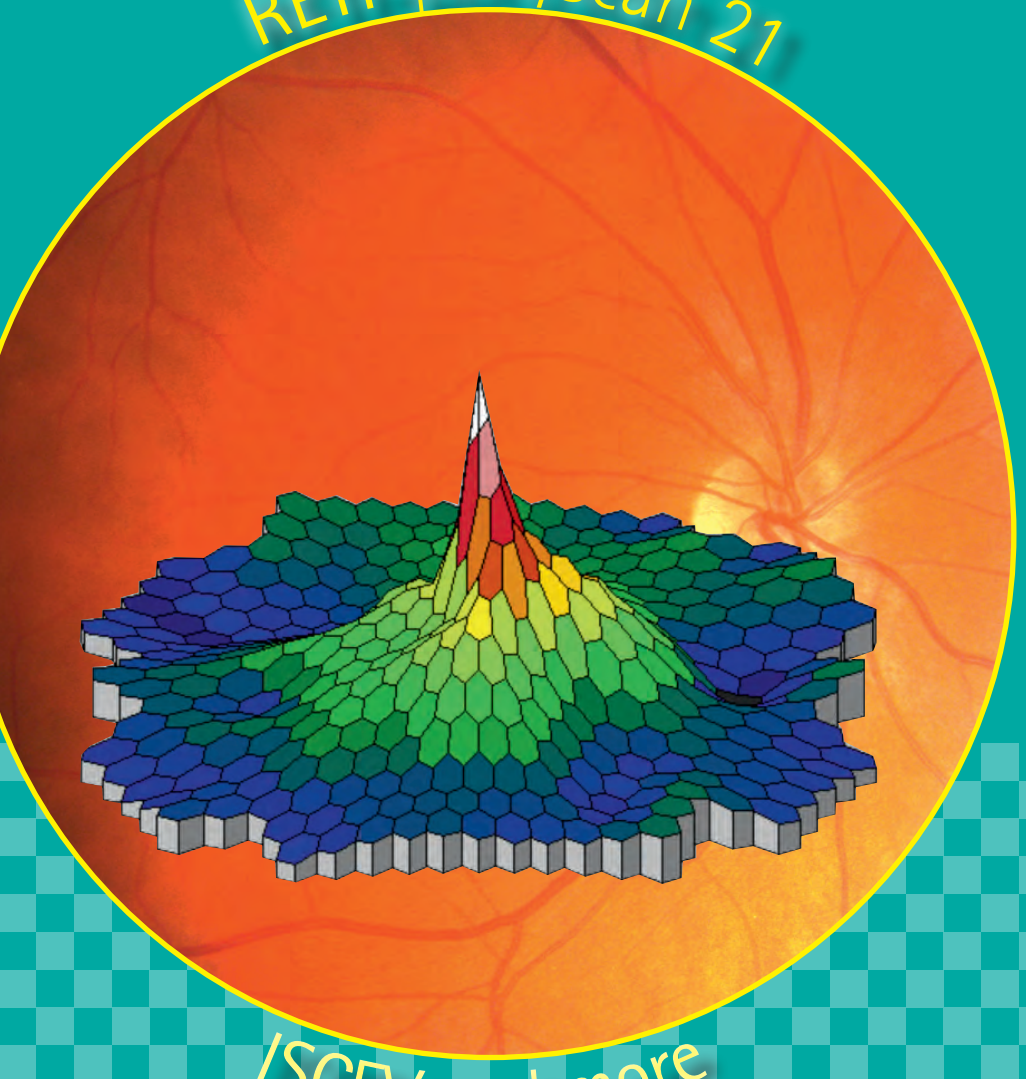
S

ERG·VEP·EOG·mfERG·mfVEP

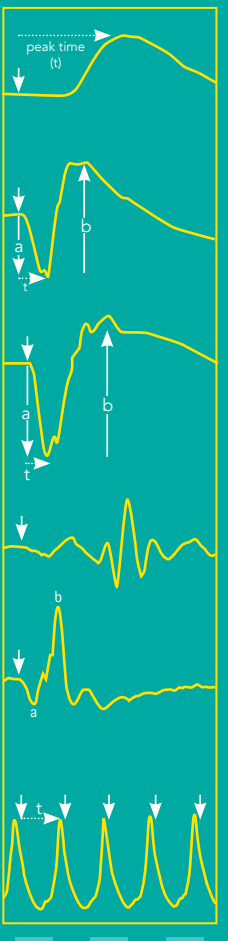
ALL IN ONE

Made in Germany

RETI-port/scan 21



ISCEV and more



Dark-adapted 0.01 ERG
b-wave: rod-initiated on pathways

Dark-adapted 3.0 ERG
a-wave: photoreceptors & postreceptoral on pathways b-wave: on & off bipolar cells

