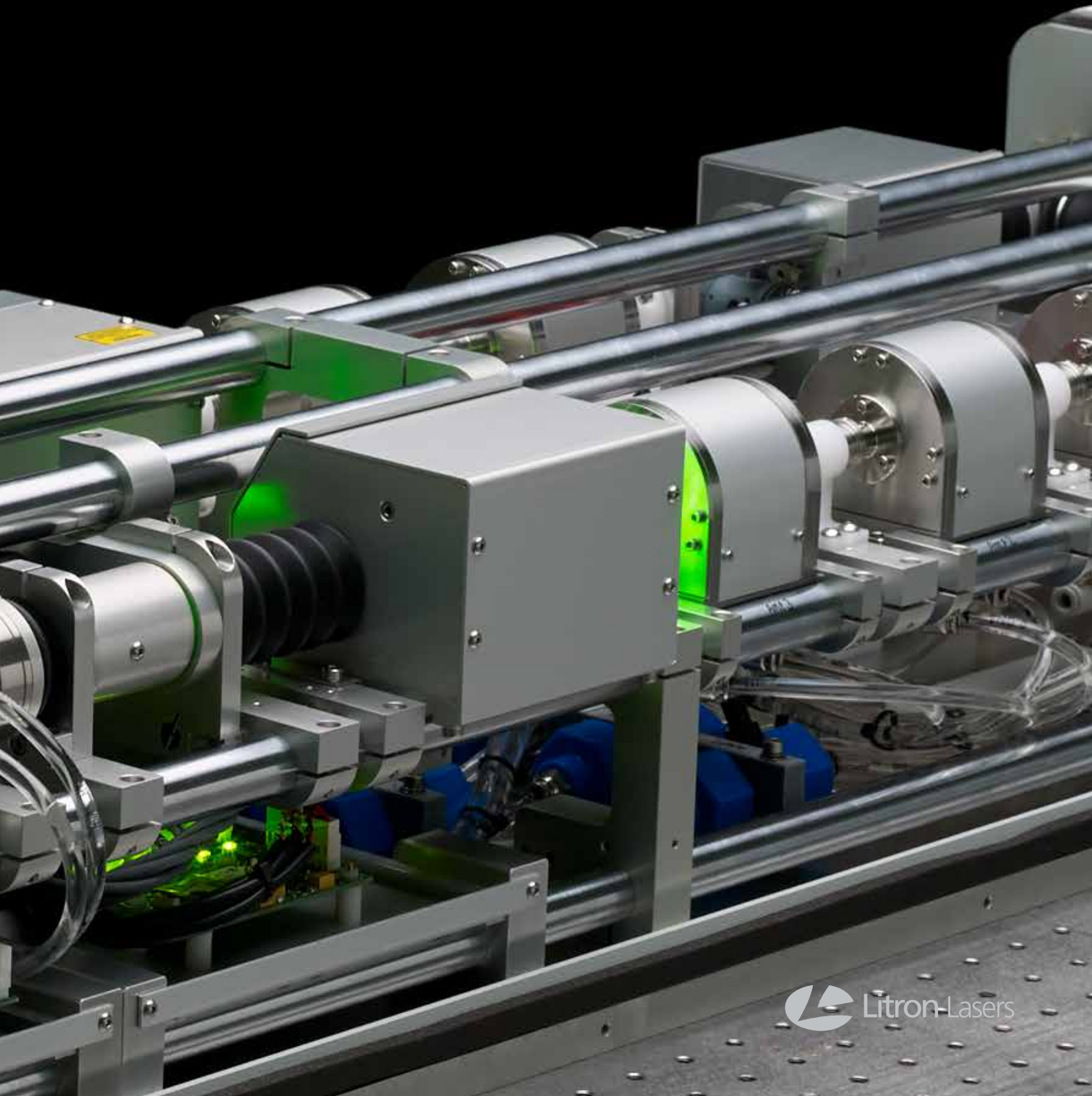




# PULSED DIODE PUMPED SOLID STATE LASERS

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# Nano DPSS

## Ultra-compact DPSS Q-switched pulsed Nd:YAG lasers

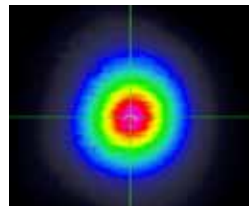


### FEATURES

- Repetition rates up to 300Hz
- Fully modular harmonics
- Choice of resonator options
- Ultra high stability
- Diode life >4 billion pulses
- Field replaceable diodes
- Excellent beam quality
- Compact PSU
- Detachable, compact chiller
- Rated to IP65

