

# 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 25-UV8, 50-UV18, 80-UV30 laser head with a single 355 nm output

# Industrial High Power Picosecond Lasers

# Atlantic

## High-energy and high-power water-cooled Atlantic series picosecond lasers are designed for a variety of industrial applications.

Suitable for LCD or OLED display cutting and drilling, laser induced forward transfer (LIFT), glass and sapphire processing, micromachining of ultra-hard materials, ablation of metals, cutting and drilling of polymers, silicon scribing, solar cell scribing and many more.

Superior beam quality parameters, maximum available average power (80W@IR / 40W@VIS / 30W@UV), maximum available pulse energy (200μJ@IR / 100μJ@VIS / 75μJ@UV) and maximum pulse repetition rate (up to 1MHz) are beneficial where high processing quality and high throughput are required.

To tailor laser performance for specific industrial applications, advanced electronics enable external gating (including PSO), synchronization and precise laser triggering as well as instant signal amplitude control.

To maintain reliability and assure long-term stable operation in an industrial environment, optical components are installed in a sealed, robust, precisely machined monolithic aluminum block. Designed for robust, low maintenance operation, Atlantic series lasers offer maximum reliability due to an optimized layout, PC controlled operation, a built-in self-diagnostic system and advanced status reporting.

For industrial high-power UV laser applications, high reliability and low ownership cost of UV components is crucial. To meet these requirements, the optical layouts of Atlantic UV models are optimized for longevity and stable operation in the UV range, resulting in a UV optics lifetime of 8,000 hours.

A unique optional feature of Atlantic high-power lasers is that they can work in both picosecond and nanosecond modes. This 2-in-1 laser solution is beneficial for some materials processing (such as glass or ceramics), where both very high accuracy, low processed surface roughness and high throughput are required at low cost.

## Features

Up to **80 W** at **1064 nm**

Optional **532 nm** and **355 nm** wavelengths (could be all 3 electronically switchable wavelengths)

Up to **1 MHz** repetition rate

Up to **200 μJ** pulse energy

Short pulse duration **10 ps**

**M<sup>2</sup><1.3**

Versatile laser control and syncronisation capabilities

Smart triggering for synchronous operation with polygon scanner and PSO

Monolythic, sealed and rugged design

Low ownership cost

Nanosecond pulse duration mode (optional)

At 1030 nm	At 515 nm	At 355 nm
80 W 200 μJ	40 W 100 μJ	30 W 75 μJ



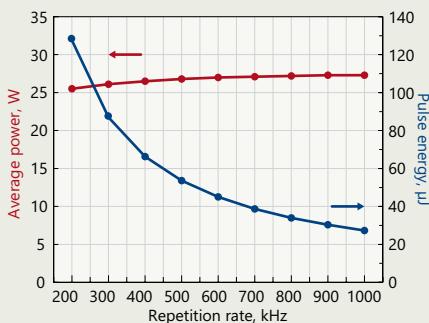
Learn more  
about Atlantic  
[www.ekspla.com](http://www.ekspla.com)

