

MiniLab 3 – ECG Measurement

GOALS

Measure an ECG signal with a commercial sensor.

GENERAL GUIDELINES

- 1) Due to the limited number of lab stations, students must work in pairs (or individually, if possible).
- 2) Students are allowed (even encouraged) to help each other. Of course, Buma will be around to provide assistance as well.

REQUIRED MATERIALS

- Lab kit
- Commercial ECG sensor (made by Vernier, Inc.) with adapter and three electrodes
- PCB adapter board
- Oscilloscope, probe, banana cables



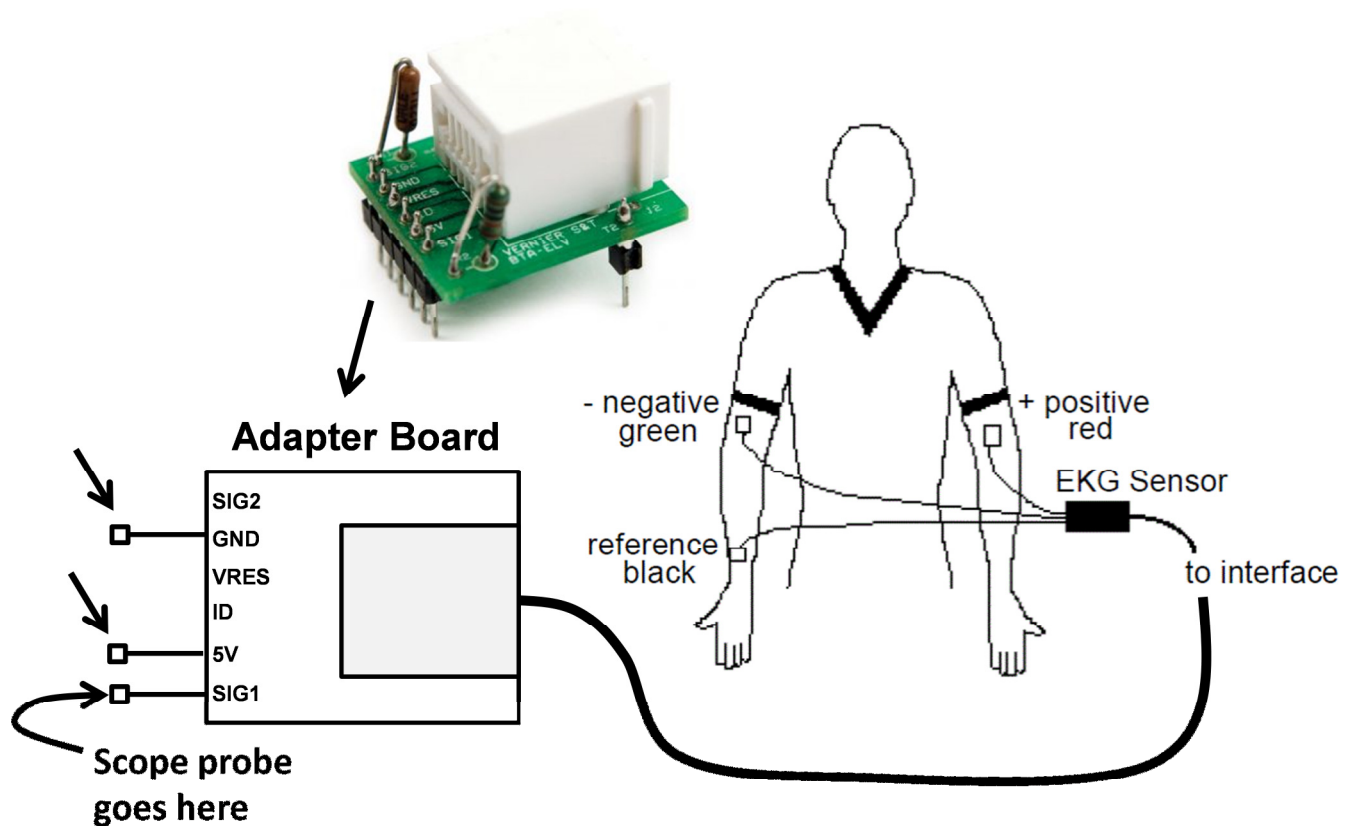


Fig. 1: ECG setup with PCB adapter board, ECG module, and electrode placement.

- 1) Wire up the benchtop power supply to output +5V.
 - Use your breadboard's RED terminal for +5V and GREEN terminal for GND.
- 2) Install the PCB adapter board into the breadboard.
 - Make sure a "breadboard gap" exists between the left and right sides – similar to the way you insert an op-amp or the AD-620 chip.
 - Wire up the "5V" and "GND" pins of the adapter board and attach a scope probe to the "SIG1" pin.
- 3) ECG measurement.
 - Place an ECG electrode on the upper left arm (see Fig. 1) and attach the RED alligator clip of the ECG module to the black tab (see Fig. 2).
 - Place an ECG electrode on the upper right arm (see Fig. 1) and attach the GREEN alligator clip.
 - Place an ECG electrode on the lower left arm (see Fig. 1) and attach the BLACK alligator clip.
 - Turn on the scope, press "Default Setup", check the probe attenuation, and use a vertical setting of 500 mV/div and horizontal setting of 200 ms/div.
 - Hopefully you will see the PQRST waveform! ☺



Fig. 2: ECG electrode with black tab for alligator clip.

(End of MiniLab3)