### APPLICATIONS

- Spectroscopy & LIBS
- PIV, LIF & ESPI
- LIDAR & remote sensing
- Laser flash photolysis
- Laser ultrasonics
- Microscopy
- Sample testing
- Ablation

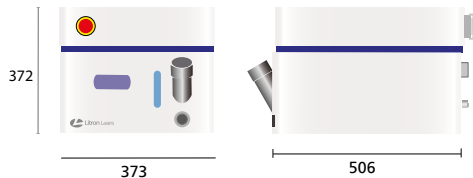


Near field beam profile at 100Hz

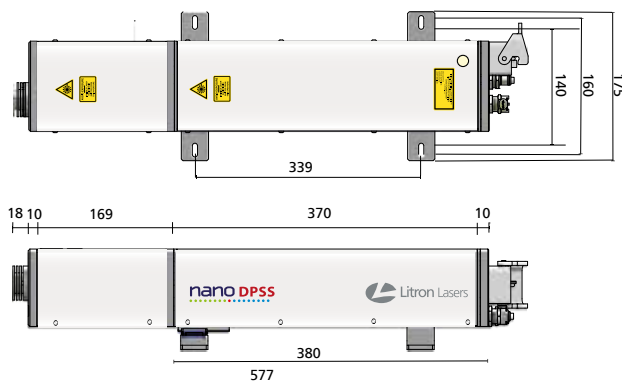
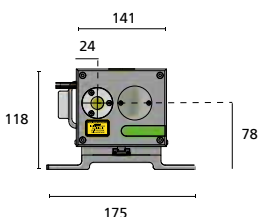
### MECHANICAL DATA

All dimensions shown in mm

Free standing PSU and chiller



Laser Head



The **Nano DPSS** is a pulsed, fully diode pumped Q-switched Nd:YAG laser with output energies up to 150mJ and repetition rates of up to 300Hz. A fully sealed laser head and harmonics provide complete protection from external contamination.

All harmonics are automatically angle-tuned with high precision linear actuators, making Litron's unique mechanical angle-tuning much faster than traditional thermal tuning. This feature has the option of single, on-demand tuning or continuous automatic tracking of the crystals for guaranteed long-term stability. Additionally, harmonic generation crystals are thermally stabilised to better than 0.1°C.

