COHERENT

NAMSON®
PASSION FOR INNOVATION
ISO 9001:2008 CERTIFIED

DIAMOND J-5 Series

RF-Excited OEM Industrial CO_2 Laser

Coherent DIAMOND J-5 Series are fully sealed, pulsed CO_2 lasers offering average power greater than 400 Watts in a fully integrated and compact package. The unique pulsing characteristics derived from its slab discharge design enable the J-5 Series laser to reach peak powers well in excess of 1 kW in contrast to CW modulated lasers. The J-5 Series lasers are available at both 10.6 µm and 9.4 µm and can be operated with pulse repetition rates up to 200 kHz with fast pulse rise and fall times. This combination of wavelength selection, high peak power and fast rise and fall time times, together with power on demand and excellent beam quality makes the J-Series an ideal laser for a wide range of materials processing applications.

The J-5 Series is part of the J-Series family spanning a power range from 150W to greater than 400W. The J-Series family is built on a common platform with common mechanical and electrical interfaces, common optical interfaces, common software and a common service and support strategy. All J-Series lasers offer proactive maintenance capability enabled by the integrated yet field replaceable RF power supply design and overall systems monitoring using Coherent's field proven full suite of on-board diagnostics.

Superior Reliability & Performance

DIAMOND J-5 Series Features:

- **Wide operating power range**
- **High peak power**
- **Pulse frequency from single-shot to 200 kHz**
- **Fast rise-and-fall time**
- **Outstanding beam quality**
- **Excellent power stability**
- **Low-cost OEM configuration**
- **Integrated but removable RF power supply**
- **Compact design**
- **Equipped with on-board internet-accessible diagnostics**

DIAMOND J-5 Series Applications:

- **Converting**
- **Drilling**
- **Cutting**
- **Scribing**
- **Engraving**
- **Marking**

www.Coherent.com/DIAMONDJ-5Series

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System Specifications[1]	J-5-9.4	J-5-10.6
Wavelength (µm)	9.36 ±0.4	10.6 ±0.4
Output Power[2] (W)	≥350	≥400
Power Range[3] (W)	35 to 350	40 to 400
Nominal Peak Power[4] (W)	≥1700	≥1300
Power Stability[2,5] (%)	±6	
Mode Quality (M^2)	<1.2	
Beam Waist Diameter[6,7] at $1/e^2$ (mm)	7.0 ±1.0	8.5 ±1.0
Full-Angle Beam Divergence[7] (mrad)	≤2.4	≤2.0
Polarization (parallel to baseplate)	Linear ≥100:1	
Beam Ellipticity[6,7]	≥0.83, ≤1.2	
Pulse Frequency (kHz)	Single-shot to 200	
RF Excitation Pulse Width Range (µsec)	2 to 800	
Duty Cycle Limit (%)	≤40	
Fall Time[4] (µs)	≤40	
Weight	58 kg (127 lbs.)	
Dimensions (L x W x H)	1225 x 198.1 x 227.6 mm (48.23 x 7.8 x 8.96 in.)	

Electrical Power Requirements

DC Input Voltage (VDC)	48 ±1.0%
Continuous DC Current[8] (A)	≤150
Peak Current (A)	≤200 for ≤6 ms

Coolant

Heat Load (kW)	≤7.5
Dynamic Coolant Flow Rate (l/min.)	≥9.5
Coolant Setpoint Temperature Range	21 to 25°C (69.8 to 77°F)
Coolant Temperature Stability (max.)	±1.0°C (±1.8°F)
Coolant[9]	Anti-corrosion treated water
Coolant Differential Pressure[10] (kPa)	241 (35 psi) at 9.5 l/min. (2.5 gpm)
Coolant Maximum Static Pressure (kPa)	827 (120 psi)

Environmental Conditions

Ambient Temperature	5 to 45°C (41 to 113°F)
Relative Humidity[11] (non-condensing)(%)	≤95
Altitude	≤2000 m (≤6500 ft.)

1 All specifications apply when the product is operated in accordance with the guidelines defined in the operators manual.
2 Measured at 10 kHz PRF, 40% duty cycle.
3 Output stability specification may not be met at lowest power or at acoustic resonances.
4 Measured for a 100 µs pulse width at 1 kHz repetition frequency.
5 Measured as $\pm(P_{max} - P_{min})/2P_{max}$.
6 Measured at waist location ~1.0 m from the laser output.
7 Measured at 10 kHz PRF, 18% duty cycle.
8 At 10 kHz PRF, maximum duty cycle operation.
9 See manual for details.
10 This differential pressure is from system input to output and does not include the pressure drop from chiller fittings and the supply and return hose.
11 Do not operate at or below dew point.

