# Diamond Cx-10LQS+

Q-Switched $CO_2$ Lasers

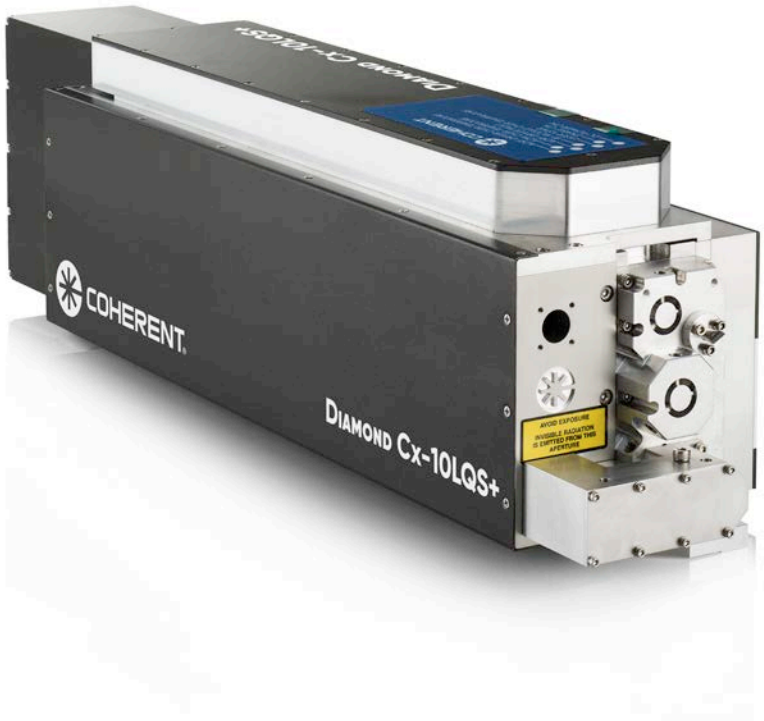
The Cx-10LQS+ $CO_2$ laser from Coherent provides short laser pulses with high peak power of 2 kW to 5 kW over the operating range from single-shot to 200 kHz. The Cx-10LQS+ is a compact laser system operating at a wavelength of 9.3 µm with a fully integrated inter cavity acoustic optical modulator (AOM). 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 and 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 affected zones providing high precision process control

**Applications**

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




COHERENT®

# Diamond Cx-10LQS+

Q-Switched $CO_2$ Lasers

| OPTICAL 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, ≤1.2 |
| 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, 40A |
| 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) |
| Max. Pressure Differential (at 1.5 gpm) | <103 kPa (15 psig) |
| Coolant Temperature | 20°C ±1°C (68°F ±1.8°F) |

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.

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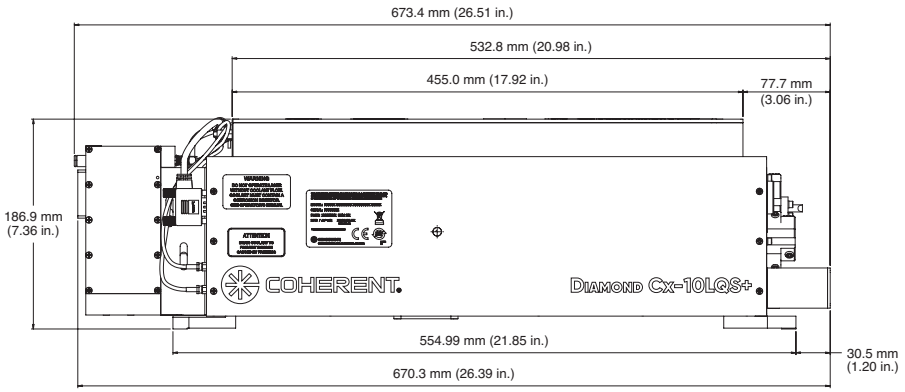
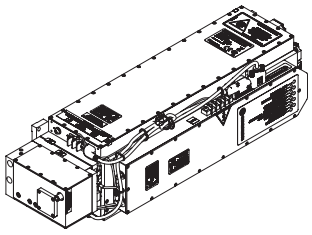
## MECHANICAL SPECIFICATIONS

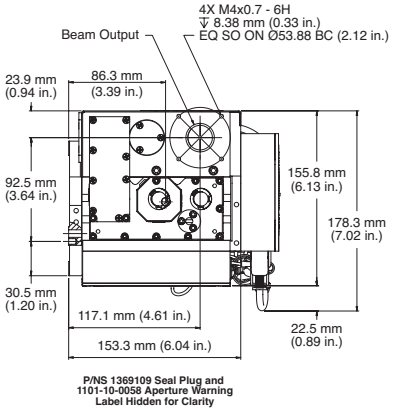
### DIAMOND CX-10LQS+

**Side View**



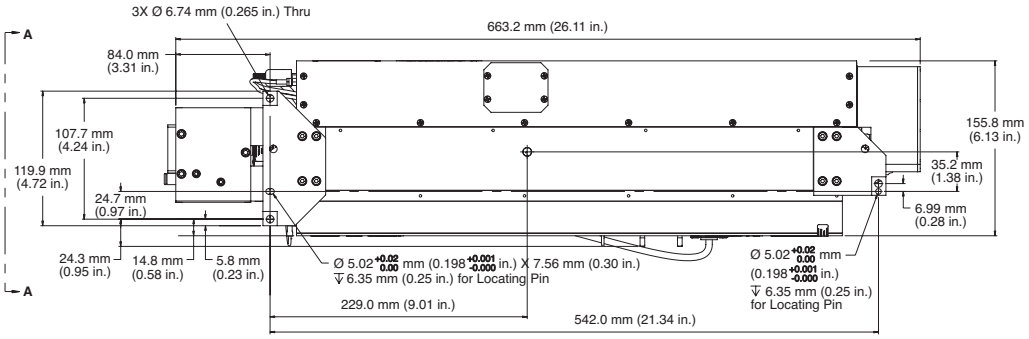



**Front View**

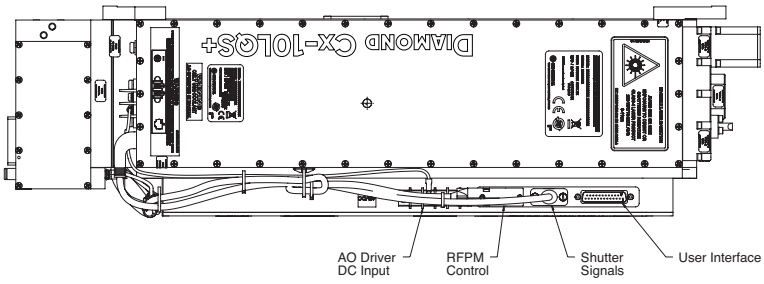



P/NS 1369109 Seal Plug and 1101-10-0058 Aperture Warning Label Hidden for Clarity

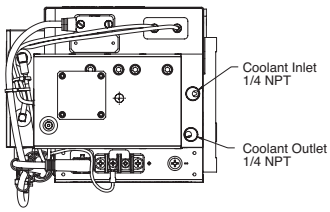
**Bottom View**




**Top View**




**Rear View**




View A-A

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