

Experiment HH-11: ECG ~ Simulations and Comparisons

Equipment Required

PC or Mac Computer

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

C- AAMI-504 ECG cable and electrode lead wires

iWorx ECG-SIM-1200 electrocardiogram simulator

Alcohol swabs

Disposable ECG electrodes

Start the Software

1. Click on LabScribe
2. Click Settings → Human Heart → ECG-Simulation
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 Setup

1. Locate the C-AAMI-504 ECG cable and electrode lead wires in the iWorx kit.
2. Insert the black AAMI connector on the end of the ECG cable into the isolated inputs of Channels 1 and 2 of the IWX/214 ([Figure HH-11-S1](#)).
3. Insert the connectors on the red, black, and green electrode lead wires into the matching sockets on the lead pedestal of the ECG cable.
4. Instruct the subject to remove all jewelry from their wrists and ankles. Turn off and remove cell phones, watches and any other device with a battery. These should be placed away from the subject to avoid electrical noise that can be associated with biopotential recordings.
5. Use an alcohol swab to clean and scrub a region with little or no hair, on the inside of the subject's right wrist, left wrist and the inside of the right ankle. Let the areas dry. Alternate locations can be the areas just under each clavicle and the abdomen. This will give a better recording.
6. Remove disposable ECG electrodes from their plastic shields, and apply the electrodes to the scrubbed areas.



Figure HH-11-S1: The C-AAMI-504 ECG cable with three lead wires attached connected to the IWX214.

7. Snap the lead wires onto the electrodes, so that:
 - the red (+1) lead is attached to the right wrist or under the 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.
8. Instruct the subject to sit quietly with their hands resting in their lap. If the subject moves, the ECG trace will move off the top or bottom of the screen.

Note: *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. Talking can also generate a noisy recording.*