MarSurf FI 2100 AS

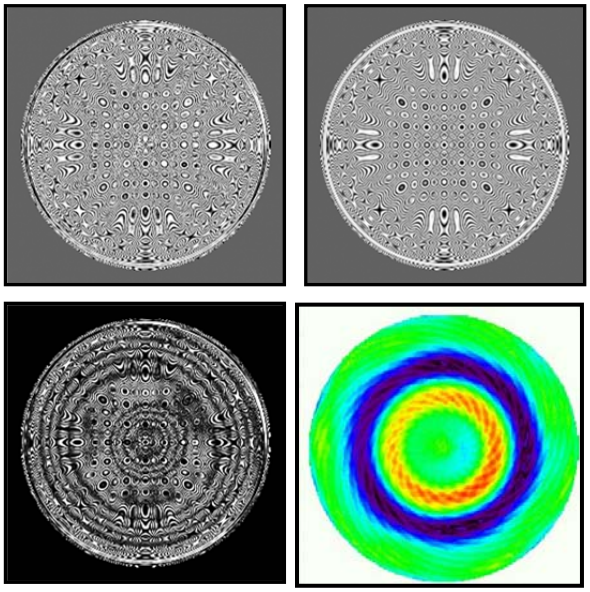
ASPHERIC FIZEAU INTERFEROMETER

Nulling Fizeau Interferometer with CGR Technology for Measuring Aspheric Surfaces

The **MarSurf FI 2100 AS** is the most technologically advanced member of ESDI's Fizeau interferometer family. The **MarSurf FI 2100 AS** is a high-speed, noncontact "nulling" Fizeau interferometer system capable of measuring aspheric, spherical & flat surfaces. With a fully automated workstation and the capability to measure **toric**, **biconic**, and **other axial asymmetric aspheric surfaces**, the **MarSurf FI 2100 AS** is the new standard in aspheric metrology.

Features & Benefits

- Can measure Aspheres, Torics, Biconics, Off-Axis Paraboloids, Freeforms, and other surfaces without rotational symmetry
- No Null lenses, CGHs, axial scanning, or stitching required
- Options for Fully or Semi-Automated Workstations
- ≥ 1.5mm of departure
- Highly flexible with a superior cost – performance benefit



MarSurf FI AS Surface Measurement
Measured Fringes (upper left) | CGR (upper right)
Moiré Fringes (lower left) | OPD (aberrations subtracted -lower right)

The **MarSurf FI 2100 AS** 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 **FIS** operates on ESDI's world-renowned **IntelliWave™ 6.7** software platform. The **MarSurf FI 2100 AS** with **IntelliWave™ 6.7** provides ease of use, high efficiency, and the flexibility to handle multiple surface metrology applications at a significantly reduced cost.

The **MarSurf FI 2100 AS** incorporates an interferometric analysis technique called Sub-Nyquist Sampling (SNS). SNS overcomes the limitations of measuring large wavefront slopes. SNS is used in conjunction with traditional phase-shifting (PSI) and therefore the precision inherent to PSI is maintained. Capable of analyzing ≥ five fringes per camera pixel, the 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.

Engineering Synthesis Design, Inc.

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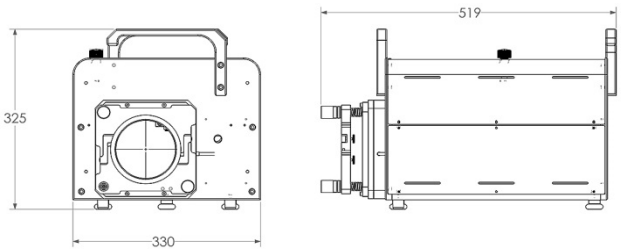
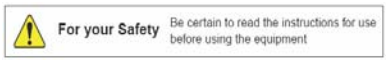
Specifications

SYSTEM	
Output Aperture	100mm (4.0”)
Zoom	N/A
Focus	Fixed
Intensity	Software controlled
Alignment	Simple two spot alignment
Alignment View	± 1.5 degrees
Viewing	Live video on computer screen
PERFORMANCE[1]	
RMS Repeatability[2]	λ/500
Height Resolution	λ/8000
Spatial Resolution	1k x 1k
Fringe Resolution	~2,500 fringes of tilt across the 100mm aperture
Digitization	12 bits
Acquisition Time	300 ms
Averaging Modes	Intensity and Phase
LASER	
Wavelength	633nm
Polarization	Circular
Coherence Length	≥100m
ELECTRICAL & MECHANICAL	
Power	110/240 Volts, 50/60 Hz, 25 Watts
Dimensions	519 x 330 x 325 mm (20.4″ x 13″ x 12.8″)
Weight	26 kg (58 lb)
ENVIRONMENTAL REQUIREMENTS[3]	
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

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.





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 **MarSurf FI 2100 AS** interferometer data acquisition

IntelliWave™ 6.7 Software
- Asphere Wizard with Proprietary **CGR™** Technology
- 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: IDL™, LabVIEW™, Excel™

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