

# Intellium™ Z100u

FIZEAU INTERFEROMETER



## FULL FEATURED 4" (100mm) FIZEAU INTERFEROMETER

### High Accuracy Measurement Capability with Unsurpassed Flexibility & Versatility

#### APPLICATIONS

- Measurement of flat, concave or convex surfaces
- Prism, corner cube, wedge angle & homogeneity measurements
- Measurement of machined, ceramic, and wafer/disk surfaces
- Wavefront analysis of optical systems & components
- Integration into OEM systems

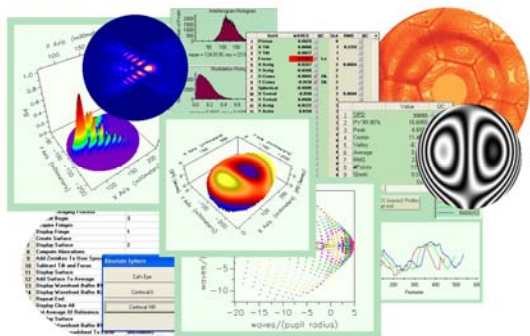
#### MAIN FEATURES & BENEFITS

- Total USB connectivity option (laptop or desktop) with 1k x 1k true spatial resolution
- Excellent versatility, stability and repeatability
- 1x to 6x zoom, focus and attenuation controls
- Vibration-insensitivity may be accomplished via ESDI's **IntelliPhase™** static spatial carrier acquisition and analysis software
- Compact, lightweight and rugged design
- Compatible with all industry standard 4" (100mm) reference optics and accessories
- High accuracy measurements at an affordable price
- Configurations include horizontal, vertical look up and vertical look down
- Optional workstations for flat and short to long radius of curvature measurements

**"IntelliPhase™"**  
For Dynamic Interferometry



The **Intellium™ Z100u** interferometer provides non-contact measurement of flat or spherical surfaces along with transmitted wavefront measurements of optical components and assemblies. Measurements may be made using basic visual fringe inspection, static fringe analysis, or phase-modulated interferogram analysis. The **Intellium™ Z100u** may be integrated with ESDI's world-renowned **IntelliWave™** acquisition and analysis software to provide the end user with superior measurement and analysis capability. The **Intellium™ Z100u** provides the versatility and flexibility to handle today's advanced applications with an unrivaled cost – performance benefit.



#### **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

### Surface & Wavefront Metrology Beyond Compare

Engineering Synthesis Design, Inc.

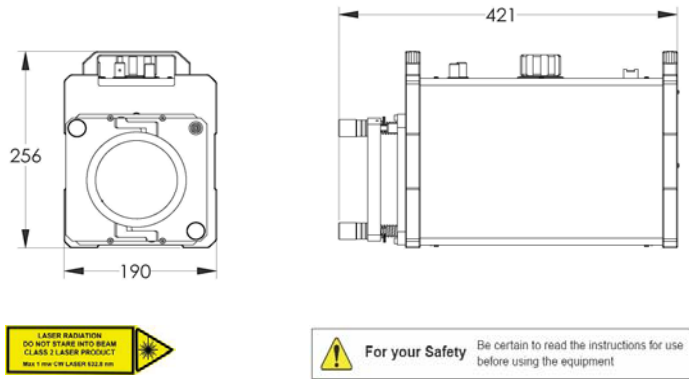
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## Intellium™ Z100u Specifications

<b>Technology</b>	Static <b>IntelliPhase™</b> & PZT Phase-Shift System			
Test Beam	102 mm (4.0")			
Zoom	1X to 6X			
Focus	+/- 2.0 m			
Attenuation	Adjustable			
Alignment	Simple two spot alignment			
Alignment View	± 1.5 degrees			
Part Viewing	Live video on computer screen (dual monitor option)			
<b>Performance<sup>1</sup></b>				
	<b>Z100u</b>	<b>HR</b>	<b>NIR</b>	
			<b>1053, 1064</b>	<b>1300</b>
Repeatability 3-Flat <sup>2</sup>	λ/300 PV			
RMS Repeatability <sup>3</sup>	< 1 Å			
Calibrated Accuracy	λ/100			
Height Resolution	λ/8000			
Spatial Resolution	1K x 1K	2048 x 1536	1280 x 1024	640 x 480
Digitization	8 bits	10 bits	10 bits	8 bits
Acquisition Time	300 ms	600 ms	300 ms	300 ms
Averaging Modes	Intensity and Phase			
<b>Laser Beam</b>				
Source	Helium-Neon 632.8 nm, < 1 mw	1053 nm <5mw	1064nm <5mw	1300nm <5mw
Polarization	Circular (Linear option)			
Coherence	>100 m			
<b>Electrical Power</b>	110/240 Volts, 50/60 Hz, <25 Watts			
<b>Mechanical</b>				
Dimensions	338 mm x 190 mm x 254 mm 13.5" x 7.5" x 10"			
Weight	14 kg (31 lb)			
<b>Environmental Requirements<sup>4</sup></b>				
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			
<b>Computer</b>	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.				

## Intellium™ Z100u Interferometer



### Configurations

- Vertical and horizontal, operates in ANY orientation
- Static or Phase-Shifting
- Short and long radius of curvature options

### Accessories

- Full set of reference optics (see lower left)
- 102 mm (4") to 33 mm (1.3") beam reducer
- 102 mm (4") to 150 mm (6"), 200mm (6") and 300mm (12") beam expanders
- Desktop isolation table – 457mm L x 508mm W x 117mm H
- Isolation table - 2400mm L x 1200mm W x 300mm T x 700 mm legs
- Compatible with all 4" industry standard reference optics

### Computer Workstations

- High performance computer with **IntelliWave™** software pre-installed
- All hardware interfaces pre-installed for complete **Intellium™ Z100u** interferometer data acquisition

### IntelliWave™ Software

- Multiple fringe unwrapping algorithms
- Multiple aberration polynomial sets for analysis
- 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
- Interface: MATLAB™, IDL™, LabVIEW™, Excel™
- IntelliPhase™** – static spatial carrier analysis

Reference Optics						
F/#	TS					TF
	0.75	1.5	3.3	7	11	
Diameter (mm)	130					126
Height (mm)	93	88	70	92.5	97	30
Weight (kg)	3	2.9	2.1	2	2	0.7
Radius of TS	47	120	299	665	1050	-
Accuracy	≤ λ/10					≤ λ/20



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