

PhaseCam®

Model 5030

4D Technology

High Performance Dynamic Twyman Green Interferometer

Instantaneous Acquisition

The PhaseCam® 5030 is a compact, lightweight dynamic laser interferometer with fully motorized controls for measurement of optics and optical systems. The industry standard for measuring large, focal optical systems such as concave telescope mirrors and lens systems, the PhaseCam is equally well suited for testing small aperture afocal components such as flat mirrors and collimators.

The PhaseCam 5030 incorporates patented technology using a single camera, high-speed optical phase sensor that makes a wavefront measurement in less than 30 microseconds—over 5000 times faster than a temporal phase shifting interferometer. Because acquisition time is so short, the PhaseCam can be used under almost any conditions, even for measuring moving parts, without vibration isolation or turbulence control. This insensitivity to environmental factors makes the PhaseCam ideally suited for use on the production floor, in clean rooms and in environmental test chambers. It can even measure moving parts such as deformable or scanning mirrors, spinning disks, or vibrating membranes.

Compact and lightweight, the PhaseCam 5030 was designed with performance and remote measurement in mind. Moving the system to reconfigure a test set is simple and easy, and isolation equipment is not required. Fully motorized controls make it easy to operate the system in remote locations.

Complete Measurement System

The PhaseCam 5030 is a turnkey instrument that includes the interferometer, 4Sight™ advanced wavefront analysis software, and complete computer system. Samples with reflectivity from 1% to 100% can be measured with a simple adjustment. The

custom-designed, high resolution, 4x optical zoom makes it easy to match the diverger and test part to achieve full aperture fit. The PhaseCam 5030 is easy to use and eliminates tedious re-testing due to inaccurate data acquisition.

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. 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.

Accessory Optics

Numerous accessories and options are available including diverger lenses, beam expanders and wavelength options.

FEATURES

- Vibration Insensitive Dynamic Operation
- 30 µsec Data Acquisition Time
- Fully Motorized Controls for Remote Operation
- Optical and Digital Zoom
- Outstanding Data Analysis and Visualization Software

APPLICATIONS

- Meter-Class Telescope Optics
- Quality Verification of Optical Components
- Vacuum and Environmental Chamber Testing
- Production Floor Quality Control
- Optical Testing of Moving Parts



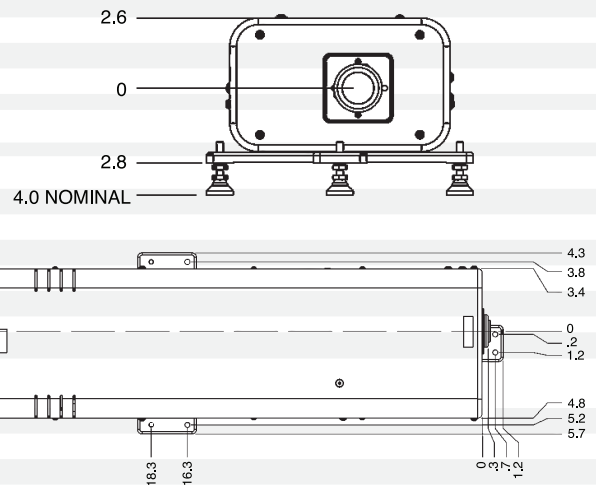
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Specifications

Configuration	Model 5030
Description	Turnkey vibration insensitive dynamic Twyman-Green interferometer
Acquisition Mode	Instantaneous Phase Shifting with pixelated phase sensor
Laser Source	Stabilized HeNe @ 632.8 nm
Maximum Cavity Length	>100 m
Beam Diameter	8.5 mm collimated (9.25 mm with 4 MegaPixel camera option)*
Polarization	Circular
Pupil Focus Range	±12.5 mm
Pupil Magnification	3X optical zoom, 4X digital zoom
Fringe Contrast	User adjustable attenuator not required for high reflectance optics
Camera	1K X 1K pixels, 10-bit standard
Data Array	User Selectable Full, Half, Quarter data arrays
Motorized Controls	Zoom, focus, reference beam block, aperture block, contrast adjustment
Computer System	Minimum Dual Core 2.4 GHz processor 4 GB RAM, 320 GB hard drive CDRW, DVDRW, 22 in LCD monitor, keyboard, mouse
Operating System	Windows XP [®]
System Software	4Sight™ Analysis Software, with User Manual 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	< 75 x 25 x 17 cm (30 x 10 x 6.6 in)
Weight	< 15 kg (33.1 lbs)
Power consumption	< 750 Watts
Temperature Range	Operational: 60–80° F, non-condensing Storage: 30–100° F, non-condensing
Warranty	One Year, limited, on-site system installation and operator training
Options	
4 MegaPixel Camera	2048 x 2048 pixels, 12-bit, 2X zoom
Beam Expanders	Optional 25 mm, 45 mm (others on request)
Divergers	Range of lenses from f/1 to f/32
Special Analysis	Modal (Vibration) Analysis
Extended Cables	10 m, 30 m lengths
System Performance	
Acquisition Rate	> 10 frames/sec display; 4 interferograms/frame (camera dependent) > 25 frames/sec max data acquisition with post processing
Minimum Exposure	30 µsec
Sample Reflectivity	1 to 100%
RMS Repeatability	< 0.001 wave**
RMS Precision	< 0.002 wave***



*7mm when used with diverging lens.

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

***Average RMS of the difference of 10 data sets between measured surface and the calibrated surface. Each data set being an average of 16 measurements.

All specifications subject to change without notice.

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