

ELECTRIC RFID COMMUNICATION VIA HUMAN BODY

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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.

Keywords: *RedTacton, Electric field sensing*

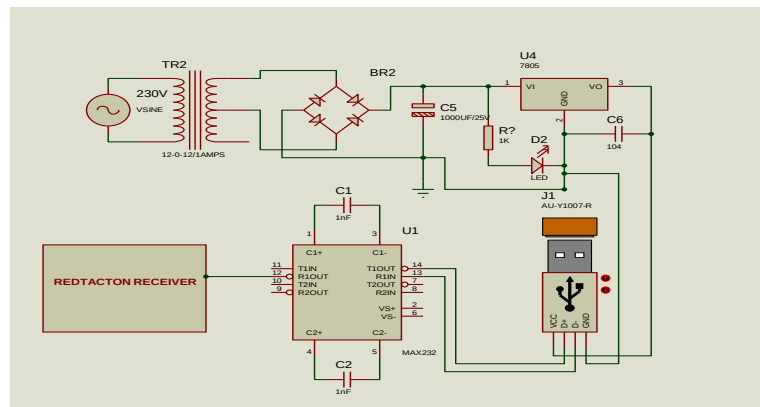
INTRODUCTION:

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.

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.



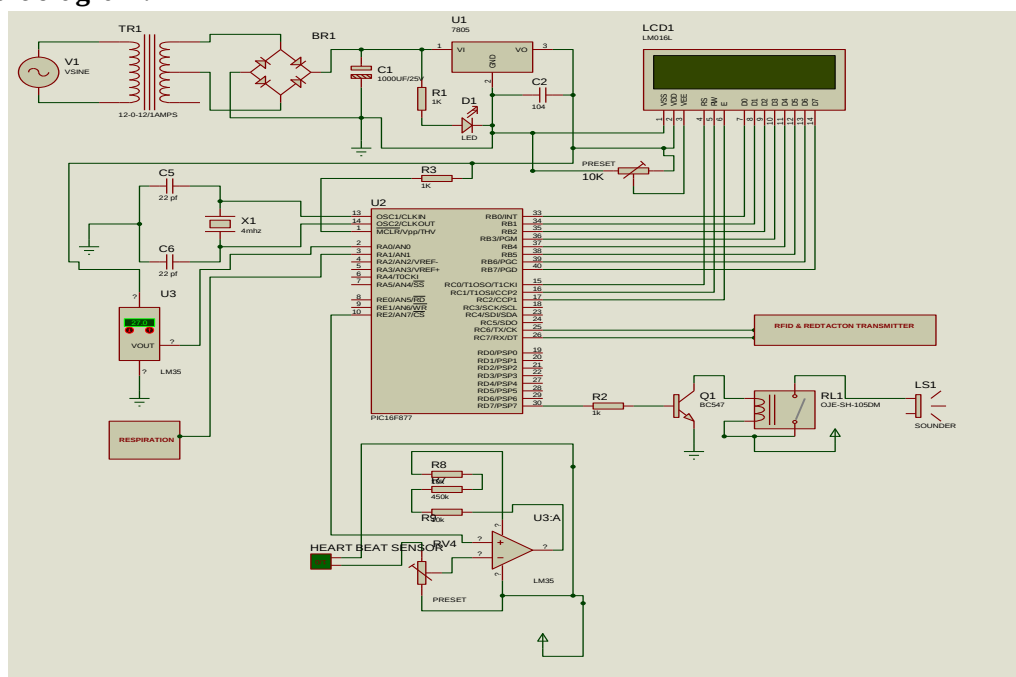
EXISTING SYSTEM:

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.

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 then becomes the data that can be viewed by the doctor which enable the doctor to guide the nurse station.

Circuit diagram:



CONCLUSION:

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 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 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.

REFERENCES:

- 1) Jingna Mao, Student Member, IEEE, Huazhong Yang, Senior Member, IEEE, and Bo Zhao, Member, IEEE (2016, "An Investigation on Ground Electrodes Capacitive Coupling Human Body Communication", IEEE Transactions on Biomedical Circuits and Systems, ISBN 1932-4545)
- 2) Zedong Nie, Yuhang Liu, Changjiang Duan, Zhongzhou Ruan, Jingzhen Li, Lei Wang(2015, "Wearable Biometric Authentication Based on Human Body Communication", ISBN 978-1-4673-7201-5/15)
- 3) Smita S.Gajare, Amit Kulkarni(2016, "Intra-body communication in Biomedical Applications", 2016 International Conference on Computation of Power, Energy Information and Communication (ICCPEIC), ISBN 978-1-5090-0901-5/16)
- 4) Prabha Sundaravadivel, Saraju P.Mohanty, Elias Kougiannos, Venkata P.Yanambaka, Himanshu Thapliyal(2016, "Exploring Human Body Communications for IoT Enabled Ambulatory Health Monitoring Systems", 2016 IEEE International Symposium on Nanoelectronic and Information Systems, ISBN 978-1-5090-6170-9/16)
- 5) Jun Sakuma, Daisuke Anzai, Jianqing Wang(2016, "Performance of Human Body Communication-Based Wearable ECG with Capacitive Coupling Electrodes", Healthcare Technology Letters, 2016, Vol.3, Iss.3, pp. 222-225)