

## **A Study on the Design & Analysis of a Dual Functionality ECG Recorder System**

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### ***Abstract***

*A handheld, portable ECG displaying device is developed. This electronic device records actual real time ECG signals and displays it on the computer screen or inbuilt display using a specialized graphical sketch software. Also there is provision for displaying the ECG on the inbuilt TFT touchscreen display. The actual ECG obtained is accurate and detects 3 conditions of the heart.*

***Keywords*** AD8232; ECG; Processing; Arduino; FTDI, Arduino Mega ADK, TFT display.

### **INTRODUCTION**

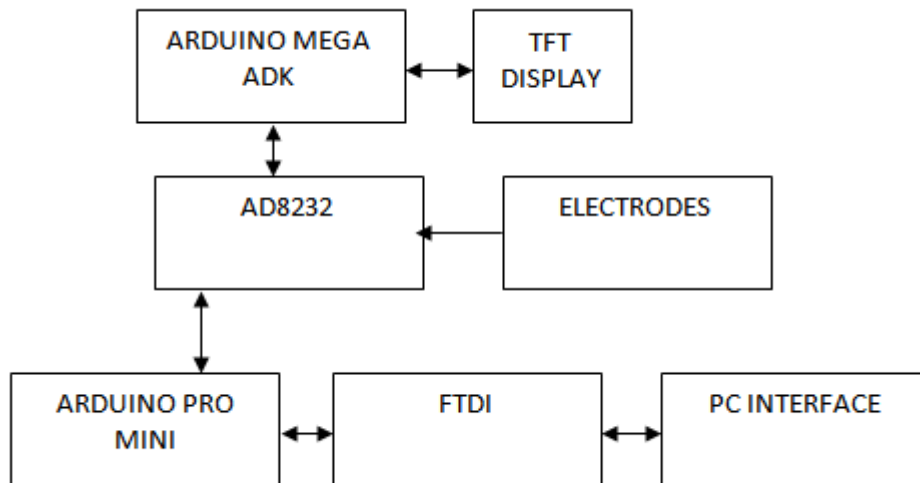
ECG is recording the electrical activity of the center. The recording is processed by putting electrodes that find electrical changes on the skin surface. an ECG may be accustomed live the speed and rhythm of heartbeats, the dimensions and position of the chambers of the center, the presence of any injury to the heart's muscle cells or conduction system. The spikes and dips type the idea for waves. The heart's electrical activity is shown as tracings on the graph sheet. We are employing a low value low quality ECG recorder setup for obtaining the waveform graph premeditated on a computer. The P-R interval is that the time from the start of the P wave to the beginning of the QRS complicated. The QRS interval or period or dimension is that the time from the start

to the tip of the QRS complicated. The QT interval is that the time from the start of the QRS complicated to the tip of the T wave. The RR interval is that the time from the height of one R wave to that of the subsequent R wave.

### **DESIGN IMPLEMENTATION**

The AD8232 acquires the signals via three conductor created and is given to the Arduino pro mini for process. It's ADC that converts the signals and displays the digital signal on the computer interface. We have a tendency to program the Arduino pro mini via the FTDI. The AD8232 passes the signals to Arduino pro mini 328 that then processes it and shows the RT wave form on the computer display. We can conjointly observe on the TFT touchscreen built-in module.

### **BLOCK DIAGRAM**



*Fig 1: Block Diagram*

### CONCLUSION & RESULTS

We are displaying the Normal Sinus Rhythm, Sinus Bradycardia and Sinus Tachycardia. The device displays the output as obtained from the person. Following is the output. For a normal adult, the Heart Rate lies between 60-100BPM. The abnormalities are studied for different persons.



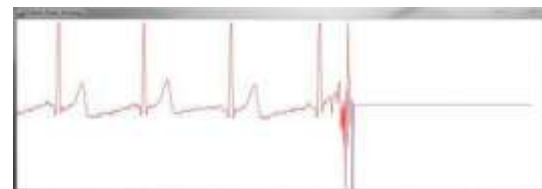
*Fig 2: ECG prototype*



*Fig 3: Inbuilt TFT display*



*Fig 4: Normal ECG waveform*



*Fig 5: Leads off detection*

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