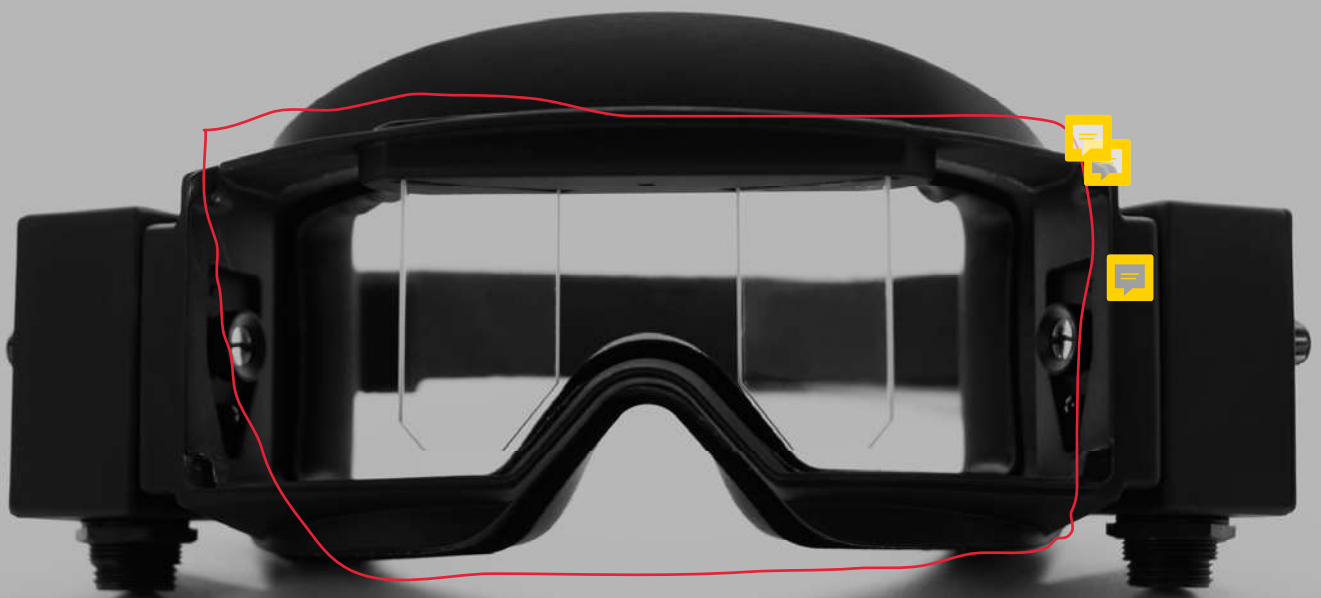


# COMBI MASK





# VNG/vHIT-COMBI MASK

for all measurements and additional functions

The combined video mask can be used either for examinations in darkness or with visual stimulation. The video image is focusable and can be individually adjusted both horizontally and vertically. The soft cushion guaranteed a pleasant and lightproof fitting to the face.

