

# VisualEyes™

## VNG/ENG





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*VISUALEYES is the assessment tool of choice to IDENTIFY abnormalities within the VESTIBULAR system. Objectively document abnormal eye movements caused by traumatic brain injury (TBI); Benign Paroxysmal Positional Vertigo (BPPV); Labrynthitis and many other peripheral and neurological pathologies.*

### VISUALEYES BINOCULAR GOGGLES

**THE INNOVATIVE BINOCULAR DESIGN OF THE GOGGLES INCLUDES THE FOLLOWING KEY FEATURES:**

- Full field of view with a minimum +/- 45 degrees horizontal and +20, -25 degrees vertical
- Integrated external focus knob and built-in software controlled fixation lights
- Comfortable, light-tight and easy to clean goggle
- Mirrors are mounted below eye level to reduce eyelid and eyelash interference.
- Goggle weight 10.5 oz. with cover 8 oz. with cover removed
- Designed to utilize high speed Firewire® cameras that can record at up to 100 Hz
- Goggle mounted button switch allows you to start, stop and escape testing in Dix-Hallpike and Positional tests



Switch operates as push button or toggle

GOGGLES WITH COVER REMOVED



Button Switch





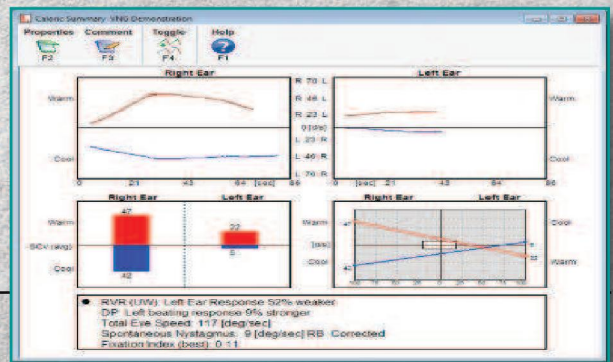


### ADVANCED CONCEPTS IN CALORIC IRRIGATIONS

- Full software integration of Micromedical's AirFx™ air caloric irrigator and AquaStim™ water caloric irrigator
- Single mouse click eye centering removes the need to adjust cameras
- Freyss caloric diagram or Fixation Index

