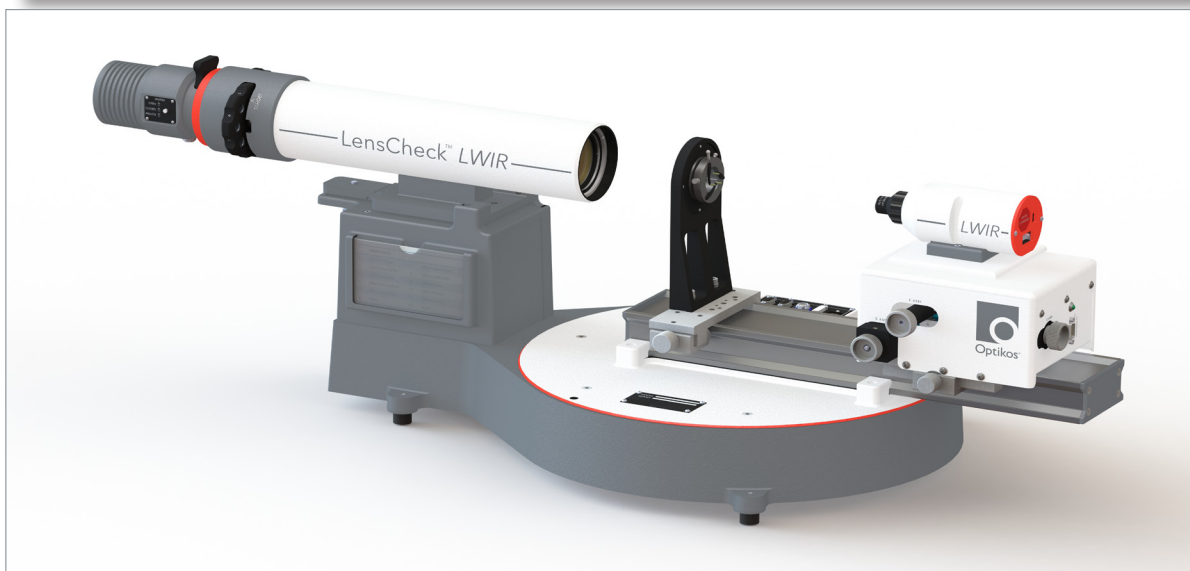
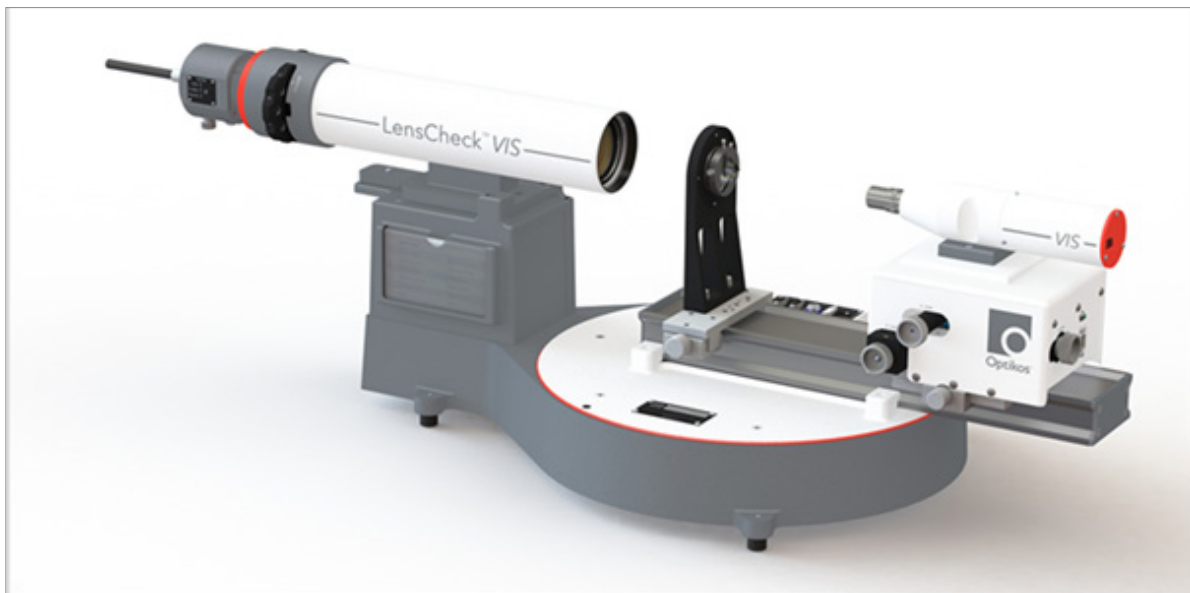




