waveguard™

eeg cap & accessories

The ultimate EEG cap solution.

ant neuro
inspiring technology

ant neuro
inspiring technology

inspiring technology for the human brain

ANT Neuro offers high quality, state-of-the-art products and services worldwide, providing technological solutions to leaders in the broad fields of neuroscience and neurodiagnostics. For 15 years we have created, discovered, and served in our scientific community, finding success in different corridors of technological advancements and application- and our journey has only just begun! Through the thoughtful exploration of human and technological possibility, we have blossomed into the innovative company we are today, offering uncompromising quality. We are ANT Neuro: We inspire!

waveguard™

eeg cap & accessories

The **wave**guard EEG caps are the most advanced caps available. The comfortable and easy fitting caps make high quality data easily accessible for clinicians and researchers. They are a valued asset of professionals, such as psychologists, neurophysiologists, neurologists and neuroscientists, and are ideally suited for daily routine studies to discriminate between psychiatric and neurological diseases as well as for studies about emotion, learning, attention, perception and other cognitive processes.

Core Features & Benefits

- Available in many different sizes and layouts
- Small sintered Ag/AgCl electrodes provide high-quality recordings
- No exposed wires due to inner lining
- Noise cancellation with actively shielded wires*
- Optimized shape of electrodes minimizes induction type artifacts (e.g. fMRI, TMS)
- Coolmax™ fabric for enhanced comfort and short drying times
- Rubber rings inside cap for stable electrode positioning
- Durable materials for long life span of the caps
- Comfortable fit
- Easy to clean
- Customized layouts available upon request
- Can be purchased separately or in combination with ANT's EEG recording systems
- Adapters available for all major EEG systems
- Standard 1 year warranty

* in combination with ANT amplifiers, asalab and eegosports

The Ultimate EEG Cap Solution.

Close collaborations with our customers have enabled us to stay ahead with developments and respond to customers' needs with state-of-the-art products. Thanks to in-house production and total control of production processes, we deliver products with outstanding quality at all times.

Optimal Solution for High-quality Signals

waveguard caps are the result of well-defined production processes, managed to tackle even the highest requirements in brain research and diagnostics. They benefit from the finest materials of the latest technology for optimal ease of use and the very best signal quality. Due to the small silver (sintered Ag/AgCl powder pellets) electrode elements, the caps deliver high-quality EEG signals with low drift and minimal intrinsic noise at all times.

Comfortable Fit and Quick Application

The very thin electrode wires and flexible breathing fabric are key components for comfortable recordings. The extremely durable and flexible fabric is very gentle on the patients' skin, providing the optimal recording experience.

Due to the special design of the electrodes, the fitting cut of the caps and the superb quality of the sintered Ag/AgCl electrode material, application time of the cap is significantly faster and easier compared to single leads in conventional caps.

Shielding for Clean Data

The option to use shielded wires strongly contributes to the superb signal quality of ANT's **wave**guard caps. Shielding makes the cap less susceptible to outside noise and greatly reduces the need to record data in shielded rooms (Faraday cage). Shielded **wave**guard caps are compatible with the active shielding technology of asalab and eegosports. Using asalab and eegosports high-quality EEG data can be recorded even with high electrode impedances, allowing short preparation times.

Connect to any EEG System

waveguard caps are equipped with special connectors to make it quick and easy when connecting and disconnecting to EEG headboxes. Adapters are available for all major manufacturers' headboxes and can be purchased separately.

Fastening Options

The cap is fastened by using either the included chin-band or optional chin-strap. All neonatal caps are delivered with an extended fabric ribbon to allow gentle fastening for the smallest babies.

Long Life Span of waveguard Caps

The caps, made of sturdy electrode sensors, durable fabric and other carefully chosen parts and materials, have been designed to provide you with high-quality recordings for more than 500 recording sessions and cleanings.

"I am using ANT's waveguard cap for TMS on daily basis for my neurofeedback and TMS sessions and I can not thank ANT enough for such a great product. My Neurotech's work has been cut into half and I don't have to worry about artifacts any more. Amazing difference between this cap and other available on the market..."

Hasan Asif, MD
Founder and Medical Director of the Brain Wellness Center, is a board-certified psychiatrist who has been in private practice for fifteen years.

waveguard™ Clinical Applications

EEG is a highly versatile and reliable technique offering medical staff valuable information for diagnosis of variety of physical disorders. It is a powerful tool, widely used in hospitals to differentiate between psychiatric and neurological disorders. It enables early detection of physical disorders, helps to assess the severity of disorders and allows close monitoring to gain a better understanding of the disease and affected brain areas.

