Monaco 1300

One-Box Three-Photon Imaging Laser

Monaco 1300 is a dedicated ultrafast 1300 nm light source for three-photon (3P) imaging, specifically developed to offer a simplified and reliable, all-in-one 3P excitation source. Delivering 1.5 to 2.5 W, sub-50 fs pulses at 1300 nm in the MHz regime, Monaco 1300 is optimized for excitation of imaging and functional probes like the GFP and GCaMP families. The Total Power Control (TPC) and dispersion precompensation options combined in a single box afford ease of integration, eliminating the need for complex set-ups. Access to the 1035 nm Monaco output also enables advanced two-photon photostimulation and imaging applications all from a single excitation source.

Features and Benefits

- 1.5 W to 2.5 W average power
- <50 fs pulse width
- 1, 2, or 4 MHz repetition rate versions
- Optional built-in fast Total Power Control (TPC) for on-the-fly power attenuation and optical gating
- Optional Compact Pulse Compressor (CPC) allowing dispersion precompensation for optimum pulse width at the sample
- Switchable Monaco 1035 nm output access for two-photon photostimulation and imaging
- Integrated one-box design for ease of use and simplified application integration
- Water-cooled for long-term stability
- HALT-designed and HASS-verified for the highest quality and reliability

Applications

- Three-Photon Imaging
- Multiphoton Imaging
- Two-Photon Imaging
- Optogenetics
- Photostimulation
- Multiphoton Microscopy

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SPECIFICATIONS[1]

OPTICAL OUTPUT A	Monaco 1300	Monaco 1300 TPC
Wavelength (nm)	1300 ±10	
Repetition Rate[2] (MHz)	1, 2, or 4	
Average Power (W)	1.5 at 1 MHz 2.5 at 2 MHz 2.5 at 4 MHz	1.5 at 1 MHz 2 at 2 MHz 2 at 4 MHz
Pulse Duration (fs)	<50	
Spatial Mode	M^2 <1.3	M^2 <1.4
Beam Asymmetry	0.8 to 1.2	
Beam Diameter ($1/e^2$, mm) (nominal)	2.7	
Beam Astigmatism (%)	<25	
Polarization	Linear, Vertical	
Power Stability[3] (% rms)	<1.5	
Beam Pointing Stability[3] (µrad) (rms)	<20	
Modulation Rise/Fall Time (ns)	NA	<35
CPC OPTION SPECIFICATIONS[1]		
Compressor Efficiency (%)	>80	
Dispersion Precompensation Range (fs^2)	-20,000 to +10,000	
Dispersion Precompensation Step Size (fs^2)	200	
OPTICAL OUTPUT B[4]		
Wavelength (nm)	1035 ±5	
Repetition Rate (MHz)	Single-shot to 1 MHz, higher rep. rates without AOM pulsepicking: 1 to 50 MHz standard	
Average Power (W) (>1 MHz)	60	
Pulse Duration (fs)	<350	
Spatial Mode	M^2 <1.2	
Beam Diameter ($1/e^2$, mm) (nominal)	2.7	
Polarization	Vertical	
Power Stability[3] (% rms)	<1.5	
MECHANICAL AND ENVIRONMENTAL SPECIFICATIONS		
Laser Head Dimensions[5] (L x W x H)	1149.7 x 358.0 x 192.7 mm (45.26 x 14.09 x 7.59 in.)	
Laser Power Supply Dimensions (L x W x H)	349.6 x 192.1 x 82.6 mm (13.76 x 7.56 x 3.25 in.)	
Laser Head Mass[5]	77 kg (169.75 lbs)	
Operating Temperature Range	10 to 30°C (50 to 86°F)	
Non-Operating Temperature	5 to 65°C (41 to 149°F)	
Relative Humidity (%)	<90% non-condensing	
ELECTRICAL AND CONTROL REQUIREMENTS		
Power Requirements	100/240 VAC (50/60 Hz)	
Cooling	Closed loop water chiller required (sold separately)	

1 Specifications subject to change.
2 Factory set, must be specified when ordered and will be optimized prior to shipment.
3 Measured over 24 hrs. after 45 min. warm-up under stable environmental conditions.
4 Outputs A and B are not available simultaneously.
5 Specified with optional compressor attached.

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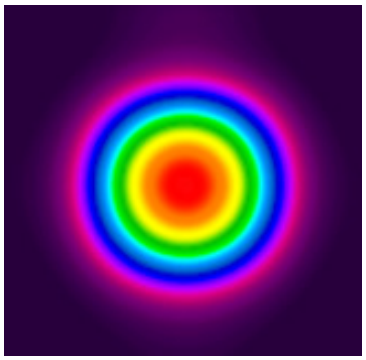
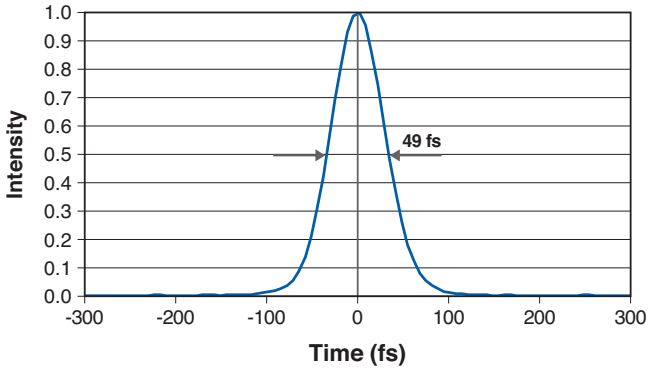
TYPICAL PERFORMANCE DATA

