

VERIFIRE^{XPID}

High performance laser Fizeau mechanical phase-shifting interferometer with digital camera and precision rail interface.

SYSTEM	
Measurement Capability	Measure overall form of reflective surfaces and optics, and transmitted wavefront of optics
Measurement Technique	Laser-based, three-dimensional, mechanical phase-shifting interferometry
Test Beam Diameter	4 inch (102 mm) or 6 inch (152 mm)
Mounting Options	Horizontal or Vertical
Optical Centerline	4.25 in. (108 mm)
Alignment System	Quick Fringe Acquisition System (QFAS) with twin spot reticle
Zoom Range	1:6X
Alignment Field of View	4 inch: ± 3 degrees 6 inch: ± 2 degrees
Pupil Focus Range	4 inch: ± 2.5 m 6 inch: ± 5.5 m
Computer and Software	High-performance Dell PC with ZYGO MetroPro™ software

PERFORMANCE ⁽¹⁾	
Repeatability of Three-Flat Test ⁽²⁾	< 2 nm $\lambda/300$ (2σ)
Repeatability of rms ⁽³⁾	< 0.1 nm $\lambda/10,000$ (2σ)
Camera Resolution	640 x 480 pixels 1K x 1K (optional)
Camera Frame Rate	75 Hz (640 x 480) 43 Hz (1K x 1K)
Fringe Resolution ⁽⁴⁾	180 fringes (640 x 480) 380 fringes (1K x 1K)
Acquisition Time ⁽⁵⁾	173 ms (640 x 480) 302 ms (1K x 1K)
Digitization	8 bits

LASER	
Type	Helium-Neon, Class II
Wavelength	632.8 nm
Output Power	≤ 1 milliwatt
Polarization	Nominally circular (1.2:1 or better)
Coherence Length	Greater than 328 ft (100 m)

PHYSICAL CHARACTERISTICS	
Dimensions (HWD) (without handles)	4 inch: 12.1 x 27.3 x 12.1 in. (308 x 694 x 308 mm) 6 inch: 12.1 x 36.3 x 12.1 in. (308 x 992 x 308 mm)
Weight	4 inch: 85 lb (38 kg) 6 inch: 100 lb (45 kg)



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

OPERATIONAL ENVIRONMENT ⁽⁶⁾	
Temperature	15 to 30°C (59 to 86°F)
Rate of Temp. Change	<1.0°C per 15 min
Humidity	5 to 95% relative, noncondensing
Vibration Isolation	Required for vibration frequencies in the range of 1 Hz to 120 Hz

TEST PART CHARACTERISTICS	
Material	Various; glass, super-finished metals, ceramics, and plastics
Preparation	None; measurements are noncontact, nondestructive, and performed under ambient conditions
Reflectivity	0.1% to 100% (based on transmission element)

OPTIONS	
<ul style="list-style-type: none"> 4 inch or 6 inch output aperture Encoded focus Linear or switchable polarization Guide rail and accessories Vibration correction software 	<ul style="list-style-type: none"> Encoded zoom (1:5X) Wireless remote control 1K x 1K camera Radius of curvature hardware FlashPhase software⁽⁷⁾

See the *GPI and VeriFire Accessory Guide, OMP-0463* for a complete listing of available options.

- Notations**
- Performance qualified in lab environment with the temperature set point between 20-23°C.
 - Repeatability of the three-flat test is an in-use example of performance in a controlled environment with a rate of temperature change less 0.1 °C per hour. Flat 'A' is tested six times using the three-flat test, using the six available pairs of flats B, C, D, and E to complete six three-flat combinations, with 16 phase averages per data set. The specification represents the 2σ value from these six three-flat tests. System accuracy for relative testing is dependent on the reference optic quality.
 - Repeatability of the quoted statistic is for 100 measurements of the same cavity, with 16 phase averages per data set. The specification represents the 2σ value of each statistic.
 - The approximate number of tilt fringes in the part image that can be resolved by the interferometer at 1X.
 - Acquisition time is the total time for acquisition of a full data set using a 13 bucket algorithm.
 - These parameters outline the conditions under which the system can operate; they do not represent the environmental stability required to meet specified performance.
 - For FlashPhase acquisition the minimum camera exposure time that can be set is 20 microseconds. Exposure time is cavity reflectivity dependent; high reflective parts allow shorter exposure time than low reflective parts.