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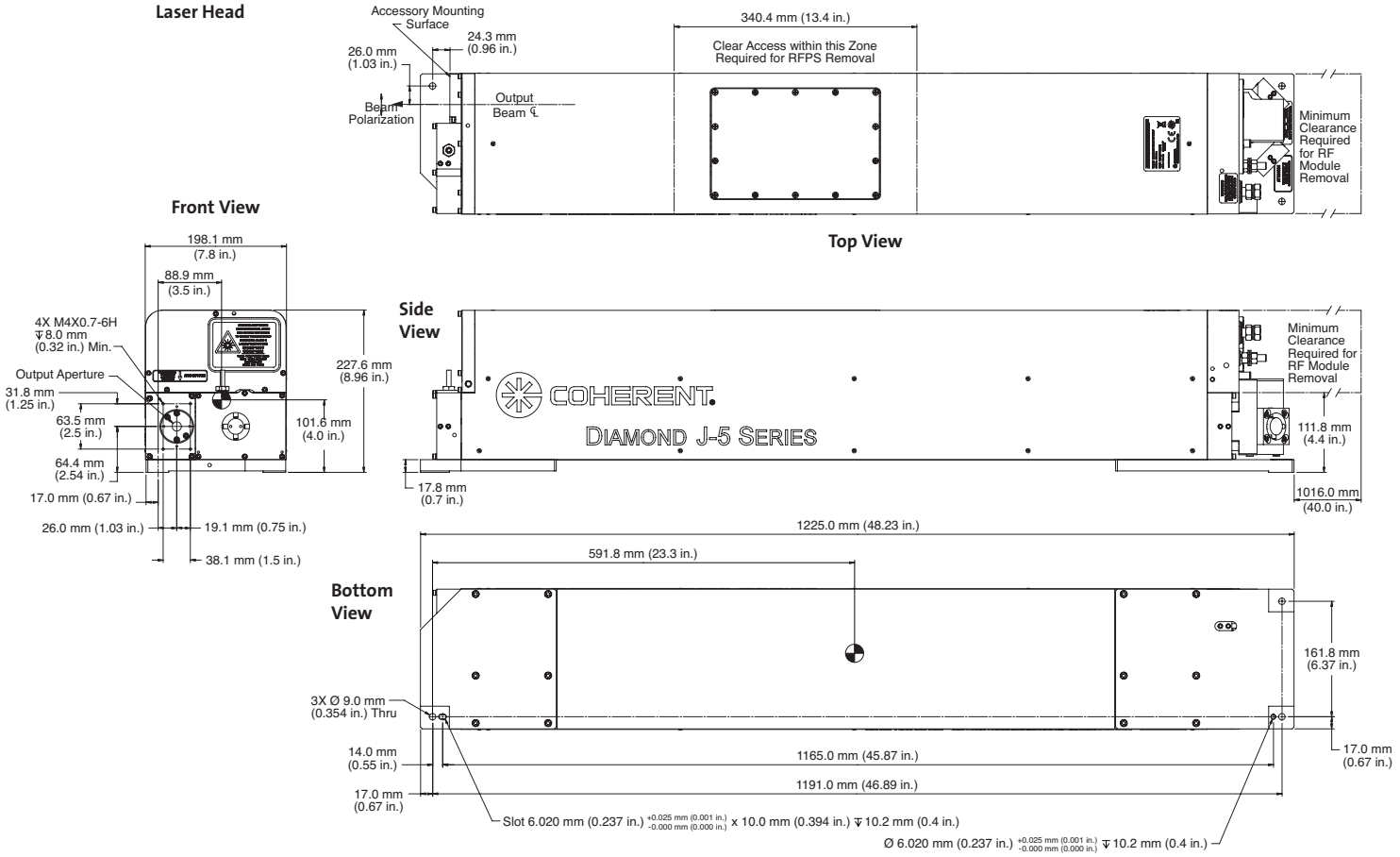
Mechanical Specifications

Laser Head



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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 J-5 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.

The DIAMOND J-5 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.