

# Chameleon Discovery NX/LX with Total Power Control

## Widely-Tunable Femtosecond Laser with Built-In Fast Power Control

Chameleon Discovery series with Total Power Control (TPC) offers next-generation automated, ultrafast tunable lasers designed to meet the most demanding requirements in two-photon imaging and spectroscopy.

Discovery NX is a dual output model that delivers the highest power to enable deep in-vivo excitation of all popular fluorescent probes, whilst the expanded dispersion pre-compensation range ensures the shortest pulses at the sample plane for a variety of microscopy configurations. Secondary high-power 1040 nm beam enables multi-wavelength excitation. Discovery LX model can be used in setups where tunable output only and narrower tunability is sufficient.

Total Power Control is available on both Discovery models providing built-in acousto-optic modulation for fast and high contrast power control, guaranteeing perfect beam parameters directly into the microscope scan head.



### FEATURES

- Automated control for hands-free operation
- Total Power Control (TPC) built-in fast power modulation
- Highest average power for deepest imaging
- High dispersion precompensation range for optimized peak power
- Optional secondary output at 1040 nm for multi-wavelength excitation
- 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 with 1040 nm option

## Chameleon Discovery NX/LX with Total Power Control

Optical Output A	Chameleon Discovery NX TPC	Chameleon Discovery LX TPC
Tuning Range (nm)	660 to 1320	680 to 1080
Average Output Power (mW)		
680 nm	-	800
700 nm	1500	1340
800 nm	2700	2400
900 nm	2700	2400
1000 nm	2300	2050
1080 nm	-	1540
1200 nm	1850	-
1300 nm	1300	-
Pulse Duration <sup>1,2</sup> (fs)	100	
Repetition Rate (MHz)	80 ±0.5	
Beam Mode <sup>1</sup>	M <sup>2</sup> <1.2	
Beam Diameter <sup>1</sup> (mm)	1.2 ±0.2	
Ellipticity <sup>1</sup>	0.8 to 1.2	
Astigmatism <sup>1</sup> (%)	<25	
Polarization	Linear, Horizontal	
Noise <sup>1,3</sup> (%)	<0.5	
Power Stability <sup>4</sup> (%)	±1	
Tuning Speed <sup>5</sup> (nm/s)	>50	
Pointing Accuracy <sup>6</sup> (μrad)	<350	
Rise/Fall Time <sup>7</sup> (ns)	<400	
Contrast Ratio	1000:1	
Dispersion Compensation Range (fs <sup>2</sup> )		
680 nm	0 to -40,000	0 to -40,000
800 nm	0 to -17,000	0 to -17,000
950 nm	0 to -9000	0 to -9000
1050 nm	0 to -5000	0 to -5000
1300 nm	0 to -4000	-
Optical Output B		
Wavelength (nm)	1040	
Average Output Power (mW)	>2800	
Pulse Duration <sup>2</sup> (fs)	140	
Repetition Rate <sup>8</sup> (MHz)	80 ±0.5	
Beam Mode	M <sup>2</sup> <1.2	
Beam Diameter (mm)	1.2 ±0.2	
Ellipticity	0.8 to 1.2	
Astigmatism (%)	<25	
Polarization	Linear, Horizontal	
Noise <sup>3</sup> (%)	<0.25	
Power Stability <sup>4</sup> (%)	±1	
Rise/Fall Time <sup>7</sup> (ns)	<400	
Contrast Ratio	1000:1	
Dispersion Precompensation <sup>9</sup>	Optional	

**Notes:**

- |   |  |  |
|---|--|--|
| 1. At 900 nm.                             | 4. Power drift in a 2 hour period after 1 hour warm-up and ±1 °C ambient temperature change. |  |
| 2. Assumes sech <sup>2</sup> pulse shape. | 5. Averaged over entire tuning range.  |  |
| 3. RMS, 10 Hz to 10 MHz.                  | 6. Maximum deviation over entire GDD dispersion adjustment and wavelength range.             |  |
|   | 7. 5% to 95% power level.  |  |
|   | 8. Phase locked to Output A.   |  |
|   | 9. External CPC 1040 module.   |  |

## Chameleon Discovery NX/LX with Total Power Control

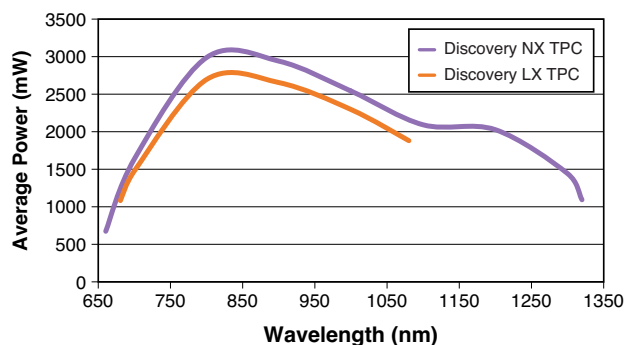
Utility Requirements		Chameleon Discovery NX/LX TPC	
Operating Voltage (VAC)		90 to 250 (auto ranging)	
Maximum Operating Current (A)		<8 at 90 VAC <14 at 90 VAC <2 at 90 VAC	
System Power Consumption (W)		2300	
Line Frequency (Hz)		47 to 63	
Communications/Control Interfaces <sup>1</sup>		RS-232, USB, 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			
Power Supply		19" unit, 3U	
Chiller		19" unit, 6U	
MRU		19" unit, 2U	

