

Smart Green House Automation

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Abstract—Smart Green House Automation is a complete system to monitor and control the environment parameters inside a green house .It is necessary to design a control system to monitor various parameters like Temperature, Humidity, Soil moisture, Light Intensity. Here controlling process takes place effectively by both manual and automatic manner. This software uses an Android mobile phone for monitoring as well as controlling green house, connected to a central server which is connected to a microcontroller via serial communication. Microcontroller communicates with the variety of sensor modules.

Keywords- Embedded system, 8051 Microcontroller, Android Phone, Green House, Monitoring, Controlling.

I. INTRODUCTION

Farmers are unaware about the exact conditions of weather so the activity performed by them is not precise. They perform their activity as per their feeling and observation so every time it may not give the accurate result. So to give accurate result about what activity should performed in green house by the farmers in different environment conditions this system is used. By using greenhouse we can increase the productivity.

In our system we can monitor the conditions of environment as well as control the conditions from remote place. So it is very useful system. It is based to perform following activities that are to monitor the system and control the system from remote place that is control the weather inside greenhouse by performing actions like water sprayer on/off or open rooftop etc. It contains basically 8051 microcontroller, computer server and android phone in the system. This system works in two modes manual mode and automatic mode. Automatic mode is based on the threshold range. When sensors reach a certain threshold it will send the signal to microprocessor, microprocessor will process that signal and perform appropriate actions.

II. EXISTING SYSTEM

Some of the previous systems used android phone to monitor the green house but lacked to control it using android from remote locations. One of them was based on Global System for Mobile Communications (GSM) in which notifications are sent via SMS, but disadvantage of this system was every time user had to type commands which was time consuming and costly. The biggest disadvantage of these systems was that one person always had to be present in the green house or in the vicinity of the green house.

III. PROPOSED SYSTEM

The first problem which is overcome in our system is that a person need not always be present in the green house or in the vicinity of green house. Plants in green house are grown under controlled environment. The temperature differences can cause harm to plants.

Sometimes the farmers cannot predict which action needs to be taken to control the environment and may take wrong decisions thus causing more harm to the plants in the green house. Our system will allow him to take proper decisions by providing the farmer with accurate information. Thus this system helps farmer to control green house from remote locations.

