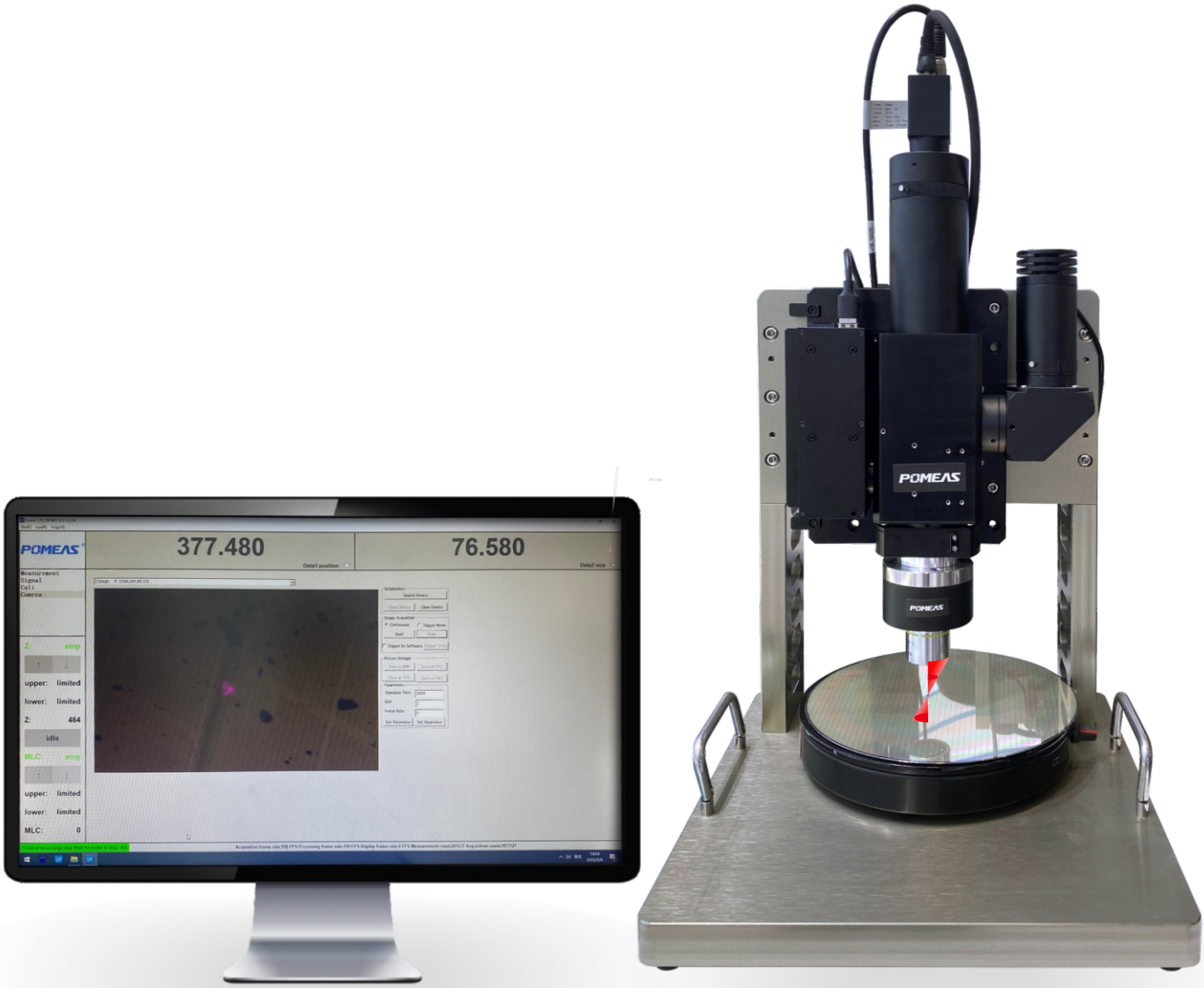
APO LASER AF MODULE

LFS 4 8000 Series

High Magnification • High Accuracy • High Efficiency



Large field-of-view flyswatters customised for high-speed high-precision microscopy automation

PMS-LFS Series Sensors Product Features

PMS-LFS Series Sensors

- Compact structure, the semiconductor laser, optical system high-speed signal processing module, laser control, motion control, as well as software algorithms into one focusing mode using co-axial focusing mode, effectively solve the problem of focusing when the blocking;
- Focusing precision um level, focusing speed up to 6.5khz level, with high focusing precision, focusing speed, product performance is stable and reliable, can be widely used in complex applications and environments.

