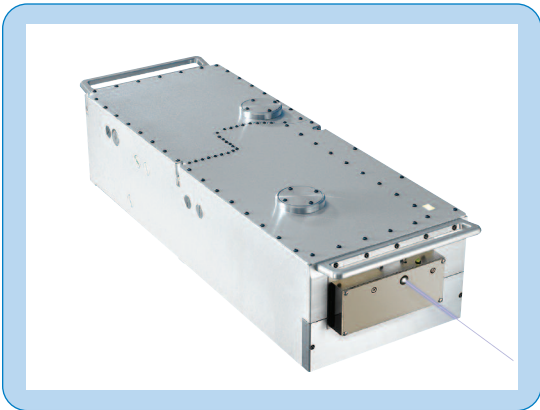


# Pulseo® 355 nm Laser Family

HIGH POWER Q-SWITCHED UV LASERS



## The Pulseo 355 Advantage

- High uptime and field serviceable design
- Lower cost of ownership and double diode life
- E-Pulse™ programmable pulse energy
- Data logging and product traceability over the life of the laser
- Short pulse width and high peak power
- Active Laser Purification System™ for longer life
- Field-replaceable laser output window, diodes and fibers

## APPLICATIONS

- Via hole drilling
- c-Si solar cell manufacturing
- Flex circuit cutting and drilling
- Flat panel manufacturing
- ITO patterning for touch screen displays
- LED substrate scribing
- Silicon wafer dicing/scrubbing (including low K)

The Spectra-Physics® Pulseo® family of high-powered 355 nm UV laser products lead the industry in system uptime and rugged product reliability. The Pulseo lasers are offered with both 10 W and 20 W 355 nm output and short pulse width of <23 ns.

## HIGH RELIABILITY

The Pulseo family of UV lasers is designed specifically for micromachining applications in a 24/7 manufacturing environment. Reliability advantages include:

- ProLite® diodes – last more than double the industry average.
- Field-replaceable laser output window – corrects for burn spots caused by airborne particulates generated from the ablation process.
- EternAlign™ optics – rugged I-beam laser housing and EternAlign optics eliminate potential damage and optical misalignment resulting from vibration and shipping.
- Field replaceable diodes and fibers – allow both diodes and fibers to be easily replaced in the field, without requiring costly tool re-alignment or system downtime.
- Harmonic crystal shifters – compensate for crystal degradation, allowing instant restoration of the laser to full power.

With our commitment to quality and reliability, the Pulseo lasers offer the best in industrial reliability—higher uptime, lower mean time to repair (MTTR), and lower cost of ownership.

## OUTSTANDING PERFORMANCE

With shorter pulse widths, Pulseo lasers have higher peak powers resulting in cleaner scribing, and less thermal damage to your parts. And, excellent near- and far-field beam pointing stability and superior pulse-to-pulse stability translate to more consistent processing results and higher yields.

The integrated E-Pulse™ feature allows users to tailor the overall pulse energy to the specific job on hand. To ensure consistent machining quality and dependability over the lifetime of the laser, we've also integrated an automatic crystal shifter which keeps the output power constant. Finally, the Pulseo laser's Active Laser Purification System™ keeps the air in the laser cavity pure by both filtering and drying it to prevent burn spots on the optics which can result from component out-gassing.

## EASE OF USE

The Pulseo laser is smaller than competitive high power DPSS lasers ensuring simple integration into any machine tool. With its intuitive GUI, comprehensive data log, automated command set and superior design, the Pulseo laser is nearly maintenance free, requiring far fewer tweaks to keep constant power, beam quality and throughput.



