

WIRELESS DC MOTOR SPEED AND DIRECTIONAL CONTROL USING RF

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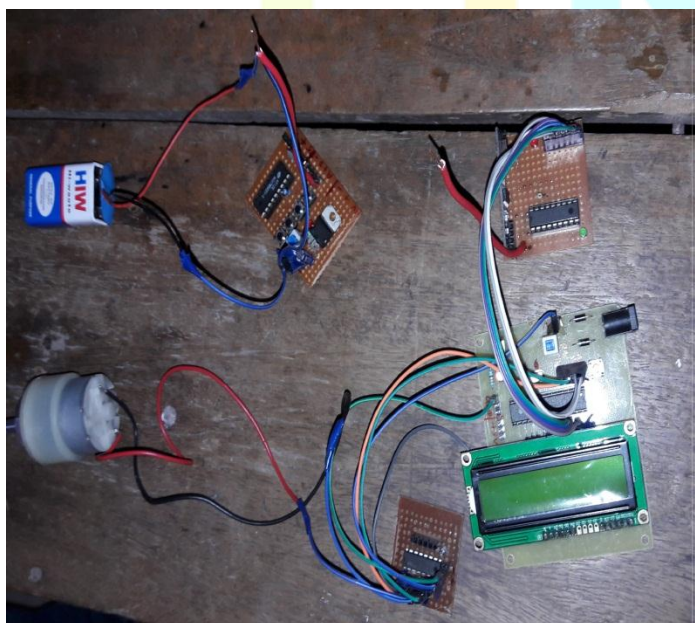
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Abstract- The main objective of project is to control the speed and direction as well as position of the DC motor using wireless communication system. In which two components are used transmitter and receiver. The control circuit of the transmitter is transmit the data as per required output and the receiver control circuit is receive a signal whose pulse width contains information regarding to the desired speed and direction in which the motor is to be turned. We also control the speed of the DC motor as required by just one click.

Index Terms - On/Off control, Speed control

I. INTRODUCTION

In our project the device controlling was totally controlled by the RF technology. The circuit used for this controlling is very simple. So we will make circuit very simple. To understand the project one needs to understand the General theory about the application and circuit. In this chapter we have discussed this general theory and the functional block diagram. Before that in the next work we are going to discuss different components used in project hardware and its working so that in next work one can understand block diagram and working well. In many applications DC motor is used as a special method sometime it's used for special control of speed and direction control in many industries. Using some method of speed control technique its adverse effect on output of the process. In some cases automatic speed control is required. In the industries its necessary to control the speed of motor using wireless. The power supply is fed to DC motor from source. The purpose behind selection of this project is to facilitate user a complete automated controlling system which provide easy access beyond distance & time, moreover provide accuracy and reliability.



II. METHODOLOGY

In the shown in block diagram of circuit component are connected in a such way to get a desired output. The main aim of project is to build a versatile device that can control the DC motor by using communication. The RF modules used in the circuits STT-433 MHz transmitter along with an RF encoder HT12E STR-433 MHz receiver along with an RF decoder HT12D.

The aim of project is designed in such a way that three switches will be interfaced to the controller is controlled the speed of the motor. These three switches are performed a task to increase and decrease the speed of motor and to stop the motor. The RF transmitter is also interfaced with the controller. Through an RF encoder to encode the data received by the controller. Hence encoded data will be transmitted by the transmitter over the wireless medium and will be received by RF receiver. The RF decoder is used to decode received data in to four bit digital data with has send to the microcontroller.

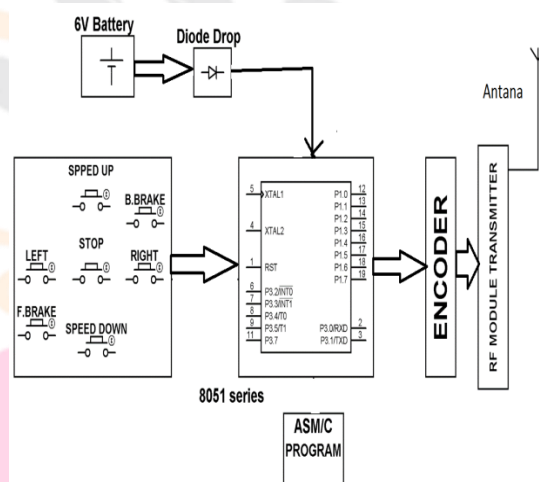


Fig. (A) Transmitter section block diagram

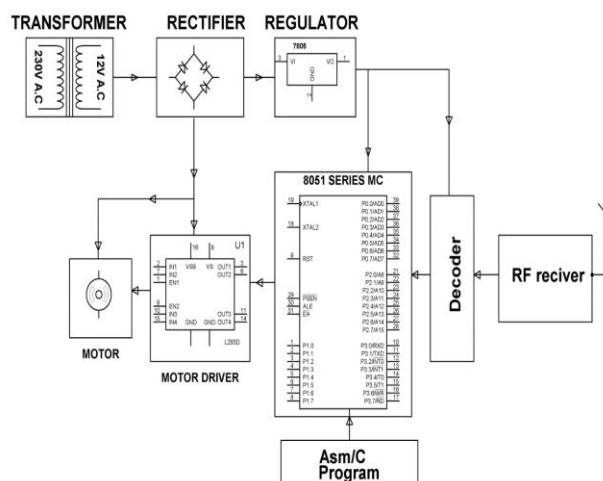


fig.(B) Receiver section block diagram

Decoding is usually performed by using microcontrollers This receiver simply removes 38 KHz carrier signal and gives clean pulses that are used for device control

III. COMPONENTS

A. DC motor

A DC motor is an electric motor that runs on direct current (DC) electricity. In any electric motor, operation is based on simple electromagnetism. Every DC motor has six basic parts -- axle, rotor, stator, commutator, field magnet(s), and brushes.

