

RAPID LX

Picosecond Lasers for Industrial Micromachining with Maximum Flexibility and Unsurpassed Profitability

The Rapid LX represents the latest product in a long line of cutting-edge industrial picosecond lasers. It is specifically designed to deliver high pulse energies and bursts optimized for cutting brittle materials as well as extremely stable UV pulses for cutting, scribing and drilling applications of highest requirements.

The proven design provides excellent beam quality and stability over the complete range of repetition rates. The PulseEQ feature enables maximum flexibility in process development and helps to vastly increase throughput and process quality for complex industrial applications. The new Rapid LX features a rugged and modular design to maintain perfect alignment and performance under all conditions. The small footprint, a one-box design and a well-defined output beam alignment ensure effortless integration.

The Rapid LX is backed up with worldwide service support to match the most demanding uptime and cost-of-ownership requirements.



FEATURES & BENEFITS

- 1064 nm or 355 nm
- Unique combination of pulse energy, operational flexibility and delivers significantly reduced cost-per-part for micromachining applications
- PulseEQ provides equal, perfectly stabilized pulse energy down to single shots with maximum timing accuracy
- Compact and light weight, with optimized footprint
- Many product support options to optimize uptime and cost-of-ownership

APPLICATIONS

- Cutting, drilling, selective removal of complex composite structures from dissimilar materials, including oxides, plastics and organics
- Ideally suited for applications in flat panel display and microelectronics processing
- Micromachining and structuring of large surfaces with line focusing or multiple beams

SYSTEM SPECIFICATIONS ^{1,2}	RAPID LX IR	RAPID LX UV
Single Wavelength Output (nm)	1064	355
Power ³ (W)	30	10
Pulse Repetition Rate Range (kHz)	Single Shot to 5000 kHz	
Pulse Duration ⁴ (ps)	<10	
Average Power Stability ⁵ (RMS 1σ,%)	≤1	
Maximum Pulse Energy ⁶ (μJ)	250	50
Pulse-to-Pulse Energy Stability ⁷ (RMS 1s, %)	≤1	≤2
PulseEQ Triggering	Single Shot to 1600 kHz	
Beam Quality Parameter (M ²)	≤1.3	
Beam Diameter, 1 m in front of laser (mm)	3.0 ± 0.3	
Beam Divergence, full angle (mrad)	≤1	
Beam Circularity, 1 m in front of laser (%)	≥85	
Beam-Pointing Stability (μrad/°C)	≤50 (peak-to-peak)	
Bore Sight Accuracy		
Lateral (mm) (beam to specified exit location)	≤1	
Angular (mrad) (beam to specified exit direction)	≤5	
Direction of Polarization (vertical/horizontal)	H	V
Polarization Ratio	>100:1	
Warm-up Time from Chiller Start (minutes)	<40	
Electrical Supply	48 V DC ±10%, 1 kW 100 to 230 V AC, 50 to 60 Hz, 1 kW (PSU)	
Mounting Orientation	Horizontal	
Chiller	Water-to-Air or Water-to-Water	
Laser Head		
Dimensions	738 x 200 x 301 mm (29.06 x 7.87 x 11.85 in.)	
Weight	51 kgs (112.4 lbs)	
Power Supply		
Dimensions	1U 19" rack	
SMC Chiller		
Dimensions	500 x 317 x 615 mm (19.69 x 12.48 x 24.21 in.)	
BURST MODE OPERATION		
Burst Mode Operation Range ⁸ (kHz)	Single Shot to 2500	
Maximum Number of Pulses in Burst ⁸	20	
OPERATING SPECIFICATIONS		
Allowed Temperature Range During Operation	+15°C to +30°C (free of condensation)	
Humidity [(0 to 90)% RH]	Non-condensing, Dew-point <22°C (71.6°F)	

1 Due to our continuous product improvement program, specifications may change without notice.

2 All specifications at respective optimized repetition rate.

3 Maximum power at 1,000 kHz and 200 kHz respectively.

4 UV Autocorrelation at 200 kHz operation.

5 Over 8 hours, ± 1°C ambient temperature.

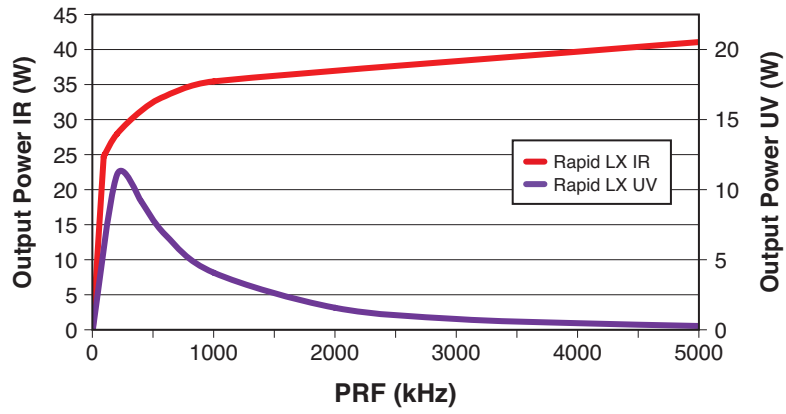
6 Single-pulse operation (burst number = 1).

