

FizCam™ DUV

4D Technology

Dynamic Laser Interferometer

Quality Assurance at 193nm

The FizCam DUV interferometer provides highly accurate measurement of optical grade surfaces at deep ultra-violet wavelengths, even in the presence of vibration and air turbulence.

The FizCam DUV incorporates a single camera, high-speed optical phase sensor that makes a wavefront measurement in less than 5 milliseconds. Because acquisition time is so short, the FizCam DUV can measure accurately in environments with vibration and air flow, as is typical of DUV compliant clean rooms.

Complete Measurement System

The FizCam DUV system includes the interferometer, beam line containment and alignment system, 4Sight™ advanced wavefront analysis software, and complete high-speed computer system. The FizCam DUV interferometer offers 2X discrete motorized optical zoom, and remote control of focus, zoom, polarization, input beam alignment, transmission flat tip/tilt and optional return flat tip/tilt.

DUV Compliant

The FizCam DUV is designed to comply with semiconductor industry specifications for DUV optics manufacturing. The laser beam path is entirely contained in a purged nitrogen environment, with “dirty” components such as the camera isolated from the beam line.

Industry Leading Analysis, Standard

4Sight wavefront analysis software features a user-friendly interface with unmatched simplicity, analysis features and graphical displays. The Measurement Console display aids alignment and execution of single, averaged, burst or continuous data acquisition. The Measurement Flow interface lets you visualize the entire measurement data flow, from raw acquisition through masking, reference subtraction, terms removal, etc. The unique Measurement Stack enables complex data manipulation and comparison. Zernike, Seidel, geometric and diffraction analyses are easy to perform. Comprehensive data sharing capabilities let you read, write, save and print from most file types, including MetroPro IDL®, MatLab®, Opticode®, Vision®, HDF5 and CodeV®. Generating phase movies to characterize deforming surfaces and moving parts is simple and straightforward.



FizCam DUV

FEATURES

- Vibration Insensitive Dynamic Operation
- Motorized Remote Operation Hand Controller
- 2X Discrete Optical Zoom
- Purged Beam Path
- 1000 x 1000 Pixel Camera

APPLICATIONS

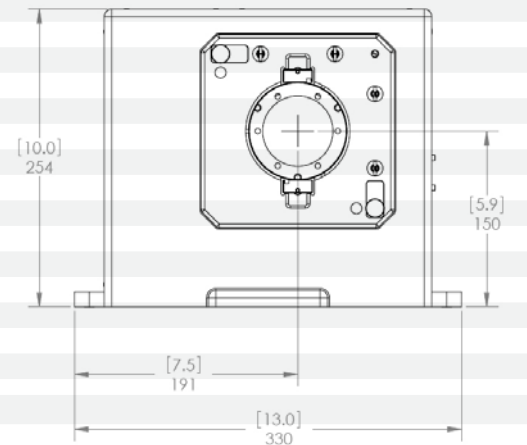
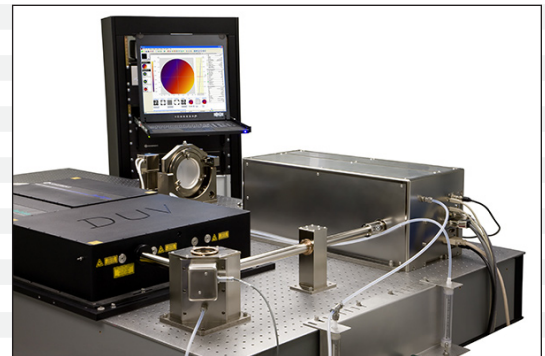
- Deep Ultra-Violet Optics and Optical Systems for Lithography

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Specifications

Configuration	Model DUV
Description	Vibration insensitive dynamic Fizeau interferometer system
Acquisition Mode	Instantaneous Phase Shifting with single frame phase sensor, or Temporal PSI
Laser Source	193 nm Coherent Indigo (customer supplied)
Output Beam	50 mm collimated
Reference Optics	Bayonet mounted, 15.0 cm (5.9 in) optical axis height
Optical System	Fizeau with coherent imaging and purged beam path
Zoom	1X or 2X motorized discrete zoom
Pupil Focus Range	Motorized; 50–2000 mm at 1X zoom; 50–1200 mm at 2X zoom
Alignment	Twin spot
Camera	1K x 1K pixels standard, 12-bit
Remote Controls	Focus, zoom, polarization (linear or circular), input beam alignment, transmission flat tip/tilt, optional return flat tip/tilt
Exposure	< 5 ms
Computer System	Minimum Dual Core 2 GHz processor 1 GB RAM, 160 GB hard drive, CDRW and DVDRW Rack-mounted LCD monitor, keyboard and mouse
Operating System	Windows XP®
Software	4Sight™ Wavefront Analysis Software Instantaneous Phase Shifting or Temporal PSI data acquisition Reference generation, subtraction, data averaging, masking 2D and 3D surface maps Zernike / Seidel / Slope / Geometric / Fourier Analysis Fiducial aided data set mapping HDF4 / HDF5 data format standard, others supported Upgrades free during warranty period
Interferometer Construction	Stainless/electroless nickel plating for DUV compliance
Isolation	Air isolation table required, 122 x 244 cm (48 x 96 in), 1 inch hole spacing
Dimensions (Interferometer)	53.3 x 22.9 x 27.9 cm (21 x 9 x 11 in)
Footprint	Air isolation table with components: 122 x 244 cm (48 x 96 in) Electronics rack: 50.8 x 91.4 cm (20 x 36 in)
Weight	31.8 kg (70 lbs)
Power Consumption	< 750 Watts
Gas System	Customer-supplied nitrogen for beam line purge
Temperature Range	Operational: 60–80° F, non-condensing Storage: 30–100° F, non-condensing



Options

Lexan Enclosure, 61.0 x 152.4 x 91.4 cm (24 x 60 x 36 in)
Return flat tip/tilt mount with motorized remote control

Warranty

One Year, limited, on-site system installation and operator training

System Performance

Acquisition Rate	> 12 frames/sec display > 12 frames/sec burst acquisition
Sample Reflectivity	1 to 40%
RMS Repeatability	< 0.001 waves*
Uncalibrated Accuracy	< $\lambda/4$ dynamic mode; $\lambda/10$ temporal mode

* One sigma for RMS of 10 data sets of calibration mirror, each data set being an average of 16 measurements.
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All specifications subject to change without notice.

