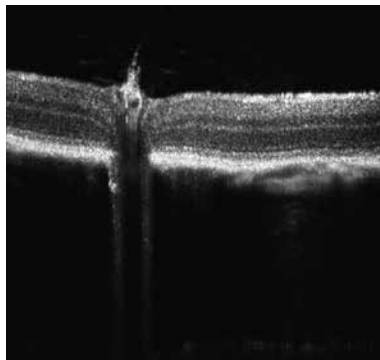
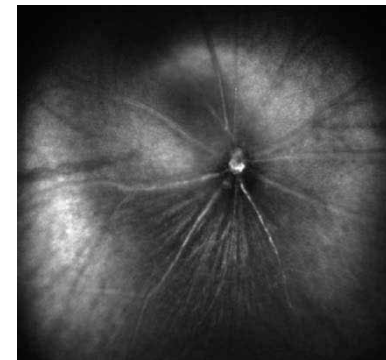


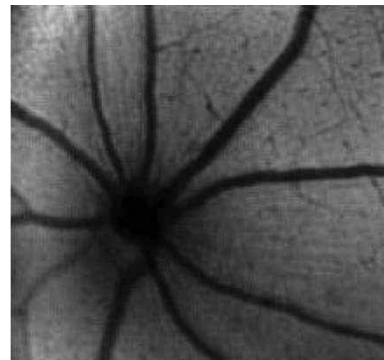
Mouse OCT



Mouse cSLO



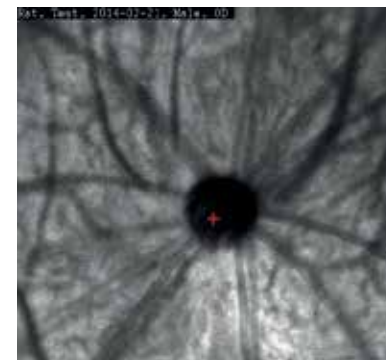
Mouse GFP



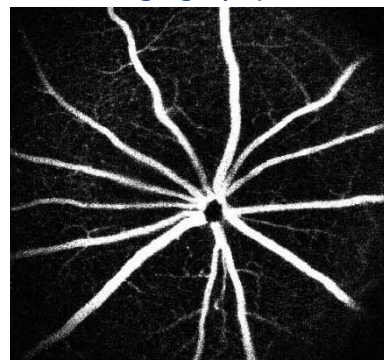
Rat



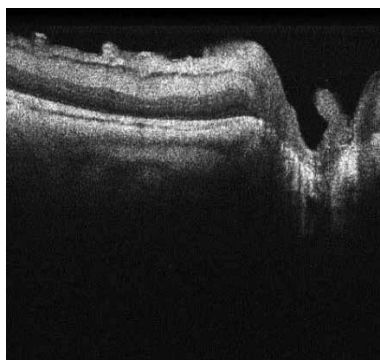
Rat cSLO



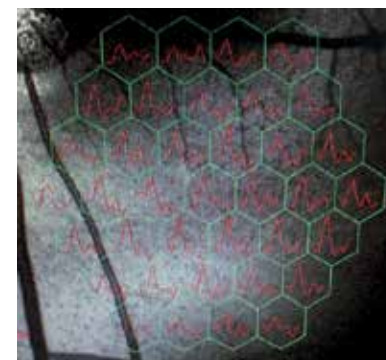
Mouse Angiography



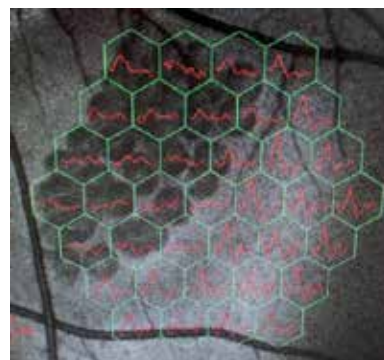
Pig OCT



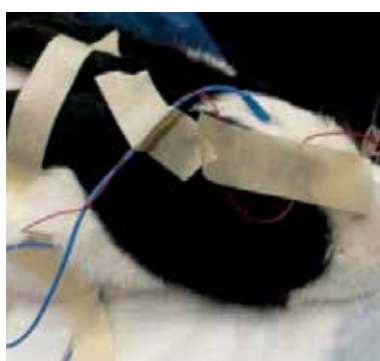
Pig mfERG before Laser Therapy



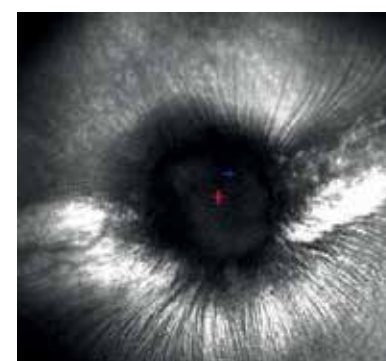
Pig mfERG after Laser Therapy



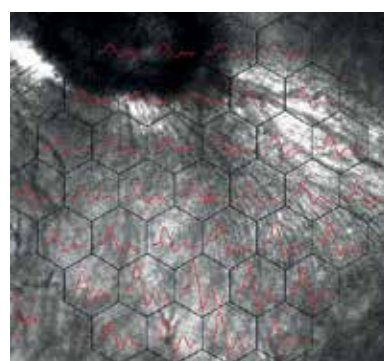
Rabbit



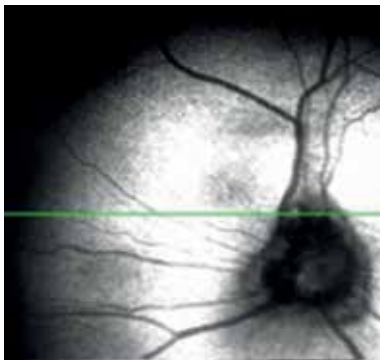
Rabbit cSLO



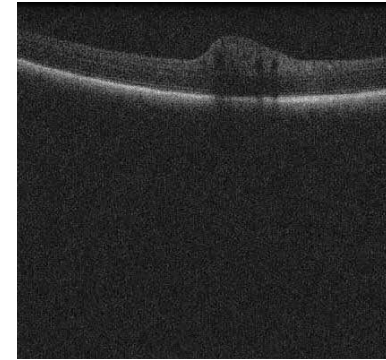
Rabbit mfERG



Dog cSLO



Dog OCT



In order to prevent the drying out of the eye and to simultaneously flatten the cornea during the examination of animals, special contact lenses are required.

**Stimulators**

Monitor	<input type="radio"/>
Ganzfeld Q450	<input type="radio"/>
Ganzfeld Q450SC	<input type="radio"/>
Ganzfeld Q450SCX	<input type="radio"/>
BABYflash	<input type="radio"/>
Pattern Handheld	<input type="radio"/>



BABYflash



Pattern Handheld



Mavo Monitor

**Programs**

SLO-Module	<input checked="" type="radio"/>
ERG-Module	<input type="radio"/>
OCT-Module	<input type="radio"/>
Angio-Module	<input type="radio"/>
Pattern-VEP	<input type="radio"/>
Pattern-ERG	<input type="radio"/>
Flash-VEP	<input type="radio"/>
Pattern-ERG	<input type="radio"/>
multifocal VEP	<input type="radio"/>
multifocal ERG	<input type="radio"/>
multifocal Science	<input type="radio"/>
Visual Acuity	<input type="radio"/>
Nystagmography	<input type="radio"/>
Pupillometry	<input type="radio"/>
Photopic negative response	<input type="radio"/>
ON-OFF Response	<input type="radio"/>
S-Cone ERG	<input type="radio"/>

**Amplifiers**

2 Channels	<input type="radio"/>
4 Channels	<input type="radio"/>
6 Channels	<input type="radio"/>
8 Channels	<input type="radio"/>

**Calibration Tool**

Mavo Monitor with Software	<input type="radio"/>
----------------------------	-----------------------

● Standard ○ Option

Distributor:

**Animal Electrodes**

	<b>Animal Goldring Electrodes</b> Gold wire 0,5 mm, various ring diameters 3-10 mm Part No 3103RC, 3110RC Gold wire 0,25 mm, various ring diameters 3-10 mm Part No 3225RC, 3230RC		<b>Gold Ground Electrode</b> Gold wire 0,5 mm Part No 3100RC
	<b>Concentric Subdermal Needle</b> Steel 0,4 x 13 mm Part No U51-000-G Steel 0,4 x 13 mm Part No U51-003-G Platinum 0,4 x 13 mm Part No U611-000-G Set of 3 x Platinum 0,4 x 13 mm Part No U61-003-G		<b>Optical Lens needle</b> For mouse Part No 1000-100-100 S
	<b>DTL Electrode ER4</b> 254cm Part No 1000-510-330 Er04		<b>Connection cable for DTL Electrode</b> 1 Set of connection cables, DIN 1,5 mm Part No 1000-510-302-D  1 Set of connection cables, 2 mm connector Part No 1000-510-302-2



Electrophysiological diagnostic systems

Friedrich-Franz-Str.19, D-14770 Brandenburg/Germany  
Phone: +49 (0)3381.8901034, Fax: +49 (0)3381.8902994  
www.roland-consult.de, e-mail: info@roland-consult.de

