

IOT BASED PLANT WATERING AND MONITERING SYSTEM FOR SMART GARDENING

D.V.Debila Mol, D.V.Delsya Mol, S.Guna Sheela, G.T.Jenisha

Department of Electronics and Communication Engineering

DMI ENGINEERING COLLEGE, ARALVAIMOZHI

Abstract

An Adequate water supply is important for plant growth. The project aims at watering plant using automation and IOT technology.

The moisture sensor used to sense the water level , if there is no water level , if there is no water it will inform the controller and message passed over pumb water will be provided to the plants.

Keywords:Arduino,IOT,ESP8266WIFI Module, sensor.

Introduction:

In this project based on arduino and IOT.IOT is an Network of physical device. Gardening is the need of most of the Indians livelihood and it is one of the main sources of livelihood. A major quantity of water is used for irrigation system has 85% of available fresh water resource are used for yielding crops. An automatic plant watering

system used not only helps gardens it is also used in agriculture.

WI-FI Module

The **ESP8266 WiFi Module** is a self contained SoC with integrated **TCP/IP protocol stack** that can give access to your WiFi network (or the device can act as an access point). One useful feature of Uno WiFi is support for **OTA (over-the-air)programming**, either for transfer of Arduino sketches or WiFi firmware. Connecting to the WiFi module through a TPLink WR841N router, [CN] as able to ping the module at **479 meters** with a huge rubber duck antenna soldered on, or**366 meters** with the PCB antenna.

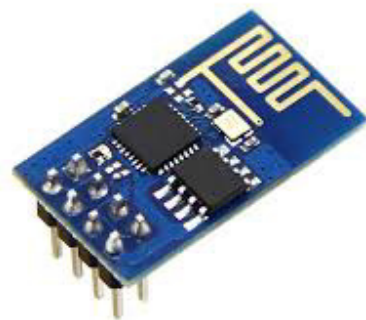


Fig. 1 ESP8266 WI-FI Module

Arduino AT Mega 328

ATmega-328 is basically an Advanced Virtual RISC (AVR) micro-controller. It is an open-source platform used for building electronics projects. Arduino ATmega328p is a datasheet. It has 14 digital input/output pins(of which 6 can be used as PWM outputs),6 analog inputs ,a 16MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset buttons. The ATmega 328 is a single-chip microcontroller created by Atmel in the megaAVR family. It has a modified Harvard architecture 8-bit RISC professor core. The Atmel 8-bit AVR RISC-based microcontroller combines 32 kB ISP flash memory with read-while-write capabilities, 1kB EEPROM,2kBSRM,2general purpose I/O lines,32 general purpose working registers. These features consist of advanced RISC architecture, good performance, low power consumption, real timer counter having separate oscillator, 6 PWM pins, programmable Serial USART, programming lock for software security, throughput up to

20 MIPS etc. ATmega-328 is mostly used in Arduino. The further details about ATmega 328 will be given later in this section.

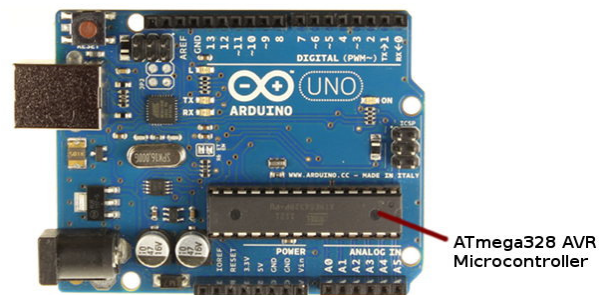


Fig.2 AT Mega328 AVR Microcontroller

SENSORS:

Soil Moisture Sensor:
Soil moisture sensor measure the volumetric water content in the soil. Since the direct gravimetric measurement of free soil moisture requires removing, drying, and weighting of a sample. The relation between the measured property and soil moisture must be calibrated and may vary depending on environmental factors such as soil type, temperature, or electric conductivity. Reflected microwave radiation is affected by the soil moisture and is used for remote sensing in hydrology and agriculture. Portable probe instruments can be used by farmers or gardeners.

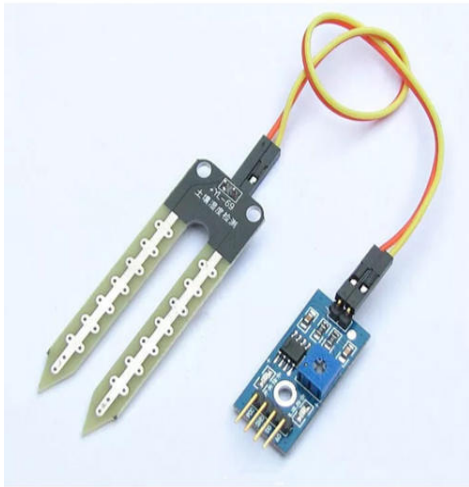


Fig: Soil Moisture Sensor

Water Level Sensor:

Level sensors are used to detect the level of substances that can flow. Such substances include liquids, slurries, granular material and powders. Level measurements can be done inside containers or it can be the level of a river or lake.



Fig: Water Level Sensor

Servo Motor:

A servo motor controller is a circuit that is used to control the position of a servo motor. It is also called as a servo motor driver. The function of servo motor is to receive a control signal that represents a desired output position of the servo shaft and apply power to its DC motor until its shaft turns to the position.

