

SmartIrrigation control using GSM Technology

¹Ms.AshwiniShinde, ²Ms.ArunaKumbhar, ³Ms.Chhaya Metkari, ⁴Prof .Ms.M.R. Wanjre(Guide)

^{1,2,3,4} ENTC,AISSMSIOIT PUNE,

Abstract :- In the Agriculture field proper method of irrigation is very important ,due to the lack of rainfall and scarcity of land waterreservoir ,farmers have to face many problems. At present the farmers are not using smart irrigation techniques, they are using old techniques for irrigating the land . In India farmers irrigate the land at the regular intervals, through the manual control. This process sometimes consumes more water or sometimes the water reaches late due to which crops get dried. So to avoid this problem we are developing smart irrigation control using GSM technology. In this irrigation will take place automatically according to the requirement of water.

Keywords- GSM module, Soil moisture sensor,IR sensor, drips irrigation.

I. INTRODUCTION

The system checks the moisture content in the soil, based on that pumping motor will automatically pumps the water into the field. Here we are using soil moisture sensor by using this sensor, we can find whether the soil is wet or dry. If it is dry, pumping motor will pump the water. In this system, the main controlling device is microcontroller. Here soil sensor will give the status of the soil to the microcontroller, based on that microcontroller will switch on or off the pumping motor through relay.

The pumping motor will pump the water into the field until the field is wet which is continuously monitor by the microcontroller. This saves the water at the same time and on the other hand the plant can get optimum level of water, so increasing productivity of crop. Status of motor is send to receiver by using GSM and this status is display on LCD. In case if the sensors are not properly working then manual control at receiver side can be used for water pumping.