## eVNG / eHIT Mask

With 9 axes sensor fusion technology

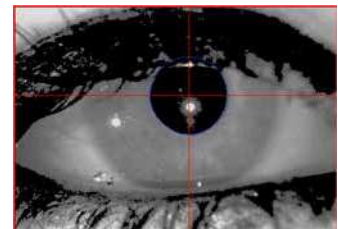
Recording of both eyes with two cameras



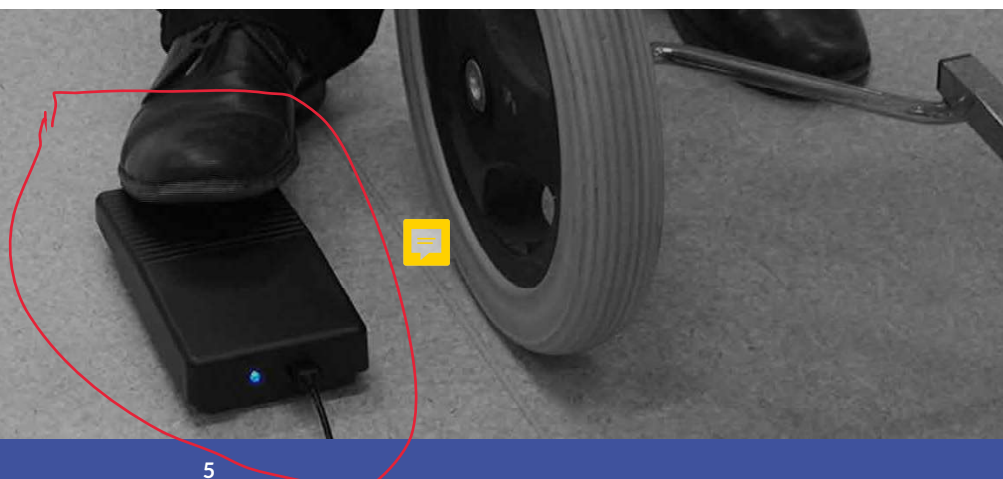
Power supply via USB



Optional with foot switch for optimal freehand-usage



WITH THE ADDITIONAL MASCARA OPTION PATIENTS WITH EYE MAKE-UP ON CAN BE TESTED WITHOUT REMOVING IT AND STILL FEEL COMFORTABLE.





## eHIT<sup>USB</sup>

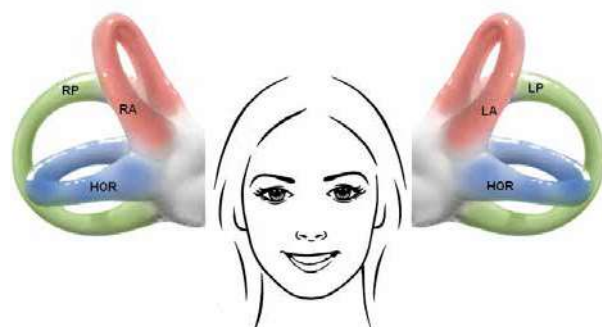
### Video - Head Impulse Test

The eHIT<sup>USB</sup> head impulse test has been developed to perform quantitative analysis of the six semicircular canals. The tested canal is always in the direction of the impulse. This means at a rotation of the head to the right, the right canal is excited and vice versa.

This also applies to the vertical semicircular canals. The test uses the vertical planes of the canals in the front and rear, which are located at an angle of approximately 45° to the sagittal plane.

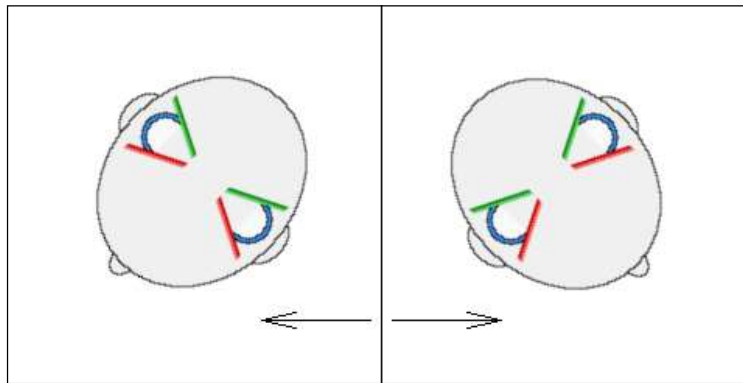
With SHIMP\* test!

Plane	Head Movement	Semicircular Canal
horizontal	leftward	left
	rightward	right
LARP	to the front	left anterior
	to the back	right posterior
RALP	to the front	rechts anterior
	to the back	left posterior

