

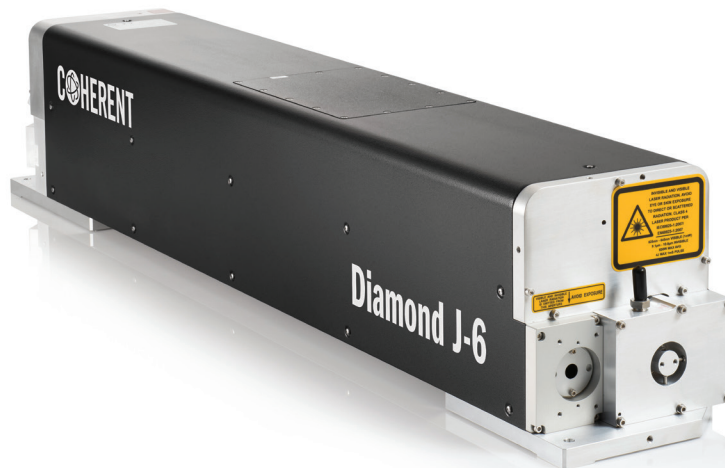
Diamond J-6

RF Excited OEM Industrial CO₂ Laser

The Coherent Diamond J-6 is a fully sealed, pulsed CO₂ laser offering average power greater than 500 Watts in a fully integrated and compact package. The unique pulsing characteristics derived from its slab discharge design enable the J-6 laser to deliver optimized pulsed and quasi-CW performance in contrast to regular CW modulated lasers.

The J-6 laser can be operated with pulse repetition rates up to 200 kHz at duty cycles up to 65%. This combination of high duty cycle at high pulse repetition frequency, together with power on demand and excellent beam quality makes the J-6 an ideal laser for applications benefitting from high power quasi-CW operation. These include galvo scanner based converting applications such as flexible packaging, folding cartons, perforation, and (label) kiss-cutting. Also included are textile patterning and engraving applications.

The J-6 laser is also optimized for other non-scanner based quasi-CW applications like flat panel display and automotive glass cutting, and reprographics.



FEATURES

- Wide operating power range
- Pulse frequency from single-shot to 200 kHz
- Pulse duty cycle up to 65%
- Optimized pulsed and quasi-CW operation
- Outstanding beam quality
- Excellent power stability
- Low-cost OEM configuration
- Field serviceable RF power supply
- Compact design
- Onboard internet-accessible diagnostics

APPLICATIONS

- Converting
- Textile Patterning
- Engraving
- Cutting
- Marking
- Reprographics

Specifications ¹	Diamond J-6-10.6
Wavelength (μm)	10.6 \pm 0.4
Output Power ² (W)	\geq 500
Typical Output Power (W)	650
Power Range ³ (W)	50 to 500
Typical Peak Power ⁴ (W)	1200
Power Stability ^{2,5} (%)	\leq \pm 6
Power Stability with CL option ⁶ (%)	\leq \pm 2
Beam Diameter ^{7,8} (mm)	8.5 \pm 1.0
Beam Waist Diameter ^{7,9} at 1/e ² (mm)	8.0 \pm 1.0
Full-Angle Beam Divergence ⁷ (mrad)	\leq 2.0
Beam Ellipticity ^{7,9}	\geq 0.83, \leq 1.2
Typical Polarization (parallel to baseplate)	Linear \geq 100:1
RF Excitation Pulse Width Range (μs)	2 to 130
Pulse Repetition Frequency Range (kHz)	Single-Shot to 200
Duty Cycle Limit ¹⁰ (%)	\leq 65
Fall Time ⁴ (μs)	\leq 50
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 \pm 1%
Continuous DC Input Current ¹¹ (A)	\leq 190
Peak Current (A)	\leq 380 for \leq 6 ms
Coolant	
Heat Load ¹² (kW)	\leq 9
Dynamic Coolant Flow Rate ¹² (l/min.)	\geq 9.5
Coolant Setpoint Temperature Range	21 to 25°C (69.8 to 77°F)
Coolant Temperature Stability (max.)	\pm 1.0C (\pm 0.18°F)
Coolant ¹³	Anti-Corrosion Treated Water
Coolant Differential Pressure ¹⁴	241 (35 psi) at 9.5 l/min. (2.5 gpm)
Coolant Maximum Static Pressure (kPa)	827 (120 psi)
Environmental Conditions	
Ambient Temperature	5°C to 45°C (41 to 113°F)
Relative Humidity ¹⁵ (non-condensing) (%)	\leq 95
Altitude	\leq 2000 m (6500 ft.)

