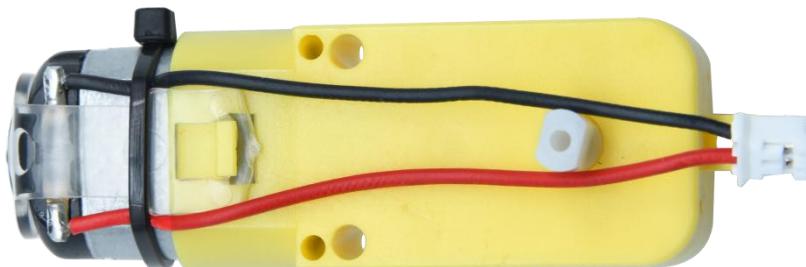


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Project 4: DC Reduction Motor

1. Description



The kit is equipped with 4 DC reduction motors, which are developed on the ordinary DC motors. It has a matching gear reduction box which provides a lower speed but a larger torque. Furthermore, different reduction ratios of the box can provide different speeds and torques.

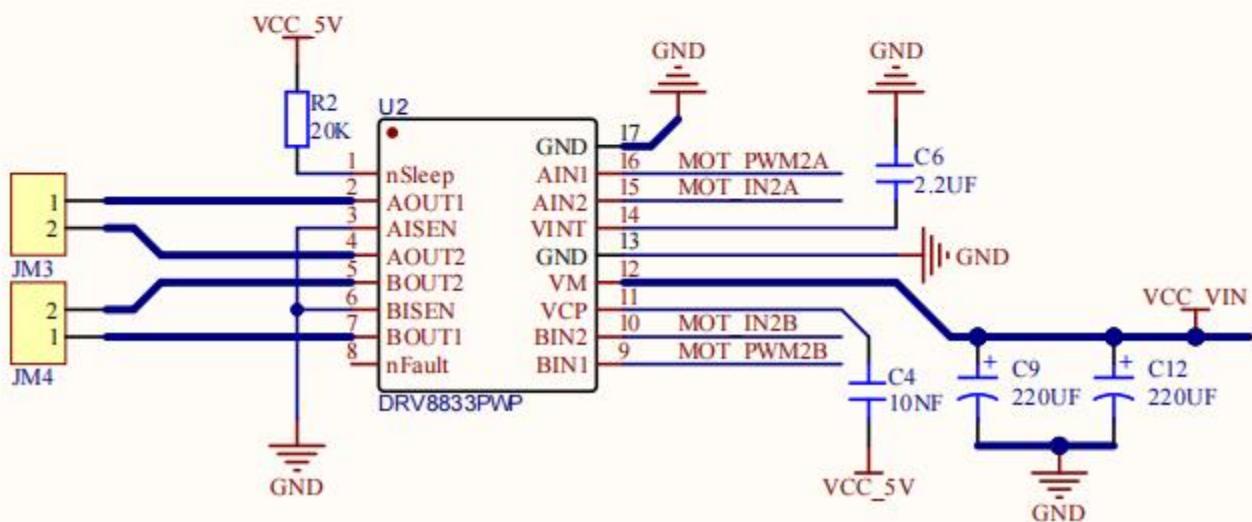
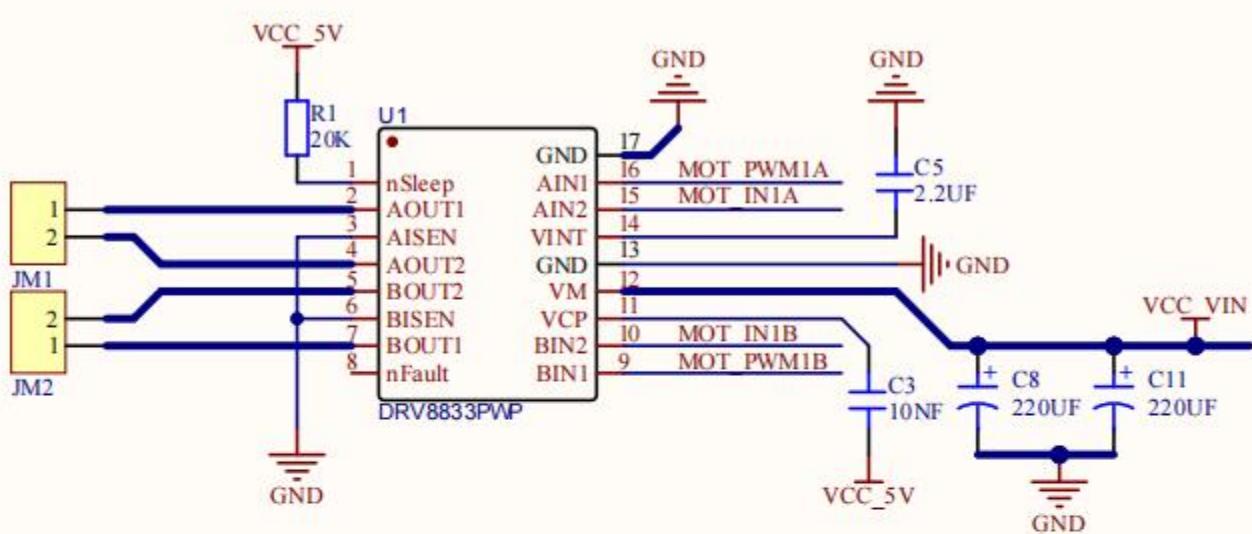
The reduction motor is the integration of gearmotor and motor, which is applied widely in steel and machine industry.

