

# Automatic Wireless Health Monitoring System in Hospital's for Patient's

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**Abstract**— In this project, a wireless communication system is designed and developed for remote patient monitoring. The primary function of this system is to monitor the temperature of a patient's body, and display the same to the doctor through RF communication. In hospitals, where patient's body temperature needs to be constantly monitored, is usually done by a doctor or other paramedical staff by constantly observing the temperature and maintaining a record of it. It is a very tedious method. In this proposed system transmitting module continuously reads patient's body temperature through a digital temperature sensor, displays it on the LCD screen and sends it to the microcontroller which transmits the encoded serial data over the air by RF (radio frequency) through an RF module. At the receiving end, a receiver is used to receive the data, decode it and feed it to another microcontroller which is then displayed on an LCD screen. The receiver module is kept in the doctor's chamber to continuously display the patient's body temperature wirelessly

**Key words:** Temperature sensors, Wireless control, RF Communication

## I. INTRODUCTION

We have seen in hospital that the body temperature of patient's need to be measured regularly after a given interval of time. This task requires due attention and accuracy. It consumes too much time. And also real time monitoring of patient body temperature is not possible. This project is related to electrical engineering and bio-medical field. It fulfill the need of a budget friendly and convenient automatic wireless temperature measurement. Our project is made to eliminate the tedious task and save precious time of medical staff. In this purposed system a transmitted module continuously reads patients body temperature through a digital temperature sensor display it on an LCD and sends the data over the air by an RF module. The data sends from RF module in received by the receiver circuit which is present in Doctor's chamber.

**Paper Organization:**-This paper is organized in VII sections where basic working of electronic circuit in the automatic wireless health monitoring system presented in section II. Section III and IV present the propose block diagram and circuit diagram along with the hardware design details with description of components used. Section. Finally, the results obtained and conclusions from the designed system is presented in section VI and VII respectively.

## II. BASIC WORKING PRINCIPLE

The project is based upon the principle of wireless communication using an RF (radio frequency) modules. Which is a small electronic device used to transmit and/or receive radio signal between 2 devices. Wireless communication is the transfer of information or power between two or more points that are not connected by an

electrical conductor. With radio waves distances can be short, such as a few meters for television or as far as thousands or even millions of kilometers for deep-space radio communications. The body temperature of patient is read by a temperature sensor LM35. For the measurement of temperature the sensor needs to be placed inside ear, mouth or rectum. This data is sent by transmitting circuit and is received by receiving circuit.

## III. BLOCK DIAGRAM:

### A. Transmitter Section:

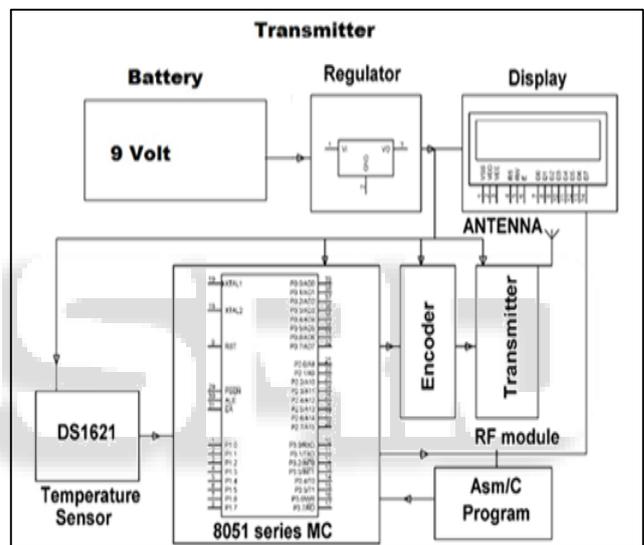


Fig. 1: Block Diagram of Transmitter section of Automatic wireless health monitoring system

### B. Receiver section:

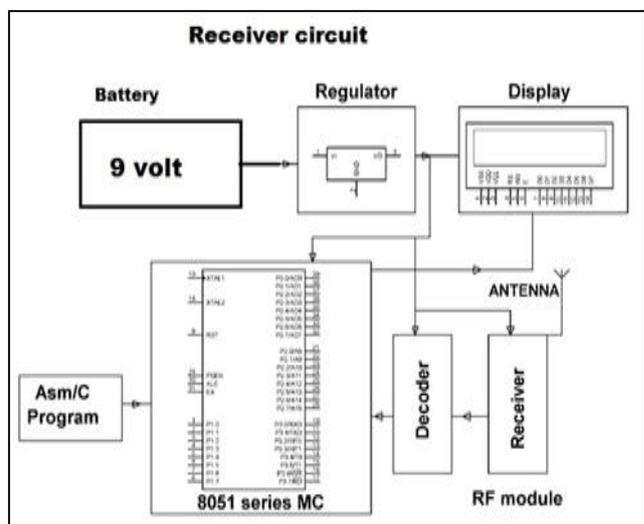


Fig. 2: Block Diagram of Receiver section of Automatic wireless health monitoring system

