



Sapphire Family of Lasers

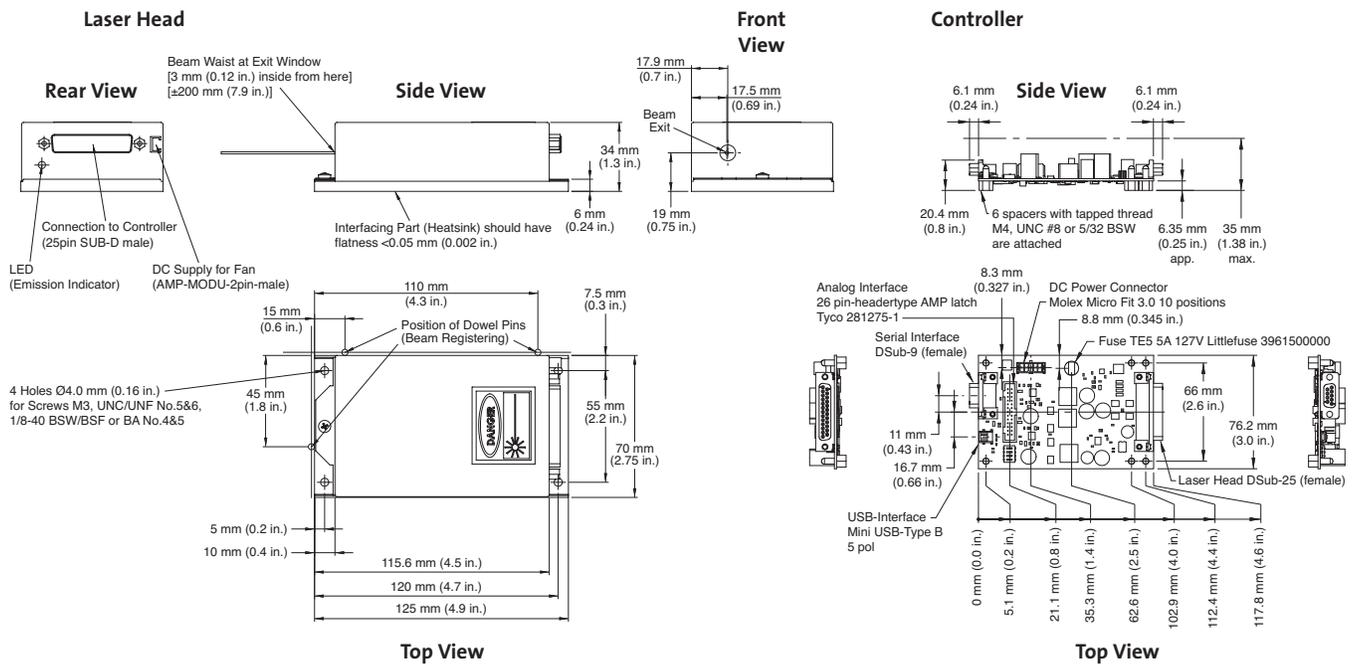
CW Blue, Green, Yellow and Orange Lasers



Features

- Proven reliability
- Low cost of ownership
- Superior beam quality
- Outstanding power stability
- Analog and digital interface
- Up to 75 mW at 458
- 10 mW at 460 nm
- Up to 200 mW at 488 nm
- Up to 150 mW at 514 nm
- Up to 300 mW at 532 nm
- Up to 200 mW at 552 nm
- Up to 200 mW at 561 nm and 568 nm
- Up to 100 mW at 588 nm

Mechanical Specifications



Superior Reliability & Performance

Sapphire™ Family of Lasers

CW Blue, Green, Yellow and Orange Lasers

System Specifications

Sapphire	458 LP	460 LP	488 LP
Wavelength ¹ (nm)	458 ±2	460 ±2	488 ±2
Output Power ² (mW)	20, 50, 75	10	10, 20, 25, 30, 40, 50, 75, 100, 150, 200
Spatial Mode	TEM ₀₀ , M ² <1.1		
Beam Asymmetry	0.9 to 1.1		
Beam Diameter at 1/e ²	0.70 ±0.05 mm		
Beam Divergence (mrad)	<1.2		
Pointing Stability (over 2 hours after warm-up and ±3°C)(μrad)	<30		
Noise (%)			
20 Hz to 2 MHz, rms	<0.25		
20 Hz to 20 kHz, peak-to-peak	<1		
Long-Term Power Stability (%) (2 hours, ±3°C)	<2		
Warm-Up Time (minutes)	<5		
Polarization Ratio	>100:1, vertical		
Static Alignment Tolerances ³			
Beam Position (mm)	±0.25		
Beam Angle (mrad)	±2.5		
Beam Waist Position at Exit Window	±200 ⁴		

