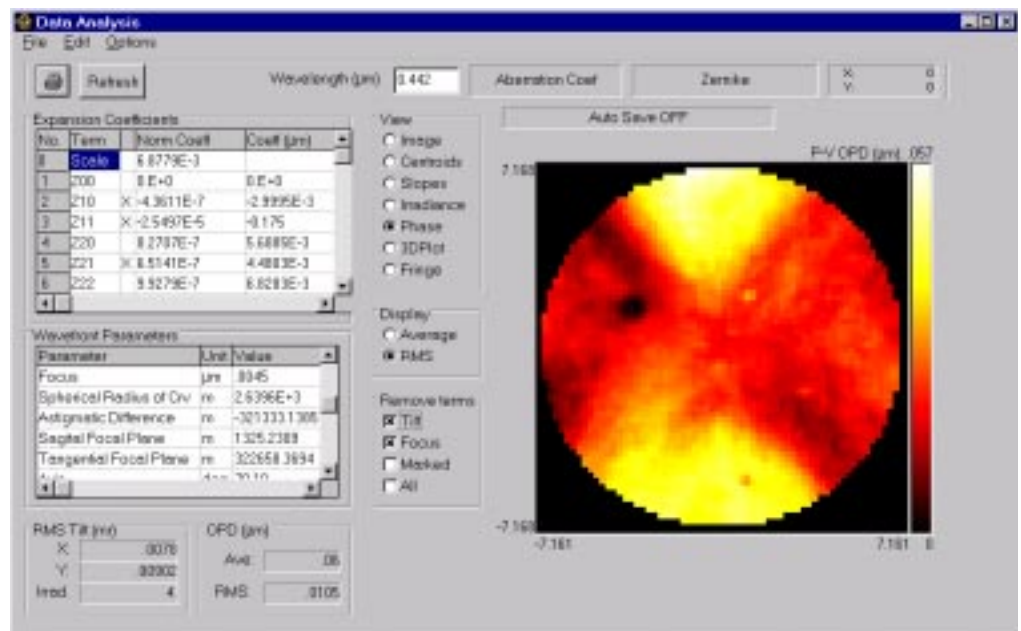
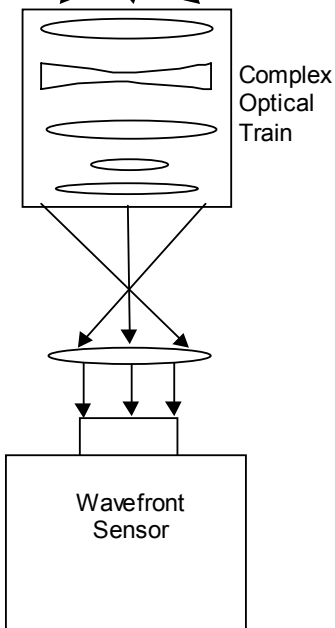


12 Bit digital performance is now available with the CLAS™-HP High Performance wavefront sensor, featuring a large 14 mm square aperture, 12 bit data resolution, 15 frames per second acquisition and full computer control of all camera functions. The development of new proprietary image processing algorithms allows even greater accuracy in surface metrology and optical characterization measurements.

Complex optical systems may be aligned and characterized when the CLAS™-HP is combined with WaveFront Sciences' CLAS™-2D analysis software. Testing and alignment of photolithography machines, microscope components, multi-element lens assemblies and optimization of light coupling into optical fibers is now possible with a single instrument.

Many types of analysis are available in the CLAS™-2D software. These include representation of the wavefront as an X-Y or Zernike polynomial.

The Zernike representation allows quantification of standard aberrations such as tip, tilt, focus, spherical aberration, coma, astigmatic difference and others. In addition the data can be manipulated by the program to show residual wavefront when these terms are



High Performance Sensor Options

Input Aperture	mm	14.34 x 14.34	14.34 x 14.34	14.34 x 14.34	14.34 x 14.34	14.34 x 14.34	14.34 x 14.34
Spatial Resolution		42x42	51x51	64x64	85x85	102 x 102	128 x 128
Lenslet Diameter	mm	0.336	0.280	0.224	0.168	0.140	0.112
Focal length	mm	53.4	28.17	19.38	10.90	7.57	4.84
Dynamic Range							
Angular (P-V)	m ρ	2.18	3.81	4.37	5.77	6.92	8.66
Total Wavefront (P-V)	μ m	\pm 31.2	\pm 54.61	\pm 62.65	\pm 82.72	\pm 99.27	\pm 124.08
Total Waves at 1064 nm	λ	\pm 29.3	\pm 51.3	\pm 58.8	\pm 77.7	\pm 93.3	\pm 116.6
Total Waves at 325 nm	λ	\pm 96	\pm 168	\pm 156.6	\pm 206.8	\pm 248.1	\pm 310
Sensitivity (noise floor)							
Tilt Noise Floor (rms)	μ r	0.32	1.51	3.02	9.35	19.4	47.3
Zernike reconstructor noise floor	μ m (rms)	0.001	0.003	0.005	0.015	0.027	0.060
In waves @ 1064nm	λ	0.001	0.003	0.005	0.014	0.025	0.056
1/ λ		1000	333.3	200	71.4	40	17.8
In waves @ 325nm	λ	0.002	0.009	0.014	0.036	0.069	0.150
1/ λ		470	108	74	28	15	7

Sensor Operating Wavelength

Two wavelength options exist for the High Performance Wavefront sensor:

- Option 1: 300 nm — 1100 nm
- Option 2: 450nm — 1100 nm

Integration Speed

Software is provided to control the sensor integration time. Allowable settings for this integration time are 1/125s, 1/250s, 1/500s, 1/1000s.

Physical Dimensions

Overall Length (excluding connectors): 14.75 cm
 Height: 9.4 cm
 Width: 9.4 cm
 Weight: 50 oz.

Power Consumption:

Sensor only: 30 watts
 Specifications subject to change without notice.

U.S. Patent 5,936,720, Other patents pending

selectively removed. There are also aberration modeling functions that allow the user to simulate the effects of various aberrations. Other important optical characterization features include the ability to compute Point Spread Function and MTF for an optical system under test.

Characterization of lasers and other light sources

The CLAS™-HP can measure a large variety of light sources. These include CW and Pulsed lasers, Super-luminescent diodes, and even incandescent white light sources. A

synchronous trigger allows measurement of pulsed light sources and other time critical events including femto-second pulsed lasers.

The CLAS™-2D software computes a number of important quality measures for these light sources including M^2 , Strehl Ratio, Spot Radius, Power and Divergence. In addition the program performs far-field propagation to show beam characteristics downstream.