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<http://www.projectsof8051.com/sms-based-weather-report-information-system/>

Synopsis for SMS based Weather report information system

1. INTRODUCTION

Throughout time we've been fascinated by the weather – studying signs of change and making and acting on predictions. Today we can link modern instruments to computers to reduce human error and automate record keeping.

Aim of the project is to monitor weather conditions including atmospheric humidity, atmospheric temperature and solar light intensity through GSM modem. Local weather measurements are extremely important to a wide range of professions, from horticulturists to fire fighters. It provides around-the-clock monitoring of various types of applications. For example, it can be used in a greenhouse to manage climate control and help promote favorable growing conditions. In solar power applications, it can verify the performance of photovoltaic (PV) array systems by monitoring solar radiation, DC power, and other

parameters. On green roofs, it can help researchers understand performance by tracking air temperature, turf temperature, soil moisture.

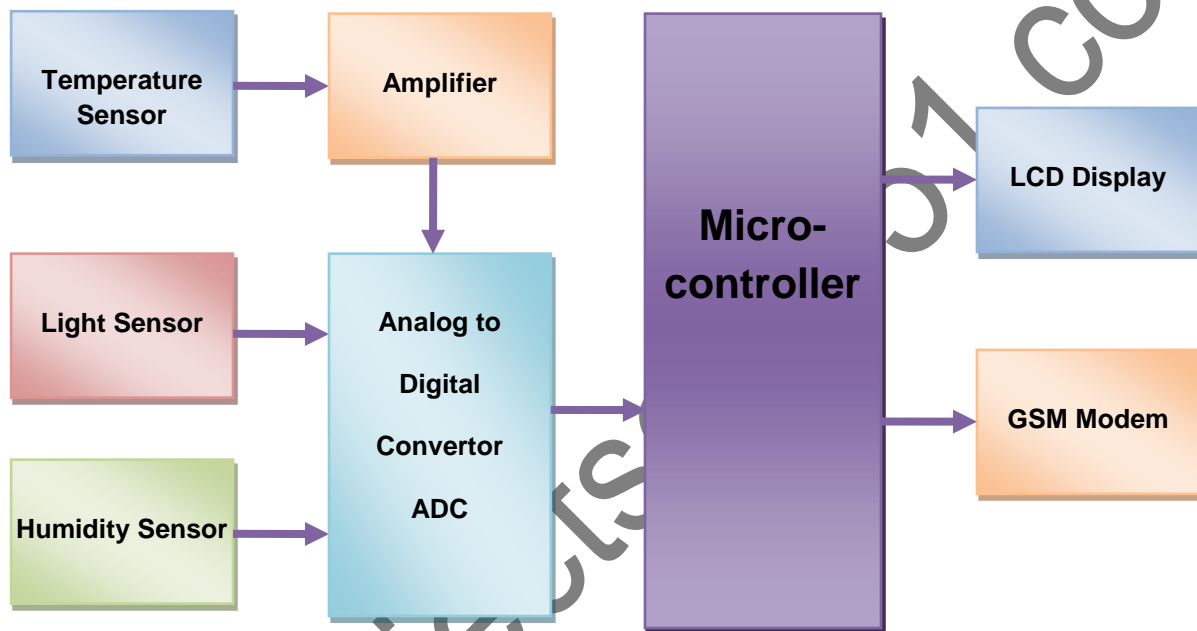
This project is a fine combination of analog and digital electronics. The project consists of parameters monitoring, parameter sending through SMS. GSM interface is one of the main features of the project in which various data like value of parameters, date and time are sent by the SMS.

We have used Microcontroller as a main component of the project. Now a Microcontroller has become a main component of many of the electronic circuits. Also Liquid Crystal Display (LCD) and sensors are used on major basis for the display and sensing purpose. This project consists of two basic modules. First is "Data monitoring" & other is "Data Sending".

A display unit will show the value of parameters. This will help for the person to know the values, for this purpose we are going to use various sensors, which will be connected to ADC.

The other module is named as parameter sending. It can be used to send the parameters values to a remote location. We are going to use a GSM modem. These values can later be seen using a mobile SMS inbox. This system is useful because many times it's difficult to measure the parameter values manually and also this module is more accurate than the domestic system.

2. BLOCK DIAGRAM



3 EXPLANATION OF BLOCK DIAGRAM

1) TEMPERATURE SENSOR:

This is first sensor which uses to sense temperature parameter. This can be temperature sensor, say LM35. The sensor will be placed on the front panel. One can use LCD display to read the temperature.

2) HUMIDITY SENSOR:

This is second sensor which uses to sense parameter two. This can be Humidity sensor. The sensor will be placed on the front panel.

3) LIGHT SENSOR:

This is third sensor which uses to sense light parameter. This can be LDR sensor. The sensor will be placed on the front panel.

4) AMPLIFIER:

We are going to use LM358 which is having 2 inbuilt amplifiers. Since we have temperature sensor, we have used this Amplifier.

5) ADC

We are going to use ADC 0808 which is 8 bit and 8 channels ADC. Since we have two inputs for ADC, we have used this ADC.

6) LCD:

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.

7) GSM modem:

We need to send the parameter values in some device. We have chosen GSM modem for this purpose.

8) MICRO-CONTROLLER (8051):

This is the most important segment of the project, i.e. the microcontroller 8051. The controller is responsible for detection and polling of the peripherals status. It is responsible for making. It is responsible for prioritizing all the devices attached to it.

It is the major part of the system which controls all the operation of the circuit such as LCD interfacing, square wave generation. It also decides the messages to be displayed on the LCD along with the time duration for which they should be displayed on the LCD.

4. APPLICATIONS

This electronic circuit is mainly used in “Weather stations”.

This project can also be used for the following application

1. To calculate and store the temperature and humidity of a boiler in the industry.
2. To store flow of the water flowing from the dam or a canal
3. To monitor / display the level of the liquid inside the container
4. Also this system communicates with a mobile and sends various data like level of humidity, liquid flow, and temperature of water.

Future Development:

1. We can monitor and store more parameters like PH of soil, pressure, by replacing the existing sensors with respective sensor.
2. We can store this data to a memory location using memory IC or a memory card
3. We can draw graphs of variations in these parameters using computer