Utility and Environmental Requirements

Operating Voltage ⁵ (VDC)	+10.8 to 15		
Power Consumption (W)	<60		
Max. Laser Head Baseplate Temp. ⁶	+50°C (122°F)	+55°C (131°F), +50°C (122°F) ⁷	
Max. Heat Dissipation of Head (W)	25 (baseplate at 50°C)	25 (baseplate at 55°C)	
Ambient Temperature			
Operating Conditions	10 to 40°C (50 to 104°F) non-condensing		
Non-Operating Condition	-30 to 60°C (-22 to 140°F)		
Shock Tolerance (6 ms)	7g laterally, 15g vertically		
Dimensions (L x W x H)			
Laser Head	125 x 70 x 34 mm (4.9 x 2.8 x 1.3 in.)		
Controller	117.8 x 76.2 x 30 mm (4.6 x 3.0 x 1.2 in.)		
Heat Sink (optional)	200 x 80 x 50 mm (7.9 x 3.2 x 2 in.)		
DC Power Supply (optional)	171 x 104 x 55 mm (6.7 x 4.1 x 2.2 in.)		
Cable — Laser Head to Controller	2m (6.56 ft.), optional 5m (16.4 ft.)		
Weights			
Laser Head	0.35 kg (0.77 lbs.)		
Controller	0.25 kg (0.55 lbs.)		
Heat Sink (optional)	0.75 kg (1.65 lbs.)		
DC Power Supply (optional)	0.95 kg (incl. line cable)(2.1 lbs.)		
Packaged System (head+controller+cable>manual)	1.7 kg (3.7 lbs.)		
Cable — Laser Head to Controller	0.3 kg (0.66 lbs.)		

Measurement Tools

		Part Number
Meter	FieldMax™II-TO	1098579
Sensor	PS10Q	1098400

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 110%. Specifications are valid for 100% power. Recommended power range is 70 to 110% power.

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

⁴ 200 mm is ~30% of Raleigh Range at 514/532/561/568 nm; 200 mm is ~25% of Raleigh Range at 458/460/488 nm.

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

⁶ With factory-provided or other adequate heat sink.

⁷ Sapphire 460-10, 488-10/20/25/30 have a maximum baseplate temperature of +55°C (+131°F). Sapphire 488-40/50/75/100/150 and 200 mW models are limited to a maximum baseplate temperature of +50°C (+122°F).

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System Specifications

Sapphire	514 LP	532 LP	552 LP
Wavelength ¹ (nm)	514 ±2	532 ±2	552 ±2
Output Power ² (mW)	20, 50, 75, 100, 150	20, 50, 75, 100, 150, 200, 300	50, 75, 100 150, 200
Spatial Mode	TEM ₀₀ , M ² <1.1		
Beam Asymmetry	0.9 to 1.1		
Beam Diameter at 1/e ²	0.70 ±0.05 mm		
Beam Divergence (mrad)	<1.3		
Pointing Stability (over 2 hours after warm-up and ±3°C)(μrad)	<30		
Noise (%)			
20 Hz to 2 MHz, rms	<0.25		
20 Hz to 20 kHz, peak-to-peak	<1		
Long-Term Power Stability (%) (2 hours, ±3°C)	<2		
Warm-Up Time (minutes)	<5		
Polarization Ratio	>100:1, vertical		
Static Alignment Tolerances ³			
Beam Position (mm)	±0.25		
Beam Angle (mrad)	±2.5		
Beam Waist Position at Exit Window	±200 ⁴		