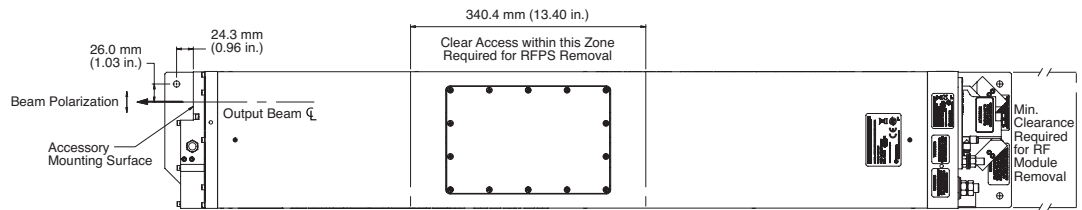
Notes:

- All specifications apply when the product is operated in accordance with the guidelines defined in the operators manual.
- Measured at 10 kHz, max. duty cycle after a 30 second warm-up from cold start. Guaranteed in warranty period.
- Output stability specification may not be met at lowest power or at acoustic resonances.
- Measured for a 100 μs pulse width at 1 kHz repetition frequency.
- Measured as $(P_{\text{max}} - P_{\text{min}}) / (2 * P_{\text{max}})$.
- See J-series Closed Loop (CL) option for full specifications.
- Measured at 10 kHz PRF, 30% duty cycle.
- Measured at \sim 1.4 m from the laser output.
- Measured at typical waist location \sim 3-4 m from the laser output.
- For PRF $<$ 5 kHz duty cycle will be limited by 130 μs max pulse width.
- At 10 kHz PRF, maximum duty cycle operation.
- Laser only. Does not include margin for water cooled DCPS.
- See manual for details.
- Differential pressure is from laser input to output and does not include pressure drop from chiller fittings and supply and return hose.
- Do not operate at or below dew point.

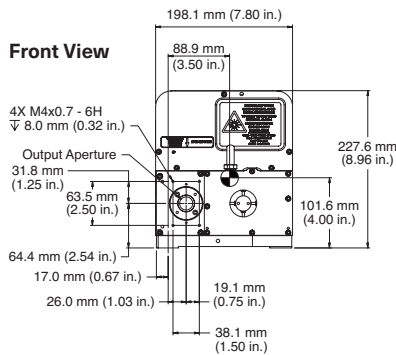
Mechanical Specifications

Diamond J-6

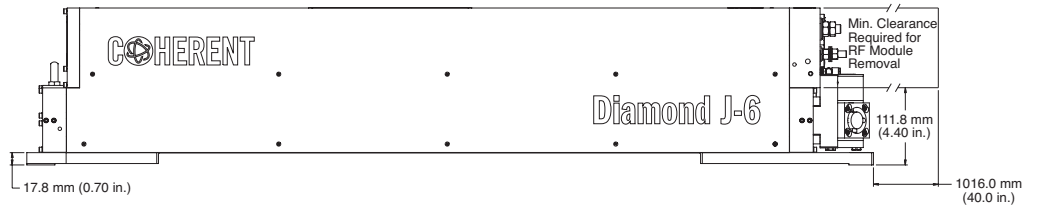
Top View



Front View



Side View



Bottom View

