

Atlantic series



Atlantic series lasers have been designed as a versatile tool for a variety of industrial material processing applications. They are compact, OEM rugged, with up to 80 W output power at 1064 nm. Featuring short pulse duration Atlantic series lasers offers minimized thermal damage to the material, what is becoming more and more important in wide range of industries: photovoltaics, electronics, biomedicine, automotive.

Innovative design, employing fiber based oscillator ensured excellent output beam parameters: $M^2 < 1.3$ with pulse energy fluctuations $< 1\%$. All optical components are placed into sealed monolithic block thus ensuring reliable 24/7 operation.

High, up to 1 MHz repetition rate, combined with low maintenance requirements establishes this laser as good choice for industrial, high throughput material processing

systems, requiring speed and precision. Optical components are installed in a robust, precisely machined monolithic aluminum block, which could be used as a separate module for customized solutions. The system is sealed to provide long term stable operation in manufacturing environments. Designed for robust, low maintenance operation, the Atlantic offers maximum reliability due to an optimized layout, PC controlled operation, a built-in self-diagnostics system and advanced status reporting. Superior beam quality allows easy focusing of the laser beam into the smallest spot size at various working distances and enables processing of practically any material.

The Atlantic series has been designed as a low-maintenance-costs solution. All replacement of consumables can be performed at user facilities by trained technicians.

Industrial High Power Picosecond Lasers

FEATURES

- ▶ Up to 80 W at 1064 nm
- ▶ 532 nm, 355 nm outputs available
- ▶ Up to 1 MHz repetition rate
- ▶ Up to 200 μJ pulse energy
- ▶ Short pulse duration 10 ps
- ▶ Excellent beam quality $M^2 < 1.3$
- ▶ Individual pulse control
- ▶ Smart triggering for synchronous operation with polygon scanner
- ▶ Compact, sealed and rugged design
- ▶ Low maintenance
- ▶ Single-phase powering
- ▶ No external cooling water

APPLICATIONS

- ▶ Drilling
- ▶ Cutting
- ▶ Patterning
- ▶ Structuring
- ▶ Ablation
- ▶ Micromachining

SPECIFICATIONS ¹⁾

Model	Atlantic IR5	Atlantic IR6HE	Atlantic IR25	Atlantic IR50	Atlantic IR80
GENERAL SPECIFICATIONS					
Wavelength	1064 nm				
Pulse repetition rate (PRR) range ²⁾	100 – 1000 kHz	30 kHz	200 – 1000 kHz	300 – 1000 kHz	400 – 1000 kHz
Maximal average output power ³⁾	5 W	6 W	25 W	50 W	80 W
Pulse energy at lowest PRR ³⁾	30 µJ	200 µJ	125 µJ	165 µJ	200 µJ
Pulse contrast	> 100 : 1				
Power fluctuations over 8 h after warm-up (Std. dev.)	< 0.5 % ⁴⁾	< 1.0 %			
Pulse energy stability (Std. dev.)	< 1.0 %				
Pulse duration (FWHM)	10 ± 3 ps				
Polarization	linear, vertical 100 : 1				
M ²	< 1.3				
Beam circularity, far field	> 0.85				
Beam divergence, full angle	< 2.0 mRad	< 1.5 mRad			
Beam pointing stability (pk-to-pk) ⁵⁾	< 50 µRad				
Beam diameter (1/e ²) at 50 cm distance from laser aperture	1.4 ± 0.2 mm	1.8 ± 0.3 mm			
Triggering mode	internal / external				
Pulse output control	frequency divider (down to single shot), arbitrary pulse selection, power attenuation				
Control interfaces	keypad / USB				
OPERATING REQUIREMENTS					
Mains requirements	100...240 V AC, 5 A, single phase 47...63 Hz				
Maximal power consumption	< 0.5 kW	< 2.8 kW	< 2.8 kW	< 3.1 kW	< 3.5 kW
Operating ambient temperature	18–27 °C				
Operating temperature stability within the operating temperature band	< ± 2 °C				
Relative humidity	10–80 % (non-condensing)				
Air contamination level	ISO 9 (room air) or better				
PHYSICAL CHARACTERISTICS					
Cooling	air	water			
Laser head size (W × H × L)	372 × 158 × 423 mm	364 × 190 × 720 mm			
Power supply unit size (W × H × L)	471 × 153 × 511 mm	553 × 1019 × 800 mm			
Umbilical length	3 m	4 m			
CLASSIFICATION					
Classification according EN60825-1	CLASS 4 laser product				

