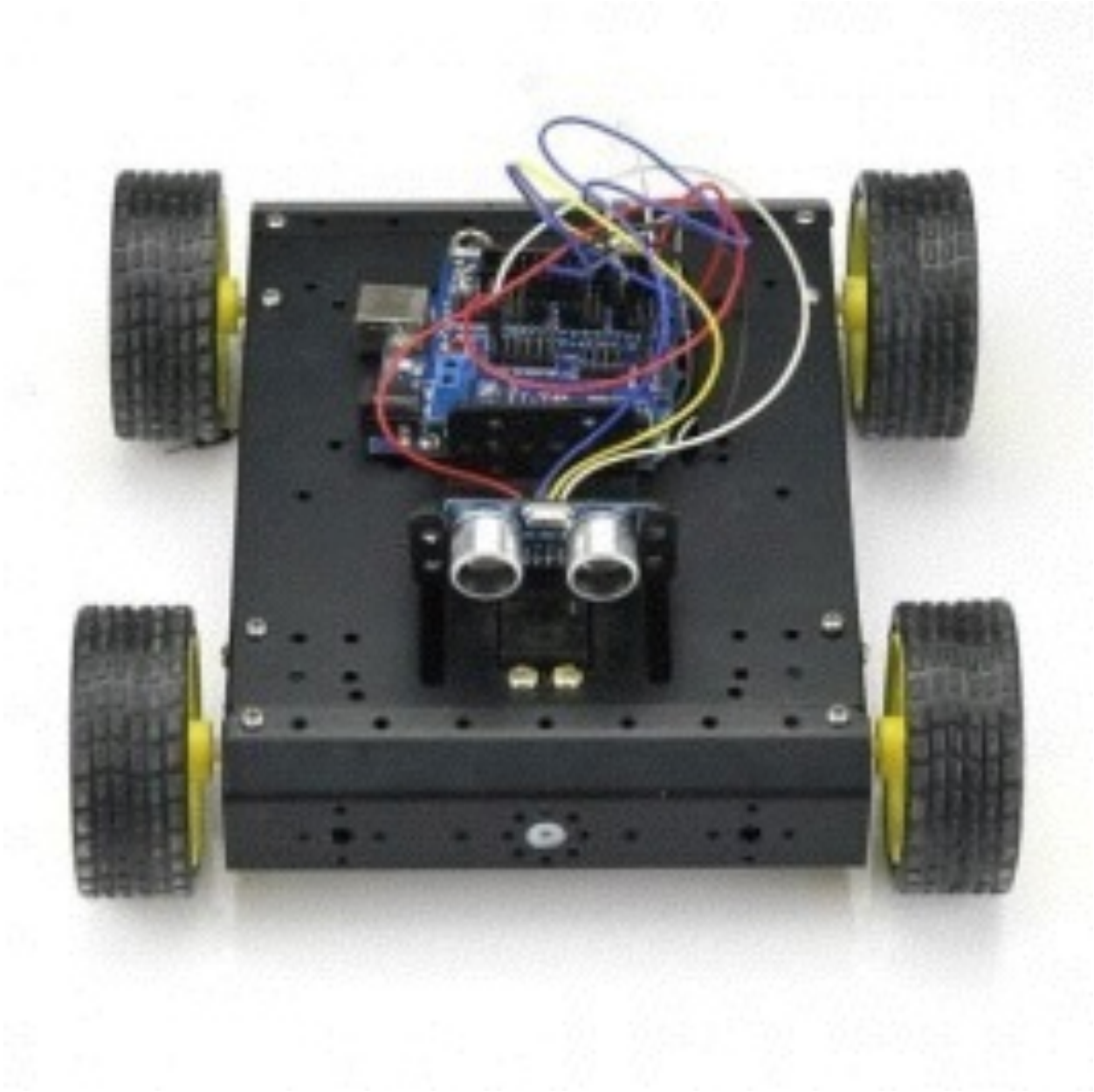
4WD mobile robot platform Installation manual v1.0

by Glenn Mossy, Dec 2014



The assembly steps Matters needing attention:

1、carefully interpret the images and pay attention to installation order, in case of doubt can refer to the next installation diagram.

2. please be careful to use cell polarity.

