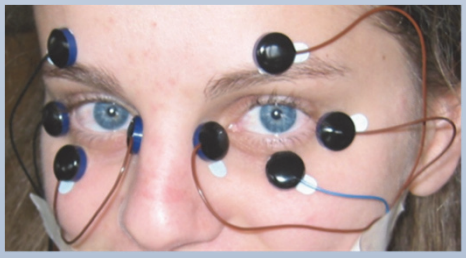
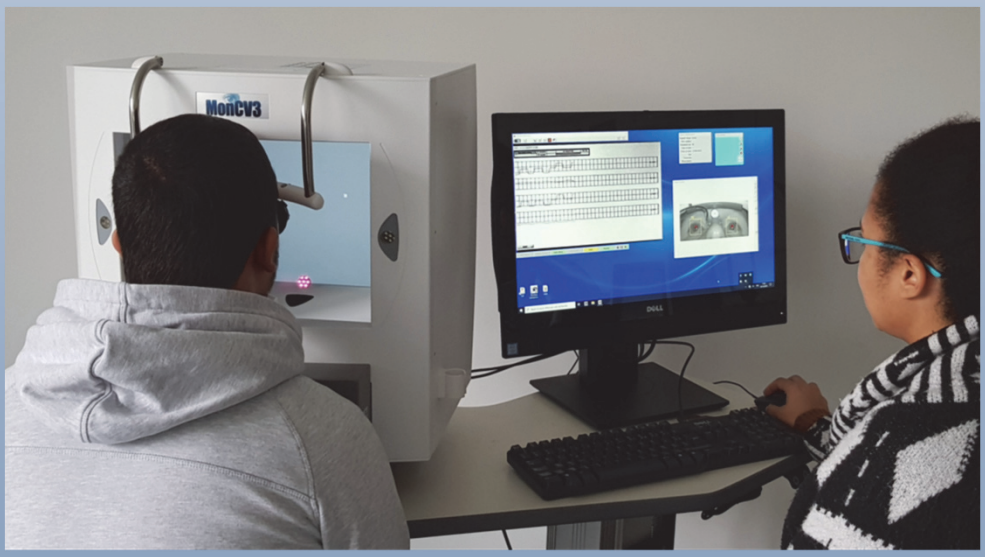
Vision Monitor

Eye movements recording

- Video-oculography

- Electro-oculography

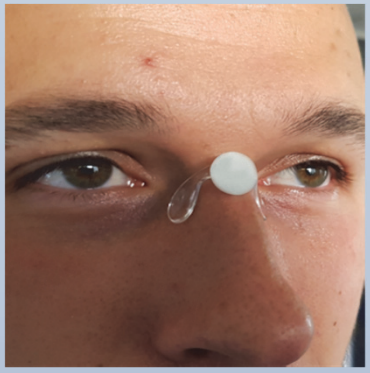


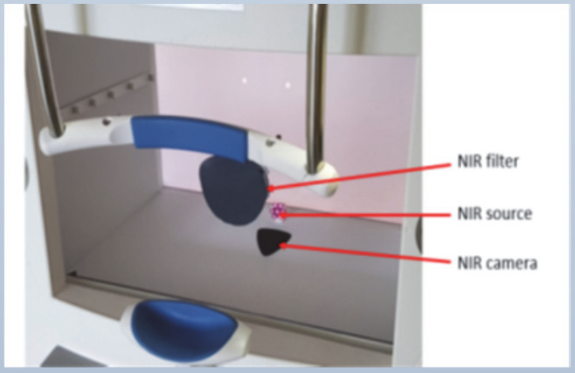


Manufactured by Metrovision
under ISO 13485: 2016
certified quality system

METROVISION

Video-oculography (VOG)





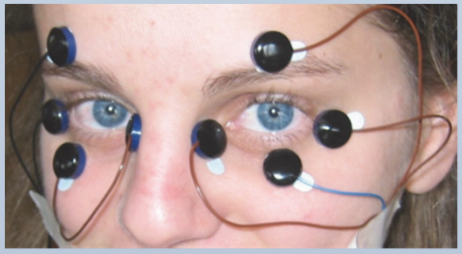
The high-resolution video sensor combined with advanced image processing measures the position of a reflective dot to determine the movements of the head. The positions of the pupils in relation to this patch are used to determine the movements of the eyes.

