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GREENHOUSE MONITORING AND CONTROLLING SYSTEM

Salokhe Priyanka[1], Patil Adika[2],Nandiwale Ashwini[3]

[1,2,3]Department of Electronics and Telecommunication,
BharatiVidyapeeth's College of Engineering, Kolhapur (India)

ABSTRACT

The greenhouse monitoring and controlling can be done by using various technologies. This technologies are used to yield higher growth of plants and production of new plants. This is our main basic objective of our project. In this project thereare four sensors we are used temperature sensor, humidity sensor, soil moisture sensor and light sensor. This four sensors are used to check temperature, light, humidity and soil moisture. This project is automated control system with latest electronic technology. In this project we are using ARM 7 microcontroller and GSM phone line. Because of the automatic working of this project it reduces the man power.

Keywords: Microcontroller, sensors, LCD and Interface.

I.INTRODUCTION

We all are live in a controlled and automatically operated world where everything can be controlled and operated automatically, but there are few important sectors in our world were automation has not been adopted. This is due to several reasons one such reason is cost. Such fields are that of agriculture and greenhouse fields.Agriculture is our primary occupation. Hence early civilizations and even today manual interventions in farming are inevitable. Greenhouses field is an important part of the agriculture country. This is our main basic objective of our project. In this project there are four sensors we are used temperature sensor, humidity sensor, soil moisture sensor and light sensor. This four sensors are used to check temperature, light, humidity and soil moisture. Automating a greenhouse envisages monitoring and controlling of the climatic parameters which directly or indirectly govern the growth of plants. There are two main existing set-ups which are as follows:

a) The set-up which is involving visual inspection of the growth of plants, manual irrigation of plants, turning ON and OFF the temperature controllers. It is time consuming, vulnerable to human error and hence less accurate and unreliable.
b) Secondly the set-up is a combination of manual supervision and partial automation and is similar to manual set-up in most respects but it reduces the labour involved in terms of irrigating the set-up.

Second setup is a sophisticated set-up which is well equipped to react to most of the climatic changes occurring inside the greenhouse. It works on a feedback system which helps it to respond to the external stimuli

efficiently. Although this set-up overcomes the problems caused due to human errors it is not completely automated and expensive.