Tools Required

1. Cross or Phillips Screwdriver (2mm and 4mm)
2. needle nose pliers
3. Wire Cutters
4. Wire Strippers

Outline of Installation Steps

1. Mount the 4 DC Motors, 2 on each motor side plate, be sure the wiring lugs are exposed.
2. You will be cutting the red and black wire into two 4” Reds, two 4” Black, two 7” Reds, two 7” Black,
3. Wire up each of the 2 motors in parallel to each other. The poles of the motors need to criss-cross over from bottom to top from one to the other. You will need to cut the red and black wire in into 4” pieces, and strip the ends of each, and attach to the motor lugs. You can twist each wire on with your fingers and solder up the connections later.
4. You should have a 14” black and red wire, cut each into half, creating two 7” wires and two 7” black wires, and strip all the ends.
5. Use the 6AA Battery pack to test each pair of m
6. between 6 volts to 9 volts out of the battery pack.
7. Attach the wheels and verify that both motors on the plate spin in the same direction. Repeat for the second set of motors.
8. Attach the bottom plate to both motor plates.
9. Attach the Battery pack inside the bottom plate with AA batteries parallel to the motor plates.
10. Attach the front and rear end plates.
11. Attach the Motor Drive board to the bottom plate using the 4 long screws, nuts, and tube extensions.
12. Optional: Attach the ON/OFF switch and the External Battery(charging jack) to the top plate.
13. Driver Motor Board: use a small phillips to loosen up all the wire screw connections and remove the two jumpers between the ENA/5V and ENB/5V.
14. Wire up the motors to the motor driver.
    - 14.(a) Left black to Out1, The negative pole connects to OUT1 port
    - 14.(b)red to Out 2, The positive pole connects OUT2 port;
    - 14.(c)Right black to Out4, The negative pole connects to OUT4 port

14.(d) red to Out3, The positive pole connects to OUT3 port.

15. Wire up the 6AA battery pack to the motor driver. The black wire to the GND and the Red wire to the VCC of the motor driver. Press the blue button and the motor driver led should turn on and off. Verify that led stays on Solid with all the wires firmly connected to the driver.

16.Attach 6 Male to Male M/M wires to the Motor Driver

16.1.Brown to IN1

16.2. Yellow to IN2

16.3. Green to IN3

16.4. Orange to IN4

16.5. Purple to ENA

16.6. Blue to ENB

17. Attach Power Red/Black. Cut or attach using M/F jumpers.

17.1.Red to 5V

17.2. Black to GND (second wire. Battery should remain attached.

18.Optional: Wire in ON/OFF switch. (connect Wht/Blk/Brn wire to switch), Red wire from Battery to center black. White wire to 5V on Motor driver; Black

19.Pull all the wires through the top plate. And fasten the top plate.

20.Using a screw driver, power up the motor driver by pressing the blue button.

21.Attach the Sainsmart Sensor Shield to the Arduino UNO.

22.Mount the Sensor Shield and Arduino UNO to the top plate. Face the USB port towards the rear to allow connection to your computer.

23.Connect the power Red/Black to POWER on the Sensor Shield, 5V Red, Black to GND. With the led on the motor driver, the led on the sensor shield should be lit.

24. Wire up the Motor Driver to the Sensor Shield.

24.1. Brown IN1 to S (7)

24.2. Yellow IN2 to S (6)

24.3. Green IN3 to S (4)

24.4. Orange IN4 to S (2)

24.5. Purple ENA to S (5)

24.6. Blue ENB to S (3)

25.Mount the Servo.

26. Wire the Servo to the Shield. BRN to GND, RED to V, ORG to S (9).

27. Mount the HC-SR04 Sensor.

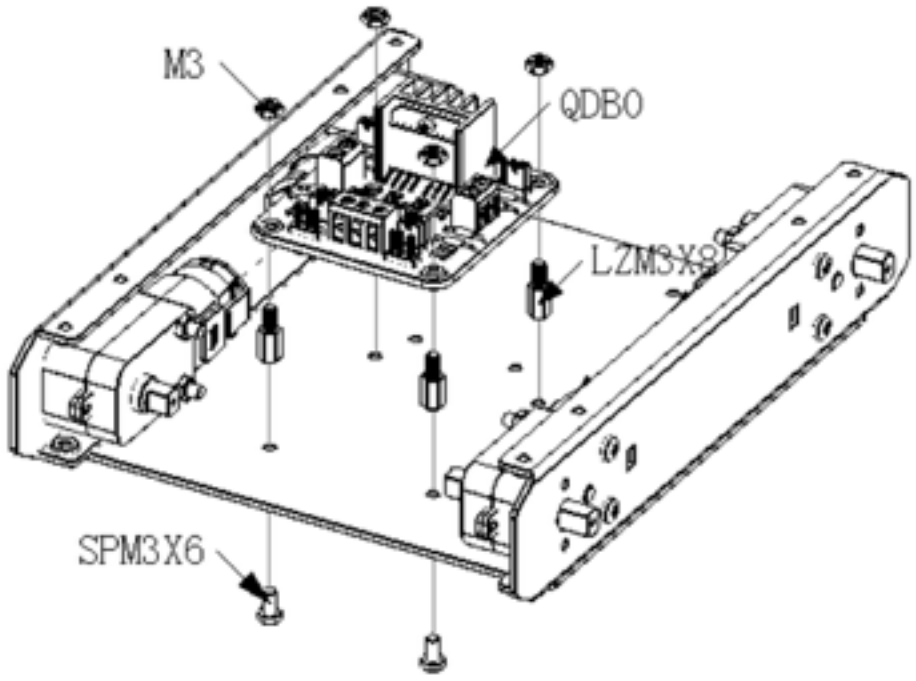
28. Wire the HC-SR04 to the Sensor Shield.

