GSM BASED WATER PUMP CONTROL SYSTEM

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ABSTRACT

- In present days, we prefer automation in every sector and are bendy to use. It offers large precision and consistency with high term operation as fair as the manual operated systems.
- Our proposed system is the automation of the Electric Water Pump used in households, industries, agriculture etc. Our effort is to make and achieve the mechanization implementation to manage electrical motor with the help of GSM module in agriculture use case.
- With this the user can monitor the Water Pump by just sending commands through the SMS. The main contribution of this work is to offer automatic water supply for plants to saving time as well as water.
- This will ease the work of farmers as they can monitor the Water Pump by just sending commands through SMS which will reduce their physical work.
- The proposed system is controlled by Arduino to turn ON/OFF of pump by checking the moister level with the help of moisture sensors. the GSM technology is also used to switch ON/OFF of the pump using mobile phone by sending the commands to the kit through the GSM modem.

INTRODUCTION

- Agriculture based economy could lead a country towards an economically independent nation. Undoubtedly, India is an agricultural country, and its economy depends on farming.
- One of the essential elements for successful farming is that we should lighten the burden on the farmers so that their productivity level can be increased. We can reduce the burden on farmers by automating the water supply system. That's not a lot but can be helpful.
- Our proposed system automates the monitoring of the water supply and water requirements of the plants with the help of specific sensors.
- In the traditional water supply system the farmer would have to monitor the water supply by himself and would have to turn on and off the water pump accordingly. But in this system the controller will do the work for farmer.
- Besides the system also gives the farmer full control of the water pump. He can turn on and off the pump whenever it is necessary by just sending a text message through his mobile phone. This will not only lighten the burden of the farmer but also will help him reduce the wastage of water and much more.

LITERATURE SURVEY

Sr. No.	Papers	Year of Publish	Author	Method Used
1.	Smart Monitoring of Agricultural Field And Controlling of Water Pump Using Internet of Things	2019	Mr.M.Suresh, S.Ashok, S.Arun Kumar, Puppala Sairam	IOT
2.	Solar Based Automatic Irrigation System with GSM Module	2019	Md. Munirul Islam Tusher, Md. Zahirul Haque, Mohammad Jalal Uddin‡ , Arif Mainuddin , Mohammad Ehsanul Hoque, Md. Mohin Uddin Talukder	Embedded System
3.	Automatic Water Supply System for Plants by using Wireless Sensor Network	2017	Santhosh Hebbar, Golla Vara Prasad	Embedded System
4.	DESIGNING A CENTRAL CONTROL UNIT AND SOIL MOISTURE SENSOR BASED IRRIGATION WATER PUMP SYSTEM	2013	Pulkit Hanswal, Ojaswi Dale, Deepika Gupta, R. N. Yadav MANIT	Embedded System

Table (1)

COMPONENT LIST

1. Power supply adapters

2. Arduino uno

3. Gsm SIM800A module

4. Soil moisture sensor

5. Water flow sensor

6. WATER PUMP

7. Relay module

COMPONENT SPECIFICATION ARDUINO UNO

Microcontroller	ATmega328P-8 bit AVR family microcontroller
Operating voltage	5V
Recommended input voltage	7-12V
Analog input pins	A0-A5
Digital I/O pins	6(13,12,8,7,4,2)
PWM digital I/O pins	6(11,10,9,6,5,3)
Serial pin	0(Rx)
	1(Tx)
SPI	10(SS)
	11,12(MOSI)
	13(SCK)
DC current on I/O pins	40mA
DC current on 3.3V pin	50mA
Flash memory	32Kb (0.5 used for bootloader)
SRAM	2Kb
EEPROM	1Kb
Frequency	16MHz

