PhaseCam® MWIR

Dynamic Infrared Twyman-Green Interferometers

Flexible and Robust Measurements

The PhaseCam® MWIR is a temporal laser interferometer, with dynamic interferometry option, designed to operate at the 3.39 μm wavelength. With fully motorized control of internal functions and port selection, the dual MWIR measurement path is uniquely suited to maintaining two test set-ups. Use both in parallel, and significantly reduce set-up and alignment time for a specific test.

Dual Port Functionality

Configure the main MWIR port as a focal test station with a diverging beam for Transmitted Wavefront Error (TWE) measurements of IR components, assemblies or telescope systems. Configure the auxiliary port with an OAP beam expander as an afocal test station for homogeneity measurement of IR materials and TWE measurement of IR components, beam relays or infinite conjugate telescope tests. Perform either measurement type without disturbing the other!

Instantaneous Acquisition

The dual-mode PhaseCam operates in standard temporal mode, or in vibration-insensitive mode, utilizing Dynamic Interferometry®. The PhaseCam MWIR incorporates spatial phase shifting technology that makes a wavefront measurement in less than 1 millisecond—hundreds of times faster than a solely temporal phase shifting interferometer. Because dynamic acquisition time is so short, the PhaseCam can be used under almost any conditions without vibration isolation control. This insensitivity to environmental factors makes the PhaseCam ideally suited for use on the production floor or in clean rooms.

Complete Measurement System

The PhaseCam MWIR is a turnkey instrument that includes the interferometer, 4Sight™ advanced wavefront analysis software, and a high-speed computer system. Samples with any reflectivity from 10% to 100% can be measured without the use of an external attenuator.

Industry Leading Analysis, Standard

4Sight wavefront analysis software features a user-friendly interface with unmatched simplicity, analysis features and graphical displays. The Measurement Screen 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 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.

Accessory Optics

Diverging optics and collimated beam expanders enable quick and easy configuration of test set-ups.

FEATURES

- 3.39 μm wavelength
- Dual measurement ports: two apertures in one
- Vibration insensitive dynamic operation
- < 1 millisecond dynamic mode data acquisition time
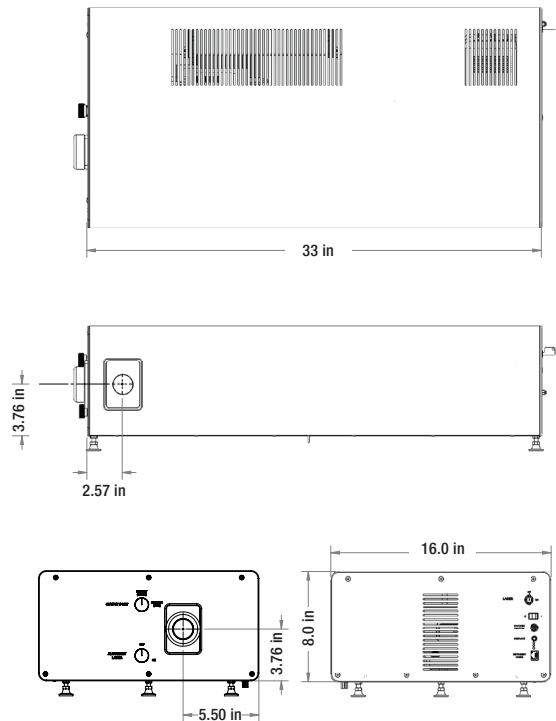- Outstanding data analysis and visualization software

APPLICATIONS

- Homogeneity measurement of IR materials
- Measure focal and afocal TWE in parallel
- TWE measurement of IR components, optical assemblies and telescopes

PhaseCam MWIR showing dual measurement port

PhaseCam® MWIR

Specifications

Configuration	PhaseCam MWIR
Description	Turnkey Twyman-Green interferometer
Acquisition Mode	Dynamic or temporal phase shifting
Alignment Mode	Visible alignment laser
Wavelength	3.39 µm
Maximum Output	Test laser: <4 mW at 3.39 µm
	Alignment laser: <5 mW at 532 nm
Maximum Cavity Length	>60 m periodic coherence
Beam Diameter	14.0 mm collimated
Axis Height	95.5 mm (3.76") from bottom of interferometer
Polarization	Linear
Pupil Focus Range	±20 mm
Camera	640 x 512 pixels; 512 x 512 array FOV
Data Array	User-selectable full, half, quarter data arrays
Motorized Controls	Focus, reference beam block; main beam block
Manual Controls	Visible alignment laser; measurement port selection
Computer System	High performance PC
Operating System	Windows® 10 or higher
System Software	4Sight™ Analysis Software
	Instantaneous Phase Shifting 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
	Absolute sphere, prism & corner cube analysis
	Multiple sub-aperture analysis
	Upgrades – free during warranty period
Physical Envelope	< 85 x 41 x 20 cm (33 x 16 x 8 in)
Weight	< 45 kg (100 lbs)
Power consumption	< 750 Watts
Temperature Range	Operational: 16–27° C (60–80° F), non-condensing
	Storage: -1–38° C (30–100° F), non-condensing

Options	
Beam Expanders	Range of expanders available on request
Diverging Lenses	Range of lenses available on request

System Performance	
Maximum Acquisition Rate	> 25 frames/sec max data acquisition with post processing*
Minimum Exposure	500 µsec
Sample Reflectivity	10 to 100%
RMS Repeatability	< 0.0005 wave**
RMS Precision	< 0.001 wave***
Warranty	One year, limited, on-site system installation and operator training

33 in

3.76 in

2.57 in

16.0 in

3.76 in

8.0 in

5.50 in

* **In dynamic spatial carrier mode.**

** **One sigma for RMS of 10 data sets of calibration mirror, each data set being an average of 16 measurements.**

*****Average RMS of the pixel by pixel difference of 10 data sets between measured surface and the calibrated surface. Each data set is an average of 16 measurements. Calibrated surface is the average of all 160 measurements.**

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VISIBLE AND/OR INVISIBLE LASER RADIATION.
AVOID EXPOSURE TO BEAM.
CLASS 3B LASER PRODUCT
<4mW at 3390nm, <5mW at 532nm

CE