### TECHNICAL DATA

| Model                                    | Nano DPSS 80-100   | Nano DPSS G 70-100 | Nano DPSS 120-100  |
|--|--------------------|--------------------|--------------------|
| Type of Resonator                        | stable             | super-Gaussian     | stable             |
| Repetition Rate (Hz)                     | 1-300              | 100-200            | 1-300              |
| Output Energy (mJ)                       |                    |                    |                    |
| 1064nm                                   | 80                 | 70                 | 120                |
| 532nm                                    | 40                 | 35                 | 60                 |
| 355nm                                    | 25                 | 20                 | 35                 |
| 266nm                                    | 10                 | 8                  | 15                 |
| 213nm <sup>(1)</sup>                     |                    |                    |                    |
| Pulse Stability (%RMS)                   |                    |                    |                    |
| 1064nm                                   | 0.2                | 0.2                | 0.2                |
| 532nm                                    | 0.3                | 0.3                | 0.3                |
| 355nm                                    | 1.0                | 1.0                | 1.0                |
| 266nm                                    | 1.5                | 1.5                | 1.5                |
| Pulse Length (ns) <sup>(2)</sup>         |                    |                    |                    |
| 1064nm                                   | 8-10               | 8-10               | 8-10               |
| 532nm                                    | 6-8                | 6-8                | 6-8                |
| 355nm                                    | 5-7                | 5-7                | 5-7                |
| 266nm                                    | 5-7                | 5-7                | 5-7                |
| Beam Parameter                           |                    |                    |                    |
| Beam Diameter (mm) <sup>(3)</sup>        | 5                  | 5                  | 5                  |
| M <sup>2</sup> @1064nm                   |                    | ≤2                 |                    |
| TEM <sub>00</sub> @1064nm (mJ)           | 10                 | N/A                | 10                 |
| Pointing Stability (μrad) <sup>(4)</sup> | <20                | <20                | <20                |
| Timing Jitter (ns) <sup>(5)</sup>        | ≤0.5               | ≤0.5               | ≤0.5               |
| Polarisation                             | Linear             | Linear             | Linear             |
| Diode Life (pulses)                      | >4x10 <sup>9</sup> | >4x10 <sup>9</sup> | >4x10 <sup>9</sup> |
| Operation                                |                    |                    |                    |
| Control <sup>(6)</sup>                   | RS232              | RS232              | RS232              |
| Q-switch Trigger and Sync                | TTL                | TTL                | TTL                |
| Services                                 |                    |                    |                    |
| Voltage (VAC) <sup>(7)</sup>             | 220-250            | 220-250            | 220-250            |
| Frequency (Hz)                           | 50 or 60           | 50 or 60           | 50 or 60           |
| Power                                    | Single Phase       | Single Phase       | Single Phase       |
| Ambient (°C) <sup>(8)</sup>              | 5-35               | 5-35               | 5-35               |
| External Cooling <sup>(9)</sup>          | Air                | Air                | Air                |

All specifications at repetition rate of 100Hz.

- (1) Contact Litron for more information.
- (2) FWHM – measured with a fast photodiode.
- (3) 100% beam diameter at laser exit port.
- (4) Half angle.
- (5) RMS with respect to Q-switch trigger input.
- (6) Full software suite and programming tools supplied.
- (7) 100-200VAC operation - contact Litron.
- (8) 0-80% non condensing atmosphere.
- (9) Standard air-cooled chiller or optional water-cooled chiller.

# TRLi DPSS

## Fully modular system designed for flexibility and enhanced performance

The **TRLi DPSS series** is based around Litron's birefringence compensating twin-rod resonator giving highly homogenous output beams. The laser resonator is housed in a body machined from solid aluminium to ensure high mechanical and optical integrity.

State-of-the-art diode pump modules and extremely low current-ripple electronics give rise to outputs with industry leading stabilities of better than 0.2% RMS at 1064nm over a six-hour period.

All accessories such as harmonics, beam expanding telescope or OPO are bolt-and-play and can be added and removed at will. The intelligent system controller automatically adapts to the pre-set configuration and allows seamless control in any application.



### FEATURES

- **Choice of resonator options**
- **Ultra high stability**
- **Diode life >4 billion pulses**
- **Field replaceable diodes**
- **Smooth, homogenous beam profile**
- **Compact PSU**
- **Detachable, compact chiller**
- **RS232 control**

### APPLICATIONS

- **LIDAR**
- **Si wafer inspection**
- **LIBS & LIF**
- **Laser cleaning**
- **LCD repair**
- **Ti:Sa pumping**
- **Laser cleaning**
- **LIBS & LIF**

