



GSM Based Motor Control for Irrigation System

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ABSTRACT: Now-a-days every system is automated in order to face new challenges in the present day situation. Automated systems have less manual operations so that the flexibility, reliabilities are high and accurate. Hence every field prefers automated control system especially in the field of electronics automated systems is doing better performance.

This is an implementation of the idea of the wireless communication between a mobile phone and a microcontroller. They have to go to the remote area and ON/OFF the appliance. But in this new design, the systems need not be reprogrammed to control another home appliance without changing the programming of microcontroller. The user will make a call from his phone and he will be able to control the appliance. This system is developed with PIC Microcontroller which is connected to the GSM and the motor. The microcontroller includes the protection against dry running and single phasing.

KEYWORDS: PIC16F886, CT sensor, MAX 232, GSM sim900A

I. INTRODUCTION

India is basically an agricultural country, and all its resources depend on the agricultural output. With the rapid development of agriculture in India, many automatic technologies have been introduced into agricultural productions.

During the present day's technology is all about the automation and wireless control of all the equipment used in industries, factories and households. It increases safety as well as speed of operation in times of failure or damage. So here we present a design which uses wireless technology for switching of motors which is placed on well or bore wells. This project uses the application of wireless communication i.e. GSM network for the wireless control of the electrical motors.

The new age of technology has redefined communication. Most people nowadays have access to mobile phones and thus the world indeed has become a global village. At any given moment, any particular individual can be contacted with the mobile phone but the application of mobile phone cannot just be restricted to SMS (Short Message Service) which is a service available on most digital mobile phones that permit the sending of short messages also known as text messaging service.

In past few years there is a rapid growth in system. The user communicates with the centralized unit through SMS. The centralized unit communicates with the system through SMS which will be received by the GSM with the help of the SIM card. The GSM sends this data to PIC controller which is also continuously receives the data from sensors in some form of codes. Thus in short whenever the system receives the activation command from the subscriber it checks all the field conditions and gives a detailed feedback to the user and waits for another activation command to start the motor. The motor is controlled by a simple manipulation in the internal structure of the starter. The starter coil is indirectly activated by means of a transistorized relay circuit. When the motor is started, a constant monitoring on current is & once the current is disturbed motor is automatically turned off & a message is send to subscriber that the motor is turned off.

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II. LITERATURE SURVEY

- “THREE PHASE MOTOR CONTROL USING GSM” International Journal Of Innovative Research In Electrical, Electronics, Instrumentation And Control Engineering.
- Real-time automation of agricultural environment for modernization of Indian agricultural system. 2010 International Journal of Computer Applications

In previous systems motor controlled with the help of voice call. For that system it is necessary to maintain balance in both Mobile. Those systems are more costly. also some previous systems are working on Android phone but some farmers are more familiar with the cellular phone, farmers not handle smart phone easily.

In advance that we develop system which operates on missed call as well as message . For this system not necessary to maintain balance in SIM cards. We develop system which is more accurate and less probability of failing. With the help of this system we get text message related to voltages in Phases (R, Y, B), motor condition.

III. RELATED WORK

In this project, we are designed system which is easy to control and monitor. User can easily control motor from anywhere and anytime. For this system not necessary to maintain balance in SIM cards. We develop system which is more accurate and less probability of failing. Designed system is less costlier than previous system. Whole system is controlled using mobile. For communicating mobile with controller SIM900A module used.

