



# Axon

## Compact Ultrafast Laser Sources

The Axon series of femtosecond lasers are cost-effective ultrafast sources at discrete wavelengths, that enable a host of applications in imaging, life sciences, inspection, and nano-processing.

Multiphoton Excitation (MPE) microscopy applications are served by key wavelengths at 780 nm, 920 nm and 1064 nm, for label-free imaging, and all popular fluorescent proteins and calcium indicators.

All models are equipped with dispersion precompensation to provide the shortest pulses at the sample plane. Additionally, each version can be fitted with optional Total Power Control (TPC); built-in modulation for fast power control and flyback blanking.

Integrators benefit from a common, plug-and-play interface with the same form factor for each wavelength. Systems are totally air-cooled with no maintenance requirements, low cost of ownership, and high lifetimes.



### FEATURES & BENEFITS

- Compact and cost-effective
- Maintenance-free for low cost of ownership
- Air-cooled for flexible system integration
- Plug-and-play common interface
- Dispersion precompensation for optimal non-linear excitation
- Total Power Control (TPC) – optional built-in power control
- HALT-designed for longest lifetimes and high uptime

### APPLICATIONS

- Multiphoton Excitation (MPE) Microscopy
- Second Harmonic Generation (SHG) Microscopy
- Two Photon Polymerization
- Nano-Processing
- Semiconductor Metrology
- Supercontinuum Generation
- Terahertz Generation

SPECIFICATIONS	Axon 780	Axon 780 TPC	Axon 920	Axon 920 TPC	Axon 1064	Axon 1064 TPC
Wavelength <sup>1</sup> (nm)	780		920		1064	
Average Power (mW)	800	700	1000	800	1000	800
Pulse Duration <sup>2</sup> (fs)	<150					
Repetition Rate (MHz)	80 ±1					
Beam Mode	M <sup>2</sup> < 1.3					
Beam Asymmetry <sup>3,4</sup>	0.8 to 1.2					
Beam Diameter <sup>4</sup> (mm)	1.2 ±0.2					
Astigmatism (%)	<25					
Power Stability <sup>5</sup> (%)	±0.5					
Noise <sup>6</sup> (%)	<0.25					
Polarization	>100:1 Vertical					
Dispersion Precompensation <sup>7</sup> (fs <sup>2</sup> )	-8000 to -23000 <sup>10</sup>	0 to -15000	0 to -30000	0 to -22000	0 to -20000	0 to -13000
Modulation Rise/Fall Time <sup>8</sup> (ns)	NA	< 1000	NA	< 1000	NA	<1000
Contrast Ratio <sup>9</sup>	NA	>1000:1	NA	>1000:1	NA	> 1000:1
MECHANICAL AND ENVIRONMENTAL SPECIFICATIONS						
Laser Head Dimensions	212 x 318 x 62 mm (8.35 x 12.528 x 2.44 in.)					
Umbilical Length	7 m (22.97 ft.)					
Laser Power Supply Dimensions	3U, 19" rack mount unit					
Laser Head Mass	4.5 kg (9.92 lbs)					
Operating Temperature Range	19 to 26°C (66 to 79°F)					
Non-Operating Temperature	0 to 40°C (32 to 104°F)					
Relative Humidity (%)	<85, Non-Condensing					
Altitude (m ASL)	0 to 2000					
ELECTRICAL AND CONTROL REQUIREMENTS						
Power Requirements	100/240 VAC (50/60Hz), <500 VA					
Control Interface	RS-232 or USB					
Synch Output	BNC, 50% duty cycle, 3.5 V into 50 Ω					
Analog Power Control (V) (optional)	0 to 5					

1 Center of mass, ±3 nm.

2 Assumes Sech<sup>2</sup> deconvolution factor.

3 Ratio of waist sizes.

4 Measured at beam waist locations.

5 Over 2 hours, environment stability ±1°C, after warm-up.

6 RMS, 10 Hz to 10 MHz.

7 Adjustable via externally accessible fine adjust. Higher values on request.

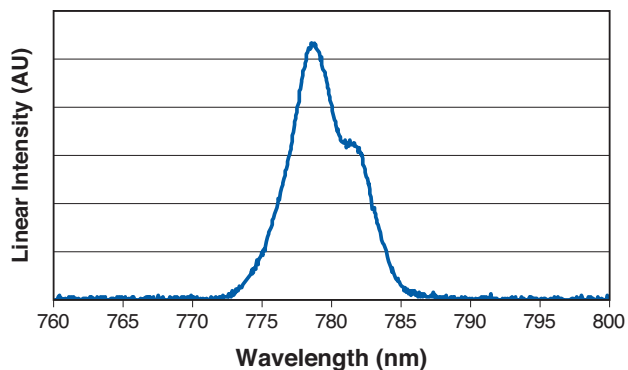
8 5% to 95% power level.

