

FEATURES & BENEFITS

- Non-contact
- Resolution to 1.5 picometers
- 6 mm output range
- Dynamic measurement to 20KHz
- Variable probe stand-off distance
- Block mounted piezo actuated probe
- Digital and analog data output
- Real-time monitoring and control
- Proven effective with aluminum, glass and ceramic materials
- User-friendly PhaseView™ software for set-up, control, monitoring and data collection

The **OPTIPHASE® ODS-4500** Optical Displacement System is a non-destructive ultra-high performance optical measurement instrument designed to accurately deliver the most miniscule [sub-nano scale] displacement variations available on the market today. It is a powerful metrology tool used to measure surface characteristics in highly demanding applications.

Precision and Speed

Designed for researchers and developers, the ODS-4500 uses Optiphase's unique and patented ultra-high performance all-fiber phase shifting interferometric technology. This technology provides highly precise non-contact surface measurements of sub-nanometer to millimeter scale.

Easy-to Use

The fiber optic displacement sensor is a robust measuring device and easy-to-use. The probe cable length can be any distance for remote deployment. Moving the probe further from the sample does not affect measurement accuracy.

Fully compatible probe

The **OPTIPHASE® DS-500** Displacement Probe consists of a fiber ferrule probe head that is inserted into a PZT cylinder. The PZT cylinder is embedded into a brass mounting block whose mass stabilizes the assembly. Light is directed to the probe head and the reflected signals are processed by the receiver. The resulting measured optical phase shift is presented as digital and analog output.

System software

With PhaseView™ software you have real-time interactive control of the ODS-4500. The digital data stream allows you to continuously monitor and adjust your settings and results. Data destination selection keeps your records organized and easily accessible in your designated file formats. Built-in diagnostics assures you of continued data and performance integrity.

In addition to the ODS-4500 instrument, Optiphase's high performance technology is also available for OEM integration.

DS-500 Displacement Probe



ODS-4500



PhaseView™ Main Screen



APPLICATIONS

INDUSTRIES	USES	ITEMS
• Metrology	• Position control systems	• Optical disks
• Semiconductor	• AFM calibration	• Lenses, Prisms
• Optics	• Stage calibration	• Hard disks
• Hard Disk Drive	• Surface roughness	• Precision machined surfaces
	• Surface waviness	• Aluminum surfaces
	• Runout	• Ceramic surfaces
	• Profilometry	• Glass surfaces
	• Flatness	

SPECIFICATIONS

SYSTEM MEASUREMENT CHARACTERISTICS

Output Resolution	1.5 picometers per LSB [least significant bit]
Measurement Range	6.25 mm
Maximum Signal Frequency	20 KHz [Nyquist]
Slew Rate	31 mm / second
Self Noise	Two pM / \sqrt{Hz}
Latency	75 μ seconds
Internal Calculation	64 bits
Interferometer	All fiber

OPTICAL

Wavelength	1550 nm
Min/Max Optical Power	0.5 / 50 μ W
Programmable Gain Range [for ADC fill]	34 db
Optical Connector	FC/APC
Effective Spot Size	< 10 μ m

MODULATED PROBE INTERFACE

Modulation Frequency	40 KHz
Connector	Front panel BNC / Probe SMA
Voltage	\pm 75 V

OUTPUT

Digital Output	
Output Rate	40 KHz
Data Averaging	1 to 65535
High Pass Filter	0.2 to 12738 Hz or DC
Word Size	32 bits
Interface	USB 2.0
Analog Output	
Output Rate	40 KHz
Data Averaging	1 to 65535
High Pass Filter	0.1Hz – 3KHz or DC
Full Scale Output	\pm 6.28 V behind 50 Ω
Resolution	12 μ V per LSB
Scaling	0.75 μ M to 3.0 mm
Interface	BNC

PROBE [DS-500]

Probe Cable Length	3 meters standard
Probe Sample Rate	40 KHz
Dimensions	See mechanical drawing
Weight	11 ounces

GENERAL [ODS-4500]

Power	120VAC
Dimensions	16.7" W x 20" D x 5.25" H [3U]
Weight	~ 20 pounds
Mounting Handles	Included

OPERATING ENVIRONMENT

Temperature	0° to 40° C
Humidity	0 to 95% non-condensing

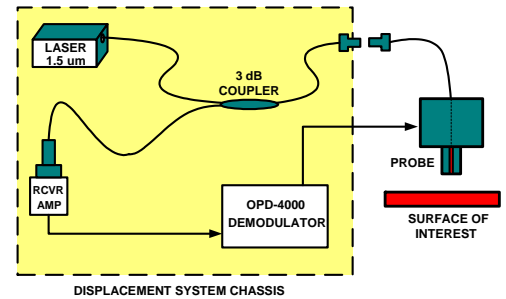
MODELS/OPTIONS

ODS-4500	Single probe system
DS-500	Various probe cable lengths [must be specified]
Multiple probe systems available	Contact Optiphase

PC HOST REQUIREMENTS

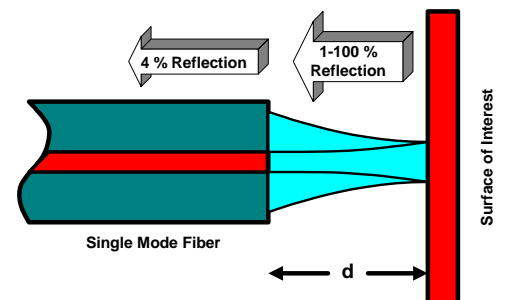
CPU	Pentium class
Memory [RAM]	128MB minimum; 256MB recommended
Operating System	Windows 2000/NT/XP
Interface	USB 2.0

System Design

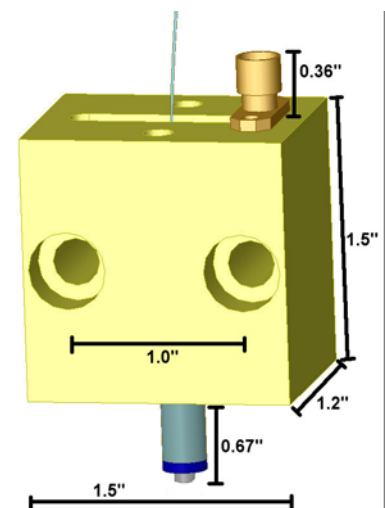


The ODS-4500 fiber optic displacement sensor is an easy-to-use and robust measuring device. The probe cable length can be any distance for remote deployment. Moving the probe further from the sample does not affect measurement accuracy. And with Optiphase's unique interferometric technology you are assured of the highest performance levels, ranging from sub-nanometer to millimeter level measurements.

Beam Spread



Probe Dimensions



Optiphase's dynamic all-fiber interferometric technology is also available for system integration into industry/application specific equipment.

Protected by U.S. Patent No. 5,903,350; 6,556,509

This instrument requires a PC to operate.

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