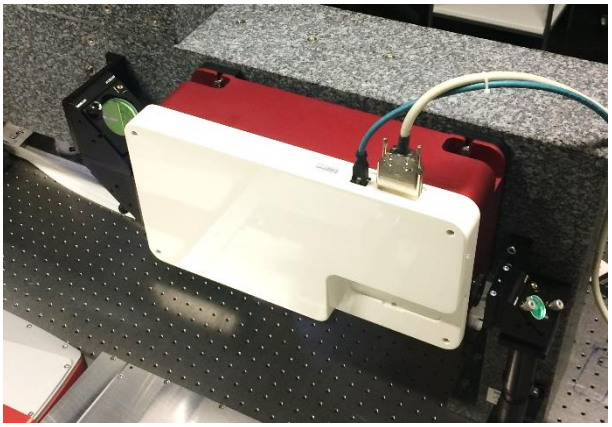
# LS-Shape

## Beam management module



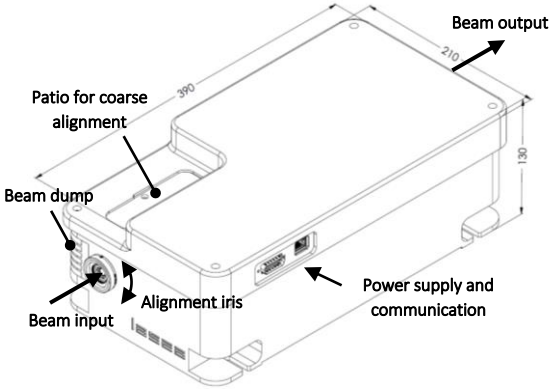
Dedicated to laser **micromachining**, the LS-Shape is a unique beam management module, inevitable for reaching an **optimized process**.

While it is irrelevant to have access to a lot of fine parameter tuning on conventional marking or machining applications, **ultrashort processes** require much more attention on pulse overlap, or power density, or on the preservation of a **perfect optical quality**. A person skilled in the art knows how hard it is to prevent from astigmatism on enlarged beams for example. Beam attenuation is also tricky due to changes on beam geometrical shape with AOMs, or on pulse length with diode current modulation.

Apart from the choice of laser, it is this beam management which defines the **machining quality**, **efficiency**, and **repeatability**. The LS-Shape is the right tool for this optimization and its quick alignment steps make its **integration** very easy.

Finally, for high productivity installations, replacement of this module is immediate to continue the production, while the repair is done.

Directly connected to a computer through an ethernet interface, the LS-Shape is driven by our software KYLA™, a full **micromachining software** able to communicate with several stages, cameras, and lasers.
Including a certified safety shutter, a beam dump, an attenuator, a beam expander, a power measurement, a polarization converter, and a protection against back reflections, everything is in this sealed aluminum block material for a perfect and stable laser path.




### Key features

- Motorized safety shutter with sensors
- Beam dump
- Motorized beam expander (x2 to x6)
- Motorized attenuator
- Power measurement
- Protection against back reflections
- Circular polarization converter

| Base features | LS-Shape |
|---|---|
| Input aperture | 6 mm |
| Output aperture | 20 mm |
| Available wavelengths | 343 nm – 515/532 nm – 1.030/1.064 nm |
| Maximum power | 50 W |
| Maximum allowed energy (@300fs-1030nm) | 300 µJ |
| Maximum allowed energy (@10ns-532nm) | 1 mJ |
| Transmission | > 90% |
| Shutter closing time | < 500 ms |
| Beam dump capacity | 20W continuously, 50W during 1 min<br>(water cooled beam dump for continuous 50W on request) |
| Beam expansion | Motorized option (see below)<br>Default fixed x3 magnification (fixed x2 or x4 on request) |
| Attenuation | Motorized option (see below) based on polarization |
| Power measurement | < 0,5% power sampling with calibrated ratio |
| Circular polarization | Pmin / Pmax > 90 % |
| Alignment | Factory aligned with < 0,5 mm lateral offset and < 200 µrad angular offset according to incident beam<br>Reference irises for on-site alignment |
| Size | 397 x 210 x 130 $mm^3$ |

| Configurations | Base | A | B | AB |
|---|---|---|---|---|
| Attenuator | | • | | • |
| Motorized Beam expander | | | • | • |

| | Connections |
|---|---|
| Power supply | 24 V – 2 A |
| Shutter | Dry contact<br>24V output for sensors |
| Interfacing | GigE RJ45 |