FD04A Rev2.0
4 Channel Motor Driver
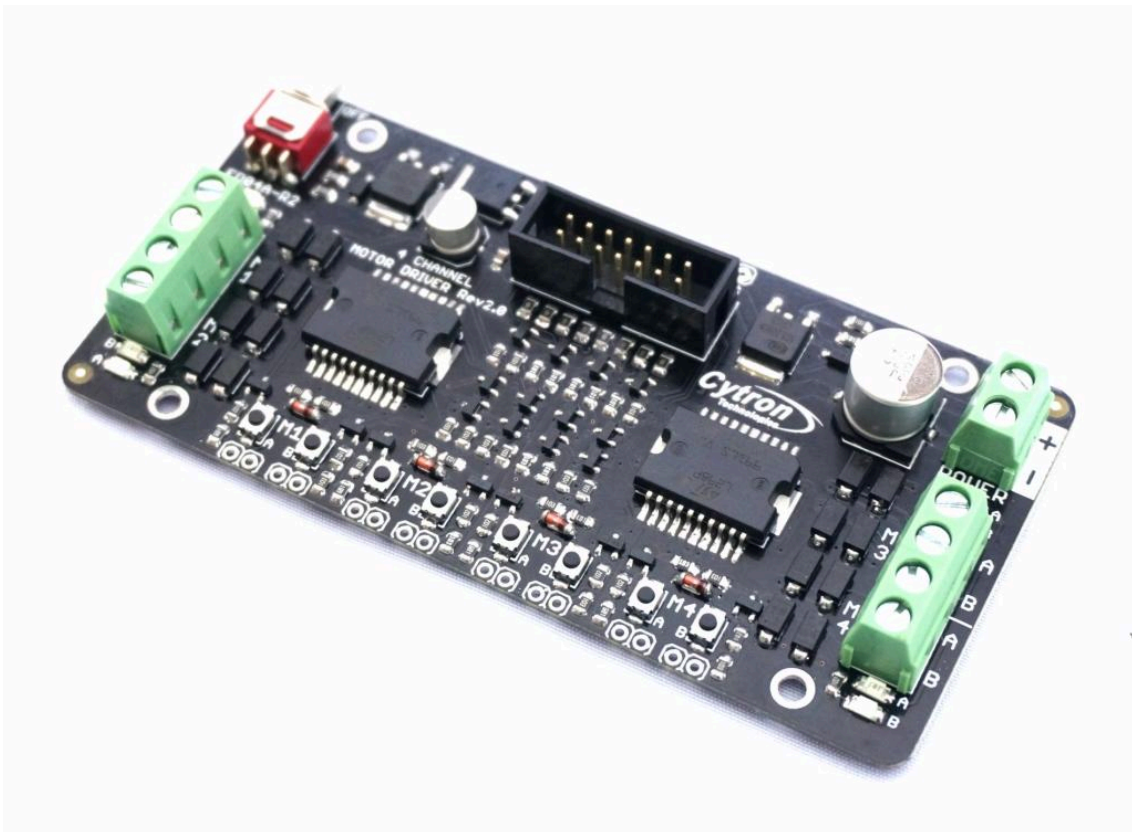
User's Manual

V1.1

Apr 2015

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1. INTRODUCTION

FD04A Rev2.0 is an enhanced version of FD04A rev1.0. It is a motor driver board to control unit of DC motor up to 2A for each channel. This revision incorporates several important improvement from older FD04A:

FD04A Rev2.0 comes with following features:
- Bi-directional control for 4 brushed DC motor (4 Channels).
- Support motor voltage ranges: 7 - 25VDC.
- Maximum current up to 1.5A continuous per channel.
- 3.3V and 5V logic level input.
- Test switches (Start and Direction) for every channel.
- Motor voltage polarity protection.
- Solid state switch for power.