9 Measured at one meter from output port.

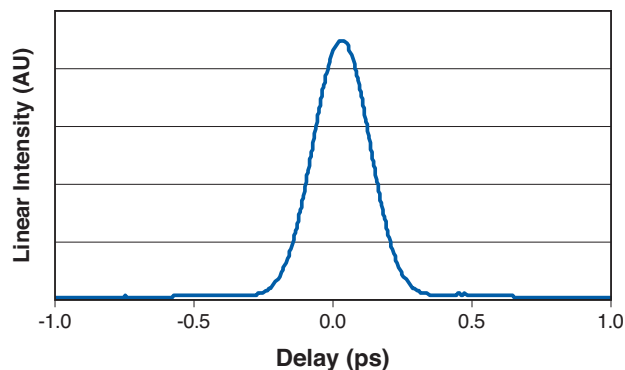
10 Option available for range starting from 0 fs<sup>2</sup>.

### TYPICAL PERFORMANCE DATA

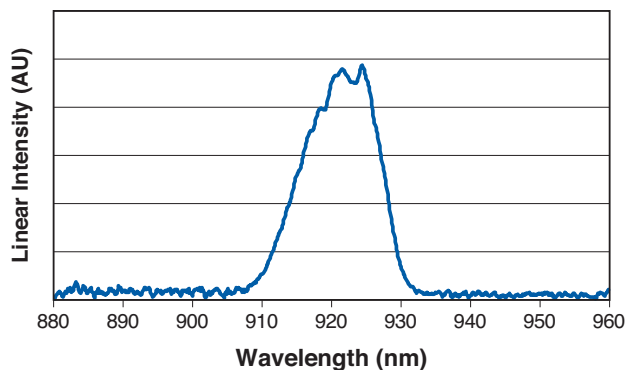
Typical Spectrum: Axon 780



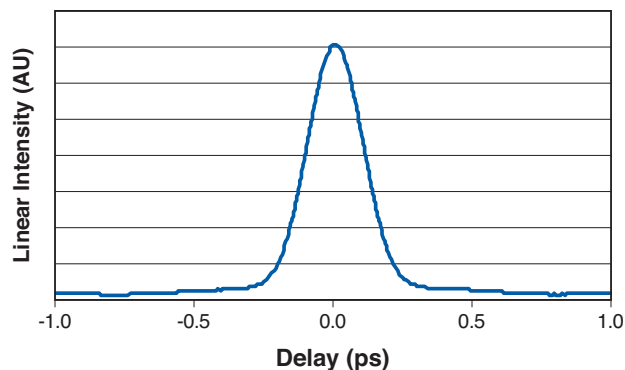
Typical Autocorrelation: Axon 780



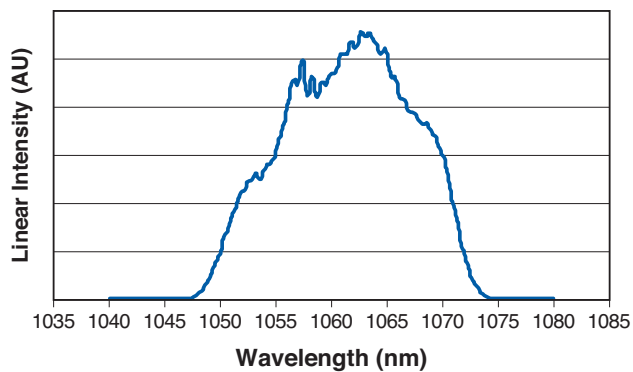
Typical Spectrum: Axon 920



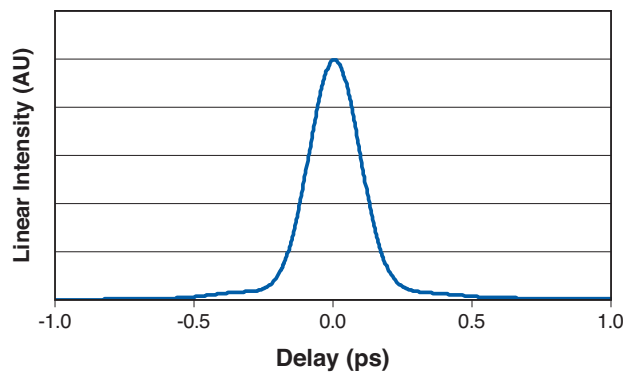
Typical Autocorrelation: Axon 920



Typical Spectrum: Axon 1064

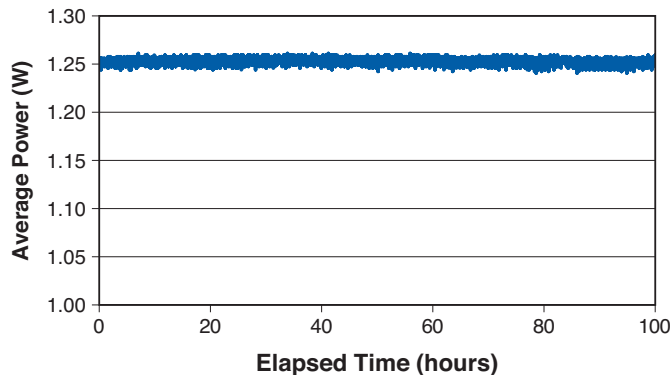


Typical Autocorrelation: Axon 1064

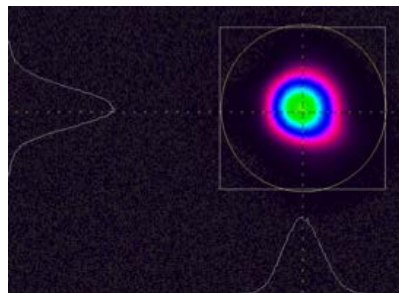


### TYPICAL PERFORMANCE DATA

Axon 100 Hour Power Stability



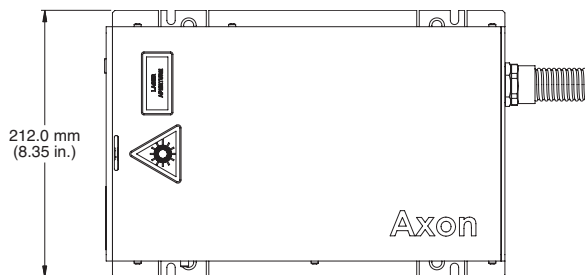