Specifications<sup>1)</sup>

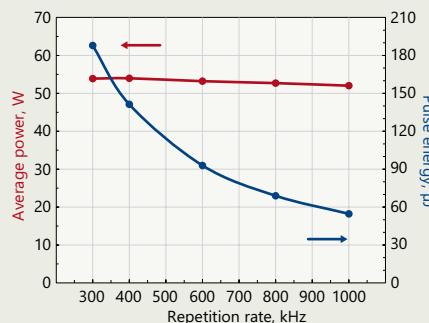
Model	Atlantic 25	Atlantic 50	Atlantic 80
<b>General specifications</b>			
Central wavelength	fundamental with 2H option with 3H option	1064 nm 532 nm (optional 1064 nm output) <sup>2)</sup> 355 nm (optional 1064 nm and/or 532 nm outputs) <sup>2)</sup>	1064 nm 532 nm (optional 1064 nm output) <sup>2)</sup> 355 nm (optional 1064 nm and/or 532 nm outputs) <sup>2)</sup>
Laser pulse repetition rate (PRR <sub>L</sub> ) range <sup>3)</sup>	200 – 1000 kHz	300 – 1000 kHz	400 – 1000 kHz
Pulse repetition rate after frequency divider		PRR = PRR <sub>L</sub> / N, N=1, 2, 3, ..., 1025	
Maximal average output power <sup>4)</sup>	at 1064 nm at 532 nm at 355 nm	25 W 12 W 8 W	50 W 25 W 18 W
Pulse energy at lowest PRR <sub>L</sub> <sup>4)</sup>	at 1064 nm at 532 nm at 355 nm	125 µJ 60 µJ 40 µJ	165 µJ 85 µJ 60 µJ
Pulse contrast	at 1064 nm at 532 nm at 355 nm	> 300 : 1 > 500 : 1 > 1000 : 1	
Power long term stability over 8 h (Std. dev.) <sup>5)</sup>		< 1.0 %	
Pulse energy stability (Std. dev.) <sup>6)</sup>	at 1064 nm at 532 nm at 355 nm	< 1.0 % < 2.0 % < 2.5 %	
Pulse duration (FWHM) at 1064 nm		10 ± 3 ps	
Polarization		linear, vertical 100 : 1	
M <sup>2</sup>		< 1.3	
Beam circularity, far field		> 0.85	
Beam divergence, full angle		< 1.5 mRad	
Beam pointing stability (pk-to-pk) <sup>7)</sup>		< 50 µRad	
Beam diameter (1/e <sup>2</sup> )	at 1064 nm	1.8 ± 0.3 mm	
at 50 cm distance from laser aperture	at 532 nm at 355 nm	2.2 ± 0.3 mm 2.0 ± 0.3 mm	2.2 ± 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	
<b>Operating requirements</b>			
Mains requirements		100–240 V AC, single phase 47–63 Hz	
Maximal power consumption	< 2.8 kW	< 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	
<b>Physical characteristics</b>			
Cooling		water	
Laser head size (W × H × L)	single output 1064 nm single output 355 nm 3 outputs 1064 / 532 / 355 nm	396 × 173 × 755 mm 396 × 173 × 1000 mm 396 × 173 × 926 mm	
Power supply unit size (W × H × L)		553 × 1019 × 852 mm	
Umbilical length		4 m	
<b>Classification</b>			
Classification according EN60825-1		CLASS 4 laser product	
<sup>1)</sup> 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.	<sup>4)</sup> See typical power and energy curves for other pulse repetition rates.		
<sup>2)</sup> Can be ordered either in a single output or in 2 or 3 separate harmonics outputs versions.	<sup>5)</sup> At the lowest PRR <sub>L</sub> after warm-up under constant environmental conditions.		
<sup>3)</sup> When frequency divider is set to transmit every pulse.	<sup>6)</sup> At the lowest PRR <sub>L</sub> under constant environmental conditions.		
	<sup>7)</sup> Beam pointing stability is evaluated as a movement of the beam centroid in the focal plane of a focusing element.		
			 <b>DANGER: VISIBLE AND/OR INVISIBLE LASER RADIATION AVOID EYE OR SKIN EXPOSURE TO DIRECT, REFLECTED OR SCATTERED RADIATION</b> <b>CLASS 4 LASER PRODUCT</b>

