ps Industrial Picosecond Lasers

Atlantic

Materials

/ Various metals

/ Brittle materials including glass, ceramics, sapphire and PCD

/ Silicon, Silicone

/ PET, PP, PI, PTFE, PCB

/ LCD, LED, OLED, microLED display panels

/ Solar cells

Applications

/ Drilling

/ Cutting

/ Patterning

/ Structuring

/ Ablation

/ Dicing

/ Micromachining

/ LCD, OLED cutting

/ Laser induced forward transfer

/ Sapphire structuring and dicing

/ Ceramics micromachining

/ PCD drilling and tracing

/ Silicon scribing

/ PET, PP, PTFE, Silicone cutting and drilling

Typical view of Atlantic 50-UV18, 80-UV30 laser head with a single 355 nm output

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Rev. 20231007

Specifications [1]

Model		Atlantic 50	Atlantic 80
General specifications			
Central wavelength	fundamental	1064 nm	
	with 2H option	532 nm (optional 1064 nm output) [2]	
	with 3H option	355 nm (optional 1064 nm and/or 532 nm outputs) [2]	
Laser pulse repetition rate (PRR_L) range [3]		300 – 1000 kHz	400 – 1000 kHz
Pulse repetition rate after frequency divider		$PRR = PRR_L / N$, N=1, 2, 3, ... , 1025	
Maximal average output power [4]	at 1064 nm	50 W	80 W
	at 532 nm	25 W	40 W
	at 355 nm	18 W	30 W
Pulse energy at lowest PRR_L [4]	at 1064 nm	165 µJ	200 µJ
	at 532 nm	85 µJ	100 µJ
	at 355 nm	60 µJ	75 µJ
Pulse contrast	at 1064 nm	> 300 : 1	
	at 532 nm	> 500 : 1	
	at 355 nm	> 1000 : 1	
Power long term stability over 8 h (Std. dev.) [5]		< 1.0 %	
Pulse energy stability (Std. dev.) [6]	at 1064 nm	< 1.0 %	
	at 532 nm	< 2.0 %	
	at 355 nm	< 2.5 %	
Pulse duration (FWHM) at 1064 nm		10 ± 3 ps	
Polarization		linear, vertical 100 : 1	
M^2		< 1.3	
Beam circularity, far field		> 0.85	
Beam divergence, full angle		< 1.5 mRad	
Beam pointing stability (pk-to-pk) [7]		< 50 µRad	
Beam diameter ($1/e^2$) at 50 cm distance from laser aperture	at 1064 nm	1.8 ± 0.3 mm	
	at 532 nm	1.8 ± 0.3 mm	2.2 ± 0.3 mm
	at 355 nm	1.8 ± 0.3 mm	2.0 ± 0.3 mm
Triggering mode		internal / external	
Pulse output control		frequency divider, pulse picker, instant amplitude control, power attenuation	
Control interfaces		keypad / USB / RS232 / LAN	
Operating requirements			
Mains requirements		100–240 V AC, single phase 47–63 Hz	
Maximal power consumption		< 3.1 kW	< 3.5 kW
Operating ambient temperature		18–27 °C	
Relative humidity		10–80 % (non-condensing)	
Air contamination level		ISO 9 (room air) or better	
Physical characteristics			
Cooling		water	
Laser head size (W × H × L)	single output 1064 nm	396 × 173 × 755 mm	
	single output 355 nm	396 × 173 × 1000 mm	
	3 outputs 1064 / 532 / 355 nm	396 × 173 × 926 mm	
Power supply unit size (W × H × L)		553 × 1019 × 852 mm	
Umbilical length		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.
2) Can be ordered either in a single output or in 2 or 3 separate harmonics outputs versions.
3) When frequency divider is set to transmit every pulse.
4) See typical power and energy curves for other pulse repetition rates.
5) At the lowest PRR_L after warm-up under constant environmental conditions.
6) At the lowest PRR_L under constant environmental conditions.
7) Beam pointing stability is evaluated as a movement of the beam centroid in the focal plane of a focusing element.

