BLOOM
LASERS FOR INDUSTRY

SCAN ME

CAREX 30-343

High power nanosecond UV laser with programmable pulses for high-speed precision micromachining

CAREX, the flexible nanosecond UV fiber laser, delivers fully programmable pulses combining high power and high pulse repetition rates. It is especially designed for high precision micro-processing.

CAREX combines process agility and throughput for demanding applications such as multi-material stack processing. It delivers pulses from 2 ns up to 10 ns with any arbitrary temporal shape and possible burst operation. The innovative fast electronic design enables instantaneous switching between two pulses patterns for optimized complex material processing.

The fiber technology combined with the simply efficient laser head architecture makes CAREX a robust, flexible, and cost-effective UV laser for most demanding industrial applications. Manufactured with field proven and qualified components, good practices and high-quality, CAREX is the right answer to 24/7 operations in extended production cycle environments.

Wavelength	343 nm
Power	30 W
Pulse Duration	2 ns - 10 ns fully adjustable Programmable pulses Burst mode
Pulse Energy	Up to 300 µJ
Beam quality	$M^2 < 1.2$

Advantages

- High power 30 W
- High Pulse Repetition Rate up to 800 kHz
- Adjustable pulse duration from 2 ns up to 10 ns
- Full pulse shaping (1 ns resolution)
- Excellent beam quality $M^2 < 1.2$ up to 800 kHz
- High peak power up to 40 kW
- Field proven technology
- Long UV crystal lifetime
- HALT designed / HASS Certified
- True Pulse-On-Demand
- Instant Pulse Switching

Applications

- Flex PCB via drilling
- HDI (High Density Interconnect)
- ITO patterning
- Wafer scribing and debonding
- Glass processing
- CFRP processing
- Battery processing

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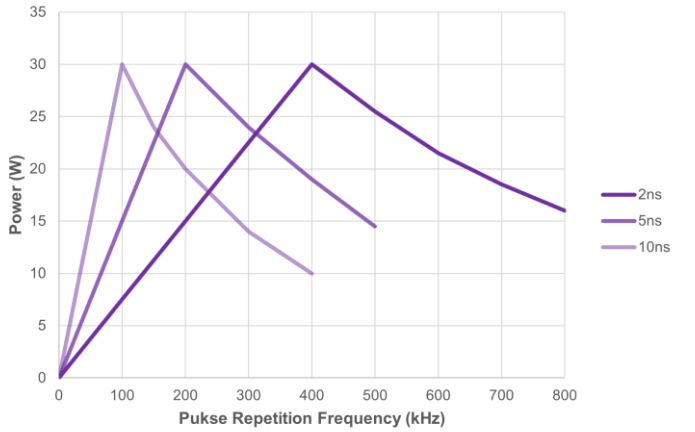
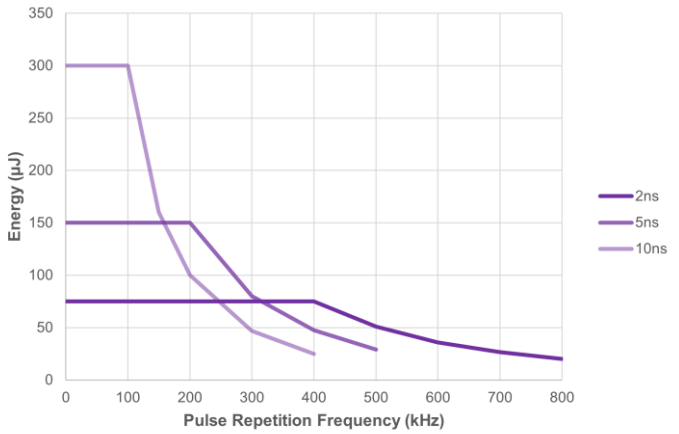
Typical performances

