

Intellium™ Asphere

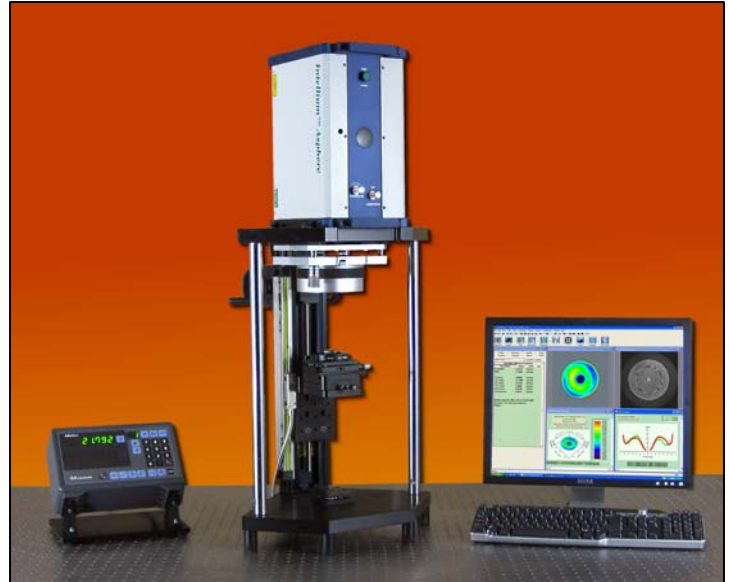
NULLING FIZEAU INTERFEROMETER FOR MEASURING ASPHERIC SURFACES

Now with CGR Technology – The New STANDARD in Aspheric Measurements

The **Intellium™ Asphere** is the newest member of ESDI's technologically advanced Fizeau interferometer family. The **Asphere** is a high-speed, noncontact "nulling" interferometer system fully capable of measuring, aspheric, spherical & flat surfaces.

Features & Benefits

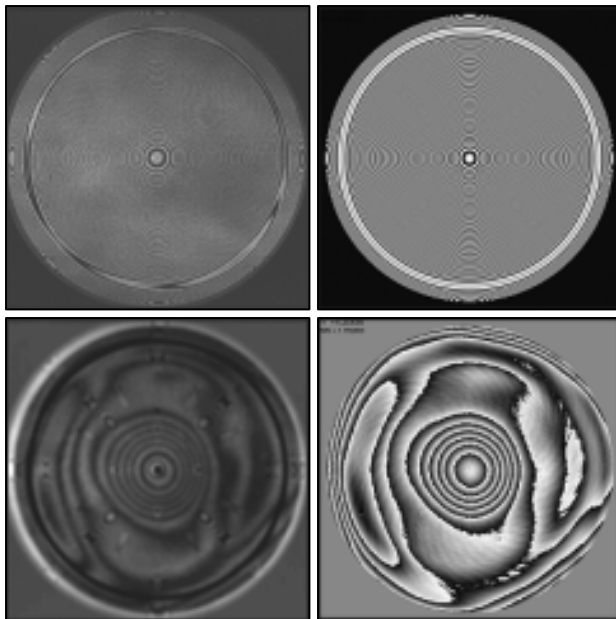
- Data acquisition, processing and retrace compensation in seconds, **NOT** minutes
- No special tools or long scanning process required for aspheric surface measurement
- Uncompromised accuracy in a compact and robust package
- Superior cost – performance benefit
- Operates on the world-renowned **IntelliWave™ 6.5** software platform



The **Intellium™ Asphere** Fizeau interferometer provides fast, high-resolution, noncontact characterization of not only aspheric surfaces but also spherical and flat surfaces. Ideal for production and process control applications, the **Asphere** operates on ESDI's world-renowned **IntelliWave™ 6.5** software platform. The **Intellium™ Asphere** coupled with **IntelliWave™ 6.5** provides ease of use, high efficiency, and the flexibility to handle multiple surface metrology applications at a significantly reduced cost.

