

(<https://www.dfrobot.com/product-1512.html>)

## Introduction

This is an ultra small **DC motor driver** (<https://www.dfrobot.com/category-105.html>) for small scale projects using the popular IC - LM2575. This provides a powerful way to drive 36V @ 15A motors. UVLO (Under Voltage Latch-Out) features a safe guard for your system. It is very considerate to



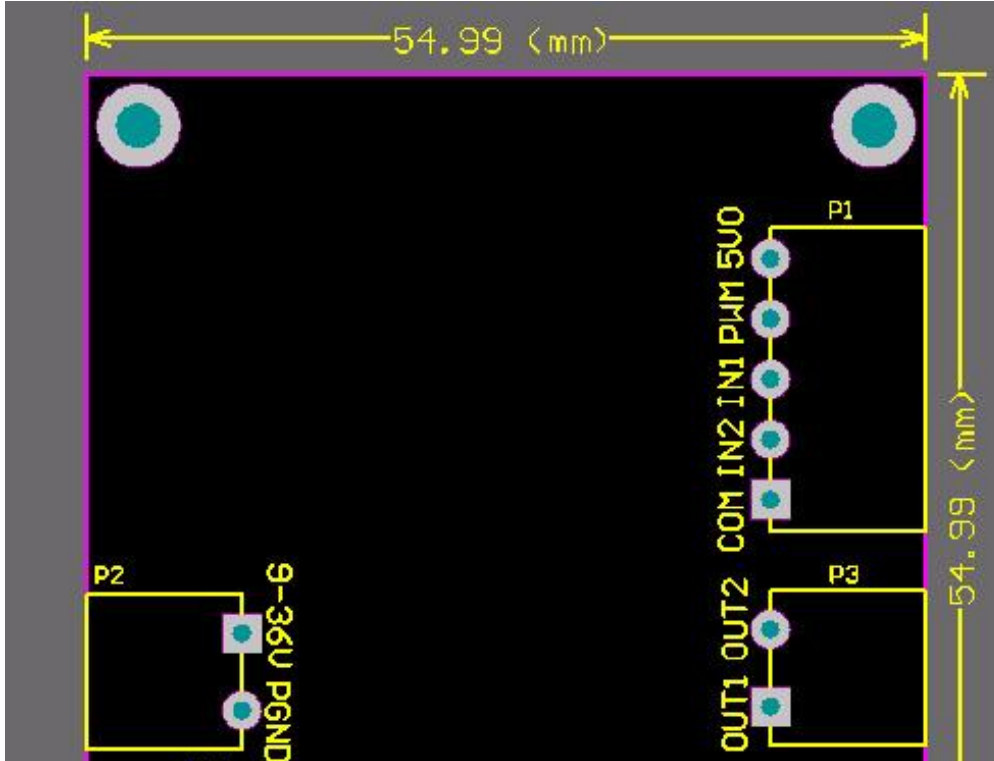
own a 5V output for Arduino or any other devices, and its interface includes ESD (electro-static discharge) protection.