POWERED BY OPTEST® SOFTWARE

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## LensCheck™ Lens Measurement Systems



# LensCheck™ Lens Testing Systems

## Portable and Precise for VIS/NIR through LWIR Lens Measurements

A cost-effective solution to your production and prototype lens qualification needs. Optikos, the leader in image quality test equipment, is pleased to offer this compact, efficient, easy-to-use quality control tool. LensCheck, with patented Optikos® VideoMTF image analysis software, features real-time MTF testing and analysis that allow manufacturers to qualify incoming products quickly and reliably, thereby minimizing the risks of sub-standard complete assemblies.

### APPLICABLE LENSES FOR TESTING:

The suitability of the LensCheck VIS for testing a visible wavelength lens depends primarily on:

Specification	VIS	LWIR
Entrance pupil diameter	up to 50 mm	up to 50 mm
Focal length	3-200mm (with appropriate image analyzer objective lens)	5 - 50 mm
f-number of the lens	f/20 - f/1 (with appropriate image analyzer objective) The suitability of fast, non-telecentric lenses at off-axis field angles is determined by whether the image cone falls within the acceptance cone of the image analyzer objective.	f/20 - f/1
Image format size	up to 25 mm image diagonal	up to 25 mm image diagonal

Other characteristics that factor into the determination are:

- spatial frequency of interest
- chromatic performance of the lens
- departure from telecentricity at off-axis angles

These parameters are seldom independent, making it difficult to place rigid bounds on the space of lenses that may be tested on LensCheck instruments. However, it is generally true to say that lenses that fall within the bounds given above are usually good candidates for testing with this instrument. There may be some special case in which lenses within these bounds may not be suitable for testing, and there are certainly cases in which lenses outside of these bounds may be tested. When in doubt, consult an Optikos engineer for advice.

### APPLICABLE MEASUREMENTS:

- MTF - on/off axis
- EFL and f-number
- Back focal length
- Astigmatism
- Field Curvature
- Distortion
- Transmission (VIS optional)
- Relative illumination (VIS optional)
- Line of Sight (VIS/LWIR optional)
- Veiling glare (VIS with optional instrument)

## FEATURES:

- Patented VideoMTF® technology enables real time MTF measurements
- Flexible platform allows a wide range of measurements (e.g. MTF, EFL, distortion)
- **VIS** - industry leading measurement accuracy better than 2% (1% typical); and better than 1% (0.5% typical) repeatability – each validated with 50mm F/5 Audit Lens)
- **LWIR** - industry leading measurement accuracy better than 3% (2% typical) to 40 lp/mm; and better than 2% (1% typical) repeatability – each validated with 50mm F/5 Audit Lens)
- Configurable automated measurement routines
- Installed in production and R&D facilities around the world