Table (2)
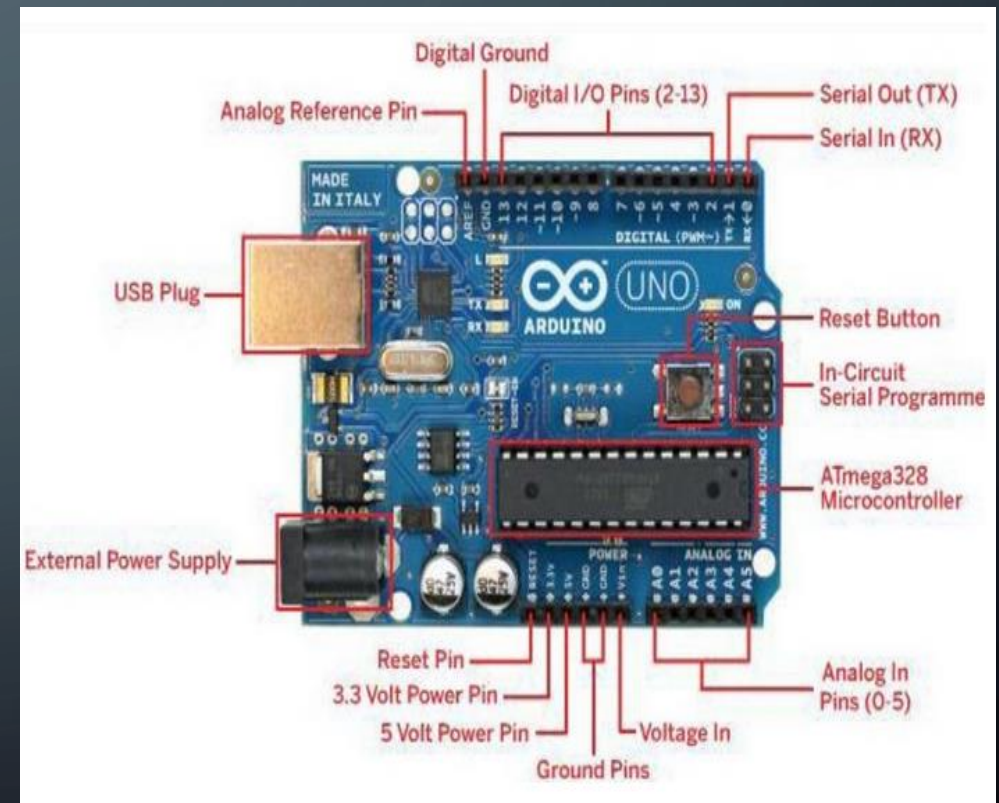
Fig (a)

GSM SIM 800A MODULE SPECIFICATION

Name	SIM800A quad band GSM module
Bands	850/900/1800/1900MHz
Pins	TXD,RXD,VCC,MCP,SPP,SPH,MCN,SCL,SDA
Voltage supply	9vDC-12vDC
Supply current	2A
Cooding schemes	CS-1, CS-2, CS-3, CS-4
Class	4 (2W), Class 1 (1W)
Control via AT commands	(3GPP TS 27.007, 27.005 and SIMCOM enhanced AT command set)

Table (3)

Fig (b)

SOIL MOISTURE SENSOR SPECIFICATION

| Name	Soil moisture sensor
Operating Voltage	: 3.3V to 5V DC
Operating Current:	15mA
Output Digital	0V to 5V, Adjustable trigger level from preset
Output Analog	0V to 5V based on infrared radiation from fire flame falling on the sensor
Pins	VCC(The Vcc pin powers the module, typically with +5V)
	GND(Power Supply Ground)
	DO(Digital Out Pin for Digital Output)
	AO(Analog Out Pin for Analog Output)