## Specification

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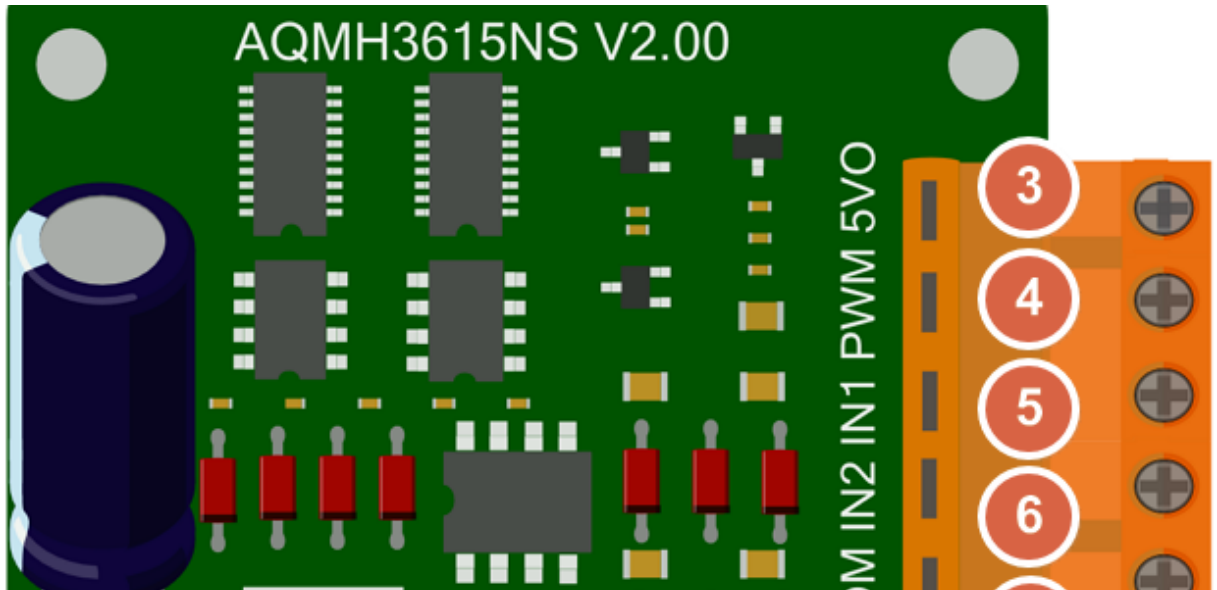
- Voltage supply: DC 12 ~ 36 V
- Voltage supply limit: 6.5 ~ 40 V
- Control signal Level (Compatible 3.3V/5V)
  - High: DC 2.0 ~ 5.5 V
  - Low: DC 0 ~ 0.8 V
- Maximum continuous operating current:
  - 12A (no heat sink)
  - 15A (with simple heat sink)
  - 20A (with Thick Heat Sink/ Cooling System)
- Peak current: 110 A
- Speed control: PWM
  - Minimum valid Pulse Width: 200 ns
- Maximum Output Current @5V: 500 mA
- Working Temperature: 25 ~ 85 °C

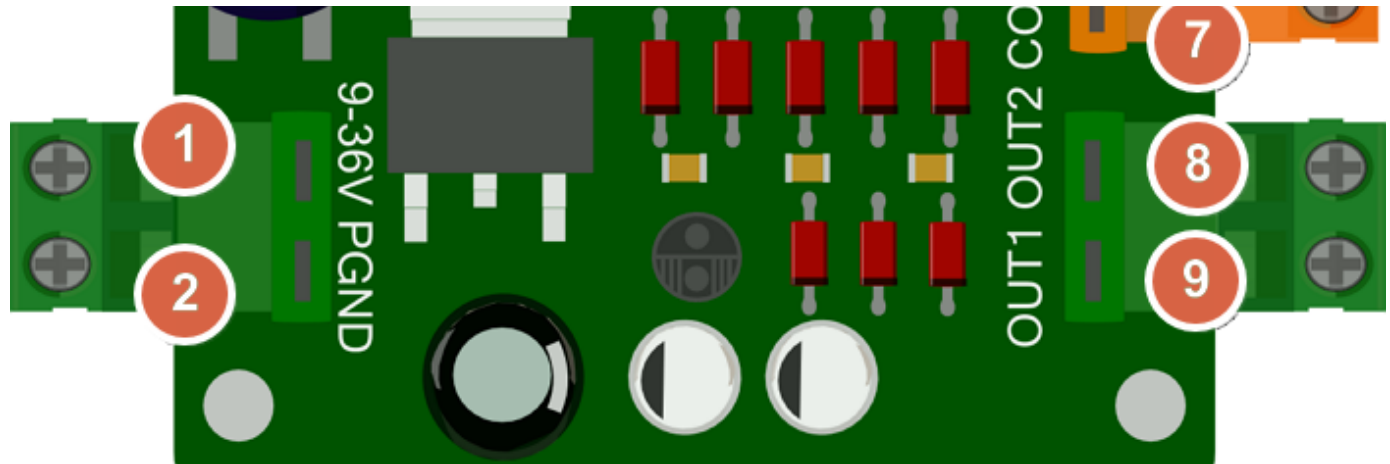
- working temperature: -25 ~ 85 °C
- Mounting Hole: M3
- Dimension (Length \* Width \* Height): 55 x 55 x 20(mm)/2.165 x 2.165 x 0.787 (in)
- Weight: 42g





