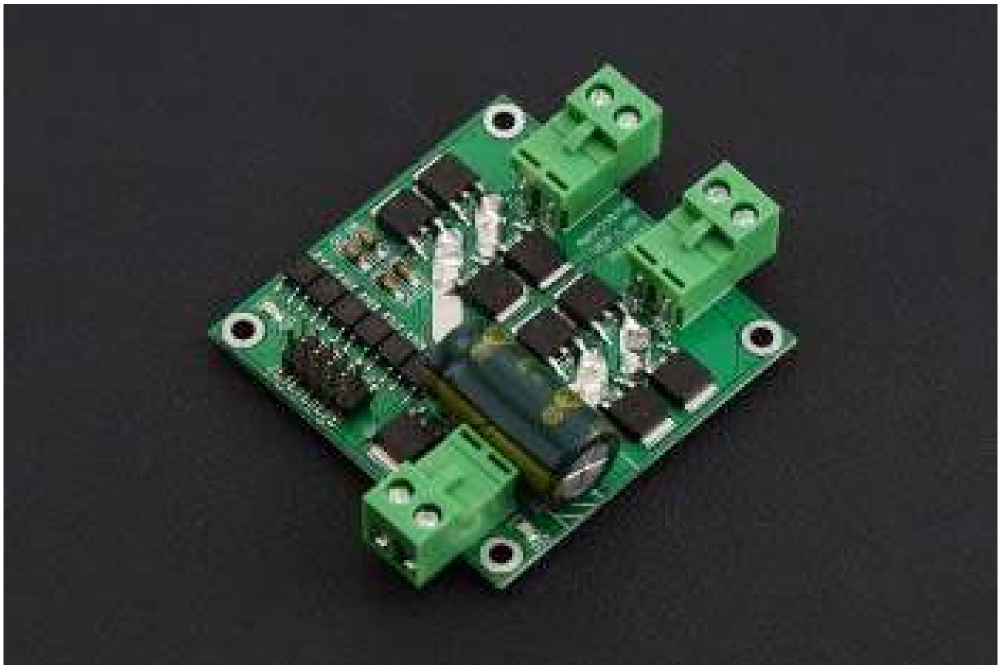
7A Dual DC Motor Driver

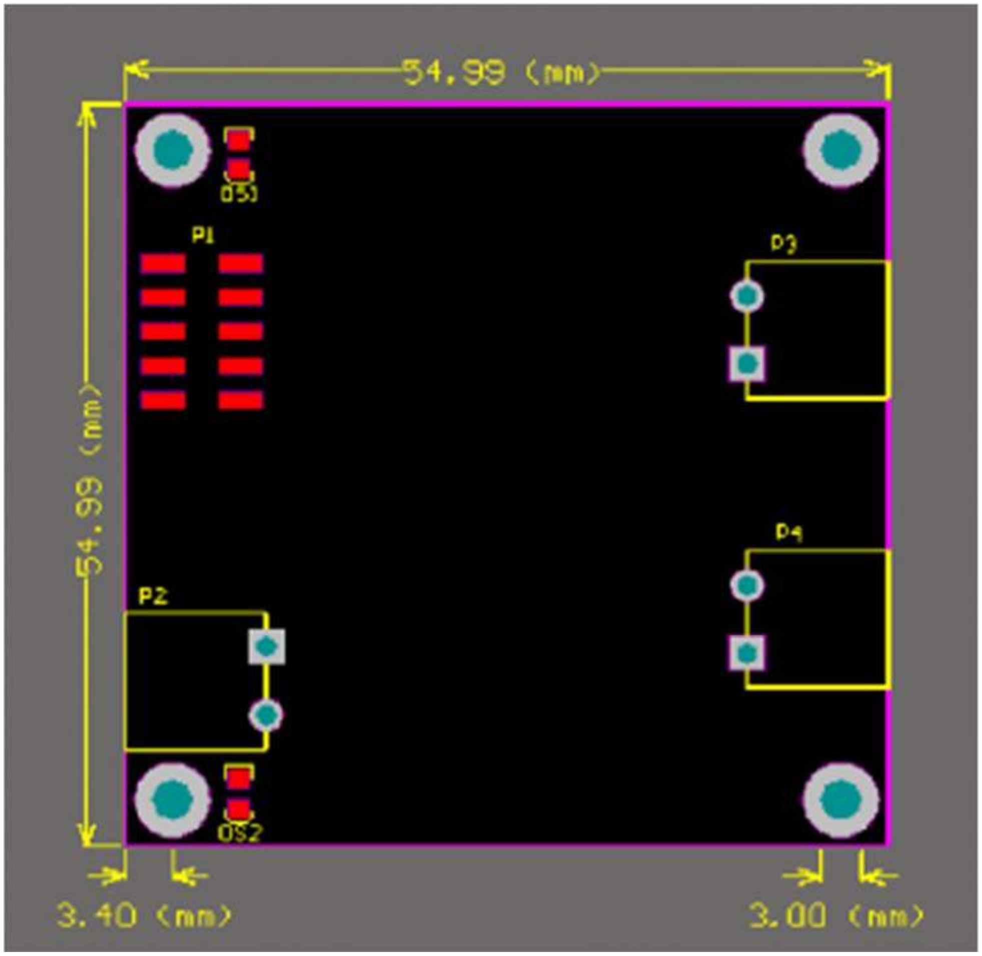
SKU: DRI0041



Introduction

This is an ultra small Dual **DC motor driver** for some room limited projects. UVLO (Under Voltage Latch-Out) features a safe guard for your system. It is very considerate to own an Photo Coupler isolation for all the signals in case of that the motor's Reverse Current would interfere the control signals. Besides all, all the interfaces includes ESD (electro-static discharge) protection.

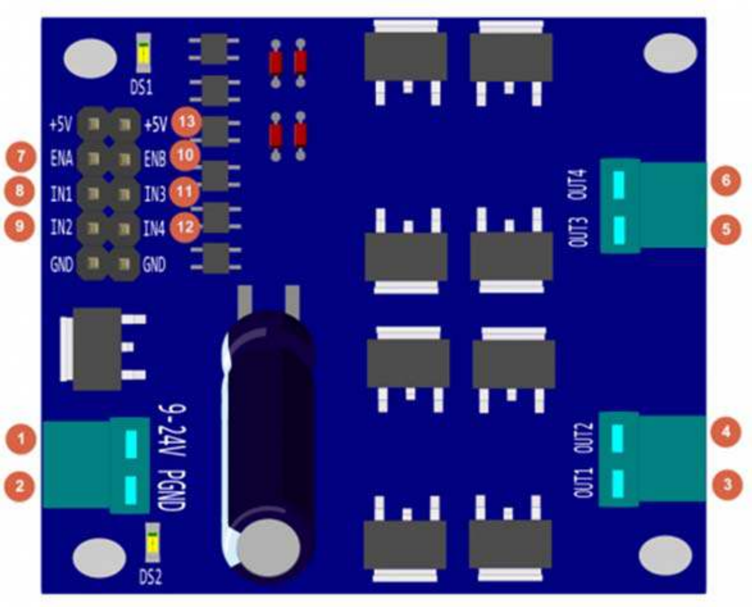
Specification



Dimension

- Voltage supply: DC 7 ~ 24 V
- Voltage supply limit: 6.5 ~ 27 V
- Control signal Level (Compatible 3.3V/5V)
  High: DC 3.0 ~ 6.5 V
  Low: DC0 ~ 0.8 V
- Output Channel: 2
- Control signal current: 3 ~ 11 mA (Each route)
- Maximum continuous operating current: 7 A
- Peak current: 50 A
- Speed control: PWM
  Minimum valid Pulse Width: 5 us
- Working Temperature: -25 ~ 85 °C
- Mounting Hole: M3
- Dimension (Length * Width * Height): 55 x 55(mm)/2.165 x 2.165(in)
- Weight: 32g

Board Overview



Num	Label	Description
1	9 - 24V	Power Supply, +
2	PGND	Power Supply, GND
3	OUT1	Motor1_+
4	OUT2	Motor1_-
5	OUT3	Motor2_+
6	OUT4	Motor2_-
7	ENA	Motor1 PWM
8	IN1	Motor1 control signal
9	IN2	Motor1 control signal
10	ENB	Motor2 PWM
11	IN3	Motor2 control signal
12	IN4	Motor2 control signal
13	+5V	Voltage Reference Input, +5V OR 3.3V

