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# Simulation of Bidirectional Control Induction Motor using wireless Technology

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**ABSTRACT**: The project is designed to drive an induction motor for the required application in forward and reverse directions using wireless technology. For an example, an exhaust fan can be used in both the directions to fresh air in and throw hot air out. This can be used in case of conventional exhaust a fan that rotates in one direction only. This proposed system demonstrates a technology to rotate a squirrel cage induction motor in both clockwise and counter clockwise direction. It also has the provision to control the direction of the motor using a wireless technology. In wireless technology Global System for Mobile (GSM) is used to control the direction of induction motor. The proposed system it acts as multiple access technique. The proposed system simulation is validated under the proteous software. It contains power supply, controller, relay, AC motor. The proposed system is simulated with the commands input are given into virtual terminal and the three modes of operation are validated with the output of the controller. Controller executes the load to rotate "FORWARD" and "REVERSE" directions.

**KEYWORDS**: GSM, Controller, Relay, AC motor.

## I. INTRODUCTION

In the present time, in the most of the applications, AC machines are preferable over DC machines due to their simple and most robust construction without any mechanical commutators. Induction motors are the most widely used motors for appliances like industrial control, and automation; hence, they are often called the workhorse of the motion industry. As far as the machine efficiency, robustness, reliability, durability, power factor, ripples, stable output voltage and torque are concerned, three- phase induction motor stands at the a top of the order. Motor control is a significant, but often ignored portion of embedded applications. Motor control applications span everything from residential washing machines, fans to hand-held power tools, and automotive window lift, traction control systems and various industrial drives. All most in all the applications there is a drastic move away from analog motor control to precision digital control of motors using different processors. Digital control of induction motors results in much more efficient operation of the motor, resulting in longer life, lower power dissipation. Although various induction motor control techniques are in practice today, the most popular control technique is by generating variable frequency supply, which has constant voltage to ratio frequency ratio.

The field of wireless communications has been in existence since the first humans learned to communicate. In early days of civilization humans would transmit notices of important events, such as enemy invasions or royal births, through the sounding of horns or the lighting of fires. While simple messages could be effectively transmitted in this manner, in order to communicate over long distances the manpower expense was great, since watchtowers had to be built within sight of each other and continually manned, and the number of messages was small.

Now days all home appliances are preferred to control wired and wireless mechanism. In our project we are proposed to control the direction of induction motor high efficiency deliver from input to output supply.

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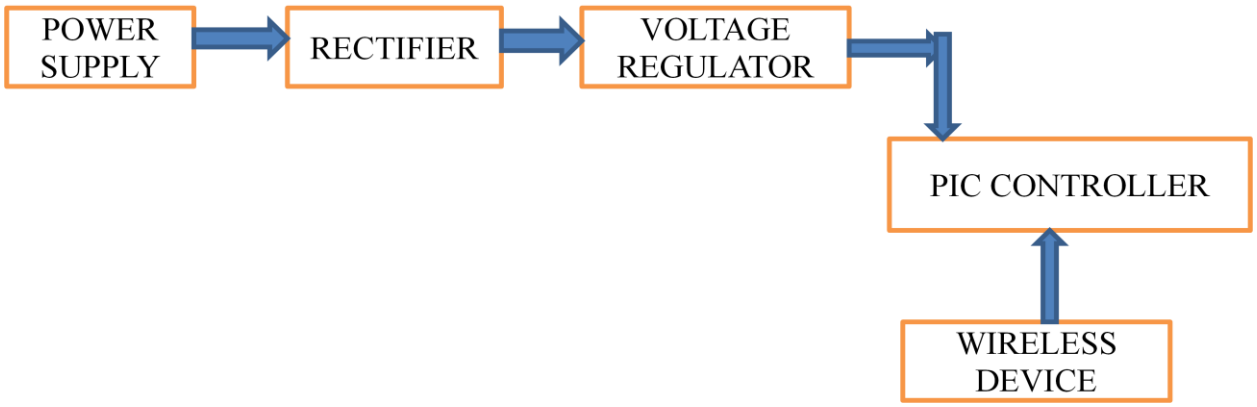
## II. PROJECT DESCRIPTION

