

Atlantic UV30



Ekspla, the laser company, is introducing a new picosecond high power UV laser. The Atlantic UV30 industrial picosecond laser is capable of producing 30 W of output power at 355 nm.

In the industrial market, increased reliability and decreased cost of ownership of high power and UV components is critical. The Atlantic UV30 harmonic module optical layout was optimized for longevity and stable operation in UV range. As a result, 8000 hours UV optics lifetime is guaranteed, which is more than 11 months 24/7 service free operation.

Short, 10 ps pulse duration minimizes the heat-affected zone of processed material. Due to the high 75 μJ pulse energy and UV output, the laser can be adapted for tough processes, like OLED cutting, sapphire processing, ceramics micromachining.

Due to negligible output beam spatial characteristic change in wide output power range, the Atlantic UV30 delivers a cost saving flexibility to use the same system for employing numerous operation modes and processing of various materials.

High (up to 1 MHz) repetition rate enables this laser to be used in high throughput material processing systems requiring speed and precision.

To tailor laser performance for specific applications, advanced electronics enable important features like external synchronization and precise triggering with jitter of 7 ns (RMS), as well as analog AOM pulse control, which helps to change energy of pulses in real time with immediate response.

Ekspla employed all its 25 years of experience by building an advanced laser optical layout: long-life fiber master oscillator combination with amplification stages, placed in a sealed monolithic block, thus ensuring stability and resistance to possibly negative ambient conditions.

Each Atlantic UV30 laser produced at Ekspla passes strict quality control test and inspection procedures. Every single unit is checked for vibration resistance, operationally tested at different environment temperature and humidity, as well as subjected to high temperature (up to 70 °C) thermo-cycling. Prior to shipment, Ekspla performs extensive testing to verify multiple external and internal laser parameters to ensure the lasers are meeting their technical requirements.

High Power Picosecond UV Laser

FEATURES

- ▶ **30 W at 355 nm**
- ▶ **8000 h UV optics lifetime guaranteed**
- ▶ **75 μJ pulse energy**
- ▶ **Short pulse duration 10 ps**
- ▶ **400 – 1000 kHz pulse repetition rates**
- ▶ **Negligible output beam spatial characteristic change depending on output power**
- ▶ **External synchronization and precise triggering with jitter of 7 ns (RMS)**
- ▶ **Analog AOM pulse control, which helps to change energy of pulses in real time with immediate response**
- ▶ **Environment resistant design for 24/7 operation**
- ▶ **Individual pulse control**
- ▶ **Smart triggering for synchronous operation with polygon scanner**
- ▶ **Low maintenance**

APPLICATIONS

- ▶ **OLED cutting**
- ▶ **Sapphire structuring**
- ▶ **Ceramics micromachining**

SPECIFICATIONS ¹⁾

Atlantic UV30	
GENERAL SPECIFICATIONS	
Wavelength	355 nm ²⁾
Repetition rate ³⁾	400 kHz to 1000 kHz (tunable within full range)
Average output power at 400 kHz ⁴⁾	> 30 W
Pulse energy at 400 kHz ⁵⁾	> 75 μJ
Pulse energy contrast	> 1000 : 1
Power fluctuations over 8 h after warm-up when RT < ±2 °C (Std. dev.)	< 1.0 %
Pulse energy stability at 400 kHz (Std. dev.)	< 2.5 %
Pulse duration (FWHM) ⁶⁾	10 ± 3 ps
Polarization	linear, vertical 100 : 1
M ²	< 1.3
Beam circularity (far field)	> 0.85
Beam divergence (full angle)	< 1.0 mRad
Beam pointing stability (pk-to-pk) ⁷⁾	< 50 μRad
Beam diameter (1/e ²) at 50 cm distance from laser aperture	2.0 ± 0.3 mm
Triggering mode	internal / external
Pulse output control	frequency divider (down to single shot), arbitrary pulse selection, power attenuation
Control	keypad / USB
OPERATING REQUIREMENTS	
Mains requirements	208/230 V AC selectable, single phase 50 or 60 Hz
Power	< 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	
Laser head size (W × H × L)	367 × 173 × 1000 mm
Power supply unit size (W × H × L)	553 × 1019 × 867 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. Unless stated otherwise, all specifications are measured at 355 nm.

²⁾ Single wavelength output.

³⁾ Pulse repetition rate can be factory pre-set to single requested frequency or tunable in all specified range. Lower pulse repetition rates are available using pulse gating system (included in standard configuration).