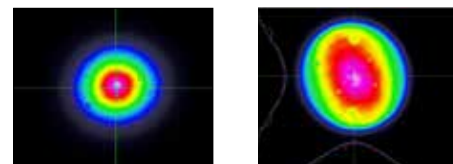
## TECHNICAL DATA

| Model                                      | TRLi DPSS 170-100  | TRLi DPSS 280-100  | TRLi DPSS 130-200  | TRLi DPSS 100-300  |
|--|--------------------|--------------------|--------------------|--------------------|
| <b>Repetition Rate (Hz)</b>                | 100                | 100                | 200                | 300                |
| <b>Output Energy (mJ)</b>                  |                    |                    |                    |                    |
| 1064nm                                     | 170                | 280                | 130                | 100                |
| 532nm                                      | 85                 | 140                | 65                 | 50                 |
| 355nm                                      | 45                 | 65                 | 25                 | 23                 |
| 266nm                                      | 15                 | 21                 | 10                 | 5                  |
| 213nm <sup>(1)</sup>                       |                    |                    |                    |                    |
| <b>Pulse Stability (%RMS)</b>              |                    |                    |                    |                    |
| 1064nm                                     | 0.2                | 0.2                | 0.2                | 0.2                |
| 532nm                                      | 0.3                | 0.3                | 0.3                | 0.3                |
| 355nm                                      | 0.8                | 0.8                | 0.8                | 0.8                |
| 266nm                                      | 1.5                | 1.5                | 1.5                | 1.5                |
| <b>Pulse Length (ns) <sup>(2)(#)</sup></b> |                    |                    |                    |                    |
| 1064nm                                     | 8-10               | 8-10               | 9-11               | 9-11               |
| 532nm                                      | 7-9                | 7-9                | 9-11               | 9-11               |
| 355nm                                      | 6-9                | 6-9                | 8-10               | 8-10               |
| 266nm                                      | 6-9                | 6-9                | 8-10               | 8-10               |
| <b>Beam Parameter</b>                      |                    |                    |                    |                    |
| Beam Diameter (mm) <sup>(3)</sup>          | 5                  | 5                  | 5                  | 5                  |
| Beam Divergence (mrad) <sup>(4)(#)</sup>   | 0.9                | 0.9                | 0.9                | 0.9                |
| M <sup>2</sup> @ 1064nm <sup>(#)</sup>     | ≤8                 | ≤8                 | ≤8                 | ≤8                 |
| Pointing Stability (μrad) <sup>(5)</sup>   | ≤15                | ≤15                | ≤15                | ≤15                |
| Timing Jitter (ns) <sup>(6)</sup>          | ≤0.5               | ≤0.5               | ≤0.5               | ≤0.5               |
| Polarisation                               | Linear             | Linear             | Linear             | Linear             |
| Diode Life (pulses)                        | >4x10 <sup>9</sup> | >4x10 <sup>9</sup> | >4x10 <sup>9</sup> | >4x10 <sup>9</sup> |
| <b>Services</b>                            |                    |                    |                    |                    |
| Voltage (VAC)                              | 220-250            | 220-250            | 220-250            | 220-250            |
| Frequency (Hz)                             | 50 or 60           | 50 or 60           | 50 or 60           | 50 or 60           |
| Power                                      | Single Phase       | Single Phase       | Single Phase       | Single Phase       |
| Ambient (°C) <sup>(8)</sup>                | 5-35               | 5-35               | 5-35               | 5-35               |
| External Cooling <sup>(9)</sup>            | Air                | Air                | Air                | Air                |

All specifications at maximum repetition rate unless otherwise stated.

# Low divergence super-Gaussian resonator option available (M<sup>2</sup> ≤ 2)  
Please contact Litron Lasers for more details.

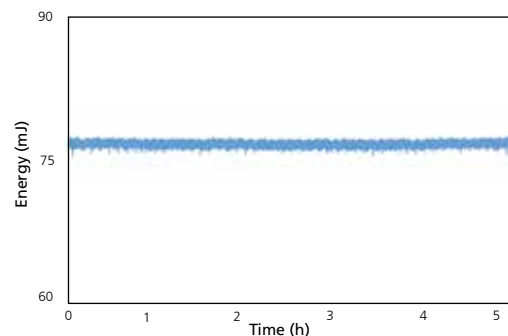
- (1) Contact Litron for more information.
- (2) FWHM – measured with a fast photodiode.
- (3) 100% beam diameter at laser exit port.
- (4) Full angle at specified beam diameter.
- (5) Half angle.
- (6) RMS with respect to Q-switch trigger input.
- (7) Full software suite and programming tools supplied.
- (8) 0-80% non condensing atmosphere.
- (9) Standard air-cooled chiller or optional water-cooled chiller.