2. PACKING LIST

Please check the parts and components according to the packing list. If there are any parts missing, please contact us at sales@cytron.com.my immediately.
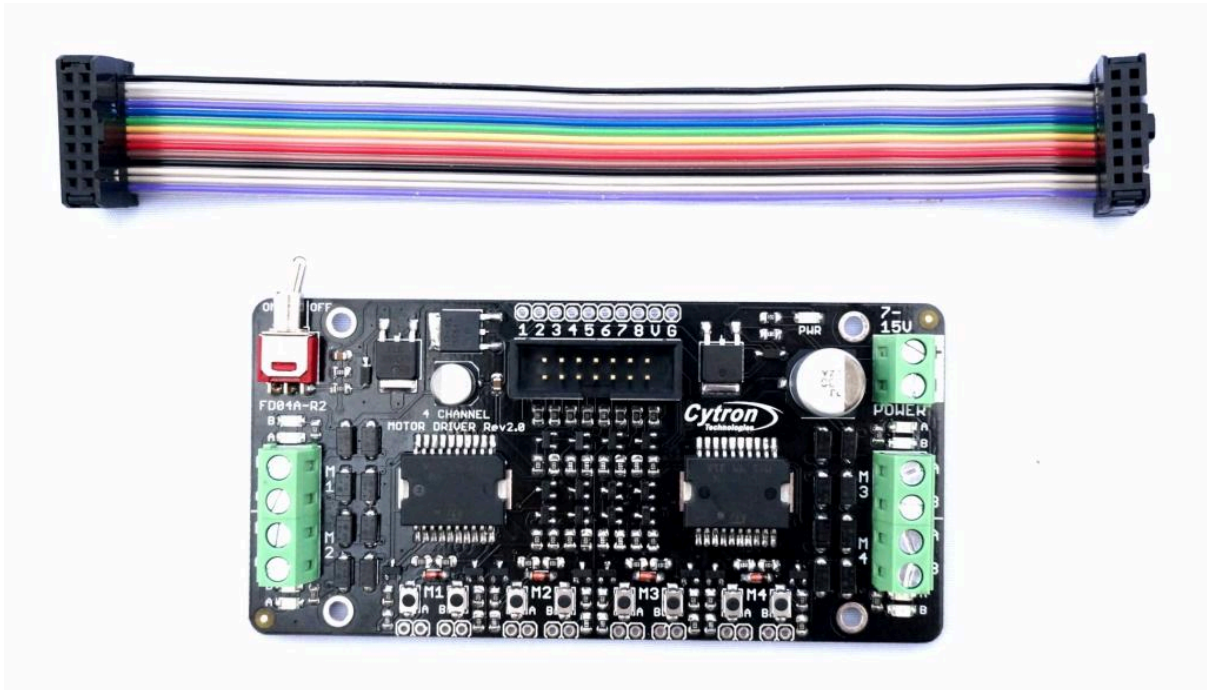
FD04A Rev2.0 comes with:
- 1 x FD04A Rev2.0 board.
- 1 x 14 way IDE cable connector.

3. PRODUCT SPECIFICATION AND LIMITATIONS

Absolute Maximum Rating

Parameter	Min	Typical	Max	Unit
Power Input Voltage (Motor supply voltage)	7	-	25	V
I_{MAX} (Maximum Continuous Motor Current, each channel)	-	-	1.5	A
I_{PEAK} (Peak Motor Current)	-	-	2.5	A
V_{IOH} (Logic Input - High Level)	3.3	-	5.5	V
V_{IOL} (Logic Input - Low Level)	0	0	0.5	V
Maximum PWM Frequency	-	-	10	KHz