Dark-adapted 10.0 ERG
a-wave: photoreceptors & postreceptoral on pathways b-wave: predominantly rod bipolar cells (on pathways)

Dark-adapted 3.0
oscillatory potentials On & off pathways reflecting middle retinal layers & vascular function

Light-adapted 3.0 ERG
a-wave: cones with post-receptoral on & off pathways b-wave: on & off bipolar cells

Light-adapted 3.0 flicker
Cone systems with post-receptoral on & off pathways

ROLAND CONSULT
Electrophysiology and Imaging

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RETI-port/scan 21 product overview

The RETI-port/scan 21 is an electrodiagnostic device used to generate stimulus signals and to display the electrical signals generated by the retina and the visual nerve system.
The system is able to display digitized:

- Electroretinograms (ERG),
- Visually Evoked Potentials (VEP),
- Electrooculograms (EOG), and the
- Measurement of pupillary reactions.

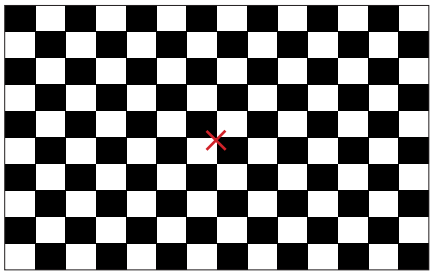
The data can be shown as measurement curves as well as spectral and topographical maps. The various examinations are performed by trained medical staff.

Model gamma plus[2]

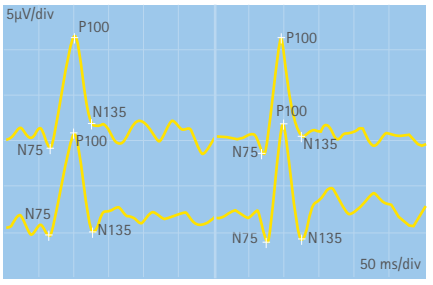
VISUAL ELECTROPHYSIOLOGY
Clinical Applications Overview

Diagnosis	EOG	ERG	mfERG	Pattern ERG	Flash VEP	Pattern VEP	Multichannel VEP
Inherited retinal dystrophies	+	++	+				
Macular diseases		+	++	+			
Vascular diseases including diabetes		++	+	+			
Opaque media (cataract) or trauma		++			++		
Optic neuropathies				+		++	
Unexplained visual loss		++		+		++	
Infant with questionable vision		+			+	++	
Albinism		+					++
Toxic and nutritional eye disease		++				++	
Glaucoma				++		+	
Suspected intracranial lesion				+		+	++

