

Diamond Cx-10LDE+

Sealed CO₂ Laser with Integrated AOM

As part of the C/Cx-series from Coherent, the Cx-10LDE+ CO₂ laser provides superior pulse control and power stability with its fully integrated acoustic optical modulator (AOM). Based on the Cx-10 laser platform, the Cx-10LDE+ is a production-ready, easy-to-integrate laser system enabling the highest quality laser processing with low maintenance and operating cost. The extreme pulse control provided by the AOM makes this laser especially useful for high precision applications such as film cutting in flat panel display manufacturing, high resolution marking, and other functions requiring a true “on/off” pulse.



FEATURES

- Fully integrated AOM providing excellent pulse control
- Superior power stability improves processing consistency and repeatability
- Modular RF board and AOM design allows for easy serviceability
- Small footprint for easy integration
- Pulse rise/fall times of <math><1 \mu\text{s}</math> minimize heat affected zones and provide high precision process control

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	Diamond Cx-10LDE+ (10.6 μm)	Diamond Cx-10LDE+ (10.2 μm)	Diamond Cx-10LDE+ (9.6 μm)	Diamond Cx-10LDE+ (9.3 μm)
Wavelength (μm)	10.6 ±0.03	10.2 ±0.05	9.6 ±0.05	9.3 ±0.05
Laser Power at 50% Duty Cycle ^{1,2} (W)	≥45	≥40	≥30	≥30
Typical Peak Output Power (W)	>120		>85	
Power Stability ^{1,2} (%)	±3 (±0.1 °C coolant stability after 10 minute warm-up)			
Pulse Rise and Fall Time (μsec)	≤1 (10% to 90%)			
Beam Quality (M ²)	≤1.2			
Beam Output Diameter (mm, nominal)	5.5 ±1.5			
Beam Waist Diameter (mm, nominal)	3.4 ±0.3		2.7 ±0.3	
Beam Divergence (mrad, full angle)	≤5.5			
Beam Ellipticity ³	≥0.83, ≤1.2			
Pointing Stability ⁴ (μrad)	≤750			
Polarization ⁵	Vertical ≥100:1			
Operating Frequency and Duty Cycle ⁶	0 to 200 kHz, 1 to 100% DC			
Configuration and Facility Requirements				
Weight	23 kg (50.5 lbs.)			
Dimensions (L x W x H)	670.8 x 176.5 x 186.9 mm (26.41 x 6.95 x 7.36 in.)			
Input Power	48 VDC, 45 A			
Heat Dissipation (W)	<2300			
Maximum Case Temperature	<60°C (140°F)			
Clean Dry Air Purge ⁷	>5 slph (0.177 scfh)			
Operating Environment Temperature Altitude Humidity	5 to 45°C (41 to 113°F) <2000 m (6500 ft.) Non-condensing ≤95%			
Shipping/Storage Environment	-10 to 60°C (14 to 140°F), non-condensing			
Coolant Coolant Flow Rate Maximum Coolant Pressure Max. Pressure Differential (at 1.5 gpm) Coolant Temperature	Distilled water with 25 to 35% Dow Frost ⁸ >5.7 lpm (1.5 gpm) 700 kPa (101 psig) <400 kPa (58 psig) 20°C ±1°C			

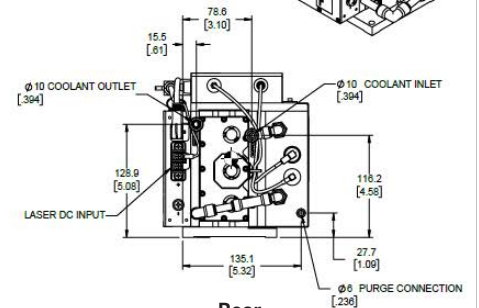
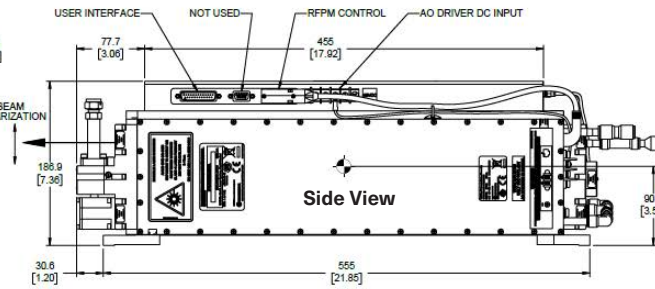
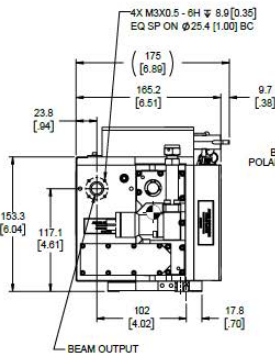
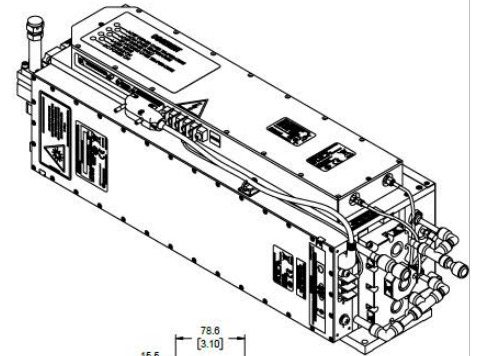
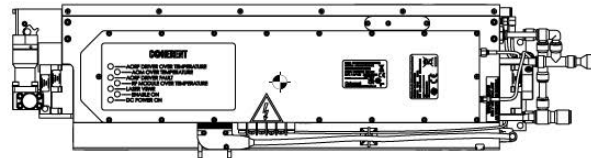
Notes:

- All measurements, such as power made at 20°C ±0.5°C coolant temperature, AOM PRF 25 kHz.
- Power Stability based on $\pm(P_{max}-P_{min})/(2 \cdot P_{max})$ average power measurement under the following conditions: AOM PRF 25kHz; AOM duty cycle 50%; Cx-10 laser duty cycle 100%; and after 10 minute warm up period with 10 minute measurement duration.
- Ratio based on far field divergence measurement, defined as the ratio of vertical to horizontal divergence.
- Measured as the steady state angular beam centroid change between a 5% AOM duty cycle and a 95% AOM duty cycle. Steady state is defined as the angular beam centroid location after 1 minute of operation at the specific AOM duty cycle and with a 100% Cx-10 duty cycle after a 10 minute Cx-10 warm-up period.
- Refer to Mechanical Specifications for beam polarization orientation.
- Operation at pulse repetition frequencies above 200 kHz may result in substantial side lobe power and reduced beam quality.
- Dry Nitrogen is also acceptable as a purge gas.
- Dow Frost is a trademark of the Dow Chemical Company

Mechanical Specifications

Diamond Cx-10LDE+ Laser Head

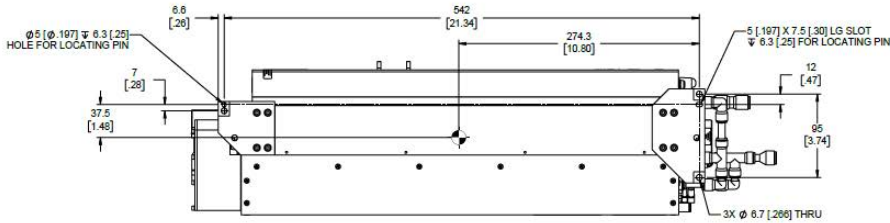
Top View



Front View

Side View

Rear View



Bottom View