Control Method

IN1	IN2	ENA/ ENB	Motor1/2 Behavior
0	0	x	Stop (brake)
1	1	x	Vacant
1	0	1	Forward 100%
0	1	1	Reverse 100%
1	0	PWM	Forward at PWM speed
0	1	PWM	Reverse at PWM speed

In this table

- IN1 & IN2: the control signal input to change the motor behavior
- "0": TTL_Low
- "1": TTL_High
- "x": Any TTL, and it is default TTL_Low while no PWM signal.
- "ENA/ ENB": PWM speed setting

Note:

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.
+5V
When the microcontroller operation voltage is 5V/3.3V, then please connect the reference voltage 5V/ 3.3V from the microcontroller. Or you will fail to control motors.

Tutorial

This tutorial will cover how to use PWM to control a motor using the shield. Do the wiring according to the Connection Diagram below, and then upload the sample code below to the Arduino card, here we use a **arduino 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.

Requirements

Hardware

1 x DFRduino UNO (or similar)

1 x This 7A Dual DC Motor Driver

2 x DC Motor

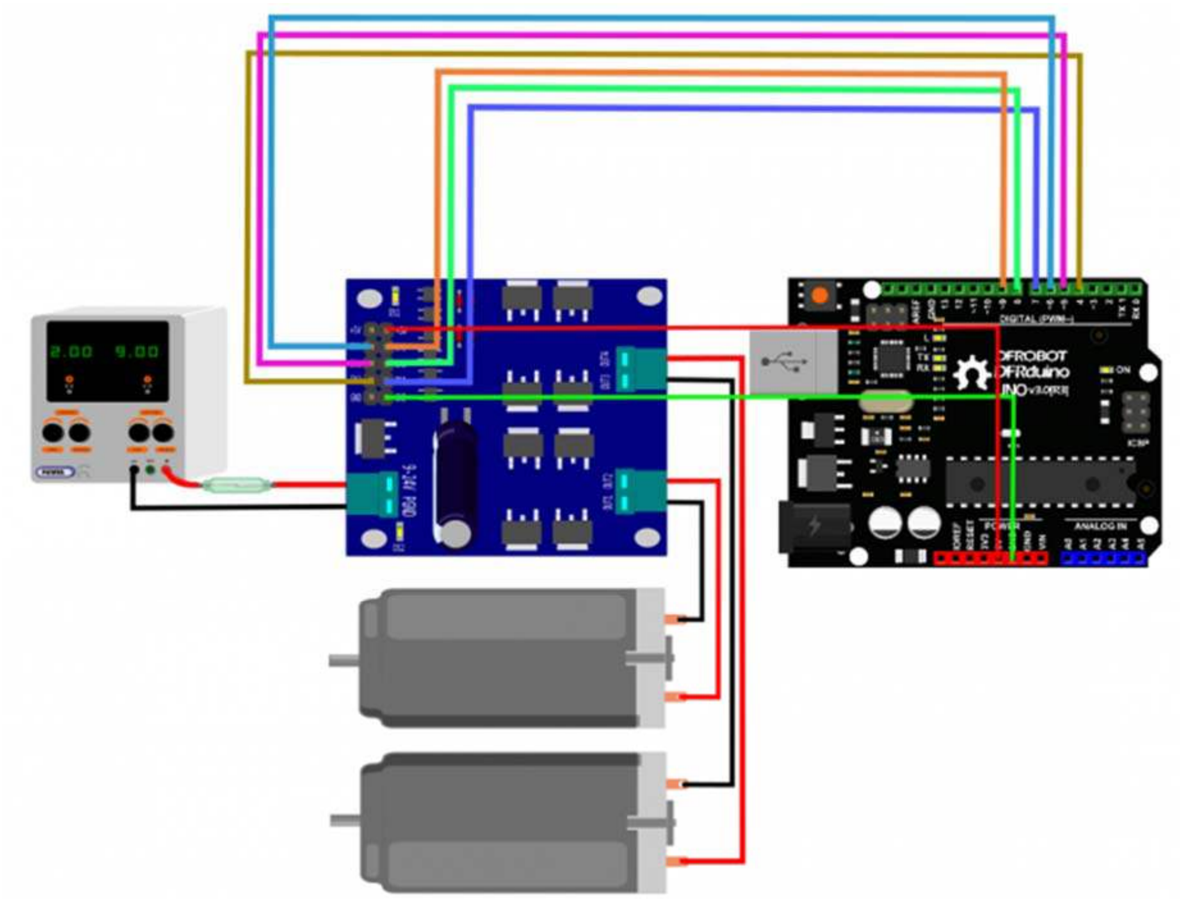
1 x Fuse@20A

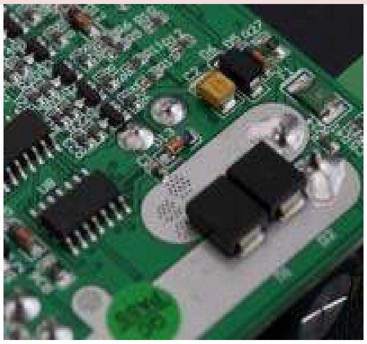
Jumper wires

Software

Arduino IDE, Click to Download Arduino IDE from Arduino® https://www.arduino.cc/en/Main/Software%7C

Connection Diagram



⚠ 

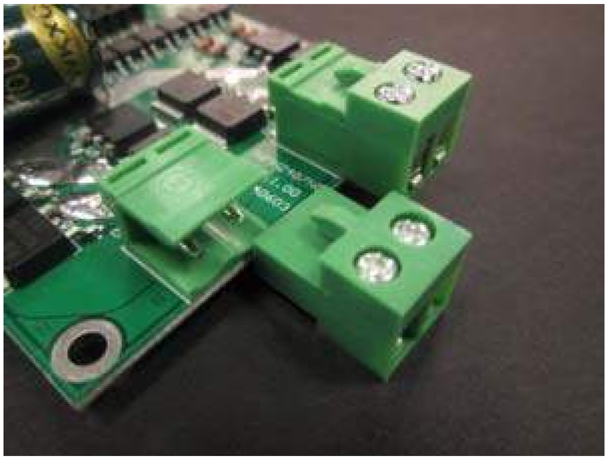
Back view, conductive layer

Facility Safety and the Personal Safety:
