

# Plasma PIV

**0-200Hz Pulsed Diode Pumped Solid State (DPSS) Nd:YAG Lasers for PIV Applications.**



*New Product - DPSS 75mJ at 532nm, 100Hz*

## Applications

- PIV
- Particle Sizing
- Ti:S Pumping
- Combustion Analysis
- Laser Induced Fluorescence
- Laser Peening
- Double Pulse LIBS

## Litron is the world's technology leader for dedicated PIV lasers

Choose from

### Ultra Compact Nano PIV Series

Up to 200mJ @ 532nm @ 15Hz  
Models from 10 to 100Hz

### Compact High Energy TRL PIV Series

Up to 425mJ @ 532nm @ 15Hz  
Models from 10 to 200Hz

### Ultra High Energy LPY HE PIV Series

Up to 2J @ 532nm @ 15Hz  
Models from 10 to 30Hz

### High Repetition Rate LPY HF PIV Series

Up to 200mJ @ 532nm @ 100Hz  
Models from 50 to 200Hz

### High Repetition Rate DPSS Plasma 75 PIV

75mJ @ 532nm @ 0 to 200Hz  
Constant energy flexible repetition rate

### DPSS LDY300 PIV Series

Up to 30mJ @ 527nm @ 1000Hz  
Repetition rate 300Hz to 10,000Hz

### Ultra High Repetition Rate DPSS LD75-G PIV

Up to 7.5mJ @ 532nm @ 10,000Hz  
Repetition rate 1000Hz to 50,000Hz

*See separate specification sheets for details on all of the above PIV ranges*

The **Plasma PIV** system is a fully DPSS dual head laser system designed specifically for PIV applications. It comprises two fully independent frequency doubled Nd:YAG lasers, that are beam combined to a common beam axis. These lasers each produce 532nm outputs of 75mJ per pulse up to 150Hz and 60mJ at 200Hz with pulse lengths of ~10ns.

Pulsed diode pumping, ultra-stable mechanics, damage resistant optics and innovative design make the Plasma PIV system highly reliable. Offering a circular homogenous beam with a low  $M^2$  it is an ideal tool for high brightness, high homogeneity light-sheet formation.

With no services required except the mains electrical input the Plasma PIV is a stand-alone turnkey system with an output suited to a huge range of PIV applications.

## Key Features

Two independent laser heads each giving

- Energy up to 75mJ at 150Hz, 60mJ at 200Hz
- 10ns pulse duration
- Variable repetition rate from 0 to 200Hz
- $M^2 < 10$  at 532nm
- RMS stability  $< 0.2\%$  / 5 hours
- Ultra compact PSU and cooler
- Homogenous beam profile for optimal light-sheet formation
- Intuitive operation using the LUCi touch screen control interface



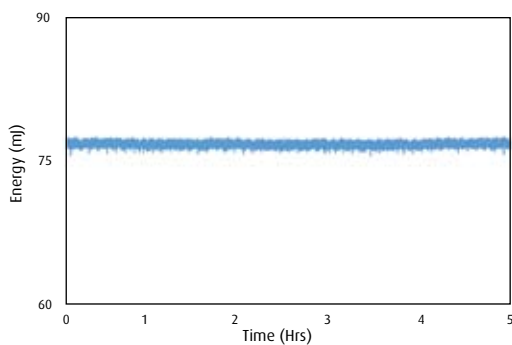
## System benefits include

- Pulsed diode pumped resonator design with long life diode modules
- Motorised attenuator for precise energy control
- Independent energy control of each laser head
- Easy configuration for 3rd and 4th harmonics for LIF or PLIF
- Extremely compact laser head compared to lamp pumped equivalent
- Dedicated power supply and chiller
- Ruggedised laser head for harsh environments
- Worldwide warranty and service

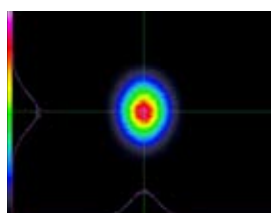
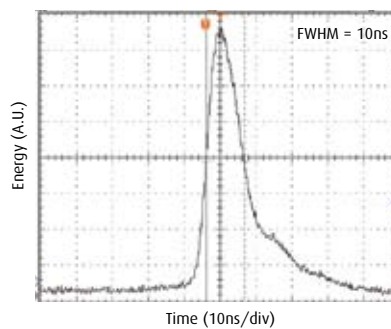
# TECHNICAL DATA