7 Steady-state (no pulse gating or change of pulse repetition rate).

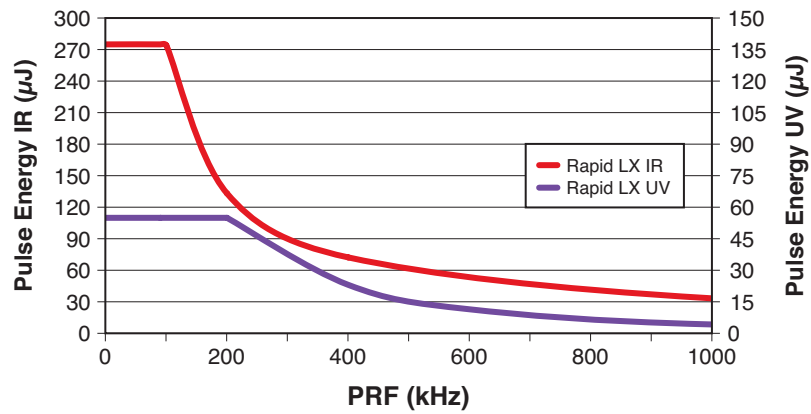
8 (Pulse repetition rate) x (number of burst) cannot exceed 5 MHz.

TYPICAL PERFORMANCE DATA

Rapid LX IR and UV:
Typical Power Output

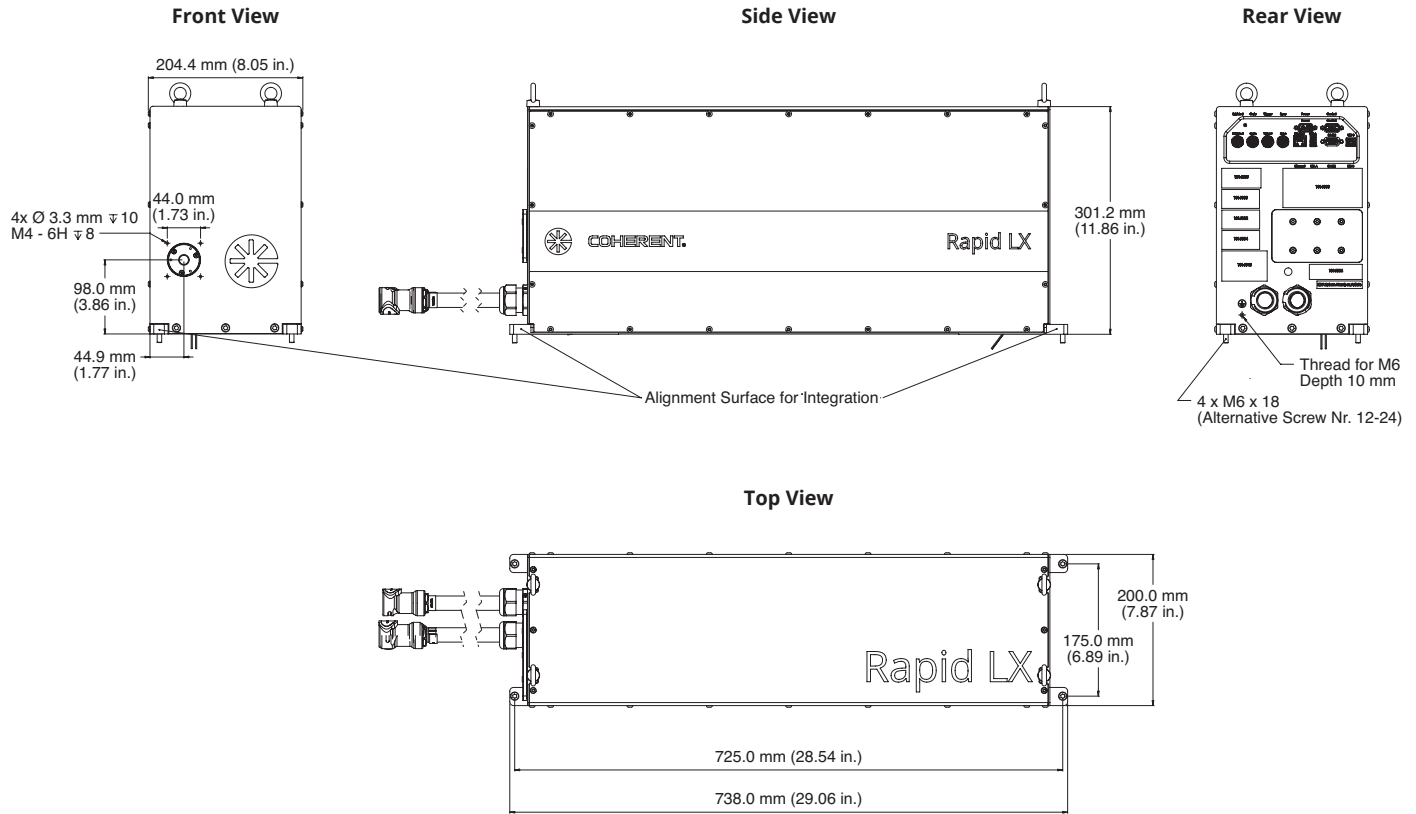


Rapid LX IR and UV:
Typical Single Pulse Energy Output



MECHANICAL SPECIFICATIONS

RAPID LX



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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 RAPID LX Lasers. 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-005-21-0M0321 Copyright ©2021 Coherent, Inc.