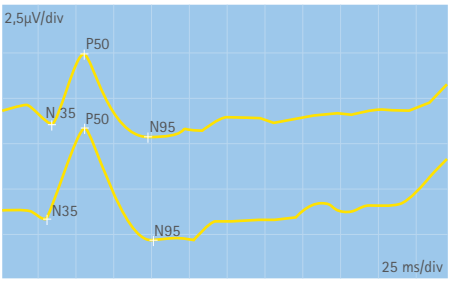
Pattern stimulus ERG/VEP



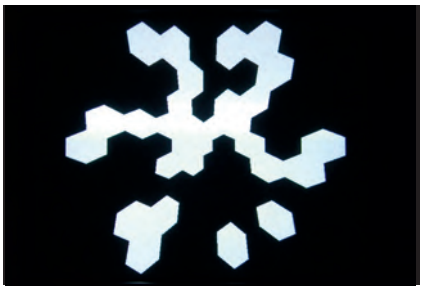
Pattern VEP



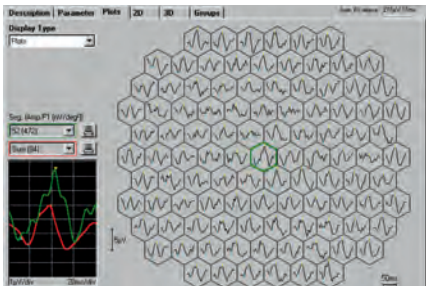
Pattern ERG



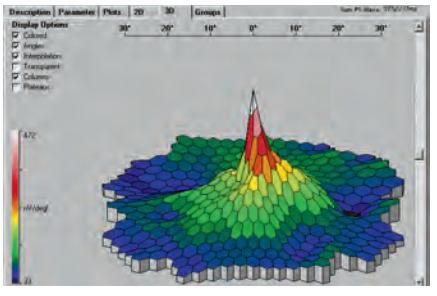
mfERG



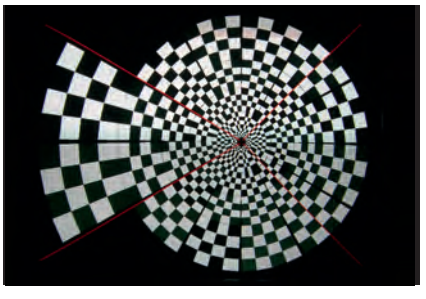
Normal mfERG plots



3D plot normal patient

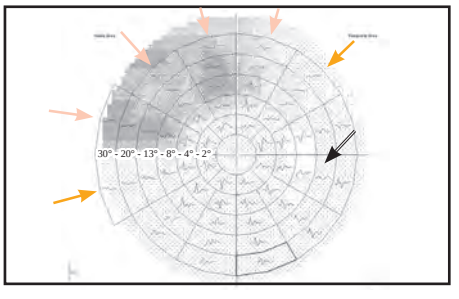


mfVEP



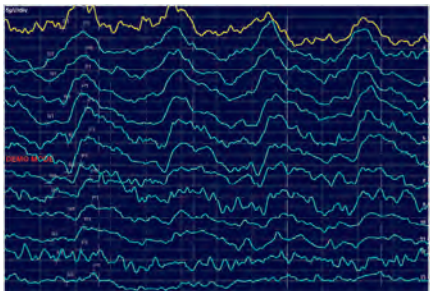
mfVEP plots

Overlapping with visualfield

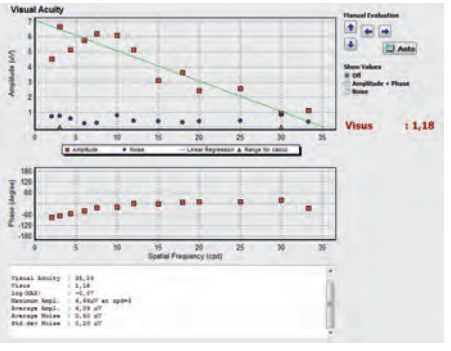


Visual acuity

Analyse curves

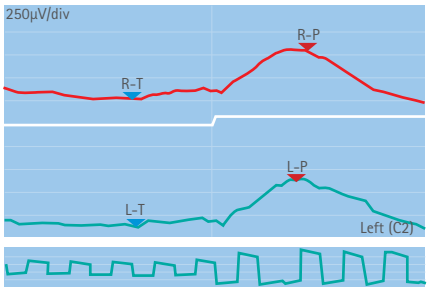


Analyse regression curve

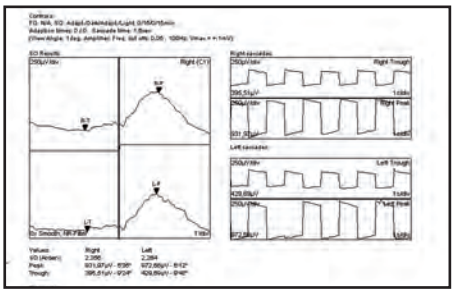


Ganzfeld Q450 EOG stimulus

EOG result

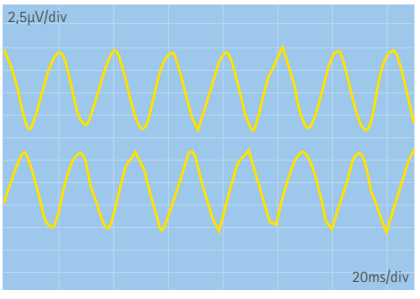


Ganzfeld Q450C/SC EOG Stimulus

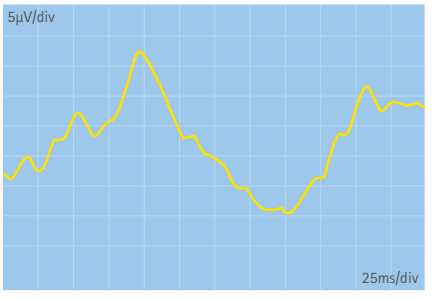


BABYflash E130 flash ERG/VEP

Steady state photopic 30 Hz ERG

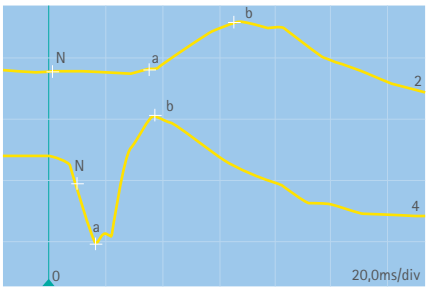


Transient VEP

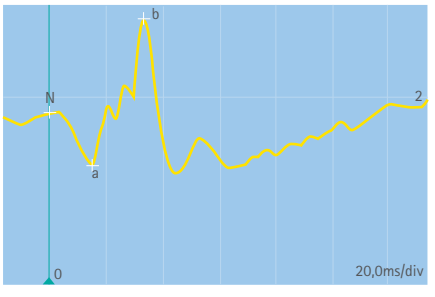


MINIganzfeld I8 flash ERG/VEP

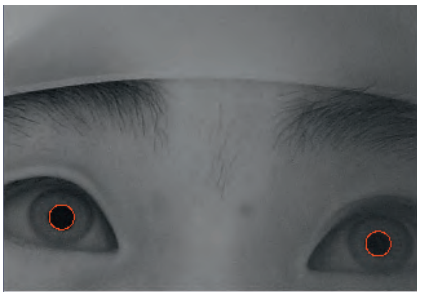
Dark adapted ERG



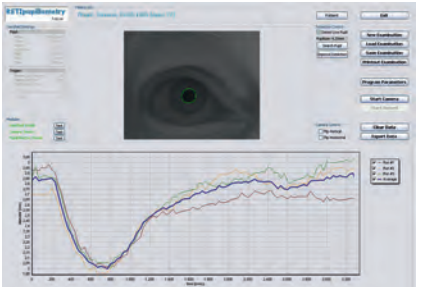
Light adapted ERG



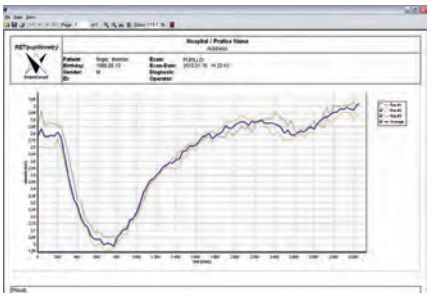
Pupillometer measurement



