

Surelite™ I, II, III

High Energy Nd:YAG

Surelite is the most imitated Nd:YAG laser design in the industry. Surelite lasers provide proven high performance and reliability at a very reasonable price. Over 5,000 Surelites are in operation throughout the world today in Scientific, Industrial and Medical applications.

Surelites are being used for remote sensing, spectroscopic analysis, Particle Image Velocimetry (PIV), machining, marking, and biological investigations. Excellent beam quality and unsurpassed output energies make Surelite the perfect choice for pumping OPOs, dye lasers and Ti:sapphire lasers.

The Surelite I, II and III all feature a simple and efficient single rod oscillator design. The Gaussian mirror-coupled resonator is optimally mode filled for maximum energy extraction. A unique rod design, proprietary Q-switch technology and Amplitude's diffuse reflector technology all contribute to the Surelite's efficiency and high performance.

The Surelite has been updated with the new Surelite Remote Harmonic operation for first and second stage harmonic automation. Controlled from a simple intuitive GUI, the option allows for hands free adjustment of the Surelite harmonics.

Applications

Industry:

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

Science:

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

Medical:

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

Key Features

- > RS-232 or TTL interface for remote or local operation
- > Water to air heat exchanger eliminates the need for external water cooling
- > Gaussian optics incorporated to provide low divergence and high spatial uniformity in beam
- > Graphite resonator structure ensures long-term thermal and mechanical stability
- > 213 nm option available
- > HEO for maximum 532 nm output
- > Optional motorized harmonics.



Specifications

	SL I-10	SL I-20	SL I-30	SL II-10	SL II-20	SL III-10
Repetition Rate (Hz)	10	20	30	10	20	10
Energy (mJ)						
1064 nm	450	420	380	650	550	850
532 ¹ nm	200	160	130	300	250	425
532 HEO	/	/	/	/	/	550
355 nm	65/100 ²	60/100 ²	25/70 ²	100/160 ²	70/160 ²	165/225 ²
266 nm	60	45	30	80	60	100
Pulsewidth ³ (ns)						
1064 nm			4 - 7			4 - 6
532 nm			4 - 6			3 - 5
355 nm			4 - 6			3 - 5
266 nm			4 - 6			3 - 5
Linewidth (cm-1) - Standard			1			
Divergence ⁴ (mrad)			0.5			
Beam Pointing Stability ($\pm\mu$ rad)	30	50	70	30	50	
Beam Diameter (mm)		6		7		9.5
Jitter ⁵ (\pm ns)			0.5			
Energy Stability ⁶ (\pm %)						
1064 nm			2.5 ; 0.8			
532 nm			3.5 ; 1.2			
355 nm			4.0 ; 1.3			
266 nm			7.0 ; 2.3			
Power Drift ⁷ (\pm %)						
1064 nm		3.0		3.0		3.0
532 nm		5.0		6.0		5.0
355 nm		5.0		6.0		5.0
266 nm		8.0		8.0		8.0

¹ Using Type II doubler

² High Energy UV option with Type I doubler

³ Full width, half max

⁴ Full angle for 86% of energy

⁵ With respect to external trigger

⁶ The first value represents shot-to-shot for 99.9% of pulses, the second value represents RMS

⁷ Average for 8 hours with $\Delta T_{room} < \pm 3^{\circ}C$

All specifications at 1064 nm unless otherwise noted. As a part of our continuous improvement program, all specifications are subject to change without notice.

Dimensions

Optical Head (LxWxH)	775 x 178 x 190 mm (30.5 x 7.0 x 7.5")
Power Supply (LxWxH)	622 x 282 x 508 mm (24.5" x 11.2" x 20.0")

Weight

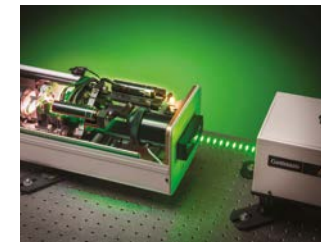
Optical Head	24 kg (52 lbs)
Power Supply	44 kg (96 lbs)

Water

Closed loop water to air heat exchanger: external cooling water not required (1 gallon deionized water).

