

# DIAMOND Cx-10LQS

## Q-Switched CO<sub>2</sub> Lasers

The Cx-10LQS CO<sub>2</sub> 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 100 kHz. The Cx-10LQS is a compact laser system operating at a wavelength of 9.3 μm with a fully integrated inter 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 inter 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 & BENEFITS

- 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 effected zones providing high precision process control

### APPLICATIONS

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



OPTICAL SPECIFICATIONS	DIAMOND Cx-10LQS
Wavelength ( $\mu\text{m}$ )	9.3 $\pm$ 0.05
Laser Power at 50% Duty Cycle <sup>1</sup> (W)	$\geq$ 50
Pulse Energy <sup>1</sup> (mJ)	$>$ 0.5
Power Stability <sup>2</sup> (%)	$\pm$ 5 ( $\pm$ 0.1 $^{\circ}\text{C}$ coolant stability after 10 minute warm-up)
Optical Pulse Width <sup>3</sup> (ns) (FWHM)	$\leq$ 200 (10% to 90%)
Beam Quality ( $M^2$ )	$\leq$ 1.2
Beam Output Diameter (mm)	9.0 $\pm$ 1.0
Beam Divergence (mRad) (full angle)	$\leq$ 6.5
Beam Ellipticity <sup>4</sup>	$\geq$ 0.9, $\leq$ 1.1
Polarization	Circular
Operating Frequency and Pulse Width	Single-Shot to 100 kHz, 0.5 – 5 $\mu\text{sec}$ PW cmd
CONFIGURATION AND FACILITY REQUIREMENTS	
Weight <sup>5</sup> (kg)	24.3.0 kg (53.5 lbs)
Dimensions <sup>5</sup> (L x W x H)	781.4 x 187.7 x 187.0 mm (30.76 x 7.39 x 7.36 in.)
Input Power	48 VDC, 40A
Heat Dissipation (W)	$\leq$ 2000
Clean Dry Air Purge <sup>6</sup>	$>$ 5 slph (0.177 scfh)
Ambient Temperature	5 to 45 $^{\circ}\text{C}$ (41 to 113 $^{\circ}\text{F}$ )
Altitude	$\leq$ 2000 m (6500 ft)
Humidity (%)	Non-Condensing, $\leq$ 95
Shipping/Storage Environment	-10 to +60 $^{\circ}\text{C}$ (14 to 140 $^{\circ}\text{F}$ ), Non-condensing
Coolant <sup>7</sup>	Distilled water with 10% OptiShield+7
Coolant Flow Rate	$\geq$ 5.7 l/min (1.5 gpm)
Maximum Coolant Pressure	414 kPa (60 psig)
Max. Pressure Differential (at 1.5 gpm)	$<$ 103 kPa (15 psig)
Coolant Temperature	20 $^{\circ}\text{C}$ $\pm$ 1 $^{\circ}\text{C}$ (68 $^{\circ}\text{F}$ $\pm$ 1.8 $^{\circ}\text{F}$ )

<sup>1</sup> All measurements, such as power and energy made at 20 $^{\circ}\text{C}$   $\pm$ 0.5 $^{\circ}\text{C}$  coolant temperature, 80 kHz PRF, and 5  $\mu\text{sec}$  PW command.

<sup>2</sup> Power Stability based on  $\pm(P_{\text{max}}-P_{\text{min}})/(2*P_{\text{max}})$  average power measurement at constant duty cycle after 10-minute warmup at operating condition.

<sup>3</sup> Pulse Width and Peak Power will vary depending on operating parameters, specifically Pulse Frequency and Duty Cycle.

<sup>4</sup> Gaussian Correlation based on Spiricon Near Field Raw Beam measurement at 80 cm distance from laser output, 20 $^{\circ}\text{C}$ , and steady state operation at 80 kHz PRF, and 5  $\mu\text{sec}$  PW.

<sup>5</sup> Ratio based on Far Field Divergence measurement at 20 $^{\circ}\text{C}$ , 80 kHz PRF, and 5  $\mu\text{sec}$  PW command.