DANGER: VISIBLE AND/OR INVISIBLE LASER RADIATION AVOID EYE OR SKIN EXPOSURE TO DIRECT, REFLECTED OR SCATTERED RADIATION
CLASS 4 LASER PRODUCT

Performance

1064 nm

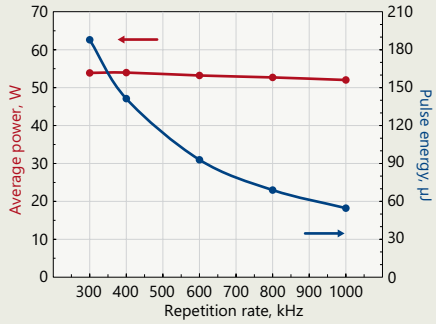

Fig 2. Typical output power and energy curves of Atlantic 50

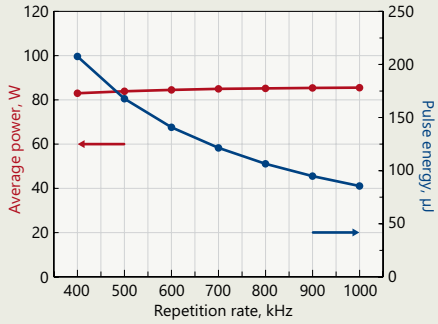

Fig 3. Typical output power and energy curves of Atlantic 80

532 nm

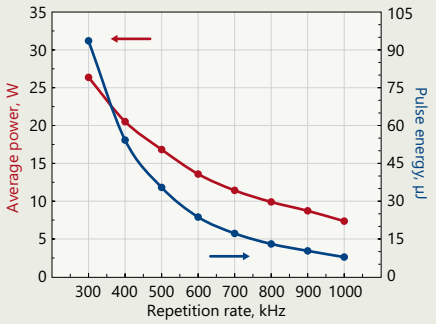

Fig 5. Typical output power and energy curves of Atlantic 50-GR25

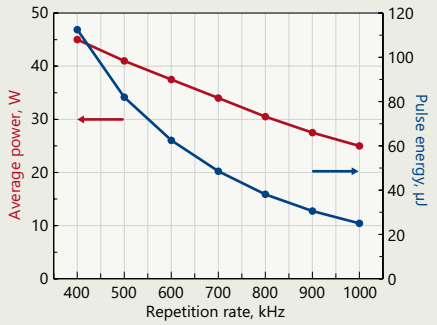

Fig 6. Typical output power and energy curves of Atlantic 80-GR40

355 nm

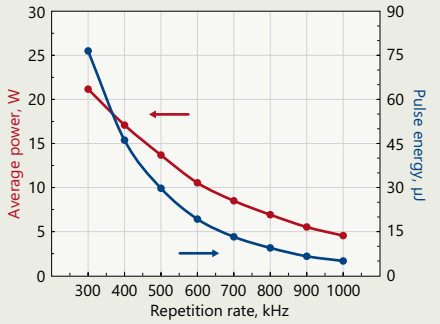

Fig 8. Typical output power and energy curves of Atlantic 50-UV18

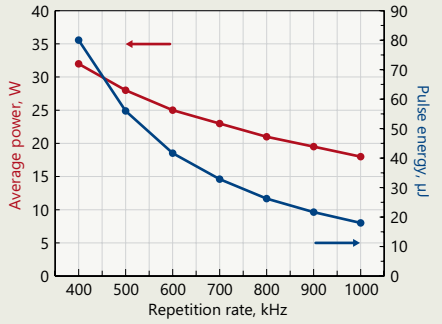

Fig 9. Typical output power and energy curves of Atlantic 80-UV30

Stability

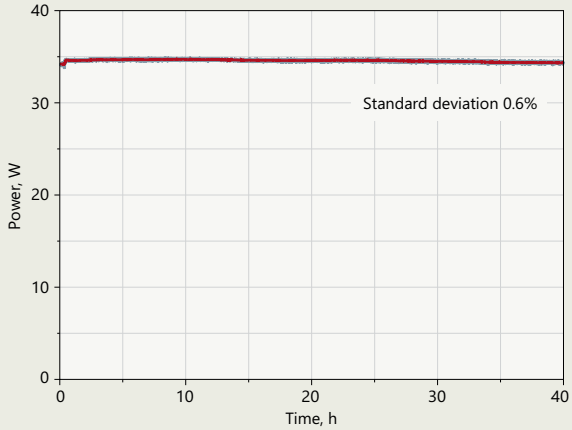

Fig 10. Typical long term 355 nm output average power stability of Atlantic 80-UV30 under constant environmental conditions