## Board Overview





Num	Label	Description
1	9 - 36V	Power Supply,
2	PGND	Power Supply, GND/ -
3	5VO	5V Output, you can use this power to feed Arduino through Arduino's 5V port, NOT Vin which requires 7-12V input
4	PWM	Speed control signal input
5	IN1	Motor steering control signal input 1. <b>Note1</b>

Num	Label	Description
5	IN1	Motor steering control signal input 1, NOTED
6	IN2	Motor steering control signal input 2
7	COM	GND

8	OUT2	Motor_
9	OUT1	Motor_-

### Control Method

IN1	IN2	PWM	OUT1, OUT2 Motor Behavior
0	0	x	Stop
1	1	x	Vacant
1	0	1	Forward 100%
0	1	1	Reverse 100%
1	0	PWM	Forward at PWM speed

IN1	IN2	PWM	OUT1, OUT2 Motor Behavior
0	1	PWM	Reverse at PWM speed

### In this table

- "0": TTL\_Low
- "1": TTL\_High
- "PWM": PWM speed setting
- "x": Any TTL, and it is default TTL\_Low while no PWM signal.

**Note1:** IN1 & IN2 To protect your motor, before switching the motor steering direction, make sure firstly to BRAKE motor by setting **IN1 - 0 & IN2 - 0**, especially when the PWM was set as 100%, full speed. And the suggestion time to brake is >0.1S, depending on your motor.

## Tutorial

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Here you will learn how to use PWM signal to control the motor through this motor driver, do some wiring according to the Connection Diagram below, and then upload the sample code

below to the Arduino card, here we use a UNO as the controller, you could see your motor run forward for 3 second and then run reversely for another 3 seconds and repeat this behavior then.

