

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 & 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



Tuning Range (nm)660 to 1320Average Output Power (mW)700 nm700 nm3600800 nn3600900 nn32001000 nm27001200 nm23001200 nm900 nmPulse Duration ¹² (fs)80 ±0.5Repetition Rate (MHz)80 ±0.5Beam Diameter' (mm)12 ±0.2Flipticy ¹ 0.80 ±0.1Astignatism ¹ (fs)0.80 ±0.2Polarizotin0.90Noise ¹³ (fs)0.90Polarizotin0.90Stignatism ¹ (fs)0.90Noise ¹³ (fs)0.90Polarizotin0.90Polarizotin0.90Noise ¹³ (fs)0.90Noise ¹³ (fs)0.90Polarizotin0.90Polarizotin0.90Noise ¹³ (fs)0.90Polarizotin0.90Noise ¹³ (fs)0.90Polarizotin0.90Polarizotin0.90Noise ¹³ (fs)0.90Noise ¹³ (fs)0.90Polarizotin0.90Solon0.90Noise ¹³ (fs)0.90Noise ¹⁴ (fs)0.90Noise0.90Noise0.90Noise0.90Noise0.90Noise0.90Noise0.90Noise0.90Noise0.90Noise0.90Noise0.90Noise0.90Noise0.90Noise0.90	OPTICAL OUTPUT A	Chameleon Discovery NX
700 nm 2000 800 nm 3600 900 nm 3200 1000 nm 2700 1200 nm 2000 1300 nm 900 1300 nm 100 Pulse Duration'? (fs) 100 Repetition Rate (MHz) 80 ± 0.5 Beam Diameter' (nm) 1.2 ± 0.2 Ellipticity ¹ 08 to 1.2 Polarization ? (%s) 20 Polarization ? (%s)	Tuning Range (nm)	660 to 1320
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1300 nm1900Pulse Duration ¹² (s)00Repetition Rate (MHz)80 ± 0.5Beam Mode ¹ M ² < 1.2		
Pulse Duration12 (fs)100Repetition Rate (MHz)80 ±0.5Beam Mode1M2 <1.2		
Repetition Rate (MHz)Ø ± 0.5Beam Mode'M² < 1.2		
Beam Mode ¹ M ² < 1.2 Beam Diameter ¹ (mm) 1.2 ± 0.2 Ellipticity ¹ 0.8 to 1.2 Astigmatism ¹ (%) <20		
Beam Diameter1 (mm)1.2 ±0.2Ellipticity10.8 to 1.2Astigmatism1 (%)<20		
Ellipticity10.8 to 1.2Astigmatism1 (%)<0		M ² <1.2
Astigmatism1 %)<0PolarizationLinear, HorizontalNoise13 %)<0.5	Beam Diameter ¹ (mm)	1.2 ±0.2
PolarizationLinear, HorizontalNoise ^{1,3} (%)<0.5	Ellipticity ¹	0.8 to 1.2
Noise ^{1,3} (%) <0.5 Power Stability ⁴ (%) ±1 Tuning Speed ⁵ (nm/s) >50 Pointing Accuracy ⁶ (µrad) <350	Astigmatism ¹ (%)	<20
Power Stability4 (%)±1Tuning Speed5 (nm/s)>50Pointing Accuracy6 (µrad)<350	Polarization	Linear, Horizontal
Tuning Speeds (nm/s)>50Pointing Accuracy6 (µrad)<350	Noise ^{1,3} (%)	<0.5
Pointing Accuracy6 (µrad)<350Dispersion Compensation Range (fs2)0680 nm0 to -50,000800 nm0 to -27,000950 nm0 to -27,000950 nm0 to -16,0001050 nm0 to -12,0001050 nm0 to -12,0001300 nm0 to -10,000OPTICAL OUTPUT BWavelength (nm)1040Average Output Power (mW)>3500Pulse Duration2 (fs)140Repetition Rate7 (MHz)80 ±0.5	Power Stability ⁴ (%)	±1
Dispersion Compensation Range (fs²)680 nm0 to -50,000800 nm0 to -27,000950 nm0 to -16,0001050 nm0 to -12,0001050 nm0 to -10,0001300 nm0 to -10,000OPTICAL OUTPUT BVavelength (nm)1040Average Output Power (mW)>3500Pulse Duration² (fs)140Repetition Rate? (MHz)80 ±0.5	Tuning Speed⁵ (nm/s)	>50
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 0 to -10,000 0 to -10,000 Yavelength (nm) 1040 Average Output Power (mW) >3500 Pulse Duration ² (fs) 140 Repetition Rate ⁷ (MHz) 80 ±0.5	Pointing Accuracy ⁶ (µrad)	<350
800 nm 0 to -2,000 950 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 ² (fs) 140 Repetition Rate ⁷ (MHz) 80 ±0.5	Dispersion Compensation Range (fs ²)	
950 nm 0 to - 6,000 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 ² (fs) 140 Repetition Rate ⁷ (MHz) 80 ±0.5	680 nm	0 to -50,000
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 ² (fs) 140 Repetition Rate ⁷ (MHz) 80 ±0.5		0 to -27,000
1300 nm0 to -10,000OPTICAL OUTPUT BWavelength (nm)1040Average Output Power (mW)>3500Pulse Duration² (fs)140Repetition Rate² (MHz)80 ±0.5		
OPTICAL OUTPUT BWavelength (nm)1040Average Output Power (mW)>3500Pulse Duration² (fs)140Repetition Rate² (MHz)80 ±0.5		
Wavelength (nm) 1040 Average Output Power (mW) >3500 Pulse Duration ² (fs) 140 Repetition Rate ⁷ (MHz) 80 ±0.5		0 to -10,000
Average Output Power (mW) >3500 Pulse Duration² (fs) 140 Repetition Rate² (MHz) 80 ±0.5		
Pulse Duration ² (fs) 140 Repetition Rate ⁷ (MHz) 80 ±0.5	Wavelength (nm)	1040
Repetition Rate ⁷ (MHz) 80 ±0.5	Average Output Power (mW)	>3500
	Pulse Duration ² (fs)	140
Beam Mode M ² <1.2	Repetition Rate ⁷ (MHz)	80 ±0.5
	Beam Mode	M ² <1.2
Beam Diameter (mm) 1.2 ±0.2	Beam Diameter (mm)	1.2 ±0.2
Ellipticity 0.8 to 1.2	Ellipticity	0.8 to 1.2
Astigmatism (%) <25	Astigmatism (%)	<25
Polarization Linear, Horizontal	Polarization	Linear, Horizontal
Noise ³ (%) <0.25	Noise ³ (%)	<0.25
Power Stability ⁴ (%) ±1	Power Stability ⁴ (%)	±1
Dispersion Precompensation ⁸ Optional		Optional

