

CONTROL AND MONITOR GREENHOUSE SYSTEM DIGITALLY

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ABSTRACT

Our project is based on microcontroller which will monitor the conditions necessary for plants growth and controlled them .the necessary parameters are light, temperature, humidity, soil moisture. The Ethernet module used will allow us to monitor the data on internet or from anywhere. The relays can be used to control the devices such as cooler, heater, water pump etc. the controlled parameter will yield the maximum production.

Index Terms: green house1, At MEGA cotroller, Cystal diaplayetc.

1. INTRODUCTION

It is an embedded system which will closely monitor and control the microclimatic parameters of a greenhouse on a regular basis round the clock for cultivation of crops or specific plant species which could enhance their production over the whole crop growth season and to eliminate the difficulties involved in the system by reducing human effort to the best possible extent. The system consists of sensors, Analog to Digital Converter, microcontroller and actuators .When any of the above mentioned climatic parameters reach a safety threshold.

Which has to be maintained to protect the crops, the sensors sense the climatic change and the microcontroller reads this from the data at its input ports after being converted to a digital form by the ADC. The microcontroller then performs the required actions by using relays until the strayed-out parameter has been brought back to its optimum level. Since a microcontroller is working as the heart of the system, it makes the set-up effective and low-cost nevertheless. As the system also employs an Liquid Crystal Display for continuously awaring the user about the condition inside the greenhouse, the whole set-up becomes user friendly. Thus, these systems remove the drawbacks of the existing set-ups and are designed as an easy to maintain, low cost and flexible solution.

2. PART OF THE SYSTEM

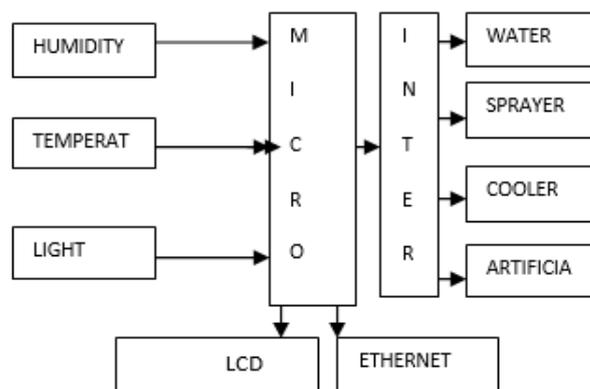
Sensor:- Humidity, Temperature, Light Sensor.

Actuators – Relays.

Devices controlled.

Liquid Crystal Display.

2.1 BLOCK DIAGRAM



2.2 HARDWARE

2.2.1. Transducer

Transducer is a device which converts the one form of energy to another form of energy. Here we are using sensors to sense the physical quantity and convert it to the electrical signal. These signals are then given to the microcontroller.

2.2.2. ADC

ADC is used to convert the analog signals to the digital one. the output given by the sensor is in the analog form and the controller cannot work on the analog signal. that is why we are requiring an ADC to have digital signals as input to the controller.

2.2.3. Microcontroller

It is important part of the system which checks the output of sensors within the threshold level. If value are exceeded the threshold then microcontroller control the parameters by actuating the devices such as cooler, water pump etc.

2.2.4. LCD

LCD is used in the project for monitoring the sensors output. it is a liquid crystal devices helpful to show the sensors output continuously.

2.2.5. Relays

The controlling action is done by using the relays as actuators which actuates the process. These are the electromagnetic devices which operates under the another electric circuit. microcontroller sends signal to relays to turn ON or OFF the devices according to the necessary conditions given by the sensors output.

2.2.6. Power Supply Connection

We are using step down transformer for 230V primary to 12V secondary for 12V power supply. For 5V power supply we are using step down voltage 5V.

2.3 SOFTWARE

Arduino software is used for writing the program. The language used for writing program is embedded c language.

2.4 WORKING

The project is controller based which used sensors as primary components .sensors used are humidity sensor, temperature sensor, light sensor and soil moisture sensor. These sensor senses the environmental parameter and if they reach the predetermined conditions of sensed value they actuates the relays for controlling. The controller used is ATmega 328 controller. It senses the output from sensor and gives the output. The programming is done on arduino software for writing the program. The written program is done in embedded c. The software is burn on controller Ic using Ic burner. After controller there is interfacing for output. The devices can be turn on or off using the relays as actuator. The Ethernet module W5100 is used for having

global access. We can monitor the system by using internet. The IP address given will take us directly to the system from anywhere.

2.5 ADVANTAGES

1. Enhance the growth of plants under controlled conditions
2. Gives more production reducing human efforts

3. CONCLUSION

Thus we work on monitoring and how to control the green house system via using AtMEGA 328 microcontroller.

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