



ECG CUM HEART RATE MONITOR MODEL-ECGHRM100

This trainer has been designed with a view to provide practical and experimental knowledge of ECG cum Heart Rate Monitor using Biomedical Sensors programming for Internet of Things (IOT) with Arduino IOT Board.



SPECIFICATIONS

1. Hardware

Following Parts are assembled on Single PCB of size - 18 Inch x 15 Inch

1. Arduino Microcontroller Board

1. Arduino Uno Microcontroller board based on the ATMEGA328P
2. 14 Digital Input / Output pins (of which 6 provide PWM output)
3. 16 MHz Ceramic Resonator
4. Flash Memory : 16KB (of which 2KB used by boot loader)
5. USB Port
6. Power Jack – 9V DC, 1A

2. Sensors:

1. Electro Cardio Graph - ECG Sensor - Ad8232
Real time ECG acquisition with 200 samples/sec with 8 Bit ADC
2. Heart Rate Sensor - HR – MAX30102
Measuring Range - 30-300 Heart Beats per minute

3. Modules and Hardware:

1. 20 X 4 - LCD Display
2. ESP32 – Wifi Module
3. 2 mm interconnections

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Dealer:-

2. Accessories

- | | | |
|-----|--|-------------------------|
| 1. | USB Cable | : 1 No |
| 2. | Ethernet Cable | : 1 No |
| 3. | Micro USB to USB cable for ESP32 | : 1 No |
| 4. | Power Supply Adaptor | : +9V DC, 1A |
| 5. | Required Connecting Electrodes | : 1 Set for Each sensor |
| 6. | Jumper wires | : 50 Nos. |
| 7. | Pen Drive with Software, Library, Driver,
Codes, Soft Copy of Manual and Mobile App | : 16 GB |
| 8. | Printed Practical Manual | : 1 No |
| 9. | E-Books for Biomedical IOT Subject | : 10 Nos. in PDF Format |
| 10. | Mp4 Video Class for Biomedical IOT Subject | : 40 Nos |
| 11. | Excitation accessories for each sensor | |

3. Cabinet and PCB

The complete circuit diagram is screen printed on component side of the PCB with circuit and Parts at the same place. The PCB with components on front side is fitted in elegant wooden box having lock and key arrangement. The acrylic cover is fitted on PCB to safeguard parts. It works on 230 V AC Supply.

EXPERIMENTS

A. Theory Experiments for Arduino Board

1. To understand theory and working of Arduino Operating software.
2. To understand Pin and Connection Diagram of Arduino.
3. To understand USB Interface for Arduino.
4. To understand 20 x 4 LCD Display.

B. Theory of ESP32 Wireless Module

5. To understand theory and working of ESP32
6. To understand Operating System for ESP32
7. To understand Pin and Connection Diagram of ESP32
8. To understand USB Interface for ESP32

C. Theory Experiments for Sensors

9. To understand theory and Connection Diagram of ECG Sensor with Electrodes
10. To understand theory and Connection Diagram of Heart Rate Sensor – HR

D. Practical Experiments

11. To get draw ECG of a person using ECG Sensor and to interpret it
12. To measure Heart Rate of a person using Heart Rate Sensor and to interpret it

E. Server, Cloud Configuration, IOT Gateway, Nodes and Mobile App Experiments

13. To send different Biomedical Sensors data of a person using Wifi Wireless Node to Main Base IOT Receiver
14. To send and display different Biomedical Sensors data of a person in a server Web Page
15. To send different Biomedical Sensors data of a person to website webpage and store them into MySQL Server
16. To receive and show different Biomedical Sensors data of a person on Android based Mobile App
17. To send and display different Biomedical Sensors data of a person on Smart Dashboard