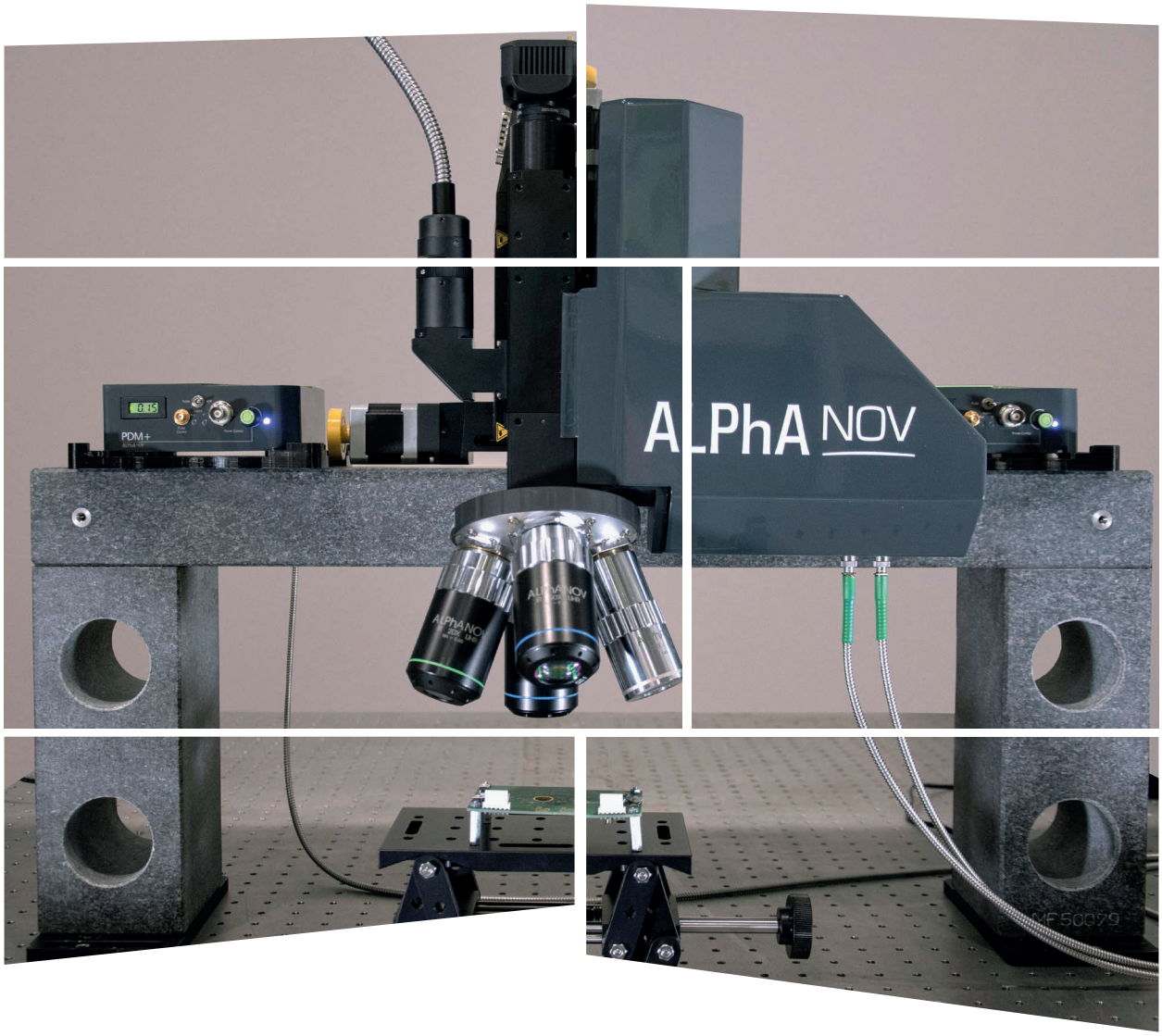
D-LMS

Double Laser Microscope Station for laser fault injection



ALPhA NOV

Optics & Lasers Technology Center

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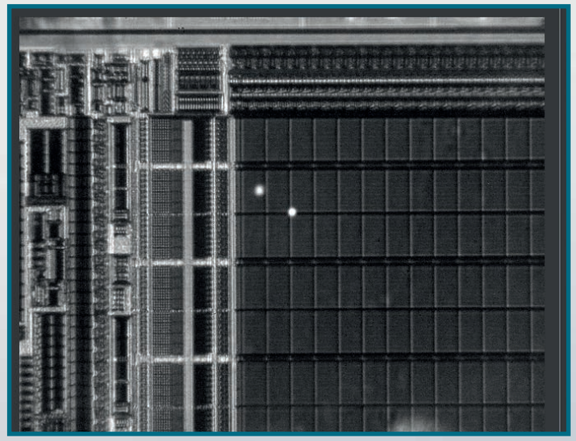
D-LMS

