

Chameleon Discovery with Total Power Control

Dual Output, Broadly Tunable Femtosecond Laser

Chameleon Discovery breaks new ground in the evolution of ultrafast lasers for multiphoton imaging by being the first such laser to offer fast power modulation on both outputs.

Users can now be guaranteed of exquisite beam mode parameters, and high power directly into the microscope scan head. The built in modulation elements have fast rise time and excellent extinction ratio ensuring sharp, noise free imaging that allows power control for z-stack brightness control, flyback blanking and voxel dwell time optimization.

High power and a broad tuning range of 680 to 1300 nm, enables deep in-vivo excitation of all popular fluorescent probes and Calcium indicators.

The entire system is designed according to Coherent's exacting HALT (Highly accelerated Life Testing) methodologies for high system uptime, low maintenance and long lifetimes.



FEATURES & BENEFITS

- Automated hands free operation
- Fast rise time and high contrast power control on both outputs
- Superb beam quality and pointing guarantees laser performance directly to microscope scanhead
- 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 optogenetics photo-stimulation
- Synchronized output pulse trains for CARS/SRS and wavelength mixing
- Industrial design for high uptime and reliability

APPLICATIONS

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



OPTICAL OUTPUT A	Chameleon Discovery with Total Power Control
Tuning Range (nm)	680 to 1300
Average Output Power (mW)	
700 nm	1100
800 nm	1250
900 nm	1300
1000 nm	1050
1200 nm	850
1300 nm	650
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 (%)	<25
Polarization ¹	Linear, Horizontal
Noise ^{1,3} (%)	<0.5
Power Stability ⁴ (%)	±1
Tuning Speed ⁵ (nm/s)	>50
Pointing Accuracy ⁶ (μrad)	<350
Rise/Fall Time (ns)	<1000
Contrast Ratio	1000:1
Dispersion Compensation Range (fs ²)	
680 nm	0 to 32,000
800 nm	0 to 15,000
1050 nm	0 to 3000
1300 nm	0 to 2500
OPTICAL OUTPUT B	
Wavelength (nm)	1040
Average Output Power (mW)	>2800
Pulse Duration ² (fs)	140
Repetition Rate ⁷ (MHz)	80 ±0.5
Beam Mode	M ² <1.3
Beam Diameter (mm)	1.2 ±0.2
Ellipticity	0.8 to 1.2
Astigmatism (%)	<25
Polarization	Linear, Horizontal
Noise ³ (%)	<0.25
Power Stability ⁴ (%)	±1
Rise/Fall Time (ns)	<1000
Contrast Ratio	1000:1

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.

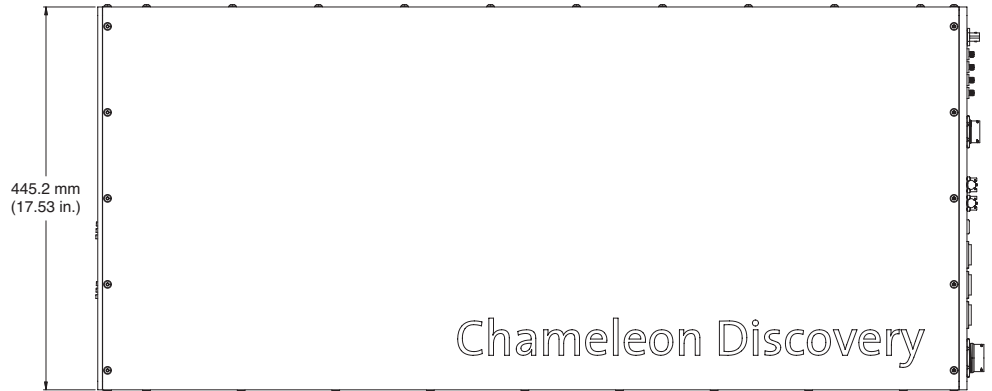
6 Maximum deviation over entire GDD dispersion adjustment and wavelength range.

7 Phase locked to Output A.

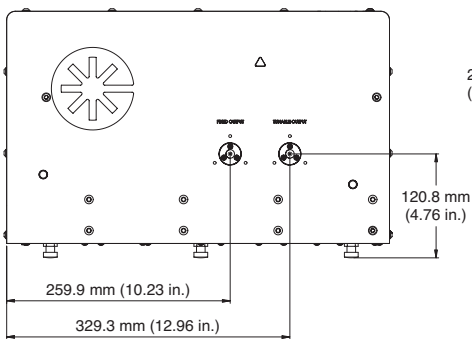
MECHANICAL SPECIFICATIONS

Chameleon Discovery with Total Power Control

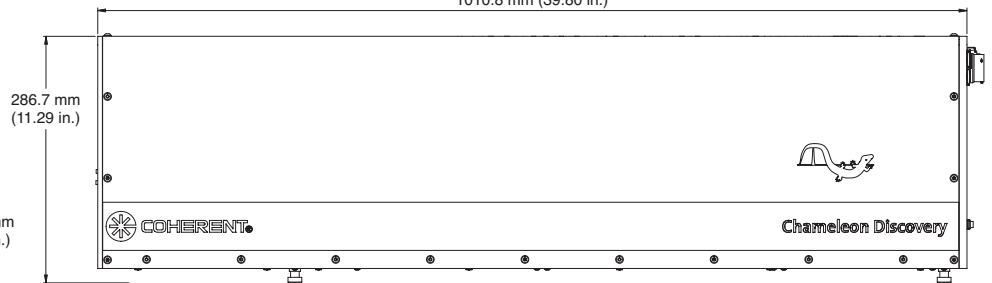
Top View



Front View



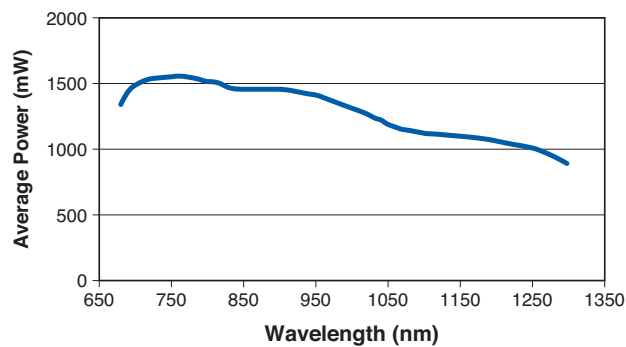
1010.8 mm (39.80 in.)



Side View

TYPICAL PERFORMANCE DATA

Chameleon Discovery with TPC:
Typical Tuning and Power



Chameleon Discovery with Total Power Control Datasheet

UTILITY REQUIREMENTS	Chameleon Discovery/Discovery with Total Power Control
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, PC required (Analog in for TPC)
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	
Maximum Operating Current (A)	
Power Supply	19" unit, 3U
Chiller	19" unit, 6U
MRU	19" unit, 2U

¹ PC required.



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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. MC-XXX-18-0M1218 Copyright ©2018 Coherent, Inc.