EEG is widely used for diagnosis of:

- Attention deficit (AHDH)
- **Depression**
- **Anxiety disorders**
- Dyslexia
- Alzheimer & Dementia
- Brain tumor
- **Stroke**
- Schizophrenia

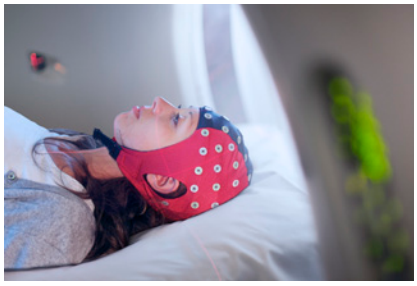
Neonatal caps

The **wave**guard neonatal caps are specifically designed to fit well on a baby's head, enabling fast and easy application, resulting in high quality recordings. The caps have been proven to work well even in the most demanding intensive care environments in preterm and full-term babies.

"Ten years ago, my research studies had shown that neonatal EEG could only progress if the brain was recorded with substantially more electrodes than the standard neonatal caps included at that time. I also realized that none of the products in the market was able to cope with the necessary challenges that face neonatal EEG caps, hence, we decided to develop this with ANT's waveguard caps.

The requirements were challenging. The caps had to be easy to use by any EEG nurse and technician. The EEG data quality had to be high even in long-term recordings of EEG in the extremely challenging environment of neonatal intensive care units. And of course, the caps had to be clinically tested and approved for use on the vulnerable preterm babies.

waveguard™ Research Applications



waveguard caps come in a variety of electrode layouts and configurations to comply with the high technological criteria of research demands. Whether you want a cap for standardized clinical EEG recordings, a specialized high-density cap or a cap compatible with TMS, MEG and fMRI, the waveguard cap is the perfect choice for your application.

EEG-ERP

waveguard caps have been primarily developed for use in EEG-ERP studies and are therefore a perfect tool for recordings to probe responses to specific cognitive, motor or sensory triggers at a given time span.

EEG-TMS

All **wave**guard EEG caps are compatible with Transcranial Magnetic Stimulation. EEG can be recorded during the TMS experiment, with very high quality and short artifact recovery times*.

EEG-fMRI

The **wave**guard caps are available in an MRI compatible version. For optimal EEG signal quality, extra care has been taken to arrange the wires inside the cap. Safety resistors at each electrode are included. Optionally, shielded wires can be used for optimal suppression of interference within the MRI scanner.

EEG-MEG

MEG/EEG acquisition can be carried out using a non-magnetic **wave**guard EEG cap. The ultra-thin wires and low profile of the electrodes are optimal for applications in the MEG helmet. Optionally, openings in the cap are provided to directly access head positioning coils. Different cap connectors ensure compatibility with all major MEG manufacturers.

EEG-NIRS compatible

The **wave**guard caps are available in a NIRS compatible version. The positions of the optodes are placed according to an equidistant layout whereas the EEG is positioned according to the 10/20 system. The positions of the optode holders can also be customized, based on customer requirements.

*depending on the amplifier used

Choose the Cap that Meets your Needs.

The intensive collaboration with ANT resulted in the unique neonatal caps that range in size from the smallest preterm babies to infants. Over the past five years my daily experiences with the caps have been excellent. Also my EEG technicians, who use the caps in routine EEG studies, always choose the waveguard cap over another cap. They find it much faster, easier and reliable."

Dr. Sampsa Vanhatalo
Head of Children's Neurophysiology and Senior Lecturer in Clinical Neurophysiology and Neurobiology at the University of Helsinki.

waveguard™ Sizes and Layouts

The set of cap sizes fully covers all possible head shapes and age ranges. Using the size chart with corresponding head circumferences, you are able to select the suitable cap size for your patient. The caps are available in 11 different sizes, starting with the smallest category of 5 different sizes for neonatal babies and ending with size L for head circumferences of 56 cm and larger. A medium sized waveguard cap will fit 65% of persons over the age of 10.

With the neonatal caps you are able to record up to 43 channels. The number of channels depends on the size of the cap; up to 21 channels for smaller sizes and up to 43 channels for size 5. At the normal positions of FC1 and FC2, no electrodes are placed; instead, the cap has two openings on the upper side for sensors or clinical wires.

Size-matching Color Schemes

With **wave**guard you are able to select the appropriate cap in a glimpse of an eye. Four distinctive colors in different combinations allow a straight-forward selection of a cap. Our color-coded labels also provide a smart way to quickly identify electrode positions.

waveguard color schemes. From left to right: Large, Medium, Small, Child, Infant, and Baby. Neonatal caps follow a slightly different color scheme.

