

# Monaco 517

## Industrial Femtosecond Laser

Monaco 517 is an industrial femtosecond laser with a MOPA architecture. Designed for high-uptime, 24/7 applications, the laser family provides  $>40 \mu\text{J}/\text{pulse}$  at 517 nm. This energy is available at 750 kHz to allow high ablation threshold materials to be processed at high throughput levels. The green wavelength provides better interaction coupling in specific materials such as copper and polymers, with the added benefit of superior depth of focus. The second harmonic stage is fully integrated into the laser enclosure, ensuring robust, highly reliable green output for industrial environments.



### FEATURES & BENEFITS

- $40 \mu\text{J}/\text{pulse}$  for processing of high ablation threshold materials
- 30 W average power for high throughput
- $<350 \text{ fs}$  standard pulsewidth for low HAZ machining
- Green wavelength is ideal for polymer, copper, and ceramics processing
- Green output to provide better depth of focus and smaller spot size
- Compact single box design for ease of integration
- HALT-designed and HASS-verified to ensure quality and reliability

### APPLICATIONS

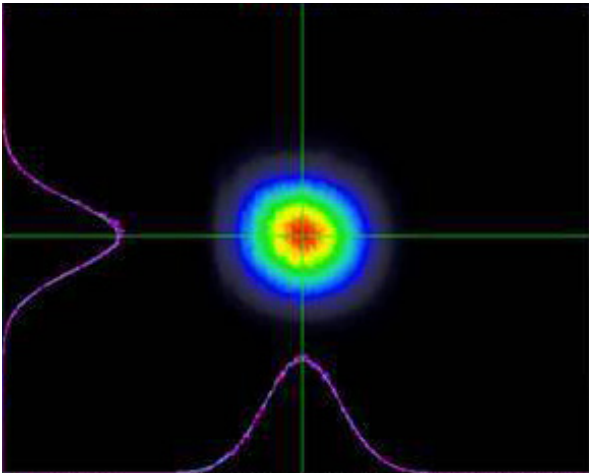
- Polymer Cutting
- Flex PCB Cutting
- IC Package Cutting
- Si Wafer Singulation
- Medical Device Manufacturing
- Thin Metal Foil Cutting and Texturing

OPTICAL SPECIFICATIONS <sup>1</sup>	Monaco 517-20-20	Monaco 517-40-30
Fundamental Center Wavelength (nm)	517 ±5	517 ±5
Output Power (W)	20	30
Energy (μJ)	20 (at 1 MHz)	40 (at 750 kHz)
Repetition Rate	Single-shot to maximum repetition at maximum energy (defined above)	
Pulsewidth (fs)	<350	
Tuning Range	Custom pulse width range may optimized at factory	
Spatial Mode	TEM <sub>00</sub> , M <sup>2</sup> <1.2	
Beam Divergence (mrad, 2θ)	<1	
Beam Diameter at Output <sup>2</sup> (mm, 1/e <sup>2</sup> )	2.0 ±0.2	
Beam Circularity (%)	>85	
Polarization Ratio	>100:1	
Polarization Direction <sup>3</sup>	Vertical ±3°	
Beam Pointing Stability (μrad/°C)	<25	
Pulse Energy Stability (%) (RMS)	<1.5	
Power Stability (%) (RMS, 2σ)	<1.5	
Warm-up Time (minutes)		
Cold Start	<45	
Warm Start	<15	
Long-term Pointing Stability (μrad)	±25 over 8 hours	
Head Weight	50 kg (110 lbs.)	
External Comms	RS-232, Ethernet, USB	
Power Consumption <sup>4</sup> (typical)	48VDC, <500W	
OPERATING SPECIFICATIONS		
Temperature (non-condensing)		
Laser Head	+10 to 30°C (50 to 86°F)	
Power Supply	-20 to +60°C (-4 to 140°F)	
Non-Operation (storage)	5 to 65°C (41 to 149°F)	
Relative Humidity (%)	<90, non-condensing	
SHIPPING SPECIFICATIONS		
Temperature	-20 to +60°C (-4 to 140°F)	

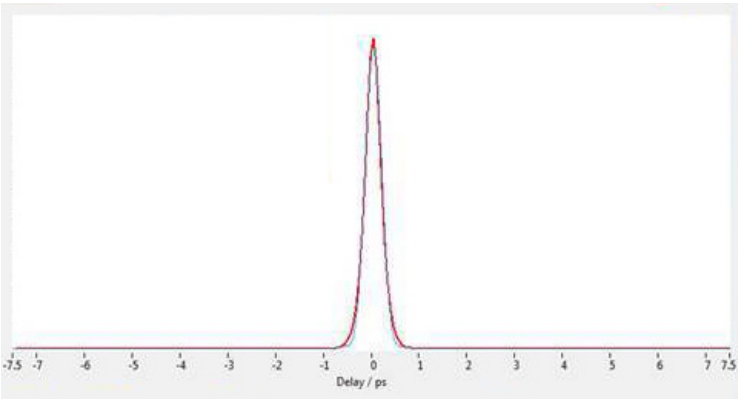
1 All specifications at maximum energy.  
2 Measured at 1m from laser output window.  
3 External isolation required depending on application.  
4 Optional 110 to 240VAC power supply available.