Static Or Dynamic Focus

The combination of laser optics and an integrated microprocessor allows the P&M laser sensor to focus equally on static surfaces and those that are dynamically moving.

High Speed And Precision

An internal update rate of 10 kHz and an output rate of up to 6.5 kHz. auto-tuning, advanced processing, and on-board algorithms allow the POMEAS laser sensor to maintain this focus even when moving at high speeds over complex surfaces.

Easy To Integrate And Implement

Ease of integration and realisation are key features of the PREMIS laser sensors. Both analogue and digital output variants are available. A number of controller options are also available including those required to interface with many third party stepper, linear and Z motion systems.

Maximum Flexibility

Sensors can operate on many surfaces including unpatterned patterned, rough and diffuse surfaces.rough and diffuse surfaces. By automatically sensing and adjusting the Pumice laser sensor adapts to a wide range of reflective surfaces. The sensor is compatible with objective lenses from 2X to 100X.

Product Characteristics

The highly accurate and efficient Promise laser sensor series supports integration into existing customer microscope systems; to meet the needs of each application, several sensor models are available, each with different options for specific needs. They are also widely used for real-time focusing for microscopic observation, precision laser welding and precision laser cutting.

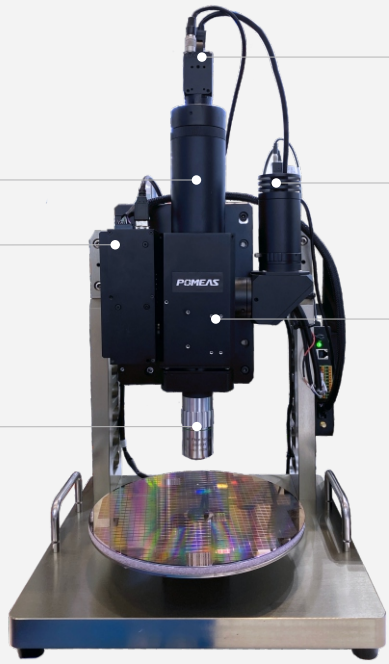
Pumice APO Mirror Tube

Maximum 2" lens barrel

LFS Series Sensors

APO Objective Lens

Supports 2×~100× objective lenses and universal objective lenses.



Pumice Industrial Cameras

Supports up to 1.25" target cameras

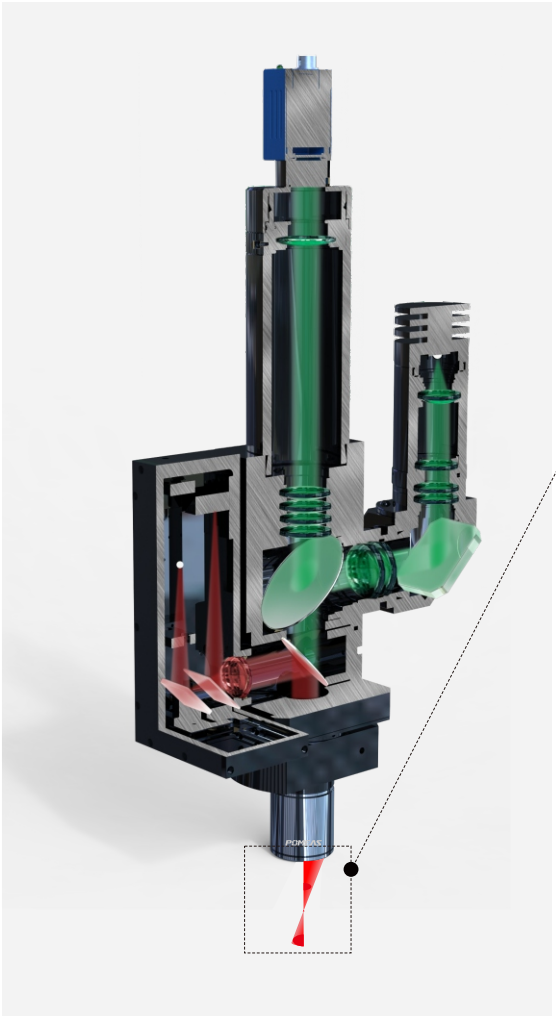
Coaxial Light Source

Provides monochrome or RGB multi-colour illumination.

