

# Chameleon Discovery NX

Dual-Output, Widely-Tunable  
Femtosecond Laser

Chameleon Discovery NX is a next-generation automated, ultrafast tunable laser with enhanced performance to address the most demanding requirements in two-photon imaging and spectroscopy.

Discovery NX delivers the highest power to enable deep in-vivo excitation of all popular fluorescent probes, whilst the expanded dispersion precompensation range ensures the shortest pulses at the sample plane for a variety of microscopy configurations.

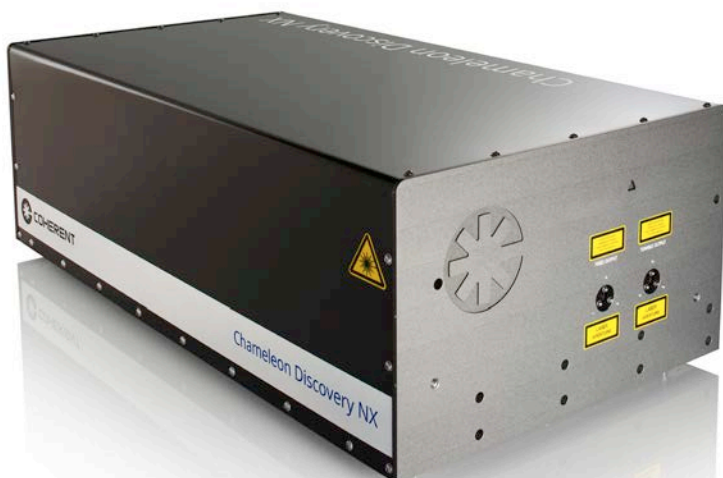
Octave spanning tuning range is especially advantageous for ultrafast spectroscopy applications, and can be coupled with Harmonic generation accessories, assuring gap-free, automated tuning from 330 nm to 1320 nm.

## Features and Benefits

- Automated control for hands-free operation
- Highest average power for deepest imaging
- High dispersion precompensation range for optimized peak power
- Secondary output at 1040 nm for multi-wavelength excitation
- Synchronized output pulse trains
- Industrial design for high uptime and reliability
- Can be upgraded with built-in fast power modulation with Total Power Control (TPC)

## Applications

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



## SPECIFICATIONS

OPTICAL OUTPUT A	Chameleon Discovery NX
Tuning Range (nm)	660 to 1320
Average Output Power (mW)	
700 nm	2000
800 nm	3600
900 nm	3200
1000 nm	2700
1200 nm	2300
1300 nm	1900
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> (%)	<20
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
Dispersion Compensation Range (fs <sup>2</sup> )	
680 nm	0 to -50,000
800 nm	0 to -27,000
950 nm	0 to -16,000
1050 nm	0 to -12,000
1300 nm	0 to -10,000
OPTICAL OUTPUT B	
Wavelength (nm)	1040
Average Output Power (mW)	>3500
Pulse Duration <sup>2</sup> (fs)	140
Repetition Rate <sup>7</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
Dispersion Precompensation <sup>8</sup>	Optional

1 At 900 nm.

2 Assumes sech<sup>2</sup> 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.

8 External CPC 1040 module.

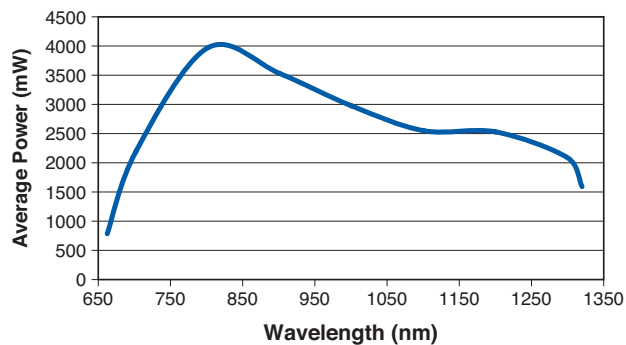
## SPECIFICATIONS

UTILITY REQUIREMENTS		Chameleon Discovery NX
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 <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

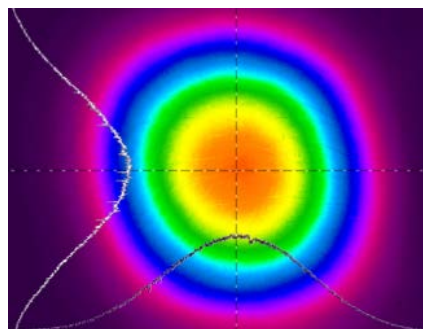
<sup>1</sup> PC required.