Up to 256 Electrodes in 10-20 or 5 Percent Layouts

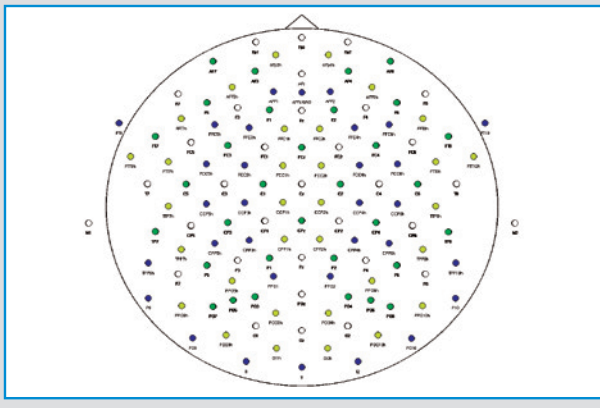
The **wave**guard EEG electrode caps are available in configurations of up to 256 electrodes. Each configuration is derived from the common 10-20 system, or from the specially developed ‘Duke’ system that features equidistant spacing between electrodes.

Caps according to the five percent electrode system

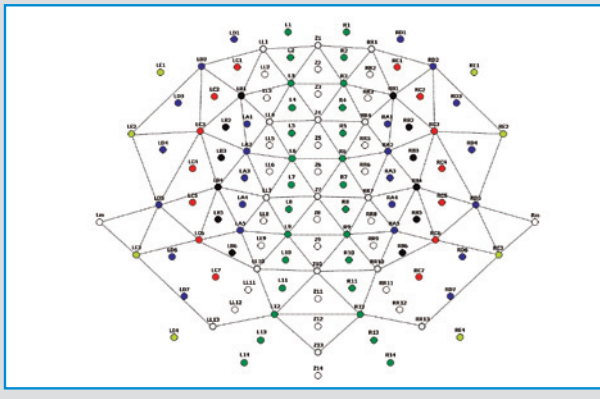
This electrode placement scheme is an extension to the 10/20 and 10/10 percent systems and allows the positioning of more than 300 electrodes. The naming scheme includes labels and positions according to the standard nomenclature as well as its logical extension for the intermediate locations.

Equidistant hexagonal layout - ANT/Duke layout

In this electrode scheme all electrodes have 6 neighboring electrodes at equal spacing. The layout includes positions further down the neck; together with the near-perfect spatial distribution this is beneficial for source localization. Electrode names follow a consistent labeling scheme based on the left/ right/central parallel lines.



Five percent electrode layout



Equidistant hexagonal layout

Easy to Use and Quick to Apply

Sizes	Description	Head circumference (cm) Min.	Head circumference (cm) Max.	Fabric color scheme			Number of electrodes in cap						
							21	24	32	43	64	128	256
L	Large	56	61	●	●	●	●	●	●	●	●	●	●
M	Medium	51	56	●	●	●	●	●	●	●	●	●	●
S	Small	47	51	●	●	●	●	●	●	●	●	●	–
C	Child	43	47	●	●	●	●	●	●	●	●	●	–
I	Infant	39	43	●	●	●	●	●	●	●	●	–	–
B	Baby	36	39	●	●	●	●	●	●	●	●	–	–
N5	Neonatal	33	38	●	●	●	●	●	●	●	–	–	–
N4	Neonatal	31	33	●	●	●	●	●	●	–	–	–	–
N3	Neonatal	29	31	●	●	●	●	●	●	–	–	–	–
N2	Neonatal	27	29	●	●	●	●	●	–	–	–	–	–
N1	Neonatal	25	27	●	●	●	●	●	–	–	–	–	–

Chart of **wave**guard cap sizes.

Start Recordings in 10 Minutes!

Step 1: Select the cap size
Use the size chart as a guideline to select the appropriate cap.

Step 2: Apply the cap
Gently pull the cap over the subject's head; Starting at the frontal electrodes, then pull the rest of the cap towards the back of the head by placing the electrodes to their approximate position. Fasten the cap by using the chin-band.

Step 3: Position the electrodes correctly
Take the point halfway between the Nasion and Inion, and the point halfway between the two pre-auricular points. At this position you should find the vertex electrode Cz. The frontal electrodes Fp1, Fpz, Fp2 should be positioned at 10% of the Nasion-Inion distance, above Nasion point.