Others

Electrical Service	200 - 240 VAC, single Φ , 10 A, 50/60 Hz
Room Temperature	18 to 30° C / 65 to 87° F
Umbilical Length	3.18 m (10.4 ft)



The new Surelite Remote Harmonic Operation option

Specifications

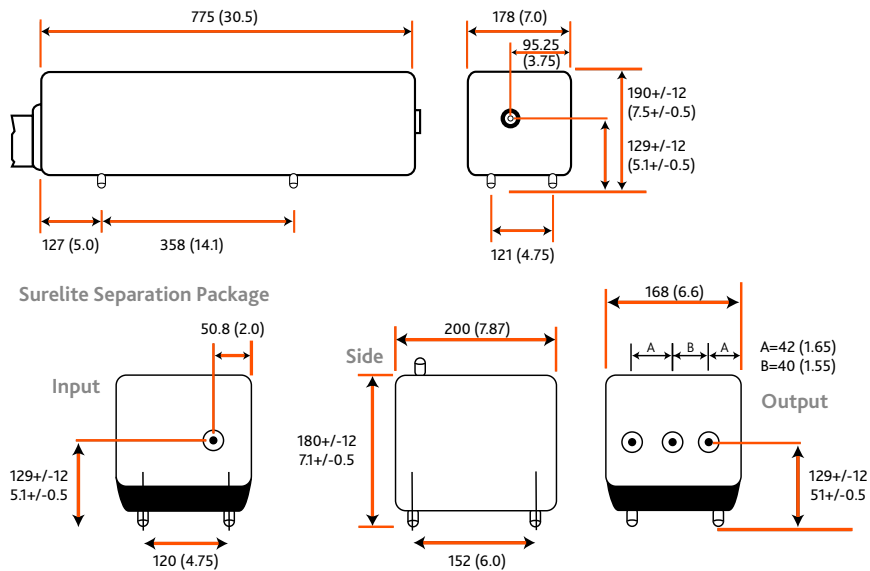
Beam Spatial Profile ⁸					
Near Field (<1m)	0.70	0.65	0.70	0.65	0.70
Far Field (∞)	0.95	0.90	0.95	0.90	0.95
Deviation from fitted Gaussian ⁹ ($\pm\%$)					
Near Field (<1m)	30	35	30	35	30
Polarization	Horizontal				
1064 nm	Vertical				
532 nm	Horizontal				
355 nm	Horizontal				
266 nm	Horizontal				

⁸ A least squares fit to a Gaussian profile. A perfect fit would have a coefficient of 1.

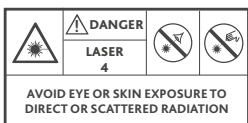
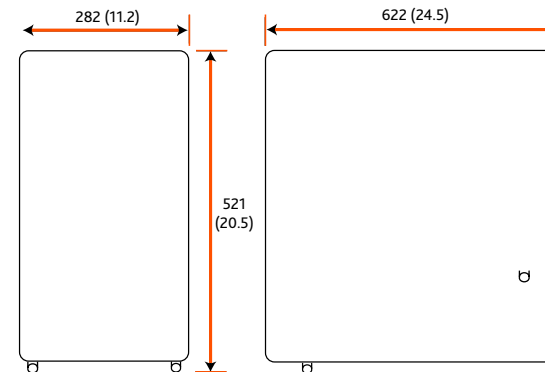
⁹ Maximum deviation at beam center ($\pm\%$)

Surelite Physical Layout

All dimensions are in mm (inches)



Surelite Power Supply



Surelite™ I, II, III

The reference in high energy Nd:YAG nanosecond lasers.



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