

Intellium™ PDI with HyperPhase™

POINT-DIFFRACTION INTERFEROMETER

Vibration-insensitive, Self-referencing Interferometer

Simultaneous phase-shifting capability in a Point-Diffraction Interferometer

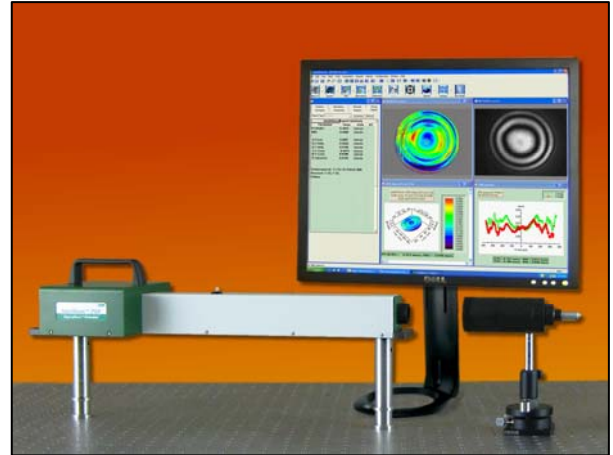
ESDI's *Intellium™ PDI* measures real-time wavefront data from external sources in vibration and turbulent atmospheric environments. The *Intellium™ PDI* with *HyperPhase™* is a state-of-the-art point-diffraction interferometer that provides real-time wavefront measurements using an internally generated spherical reference and ESDI's simultaneous phase-shifting technology.

Applications

- Wavefront and collimation testing of telescopes and periscopes
- Alignment and collimation of fiber optic systems
- Optical alignment of holographic storage & disk mastering systems
- OEM integration for real-time monitoring of laser collimation
- Atmospheric testing
- Adaptive Optic Measurements/Applications

Main Features & Benefits

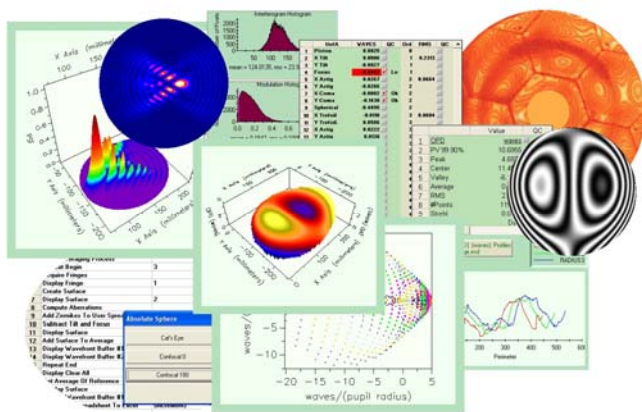
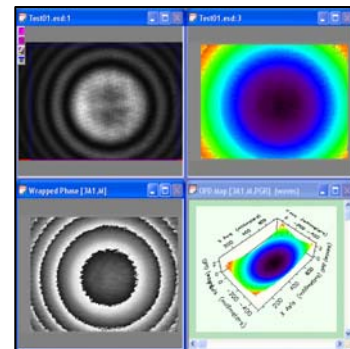
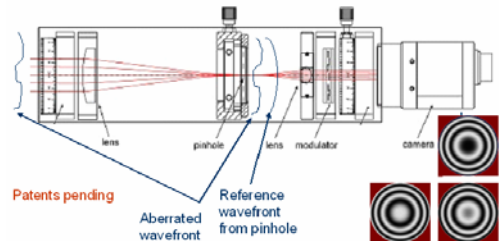
- Measure collimation to better than 100-200 micro radians (wavelength dependent)
- Wavelength selectable from 480nm to 1800nm
- Simple operation reduces alignment time to minutes
- *IntelliWave™* Software for complete wavefront diagnostics.
- Compact, Portable, Rugged Design



How to Use

The incoming wavefront is partially focused through the pinhole producing a spherical reference wavefront. The remainder of the test wavefront passes through the waveplate, which rotates the polarization 90° with respect to the reference wavefront.

Point Diffraction Interferometer



All specifications are subject to change without notice.

