

# Patient Monitoring System

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**Abstract-** *Now a day technology is running with time, it completely occupied the life style of human beings Healthcare monitoring systems have been one of the most important system in the last decade, and they have become increasingly technological. Humans are facing various issue and untimely death due to multiple illness, due to a lack of medical treatment for patients. To overcome this issues a real time health monitoring system. The main aim is to create a dependable patient management system based on IOT. So that healthcare professionals can monitor their patients who are either hospitalized or at home using a different analyzing based integrated healthcare system to ensure quality patient care. Sensors are used to track vital parameters, and the data collected by the sensors. A wireless healthcare monitoring system has created that can provide real time online information about a patient's conditions. The system is made up of sensors, a data acquisition unit, a microcontroller (i.e. ESP32) and software. The patient's temperature, heart beat rate, and SPO2 are regularly monitored, displayed and stored by the system and the same has been sent to the doctor's mobile containing the application. Additionally, a message is sent to the doctors mobile if any of the parameter crosses the threshold value. Thus based real time health monitoring system, systematically monitor the condition of patient's health and save their life on time*

## I. INTRODUCTION

The system will track, trace, monitor patients and facilitate taking care of their health; so efficient medical services could be provided at appropriate time. By using specific sensors, the data will be captured and compared with a configurable threshold via microcontroller which is defined by a specialized doctor who follows the patient; in any case of emergency a short message service (SMS) will be sent to the Doctor's mobile number along with the measured values through GSM module. Furthermore, the GPS provides the position information of the monitored person who is under surveillance all the time. Moreover, the paper demonstrates the feasibility of realizing a complete end-to-end smart health system responding to the real health system design requirements by taking in consideration wider vital human health parameters such as respiration rate, nerves signs etc. The system will be able to bridge the gap between patients - in

dramatic health change occasions- and health entities who response and take actions in real time fashion.

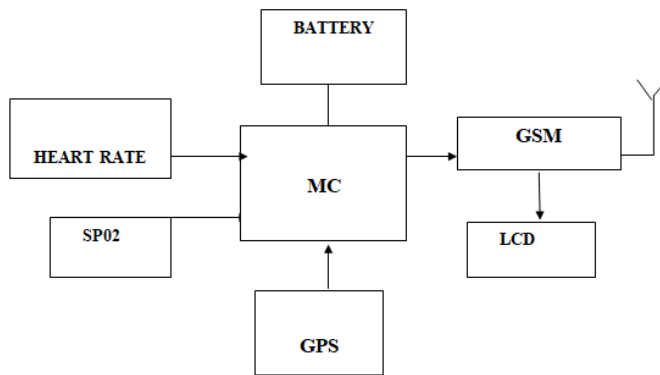
## II. EXISTING SYSTEM

In the existing system there are many types of Humidity and Temperature monitoring system some of them are using IOT sensors, by using cloud services, by using Digital technology and Computer technology. In this paper, we are going to implement Humidity and Temperature monitoring system by using IOT. All the current working models are good by many of laboratories are losing their projects. By this project we can able to get exact value of measures present in our atmosphere More over this model in previous literature studies have been trained with other low longitude areas Temperature values and got deployed and makes it inaccurate for the recognition of Temperature and Humidity values. By this project we can able to get accurate values of weather at every time

## III. PROPOSED SYSTEM

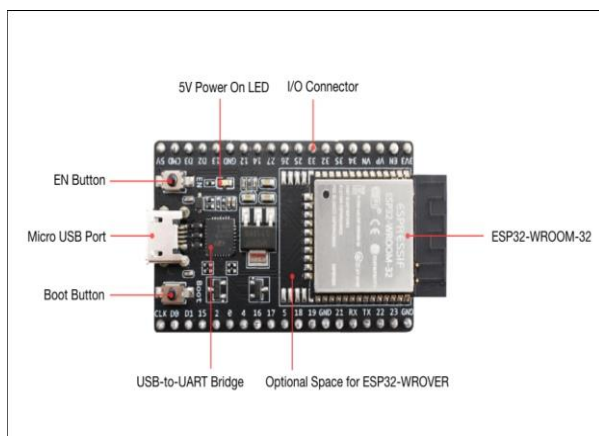
In this Arduino Project we will figure out how to utilize the DHT11 or the DHT22 sensor for estimating temperature and moistness with the IOT hub MCU. By this project we are going to get the values to our mobiles and computers. So, we can able to know the exact values of temperature in the lab. It is easy to operate and able to understand easily. Live temperature or moistness worth is sent to a scrounge recipient through remote signal. The DHT11 sensor detects mugginess and temperature, and sends the data to computerized stick 5 of Arduino MCU, From Arduino MCU, stickiness and temperature esteems are transferred to the Cloud at regular intervals of time through ESP8266 WIFI module. From the Cloud, humidity and temperature values can be seen graphically on Firebase console platform from anywhere in the world. With the help of WIFI module we can able to access the data.

