



# Sapphire LPX

## Optically-Pumped Semiconductor Lasers (OPSL)

Sapphire LPX extends the Sapphire LP series of compact CW visible lasers to the higher power range.

Sapphire LPX relies on Coherent's unique OPSL technology. The lasers not only provide established legacy wavelengths of ion and diode-pumped solid-state lasers, but their scalability also allows for customized wavelengths to be developed and tailored to a specific application.

Sapphire lasers are manufactured using Coherent's patented PermAlign™ technology for optimal aligning and solder-bonding the optics to provide the best beam quality, power stability, and lowest noise over the complete lifetime of the laser.

Sapphire lasers feature superior performance, proven reliability, and low-cost of ownership making them the ideal laser solution for a multitude of applications.



### FEATURES & BENEFITS

- Three standard wavelengths with custom options available
- Up to 500 mW output power at 488 nm, 532 nm, and 561 nm
- Outstanding power stability and low noise
- Superior beam quality
- Flexible interface to fit all needs: analog, RS-232, and USB
- PermAlign technology for permanent optical alignment
- Proven reliability with more than 50,000 installed systems
- OEM and CDRH version

### APPLICATIONS

- Flow Cytometry
- Confocal Microscopy
- DNA Sequencing
- Super-Resolution Microscopy
- Medical Diagnostics
- Semiconductor Inspection
- Metrology

SPECIFICATIONS	Sapphire 488 LPX	Sapphire 532 LPX	Sapphire 561 LPX
Wavelength <sup>1</sup> (nm)	488 ±2	532 ±2	561 ±2
Output Power <sup>2</sup> (mW)	300, 400, 500		
Spatial Mode	TEM <sub>00</sub> , M <sup>2</sup> <1.1		
Beam Asymmetry	0.9 to 1.1		
Beam Diameter at 1/e <sup>2</sup> (mm)	0.70 ±0.05		
Beam Divergence (mrad)	<1.2	<1.3	<1.3
Pointing Stability (μrad) (over 2 hours after warm-up and ±3°C)	<30		
Static Alignment <sup>3</sup> x/y (mm) Angular x/y (mrad)	±0.25 ±2.5		
Beam Waist Location <sup>4</sup> (mm from front)	±200		
Noise (%) 20 Hz to 2 MHz, rms 20 Hz to 20 kHz, peak-to-peak	≤0.25 ≤1		
Long-term Power Stability (%) (2 hours, ±3°C)	<2		
Digital Modulation Rise Time (10 to 90%) (μs) Fall Time (10 to 90%) (μs)	≤200 ≤10		
Analog Modulation Rise Time <sup>5</sup> (10 to 90%) (μs) Fall Time <sup>5</sup> (10 to 90%) (μs)	≤1000 ≤1000		
Warm-up Time (minutes)	<5		
Polarization Ratio (linear, vertical)	>100:1		
UTILITY AND ENVIRONMENTAL REQUIREMENTS			
Operating Voltage <sup>6</sup> (VDC)	+12.0 to 13.2		
Power Consumption (W)	<60		
Max. Laser Head Baseplate Temp. <sup>7</sup>	+50°C (122°F)		
Max. Heat Dissipation of Laser Head (W)	30 (baseplate at 50°C/122°F)		
Ambient Temperature Operating Condition Non-Operating Condition	10 to 40°C (50 to 104°F) -20 to 60°C (-4 to 140°F)		
Humidity (%) Operating Condition Non-Operating Condition	0 to 95, non-condensing 0 to 100, non-condensing		
Dimensions (L x W x H) Laser Head Controller Heat Sink (optional) DC Power Supply (optional) Cable — Laser Head to Controller	125 x 70 x 34 mm (4.9 x 2.8 x 1.3 in.) 117.8 x 76.2 x 39.4 mm (4.6 x 3.0 x 1.6 in.) 200 x 80 x 50 mm (7.9 x 3.2 x 2.0 in.) 171 x 104 x 55 mm (6.7 x 4.1 x 2.2 in.) 1 m (3.28 ft.), with options		
Weights Laser Head Controller Heat Sink (optional) DC Power Supply (optional)	0.35 kg (0.77 lbs.) 0.25 kg (0.55 lbs.) 0.75 kg (1.65 lbs.) 0.95 kg (2.1 lbs.) (incl. line cable)		
Laser Safety Classification	4		

1 Laser-to-laser tolerance. With residual IR emission less than 0.1 mW.

2 Output power is adjustable via analog or digital interface from 10% to 100%. Specifications are valid for 100% power.

3 Static alignment tolerances are relative to the right bottom edge (in beam direction).

4 200 mm is ~30% of Raleigh Range at 532/561 nm; 200 mm is ~25% of Raleigh Range at 488 nm.

