BLOOM
LASERS FOR INDUSTRY

YUCCA 30-343

High power short nanosecond UV laser for high-speed precision micromachining

YUCCA, the UV fiber laser, provides high power at high pulse repetition rates with short nanosecond pulses. It is fully designed to improve laser process quality with shorter pulse widths and increase productivity with higher pulse repetition rates.

Its innovative patented fiber design enables a unique combination of short nanosecond pulses, performance for high-speed process and reduced overall processing cost. With a constant short nanosecond pulse duration and beam quality over the whole pulse repetition rate range, YUCCA is the right laser source for the next generation of UV laser micromachining equipment targeting higher throughput.

YUCCA is designed with high-end methodologies to exceed industrial quality standards and to guarantee reliability and serviceability. Manufactured with field proven technology and qualified components, good practices and high-quality, YUCCA is the right answer for 24/7 operations in extended production cycle environments.

Wavelength	343 nm
Power (*) (*) 10 ns pulse duration	30 W at 100 kHz 13 W at 300 kHz
Pulse Duration (**) (**) Factory set	2.5 ns, 5 ns, 10 ns or burst mode
Beam quality	$M^2 < 1.2$

Advantages

- High power 30 W up to 400 kHz
- Short pulses 2.5 ns up to 800 kHz
- Excellent beam quality $M^2 < 1.2$ up to 800 kHz
- High peak power up to 30 kW
- Field proven technology
- Long UV crystal lifetime
- HALT designed / HASS Certified
- 2.5 ns, 5 ns, 10 ns or burst
- True Pulse-On-Demand
- Instant Pulse Switching

Applications

- PCB via drilling, cutting and depaneling
- ITO patterning
- Wafer scribing and debonding
- Glass processing
- CFRP processing
- Battery processing
- Ceramic scribing, cutting and drilling

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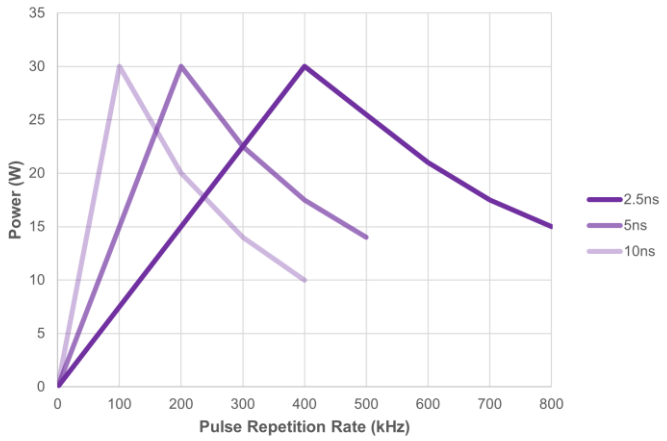
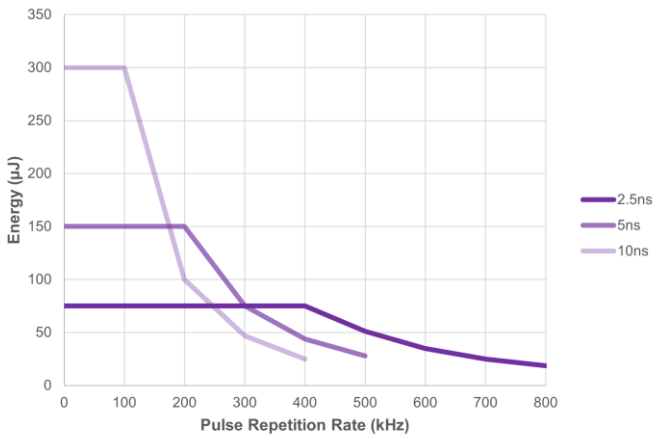
Typical performances

