

Powerlite™ DLS 9000

High Energy Nd:YAG

The Powerlite Series of high energy YAG lasers is known for its beam quality, reliability, and ease of use. The New DLS (Digital Laser Source) Series remains consistent with the Amplitude approach to laser design, keeping the features that have made it so popular, and adding new capabilities to enhance its performance and utility.

The DLS power supply is compact and quiet, taking up half the space of the one it replaces. The components are modular and rack mounted to simplify maintenance and service. It uses distributed intelligence, with microprocessors in both the laser head and power supply.

A new cooling group with active digital control has been added. The complete control of all functionality is made possible through a digital interface, thus eliminating the need for knobs or switches.

A powerful Windows®-based Graphical User Interface is standard for all Powerlite DLS systems. An optional touch screen remote control is available, as are LabView drivers.



Applications

Industry:

- > Material sorting (recycling)
- > Weld inspection
- > Cleaning
- > LIBS

Science:

- > LIDAR, LIF, LIBS, PLIF
- > Thomson Scattering
- > Laser Thermal Annealing
- > Pump Source

Medical:

- > Skin Surfacing
- > Tattoo Removal
- > Pump Source
- > Medical device manufacturing

Key Features

- > Distributed intelligence power supply architecture.
- > Rack mounted and modular components for easier maintenance and service
- > New cooling group with active digital control for accurate temperature monitoring and improved thermal management
- > LabView drivers available
- > HEO for maximum 532 nm output

Specifications

	9010	9020	9030	9050
Repetition Rate (Hz)	10	20	30	50
Energy (mJ)				
1064 nm	2000	1800	1600	1200
532 ¹ nm	1000	900	800	600
532 HEO	1400	1200	1100	800
355 ² nm	550	475	400	350
266 nm	160	110	90	75
Pulsewidth ³ (ns)				
1064 nm			6-9	
532 nm			5-8	
355 nm			4-7	
266 nm			4-6	
Linewidth ⁴ (cm ⁻¹)				
Standard			1	
Injection Seeded, SLM			0.003	
Divergence ⁵ (mrad)	0.45			0.5
Beam Pointing Stability ⁶ (±μrad)			30	
Beam Diameter (mm)			9	
Jitter ⁷ (±ns)				
Unseeded		0.5		0.6
Seeded		1.0		1.0
Energy Stability ⁸ (±%)				
1064 nm	2.5;0.8		2.5;0.8	3.0;1.0
532 nm	3.0;1.0		3.0;1.0	4.0;1.3
355 nm	4.0;1.3		4.0;1.3	6.0;2.0
266 nm	8.0;2.6		9.0;3.0	9.0;3.0
Power Drift ⁹ (±%)				
1064 nm			3.0	
532 nm			6.0	
355 nm			6.0	
266 nm			8.0	

¹ Using Type II doubler

² Using Type I doubler

³ FWHM full width half max

⁴ FWHM (1cm⁻¹ = 30 GHz)

⁵ Full angle for 86% (1/e²)

⁶ 99.9% shots will be <±30 μrad with ΔT_{room} <±3°C

⁷ With respect to external trigger

⁸ The first value represents shot-to-shot for 99.9% of pulses,

the second value represents RMS

⁹ Average for 8 hours with ΔT±3°C

All specifications at 1064 nm unless otherwise noted.

Dimensions

Optical Head (LxWxH)	1189.2 x 457.2 x 298.4 mm (46.82" x 18" x 11.75")
Power Supply (L x W x H)	714.5 x 621 x 546.1 mm (28.13" x 24.46" x 21.5") PL 9050: 714.5 x 621 x 679.4 mm (28.13" x 24.46" x 26.75")

Water

Service	1-2 GPM (gallons/minute) at 10 - 40 PSI pressure drop
Temperature	<22° C / 70° F (higher flow rate for higher temperature)

Others

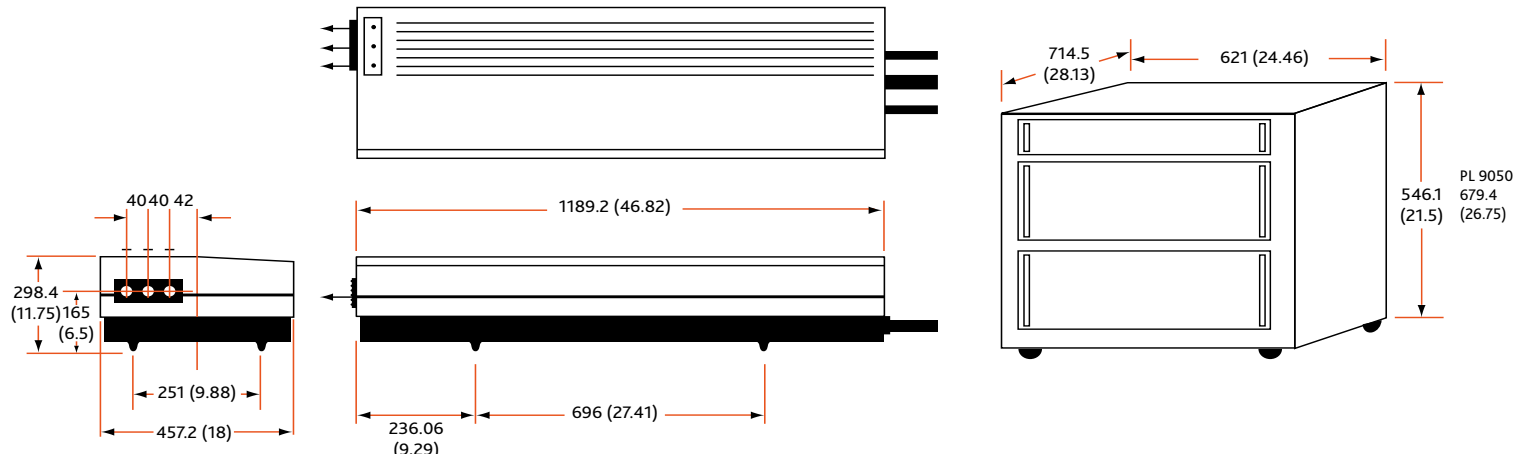
Electrical Service	200 - 240 VAC, single Φ, 50/60 Hz
Room Temperature	18 to 30° C / 65 to 87° F
Umbilical Length	5 m (16.4 ft)

Specifications

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Beam Spatial Profile (Fit to Gaussian) ¹⁰ Horizontal Near Field (<1m) Far Field (∞)		0.7 0.95		0.65 0.90
Max Deviation from fitted Gaussian ¹¹ ($\pm\%$) Near Field (<1m)		40		
Service Requirements 208-240 VAC, single Φ Water GPM at 10-40 PSI	14A 1-2	21A 1-2	24A 2-3	35A 2-3
Polarization 1064 nm 532 nm 355 nm 266 nm		Horizontal Vertical Horizontal Horizontal		

¹⁰ A least squares fit to a Gaussian profile. A perfect fit would have a coefficient of 1.
¹¹ Within FWHM points near field at 1 meter.

Powerlite DLS 9000 Physical Layout



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Amplitude