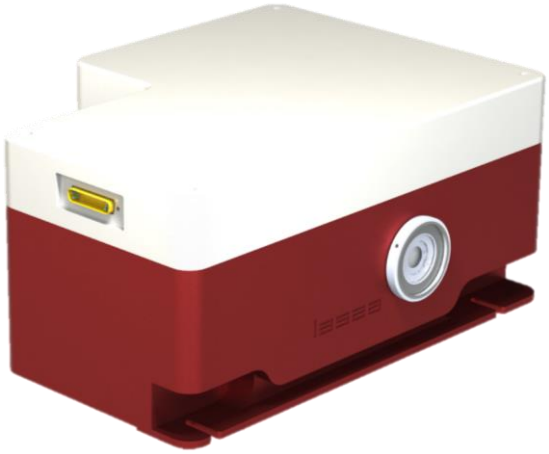
LS-Precess

Controlling conicity



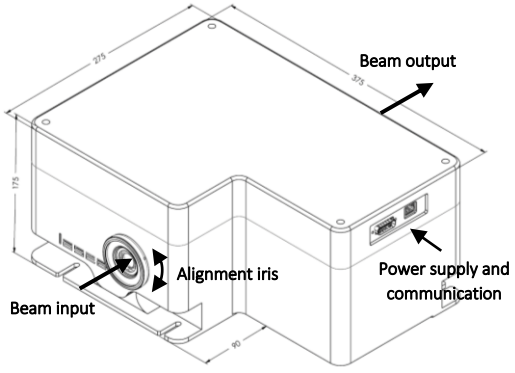
Laser **drilling** and **cutting** processes have been well established in the industry for many years. Cutting processes using scanning heads are more and more common due to their ease-of-use and process speed, and also due to a lower overall cost than a stage-driven system with its gas consumption, but in all cases, with a nozzle or a scanner, conical trenches are inevitable due to gaussian shapes of laser beams. The LS-Precess is a module able to **suppress or control** these **kerf conicities**. It is well suited for drilling and cutting with a nozzle and stage movements, but it also allows the use of **scanning heads**, with the same ease-of-use as conventional scanner processes.

The principle is a **high speed** continuous rotation around the beam propagation axis of a lateral beam shift. Once focused, these lateral shifts are converted to **rotating attack angles** which **crops both sidewalls** of the kerf.

LASEA's **patented technology** is the only one compatible with the use of scanners and F-Theta objectives, allowing processing **fields up to 20 x 20 mm**, with a stable zero or negative taper.

In addition, for high productivity installations, replacement of this module is immediate to continue the production, while repairs are done.

Directly connected to a computer through an ethernet interface, the LS-Precess is driven by our software KYLA™, a full **micromachining software** able to communicate with several stages, cameras, and lasers.
Including a motorized setting of the lateral shift and a by-pass function to perform conventional cutting, engraving, or texturing, this module is an easy to integrate add-on for a perfect laser processing system.



Key features

- Motorized beam shift setting
- Up to 30.000 rotations per minute
- By-pass function
- 50 and 80 mm telecentric F-Theta lenses
- 40µm min kerf size

Base features	LS-Precess
Input aperture	22 mm
Output aperture	22 mm
Available wavelengths	343 nm – 515 nm – 532 nm – 1.030 nm – 1.064 nm
Maximum power	50 W
Maximum allowed energy (@300fs-1030nm)	300 µJ
Maximum allowed energy (@10ns-532nm)	1 mJ
Transmission	> 80%
Lateral beam shift	4,5 to 8 mm from the center
Maximum rotation speed	30.000 rpm
By-pass	Variable by-pass between 0 and 100%
Polarization	Non-random laser polarization required Motorized output polarization (often set as perfectly circular on target with Pmin / Pmax > 95%)
Alignment	Factory aligned with < 0,5 mm lateral offset and < 100 µrad angular offset according to incident and by-pass beams Reference irises for on-site alignment
Size	376 x 293 x 175 mm^3

	Objectives	
Focal length	**50 mm**	**80 mm**
Min kerf size (M^2= 1,1, 1.030 nm, LS-Scan 20)	40 µm	60 µm
Scanning Field	8 x 7 mm^2	22 x 20 mm^2
Conicity compensation	+/- 5 to +/- 9°	+/- 3 to +/- 6°
Appropriate material thicknesses without refocusing	100 to 300 µm	200 to 600 µm
Working distance	60 mm	79 mm

These data can change according to laser beam quality, LS-Scan input aperture, or wavelength

	Connections
Power supply	24 V – 2 A (5 A peak)
Interfacing	GigE RJ45