

Pantera™

High Power Picosecond UV Laser



The Pantera Advantage

- Fiber amplifier architecture for unique combination of high output power, good beam quality, and excellent reliability
- 12 W of UV power
- Outstanding reliability using hermetically-sealed pump diodes
- Rugged fiber design not sensitive to cavity misalignment
- Stable beam parameters with no thermal lens
- Space-efficient fiber amplifier for smaller footprint
- Protection against photo-contamination with integrated air purge

The Spectra-Physics Pantera™ diode-pumped solid state laser uses innovative fiber-amplifier technology to deliver more than 12 W of UV power at 355 nm. It also provides excellent mode quality of TEM₀₀ and picosecond laser pulses at very high repetition rates of 80 MHz with a rugged industrial platform for hands-off 24/7 operation.

Specifically designed for industrial and OEM customers who require precision, high-throughput material processing, the Pantera picosecond laser prevents thermal damage, enabling higher resolution and higher quality work. A high repetition rate of 80 MHz provides smooth processing results, even at speeds of multiple meters per second. The 12 W output power level provides high throughput and lower cost per Watt.

The Pantera UV laser uses a fiber amplifier—powered by rugged, hermetically sealed diodes with high brightness—to provide the unique combination of high UV power, good beam quality, and unprecedented reliability. The power of the pump diodes is converted into laser light with very high slope efficiency of up to 70% (laser power to pump power) for easy thermal management, limited power consumption, and lower operating cost.

Unlike conventional resonators, the fiber amplifier is not affected by external influences such as mechanical or temperature-induced misalignment, making the Pantera suitable for rugged industrial applications. The Pantera is further protected by a recirculating purge system integrated in the power supply to ensure reliable operation with no unscheduled downtime.

In addition, the fiber amplifier provides a platform, unlimited by thermal lensing, that enables the Pantera to scale to even higher power levels.

Applications

- Laser direct imaging
- High-speed laser processing
- Scribing and ablation of thin layers for photovoltaics
- Polyimide cutting for the electronics industry
- Glass cutting for the flat panel and automotive industries
- Silicon and wafer processing
- Micro-material processing

Pantera Specifications¹

Output Characteristics

Wavelength	355 nm
Output Power	12 W stabilized
Repetition Rate	80 MHz ±2 MHz
Pulse Length	<50 ps (FWHM)
Spatial Mode	TEM ₀₀
M ²	<1.3
Beam Diameter	2 mm nominal
Beam Divergence	<500 μrad
Beam Ellipticity	0.9–1.1
Pointing Stability	<25 μrad/°C
Polarization	>100:1, vertical
Long Term Power Stability ²	<2%
Noise	<1% rms (10 Hz – 2 MHz)
Maximum Warm-up Time	<30 min from standby <60 min from cold start
Static Alignment Tolerances ³	Relative to laser mount
Beam Position	<±0.5 mm
Beam Angle	<±2.5 mrad

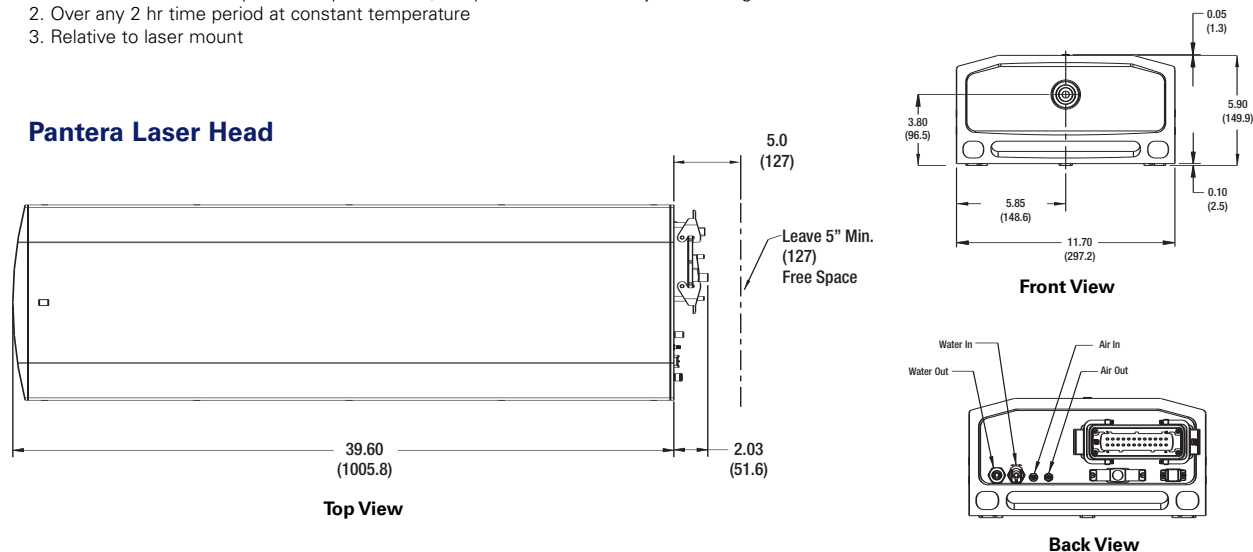
Utilities and Environmental Requirements

Operating Voltage (Power Supply)	100–240 VAC, 50–60 Hz
Ambient Temperature Range	20–27°C
Laser Head Dimensions (W x H x L)	11.7 x 6 x 40 in (300 x 150 x 1010 mm) additional 12 in (300 mm) for connectors on the back
Power Supply Dimensions (W x H x L)	19 x 7 x 20 in (483 x 178 x 508 mm)
Laser Head Weight	100 lbs (45 kg)
Power Supply Weight	31 lbs (14 kg)

Notes

1. Due to our continuous product improvements, all specifications are subject to change without notice.
2. Over any 2 hr time period at constant temperature
3. Relative to laser mount

Pantera Laser Head



Dimensions in inches (mm)

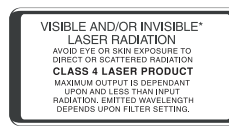


1335 Terra Bella Avenue
Mountain View, CA 94043

Phone: 1-800-775-5273 • Fax: 1-650-964-3584

Email: sales@spectra-physics.com

Web: www.newport.com



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