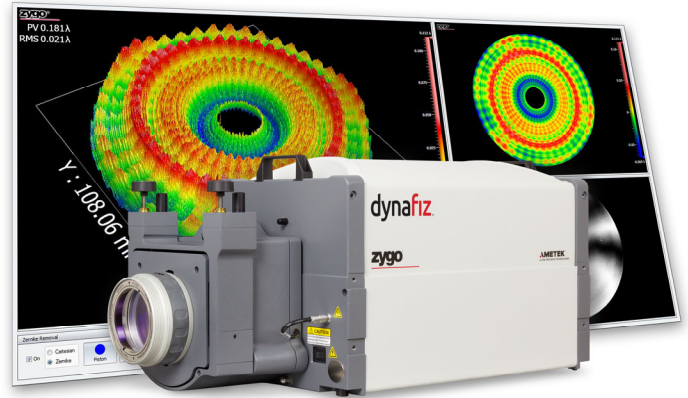# zygo™
AMETEK®

dynafiz™
Specifications

DynaFiz is a new instantaneous Fizeau-type interferometer optimized for dynamic metrology in the presence of extreme vibrations and air turbulence. Mx™ software with LivePhase™ enables real-time Zernike analysis for active alignment and dynamic testing.

SYSTEM OVERVIEW

Measurement Capability	Measures surface form of reflective materials and optics, and transmitted wavefront of transparent optics
Measurement Techniques	PSI – temporal phase-shifting interferometry QPSI – vibration robust temporal phase-shifting interferometry DynaPhase™ – vibration insensitive instantaneous interferometry
Alignment System	DynaPhase alignment wizard with integrated calibration Quick Fringe Acquisition System (QFAS) with twin spot reticle for PSI
Test Beam Diameter	4 inch (102 mm) or 6 inch (152 mm)
Alignment FOV	4 inch: ±3 degrees 6 inch: ±2 degrees
Optical Centerline	4.25 in. (108 mm)
Camera Details	Resolution: 1400 x 1400 /600 x 600 pixels Frame Rate: 50 Hz /82 Hz Digitization: 10 bit
Magnification	1X Fixed (1-50X digital); 3 Position Zoom Turret 1X/1.7X/3X (option)
Polarization	Nominally circular (1.2:1 or better)
Pupil Focus Range	4 inch: ±2 m 6 inch: ±4.5 m
Computer and Software	High-performance Dell PC, Windows 10 64-bit and Mx software
Mounting Configuration	Horizontal or vertical
Remote Control	Wired and wireless remote with common interferometer function controls
Option	CARS (Coherent Artifact Suppression)- minimizes artifacts from wavefront shearing, speckle, or mottle
Accessories	See the ZYGO *Laser Interferometer Accessory Guide*, OMP-0463
Physical Envelope (LWH)	69 x 31 x 34 cm (27.3 x 12.1 x 13.4 in.)
Weight	≤90 lb (41 kg)
Warranty	3 years laser source, 2 years system

LASER DETAILS

Laser Source	High power stabilized HeNe
Class	IIIa (meets 3R ANSI requirements)
Wavelength	633 nm
Frequency Stabilization	<0.0001 nm
Output Power	>3 mW
Coherence Length	>100 m

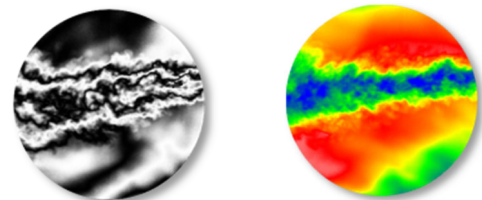## UTILITY REQUIREMENTS

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

OPERATIONAL ENVIRONMENT[(1)]

Temperature	15 to 30°C (59 to 86°F)
Rate of Temp. Change	<1.0°C per 15 min
Humidity	5 to 95% relative, non-condensing
Vibration Isolation	Not required for DynaPhase acquisition; recommended with PSI acquisition

PERFORMANCE [2]

RMS Simple Repeatability [3]	<0.06 nm, $\lambda/10,000$ (2σ)
RMS Wavefront Repeatability [4]	Dynamic: <1.0 nm, $\lambda/600$ (mean + 2σ) PSI/QPSI: <0.25 nm, $\lambda/2500$ (mean + 2σ)
Peak Pixel Deviation [5]	Dynamic:<2.0 nm, $\lambda/300$ (99.5[th] %) PSI/QPSI: <0.5 nm, $\lambda/1200$ (99.5[th] %)
Fringe Resolution [6]	Dynamic: 250 fringes (all magnifications) PSI/QPSI: 500 fringes (all magnifications)
Exposure Time	12 µsec (minimum)
LivePhase	Real-time phase with Zernike fit
Phase Movies	Records events ≤82 frames/sec and generates AVI movie and raw data file
External Movie Trigger	TTL signal

Notations

1. Defines conditions under which the system can operate; does not represent environmental stability required to meet specified performance.
2. Performance qualified with the temperature set point between 20-23° C.
3. RMS Simple Repeatability is defined by 2X the std dev of the RMS for 36 sequential measurements (16 avgs) of a short plano cavity at 1X zoom.
4. RMS Wavefront Repeatability is defined by the mean RMS difference plus 2X the standard deviation for the differential between all even numbered measurements and a synthetic reference (defined as the average of all odd numbered measurements); 36 sequential measurements (16 averages) at 1X zoom form the basis for calculation.
5. Peak Pixel Deviation is defined by the 99.5[th] percentile of the pixel-wise std dev map for 36 sequential measurements (16 averages); this result measures time varying behavior (or Type A uncertainties) at 1X zoom.
6. The approximate number of tilt fringes in the part image that can be resolved by the interferometer.

CAUTION
LASER RADIATION– DO NOT STARE INTO BEAM OR VIEW DIRECTLY WITH OPTICAL INSTRUMENTS
633 nm 5 mW max
CLASS IIIa LASER PRODUCT