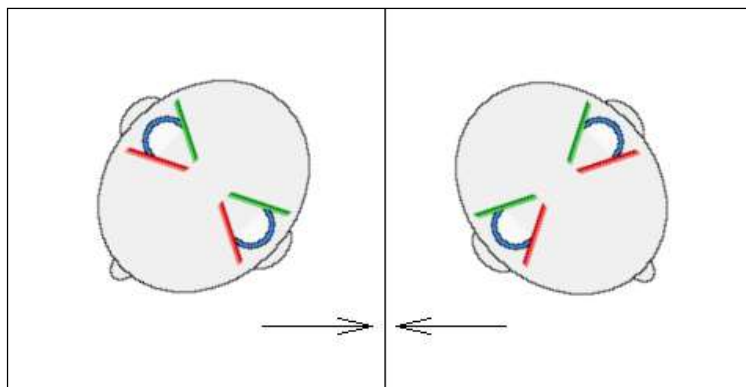


\* Optional - Suppression Head Impulse Paradigm

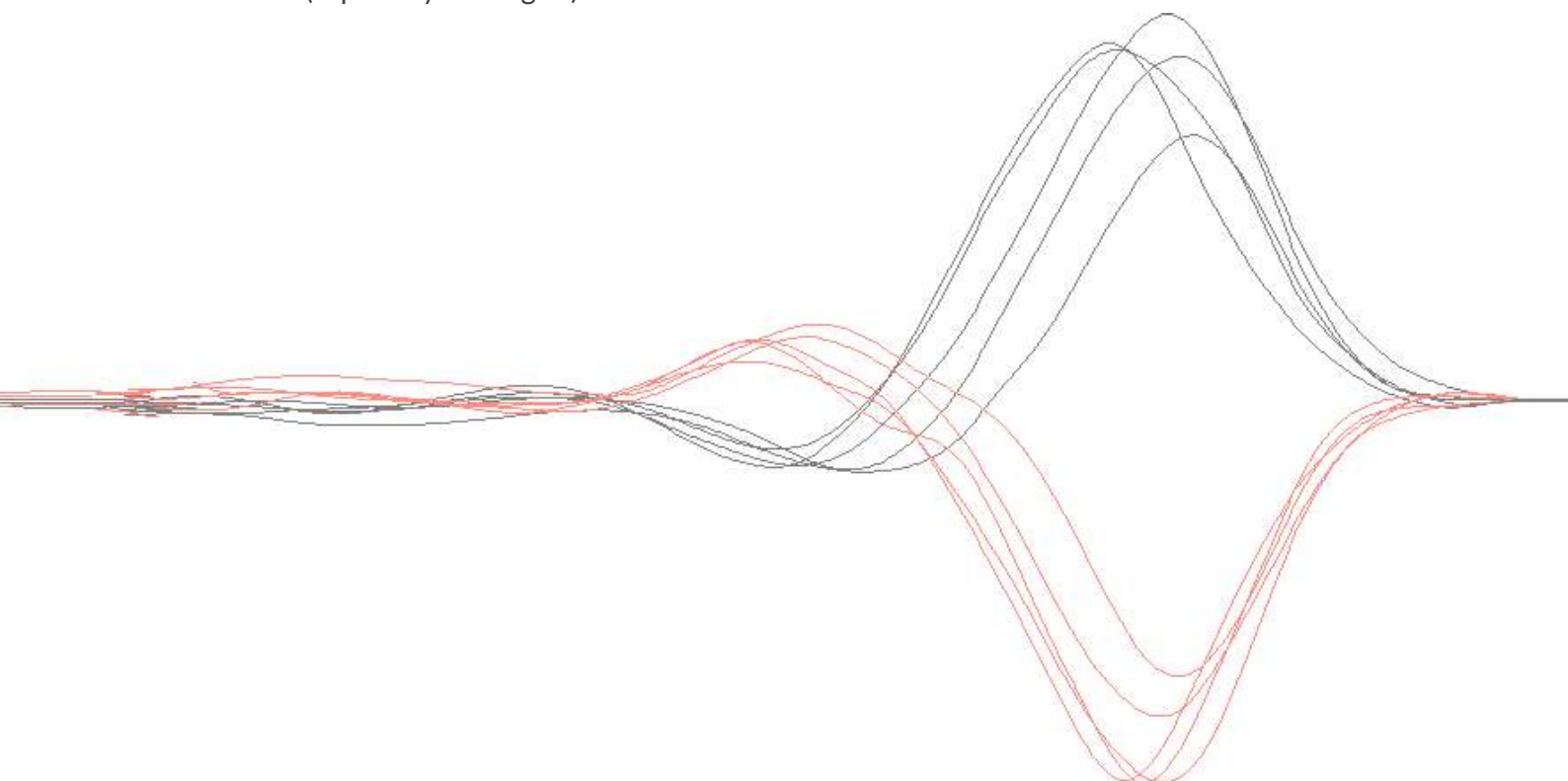
## Impulses



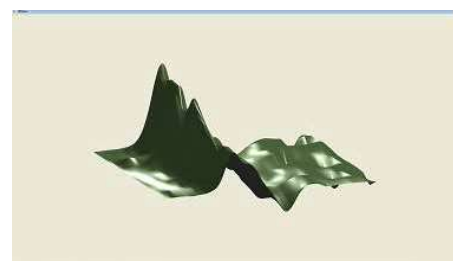
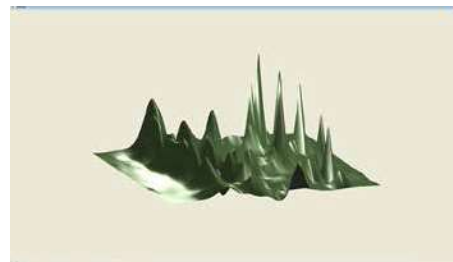
**Method 1:** The first method starts from the middle randomly to the left and to the right. After a stimulus the head is slowly moved to the start position. The benefit - the patient does not know the direction of the stimulus.



**Method 2:** The head is slowly moved to the left or right and then rotated to the central position. The benefit - it is easier for beginners, because there is more control over the stimulus (especially the angles).



The results are shown in realtime. The normal reaction to the stimulus is almost the complete opposite of the head movement with a smooth eye movement. The gain is calculated for each trial. The gain ratio between head