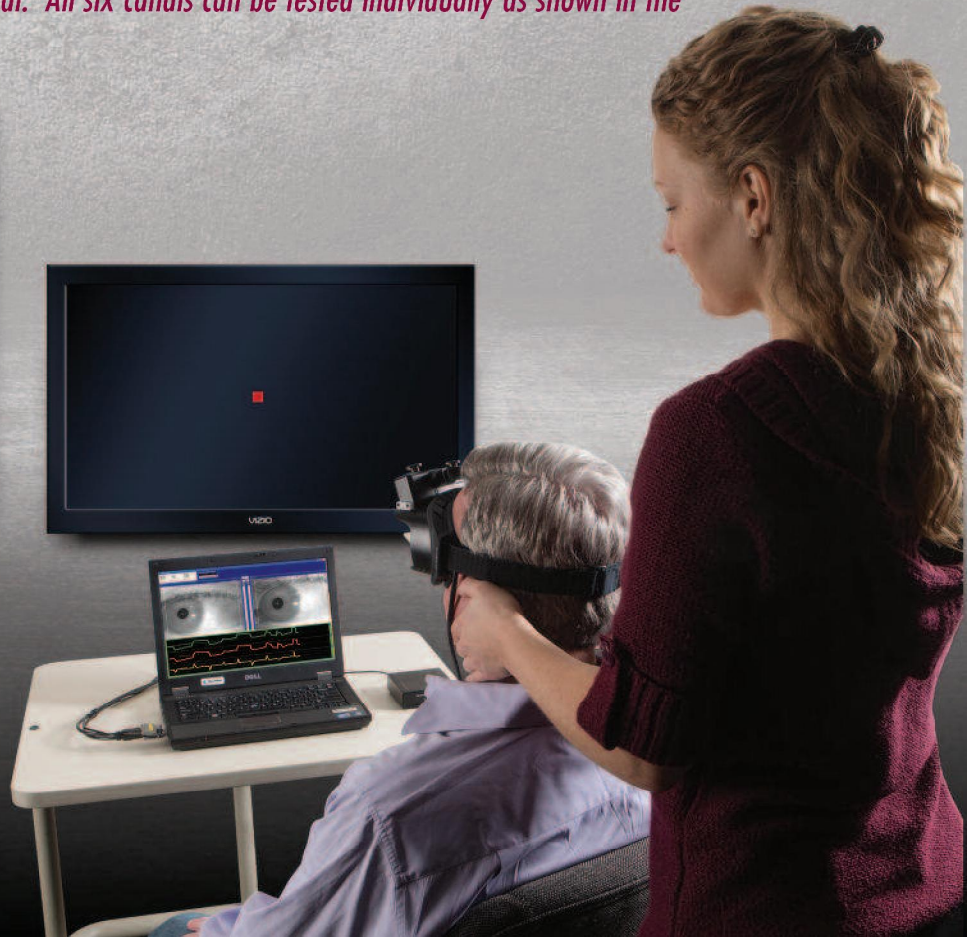
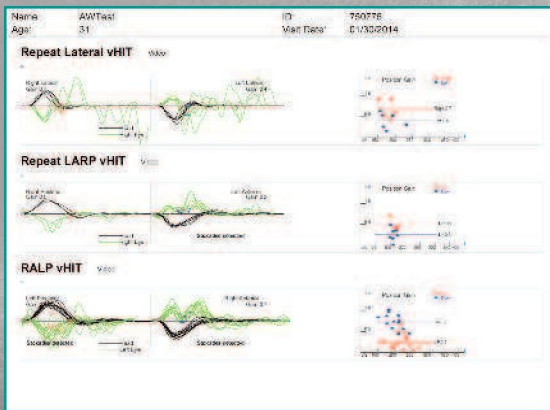
### CALORIC SUMMARY

At a glance, Unilateral Weakness is identified graphically in both bar graph and Freyss diagram displays.



### VORTEQ™ VHIT - Video Head Impulse Test

*As interest increases in Video Head Impulse Testing (VHIT), the most economical and efficient way to add this protocol to a clinic test paradigm is to acquire it as an option on VisualEyes. The VORTEQ VHIT allows binocular eye movement to be video recorded allowing the clinician the ability to clearly observe compensatory catch up saccades indicative of a vestibular loss in the stimulated semicircular canal. All six canals can be tested individually as shown in the sample report, below.*





*Objective documentation of vestibular and balance function is critical to the correct diagnosis of the balance disorder patient. Spectrum software provides your clinic with standard testing protocols as well as protocols that will give you unique assessment capabilities.*

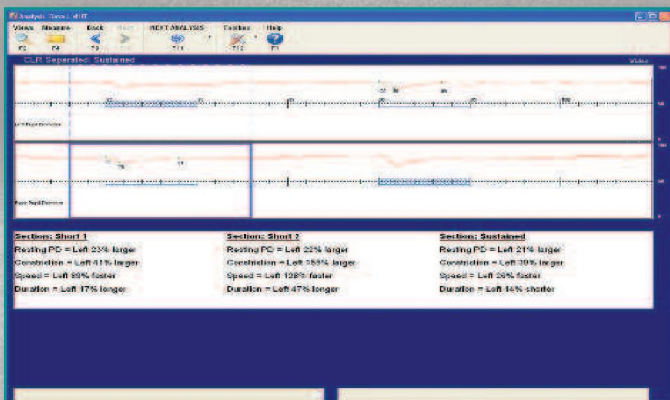
## STANDARD PROTOCOLS

- Gaze
- Positional
- Dix-Hallpike
- Caloric
- Pursuit
- Saccade
- Optokinetic

## UNIQUE ASSESSMENT CAPABILITIES

(some may require hardware or software enhancements)

