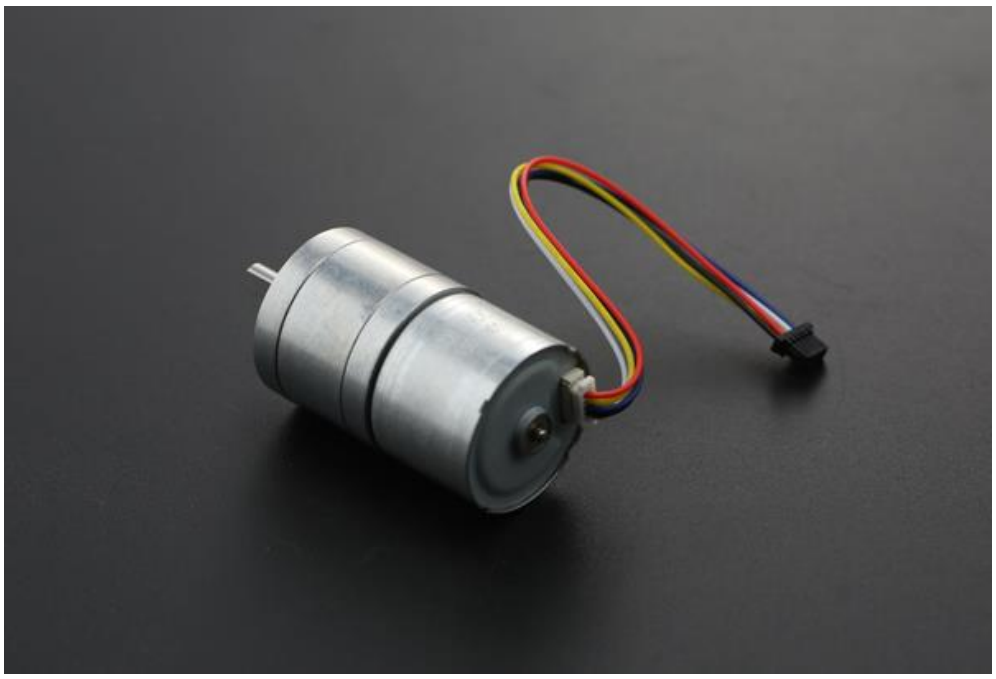


Brushless DC Motor with Encoder 12V 159RPM

SKU:FIT0441

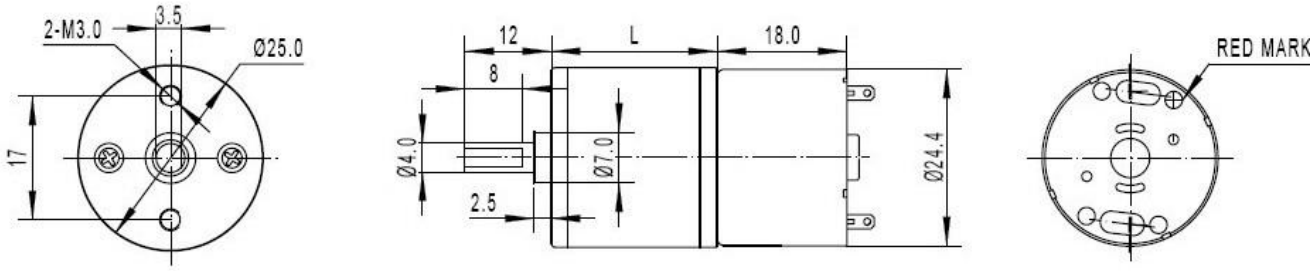
Introduction

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 board directly!

The brushless 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	PWM	PWM Control, 0-5V (20~30KHz)
2	Power -	POWER- (GND)
3	Direction	Direction Pin:+5V or dangling, motor moves forward; GND or cathode, motor moves backward.
4	FG	FG signal pin(need a pull-up resister-5k)
5	Power +	POWER+ (12V)

⚠️ **NOTE**: Sometime, the manufacturer provides a different color cable, but the cable order is same.