IV. SYSTEM ARCHITECTURE

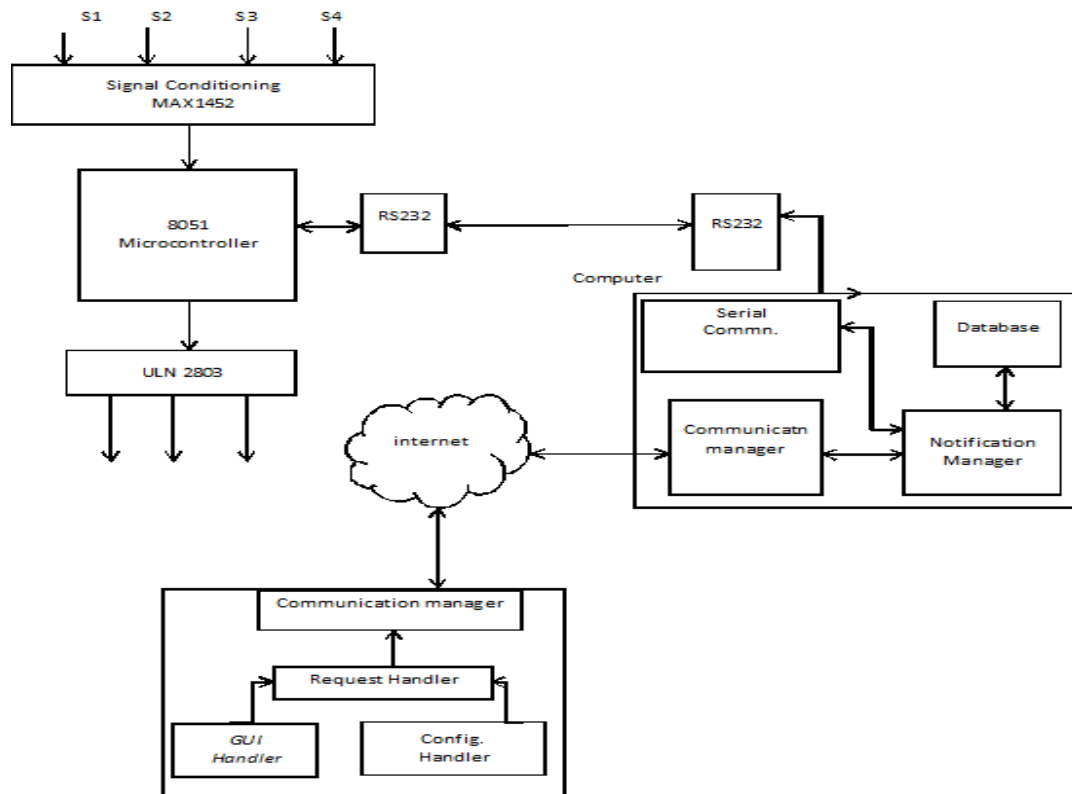


Figure 1: System Architecture of smart green house automation.

The system mainly contains the android device, computer server and 8051 microcontroller. An internet connection is required for communication between them. The android device contains the GUI Handler, configuration Handler, Request Handler and communication manager where GUI requests are handled using Request Handler. Android phone communicates with the computer this communication can be done using communication manager. Computer server contains the communication manager, notification manager, database and serial communication.. The computer server is connected to the 8051 microcontroller through IC232. 8051 microcontroller is connected to the ULN 2803 which comes in an 18-pin IC configuration and includes eight (8) transistors. Pins 1-8 receive the low level signals. MAX 1452 is used for signal conditioning

V. HARDWARE

The AT8051 is a low-power, high-performance CMOS 8-bit microcomputer with 4K bytes of Flash programmable and erasable read only memory (PEROM). The device is manufactured using Atmel’s high-density nonvolatile memory technology and is compatible with the industry-standard MCS-51 instruction set and pin out. The on-chip Flash allows the program memory to be reprogrammed in-system or by a conventional nonvolatile memory programmer. By combining a versatile 8-bit CPU with Flash on a monolithic chip, the Atmel AT8051 is a powerful microcomputer which provides a highly-flexible and cost-effective solution to many embedded control applications.

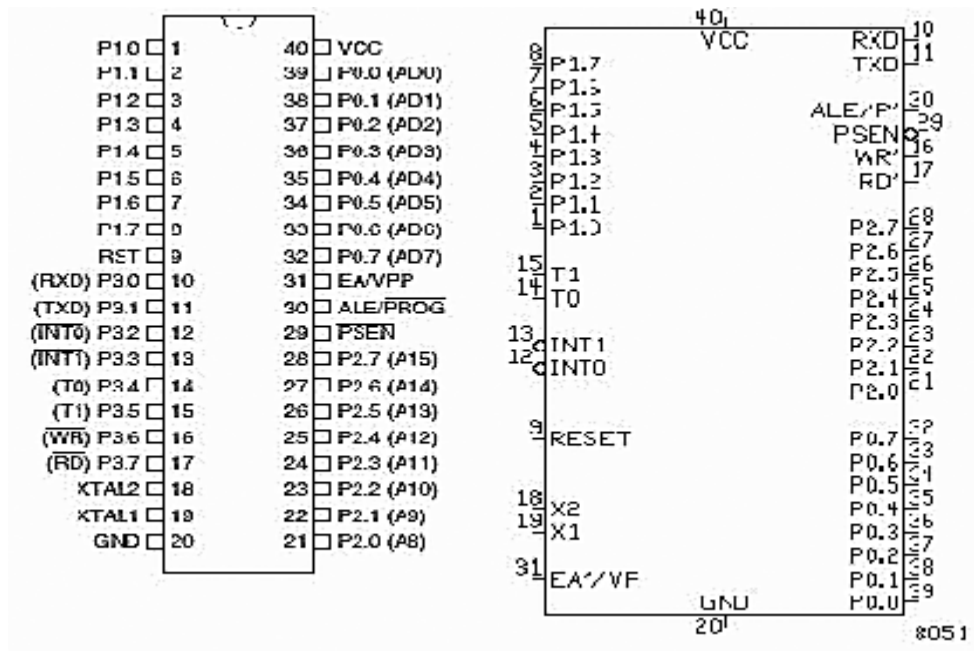


Figure 2 :Pin diagram of 8051 Microcontroller

VI. CONCLUSION

In this paper we have discussed about smart greenhouse automation with advantages of system like low cost and accuracy. This system proposes a green house system in which user can control their green house from remote location by using android mobile. This system is capable of controlling the essential parameters necessary for plant growth, viz. Temperature, humidity, soil moisture and light intensity etc.

VII. REFERENCES

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