- VHIT - Video Head Impulse Test through VORTEQ
- Active Head Rotation AHR through VORTEQ
- Dynamic Visual Acuity (DVA-Test) through VORTEQ
- Pupillometry
- HVT 3D Eye Tracking – torsion measurement for ocular counter roll
- EOG amplifier to add ENG electrode recording capability
- Consensual Light Reflex (CLR)

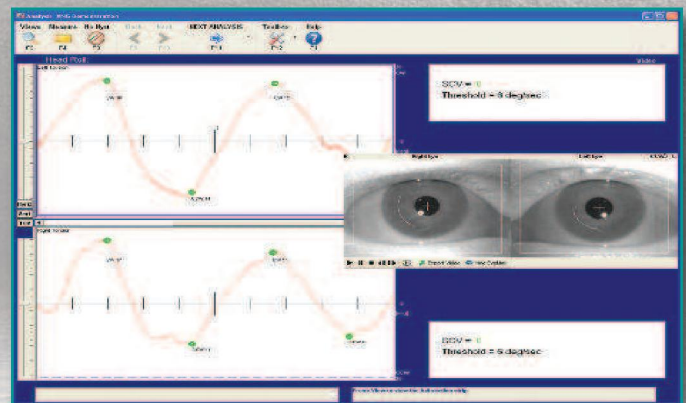


## CONSENSUAL LIGHT REFLEX

Developed at the request of our interested neurology professionals to help find oculomotor nerve lesions, the CLR examines the integrity of the retina; ipsilateral optic nerve; ipsilateral oculomotor nerve and the contralateral oculomotor nerve.

## PATIENT POPULATIONS THAT CAN BENEFIT FROM MICROMEDICAL'S MULTI-DIMENSIONAL ASSESSMENT APPROACH INCLUDE:

- Traumatic Brain Injury
- Stroke
- Vestibular Loss
- Ototoxic Reactions
- Neurological Conditions
- Migraine



## HVT 3D EYE TRACKING

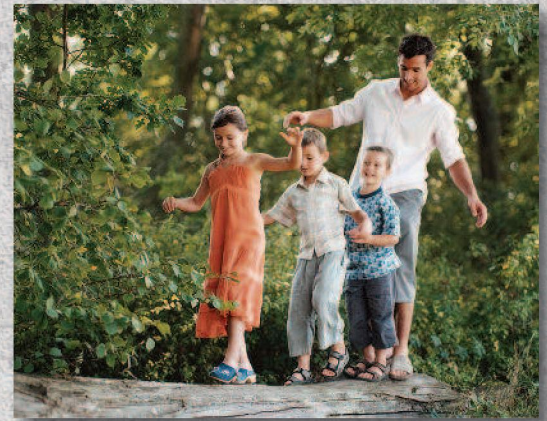
Torsional eye movement measurement provides a unique assessment of otolith function through an ocular counter roll test protocol.

- User selectable iris segment
- Torsion is recorded on one eye at 100 Hz with one degree accuracy
- Compensatory eye position is measured when the patient's head is tilted 45 degrees left or 45 degrees right



# Providing Insight

into the Complexity of the Balance System.



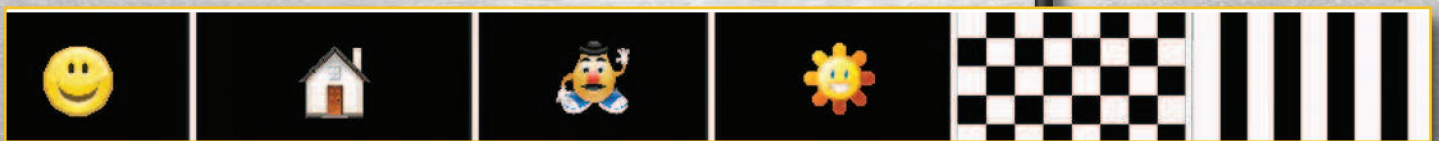
*Discrimination of the extent and progress of peripheral and central vestibular disorders begins with a good patient history as well as effective and accurate instrumentation. Micromedical specializes in designing equipment that allows clinicians to test patients of all ages as well as evaluate many healthy individuals who seek to improve their visual-vestibular-motor function capabilities in order to optimize their physical performance.*



