Vision Monitor

All in One

- Vision electrophysiology
- Visual field perimetry
- Dark and light adaptometry
- Video-oculography
- Pupillometry
- …

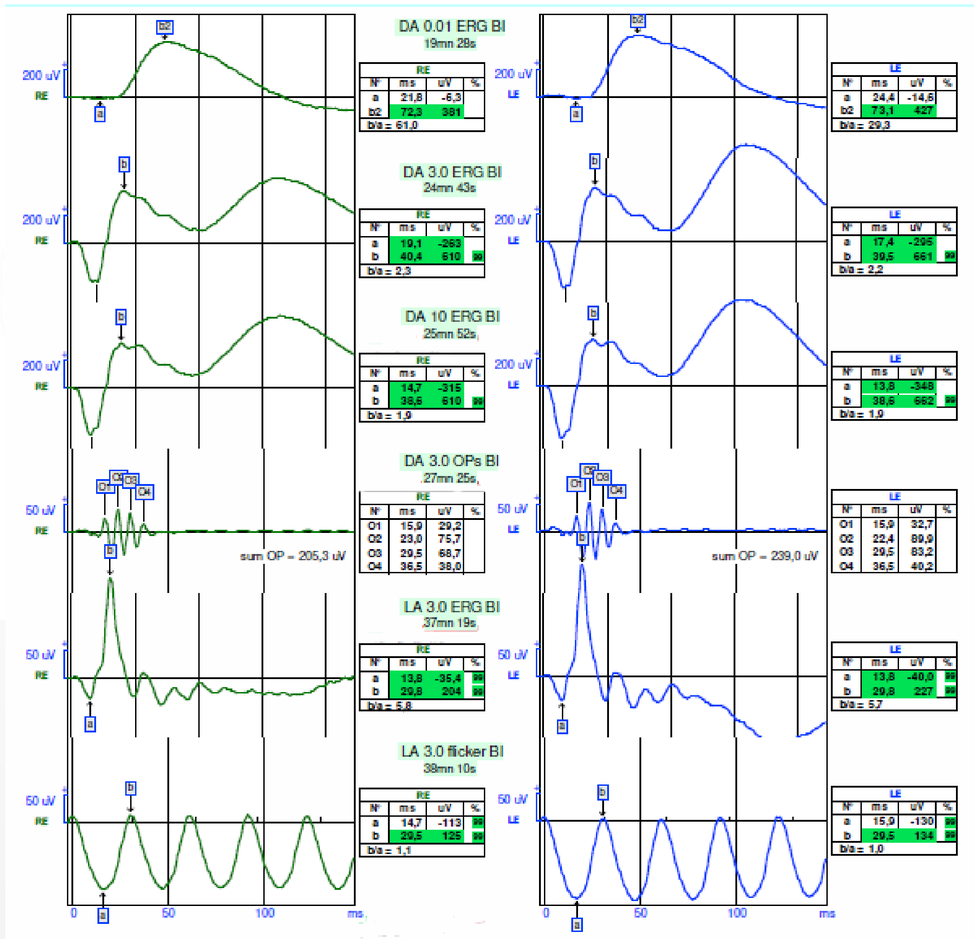
Manufactured by Metrovision
ISO 13485: 2016
certified quality system

METROVISION

Vision electrophysiology

Flash ganzfeld ERGs

Evaluation of responses from the different layers of the retina and from the rod and cone systems.

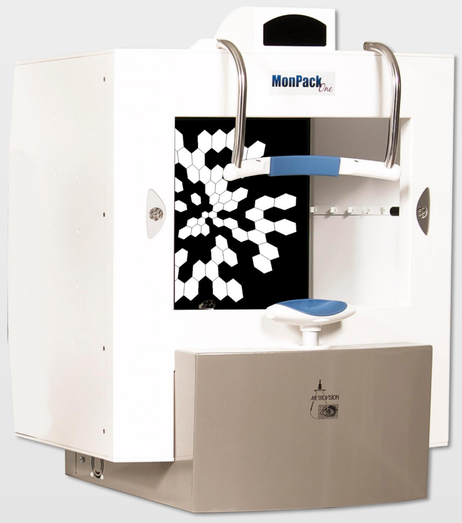


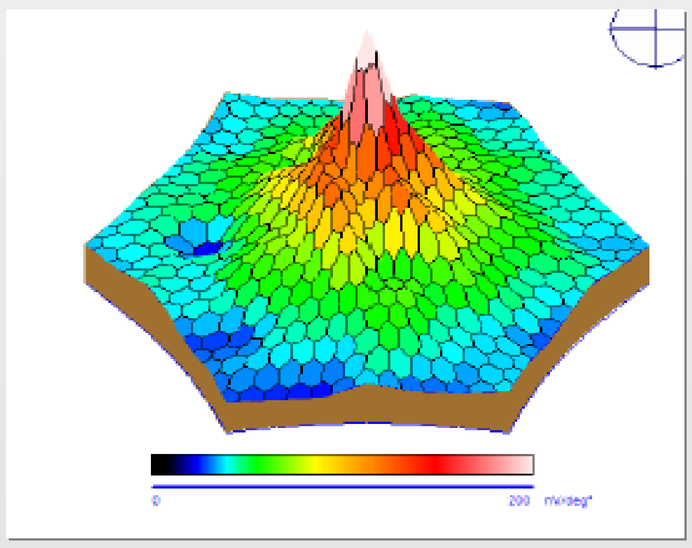
Key points:

- *ISCEV standard ERG protocol,*
- *On-Off, S-cone, .. responses.*

Multifocal ERGs

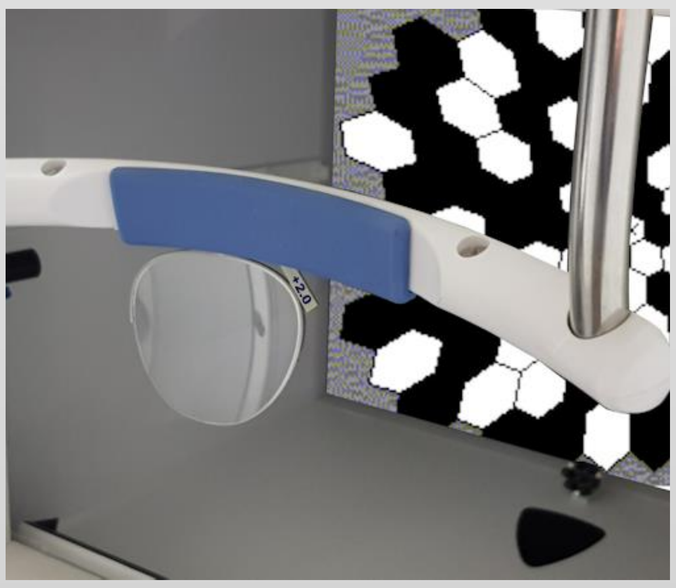
Realization of a detailed and objective cartography of the electrical activity of the retina.