Far Field Beam Profile: Axon



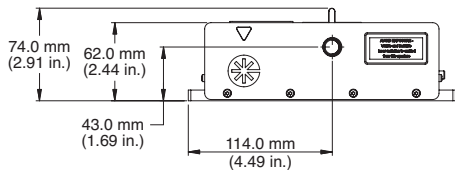
### MECHANICAL SPECIFICATIONS

Axon Laser Source

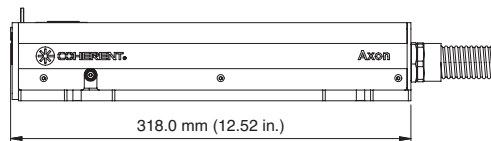
Top View



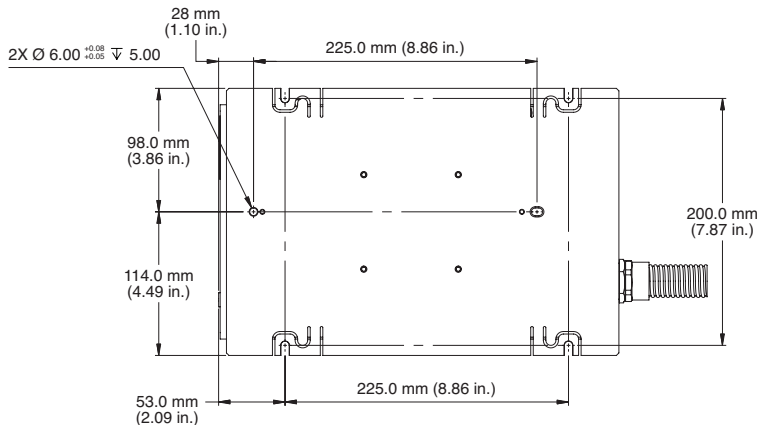
Front View



Side View

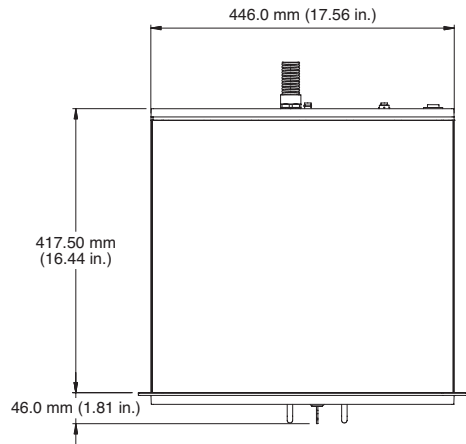


Bottom View

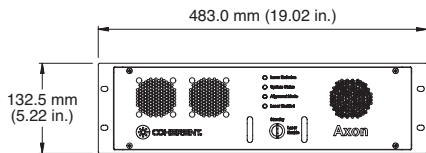
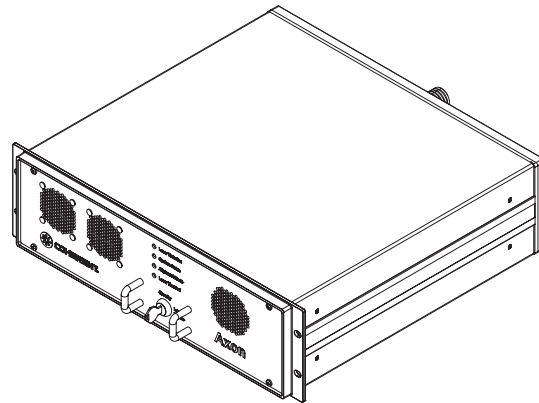


## MECHANICAL SPECIFICATIONS

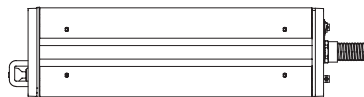
### Axon Controller



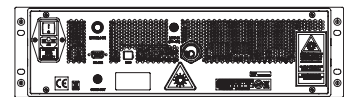
Top View



Front View



Side 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 Axon Lasers. 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. MC-027-19-0M0321Rev.C Copyright ©2021 Coherent, Inc.