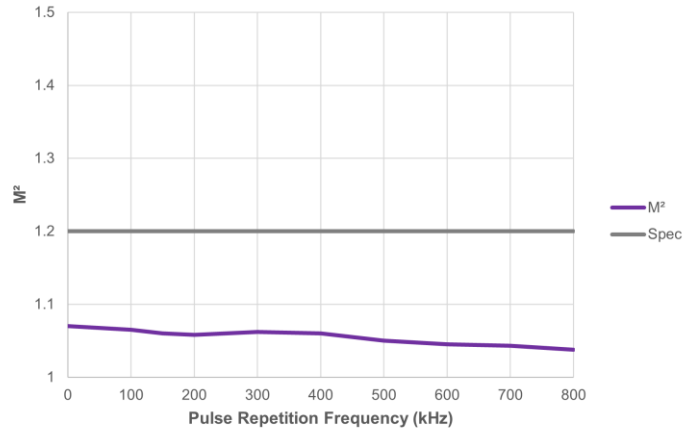
Power



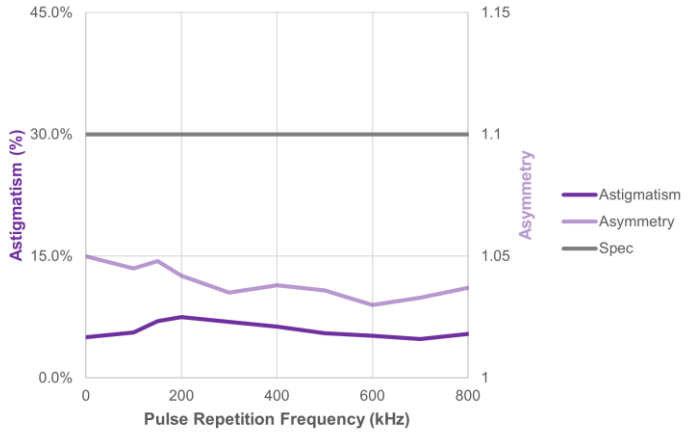
Pulse energy



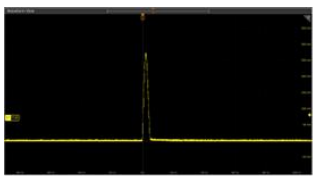
M^2

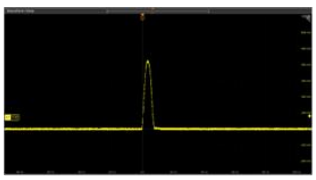


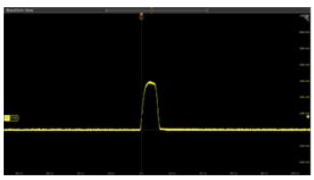
Astigmatism & asymmetry

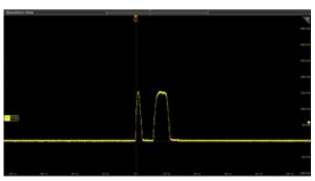


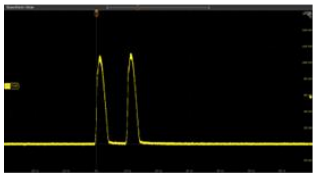
Programmable Pulses

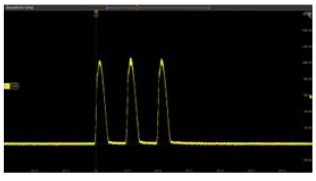

2 ns

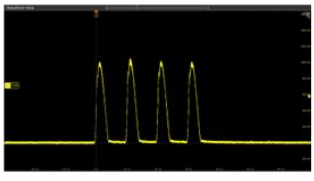

5 ns

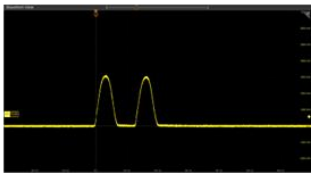

10 ns


2 ns + 10 ns


2 x 2 ns ; Δ = 10 ns


3 x 2 ns ; Δ = 10 ns


4 x 2 ns ; Δ = 10 ns


2 x 5 ns ; Δ = 10 ns

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Specifications

Output Characteristics			
Central Wavelength		343 nm ± 0.3 nm	
Average Power	2 ns	5 ns	10 ns
	30 W @ 400 kHz	30 W @ 200 kHz	30 W @ 100 kHz
Pulse Width		Fully programmable from 2 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)		< 0.2 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		≤ 30 minutes	
Warm Start		≤ 2 minutes	
Electrical Requirements		100 – 240 V 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		0°C to 50°C (32°F to 122°F)	
Humidity		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		500 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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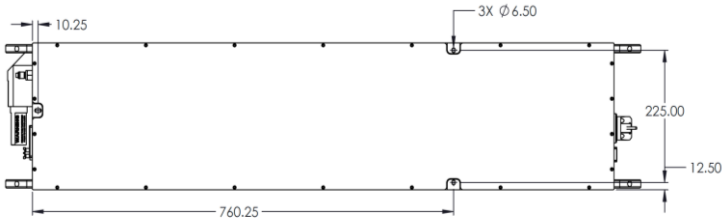
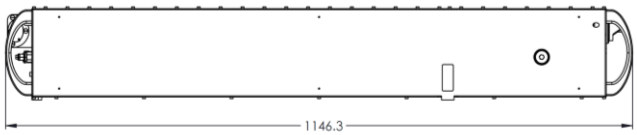
Drawings

Laser Head (in mm)

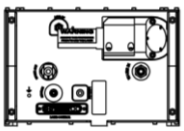


Bottom View

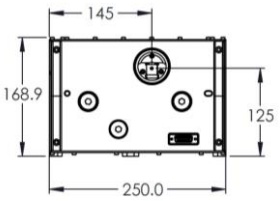
Top View



Side View

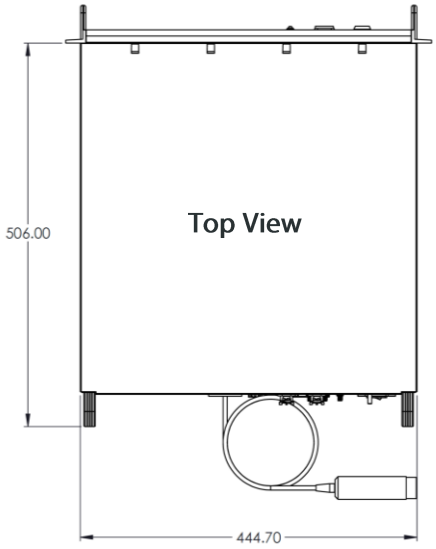


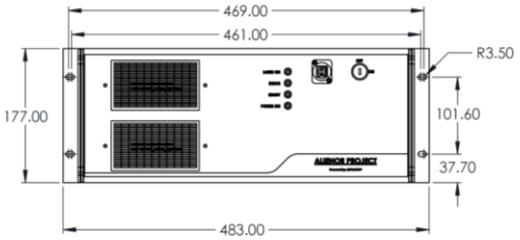
Rear View



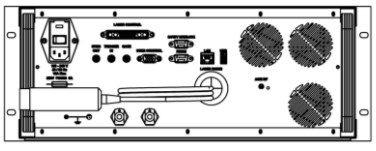
Front View

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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