

Technical Specification

INTERFACES

- 2x USB B female reserved for measurement instruments
- 1x RJ45 female reserved for robot control
- 1x USB B female free for headset connection
- 1x M12 8-pin female safety input for external sensor (e.g. light curtain)
- Operating voltage: 110–240 VAC
- Other features: E-Stop, power outlet & button

HMD INTERFACES

- Toolless mounting for any HMD (AR/VR/MR).
- USB2 link available for HMD connection, max 480 Mbit/s.

HMD TEST CONTENT

- Test content applications: Unity/Steam, Android, iOS applications for Absolute tracking markers.
- Extensions (customized): optical flow pattern, QR-codes, colors, synchronized audio etc.
- Options to create own test content or request this from OptoFidelity.

CONTROL AND REPORTING

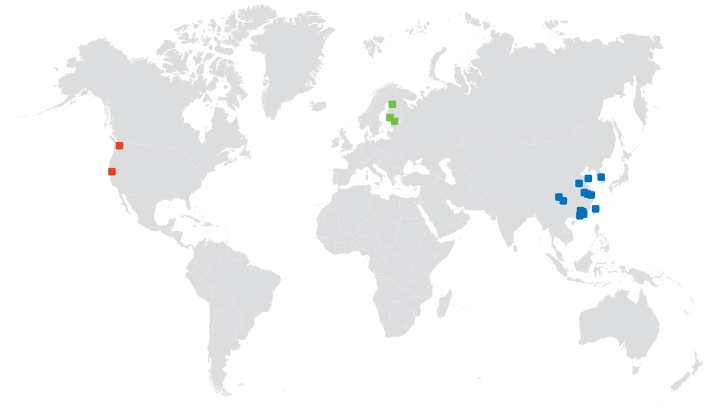
- Graphical user interface for robot movement control and running scripts.
- Python based movement API for automation.
- Access to timestamped robot location data.
- Access to timestamped processed vision analysis data, including HMD position.
- System-wide synchronization accuracy: 100 μ s covering all sensors
- Visualization reports, data for creating custom reports.
- Windows or Linux control PC

More technical info inside

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 test solutions, 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 software tools for test configuration, results analysis and reporting.



LOCATIONS

USA: Cupertino, Redmond
FINLAND: Helsinki, Oulu, Tampere
SOUTH KOREA: Seoul
CHINA: Chengdu, Chongqing, Dongguan, Kunshan, Nanjing, Shanghai, Shenzhen, Yantai, Zhengzhou, Zhuhai
Hong Kong, Taipei

HEADQUARTER

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OptoFidelity™ BUDDY-3

Performance tester
with 3 degrees of freedom
for any head mounted display



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Performance tester with 3 degrees of freedom for any head mounted display

OptoFidelity™ BUDDY-3 is a comprehensive solution for Virtual, Augmented and Mixed Reality (VR, AR, MR) Head Mounted Display (HMD) performance testing and calibration in both R&D and in manufacturing lines.

With its integrated vision module and 3 degrees of freedom, you are able to ensure the best HMD performance including Motion to Photon (M2P) jerkiness, spatial jitter and pose drifting between real world and virtual world.

The system is based on non-intrusive measurement comparing the changes in the virtual world pose to the robotics pose. Measurement performance comes from OptoFidelity's proprietary vision module and robotics platform, which enables unbeatable repeatability, timesynchronization, and position based triggering.

Main components

- 1 HMD mounting
- 2 Vision module
- 3 Roll axis
- 4 Pitch axis
- 5 Yaw axis
- 6 Controller



Test Cases

DISPLAY TEMPORAL CHARACTERISTICS

- Display pixel persistence
- Display refresh rate

MOTION TRACKING ACCURACY

- Spatial jitter
- Drifting
- Prediction overshoot/undershoot

MOTION-TO-PHOTON (M2P) LATENCIES

- M2P latency w/o motion prediction
- M2P latency w/ motion prediction: predictable movements
- M2P latency w/ motion prediction: unpredictable movements

OPTION1: ADDITIONAL STAND-ALONE EQUIPMENT OR INTEGRATED INTO BUDDY-3

- FPS Jerkiness during movement: average frame rate, dropped frames
- FPS Jitter during movement: std deviation of frame rate
- See through latency: Camera viewfinder latency

OPTION2: MECHANICAL BUDDY-3 ADAPTATION TO TEST A HANDHELD CONTROLLER

- Controller Motion-to-Photon latencies

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The system is based on non-intrusive measurement comparing the changes in the virtual world pose to the robotics pose.

VISION MODULE (THE EYE)

- Optics: 20° Field of View with autofocus
- Imaging sensor: 240x240 pixels
- Motion to photon analysis up to 120Hz
- Tristimulus sensor: Point type, CIE1931, 100kHz
- Selectable color channel triggering up to 540Hz
- Image processing and acquisition: onboard STM32F4 microcontroller

ROBOTICS SPECIFICATION

- Gimbal reach, max speed and acceleration:
- Roll: 180°, 600°/s, 2000°/s²
 - Pitch: 180°, 430°/s, 840°/s²
 - Yaw: unlimited, 600°/s, 3000°/s²
- Repeatability per axis: 36 arc seconds/0.1°
Accuracy: absolute position calibration per request

ROBOT CELL

- Form factor: Table top fixture
- Test Cell dimensions (W/H/L): 500 / 670 / 500mm
- Weight: 50kg
- Option: safety enclosure