Pupillometer result



Pupillometer report



RETI-port/scan 21

Protocols / Models	basic	alpha	alpha plus	beta	beta plus	gamma	gamma plus	gamma plus²	delta plus	delta plus²
Pattern-VEP	●	●	●	●	●	●	●	●	-	-
Pattern-ERG	●	●	●	●	●	●	●	●	-	-
Flash-VEP	-	●	●	●	●	●	●	●	-	-
Albino VEP 1 Channel	●	●	●	●	●	●	●	●	-	-
Flash ERG	-	●	●	●	●	●	●	●	-	-
Photopic Negative Resp.	-	-	-	●	●	●	●	●	-	-
ON-OFF Resp.	-	-	-	-	-	●	●	●	-	-
S-Cone ERG	-	-	-	-	-	●	●	●	-	-
EOG	-	-	-	●	●	●	●	●	-	-
Multifocal ERG P	-	-	●	-	●	-	-	-	●	-
Multifocal ERG S	-	-	-	-	-	-	●	●	-	●
Multifocal VEP	-	-	-	-	-	-	-	●	-	●
Visual Acuity	●	●	●	●	●	●	●	●	-	●
Glaucoma Screening	●	●	●	●	●	●	●	●	-	-
Pupilometry	-	-	-	-	-	-	-	●	-	-
Scientific Tool Port	-	-	-	-	-	●	●	●	-	-
Scientific Tool Scan	-	-	-	-	-	-	●	●	●	●
Stimulators										
Monitor TFT 19"	●	●	●	●	●	●	●	●	●	●
Ganzfeld Q450 C	-	-	-	●	●	-	-	-	-	-
Ganzfeld Q450 SC	-	-	-	-	-	●	●	●	-	-
MINIganzfeld I8	-	-	-	-	-	-	●	●	-	-
BABYflash E130	-	-	-	-	-	-	-	●	-	-
EYE-Fixation Camera										
LA-P	-	-	-	-	-	●	-	-	-	-
LA-S	-	-	●	-	●	-	-	-	●	●
LA-PS	-	-	-	-	-	-	●	●	-	-
Amplifier										
2 Channels	●	●	●	●	●	-	-	-	●	-
4 Channels	-	-	-	-	-	●	●	●	-	●

RETI-port/scan 21

Features:

