

POLHEMUS DIGITIZER

Digitizing Electrode Positions

The Polhemus Digitizer is used for the digitization of the Head Coil Cable and EEG electrode positions for the determination of head shape. Digitize all electrode positions using the Polhemus. The Polhemus system must be used in a large area which is free of metal/metal object, such as a conference room with a wooden table and chairs. Two people are required for this process. One person must do the digitization, and a second person is needed to operate the computer, watch the screen and keep track of the points.

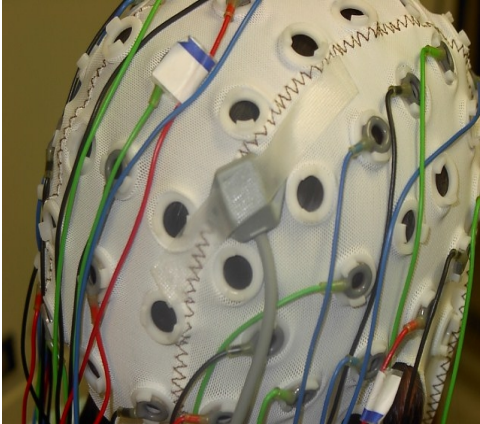


Figure 1: Polhemus Receiver Module

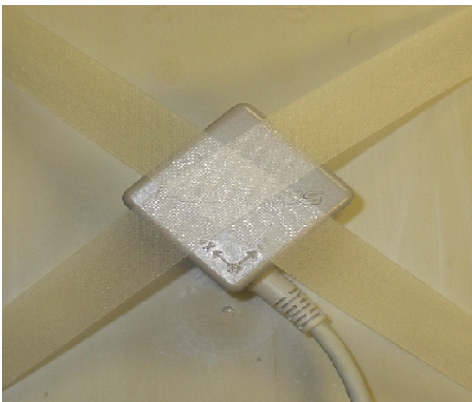


Figure 2: Polhemus Transmitter Module

1. Turn on the power to the laptop computer located on the portable cart.
 2. Turn on the Polhemus Unit by pushing the black switch (located under the Polhemus label) to "1".
 3. **Place the Polhemus Receiver:**
 - a. After the Easy Cap has been placed on the subject, position the small ***Receiver Module*** on the head on top of the cap near midline.
 - b. Firmly fix the Receiver to the subject's head or the cap.
- Note: When placing the Stylus Pen, Receiver and Transmitter make sure that the Transmitter cable does not cross and is not in close proximity to the Receiver or Stylus Pen cables.*
4. **Position the Polhemus Transmitter:**
 - a. Place the *large Transmitter* on a non-metallic stand directly behind the subject midline so that *the x-y coordinate arrows are pointing towards the subject's right and left shoulders.*
 - b. Tape the transmitter to the stand to secure. The Transmitter must ***NOT*** move during digitization.
 5. **Open the Polhemus Electrode Digitizing Program:**
 - a. Double click on the **Electrode Digitizer** Program.
 - b. The software should detect two (2) stations: the receiver and transmitter.
 - c. If the software does not recognize both stations, check the connections then restart the program.

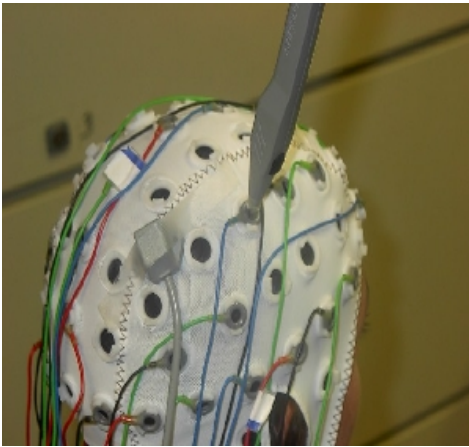


Figure 3: Stylus Pen

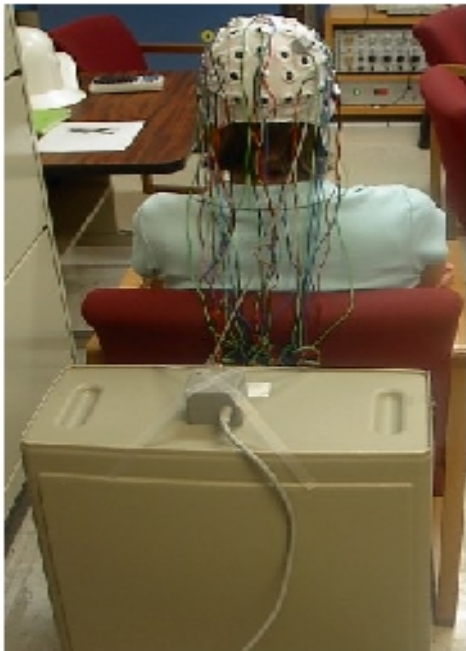


Figure 4: Polhemus Setup

6. **Define Head Coordinates:**

*Note: The first time you digitize a point, it may take longer than for other points and/or may be inaccurate. It is recommended that the first point be thrown away; press the **Erase Last Point** button to do this.

- a. From the laptop click on Define Head Coordinates.
- b. Press the stylus pen button to begin defining the head coordinates then:
 - i. Place the stylus pen tip at the center of the nasion then press the stylus button.
 - ii. Repeat for the left and right preauricular points.
 - iii. If a mistake is made, do not save the previously acquired locations simply start over from the beginning.
- c. Click on Define Head Coordinates to end.

7. **Digitize Electrode Locations:**

*Note: The first time you digitize a point, it may take longer than for other points and/or may be inaccurate. It is recommended that the first point be thrown away; press the **Erase Last Point** button to do this.

- a. Click on **Digitizing Start / Stop**.
- b. Place the stylus pen at the center of an electrode location as designated by the digitizing program then press the stylus button.
 - A single data point is collected each time the stylus button is depressed and a beep will alert the user to each acquired point.
 - The program will assign a number to the electrode position in the sequence the electrodes are selected, i.e., 1, 2, 3, 4, etc.
- c. If a mistake is made, click on **Remove Last Point** and try that position again.
- d. Click on **Digitizing Start /Stop** when all electrode locations have been done.

8. At the end the program a head diagram will appear on the screen.
 - a. If the diagram is:
 - i. Correct – continue with Step 9.
 - ii. Not correct – check to make sure that the receiver or transmitter did not move then repeat digitization (steps 6a –d).
9. Click on **File / Save Data**.
 - a. Enter the filename in the form “YYYYMMDD”.
 - b. Save the data to the hard drive and
 - c. Save to a floppy disk.
**The filename is the current date.*
10. Exit the program. Eject disk. Turn off laptop.
11. Transfer the Polhemus head coordinate file from the disk to the computer at the acquisition workstation / console.



The operator and anyone within 10 feet of the transmitter and receiver should de-metal. The general rule of thumb is three times the separation distance between the transmitter and receiver from any metal in the room.

For example, if the separation distance is one foot, metal within three feet of the transmitter or receiver may cause distortion and inaccurate measurements.