Far field beam profile

Near field beam profile

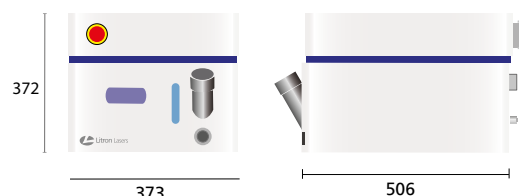
Energy stability at 532nm, 100Hz over 5 hours



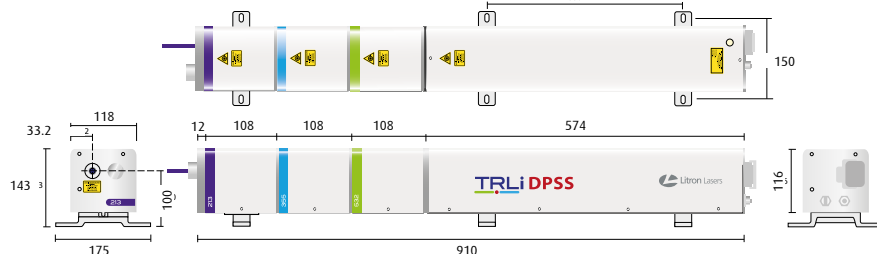
## MECHANICAL DATA

All dimensions shown in mm

Free standing PSU and chiller

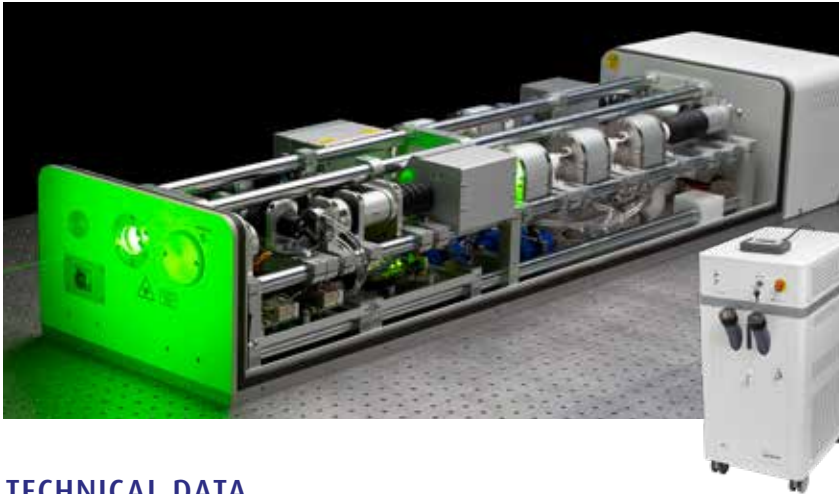


Laser Head



# The Plasma Series

## High Energy Pulsed DPSS Nd:YAG Lasers at up to 200Hz



The **Plasma series** lasers are pulsed diode pumped, Q-switched Nd:YAG lasers, which use the very latest in high efficiency fully diode pumped technology to replace traditional flashlamp pumping. The Plasma series DPSS lasers use Litron's sealed, mechanically robust diode pump module to ensure stable output, high reliability, easy diode replacement and long diode lifetime of more than 4 billion pulses. Litron's unique diode module design and diode drive electronics combined with the mechanically stable and robust optical rail systems deliver class leading pulse to pulse stability (0.2% RMS at 1064nm).

