

# Vision Monitor

## Visual electrophysiology systems

- Electroretinography (ERG)
- Visual evoked potentials (VEP)
- Electro-oculography (EOG)



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CE 0120

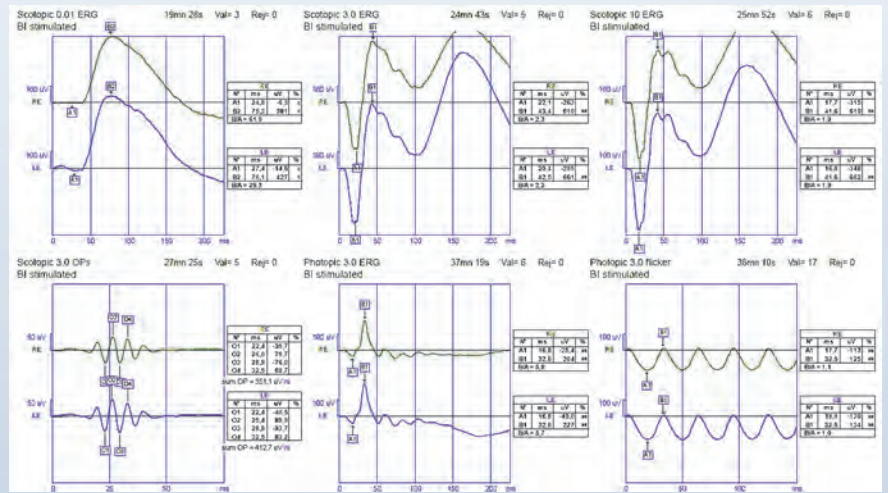
Manufactured by Metrovision  
ISO 9001:2008 ISO 13485: 2003  
certified quality system



# Flash ERGs

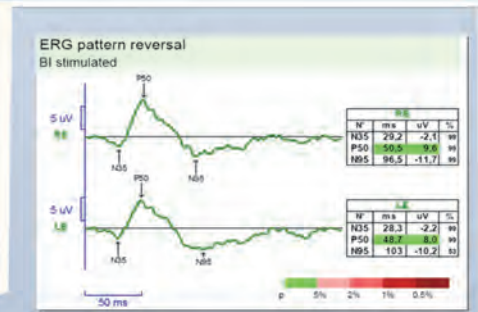
Evaluation of responses from the different layers of the retina and from the rod and cone systems.

Realization of ISCEV protocols and of research protocols.



# Pattern ERGs

Evaluation of responses from ganglion cells and from the macula.

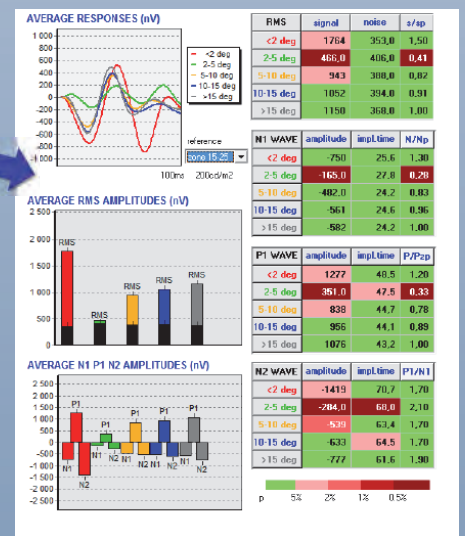
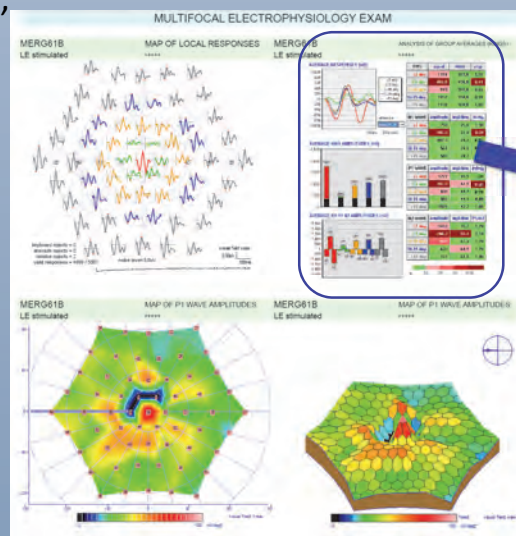
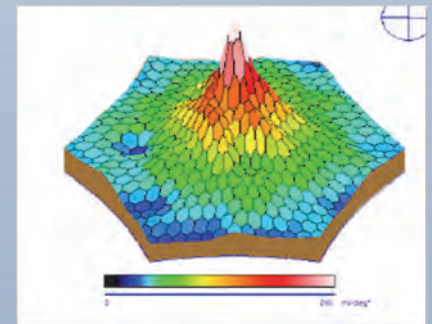