28.1.5V, Red, Echo (11) Green, Trigger S(12) Yellow, GND. Black

29. Add a 9V battery to power the Arduino UNO.

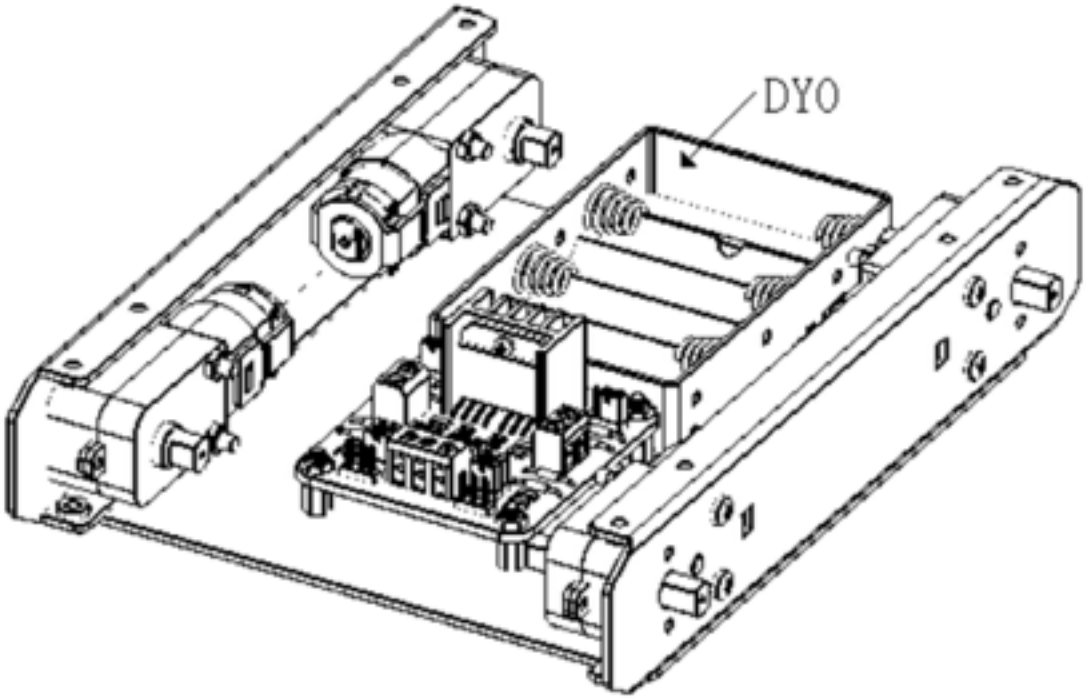
30. Power UP. Load the 4WDRobot_Motor_Test01.ino sketch and test.

Step 2.1 drive plate installation



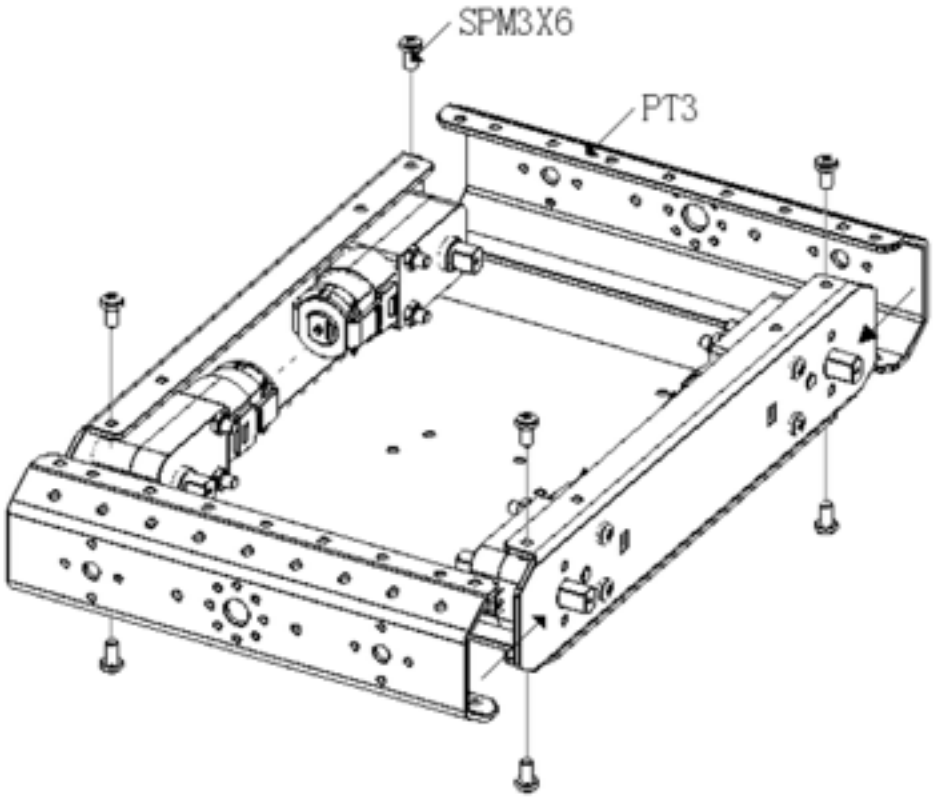
Drive board mounting direction freely, pay attention to the ipsilateral motor wiring direction sequence