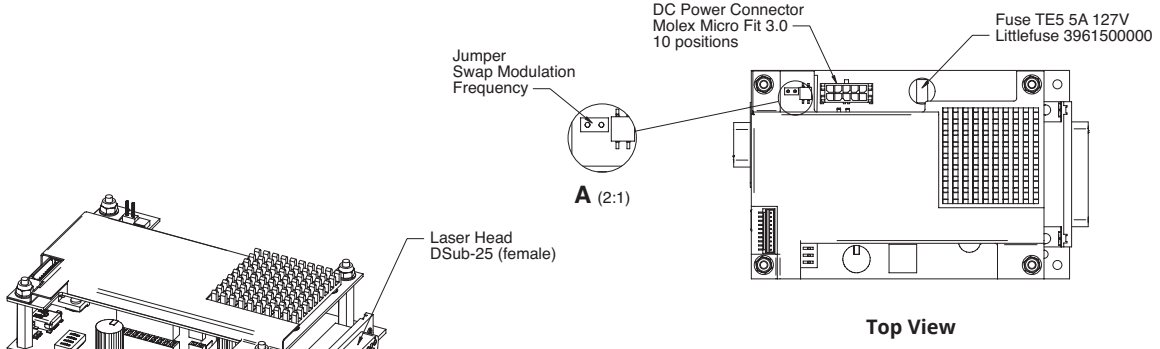
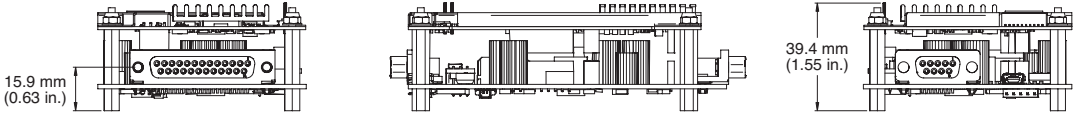
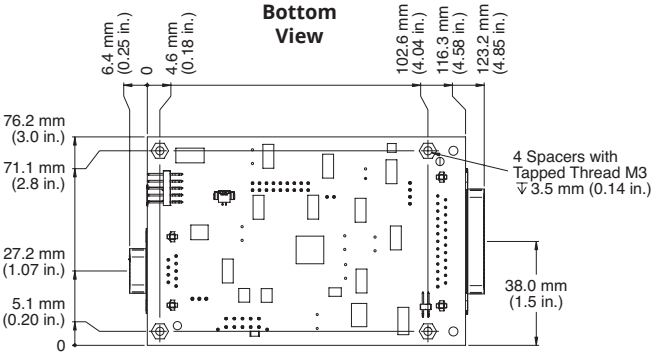
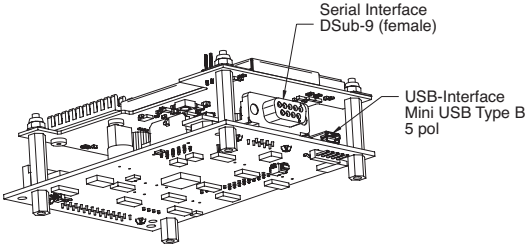
5 Power between 50% and 100% nominal.

6 If user-supplied, the DC power supply has to meet the following requirements: Power >60 W; ripple <5% peak-to-peak; line regulation <0.5%.

