

# REVOLUTION

## Family of High Energy, kHz, Pulsed Green Lasers

The Revolution laser family from Coherent represents the state-of-the-art in high reliability, high energy, kilohertz pulsed green lasers. All models share the same sealed monolithic construction and compact footprint enabling easy integration and interchangeability. With models delivering up to 45 mJ at 527 nm and average power in excess of 80W, Revolution lasers are the most compact and powerful lasers in their class.

Ideal for pumping ultrafast Ti:S amplifiers, Revolution lasers are the power source at the heart of Coherent's latest one-box Astrella series amplifiers.

Built to Coherent's exacting industrial manufacturing standards, with every unit HASS screened for quality and reliability, Revolution lasers are equally at home on a 24/7 manufacturing line or in the most demanding of scientific research environments.

Welcome to the laser Revolution.



**Superior Reliability & Performance**

### Revolution Features:

- **Models up to 45 mJ and average powers >80W at 527 nm**
- **Nd:YLF gain medium for high energy storage**
- **Intracavity frequency doubled for best efficiency**
- **CW diode pumped for lowest optical noise**
- **User adjustable repetition rate**
- **Excellent mode quality with smooth energy distribution**
- **Compact and sealed monolithic design**
- **Side or front beam exit port options**
- **HASS tested for quality and reliability**

### Revolution Applications:

- **Ti:S Amplifier Pumping**
- **Semiconductor Annealing**
- **Materials Processing**
- **Flow Visualization**

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Performance Parameter <sup>1</sup>	REVOLUTION-20	REVOLUTION-35	REVOLUTION-50	REVOLUTION-65	REVOLUTION-80
Wavelength (nm)	527				
Standard Pulse Repetition Rate Range <sup>2</sup> (user adjustable)	Single-shot to 10 kHz				
Average Output Power (W)	15 at 1 kHz 20 at 5 kHz 20 at 10 kHz	22 at 1 kHz 35 at 5 kHz 35 at 10 kHz	30 at 1 kHz 50 at 5 kHz 50 at 10 kHz	38 at 1 kHz 65 at 5 kHz 65 at 10 kHz	45 at 1 kHz 80 at 5 kHz 80 at 10 kHz
Energy per Pulse (mJ)	15 at 1 kHz 4 at 5 kHz 2 at 10 kHz	22 at 1 kHz 7 at 5 kHz 3.5 at 10 kHz	30 at 1 kHz 10 at 5 kHz 5 at 10 kHz	38 at 1 kHz 13 at 5 kHz 6.5 at 10 kHz	45 at 1 kHz 16 at 5 kHz 8 at 10 kHz
Pulse Width (nsec)(FWHM)	<250 at 1 kHz	<250 at 1 kHz	<200 at 1 kHz	<150 at 1 kHz	<150 at 1 kHz
Pulse-to-Pulse Energy Stability (% rms)	<0.5				
<b>Beam Characteristics</b>					
Spatial Mode	Multimode				
M <sup>2</sup> <sup>3</sup>	≤23	≤23	≤25	≤25	≤27
Polarization Ratio	Horizontal, >100:1				
Nominal Beam Diameter at output window <sup>3</sup> (mm)(1/e <sup>2</sup> )	3				
Beam Divergence (mrad)(full-angle)	<8				
Beam Circularity (%)	>80				
<b>Options</b>					
High Repetition Rate (10 kHz to 40 kHz) Configuration				•	•
Extended Umbilical Options	•	•	•	•	•
Extended Water Hose Options	•	•	•	•	•
Side Output Option	•	•	•	•	•
Water-to-Water Heat Exchanger Option	•	•	•	•	•
<b>Utility &amp; Environmental Requirements</b>					
Operating Voltage Laser	200 to 240 VAC, ±10%, single-phase, 50 to 60 Hz				
Operating Voltage Options Chiller	60 Hz, 188 to 253 VAC 50 Hz, 216 to 264 VAC 50 Hz, 180 to 220 VAC 12A Max., single phase				
Weight Laser Head	19 kg (43 lbs.)				
Laser Power Supply	14 kg (31 lbs.)				
Umbilical	2 kg (4.5 lbs.)				
Chiller	75 kg (166 lbs.)				
Umbilical Length	3 m (10 ft.)				
Warm-up Time (minutes)(typical) from standby mode	<10				
from cold start	<30				

<sup>1</sup> Specifications apply at 1 kHz unless otherwise stated.

<sup>2</sup> Operation below 500 Hz requires user supplied external TTL trigger.

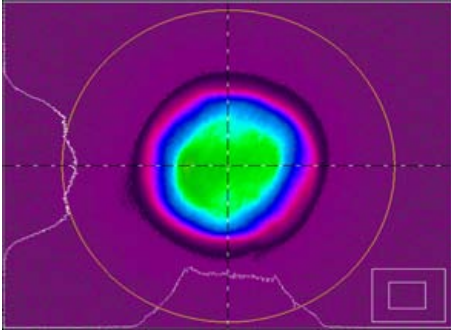
<sup>3</sup> Average of X & Y.

