

# Chameleon Discovery NX with Total Power Control

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

Chameleon Discovery NX with Total Power Control (TPC) 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 pre-compensation range ensures the shortest pulses at the sample plane for a variety of microscopy configurations.

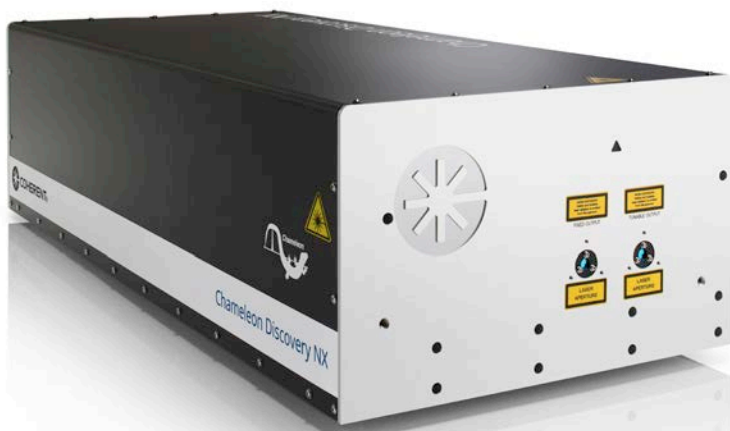
Total Power Control uses built-in acousto-optic modulation for fast and high contrast power control, guaranteeing perfect beam parameters directly into the microscope scan head. A secondary 1040 nm output is also available as an option.

## Features and Benefits

- 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



## SPECIFICATIONS

OPTICAL OUTPUT A	Chameleon Discovery NX with Total Power Control
Tuning Range (nm)	660 to 1320
Average Output Power (mW)	
700 nm	1500
800 nm	2700
900 nm	2700
1000 nm	2300
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 (ns)	<400
Contrast Ratio	1000:1
Dispersion Compensation Range (fs <sup>2</sup> )	
680 nm	0 to -40,000
800 nm	0 to -17,000
950 nm	0 to -9000
1050 nm	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>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
Rise/Fall Time (ns)	<400
Contrast Ratio	1000:1
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.

# Chameleon Discovery NX with TPC

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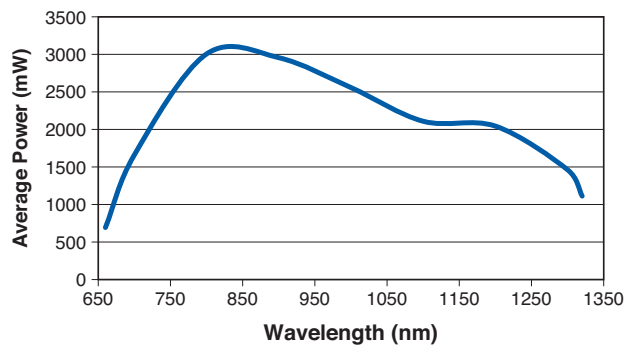
## SPECIFICATIONS

UTILITY REQUIREMENTS		Chameleon Discovery NX 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 <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

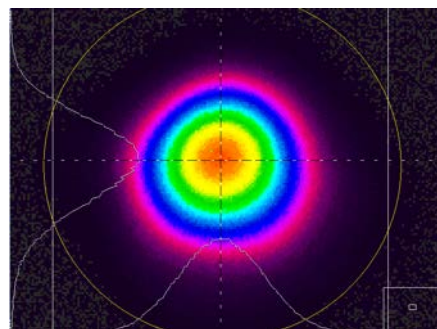
<sup>1</sup> PC required.

## TYPICAL PERFORMANCE DATA

Chameleon Discovery NX TPC:  
Typical Tuning and Power



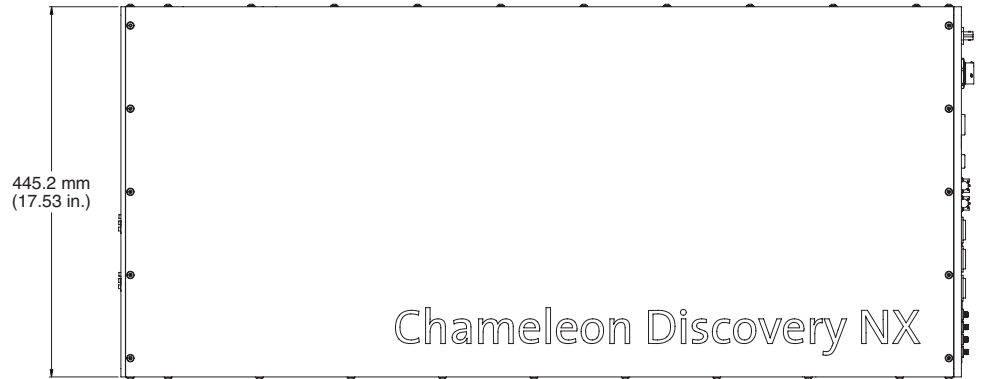
Chameleon Discovery NX TPC:  
Beam Profile at 1000 nm



