# Introduction

ELECFREKAS Motor:bit is a kind of motor drive board based on micro:bit. It has integrated a motor drive chip TB6612, which can drive two DC motors with 1.2A max single channel current. Motor:bit has integrated Octopus series' sensor connectors. You can plug various sensors into it directly. Among these connectors, P0, P3-P7, P9-P10 support sensors with 3.3V power voltage only; P13-P16, P19-P20 support 3.3V or 5V sensors. You can change electric level by sliding the switch on the board.
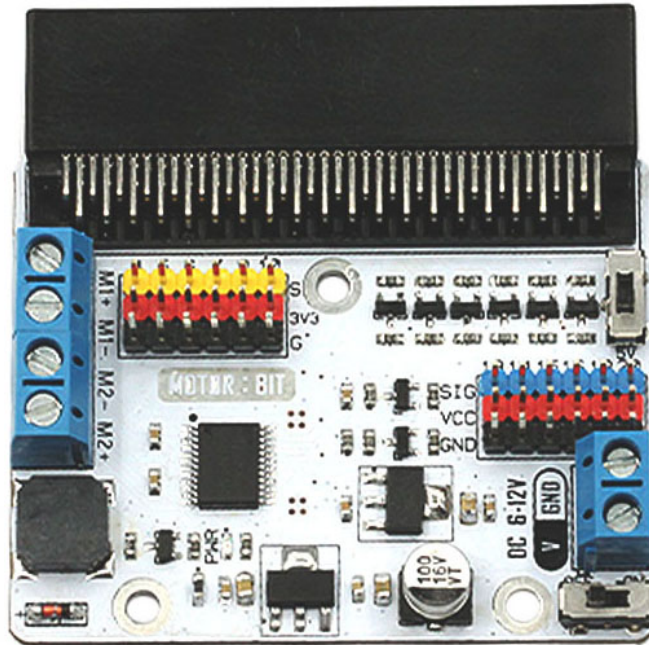

Hardware

Features:

1. Motor Drive Chip: TB6612
2. Support GVS-Octopus electric Bricks' connector
3. Some GVS connectors support electric level switch between 3.3V and 5V.
4. With 2 channels DC motor connectors, max single channel current is 1.2A.
5. Input Voltage: DC 6-12V
6. Dimension: 60.00mm X 60.10mm
7. Weight: 30 g

Application:

1. It is compatible with ElecFreaks Octopus electric bricks module series due to its built-in 3 pin IO electric brick GVS extension connector.
2. It can be used as the development board of mini smart cars and balance cars.
3. Users can develop mobile-controlled robot, robot arms, etc..

Connector Information:

ELECFREAKS MOTOR BIT V1.4
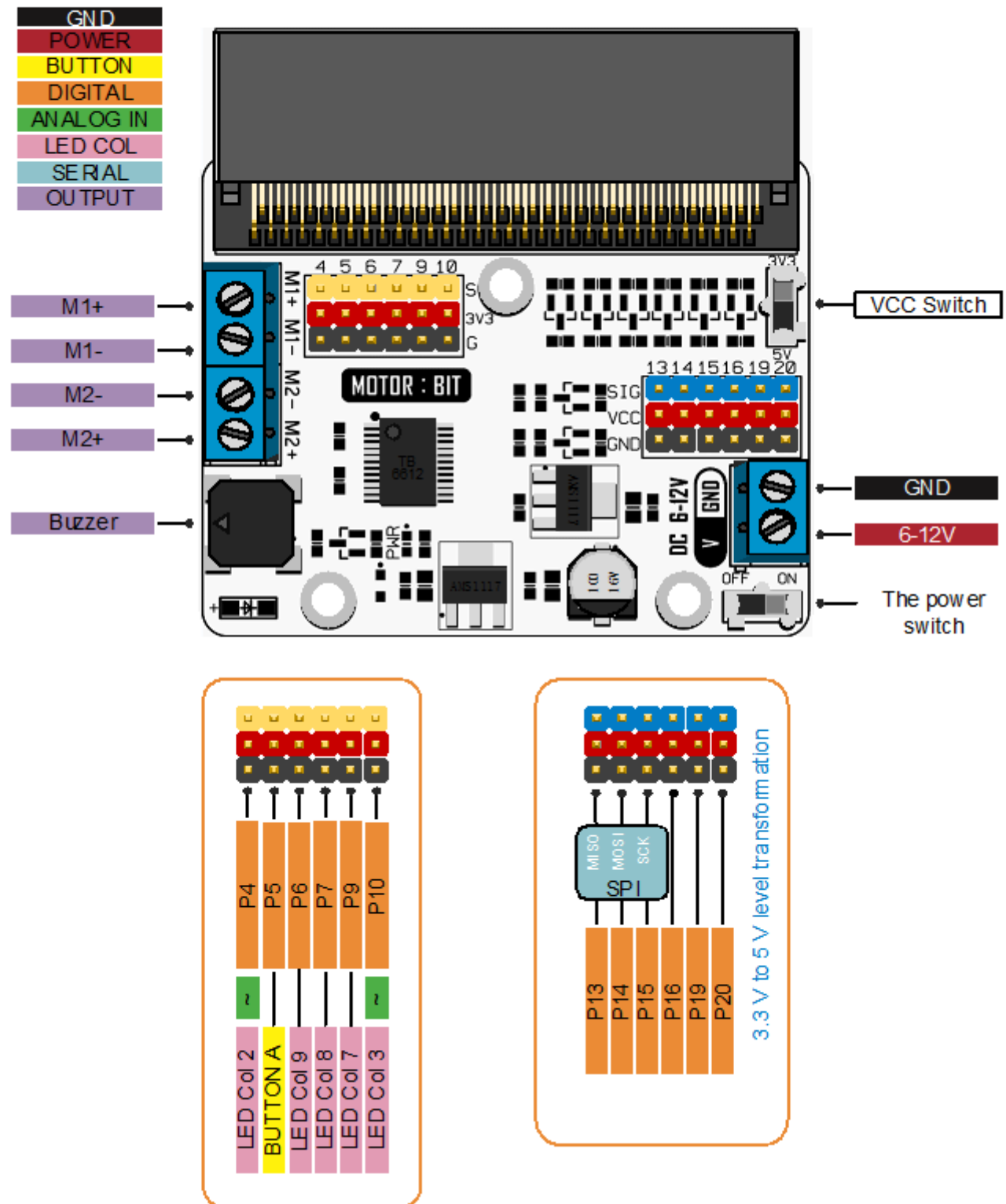
Type	Instruction
Buzzer	Buzzer is controlled by P0.
LED COL	Micro:bit LED matrix control pin
VCC Switch	3.3V/5V electric level switch only for P13-P16, P19, P20.
Button-A	Micro:bit main board button A
P4-P7,P9,P10,P13-P16,P19,P20	Digital connecotr
P4,P10	Analog connector/PWM
SCK MISO MOSI	Hardware SPI pin -P13,P14,P15
SDA SCL	Hardware IIC pin -P19,P20
The power switch	External power switch
6-12V GND	External power connector
M1+ M1- M2+ M2-	Connector of two DC motor or one stepping motor.
PWR	Power Indicator

Detailed Introduction Of Some Connectors：

1. VCC Switch-3.3V/5V electric level switch.

Slide switch to the end of 5V, the electric level of the blue pins (P13、P14、P15、P16、P19、P20) on motor:bit is 5V, and the voltage of the red power pins is 5V too. Similarly, when slide switch to 3.3V, the voltage of blue pins and red pins are 3.3V.
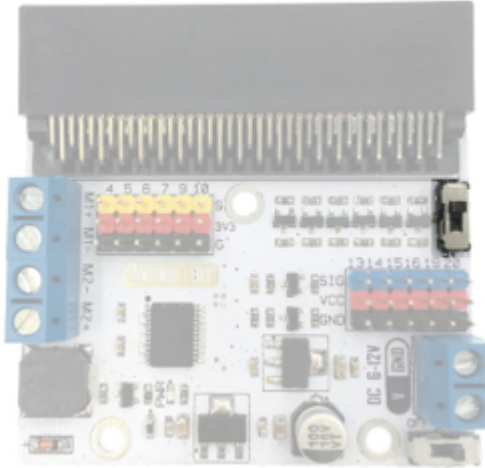

2. Digital Pin Connector.

Digital pins: P4、P5、P6、P7、P9、P10.