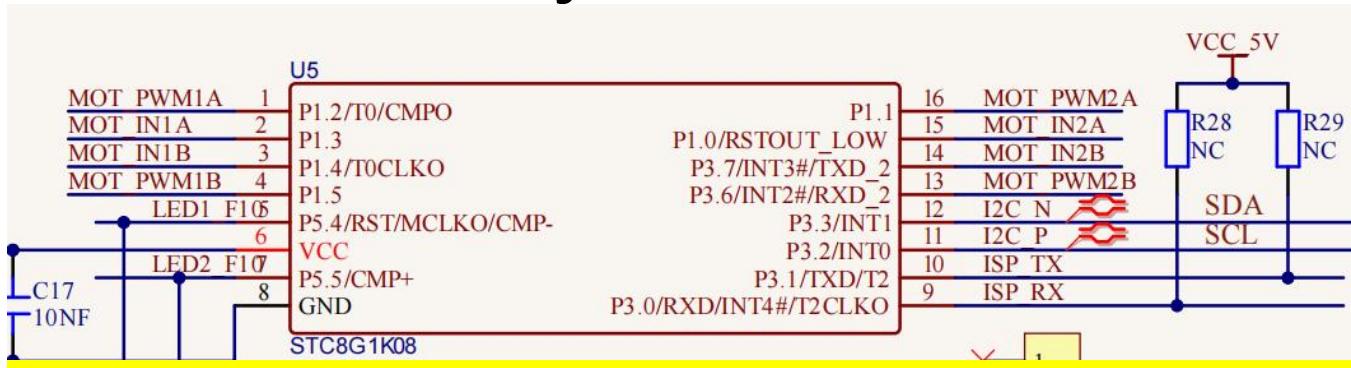
The current of the motor driver is relatively large. If we use the IO port to force the motor to drive, either the motor will not rotate or the IO port will be burned, thereby it entails a motor driver chip. The DRV8833 motor driver chip has been included on the motor driver base board, which is used to control the rotation direction and speed of the 4 DC reduction motors. The circuit schematic diagram of the two chips are as below:

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2. Component Knowledge

Motor





Each chip controls 4 pins, and 2 pins control one motor.

3. Test Code

```
//*****
/*
Keyestudio 4WD Mecanum Robot for Arduino
lesson 4
Motor
http://www.keyestudio.com
*/
#include "MecanumCar_v2.h"
mecanumCar mechanumCar(3, 2); //sda-->D3, scl-->D2

void setup() {
mechanumCar.Init(); //Initialize the drive
}

void loop() {
mechanumCar.Advance(); //Wait for 2s

mechanumCar.Back(); //Move back
delay(2000);

mechanumCar.Turn_Left(); //Turn left
delay(2000);

mechanumCar.Turn_Right(); //Turn right
delay(2000);

mechanumCar.Stop(); //Stop
delay(1000);
}
//*****
```

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4. Test Result

First, make sure the library files are installed, otherwise the code will fail to compile. Here we use the library file [MecanumCar_v2](#), please refer to the [development environment configuration](#) for installation. After compiling and uploading the code, turn the DIP switch to the ON end and power on, and we can see that the car goes forward for 2s, goes back for 2s, turns left for 2s, turns right for 2s and then stops for 1s.

5. Code Explanation

#include "MecanumCar_v2.h"	Import the MecanumCar_v2 file
mecanumCar mecanumCar(sda, scl);	Create an instance to drive the motor and seven-color lights , sda is connected to D3, scl is connected to D2
mecanumCar.Init();	Initialize the car driver
mecanumCar.Advance();	4 motors and the car go forward
mecanumCar.Back();	4 motors the car move back
mecanumCar.Turn_Left();	The left motors move back, the right motors turn forward and the car turns left
mecanumCar.Turn_Right();	The left motors turn forward, the right motors move back and the car turns right
mecanumCar.Stop();	4 motors and the car stop
delay(2000);	Wait for 2s

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