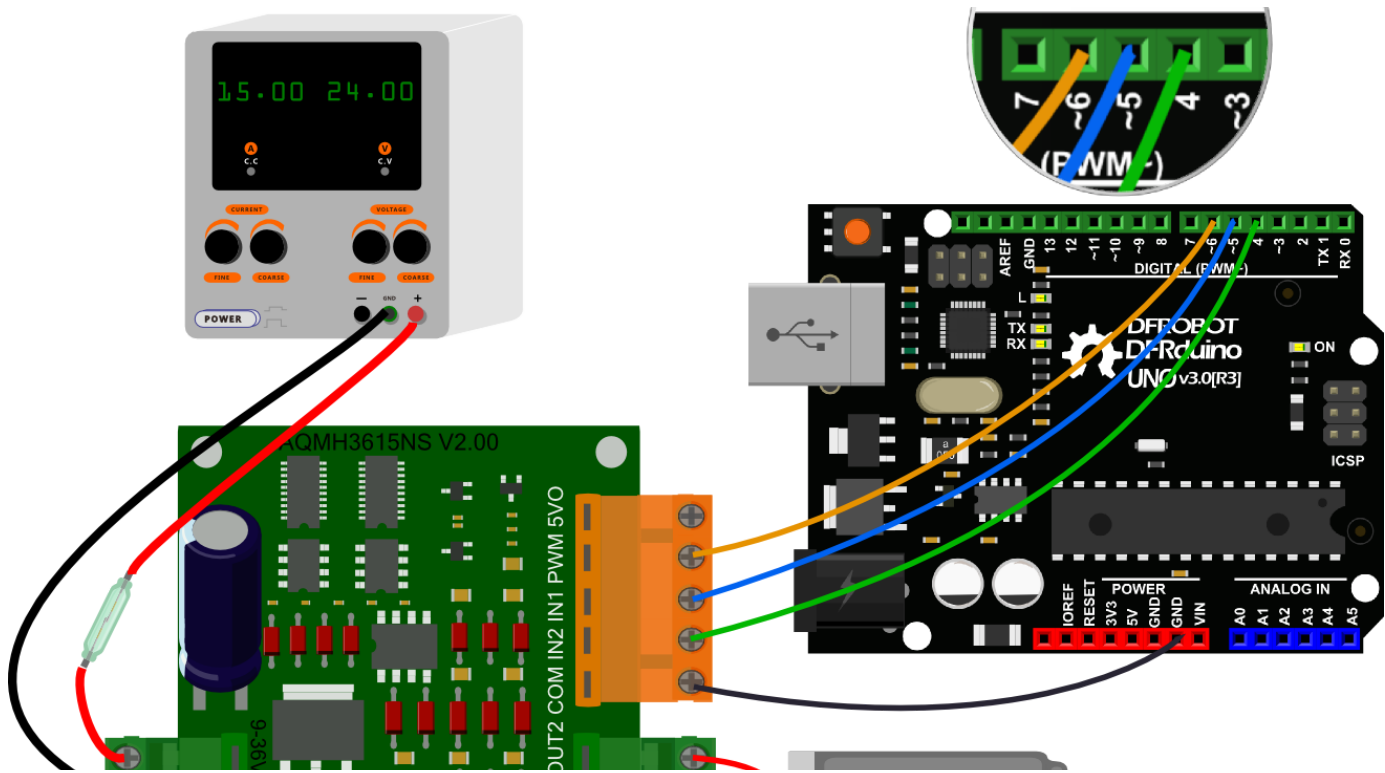
This tutorial will cover how to use PWM to control a motor using the shield.

