

Full Featured 40mm Fizeau Interferometer for Flat or Spherical Surfaces

Non-Contact and Transmitted Wavefront Measurement of Optical Components and Assemblies

Applications

- Transmission and surface testing of small optics
- Measure optics, machined parts, ceramics, semiconductors, and wafers
- Integrated ROC measurements

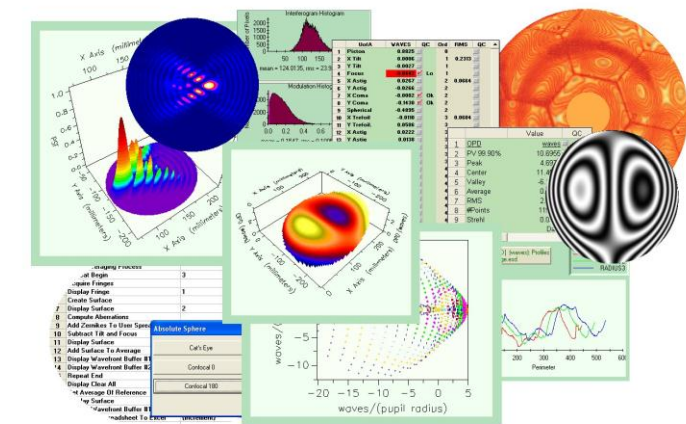
Main Features & Benefits

- 6x zoom for measuring parts as small as 0.5 mm diameter
- 3 modes of interferogram analysis - Phase shifting, **IntelliPhase™** - static spatial carrier analysis, or Fringe Tracing (automated or manual)
- Small size and form factor design allows easy integration into OEM systems
- Compact, Rugged design
- Transmission Spheres from F/0.7 to F/6.0



Optowave 40 is shown with a vertical workstation and computer.

The **Optowave 40** is a full-featured interferometer that can provide non-contact measurement of flat or spherical surfaces and transmitted wavefront of optical components and assemblies. The **Optowave 40** is ideal for measuring a wide variety of optical components including but not limited to contact lenses, Intra Ocular Lenses and Mold Inserts. Measurements can be made using simple basic visual fringe inspection, **IntelliPhase™** static spatial carrier analysis, or phase-modulated interferogram analysis. The **Optowave 40** provides flexibility to handle today's applications at an unprecedented value.

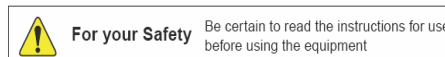
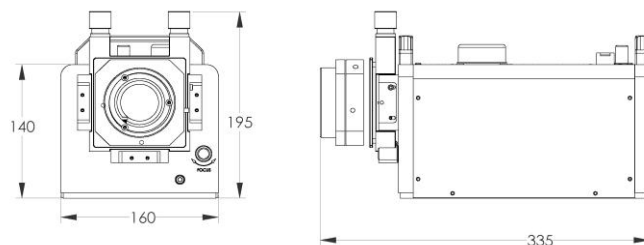


IntelliWave™ Software Features

- Phase-shifted or static acquisition and analysis
- Peak-to-Valley, RMS measurements, Strehl Ratio
- Zernike and Seidel analysis
- Diffraction analysis (PSF, MTF, Encircled Energy)
- Geometric analysis (Geometric Spot Diagrams, Encircled Energy)
- Automation for factory floor applications
- Power filtering and averaging features for noisy data
- Interface with MATLAB™, IDL™, MS Excel™, and LabVIEW™
- **IntelliPhase™** – static spatial carrier analysis

Optowave 40 Specifications	
Technology	Phase Shifting and/or <i>IntelliPhase</i> ™
System	
Test Beam	38 mm (1.5")
6X Zoom	Manual
Focus	Manual; +/- 1.5 m
Intensity	Rotary Dial
Alignment	Simple two spot alignment
Alignment View	± 1.5 degrees
Part Viewing	Live video on computer screen
Performance ¹	
Repeatability 3-Flat ²	$\lambda/300$ PV
RMS Repeatability ³	$\leq 1 \text{ \AA}$
Calibrated Accuracy	$\lambda/100$
Height Resolution	$\lambda/8000$
Spatial Resolution	640 x 480
Fringe Resolution	180 fringes
Digitization	8 bits
Acquisition Time	<300 ms
Averaging Modes	Intensity and Phase
Laser Beam	
Source	Helium-Neon, 632.8 nm, < 1 mw (other wavelength options available)
Polarization	Linear
Coherence	>100 m
Electrical Power	110/240 Volts, 50/60 Hz, 50 Watts
Mechanical	
Dimensions	140 mm x 165 mm x 254 mm 5.5" x 6.5" x 10.00"
Weight	7.25 kg (16 lb)
Environment Requirements ⁴	
Temperature	15 to 30°C (59 to 86°F)
Rate of Temp. Change	<1.0°C per 15 min
Humidity	Relative 5% to 95%, no condensing
Vibration Isolation	Required for frequencies from 1 Hz to 120 Hz
Computer	High Performance – Current Technology
1) Vibration free environment with temp. change < 1°C/15 min. between 20-23°C, no thermals 2) 3 sigma repeatability of 3-Flat Test with 32 averages per set 3) 3 sigma of the rms for 128 data sets, each an average of 32 measurements 4) These parameters state conditions which the system can operate; they do not represent the environmental stability required to meet performance.	

Optowave 40 Interferometer



Configurations

- Vertical and horizontal configurations
- Static or Phase-Shifting
- Radius of curvature

Accessories

- Reference optics (see lower left)
- Video printer
- Desktop isolation tables

Computer Workstations

- State-of-the-art computer workstation with *IntelliWave*™ software pre-installed
- All hardware interfaces pre-installed for complete *Optowave 40* interferometer data acquisition

IntelliWave™ Software

- Five polynomial sets to choose from
- Diffraction and geometric analysis
- Derivatives and integrals
- Complex masking including unlimited mask groups
- Fiducials and image transformations
- Measurements: Wavefront, Wedge, Angle, Prisms, 3-Flat Test, Two Sphere Test, Homogeneity
- Interfaces: MATLAB™, IDL™, LabVIEW™, Excel™
- *IntelliPhase*™ – static spatial carrier analysis

	Reference Optics							RS	TF
	TS								
F/#	0.7	1.0	2.0	3.0	4.0	6.0	6.5	40	
Diameter (mm)	40							40	
Accuracy	$\lambda/10$							$\lambda/15$	$\lambda/20$