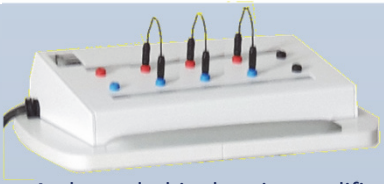
Compared with the pupil-corneal reflex technique, this solution is relatively insensitive to stray reflections (tears, corrective lenses, etc.) and can measure eye movements of large amplitude.

Key points

- *No helmet, simple adaptation to patient;*
- *Minimum calibration procedure;*
- *Near infra-red operation (940 nm) that does not interfere with the visual task;*
- *High speed (200Hz) which is sufficient to evaluate the latencies and velocities of saccades;*
- *Binocular recording;*
- *Synchronized recording with video.*

Electro-oculography (EOG)





The 4 channels bioelectric amplifier is used to record the horizontal and vertical components of eye movements.

Key points

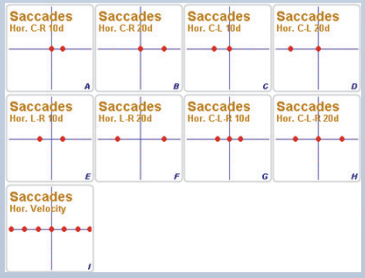
- *Allows recording eye movements when the pupils are not detectable, i.e. when eyes are closed or in case of difficulties opening the eyes;*
- *Uses the same test procedures and analysis as VOG;*
- *Synchronized recording with video.*

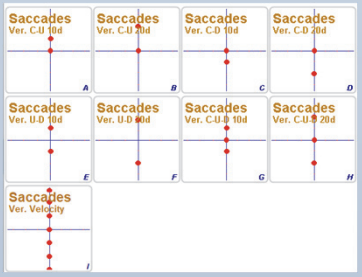
VOG and EOG are complementary techniques

		
Measurements of eye movements	Relative to the head	Independent of head movements
Constraints	Electrodes	Opening of the eye Reflective dot
Advantages	Can record even with closed eyes	Less invasive More accurate for vertical and oblique movements
Artifacts	Drifts due to electrode polarization, eye blinks	Masking of the pupils by eye lids
Sampling frequency	680 Hz (before filtering)	200 Hz

Evaluation of saccades

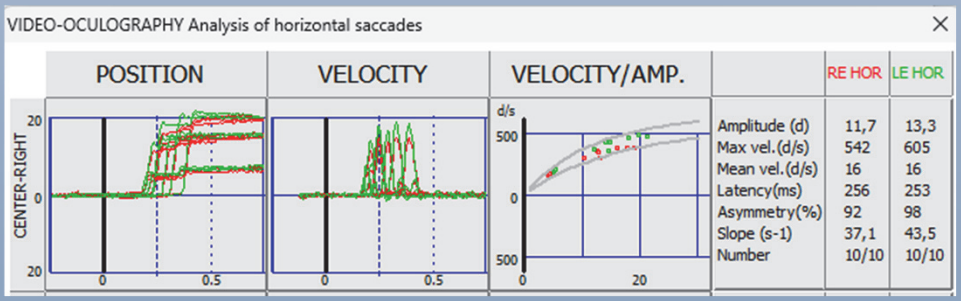
- Amplitude of saccades (horizontal and vertical)





- Latency of voluntary and reflexive saccades (step, overlap, gap and antisaccades)

