

Mobita ConfiCap™ Series

MB-32EEG-CAP-A ConfiCap for 32-channel EEG

included in MOBITA-W-32EEG System

MB-20EEG-CAP-B ConfiCap for 10/20 EEG + 13 biopotentials

included in MOBITA-W-20EEG System

MB-12+20-CAP ConfiCap for up to 32 biopotentials

included in MOBITA-W-12+20 System

ConfiCaps deliver power and flexibility for wireless EEG and other biopotential recordings. Quickly change the electrode configuration or signal type of your Mobita Wireless Biopotential System by swapping out the ConfiCap. With *AcqKnowledge* and Mobita®, the system is quickly configured to do the work of multiple systems without the added cost of multiple amplifiers. Simply disconnect one header and snap on a new configuration for a completely different application. Record a 12-lead ECG while recording EEG and EMG data all with the same device.

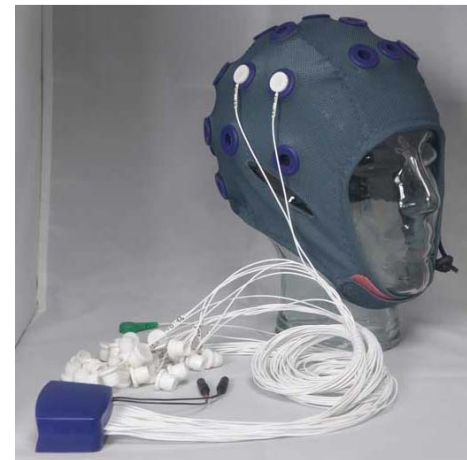
MB-32EEG-CAP-A Mobita ConfiCap for 32-channel EEG with Water Electrodes

This ConfiCap includes MB-32EEG-CAP-A1 water electrodes (100 inserts), trigger, Touchproof sockets, and options for H2O-CAP-SMALL, H2O-CAP-MEDIUM, H2O-CAP-LARGE.

Use with the MOBITA-W-32EEG System physiological signal amplifier for 32 channels of high-fidelity wireless EEG data with 3D accelerometer and trigger channel.

Water Electrodes are a highly efficient type of EEG sensor that conducts signals using just plain water. No electrode gel is required.

The electrodes terminate in a Mobita ConfiCap connector. Snap the assembly to the Mobita unit and attach the cap to a subject.



Benefits of water-based electrodes used with H2O Headcaps

- Water electrodes perform very well.
- Water electrodes are not sensitive for movement artifacts when properly applied/secured.
- No blood flow artifacts are measured.
- Noise figures are better than commercially available electrodes.
- DC characteristics are comparable or better than commercially available electrodes.
- Water electrodes are not light sensitive.
- Portability is excellent.
- Cap is easy to handle, comfortable to wear, and provides excellent signal quality.
- Less artifacts due to better placement and fixation on the head by using a sensor carrier.
- Suitable for a variety of applications, including long-term subject monitoring > 8 hours.

Ground Connector (Green)

The ConfiCap's green connector most often serves as a subject ground (GND). Simply apply an adhesive snap electrode (such as the BIOPAC EL500 series) to the subject's forehead and attach the green connector.



Trigger

The ConfiCap Trigger channel (Trigger + Trigger ground) supports TTL inputs from 3rd-party hardware and can be used to synchronize the Mobita system with other devices or data streams; contact BIOPAC for optional trigger interface.

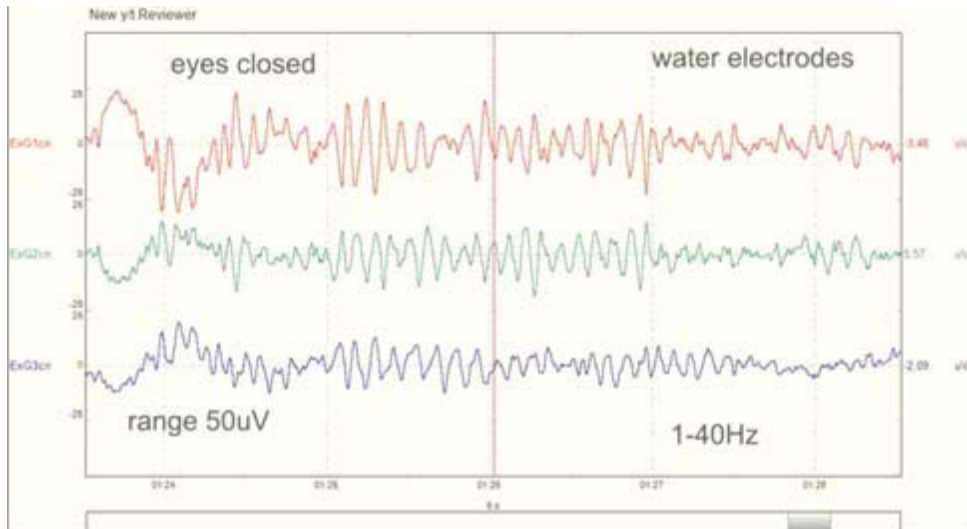
Water Electrode Housing

Rubber sensor carriers are integrated into the cap and sensors are applied to the carrier in the cap. A special housing with integrated AgCl pellet electrode was used to be the main components of the new sensor. Electrode and sensor housing are shown below, as well as the procedure for applying the sensor inside the carrier:



The sensor housing can contain a sponge that is soaked with water. The sponge and the water make contact with the skin to measure EEG. In order to increase comfort and decrease motion artifacts, the sensor housing is inserted in a rubber carrier, integrated into a type of headcap. The rubber ring prevents the sensor from drying out quickly and, more importantly, prevents sensor movement with respect to the skin. The carrier is produced from a soft type of rubber, and is very comfortable to wear.

