

# IVRS FOR THREE PHASE MOTOR CONTROL USING GSM FOR AGRICULTURAL FIELD

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## Abstract:

*In India agricultural field play an important role in economic development. That's way focus on that point. Farmers facing number of problems. Electrical power supply not available in 24 hours. Farm is away from his house, hence to on and off the motor automatically using our project, is about make this control system efficient and dynamic. The automatic control is for controlling the motor from remote place, look over its operating conditions; get feedback from the motor itself. Our target is to control the motor from distant place by mobile sms/miss call and also get feedback by SMS while it is in ON or OFF condition. We also ensure the safe operation of the motor by detecting the voltage of the source and ensure feedback from system while it is over or under voltage. Again we also get these feedbacks by SMS as well. If any faults occur such as spp, dry run and over heat then automatically motor off. GSM network is everywhere in our country that's why we choose GSM network to operate our motor also transferring feedback Information through it. We also use GSM network because if we use it then we don't need to establish extra equipment for networking. To transmit feedback signals we use GSM modem at the motor end also generate control signal by mobile DTMF because it is very easy to generate DTMF by mobile station and send feedback SMS by Modem as well. It is also applicable in industrial sector we hope our project is become handy and cost effective to operate motor and give its protection*

**Keywords:** Interactive Voice Response System (IVRS), GSM model, renesas microcontroller, sequence phase protection (SPP), dual tone multiple frequency (DTMF), short message service (SMS), Moisture sensor.

## 1 INTRODUCTION

GSM Based motor Control with 3 phase detection

In GSM based, the GSM Pump Controllers (Mobile Pump Starter) are specifically design to operate remote located submersible pumps and motors for benefit of farmers, agriculture people and industries where wireless pump and motor control required. Our GSM based mobile pump controller is manufactured with advanced micro controller technology and quality process.

About 3 phase detection:

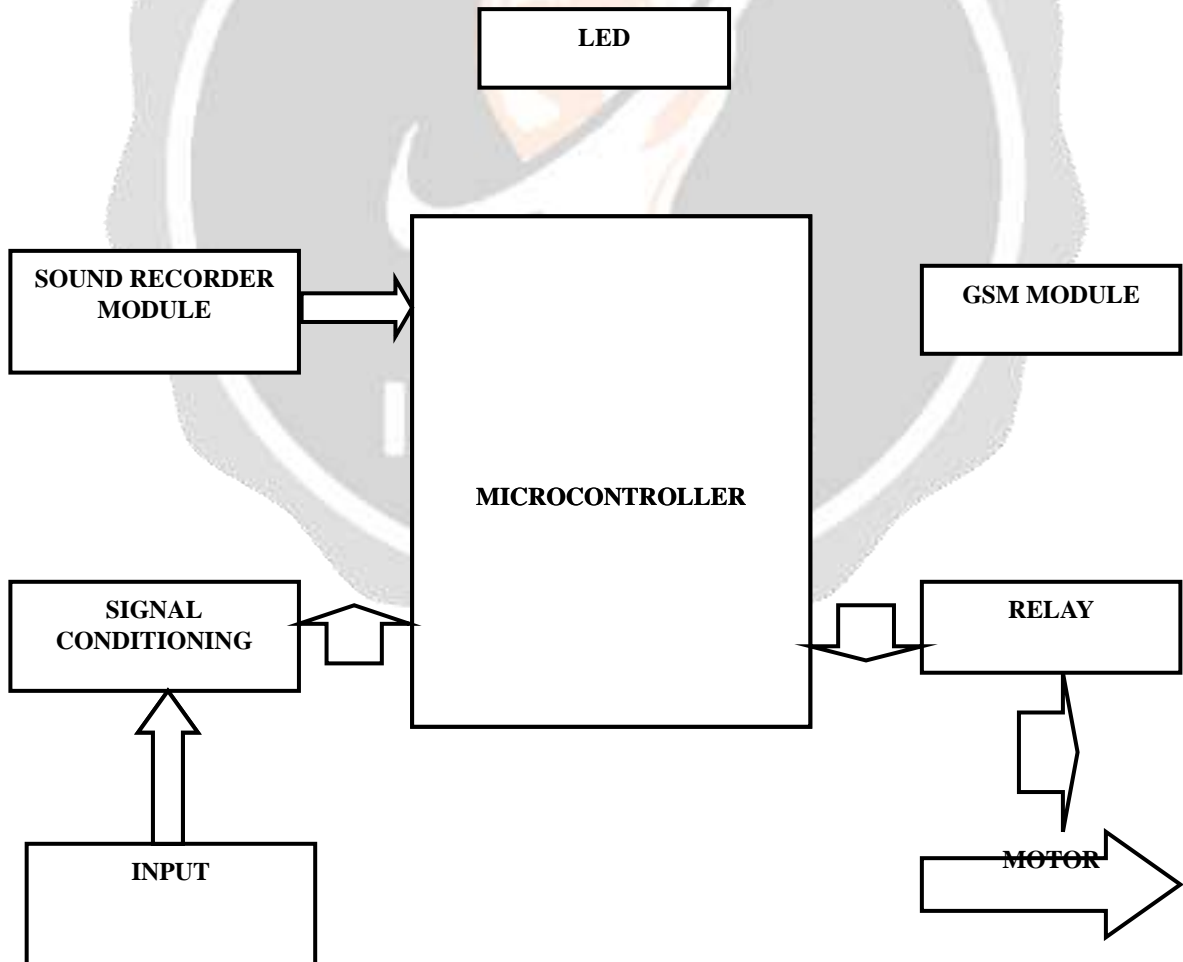
After Power up 3 Phase will be checked

If all the 3 phase is present SMS will 3- PHASE - MODE, if any phase is absent SMS will be 1- Phase / Mode

