Microduino Robot Shield

USER GUIDE

https://eckstein-shop.de/

Content

Microduino-Robot shield, as a DC motor control board, can control 4 DC motors together with Microduino-Core and Microduino-Core+. And at the same time with sensor interfaces onboard, the users can connect it with varieties of sensors to achieve more functions.

The sensor / trinket connector are 4 pin, 1.25mm pitch JST connectors.

The motor connector are 2 pin, 1.25mm pitch JST connectors.

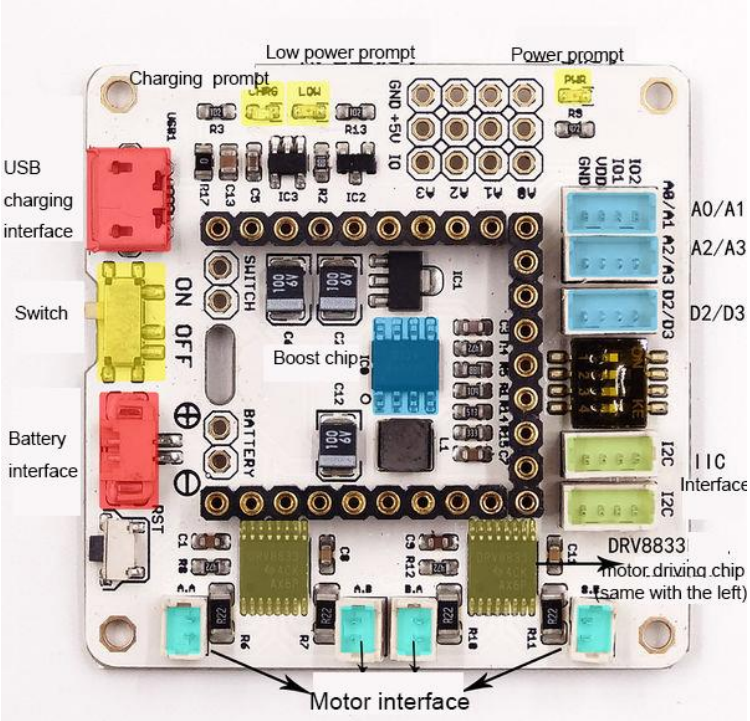
Features

- With lithium battery charging and discharging management, including charging, boosting (5V) and stabilivolt (3.3V) functions.
- With four motor driving interfaces, which makes it can drive four DC motor.
- With abundant sensor interfaces, which makes it can be easily extended.
- With Upin27 baseboard, which makes it can be connected with more Microduino modules.
- With small size, 46.99mm*40.64mm

Specifications

- Electric
    - 5V boosting: Adopt G5177 rectifier booster chip, working voltage 3.0V~5V, and the output current 800mA
    - 3.3V stabilivolt: AMS1117 stabilivolt plan, and the maximum output current can achieve 600mA.
    - Charging management: LTC4054 power management solution, and MicroUSB charging interface.
    - With battery interface and power switch onboard.
    - The battery interface and the power switch can be led out, which makes it easy to be controlled.
- Motor driving
    - Adopt 2 DRV8833two-channel motor driver, and the driving power supply is battery, and each motor can continually provide RMS driving current up to 400mA. And they support the peak current up to 450mA.
    - A driver pins: D6, D8, D5, D7
    - B driver pins: A0, A1, A2, A3
        - The position from the head to the foot of the toggle switch as shown in the following picture is corresponding to the motor driving pin A0, A1, A2, A3

    - Turn the corresponding toggle switch to ON, and this motor can be used to drive pins
- With 5 sensor interfaces onboard
- With reset button onboard



Document

- Chip: DRV8833datasheet.pdf
- Microduino motor control library functions: Microduino_Motor (GitHub)

Development

DC Motor Wiring

Connect a DC motor to (A.MOTOR.1), and the other to (A.MOTOR.2); or one to (B.MOTOR.1), and the other to (B.MOTOR.2);

DC Motor Control Mode

- A Driver

D6	D8	D5	D7	A.MOTOR.1.A	A.MOTOR.1.B	A.MOTOR.2.A	A.MOTOR.2.B	Function
0	0	0	0	Off	Off	Off	Off	Close
1	0	1	0	High	Low	High	Low	Forward
0	1	0	1	Low	High	Low	High	Reverse
1	1	1	1	Low	Low	Low	Low	Braking

- B Driver

A0	A1	A2	A3	B.MOTOR.1.A	B.MOTOR.1.B	B.MOTOR.2.A	B.MOTOR.2.B	Function
0	0	0	0	Off	Off	Off	Off	Close
1	0	1	0	High	Low	High	Low	Forward
0	1	0	1	Low	High	Low	High	Reverse
1	1	1	1	Low	Low	Low	Low	Braking

- For driving DC motor, refer to: Microduino-Motor

Example:

```
//=========M.A=============//
int mic_left_A = 6;
int mic_right_A = 8;
int mic_head_A = 5;
int mic_back_A = 7;
//=========M.B=============//
/*
 int mic_left_A = A0;
 int mic_right_A =A1;
 int mic_head_A = A2;
 int mic_back_A = A3;
 */
void setup() {
  pinMode(mic_left_A,OUTPUT);
  pinMode(mic_right_A,OUTPUT);
  pinMode(mic_head_A,OUTPUT);
  pinMode(mic_back_A,OUTPUT);
}

void loop() {
  head();
  delay(1500);
  back();
  delay(1500);
  left();
  delay(1500);
  right();
  delay(1500);
}

void head()
{
  digitalWrite(mic_left_A,LOW);
  digitalWrite(mic_right_A,HIGH);
  digitalWrite(mic_head_A,HIGH);
  digitalWrite(mic_back_A,LOW);
}

void left()
{
  digitalWrite(mic_left_A,HIGH);
  digitalWrite(mic_right_A,LOW);
  digitalWrite(mic_head_A,HIGH);
  digitalWrite(mic_back_A,LOW  );
}

```

```
47. void right()
48. {
49.   digitalWrite(mic_left_A,LOW);
50.   digitalWrite(mic_right_A,HIGH);
51.   digitalWrite(mic_head_A,LOW);
52.   digitalWrite(mic_back_A,HIGH);
53. }
54.
55. void back()
56. {
57.   digitalWrite(mic_left_A,HIGH);
58.   digitalWrite(mic_right_A,LOW);
59.   digitalWrite(mic_head_A,LOW);
60.   digitalWrite(mic_back_A,HIGH);
61. }
62.
63. void stoop()
64. {
65.   digitalWrite(mic_left_A,LOW);
66.   digitalWrite(mic_right_A,LOW);
67.   digitalWrite(mic_head_A,LOW);
68.   digitalWrite(mic_back_A,LOW);
69. }
```

Application

Open Source Electric Drive Cube Robot