Speed Control of DC Motor Using Arduino

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Abstract: This proposed system consists of ATMega328 microcontroller, 9v battery, 12vdc mot, one npn transistor, one diode, one micro farad capacitor, 1kilo ohm resistor and one pressure button. This method was used to control the speed of the DC motor. The control signals are transferred from Arduino UNO microcontroller to pressure button. Diode is used for protection of motor. Capacitor is used for bypass the noise generated from the motor. By using pressure switch the speed of motor can vary at five different level. The speed of motor depends upon the strength of arduino.

1. Introduction

Arduino is used for supply signal and increase the motor speed. Pressure switch is used to get five different level of speed. Diode is used for protect motor from high reversal current. Capacitor is used for bypass the noise generated by the motor. A npn transistor is used for switching purpose. A 9volt battery is used input for the motor. A resistor is used with npn transistor.

2. Objective

The objective of this project is to increase the speed of DC motor by the help of arduino, n-p-n transistor, diode and capacitor.

3. Scope

The project focuses on the accessibility of devices. Giving a remote control to regulate the speed of fan using pressure button. This project covers a vast area as per as application is concerned. It could be used in medical, defense and even in houses.

4. Programme and code

table

```
void setup()
{
    pinMode(3, OUTPUT);  // sets the pin3 as output
    pinMode(0, INPUT);// sets the pin0 as output
    pinMode(1, INPUT);// sets the pin1 as output
}

void loop()
{
    analogWrite(3, i);  // analogWrite values from 0 to 255
    if (digitalRead(0)==LOW)
    {
        if (i<255)
        {
            i++;if pin0 is pressed
        }
    }
    delay(30);
    if (digitalRead(1)==LOW)
    {
        if (i>0)
        {
            i--;if pin1 is pressed
        }
    }
    delay(30);
}
```

6. Arduino Uno Arduino is an open source, computer hardware and software company, project, and user community that designs and manufactures microcontroller kits for building digital devices and interactive objects that can sense and control objects in the physical world. The project's products are distributed as open-source hardware and software, which are licensed under the GNU Lesser General Public License (LGPL) or the GNU General Public License (GPL),[1] permitting the manufacture of Arduino boards and software distribution by anyone. Arduino boards are available commercially in preassembled form, or as do-it-yourself kits.
Arduino board designs use a variety of microprocessors and controllers. The boards are equipped with sets of digital and analog input/output (I/O) pins that may be interfaced to various expansion boards (shields) and other circuits. The boards feature serial communications interfaces, including Universal Serial Bus (USB) on some models, which are also used for loading programs from personal computers. The microcontrollers are typically programmed using a dialect of features from the programming languages C and C++. In addition to using traditional compiler toolchains, the Arduino project provides an integrated development environment (IDE) based on the Processing language.

The Arduino project started in 2003 as a program for students at the Interaction Design Institute Ivrea in Ivrea, Italy,[2] aiming to provide a low-cost and easy way for novices and professionals to create devices that interact with their environment using sensors and actuators. Common examples of such devices intended for beginner hobbyists include simple robots, thermostats, and motion detectors.

The name Arduino comes from a bar in Ivrea, Italy, where some of the founders of the project used to meet. The bar was named after Arduin of Ivrea, who was the margrave of the March of Ivrea and King of Italy from 1002 to 1014.

7. Circuit diagram

![Circuit diagram](image)

8. Advantage

- It is easy to use system.
- No need of extra training is required for new users. It is user friendly.
- All the control would be in your hands.
- There will be a future scope in field of power robotics.

9. Acknowledgement

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10. Conclusion

The project is purposed on the working of Arduino and an npn transistor due to this the cost of the project is not high. It is easy method to control the speed of dc motor.

11. Reference