4. DIMENSION
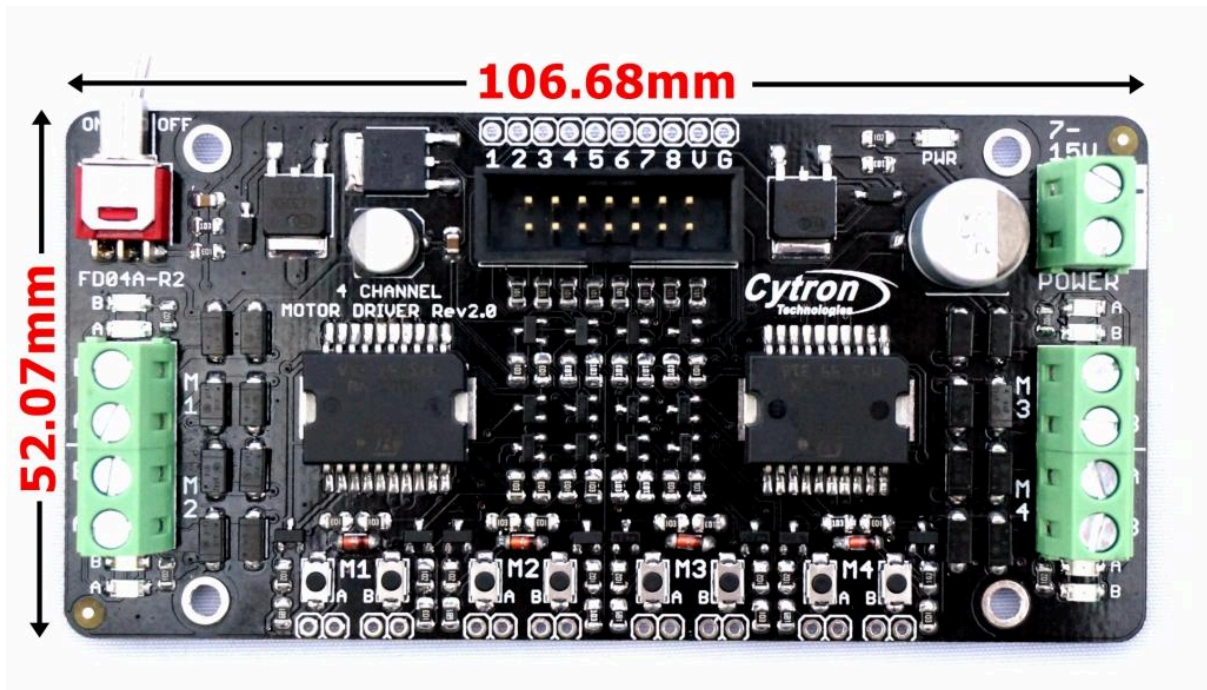
5. BOARD LAYOUT
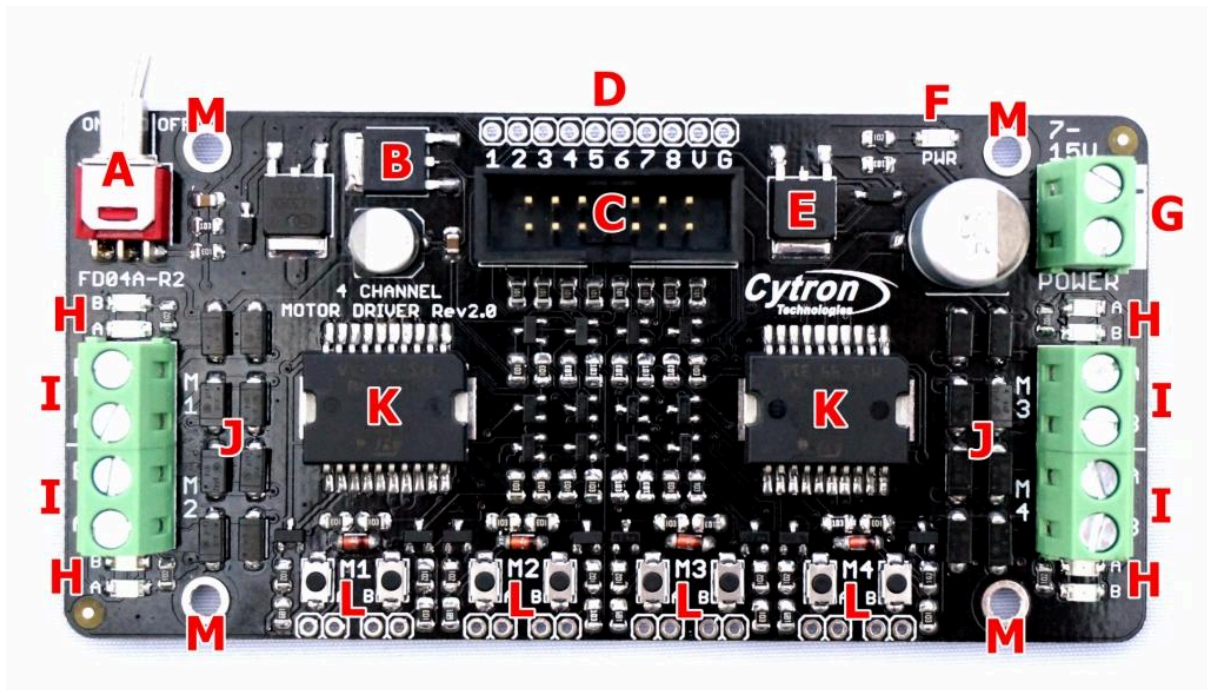
Label	Function
A	Power toggle switch.
B	5V voltage regulator
C	7 x 2 IDE Socket
D	Extra pad
E	Reverse polarity protection
F	Power indicator LED
G	Power supply terminal block
H	Motor status indicator LED
I	Motor terminal block
J	Schottky diode
K	L298P motor driver
L	Motor test switch
M	3mm hole

Power toggle switch
Switch to ON or OFF FD04A Rev2.0 board.