Table (4)
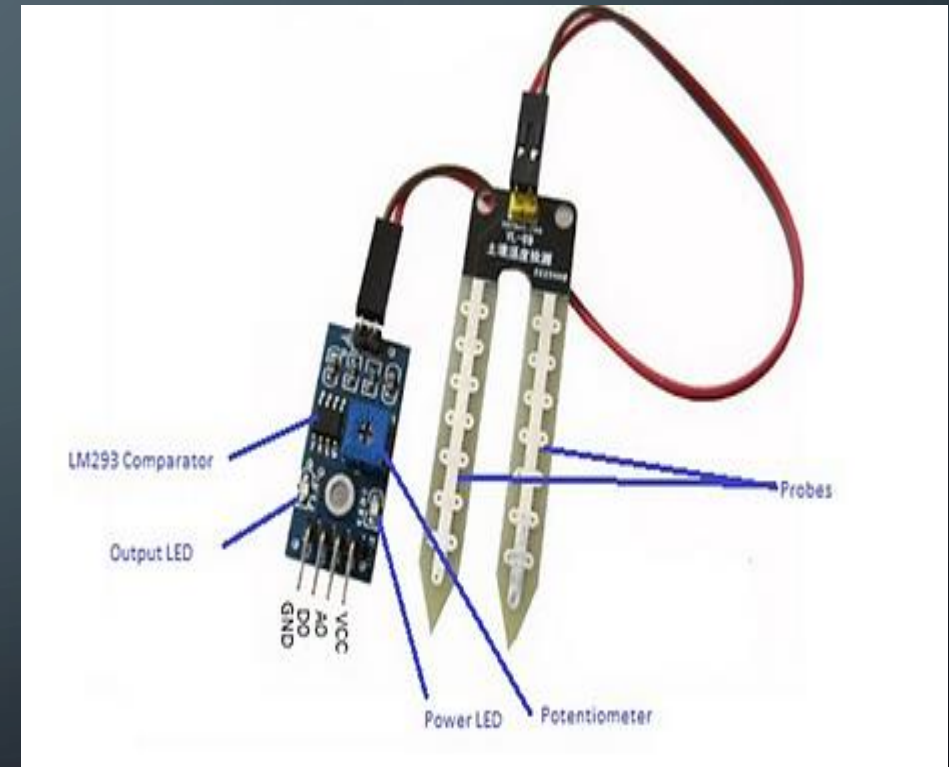
Fig (c)

WATER PUMP SPECIFICATION

Voltage	DC 12V
Power	8W
H-max	5m
Flow	10L/min
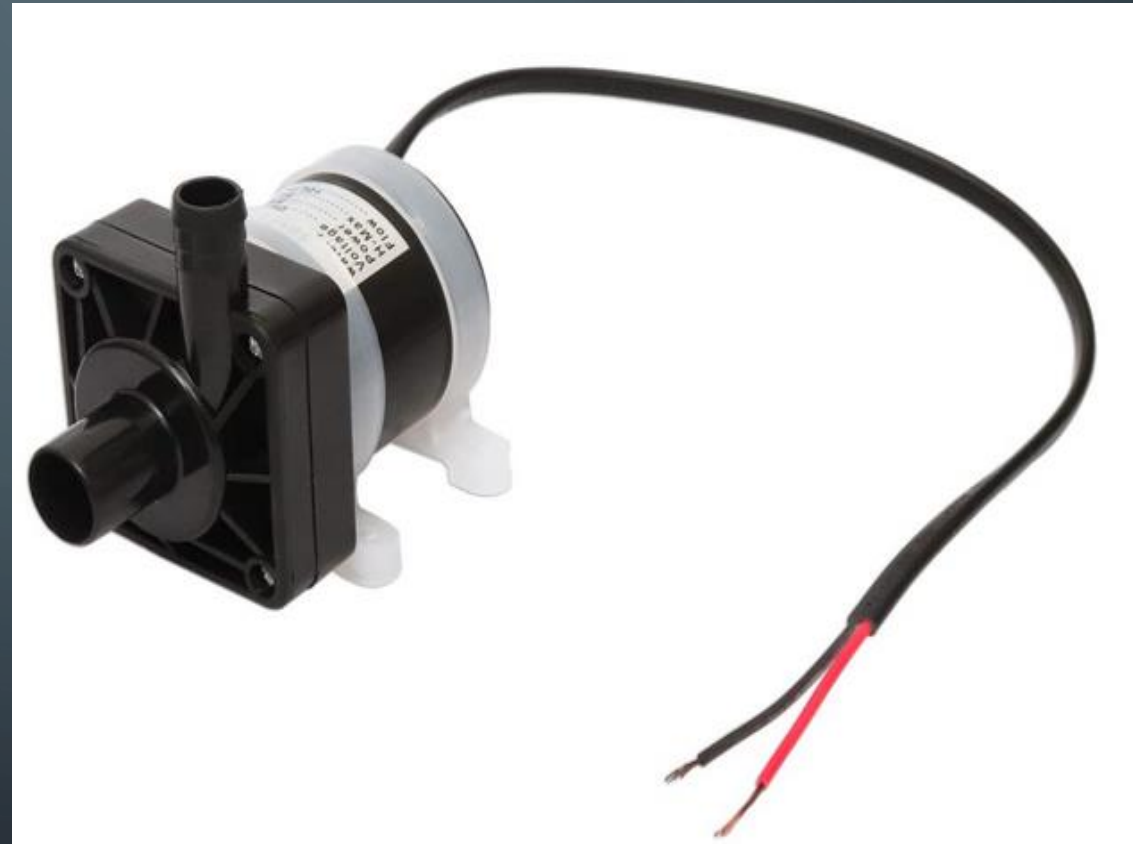
Table (5)   Fig (d)

