

## FRI-2140-5

### EEG Headband



### User's Guide

The FRI-2140-5 EEG Headband is a convenient accessory for recording EEG signals from the brain. It has a number of spaced holes, where electrodes can be placed in the desired locations for signal measurement. Electrodes are placed on the skin side of the headband, with the top snap portion emerging through the hole. The electrode cables are snapped on top. The headband is completely adjustable for most sizes, and comes with an elastic chin strap to adjust the tension for comfort.

<http://www.floridaresearchinstruments.com>

### Usage notes

The headband is shipped fully assembled, to help show how it is configured. We recommend you have someone help you to adjust it to your own head.

This manual is for the headband only. You will also need electrodes & cables to measure the signal, and Q-tips & rubbing alcohol to cleanse the electrode skin contact sites.

To use the headband:

We will describe 3 steps to getting your perfect fit.

- 1) Placing the headband on the head in the correct direction
- 2) Adjusting the straps for your head
- 3) Placing the electrodes

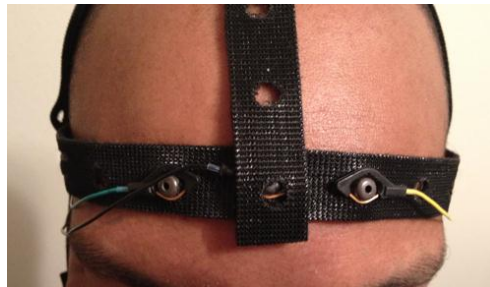
**1) Placing the headband on the head in the correct direction**

Detach one side of the ELASTIC CHIN STRAP ONLY. DO NOT DETACH ANY OTHER PART OF THE HEADBAND.

Place the headband on the head, with the "tail" hanging down the back of the head.



Lower the front as close to the eyebrows as possible.



Re-attach the chin strap. The side portion of the headband will hang in front of the ears.



The headband is now approximately in place, and can be tightened/loosened for a custom fit.

## 2) Adjusting the straps for your head

### A. Horizontal strap

The horizontal strap goes around the head, parallel to the eyebrows. Find the end of the horizontal strap, and detach **ONLY THE HORIZONTAL BAND**. LEAVE ALL OTHER STRAPS CONNECTED. Pull the horizontal band tight to your head. It should be difficult to slide a piece of paper underneath the band, but not cut off circulation or give you a headache. If the horizontal band leaves a mark in your skin, it is probably too tight. You may get a good signal, but it will likely be uncomfortable for long-term wear.



### B. Sagittal strap

The sagittal strap goes from the front of the head to the back. Leave this strap attached at the front of the head, right above the eyebrows. It should start directly above your nose, and pass over the center of the head. Detach the sagittal strap at the crossing point at the top of the head, and also detach from the back of the head. Pull it taut and re-attach the top part at the center of the top of the head. Then reattach the sagittal strap to the horizontal strap at the back of the head. It should be centered. It is ok if some extra hangs down the back.



## C. Coronal strap

The remaining strap is the Coronal strap. It goes across the top of the head from the left side to the right side. It is also the attachment point for the chin strap. The Coronal strap should already be centered on the head from the adjustment for the Sagittal strap. Leave the top of the head attached. Detach the chin strap, and the left & right sides of the coronal strap near the ears. Smooth them and reconnect so they are flat and pass in front of the ears. Reattach the chin strap comfortably.



## D. Chin strap

The purpose of the chin strap is to keep the coronal strap from riding up. Also, if you use electrodes in front of the ears, the chin strap will help hold those electrodes to the skin (since they will be below the connection point of the horizontal strap). We will describe electrode placement in the next step.





### 3) Placing the electrodes

This will be easier to do with the headband removed from your head. Electrodes are placed underneath the strap, with the snap poking up through the nearest hole. Then, the cable is pressed on top of the strap/electrode. You may need to wiggle it to make sure your cable has a firm connection with the electrode. It should not pop off or move.

After attaching the electrodes/cables to the headband, place the headband back on the head. Moisten a Q-Tip in rubbing alcohol, and scrub the surface of the head directly underneath the contact point for each electrode. This will remove oil/debris from the skin, resulting in a better signal.

Florida Research Instruments recommends using two types of electrodes with the EEG Headband - the Disposable / Reusable Wet EEG Electrode [TDE-201], and/or the Disposable / Reusable Dry EEG Electrode [TDE-200]. The main difference between these electrodes is that the “dry” electrode has tiny prongs to help press into the skin. However, both can be used with or without saline. The “wet” electrode is recommended for hairless skin such as the forehead. It will be more comfortable. The “dry” electrode is recommended for areas with (thin) hair obstructing the electrode. It may be challenging to get a good signal through long or thick hair, because the electrode needs to make good contact with the skin. In most cases injecting some electrode gel between the electrode and the skin will solve the problem. For your convenience FRI carries several varieties of gel, including TD-40, TD-41, and TD-242.

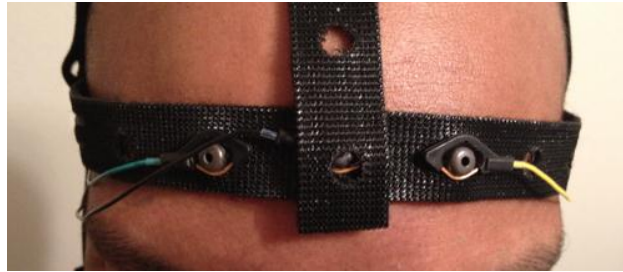
The TDE-207xx Lead wire is recommended for connecting the electrodes to your EEG measurement device. One end snaps to an electrode, the other is terminated with a standard biomedical safety plug. It is available in a variety of colors.

#### The basic 5-cable setup

To place the basic 5-cable measurement setup, you will have 5 electrodes attached to the headband. The recommended placement is:

1 “wet” electrode at the front intersection of the horizontal and sagittal straps. The electrode/cable can only snap well through one layer of the headband, so detach the sagittal strap, attach the electrode/cable to the horizontal strap, and reattach the sagittal strap over the top of both.

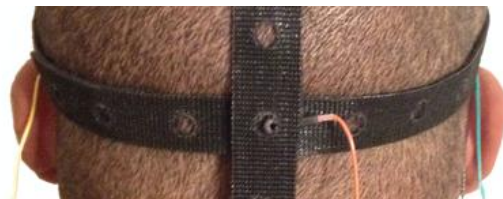
2 “wet” electrodes in the nearest holes on either side, going through the horizontal strap



1 “dry” electrode at the top of the head



1 “dry” electrode at the back of the head. As for the front, detach the sagittal strap from the horizontal strap, attach the electrode to the horizontal strap, and reattach the sagittal strap.



*Manual rev 1.2*