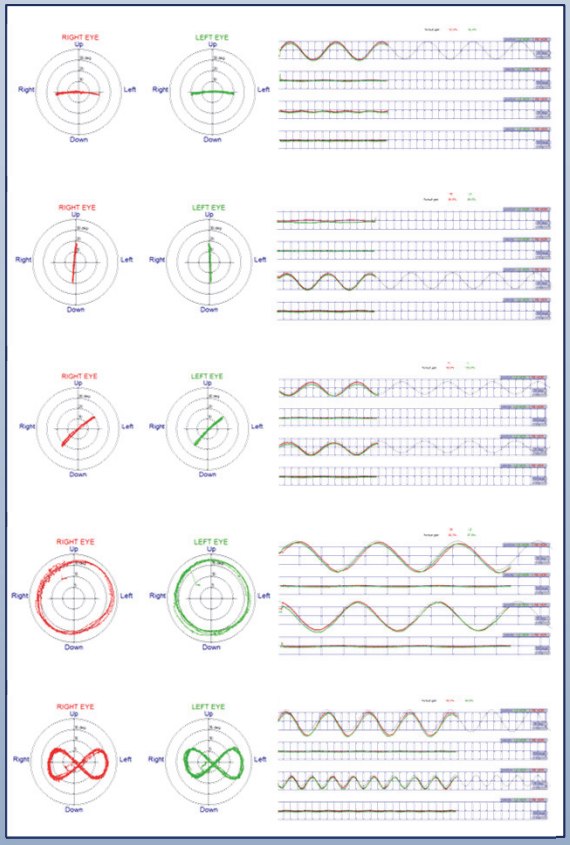
- Velocity of saccades (horizontal and vertical)



Key points

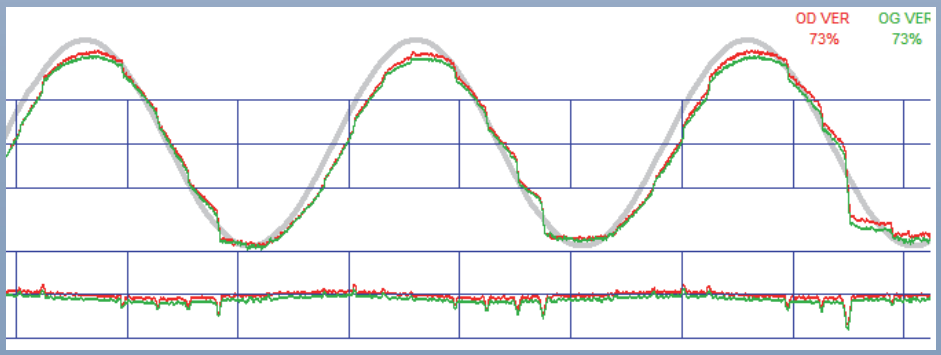
- *Simple calibration procedure;*
- *Automated quantification of maximum velocity, latency and slope.*

Evaluation of visual pursuits



Key points

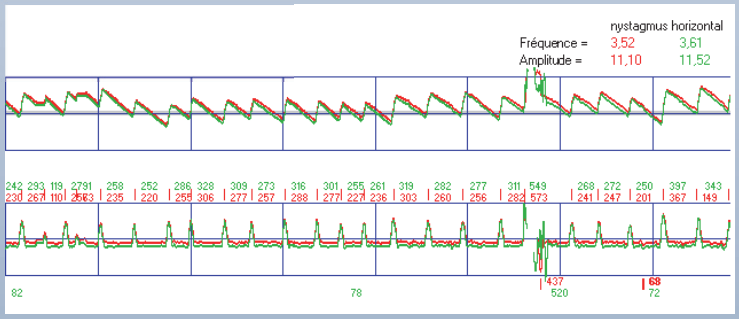
- *Horizontal, vertical, oblique, circular and eight stimulations;*
- *Programmable velocity;*
- *Automated analysis of pursuit gain.*



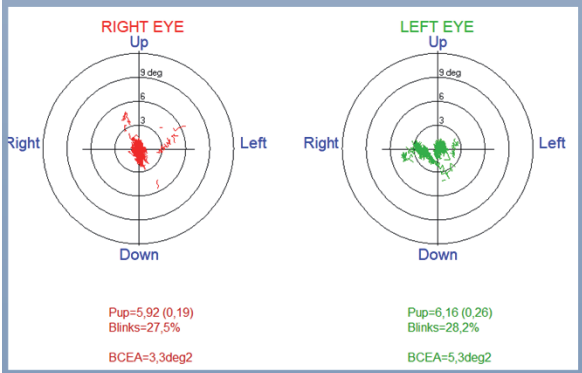
Analysis of nystagmus

Key points

- *Different position of fixation;*
- *Automated measurement of the frequency and amplitude of nystagmus.*



