COHERENT

Chameleon Discovery

Dual Output, Broadly Tunable Laser for Multiphoton Imaging

Chameleon Discovery is an ultrafast tunable laser with performance that truly redefines possibilities for non-linear imaging.

A combination of high average power across a wide tuning range (680 nm to 1300 nm) and short pulses delivered right to the sample plane enables deep in-vivo excitation of all popular fluorescent probes, like eGFP and YFP. The long wavelength capabilities address perfectly the ongoing developments in RFPs and red-shifted calcium indicators. High peak power ensures optimized performance for label-free techniques such as SHG and THG.

A high power, 1040 nm, secondary output further allows simultaneous, multi-wavelength excitation of multiple fluorescent markers or photoactivation of optogenetics probes. The two outputs of the laser have phase-locked pulse trains, enabling CARS and SRS microscopy.

As should be expected from every Chameleon laser, beam quality is exquisite, guaranteeing optimum axial resolution and efficient power transmission through the microscope optical system.

Chameleon Discovery is totally automated, with a simple interface that allows fast tuning and easy integration with commercial and home-built microscope systems. The rugged testing demanded by Coherent's industrial design process ensures high system uptime and low maintenance.

Superior Reliability & Performance

Chameleon Discovery Features:

- **Automated hands free operation**
- **High average and high peak power for excellent fluorescent yield and efficiency**
- **GDD dispersion compensated output for optimized peak power at the sample plane**
- **Secondary output standard with high average power for multi-wavelength imaging and opto-genetics photoactivation**
- **Synchronized output pulse trains for CARS/SRS and wavelength mixing**
- **Industrial design for high uptime and reliability**

Chameleon Discovery Applications:

- **Multiphoton Excitation Microscopy**
- **Second Harmonic Generation Imaging**
- **Third Harmonic Generation Imaging**
- **CARS/SRS Microscopy**
- **Optogenetics**
- **Ultrafast Spectroscopy**
- **Non-linear Optics**

www.Coherent.com/ChameleonDiscovery

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System Specifications	Chameleon Discovery
Optical Output A	
Tuning Range (nm)	680 to 1300
Average Output Power (mW)	
700 nm	1300
800 nm	1400
900 nm	1300
1000 nm	1100
1200 nm	800
1300 nm	600
Pulse Duration[1,2] (fs)	100
Repetition Rate (MHz)	80 ±0.5
Beam Mode[1]	M^2 <1.2
Beam Diameter[1] (mm)	1.2 ±0.2
Ellipticity[1]	0.9 to 1.1
Astigmatism[1] (%)	<10
Polarization[1]	Horizontal, >500:1
Noise[1,3] (%)	<0.5
Power Stability[4] (%)	±1
Tuning Speed[5] (nm/s)	>50
Pointing Accuracy (µrad)[6]	<350
Dispersion Compensation Range (fs^2)	
680 nm	0 to 45,000
800 nm	0 to 25,000
1050 nm	0 to 10,000
1300 nm	0 to 8000
Optical Output B	
Wavelength (nm)	1040
Average Output Power (mW)	>1500
Pulse Duration[2] (fs)	160
Repetition Rate[7] (MHz)	80 ±0.5
Beam Mode	M^2 <1.2
Beam Diameter (mm)	1.2 ±0.2
Ellipticity	0.8 to 1.2
Astigmatism (%)	<10
Polarization	Horizontal, >500:1
Noise[3] (%)	<0.25
Power Stability[4] (%)	±1

1 At 900 nm.
2 Assumes sech² pulse shape.
3 RMS, 10 Hz to 10 MHz.
4 Power drift in a 2 hour period after 1 hour warm-up and ±1°C ambient temperature change.
5 Averaged over entire tuning range.
6 Maximum deviation over entire GDD dispersion adjustment and wavelength range.
7 Phase locked to Output A.

