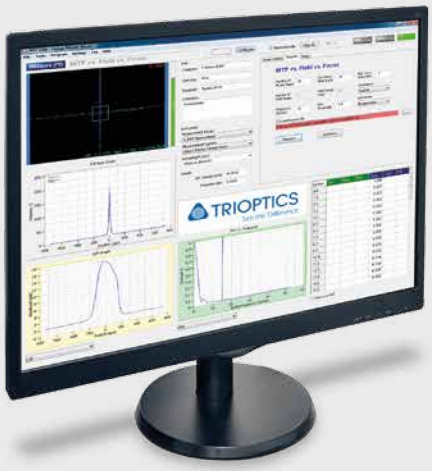
TRIOPTICS

See the Difference.

ImageMaster® VR

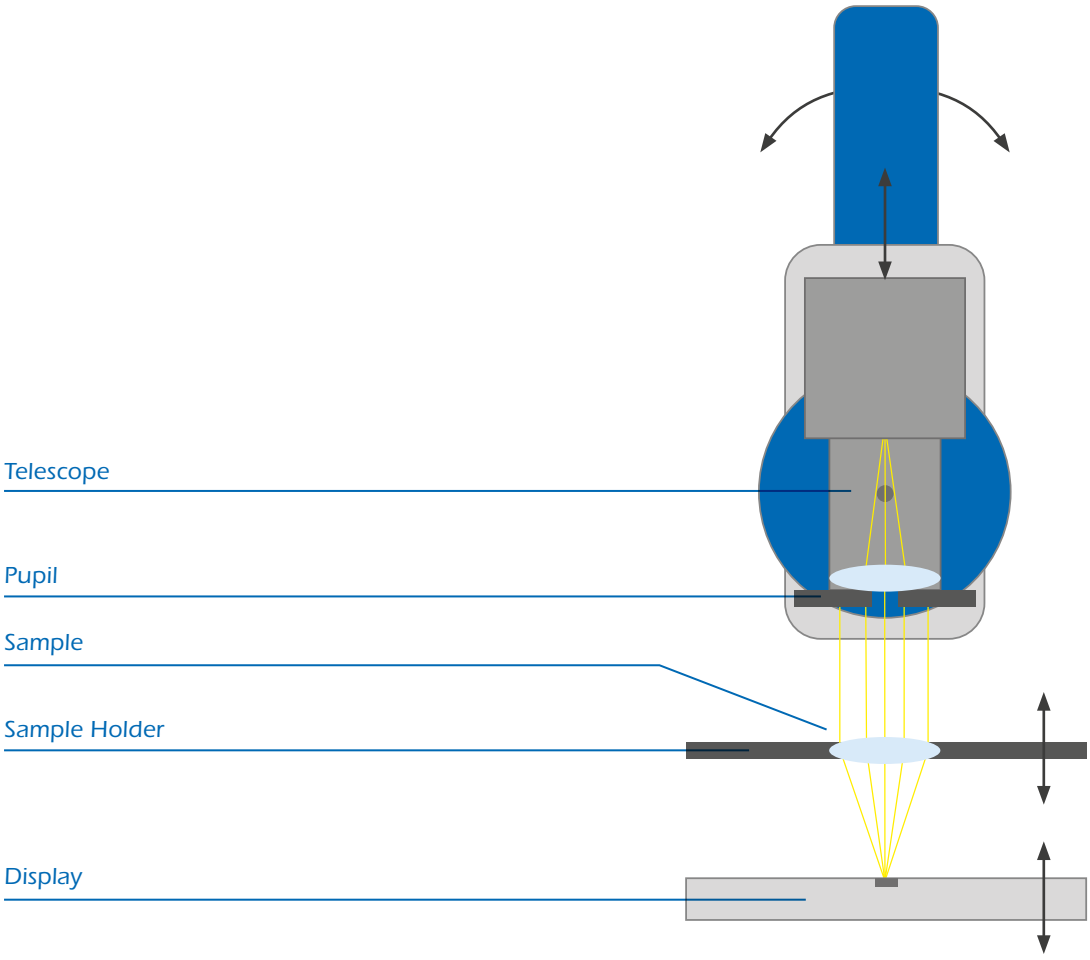
A Measurement Device for Testing VR Lenses



ImageMaster®

The TRIOPTICS ImageMaster® product group is a comprehensive system of measurement devices for determining the imaging quality of optical assemblies. In addition to established methods to determine the modulation transfer function (MTF) for the image contrast, a number of other optical quality parameters can be determined, including distortion, image field curvature, chromatic errors and effective focal length.
The ImageMaster® VR was specifically developed for the measurement and qualification of virtual reality optics.

Ghosting and false light are very important parameters in the qualification of these lenses. The two effects are summarized as „veiling glare." In virtual reality applications, lenses are used to collimate light from a display before it reaches the user's eye. The ImageMaster® VR uses a high-contrast, programmable display as a light source and object generator. In addition to veiling glare, the device measures focal length and, with an optional upgrade, MTF, distortion and chromatic aberration. The veiling glare index and MTF can be determined for different wavelengths by illuminating the display in different colors.