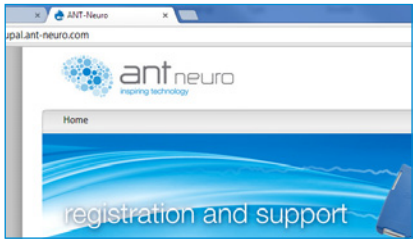
Step 4: Apply the gel
Apply gel using dedicated syringes. Blunt needles serve for easier insertion through the hole of the electrodes. Bring the blunt needle down through the hole and inject gel slowly.

Step 5: Connect cap adapter to the amplifier
Attach your amplifier according to the numbered labels available on each of the wires. This is straightforward by matching the numbers on the amplifiers and adapter.

Step 6: Check impedances
Check impedances on your screen and re-gel electrodes if needed.

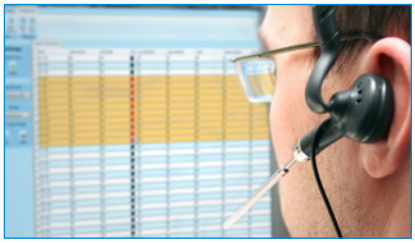
Step 7:
Go!

waveguard™ Service and Support



Service and Support

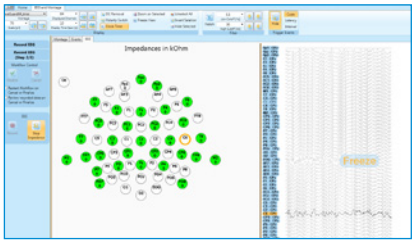
ANT Support team



ANT User Forum

Instructional Videos

Workshops and Demonstrations



Guaranteed Quality

Service and Support
We are always thinking of new ways to provide customers with resourceful information to advance their research and be able to benefit from the full functionality of our highly versatile products and systems. The ANT user forum, online support and direct support are just a few of these. Customer service is an integral part of our company.

ANT Support Team
Our support team ensures that our customers get accurate and timely replies to any questions they may have about ANT systems and services; a result of knowledge and experience gained through many years of work at established universities, committed fieldwork and close collaboration with our customers.

ANT User Forum
As a supplier of complete ERP solutions for several years now, we have seen the need for sharing information; practical tips on the application of caps, detailed parameters in the software, or more general research topics. On the user forum, information about our developments, systems and new downloads can be shared and discussed.

Instructional Videos
Instructional videos with practical user information are available on our website and the youtube channel. Step by step explanations on how to use the caps are assisting users in their daily work with the waveguard caps.

Workshops and Demonstrations
ANT organizes events regularly to share expertise and knowledge with their customers. Whether you need to brush up on your EEG analysis skills, learn how to work with system features or get updated on the best practices in the world of EEG applications, the workshops and demonstrations will provide you with insightful information for your daily work.

Guaranteed Quality
The caps are manufactured in Germany by our sister company eemagine GmbH where our specialists take care of fitting design, meticulous production processes and quality assurance.

ANT Neuro, the Complete Solution Provider

ANT Neuro specializes in being a single-source provider of high-performance products within neuroscience research and neurodiagnostics. Applications include EEG, EMG, MRI, TMS and MEG technology. We are committed to serving our customers the best-possible solutions available through our dedication to advancing the capabilities of neurotechnology, through steadfast relationships with our user community, and through helping further the collective understanding of the human brain, with the ultimate hope of improving human life.

neuroscience

asa™
eeg & meg analysis and mri integration

eegosports™
ultra-mobile eeg & emg recording platform

asalab™
turnkey eeg & erp solution

eevoke™
cognitive stimulation

neurocare

cognitrace™
clinical neuro-psychiatry system

eemagine eeg™
eeg diagnostics for professionals

waveguard™
eeg cap & accessories

neuromodulation

visor2™
tms neuronavigation & emg solution

smartmove™
robotized tms positioning solution

xensor™
electrode digitizer

ANT Neuro Worldwide Distribution

ANT Neuro systems and solutions are globally available through our worldwide distribution channel. This facilitates ANT Neuro's contact with customers, ensuring the best systems & services are provided, regardless of location and application demand. For a complete overview of ANT Neuro's distributors, please visit our website.

waveguard caps are compliant with international standards for use in clinical environments. The caps are CE marked and have a MDL issued by Health Canada. The waveguard caps have been granted Medical Device clearance under FDA 510(k); with exception to the neonatal caps, which are outside the EU and Canada intended for investigational use only.

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ANT Neuro b.v., Enschede, The Netherlands,
tel: +31 53 43 65 175, fax: +31 53 43 03 795,
internet: www.ant-neuro.com, e-mail: info@ant-neuro.com

Information in this document is subject to change.

www.ant-neuro.com/products/waveguard

Your local distributor:

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