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AUTOMATIC MOTOR/PUMP CONTOLLER WITH PROTECTION

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Abstract - This project is designed to operate a three- phase motor using a mobile application. Three-phase motor is widely used in agriculture. In India, agricultural field play an important role in economic development. When the farm is a way from the farmer's house, typically a few kilometers away, the farmer must go on foot to turn on or turn off the motor. If the motor isn't operated properly it will lead to the motor being damaged. Or sometimes the motor might even get destroyed. Thereby it would be more liable to control the motor from anywhere convenient to the farmer. Our target is to control the motor from distant place by our mobile application. Using the mobile application, we control the motor from any place for benefit to farmers. Farmers are unable to check if three phase current is available via their phones. They follow the traditional manual method, which is both energy and time consuming. Thereby checking for three-phase current through their mobile phones is a faster and convenient approach. Switching on the motor during rain is a waste of current. Thunder storm can destroy a motor within no time. Hence, protection is required for the motor. Rain detector is present to indicate rain and lightning to protect the motor.

Key Words: Transformer step down 12-0, Diodes IN4007 x5, LM7812 x1, Relay 12V x1, GSM module: SIM 800 or SIM 900 model, LED RED/GREEN x1

1.INTRODUCTION

In this project, we are going to Design and Implement Remote Control System to turn on and off a three,phase motor. Farmers cannot depend only on the climate and rainfall alone for irrigation. This is why the farmers use motors for irrigation purpose. Three-phase motor is widely used in agriculture. Traditionally they are controlled by user manually where protection are mostly not taken care or must be done using isolated unit. To be able to start from the cell phone, we use the Arduino and a relay module that will be the bridge between the power part (electrical part) and the control part (electronic part).

A farmer depending solely on rainfall for the purpose of irrigation is long gone.

Farmers in these days opt for three-phase motor for irrigation. However, the operation of the motor is done manually.

2. LITERATURE SURVEY

1. Robe rtWall -YHDC SCT006 Current Transform er- All tests were carried outAt 50 Hz. For the tests,theCT primary consisted of 1or 5 passes of insulated 16/0.2mm wire
2. Rohi t Gupta- A Study ofAC/DC Converter with Improved power factor- The diode bridge rectifierIs Constructed. All Methods are compared interms ofTHD (Total harmonicdistortion)
3. 3.P.Abhilas hReddy,G. Prudhvi,Dr.S.Subhash ka P.J-Automatic rainSensing car wiper Servomotor, rain sensor Arduino, LCD module forcontrol in the wiper system. Whenever the rain falls, the rain sensor detects the Intensity of the rainfall and sends theinformation to Arduino which is sent to servomotor totake action.
4. Neha Malik,Yogita Bodwade-Literature Review on Home Automation System- Wi-Fi based usingArduino microcontroller through IOT