17-50-2.2E

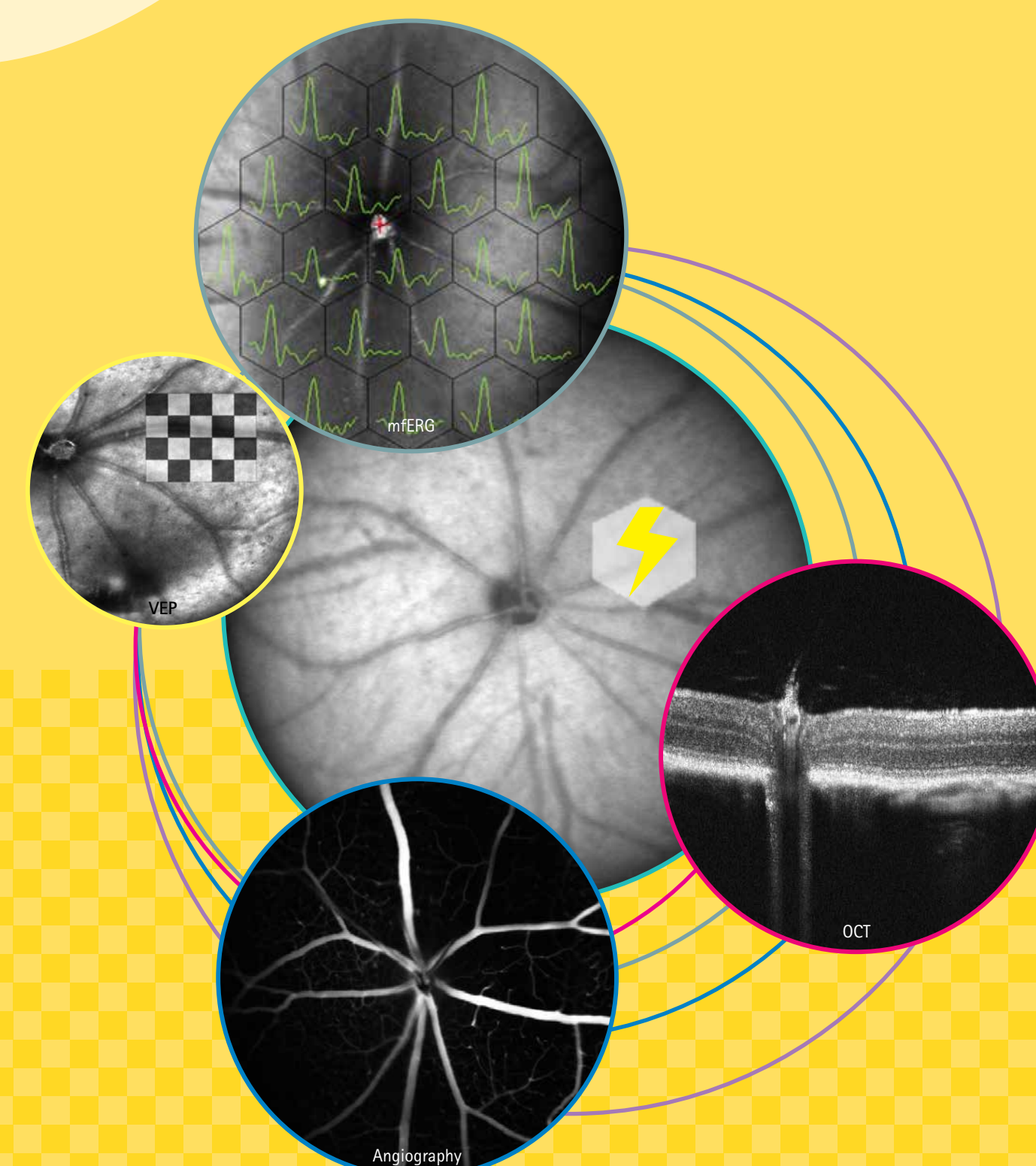


**RETImap animal**<sup>®</sup>

The combination cSLO + ERG/VEP is a worldwide unique technology



Made in Germany



Certification:  
Quality Management System  
EN ISO 9001  
EN ISO 13485  
3





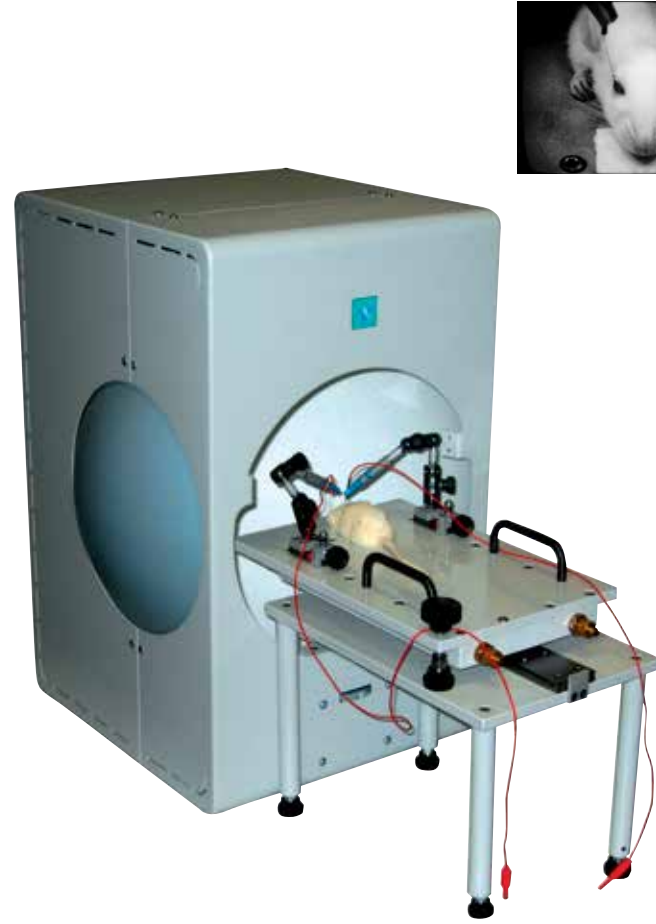
# RETI<sup>map</sup> animal<sup>®</sup> product overview

Operator unit

Laser unit

Ganzfeld with animaltable

Infrared monitoring



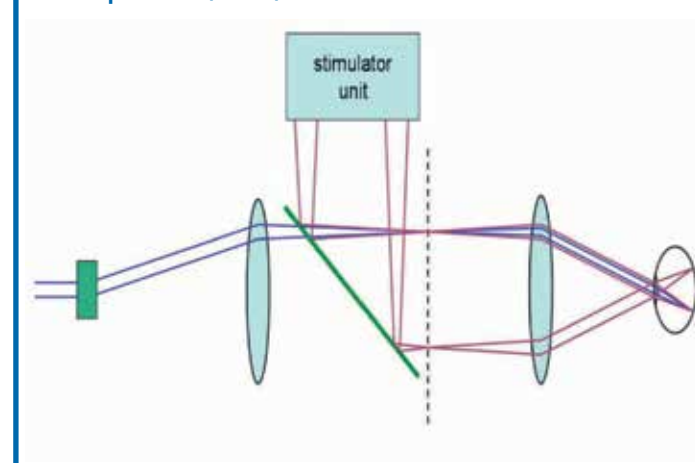
Electrophysiological Test Unit is usable for Pattern VEP + Pattern ERG + Flash VEP, for scotopic and photopic ERG, EOG fast and slow, mf ERG Flash stimulation and mf VEP Pattern stimulation.