IV. BLOCK DIAGRAM

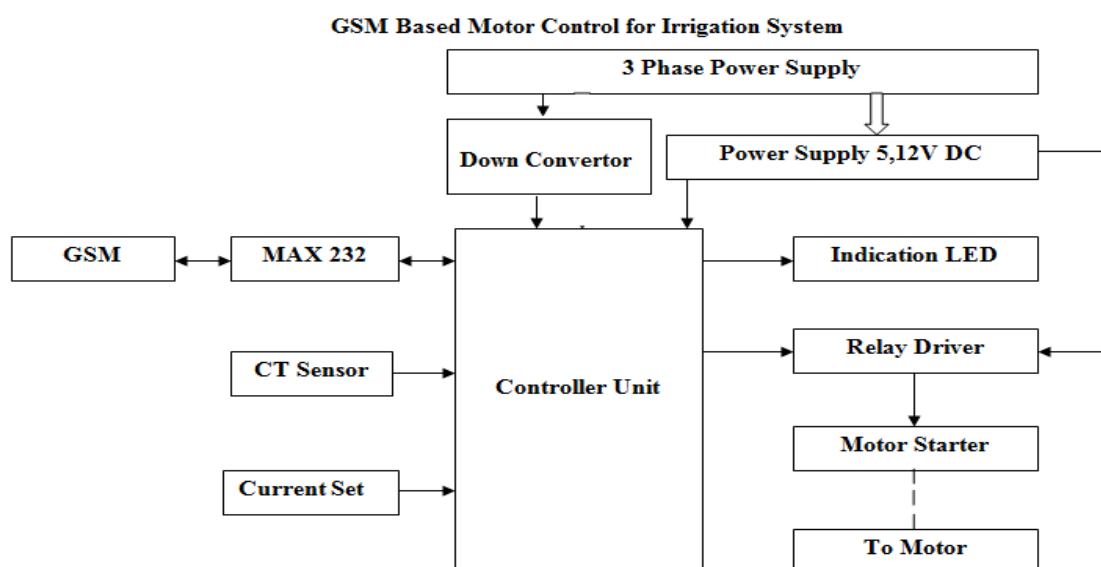


Fig. block diagram

The whole system is controlled with the PIC16f886 controller unit. With the help of down converter, three phase power supply down converted to 5v for checking of availability of three phase supply. 12 volt power supply is given to the relay driver circuit, with the help of this 12 volt power supply relay operation performed.

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The MAX 232 is serial communication IC communicate GSM with controller. The MAX232 IC is used to convert the TTL/CMOS logic levels to RS232 logic levels during serial communication of microcontrollers with PC or GSM. The controller operates at TTL logic level (0-5V) whereas the serial communication in GSM works on RS232 standards (-25 V to + 25V). Current sensor (CT sensor) used for checking input current of motor. If current sense by CT sensor is OK then signal transmit to the controller for performing next operation. The generated signal could be analog voltage or current. The generated signal can be then used to display the measured current in an ammeter, or can be stored for further analysis in a data acquisition system, or can be used for the purpose of control.

Indicating LEDs are used for indicating availability of three phase power, single phase power and GSM working condition. Another LED indicating motor condition.

V.SYSTEM SPECIFICATION

There are different components are used in this system to run the robot. The specifications of these components are as follows:

- PIC 16F886 Microcontroller: the main controller of the system. It will control all the operations of the system. It is the 28 pin IC operates on 5V supply.
- GSM module SIM900A : For communication between mobile and controller gsm module used with baud rate 1200 bps.
- CT sensor: It is current sensor.
- Max 232: It is used for serial communication purpose.
- Relay driver circuit: It is used for switching purpose.
- LEDs: 3 LEDs are used in system to give indication related 3 phase power, gsm module ok, dry run.

VI.RESULT

See screenshot of text message received on mobile.

1-when system start automatically get message related 3 phase power present or not

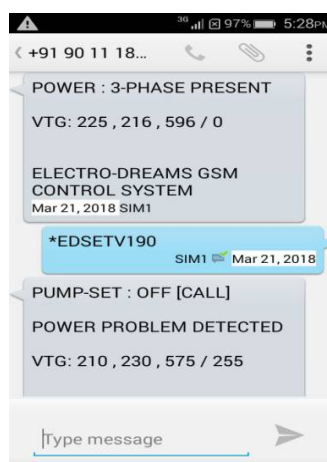


Fig. Screenshot 1

2-when motor start using missed call then this message received.



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Fig. Screenshot 2

3-when we want to register new mobile number then by sending ‘*ED mob no’ message we can add new number



Fig. Screenshot 3

4-when we want to set current then by sending ‘*EDSETI’ message we can set current



Fig. Screenshot 4



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VII. CONCLUSION

After successfully completion of our GSM based motor controller system, we can easily control and monitor motor from anywhere and anytime. Designed system is operates on both missed call as well as message so user can easily operate it. Previous systems are somewhat costlier than this system. When this system used for agriculture, farmer can easily switching that is ON and OFF motor from anywhere. After installing this system on well or river no need to go on well or river to turn ON or OFF motor. This is time saving system.

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BIOGRAPHY



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