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RF BASED WIRELESS MULTIPARAMETER PATIENT MONITORING SYSTEM WITH WAP

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Abstract
This paper provides healthcare authorities to maximize the quality and breadth of healthcare services by controlling costs, long waiting time for hospitalization or ambulatory patient monitoring/treatment, are other well-known issues for both the healthcare institutions and the patients. As the population increases and demand for services increases, the ability to maintain the quality and availability of care, while effectively managing financial and human resources, is achieved by this project. The use of modern communication technology in this context is the sole decisive factor that makes such communication system successful.**Keywords:** Ambulatory patient monitoring, Modern communication technology, Biological parameter, GSM Modem

BLOCK DIAGRAM

I INTRODUCTION

This paper is used in the ICU or in operation theaters to identify the parameters of the patients such as ECG, respiratory rate, heart beat rate, blood pressure rate & temperature of the patient. The sensor used for this detection can be simply housed on the patient's finger. The sensor detects pumping of the heart and produces a voltage output. This is then transferred to the computer.

In the computer the output is plotted with respect to the real time to the ECG, respiratory rate, heart beat rate, blood pressure and temperature. The parameters measurement per minute is also given on the computer. This information can be stored on the computer and can be used to analyze a status of the patient. The complete information can be sent to doctors and hospitals mobile phone.

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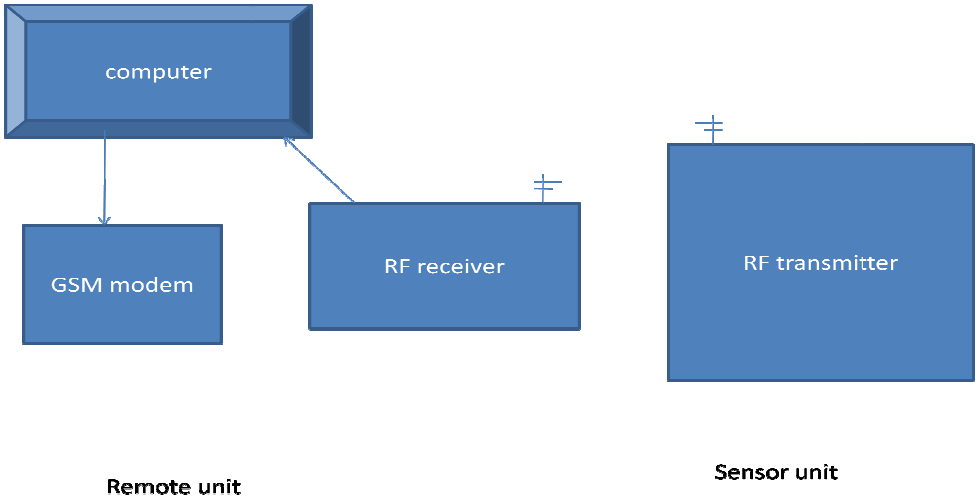

