



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



## DC Motor Driver 2x15A Lite (SKU: DRI0018)

From Robot Wiki



### Contents

- 1 Introduction
- 2 Specification
- 3 Tutorial
  - 3.1 Diagram
  - 3.2 Sample Code
    - 3.2.1 PWM mode
    - 3.2.2 PLL mode
- 4 Trouble shooting

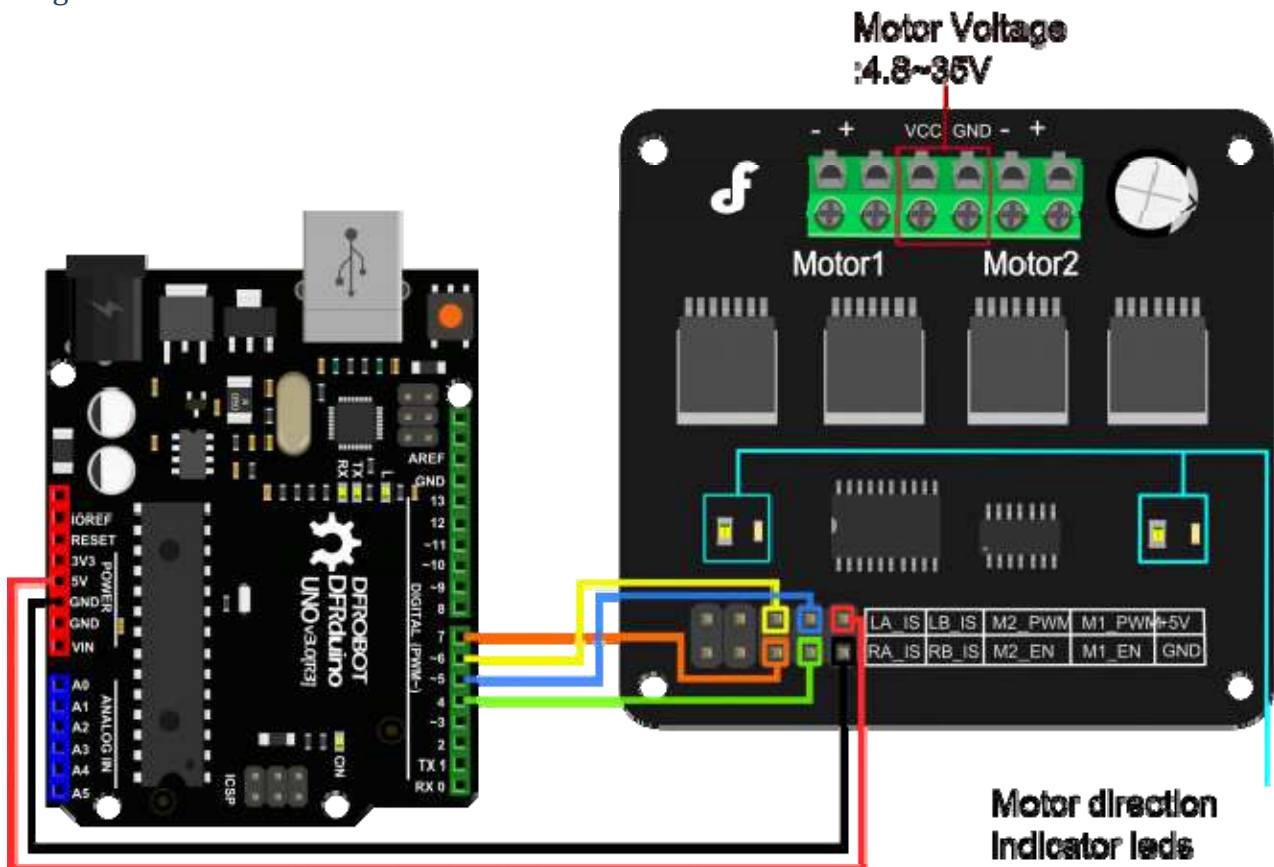
### Introduction

This DC Motor Driver can be used in 4WD mobile robot platforms, Combat robots, smart car competition, to drive pumps, electric fans, conveyors, etc... This module uses 4 high-performance & high-current driver chips——BTS7960 with the function of current short, over temperature, over voltage protection. You can control 2 motors with only 4 digital IO at the same time. Dual 15A@13.8V max output current, good responsiveness & braking performance. Four indicator leds are provided for easy and convenient debugging without motors. This DC Motor Driver module is directly compatible with Arduino.

## Specification

- Input Voltage:4.8-35V
- Maximum output current:15A@13.8V per channel
- Peak output current:20A@13.8V per channel
- PWM capability:up to 25 kHz
- Interfaces:4 digital IO(2 PWM output include)
- Driving mode:Dual high-power H-bridge driver
- Other specifications:
  - Galvanic isolation to protect the microcontroller
  - Dual current detection diagnostic functions
  - Short circuit, overheating, over-voltage protection
- Size:73x68x14mm
- **For applications of more than 15A per channel**
  - Fast switching might damage the board, best to smooth it by software
  - Avoid higher rating motors, and use lower PWM whenever possible

## Tutorial Diagram



DC Motor Driver 2x15A diagram

LA\_IS, LB\_IS, RA\_IS & RB\_IS is for current sense and diagnosis.

In normal operation, the IS pin outputs a LOW level. In a fault condition, it will output a HIGH level. The following code will show you how to do.

- LA\_IS and RA\_IS is used for Motor1.
- LB\_IS and RB\_IS is used for Motor2.

