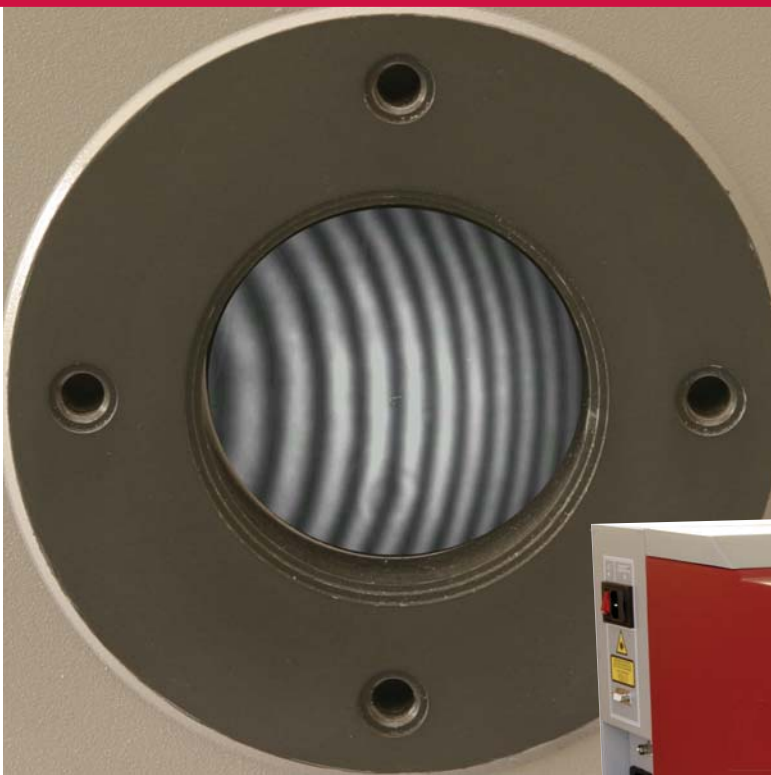


Infra-red interferometers

for performance testing of infra-red
materials and optical systems



**PRECISION-OPTICAL
ENGINEERING**

a business unit of

MBDA
MISSILE SYSTEMS

INTERFIRE MK II FAMILY OF INTERFEROMETERS

To meet the increasing demands for the accurate optical testing of infra-red (IR) materials and lens systems, Precision Optical Engineering has designed, developed and now manufacture the Interfire MK II family of IR Interferometers that cover the testing of systems in the **Mid** (3-5 micron) and **Far** (8-12 micron) **IR wavebands**. Additional interferometers can be supplied between 850nm and 1.55 microns



the Interfire II family, 10.6 shown above and the 3-5 below.



DESIGNED FOR THE USER

The two Interferometers have been designed to be rugged, easy-to-use instruments that can be used for production, quality control or research applications and are fully supported with a comprehensive range of optical and mechanical accessories and static and phase-measuring fringe analysis software options.

WIDE RANGE OF APPLICATION

As precision non-contact instruments, the Interfire MK II Interferometers provide rapid and accurate measurement of wavefront distortion through IR systems and components. Their operating wavelengths allow for the evaluation of high specification IR lens assemblies, producing interference fringes that indicate the degree of aberrated performance. Their associated fringe analysis software enables detailed performance analysis of even the most complex of lenses. Reflecting Precision Optical Engineering's position as a leading supplier in the provision of optical design services, optical testing, diamond machining and sub-assembly manufacturing, the Interfire MK II family have an established history of proven reliability, come with a comprehensive operating manual and are backed by a one year guarantee plus varying levels of technical field service and support.

INTERFIRE MARK II SYSTEMS

Both of the Interfire MK II Interferometer systems are configured in a Twyman Green optical configuration and have an integral co-linear visible HeNe laser included that provides the user with a rapid and accurate alignment system.