and eye movement should nearly be 1. If there is an issue with a semicircular canal the patient loses the target and there will be compensation saccades. If the gain is in the grey area, there can be a disease. If only one side is affected there will be two separated point clouds. Additional to the gain and movement display, the **eHIT<sup>USB</sup>** software offers a 3D-representation of the eye response. A failure can be recognised very well by the refixation saccades that appear as peaks in the 3D representation.



If the VOR reacts normally, the eye makes a counter movement in order to continue to fixate the target. This counter movement is followed by a relatively area without saccades. In the event of hypofunction or failure, distinct saccades are seen in this area.







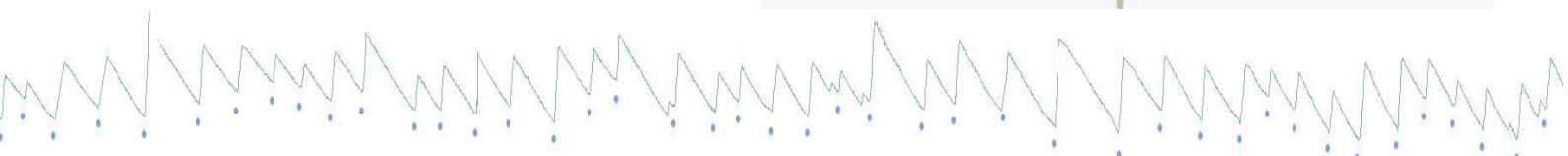
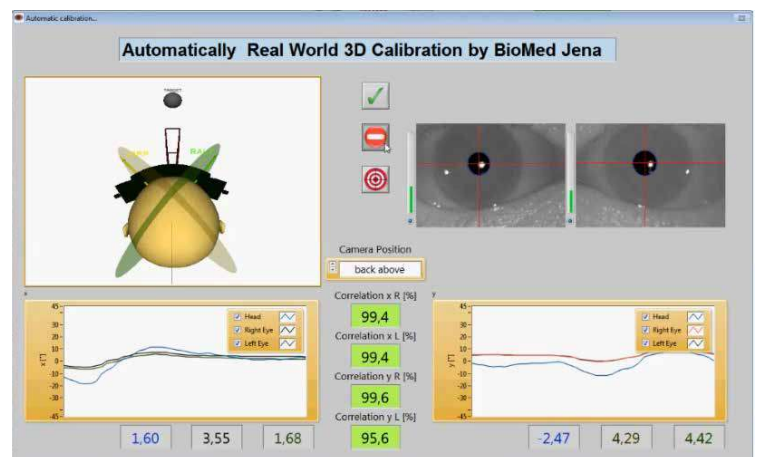
## Real world 3D Calibration

