BLOOM
LASERS FOR INDUSTRY

SCAN ME

YUCCA 100-515

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

YUCCA, the visible 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 visible 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	515 nm
Power (*) (*) 10 ns pulse duration	100 W up to 300 kHz 40 W @ 1 MHz
Pulse Duration (**) (**) Factory set	2 ns, 5 ns, 10 ns or burst mode
Beam quality	$M^2 < 1.2$

Advantages

- High power 100 W up to 1 MHz
- Short pulses 2 ns up to 2.5 MHz
- Excellent beam quality $M^2 < 1.2$ up to 2.5 MHz
- High peak power up to 60 kW
- Field proven technology
- HALT designed / HASS Certified
- 2 ns, 5 ns, 10 ns or burst
- True Pulse-On-Demand
- Instant Pulse Switching

Applications

- Solar Cells processing
- Glass processing
- PERC processing
- Selective ablation
- Battery processing
- Ceramic scribing, cutting and drilling
- Material processing

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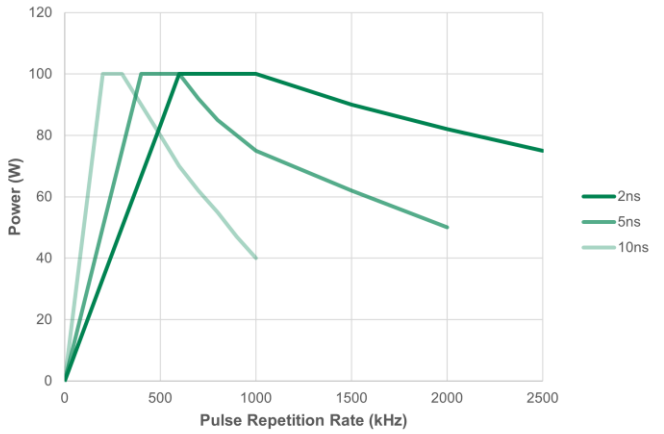
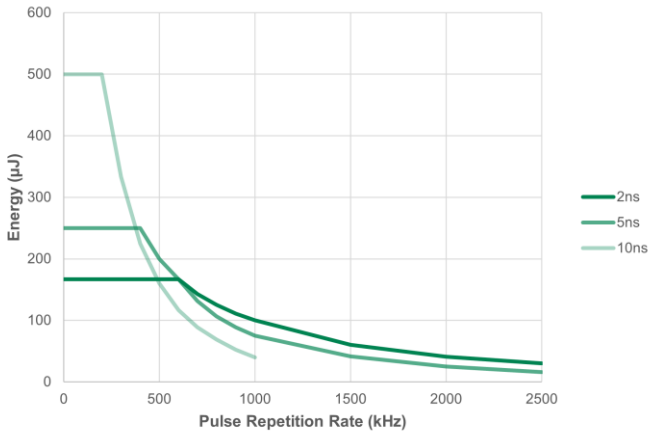
Typical performances

