

# Tristar™

## HIGH REPETITION RATE, INTRA-CAVITY TRIPLED UV LASER



### The Tristar Advantage

- Short pulse width and high peak power for minimized thermal damage to parts during processing
- Easy field serviceability increases uptime by shortening MTTR
- Motorized THG crystal shifter for stable power and long life
- Long life ProLite® diodes reduce cost of ownership
- Automatic Laser Purification System™ (ALPS) actively cleans the laser cavity to greatly extend laser life
- Automatic data logging means cradle to grave product and process traceability
- Air-cooled operation does not require a chiller

### APPLICATIONS

- LED scribing
- Memory repair
- Rapid prototyping
- Stereolithography
- Precision marking



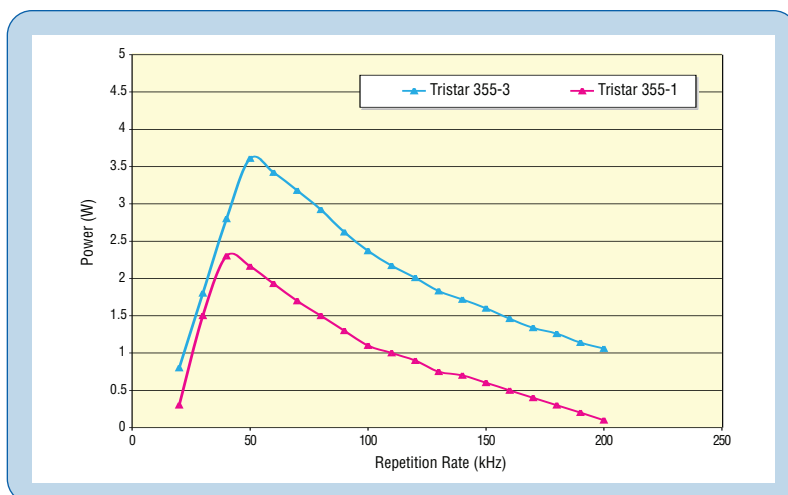
A Newport Corporation Brand

The Spectra-Physics® Tristar™ provides a state-of-the-art light source for an impressive combination of power and flexible repetition rates. The Tristar incorporates reliable technologies from field-proven Spectra-Physics diode-pumped solid state (DPSS) lasers and is designed to produce >3 W of power at 50 kHz repetition rate. It is an excellent choice for demanding applications where highly focused spots, precision positioning, and the highest possible throughput are necessary.

With a pulse width <25 ns at 90 kHz, the Tristar laser generates the high-intensity peak power necessary for next-generation scribing applications. The high peak power also provides the best quality materials processing and increased throughput.

The Tristar laser offers:

- Compact, easy to integrate design.
- Short pulse durations for smaller heat affected zones.
- High peak power reduces recast material, lowers kerf heights and results in cleaner scribe lines and more consistent material processing.
- Lower cost of ownership.
- Longer life ProLite® diode pump modules for higher reliability.
- EternAlign™ optical mount technology for perfect alignment over the lifetime of the laser.
- Automatic crystal shifter extends lifetime and lowers the cost of ownership over the life of the laser.
- Unique Active Laser Purification System™ keeps the cavity clean and dry to significantly extend laser life.



# Tristar™

## Specifications¹

General Characteristics	Tristar 355-1	Tristar 355-3
Wavelength	355 nm	
Repetition Rate	1 Hz – 300 kHz	
Output Power	>1 W	>3 W at 50 kHz >2 W at 90 kHz
Peak Power	0.4 kW	0.9 kW ns
Pulse Width	<25 ns	
Pulse-to-Pulse Stability (peak power 1 $\sigma$ )	<4% at 90 kHz <5% at 150 kHz	
Beam Characteristics		
Spatial Mode	TEM <sub>00</sub>	
M²	<1.2	
Polarization	>300:1, vertical	
Beam Diameter (at waist)	240 $\mu$ m $\pm$ 75 $\mu$ m	
Beam Divergence	<3 mrad	
Beam Roundness	>90%	
Beam Waist Location	-300 mm $\pm$ 100 mm	
Astigmatism	<0.15	
Polarization	>300:1, vertical	
Boresight Tolerance	Near field <1 mm Far field <1 mrad	

### Stability

Beam Pointing Stability	<20 $\mu$ rad (8 hrs at constant temperature)
Power Stability	$\pm$ 4% over 8 hours ( $\pm$ 1°C)
Warm-up Time (from cold start)	<30 min