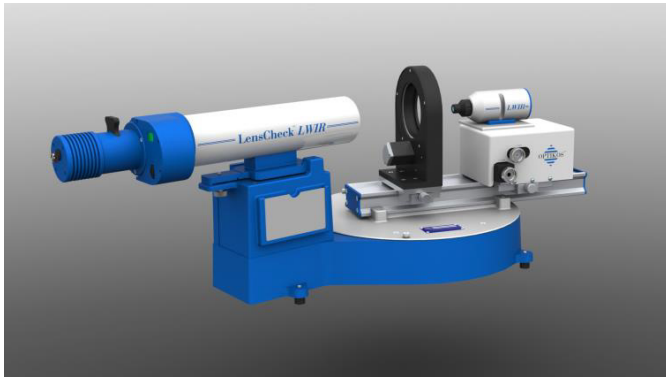
## SPECIFICATIONS

Physical Size:	15" (355mm) H 30" (762mm) W 48" (1219mm) L
Power Requirements:	100~240VAC 60/50Hz Computer 8/5A, Monitors 0.6A each, DC Power Supply 1.6A, Light Source 2/1A
Environmental:	Optimal performance is achieved in a dark room
Refractive Collimator	355 mm EFL, 50mm clear aperture
Source Module	<b>VIS</b> - Fiber-optic light source: 400-700nm 8-position manual target and filter wheels Target set: pinholes, USAF 1951, and alignment target Filter set: photopic, 546nm bandpass, infrared cutoff, and RGB set  <b>LWIR</b> - Broadband Emitter: 7-15 microns 12-position high-speed motorized target wheel Target set: slits, pinholes, crosshairs, and alignment target 8-12 micron bandpass filter
Image Analyzer	<b>VIS</b> - Sony EXview HAD CCD II offers improved sensitivity, dynamic range, and noise characteristics 2736 x 2192 pixels 12-bit video output Calibrated 40x 0.65NA achromatic objective  <b>LWIR</b> - Uncooled Microbolometer 324 x 256 format Spectral sensitivity 7.5-15 microns Calibrated 7.5x 0.70NA relay lens
Motorized Z-axis	25 mm travel 0.1 µm resolution
Motorized X-axis	25 mm travel with 0.05 µm resolution glass scale encoder
Manual Y-axis	12.5 mm travel
Motorized Lens Platform	+/- 100° off-axis rotation 0.0001° resolution glass scale encoder 0.5m optical rail Self-centering lens mount

## Options

- Audit Lens
- Transmission Kit
- Veiling Glare Instrument
- Finite Conjugate Instrument - available as a LensCheck option or standalone unit
- Achromatic Objectives
- Reflective Collimator\*
- Apochromatic Objective\*
- Lens Mounts: supplied with standard three-jaw caliper lens holder for lenses with diameters in 5-25 mm range. For best results, we suggest using available lens mount for specific mounting interfaces. A partial list of available adapters includes the following: M7 through M12, C-Mount, T-Mount, Nikon F-Mount, etc.
- Spectral Filters
- Optical Rail - custom configurations are available upon request

### ROTARY LENS MOUNT (VIS)



Motorized lens mount accommodates varying diameter lenses; lense can be measured for centration and optical axis runout

### TRANSMISSION KIT (VIS)



Transmission measurements:

- Measure sphere irradiance with or without UUT
- Accuracy of 0.1% validated using Reference Lens with uncoated window

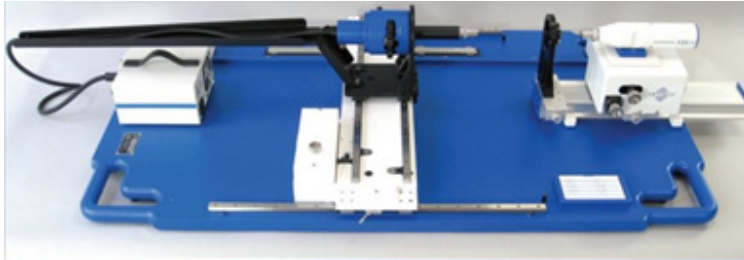
### VEILING GLARE INSTRUMENT (VIS)



- Stray Light measurements per ISO 9358
- Black dot surrounded by uniform bright field
- Validated with Reference Lens down to 0.1%

## FINITE CONJUGATE LENS MEASUREMENT INSTRUMENT (VIS)

The Finite Conjugate Measurement Instrument is available as a standalone unit, or as an option for the LensCheck VIS. When used as a LensCheck add-on option for measuring finite distances, the LensCheck™ Image Analyzer (IA), IA Mount, Rail and Lens Mount are removed from the LensCheck unit and mounted to the instrument base below. The image may then be moved to a precise location on the rail, and may be moved off axis.



- Manual Z-axis: 500mm travel with 0.01mm resolution encoder
- Motorized X-axis: 500mm travel with 0.1mm resolution
- Footprint: 53"x 30" (134.6x76.2cm)  
Approximately 80 lbs (36.4 kg)

## REFLECTIVE COLLIMATOR (LWIR)



- Infrared emitter: 1000 degrees C
- Uncooled microbolometer:  
spectral response 7.5-14 microns

## APOCHROMATIC OBJECTIVES (LWIR)



Infinity corrected 10X, 20X, and 40X objectives with tube lens suitable for broadband

## Get Started with Optikos

Optikos offers engineering design and manufacturing, and a full-line of metrology products and services for testing optical, imager and camera systems that are appropriate for any industry--or we will design a custom product for your specific needs. Visit our website at [optikos.com](http://optikos.com) or contact us to help you choose the right optically-based solution for your application.

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