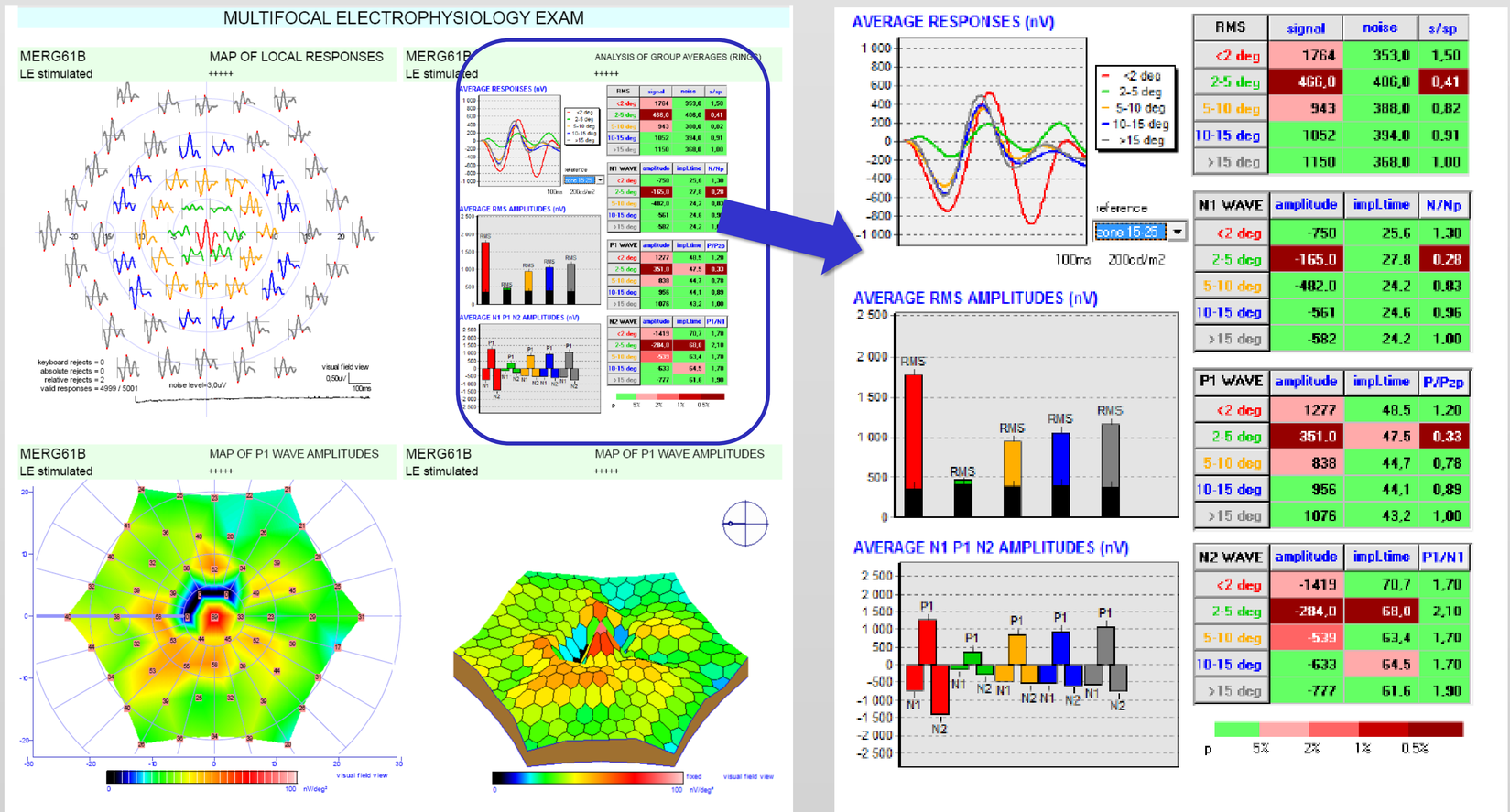




Key points:

- *high luminance stimulation,*
- *precise control of stimulation timing,*
- *large field refractive lenses,*
- *ring ratio analysis.*





RMS	signal	noise	s/sp
<2 deg	1764	353,0	1,50
2-5 deg	466,0	406,0	0,41
5-10 deg	943	388,0	0,82
10-15 deg	1052	394,0	0,91
>15 deg	1150	368,0	1,00

N1 WAVE	amplitude	impl.time	N/Np
<2 deg	-750	25,6	1,30
2-5 deg	-165,0	27,8	0,28
5-10 deg	-482,0	24,2	0,83
10-15 deg	-561	24,6	0,96
>15 deg	-582	24,2	1,00

P1 WAVE	amplitude	impl.time	P/P2p
<2 deg	1277	48,5	1,20
2-5 deg	351,0	47,5	0,33
5-10 deg	838	44,7	0,78
10-15 deg	956	44,1	0,89
>15 deg	1076	43,2	1,00

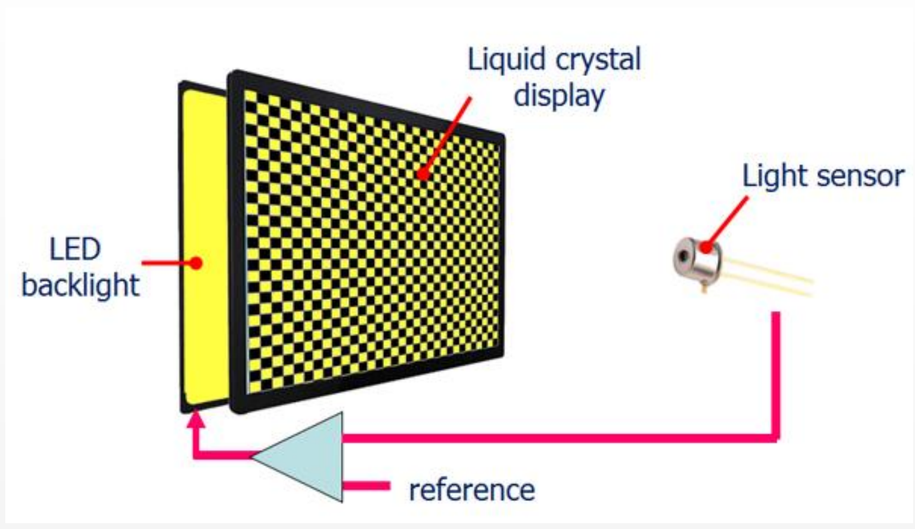
N2 WAVE	amplitude	impl.time	P1/N1
<2 deg	-1419	70,7	1,70
2-5 deg	-284,0	68,0	2,10
5-10 deg	-539	63,4	1,70
10-15 deg	-633	64,5	1,70
>15 deg	-777	61,6	1,90

p 5% 2% 1% 0,5%

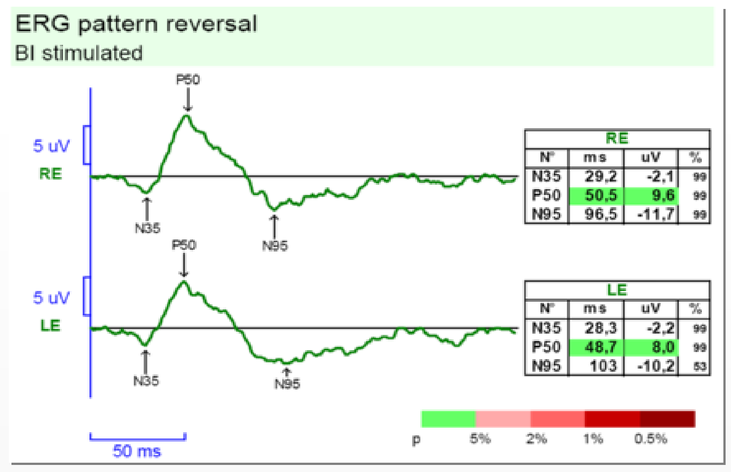
MfERG in hydroxychloroquine intoxication showing a reduction of amplitude between 2 and 5 degrees of eccentricity.

Vision electrophysiology

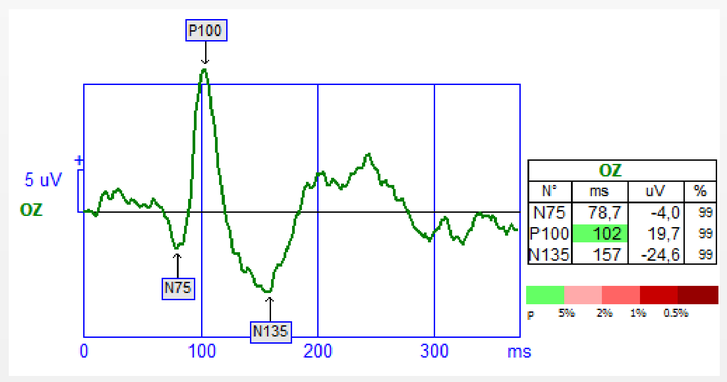
Pattern ERGs and VEPs



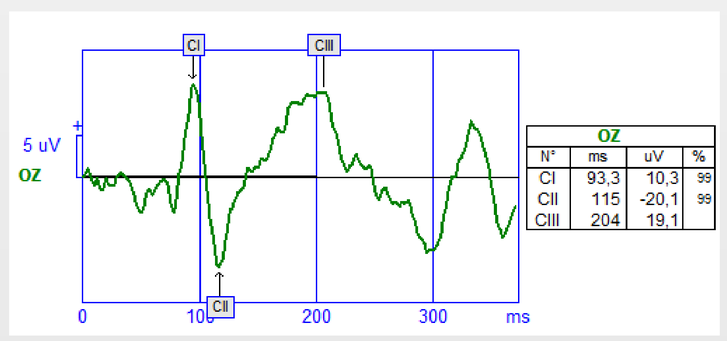
Principle of the active suppression of the luminance artefact



