BLOOM
LASERS FOR INDUSTRY

SCAN ME

YUCCA 45-343

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 operation in extended production cycle environments.

Wavelength	343 nm
Power (*) (*) 10 ns pulse duration	45 W up to 300 kHz 20 W at 700 kHz
Pulse Duration (**) (**) Factory set	2 ns, 5 ns, 10 ns or burst mode
Beam quality	$M^2 < 1.2$

Advantages

- High power 45 W up to 600 kHz
- Short pulses 2 ns up to 1 MHz
- Excellent beam quality $M^2 < 1.2$ up to 1 MHz
- High peak power up to 40 kW
- Field proven technology
- Long UV crystal lifetime
- HALT designed / HASS Certified
- 2 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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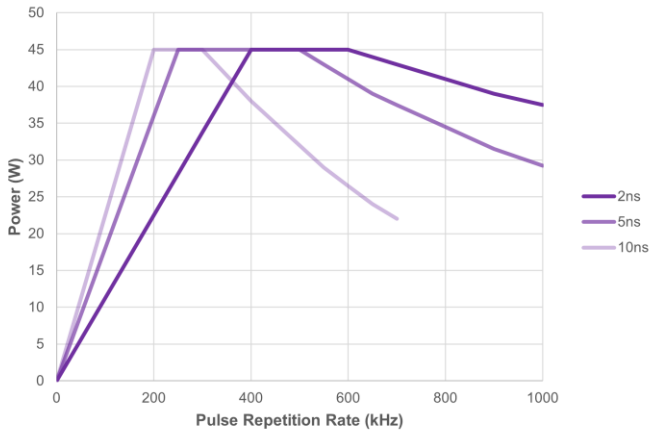
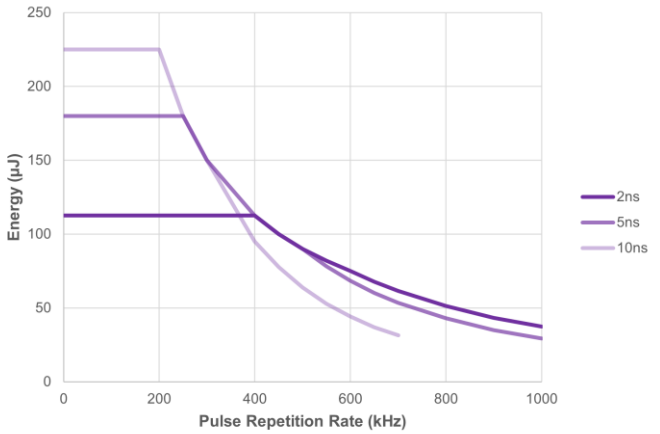
Typical performances

