Experiment HH-2: The Electrocardiogram and Heart Sounds

Note – this lab uses a manual or electronic stethoscope so that students can get gain an understanding for using an external stethoscope for listening to the heart. If you would like to use the Heart Sounds microphone instead – please refer to Lab HH-8 "Auscultation".

Equipment Required

PC or Mac Computer

IWX/214, USB cable, IWX/214 power supply

C-AAMI-504 ECG cable and electrode lead wires

EM-100 Event marker

Stethoscope

Alcohol swabs

Disposable ECG electrodes

Start the Software

1. Click on LabScribe
2. Click Settings → Human Heart → ECG-HeartSounds
3. Once the settings file has been loaded, click the **Experiment** button on the toolbar to open any of the following documents:
    - Appendix
    - Background
    - Labs
    - Setup (opens automatically)

ECG Cable and Event Marker Setup

1. Locate the C-AAMI-504 ECG cable and electrode lead wires (Figure HH-2-L1), and EM-100 event marker (Figure HH-2-L2), in the iWorx kit.
2. Plug the DIN8 connector to the EM-100 event marker into the Channel 3 input of the IWX/214 (Figure HH-2-L3).
3. Insert the black C-AAMI connector on the end of the ECG cable into the isolated inputs of Channels 1 and 2 of the IWX/214.
4. Insert the connectors on the red, black, and green electrode lead wires into the matching sockets on the lead pedestal of the ECG cable.
5. Instruct the subject to remove all jewelry from their wrists and ankles. Another option is to use the area just under each clavicle which will give a better recording.

6. Use an alcohol swab to clean a region of skin on the inside of the subject's right wrist/clavicle. Let the area dry. Then, rough up the skin in that area with an emery board. this improves the conductivity of the electrodes.
7. Remove a disposable ECG electrode from its plastic shield, and apply the electrode to the scrubbed area on the wrist.
8. Repeat Steps 6 and 7 for the inside of the left wrist/clavicle and the inside of the right ankle.
9. Snap the lead wires onto the electrodes, so that:
    - the red (+1) lead is attached to the right wrist or under thr right clavicle,
    - the black (-1) lead is connected to the left wrist or under the left clavicle,
    - the green (C or ground) lead is connected to the right leg or on the abdomen.
10. Instruct the subject to sit quietly with their hands in their lap. If the subject moves, the ECG trace will move off the top or bottom of the screen. If the subject moves any muscles in the arms or upper body, electromyograms (EMGs) from the muscles will appear on the ECG recording as noise.

Figure HH-2-L1: The C-AAMI-504 ECG cable with three lead wires attached.

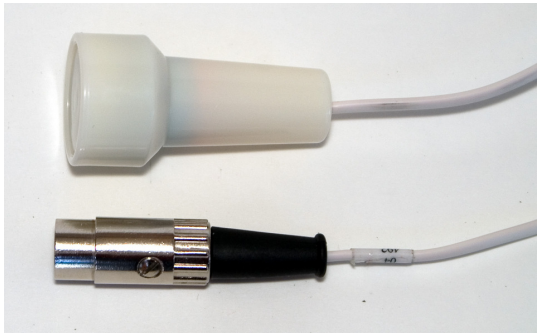

Figure HH-2-L2: The EM-100 event marker.

Figure HH-2-L3: The ECG cable and event marker connected to an IWX/214.