# Multifocal ERGs

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

Unique features:

- high luminance stimulation,
- precise control of stimulation timing,
- large field refractive lenses,
- age corrected normative database,
- ring ratio analysis



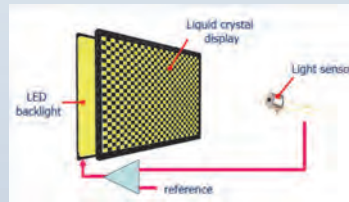
MfERG in hydroxychloroquine intoxication showing a reduction of amplitude between 2 and 5 degrees of eccentricity.

# Flash and pattern VEPs

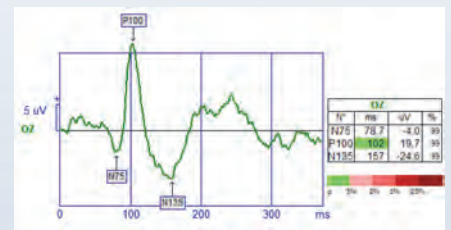
Evaluation of cortical responses to flash and pattern stimulations.

Unique features:

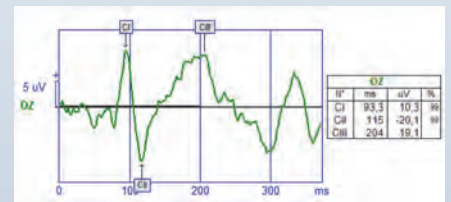
- Active control of luminance
- Statistical analysis of the reliability of responses



Principle of the active control of luminance



Response to a pattern reversal stimulation

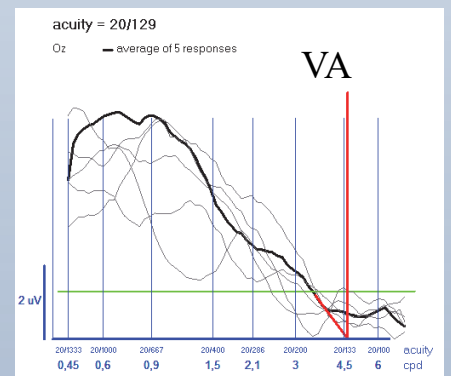


Response to a pattern on-off stimulation

# Sweep VEPs

Rapid and objective estimation of visual acuity based on a rapid sweep of spatial frequencies.

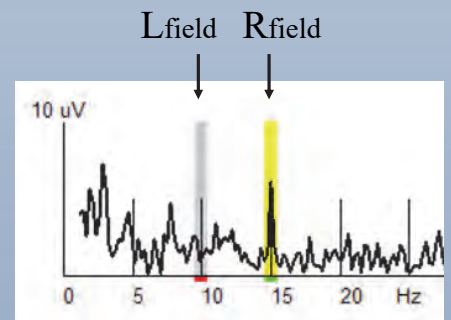
**Applications:** exam of preverbal, handicapped and malingering patients.



# Multifrequency VEPs

Simultaneous recording of responses from 2 hemi-fields using stimulations with different temporal frequencies.

