

# Nano TRLi DP Series

The New Fully Diode Pumped Nano TRLi  
Up to 170mJ with a large range of intelligent accessories

## Key Features

- Repetition rates up to 200Hz
- Fully diode pumped
- Stable resonator  $M^2 \leq 8$
- Super-Gaussian resonator  $M^2 \leq 2$
- RMS stability 0.2% at 1064nm
- Diode life >4 billion pulses
- Plug and play harmonic modules
- Smooth, homogenous beam profile
- Compact PSU and remote chiller

## Applications

- Semiconductor and display inspection
- LCD repair
- Ti:Sa pumping
- Laser cleaning
- LIBS & LIF
- PIV and visualisation

## System options

- Auto-tuning harmonics
- Litron's proprietary active stabilization
- Automatic optical attenuation



Building on Litron's extremely versatile and successful **Nano TRLi** platform, the new **Nano TRLi DP series** comprises a set of fully diode pumped electro-optically Q-switched pulsed Nd:YAG lasers with output energies of up to 170mJ and repetition rates of up to 200Hz.

The Nano TRLi DP series are based around Litron's birefringence compensating twin-rod resonator giving high homogeneity 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.

As with the existing TRLi range all accessories such as harmonics are bolt-and-play and can be added and removed at will. The intelligent system controller automatically adapts to the set configuration and allows seamless control in any setup or application.

Unlike the competition all harmonics are angle tuned with high precision linear actuators. This allows not only initial auto-tuning at startup but continuous auto-tuning of the output during operation due to the fast response of mechanical angle tuning as opposed to thermal tuning. Additionally, all harmonic generation crystals are thermally stabilised to better than 0.1°C.

The high efficiency of the Nano TRLi DP means that the cooling requirements are minimal and it is supplied with a fully integrated, Litron designed, chiller and drive electronics.

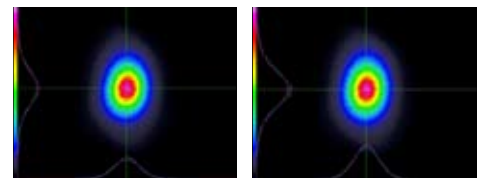
All harmonics to the fifth at 213nm are available and are all auto-tuned as standard.

# TECHNICAL DATA

Model	TRLiDP 170-100	TRLiDP 150-150	TRLiDP130-200	TRLiDP 40-200
<b>Repetition Rate (Hz)</b>	100	150	200	200
<b>Output Energy (mJ)</b>				
1064nm	170	150	130	40
532nm	85	75	65	20
355nm	45	35	25	7
266nm	10	15	8	3
<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	1.0	1.0	1.0	1.0
<b>Pulse Length (ns) <sup>(1)</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>(2)</sup>	5	5	5	5
Beam Divergence (mrad) <sup>(3)</sup>	0.9	0.9	0.9	0.9
M <sup>2</sup> @ 1064nm	≤5	≤5	≤5	≤5
Pointing Stability (μrad) <sup>(4)</sup>	≤70	≤70	≤70	≤70
Timing Jitter (ns) <sup>(5)</sup>	≤0.5	≤0.5	≤0.5	≤0.5
Linewidth @ 1064nm (cm <sup>-1</sup> )	≤0.7	≤0.7	≤0.7	≤0.7
Polarisation	Horizontal	Horizontal	Horizontal	Horizontal
Diode Life (pulses)	>4x10 <sup>9</sup>	>4x10 <sup>9</sup>	>4x10 <sup>9</sup>	>4x10 <sup>9</sup>
<b>Operation</b>				
Control <sup>(6)</sup>	LUCi/RS232	LUCi/RS232	LUCi/RS232	LUCi/RS232
Q-switch trigger and sync	TTL	TTL	TTL	TTL
<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>(7)</sup>	5-35	5-35	5-35	5-35
External Cooling	Air	Air	Air	Air
<b>Power Supply</b>	Free standing	Free standing	Free standing	Free standing

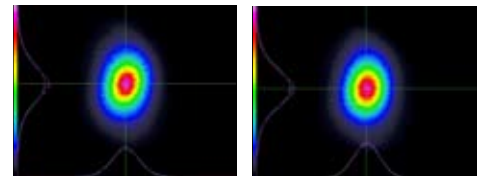
\* All specifications at maximum repetition rate unless otherwise stated.

