Global Journal of Engineering Science and Research Management

ANDROID APPLICATION DEVELOPMENT FOR POLYHOUSE CONTROL

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ABSTRACT

Parameter monitoring and control of polyhouse environment play an important role in polyhouse production and management. This project involve a design and implementation of an monitor and control the essential polyhouse parameters, such as, soil moisture sensing scheduled based Plant monitoring system. This implementation supports the farmers to increase the crop production. The standalone GSM module which is integrated with specific small size sensors. All monitored parameters are transmitted through a wireless link to Android via coordinator to be analysed, and then initiate suitable commands to the specific devices to overcome the drifts in an environmental parameters inside polyhouse.

INTRODUCTION

This System is a very good example of embedded system as all its operations are controlled by intelligent software inside the microcontroller. The aim of this proposed System is to ON/OFF control of different motors, the electrical or electronic appliances connected to this system from anywhere in the world. For this purpose user can use any type of Mobile. This way it overcomes the limited range of infrared and radio remote controls. Using the convenience of SMS, this project lets you remotely control equipment by sending plain text messages, such as "abcdn1", "abcdnaf3", "abcdf57n142"– all of which can be pre-programmed into the controller and easily remembered later. Short Message Service (SMS) is defined as a text based service. That enables up to 160 characters to be sent from one mobile phone to another. In a similar vein to email, messages are stored and forwarded at an SMS centre, allowing messages to be retrieved later if you are not immediately available to receive them. Unlike voice calls, SMS messages travel over the mobile network's low-speed control channel. "Texting", as its also known, is a fast and convenient way of communicating. In fact, SMS has taken on a life of its own, spawning a whole new shorthand language that's rapidly Many industries have been quick to make use of this technology, with millions of handsets currently in use. As new models with "must have" features hit the market, older models become virtually worthless and if not recycled, end up in landfill. With this in mind, we have designed the project to work with Quectel M95 GSM modem.

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THE CONCEPT

The polyhouse are constructed with help of ultraviolet plastic sheet,so that they may last for more than five years. The structure is covered with 1501m thick plastic sheet and is prepared with the bamboos or iron pipes. Generally the length of polyhouse is 25-30 feet and width 4-5feet the direction of polyhouse is always East to West,so that the maximum sunshine is available.the house should not be constructed in shade. A polyhouse is a structure with walls and roof made chiefly of transparent material. polyhouse may be used to overcome short coming in the growing qualities of a piece of land, such as short growing season and poor light levels and they can improve food production in marginal environments. Polyhouse are often used for growing flowers,vegetables, fruits and transplants.special polyhouse varieties of certain crops such as tomatoes are generally used for commercial production. The concept behind this system is to control the polyhouse parameters wirelessly. So that the human interference will be minimized and system can work accurately and properly.

Figure:
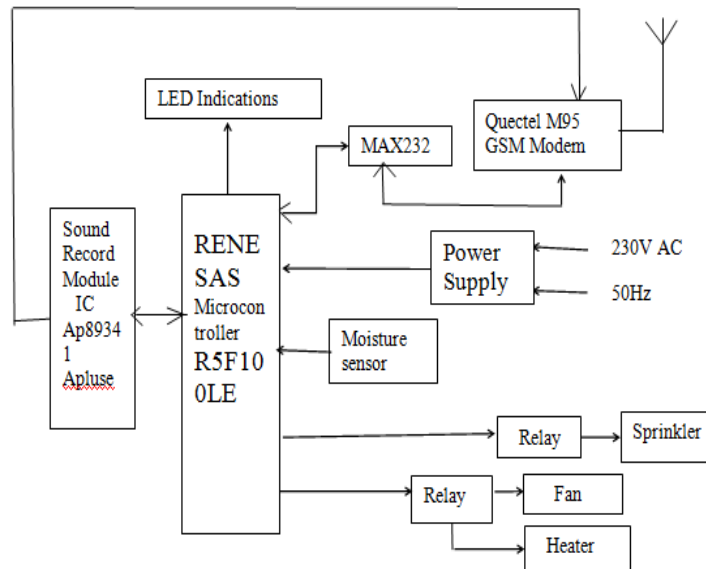
Block Diagram of Polyhouse control

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GSM Quectel M95 Modem

Here we have used the GSM modem of Quectel M95 since it has very good range an accuracy as Compared With sim 300 and sim 900. We have used the Extended Antenna Which Will help to get the Range in the rural area.

IVRS (Interactive Voice Response System)

This IC is mainly used for the Sound Recording and it is OTP IC that is one time programmable IC. The capacity of this IC to store the Sound Clip is 170sec. The IC we Are using is DIP Package so it requires more Space as compare to the Maxx232. Assigned to the RFID tag and thus the address of the tag is obtained. It should be noted that the address defers from each RFID tag and hence it offers complete resistance to duplication. With respect to the concepts of RF Identification discussed above, the use of the same technology in the ticketing system would induce an enhanced transparency and offer a suitable platform for preventing any fraudulent practices.

RENESAS Microcontroller

This microcontroller has advanced features than other microcontroller. The RENESAS MCU is True Low Power Platform (as low as 66 μa/Hz, and 0.57 μa for RTC + LVD), Supply voltage is 1.6 V to 5.5 V operation, 16 to 512 Kbyte Flash, 41 DMIPS at 32 MHz, for General Purpose Applications.

LED'S

There are various types of LEDs are used for ON/OFF indication of Motor, Sprinkler, Fan, Heater, Power, SMS and network.

1. Supply Healthy (Green) (No fault):
   When we give supply to the PCB green led will glow and it si show power is given to unit.
2. When the Sprinkler is ON then the 3rd LED will Glow it will show motor is ON.
3. The heater and Fan will be ON according to the Scheduled timing.
4. And moisture sensor will sense the Present moisture and it will send the message to Sprinkler to turn ON/OFF.
5. SMS/CALL(RED): Communication Indication
6. When user call or sending SMS to unit this LED will automatically ON.
7. NETWORK(RED): Network Indication
8. When SIM card detect and mobile tower range is there this LED will glow.

ALGORITHM

1. START
2. Initialize the system.
3. All Relays OFF.
4. Wait for SMS/IVRS/Android App Commands.
5. If Command Receive then Relay1 is ON i.e Fan ON,Light OFF.

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6. If NO then it wait for next command.
7. If next command receive then Fan OFF,Light ON.
8. If NO then it wait for next command.
9. If next command receive then Relay 2 ON i.e Sprinkler ON.
10. If NO then it check next command and Sprinkler OFF.
11. It repeats the cycle step 4.

RESULTS AND DISCUSSION
The Motor can be Started/Stopped by sending SMS through any mobile with the commands having user settable password protection. If any fault occurs to the motor, controller will send SMS to the registered numbers in the unit. If any fault occurs the controller will send an SMS which contains current fault status to 3 mobile numbers stored in the Controller.

CONCLUSION
In this system we have designed and built a wireless control to the various devices like motor, sprinkler, fan, heater. The user will be able to do the operations like send message or do call or by operating application make ON/OFF various devices. The main advancement of this project is wireless control the various devices to maintain the parameters by using three ways like SMS,IVRS system and using Android Application too. The system can be controlled from long distance using this three ways. This system can be used in Smart Farm, Food store room and also in industries etc.

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