Step 2.2 are arranged in the battery box



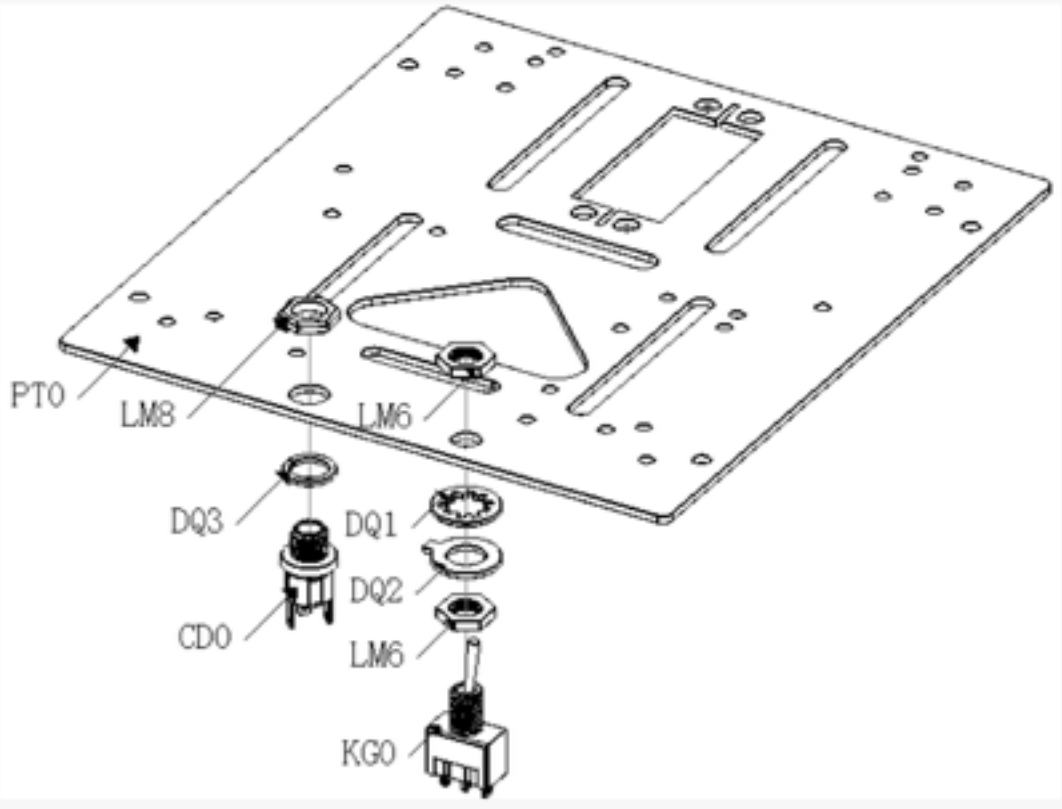
The battery box can be double-sided glue fixed, rear wheel motor wiring need to insert the DuPont line cap, access interface of the stepping motor