All programs: ERG, VEP, EOG, mfERG according ISCEV standards
- Possibility to create own programs
- Delivered with normal values and there is an easy way to integrate your own values
- Automated measurement of pupil size in ERG, EOG and mfERG
- Special fixation targets are available on the Stimulator Monitor for children
- Optimized screening ERG/VEP protocols for children
- objective Visual Acuity Test with VEP
- S-Cone ERG, Photopic negative response ERG, ON-OFF ERG
- Early Glaucoma Screening Test with P-ERG
- advanced Glaucoma follow-up with Contrast Flicker Test
- multifocal VEP
- The impedance test with shown image of the electrode position
- Automated artefact rejection in all protocols
- Artefact adjustment as absolute or relative values
- Automated analysis by placing the markers already during the examination
- Digital filter for signal processing
- Possibility to integrate a typical curve in the analysis and on the printout
- PVEP and PERG can also be tested simultaneously
- Display of even and odd average results with calculation of the correlation factor
- Supplied with infrared EYE-Fixation Camera for patient monitoring
- Printout also in pdf format
- Work in the LAN, all data are available at the reading stations
- Export all data to EXCEL
- DICOM interface
- Service via Team Viewer

Operating Unit:

- DELL Mini PC „State of the art"
- Software: Windows 10, Team Viewer

Biosignal amplifier:

- 2 or 4 channel
- Impedance 2 x 100 MΩ
- Common mode rejection >110 dB
- Sensitivity 10 µV/Div to 2 mV/Div
- Low pass: 0,02 Hz to 1 kHz, High pass: 30 Hz to 3 kHz

Monitor Stimulator unit:

- High Quality Brand industrial PC-System
- 19" color-monitor, luminance max. 220 cd/m^2; high contrast
- Checkerboards, bars fields: full, half or quarter
- Pattern reversal / appearance / disappearance
- Software controlled contrast settings (3 % - 99 %)
- black and white or different color settings
- variable fixation points, special pictures for children

Distributor:

Ganzfeld Q450

The Ganzfeld consists of the 400 mm full field globe, with the central fixation LED and two EOG fixation LEDs. The brightness of these LEDs are computer controlled and an infrared camera is integrated.
There are two models Q450 C and Q450 SC.

Model Q450 C: white, blue, red
Model Q450 SC: white, blue, red, royal blue, green, amber
Flash Luminance white: standard flash 3,0 cds/m^2
- Range -40 dB to +5 dB in steps of 5 dB

Flash Luminance color: standard flash 3,0 cds/m^2
- royal blue (455 nm) range -50 dB to -5 dB in steps of 5 dB
- blue (470 nm) range -45 dB to 0 dB in steps of 5 dB
- green (525 nm) range -45 dB to 0 dB in steps of 5 dB
- amber (590 nm) interval -45 dB to 0 dB in steps of 5 dB
- red (625 nm) interval -45 dB to 0 dB in steps of 5 dB

Stimulus ON-OFF:
- all colours: 1 ms to 1000 ms adjustable in steps of 1 ms

Background Luminance:
Option flimmer check according Prof. Krem
For each colour:
- selectable waveform type: sine wave, rectangular
- triangular wave, ramp up or ramp down
- phase shift: 0°-359° in steps of 1°
- contrast 0,1 %-100 % in steps of 0,1 %
- stimulation frequency 1 Hz-150 Hz

adjustable in 1,0 cd/m^2 steps
- white: 1000 cd/m^2
- royal blue (455 nm): 100 cd/m^2
- blue (470 nm): 200 cd/m^2
- red (625 nm): 200 cd/m^2
- green (525 nm): 500 cd/m^2
- amber (590 nm): 750 cd/m^2

simultaneous use of all LED´s to generate different flash/background intensities and colors

Pupilometer
- Full field Ganzfeld stimulation
- Resolution time 33 ms (30 images per second)
- Resolution pupil size 0.1 mm
- Examination settings: Number of cycles, cycle time, record time, flash time, flash intensity, averaging of the cycles

Stimulators

- **BABYflash E130**
  - Flash Luminance: standard flash 3,0 cds/m^2 for white, blue, red
  - Range: -40 dB to +10 dB in steps of 5 dB for white, blue, red
  - Background: 30, 100 and 450 cd/m^2 for white, 10,15, 20, 30 and 50 cd/m^2 for blue (470nm), red (625 nm)
- **MINIganzfeld I8**
  - Flash Luminance: standard flash 3,0 cds/m^2 for white
  - Range: -25 dB to +10 dB in steps of 5 dB for white
- **Test tool for maintenance**
  - Testbox T2 (amplifier test)
  - Mavo-monitor (light intensity test)

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Electrophysiology and Imaging

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17_04-03.2_1.5en_RPS21