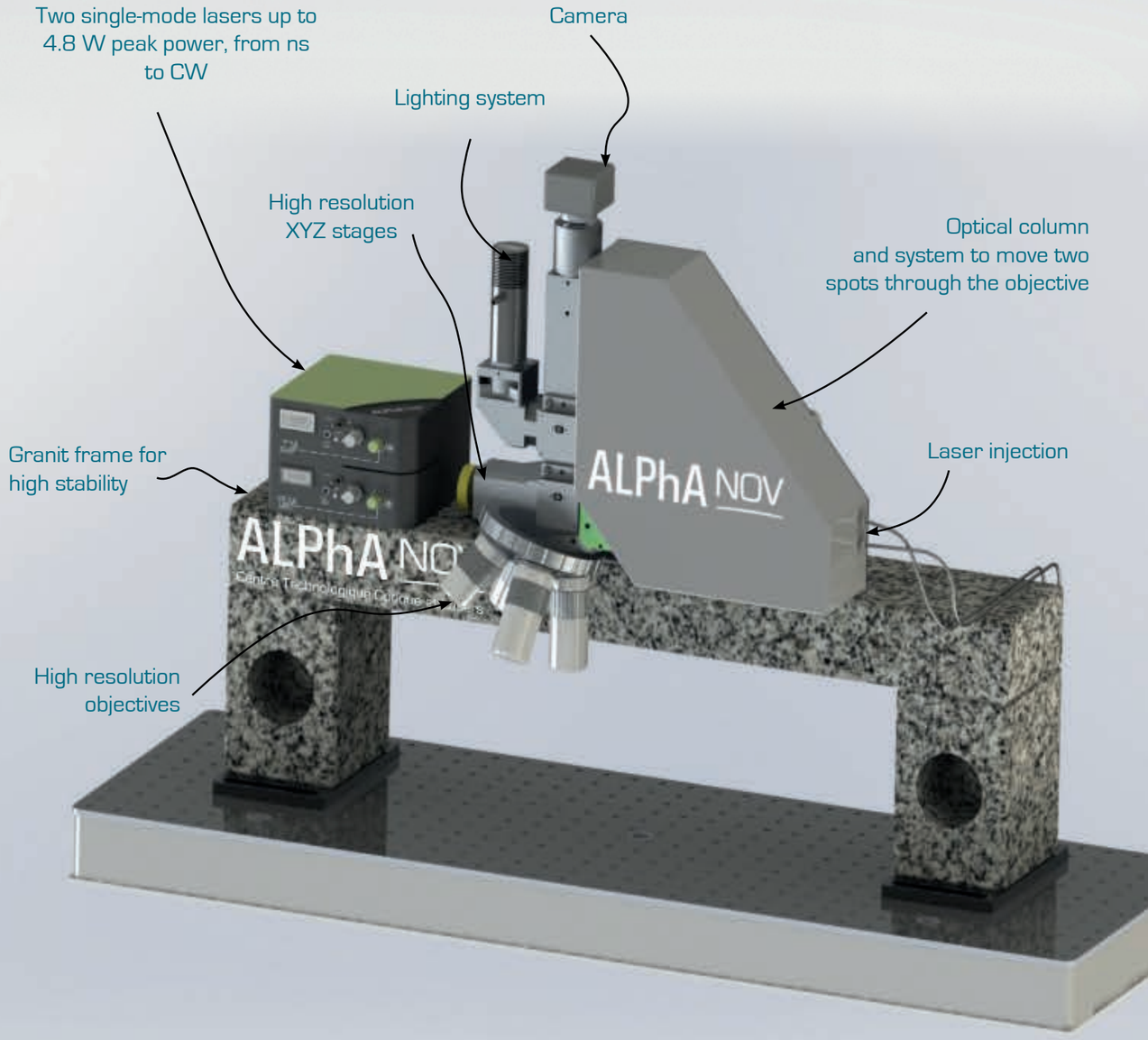
Double Laser Microscope Station for laser fault injection

The D-LMS microscope allows to see and scan at the same time two laser spots. Both laser spots have full & independent temporal and spatial modularities. The camera and lighting system allows to see the path from the back side.