**Applications:** evaluation of chiasmatic and post-chiasmatic syndromes

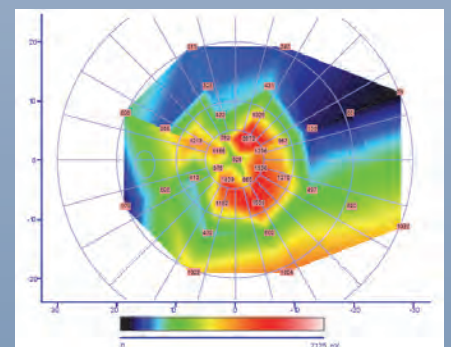


Absence of response from the left hemifield in an hemianopsia

# Multifocal VEPs

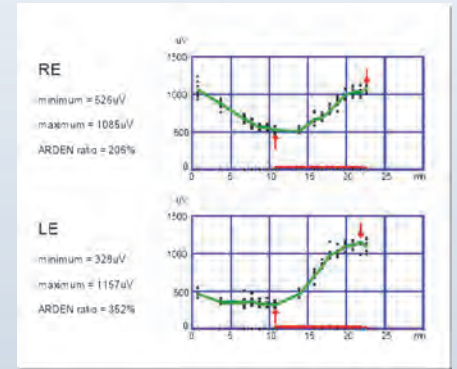
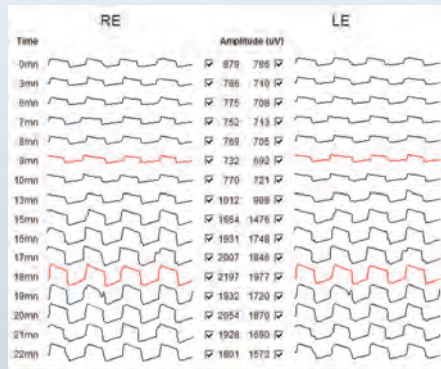
Cartography of the cortical electric activity using m-sequence pattern reversal stimulations.

Simultaneous recording of 4 channels with automated fusion of results.



# Sensory EOG

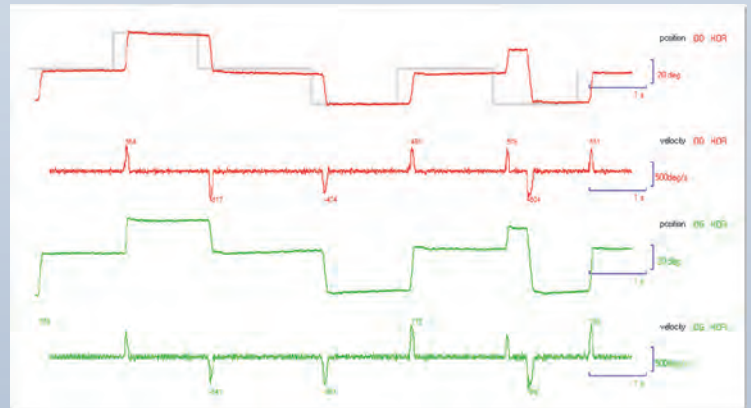
Evaluation of responses from the pigment epithelium.



# Electronystagmography

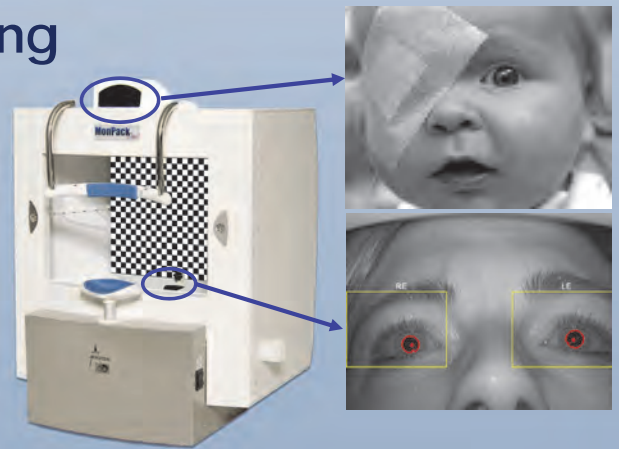
Analysis of eye movements:

- fixations,
- saccades,
- pursuits,
- optokinetic nystagmus



# Fixation control and video imaging

All stimulators are equipped with a near-infrared camera for near vision tests (30 cm).  
 On the MonPackONE stimulator a second camera is proposed as an option for distance tests (1 m).  
 Another option allows the video recording of exams which may be used for a post-exam analysis of responses .