II. BLOCK DIAGRAM

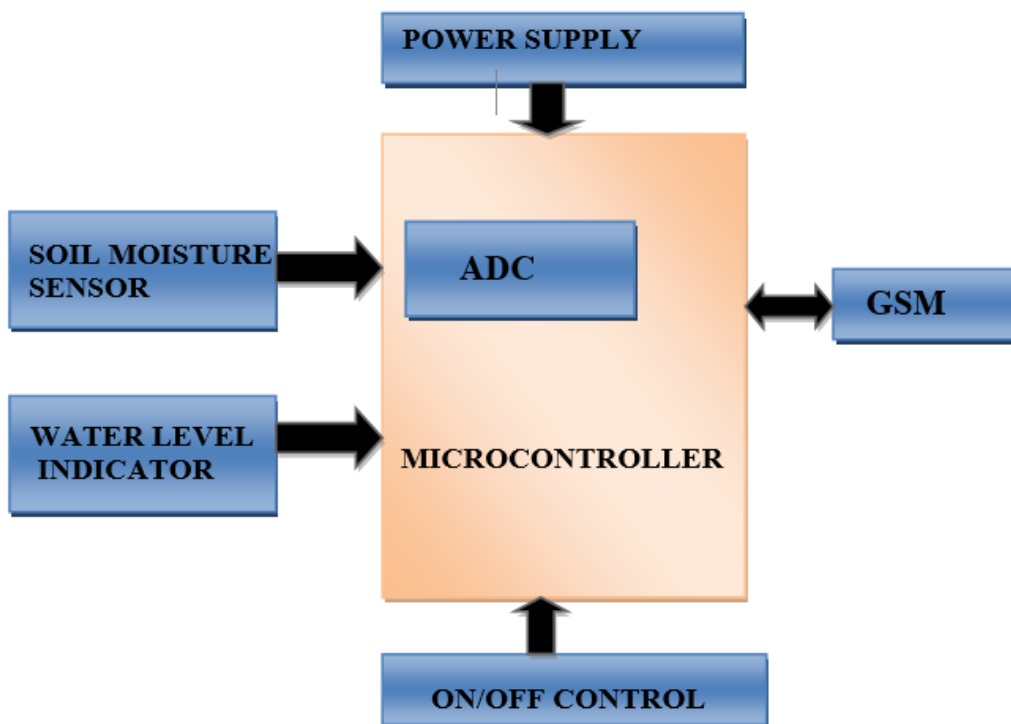


FIG-FIELD SIDE

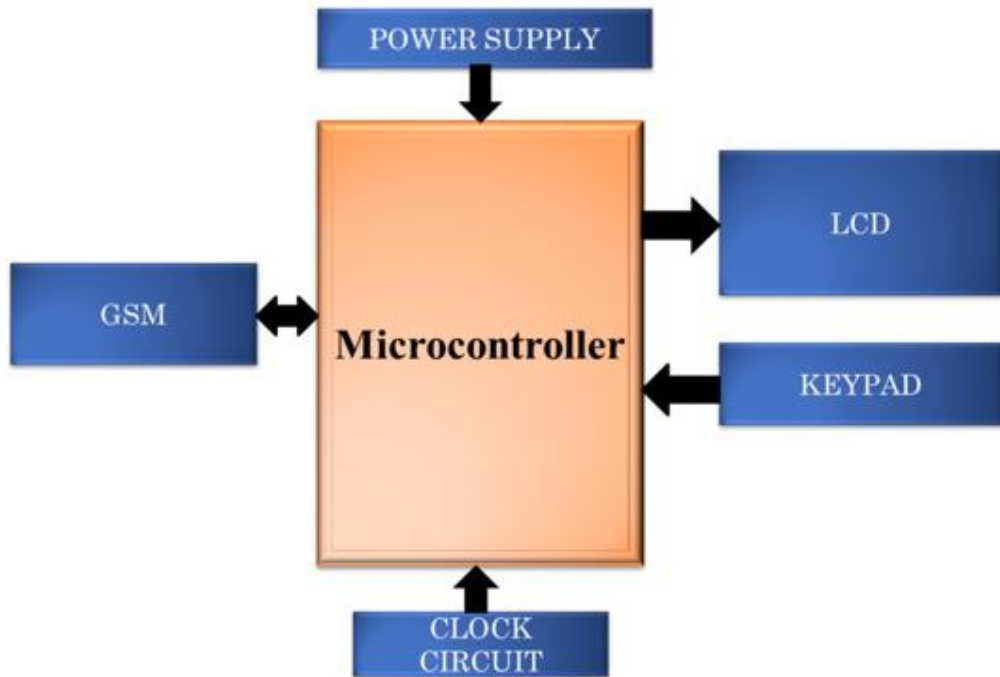


FIG-USER SIDE

A. Soil Moisture Sensor

The moisture sensor senses the moisture content of the soil, it gives a signal to the microcontroller. It gives high signal to microcontroller when there is no requirement of water, and sends a low signal when there is need of water. According to the level of water tank ,then it will on the motor.



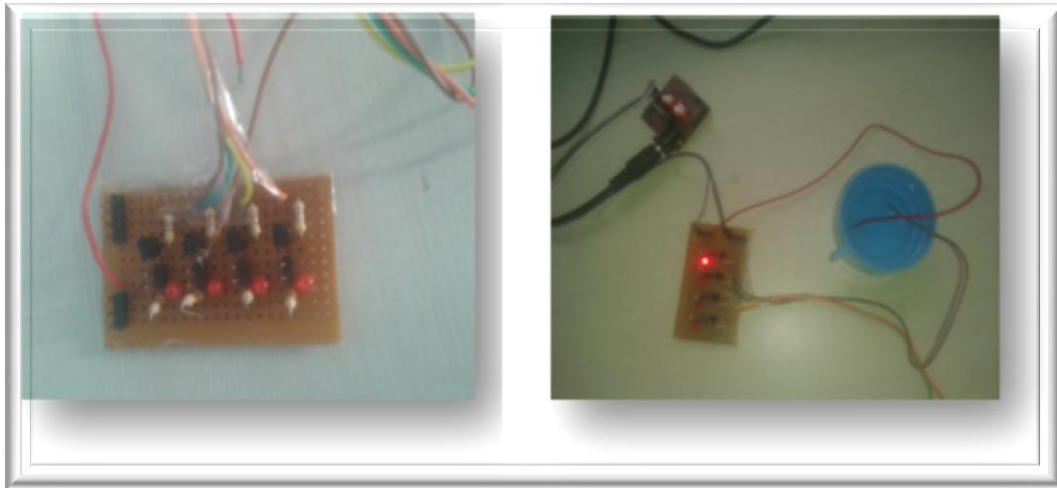
Specification

Working voltage: 5V

Working current <20ma

B. Water Level Indicator

Water level indicator simply indicates the water level in the tank .It indicates ,whether the water is at top level bottom level or middle level, so that microcontroller understand whether to on or off the motor.



