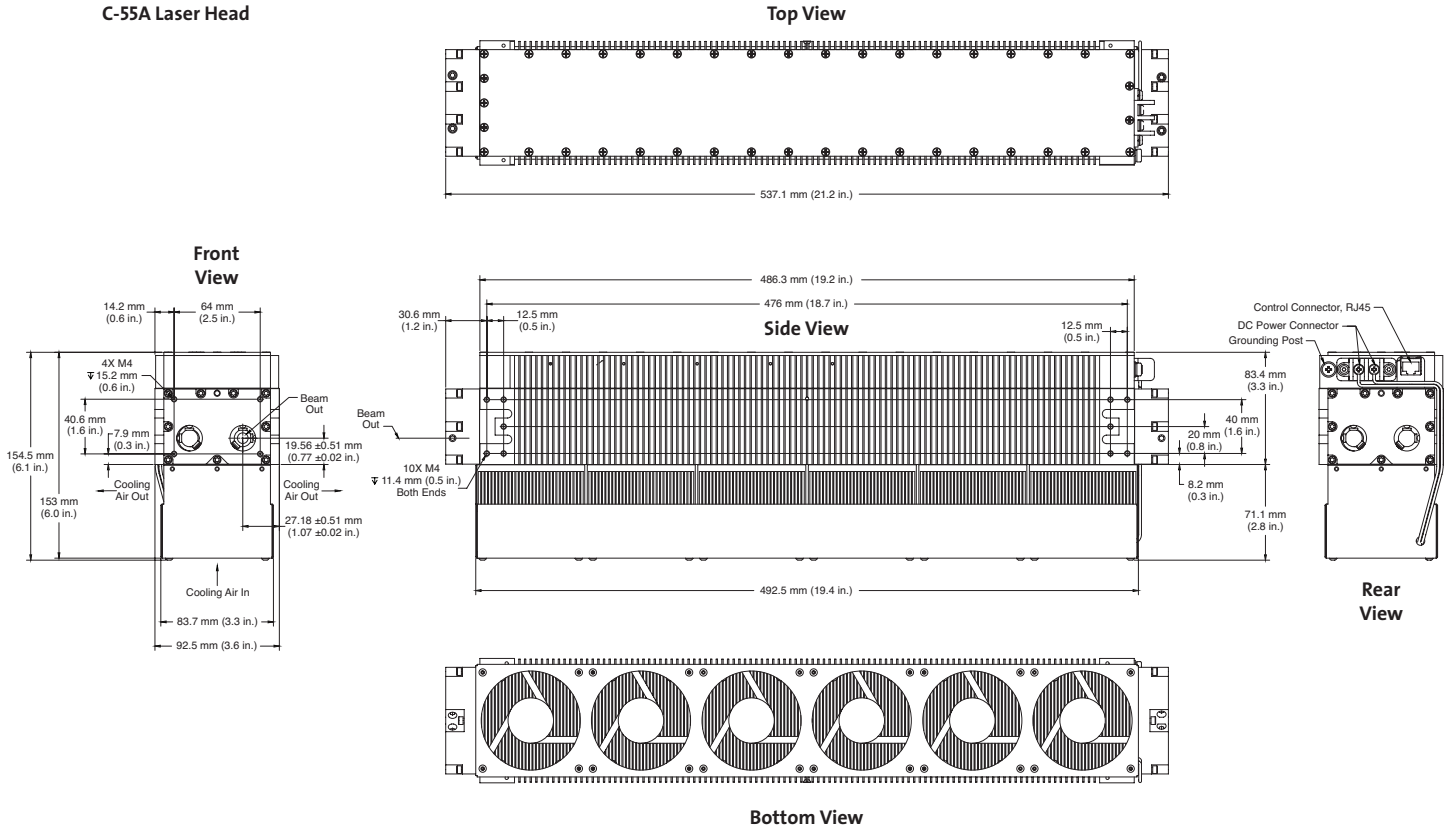


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Mechanical Specifications

C-55A Laser Head



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Coherent, Inc. guarantees that the output power of the C-55 Series will exceed the rated power for a period of 24 months, independent of the actual operating time. Coherent, Inc. also warrants to the original purchaser for a period of 24 months from the date of delivery that the C-55 Series 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 C-55 Series is a laser 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.