The Roland RETI<sup>map</sup> animal<sup>®</sup> unit consists of the stimulator units and data recording and analyzing system. The biosignal amplifier includes a preamplifier near the patient. All patient data and the results are stored in a database. The biosignal and averaged curves

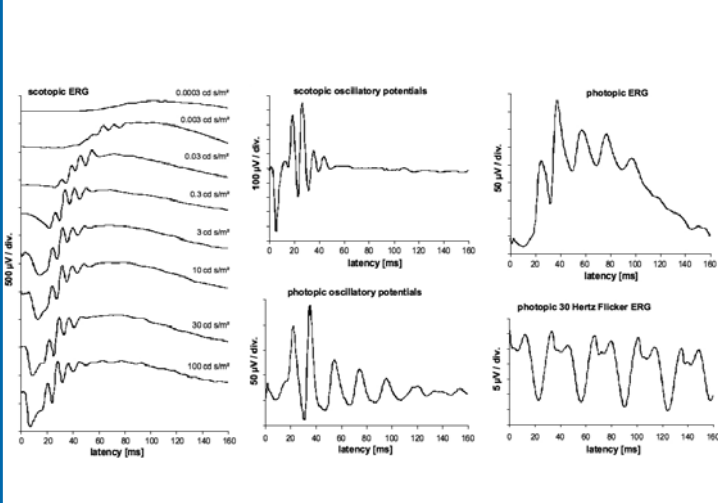
from all channels can be displayed on the monitor. In the analyze mode the system set all markers and calculates all defined parameters automatically. The software includes a lot of advanced features like FFT analyse, OFF-line averaging and PreTrigger.

The new Macula tool for better and accurate understanding of function and structure of the Retina. It is possible to do in 30deg SLO picture, ERG for 7 and 19 areas. Fluorescin Angiography and vertical and horizontal spectral domain OCT slices.

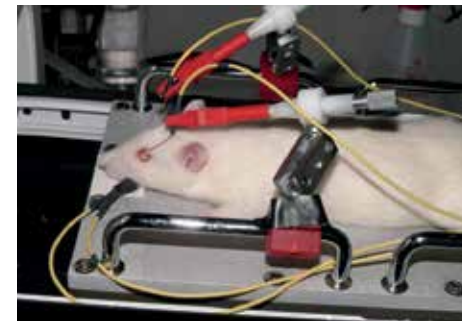
## RETI<sup>map</sup> with main components Principle ERG, SLO, OCT and GFP



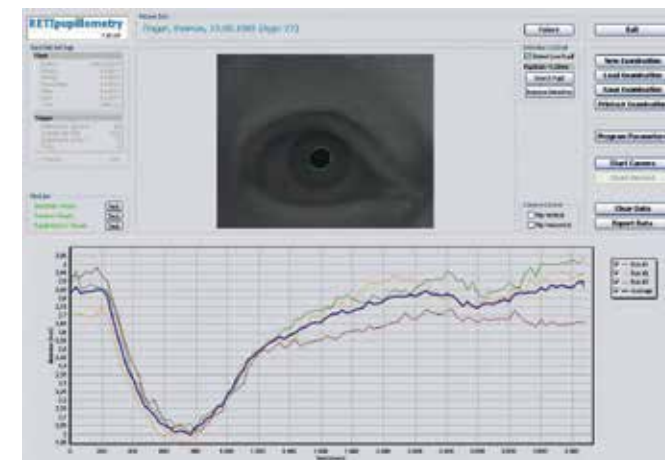
## Ganzfeld ERG with different colours



## Application



## Pupillometry measurement



## Features:

- Mouse table: Size: 20 x 30 cm, other sizes are available!
- Heating platform with warm water connection to keep the animal warm
- User can customize programs
- Bio signal and average result can be displayed on the screen
- Automatic artefact rejection
- All amplifier parameters are software-controlled
- Automated electrode impedance test can be started any time
- Offline averaging of single responses
- Multifocal analyse each signal with N1, P1 marker, 2D, 3D groups and user groups
- Many special mathematical features to calculate many different parameters
- FFT-Fast Fourier Transformation to analyse steady state results
- DSP-Digital Signal Processing Filter
- Database with backup on DVDRW
- All data can be exported to EXCEL for statistic analyse
- Allow to analyse in local area network
- Motorized operator table