- (1) FWHM – measured with a fast photodiode.
- (2) 100% beam diameter at laser exit port.
- (3) Full angle at specified beam diameter.
- (4) Full angle.
- (5) RMS with respect to Q-switch trigger input.
- (6) Full software suite and programming tools supplied.
- (7) 0-80% non condensing atmosphere, laser head only.



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

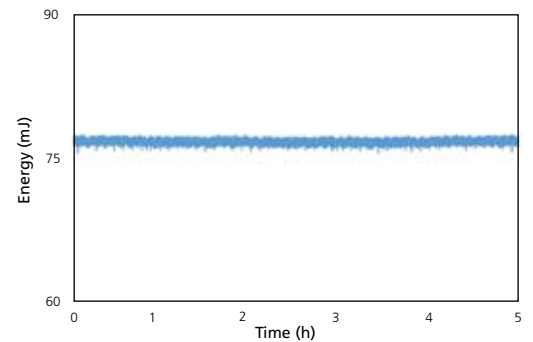
Near field beam profile at 100Hz  
75mJ, 532nm



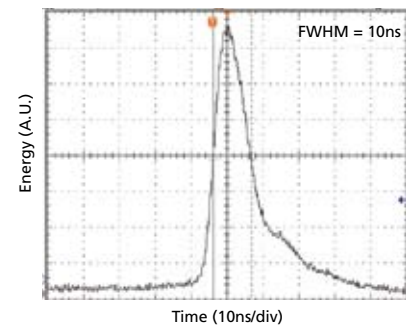
Near field beam profile at 150Hz  
75mJ, 532nm

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

LP-150-100: Energy stability at 532nm at 100Hz over 5 hours

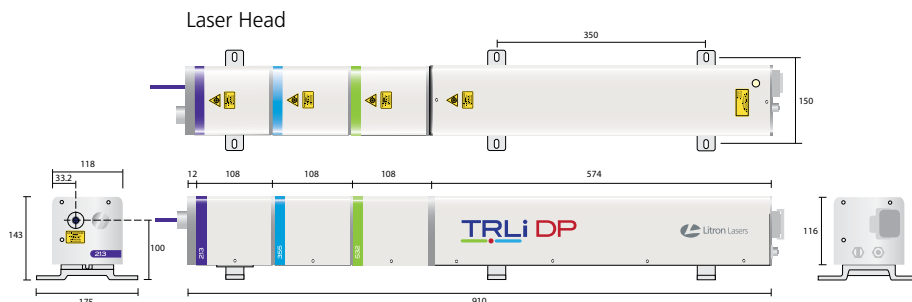


LP-150-100: Pulse shape at 100Hz

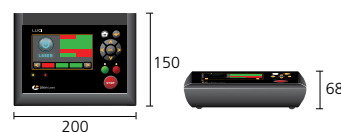


# MECHANICAL DATA

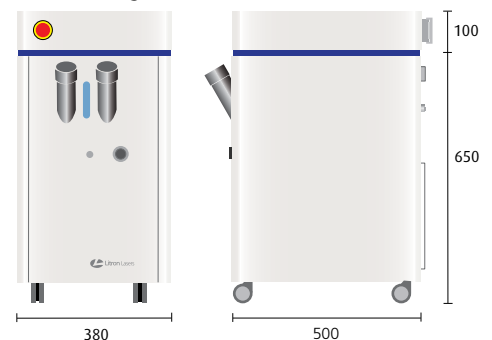
All dimensions shown in mm



LUCi Remote Control Box



Free Standing PSU



**CE**  
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.

HEAD OFFICE  
**Litron Lasers Ltd**  
8 Consul Road, Rugby,  
Warwickshire CV21 1PB,  
England.

T +44 (0)1788 574444  
F +44 (0)1788 574888  
E sales@litron.co.uk

 **Litron Lasers**  
www.litronlasers.com