Model	P-75-100 PIV
<b>EACH HEAD</b>	
Repetition Rate (Hz)	0-200
Wavelength (nm)	532
<b>Pulse Energy (mJ)</b>	
10Hz	75
15Hz	75
25Hz	75
50Hz	75
100Hz	75
200Hz	60
<b>Parameter @ 100Hz</b>	
M <sup>2</sup>	<10
Pulse Stability @ 532nm (±%)	<1.5
Beam Diameter (mm) <sup>(1)</sup>	5
Beam Divergence (mrad) <sup>(2)</sup>	0.9
Pulse Length @ 532nm (ns) <sup>(3)</sup>	7-11
Pointing Stability (µrad)	<70
Timing Jitter (ns) <sup>(4)</sup>	<0.5
Polarisation	Horizontal
Diode Life (pulses)	>4x10 <sup>9</sup>
<b>SYSTEM</b>	
<b>Operation</b>	
Control <sup>(5)</sup>	LUCi/RS232
Q-switch trigger and sync <sup>(6)</sup>	TTL
<b>Services</b>	
Voltage (VAC)	220-250
Frequency (Hz)	50 or 60
Power	Single Phase
Ambient (°C) <sup>(7)</sup>	5-35
Cooling	Air
Power Supply	Free standing
<b>Optional Wavelengths</b>	
Output Energies per laser head	
355nm (mJ) <sup>(8)</sup>	20
266nm (mJ)	10

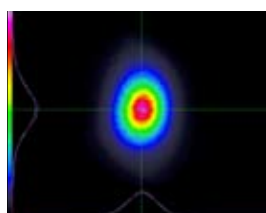
P-75-100: Energy stability at 532nm at 100Hz over 5 hours



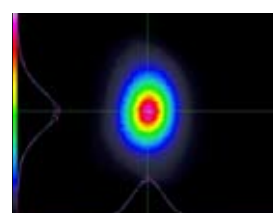
P-75-100: Pulse shape at 100Hz



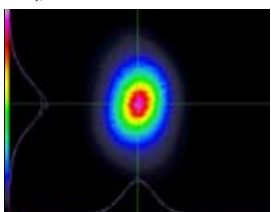
Near field beam profile at 10Hz 75mJ, 532nm



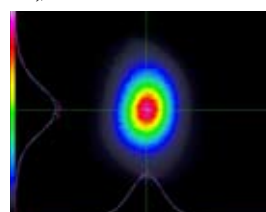
Near field beam profile at 50Hz 75mJ, 532nm



Near field beam profile at 100Hz 75mJ, 532nm

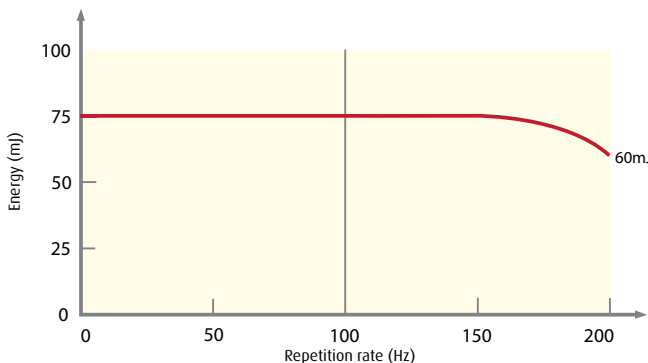


Near field beam profile at 150Hz 75mJ, 532nm



Near field beam profile at 200Hz 60mJ, 532nm

P-75-100 Performance curve at 532nm (per laser head)



- (1) 100% beam diameter at laser exit port.
- (2) Full angle at specified beam diameter.
- (3) FWHM – Fast photodiode and >1GHz oscilloscope.
- (4) RMS with respect to Q-switch trigger input.
- (5) Full software suite and programming tools supplied.
- (6) Each laser head independently triggerable.
- (7) 0-80% non condensing atmosphere, laser head only.
- (8) One laser only.

\* All specifications at 100Hz unless otherwise stated.

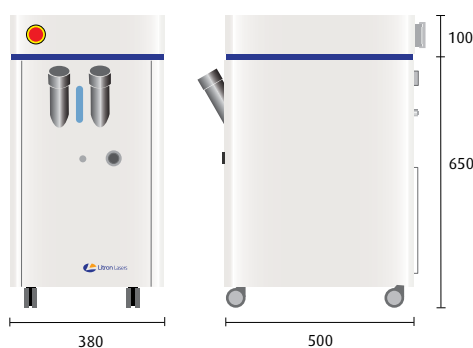
## MECHANICAL DATA

All dimensions shown in mm

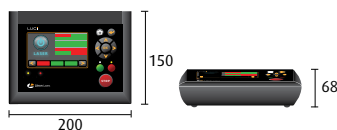
PIV Laser Head



Free Standing PSU



LUCi Remote Control Box



Our policy is to improve the design and specification of our products. The details given in this document are not to be regarded as binding.

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