## Operating unit:

- taking account of the existing technological level
- 24" TFT Control Monitor
- Keyboard, Mouse
- Colour printer
- Software: MS Windows, Nero, Antivirus, Team-Viewer

## Biosignal Amplifier:

- 2, 4, 6 or 8 channel
- Type BF check voltage 1,5 kV
- Impedance 2 x 100 M $\Omega$ , Noise < 4 $\mu$ V(SS)
- Common mode rejection >100 dB
- Gain up to 150.000
- Sensitivity 10 $\mu$ V/Div to 2 mV/Div
- High pass: 20 Hz to 10 kHz
- Low pass : 0,02 Hz to 1 kHz

## OPTIONS

### Monitor Stimulator unit:

- High Quality Brand industrial PC-System
- 19" color-monitor, luminance 220 cd/m<sup>2</sup>; high contrast
- Pattern or stripes positions: full, half or quarter
- Pattern reversal, appearance/disappearance
- Software controlled contrast settings (3 % - 99 %)
- black and white or different color settings

### • Ganzfeld Q450

The Ganzfeld consists of the 400mm 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 Q450C and Q450SC. The Xenon tube module (x) for high intensity flash is an option for both models.

#### ■ Model Q450 C (X): white, blue, red

- **Model Q450 SC(X):** white, blue, red, royal blue, green, amber
- Stimulus white flash** - standard intensity 3,0 cds/m<sup>2</sup>
  - Interval -40 dB to +5 dB in steps of 5 dB
- Stimulus colour flash:** - standard flash 3,0 cds/m<sup>2</sup>
  - royal blue (455 nm) interval -50 dB to -5 dB in steps of 5 dB
  - blue (470 nm) interval -45 dB to 0 dB in steps of 5 dB
  - green (525 nm) interval -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: adjustable in 1,0 cd/m<sup>2</sup> steps

- white: 1000 cd/m<sup>2</sup>
- royal blue (455 nm): 100 cd/m<sup>2</sup>
- blue (470 nm): 200 cd/m<sup>2</sup>
- red (625 nm): 200 cd/m<sup>2</sup>
- green (525 nm): 500 cd/m<sup>2</sup>
- amber (590 nm): 750 cd/m<sup>2</sup>

simultaneous use of LED to generate different flash/background colour

#### Option X:

- Xenon tube for white high flash
- Intensities: 9,5 cds/m<sup>2</sup> (+5 dB), 30 cds/m<sup>2</sup> (+10 dB), 95 cds/m<sup>2</sup> (+15 dB)

For the Model Ganzfeld Q450 SC (x) are more additional flexible settings possible.

#### Option Flimmer Check according Prof. Kremers:

Only for the Model Ganzfeld Q450 SC (x)

For each colour:

- Selectable waveform type: siene wave, rectangular wave,
- 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

#### Option: Pupillometry

- 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

### • BABYflash

- Standardblitz: 3,0 cds/m<sup>2</sup> Weiß, Blau, Rot-Range -25dB7 +10dB- Backlight: 10, 30, 50, 100, 450 cd/m<sup>2</sup>

### • Pattern Handheld

- Squares (10x10) mm, fixed LED Board 50x50 mm dimension- luminance 80 cd/m<sup>2</sup>; high contrast, Pattern ReversalBA

### • Monitor Calibration Tool

- Mavo Monitor
- Automatic Ganzfeld and monitor calibration via USB

# RETI<sup>map</sup> animal<sup>®</sup>

## SLO

### cSLO Macula Basic Unit

RETI<sup>map</sup> animal<sup>®</sup> is a new high technology modular system in ophthalmology. It comes always with the basic unit:

- a non-mydiatic infrared confocal Scanning Laser Ophthalmoscope (cSLO) and can be combined with the following 3 modules:

- Electroretinogram (ERG) + Visual Evoked Potentials (VEP)
- Fluorescein Angiography (FA) + Autofluorescence (AF)
- Spectral Domain Optical Coherence Tomography (SD-OCT)

The basic unit delivers a very well detailed image of the fundus. The integrated Roland Consult Fundus Eye Tracker (RCFET) helps to find the exact same position of past examinations. A high resolution DLP Projector is built-in to present the fixation target. The type of the target can be customized in different colors (cross, arrow).

