

## THREE PHASE MOTOR CONTROL USING GSM

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### ABSTRACT

In this semester we have worked on this project because it may help in agricultural development of India. Due to frequent power cut and abnormal voltage condition leads to maintenance of motor by using this system we provide the protection from over voltage, over current, three phase detection & dry-run helps to off motor during dry condition. In this system we used ATMEGA 328 microcontroller for checking all conditions of motor. After checking the conditions of motor controller sends signal to GSM modem which reports to consumer via message. Consumer can check all the conditions and on/off the motor by sending text message by registered mobile number. In abnormal condition of motor consumer receives information about fault and motor gets off to prevent accidents. We use GSM modem because they don't need extra networking equipments. Due to this system easily access the motor and prevent from any abnormal condition.

**KEYWORDS:** ATMEGA328 Microcontroller, GSM-Global System for Mobile Communication.

### INTRODUCTION

The Three phase motor control using GSM are mainly designed to farmers. Using GSM we control the motor from any place for benefit to farmers. Due to this farmers maintain the correct timing of water and gives protection to the motor. In the agriculture sector problems occurred to the motor and this damage the motor. For preventing the motor use this system in that voltage, current, three phase detection & dry run protection provided. Due to this system user on/off the motor from any place it helps to saving the time and required less man power. For on/off the motor user need to send the message to the system. If any abnormal condition is occurred motor automatically switch off & system gives information about fault to the user threw message. For switch on/off the motor need to send the message like /motor on/, /motor off/. And suppose any abnormal condition is occurred system gives information like dry run fault is occur then motor is automatically off and user get a message like " Motor is off due to dry run" as well as system gives information about over voltage, over current, single phasing fault.

### PROBLEM DESCRIPTION

In the agriculture sector most of the three phase motors are used. In this motors many problems are occurred. Such as related to voltage & current. When the load is suddenly decreases over voltage becomes occur, such as if short circuit is occur then over current in the motor. These problems are occurred due to the imbalance

voltage and current. Dry run fault is also occur if motor running in no load condition and its harmful to the motor. Single phasing fault is generated because out of three phases one phasedisconnected. System is working when all condition is good. We provide the protection against over voltage, over current, single phasing & dry run.

**SYSTEM DESCRIPTION**

The three phase motor control using GSM is developed to protection for motor. System is ready when three phases is available. Microcontroller monitors the all condition of the motor and control the operation of the starter based on the motor condition. When all condition is good the motor will on and gives the feedback to user. If voltage decreases to its rated value or when there is no flow of water in the pipe or water level insufficient or single phase is occur the motor will automatically off and the problem is intimated to the farmers through messages from GSM. The GSM is connected to the controller user can control the starter by sending the message when needed or when abnormal condition exist. The message send to the GSM controller perform the proper operation based on the motor condition and given task. The signals sent to the controller to switch on/off the motor through the starter the relays. The relays is controlled by the microcontroller.

Table no.1

Sr. No	Name Of Component	Rating
1	Transformer	9-0-9V, 500mA
2	Capacitor	10µf,150µf, 0.1µf,1000µf,33µf
3	Regulator	7805, 5V
4	Resistors	220Ω, 1kΩ, 10kΩ
5	Microcontroller	ATMEGA328, 5V
6	Transistor	BC547
7	Relay	6V, 7A
8	GSM Model	SIM 800C
9	Three Phase Motor	5HP

