FIT0441 Brushless DC Motor with Encoder 12V 159RPM


Contents

Introduction

This is a new brushless DC motor with the added bonus of a built-in motor driver - this means it doesn't need any external motor drivers and you can connect it to an Arduino directly!

The motor comes with direction control, PWM rotational speed control and frequency feedback output. It is suitable for miniature-sized mobile robotic platforms. With the motor speed feedback signal, it is useful in cyclic control systems.

Specification

- Operating Voltage: 12V
- Motor Rated Speed: 7100-7300rpm
- Torque: 2.4kg*cm
- Speed: 159 rpm/min approx.
- Reduction ratio: 45:1
- Signal cycle pulse number: 45*6 (Each cycle outputs 6 pulse)
- Control mode:
  PWM speed control
  Direction control
  Feedback pulse output
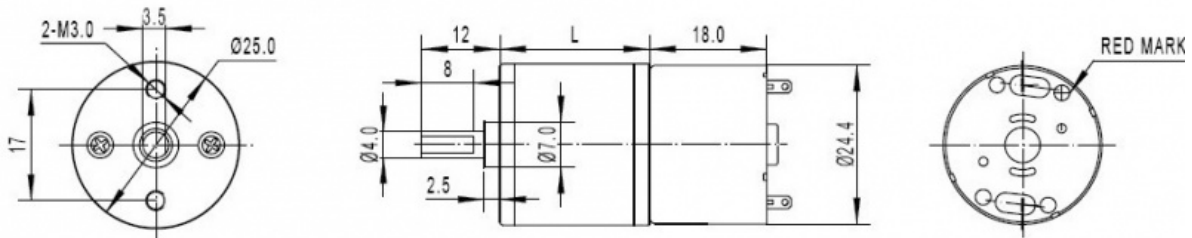
Pins
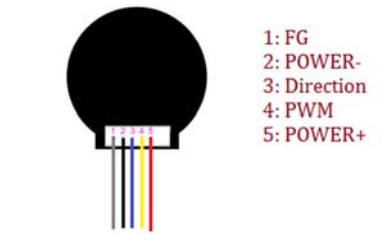
Label	Name	Description
1	black	POWER- (GND)
2	red	POWER+ (12V)
3	yellow	FG frequency feedback output
4	white	PWM Control, 0-5V
5	blue	Direction Pin: +5V or dangling, motor moves forward; GND or cathode, motor moves backward.

|}

Tutorial

Here is a example how to use this motor, Just follow the guide, and you will get it work.
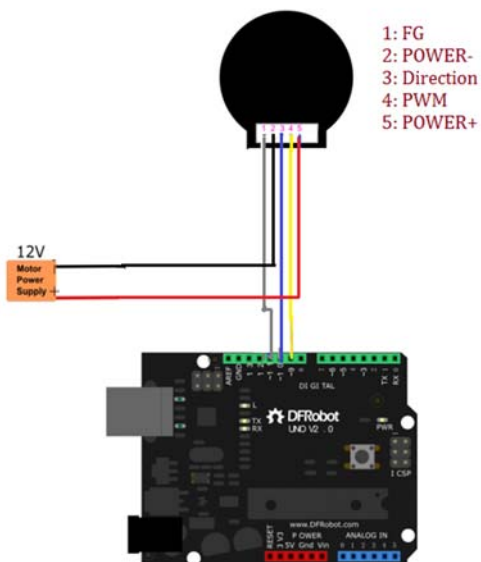
Requirements

First, prepare the following hardware and software.

- **Hardware**
  UNO x1
  Motor x1

- **Software**
  Arduino IDE V1.6.5 Click to Download Arduino IDE

Connection Diagram

After the hardware, the module is connected with the UNO in the following diagram.

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FIT0441-C.png (516 × 575 pixels, file size: 62 KB, MIME type: image/png)

https://www.dfrobot.com/wiki/index.php/File:FIT0441-C.png

Sample Code

1. Open the Arduino IDE and copy the following code to the IDE. Select your board's serial port and the board type (e.g. Arduino UNO) and upload the sample code.
2. Open the Serial monitor.
3. Enter a number **between 0 and 255** to set the motor's speed. (0: Maxmum speed; 255: Stop)
* The code will alternates its rotation direction every 5 seconds.

```
int i = 0;

unsigned long time = 0;

bool flag = HIGH;


void setup() {
  // put your setup code here, to run once:
  Serial.begin(115200);
  pinMode(10, OUTPUT); //PWM PIN 10  with white line
  pinMode(11, OUTPUT);//direction control PIN 11 with blue line
}


void loop() {
  // put your main code here, to run repeatedly:
  if (millis() - time > 5000)  {
    flag = !flag;
    digitalWrite(10, flag);
    time = millis();
  }
  if (Serial.available())  {
    analogWrite(11, Serial.parseInt());   //input speed (must be int)
    delay(200);
  }
  for(int j = 0;j<8;j++)  {
    i += pulseIn(9, HIGH, 500000); //SIGNAL OUTPUT PIN 9 with  white line,cyc
le = 2*i,1s = 1000000us, Signal cycle pulse number : 27*2
  }
  i = i >> 3;
```

```
Serial.print(111111 / i); //speed    r/min   (60*1000000/(45*6*2*i))

Serial.println("  r/min");

i = 0;
```

}