Motorised Focus Module

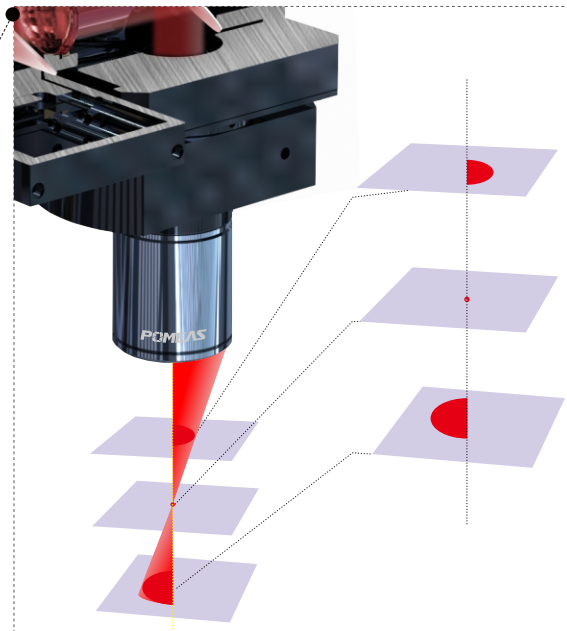
Supports multiple focusing motion modes (screw, piezo)

SENSOR DEMO PLATFORM

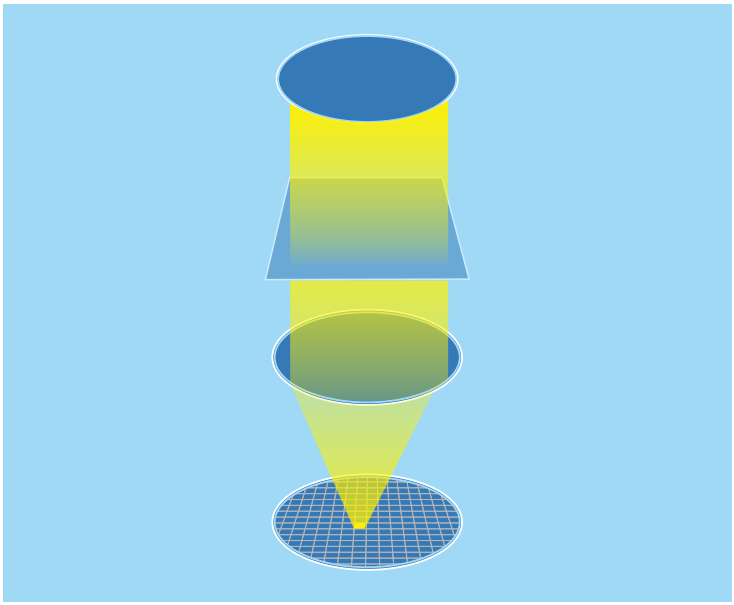


Focusing Principle

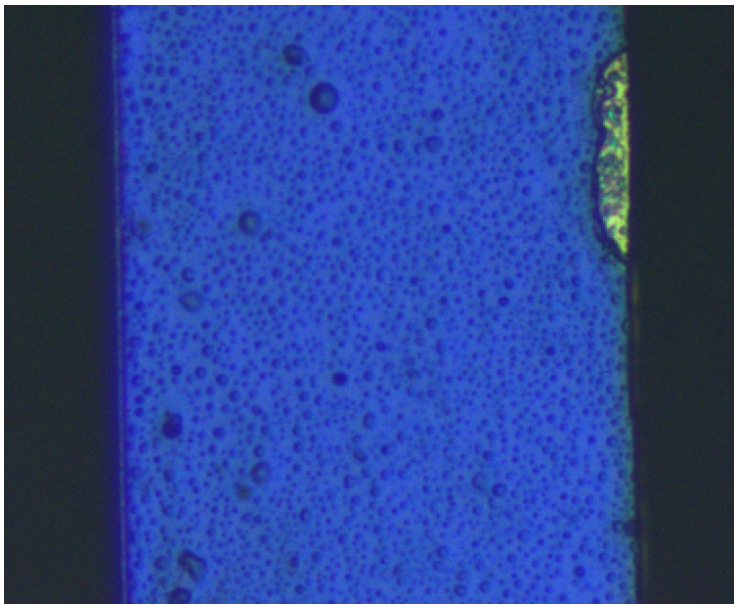
Using the optical principle that the point of light will be inverted after passing through the focal point, let the Sensor judge whether the current Z-axis height is above or below the focal point and then give the instruction to follow the focus quickly in one direction. The centre point is in the middle of the semicircle to judge whether the position of the Sensor is accurate or not, and then switch to reduce the misjudgment of the Sensor when the focus changes.