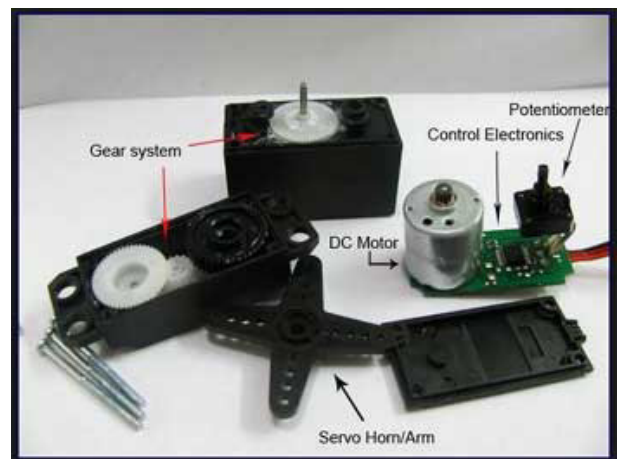
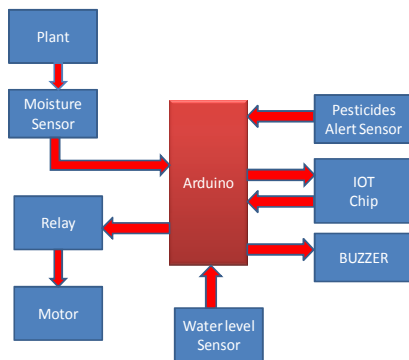


Fig: Servo Motor

Block Diagram:

Moisture sensor sense moisture level in the soil and send the signal to the arduino. Arduino programmed and send the signal to relay the use of relay is convert high voltage into low voltage. IOT chip receive the signal from arduino board. Chip programmed and transmit signal to arduino board. Water level sensor sense the water content in the tank. Pesticide sensor send the signal to the arduino board and

its programmed and remain the user to put pesticides.



Literature Survey

1. In this paper soil moisture sensor arduino LCD screen servo motor is used. System has the potential to be useful in water limited geographically isolated area.
2. In this paper, PIC16F877A microcontroller, moisture sensor relay and motor are used. It is implemented sensors which detect the humidity in the soil and supply water to the field which has water requirement.
3. In this paper ESP8266 Module, Arduino Node MCU and sensors are used. The project aims at making agriculture smart using automation and IOT technology. The whole information about the agriculture field is send to android application.

4. In this paper arduino moisture sensors water pump is used. This irrigation system will reduce the hardship of farmers, save the time and enhance accuracy and effectiveness in minimal cost.

5. In this paper Arduino, Soil moisture sensor, L293D IC & DC motor are used. In the modern system, plants can be easily monitored. For this implementation Arduino UNO is used.

6. In this paper, arduino, soil moisture sensor is used. Watering or irrigation is the artificial application of water in the crops.

7. In this paper, when a need for water was recognized by the sensor, microcontroller sent signal to pump to start watering the plant.

8. In this paper, times stamps and humidity levels will be recorded in a CSV file throughout the process using raspberry pi. Raspberry pi will then store this CSV file over the internet.

9. In this paper, this project uses arduino board, which consists of ATmega328 microcontroller. The system automation is designed to be assistive to the user.

10. This paper the microcontroller has to be coded to water the plants in the greenhouse about two times per day. The application of technology in the areas of irrigation has proven to be great help as they deliver efficiency and accuracy.

Conclusion

This Paper is developed using Arduino microcontroller, IOT and Sensors successfully. This plant watering method is very useful in the fast world.

References

- [1] Archana P, Priya R. “Design And Implementation Of Automatic Plant Watering System”, ISSN NO: 2309-4893
- [2] Abhishek Gupta, Shailesh Kumawat, And Shubham Garg “Automatic Plant Watering System”, ISSN: 2454-1362
- [3] G.NandhaKumar, G.Nishanth, E.S.Praveen Kumar, B.Archana “Arduino based Automatic Plant Watering System with Internet of Things ”, ISSN: 2320-3765
- [4] Tasneem Khan Shifa “Moisture Sensing Automatic Plant Watering System Using Arduino Uno”
- [5] Shruthi Bansod, Rishita jaiswal, Priyanka Sargam, Prajakta Survase, “Arduino Based Water Irrigation System”
- [6] Umesh Maru, Rajesh Jain, Gajendra Sujediya “Automated Plants Watering System Using Arduino UNO Board” ISSS: 2320-2882

- [7] Nermin Duzic, Dalibor Dumic “Automated Plant Watering System Via Soil Moisture Sensing By Means Of Suitable Electronics And Its Applications For Anthropological And Medical Purpose”
- [8] Ditya Padyal, Saylee Shitole, Sagar Tilekar, Pratik Raut “Automated Water Irrigation System Using Arduino Uno And Raspberry pi with Android Interface” ISSN: 2395-0072
- [9] S.V.Devika, S.Khamurunnisa, Jayanth Thota, Khalesha Shaik “Arduino Based Automatic Plant Watering System” ISSN: 2277-128x
- [10] Mritunjay ojha, Sheetal Mohite, Shraddha Kathole and D Iksha Tarware “Microcontroller Based Automatic Plant Watering System” ISSN: 2278-9960