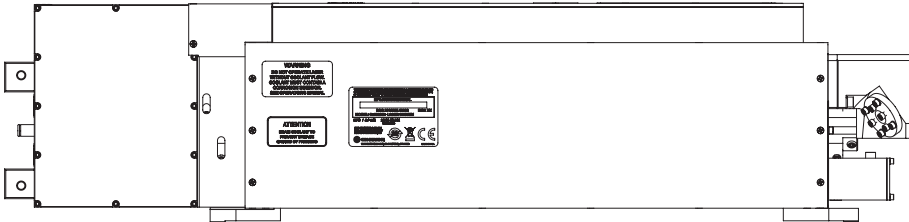
<sup>6</sup> Weight and Dimensions with Circular Polarizer or Isolator.

<sup>7</sup> OptiShield+ is a trademark of the OptiTemp.

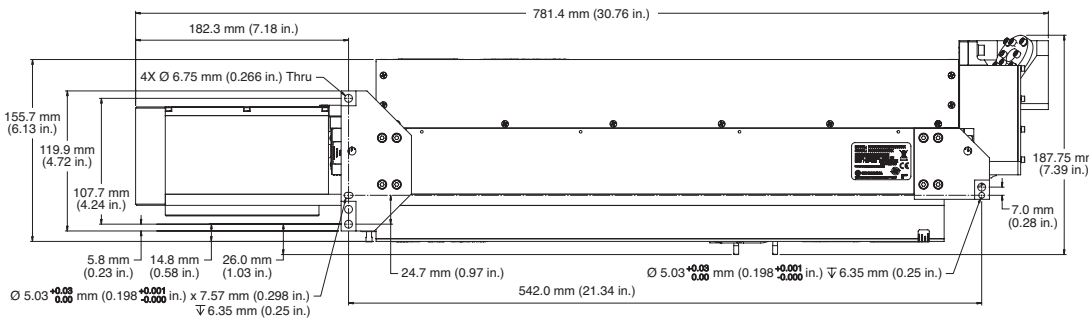
MECHANICAL SPECIFICATIONS

DIAMOND Cx-10LQS

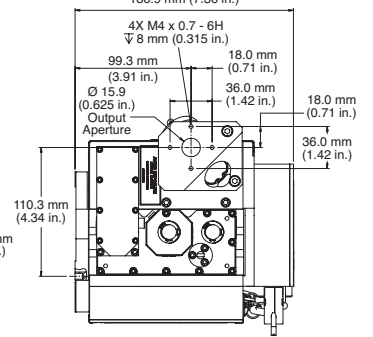
Side View



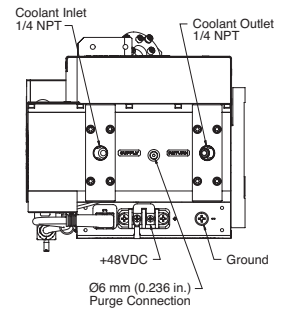
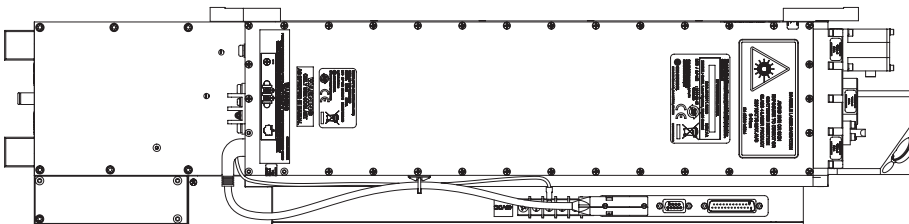
Bottom View



Front View



Side View



Rear View



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Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice.

Coherent offers a limited warranty for all DIAMOND Cx-10LQS Lasers. For full details of this warranty coverage, please refer to the Service section at [www.Coherent.com](http://www.Coherent.com) or contact your local Sales or Service Representative. Printed in the U.S.A. MC-XXX-18-0M0118 Copyright ©2018 Coherent, Inc.