Chipsmall

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Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
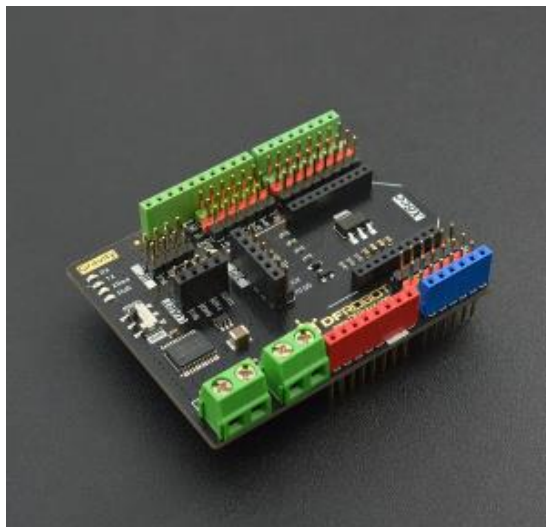Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

Gravity:IO Expansion & Motor Driver Shield V1.1   SKU: DFR0502

Introduction

Gravity: IO Expansion & Motor Driver Shield V1.1

Gravity IO Expansion Shield with Motor Driver is a new product designed for Arduino Boards. It combines IO Expansion Shield and DC Motor Driver Shield, equipped with Gravity sensor interface and TB6612FNG dual motor driver. It also has XBee socket, I2C interface and UART port, makes the connections more convenient.

With TB6612FNG dual channel motor driver IC, the shield can drive 2x1.2A DC motors at the same time. It supports PWM speed control, each channel can output 1.2A continuous current and the peak current can reach to 3.2A. It is compatible with majority micro DC motors in the market. It is a solid choice for small intelligent robot controls, convenient and cost-effective.

Features

- Compatible with Arduino UNO R3 Pinmap.
- Gravity-3Pin interface, plug & play, easy to use.
- Integrated XBee Slot, XBee, WiFi Bee, Bluetooth Bee compatible.
- Program download switch will avoid serial occupancy during Arduino UNO/Mega downloading.
- 2x1.2A TB6612FNG DC motor driver (power from Vin port).

Specifications

- Digital interface: 14
- Analog interface: 6
- IIC interface: 2
- SPI interface (compatible with Arduino UNO R3): 2
- Serial port: 1
- XBee Slot: 1
- Output Current: 1.2A single channel continuous driving current
- Start/ Peak Current: 2A (continuous pulse)/ 3.2A (monopoles)
- Input Voltage: 12V (peak value)
- Occupying Pins: D4, D5, D6, D7 (caution: the pin is occupied when control the motor)
- Size: 68.5mm×53.3mm (2.7 inch×2.1 inch)
- Weight: 36

Board Overview

PinOut	
Num	Description
1	Digital interfaces
2	XBee interfaces
3	Analog interfaces
4	Power supply and reset interfaces
5	dual channel motor driving interfaces
6	SPI interfaces
7	Serial port interfaces
8	Programming switch (RUN: Running XBee; PROG: Sketch upload)
9	State indicators
10	IIC interfaces
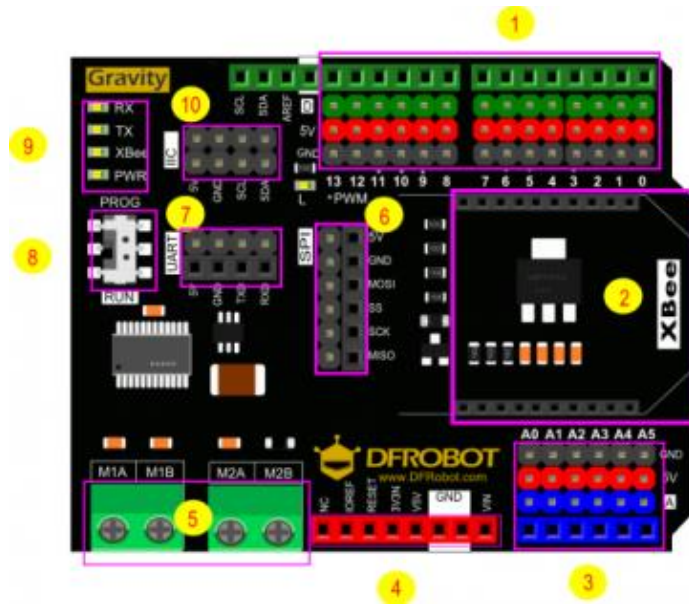
DFR0502_BOARD2_pinout

Detail Explanation

LED "L"

Here is an onboard LED in the expansion shield, it is connected to digital pin 13.

D&A

Letter 'D' and 'A' are printed in the Gravity: IO Expansion & Motor Driver Shield

'D': stands for digital signal, which should be connected to digital pins.

'A': stands for analog signal, which should be connected to analog pins.

Gravity: IO Expansion & Motor Driver Shield V1.0 is sufficient in interfaces. Compared to limited power supply interfaces in the control shields, it equipped with more GND interfaces and power supply interfaces. Although a multi-sensors connection, no need to worry about interface shortage.

A row of red pins and a row of black pins are below digital pins and analog pin. They are the expanding power supply interface. The red pins connect to the power supply (VCC) and the black pins connect to GND.

DFRobot Colors Explanation

Green:

Digital Signal

Blue:

Analog Signal

Red:

VCC

Black:

GND

The reason why designed the order as Signal > VCC > GND is to correspond to sensors linear order, the design has improved the wiring efficiency.

