GREENHOUSE AUTOMATION USING GSM

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Abstract- The Monitoring and developing the *GSM system is for use in greenhouse applications, where real time data of climate conditions and other environmental properties are sensed and control decisions are taken by monitoring systems they are modified by the automation system and sends SMS that what operation is performed by them to user. The architecture of a greenhouse monitoring system comprises of a set of sensor nodes and control unit that communicate with each sensor and collect local information to make necessary decisions about the physical environment. The temperature sensor LM35 sense the temperature and sends to SCU, it will amplify and send to control unit. The humidity sensor used to find the humidity of the greenhouse. The control unit have the MCU to check the reading and make the fan ON or OFF. Then status of the Green House will send to the user mobile through GSM.*

**Key words: Monitoring sensors, Detection, GSM, automation, LCD**

1. INTRODUCTION-

 A greenhouse is a made up of glass or plastic walls; it heats up because incoming solar radiation from the sun warms plants, soil inside the room. Because they can provides protection and a controlled environment for growing plants inside the room. This project acquaints the reader with basic principal of green house parameter control. In Green house we have to measure, control and monitor various parameters. For monitoring the green house parameter we are using PIC based system. In our project we had attempted the three parameters wise temperature, humidity, light and CO2. In today's life microprocessor is used in the green house. But we are using the micro-controller in replace of the microprocessor. Therefore our system is embedded system used only for the green house parameter control.

2. OBJECTIVES-

The objective of this project is to automatically control the system in greenhouse using temperature sensor, humidity sensor, light sensor and co2 sensor etc.

3. BLOCK DIAGRAM-
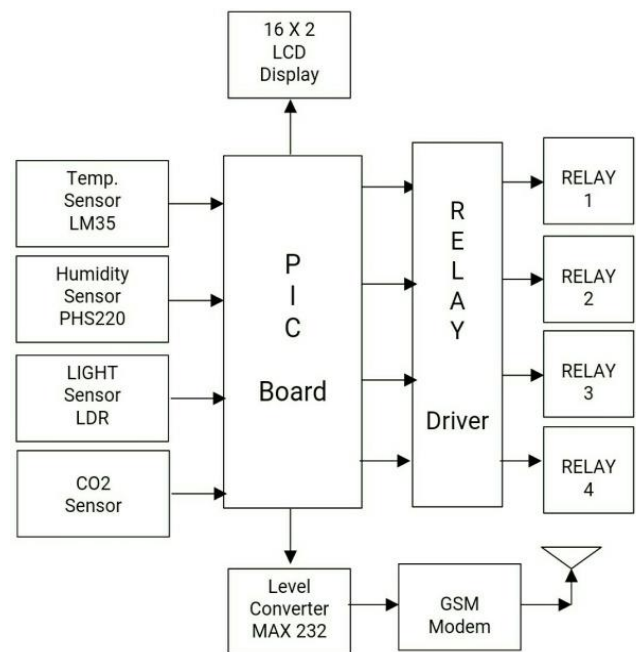
3.1 Block diagram description-

3.1.1. PICMicrocontroller16F877-

 Only 35 single word instructions to learn. All single-cycle instructions except for program branches, which are two-cycle. An operating speed is DC – 20 MHz clock input. Up to 8K x 14 words of Flash Program Memory, up to 368 x 8 bytes of Data Memory (RAM) and up to 256 x 8 bytes of EEPROM Data Memory Pin. Parallel Slave Port (PSP) is 8 bits wide with external RD, WR and CS controls (40/44-pin only). A Brown-out detection circuitry for Brown-out Reset (BOR).

3.1.2. Temperature sensor (LM35)-

 We use LM35 temperature sensor in our project. The output voltage of LM 35 varies in liner proportion with the temperature. The sensitivity of LM 35 is 10 mV/^{0}C. For 1 ^{0}C output of LM35 is 10 mV. For 10 ^{0}C output of LM35 is 100 mV.

3.1.3. Humidity sensor (BTH polymer):

In our project we are using BTH Polymer Humidity Sensor model P-HS-220 as humidity sensor. Humidity sensor converts humidity in to electric form. Sensitivity of P-HS-220 is 33 mV / %RH. It measure the temperature and relative humidity using simple interface that requires just three wires to the sensor GND.

3.1.4 Light sensor:

This is one of the main part of our project. The main intention of this block is to sense the DAY or NIGHT. For sensing this we are using the light dependent register (LDR). In dark condition i.e night, the resistance of LDR is very high. And in light condition i.e .DAY, the resistance of LDR is very low.

3.1.5 CO2 sensor:

A carbon dioxide sensor or CO_2 sensor is an instrument for the measurement of carbon dioxide gas. The most common principles for CO_2 sensors are infrared gas sensor (NDIR) and chemical gas sensors. Measuring carbon dioxide is important in monitoring indoor air quality; the function of the lungs in the form of a capnograph device; and many industrial process.

3.1.6 Relay driver (IC ULN2804):

Relays driver is used to switch ON or OFF the RELAY. PIC will send data to the base of transistor. If base of transistor is at zero volts then transistor is off and relay is in de-energized condition. Therefore NO contact remains NO. If base of transistor is at +5 volts then transistor is ON and current flows through transistor as well as relay. Therefore relay is in energized condition. Therefore NO contact will become NC.

3.1.7 Relay:

Relay is electromechanical switch. This electromechanical switch is used to operate 230Vac devices. We can't operate 230Vac devices directly with the microcontroller. There for we required relay as a switch.

3.1.8 16X2 LCD Display:

In this project we are using 16 X 2 intelligent LCD display to display the temperature, humidity, light etc. In our project to monitor the temperature humidity, and status we require LCD display.

3.1.9 Level Convertor:

It is used for converting TTL logic level to serial communication levels because GSM does not work on TTL. For GSM modem which works on the RS-232 voltage levels, logic 1 varies from -3 to -15 volts and logic 0 from +3 to +15 volts.

3.1.10 GSM Modem:

A GSM modem is a wireless modem that works with a GSM wireless network. A wireless modem behaves like a dial-up modem. The main difference between them is that a dial-up modem sends and receives data through a fixed telephone line while a wireless modem sends and receives data through radio waves. Like a GSM mobile phone, a GSM modem requires a SIM card from a wireless carrier in order to operate.

4. CONCLUSION-

The present study provide a reliable "Greenhouse automation using GSM" having wide application in agriculture also in horticulture. Thus we can say that "Greenhouse automation using GSM" is better efficient than the other technologies.

ACKNOWLEDGEMENT

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