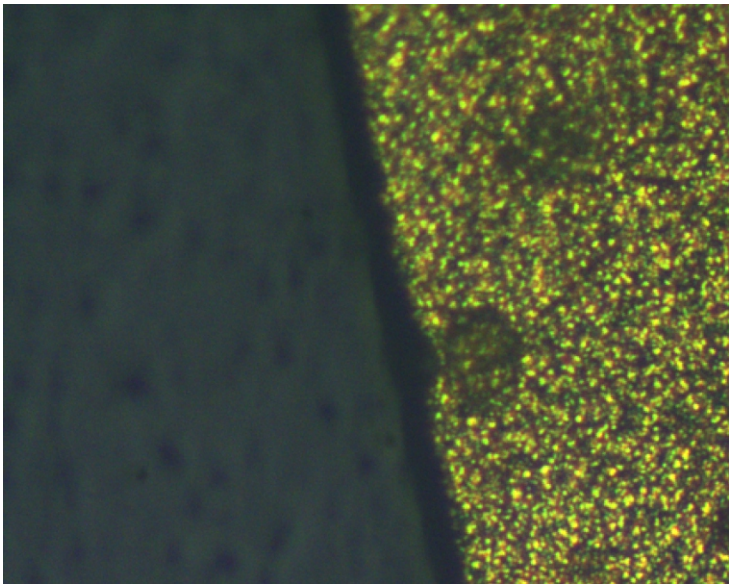
The focusing direction and travel of the objective lens is judged by the morphology of the laser spot on different focusing surfaces, achieving fast and accurate focusing.



Lithography Guidance and Inspection



Wafer substrates (guidance and inspection)



Copper Foil (Guidance and Inspection)

LCD (guidance and detection)

Focus Motion Dedicated Controller Products

Focus Motion Dedicated Controller

- ◆ Support A/B two groups of motor driver control.
- ◆ Support A/B two groups of motor supporting photoelectric sensor limit;
- ◆ Support NPN type and PNP type;
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- ◆ Limit sensor support NPN type and PNP type.
- ◆ Support 1 way high current constant current LED light source: default 3.3V/1A (support 0.75A~1.5A);
- ◆ Support analogue signal output;
- ◆ Support 1 way high current constant current LED light source: default 3.3V/1A (support 0.75A~1.5A)
- ◆ Support analogue signal output.
- ◆ Support RS-232 communication.
- ◆ Support control of multi-way motor movement;
- ◆ Support multi-hole objective lens rotation
- ◆ Support rotating nose wheel for multi-hole objective lens.

Focus Motion Dedicated Controller Product Parameter

Power supply	AC100V±10% 50/60Hz Wire length 2M
Current	0.5A
Working Temperature	10-50°C
OverallDimension	W254×D332×H75mm
Weight	0.5kg
Option	External operation box (PI/O link port)
Motor	2-phase type stepping motor 0.85A/phase (6V)
Control Function	Stepping movement, home return, panel operation
Number of drive cycles	Maximum 20MHZ
Home Return	Mechanical home position, OFF-SET home position
Over Run	Limit device
Communication Function	RS-232C/PI/O

Objective Lens Controller Products

Universal objective lenses, commonly used 2×、5×、10×、20×、50×、100×objective lenses can be applied; can be in the stationary or real-time movement of a variety of types of surface focusing, such as surface focusing, layered focusing, etc.;

PMS LFS 4 Series Parameters

Category	LFS 4 Series		
Selectable Wavelength(nm)	660	785	850
Power Output(mW)	0.3	0.85	0.2
Laser Class	Class IIIB		
Maximum Focusing Distance(mm)	200mm		
Internal Update Rate	＞1.2kHz		
Structured Light Mode	Single Point		
Sample reflectivity	1%-99%		
Static AF accuracy	±1/4 objective lens DOF or better		
Moving AF Accuracy	±1/2 objective lens DOF or better		
AF Repeatability	±1/3 objective lens DOF or better		

PMS LFS 4 Series Parameters

Objective lens magnification/NA	Linear range (μm)
5×/0.14	±500
10×/0.28	±100
20×/0.42	±30
50×/0.55	±20

PMS LFS 4 Series Motion Control

Z-axis features	Miniaturized X High Rigidity Magnetic Floating Linear Ball Guide + Stepping Motor + Limit Sensor
Optional Z-axis travel	±10mm/+15mm
Repeat Positioning Accuracy	0.5um (optional piezo drive for nanometer positioning)
Response speed	20mm/sec, 30mm/sec

APO Objective Lens Selection Parameters

Number	Magnification	Numerical Aperture	Working Distance (mm)	Focal Length (mm)	Dof(μm)	Resolution (μm)	Supports Maximum Field Of View
PM02	2×	0.055	34.6	100	91	5	40
PM05	5×	0.14	45	40	14	2	40
PM010	10×	0.28	34	20	3.5	1	40
PM020	20×	0.29	30.8	10	2.6	1	40

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