Analysis of stability of fixation



Key points

- *Different position of fixation;*
- *Automated analysis of the stability of fixation (BCEA = Best Corrected Ellipse Area).*

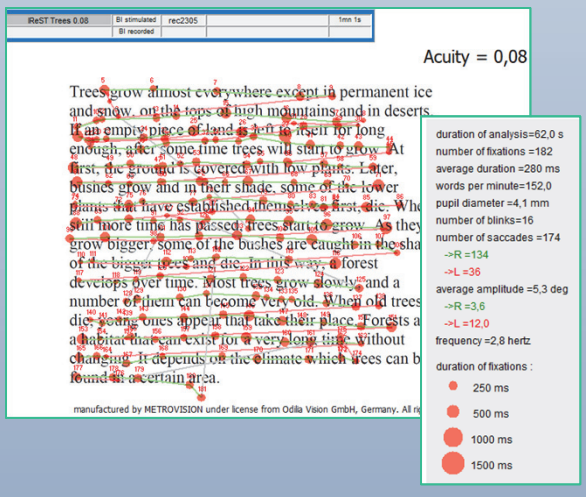
Options

VOG and **EOG** can be supplied independently or combined.

They can also be added to the MonCv3 visual field perimeter or to the MonPackONE vision electrophysiology system.

Additional tests are also available as options :

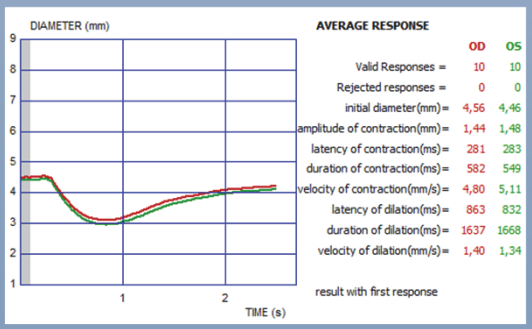
Eye gaze strategy



Key points

- *Quantification of the number and duration of fixations during the exploration of images;*
- *IReST reading test including 10 standardized texts with same level of reading difficulty and length plus 4 levels of reading acuity;*
- *Available in different languages (English, French, German, Spanish, Italian, Arabic,..).*

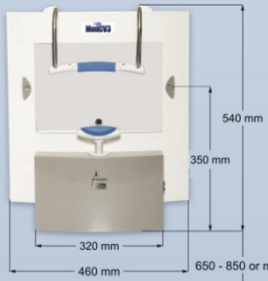
Pupillometry



Key points

- *Pupil light response flash stimulations with programmable strength, duration and color;*
- *Automated quantification of the pupil resting level, latency, amplitude and velocity of constriction.*

Technical specifications



Power supply:
230V, 0.7A/120V, 1.4A 50/60Hz.
Weight:
25 kg (without PC and electric table).
Interface:
Connection to the PC via two USB cables.

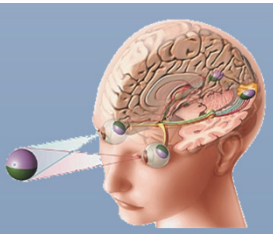
The equipment is controlled from a standard high-performance PC under Windows 11 PRO operating system.
Tests are presented at a distance of 30 cm from the eyes. In addition, a large size monitor can be connected to perform EOG exams at a distance of 1 meter.
The examination results are easily exported to medical information systems (DICOM, ...).

Bioelectric amplifiers (for EOG configuration)

- 4 channels
- High performances
  (input noise < 0.5 µV pp, CMRR > 115 dB,
  input impedance 1000 GOhms // 220 pF)
- Optoelectronic isolation
- Automated control of electrode impedances

Available exams and options

• Video-oculography	PVM-YE
• Electro-oculography	PVM-EO
• Scan path analysis	PVM-SA
• Pupillometry	PVM-PU



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