- Field of view:** 30° x 30°
- Laser source:** SLD 920 nm (IR Image)
- Optical resolution:** <30  $\mu$ m,
- Focus adjustment:** -15 to +15 dpt
- Digital image:** 12 bit,
- Image Resolution:** 512 x 512
- Pupil size requirement:**  $\geq$  2 mm
- EyeTracker:** software module

## ERG

## Module ERG, VEP

The combination cSLO + ERG/VEP is a worldwide unique technology. It allows simultaneous infrared laser monitoring during electrophysiological diagnostic. With the built-in stimulator, the high resolution DLP projector, it is possible to stimulate a large number of retinal locations and extract their responses. The final result is a function map superimposed onto the fundus cSLO image. Regionally confined areas of dysfunction can be detected. The Roland Consult Fundus EyeTracker (RCFET) software helps to detect all eye movement artefacts during the test. The various electrophysiological functions are:

- multifocal ERG,
- focal flash ERG, focal pattern ERG,
- Pattern VEP,
- focal Pattern VEP and focal Flash VEP.

This device can also be upgraded with the classical electrophysiological stimulators and programs.

- Field of view:** 25° x 25°
- Monitor stimulator:** DLP projector
- Brightness:** 200 cd/m<sup>2</sup>
- Vertical frequency:** 60 Hz
- Resolution:** 800 x 600 Pixel
- Color Stimulator RGB:** 636nm/520nm/452nm
- Stimulator Protocols:** focal ERG, multifocal ERG, Flash VEP and Pattern VEP

- Control monitor:** 10"
- Bio Signal- Amplifier:** Software controlled amplifier

- Type:** BF
- Impedance:** 2 x 100 M
- Noise:** < 4  $\mu$ V (SS)
- CMR:** > 120 dB

- Sensitivity:** 10  $\mu$ V/div to 2 mV/Div
- High pass:** 0,02 Hz to 1 kHz,
- Low pass:** 20 Hz to 10 kHz

## FA

## Module Fluorescin Angiography

The Fluorescin Angiography Module runs with a blue laser source (488 nm). It generates higher quality fundus images in comparison to alternative white light illumination photo systems and since no flashes are involved, the system is more animal friendly.

At the beginning of an injection the laser source automatically switch to Angiography mode and a video will be recorded with an exact timestamp on every image. This helps the user to concentrate more on the patient during the examination and review the angiography images later. The advantage of the laser system is also the high speed of image acquisition. Instead of watching static images from early, mid or late phase it is easy to observe the dye in the vessels to localize narrowings and partial blockades.

- Laser source Blue:** 488 nm
- Digital image:** 512 x 512
- Record Mode:** 15 pictures / second

## OCT

## Module Optical Coherence Tomography (OCT)

The combination of RETI<sup>map</sup> animal<sup>®</sup> cSLO + OCT enables the exact analysis of the morphology. The user just selects an area on the cSLO image and describe the scan (hor./ver. LineScan, CircleScan, VolumeScan). Because of an optimized hardware design a single OCT Scan originally comes in a very high quality. In combination with the Roland Consult Robust OCT Tracker (RCROT) the signal noise ratio will be greatly reduced to a minimum. The OCT software is able to detect up to 7 layers automatically and visualize them in thickness maps. The integrated DLP Beamer helps the patient with an internal customizable fixation cross and reduces the motion artefacts.

- Laser Source:** 830 $\pm$ 50 nm, Superluminescent Diode (SLD)
- Max. scan speed:** 25 000 A scans / sec.
- Scan depth:** 2-2,5 mm
- Axiale resolution:** 5  $\mu$ m
- Transverse Resolution:** 15  $\mu$ m

## GFP

## Module GFP

- Laser source:** 488 nm
- Superposition of the reflected images, real time averaging

## Online support:

- Team viewer