Atlantic 5

Atlantic 5 series air-cooled lasers are among the most compact picosecond industrial lasers. This series was designed as a versatile tool for a variety of industrial applications.

Having the capability to electronically switch IR, VIS and UV outputs as well as featuring 10 ps pulse duration, Atlantic 5 series lasers offer minimized thermal damage to different materials. This is beneficial for a variety of applications such as black marking, patterning, micromachining, PCB drilling and tracing, solar cell CIGS scribing and many others.

Atlantic 5 series lasers have a versatile synchronisation capability with external equipment, including PSO (position synchronized output) which makes integration with any laser beam control equipment seamless and easy.

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.

Atlantic 5 series lasers can also work in bursts, with 25 ns interval between pulses, within a burst. This is very beneficial for applications such as increasing material removal rate in laser ablation.

FEATURES
▶ Up to 5 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 30 µJ pulse energy
▶ Short pulse duration 10 ps
▶ Excellent beam quality M²<1.3
▶ Air cooled
▶ Burst mode
▶ Versatile laser control and synchronisation capabilities
▶ Smart triggering for synchronous operation with polygon scanner and PSO
▶ Compact, sealed and rugged design
▶ Low life-time ownership cost

APPLICATIONS
▶ Black marking, diffraction grating marking
▶ Patterning
▶ Micromachining
▶ Solar cells CIGS scribing
▶ PCB drilling and tracing
▶ Drilling
▶ Cutting
▶ Structuring
▶ Ablation
▶ Dicing

MATERIALS
▶ Various metals
▶ Brittle materials, including glass, ceramics, sapphire and PCD
▶ Silicon
▶ PET, PP, PI
▶ Silicone
▶ PCB
▶ Solar cells
To increase reliability and assure long-term stable operation in industrial environments, the optical components are installed in a sealed, robust, precisely machined monolithic and compact aluminium block. Designed for robust, low maintenance operation, Atlantic 5 series lasers offer maximum reliability due to an optimized and compact layout, PC controlled operation, a built-in self-diagnostic system and advanced status reporting.

The Atlantic 5 series lasers do not require installation to be performed by a qualified laser engineer and are designed to be a low lifetime ownership cost solution.

**TYPICAL VIEW OF ATLANTIC 5 SERIES LASER HEADS**

Typical view of Atlantic 5 laser head with a single 1064 nm output

Typical view of Atlantic 5 laser head with two and three outputs
### Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Atlantic 5</th>
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</table>

#### General Specifications
- **Central wavelength**
  - Fundamental: 1064 nm
  - With second harmonics option: 532 nm (optional 1064 nm output)
  - With third harmonics option: 355 nm (optional 1064 nm and/or 532 nm outputs)
- **Laser pulse repetition rate (PRR) range**
  - 100 – 1000 kHz
- **Pulse repetition rate after frequency divider**
  \[ \text{PRR} = \frac{\text{PRR}_L}{N}, N=1, 2, 3, \ldots, 1025 \]
- **Maximal average output power**
  - at 1064 nm: 5 W
  - at 532 nm: 2 W
  - at 355 nm: 1 W
- **Pulse energy at lowest PRR**
  - at 1064 nm: 30 µJ
  - at 532 nm: 20 µJ
  - at 355 nm: 10 µJ
- **Pulse contrast**
  - at 1064 nm: > 150 : 1
  - at 532 nm: > 500 : 1
  - at 355 nm: > 1000 : 1
- **Power long term stability over 8 h after warm-up (Std. dev.)**
  - < 1.0 %
- **Pulse energy stability (Std. dev.)**
  - at 1064 nm: < 0.8 %
  - at 532 nm: < 1.5 %
  - at 355 nm: < 1.5 %
- **Pulse duration (FWHM) at 1064 nm**
  - 10 ± 3 ps
- **Polarization**
  - linear, vertical 100 : 1
- **M²**
  - < 1.3
- **Beam circularity, far field**
  - > 0.85
- **Beam divergence, full angle**
  - at 1064 nm: < 2.0 mRad
  - at 532 nm: < 1.5 mRad
  - at 355 nm: < 1.5 mRad
- **Beam pointing stability (pk-to-pk)**
  - < 50 µRad
- **Beam diameter (1/e²) at 50 cm distance from laser aperture**
  - at 1064 nm: 1.4 ± 0.2 mm
  - at 532 nm: 1.2 ± 0.2 mm
  - at 355 nm: 1.1 ± 0.2 mm
- **Triggering mode**
  - internal / external
- **Pulse output control**
  - frequency divider, pulse picker, instant amplitude control, burst mode, power attenuation
- **Control interfaces**
  - keypad / USB / RS232 / LAN

#### Operating Requirements
- **Mains requirements**
  - 100...240 V AC, single phase 47...63 Hz
- **Maximal power consumption**
  - < 0.5 kW
- **Operating ambient temperature**
  - 18–27 °C
- **Relative humidity**
  - 10–80 % (non-condensing)
- **Air contamination level**
  - ISO 9 (room air) or better
**Model**  
Atlantic 5

<table>
<thead>
<tr>
<th>PHYSICAL CHARACTERISTICS</th>
<th></th>
</tr>
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<tbody>
<tr>
<td>Cooling</td>
<td>air</td>
</tr>
<tr>
<td>Laser head size (W × H × L)</td>
<td></td>
</tr>
<tr>
<td>at 1064 nm</td>
<td>372 × 158 × 423 mm</td>
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<tr>
<td>at 532 nm</td>
<td>372 × 158 × 590 mm</td>
</tr>
<tr>
<td>at 355 nm</td>
<td></td>
</tr>
<tr>
<td>Power supply unit size (W × H × L)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>471 × 153 × 511 mm</td>
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<tr>
<td>Umbilical length</td>
<td>3 m</td>
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**CLASSIFICATION**

Classification according EN60825-1  
CLASS 4 laser product

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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.

When frequency divider is set to transmit every pulse.

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

At the lowest PRR, after warm-up under constant environmental conditions.

At the lowest PRR, under constant environmental conditions.

Beam pointing stability is evaluated as a movement of the beam centroid in the focal plane of a focusing element.

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**PERFORMANCE**

Typical output power and energy curves of Atlantic 5

Typical output power and energy curves of Atlantic 5-GR2

Typical output power and energy curves of Atlantic 5-UV1
OUTLINE DRAWINGS

Outline drawings of Atlantic 5 laser head with a single 1064 nm output (dimensions in mm)

Outline drawings of Atlantic 5 power supply unit (dimensions in mm)
Outline drawings of Atlantic 5 laser head with two and three outputs (dimensions in mm)

ORDERING INFORMATION

Atlantic 5-IR-GR2-UV1

Model | 355 nm output
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1064 nm output (only for models with multiple outputs) | 532 nm output