

# VeriFire Asphere™ Specifications



## ASPHERIC MEASUREMENT PERFORMANCE

Form	$\leq 30^\circ: \geq F/1.0 \Rightarrow 60 \text{ nm } (\lambda/10)$
Uncertainty <sup>(1)</sup>	$\leq 45^\circ: F/0.71 \Rightarrow 100 \text{ nm } (\lambda/6)$ $\leq 60^\circ: F/0.58 \Rightarrow 200 \text{ nm } (\lambda/3)$
Alignment	Semi-automated computer alignment
Simple Repeatability <sup>(2)</sup>	$\leq 3 \text{ nm } (\lambda/200) \text{ RMS}$
Surface Measurement Repeatability <sup>(3)</sup>	$\leq 10 \text{ nm } (\lambda/60) \text{ RMS}$
Height Resolution	0.08 nm
TACT	6 - 10 minutes (typical) <sup>(4)</sup>

## TEST PART CHARACTERISTICS

Material	Various including glass, metals, ceramics and plastics
Aspheric Shape	Axially symmetric concave or convex shape with specular surface and a measurable apex <sup>(5)</sup> .
Departure from asphere design	Up to 10 $\mu\text{m}$
Departure from vertex sphere R0	Approximately 800 $\mu\text{m}$
Part Diameter	1 mm to 130 mm <sup>(6)</sup>
Part Weight	$\leq 5 \text{ kg}$
Reflectivity	0.1% to 100% (based on transmission element)

## ENVIRONMENTAL REQUIREMENTS

Temperature	15 to 30°C < 1° C in 15 min rate of change
Humidity	5 to 95% relative, noncondensing
Vibration Isolation	Isolates frequencies 1 Hz - 120 Hz

## LASER SPECIFICATIONS

Type	Helium-Neon, Class II
Wavelength	632.8 nm
Output Power	$\leq 1 \text{ milliwatt}$
Polarization	Nominally circular (1.2:1 or better)

## FOOTNOTES:

- (1) Form uncertainty is variation from first principle error budget.
- (2)  $2\sigma$  variation of 30 measurements.
- (3) Difference of a single measurement from the average of 30 measurements. A mean  $+2\sigma$  value.
- (4) Total Average Cycle Time estimate for a 3D map with >700,000 data points. TACT is dependent on the number of measured zones.
- (5) VeriFire Asphere calculator (OMP-0525) predicts part measurability. Requires Microsoft Excel.
- (6) Range depends on transmission sphere selection and part specifications.

## SYSTEM

Measurement Capability	Aspherical, spherical and flat surface waveform and radius of curvature
Measurement Technique	Laser based, three-dimensional, optical phase-shifting interferometry combined with heterodyne displacement interferometry
Measurement Hardware	VeriFire AT™ with 1K x 1K camera & ZMI 501 displacement interferometer
Test Beam (dia)	4 inch (102 mm) or 6 inch (152 mm)
Orientation	Downward-looking configuration
Travel Range	850 mm
Zoom Range	6:1
Software	ZYGO MetroPro software running under Microsoft® Windows XP™

## PHYSICAL CHARACTERISTICS

Dimensions (HWD)	4 in. mainframe: 239 x 172 x 150 cm 6 in. mainframe: 262 x 172 x 150 cm
Weight	< 650 kg

## UTILITY REQUIREMENTS

Power	100 - 240 VAC, 50/60 Hz, 400 W
Compressed Air	80 psi (5.5 bar); dry and filtered source (for vibration isolation system)

Specifications subject to change without notice.



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