5V voltage regulator
Generates 5V to supply all the transistors and L298P motor driver, include V pin. User can access 5V (at V pin) and use it to supply another circuit. User is prohibited to supply another 5V at V pin.

7 x 2 IDE socket
Socket to connect FD04A.

Extra pad
This is another alternative to access FD04A Rev2.0 control pin instead of using ribbon cable at 7 x 2 IDE socket.

Reverse polarity protection
In case user wrongly connect the external power source polarity, this circuit will protect the board from broken.

Power indicator LED
Once this board is power up, PWR LED will turn ON.

Power supply terminal block
Connector for motor power supply.

Motor status indicator LED
Indicates voltage at corresponding terminal.

Motor terminal block
Connect to two terminal of DC motor.

Schottky diode
This diode is used as clamping diode.

L298P motor driver
FD04A Rev 2.0 uses L298P motor driver.

Motor test switch
When button A is pressed, current flows from output A to B and motor will turn CW (or CCW depending on the connection).

When button B is pressed, current flows from output B to A and motor will turn CCW (or CW depending on the connection).

3mm hole
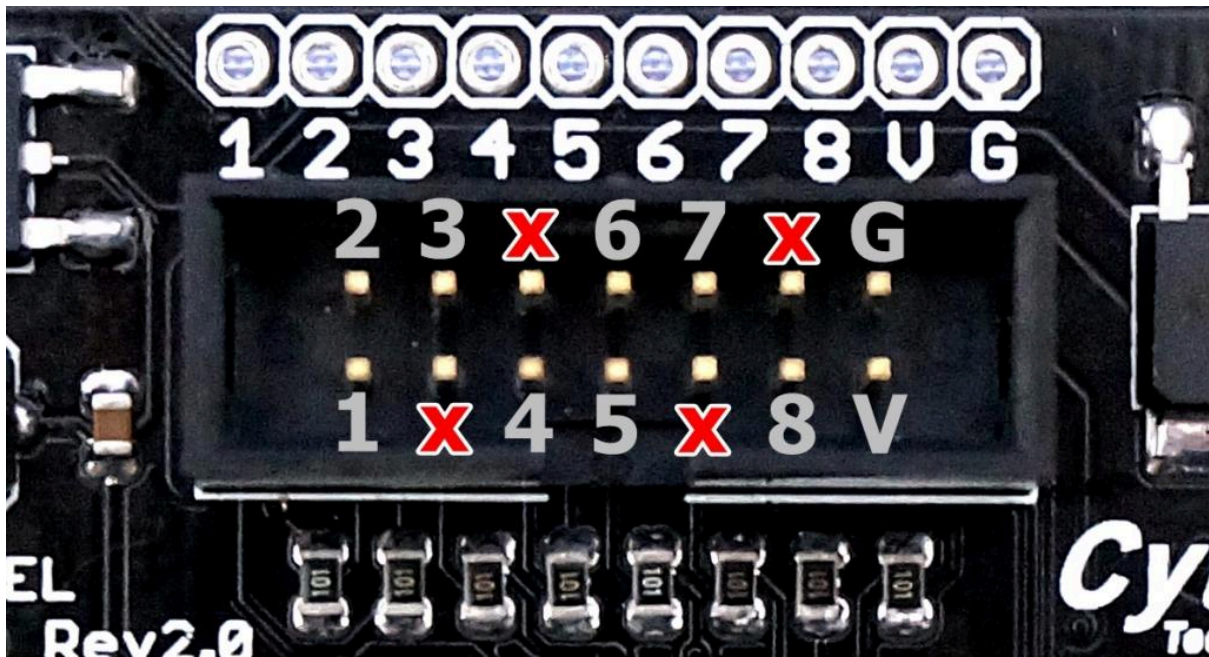This hole can fit standard PCB stand.

