

Sensor Cable c/w Electrode Pads (3 Connect) for ECG Measurement

Introduction:

This sensor is a cost-effective board used to measure the electrical activity of the heart. This electrical activity can be charted as an ECG or Electrocardiogram and output as an analog reading. ECGs can be extremely noisy, the AD8232 Single Lead Heart Rate Monitor acts as an op amp to help obtain a clear signal from the PR and QT Intervals easily.

The AD8232 is an integrated signal conditioning block for ECG and other biopotential measurement applications. It is designed to extract, amplify, and filter small biopotential signals in the presence of noisy conditions, such as those created by motion or remote electrode placement.

The AD8232 module breaks out nine connections from the IC that you can solder pins, wires, or other connectors to. SDN, LO+, LO-, OUTPUT, 3.3V, GND provide essential pins for operating this monitor with an Arduino or other development board. Also provided on this board are RA (Right Arm), LA (Left Arm), and RL (Right Leg) pins to attach and use your own custom sensors. Additionally, there is an LED indicator light that will pulsate to the rhythm of a heart beat.



Objective:

To determine heart rate, heart rhythm and other information regarding the heart's condition. ECGs are used to help diagnose heart arrhythmias, heart attacks, pacemaker function and heart failure.

Components:

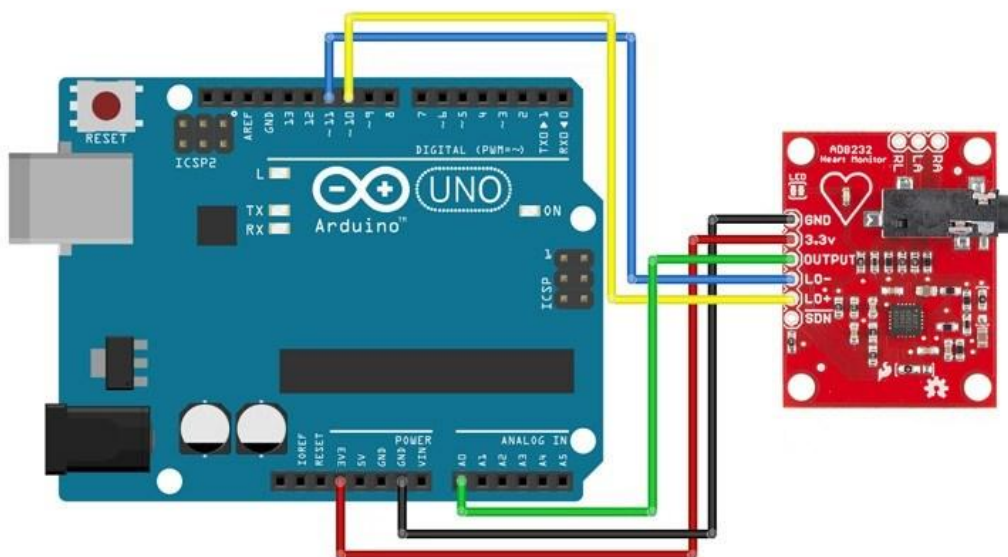
- Arduino Uno Board
- AECG Module AD8232
- ECG Electrodes – 3 pieces
- ECG Electrode Connector -3.5 mm
- USB Cable
- Several Jump Wires

Procedures:

Step 1: Build the circuit.

The connection between the Sensor Cable c/w Electrode Pads (3 Connect) for ECG Measurement and the Arduino Uno Board:

Sensor Cable c/w Electrode Pads (3 Connect) for ECG Measurement	Arduino Uno Board
GND	GND
3.3V	3.3V
OUTPUT	A0
LO -	PIN 11
LO +	PIN 10



Step 2: Insert the sample programming provided below by copy and paste it into Arduino IDE.

```
void setup() {  
  // initialize the serial communication:  
  Serial.begin(9600);  
  pinMode(10, INPUT); // Setup for leads off detection LO +  
  pinMode(11, INPUT); // Setup for leads off detection LO -  
  
}  
  
void loop() {  
  
  if((digitalRead(10) == 1)||((digitalRead(11) == 1)){  
    Serial.println('!');  
  }  
  else{  
    // send the value of analog input 0:  
    Serial.println(analogRead(A0));  
  }  
  //Wait for a bit to keep serial data from saturating  
  delay(1);  
}
```

Step 3: Open the serial monitor to observe the result as shown below.