Please add a fuse@20A between the Power source and this shield.

Installation Tips
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.

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 ENA=6;

const int IN3=8;
const int IN4=7;
const int ENB=9;

void setup() {
     pinMode(IN1, OUTPUT);
     pinMode(IN2, OUTPUT);
     pinMode(ENA, OUTPUT);

     pinMode(IN4, OUTPUT);
     pinMode(IN3, OUTPUT);
     pinMode(ENB, OUTPUT);
}

void loop() {
 Motor1_Brake();
 Motor2_Brake();
 delay(100);
 Motor1_Forward(200);
 Motor2_Forward(200);
 delay(1000);
 Motor1_Brake();
 Motor2_Brake();
 delay(100);
 Motor1_Backward(200);
 Motor2_Backward(200);
 delay(1000);
}

void Motor1_Forward(int Speed)
{
     digitalWrite(IN1,HIGH);
     digitalWrite(IN2,LOW);
     analogWrite(ENA,Speed);
}

void Motor1_Backward(int Speed)
{
     digitalWrite(IN1,LOW);
     digitalWrite(IN2,HIGH);
     analogWrite(ENA,Speed);
}
void Motor1_Brake()
{
     digitalWrite(IN1,LOW);
     digitalWrite(IN2,LOW);
}
void Motor2_Forward(int Speed)
{
     digitalWrite(IN3,HIGH);
     digitalWrite(IN4,LOW);
     analogWrite(ENB,Speed);
```

```
}


void Motor2_Backward(int Speed)
{
     digitalWrite(IN3,LOW);
     digitalWrite(IN4,HIGH);
     analogWrite(ENB,Speed);
}
void Motor2_Brake()
{
     digitalWrite(IN3,LOW);
     digitalWrite(IN4,LOW);
}
```

For any questions, advice or cool ideas to share, please visit the **DFRobot Forum**.