# Other applications

(refer to the specific brochures for detailed information)

<b>Pupillo-metry</b> 	<b>Contrast sensitivity</b> 	<b>Dark adaptation</b> 	<b>Eye gaze strategy</b> 	<b>Video oculography</b> 	<b>Baby vision</b> 
<b>Visual field</b> 	<b>Visual field PRO</b> 	<b>Attention field</b> 	<b>Metamorphopsia</b> 	<b>Macular pigments</b> 	<b>Visual aptitudes</b> 



## MonPackONE stimulator

Compact and universal stimulator:

- Combines ganzfeld, pattern and multifocal stimulation functions
- Active control of luminance (patent pending)



## MonColor stimulator

Stimulator for advanced visual electrophysiology:

- 5 color wavelengths:  
violet, blue, green, red, deep red
- Responses from S and L cones
- Photopic negative responses (PhNR)
- ON and OFF responses



## MonCvONE stimulator

Stimulator for full field standard automated perimetry and Goldmann perimetry.

It can also generate « ganzfeld» stimulations used for flash ERG and VEP as well as pupillometry.



## MonBaby stimulator

Portable stimulator for flash ERG and VEP suitable for tests on young children and in ambulatory conditions.

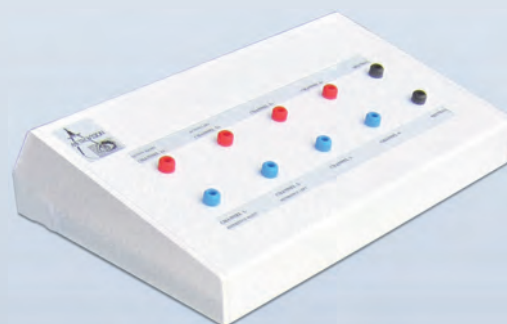
It includes a matrix of light emitting diodes with programmable intensity and frequency.

	<b>MonPack</b> <i>One</i>	<b>MonColor</b>	<b>MonCV</b> <i>One</i>	<b>MonBaby</b>
<b>Wavelength</b>	Blue, green, red and their combinations	Violet, blue, green, red, deep red and their combinations	Blue, green, red and their combinations	White Blue and red
<b>Dynamic range</b>	from $3 \times 10^{-6}$ up to $10 \text{ cd.s.m}^{-2}$	from $15 \times 10^{-6}$ up to $15 \text{ cd.s.m}^{-2}$ or $150 \text{ cd.s.m}^{-2}$ (**)	from $3 \times 10^{-6}$ up to $10 \text{ cd.s.m}^{-2}$	from $10^{-3}$ up to $100 \text{ cd.s.m}^{-2}$
<b>Background luminance</b>	Up to $100 \text{ cd.m}^{-2}$	Up to $2000 \text{ cd.m}^{-2}$	Up to $2000 \text{ cd.m}^{-2}$	0 or $30 \text{ cd.m}^{-2}$
<b>Stimulus duration</b>	from 2 ms and up	from 2 ms and up	from 2 ms and up	< 5 ms
<b>Electrophysiologic exams</b>	Flash ERG and VEP Pattern ERG and VEP Multifocal ERG and VEP Multifrequency VEP Sensory EOG	Flash ERG and VEP S and L cone responses PhNR responses Sensory EOG	Flash ERG and VEP Sensory EOG	Flash ERG and VEP
<b>Psychophysical exams</b>	Dark adaptation Contrast sensitivity Central visual field perimetry	Dark adaptation	Dark adaptation Standard automated perimetry Goldmann perimetry	
<b>Eye movement exams</b>	Electronystagmography Video-oculography Pupillometry	Pupillometry	Pupillometry Field of eye movements	

- Notes:**
- MonPackONE, MonColor, MonCvONE and MonBaby can be combined in a unique system with unequalled performance
  - \*\* MonColor Plus option

## Bioelectric amplifiers

- 2, 4 or 5 channels
- High performances  
(input noise <  $0,5 \mu\text{V pp}$ , CMRR > 115 dB,  
input impedance > 200 Mohms)
- Optoelectronic isolation
- Automated control of electrode impedances



## User interface

- Standard PC with Windows 7, 8 or 10 environment
- Access to results through the computer network
- Easy exportation of data
- Video monitoring window
- Unique data base for all exams
- Internet assistance and maintenance
- DICOM option

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