1 At 900 nm.

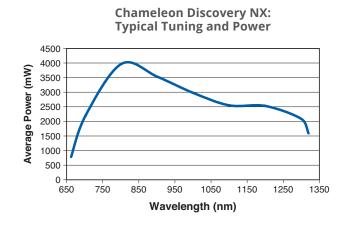
At 900 nm.
Assumes sech² pulse shape.
RNS, 10 Hz to 10 MHz.
Power drift in a 2 hour period after 1 hour warm-up and ±1°C ambient temperature change.
Averaged over entire tuning range.
Maximum deviation over entire GDD dispersion adjustment and wavelength range.
Phase locked to Output A.
External CPC 1040 module.



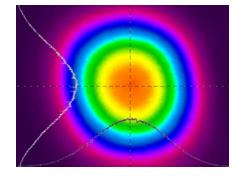
UTILITY REQUIREMENTS	Chameleon Discovery NX
Operating Voltage (VAC)	90 to 250 (auto ranging)
Maximum Operating Current (A)	
Power Supply	<8 at 90 VAC
Chiller	<14 at 90 VAC
MRU	<2 at 90 VAC
System Power Consumption (W)	2300
Line Frequency (Hz)	47 to 63
Communications/Control Interfaces ¹	RS-232, USB,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

1 PC required.

TYPICAL PERFORMANCE DATA



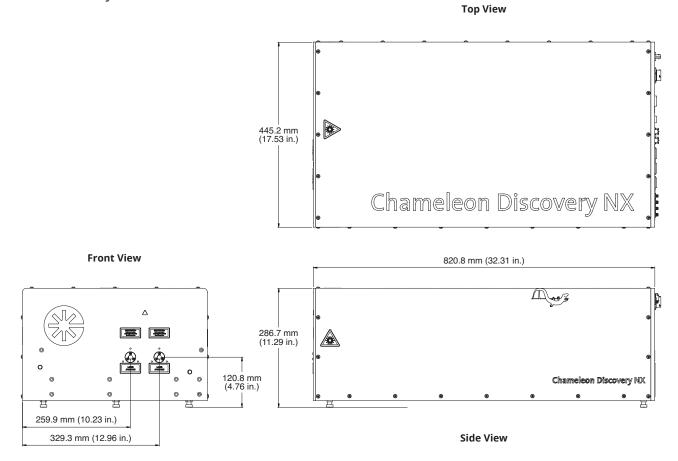
Chameleon Discovery NX: Beam Profile at 900 nm





MECHANICAL SPECIFICATIONS

Chameleon Discovery NX

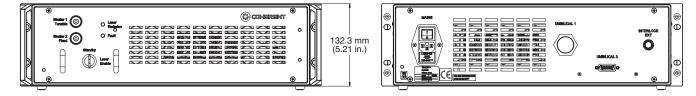




MECHANICAL SPECIFICATIONS

Chameleon Discovery NX Power Supply





Front View

Rear View

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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. MC-001-20-0M-0520Rev.B Copyright ©2020 Coherent, Inc.