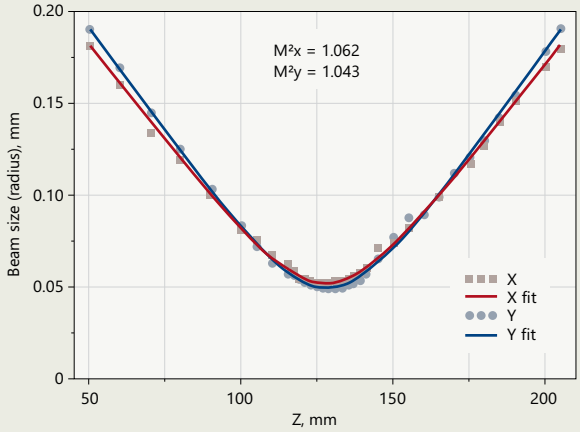

Fig 11. Typical M^2 measurement of 355 nm wavelength at 34 W average power, 400 kHz repetition rate (Atlantic 80-UV30)

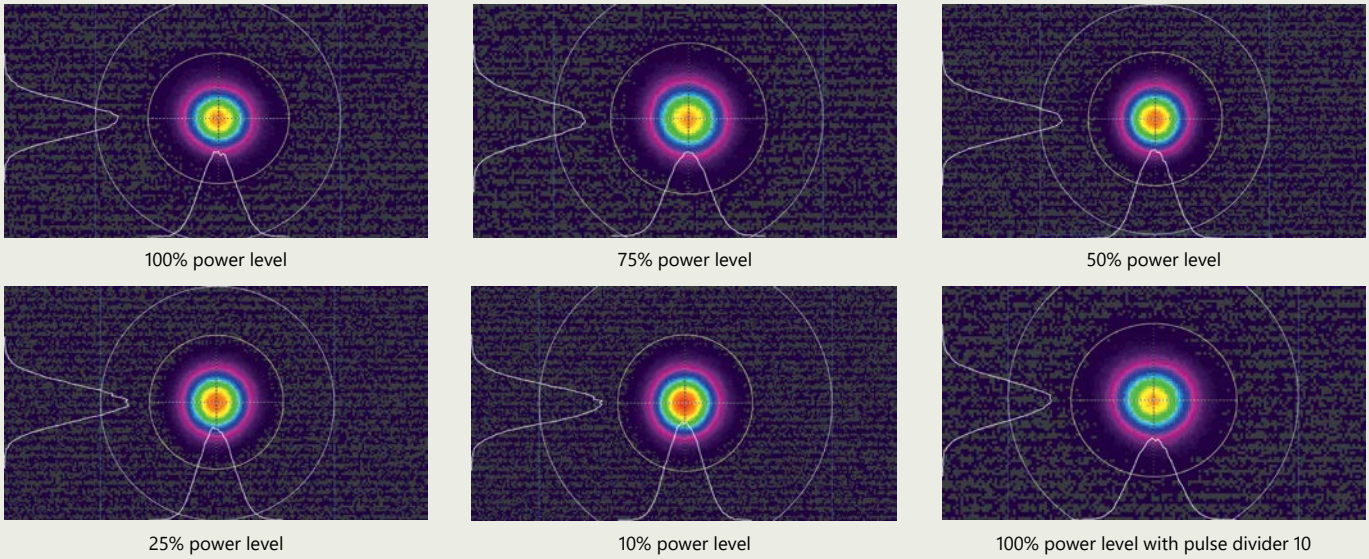

Fig 12. Typical beam profile of 355 nm in far field at 34 W max average power with different attenuation conditions