Tutorial

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

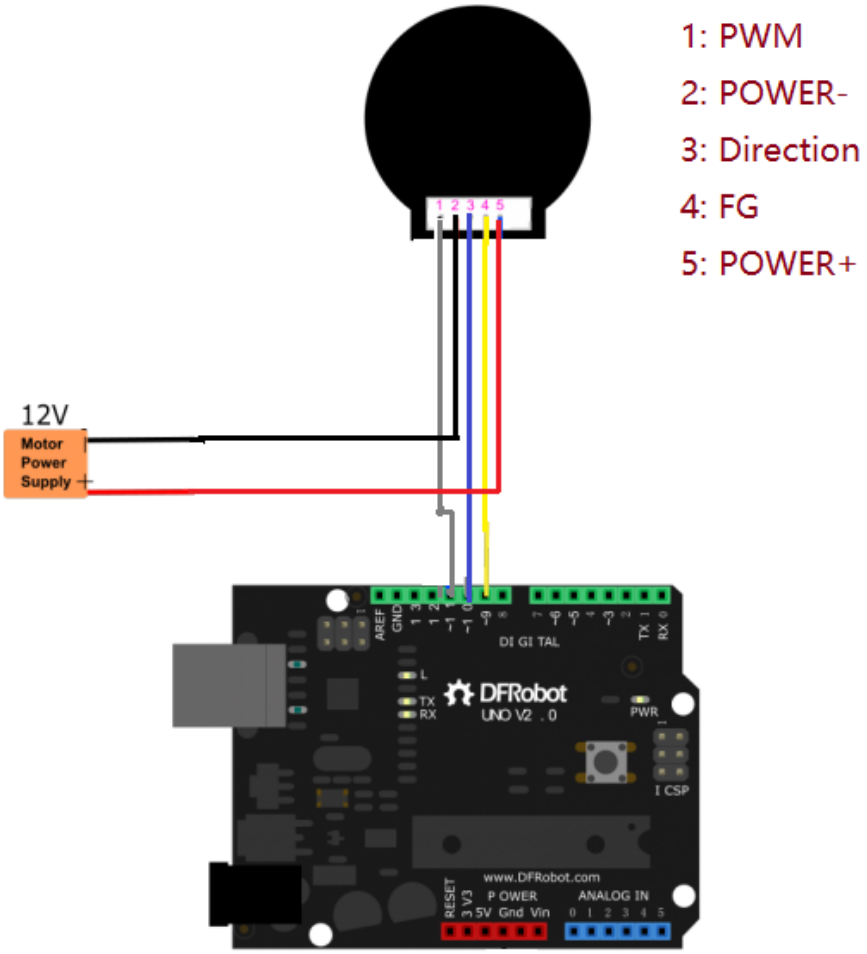
Requirements

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.



⚠ **NOTE**: Remember to connect Arduino GND to the POWER-.

Sample Code

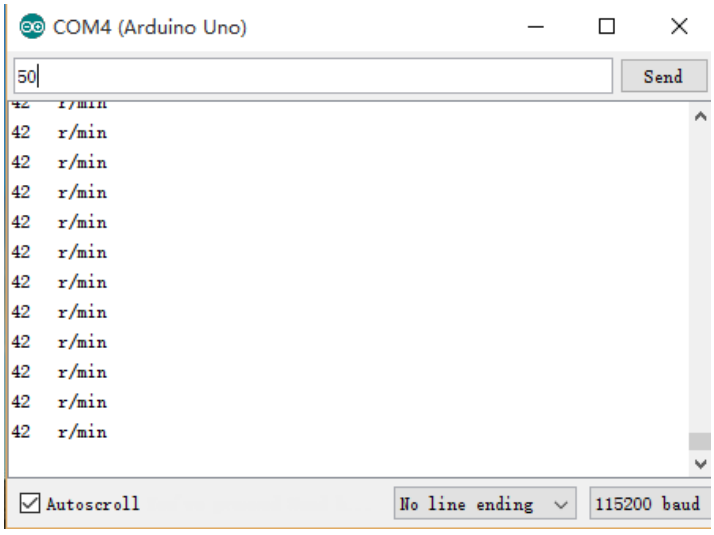
1. Open the Arduino IDE and copy the following code to the IDE. Select your board's serial port and the board type (e.g. Arduino UNO) and upload the sample code.
2. Open the Serial monitor.
3. Enter a number **between 0 and 255** to set the motor's speed. (0: Maxmum speed; 255: Stop)
    - The code will 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); //direction control PIN 10 with direction wire
  pinMode(11, OUTPUT); //PWM PIN 11  with PWM wire
}

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,cycle =
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;
}
```

Expected Results



More Documents

If you have any questions or cool ideas to share, please visit the **DFRobot Forum**