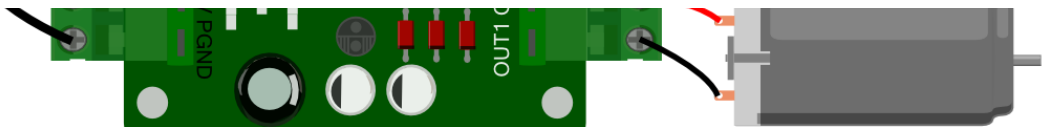
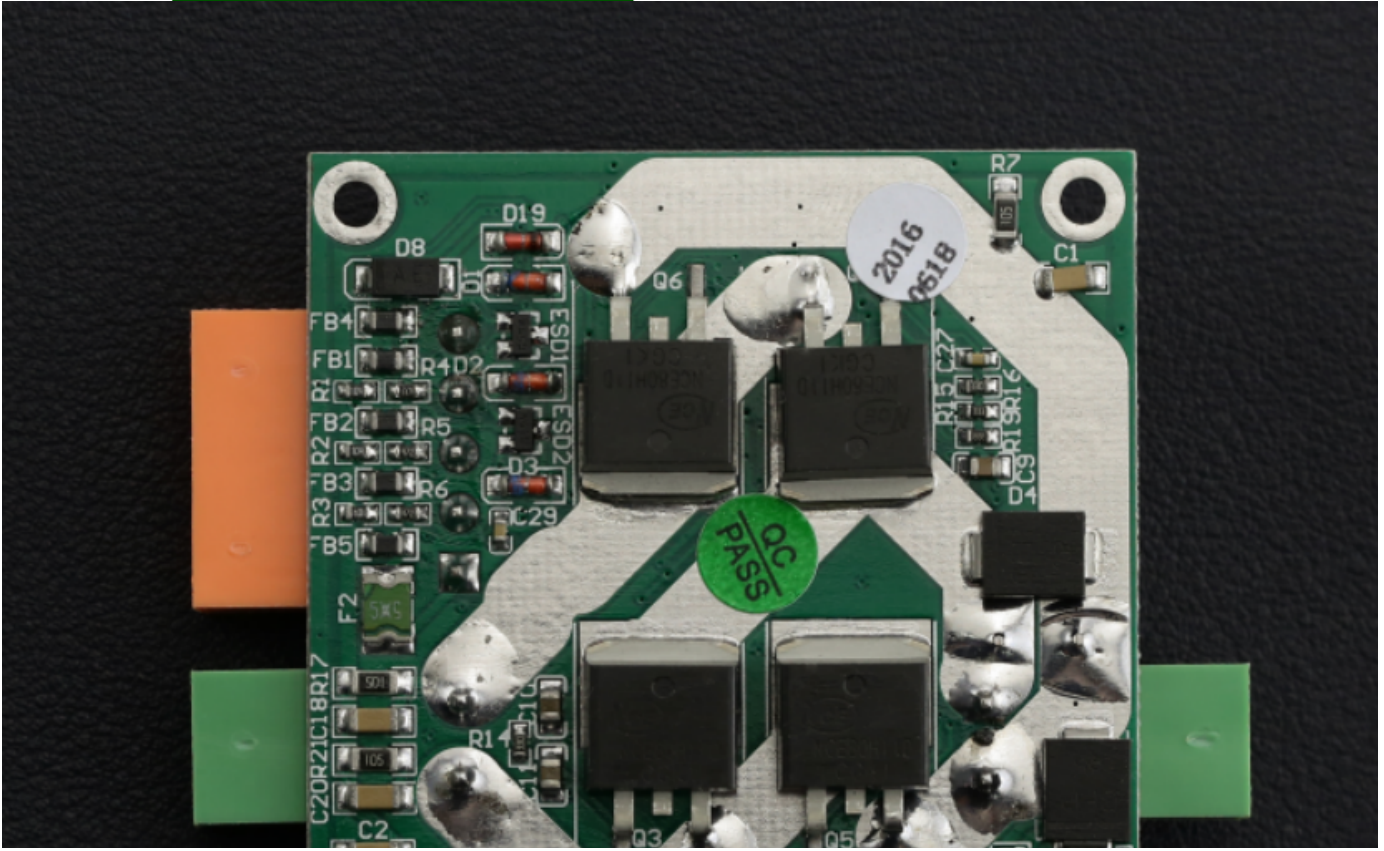
## Requirements

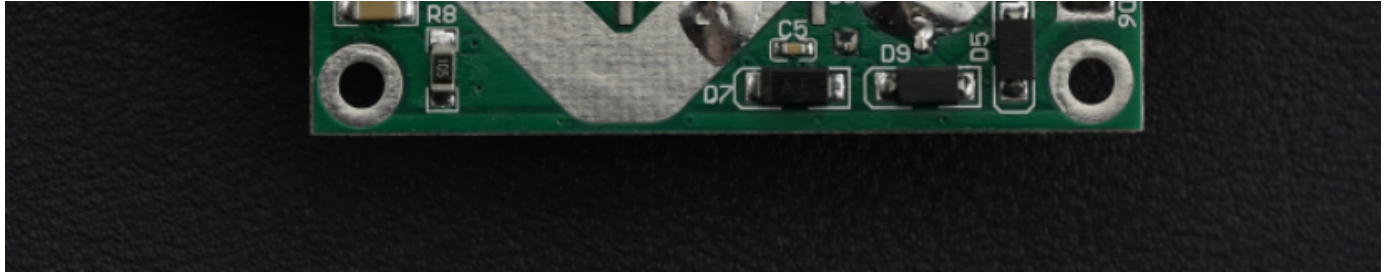
- **Hardware**
  - 1 x **DFRduino UNO** (<https://www.dfrobot.com/product-838.html>) (or similar)
  - 1 x **DC Motor Driver** (<https://www.dfrobot.com/product-1512.html>)
  - 1 x DC Motor
  - 1 x Fuse@20A
  - Jumper wires
- **Software**
  - Arduino IDE (<https://www.arduino.cc/en/Main/Software>) Click to Download Arduino IDE from Arduino®.