TRANSMITTER:




RECIEVER:

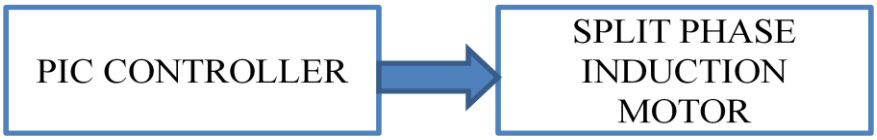



**Figure 1. Block diagram of proposed method**

Figure 1 shows the diagram of transmitter and receiver for the proposed method. In this method power supply of 230V is given to rectifier circuit, rectifier is convert the 5v DC and given to voltage regulation it regulates the voltage for controller. Controller is connected with the GSM. It controls the forward and reverse direction.

## III.SIMULATION

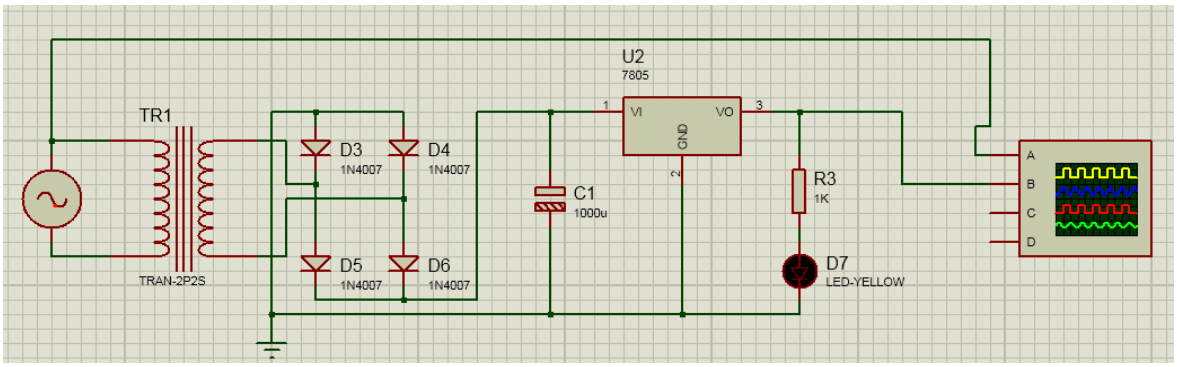



**Figure 2. Circuit diagram for Power supply**

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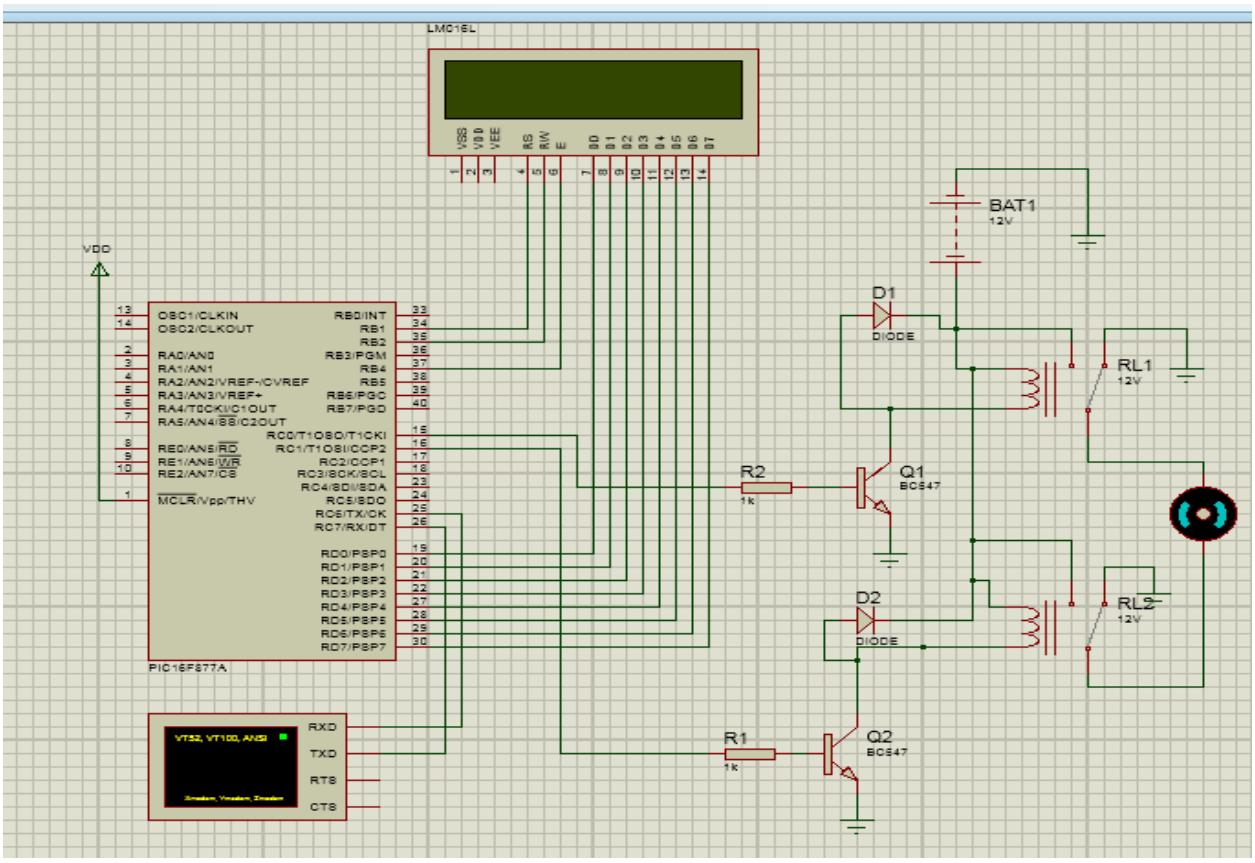


**Figure 3. Simulation for Proposed method**

Figure 2 represents the purpose of 5V power supply is to provide supply for the microcontroller unit (MCU). Power supply is supplied with a single step down transformer. In both these power supplies the 230V input supply is stepped down by the step down transformer. In the next stage it is converted in to dc 5V by using a bridge rectifier. The regulator type of 7806 is used to regulate the dc voltage at the output side.

Figure 3 shows the of proposed method in this proposed method In this project, the PIC (Peripheral Interface Controller) series microcontroller has been used .The PIC16F877A device comes in 40-pin controller is associated with An opto isolator, also called an opto coupler, photocoupler, or optical isolator, is an electronic device designed to transfer electrical signals by utilizing light waves to provide coupling with electrical isolation between its input and output and relay is connected with AC motor to control the timing. When the proposed converter operates three commands mode in virtual terminal. In virtual terminal is giving the command motor operates for both forward and reverse direction

