BrainAccess CAP Version 3.0

User's Manual May, 2025

Introduction

Welcome to the user's manual of BrainAccess EEG cap – BrainAccess CAP. The cap comes in different sizes and is inclusive of dry-contact, shape-adapting gold electrodes. This manual overviews the main features of the BrainAccess cap together with setup instructions. Should you have any further questions not covered in this guide please visit www.brainaccess.ai where you can find more information or contact us at brainaccess@neurotechnology.com.

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1 Overview

The BrainAccess CAP is a flexible EEG cap that is available in different sizes and comes with dry-contact, shape-conforming gold electrodes. The BrainAccess CAP is designed to work with BrainAccess electroencephalographs and can be purchased as part of BrainAccess kits.

3 different sizes. The cap is available in 3 different sizes: L, M, S to fit different adult head sizes and shapes.

Number of electrodes. The total number of the electrodes provided with the cap varies depending on the purchased kit. Standard Kit comes with an 8 electrode cap with additional reference and bias electrodes while Extended and Extended+ Kits come with 16 and 32-electrode caps respectively.

Dry-contact electrodes. The cap comes with dry-contact electrodes. The electrodes feature spring-loaded spikes that enable the electrode to conform to the curvature of the head resulting in a more comfortable wear when compared to standard dry-contact electrodes.

Dry-contact pad electrodes. Electrodes with golden pads are provided for the positions without hair, i.e. forehead. Typically, a pad electrode at the Fp1 position is used as a reference electrode and an electrode at Fp2 as a bias electrode in BrainAccess setups. These electrodes generally have good contact which is essential for reference electrode as it affects the measurements on all the channels. It is recommended to re-reference to average reference or other electrode in software if needed.

34 electrode positions. The cap provides 34 positions where the electrodes can be placed using an easy-to-use clipping mechanism. The positions follow the standard 10-20 system and are conveniently labeled on the cap.

Single connector. 16 and 32-electrode caps come with a single connector to connect with BrainAccess MIDI or BrainAccess MAXI electroencephalographs. Therefore, MIDI/MAXI devices can be quickly attached/detached to different size caps for taking the measurements. The connectors on MIDI/MAXI devices are compatible, so, for example, 16-electrode cap could be used with MAXI device as well. In an 8-electrode cap each electrode has to be connected individually with micro-coax cables to the MINI device.

Ultra small cables. The CAP is equipped with ultra-miniature coaxial cables that not only ensure shielding from the noise but are also thin and flexible to ensure the comfort.

Machine washable. For hygienic purposes the cap can be machine washed using delicate wash cycle. Make sure to remove the electrodes and cables from the cap before washing. The electrodes can be cleaned with standard disinfectant liquids/sprays and non-abrasive wipes.

Hook-and-Loop Fastener Attachment. The cap features a Hook-and-Loop fastener below at the back side of the cap. BrainAccess electroencephalograph should be attached there.

2 Specifications

Main specifications of BrainAccess CAP are given in the table 2.

Cap

sizes (head circumference)	$I_{(54-50 \text{ cm})} M_{(50-55 \text{ cm})} S_{(48-52 \text{ cm})}$		
sizes (nead en eutrice en e	$L(34 \ 39 \ cm), W(30 \ 33 \ cm), 5(40 \ 32 \ cm)$		
colour	gray/blue		
number of holes for electrode attachments	34		
Electrodes			
type	dry-contact		
material	gold-plated		
diameter	20 mm		
number of spikes	12 x spring-loaded		
number of pads (forehead)	5 x 6 mm diameter		
input connector	ECG 4mm snap connector (male)		
Cables			
type	ultra-mini RF coaxial cables		
length	different lengths for different electrode positions		
electrode connector	ECG 4mm snap connector (female)		
electroencephalograph connector	Harting Harflex 2 x 20 1.27mm pitch (male)		
electroencephalograph connector (8-electrode cap)	ultra-mini RF coaxial connectors		

Table 1: Specifications of BrainAccess CAP.

3 Setup

BrainAccess CAP comes pre-assembled with electrodes. BrainAccess Board software uses default templates for mapping electroencephalograph channel and corresponding electrode position. This mapping is shown in Figure 1 for BrainAccess Extended and Extended+ kits, while the mapping for Standard Kit is known in Figure 2. The electrode positions can be easily changed using the standard clipping mechanism when needed. The template will then have to be updated in software so that electroencephalograph channels are mapped correctly to electrode positions.



Figure 1: Electrode positions for BrainAccess CAP setups in a 10-20 system notation. Positions for BrainAccess Extended Kit are highlighted in green but users can place electrodes in different positions if they prefer. BrainAccess Extended+ Kit fills all the available positions. The numbers indicate the default connections to electroencephalograph channels.

In order to start making the measurements plug the connector at the back of the cap either to MIDI or MAXI electroencephalograph and attach it to the Hook-and-Loop fastener. Follow the steps given in MIDI or MAXI user manual to connect and stream EEG data. If you have purchased Standard Kit with MINI device, MINI device comes connected to the electrodes. Follow the steps in the MINI user manual to connect and stream EEG data. Visit www.brainaccess.ai/tutorials/ for tutorials on setting up and using BrainAccess devices and software.



Figure 2: The default electrode positions for the BrainAccess Standard Kit are highlighted in green. However, electrodes can be placed in any other available position. The numbers indicate the default connections to the channels of MINI electroencephalograph.

4 Safety Notice

BrainAccess CAP will be referred as 'the cap' in this safety notice.

- Do not use the cap in rainy/snowy conditions.
- Do not use the cap near the water or in extremely damp conditions.
- Do not use the cap in an explosive atmosphere.
- Connect the electrodes only to the inputs of the BrainAccess electroencephalograph.
- Do not use the cap if any of the electrodes are broken, remove the broken electrodes first.

5 Warranty

Neurotechnology ltd. warrants this product (BrainAccess CAP) against defects in materials and workmanship for one (1) year from purchase date under normal consumer use conditions. If the product fails during normal and proper use within the warranty period, Neurotechnology will

repair or replace the product. The liability of Neurotechnology does not include any incidental or consequential damages.

This warranty does not include failure caused by improper set-up, operation, maintenance, accident, damage, misuse, modifications not approved by Neurotechnology, normal wear and tear, any event or act outside Neurotechnologys control.

6 Support

Please contact Neurotechnology if you have any problems using any of the BrainAccess products.

Neurotechnology ltd.

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