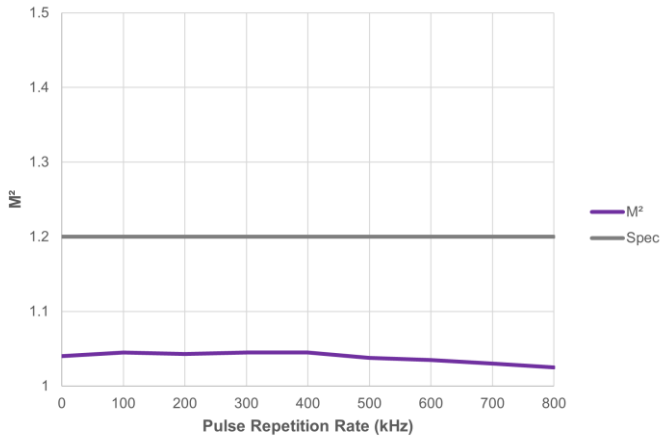
Power vs/ pulsewidth



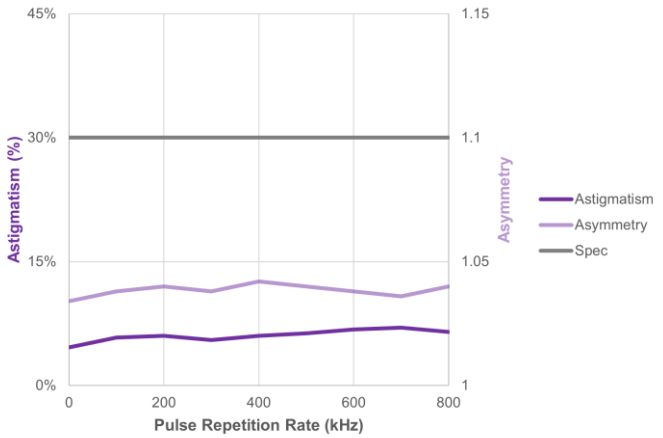
Energy vs/ pulsewidth



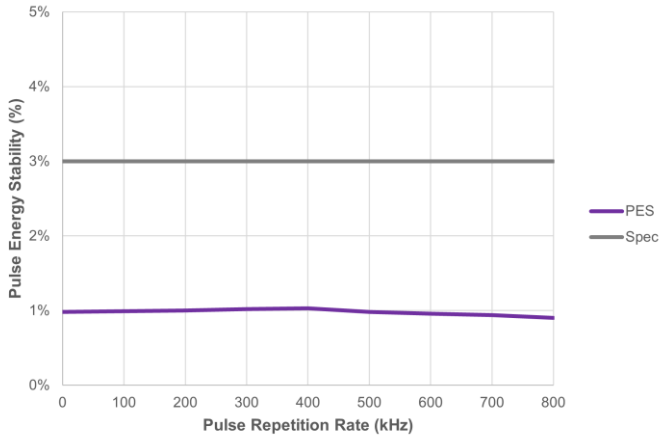
M^2 at 10ns



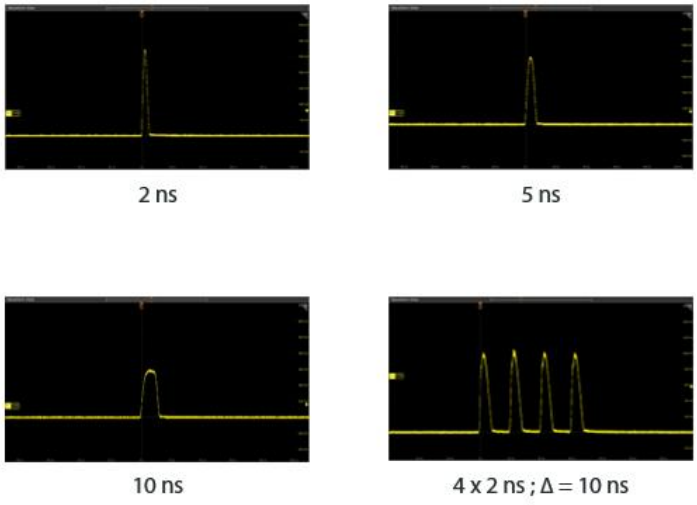
Astigmatism & asymmetry at 10ns



Pulse Energy Stability at 10 ns



Factory Set Pulses



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Specifications

Output Characteristics				
Central Wavelength	343.3 nm ± 0.3 nm			
Average Power (*) (**) (*) Pulse duration to be chosen by customer between 2.5 ns and 10 ns and factory set (**) Burst available on request	2.5 ns	5 ns	10 ns	Burst
	30 W @ 400 kHz 20 W @ 600 kHz 15 W @ 800 kHz	30 W @ 200 kHz 17 W @ 400 kHz 14 W @ 500 kHz	30 W @ 100 kHz 20 W @ 200 kHz 13 W @ 300 kHz	(**)
Pulse Width	Fully programmable from 2.5 ns to 10 ns			
Pulse Repetition Rates	Single-shot to 800 kHz			
Power Stability	< 2%, 2σ over 8 hours			
Pulse to Pulse Energy Stability	< 3% RMS			
Beam Characteristics				
Spatial Mode	TEM_{00}			
M^2	≤ 1.2			
Polarization Ratio	≥ 100:1 linear			
Polarization Direction	Vertical, ± 2°			
Beam Divergence (full-angle)	< 0.3 mrad			
4σ Beam Diameter @ exit (nominal)	3.5 mm ± 0.35 mm			
Astigmatism	≤ 30%			
Beam Circularity	≥ 90%			
Long Term Beam Pointing Stability, over 8 hours	≤ 25 µrad, full-angle			
Laser safety class (IEC 60825-1 : 2014)	Class IV			
Operating Conditions				
External Communications	Ethernet / RS-232 / USB			
Warm-up Time Cold Start Warm Start	 ≤ 30 minutes ≤ 2 minutes			
Electrical Requirements	100 – 240V AC			
Line Frequency	50 to 60 Hz			
Power Consumption	< 700 W			
Temperature Range	15°C to 35°C (59°F to 95°F)			
Humidity	10% to 95% RH, non-condensing			
Storage Conditions Temperature Humidity	 0°C to 50°C (32°F to 122°F) 5% to 95% RH			