ERG response to a pattern reversal stimulation



VEP response to a pattern reversal stimulation



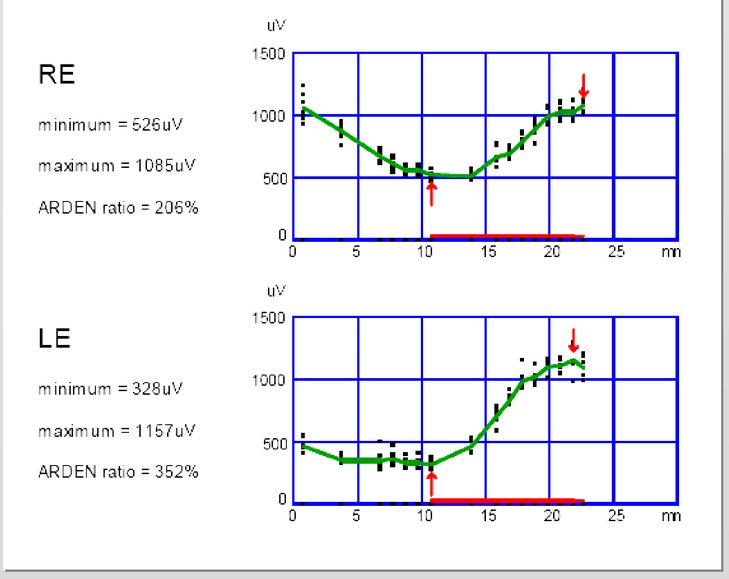
VEP response to a pattern on-off stimulation

Key points:

- *Pattern reversal and pattern ON-OFF,*
- *Programmable pattern size, luminance and contrast,*
- *Active suppression of the luminance artefact,*
- *Statistical analysis of the reliability of responses,*
- *Animations to maintain the attention of children.*

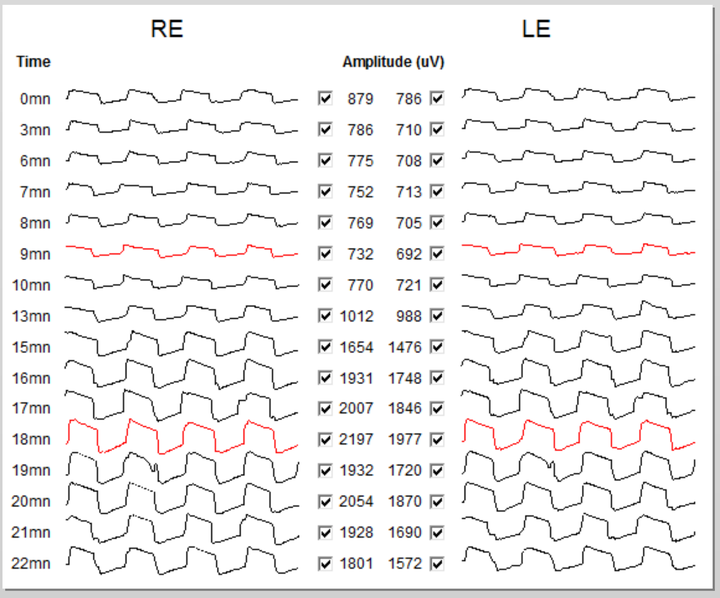
Sensory EOG

Evaluation of the responses from the pigment epithelium.



Key points:

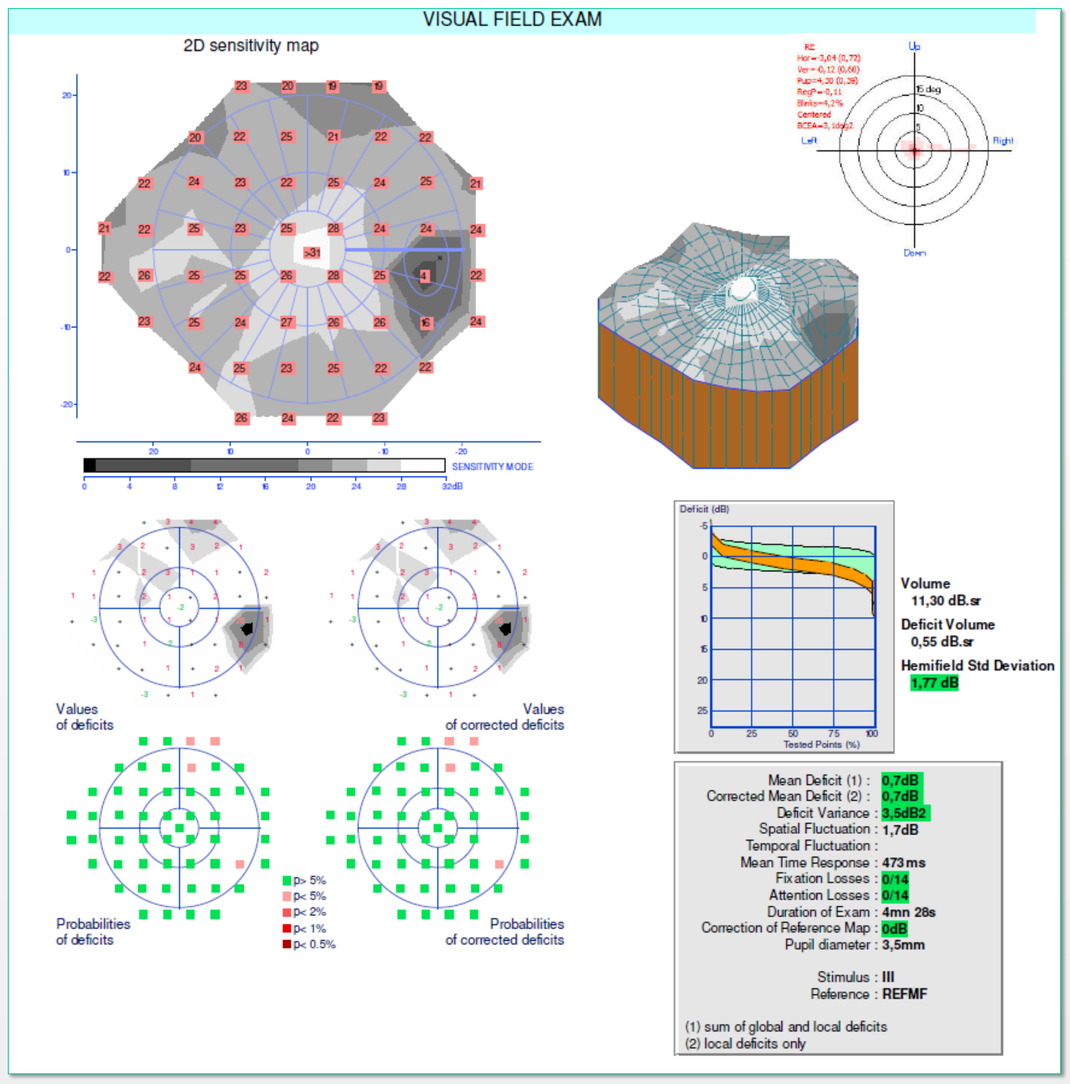
- *Fully automated analysis of dark trough, light peak and Arden ratio,*
- *Slow and fast oscillations,*
- *Dilated or non-dilated pupils,*
- *Tests for low vision.*



Standard automated static perimetry

The test library includes **STAT** and **FAST** procedures covering eccentricities up to 10, 24, 30 and 60 degrees.

Tests for Blue / yellow perimetry (SWAP) are also provided.