The Interfire 10.6 system has a stabilised CO₂ waveguide laser source operating at 10.6 microns whilst the Interfire 3-5 system uses a HeNe laser source operating at 3.39 microns; both systems are designed to provide versatile testing capabilities.

To meet testing requirements at other IR wavelengths both of the MK II interferometers can have their lasers replaced with lasers of an appropriate wavelength.



FRINGE ANALYSIS

Both Interfire MK II systems can be used with static or phase-shifting fringe analysis software packages. These packages run on a standard PC with a framegrabber board, enabling both simple routine tests and advanced system studies. The phase-shifting technique employed allows the highest degree of precision and enables full use of standard accessories.

Static Package provides:

- 1 Pass/fail criteria; irregularity, power, PV, rms.
- 2 Low cost analysis of open or closed fringes.
- 3 Full wavefront analysis including MTF, PSF, slope error.
- 4 Zernike analysis up to 49 terms.
- 5 Reference subtract.

Phase-shift Package provides:

- 1 Software operates within Windows™.
- 2 Capability to evaluate both components and systems.
- 3 Full analysis of circular, multiple, low-contrast and null fringes.
- 4 Macro programming facility allows repetitive testing routines to be set up.
- 5 Reference subtract.

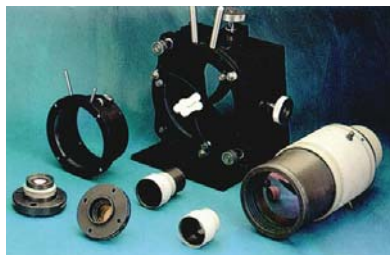
KEY BENEFITS

Both systems are:

- Portable and compact
- Easy to set up and operate
- Provide remote control operation
- Non-contact and precise
- Transmitted wavefront measurement for IR materials/systems
- Compatible with a wide range of standard accessories
- Practical, versatile and affordable

STANDARD ACCESSORIES

- Aperture converters to increase the 35mm output beam diameter
- Reference flats ($\lambda/20$)
- Transmission spheres ($\lambda/10$)
- Reference spheres ($\lambda/20$)
- Collimating lenses
- Off-axis parabolas
- Attenuators
- Precision mounts
- Vertical configurations
- Upward/downward looking options
- Static and phase measuring fringe analysis systems



SPECIFICATIONS

	Interfire 3-5	Interfire 10.6
Type:	Twyman-Green Unequal Path Interferometer	
Wavelength:	3-5 μ m	10.6 μ m (others available)
Dimensions:	675mm (l) x 260mm (w) x 280 (h)	
Weight:	30kg approx.	35kg approx
Laser Source Type:	Externally coupled HeNe (operating at 3.39 μ m)	Water-cooled waveguide CO ₂ others available)
Head dimensions	1100mm (l)x160mm (w)x130mm (h)	
Head weight	20kg approx.	
Clear aperture:	Nomally 35mm (greater than 31.5mm guaranteed). Expandable with accessories	
Fringe detection:	Focal plane array with fringe contrast adjustments	
Display:	CCIR compatible or as specific user requirements	
Alignment:	Integral co-linear visible HeNe laser	
Optical zoom:	Continuously variable x 1 - x 3	
Remote control:	Full control of reference mirror tilt/tip Main/alignment, aperture focussing, optical zoom	CO ₂ and HeNe lasers – on/off, standby, aperture focussing, optical zoom.
Accuracy (PV):	STATIC: $\lambda/20$	PHASE: $\lambda/50$
Repeatability (PV):	STATIC: $\lambda/50$	PHASE: $\lambda/100$
Data acquisition time:	STATIC: 0.04 sec PHASE: 0.167 – 1.33 sec	
Min. hardware:	Pentium© computer with maths processor vacant expansion slot for framegrabber board	

For further information about Infra-red interferometers and their applications please contact our sales department



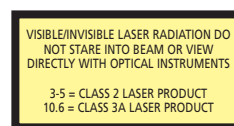
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