BIO PAC EMG System – Initial Setup

STEP 1:
Verify the supplies and equipment listed under the EMG supplies section.

STEP 2:
Install AcqKnowledge 4.2 software on the recording laptop\workstation.

STEP 3:
Plug in the power cord to the Biopac EMG100C system (Do not switch ON the Biopac EMG100C system). Connect one end of the Ethernet cord to computer or laptop with the installed AcqKnowledge 4.2 software and the other to the Biopac EMG100C system.

STEP 4: Connecting leads to EMG system.
   a. Connect lead (110 S-W) to the EMG 100 module, the white segment of lead (110 S-W) connects to VIN+ port and the black segment of lead (110 S-W) connects to Shield port.
   b. Connect lead (110S-R) to the EMG 100 module, the red segment of lead (110S-R) connects to VIN- port and the black segment of lead (110S-R) connects to Shield port.
   c. Connect lead (110) to GND port.

   Connecting Leads (Connecting Leads.wmv)

   Video Demonstration Step 4

STEP 5:
Check whether the EMG 100C module is set to channel 1 on red channel switch on top of the EMG 100C module (make sure no other connections are made to channel 1 port in the UIM100C module).

STEP 6:
Verify whether the EMG 100C module is set to the specifications listed in the table for the electrode in use.

<table>
<thead>
<tr>
<th>Electrode</th>
<th>Gain</th>
<th>Low Pass Filter</th>
<th>High Pass Filter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface - Solid Gel</td>
<td>2000</td>
<td>500Hz</td>
<td>10Hz</td>
</tr>
<tr>
<td>Needle</td>
<td>2000</td>
<td>5KHz</td>
<td>100Hz</td>
</tr>
</tbody>
</table>

*Please verify in reference text for any preferred frequencies to be used in data logging on specific muscle groups.
**BIO PAC EMG System – Application of Electrode**

**STEP 7:**
Connect the individual leads (pincer end) to the electrodes (Cut the electrode strip into individual elements using a pair of scissors).

![Figure: Step 7.1](image_url)

**STEP 8:**
Prepare the participant’s skin locations for electrode placement. If necessary, shave the area under study to remove any hair that might interfere with the EMG signal. Rub the skin preparation gel (NuPrep) lightly using a gauze pad to exfoliate the electrode placement site. Remove any excess gel with a clean gauze pad.
STEP 9:

Mark the locations for electrode placement sites on the participant’s skin using the appropriate methodology as defined by a reference text.

Note: A good trick is to use a rubber band to help identify lengths in ratios. You can mark the rubber band at fractions of lengths. Then when it is extended, the marking will help you identify exact locations along the muscles.

For example: If the electrodes should be placed half way between two points, mark the halfway point of the rubber band at resting length. When the rubber band is extended between two points, the halfway point is identified by the marking on the rubber band.

STEP 10:

Peel the electrodes with the leads attached from electrode strip and press onto the marked skin locations.

a. Apply the electrodes with leads 110S-R (red) & 110S-W (white) to marked locations on the participant’s skin around the muscle group under study.

b. Apply the electrode with lead 110 (black) to a bony surface on the participant’s skin to serve as the ground (In this example we use a location near the elbow).

Note: Use Transpore 3M tape to secure electrodes to the participant’s skin surface, when applying the electrodes, try to orient them so the wires flow in a convenient direction so you can tape and secure it appropriately.
STEP 11:
Turn on the Biopac EMG100C System and open the software application AcqKnowledge 4.2.

**BIO PAC EMG System – Software configuration**

STEP 12: Configuring AcqKnowledge 4.2

a. Select Create empty graph.

![Figure 12.1](image)

b. Setup the input channels by navigating to **MP150>Set Up Channel** and select “Add New Module.”
c. Choose the appropriate module set up - **EMG100C and EMG100C-MRI**
d. To set up acquisition length, select **MP150>Set Up Acquisition** and choose appropriate length for monitoring.

e. Select “**Start**” on the Start/Stop title bar to begin monitoring.
f. The raw data will be recorded in the AcqKnowledge 4.2 software which can then be used to perform the desired analysis.

g. Select “Stop” on the Start/Stop tool bar to end monitoring.
**BIO PAC EMG System – Removal of Electrode.**

STEP 13: Remove the electrodes on completion of the experiment.

- a. Remove the adhesive tape and disconnect the leads from the electrodes.
- b. Disconnect the other end of the lead from the socket in EMG100c module.
- c. Remove and discard the electrodes from the participant’s skin.
- d. Clean any residual skin prep gel from the participant’s skin by gently wiping with rubbing alcohol and a gauze pad.

![Video Demonstration Step 13](Removing of Electrodes.wmv)