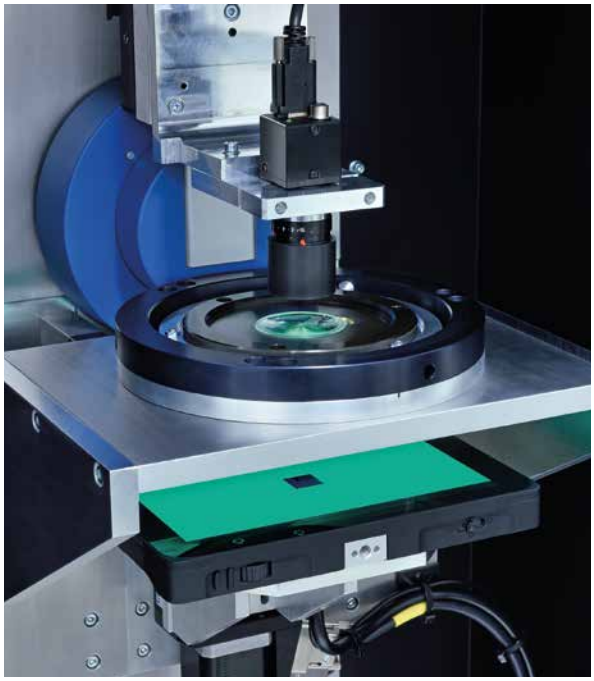


The challenge for VR lens systems is to provide a high-contrast imaging over a large field of view. It makes sense to test the VR lenses in a similar setup, so that the different test images are generated on a high-quality, contrast-rich display. The lens to be tested projects these test images on a measuring telescope connected with a high resolution camera. The image processing and evaluation are ensured by the unique TRIOPTICS MTF-Lab software.

The ghosting and stray light components are determined via the so-called 'Veiling Glare Index'. With an optional extension, measuring the MTF, distortion and color errors is also possible.
The display allows the presentation in different colors, so that all measured values can also be determined in different wavelength ranges.

The special design of the measuring telescope on a swivel arm simulates the rotational movement of the human eye. It captures the entire field of view, which also extends over the edge regions of the VR lens which are crucial for the lens design. Furthermore, the eye's distance to the VR lens and the pupil diameter can be adjusted to the measurement task.

The Veiling Glare Index is carried out by measuring a special target. The ghosting and false-light components caused by the sample are summarily recorded and expressed as a percentage relative to the overall brightness. This measurement is carried out successively at different image field positions so that the image quality in the entire field of view is obtained.



In summary, the ImageMaster® VR makes it possible to analyze the imaging quality of glasses, especially in research and development and in quality assurance. A version for series production with optimized cycle time will also soon be available at TRIOPTICS.

ImageMaster®

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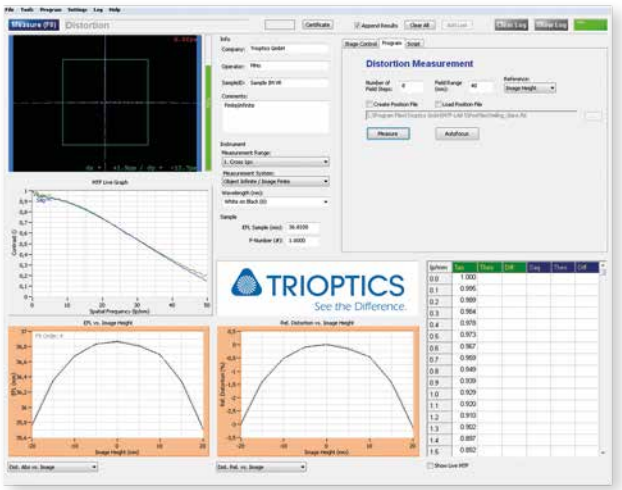
Software

- MTF LAB with veiling glare index extension
- Scripting tools for customer-specific programming and analysis
- Functions for easy alignment of the sample
- Intuitive user interface and time-saving lens testing routines
- Certificate output in HTML format, can be imported to MS Excel



Key Features

- Measurement parameters:
  - MTF
  - Veiling glare index according to ISO 9358
  - Distortion
  - Chromatic aberration
- Measurement with high-contrast, programmable display
- Measurement possible for various wavelengths (RGB)
- Simulation of human eye movement
- Measurement possible for various pupil distances and sizes

Technical data

	Veiling Glare Index	MTF	Distortion
Measuring accuracy	< ± 5 %	± 3 %	± 0.7 % (without encoder) / ± 0.25 % (with encoder)
Repeatability	< ± 3 %	± 1 %	± 0.3 % (without encoder) / ± 0.1 % (with encoder)

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