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### Human health monitoring system using redtacton transceiver

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#### ABSTRACT

RedTacton is a Human Area Networking technology that uses the surface of the human body for transmitting the information at a high speed. It is completely distinct from wireless and infrared technologies as it uses the minute electric field emitted on the surface of the human body. A transmission path is created when human body comes in contact with a RedTacton transceiver. Communication is possible using any body surfaces, such as the hands, fingers, arms, feet, face, legs or torso. RedTacton works through shoes and clothing as well. When the human body is not in contact with the transceiver the communication will be terminated. Human body communication (HBC) provides a promising physical layer for wireless body area networks (BANs) in healthcare and medical applications because of its low propagation loss and high security characteristics. In this project, we propose to monitor the patients health monitoring in a hospital. No external devices like Bluetooth, LAN, RF, Zigbee, Wires are used for transmitting the data. Thus reducing the capital or investment cost.

**Index Terms:** RedTacton, Electric field sensing

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#### INTRODUCTION

The Internet of Things (IoT) is defined as a system of interrelated mechanical and digital machines, objects, computing devices, animals or people that are provided with unique identifiers and the ability to transfer data over a network devoid of requiring human-to-human or human-to-computer interaction. Wearable computing and digital health devices are examples of how people are connecting to the Internet of Things landscape. IoT helps in communicating information to people and systems. The area of sensor network has grown significantly supporting a range of applications including medical and healthcare systems. A Wireless Body Area Network (WBAN) is a special purpose sensor network designed to operate autonomously to connect various medical sensors and appliances, located inside and outside of a human body.

These sensor nodes have wireless transmission capability and sense biological information from the human body to

transmit over a small distance to a control device worn on the body or placed at an accessible location.

#### EXISTING SYSTEM

In the existing system, Galvanic Coupling is used for transmission of information. Galvanic coupling for intrabody communication denotes the technology of signal transmission through the body for body and implanted sensor communication. Galvanic coupling follows the approach of coupling alternating current into the human body. The signal is applied differentially over two coupler electrodes and received differentially by two detector electrodes. The coupler establishes a modulated electrical field, which is sensed by the detector. Therefore, a signal transfer is established between the coupler and detector units by coupling signal currents galvanically into the human body.

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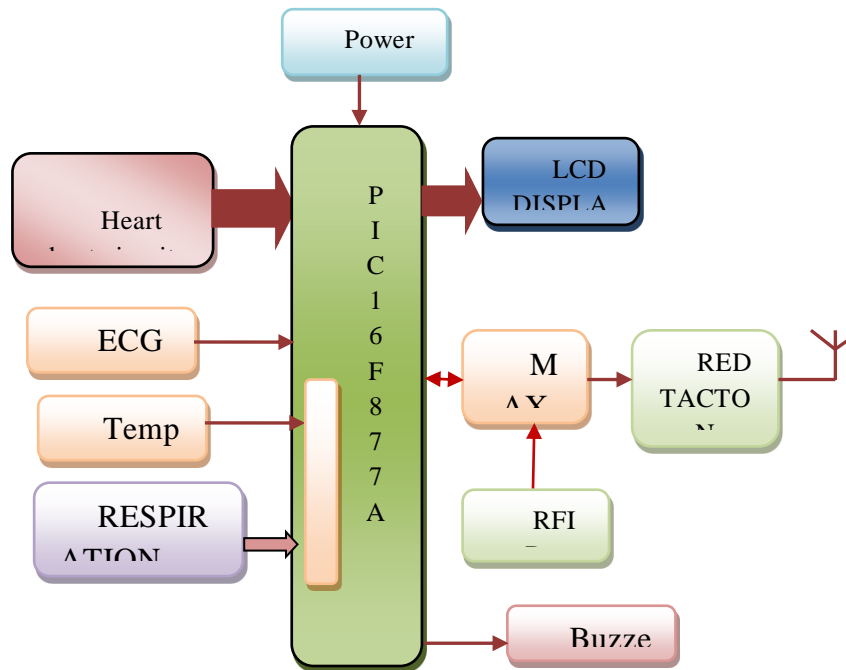
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## PROPOSED SYSTEM

In the proposed system, the sensors are placed on the epidermis of the patient. The PIC microcontroller displays the Heart Beat signals and the signals from the temperature sensor. These

signals are then forwarded to the RedTacton transceiver. The RS232 level converter converts the 5V signals to 12V signals. This processed signal thus becomes the data that can be viewed by the doctor which enable the doctor to guide the nurse station.

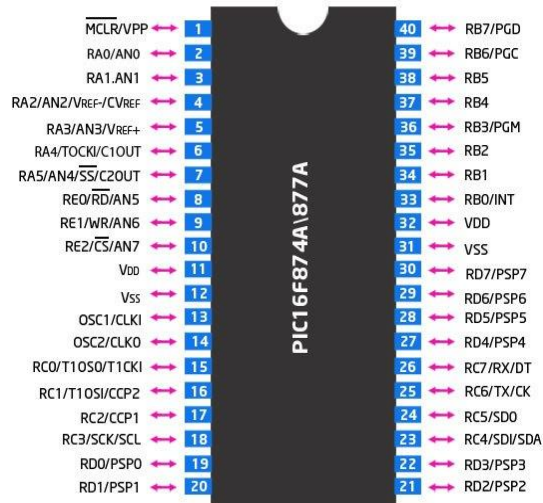
## METHODOLOGY



## MICROCONTROLLER

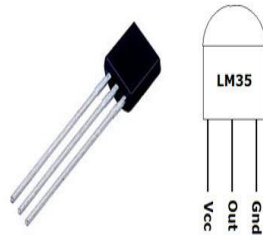
The design uses PIC16F877A microcontroller. PIC16F877A is a family of modified Harvard Architecture microcontroller made by Microchip Technology. This is powerful microcontroller with nanosecond instruction execution and easily

programmable with only 35 single word instructions. The entire automation of the system is done by this microcontroller. It has an inbuilt Analog to Digital converter. Because of this we do not require any ADC to be connected externally.