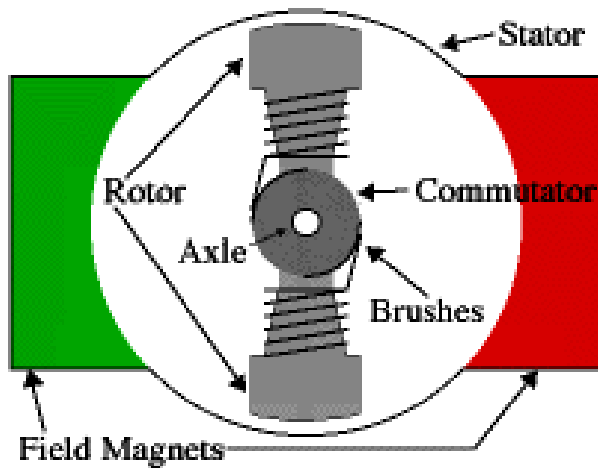


Figure1.DC mot

B. Voltage regulator

A voltage regulator is designed to automatically maintain a constant voltage level. A voltage regulator may be a simple "feed-forward" design or may include negative feedback control loops. It may use an electromechanical mechanism, or electronic components. Depending on the design, it may be used to regulate one or more AC or DC voltages

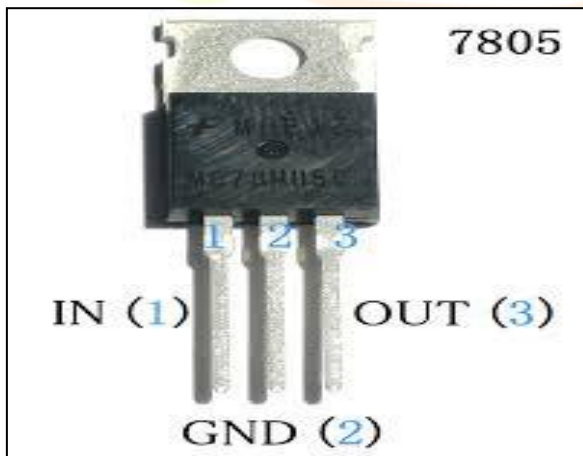


Figure2.voltage regulator

Electronic voltage regulators are found in devices such as computer power supplies where they stabilize the DC voltages used by the processor and other elements. In automobile alternators and central power station generator plants, voltage regulators control the output of the plant. In an electric power distribution system, voltage regulators may be installed at a substation or along distribution lines so that all customers receive steady voltage independent of how much power is drawn from the line.

C. Remote control

IR remote control is a device you can find everywhere where you can find TV, VCR or home theatre.

As we know remote control devices uses IR light. This is invisible light about 950nm wavelength. One biggest problem in using IR light is that there many other sources of it like sun, light bulbs, fire. In order to exclude other sources, IR signal is modulated by some frequency. Receiver has to be tuned for this frequency. Mostly remote controls transmit IR signal using 38kHz frequency signals. Transmitting and coding is one part which can be done more easily than receiving and decoding.

D. RF TRANSMITTER AND RECEIVER



Figure3 RF Transmitter

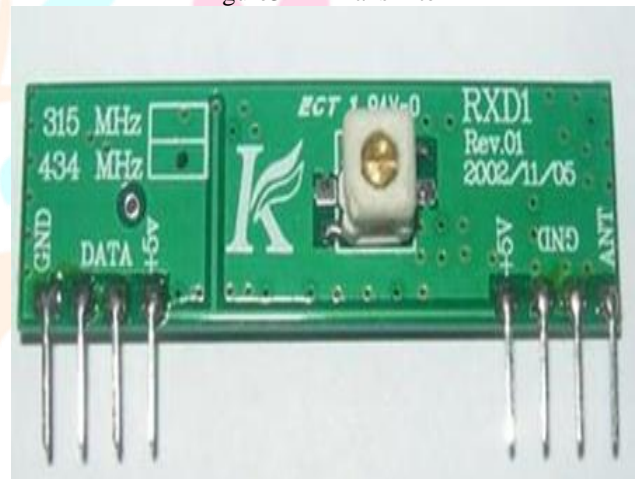


Figure 4 RF Receiver

RF modules are divide in to two groups,RF transmitter will transmitted data which encode by encoder.

RF receiver will receive data in to 4 bit digital data which has send to the microcontroller.

433MHz transmitter and receiver is used for the remote control.

IV. CONCLUSION

By doing this project we can say that motor control through remote device is possible by coding in mat lab. Electrical load can control forward and reverse direction and also control the speed of dc motor through remote. According to click event on remote, the electrical equipment is being controlled. Our project can be implementing in industry where remote based controlling required.

V. REFERENCES

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