

Diamond Cx-10LQS+

Q-Switched CO₂ Lasers

The Cx-10LQS+ CO₂ laser from Coherent provides short laser pulses with high peak power of 2 kW to 5 kW over the operating range from single-shot to 200 kHz. The Cx-10LQS+ is a compact laser system operating at a wavelength of 9.3 μm with a fully integrated intra-cavity acoustic optical modulator (AOM). The Cx-10LQS+ — part of the successful Cx-10 series lasers — 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 intra-cavity 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 Q-switch 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 <200 ns and high peak power minimize heat affected zones providing high precision process control

APPLICATIONS

- Film Cutting in Flat Panel Display Manufacturing
- High Resolution Marking

Specifications	Diamond Cx-10LQS+
Wavelength (μm)	9.25 ±0.05
Laser Power at 10% Duty Cycle ¹ (W)	≥40
Pulse Energy ^{1,2} (mJ) (typical)	>0.5
Power Stability ³ (%)	±3 (±0.1°C coolant stability after 10 minute warm-up)
Optical Pulse Width ² (ns) (FWHM)	≤200
Beam Quality (M ²)	≤1.2
Beam Output Diameter ⁴ (mm)	7.5 ±1.5
Beam Divergence (mrad) (full angle)	≤6.5
Beam Ellipticity ⁵	>0.83, <1.20
Polarization	Circular
Operating Frequency and Pulse Width	Single-Shot to 200 kHz, 0.5 to 5 μsec PW cmd
Configuration and Facility Requirements	
Weight (kg)	24.3 kg (53.5 lbs)
Dimensions (L x W x H)	673.4 x 178.3 x 187 mm (26.51 x 7.02 x 7.36 in.)
Input Power	48 VDC, 40 A
Heat Dissipation (W)	≤2000
Clean Dry Air Purge	5 slph (0.177 scfh)
Ambient Temperature	5 to 45°C (41 to 113°F)
Altitude	≤2000 m (6500 ft)
Humidity (%)	Non-condensing, ≤95
Shipping/Storage Environment	-10 to +60°C (14 to 140°F), Non-condensing
Coolant	Distilled water with 10% OptiShield Plus ⁶
Coolant Flow Rate	≥5.7 l/min (1.5 gpm)
Maximum Coolant Pressure	414 kPa (60 psig)
Maximum Pressure Differential (at 1.5 gpm)	<103 kPa (15 psig)
Coolant Temperature	20°C ±1°C (68°F ±1.8°F)

Notes:

1. All measurements, such as power and energy made at 20°C ±0.5°C coolant temperature, 100 kHz PRF, and 1 μs PW command.
2. Pulse width, peak power, and pulse energy will vary depending on operating parameters, specifically Pulse Frequency and Duty Cycle.
3. Power Stability based on $\pm(P_{max} - P_{min}) / (2 * P_{max})$ average power measurement at constant duty cycle after 10-minute warmup at operating condition.
4. Measured at 20 cm from laser output.
5. Ratio based on Far Field Divergence measurement at 20°C, 100 kHz PRF, and 1 μs PW command.
6. OptiShield Plus is a trademark of the OptiTemp.

Mechanical Specifications

Diamond Cx-10LQS+ Laser Head