# Performance

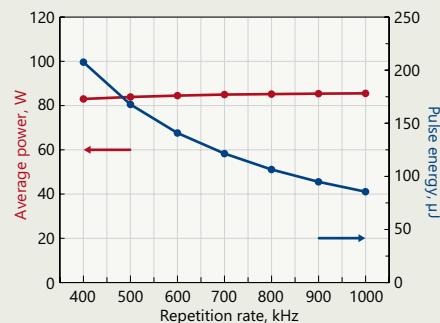
## 1064 nm



**Fig 1.** Typical output power and energy curves of Atlantic 25

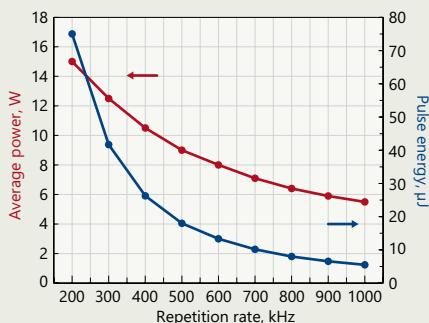


**Fig 2.** Typical output power and energy curves of Atlantic 50

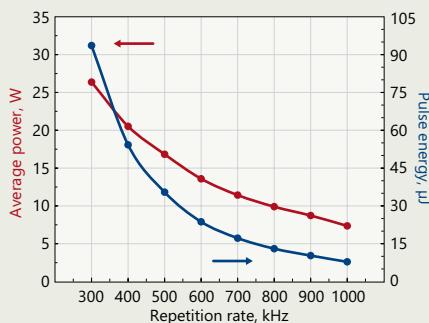


**Fig 3.** Typical output power and energy curves of Atlantic 80

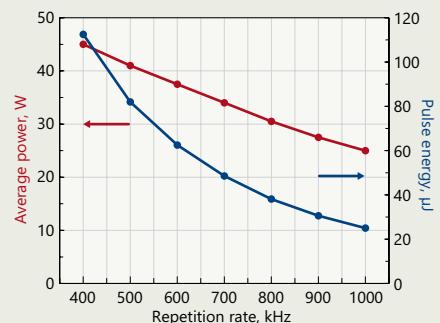
## 532 nm



**Fig 4.** Typical output power and energy curves of Atlantic 25-GR12

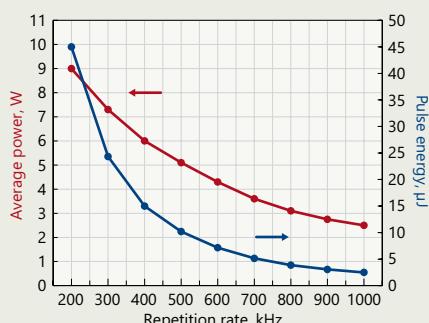