### Operating Conditions

Temperature Range	18 to 35°C
Altitude	0–3,000 m
Humidity	5–80%, non-condensing (for temperatures up to 35°C)

### Non-operating Conditions

Temperature Range	0 to 50°C
Altitude	0–12,000 m
Humidity	8–95%, non-condensing

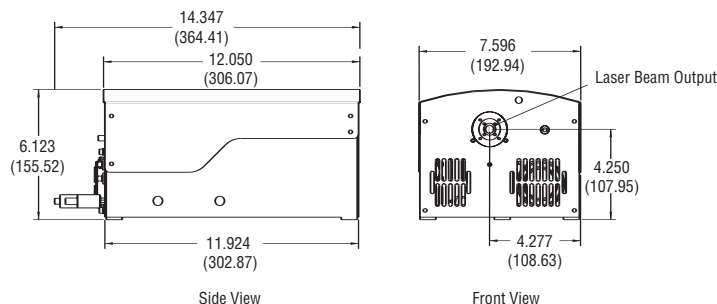
### Physical Characteristics

Laser Head Size (H x W x L)	155.5 x 192.9 x 302.9 mm (6.1 x 7.6 x 11.9 in)
Laser Head Weight	8 kg (17.6 lb)
Power Supply Size (H x W x L)	176.3 x 482.6 x 454.9 mm (6.94 x 19 x 17.9 in)
Power Supply Weight (typical)	12 kg (26.4 lb)
Active Air Purge Size (H x W x L)	116 x 210 x 279 mm (4.6 x 8.3 x 11 in)
Active Air Purge Weight (typical)	3.2 kg (7 lb)
Fiber Length	4 m

### Compliance RoHS compliant

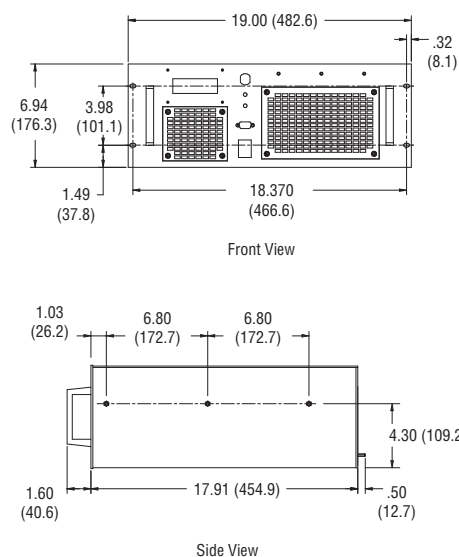
1. Due to our continuous product improvement, all specifications are subject to change without notice.
2. Unless otherwise stated, all specifications are at 90 kHz.

## Tristar Laser Head Dimensions



Dimensions are in inch (mm)

## Power Supply Dimensions



Dimensions are in inch (mm)



A Newport Corporation Brand

3635 Peterson Way, Santa Clara, CA 95054, USA

PHONE: 1-800-775-5273 1-408-980-4300 FAX: 1-408-980-6923 EMAIL: sales@spectra-physics.com

Complete listings for all global office locations are available online at [www.newport.com/contact](http://www.newport.com/contact)

[www.newport.com/spectra-physics](http://www.newport.com/spectra-physics)

	PHONE	EMAIL		PHONE	EMAIL
Belgium	+32-(0)0800-11 257	belgium@newport.com	Irvine, CA, USA	+1-800-222-6440	sales@newport.com
China	+86-10-6267-0065	china@newport.com	Netherlands	+31-(0)30 6592111	netherlands@newport.com
France	+33-(0)1-60-91-68-68	france@newport.com	United Kingdom	+44-1235-432-710	uk@newport.com
Japan	+81-3-3794-5511	spectra-physics@splasers.co.jp	Germany / Austria / Switzerland	+49-(0)6151-708-0	germany@newport.com
Taiwan	+886 -(0)2-2508-4977	sales@newport.com.tw			

Newport Corporation, Irvine, California and Franklin, Massachusetts; Evry and Beaune-La-Rolande, France and Wuxi, China have all been certified compliant with ISO 9001 by the British Standards Institution. Santa Clara, California is DNV certified.

© 2010 Newport Corporation. All rights reserved. Spectra-Physics, the Spectra-Physics logo and the Newport logo are registered trademarks of Newport Corporation. Tristar, Active Laser Purification System, and EternAlign are trademarks of Newport Corporation. ProLite is a registered trademark of Oclaro, Inc.

DS-09063 (02/10)