### TECHNICAL DATA

| Model                                    | Plasma 450-100     | Plasma 400-200     | Plasma G 400-100   | Plasma 1000-100    |
|--|--------------------|--------------------|--------------------|--------------------|
| <b>Repetition Rate (Hz)</b>              | 100                | 200                | 100                | 100                |
| <b>Output Energy (mJ)</b>                |                    |                    |                    |                    |
| 1064nm                                   | 450                | 400                | 400                | 1000               |
| 532nm                                    | 225                | 200                | 200                | 500                |
| 355nm                                    | 100                | 90                 | 100                | 200                |
| 266nm                                    | 45                 | 35                 | 45                 | 90                 |
| 213nm <sup>(1)</sup>                     |                    |                    |                    |                    |
| <b>Pulse Stability (%RMS)</b>            |                    |                    |                    |                    |
| 1064nm                                   | 0.2                | 0.2                | 0.2                | 0.2                |
| 532nm                                    | 0.3                | 0.3                | 0.3                | 0.3                |
| 355nm                                    | 1.0                | 1.0                | 1.0                | 1.0                |
| 266nm                                    | 1.5                | 1.5                | 1.5                | 1.5                |
| <b>Pulse Length (ns) <sup>(2)</sup></b>  |                    |                    |                    |                    |
| 1064nm                                   | 11-14              | 9-11               | 8-10               | 11-14              |
| 532nm                                    | 10-13              | 9-11               | 8-10               | 10-13              |
| 355nm                                    | 9-12               | 8-10               | 7-9                | 9-12               |
| 266nm                                    | 9-12               | 8-10               | 7-9                | 9-12               |
| <b>Beam Parameter</b>                    |                    |                    |                    |                    |
| Resonator                                | stable             | stable             | super-Gaussian     | stable             |
| Beam Diameter (mm) <sup>(3)</sup>        | 6.5                | 5                  | 6.5                | 6.5                |
| Beam Divergence (mrad) <sup>(4)</sup>    | ≤1                 | ≤1                 | ≤0.5               | ≤1                 |
| M <sup>2</sup> @ 1064nm                  | ≤8                 | ≤8                 | ≤2                 | ≤8                 |
| Pointing Stability (μrad) <sup>(5)</sup> | ≤30                | ≤30                | ≤30                | ≤30                |
| Timing Jitter (ns) <sup>(6)</sup>        | ≤0.5               | ≤0.5               | ≤0.5               | ≤0.5               |
| Polarisation                             | Linear             | Linear             | Linear             | Linear             |
| Diode Life (pulses)                      | >4x10 <sup>9</sup> | >4x10 <sup>9</sup> | >4x10 <sup>9</sup> | >4x10 <sup>9</sup> |
| <b>Services</b>                          |                    |                    |                    |                    |
| Voltage (VAC)                            | 220-250            | 220-250            | 220-250            | 220-250            |
| Frequency (Hz)                           | 50-60              | 50-60              | 50-60              | 50-60              |
| Power                                    | Single Phase       | Single Phase       | Single Phase       | Single Phase       |
| Ambient (°C) <sup>(8)</sup>              | 5-35               | 5-35               | 5-35               | 5-35               |
| External Cooling <sup>(9)</sup>          | Air                | Air                | Air                | Air                |

### FEATURES

- **Output energies up to 1J**
- **Repetition rates up to 200Hz**
- **Fully diode pumped lasers**
- **Super-Gaussian resonator M<sup>2</sup> ≤2**
- **Stable resonator M<sup>2</sup> ≤8**
- **Ultra high stability**
- **Diode life >4 billion pulses**
- **Homogenous beam profile**
- **Compact PSU**
- **Detachable chiller**
- **Field replaceable diodes**
- **RS232 control**

### APPLICATIONS

- **LIDAR**
- **Semiconductor annealing**
- **Si wafer inspection**
- **Laser shock peening**
- **Laser lift-off**
- **LCD repair**
- **Ti:Sa pumping**
- **Laser cleaning**
- **LIBS & LIF**

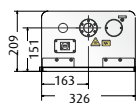
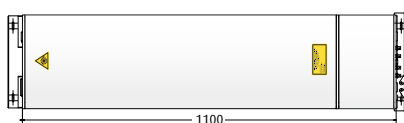
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- (3) 100% beam diameter at laser exit port.
- (4) Full angle at specified beam diameter.
- (5) Full angle.
- (6) RMS with respect to Q-switch trigger input.
- (7) Full software suite and programming tools supplied.
- (8) 0-80% non-condensing atmosphere.
- (9) Standard air-cooled chiller or optional water-cooled chiller.

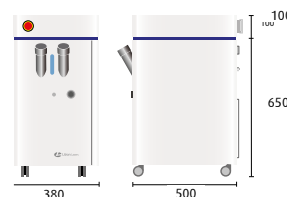
### MECHANICAL DATA

All dimensions shown in mm

#### Laser Head



#### Free standing PSU and chiller



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