**Fig 5.** Typical output power and energy curves of Atlantic 50-GR25

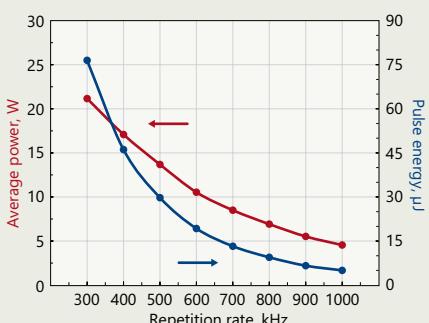


**Fig 6.** Typical output power and energy curves of Atlantic 80-GR40

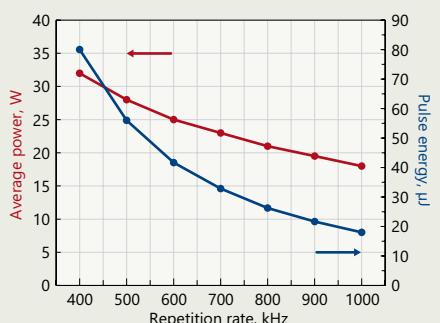
## 355 nm



**Fig 7.** Typical output power and energy curves of Atlantic 25-UV8

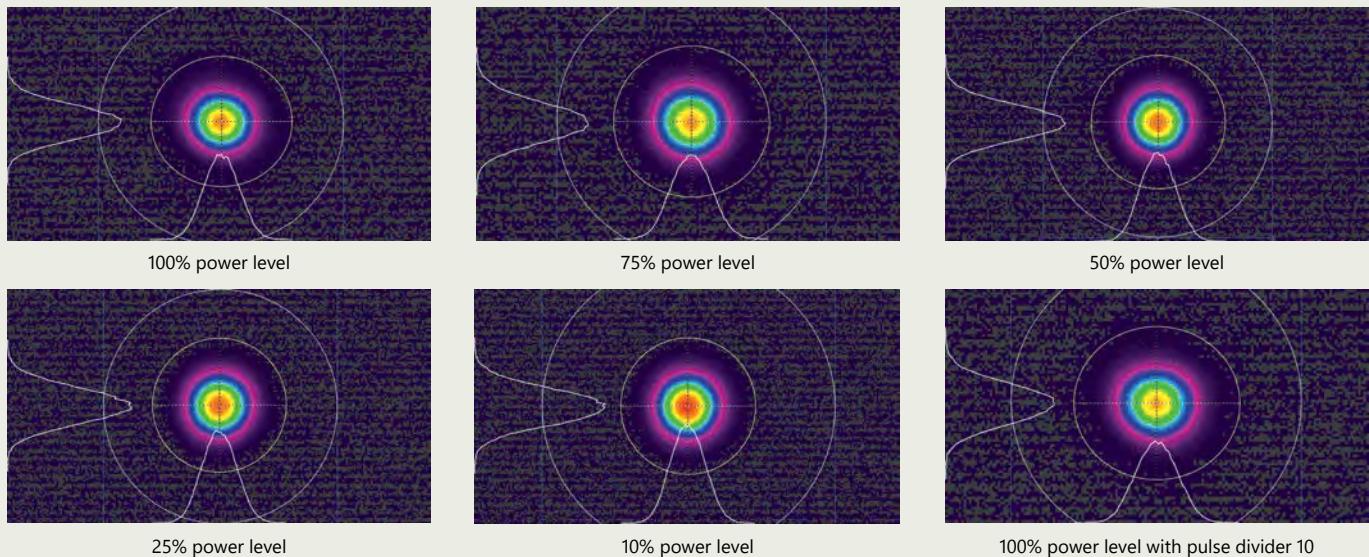
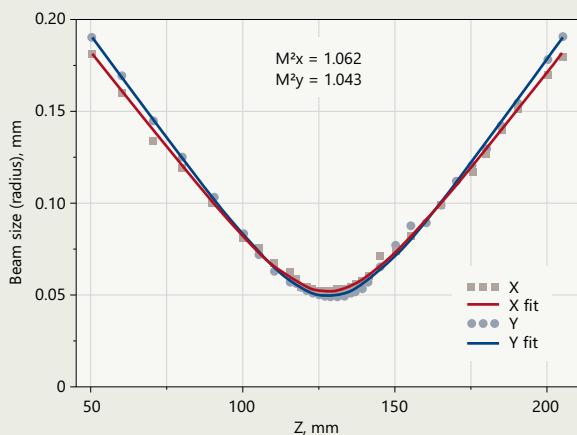
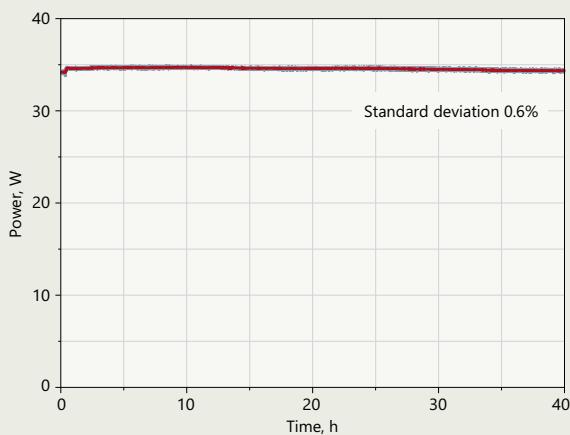