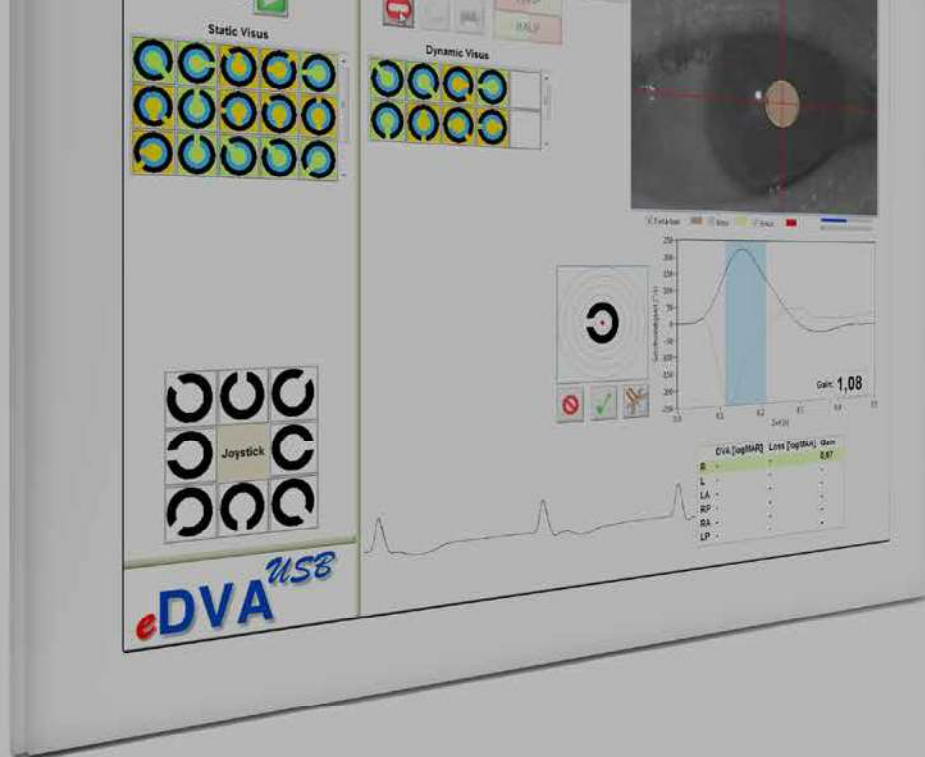
System requirements for eHIT<sup>USB</sup>:

- Min. Intel Core i5
- screen resolution of 1920x1080 Pixel (Full HD)
- Windows 10/11

Thanks to our new innovative sensor technology we are now able to offer you a simple real world calibration!

- Easy, fast and reliable!
- New opportunities in Training, Measurement and Diagnoses!
- Shows the movement of the head in space in all axes in real-time!





## eDVA<sup>USB</sup>

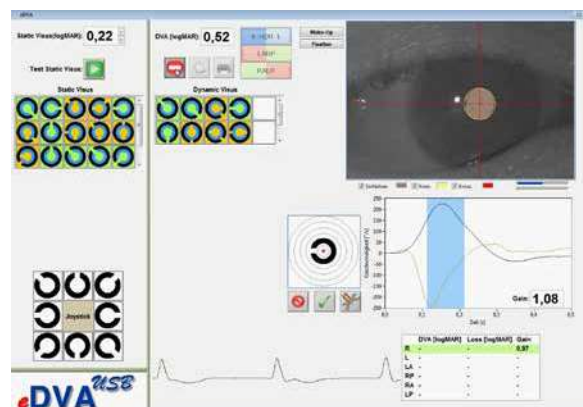
### Dynamic visual acuity during VOR

Dynamic Visual Acuity (DVA) describes visual image stability where the vestibular ocular reflex (VOR) counteracts head motion by moving the eyes in the opposite direction to maintain a clear view of the world.

The eDVA<sup>USB</sup> provides static and dynamic visus information in normal subjects such as pilots and athletes, as well as in patients with vestibular or neurological disorders.