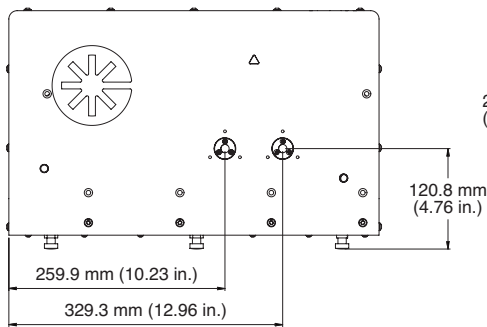
## MECHANICAL SPECIFICATIONS

Chameleon Discovery NX  
with Total Power Control

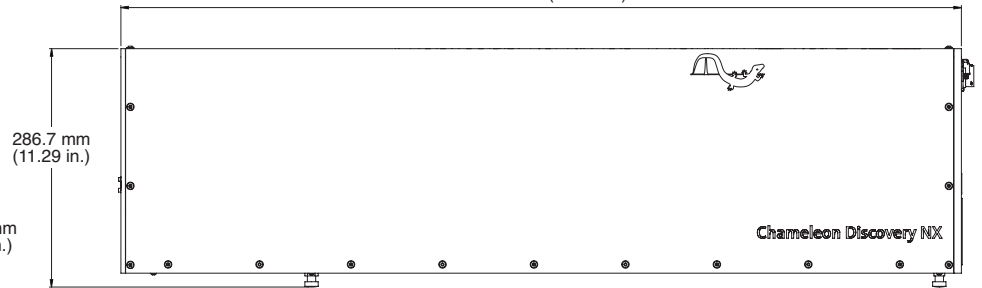
Top View



Front View



1010.8 mm (39.80 in.)



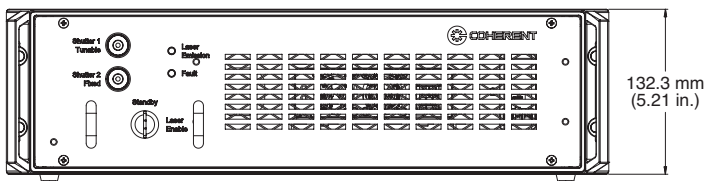
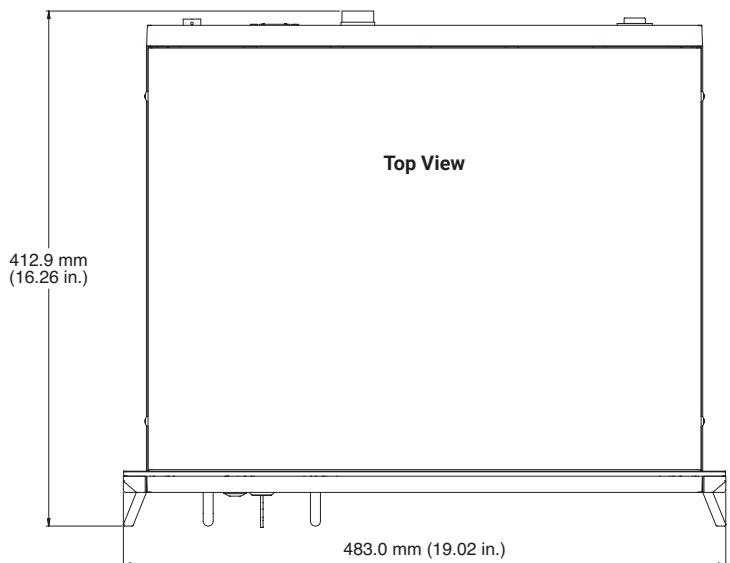
Side View

# Chameleon Discovery NX with TPC

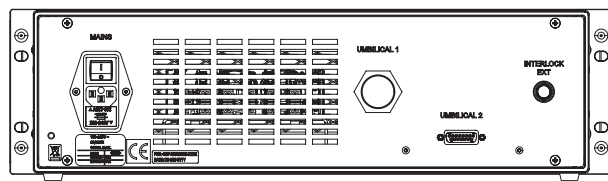
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## MECHANICAL SPECIFICATIONS

Chameleon Discovery NX TPC  
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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