WATER FLOW SENSOR

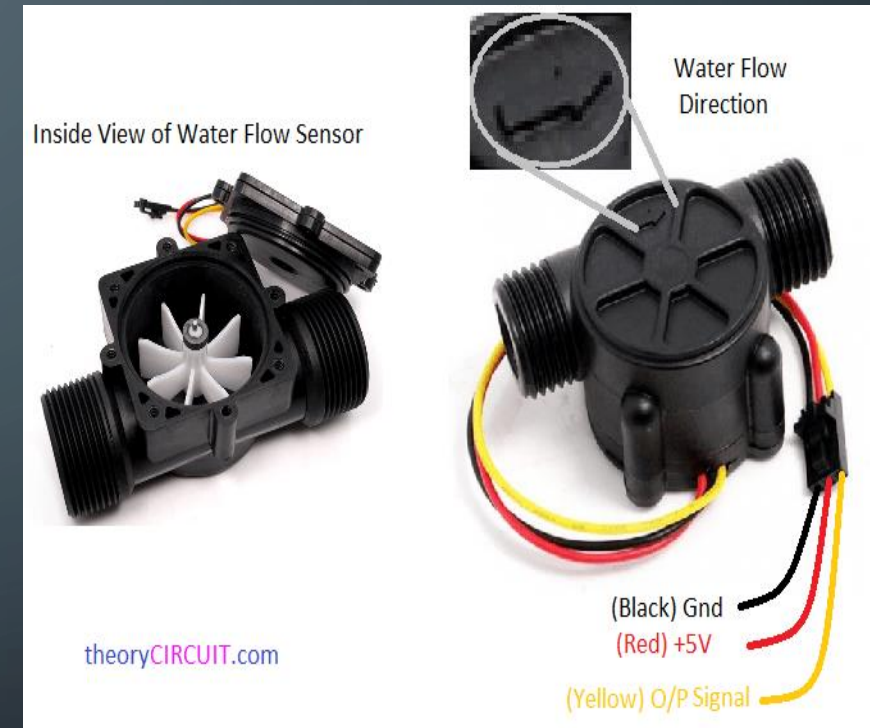| Name	Water flow sensor
Mini. Wokring Voltage	DC 4.5V
Max. Working Current	15mA (DC 5V)
Working Voltage	DC 5V~15V
Interface Dimensions	G½Inch
Flow Rate Range	1~25L/min
Load Capacity	≤10mA (DC 5V)
Water Pressure	≤1.75MPa
Material Description	H57Copper+POM
Output Pulse High Level	>DC 4.7V (Input Voltage DC5V)
Output Pulse Duty Cycle	50%±10%

