

## Improve your VR device user experience with OptoFidelity™ VR Multimeter

VR (virtual reality) performance is an essential factor in overall user experience of smart devices. Poor performance affects the viewing experience, and can even cause motion sickness and nausea.

VR performance consists of the following measurable items:

- Motion-to-photon latency
- Pixel persistence
- Frame jerkiness and jitter
- Dropped/duplicated frames
- Audio/Video synchronization



## About OptoFidelity

At OptoFidelity we thrive for the ultimate user experience by simulating and testing user interactions for smart devices. We work with the world's largest device manufacturers. We are globally recognized pioneers in testing, and our humanlike robot assisted technology platforms are widely used in product development, production and quality assurance. Our products are all equipped with easy-to-use SW tools for test parametrizing, results analysis and reporting tools.



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## OptoFidelity™ VR Multimeter

For VR Performance  
Measurement



## OPTOFIDELITY™ VR Multimeter

The OptoFidelity™ VR Multimeter is a professional, end-to-end, non-intrusive measurement solution for acquiring precise and objective data from any multimedia device. This VR Multimeter can objectively analyze a variety of VR performance metrics such as: motion-to-photon and display persistence. Additionally, this device can measure audio to video synchronization and the so called motion-to-audio-latency.

OptoFidelity™ VR Multimeter is the perfect tool for R&D design verification/certification, test laboratory use or even competitor benchmarking. It quickly creates repeatable results when measuring VR playback performance. The results can then be transferred to a computer for complete analysis. An API option is available that allows measurements to be combined with a continuous integration solution.

OptoFidelity™ VR Multimeter combines a novel synchronization technique with characterized measurement technology to produce accurate results. This implementation will allow the VR Multimeter to work with current and future display technologies.



### BENEFITS

- + Battery operated compact device
- + True measurements directly from display
- + Standardized measurement setup: repeatable and reliable test results
- + Support for all typical VR/AR display technologies: LCD, OLED, LOE (Light -guide Optical Element), Low Persistence
- + Independent from backlight brightness
- + Futureproof firmware updates for supporting new display technologies

### USE CASES

- VR performance of 360 videos
- VR performance of Google Daydream based applications
- VR performance of cross-platform applications using Unity
- Special case for 360 videos: motion-to-audio latency

### OPTIONS

- A/V synchronisation (lip sync) measurement from 3.5mm audio output connector
- Control API
- Left versus right eye frame delay with dual sensors
- Additional tilt stage
- Encrypted log file for tamper-proof results
- Motorized rotation and tilt stages with computer control
- Available also as Display VR version without artificial head



### TECHNICAL SPECIFICATIONS

Supported operating systems: Windows 7 or newer, Ubuntu Linux 12.04 or newer, Mac OS X Snow Leopard or newer. Linux / Windows host controllable via USB.

Timing accuracy:	1 ms	Operating temperature range:	-10 C to + 40 C
Maximum display framerate:	120 FPS		4 F to 104 F
Photon imager resolution:	30 x 30	Storage temperature range:	-20 C to +60 C
Photon spot size (typical):	5 x 5 mm, 0.2 x 0.2 in		-4 F to 140 F
Rotation encoder accuracy:	0.1°	Internal memory:	4 GB
Device display sizes:	4.5 to 6 in	Battery:	Li-Ion Panasonic
External dimensions:	120 x 80 x 30 mm, 4.7 x 3.1 x 1.2 in	PA-L2,	1950 mAh, 7 Wh
M2P Stage dimensions:		Operating time on battery:	6 hours
Power supply height with foot:	90 mm, 3,54 in	Battery:	Li-Ion Panasonic
Rotator height:	450 mm, 17,72 in	Operating current:	300 mA
Width & depth:	250 mm, 9,84 in	Built-in fiber sensor bandwidth:	4 kHz
		Built-in fiber sensor sample rate:	100 kS/s