

SKU:DRI0009 (<https://www.dfrobot.com/product-69.html>)

Introduction

This **2x2A DC Motor Shield for Arduino** (<https://www.dfrobot.com/product-69.html>) allows Arduino to drive two channel DC motors (<https://www.dfrobot.com/category-110.html>). It uses a L298N chip which delivers output current up to 2A each channel. The speed control is achieved through conventional PWM which can be obtained from Arduino's PWM output Pin 5 and 6. The enable/disable function of the motor control is signalled by Arduino (<https://www.dfrobot.com/category-35.html>) Digital Pin 4 and 7.

The Motor shield can be powered directly from Arduino (<https://www.dfrobot.com/category-35.html>) or from external power source. It is strongly encouraged to use external power supply to power the motor shield.

- Logic Control Voltage: 5V (From Arduino)
- Motor Driven Voltage: 4.8 ~ 35V (From Arduino or External Power Source)
- Logic supply current I_{ss} : $\leq 36\text{mA}$
- Motor Driven current I_o : $\leq 2\text{A}$
- Maximum power consumption: 25W ($T=75^\circ\text{C}$)
- PWM, PLL Speed control mode
- Control signal level:

High: $2.3\text{V} \leq V_{in} \leq 5\text{V}$ Low: $-0.3\text{V} \leq V_{in} \leq 1.5\text{V}$


Board Diagram

 Motor Shield

Control Mode Selection Jumpers: The shield supports PWM and PLL(Phased Locked Loop) control Modes. The PWM mode uses E1 and E2 to generate PWM signal. The PLL mode uses M1 and M2 to generate phase control signal.


 Control Mode Selection Jumpers

Motor Terminal: Two DC motors are connected to blue motor terminals. The male header behind the terminals are the same as the motor terminals.

 Motor terminal

PWRIN: The motors can be powered by external power supply when the motor current exceeds the limits provided from the Arduino. The switch between external and Arduino power is implemented by two jumpers.

- PWRIN: External Power
- VIN: Arduino Power

 The motors are powered by Arduino power supply

NOTE: When the motor shield is powered by external power source, make sure the external power source and Arduino have the same GND.

Control Signal Truth Table:

E1	M1		E2	M2	
L	X	Motor 1 Disabled	L	X	Motor 2 Disabled
H	H	Motor 1 Backward	H	H	Motor 2 Backward
PWM	X	PWM Speed control	PWM	X	PWM Speed control

Note: H is High level; L is Low level; PWM is Pulse Width Modulation signal; X is any voltage level

Pin Allocation

Pin	Function
Digital 4	Motor 1 Direction control

Digital 5	Motor 1 PWM control
Digital 6	Motor 2 PWM control
Digital 7	Motor 2 Direction control

"PWM Mode"

Pin	Function
Digital 4	Motor 1 Enable control
Digital 5	Motor 1 Direction control
Digital 6	Motor 2 Direction control
Digital 7	Motor 2 Enable control

"PLL Mode"

Shield diagram (<http://www.shieldlist.org/dfrobot/2a-motor>)

Sample Code

PWM Speed Control

```
//Arduino PWM Speed Control:
int E1 = 5;
int M1 = 4;
int E2 = 6;
int M2 = 7;

void setup()
{
    pinMode(M1, OUTPUT);
    pinMode(M2, OUTPUT);
}

void loop()
{
    int value;
    for(value = 0 ; value <= 255; value+=5)
    {
        digitalWrite(M1,HIGH);
        digitalWrite(M2, HIGH);
        analogWrite(E1, value);    //PWM Speed Control
        analogWrite(E2, value);    //PWM Speed Control
        delay(30);
    }
}
```


PLL Speed Control

```
//Arduino PLL Speed Control:
int E1 = 4;
int M1 = 5;
int E2 = 7;
int M2 = 6;

void setup()
{
  pinMode(M1, OUTPUT);
  pinMode(M2, OUTPUT);
}

void loop()
{
  int value;
  for(value = 0 ; value <= 255; value+=5)
  {
    digitalWrite(M1,HIGH);
    digitalWrite(M2, HIGH);
    analogWrite(E1, value); //PLL Speed Control
    analogWrite(E2, value); //PLL Speed Control
    delay(30);
  }
}
```

More Documents

 Get **Arduino Motor Shield (L298N)** (<https://www.dfrobot.com/product-69.html>) from DFRobot Store or **DFRobot Distributor**. (<https://www.dfrobot.com/index.php?route=information/distributorsloqo>)

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