	Background (cd/m2)	Stimulus size	Eccentricity (degrees)
STAT/FAST 30	10	III	30
STAT/FAST24	10	III	24
STAT/FAST10	10	III	10
Fovea	10	III	fovea
FAST-60	10	III	60
SWAP	100	V	30

Key points:

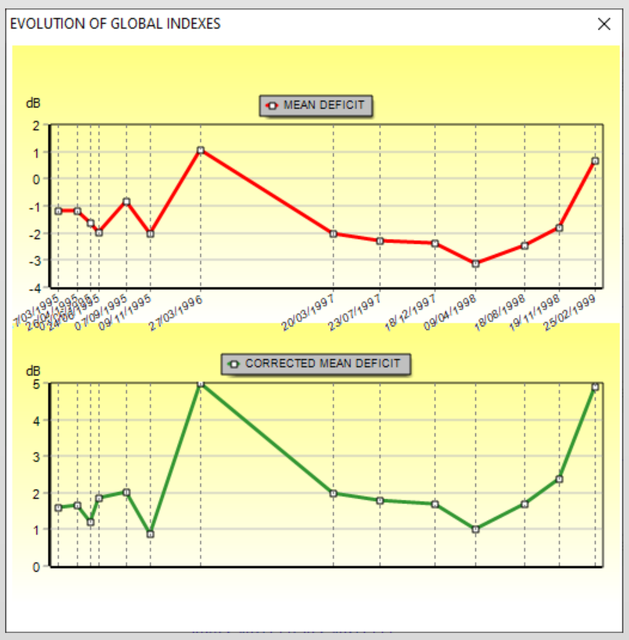
- *Standard automated perimetry tests and analysis,*
- *Automated analysis of fixation stability (BCEA), pupil size and blink rate.*

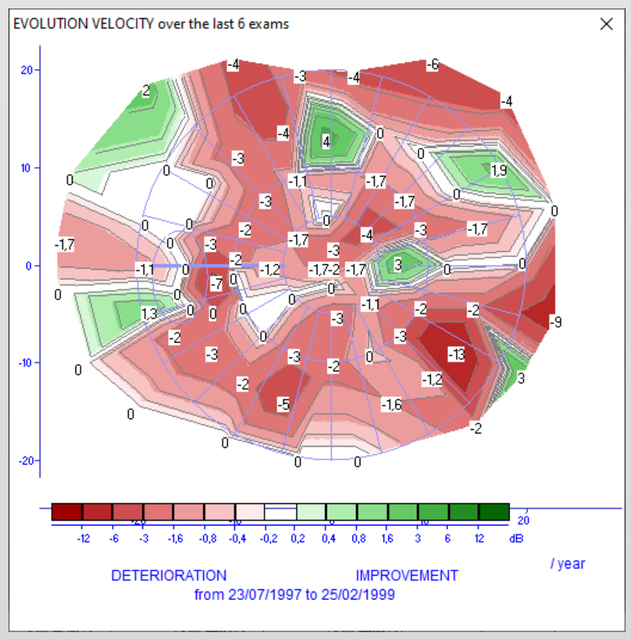
Visual field analysis

Visual field progression

Key points:

- *Evolution of global scores,*
- *Evolution of local thresholds.*

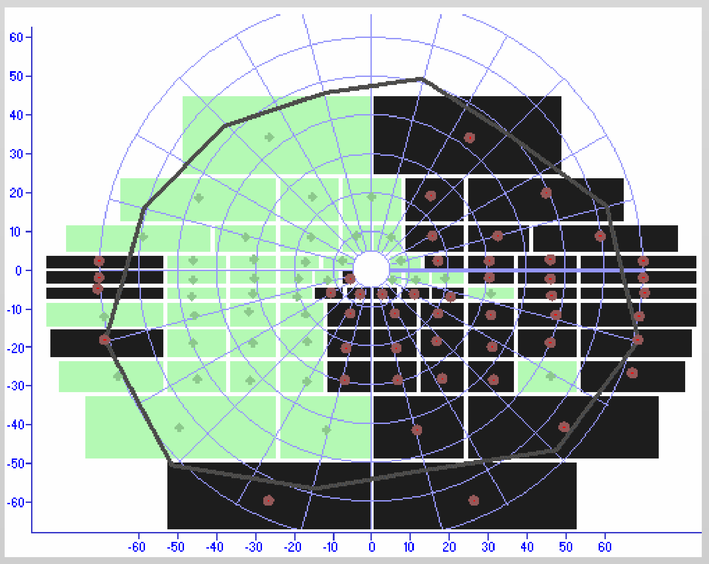




Binocular visual field analysis

Key points:

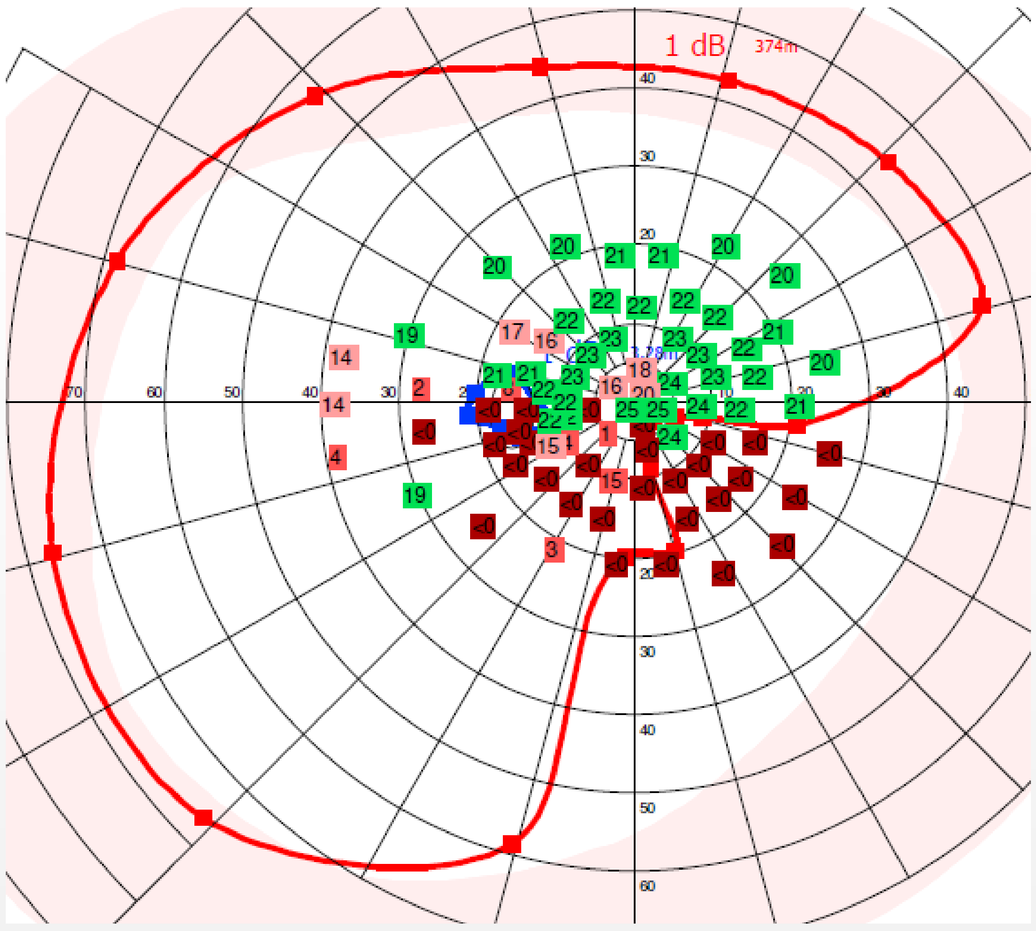
- *Exams are performed under true binocular viewing conditions,*
- *True binocular video monitoring,*
- *Esterman scoring for low vision,*
- *Driving aptitude for group1 and group 2 drivers.*



Mixed Perimetry: combination of Kinetic and Static Perimetry

Mixed perimetry combines the evaluation of the peripheral field with kinetic tests and the evaluation of the central field with static tests.