Images

Typical view of Atlantic 50, 80 laser head with a single 1064 nm output

Typical view of Atlantic 50, 80 laser head with two and three outputs

Typical view of Atlantic 50-UV18, 80-UV30 laser head with a single 355 nm output

Drawings

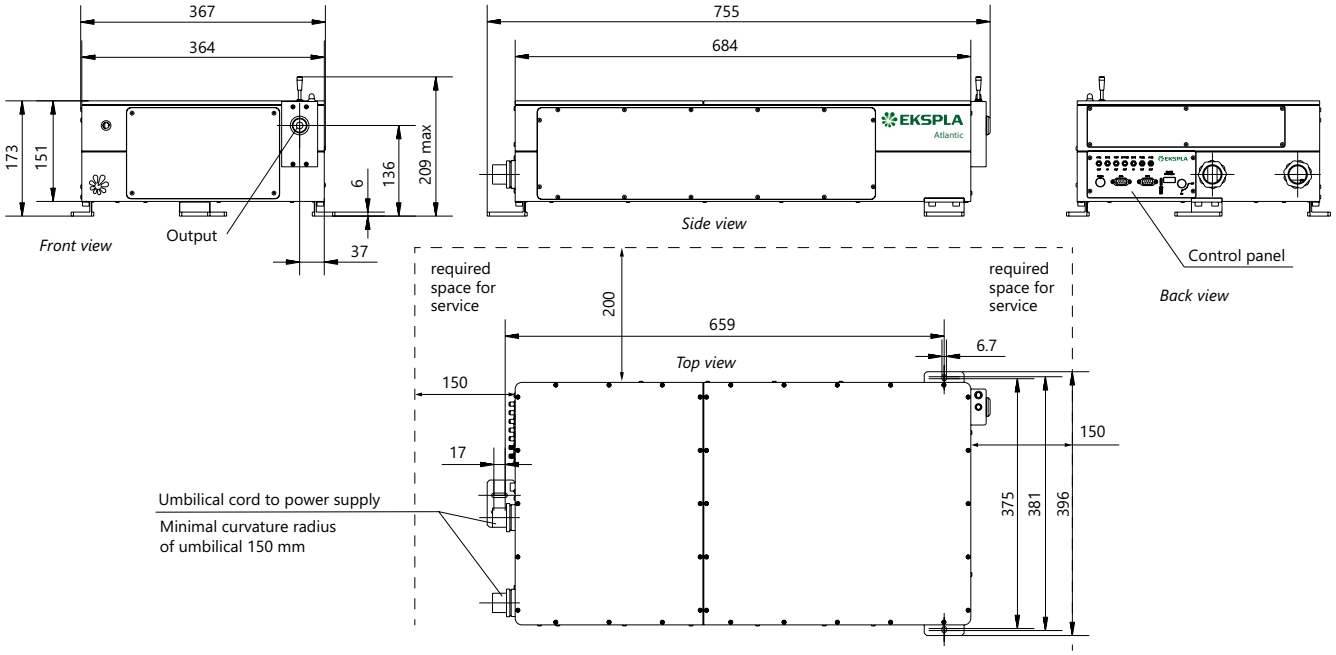

Fig 13. Outline drawings of Atlantic 50, 80 laser head with a single 1064 nm output (dimensions in mm)