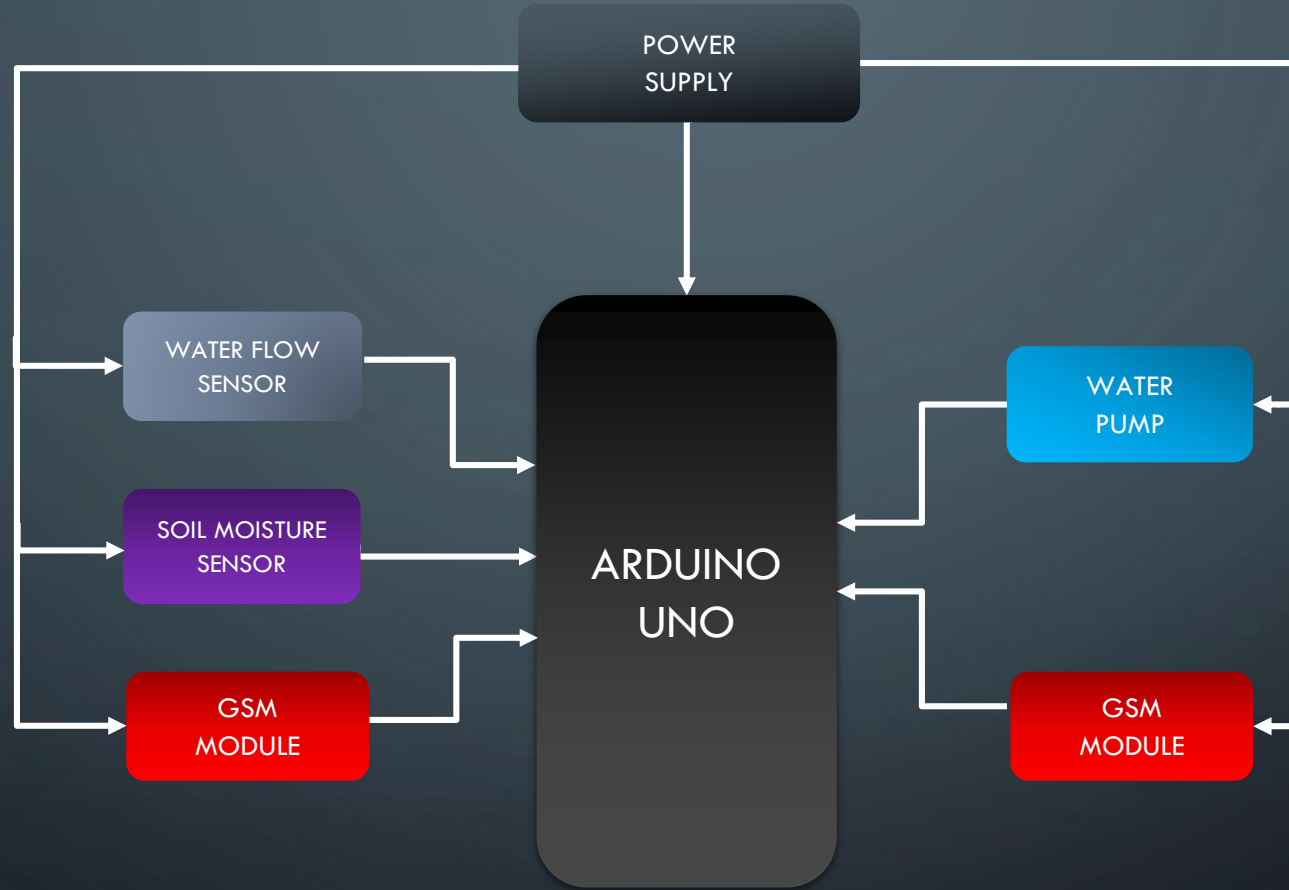Table (6)

Fig (d)

BLOCK DIAGRAM

Fig (e)

ADVANTAGES

- Use of this system will save farmers time and money.

- Reduces the burden of farmers also increases their productivity.

- Farmers can control land moisture from a remote location.

- It can be easily implemented in the fields.

- It is user friendly.

APPLICATIONS:

- This system can be used in the agricultural watering pumps.
- It also has wide applications in the industrial as well as household water pumps

FUTURE SCOPE

- Addition of IOT to the system would give great outcomes.

- PLC version can also be designed for factories

REFERENCES

1) Mr.M.Suresh1 , S.Ashok2 , S.Arun Kumar3 , Puppala Sairam, Smart Monitoring of Agricultural Field And Controlling of Water Pump Using Internet of Things Manakula Vinayagar Institute of Technology, Puducherry.

2) Md. Munirul Islam Tusher* , Md. Zahirul Haque, Mohammad Jalal Uddin , Arif Mainuddin , Mohammad Ehsanul Hoque, Md. Mohin Uddin Talukder, Solar Based Automatic Irrigation System with GSM Module, International Islamic University Chittagong.

3) Santhosh Hebbar , Golla Vara Prasad Department of Computer Science and Engineering BMS College of Engineering, Bangalore 560019, India. Automatic Water Supply System for Plants by using Wireless Sensor Network.

4) Pulkit Hanswal, Ojaswi Dale, Deepika Gupta, R. N. Yadav MANIT, DESIGNING A CENTRAL CONTROL UNIT AND SOIL MOISTURE SENSOR BASED IRRIGATION WATER PUMP SYSTEM.