**Fig 8.** Typical output power and energy curves of Atlantic 50-UV18



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

# Stability



# Images



Typical view of Atlantic 25, 50, 80 laser head with a single 1064 nm output

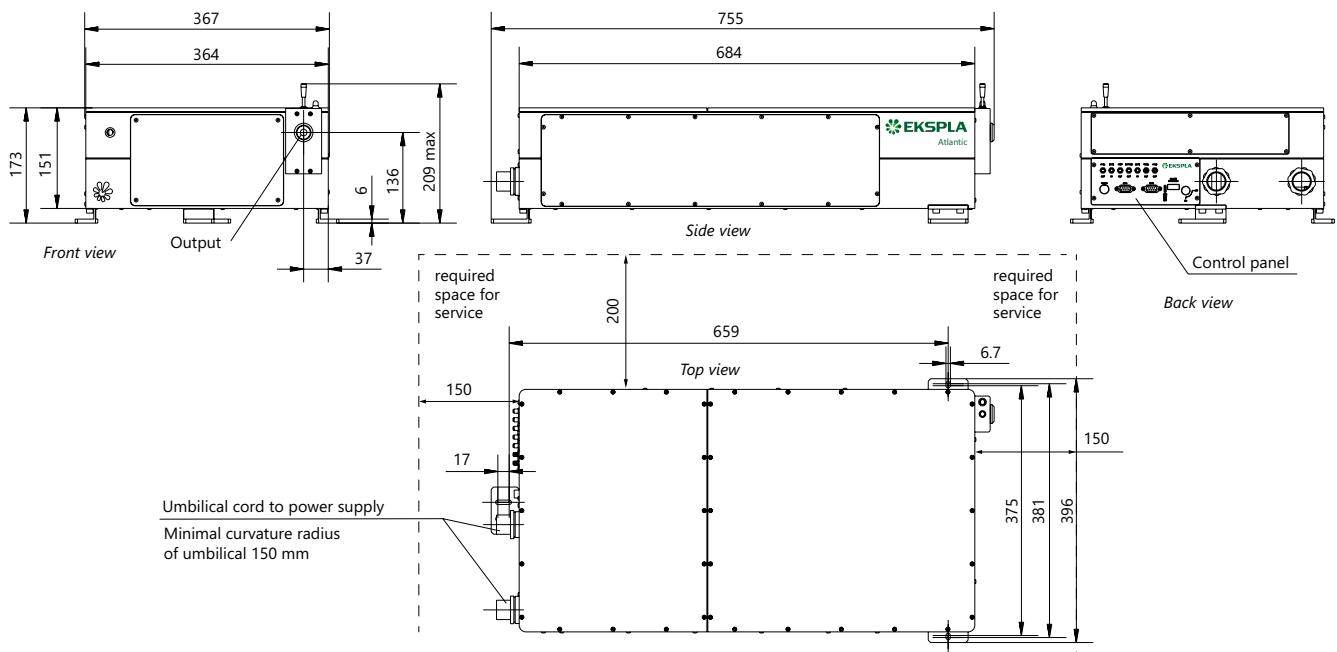


Typical view of Atlantic 25, 50, 80 laser head with two and three outputs

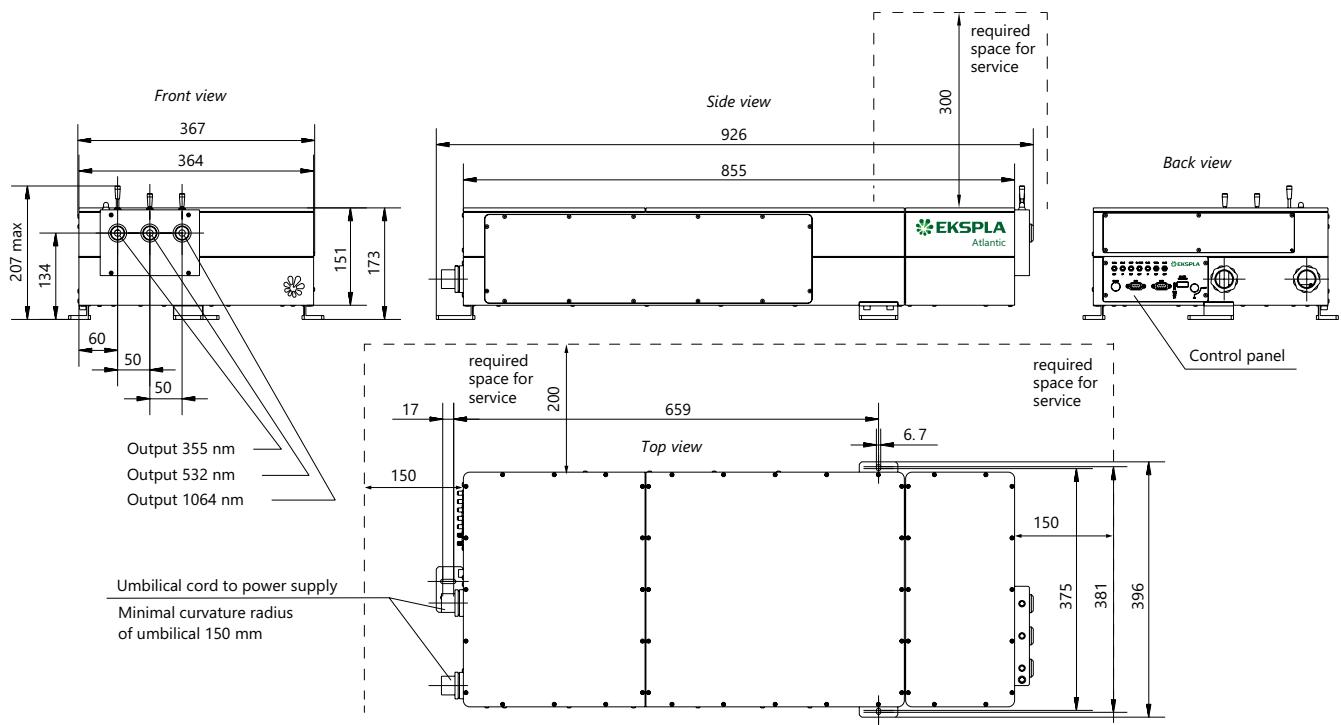


Typical view of Atlantic 25-UV8, 50-UV18, 80-UV30 laser head with a single 355 nm output