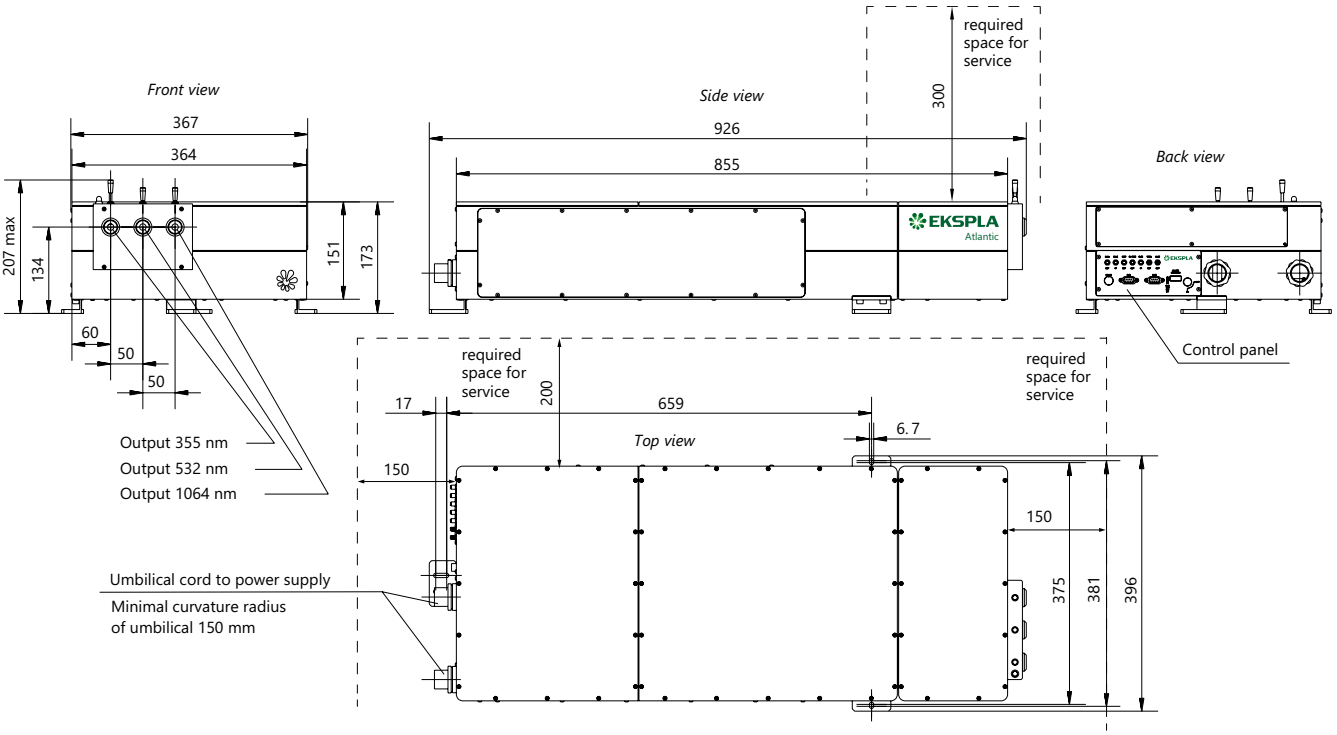

Fig 14. Outline drawings of Atlantic 50, 80 laser head with two and three outputs (dimensions in mm)