1.1 Block Diagram

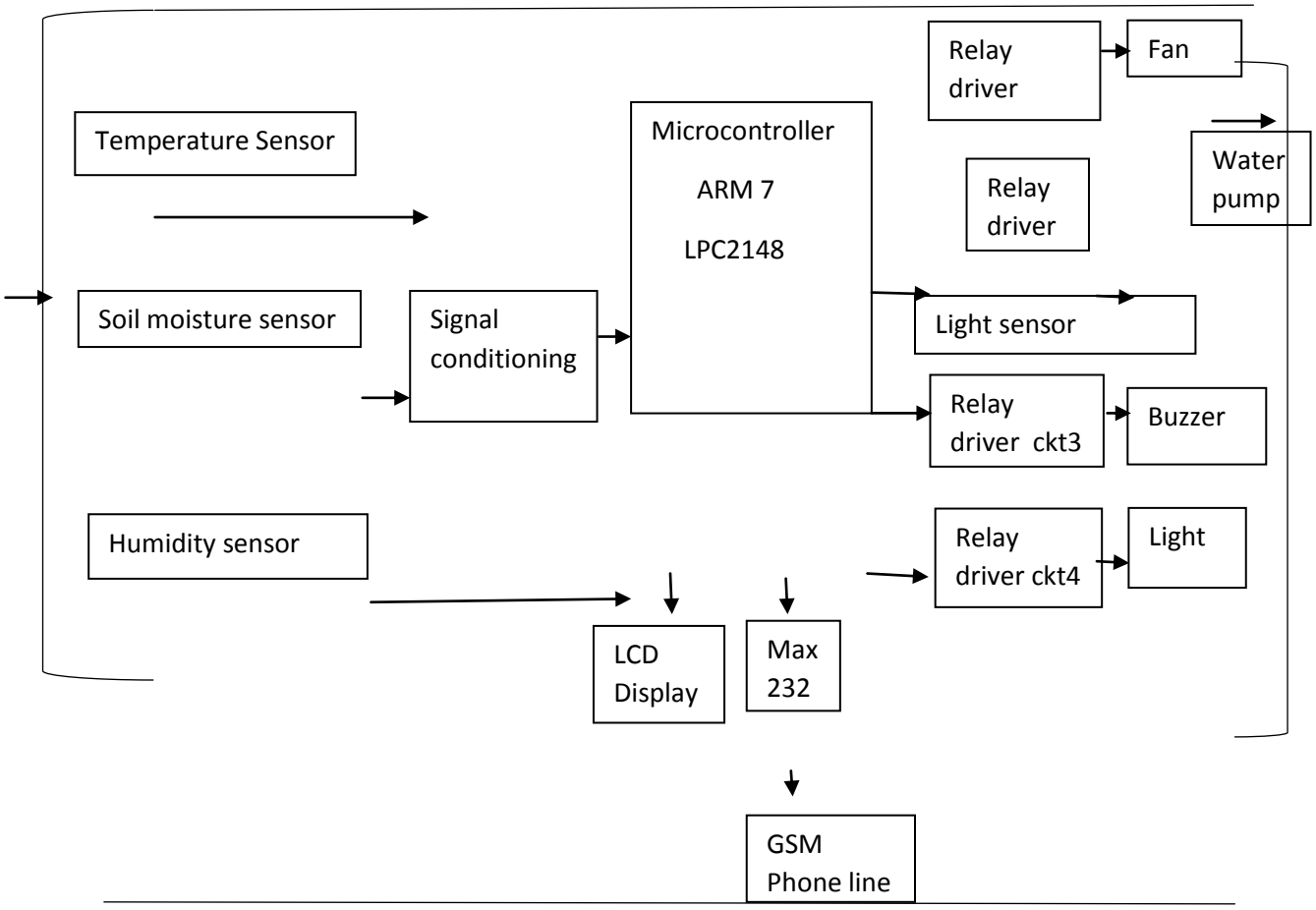

Fig 3.1. Block diagram of Greenhouse monitoring and controlling System

This system contains microcontroller, sensors and GSM phone line. When any of the parameters of the sensors are cross a safety threshold which has to be maintained to protect the crops. This sensors sense the change and the microcontroller reads this from the data at its input ports after beingconverted to a digital form by the ADC of microcontroller ARM 7. The microcontroller then performs the needed actions by employing relays until the strayed-out parameter has been brought back to its optimum level. Since a microcontroller is used as the heart of the system, it makes the set-up low-cost and effective nevertheless. This system consists of various sensors, namely soil moisture, humidity, temperature and light.

These sensors sense various parameters- temperature, humidity, soil moisture and light intensity and are then sent to the microcontroller.In this project we use many sensors. Out of these sensor's one sensor is temperature sensor. Here in this project we use LM 35 as a temperature sensors. Humidity measurement determines the

amount of water vapour present in a gas that can be a mixture, such as air, or a pure gas, such as nitrogen or argon. Humidity sensors relying on this principle consists of a hygroscopic dielectric material sandwiched between a pair of electrodes forming a small capacitor. In the light sensor we use one LDR. LDR is a light dependent resistor. Resistance of the LDR is depending on the intensity of the light. As the light on the LDR is change, resistance of LDR is also change.In the soil moisture sensor we check conductivity of the soil .for this purpose we insert two probes in the field. If the field is wet then conductivity is more and resistance is less. If the field is dry then conductivity is less and resistance is high.

II. CONCLUSION

This paper emphasizes on the monitoring and controlling the greenhouse, low cost data acquisition of a greenhouse processes. The agricultural areas are f prime importance for computer control processes. The greenhouse processes parameters which are under consideration here whose processes data temperature, humidity, soil moisture and light intensity should be acquired from the field, logged in a data base and the data is further used for supervisory control. The GUI is made in virtual instrumentation domain lab view. The system has successfully overcome quite a few short coming of the existing system by reducing the power consumption, maintenance and complexity, at the same time providing a flexible and precise form of maintaining the environment.

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