View of chip from the back side and the two laser spots injected through the microscope.

Complete automatic system with CE certified laser enclosure



Features

- IC security evaluation double-laser station (both spot through the microscope)
- Ideal for back side laser fault injection
- Down to 1 µm single-mode laser spot sizes with ultra high resolution objectives
- Both laser spots have full & independent temporal and spatial modularities
- Cameras to observe laser spots on IC paths through hundreds of µm of silicon
- High reproducibility and resolution laser spot displacements
- Three famous ALPhANOV PDMs “Pulse-On-Demand” laser modules included

Compatible with

- Photoemission option
- Thermal Laser Stimulation option
- esDynamic software plateform

The S-LMS is now fully compatible with esDynamic Analyst Development platform from eShard

esDynamic software platform allows security experts to analyze, attack, pinpoint and refine the security of their products by performing side-channel, white-box cryptography analysis or fault injection. With esDynamic platform, eShard offers dedicated contents in its Hardware Analysis module to drive ALPhANOV equipment and perform precision fault injections attacks.

Technical Specifications

Single-mode fibered lasers

	PDM+ and PDM+ HP	PDM4+ and PDM4+ HP
Pulse duration	from 1.5 ns to CW	from 1.5 ns to CW
Peak power	Up to 3.2 W	Up to 10 W
Wavelength	980 nm ; 1064 nm	980 nm ; 1064 nm
Repetition rate	From single-shot to 250 MHz	From single-shot to 250 MHz
Command interface	TTL/LVTTL / Software & DLLs	TTL/LVTTL / Software and DLLs
Beam quality	Single-mode	Single-mode

Camera

Captor	640x512 µm
Dynamic range	140 dB
Interface	USB (software included)

Electrical

Voltage	220 V/110 V
Intensity	16 A

Optical column

Transmission typ.	>80% at 980 and 1064 nm
Signal type	Adapted for single-mode or multimode lasers
Vision	High Resolution camera
Lighting system	LED

Positioning system

	Laser spots positioning	Microscope positioning
Axes number	2x2	3
Travel range	The field of the objective	52 mm
Resolution	<0.4 µm	0.315 µm
Repeatability	<0.8 µm	+/- 0.8 µm
Max velocity	100 mm/s	20 mm/s

High-transmission objectives recommended (others on demand)

Objectives[1]	50X	20X	2.5X
N.A	up to 0.7	Up to 0.6	0.1
Typ. spot size	Down to 1.3 µm	Down to 2.2 µm	25 µm
Field	190x150 µm	480x380 µm	3800x3000 µm
Working distance	10 mm	10 mm	28 mm
Typical transmission (with microscope)	up to 80%	up to 80%	up to 80%

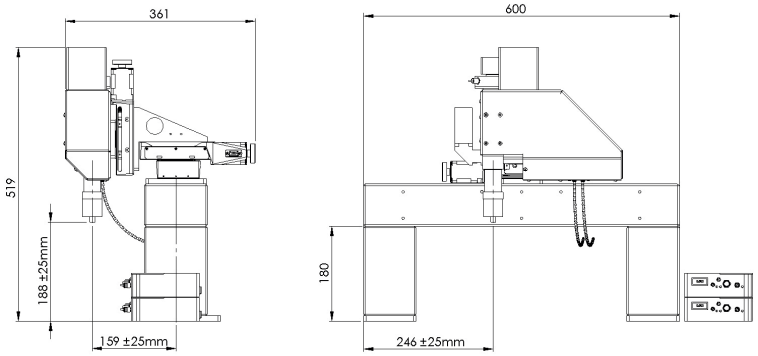
[1]Other objectives available

Options

- Optispot technology
- Photoemission kit
- Thermal laser stimulation kit
- Complete automatic setup with CE certified laser enclosure
- Ultra high resolution objectives

Mechanical

indicated dimensions



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