RUN/PROG

The new expansion shield added switch 'RUN' and 'Download'. When using controller such as Arduino UNO/ Mega, you may failed to download program because downloading and XBee would occupy the same serial port. Therefore, you should switch to 'PROG' in download and switch to 'RUN' in run.

Sample Code

```
/*!
  * file motor.ino
  * brief Show Show The motor turns clockwise or counterclockwise.
  * Copyright  [DFRobot](http://www.dfrobot.com)
  * Copyright GNU Lesser General Public License  *
  * @author [DongZi](dongzi.liu@dfrobot.com)
  * version  V1.0
  * date  2017-07-05
  */


void setup() {
pinMode(4,OUTPUT);   /* define  pin (4,5,6,7) out*/
pinMode(5,OUTPUT);
pinMode(6,OUTPUT);
pinMode(7,OUTPUT);
}
void motor_c(char motor_n,char direction_m,int speed_m ) /* motor_n: the moto
r number to drive(0 stands for M1;1 stands for M2)*/
/* direction_m : the motor rotary direction(0 is clockwise and 1 is counter-c
lockwise).*/
/* speed_m: to control the motor rotation speed(from 0 to 255 ), the speed_m
value is larger, the rotation speed is faster;*/
{  if(motor_n==1)
   {   if(direction_m==1)
      {digitalWrite(4,HIGH);    // pin 4 controls M2 rotary direction analo
gWrite(5,speed_m);  //pin 5 controls M2 rotation speed
      }
      else
      {digitalWrite(4,LOW);
       analogWrite(5,speed_m);
      }
   }
   else
   {
```

```
        if(direction_m==1)
         {digitalWrite(7,HIGH);  // pin 7 controls M1 rotary direction
          analogWrite(6,speed_m);//pin 6 controls M2 rotation speed
         }
         else
         {digitalWrite(7,LOW);
          analogWrite(6,speed_m);
         }
       }


    }
void loop() {
 motor_c( 0,0,127 );// M1 rotate in clockwise of 127 component velocity(total
as 225)
 motor_c( 1,0,127 );// M1 rotate in clockwise of 127 component velocity(total
as 225)
 delay(5000);        //delay for 5s
 motor_c( 0,1,200 );// M1 rotate in counter-clockwise of 200 component veloci
ty(total as 225)
 motor_c( 1,1,200 );// M2 rotate in counter-clockwise of 200 component veloci
ty(total as 225)
 delay(5000);       //delay for 5s
}
```

D.C Motor Driving Effect
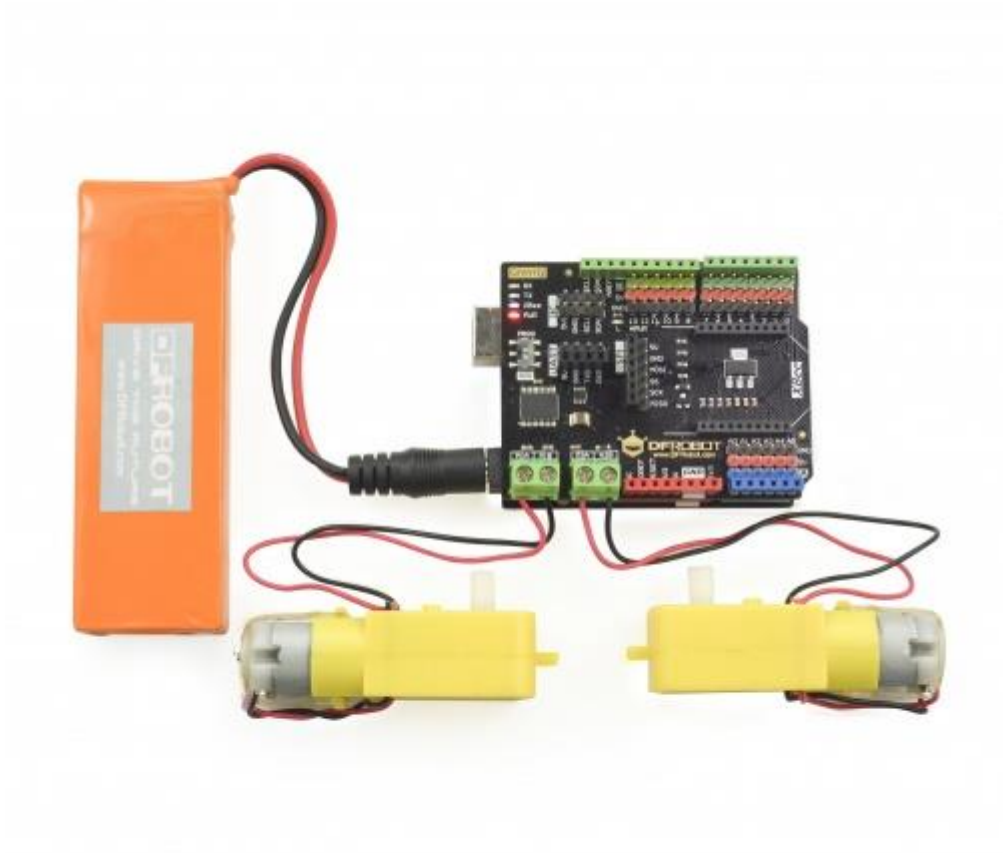
Result

The motor rotate slowly in clockwise for 5s and rotate quickly in counter-clockwise for 5s and goes on.

> NOTE: If the motor rotating direction is opposite to the expectation, you just
> need to adjust the pin order.

More Documents

- Schematic