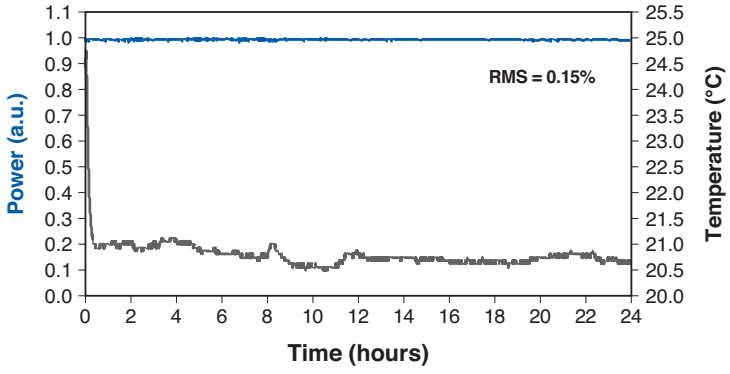
Typical Monaco 1300 Beam Profile at 2 MHz



Typical Monaco 1300 Temporal Profile at 2 MHz (Autocorrelator)



Typical Monaco 1300 Power Stability at 2 MHz over 24 Hrs



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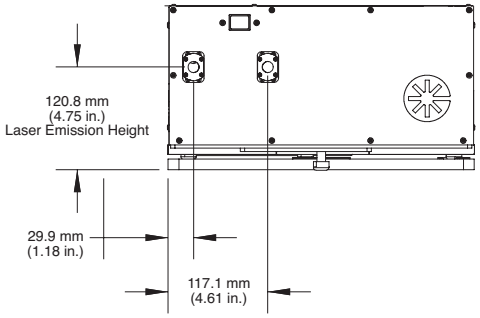
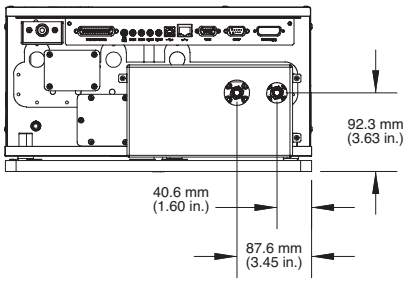
MECHANICAL SPECIFICATIONS

Monaco 1300

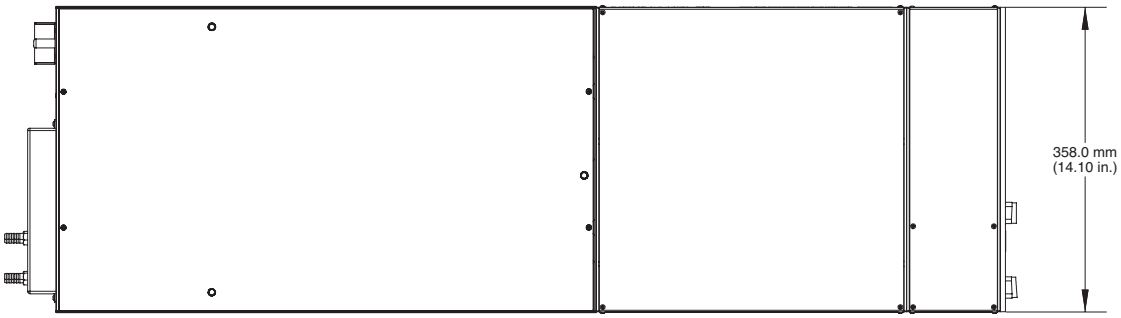
Front View



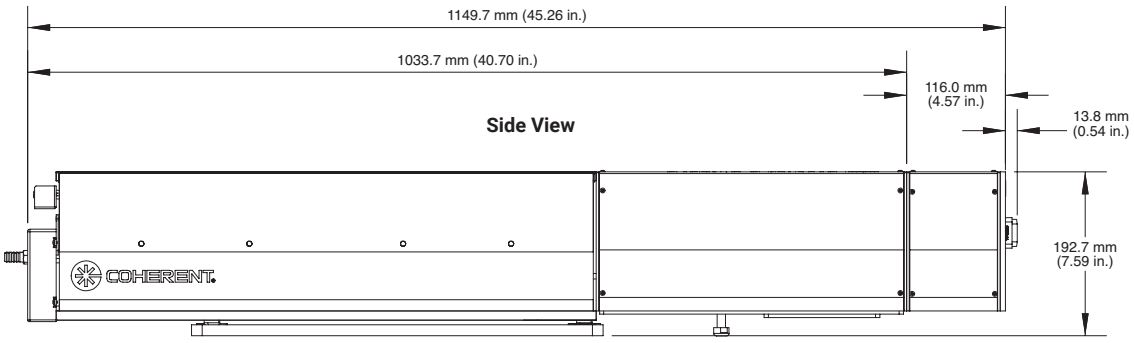
Rear View



Top View



Side View



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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 Monaco 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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