7 With factory-provided or other adequate heat sink.

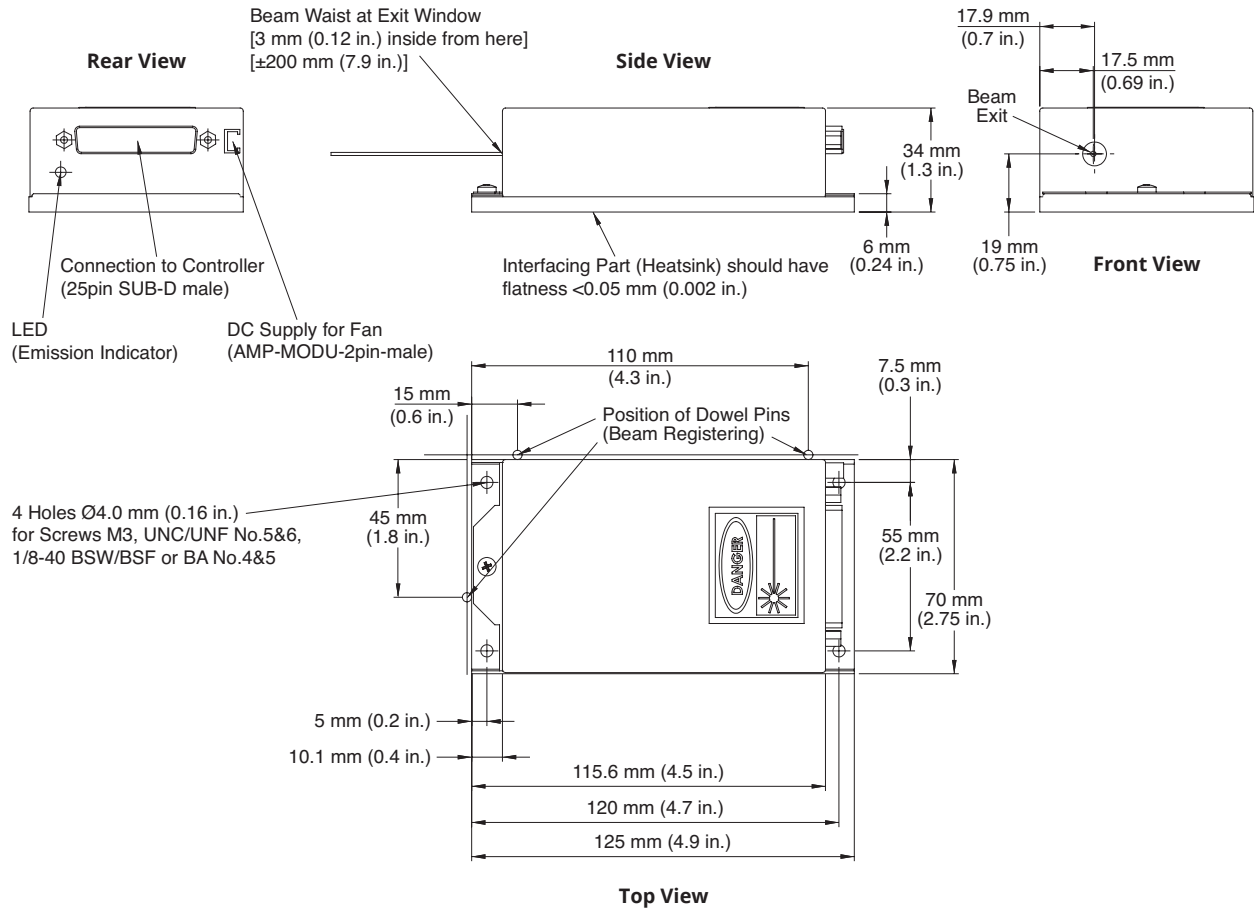
**MECHANICAL SPECIFICATIONS**

**Controller**



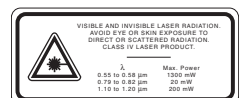
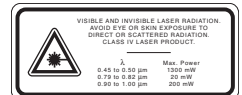
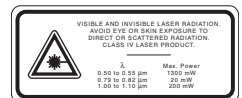
**MECHANICAL SPECIFICATIONS**

**Sapphire LPX**



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Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice. Coherent's scientific and industrial lasers are certified to comply with the Federal Regulations (21 CFR Subchapter J) as administered by the Center for Devices and Radiological Health on all systems ordered for shipment after August 2, 1976.

Coherent offers a limited warranty for all Sapphire LPX 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. MC-014-17-0M0119Rev.A Copyright ©2019 Coherent, Inc.