ESDI's **Intellium™ Asphere** incorporates an interferometric analysis technique called Sub-Nyquist Interferometry (SNI). SNI overcomes the limitations of measuring large wavefront slopes. SNI is used in conjunction with PSI and therefore, the precision inherent to PSI is maintained. Capable of analyzing four fringes per camera pixel, ESDI's SNI technology allows for a significant increase in the range of slope measurements, or amount of aspheric departure, that can be measured by the interferometer. This is all accomplished with no increase in the amount of required data and no need for special hardware such as null lenses or CGHs.

The result is a highly compact and robust interferometer system that accurately measures aspheric surfaces in seconds – **NOT** minutes.



Intellium™ Asphere Surface Measurement
Measured Fringes (upper left), CGR (upper right),
Moire Fringes (lower left), Wrapped Phase (lower right).

All specifications are subject to change without notice.

Surface & Wavefront Metrology Beyond Compare

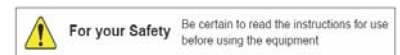
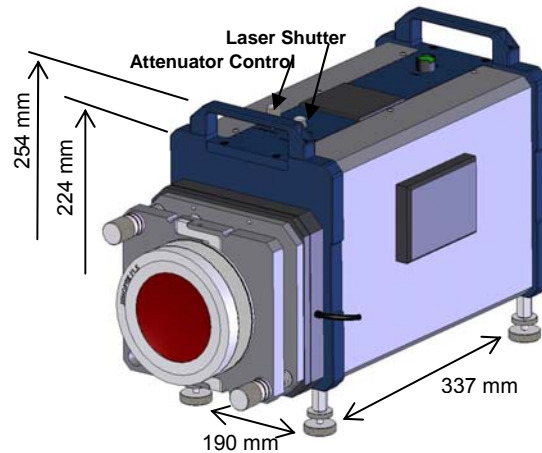
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Intellium™ Asphere Specifications

Technology	Phase-Shifting Fizeau with Sub-Nyquist Sampling & CGR Technology
System	
Output Aperture	100mm (4.0")
Zoom	N/A
Focus	N/A
Intensity	Rotary dial
Alignment	Simple two spot alignment
Alignment View	± 1.5 degrees
Viewing	Live video on computer screen
Performance¹	
Accuracy	< $\lambda/10$ (fringe density dependent)
Maximum Slope	169mrad; relative to best fit sphere and as seen at the detector plane of the interferometer
RMS Repeatability ²	$\lambda/500$
Height Resolution	$\lambda/8000$
Spatial Resolution	512 x 512
Fringe Resolution	2,000 fringes tilt across the 100mm aperture
Digitization	8 bits
Acquisition Time	300 ms
Averaging Modes	Intensity and Phase
Laser	
Source	< 5mW 642nm Diode
Polarization	Circular
Coherence	>100 m
Electrical	
Power	110/240 Volts, 50/60 Hz, 50 Watts
Mechanical	
Dimensions	338 mm x 190 mm x 254 mm 13.5" x 7.5" x 10"
Weight	14 kg (39 lb)
Environmental Requirements³	
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
<p>1) Vibration free environment with temp. change < 1°C /15 min. between 20-23°C, no thermals 2) 3 sigma of the rms for 128 data sets, each an average of 32 measurements 3) These parameters state conditions which the system can operate; they do not represent the environmental stability required to meet performance.</p>	

Intellium™ Asphere Interferometer



Configurations

- Vertical down-looking or Horizontal
- Phase-Shifting

Accessories

- Full Set of Transmission Spheres
- Attenuators
- Custom Mounts & Stages

Computer Workstations

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

IntelliWave™ 6.5 Software

- Asphere Wizard with CGR
- 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, Corner Cube
- Interface: MATLAB™, IDL™, LabVIEW™, Excel™
- **IntelliPhase™** – static spatial carrier analysis

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