## Connection Diagram





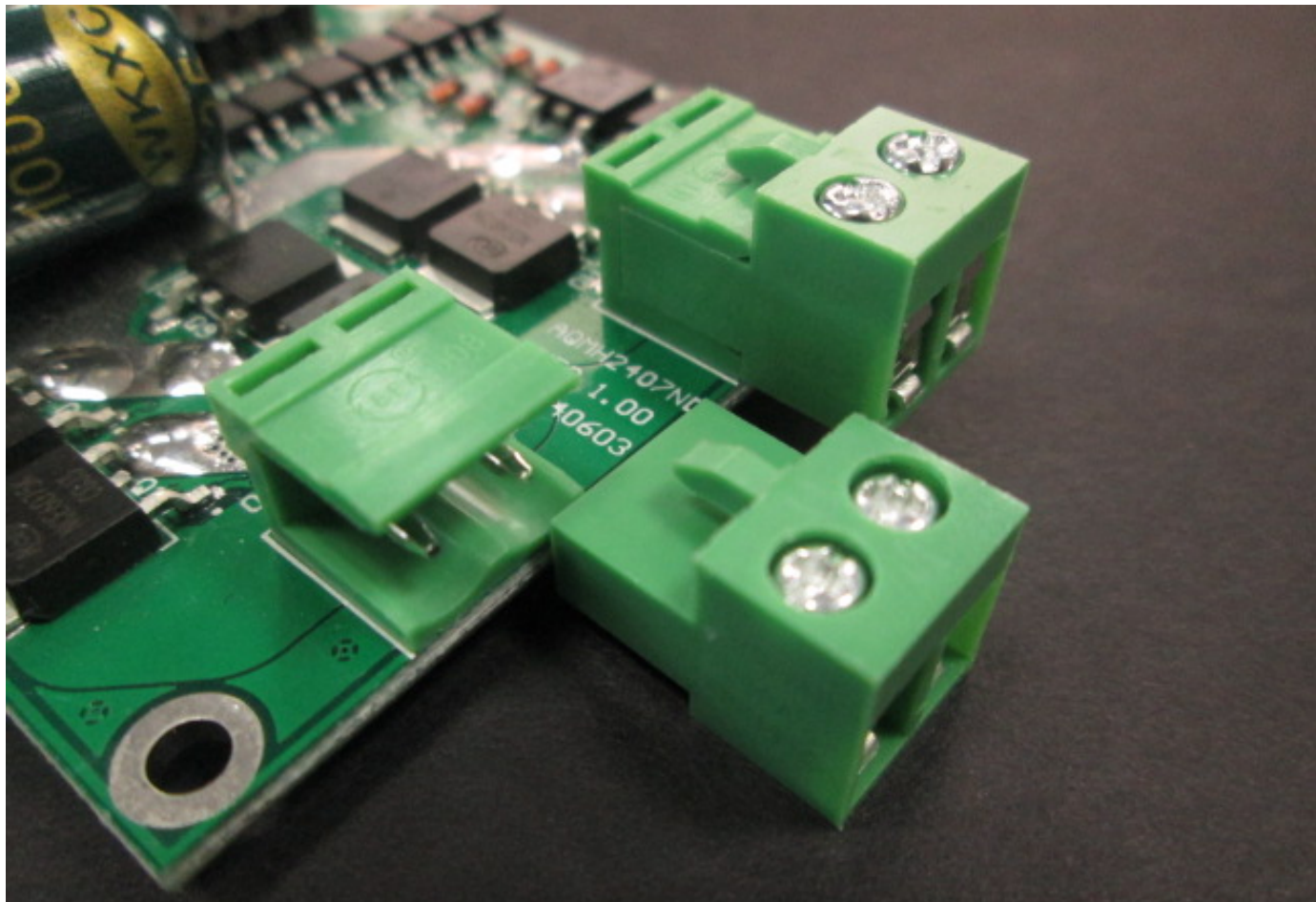




**Facility Safety and the Personal Safety:** Please add a fuse@20A between the Power source and the module (9-36V). The 5VO port is for 5V output for other module, can NOT be used as Power\_In.

