

# Powerlite™ DLS 8000

## 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 has been added for more accurate monitoring. 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

|  | 8000    | 8010 | 8020    | 8030 | 8050 |
|--|---------|------|---------|------|------|
| Repetition Rate (Hz)                         | 10      |      | 20      | 30   | 50   |
| Energy (mJ)                                  |         |      |         |      |      |
| 1064 nm                                      | 1200    | 1650 | 1200    | 650  | 550  |
| 532 <sup>1</sup> nm                          | 600     | 800  | 550     | 300  | 210  |
| 532 HEO                                      | 800     | 1100 | 780     | 420  | 360  |
| 355 <sup>2</sup> nm                          | 310     | 450  | 300     | 150  | 95   |
| 266 nm                                       | 120     | 150  | 80      | 50   | 30   |
| Pulsewidth <sup>3</sup> (ns)                 |         |      |         |      |      |
| 1064 nm                                      | 6-8     |      | 7-9     |      |      |
| 532 nm                                       | 5-7     |      | 6-8     |      |      |
| 355 nm                                       | 5-7     |      | 6-8     |      |      |
| 266 nm                                       | 5-7     |      | 6-8     |      |      |
| Linewidth <sup>4</sup> (cm <sup>-1</sup> )   |         |      |         |      |      |
| Standard                                     |         |      | 1       |      |      |
| Injection Seeded, SLM                        |         |      | 0.003   |      |      |
| Divergence <sup>5</sup> (mrad)               | 0.45    |      |         | 0.5  |      |
| Beam Pointing Stability <sup>6</sup> (±μrad) |         |      | 30      |      |      |
| Beam Diameter (mm)                           | 9       |      |         | 7    |      |
| Jitter <sup>7</sup> (±ns)                    |         |      |         |      |      |
| Unseeded                                     |         |      | 0.5     |      |      |
| Seeded                                       |         |      | 1.0     |      |      |
| Energy Stability <sup>8</sup> (±%)           |         |      |         |      |      |
| 1064 nm                                      | 2.5;0.8 |      | 3.0;1.0 |      |      |
| 532 nm                                       | 3.5;1.2 |      | 4.5;1.5 |      |      |
| 355 nm                                       | 4.0;1.3 |      | 5.0;1.7 |      |      |
| 266 nm                                       | 10;3.3  |      | 10;3.3  |      |      |
| Power Drift <sup>9</sup> (±%)                |         |      |         |      |      |
| 1064 nm                                      | 3.0     |      | 5.0     |      | 5.0  |
| 532 nm                                       | 5.0     |      | 6.0     |      | 7.0  |
| 355 nm                                       | 5.0     |      | 6.0     |      | 8.0  |
| 266 nm                                       | 8.0     |      | 8.0     |      | 8.0  |

<sup>1</sup> Using Type II doubler

<sup>2</sup> Using Type I doubler

<sup>3</sup> FWHM full width half max

<sup>4</sup> FWHM (1cm<sup>-1</sup> = 30 GHz)

<sup>5</sup> Full angle for 86% (1/e<sup>2</sup>)

<sup>6</sup> 99.9% shots will be <±30 μrad with ΔT<sub>room</sub> <±3°C

<sup>7</sup> With respect to external trigger

<sup>8</sup> The first value represents shot-to-shot for 99.9% of pulses,

the second value represents RMS

<sup>9</sup> 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 (LxWxH) | 714.5 x 621 x 546.1 mm (28.13" x 24.46" x 21.5")  |

## Water

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

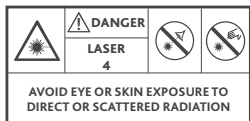
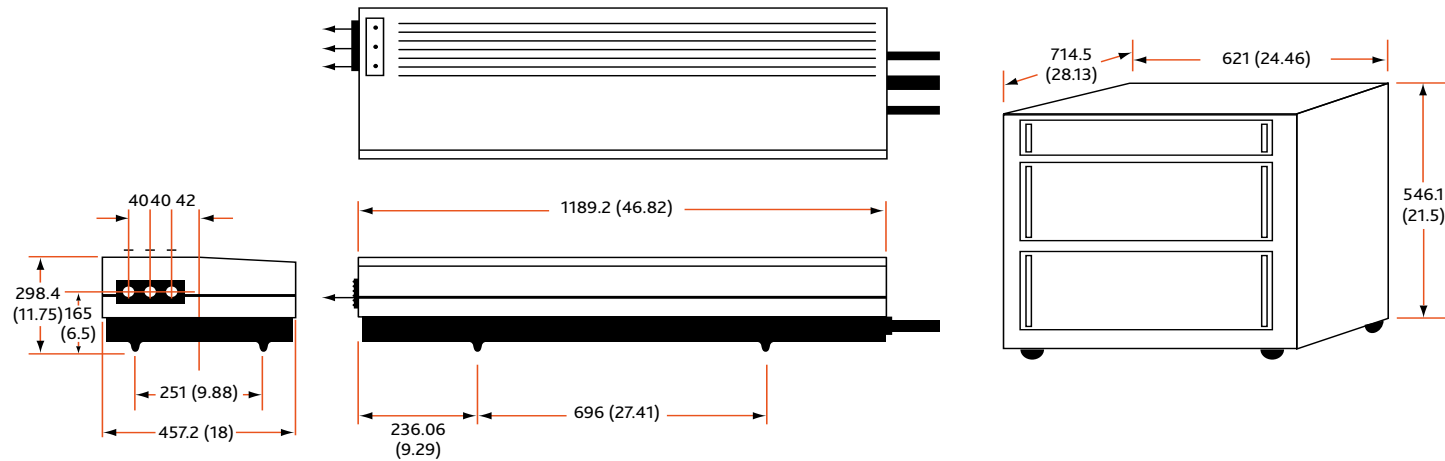
# Specifications

8000    8010    8020    8030    8050

|   |            |            |  |            |  |
|---|------------|------------|--|------------|--|
| Beam Spatial Profile (Fit to Gaussian) <sup>10</sup><br>Horizontal Near Field (<1m)<br>Far Field ( $\infty$ ) |            |            | 0.7<br>0.95  |            |  |
| Max Deviation from fitted Gaussian <sup>11</sup> ( $\pm\%$ )<br>Near Field (<1m)                              |            |            | 40   |            |  |
| Service Requirements<br>208-240 VAC, single $\Phi$<br>Water GPM at 10-40 PSI                                  | 10A<br>1-2 | 11A<br>1-2 | 16A<br>1-2   | 17A<br>1-2 |  |
| Polarization<br>1064 nm<br>532 nm<br>355 nm<br>266 nm   |            |            | Horizontal<br>Vertical<br>Horizontal<br>Horizontal |            |  |

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

## Powerlite DLS 8000 Physical Layout



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