Water level indicator

C. Microcontroller

Microcontroller automate the process of water pumping in the tank storage system and has the ability to switch ON or OFF, the pump according to signal given by water level indicator circuit and display the status on the LCD screen.

Features of microcontroller (PIC 16F877A)

- 1) Programme memory - 14.3kbytes.
- 2) Operating voltage – 2 to 5.5v.
- 3) Pin count -40
- 4) Input /Output pins - 33
- 5) For communication I2C, SPI, USART, MSSP

D. Motor



E. GSM

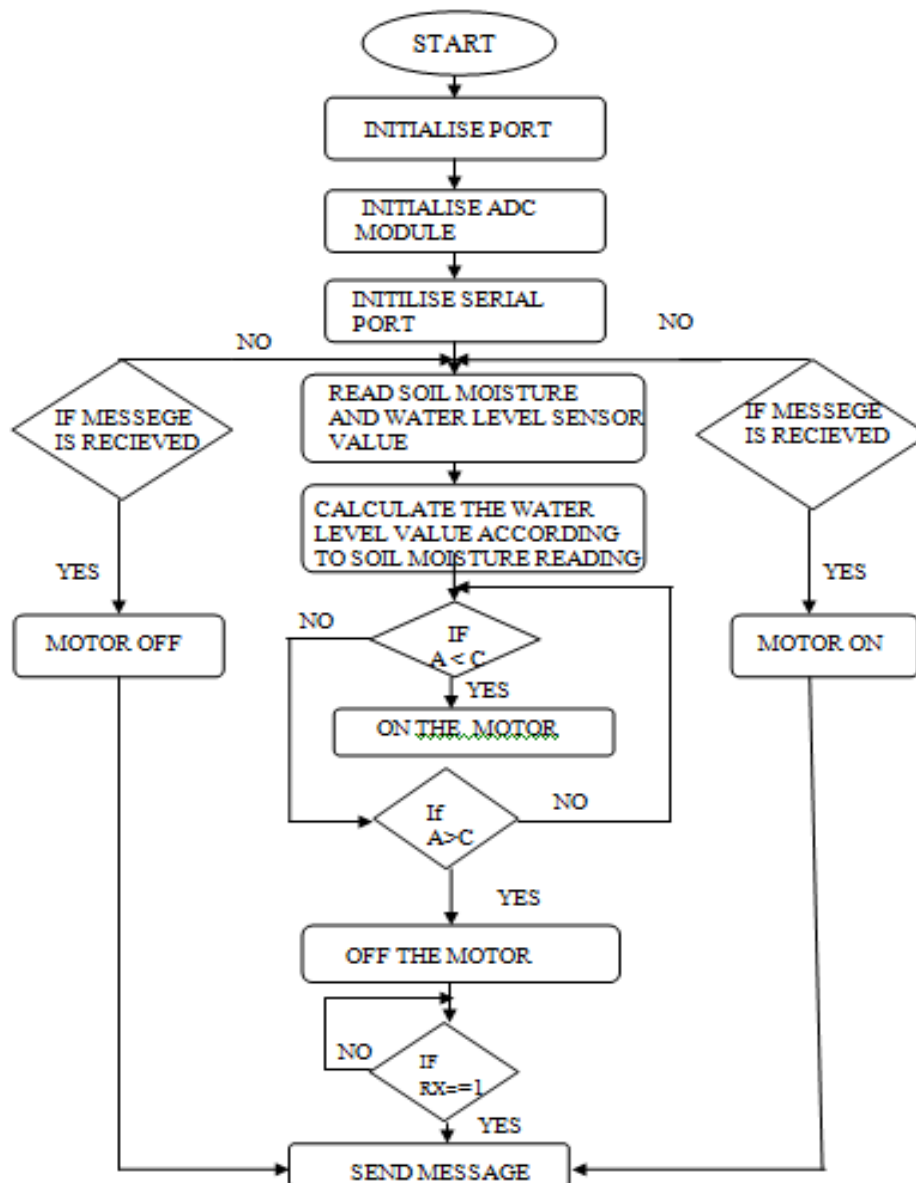
1. Low power consumption
2. Quad Band
3. Weight: 3.4g
4. Supply voltage range 3.4 - 4.5 V
5. Operation temperature: -30 °C to +80 °C

