

VeriFire MST™ 1550 nm

Specifications



SYSTEM

Measurement Technique	Laser based, three-dimensional, optical phase-shifting interferometry
Added Measurement Advantage	Simultaneous fringe pattern analysis using ZYGO's FTPSI (Fourier Transform Phase Shifting Interferometry) technology
Aperture Size	4 in. (102 mm)
Mounting Options	Horizontal and Vertical, Upward and Downward-looking configurations
Optical Centerline	4.25 in. (108 mm)
Alignment System	635 nm Alignment laser used with Quick Fringe Acquisition System (QFAS) with twin spot reticle
Image Magnification	1X, 2X, 4X
Alignment Field of View	±3 degrees (±1.5 degrees with aperture converter)
Pupil Focus Range	-800 mm/ +1600 mm from 4 inch output aperture
Part Viewing	Additional fringe monitor included
Computer	Dell PC with hard drive, CD-R/W, floppy drive, and 17-inch flat panel monitor; printers optional
Software	ZYGO MetroPro software running on Microsoft® Windows XP Professional

CONTROLS

Interferometer	Power On/Off, Beam Attenuator, Tip/Tilt
Remote	QFAS, Align, Zoom, Focus, Measure, Print

MEASUREMENT LASER

Type	DFB temperature-tuned laser
Frequency Modulation Range	500 GHz
Nominal Wavelength	1550 nm
Maximum Output Power	10 milliwatts
Output Power at Aperture	5 milliwatts
Polarization	Nominally circular (1.2:1 or better)
Linewidth	12 MHz

PERFORMANCE

Repeatability of Three-Flat Test (1)	$\lambda/300$ (2 σ)
Repeatability of PV (2)	$\lambda/1,000$ (2 σ)
Repeatability of rms (2)	$\lambda/10,000$ (2 σ)
Spatial Sampling(3)	312 x 232 pixels
Surface Height Resolution	Better than $\lambda/8,000$
Data Acquisition & Processing Time Range(3)	0.5 sec. minimum (2-surface data, min. resolution) 1.5 sec. maximum (4-surface data, max resolution)
Digitization	12 bits

UTILITY REQUIREMENTS

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

ENVIRONMENTAL REQUIREMENTS

Temperature	15 to 30°C (59 to 86°F)
Rate of Temp. Change	<1.0°C per 15 minutes
Humidity	5 to 95% relative, noncondensing
Vibration Isolation	Required for vibration frequencies in the range of 1 Hz to 120 Hz
Shipping Temp. Range	-40 to +65°C (-40 to +149°)



Zygo Corporation
Laurel Brook Road
Middlefield, CT 06455

Phone: 860-347-8506
Email: inquire@zygo.com
Website: www.zygo.com

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PHYSICAL

Dimensions (H x W x D)	Horizontal, 4 inch: 15.1 x 27.3 x 12.1 in. (384 x 694 x 308 mm) Vertical: H x 27 x 27 in. (H x 686 x 686 mm) 1 meter H = 39.4 in. (1000 mm) 1.5 meter H = 59 in. (1500 mm) 2 meter H = 78.7 in. (2000 mm)
Weight (approximate)	Horizontal, 4 inch: 80 lb (36 kg) Vertical, 4-inch: 160 lb (73 kg)

PART SETUP

Standard	Two-surface
MetroPro	Three-surface
Setups ⁽⁴⁾	Four-surface
Minimum Test Part Optical Thickness ⁽⁵⁾	1.2 millimeters (=0.8 mm physical thickness for n=1.5)
Allowable Optical Distance Range ⁽⁶⁾	0.8 millimeter to 2.25 meters (one way)

ZYGO offers a wide variety of accessories, including transmission and reference flats, transmission and reference spheres, part mounting options, large aperture components, and radius of curvature measurement options. For information on these accessories, refer to the GPI and VeriFire Accessories booklet, OMP-0463.

NOTATIONS

- 1 Repeatability of the three-flat test is a practical example of the in-use performance of this instrument. Flat 'A' is tested six times using the three-flat test in the 2-surface configuration, 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 quality of the reference optic.
- 2 Repeatability of the quoted statistic is for 100 measurements of the same cavity using ZYGO's 2-surface testing setup, with 16 phase averages per data set. The specification represents the 2σ value of each statistic.
- 3 For higher resolution needs, please contact your local Zygo Corporation sales representative.
- 4 For measurements of cavities with more than four parallel surfaces using Multiple Surface Transform techniques, contact your local Zygo Corporation sales representative.
- 5 This is minimum *optical* thickness. Minimum physical thickness is dependent on the index of refraction of the material. For example, the minimum physical thickness for a parallel plate with an index of 1.5 would be 0.8 mm. For measurement of thinner parts using Multiple Surface Transform techniques, contact your local Zygo Corporation sales representative.
- 6 This range defines the minimum and maximum distances allowed between any pair of parallel surfaces in the test setup. For requirements outside this range, contact your local Zygo Corporation sales representative.

Specifications are subject to change without notice. ZYGO not responsible for errors and omissions.