#### IV. CIRCUIT DIAGRAM

##### A. Receiver Circuit Diagram:

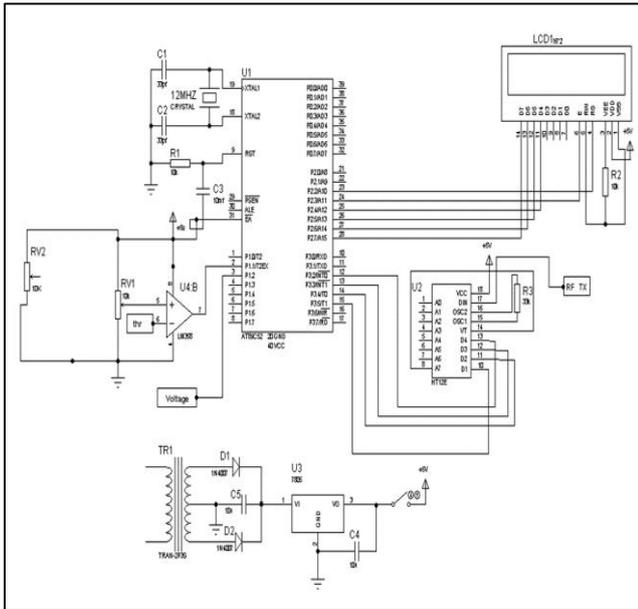


Fig. 3: Circuit Diagram of Receiver Section

##### B. Transmitter Circuit Diagram

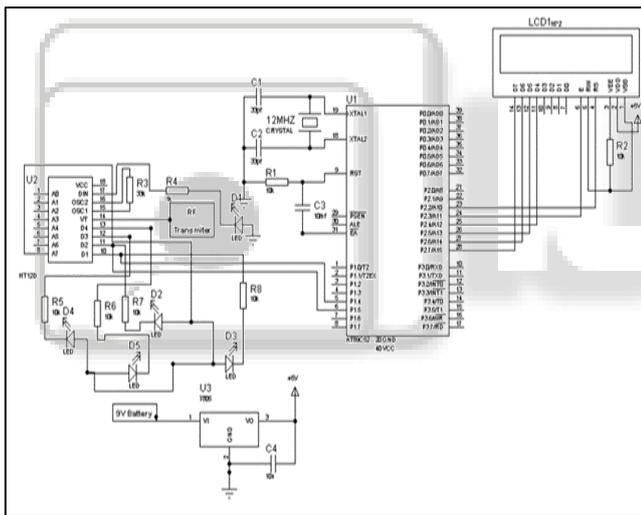


Fig. 4: Circuit Diagram of Transmitter Section:

##### C. Description of Components Used:

- 1) Alkaline Battery: In an alkaline cell the electrical energy is essentially derived from the reaction of a metal with oxygen. The Alkaline Manganese Dioxide battery is a variant on the Leclanché cell. As with the Leclanché cell the electrodes are zinc and manganese dioxide but the electrolyte is Potassium hydroxide (KOH).
- 2) ii. Liquid Crystal Display(LCD):- Most common LCDs connected to the microcontrollers are 16x2 and 20x2 displays. This means 16 characters per line by 2 lines and 20 characters per line by 2 lines, respectively. The standard is referred to as HD44780U, which refers to the controller chip which receives data from an external source (and communicates directly with the LCD).
- 3) Temperature Sensor:- The LM35 series are precision integrated-circuit temperature devices with an output voltage linearly-proportional to the Centigrade temperature. The LM35 device has an advantage over

linear temperature sensors calibrated in Kelvin, as the user is not required to subtract a large constant voltage from the output to obtain convenient Centigrade scaling.

#### V. RESULTS

We have designed the circuit for automatic wireless patient health monitoring system and have assembled the hardware regarding the project. The project consist of two main circuit one is transmitting circuit and the other is receiving circuit both the circuit have been designed and assembled successfully. The programming of our project is done by using BASCOM programming language of microcontroller. The project is in working condition and can be used to measure temperature.

#### VI. CONCLUSION AND FUTURE SCOPE

The project has been successfully designed and tested. The project model is only a prototype or representational model. For the use of device in practical life some changes need to be done. This project can be further improved by sensing and displaying other vital statistics of a patient like blood pressure, pulse rate etc. For the measurement of pulse rate a pulse measuring device can be added to this project. Another feature can be added where a warning signal is generated if the parameters cross the safety limit. Additional feature can be added by using GSM technology. It improves the transmitting range of the device and the doctor will be able to get patient's body temperature via SMS. Bluetooth can also be used in improvisation of this project as it would also increase the transmitting range of project. There are two classes of Bluetooth devices that are available in the market one is class A and the other is class B. The range of class A Bluetooth device is greater than that of class B type device. The feature of storing the temperature readings online and updating them whenever required can also be added to the device.

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