Figure 1.1 Block diagram of proposed method

SENSOR UNIT

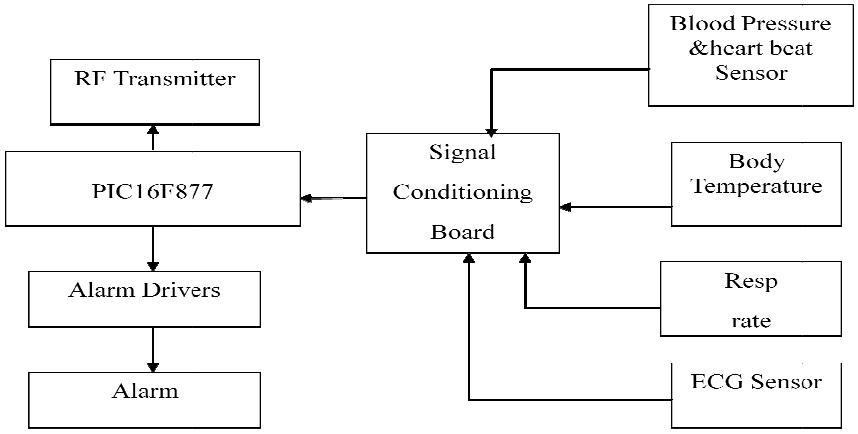

Figure 1.2 Block diagram of sensor unit

REMOTE UNIT

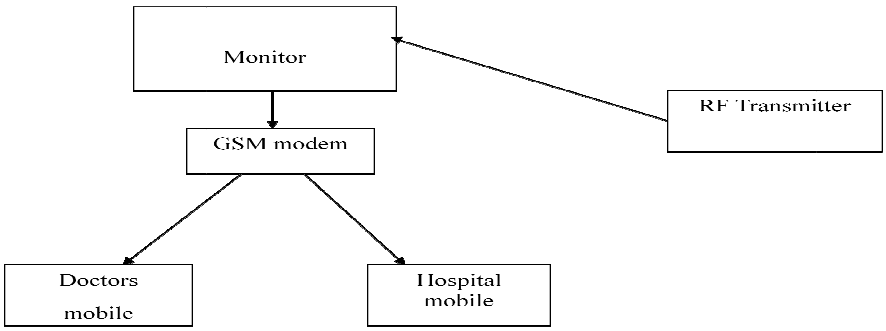

Figure 1.3 Block diagram of remote unit

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II BLOCK DIAGRAM EXPLANATION

The parameters of the patient are measured through three different, first sensors silver silver chloride electrode, second infrared ray emitter and detector and third bead thermistor. The sensor used to detect each parameter which can be simply housed on the patient's finger. The sensor detects pumping of the heart and produces a voltage output.

The output is moved to PIC 16F877 microcontroller where it is processed. The PIC Microcontrollers are supported with a full range of hardware and software development tools. The used PIC 16F877 device comes in 40 pin package. To communicate with PIC we are using RS232 port of the computer by RF transmitter and receiver.

The RF transmitter and receiver are the main component of our device. This method is safer rather than communicating through FM Transmitter and receiver. Because the receiver can sense any FM signal which may lead to wrong readings. Since the RF transmitter and receiver are kept in straight angle there will not be any interference of other signals. High performance SAW based architecture with a maximum range of 100 feet at 2400 bps data rate.

The output given to the computer is saved and the status of the patient is analyzed. In case of abnormal conditions the patients report is send through SMS to doctors and hospitals mobile phone through GSM modem.

GSM Modem is a cellular wireless modem working under GSM networks. Providing CSD connection or SMS application for industrial application M2M field.

The Global System for Mobile Communications Service is the most widely adopted, digital cellular technology in use today. GSM modem uses time and frequency division techniques (TDMA and FDMA) to optimize the call carrying capacity of a wireless network. GSM also provides a number of carefully standardized and broadly supported capabilities such as Short Message Service (SMS), circuit switched data (CSD) and General Packet Radio Services (GPRS).

Transmitter Section

Each of the two transmitters is a CMOS inverter powered by + 10V internally generated supply. The input is TTL and CMOS compatible with a logic threshold of about 26% of Vcc. The input if an unused transmitter section can be left unconnected: an internal 400KΩ pull up resistor connected between the transistor input and Vcc will pull the input high forming the unused transistor output low. The open circuit output voltage swing is guaranteed to meet the RS232 specification + 5v output swing under the worst of both transmitter driving the 3KΩ. Minimum load impedance, the Vcc input at 4.5V and maximum allowable ambient temperature typical voltage with 5KΩ and Vcc= +.9 v. The slow rate at output is limited to less than 30V/µs and the powered done output impedance will be a minimum of 300Ω with +2V applied to the output with Vcc =0V.The outputs are short circuit protected and can be short circuited to ground indefinitely.

Receiver section

The two receivers fully conform to RS232 specifications. They're input impedance is between 3KΩ either with or without 5V power applied and their switching threshold is within the +3V of RS232 specification. To ensure compatibility with either RS232 IIP or TTl\CMOS input. The MAX232 receivers have VIL of 0.8V and VIH of 2.4V the receivers have 0.5V of hysterisis to improve noise rejection.

The TTL\CMOS compatible output of receiver will be low whenever the RS232 input is greater than 2.4V. The receiver output will be high when input is floating or driven between +0.8V and –30V.

CONCLUSION

From this paper we can conclude that this can be one of the best methods for bio medical application where the doctors can analyze the subject condition from

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the place where they are sitting and hence proper and timely Medicare to the patient can be given so that percentage of patient death can be reduced to larger extent.

In the computer the output is plotted with respect to the real time to the heart beat rate. The Heartbeat Rate per minute is also given on the computer. This information can be stored on the computer and can be used to analyze a status of the patient. The complete information can be sent to doctors and hospitals mobile phone.

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