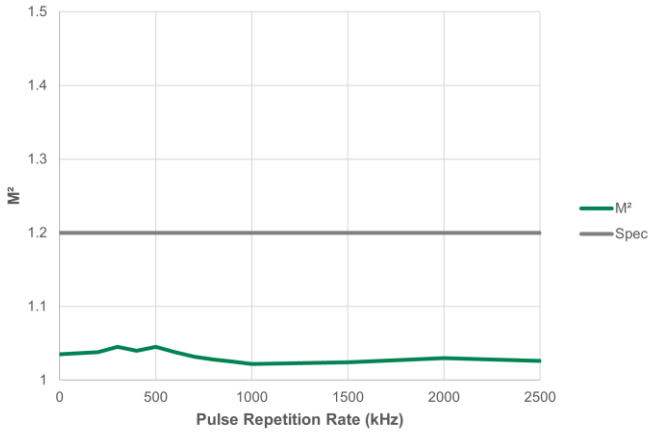
Power vs pulse duration



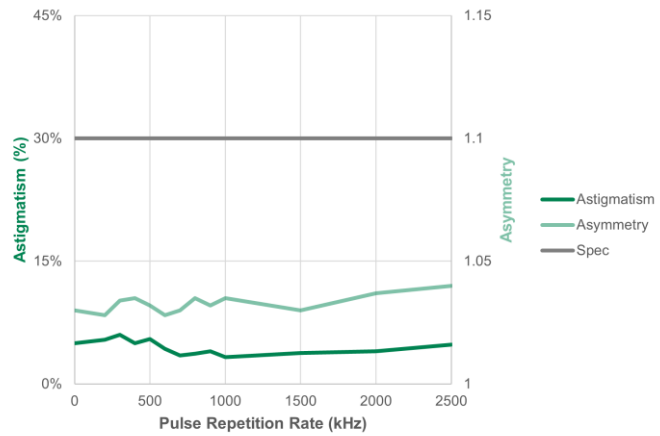
Energy vs pulse duration



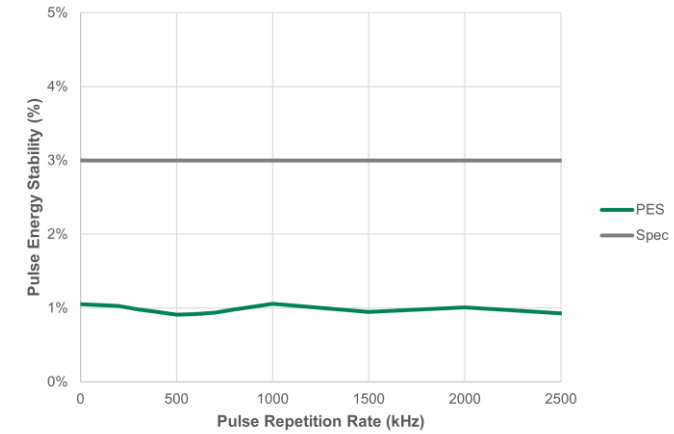
M^2



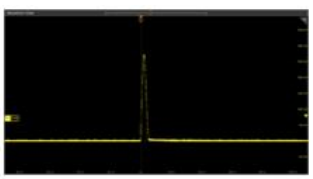
Astigmatism & asymmetry



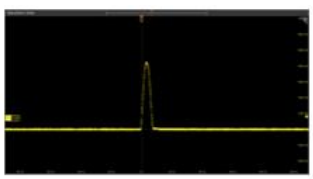
Pulse Energy Stability



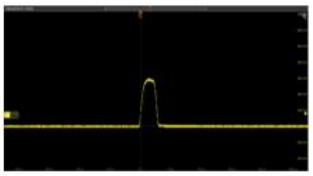
Factory Set Pulses



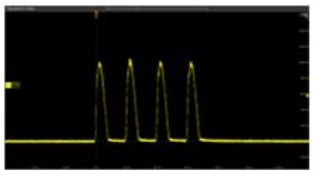
2 ns



5 ns



10 ns



4 x 2 ns ; Δ = 10 ns

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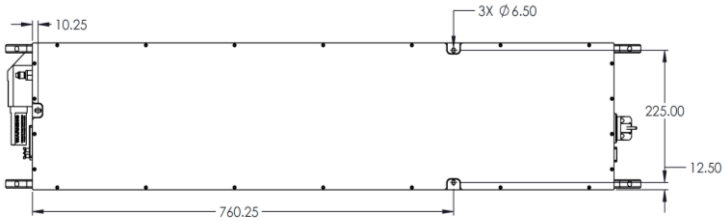
YUCCA 100-515 Specifications

Output Characteristics				
Central Wavelength	515 nm ± 0.5 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
	100 W @ 600 kHz 100 W @ 1 MHz 70 W @ 2.5 MHz	100 W @ 400 kHz 100 W @ 600 kHz 50 W @ 2 MHz	100 W @ 200 kHz 100 W @ 300 kHz 40 W @ 1 MHz	(**)
Pulse Width	Fully programmable from 2 ns to 10 ns			
Pulse Repetition Rates	Single-shot to 2.5 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)	< 0.3 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 – 240 V AC			
Line Frequency	50 to 60 Hz			
Power Consumption	< 1200 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	900 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)			

YUCCA 100-515

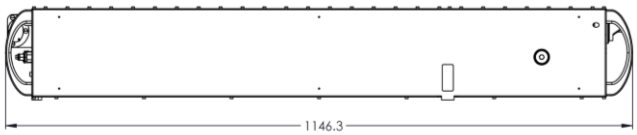
Drawings

Laser Head (in mm)

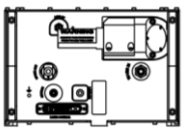


Bottom View

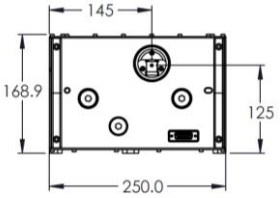
Top View



Side View

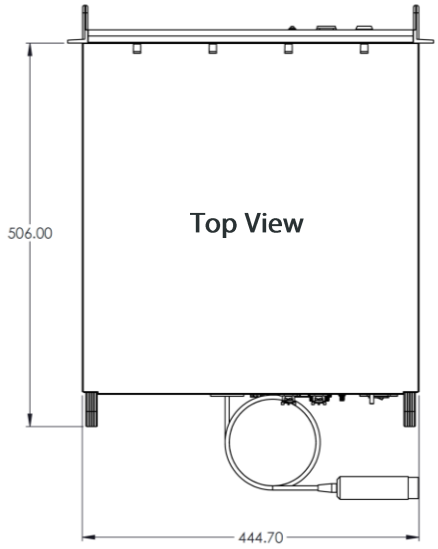


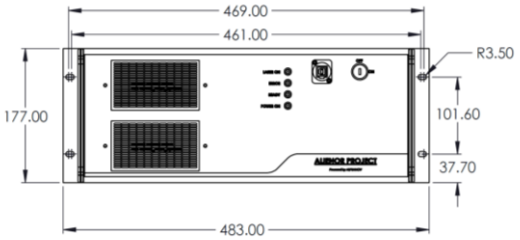
Rear View



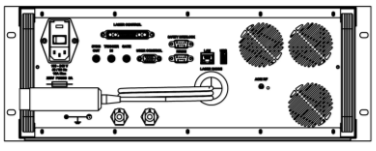
Front View

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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