¹⁾ Due to continuous improvement, all specifications are subject to change without notice. Parameters marked typical are not specifications. They are indications of typical performance and will vary with each unit we manufacture. Unless stated otherwise, all specifications are measured at 1064 nm.

²⁾ Lower pulse repetition rates are available using pulse gating system (included in standard configuration).

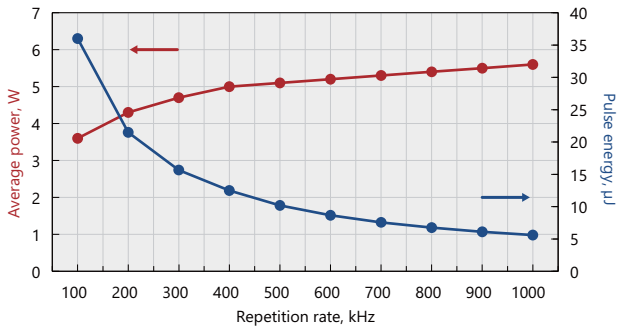
³⁾ See typical power and energy curves for other pulse repetition rates.

⁴⁾ With power-lock on.

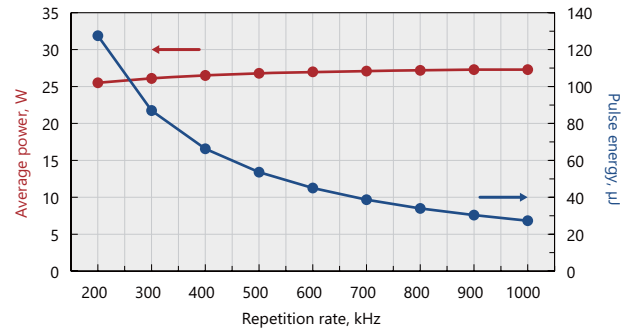
⁵⁾ Defined as short term < 2 min beam angular stability.



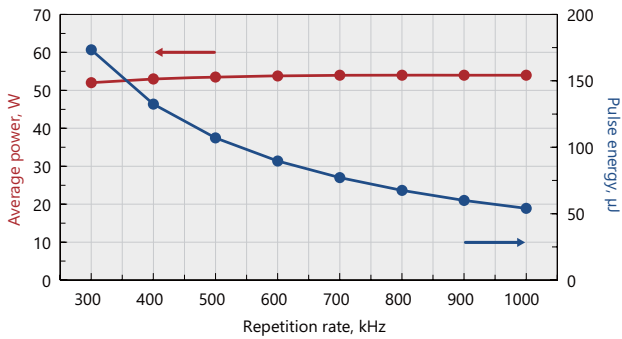
PERFORMANCE



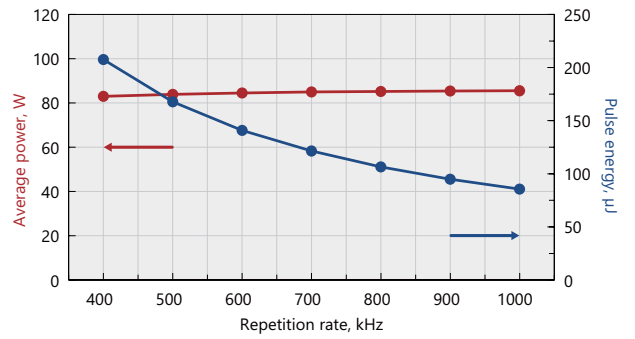
Typical output power and energy curves of Atlantic IR5



Typical output power and energy curves of Atlantic IR25



Typical output power and energy curves of Atlantic IR50



Typical output power and energy curves of Atlantic IR80