EEG Measurement in a Noisy Environment



The new water electrodes were compared with standard Ag/AgCl in a simulation environment. A towel soaked with seawater was used to measure the noise of electrodes and amplifier. The noise of the amplifier was known, allowing a good impression of the noise specifications of the water electrodes and the DC stability of the offset of the electrodes. Tests have shown that the DC stability of the water electrodes is slightly better than the EEG cup electrodes, and the noise is a little bit lower. In the frequency band 1-300 Hz, noise was 0.79 μVrms . Impedance of both types of electrodes was measured, with no difference between the two. Without any skin preparation, impedance measured about 20 k Ω .

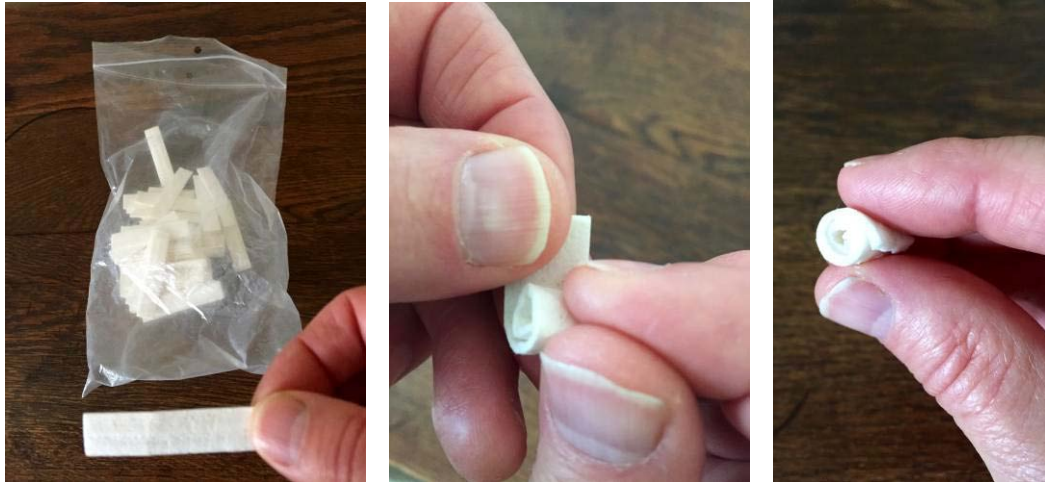
In Vivo tests

The system was also extensively tested in vivo, for more than 8 hours, without having encountered any trouble concerning comfort or convenience. During these 8 hours no decrease of signal quality was encountered. To have an indication about the quality in a normal (“noisy”) measurement environment a 3 channel EEG measurement placed on the occipital area was performed.

Water Electrode Preparation

Before using water electrodes to record EEG data, it's necessary to prepare them using the following steps:

1. Locate the plastic bag of Mobita H2O Electrode Inserts (included with the Cap). These are small strips of absorbent material that must be rolled up and inserted into the electrode cavity prior to recording.



2. Roll the Paper Electrode Insert lengthwise into a small tube as shown above. Make certain it is rolled tightly enough to fit into the water electrode cavity.
3. Pack the rolled insert into the electrode cavity as shown below, making sure it is well seated.



4. Repeat Steps 2 and 3 for the remaining electrodes.
5. Soak the prepared electrodes in water until completely saturated.