⁴⁾ See typical power curve for other pulse repetition rates.

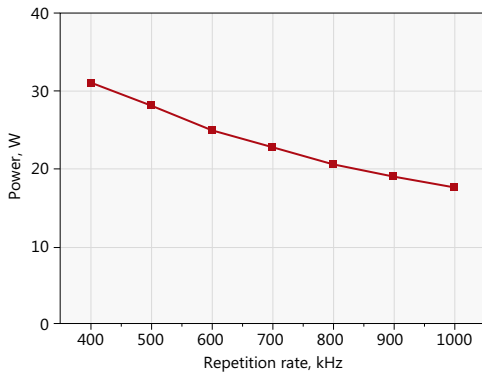
⁵⁾ See typical energy curve for other pulse repetition rates.

⁶⁾ Measured at 1064 nm fundamental wavelength.

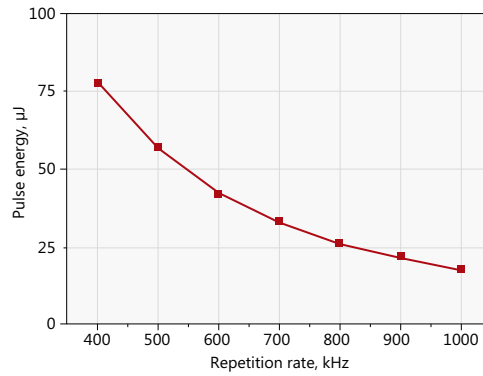
⁷⁾ Defined as short term < 2 min. beam angular stability.



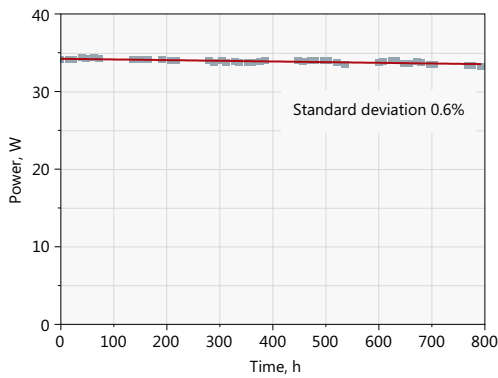
PERFORMANCE



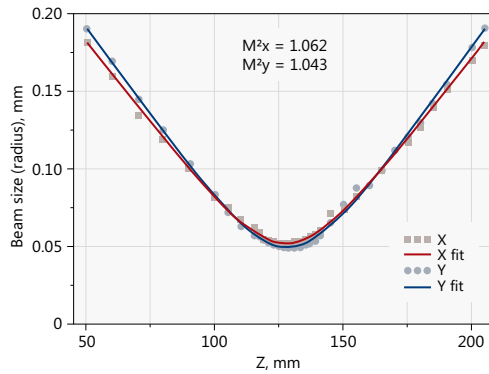
Typical dependence of output power on the repetition rate for Atlantic UV30 laser



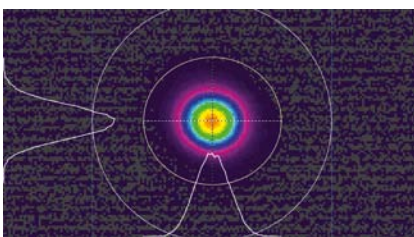
Typical dependence of pulse energy on the repetition rate for Atlantic UV30 laser



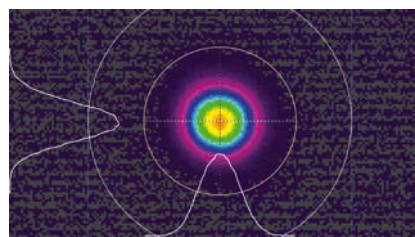
Typical long term 355 nm output average power stability of Atlantic UV30 under constant environmental conditions



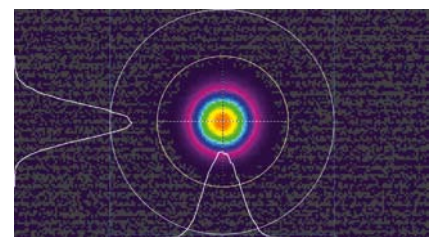
M² measurement of 355 nm wavelength at 34 W average power, 400 kHz repetition rate (Atlantic UV30)