TYPICAL PERFORMANCE DATA

Monaco 517 Sample Spatial Mode at 1 MHz

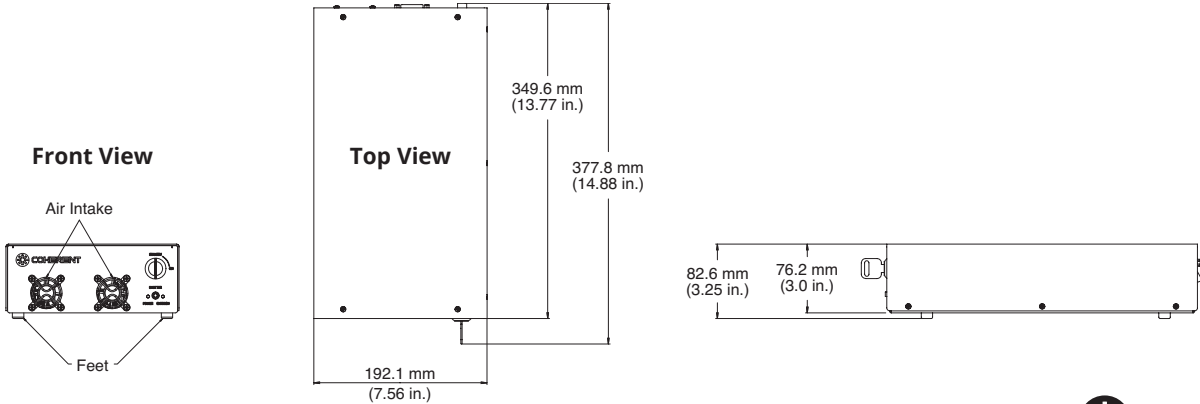


Monaco 517 Sub-350 fs Temporal Profile (Autocorrelator)



MECHANICAL SPECIFICATIONS

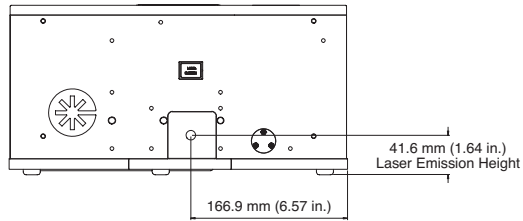
Monaco 517 Power Supply



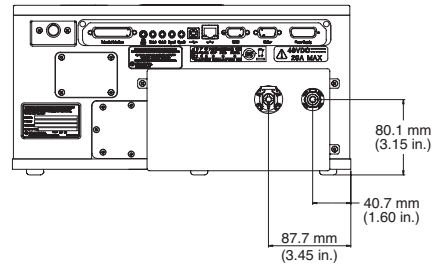
## MECHANICAL SPECIFICATIONS

### Monaco 517

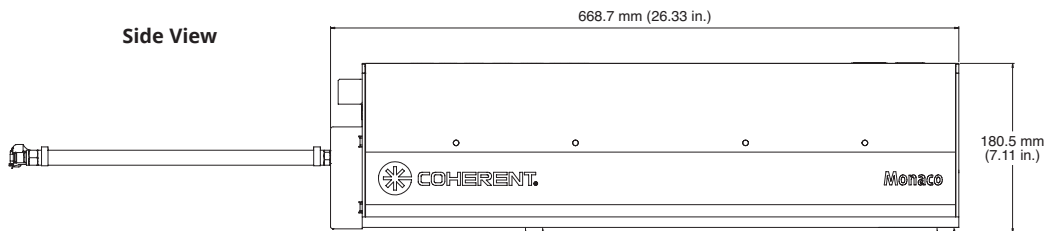
Front View



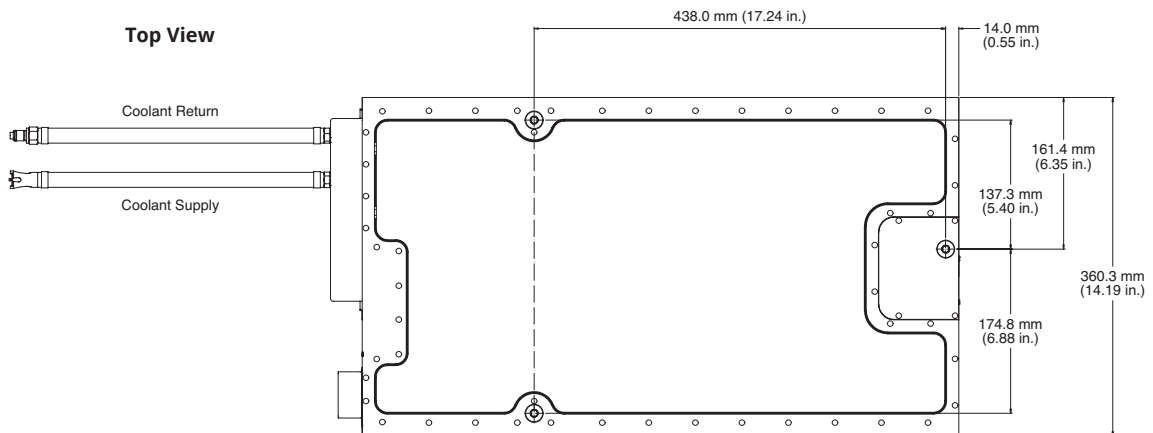
Rear View



Side View



Top 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 Monaco 517 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.  
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