G-3V3-S connector: 3V3 stands for 3.3V power voltage, G is for GND, S is for signal. GVS is a standard sensor connector, which enables you to plug onto servos and various sensors conveniently. At the same time, it supports our Octopus Bricks series'products.
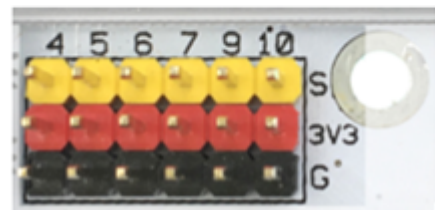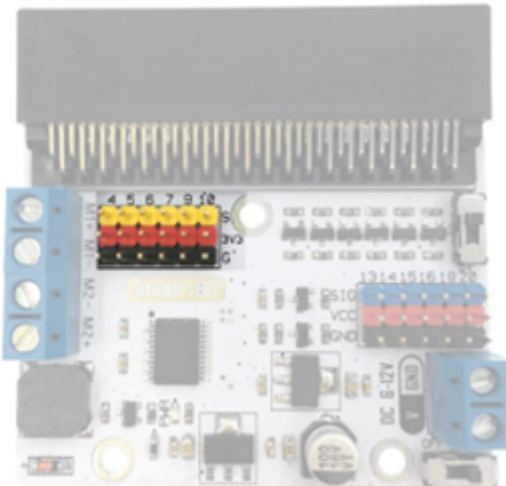

3. 3.3V/5V dual electric level GND-VCC-SIG connector：P13, P14, P15, P16, P19, P20.

The specialty of G-VCC-SIG connector lies in that it can support 3.3V or 5V power device by shifting electric level of 3.3V/ 5V through VCC connector. At the same time, it supports our Octopus Bricks series' products.
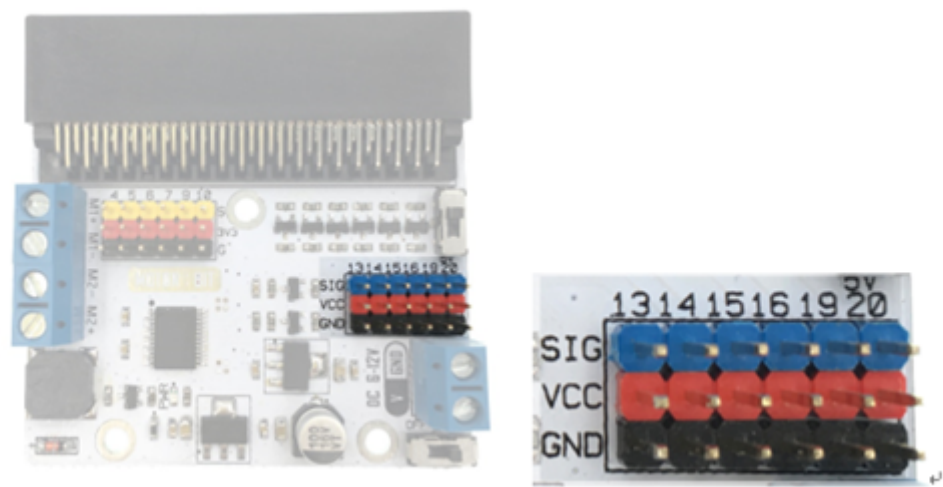
Motor Input Connector: Two motor input connectors in total. M1+, M1- and M2+, M2- separately controls a channel of DC motor.
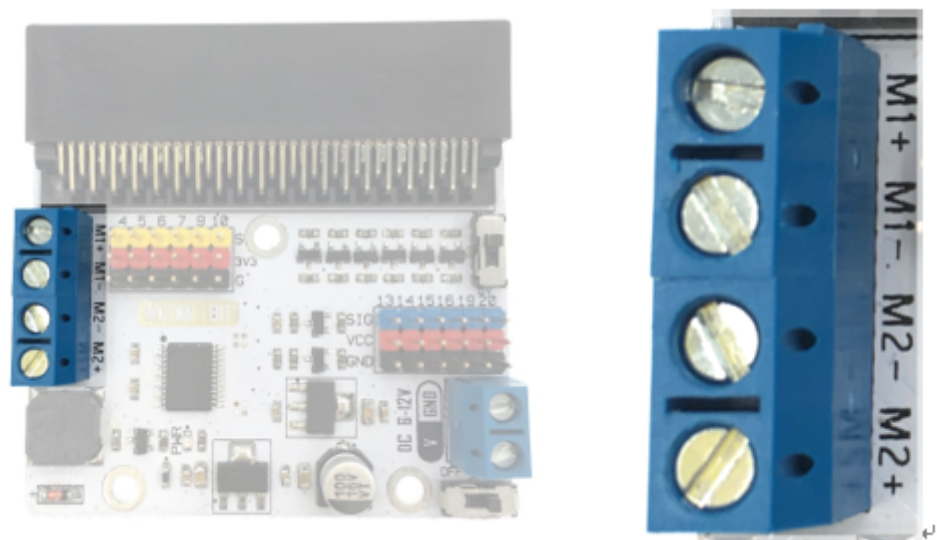

M1，M2 Motor Control Instruction: P8 and P12 relatively controls the rotating direction of M1 and M2; P1 and P2 control motor speed.