Designed specifically to meet the mobility and space limitation requirements of vestibular and balance testing centers, Micromedical's laptop system provides an unprecedented opportunity to keep your clinic on the cutting edge of technology. Laptop with Datalink and Digital Light Bar shown. This configuration can allow VNG/ ENG/VORTEQ/DVAT and VHIT testing wrapped up in a nice portable package.

## TARGET STIMULUS OPTIONS

While the Digital Light Bar is available as a standard stimulus, utilizing a large TV or LCD Projector have gained in popularity due to the variety of images that can be used for Optokinetic stimuli. Stripes are used most commonly, however a checkerboard pattern produces a strong response as well. For pediatric testing a variety of custom images are available.



*Turnkey System hardware includes either Mid-tower or Laptop computers with Window® OS. Additionally all systems include Micromedical's proprietary EyeMax video recording and Management. EOG and VORTEQ options are available through the DataLink connections*





## To Preserve and Improve Balance

### EYEMAX™

An integral feature of our Spectrum Balance Software, EyeMax provides real-time eye video images large enough to see minute eye movement detail. During analysis or report interpretation a scrolling time marker allows you to directly correlate the eye movement tracing with minute eye movements and any ocular torsion present in the video playback.

### TURNKEY SYSTEM HARDWARE

**Computer:** Choose either Mid-Tower or Laptop configuration with Windows® OS (computer hardware shown in photos may differ from what is supplied with your system due to our commitment to provide you with the latest technology).

**Target Stimulus:** Choose 32 or 42" TV; Digital Light Bar or LCD Projector.

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Windows® is a registered trademark of Microsoft Corp.  
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ISO 13485:2003  
FM 90233

## ALSO AVAILABLE FROM MICROMEDICAL

THE SYSTEM 2000 IS AVAILABLE IN THE FOLLOWING CONFIGURATIONS:

- Reclining
- Comprehensive
- Auto-Traverse Micro-Centrifuge  
Child & Infant seat for assessing children - optional

### VNG AND OPTIONS

- VisualEyes VNG – add nystagmus and caloric testing
- EOG - Electrode Capability
- Air Fx air caloric irrigator
- Aqua Stim water caloric irrigator
- Vorteq – Active Head Rotation Testing
- DVAT – Dynamic Visual Acuity Test
- VHIT – Video Head Impulse Test

### CUSTOMER CARE

MICROMEDICAL'S KNOWLEDGEABLE STAFF IS DEDICATED TO ASSISTING YOU AND MAXIMIZING YOUR INVESTMENT BY:

- Providing on-site installation and training using factory representatives
- Providing technical, operational and interpretation assistance from Micromedical's experienced support staff
- Sponsoring continuing education courses
- Including a one year hardware warranty
- Including one year of free software updates

### QUALITY AND REGULATORY STANDARDS

All equipment is designed and manufactured under our ISO 13485 certified quality management system to meet U.S. FDA; Canadian; European and International Standards.

- CMDCAS
- ANSI S3.45-2009
- Medical Device Directive (MDD) to comply with EC Directive 93/42



**Micromedical**™  
TECHNOLOGIES INC.

10 KEMP DRIVE • CHATHAM, ILLINOIS 62629 • 800.334.4154 U.S. AND CANADA  
217.483.2122 OUTSIDE U.S. 217.483.4533 FAX • WWW.MICROMEDICAL.COM