**IV. BLOCK DIAGRAM**



**Fig 1.1** block diagram of proposed system

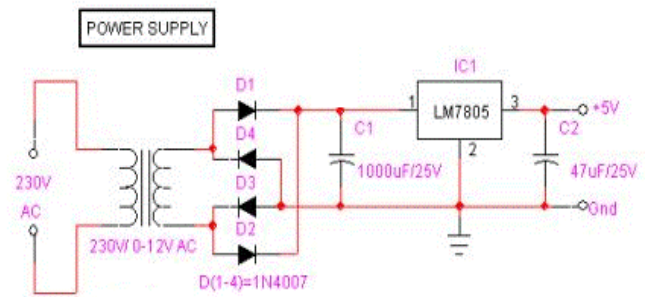
**V. HARDWARE DESCRIPTION**



ESP32-DevKitC V4 with ESP32-WROOM-32 module solder

ESP32-WROOM-32	A module with ESP32 at its core. For more information, see <a href="#">ESP32-WROOM-32 Datasheet</a> .
EN	Reset button.
Boot	Download button. Holding down Boot and then pressing EN initiates Firmware Download mode for downloading firmware through the serial port.
USB-to-UART Bridge	Single USB-UART bridge chip provides transfer rates of up to 3 Mbps.
Micro USB Port	USB interface. Power supply for the board as well as the communication interface between a computer and the ESP32-WROOM-32 module.

**POWER SUPPLY**

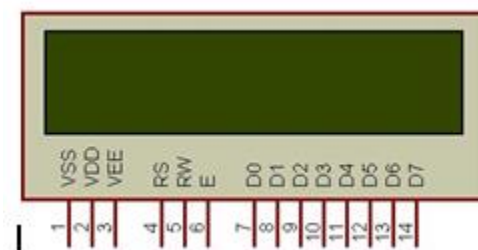


**Fig: 2.1** Power supply diagram

**DHT SENSOR**

This module includes a stickiness and temperature complex with an aligned computerized sign yield implies DHT11 sensor module is a joined module for detecting mugginess and temperature which gives an adjusted advanced yield signal. DHT11 gives us exact estimation of moistness and temperature and guarantees high unwavering quality and long-haul soundness. This sensor has sensitive sort mugginess estimation segment and NTC type temperature estimation segment with an 8-piece microcontroller inbuilt which has a quick reaction and practical and accessible in 4-stick single line package. DHT11 module deals with sequential correspondence for example single wire correspondence. This module sends information in type of heartbeat train of explicit timespan. Before sending information to Arduino, it needs some introduce order with a period delay. Furthermore, the entire procedure time is about 4ms. The single-wire sequential interface makes framework joining speedy and simple. Its little size, low power usage and up-to-20-meter signal transmission choosing it the best choice for various applications, including those most mentioning ones. The segment is 4-stick single line stick bundle. It is advantageous to interface and uncommon bundles can be given by clients' solicitation.

**LCD (LIQUID CRYSTAL DISPLAY)**



**Fig 3.1:**LCD

- A liquid-crystal display (LCD) is a flat panel display, electronic visual display, or video display that uses the light modulating properties of liquid crystals.
- Liquid crystals do not emit light directly. LCDs are available to display arbitrary images (as in a general-purpose computer display) or fixed images which can be displayed or hidden, such as preset words, digits, and 7-segment displays as in a digital clock
- They use the same basic technology, except that arbitrary images are made up of a large number of small pixels, while other displays have larger elements.
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## GSM (GLOBAL SYSTEM FOR MOBILE COMMUNICATION)

Main function of GSM modem is to send all parameters to user or Doctor through a text SMS. For sending SMS, Microcontroller needs to give various AT commands to GSM modem using a serial communication port. . A customized Global System for Mobile communication (GSM) module is designed for wireless radiation monitoring through Short Messaging Service (SMS). This module is able to receive serial data from radiation monitoring devices such as survey meter or area monitor and transmit the data as text SMS to a host server.

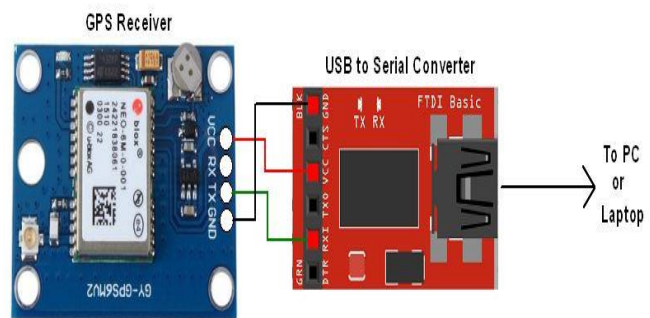
### Features of GSM

- Supports international roaming.
- Clear voice clarity.
- Ability to support multiple handheld devices.
- Spectral / frequency efficiency.
- Low powered handheld devices.
- Case of accessing network.
- International ISDN compatibility.

## GPS (GLOBAL POSITIONING SYSTEM)

Main function of GPS – **Global Positioning System** modem is to provide longitude and latitude of the ambulance. The GPS modem receives data from satellite. And then it gives this bunch of data to Microcontroller through serial communication. As ambulance moves along the way from patient's home to hospital, the co-ordinates of ambulance location will change and these variations are given to Microcontroller.

### PIN description



GPS Serial Interface

## VI. CONCLUSION

In this project we set out to develop a low cost remote patient monitoring system that could monitor the heart rate and body temperature of a patient. The results show that the system was able to monitor the body temperature and heart rate of a person. The result data was then uploaded to the server. The SMS Alert functionality also worked as expected. For future work, the system can be equipped with more sensors so that it can be able to monitor more vital signs. A web application can also be developed to display the plots of the data stored in the database for visualization and trend analysis. The GPS coordinates can also be connected to the Google Maps API and the location of the device & patient can be displayed on Google Maps.

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