Step 3 end plate installation

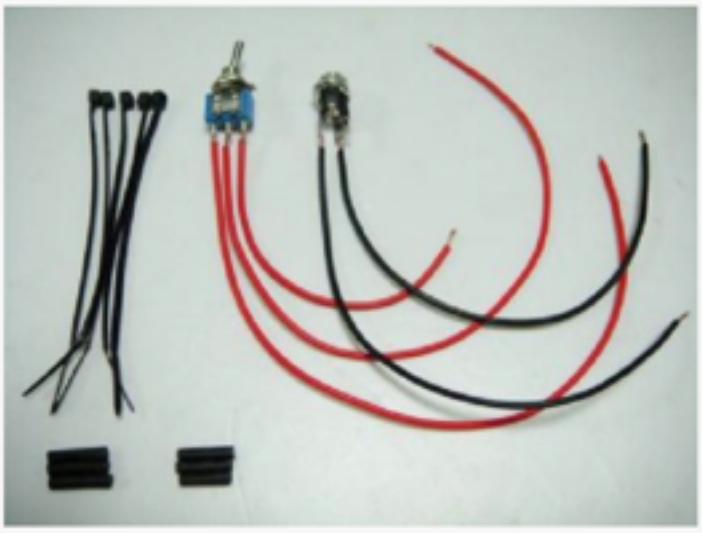


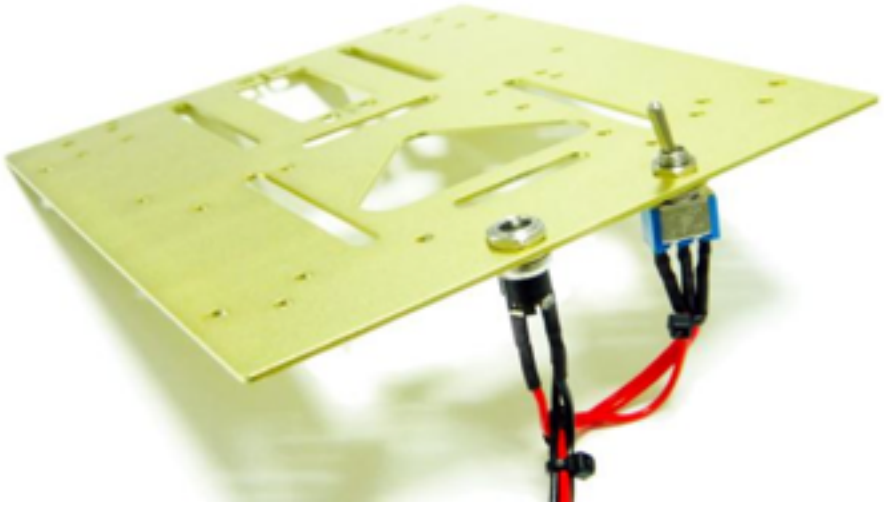
This section after the installation is complete, the reference below, if there is any difference in modified