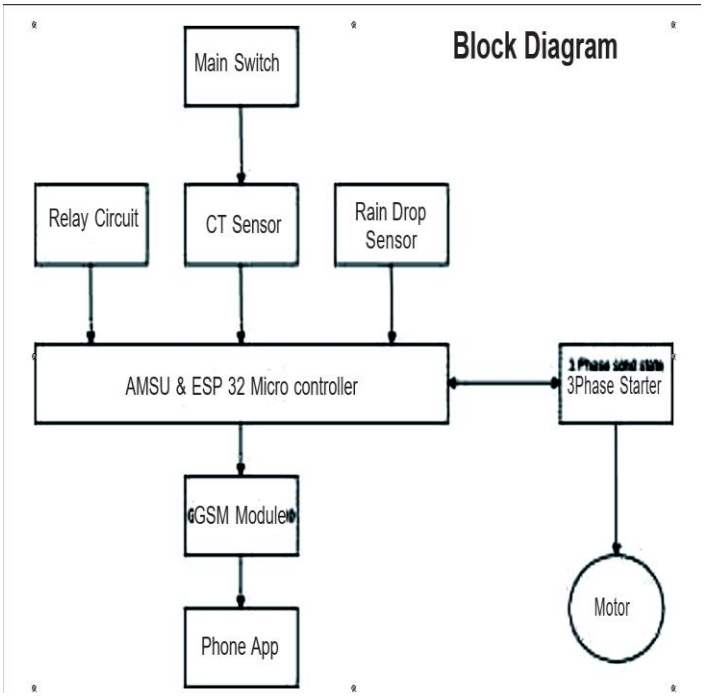
3. METHODOLOGY

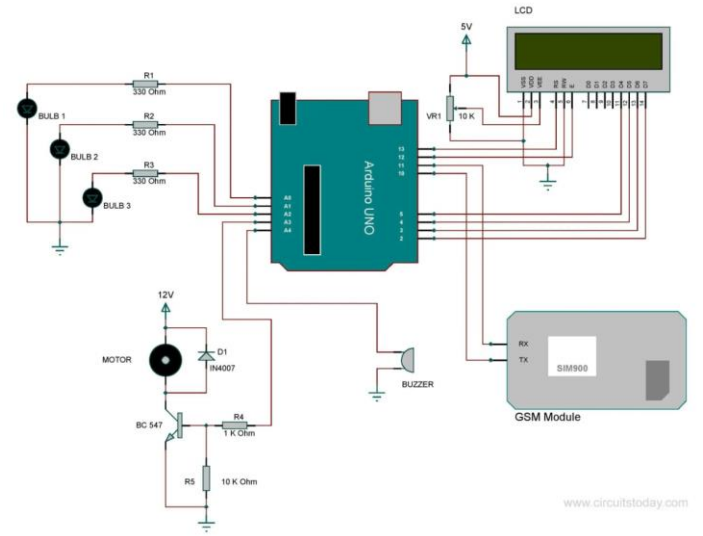
Here is the proposed system,

- First we check if three Phase current is available through Mobileapplication. The CT Sensor detects the presence of three phase current.
- The presence of three phase current will be displayed on the app.
- If there is no three, phase current, we wait for the current to come.
- If there is three phase current then by the help of the android app the motoris turned on.
- Rain monitoring sensor is present to check the rain. If the rain is coming themotor will not be started.
- The temperature and moisture sensor's respective outputs will be displayed in the app. If there are any adjustments required in these, it can be easily monitored from the phone.

Farmers are increasingly using motors for irrigation, but they are unable tocheck if three phase current is available or not in the field. In some times it is difficult for the farmer to go field and switch ON/OFF the motor. The proposed project is aimed at creating a motor device that

would operate amotor using a mobile application.





Working of Smart Irrigation System

We have tried to simplify this system/project as much as possible to make it easy for everyone, from beginners to experts.

Let me explain the overview of working of this smart irrigation system, The GMS module is connected to Arduino. When the farmer shoots a message to turn ON the motor, it will be received by the GSM module. Then GSM module forwards this message as a signal to the Arduino board.

After this, the Arduino will make the relay input HIGH, resulting in turning ON the motor pump and this way our smart irrigation system will start supplying the water to crops.

The procedure remains same while turning OFF the motor. This time the farmer will send a message to turn OFF the motor, and the relay output will be made LOW which is then followed by the shutdown of the water pump

the Steps to Use Smart Irrigation System

Step 1 – Turn on the System. This will trigger an acknowledgement message to your number.

Step 2 – Send SMS "Motor On" to the number ****.

Step 3 – It will be received by GSM and sent to Arduino.

Step 4 – Arduino will turn ON the water pump through the relay.

Step 5 – The irrigation will start.

Step 6 – Now, after a perticualar time, send SMS "Motor Off" to the number ****.

Step 7 – Here the Step-3 will be repeated, and the process in step-4 will be reversed, and the motor will be turned OFF.

CONCLUSION

Agriculture:

- This project can be widely used in agriculture.
- Checking the presence of three phase current in the phone is a very time saving approach
- This project can also be used to irrigate small and largefarms.
- The irrigation system of the farm can be controlled from the farmer’s figure tips from anywhere.
- This project helps farmers to not only protect the motor but also saves power by turning it off anytime.
- Rain sensor detects the rain and accordingly the motor can be turned on or turned off from any convenient place in no time
- Many companies are doing Green House Projects andthey can check the
- Water management through our Mobile application.
- Since this project is cost efficient it can be implementedin small scale and individual green house projects is benefitted.
- By the help of this project the irrigation system can be taken care of even from the person’s office.
- Nursery water management can be implemented through our Mobile based water management system

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