Simpler versions of this test involve reading an eye chart while the patient is shaking their head. If the patient must move up two lines on the eye chart to see the characters clearly, then their VOR is considered abnormal.

One problem with the simple test is that the character can be read while the patient's head is stopped. The eDVA<sup>USB</sup> computerized version will only present the character to the patient when his head is moving at a high velocity where only the VOR is functional and not active tracking. The test is also direction sensitive, so **all the six semicircular canals** can be tested separately.







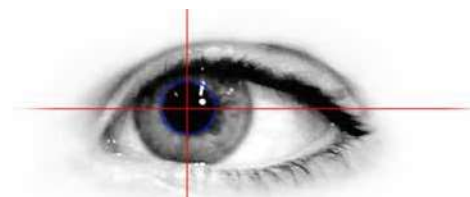
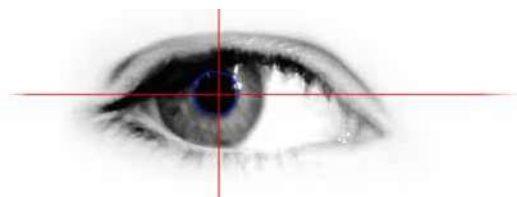


**eVNG<sup>USB</sup>**

Videonystagmography

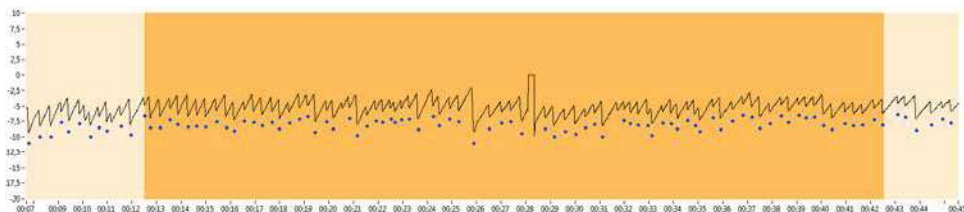
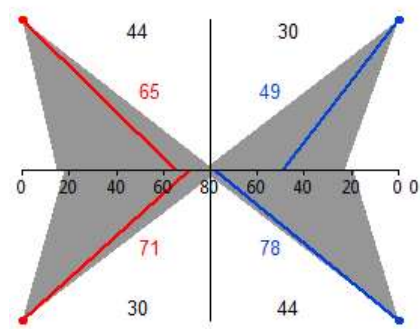
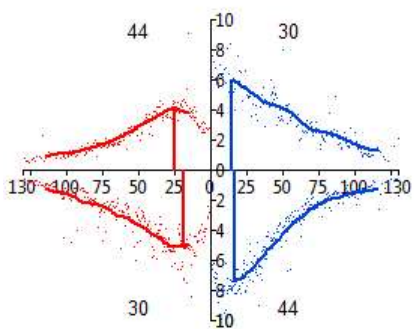
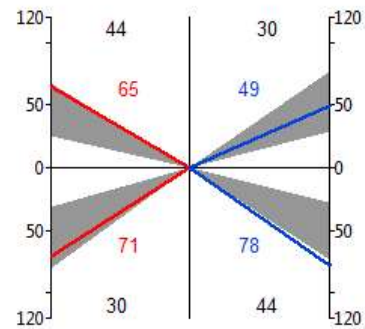
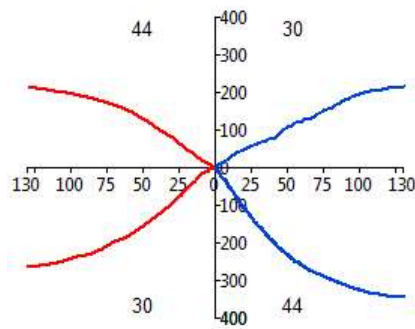
### User friendly routine check with the nystagmography system eVNG<sup>USB</sup>

- test battery in standard nystagmography systems:
- spontaneous nystagmus, position, positioning test, bi-thermal caloric test, optomotoric tests
- real time image of the eyes improved image processing algorithm
- automatic nystagmus detection
- calculation of all relevant parameters
- improved automatic artefact rejection
- sharpness adjustment
- fully automatic test sequences
- stable binocularly video goggle with mask cover
- hot mirrors adjustable in 3 steps
- detailed results printout
- soft cushion for optimal and comfortable fit
- foot switch
- no other computer hardware needed