Step 4 with a charging interface switch installation

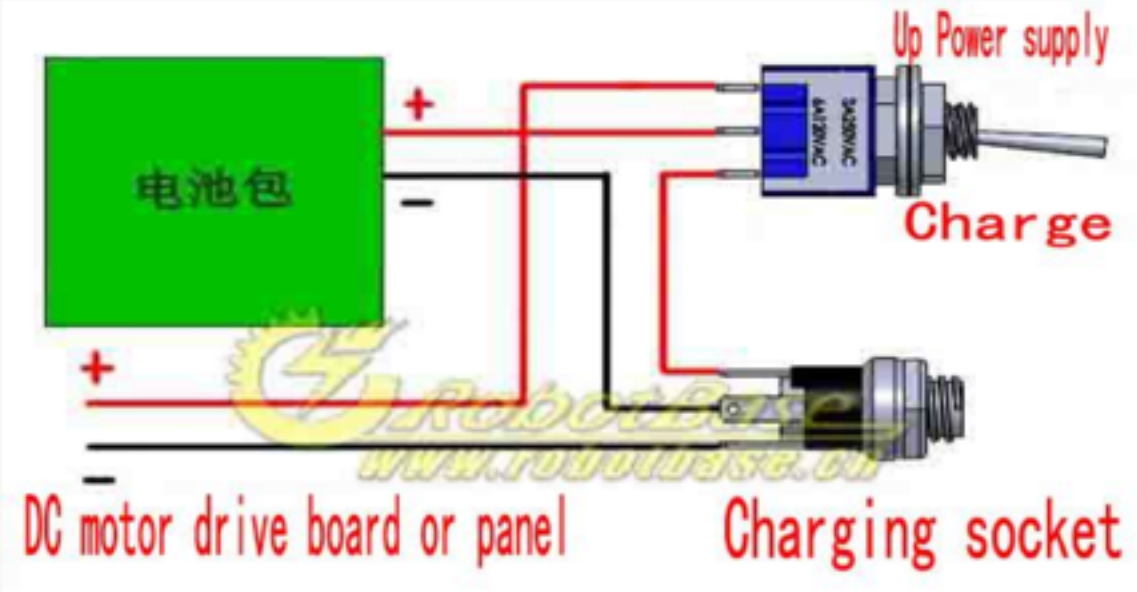


（1）Charging switch kit production



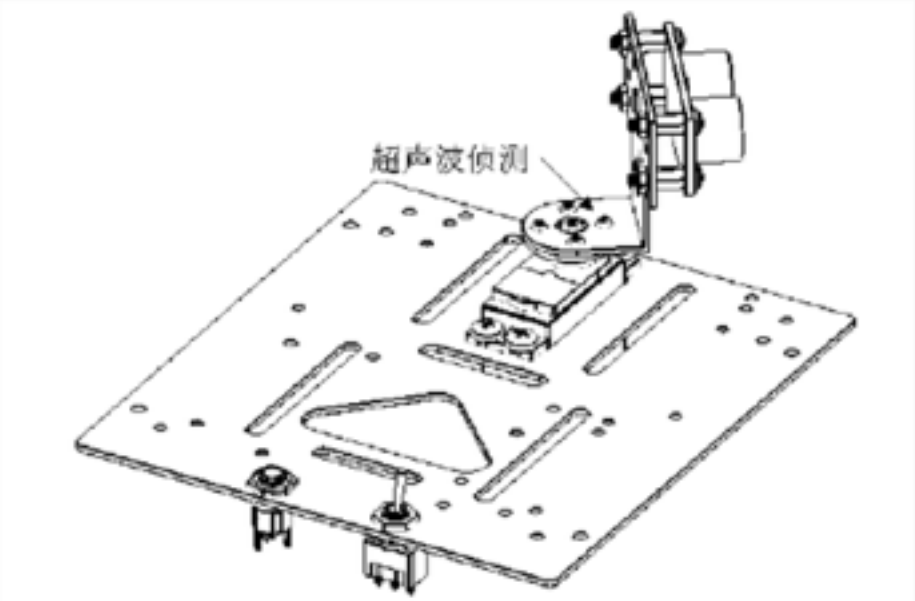


（4）power switch and a charging connection diagram



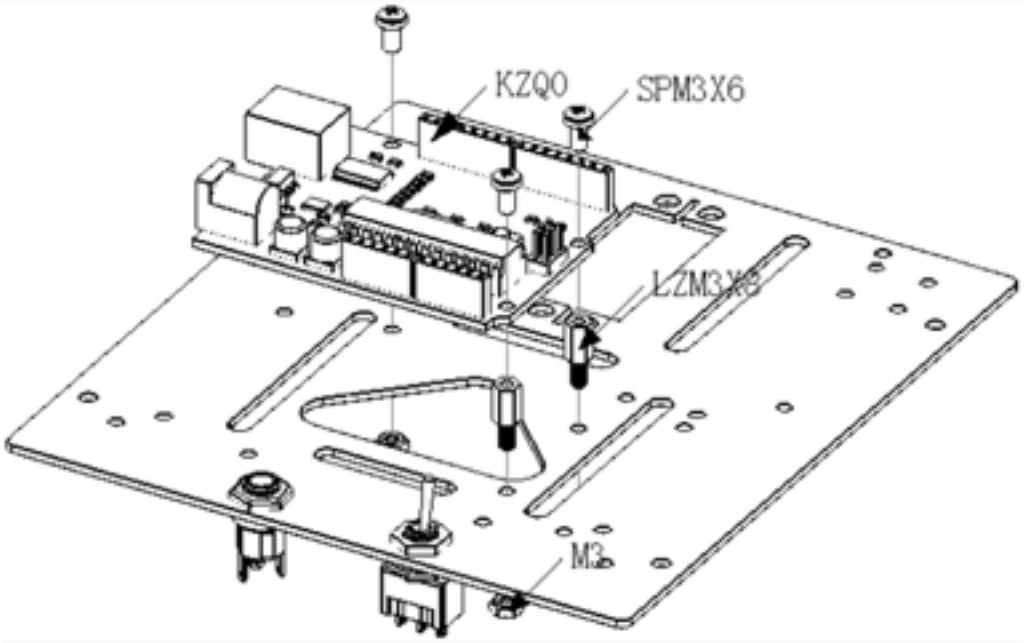
Step 4.4 rotary ultrasonic detection installation

(Extended)



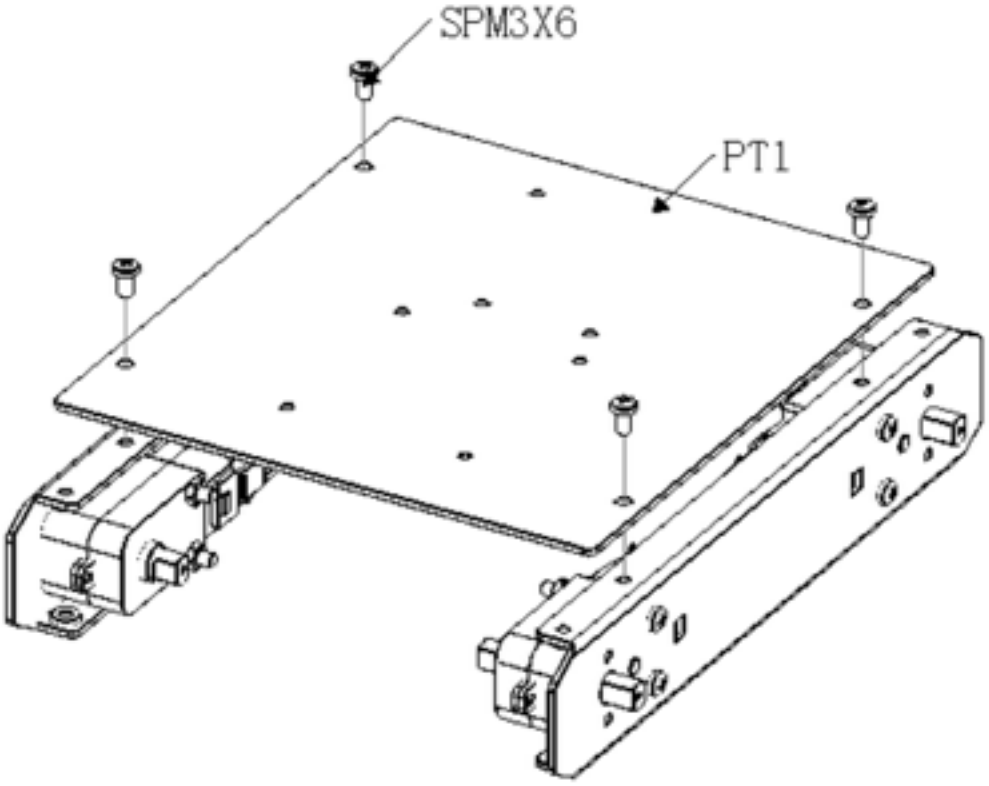
Note: before installing the servo steering gear, through the servo controller, Arduino controller to the median (0 degree position)