Notes:

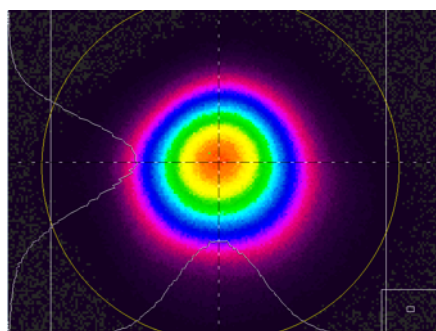
1. PC required.

### Typical Performance Data

Chameleon Discovery NX/LX TPC:  
Typical Tuning and Power



Chameleon Discovery NX/LX TPC:  
Beam Profile at 1000 nm



# Chameleon Discovery NX/LX with Total Power Control

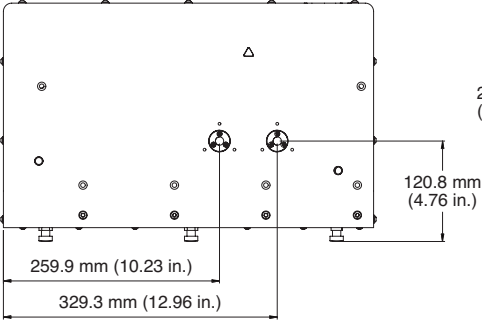
## Mechanical Specifications

Chameleon Discovery NX/LX  
with Total Power Control

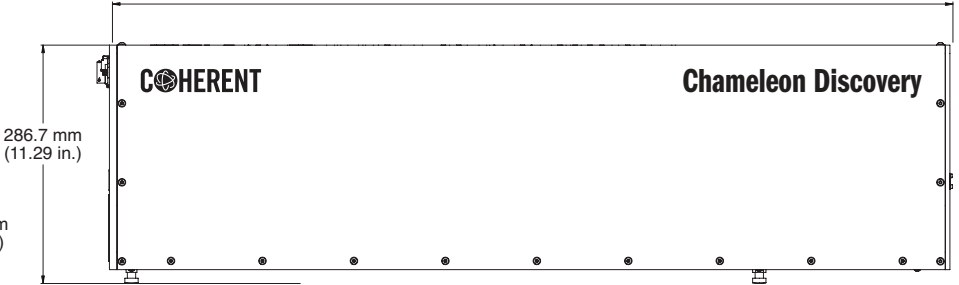
Top View



Front View



1010.8 mm (39.80 in.)



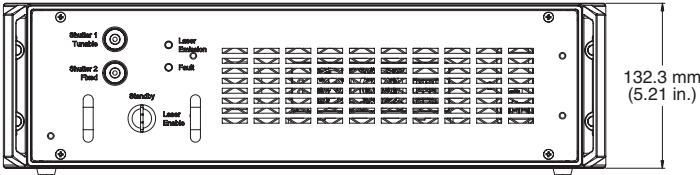
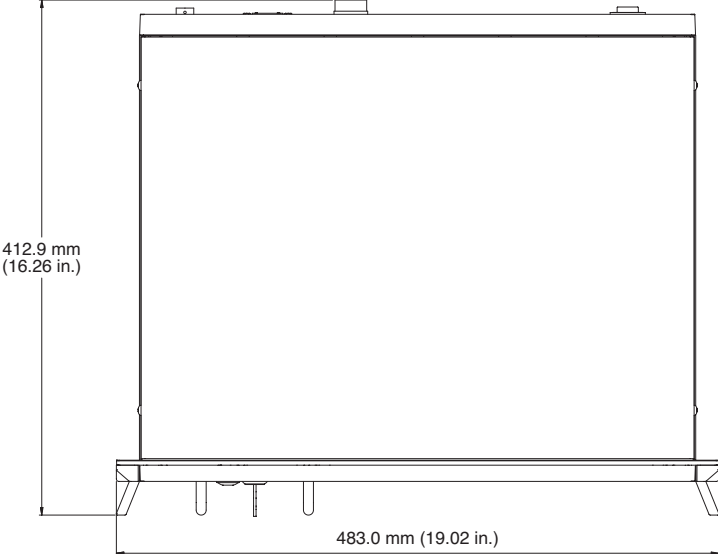
Side View

# Chameleon Discovery NX/LX with Total Power Control

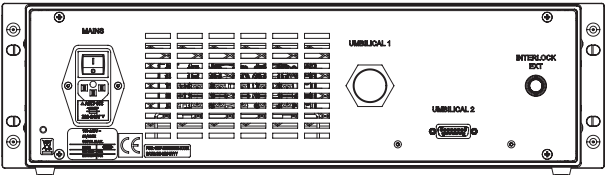
## Mechanical Specifications

Chameleon Discovery NX/LX TPC Power Supply

Top View



Front View



Rear View



ISO 9001 Registered