

## **LAS-UP**™ Large, Ultra Precision

#### **INCLUDES:**

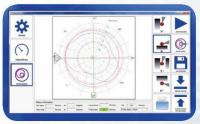
- Green (520nm) and Red (660nm) laser-reflection based Optical Module
- 1250mm vertical linear focusing movement with multi-speed stepper motor and micron precision linear encoder
- Ø300mm manual air-bearing (ABS) with integrated x/y/tip/tilt stage and vacuum through center
- CalcuLens<sup>™</sup> Assembly software for measuring alignment errors of single lens
- Measuring accuracy 0.2 
   µm centration and 0.5 arcsec tilt, depending on the lens specs and opto-mechanical design
- Maximum axial load capacity 1,000lb (454Kg)
- System weight 3,307lb (1,500Kg)
- System dimensions 36"x32"x118" (914x813x2,540mm)
- System Requirements:
  - Compressed air, pressure: 60PSI (0.004bars)
  - Dry air: 40 Dew point
  - Filter: ±0.005mm
  - Air flow: 4 ft<sup>3</sup>/min (0.113 m<sup>3</sup>/min)
  - Electrical rating: 120/240V 50/60Hz @ 1Amp

#### **OPTIONS:**

- Additional wavelengths: Blue (450nm), NIR (850nm/940nm), SWIR (1550nm), MWIR (4.05 µm), LWIR (9.50 µm)
- Larger rotary air bearing: Ø400 mm
- Extended rotary worktable for larger optics/housings: up to Ø600 mm
- Extended vertical travel: 1500 mm and 2000 mm
- Motorized rotary air bearing
- Custom lens and housing holding fixtures
- CalcuLens<sup>™</sup> Inspection software for measuring in-stack (embedded) lens alignment values
- CalcuSurf2D™ real-time profiling/gauging software with 0.1 µm precision USB lever probe for aligning housings and lenses with rotary axis. Non-contact probes also available.
- LAS-DMI<sup>™</sup> low-coherence SWIR Distance Measurement Interferometer for the measurement of lens center thickness and air gaps over a 200mm range at ±1 µm accuracy (±0.1 µm accuracy and 600mm measurement range options also available)
- LAS-Vertex/ROC<sup>™</sup> autofocus-based vertex height measurement at ±2.5 µm accuracy for the measurement of air gaps during assembly, lens center thickness and air gaps of cemented or air spaced doublets/triplets (< 50mm stack height), and single lens ROC (0.05% accuracy)
- LAS-ATM<sup>™</sup> Aspheric Tilt Measurement of aspheric surfaces
- LAS-IAM™ Image Analysis Measurement (on-axis MTF, EFL & beam deviation) in transmission
- LAS-SPM<sup>™</sup> Surface Profiling of single lens/mirror surfaces at 20nm resolution and 200 nm accuracy

Ultimate Precision for Large Lens Assemblies





CalcuSurf 2D™ v2.0
Profiling software for
LAS™ stations with USB integrated electronic contact probes



CalcuLens™ v2.8 Alignment Software for LAS™ Stations



**Options Matrix** 

# Laser Alignment and Assembly Station™ (LAS™)

StandardOption

LAS-BT

LAS-P

LAS-UP

LAS-XUP

- Option				
Light Source				
Blue Laser @ 450nm	0	0	0	0
Green Laser @ 520nm				
Red Laser @ 660nm	0		•	
NIR Laser @ 850nm/940nm	0	0	O	0
SWIR Laser @ 1.55µm	0	0	O	0
MWIR Laser @ 4.05µm	0	0	0	0
LWIR Laser @ 9.50µm	0	0	O	0
Detector				
Visible camera (1600 x 1200)	•	•	•	
Large-Format Visible Camera (2500 x 2000)	0	0	0	•
Infrared camera (640 x 480)	0	0	0	0
Air-bearing, (vacuum through)				
Air-bearing Ø100mm (optional Ø150mm work table)	•			
Air-bearing Ø150mm (optional Ø200mm work table)		•		
Air-bearing Ø200mm (optional Ø300mm work table)		0		
Air-bearing Ø300mm (optional Ø400mm work table)			•	
Air-bearing Ø400mm (optional Ø600mm work table)			0	
Air-bearing Ø600mm (optional Ø800mm work table)				•
Air-bearing Ø800mm (optional Ø1000mm work table)				0
Tip/tilt/x/y stage		•	•	•
Rotary Encoder	•	•	•	•
Motorized Air-bearing	•	0	0	0
Maximum Axial Load Capacity	57Kg	226Kg	454Kg	907Kg
Measuring Head				
Single Objective for Spheric, Aspheric, Cylindric Surfaces	•	•	•	•
Range of Lens Radii				
± 0.5mm to Plano	•	•	•	•
Measurement Assessment				
Live Orbit Image on Monitor	•	•	•	•
Software Numerical Data Display	•	•	•	•
Angle Measurement (accuracy in arc seconds)	0.5	0.5	0.5	0.5
Centration Measurement (accuracy in microns)	0.2	0.2	0.2	0.2
Measurement Head Linear Processing	0.12	3.1		
Automatic PC Controlled (variable speed)	•	•		
Linear Travel	•	•	•	•
Linear naver	(533mm)	(1000mm)	(1250mm)	(2000mm)
	(633mm)	(1250mm)	(1500mm)	(3000mm)
		(1500mm)	(2000mm)	
Magaurament Madulas		(1500(11(11))	(200011111)	
Measurement Modules				•
CalcuLens™ Assembly (measure single lens)				
CalcuLens™ Inspection (measure alignment in stack)	0	0	0	0
Low-Coherence Center Thickness & Air-Gap (±1µm accuracy)	0	0	0	0
Vertex Height Measurement (± 2.5µm accuracy)	0	0	0	0
Aspheric Tilt Measurement (± 2 arcsec accuracy)	0	0	0	0
Image Analysis Measurement (MTF, EFL, etc)	0	0	О	0
Structural Material				
Granite Base; Granite Column	•	•	•	•



LAS-BT



LAS-P



LAS-XUP

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