5.1 Pin Description

Figure show the pin orientation of the 7 x 2 IDE socket and extra pad. The function of each pin is described as below:

PIN	DESCRIPTION
1	Motor 1 direction
2	Motor 1 enable/Speed Control
3	Motor 2 direction
4	Motor 2 enable/Speed Control
5	Motor 3 direction
6	Motor 3 enable/Speed Control
7	Motor 4 direction
8	Motor 4 enable/Speed Control
V	Output voltage 5V
G	Ground
x	Not connected

Table 1

Refer to Table 1, there are 4 individual channels which capable of driving 4 separated DC brush motor, and each channel has 2 control pins (direction pin and enable pin).

| Enable pin	Direction pin	OUT A	OUT B
0	X	LOW	LOW
1	0	HIGH	LOW
1	1	LOW	HIGH

User may refers to pin description at the bottom of FD04A Rev2.0 board.
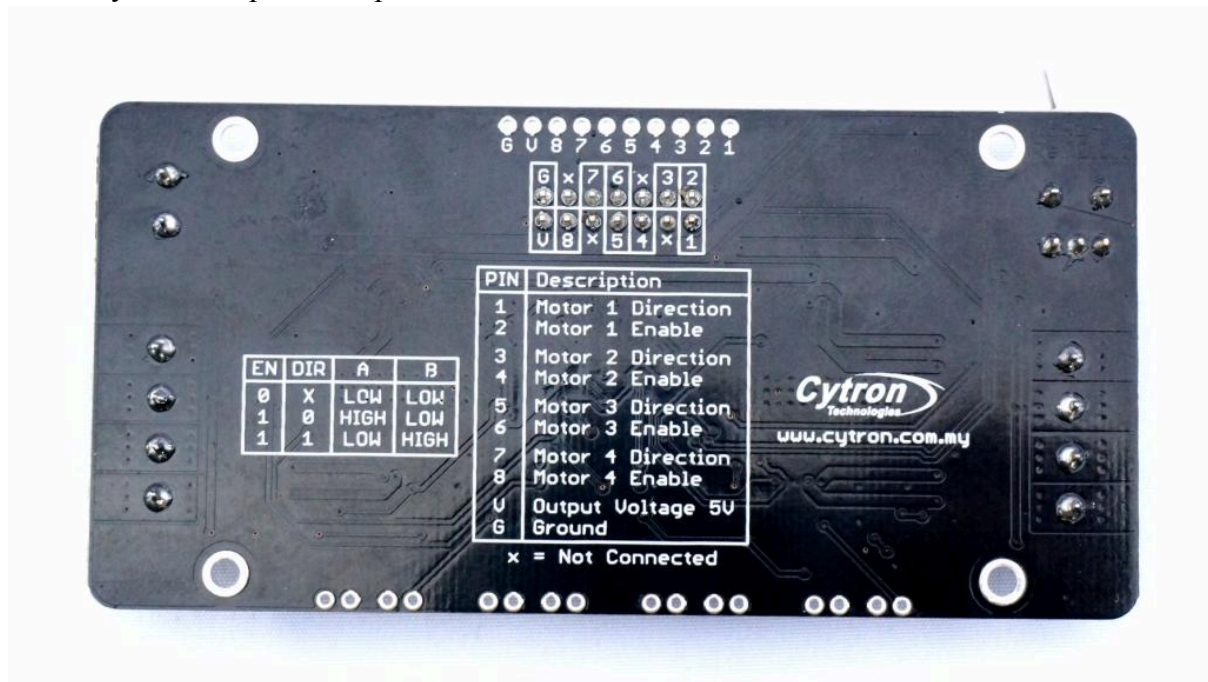
6. HARDWARE INSTALLATION