## Sample Code

### PWM mode

```
/*
/*
# This Sample code is for testing the DC Motor Driver 2x15A_lite module.

# Editor : Phoebe
# Date   : 2012.11.6
# Ver    : 0.1
# Product: DC Motor Driver 2x15A_lite
# SKU    : DRI0018

# Description:
# Drive 2 motors with this DC Motor Driver module

# Hardwares:
1. Arduino UNO
2. DC Motor Driver 2x15A_lite
3. DC motors x2

#Steps:
1.Connect the M1_PWM & M2_PWM to UNO digital 5 & 6
2.Connect the M1_EN & M2_EN to UNO digital 4 & 7
3.Connect +5V & GND to UNO 5V & GND
```

```

# Function for current sense and diagnosis,if you want to use
please connect the IS pins to Arduino
Connect LA_IS and RA_IS to UNO digital 2 at the same time
Connect LB_IS and RB_IS to UNO digital 3 at the same time
*/

int E1 = 5;      //M1 Speed Control
int E2 = 6;      //M2 Speed Control
int M1 = 4;      //M1 Direction Control
int M2 = 7;      //M2 Direction Control
int counter=0;

void stop(void)          //Stop
{
    digitalWrite(E1,0);
    digitalWrite(M1,LOW);
    digitalWrite(E2,0);
    digitalWrite(M2,LOW);
}

void advance(char a,char b)      //Move forward
{
    analogWrite (E1,a);      //PWM Speed Control
    digitalWrite(M1,HIGH);
    analogWrite (E2,b);
    digitalWrite(M2,HIGH);
}

void back_off (char a,char b)    //Move backward
{
    analogWrite (E1,a);
    digitalWrite(M1,LOW);
    analogWrite (E2,b);
    digitalWrite(M2,LOW);
}

void turn_L (char a,char b)      //Turn Left

```

```

{
  analogWrite (E1,a);
  digitalWrite(M1,LOW);
  analogWrite (E2,b);
  digitalWrite(M2,HIGH);
}

void turn_R (char a,char b)           //Turn Right
{
  analogWrite (E1,a);
  digitalWrite(M1,HIGH);
  analogWrite (E2,b);
  digitalWrite(M2,LOW);
}

void current_sense()                 // current sense and diagnosis
{
  int val1=digitalRead(2);
  int val2=digitalRead(3);
  if(val1==HIGH || val2==HIGH){
    counter++;
    if(counter==3){
      counter=0;
      Serial.println("Warning");
    }
  }
}

void setup(void)
{
  int i;
  for(i=4;i<=7;i++)
    pinMode(i, OUTPUT);
  Serial.begin(19200);           //Set Baud Rate
  Serial.println("Run keyboard control");
  digitalWrite(E1,LOW);
}

```

```

digitalWrite(E2,LOW);
pinMode(2,INPUT);
pinMode(3,INPUT);
}

void loop(void)
{
  /*
   static unsigned long timePoint = 0;    // current sense and diagnosis,if yo
   u want to use this
   if(millis() - timePoint > 1000){      //function,please show it & don't f
   orget to connect the IS pins to Arduino
   current_sense();
   timePoint = millis();
   }
  */
  if(Serial.available()){
    char val = Serial.read();
    if(val != -1)
    {
      switch(val)
      {
        case 'w'://Move Forward
          advance (255,255);    //move forward in max speed
          break;
        case 's'://Move Backward
          back_off (255,255);    //move back in max speed
          break;
        case 'a'://Turn Left
          turn_L (100,100);
          break;
        case 'd'://Turn Right
          turn_R (100,100);
          break;

```

```
    case 'z':  
        Serial.println("Hello");  
        break;  
    case 'x':  
        stop();  
        break;  
    }  
}  
else stop();  
}
```

}

### PLL mode

DRI0018 motor drive also support PLL control mode.Data is as follows:

"PLL mode"	
pin	function
4	motor 1 enable control
5	motor 1 direction control
6	motor 2 direction control
7	motor 2 enable control



## Demo data :

```
//Standard DLL Speed control

int E1 = 4;    //M1 Speed Control
int E2 = 7;    //M2 Speed Control
int M1 = 5;    //M1 Direction Control
int M2 = 6;    //M1 Direction Control

//When m1p/m2p is 127, it stops the motor
//when m1p/m2p is 255, it gives the maximum speed for one direction
//When m1p/m2p is 0, it gives the maximum speed for reverse direction

void DriveMotorP(byte m1p, byte m2p)//Drive Motor Power Mode
{

    digitalWrite(E1, HIGH);
    analogWrite(M1, (m1p));

    digitalWrite(E2, HIGH);
    analogWrite(M2, (m2p));

}

void setup(void) {
    int i;
    for(i=4;i<=7;i++)
        pinMode(i, OUTPUT);
    Serial.begin(19200);    //Set Baud Rate
}

void loop(void) {
    if(Serial.available()){
        char val = Serial.read();
```

```
if(val!=-1){
  switch(val){
    case 'w'://Move Forward
      DriveMotorP(0xff,0xff); // Max speed
      break;
    case 'x'://Move Backward
      DriveMotorP(0x00,0x00);
      ; // Max speed
      break;
    case 's'://Stop
      DriveMotorP(0x7f,0x7f);
      break;
  }
}
}
```

```
}
```

data function : input “w”, “x”, “s” : motor will have corresponding reaction.

## Trouble shooting

More question and cool idea, visit [DFRobot Forum](#)