## User application

- network ready
- binocularly analysis at 100 Frames/s
- manual nystagmus marking
- findings sheets
- compatible with Windows 10/11



## Technical specifications

- Sample rate: binocularly 100 Hz (100 images/s)
- Resolution: 0,1 °
- Camera: 1280 (H) x 1024 (V)



# KALORistar

Air irrigator with active cooling technology

The **KALORistar Arctic** is a powerful caloric air irrigator used to stimulate the vestibular organ. Thanks to its innovative concept the cooling is guaranteed at all times. Thus it is not only useful in daily practice but also applicable in clinical research.

The default temperatures for air irrigation are **47°C (warm stimulus)** und **27°C (cold stimulus)**. You can change these values from 20°C to 50°C.



47°C  
(Warm stimulus)



27°C  
(Cold stimulus)

The screenshot displays the ENTools software interface. At the top left is the ENTools logo and version information (ENTools 1.0.0.0). The main title bar reads "SHOW: ALL\_TESTS (3)" with a timestamp "08.01.2013 01:59:51" and a "Default" button. Below the title bar is a toolbar with icons for file operations (Open, Save, Print, etc.), analysis tools (Histogram, Scatter, etc.), and a "Help" button. The main workspace is divided into several panels:

- Top Right:** Two circular plots showing spatial distributions of data points, likely representing the "Right ear" and "Left ear" data.
- Left Column:** Four time-series plots showing "Normalized raw position" for "Right ear", "Left ear", "Left ear", and "Right ear". Each plot displays a noisy signal over time (from 0 to 1000).
- Center:** A scatter plot showing "Group (SP/10)" with data points colored by group (Red, Blue, Green, Yellow). The axes are labeled "SP/10" and "SP/10".
- Right:** A scatter plot showing "Group (SP/10)" with data points colored by group. The axes are labeled "SP/10" and "SP/10".
- Bottom Center:** A text box containing the following information:
  - Unilateral weakness: 0.5 % Right weaker (25 % Bilateral)
  - Correct prepared: 1.5 % Left leaving stronger (30 %)
  - No spontaneous myogenic
- Bottom Right:** A time-series plot showing "Normalized raw position" for "Bilateral myogenic" data, displaying a sharp peak around 500.

KALORistar setup

Warm Stim. in °C

47

Cold Stim. in °C

27

Duration [s]