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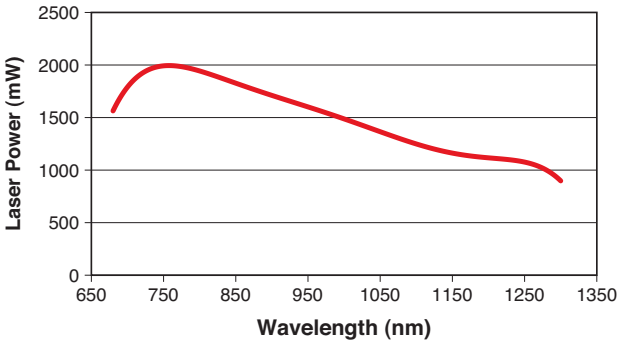
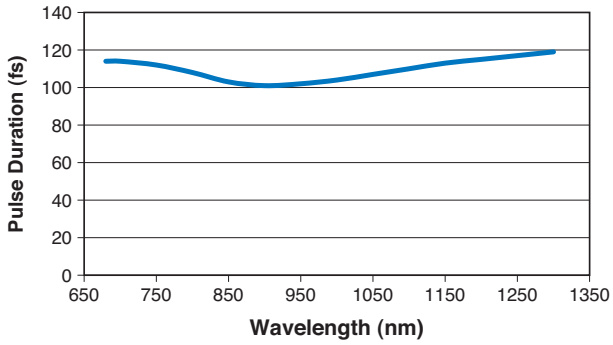
System Specifications	Chameleon Discovery
Utility Requirements	
Operating Voltage (VAC)	90 to 250 (auto ranging)
Maximum Operating Current (A)	
Power Supply	<8 at 90 VAC
Chiller	<14 at 90 VAC
MRU	<2 at 90 VAC
System Power Consumption (W)	2300
Line Frequency (Hz)	47 to 63
Communications/Control Interfaces[1]	RS-232, USB, Ethernet (option)
Environmental Requirements	
Operating Temperature Range	15 to 35°C (59 to 95°F)
Storage Temperature Range	0 to 40°C (32 to 104°F)
Humidity	Non-condensing
Altitude (m)	<2000
Mechanical Specifications	
Dimensions	
Power Supply	19" unit, 3U
Chiller	19" unit, 3U
MRU	19" unit, 2U

[1] PC required.

Chameleon Discovery Laser Power (typical)



Chameleon Discovery Pulse Duration (typical)



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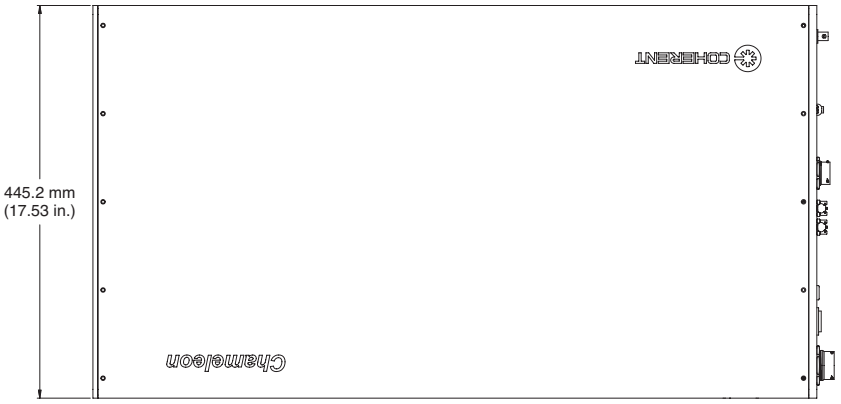
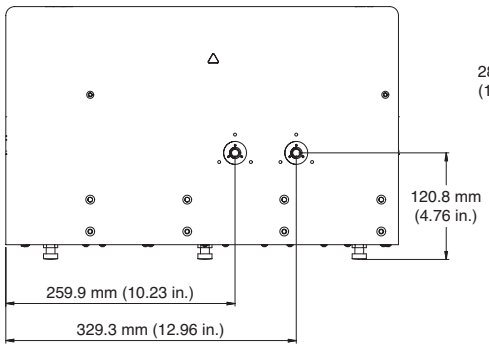
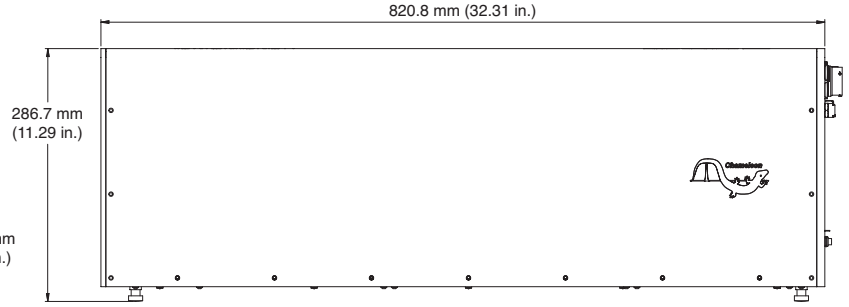
Mechanical Specifications

Top View



Front View





Side View

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Printed in the U.S.A. MC-xxx-14-0M1114

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 Chameleon systems. 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.