If AUTO Mode is On after Testing 3 Phase, Motor will get ON after 5 Sec (using Commands thru SMS u can On/OFF AUTO Mode) This Project is a very good example of embedded system as all its operations are controlled by intelligent software inside the microcontroller. The aim of this project is to control i.e. to ON/OFF control of 3 phase motor pump, 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 command text messages, such as "xxxxA()#", "xxxxON#", "xxxxOFF#"– all of which can be pre-programmed into the controller and easily remembered later.

Short Message Service (SMS) is mean by 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 center, 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. In fact, SMS has taken on a life of its own, spawning a whole new shorthand language. We can also use calling system by stopping the sms system; also missed calls can switch action taken.

**2 Block diagram**



**3 WORKING:**

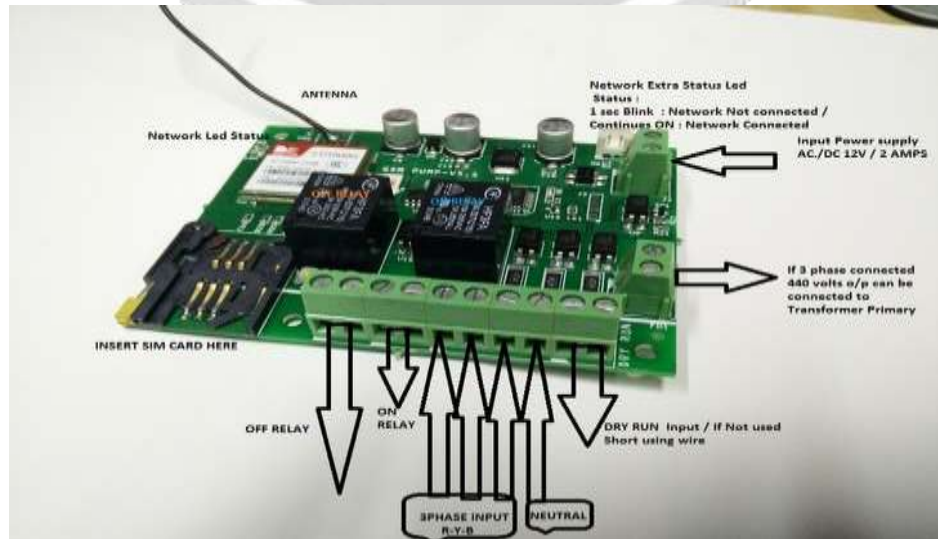
We use the reneses microcontroller which is world number one microcontroller. Signal conditioning block is used to maintain the voltage with in positive range and these voltage is read by the ADC which is in microcontroller, the relay is used as a switch to ON/OFF the motor, and one of the main work of microcontroller is it continuously monitor the RYB phase and if voltage is over, under not in range then it will off the motor and send corresponding message status to register user through GSM network. And indicate problem occurs like spp, dry run etc. then it indicated by LED, ap89341 is used for sound recording (clips).And max232 is used to convert 12v dc to 5v dc.

The missed calls are received from the user mobile to perform specific task. Based on the received signals and sensor conditions, the signals are sent to the microcontroller to switch on/off the motor through the starter using the relays. The relay is controlled by the ports. Dry run protection sensor used to protect motor.

**Advantages:**

- Simple SMS based switching ON and OFF the pump.
- Message 1 to ON the pump and message 0 TO off the pump.
- Miss called based switching after 3 rings.
- Auto mode and manual mode option.
- Option for accepting message from registered numbers or any number.
- Mobile number changing option.
- option for changing the delay of the pump ON time
- Option for checking the sim card balance.
- Option for changing from 3 phase TO 2/3 mode.
- Option for checking the status of the pump.
- 3 phase detection system motor does not start if all 3 phase is not present.
- SMS relay for every operations with feedback.
- Power ON SMS with the status display.
- dry run protection sensor.(sensor leads optional)
- Motor/Pump trip SMS.

**Overview of PCB:**



### **Future Scope:**

If the GSM range is not occurs in some area then the controlling three phase motor using GSM is difficult then instead GSM we used Zigbee for controlling three phase motor because the property of zig bee is creating the range according to user requirement. If user want to see current operation and status live then we used Digital Camera System It will possible to controlling the three phase transformer, three phase drivers, breakers which is required for Maharashtra State Electricity Board(MSEB) using GSM and Android Application

### **Conclusion**

Thus we control on or off the 3 phase motor pump from anywhere. And reduce the man work and safely motor works and if any faults occur immediately motor stop. This project increases our ability to work as a group and it helps us in future life. But we face several problems because of unavailability of quality goods, technical support and inexperience. Despite that we enjoyed our work very much and successfully finished that work in perfection. In this dynamic world motor is the most convenient and useful tool in industry. Large rated motor required flexible control and protection. We hope our project can bring dynamic change in our agricultural level motor pump controlling system.

### **ACKNOWLEDGMENT**

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Some important websites

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2. [www.Renesas.com](http://www.Renesas.com)
3. [www.aplusinc.com](http://www.aplusinc.com)