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## IV.SIMULATION RESULTS

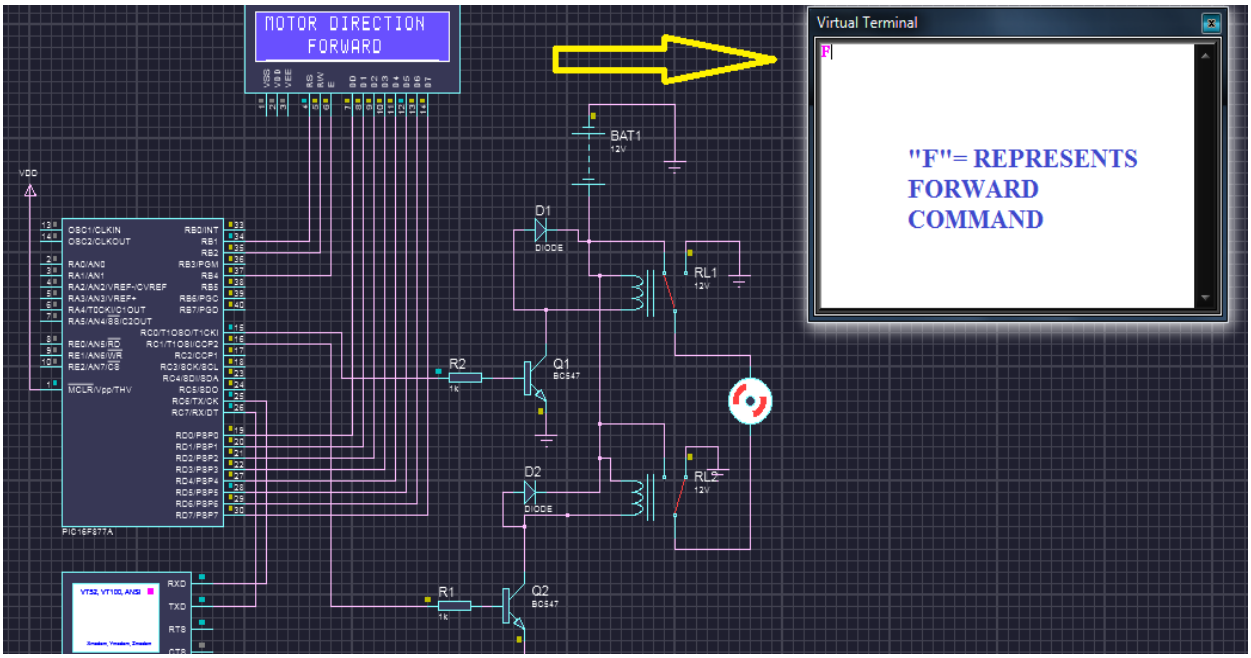


**Figure 5. output for forward direction**

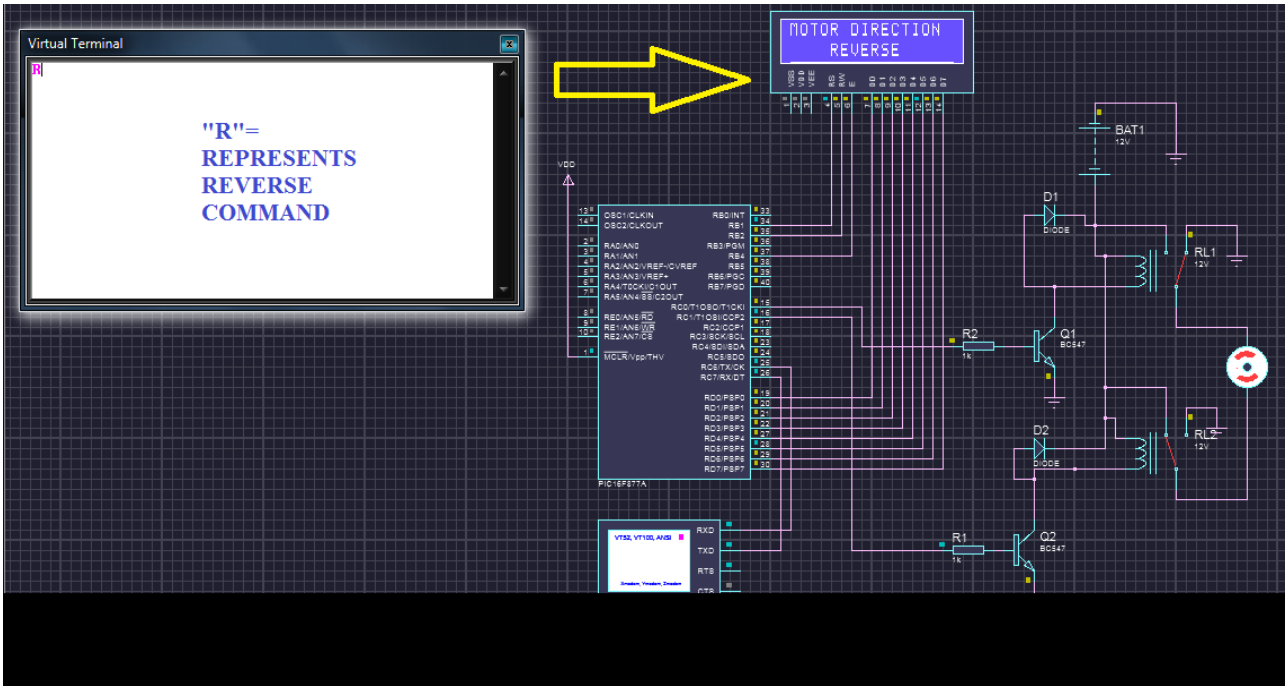


**Figure 6. Output for Reverse direction**

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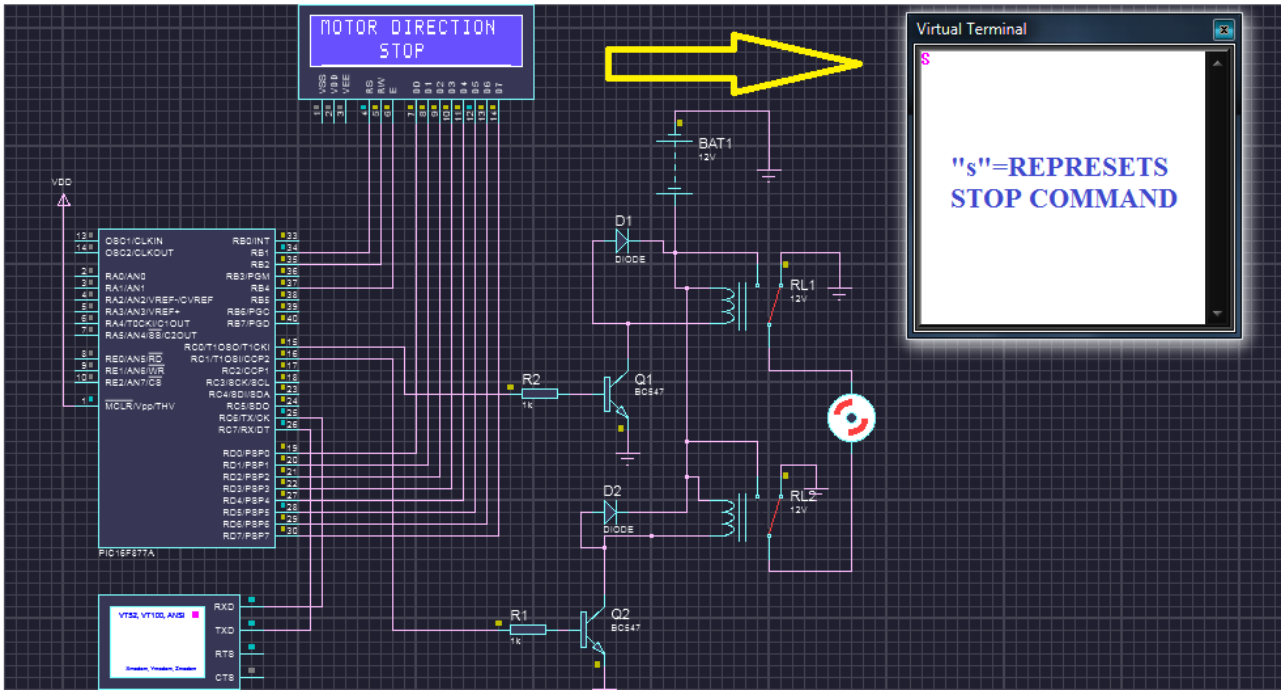


**Figure 7. Output for Stop command**

Figure 5, 6, 7 shows the diagram of output of the forward, reverse, and stop commands which typed in the virtual terminal and the induction motor rotation for simultaneous response for virtual terminal input**.**

## V.CONCLUSION

In the bidirectional rotation of induction motor was implemented with proteous software. The proposed system is simulated with the commands input are given into virtual terminal and the three modes of operation are validated with the output of the controller. Controller executes the load to rotate "FORWARD" and "REVERSE" direction depending upon the input we are giving the virtual terminal. In virtual terminal giving the input of "S" the induction Motor stopped**.** Bidirectional control of induction motor using wireless control for output frequency variations ensure high efficiency to the output system To validate the proposed converter and its analysis, a prototype is to be developed and tested.

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