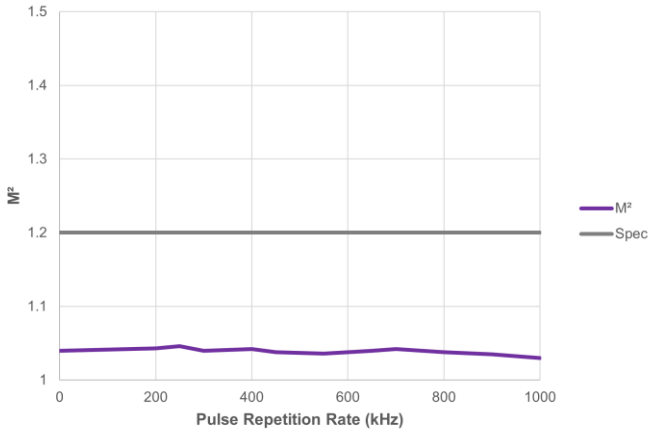
Power vs pulse duration



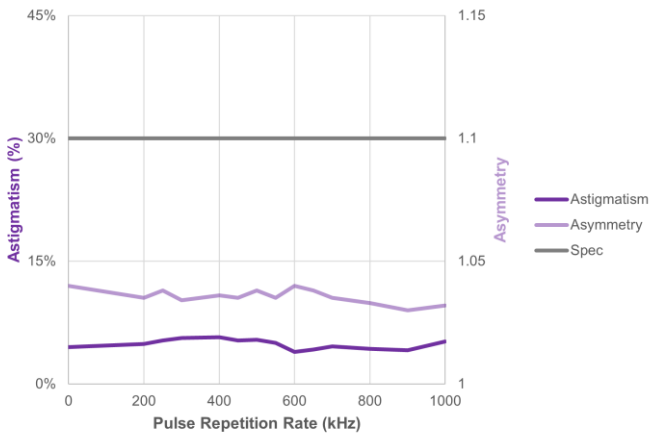
Energy vs pulse duration



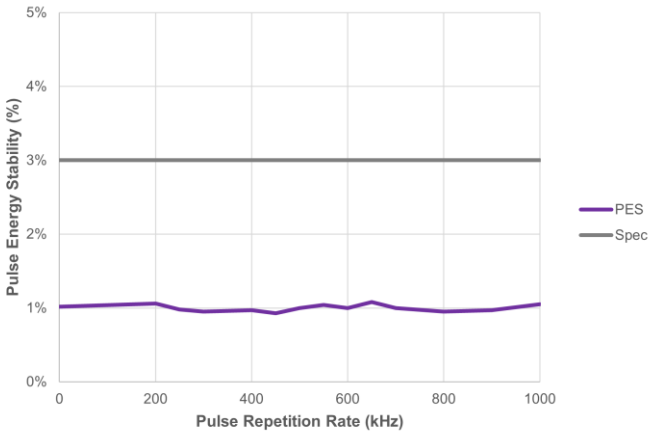
M^2



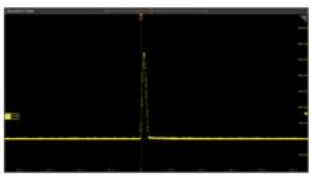
Astigmatism & asymmetry



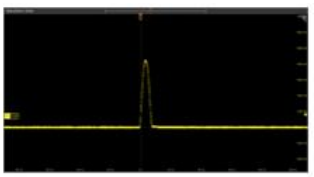
Pulse Energy Stability



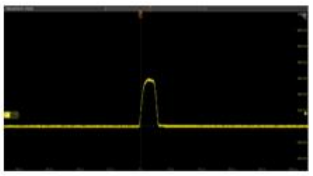
Factory Set Pulses



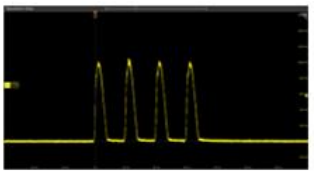
2 ns



5 ns



10 ns



4 x 2 ns ; Δ = 10 ns

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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 ns and 10 ns and factory set (**) Burst available on request	2 ns	5 ns	10 ns	Burst
	45 W @ 500 kHz 45 W @ 600 kHz 35 W @ 1 MHz	45 W @ 250 kHz 45 W @ 500 kHz 29 W @ 1 MHz	45 W @ 200 kHz 45 W @ 300 kHz 20 W @ 700 kHz	(**)
Pulse Width		Fully programmable from 2 ns to 10 ns		
Pulse Repetition Rates		Single-shot to 1 MHz		
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)		< 0.2 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 – 240 V AC		
Line Frequency		50 to 60 Hz		
Power Consumption		< 900 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, >50 sensors		
Best Practices		Sealed laser head, multi-stage components cleaning and assembled in ISO 6 cleanroom (class 1000)		

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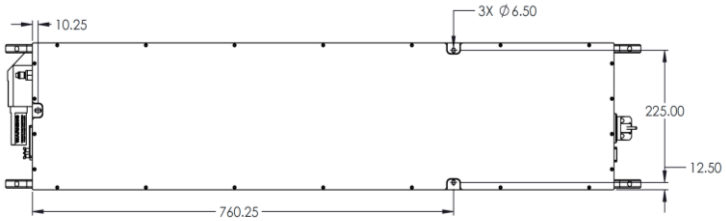
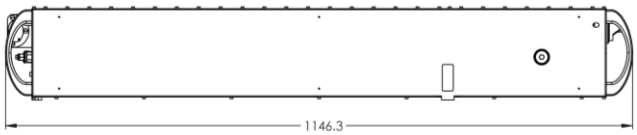
Drawings

Laser Head (in mm)

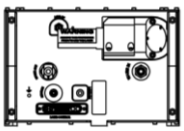


Bottom View

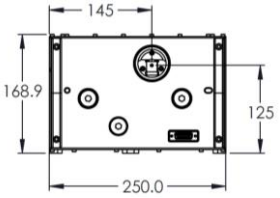
Top View



Side View

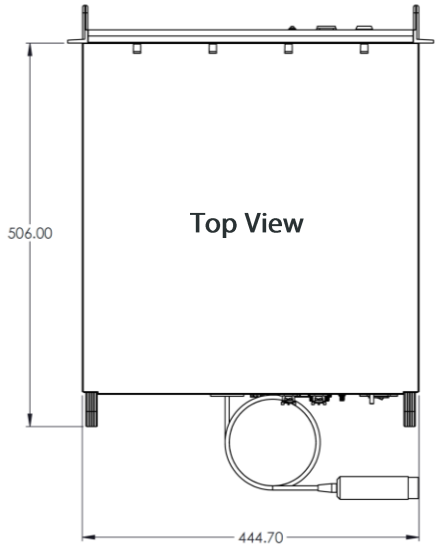


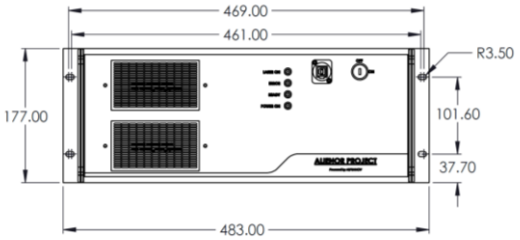
Rear View



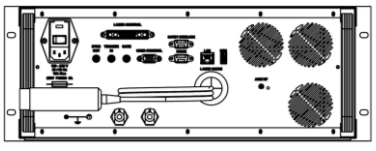
Front View

Power Supply (in mm)





Front View



Rear View

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

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