	Background (cd/m2)	Stimulus size	Eccentricity (degrees)
MIXED-30	10	III	Periphery +30
MIXED-24	10	III	Periphery +24
MIXED-12	10	III	Periphery + 12



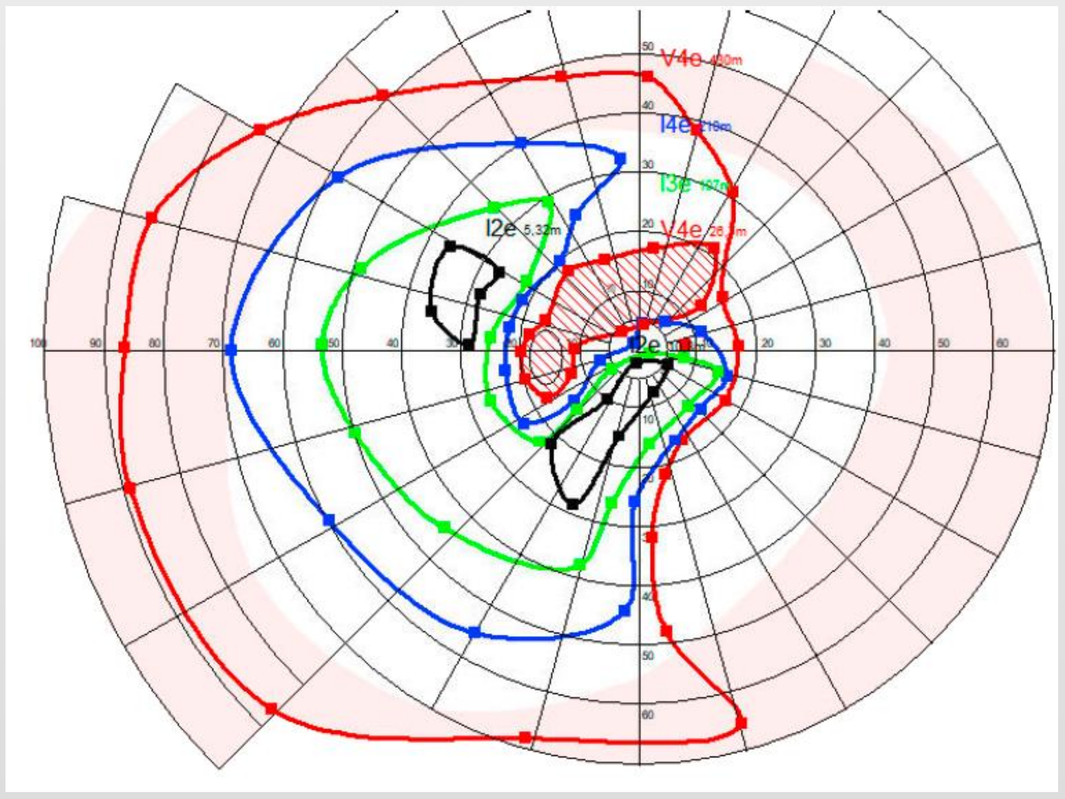
Key points:

- *a complete evaluation of the visual field,*
- *time saving in severely affected visual fields.*

Manual, Goldmann style Perimetry

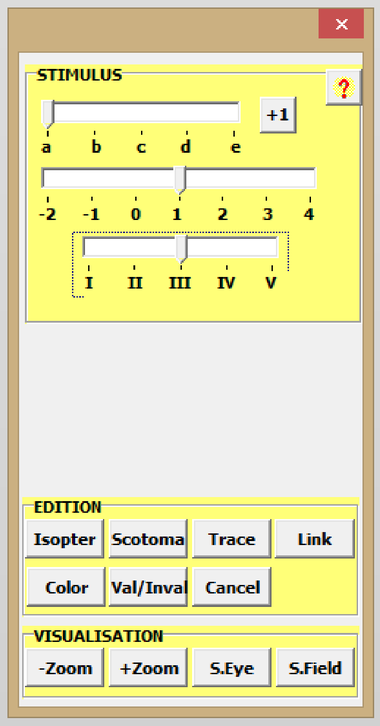
Manual perimetry is needed in a number of clinical situations:

- for patients who are not reliable with automated perimetry,
- for the control of abnormal results obtained with automated perimetry,
- for the evaluation of acute visual field loss.



Key points:

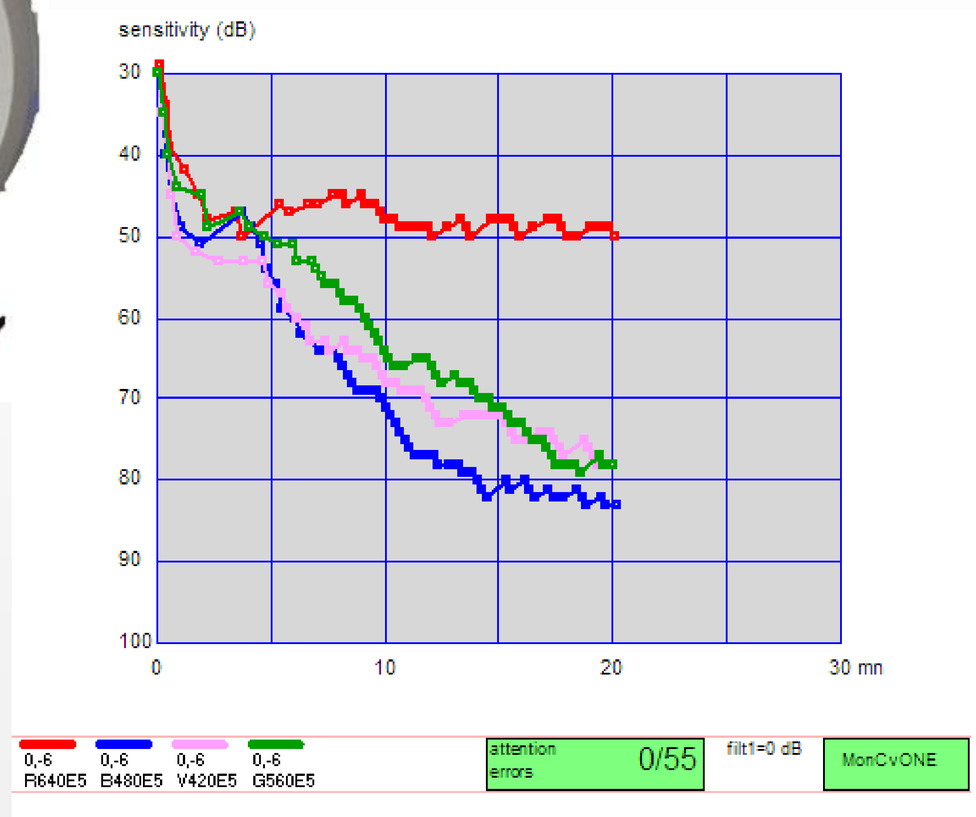
- *Interactive perimetry with direct mouse or stylus control,*
- *Automated quantification of isopters and scotoma surface area,*
- *Detailed evaluation of the macula obtained by zooming-in the central field,*
- *Automated analysis of fixation stability (BCEA), pupil size and blink rate.*



Dark and light adaptation exams

Key points:

- *Programmable bleaching time and luminance,*
- *Programmable stimulus color and location (with Goldmann size V),*
- *Automated measurement of alpha point and rod intercept time (RIT),*
- *Full field stimulus threshold (FST)*
  scotopic and photopic with white or chromatic stimuli,
- *Photoaversion test (PAT).*

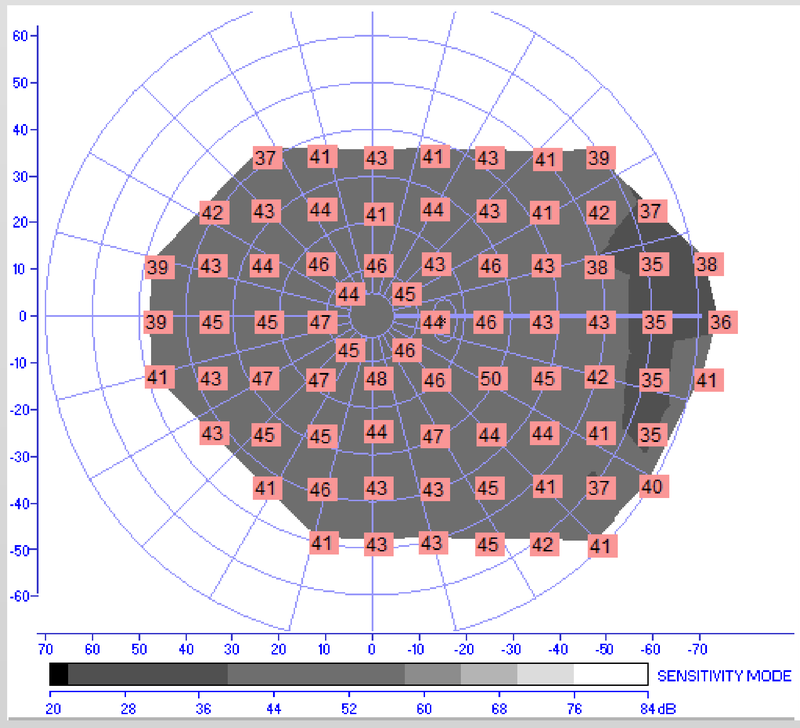


Dark and light adapted chromatic perimetry

MonCvONE can be operated under scotopic, mesopic and photopic luminance levels

Key points:

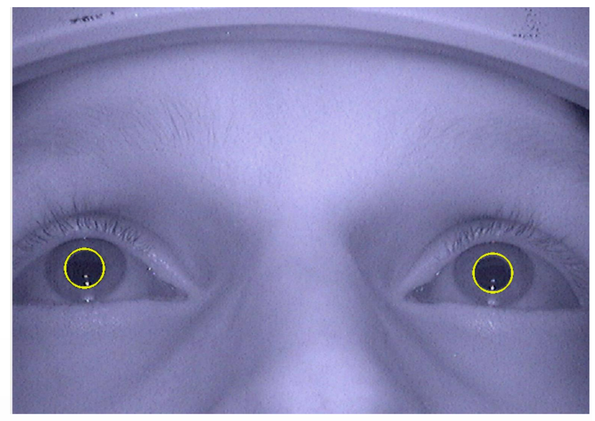
- *Ultrawide (70dB) dynamic range of luminance,*
- *Up to 5 user defined dichroic color filters,*
- *Programmable stimulus position over the entire visual field with a resolution better than 1 degree.*

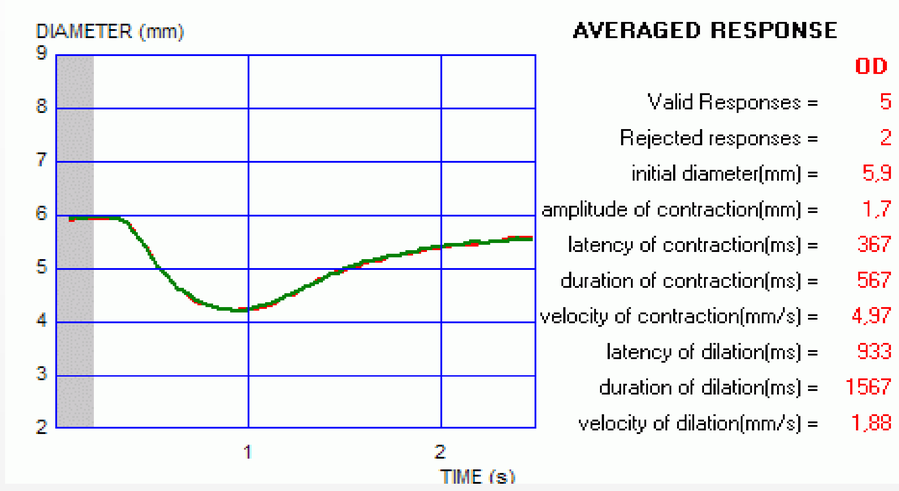


Pupillometry

Key points:

- *Programmable luminance and color,*
- *Ganzfeld flashes or local stimulations (size V),*
- *Automated analysis of pupil flash responses,*
- *Binocular or monocular.*

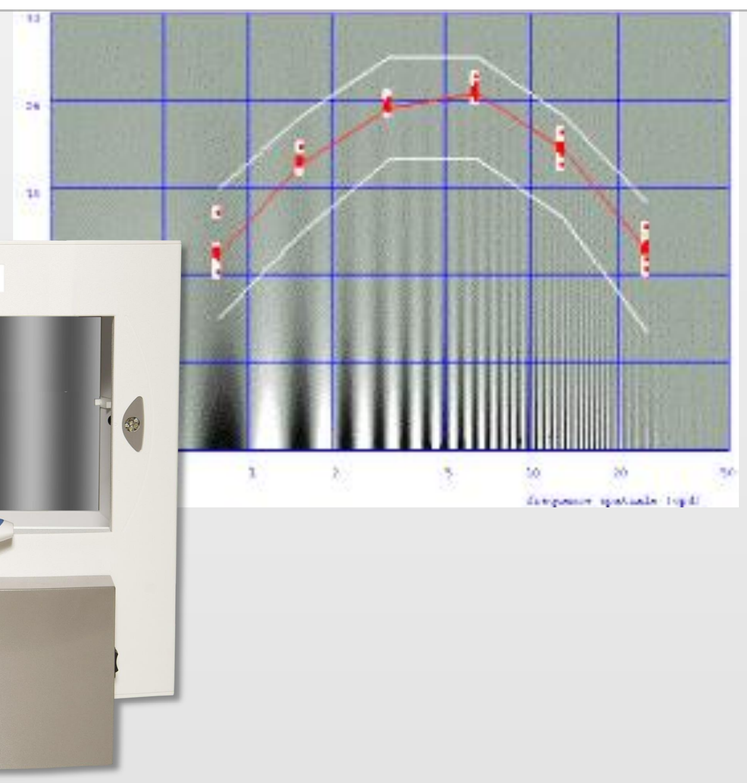




Contrast sensitivity

Key points:

- *programmable under photopic and mesopic conditions,*
- *programmable spatial frequencies,*
- *ascending limit threshold.*

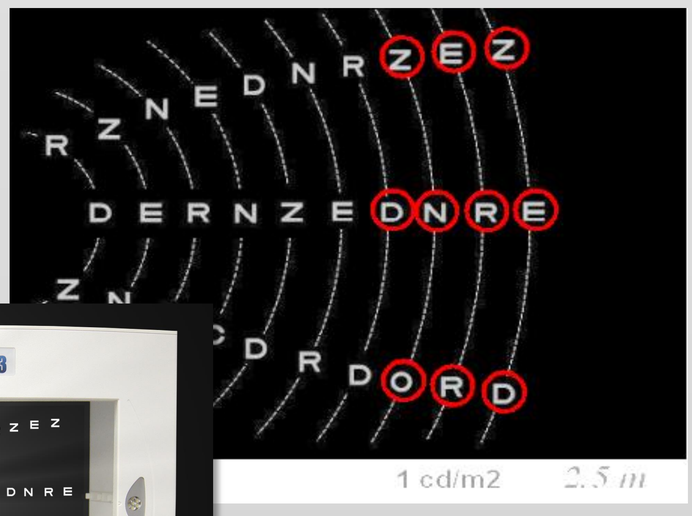


Visual aptitudes

This exam includes Standard Landolt ring and ETDRS visual acuity tests, in addition to glare test, color test and aniseikonia test..