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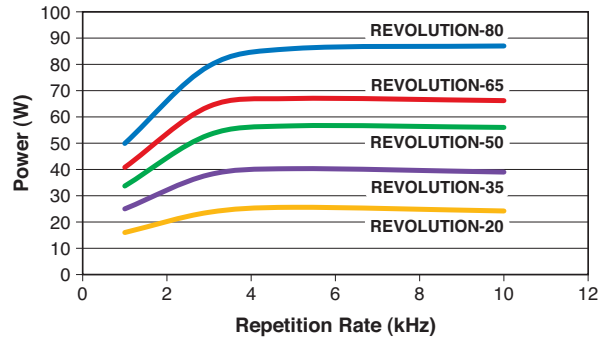
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## Typical Performance Data

Example of REVOLUTION's Excellent Beam Quality  
(REVOLUTION-80 operating at 45 mJ at 1 kHz)



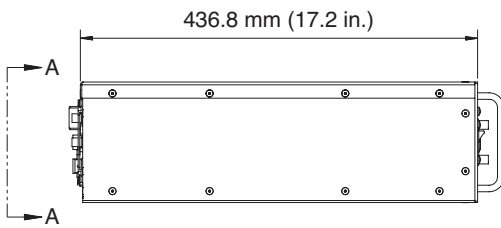
Typical Average Output Power  
vs. Repetition Rate



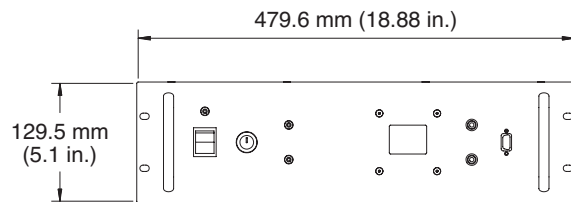
## Mechanical Specifications

Power Supply

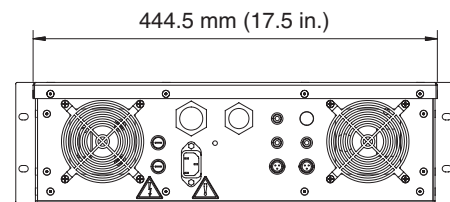
Side View



Front View



Rear View

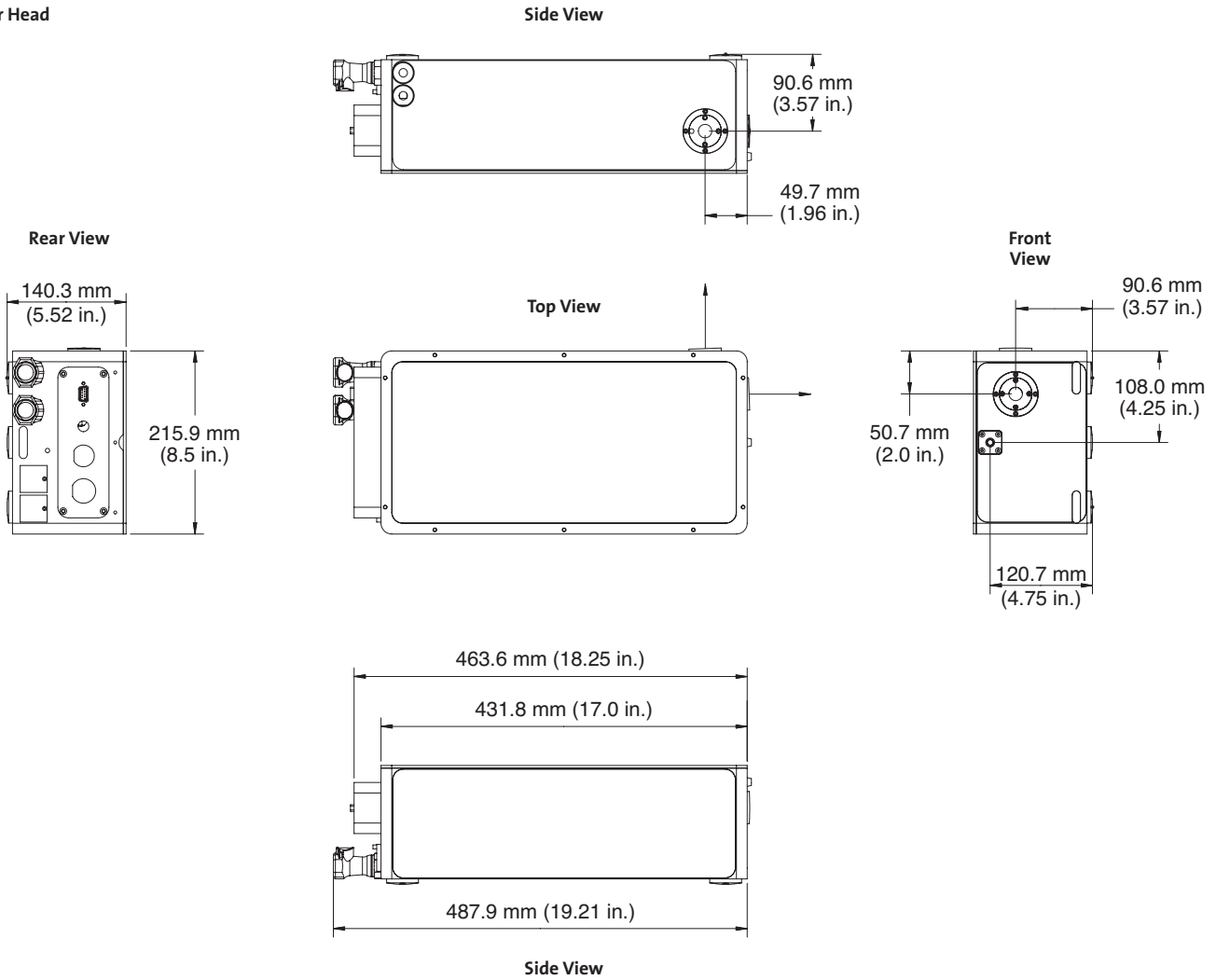


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## Mechanical Specifications

### Laser Head



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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 REVOLUTION 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.