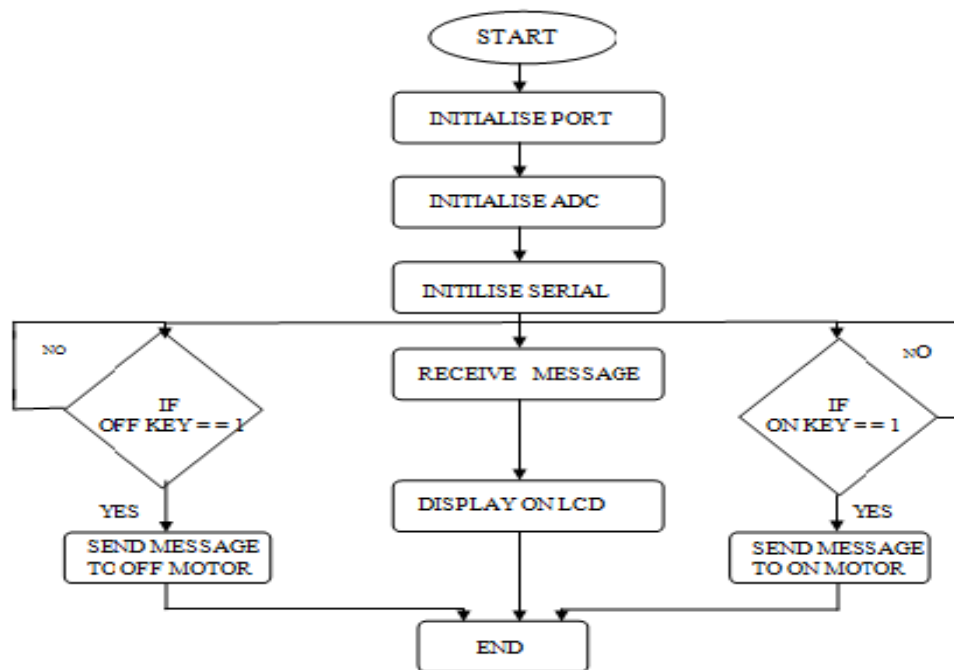


GSM MODULE

GSM module consists of a GSM modem assembled together with power supply circuit and communication interfaces (like RS-232, USB, KEYBOARD) for computer. The MODEM is the heart of such modules. Modem is used to generate, transmit or decode data from a cellular network, for establishing communication between the cellular network and the computer. They use serial communication to interface with the user and AT (Attention) commands for communication with the computer.

III. FLOW CHART





USERSIDE

IV. CONCLUSION

The final project of SMART IRRIGATION USING GSM TECHNOLOGY. In this we have tried to help the farmers by automatic irrigation according to requirement of water, by using soil moisture sensor, water level sensor, PIC controller and providing manual control in case of any system failure. By this, farmers can easily irrigate the land and save the time.

V. REFERENCES

- [1] Prof. D. Babu Rajendra Prasad, Sunil .NGSM Based Smart Agriculture System, International Journal of Electrical and Electronics Research, June 2015.
- [2] Pravin Shendge, Trupti Pasalkar, Pankaj Patil, Automatic Agricultural System, International Journal of Electrical and Electronics Research, March 2015.
- [3] Ayush Akhouri², Chandan Kumar³, Raunak Rishabh⁴, Rochak Bagla, A Real time implementation of a GSM based Automated Irrigation Control System using Drip Irrigation Methodology, May 2013.