

Mephisto/Mephisto S

Ultra-Narrow Linewidth CW DPSS Laser

Mephisto



Mephisto S



Features

- Monolithic non-planar ring oscillator (NPRO) technology for ultra-stable and narrow linewidth
- Extremely long coherence length
- Active intensity noise reduction (Noise Eater)
- User-installed, turn-key operation
- Low noise control electronics

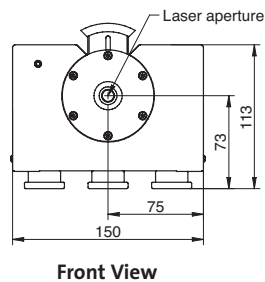
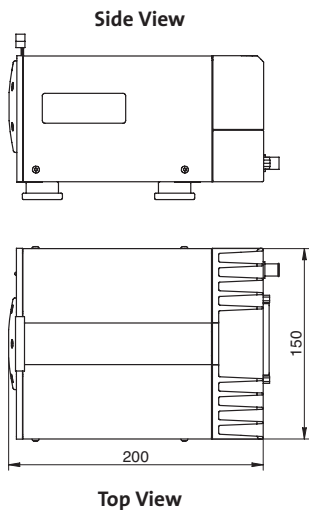
Applications

- Atom trapping and cooling
- Gravitational wave studies
- Laser-based metrology
- Laser injection locking and seeding
- Optical frequency standards
- Quantum optics (optical trapping, optical lattice, squeezing)
- Nonlinear optics pump source (SHG, DFG, OPO)
- Optical heterodyning and coherent communication

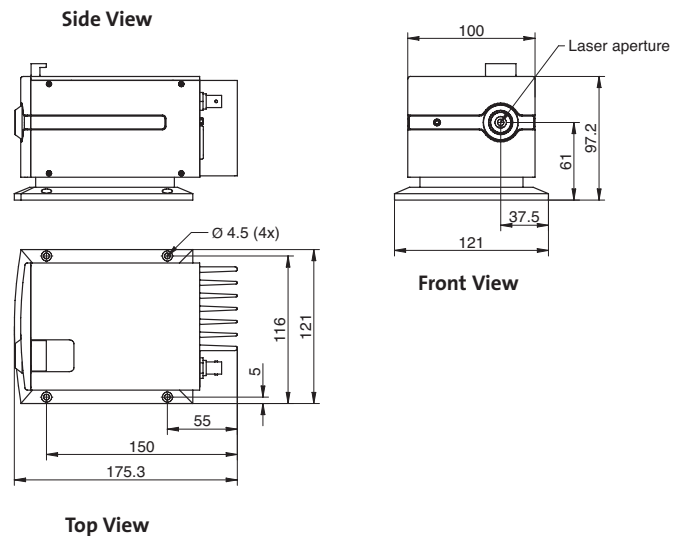
Mechanical Specifications

(all dimensions in mm)

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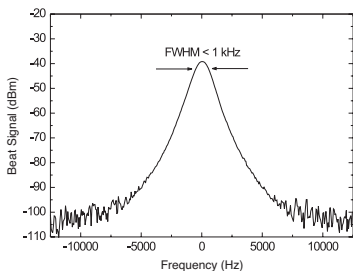


Superior Reliability & Performance

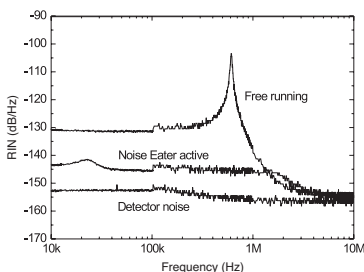
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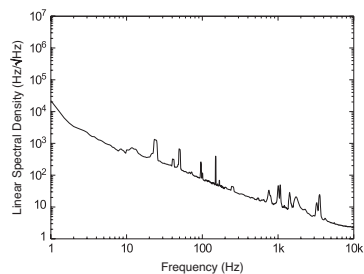
Spectral Linewidth⁵



Relative Intensity Noise⁵



Frequency Noise⁵



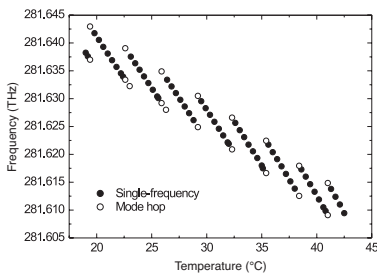
Specifications

	Mephisto	Mephisto S
Laser Power (mW) at 1064 nm at 1319 nm	500 ^{1,2,3} , 1000 ^{1,2} , 2000 ^{1,2} 200 ^{1,2} , 500 ^{1,2} , 800 ^{1,2}	200 ^{1,2,3} , 500 ^{1,2,3} not available
Operational Mode	Continuous wave	
Spatial Mode	TEM ₀₀ (M ² <1.1)	
Beam Roundness	<1.1	
Thermal Tuning Coefficient (GHz/K)	-3	
Thermal Tuning Range (GHz)	30	
Thermal Response Bandwidth (Hz)	≅1	
PZT Tuning Coefficient (MHz/V)	≅1	
PZT Tuning Range (MHz)	±65	
PZT Response Bandwidth (kHz)	100	
Emission Spectrum	Single-frequency	
Spectral Linewidth (kHz)(over 100 ms)	≅1	kHz range
Coherence Length (km)	>1	
Frequency Stability ⁴ (MHz/min.)	≅1	≅2
Relative Intensity Noise (RIN)(dB/Hz), f >10 kHz	<-100	<-90
RIN with Noise Eater (NE)(dB/Hz) option, f >10 kHz	<-140	<-120
Intensity Noise without NE, 10 Hz to 2 MHz (% rms)	<0.1	<0.5
Intensity Noise with NE, 10 Hz to 2 MHz (% rms)	<0.03	<0.2
Waist Location (inside laser head)(mm)	≅105	≅95
Laser Head Size (W x H x L)	150 x 113 x 200 mm (5.9 x 4.4 x 7.9 in.)	121 x 97 x 175 mm (4.8 x 3.8 x 6.9 in.)
Laser Head Weight	3.9 kg (8.6 lbs.)	2.6 (5.7 lbs.)
Laser Controller Size (W x H x L)	340 x 345 x 135 mm (13.4 x 13.6 x 5.3 in.)	340 x 235 x 90 mm (13.4 x 9.25 x 3.5 in.)
Laser Controller Weight	9.2 kg (20.3 lbs.)	4.2 kg (9.3 lbs.)
Options	Noise Eater Extended Tuning Range (ETR) Fiber coupling (>60% coupling efficiency)	

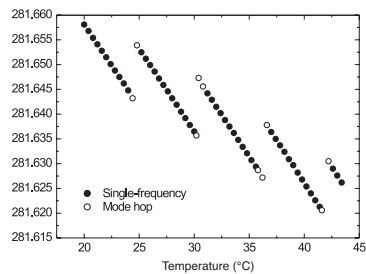
¹ Optional Noise eater (NE) available at time of order.
² Optional fiber coupling (FC) available at time of order.
 Coupling efficiency > 60%.

³ Optional extended tuning range (ETR) available at time of order.
⁴ Measured at constant room temperature.
⁵ Only for Mephisto product line.

Tuning Standard Geometry



Tuning ETR Geometry



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 Mephisto 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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