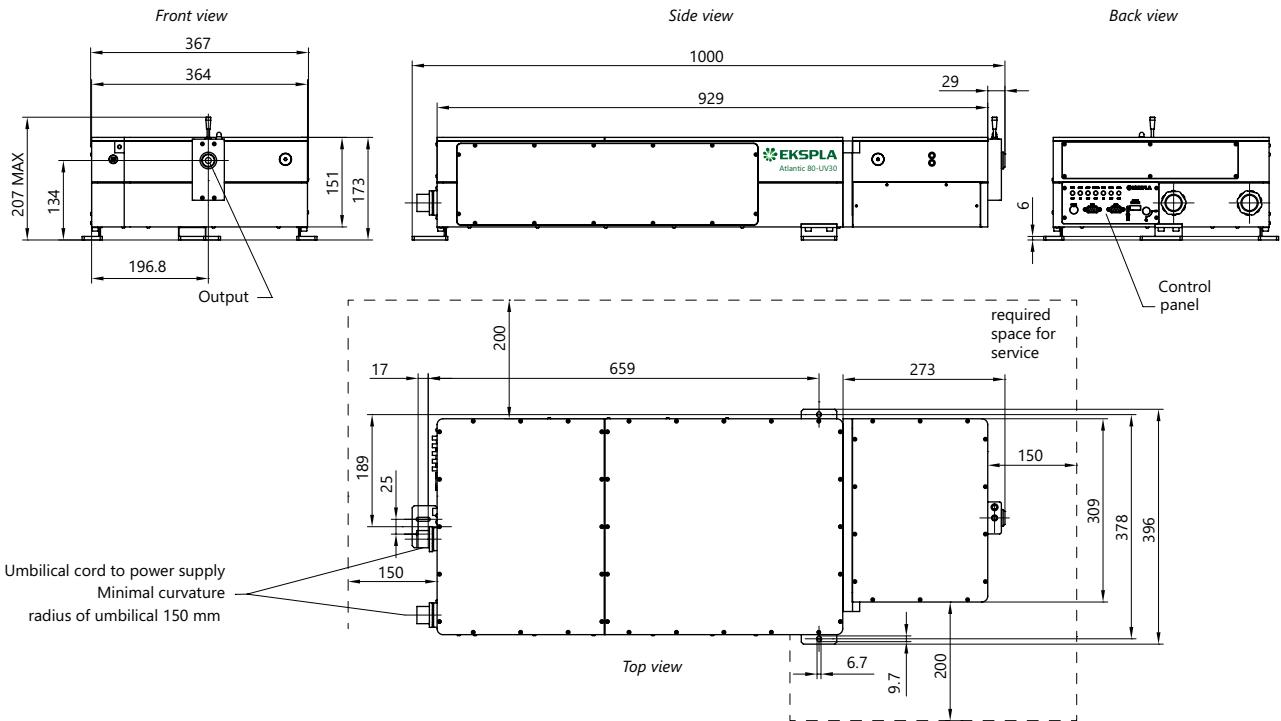
# Drawings



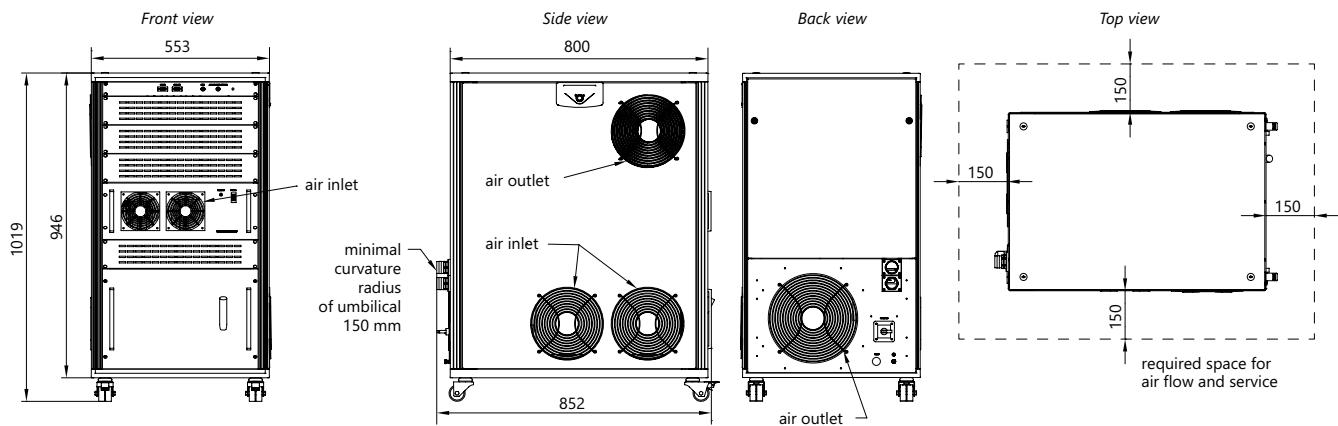
**Fig 13.** Outline drawings of Atlantic 25, 50, 80 laser head with a single 1064 nm output (dimensions in mm)



**Fig 14.** Outline drawings of Atlantic 25, 50, 80 laser head with two and three outputs (dimensions in mm)



**Fig 15.** Outline drawings of Atlantic 25-UV8, 50-UV18, 80-UV30 laser head with a single 355 nm output (dimensions in mm)



**Fig 16.** Outline drawings of Atlantic 25, 50, 80 power supply unit (dimensions in mm)

## Ordering information

Atlantic 25-IR-GR12-UV8	
Model	
Fundamental wavelength max power:	355 nm output max power:
25 → 25 W	UV8 → 8 W
50 → 50 W	UV18 → 18 W
80 → 80 W	UV30 → 30 W
1064 nm output (only for models with multiple outputs)	532 nm output max power:
	GR12 → 12 W
	GR25 → 25 W
	GR40 → 40 W

**PHOTO**  
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