01:00

Current Temp. in °C

47,0

Stimulus / Menu

Cold

☐ Set data from VNG

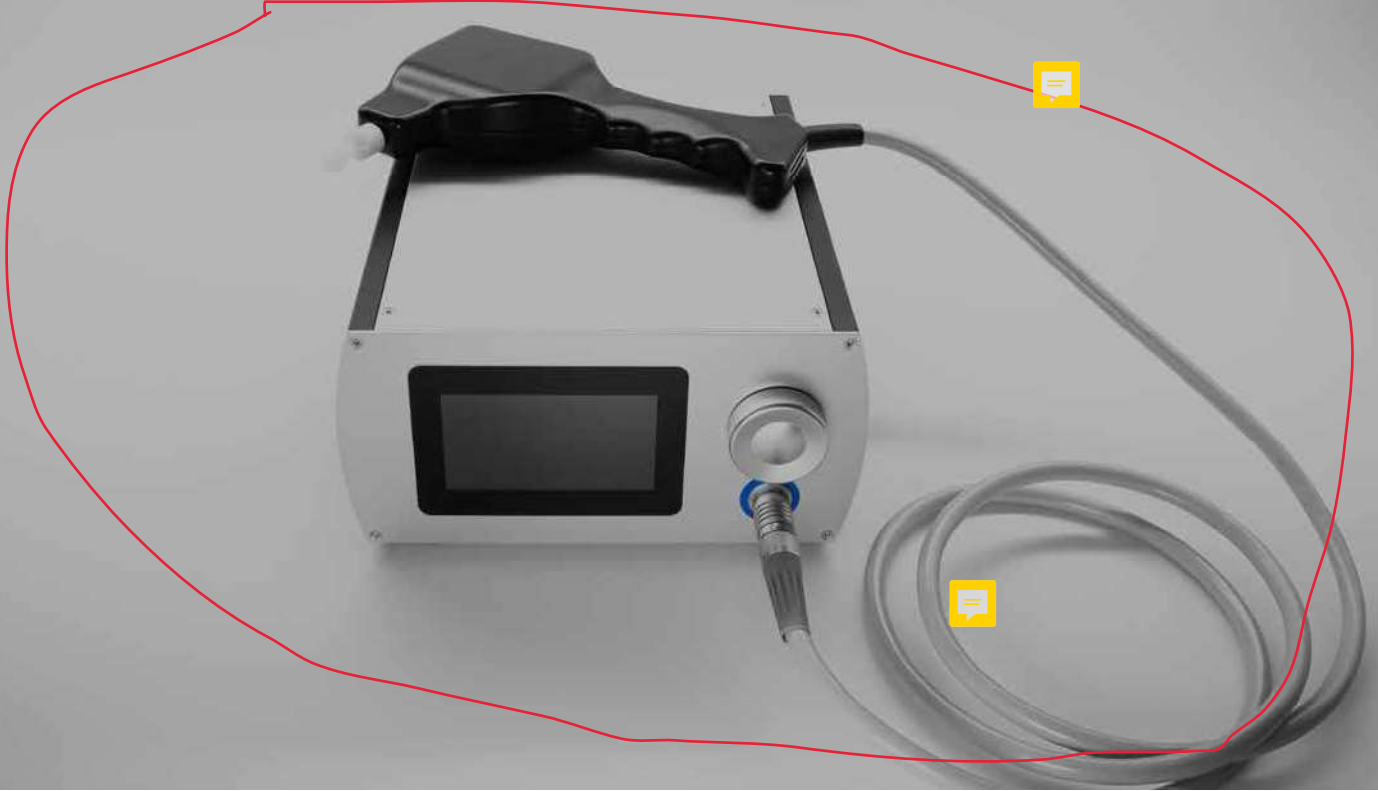
☐ Start measurement manually

00:00 Delay

Close

Connect

A black and white photograph of a young woman with long hair, smiling and looking through a VR headset. She is holding a VR controller in her right hand. The background is a plain, light color.



# KALORistar<sup>CT</sup>

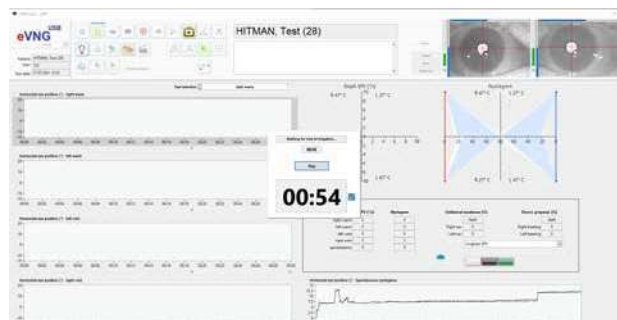
The new air irrigator with active cooling technology

The **KALORistar<sup>CT</sup>** is the further development of the reliable air irrigator **KALORistar Arctic** the first air irrigator with active cooling technology (ACT).

We took the robust technology of the **KALORistar Arctic** and spent it an outstanding design. The round innovative push-pull connector fits in the high quality design and the intelligent handle allows us to change only the handle in case of service or maintenance. Last but not least, we are setting a new standard in low-noise operation. It is easy to use and comfortable for the patient.

**We were the first having active cooling technology and now we're the prettiest too.**

- Temperature 20...50 °C
- Improved active cooling (ACT)
- Very quick regulation
- Handle holder on device, wall mount available\*
- Intelligent handle for easy service/maintenance.
- Completely integrated into **eVNG<sup>USB</sup>**



**SUPER QUIET PUMP! - EASY TO DISINFECT!**

\* Optional



## Systemeinstellung

System Töne

Erinnerung MTK

Datum & Uhrzeit

Sprache

Kalibriermenü