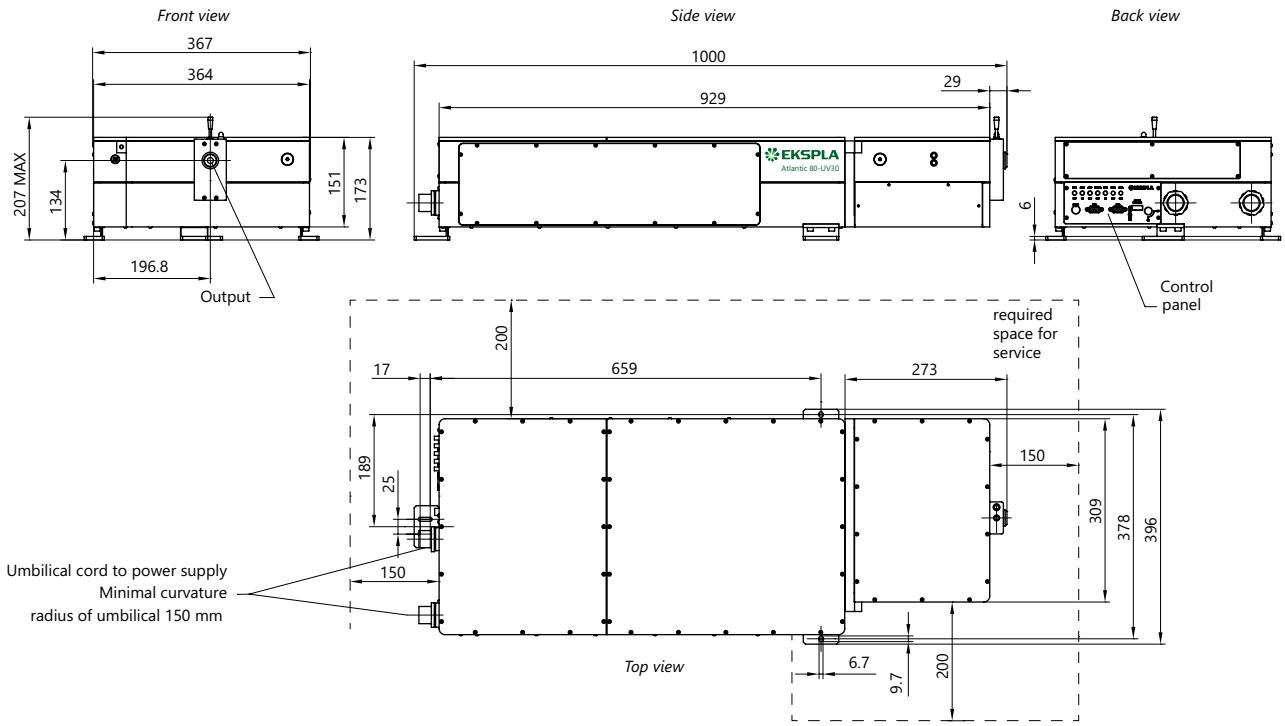

Fig 15. Outline drawings of Atlantic 50-UV18, 80-UV30 laser head with a single 355 nm output (dimensions in mm)

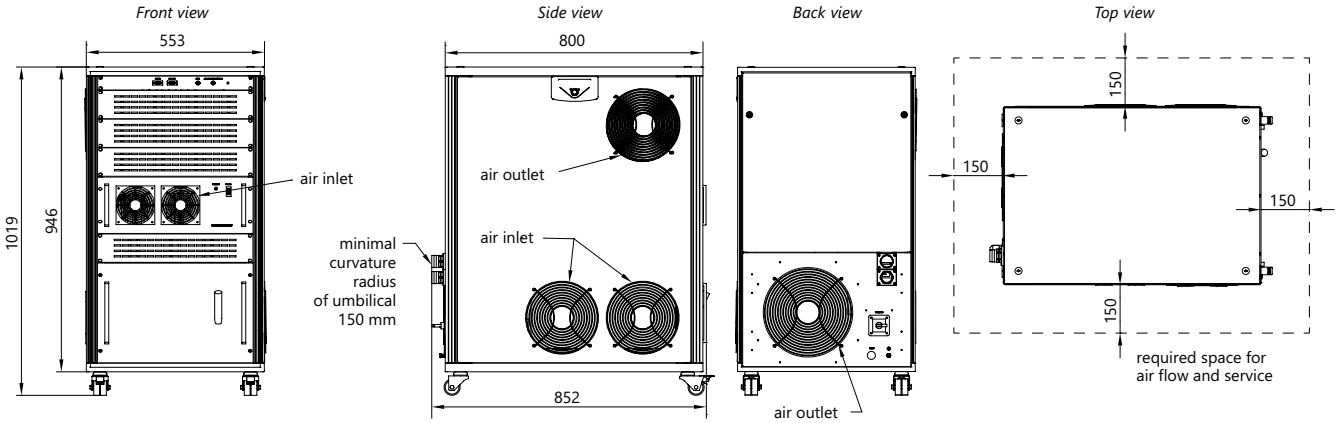

Fig 16. Outline drawings of Atlantic 50, 80 power supply unit (dimensions in mm)

Ordering information

Atlantic 50-IR-GR25-UV18	
Model	355 nm output max power: UV18 → 18 W UV30 → 30 W
Fundamental wavelength max power: 50 → 50 W 80 → 80 W	532 nm output max power: GR25 → 25 W GR40 → 40 W
1064 nm output (only for models with multiple outputs)	

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