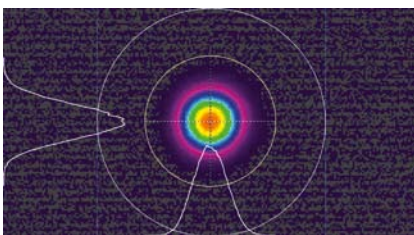
100% power level



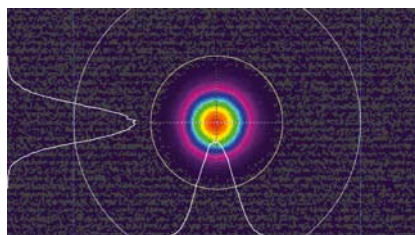
75% power level



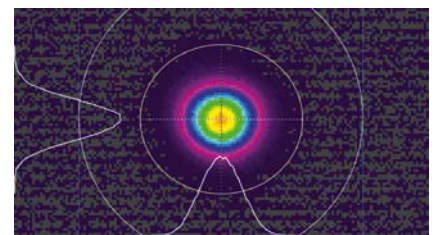
50% power level



25% power level



10% power level



100% power level with pulse divider 10

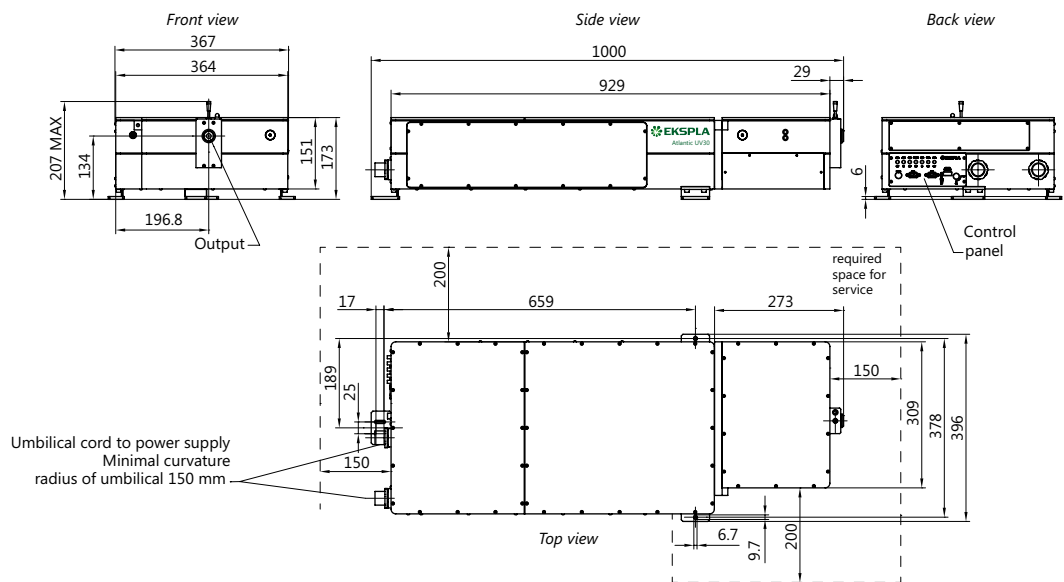
Beam profile of 355 nm in far field at 34 W max average power with different attenuation conditions

LASER HEAD IMAGE



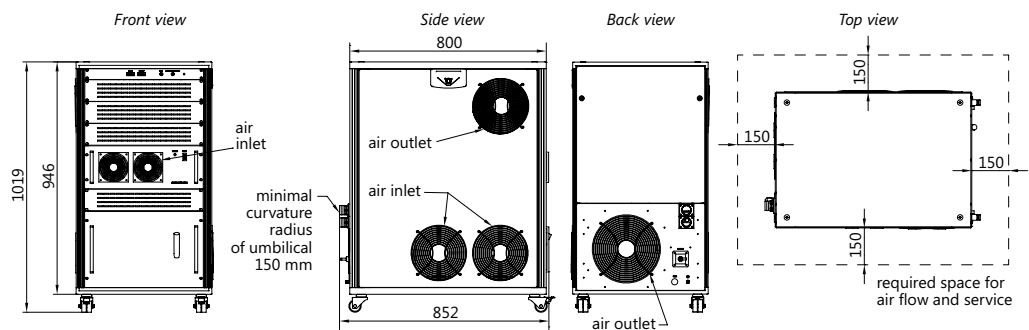
Typical view of Atlantic UV30 laser head

LASER HEAD OUTLINE DRAWINGS



Atlantic UV30 laser head outline drawings

POWER SUPPLY OUTLINE DRAWINGS



Atlantic UV30 power supply outline drawings