## TYPICAL PERFORMANCE DATA

Chameleon Discovery NX:  
Typical Tuning and Power



Chameleon Discovery NX:  
Beam Profile at 900 nm



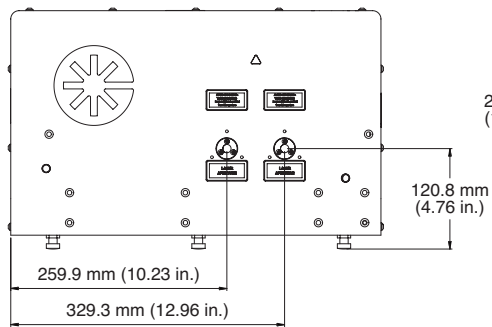
## MECHANICAL SPECIFICATIONS

### Chameleon Discovery NX

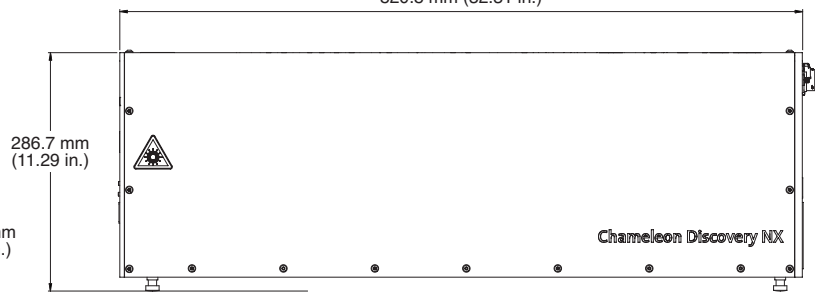
Top View



Front View



820.8 mm (32.31 in.)



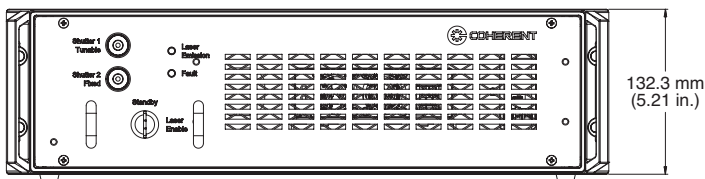
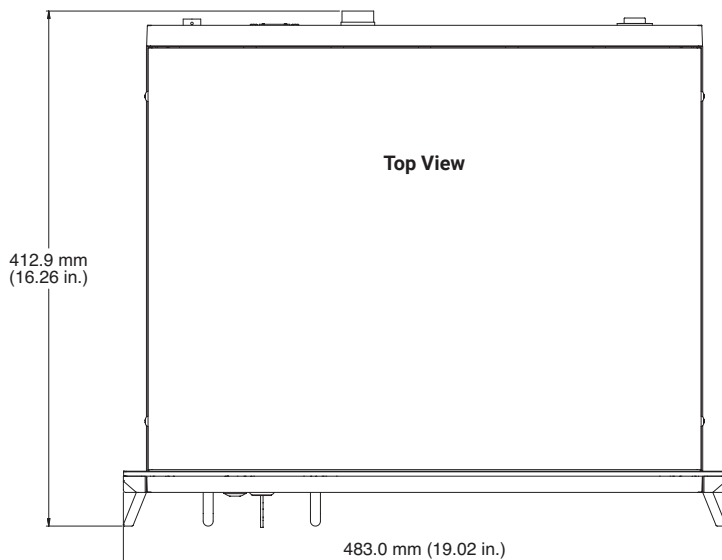
Side View

# Chameleon Discovery NX

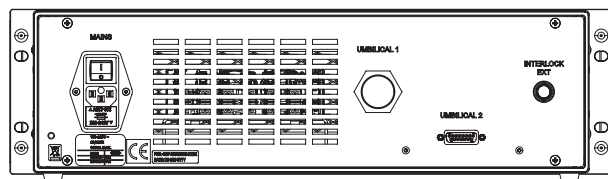
Dual Output, Widely-Tunable Femtosecond Laser

## MECHANICAL SPECIFICATIONS

Chameleon Discovery NX  
Power Supply



Front View



Rear View



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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](http://www.Coherent.com) or contact your local Sales or Service Representative.

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