**Installation Tips** The module needs a cooling system once your motor runs over 15 amps, like Electronics Blower Fan ([https://www.dfrobot.com/index.php?route=product/product&product\\_id=793&search=cooling&description=true](https://www.dfrobot.com/index.php?route=product/product&product_id=793&search=cooling&description=true)), Heatsink ([https://www.dfrobot.com/index.php?route=product/search&search=Heatsink&category\\_id=48&description=true](https://www.dfrobot.com/index.php?route=product/search&search=Heatsink&category_id=48&description=true)), etc. The backside of the driver, as right-hand picture shows, that its conducting layer can be very wide, so you should take some measurements to ensure it won't **short-circuit**, like applying 1mm layer conductive epoxy or any other similar materials.

**Important: Pluggable Connector** You may find that the connector is designed as pluggable type to adapt with Male or Female wires.



## Sample Code

```
/*
 * @file Motor driver DRI0042_Test.ino
 * @brief DRI0042_Test.ino Motor control program
 *
 * control motor positive inversion
 *
 * @author bernie.chen@dfrobot.com
 * @version V1.0
 * @date 2016-8-10
 */
const int IN1=5;
const int IN2=4;
const int PWM=6;

void setup() {
    pinMode(IN1, OUTPUT);
    pinMode(IN2, OUTPUT);
    pinMode(PWM, OUTPUT);
}
```

```
},

void loop() {
    Motor_Brake();
    delay(100);

    Motor_Forward(200);//Forward, PWM setting 0-255
    delay(3000);
    Motor_Brake();
    delay(100);
    Motor_Backward(200);//Reverse, PWM setting 0-255
    delay(3000);
}

void Motor_Forward(int Speed) {
    digitalWrite(IN1,HIGH);
    digitalWrite(IN2,LOW);
    analogWrite(PWM,Speed);
}

void Motor_Backward(int Speed) {
    digitalWrite(IN1,LOW);
    digitalWrite(IN2,HIGH);
    analogWrite(PWM,Speed);
}
```

```
void Motor_Brake(){
    digitalWrite(IN1,LOW);
    digitalWrite(IN2,LOW);
}
```


## FAQ

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Q	<b>General Arduino Problems/FAQ/Tips</b>
A	Click the topic link ( <a href="https://www.dfrobot.com/forum/viewtopic.php?f=8&amp;t=1869&amp;p=8624#p8624">https://www.dfrobot.com/forum/viewtopic.php?f=8&amp;t=1869&amp;p=8624#p8624</a> ) on DFRobot Forum.
A	For any questions, advice or cool ideas to share, please visit the <b>DFRobot Forum</b> ( <a href="https://www.dfrobot.com/forum/">https://www.dfrobot.com/forum/</a> ).

## More Documents

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 DFshopping\_car1.png Shopping from **15A Single DC Motor Driver** (<https://www.dfrobot.com/product-1512.html>) or **DFRobot Distributor**.

[https://www.dfrobot.com/product-1512.html](#) or [DFRobot Distributor](#)

(<https://www.dfrobot.com/index.php?route=information/distributorslogo>)

Category: **DFRobot** (<https://www.dfrobot.com/>) > **Sensors & Modules**

(<https://www.dfrobot.com/category-156.html>) > **Motors & Actuators & Drivers**

(<https://www.dfrobot.com/category-51.html>) > **DC Motor Drivers**

(<https://www.dfrobot.com/category-105.html>)

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