Utility and Environmental Requirements

Operating Voltage ⁵ (VDC)	+10.8 to 15
Power Consumption (W)	<60
Max. Laser Head Baseplate Temp. ⁶	+50°C (122°F)
Max. Heat Dissipation of Head (W)	25 (baseplate at 50°C)
Ambient Temperature	
Operating Conditions	10 to 40°C (50 to 104°F) non-condensing
Non-Operating Condition	-30 to 60°C (-22 to 140°F)
Shock Tolerance (6 ms)	7g laterally, 15g vertically
Dimensions (L x W x H)	
Laser Head	125 x 70 x 34 mm (4.9 x 2.8 x 1.3 in.)
Controller	117.8 x 76.2 x 30 mm (4.6 x 3.0 x 1.2 in.)
Heat Sink (optional)	200 x 80 x 50 mm (7.9 x 3.2 x 2 in.)
DC Power Supply (optional)	171 x 104 x 55 mm (6.7 x 4.1 x 2.2 in.)
Cable — Laser Head to Controller	2m (6.56 ft.), optional 5m (16.4 ft.)
Weights	
Laser Head	0.35 kg (0.77 lbs.)
Controller	0.25 kg (0.55 lbs.)
Heat Sink (optional)	0.75 kg (1.65 lbs.)
DC Power Supply (optional)	0.95 kg (incl. line cable)(2.1 lbs.)
Packaged System (head+controller+cable>manual)	1.7 kg (3.7 lbs.)
Cable — Laser Head to Controller	0.3 kg (0.66 lbs.)

Measurement Tools

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Meter	FieldMax™II-TO	1098579
Sensor	PS10Q	1098400

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⁴ 200 mm is ~30% of Raleigh Range at 514/532/561/568 nm; 200 mm is ~25% of Raleigh Range at 458/460/488 nm.

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

⁶ With factory-provided or other adequate heat sink.

⁷ Sapphire 460-10, 488-10/20/25/30 have a maximum baseplate temperature of +55°C (+131°F). Sapphire 488-40/50/75/100/150 and 200 mW models are limited to a maximum baseplate temperature of +50°C (+122°F).

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System Specifications

Sapphire	561 LP	568 LP	588 LP
Wavelength ¹ (nm)	560 ±2	567 ±2	588 ±2
Output Power ² (mW)	20, 50, 75, 100, 150, 200	50, 75, 100, 150, 200	20, 50, 75, 100
Spatial Mode	TEM ₀₀ , M ² <1.1		
Beam Asymmetry	0.9 to 1.1		
Beam Diameter at 1/e ²	0.70 ±0.05 mm		
Beam Divergence (mrad)	<1.3		
Pointing Stability (over 2 hours after warm-up and ±3°C)(μrad)	<30		
Noise (%)			
20 Hz to 2 MHz, rms	<0.25		
20 Hz to 20 kHz, peak-to-peak	<1		
Long-Term Power Stability (%) (2 hours, ±3°C)	<2		
Warm-Up Time (minutes)	<5		
Polarization Ratio	>100:1, vertical		
Static Alignment Tolerances ³			
Beam Position (mm)	±0.25		
Beam Angle (mrad)	±2.5		
Beam Waist Position at Exit Window	±200 ⁴		

Utility and Environmental Requirements

Operating Voltage ⁵ (VDC)	+10.8 to 15
Power Consumption (W)	<60
Max. Laser Head Baseplate Temp. ⁶	+50°C (122°F)
Max. Heat Dissipation of Head (W)	25 (baseplate at 50°C)
Ambient Temperature	
Operating Conditions	10 to 40°C (50 to 104°F) non-condensing
Non-Operating Condition	-30 to 60°C (-22 to 140°F)
Shock Tolerance (6 ms)	7g laterally, 15g vertically
Dimensions (L x W x H)	
Laser Head	125 x 70 x 34 mm (4.9 x 2.8 x 1.3 in.)
Controller	117.8 x 76.2 x 30 mm (4.6 x 3.0 x 1.2 in.)
Heat Sink (optional)	200 x 80 x 50 mm (7.9 x 3.2 x 2 in.)
DC Power Supply (optional)	171 x 104 x 55 mm (6.7 x 4.1 x 2.2 in.)
Cable — Laser Head to Controller	2m (6.56 ft.), optional 5m (16.4 ft.)
Weights	
Laser Head	0.35 kg (0.77 lbs.)
Controller	0.25 kg (0.55 lbs.)
Heat Sink (optional)	0.75 kg (1.65 lbs.)
DC Power Supply (optional)	0.95 kg (incl. line cable)(2.1 lbs.)
Packaged System (head+controller+cable>manual)	1.7 kg (3.7 lbs.)
Cable — Laser Head to Controller	0.3 kg (0.66 lbs.)

Measurement Tools

Meter	FieldMax™II-TO	Part Number
Sensor	PS10Q	1098579 1098400

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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 lasers. For full details of this warranty coverage, please refer to the Service section at www.Coherent.com or contact your local Sales or Service Representative.



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