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# Pulseo® 355 nm Laser Family

## Specifications<sup>1</sup>

General Characteristics	Pulseo 355-10	Pulseo 355-20
Wavelength	355 nm	
Peak Power	~5 kW	~10 kW
Average Power	>10 W at 90 kHz	>20 W at 100 kHz
Repetition Rate	0–300 kHz	
Pulse Width	<23 ns at 90 kHz	<23 at 100 kHz

### Beam Characteristics

Spatial Mode	TEM <sub>00</sub>	
M <sup>2</sup>	<1.3	
Polarization	>100:1, vertical	
Beam Diameter, at waist	2.0 mm ±10%	3.5 mm ±10%
Waist Location, nominal	At output ±25% of Rayleigh range	
Beam Divergence, full angle	<0.3 mrad	
Beam Ellipticity	<10%	
Boresight Tolerance	±1 mm position at output ±3.5 mrad angle	
Pulse-to-Pulse Stability	<4% rms	
Power Stability (over 8 hours at constant temperature)	±2% peak-to-peak	

### Operating Conditions

Warm-up Time, from cold start	<40 min	
Temperature Range	18–35°C	
Altitude	0–3000 m	
Humidity	8–95%, non-condensing	

### Non-Operating Conditions

Temperature Range	0–50°C	
Altitude	0–12,000 m	
Humidity	8–95%, non-condensing	

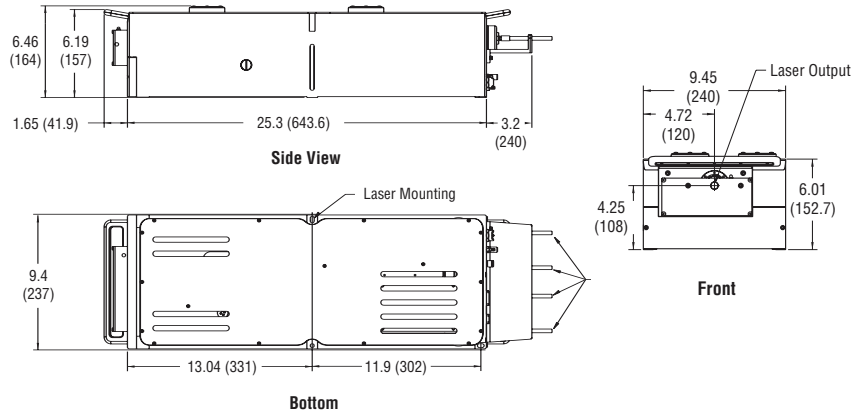
### Physical Characteristics

Laser Head Dimensions	9.49 x 8.90 x 25.35 in (240 x 266 x 644 mm)	
Laser Head Weight	60 lbs (27 kg)	
Power Supply Dimensions	19 x 12.15 x 21.11 in (483 x 309 x 536 mm)	
Power Supply Weight	80 lbs (36 kg)	95 lbs (43 kg)
Fiber Length	5 m	
Water Cooling	Yes	
Water Temperature	20°C	
Water Flow Rate (input)	1.5 liter/min @ 3 psi	6 liter/min @ 50 psi
Heat Load	170 W	800–1200 W
Water Temperature Stability	±0.5°C	

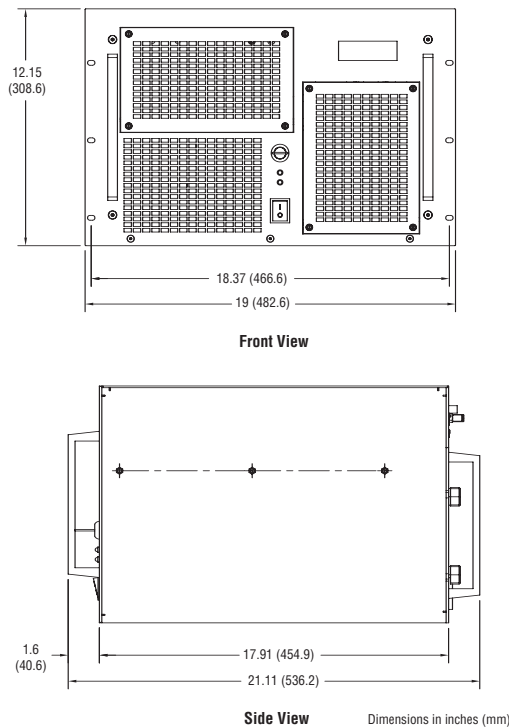
### Electrical Requirements

Electrical Requirements	110–220 VAC, 50/60 Hz, auto ranging	
Power Consumption	1.1 kW	

## Pulseo Laser Head Dimensions



## Power Supply Dimensions



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