Step 4.1 controller installation

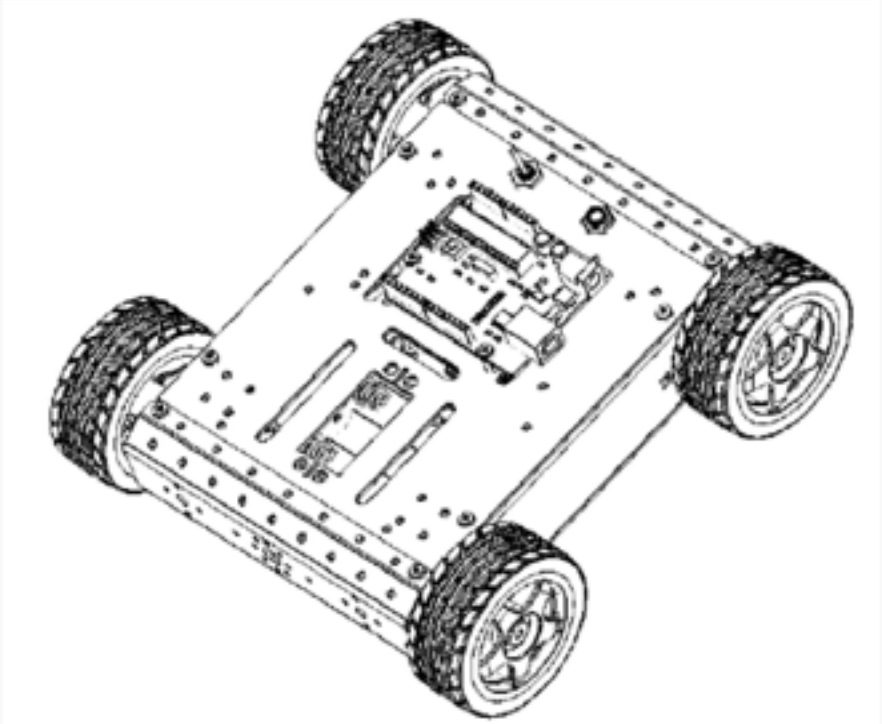


This platform is provided with a variety of controller mounting hole, install Arduino Mega168/328 controller, Arduino Mega1280/2560, Arduino UNO,

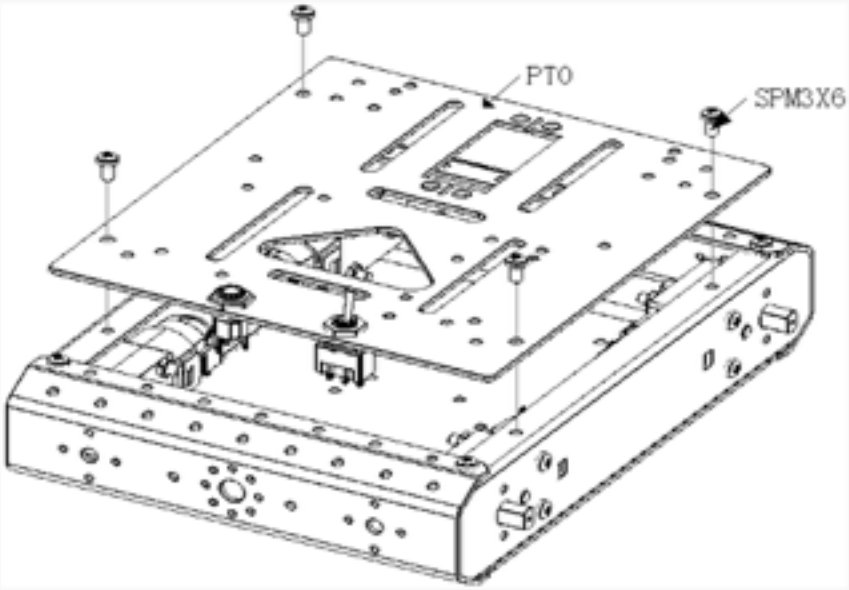
Step 2 Side and the lower plate installation