6.1 Connecting Power Supply

User may connect power supply to the POWER terminal. Please ensure the power supply voltage range within 7 - 25V (refer to product specification and limitation). Make sure the polarity is correct.
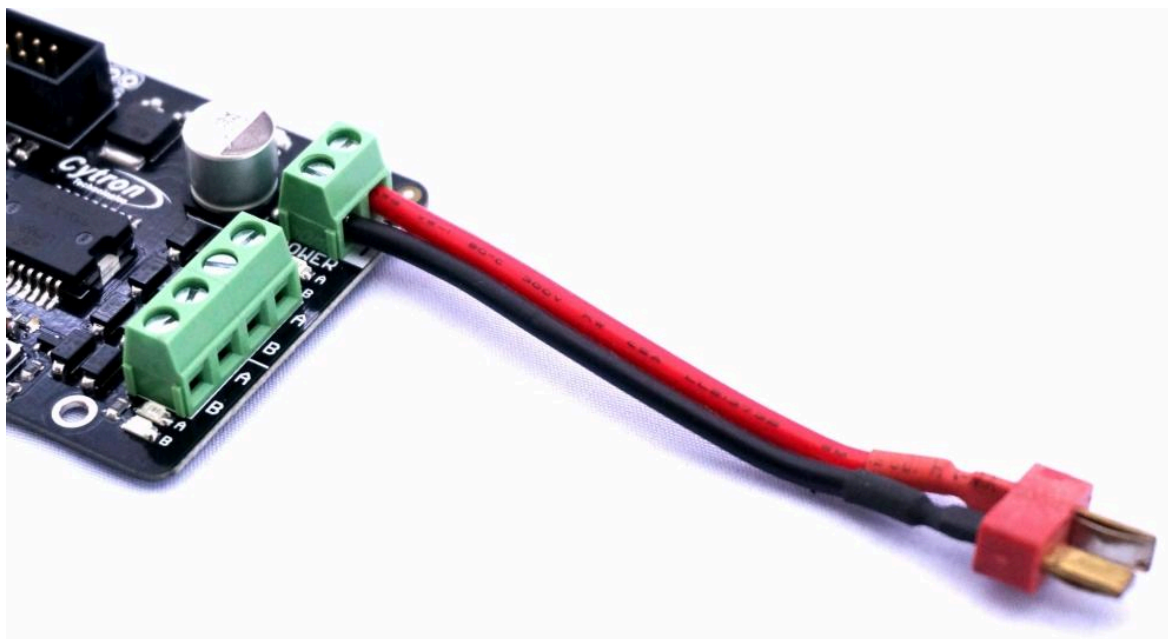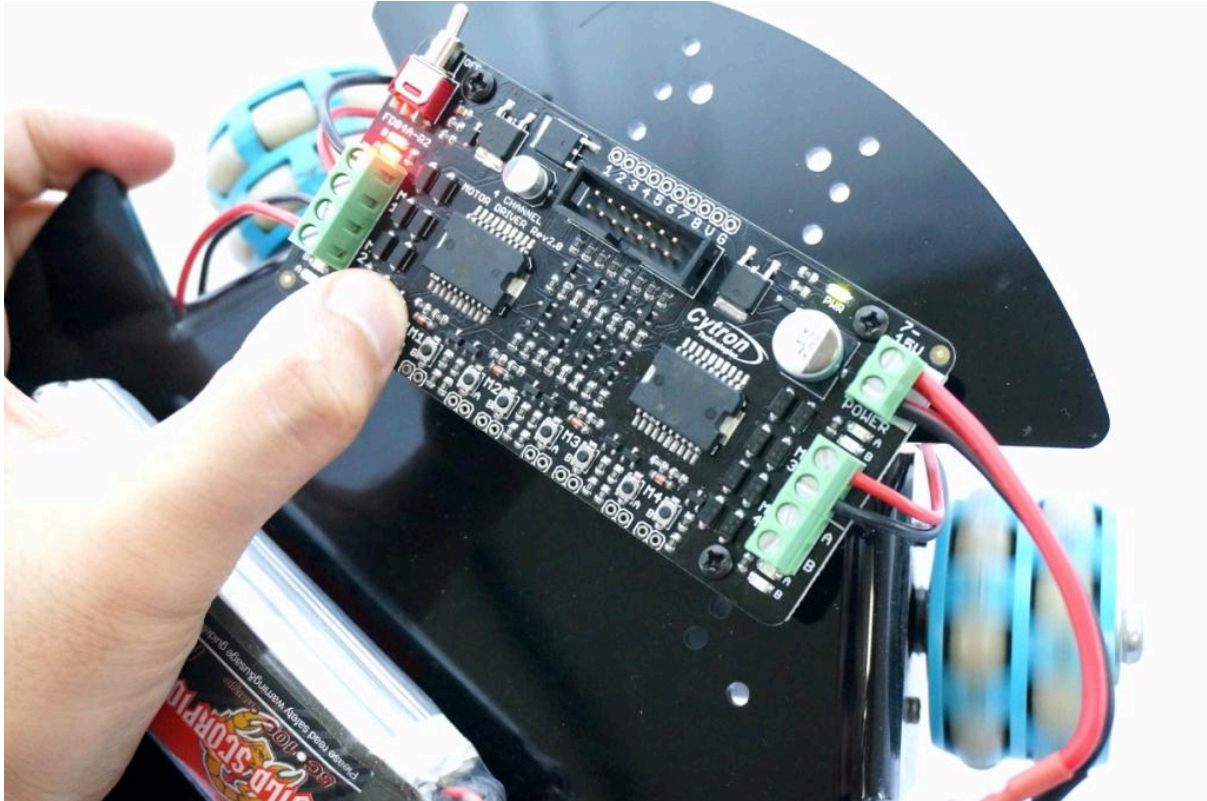
6.2 Connecting to DC Motor