Pin	Function	Note
P8	Direction control of M1	Positive rotate under high voltage; negative

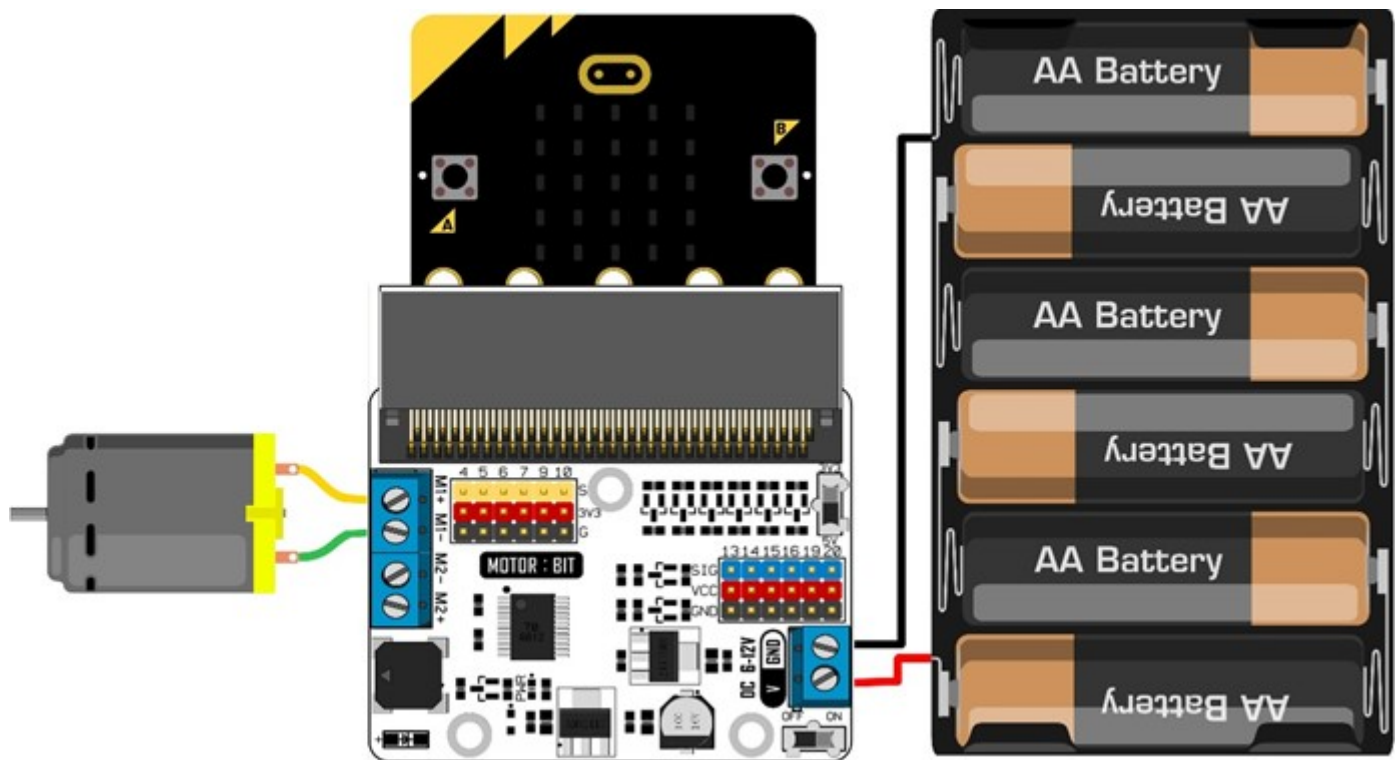|		rotate under low voltage.
P1	Speed control of M1	PWM
P2	Speed control of M2	PWM
P12	Direction control of M2	Positive rotate under high voltage; negative rotate under low voltage.