Key points:

- *For the glare test: calibrated optotypes presented over a dark background to optimize glare measurements,*
- *3 levels of luminance to adapt to different levels of alteration,*
- *automated scoring.*

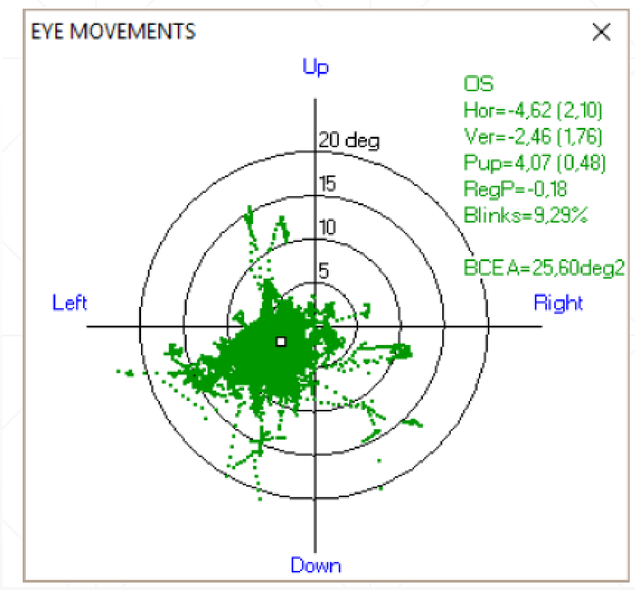


Video oculography

Video and eye movement recording during exams

Key points:

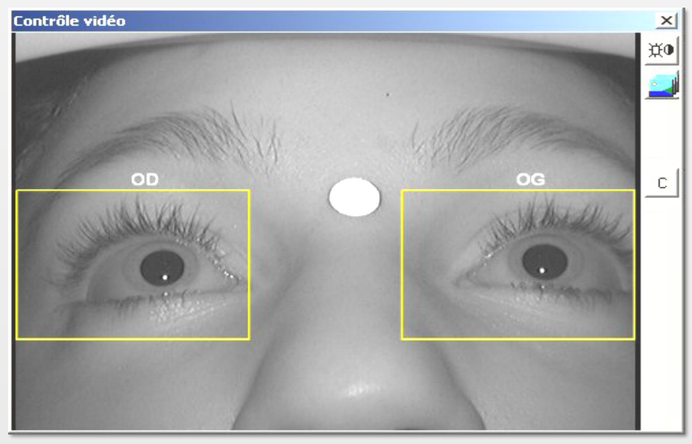
- *Available during Perimetry (automated and manual), MfERG, Dark adaptometry, Pupillometry…,*
- *non invasive, easy setting,*
- *no calibration,*
- *binocular or monocular,*
- *Simple report with stability of fixation (BCEA), pupil size, blink rate*



Video-oculography

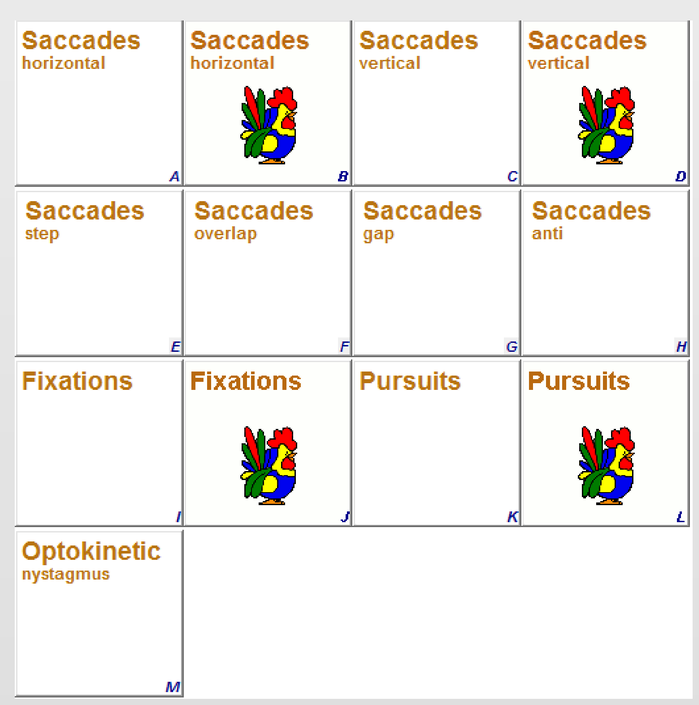
Includes tests for

- **Fixation**
- **Saccades** (steps, overlap, gap and antisaccades)
- **Pursuits** at different velocities
- **Optokinetic nystagmus** (OKN)



Key points:

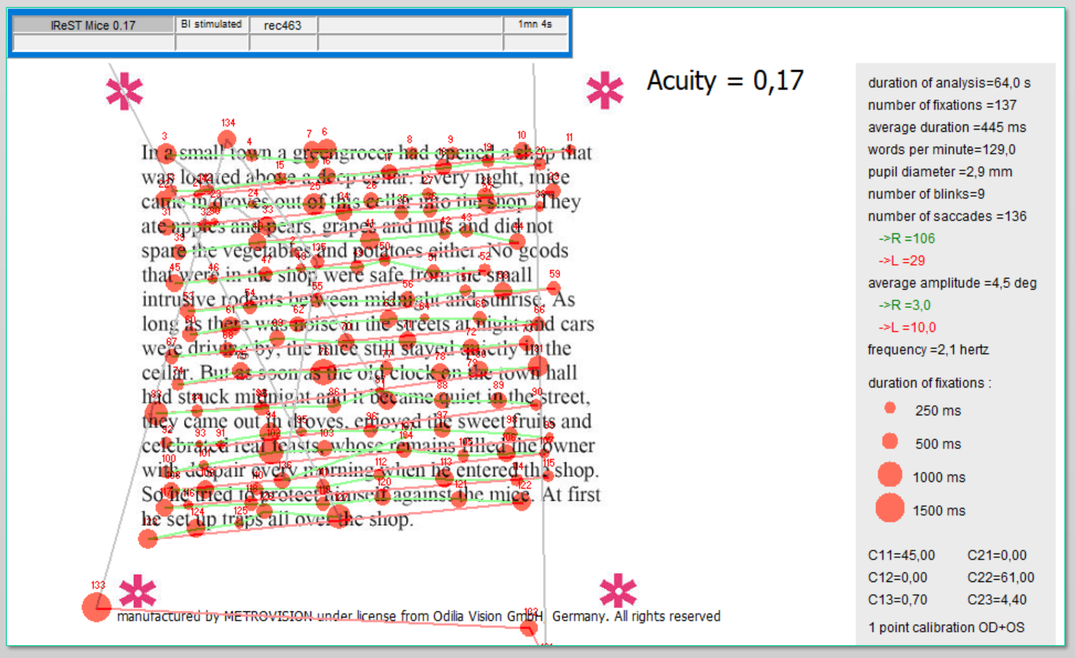
- *200Hz camera for the analysis of response time and saccade velocity,*
- *non invasive, easy setting,*
- *simple calibration,*
- *binocular or monocular,*
- *automated analysis of nystagmus (frequency and amplitude), pursuits (gain) and saccades (velocity, latency)*



Eye gaze strategy

Key points:

- *uses the international IReST reading test combined with eye movement recording,*
- *automated measurement of reading speed, number and duration of fixations,*
- *4 different letter sizes,*
- *10 different texts with similar difficulty,*
- *available in 17 different languages.*



Tests for young children

The MonBaby portable flash stimulator

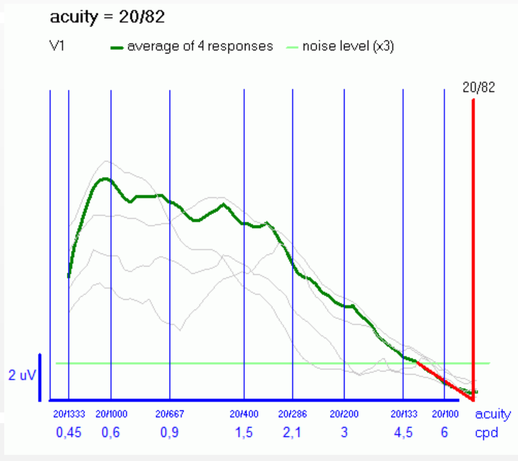
Key points:

- *Standard test with flash ERG and VEP*
- *Can be used in children and patients in lying position*

Sweep VEP exam

Key points:

- *Rapid, objective estimation of visual acuity*



Baby vision exam

Key points:

- *Estimation of visual acuity based on the ability to track a moving pattern*

Examinations and options

Vision electrophysiology exams

• Flash and pattern ERG and VEP exam	PVM-EL
• Sensory EOG exam	PVM-ES
• Multifocal ERG and VEP exam	PVM-MU
• Sweep VEP exam	PVM-SS
• Multifrequency VEP exam	PVM-ST

Options

• Electric table	HVM-TABLE
• Additional camera for distance tests	HVM-CAMERA
• Set of large field refractive lenses	HVM-OPTI
• High speed camera (200Hz)	HVM-camera-200
• Video and eye movement recording (during visual field and other exams)	PVM-CF