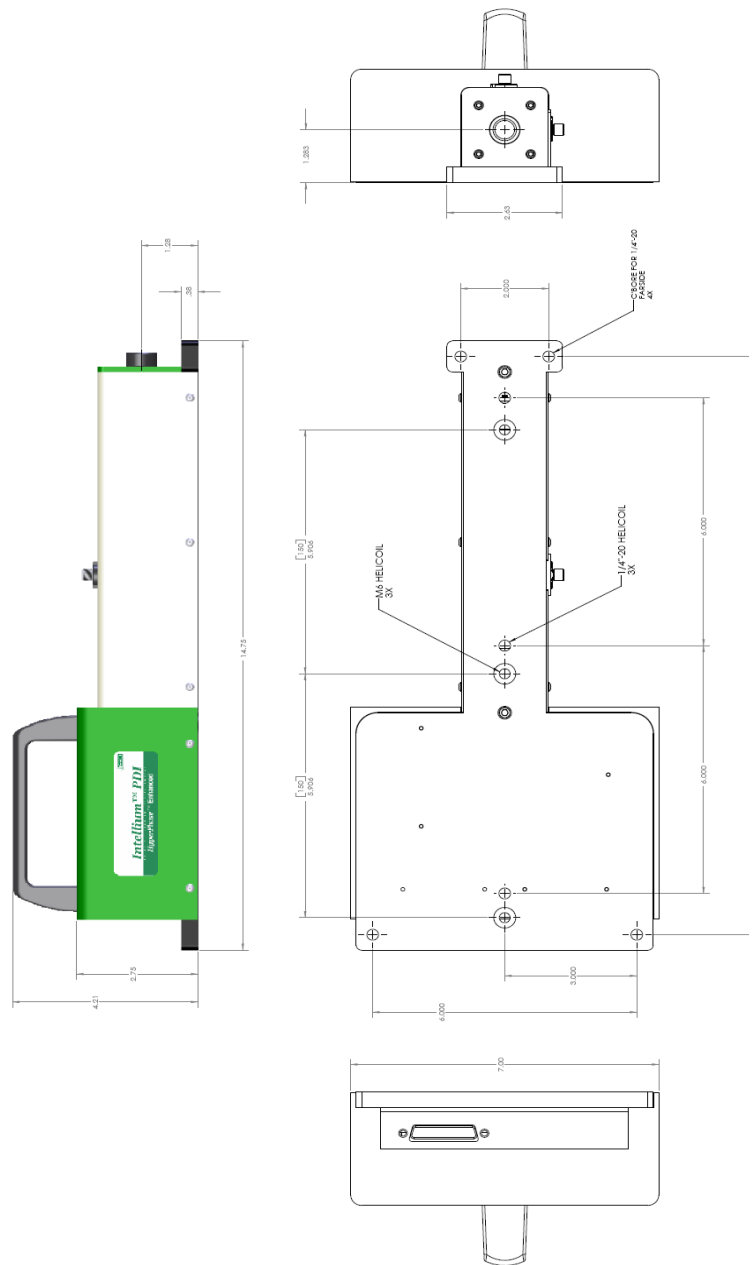
Surface & Wavefront Metrology Beyond Compare



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Intellium™ PDI Specifications

Technology	Patented simultaneous phase-shifting and PDI technology	
System		
Test Beam (*)	5mm to 25mm	
Alignment	Video	
Alignment View	± 0.7 degrees	
Part Viewing	Live video on computer screen	
Performance		
RMS Repeatability ¹	λ/1000	
Uncalibrated Accuracy	λ/20	
Height Sensitivity	λ/8000	
Spatial Resolution	1024 x 1024 Visible	768x576 NIR
Dynamic Range	5 fringes or 10 fringes	
Digitization	8 bits	
Acquisition Time	30 ms	
Exposure Time	Minimum 10μs (optical power dependant)	
Averaging Modes	Intensity and Phase	
Source Requirements		
Measurement Source	VIS 632.8nm	NIR 1064nm,
Source Polarization	Random, Circular, or Linear (except horizontal)	
Source Coherence	Spatially coherent	
Electrical		
Power	Powered from Computer	
Mechanical		
Dimensions	375mm L x 178 mm W x 70 mm T (14.75" L x 7.0" W x 2.75" T) or 536mm L x 172mm W x 107mm T (21.1" L x 6.75" W x 4.2" T)	
Weight	3.1 kg (7 lb) or 3.9 kg (8.5 lb)	
Environmental Req.		
Temperature	15 to 30°C (59 to 86°F)	
Rate of Temp. Change	<1.0°C per 15 min	
Humidity	Relative 5% to 95%, no condensing	
Vibration	NO Isolation Required	
Computer	Current Technology	
Measurements assume reasonable vibration suppression (isolation table, etc.)		
<p>¹ 1 sigma of the rms for 10 data sets, each an average of 16 measurements The instrument may need to be tailored to your specific wavefront requirements, such as wavelength, beam diameter, and beam divergence.</p>		



Configurations

- Vertical, horizontal, or any orientation

Computer Workstations

- State-of-the-art computer workstation with **IntelliWave™** software pre-installed

IntelliWave™ Software

- Interferogram unwrapping, polynomial fitting
- Diffraction and geometric analysis
- Measurements: Wavefront, Wedge, Angle, Prisms, 3-Flat Test, Two Sphere Test, Homogeneity
- Interface to MATLAB™, IDL™, LabVIEW™, Excel™

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