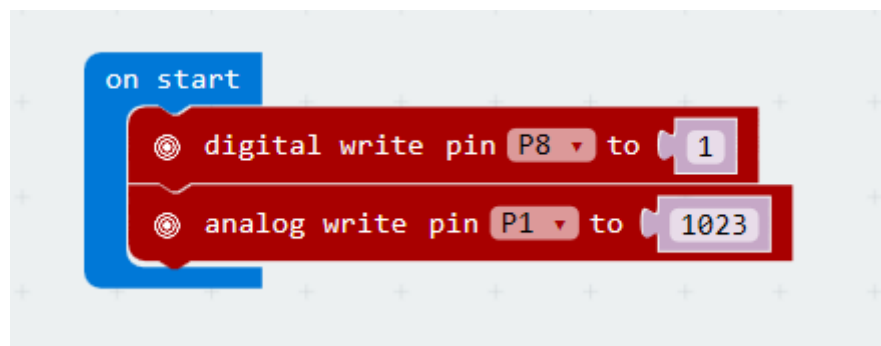**Dimension:**
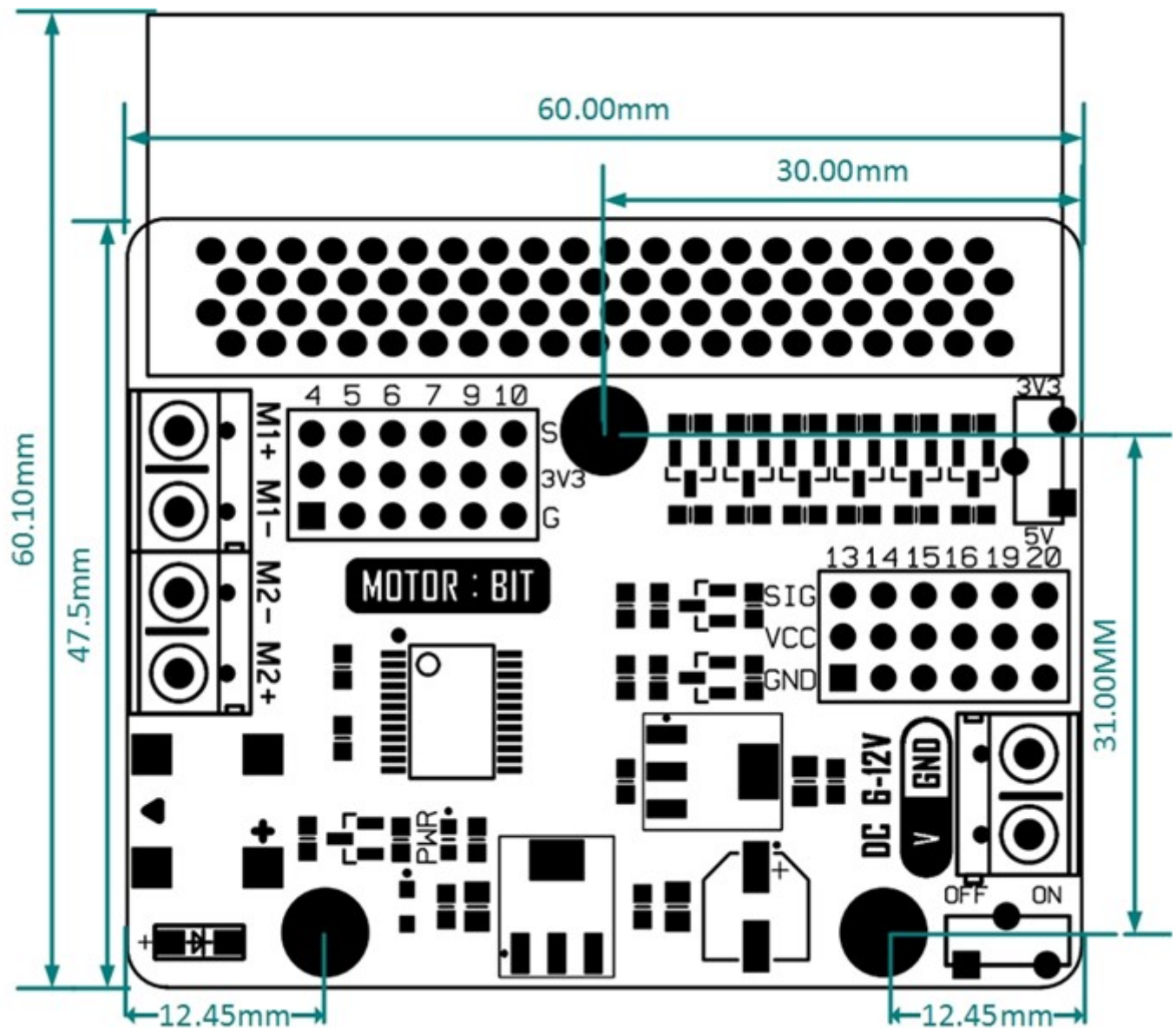
1. **Example**

Hardware Connection

Please connect components according to the picture below:

Programming

Positive Rotation Of Motor:

P8 in high electric level means the positive rotation of motor. You can adjust the logic value of P1 to control motor speed.

Negative Rotation Of Motor: