

Fast, precise, and flexible interferometric asphere metrology workstation with integrated passive vibration isolation and motorized staging for alignment and measurement.

SYSTEM	
Measurement Capability	Surface form error of axisymmetric asphere optical surfaces with annular stitching, toric surface form error, spherical surface form error and radius of curvature, and freeform, cylinder and off-axis conic metrology with optional CGH stage
Measurement Technique	Laser based, three-dimensional, mechanical phase-shifting interferometry combined with heterodyne displacement interferometry
Measurement Hardware	Verifire HD-1.2k laser Fizeau interferometer and displacement measuring interferometer
Orientation	Downward-looking configuration
Test Beam Diam	6 inch (152 mm)
Camera Res	1200 x 1200
Zoom Range	Discrete zoom turret 1X, 1.7X, 3X
Artifact Suppression	Ring of Fire extended source
Z-Axis Travel	820 mm
Computer	i7 class PC with 27 in. 1080P display
Software	ZYGO Mx software running under Windows 10 (64-bit)

ASPHERIC MEASUREMENT PERFORMANCE ⁽¹⁾	
Alignment	Automated 5-axis alignment for annular stitching
Simple Repeatability ^(2,3)	≤1 nm ($\lambda/600$) RMS
Surface Measurement Repeatability ^(2,4)	≤5 nm ($\lambda/125$) RMS
Height Resolution	0.08 nm
Cycle Time ⁽⁵⁾	2 - 8 minutes (typical)

LASERS	
Type	Mainframe: High power stabilized HeNe, Class IIIa DMI: Low power HeNe, Class II
Wavelength	Mainframe & DMI: 633 nm
Laser Power	Mainframe: >3 mW DMI: <1 mW
Frequency Stabilization	Mainframe & DMI: < 0.0001 nm

PHYSICAL CHARACTERISTICS

Dimensions (HWD)	262 x 172 x 150 cm
Weight	< 650 kg

Utility Requirements

Power	100 to 240 VAC, 50/60 Hz
Compressed Air	80 psi (5.5 bar); dry and filtered source (for integrated vibration isolation system)

OPERATIONAL ENVIRONMENT⁽⁶⁾

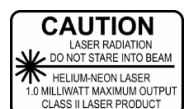
Temperature	15 to 30°C
Rate of Change	< 1° C per 15 min
Vibration Isolation	Integrated passive isolation Dampens vibration frequencies 1 Hz–120 Hz

TEST PART CHARACTERISTICS

Material	Various including glass, metals, ceramics and plastics
Aspheric Shape	Annular stitching: Axially symmetric concave and convex with specular surface and measurable vertex
Departure from asphere design	Up to 10 μ m
Departure from best fit sphere	Approximately 800 μ m
Part Diameter ⁽⁷⁾	1 mm to 130 mm
Part Weight	≤ 5 kg
Reflectivity	0.1% to 100% (based on transmission element)

NOTATIONS

- Performance qualified with temperature set point between 20-23°C and temperature stability < 0.5°C.
- Performance dependent on surface slope and departure from design.
- 2 σ RMS of 30 measurements using VFA Parabola artifact PN 6024-0484-01.
- Difference of a single measurement from the average of 30 measurements. RMS mean + 2 σ .
- Total Average Cycle Time (TACT) estimate for a 3D map with > 1.1 million data points. Includes alignment, acquisition, and analysis, and is dependent on asphere departure.
- These parameters outline the conditions under which the system can operate.
- Range depends on transmission sphere selection and part specifications.



Distribution in the UK & Ireland



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**Characterisation,
 Measurement &
 Analysis**