

ANALYSIS AND DESIGN OF SECURITY SYSTEM USING TEMPERATURE AND HUMIDITY SENSORS

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ABSTRACT:

In this project design and development of industrial monitoring system is implemented. Industrial monitoring system plays significant role in present generation. Parameters like temperature sensor, humidity sensor, buzzer, RS-232, GSM, LCD display, crystal oscillator and power supply are utilized. Initially whenever threshold level of temperature is increased then temperature sensor is detected the buzzer will give indication and sends SMS to the corresponding phone number. In the same way whenever threshold level of humidity is increased then humidity sensor is detected then buzzer will give indication and sends SMS to the corresponding phone number. Hence this project gives effective outcome.

I. INTRODUCTION

Real-time systems are those in which the correctness depends not only on the logical result of computation, but also on the time at which the results are produced. There are many real world applications such as flight control systems, command and control systems, process control systems, monitoring systems, etc. There has been an increased interest in the industry for the development of new technologies where real-time systems could improve the quality of products and provide cost savings. For these purposes, the best alternative is the use of a monitoring system with realtime constraints in order to provide instantaneous information about the production process. One of the

industries where this knowledge is being applied is the ceramic tile industry.

Monitoring systems are inherently distributed systems, which offer some widely recognised advantages like the possibility for enhanced reliability due to inherent redundancy, increased performance by exploiting concurrency, and better resource utilisation through sharing. In distributed systems things are even more complex due to the lack of a central control, a precise global time and an accurate global state. A data acquisition system, a real-time operative system and a database compose a monitoring system. However, there is a lack of standard monitoring tools. Ideally, for supporting real-time applications such as an industrial monitoring system, a real time operating system and a real-time database ought to be used. However, the market forces the acceptance of Windows NT and SQL-Server in industrial applications, and the Client/Server programming paradigm versatility, have generated a need for achieving real-time functionality using them.

II. EMBEDDED SYSTEM HARDWARE

1. POWER SUPPLY:

The power supply is an essential part of any embedded systems circuits. An embedded system may need a supply of 5

volts or if it is low power then maybe 3.3 or 1.8v. The supply may be provided with the help of battery or we can use any wall adapter. It will depend on the application need. The power supply circuit can be designed with the help some little knowledge of electronics. For that, we need a bridge rectifier circuit, capacitor as a filter and a voltage regulator that provides constant output supply.

2. PROCESSOR:

A processor is the main brain inside any embedded systems. This is a major factor that affects the performance of the system. There are different processors available in the market. An embedded system may use microprocessor or microcontroller. The processor comes in different architecture like 8-bit, 16-bit and 32-bit. The 8-bit processor is generally used in a small application where we need some basic computation like input and output no heavy processing.

3. RS-232

RS-232 is a standard protocol used for serial communication, it is used for connecting computer and its peripheral devices to allow serial data exchange between them. As it obtains the voltage for the path used for the data exchange between the devices.

4. GSM (Global System for Mobile communication)

Global System for Mobile Communications (GSM) modems are specialized types of modems that operate over subscription based wireless networks, similar to a mobile phone. A GSM modem accepts a Subscriber Identity Module (SIM) card, and basically acts like a mobile phone for a computer. Such a modem can even be a dedicated mobile

phone that the computer uses for GSM network capabilities.

5. LM35 (TEMPERATURE SENSOR)

Is an analog, linear temperature sensor whose output voltage varies linearly with change in temperature. LM35 is three terminal linear temperature sensor from National semiconductors. It can measure temperature from *-55 degree celsius to +150 degree celsius*. The voltage output of the LM35 increases 10mV per degree Celsius rise in temperature. LM35 can be operated from a 5V supply and the stand by current is less than 60uA.

6. HUMIDITY SENSOR

Humidity sensors work by detecting changes that alter electrical currents or temperature in the air. There are three basic types of humidity sensors: capacitive, resistive and thermal. All three types will monitor minute changes in the atmosphere in order to calculate the humidity in the air.

7. LCD(Liquid Crystal Display)

LCD can easily be interfaced with a microcontroller to display a message or status of a device. For displaying anything in LCD, it has to be initialised by sending set of commands to initialize the LCD or the internal reset circuit. It is up to the choice of the user to use which method. We are going to use the commands to initialize LCD. Initialisation by internal reset sequence When the LCD is turned on, an internal reset circuit initializes automatically.

8. INPUT OUTPUT:

To interact with the embedded systems we need input. The input may be provided by the user or by some sensor. Sometimes

some systems need more input or output. So the processor selection will be based on I/O. These input and output are generally divided into ports like P0, P1, P2 and P3 in 8051 microcontrollers. And PA, PB, PC and PD in ATmega series of the microcon. The I/O need to be configured for input or output based on the provided register. And for that, we need to refer the datasheet of the manufacturer.

Block Diagram:

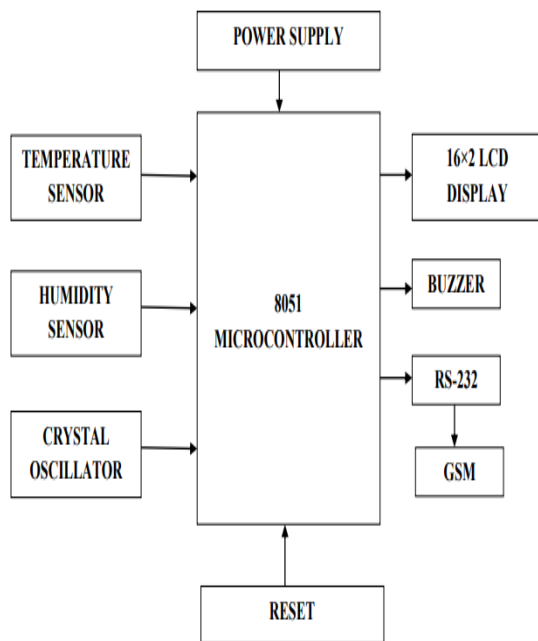


FIG: BLOCK DIAGRAM OF ANALYSIS AND DESIGN OF SECURITY SYSTEM USING TEMPERATURE AND HUMIDITY SENSORS

III. WORKING

User need to set the minimum temperature and humidity ranges based on his location. user have access to change temperature at any time based on there need. using LCD we can able to see temperature and humidity continuously.

When the temperature crossed max limit temperature value which is displaying on the LCD will be changed and it gives

buzzer sound, an alert message will be send to the user registered phone number.

When the humidity crossed max limit humidity value which is displaying on the LCD will be changed and it gives buzzer sound, an alert message will be send to the user registered phone number.

So, user/ Workers can safe guard their selves and their organizations.

IV. RESULT

As we conclude to the result, as an end result of system the temperature and humidity information is present over the display and also a SMS is send to the user registered mobile number.

V. CONCLUSION

Hence in this project design and development of industrial monitoring system is implemented. New innovations and ideas can be generated from it that can further enhance its capabilities. Hence this project gives effective outcome.

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