### Temperature sensor (LM35)

The LM35 series are precision integrated circuit temperature sensors, whose output voltage is linearly proportional to Celsius temperature.



### Heart beat sensor

Heart beat sensor is designed to give digital output of heart beat when a finger is placed on it. When the heart beat detector is working, the beat LED flashes in unison with each heart beat. This

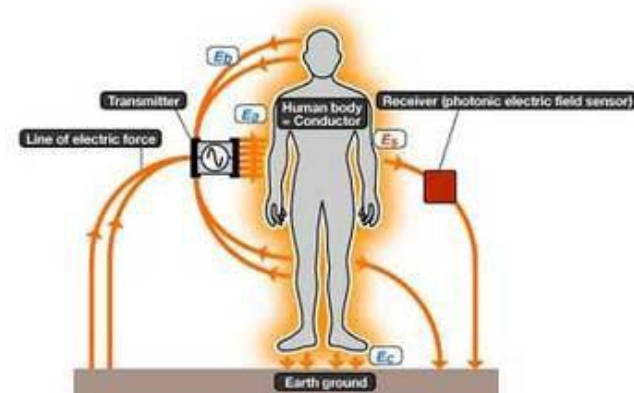
digital output can be connected to microcontroller directly to measure the Beats Per Minute (BPM) rate. It works on the principle of light modulation by blood flow through finger at each pulse.



## What is RedTacton?

RedTacton Technology was introduced by Nippon Telegraph and Telephone Corporation (NTT). TACTON- meaning “action triggered by touching and RED - It is an auspicious color according to Japanese culture for warmth. It is a technology that uses the surface of the human body as a safe, high speed network transmission. The study of Human Area Networking

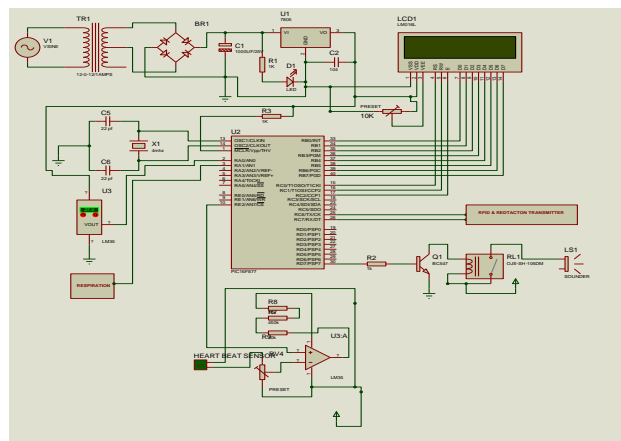
- I. RedTacton uses the minute electric field emitted on the surface of the human body. It is completely distinct from wireless and infrared.



- II. A transmission path is formed at a part of the human body which comes in contact with a RedTacton transceiver. Physically separating ends the contact and thus ends communication.
- III. Using RedTacton, communication starts when terminals carried by the user are linked in several combinations according to the user's natural, physical movements.
- IV. Communication is possible using any body surfaces, such as the hands, fingers, feet, face, legs, skin or torso. Red Tacton works through shoes and clothing as well.

## CIRCUIT DIAGRAM

### Transmitter



through interaction with sensors. The proposed system has potential to extend a wide range of benefits to patients, medical personnel, and society through continuous monitoring. It also helps to give immediate aid to the patients when the doctor is remote through the nurse station. This system includes a wearable device which can be worn by the patient enabling the updation of patient parameters in real time in both the PC and LCD display. The doctor can monitor the progress of patients' health by accessing the web application. Through its simple implementation, it makes everyday life easy and it paves a way to IoT in future.

1. Safe and Secure transmission
2. Less time consumption
3. Accuracy is improved
4. Reliable
5. The data transmission rate is increased

1. In large scale device handling will be complex.
2. Mechanical assembly is more complex.

1. Simple circuit and easy to operate.
2. Fast and simple installation.
3. Location flexibility.
4. Low cost maintenance.
5. Automatic operation.
6. High reliability and long lifetime.
7. Digital display

1. Hospitals
2. Security systems

In the era where monitoring of health has become a necessity, RedTacton transceiver will be of great use to common people. The livelihood of the common man can be improved significantly

The applications of this system can be widened by including more modules and sensors like blood pressure sensor, ECG sensor, airflow sensor etc. In a few years when the nanotechnology will be more common and easily available, sensors which are much smaller and lighter can be used to build an even compact wearable device. In case of abnormal conditions, an alert can be given to both doctor and the nurse in the form of messages, calls or by generating alarms. RedTacton is a technology that uses the surface of the human body as a high speed and safe network transmission path. This technology stands out with exactness when the transfer of data is fast, feasible and more significantly reliable. So, in a few years, everything is going to fall under RedTaction technology.

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