



Amplitude  
SYSTEMES

# s-Pulse



## Diode pumped femtosecond amplifier

### A new generation of ultrafast lasers

**s-Pulse** is a diode pumped femtosecond amplified laser setting new standards for performance and ease of use.

**s-Pulse** takes advantage of new, high quality Ytterbium materials and advanced diode pumping technology to take high energy femtosecond lasers out of the laboratory and into the real world. Ytterbium doped laser materials can be directly diode pumped with low consumption, high reliability semiconductor laser diodes. They do not require any of the intermediate pump lasers used in traditional Titanium:Sapphire lasers.

**s-Pulse** is built on a single, compact, and hermetically sealed monolithic housing for improved stability. It features simple control electronics, user adjustable repetition rate without internal laser adjustment, complete set of diagnostics, and no requirements for external water cooling. Low electrical consumption and long lifetime laser diodes keep operating costs at a minimum.

**s-Pulse** offers exceptional optical performances such as a high repetition rate, high energy, short pulse duration, and a high output beam quality.

**s-Pulse** is an ideal laser source for laser ablation, micro-machining, non linear optics, etc.

#### Application examples:

Micro-machining

> Laser ablation

Marking and engraving

> Traceability and antifraud

Analytical chemistry

> Laser assisted ICP-MS

Eye surgery

> Vision correction

# s-Pulse

Diode pumped  
femtosecond amplifier

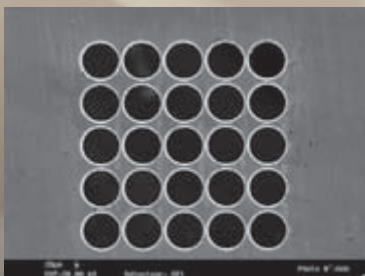
## Application example:

### Micro-machining

High precision micro-machining can now benefit from important advances in ultrafast femtosecond laser technology.

A femtosecond laser emits very high intensity pulses with an extremely short duration. The short duration of the laser pulse virtually eliminates heat diffusion in the surrounding area. The high peak power enables machining of almost any material, including glass, ceramics, metals, or even explosive or hazardous materials. Complex shapes with micrometer sized features can be machined with both high flexibility and exceptional quality.

**s-Pulse** high energy per pulse and short pulse duration ensure high quality micro-machining. Its high repetition rate improves process productivity. Its low electrical consumption and long lifetime components guarantee minimal operating costs.



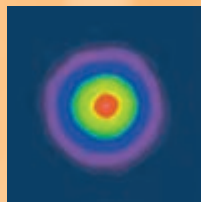
## Specifications:

|                 | s-Pulse           | s-Pulse HR        | s-Pulse HP        | s-Pulse HP <sup>2</sup> | s-Pulse PS        |
|-----------------|-------------------|-------------------|-------------------|-------------------------|-------------------|
| Pulse duration  | < 400 fs          | < 500 fs          | < 500 fs          | < 500 fs                | < 3 ps            |
| Pulse energy    | > 100 μJ          | > 10 μJ           | > 1 mJ            | > 2 mJ                  | > 50 μJ           |
| Average power   | > 1 W             | > 1 W             | > 4 W             | > 8 W                   | > 5 W             |
| Repetition rate | 0 to 10 kHz       | 100 kHz           | 0 to 300 kHz      | 0 to 300kHz             | 100 kHz           |
| Wavelength      | 1030 nm           | 1030 nm           | 1030 nm           | 1030nm                  | 1030 nm           |
| Beam quality    | TEM <sub>00</sub> | TEM <sub>00</sub> | TEM <sub>00</sub> | TEM <sub>00</sub>       | TEM <sub>00</sub> |
| Dimensions      | 75 cm x 50 cm     | 75 cm x 50 cm     | 75 cm x 50 cm     | 75 cm x 50 cm           | 75 cm x 50 cm     |
| SHG & THG       | Optional          | Optional          | Optional          | Optional                | Optional          |

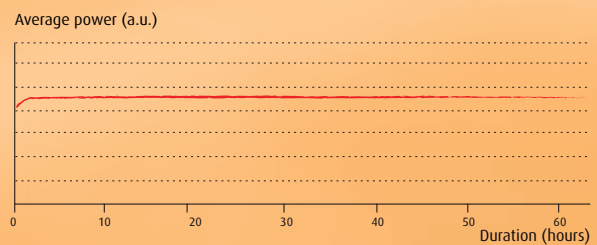
Other specifications available on request. Please contact us.

## Typical data:

### TEM<sub>00</sub> beam profile



### Long term stability

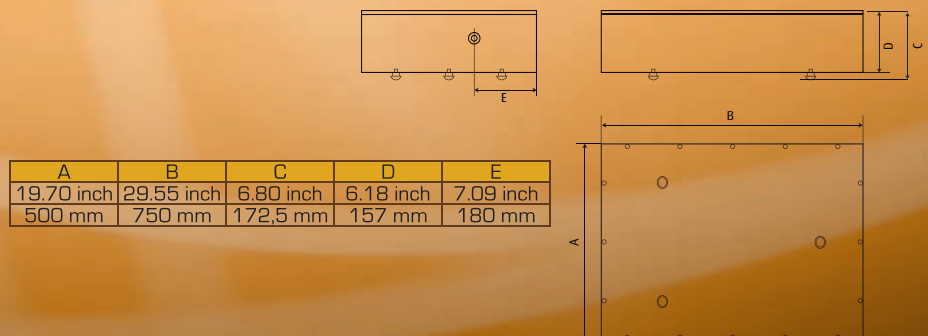


## Flexibility:

s-Pulse series offer a full range of adjustable parameters without any need for realignment:

- Adjustable repetition rate
- Adjustable pulse duration up to 10 ps
- Adjustable energy

## Mechanical interface:



[www.amplitude-systemes.com](http://www.amplitude-systemes.com)

### Amplitude Systemes

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