**BLOCK DIAGRAM**

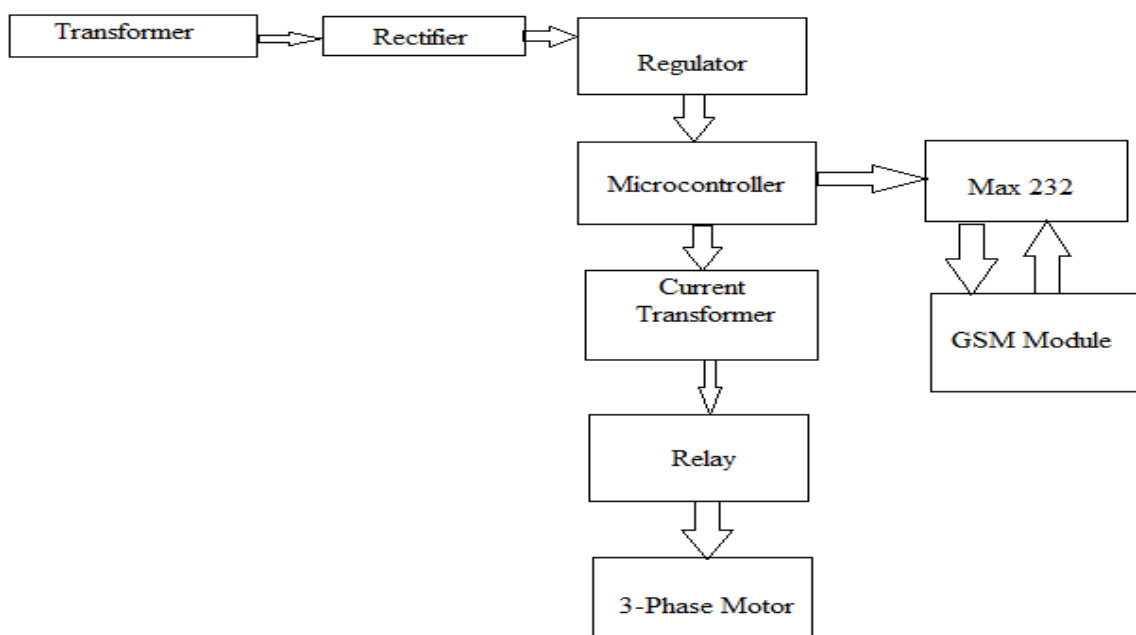


Figure no.1 Block diagram of three phase motor control using GSM

## WORKING

In this system we use the GSM module to communicate the user to the system. For controlling the motor ATMEGA 328 microcontroller are used and relay use to on/off the motor. Controller always the monitor the RYB phase when all phase is available system gives the message to user as “System is ready”. For switch on the motor send a message as “/motor on/” after motor is in on condition microcontroller check the all conditions when there is no abnormal condition system gives a feedback “All condition is good motor is on”. For switch off the motor send the message “/motor off/” motor is suddenly off and gives the feedback as “Motor is off”. Microcontroller always checking the condition of motor if any abnormal condition is occur as over voltage, over current, single phasing & dry run microcontroller operates the relay and motor automatically switch off and GSM gives the message about the fault condition. If dry run fault occur motor automatically switch off and gives feedback as “Motor is off due to dry run” as well as over voltage, over current, phase offline this facility also provided. The relay is controlled by microcontroller. As we provide protection against the abnormal conditions of motor.

## FUTURE SCOPE

This system mainly developed to the farmers, but it also use in industry area. In the industrial area for three phase motor protection gives through this system. This is best example of the embedded system. Any automation is provided through this system. In that microcontroller use to control the overall operations and as per our requirement we change the controller operation. The motor is switch on/off to give a missed call. This helps to reduce the labor cost and maintain the proper timing of water. We get the all condition of the motor from any place. It also very useful to industry area to control the motors.

## RESULT

In this system wedone to give the protection to three phase motor against the over voltage, over current, single phasing & dry run. We switch on/off the motor by sending the message to the system. Any abnormal condition is occur the system switch off the motor automatically and intimate the fault to user.



## CONCLUSION

The system ensures protection against over voltage, over current, single phasing & dry run. It also provides the intimation of the abnormal condition and motor automatically switch off. This helps to uniform distribution of water at regular intervals, reduction in labor cost, prevention of unwanted water spillage, It helps to save the water and gives the feedback of the all operations this is the major advantages of this system. The use of mobile phone is common and easy to understood for farmers. The pump will located

away from their homes due to this by using mobile phone farmer control the motor from home. As this is very helpful to the farmer.

#### REFERENCES

- I. Prof.R.R.Jadhav,Prathmesh P Pandit , Shubham D.Pal , Vineet H.Risbud , “Three Phase Motor Control Using GSM”, International journal of innovative research in electrical, electronics,instrumentation and control engineering volume 3 ,Issue 5.May 2015.
- II. Wani SurajR,GhaywatVivekV,NaikAkshayD,MandlikSachin B “IVR System for three phase motor protection , Control and Alert system using GSM”, international journal of engineering and computer science volume 4 Issue 2 Feb. 2015
- III. [http\\:www.sciencedirect.com](http://www.sciencedirect.com)