User may connect DC motor to the MOTOR terminal. There are 4 MOTOR terminals with label of M1, M2, M3 and M4.
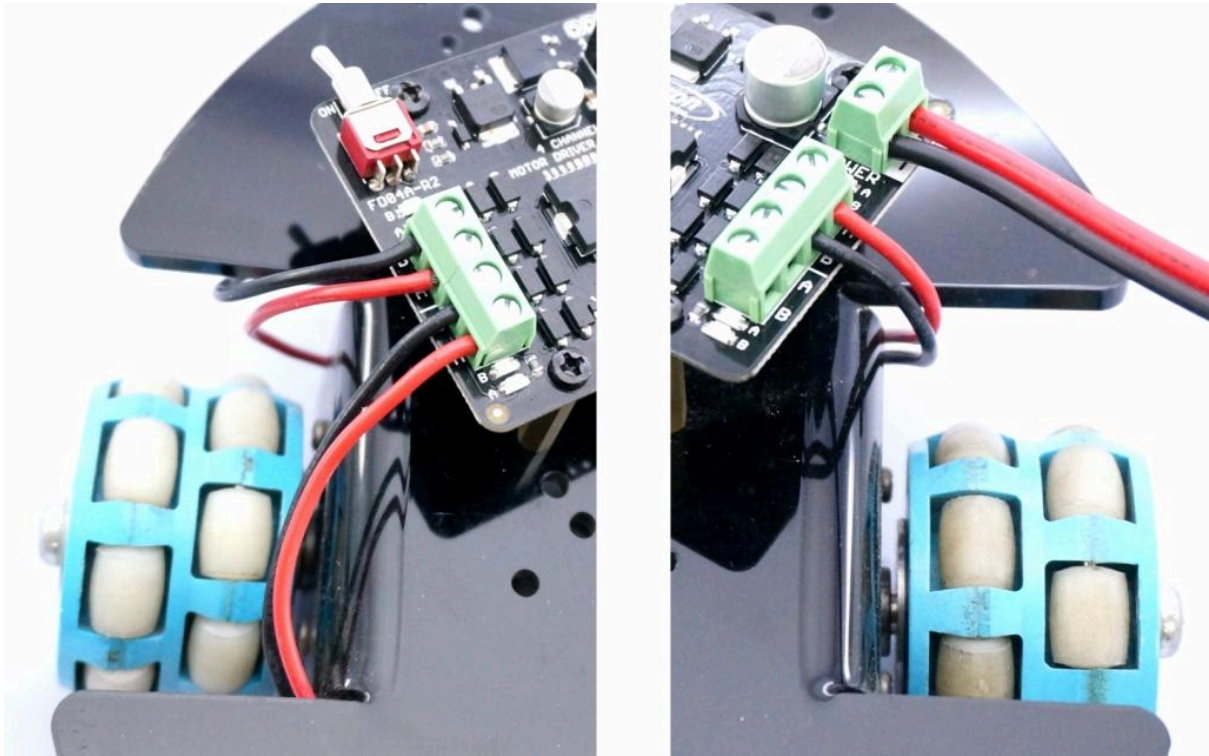
7.1 Test DC Motor

User may manually test the motor by pressing the test switch.