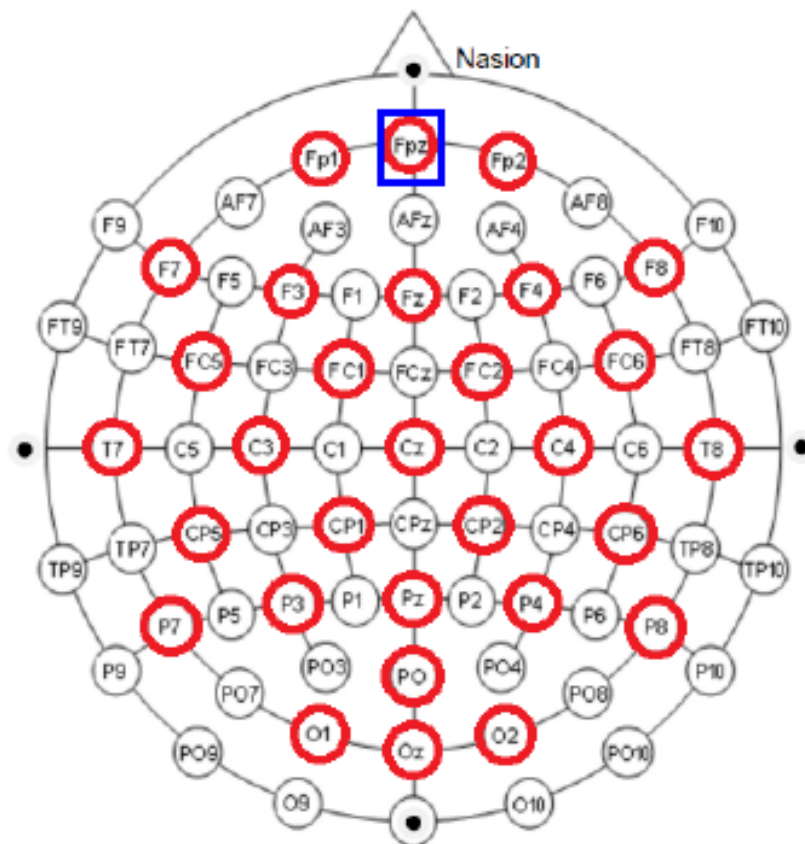


Attaching Water Electrodes

1. Insert the electrode into the rubber grommets on the cap as shown in figure below, paying attention to the “CH” numbers shown on the electrode leads. These numbers will be referenced for assigning the channels in the AcqKnowledge software.
 - The subject should feel a cool sensation as the moisture makes contact with the scalp. For best signal quality, move hair aside and avoid areas where hair is too thick.



2. It’s important to note the EEG electrode signal positions as they correspond to the cap grommets. Use the 32-channel EEG montage example below to help determine the electrode positioning. (Triangle represents nasion, which is the point between a subject’s forehead and nose.)



32-Channel EEG Electrode Positions

For example, if electrode lead CH1 is connected to the “Fpz” position, then Channel 1 in the AcqKnowledge software must be assigned and labeled to record the “Fpz” signal.

TIP: It is also possible to mark the signal position on the back of the water electrode using a permanent marker.

MB20-EEG-CAP-B Mobita ConfiCap for 10/20 EEG plus 13 biopotential signals

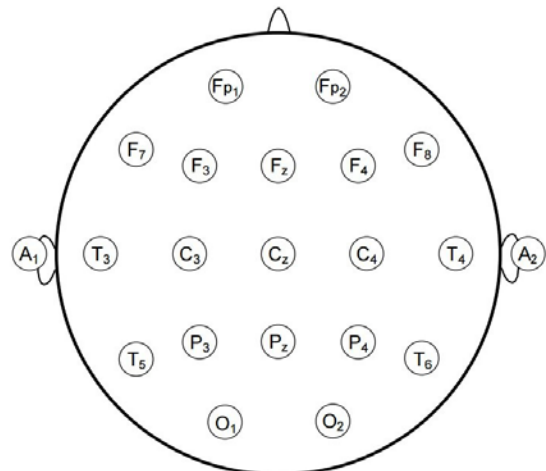


This combination interface allows for a full 10/20 EEG, plus optional biopotential signals for EOG, EMG, and ECG.

Additional electrodes are interfaced via standard 1.5 mm Touchproof sockets. Additional Touchproof sockets are provided for subject ground (green), trigger, and trigger ground.

Snap the assembly to the Mobita unit and attach the cap to a subject to record up to 32 channels of data for either in laboratory telemetry or remote data logging applications.

Includes medium EEG cap and accessories; other sizes available.



International 10-20 electrode montage

Ground Connector (Green)

The ConfiCap’s green connector most often serves as a subject ground. Simply apply an adhesive snap electrode (such as the BIOPAC EL500 series) to the subject’s forehead and attach the green connector.

Trigger

The ConfiCap Trigger channel (Trigger + Trigger ground) supports TTL inputs from 3rd-party hardware and can be used to synchronize the Mobita system with other devices or data streams; contact BIOPAC for optional trigger interface.

MB-12+20-CAP Mobita ConfiCap for 32 Biopotentials, includes 12 electrode leads



The MB-12+20-CAP is a complete assembly for the Mobita wearable biopotential system that interfaces 32 Touchproof (1.5 mm) sockets and includes 12 snap fit electrode leads, leaving 20 Touchproof sockets open for user's choice. Additional sockets provided for subject ground (green), trigger, and trigger ground.

Additional snap fit leads may be purchased to record up to 32 channels of biopotential data using a variety of electrode configurations, including both disposable and reusable options.

Connect to the Mobita and the subject and record 32 channels of data for either in laboratory telemetry or remote data logging applications.

Ground Connector (Green)

The ConfiCap's green connector most often serves as a subject ground. Simply apply an adhesive snap electrode (such as the BIOPAC EL500 series) to the subject's forehead and attach the green connector.

Trigger

The ConfiCap Trigger channel (Trigger + Trigger ground) supports TTL inputs from 3rd-party hardware and can be used to synchronize the Mobita system with other devices or data streams; contact BIOPAC for optional trigger interface.