Altitude (non-operational)	Sea level to 11 000 meters			
Chiller Requirements				
Cooling Water Temperature	25°C ± 0,1°C			
Minimum Cooling Power	700 W			
Cooling Water Flow	5 L/min, 3.5 L/min minimum			
Physical Characteristics				
Dimensions (L x W x H)	Laser Head : 1146 x 250 x 169 mm (45.11 x 9.84 x 6.65 in) Control Unit : 506 x 483 x 177 mm (19.92 x 19.01 x 6.97 in)			
Weight	Laser Head : 50 kg (110 lbs) without water Control Unit : 25 kg (55 lbs)			
Features				
Extended Internal Power Monitoring	Power monitored at each stage of the laser			
Ultra Wide Operation Range	Constant pulse width and beam parameters over the whole pulse repetition rate range			
Industry Ready Data Logging	Long-term and short-term laser operation log, diagnosis, maintenance			
Alignment Beam	Low power mode for laser installation and alignment			
Sacrificial Window	Field Replaceable Unit			
Advanced Support	Industry 4.0 ready, remote control, remote support, >30 sensors in laser head			
Best Practices	Sealed laser head, multi-stage components cleaning and assembled in ISO 6 cleanroom (class 1000)			

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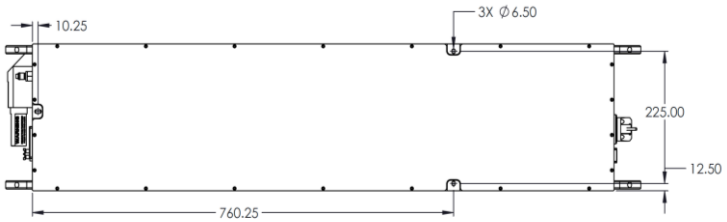
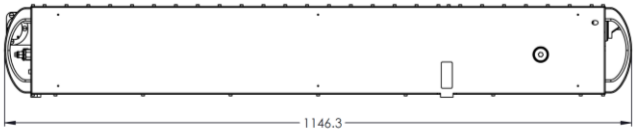
Drawings

Laser Head (in mm)

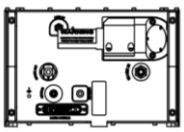


Bottom View

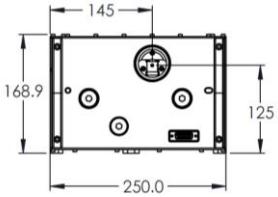
Top View



Side View

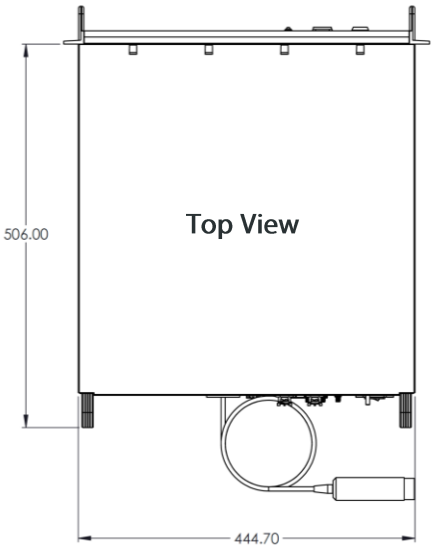


Rear View

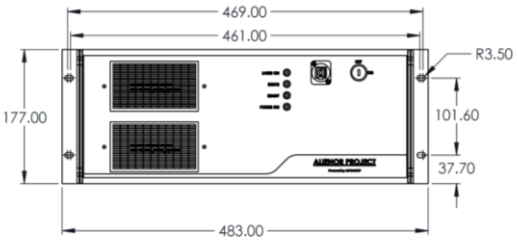


Front View

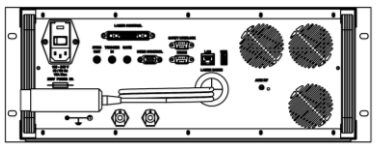
Power Supply (in mm)



Top View



Front View



Rear View

According to BLOOM continuous product improvements, specifications and drawings are subject to change without notice.

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