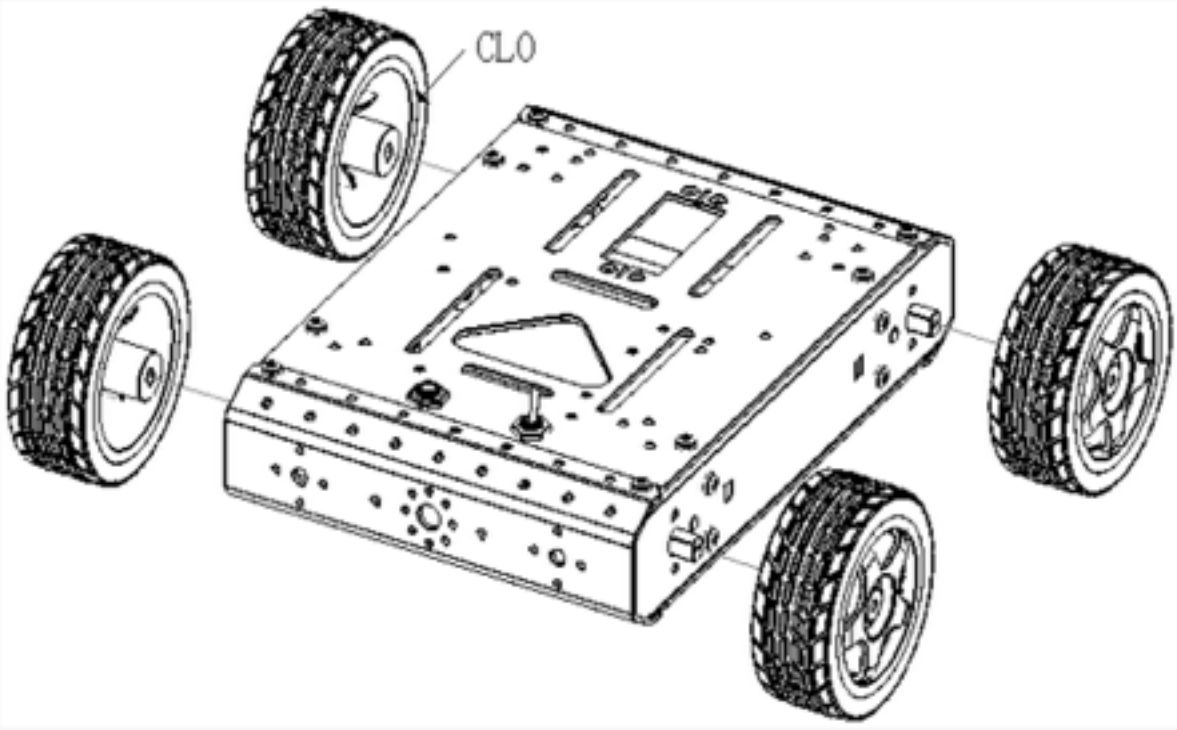
Step 7 basic configuration mobile platform installation completion effect



Step 5 on board mounting



Step 6 wheel mounting



Specifications and parameters:

1、 driving motor gearbox ratio: 1:48

2 、driving motor no-load speed: 220rpm

3 、wheel diameter: 65mm

4 、wheel width: 26mm

5 、platform length: 206mm

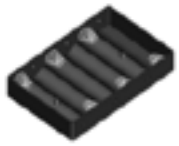
6 、platform width: 200mm

7 、platform height: 65mm

8 、Platform weight: 620g

9 、chassis ground distance: 13mm

the parts list

Name (number)	Code	Icon	Name (number)	Code	Icon
The platform plate (1)	PT0		Platform plate (1)		
Platform side (2)	PT2		Platform end plate (2)	PT3	
Toggle switch (1)	KG0		Charging interface (1)	CD0	
DC motor (4)	DJ0		Power supply box (1)	DY0	
Wheel (4)	CL0				

31.

(二) connecting parts list

SN	Name	Code	Icon	Specification and description
1	Cruciform slot screw	SPM3×6		24 个 M3×6
2	Cruciform slot screw	SPM3×25		8 个 M3×25
3	Six corner	LM3		16 个 M3
4	Elastic washer	DQ1		1 for the M6 thread parts
5	Check washer	DQ2		1 for the M6 thread parts
6	Elastic washer	DQ3		1 for the M8 thread parts
7	Six corner	LM6		1 for the M6 thread parts

Step 1: DC motor mounting