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Code	Project Title
1615	GSM based Patient monitoring system

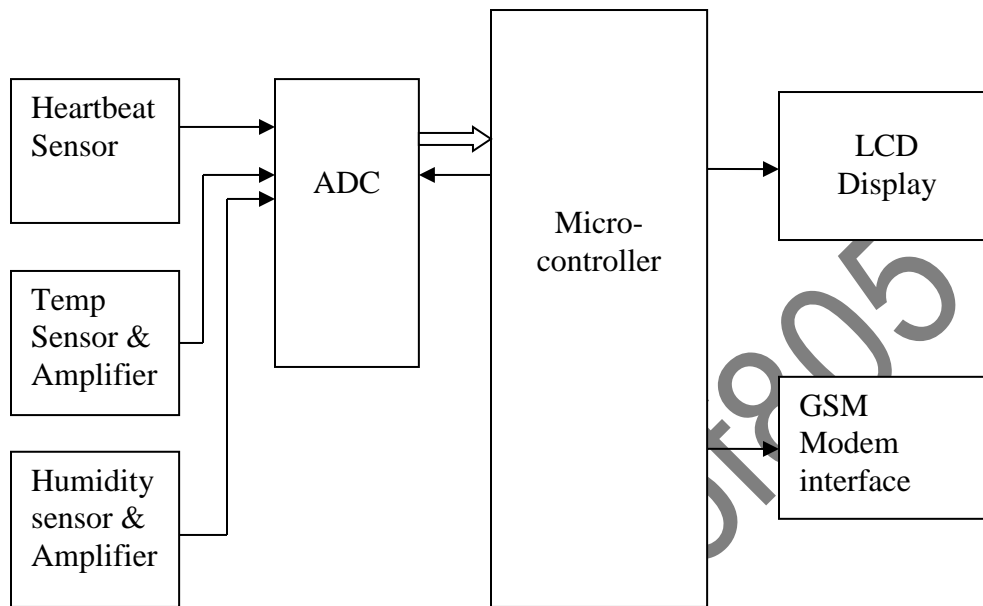
Synopsis for

GSM based Patient monitoring system

Introduction

This project deals with the monitoring of the patient parameters such as humidity, temperature and heartbeat. Here we have designed a microcontroller based prototype model where we are monitoring the above mentioned parameters through the microcontroller. For measurement of these parameters we need sensors which respond to the changes in the parameters appropriately. As the signals measured are of very low value therefore their amplification is very necessary. Hence we need to use as amplifier. For the purpose of analog to digital conversion we have used ADC. The heart of the project is the microcontroller is AT89s51. The display is done through 16x2 line LCD.. MAX232 has been used for the interfacing purpose. With the help of this IC we can send the data to the GSM modem also. The power module consists of IC7805 for 5V supply and IC7812 for 12V supply.

Block diagram



Explanation of Block diagram

1) Temperature sensor and amplifier:-

Temperature sensor is the sensor that measures the amount of heat that it observes. There are contact and non-contact type of temperature sensors. The commonly used contact type sensors are thermocouple RTDs, thermistors, thermometers IC's, diodes etc. The non contact type sensors are radiation and optical pyrometers. As the output signal of sensor is smaller in amplitude the signal power is also low therefore amplifiers are used. The weak signals are amplified using amplifiers.

2) Humidity sensor and amplifier:

Humidity sensor is the sensor that measures the percentage of moisture content i.e. the humidity in the air. There are 3 types of humidity sensors open air humidity sensor, duct humidity sensor and room humidity sensor. The sensing element is the impedance type humidity sensor. The output of the humidity sensor is in the form of current. The response time is 20sec.

3) HEART BEAT SENSOR

This block is used to sense the heart beat with the help of an LED and an LDR. A continuous light from the LED should fall on the LDR and the finger of the patient is to be placed in between the LED and LDR. The slight variation in the skin due to the heart beat is read by the LDR. The LDR output is fed to an operational amplifier to the digital level (0 and 5) which is then fed in to the microcontroller.

4) ANALOG TO DIGITAL CONVERTER (ADC):-

ADC is used as a signal conditioner, which is given as an input to the micro controller.

Most of the information carrying signals such as voltage, current, temperature, pressure and time are available in analog form. However, for processing, transmission and storage purpose, it is often more convenient to express such signals in digital form. When expressed in digital form, they provide better accuracy and reduce noise.

The A to D conversion is a quantizing process whereby an analog signal is converted into equivalent binary word.

ADCs are classified into two general groups based on the conversion techniques. One involves comparing a given analog signal with the internally generated reference voltages. This group includes successive approximation, dual slope technique and flash A to D type converters. Another technique

involves changing an analog signal into time or frequency and comparing these new parameters against known values. This group includes integrator converter and V to F converter.

Interfacing ADC's with micro controller can be done using:- ADC family

5) MICRO-CONTROLLER (8051):-

It is the major part of the system. It maintains the temperature, humidity and light intensity to the desired value. The 8051 has one serial port that receives and transmits data. Transmission and reception can take place simultaneously. The four communication modes possible with 8051 present the system designer and programmer with opportunities to conduct very sophisticated data communication network. It is the heart of the system which controls all the inputs and the controlling action to be taken at the output. Microcontroller used here is the AT89S51.

7) LCD DISPLAY:-

Liquid Crystal Display which is commonly known as LCD is an Alphanumeric Display it means that it can display Alphabets, Numbers as well as special symbols thus LCD is a user friendly Display device which can be used for displaying various messages unlike seven segment display which can display only numbers and some of the alphabets. The only disadvantage of LCD over seven segment is that seven segment is robust display and be visualized from a longer distance as compared to LCD. Here we have used 16 x 2 Alphanumeric Display which means on this display we can display two lines with maximum of 16 characters in one line.

10) GSM INTERFACE:-

GSM interface is the additional feature provided for this system. It is used as an enhancement. In this the present readings taken through the sensors are given to the GSM modem for further manipulations and calculations.

Applications

Hospitals

1. It is used to display patient parameters in the various hospitals
2. It can be operated remotely by interfacing a GSM modem system so that if there is any problem in the system, it can automatically send sms & give information about the occurred problem.
3. It can be used in I. C. U's, operation theatres, maintenance of laboratory temperatures, monitoring of oxygen levels etc

Old age homes:

It can be used in old age homes to monitor the various parameters of a sick person in old-age homes.