6.4 Connecting to Microcontroller

There are two methods to access the control pins of FD04A R2, which are through IDE connector or extra pads. IDE connector on FD04A R2 is compatible with FD04A. So, for those already bought the PR19, or build any project that uses FD04A Rev1.0, you still can replace it with FD04A R2.
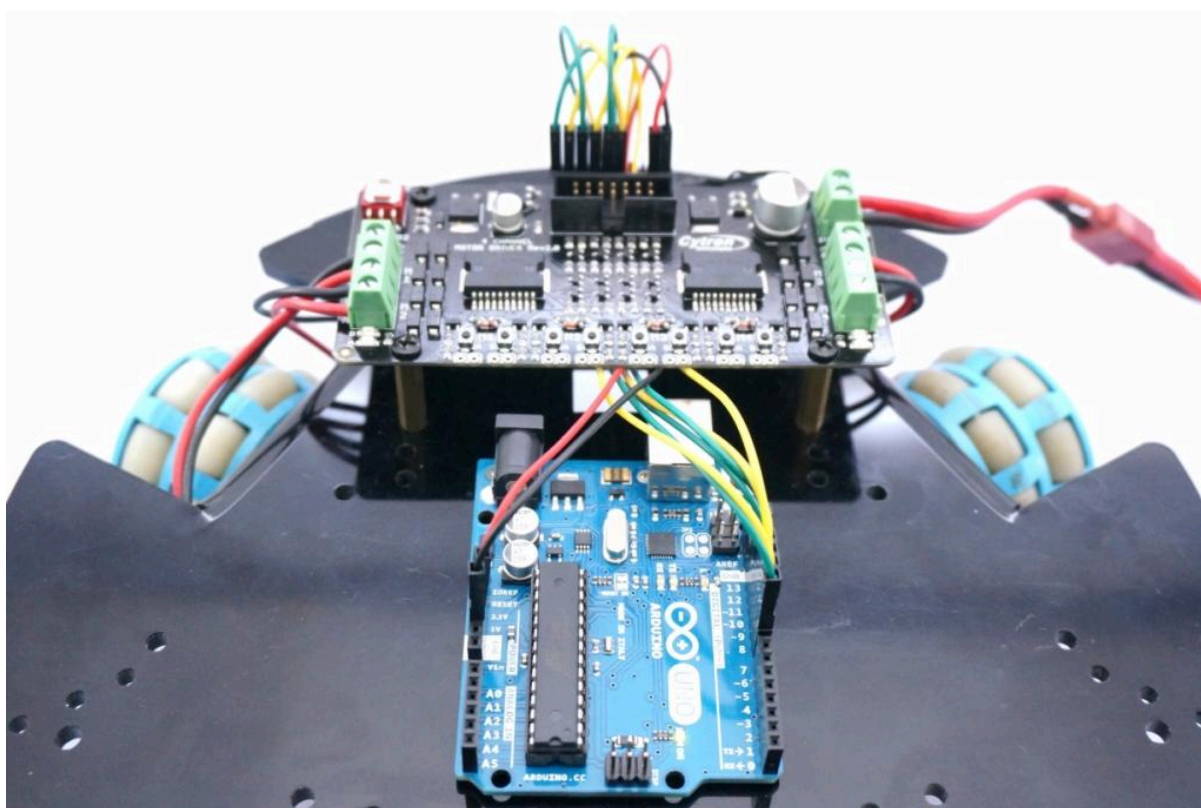
*Note: 5V (V pin) from FD04A R2 can supply the PR19 main board.

Using IDE connector
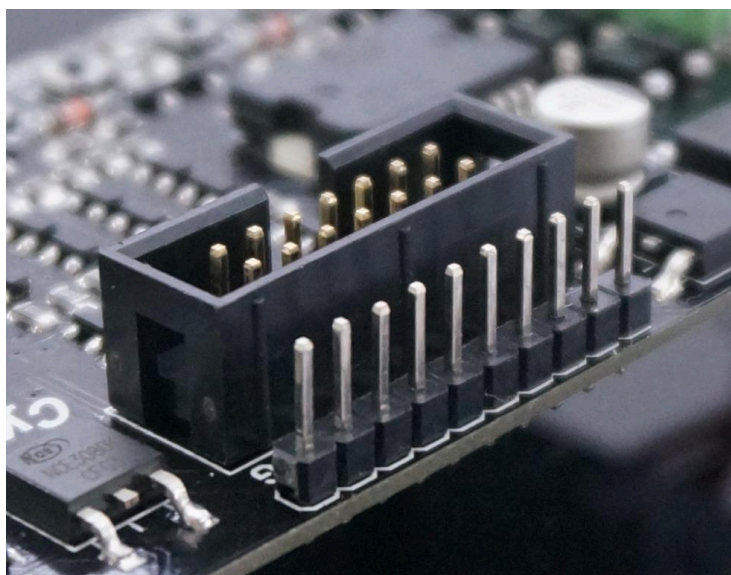
User can solder any suitable header pin on extra pad.

Using extra pad

8. WARRANTY

- Product warranty is valid for 12 months.
- Warranty only applies to manufacturing defect.
- Damaged caused by misuse is not covered under warranty
- Warranty does not cover freight cost for both ways.

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