Vision psychophysic exams

• Visual field exam (automated static & dark adapted chromatic perimetry)	PVM-CV
• Visual field PRO exam (Goldmann, Blue/Yellow perimetry)	PVM-CW
• Contrast sensitivity exam	PVM-SC
• Dark adaptometry exam (dark adaptometry, FST and PAT)	PVM-AO
• Visual aptitude exam (Landolt rings, ETDRS, glare test, color test)	PVM-AC
• Attention visual field exam	PVM-UF
• Macular pigments exam	PVM-PI
• Metamorphopsia exam	PVM-ME

Eye movement exams

• Electro-nystagmography exam	PVM-EO
• Video-oculography exam	PVM-YE
• Pupillometry exam	PVM-PU
• Scan path analysis exam	PVM-SA
• Baby vision exam	PVM-EN

Specifications

	MonCvONE	MonPackONE	MonBaby
			
Eye-screen distance (cm)	30	30 and up	10
Ganzfeld stimulus color	White Blue 447 nm (CR) Amber 590 nm Red 655 nm (CR)	White Blue 465nm Green 525nm Red 619nm	White Blue 460nm Red 635nm
Maximum ganzfeld luminance ($cd.m^{-2}$)	White = 1400 Blue = 60 Amber = 350 Red = 160	White = 810 Blue = 64 Green = 510 Red = 240	30
Maximum ganzfeld flash strength ($cd.s.m^{-2}$) with 5 ms flash	White = 10 Blue = 0.3 Amber = 1.75 Red = 0.8	White = 40 Blue = 3.6 Green = 29 Red = 14	30
Ganzfeld dynamic range (dB)	60 (steps of 0.5 dB) 95 (CR, steps of 0.5 dB)	70 (steps of 0.5 dB)	35 (steps of 5dB)
Ganzfeld flash duration (ms)	2 and up	2 and up	5
Spot stimulus size	I to V	I to V	NA
Spot spatial range (degrees)	Up=60 Down=70 Temporal=105 Nasal=70	Up=30 Down=30 Temporal = 80 Nasal=80	NA
Spot position resolution (degrees)	0.1	0.1	NA
Spot stimulus color	White, Blue 440nm Red 610nm (PRO) 5 dichroic filters (CR)	White, Blue, Green, Red	NA
Spot max luminance ($cd.m^{-2}$)	3200	120	NA
Spot dynamic range (dB)	75	75	NA
Glare test luminance ($cd.m^{-2}$)	NA	20000	NA
Pattern stimulation resolution	NA	1024x768 pix 0.21 mm	NA
Apparatus dimensions (cm)	W =62 H = 74 D = 35	W =46 H = 54 D = 37	W =24 H = 16 D = 5
Apparatus weight (kg)	23	25	0.94
Apparatus electrical supply	230V 1.8A or 110V 3.6A 50 or 60Hz	230V 0.7A, 110V 1.4A 50 or 60Hz	12V from MonPackONE

Notes:

NA = not available

1 dB = 0.1 log units

PRO = Professional version

I to V = Goldmann stimulus sizes

CR = Clinical Research version

Bioelectric amplifiers

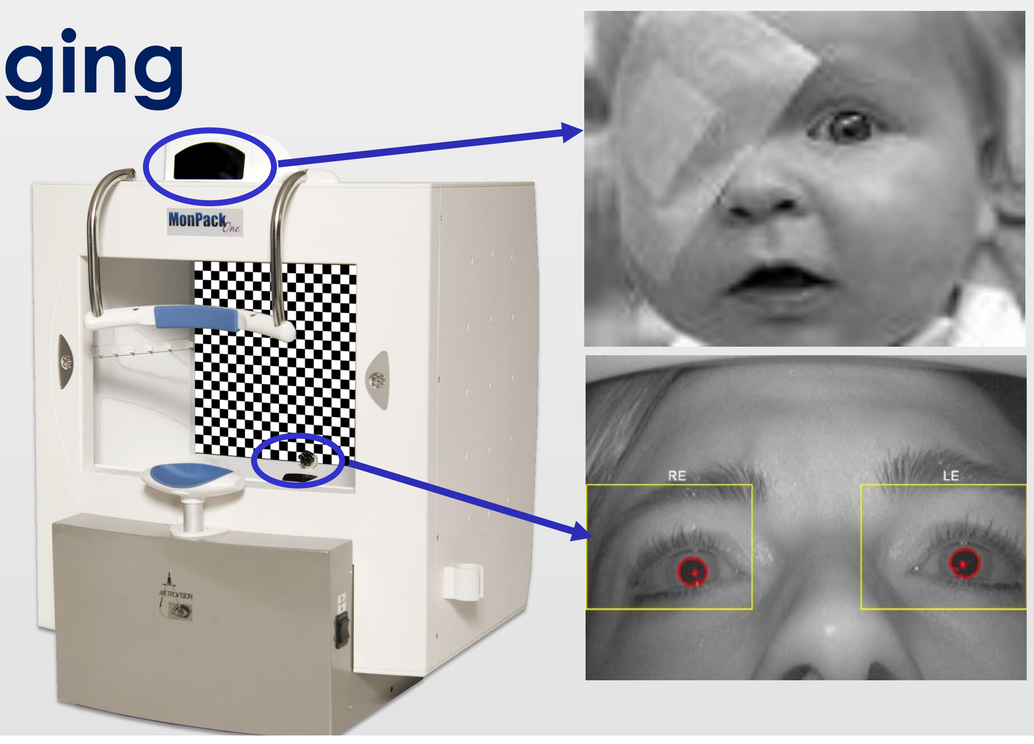
- 2, 4 or 5 channels,
- High performances
  (input noise < 0.5 µV pp, CMRR > 115 dB,
  input impedance> 200 Mohms)
- Optoelectronic isolation,
- Automated control of electrode impedances.

Correction of refractive errors

A set a large field lenses (55 mm in diameter) prevents errors resulting from the lens rim or lens misalignment in visual field perimetry and multifocal ERG exams.

Fixation control and video imaging

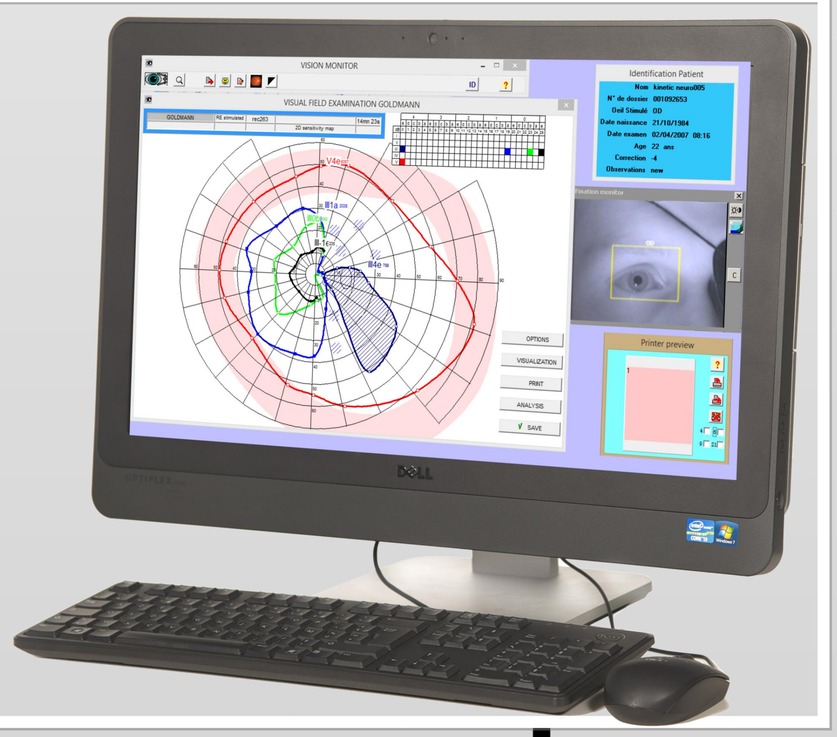
All stimulators are equipped with a near-infrared (940nm) camera for monitoring fixation and pupil size.
Video and eye movements can be recorded during exams.
On the MonPackONE stimulator a second camera is proposed for distance tests (1 m).



Computer networking

The Vision Monitor is controlled from a standard PC operating under Windows 10 or 11.

It can be connected to a computer network allowing the access to results from a work station and their exportation under **PDF** or **DICOM** formats.



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