Electronic Scales DIY Kit

1. Introduction

Multi-function electronic scales, not only to weigh, it can count, set the alarm and view the time.

2. Parameter

NO.	Parameter	Value
1	Product name	Multi function electronic scale
2	Product model	Trans--CRS--162DZC
3	Maximum weighing	10kg
4	Precision grade	1g
5	Machine size	15.2*14.1*6.5cm(Length*width*height)
6	Platform size	15.6*9.5*0.5cm(Length*width*height)
7	Net weight	0.515kg
8	Power	DC 5V

3. Feature

1>. Power-off memory function,it can save the parameters that have been set.

2>. Match dates and weeks automatically.

3>. Set the alarm function.Set on and off.

4>. Calibration function, pressure coefficient calibration, to achieve zero error.

5>. Small size, large scale, almost anything common around can weigh.

4. Component listing

NO.	Component Name	PCB Marker	Parameter	QTY
1	Metal Film Resistor	4.7K	4.7K	2
2	Crystal	11.0592M	11.0592MHz	1
3	Crystal	32.768K	32.768KHz	1
4	Ceramic Capacitor	30P	30pf	2
5	IC Socket	DS1302	DIP-8	1
6	IC Socket	AT24C02	DIP-8	1
7	IC Socket	STC89C5XRC	DIP-40	1
8	DS1302	DS1302	DIP-8	1
9	AT24C02	AT24C02	DIP-8	1
10	STC89C52	STC89C5XRC	DIP-40	1
11	CR1220 Battery Socket	CR1220		1
12	CR1220 Battery		3V	1
13	DS18B20	DS18B20	TO-92	1
14	Round Pin	DS18B20	3P	1
15	Power Pin		2.54mm 2P Right Angle	1
16	Switch Pin		2.54mm 2P Right Angle	1
17	Potentiometer	103	10K	1
18	S8550	S8550	TO-92	1
19	Buzzer		5V	1
20	Network Resistor	103	10K	1
21	Female Pin		4P	1
22	Female Pin		16P	1
23	Male Pin		4P	1
24	Male Pin		6P	1
25	Male Pin		2.54mm 8P Right Angle	1
26	HX711 Module			1
27	LCD1602		Yellow	1
28	Male Pin		16P	1
29	Cable		2P 10cm	2
30	Keyboard		4*4	1
31	Pressure Sensor		10Kg	1
32	Acrylic Stent			6
33	Seat Cushion			6
34	Screw		M3*10	17
35	Nut		M3	17
36	Acrylic Gasket		2.5*2cm	8

37	Screw		M7*30	4
38	KCD1-11 Switch			1
39	Power Socket			1
40	Nut		M11	1
41	USB Cable		5.5*2.1MM	1

5. Function

1>. Calendar, time, temperature display function.

It will display Date,Time and Temperature after power on.

It can set Date and Time by Set Button 'A' and '+' button 'B' and '-' button 'C'.Button 'D' can check the alarm clock.

2>. Alarm function.

In calendar time mode, press the button D to enter the view alarm interface.

User can adjust the alarm status and regular time by Set Button 'A' and '+' button 'B' and '-' button 'C'.

Buzzer alarm when reach the regular time.Press any button to end the alarm.

The ON and OFF status display is Chinese.“开”means ON, and “关”means OFF.

3>. Valuation scale function.

“Calendar mode” and “Electronic scale mode” switching by button “C”.

The value of unit price “P” can be set by numeric button, and the

Money “M” will be calculated automatically.

The unit price “P” can be accurate to 0.1. At this time, press the button ‘D’ to switch to the counting scale mode.

4>. Counting scale function

“weighing scale” and “counting scale” switching by button “D”.

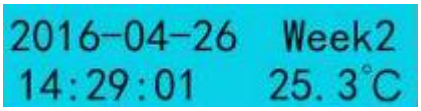
1pcs weight D can be set by the digital keyboard, and the system will automatically calculate the number of N. A single weight of D can be accurate to 0.1g.

E.g: the national standard weight of one yuan coin is 3.2G. The weight of the single weight D is set to 3.2G, pan put 10 coins, electronic scales show weight: 0.032KG, number N=10.

6. Setting method

1>. Setting of calendar and time

Turn on the switch after the power is switched on. Boot mode defaults to calendar time mode". The screen displays as follows:



In this mode, only four keys of A, B, C and D are effective.

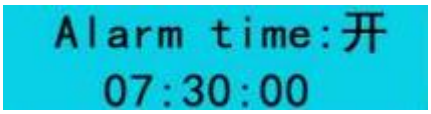
A: setting; press the button ‘A’ in turn, the year, month, day, time, minutes, seconds of the cursor blinking in turn. It can be adjusted by B and C keys.

B: Add; click and add a value.

C: Reduce; click and reduce the value of one.

D: Check the alarm clock, enter the “alarm clock” interface.

The screen displays as follows:



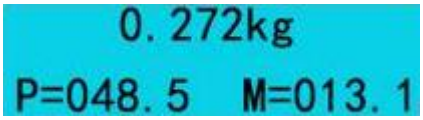
2>. Setting of alarm clock

In this mode of the interface, press the button A, the alarm switch ON/OFF, time, minutes, seconds cursor blinking in turn. Then it can be adjusted by buttons B and C. Press the button D, you can exit the "alarm settings interface" anytime to return to "calendar time interface".

The ON and OFF status display is Chinese. "开" means ON, and "关" means OFF.

3>. Setting of valuation scale

In the display time mode, press the C key, switch to the "valuation scale" mode.The screen displays as follows:



The first line displays weight, and the unit is KG.

The second line displays unit price "P" and money M".

In this mode, the 16 buttons are all effective.

Keypad introduction:

1234567890 represents the number, the keyboard can set the value of P, the value can be accurate to 0.1g.

After setting the unit price, the system will automatically calculate the money M.

A: clear.

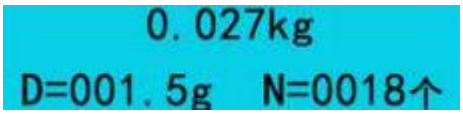
B: clear unit price P

C: switch to "calendar time mode"

D: switch to the "counting scale mode"

4>. Setting of counting scale

Under the "valuation scale mode", press the button D to switch to the counting scale mode. The screen displays as follows:



The first line displays weight value, and the unit is KG.

The second line displays D=single item weight, number of N= items.

Keypad introduction:

1234567890 represents the number, the keyboard can set the value of P=, the value can be accurate to 0.1g.

After setting the unit price, the system will automatically calculate the Number N

A: clear.

B: clear unit price P

C: switch to “calendar time mode”

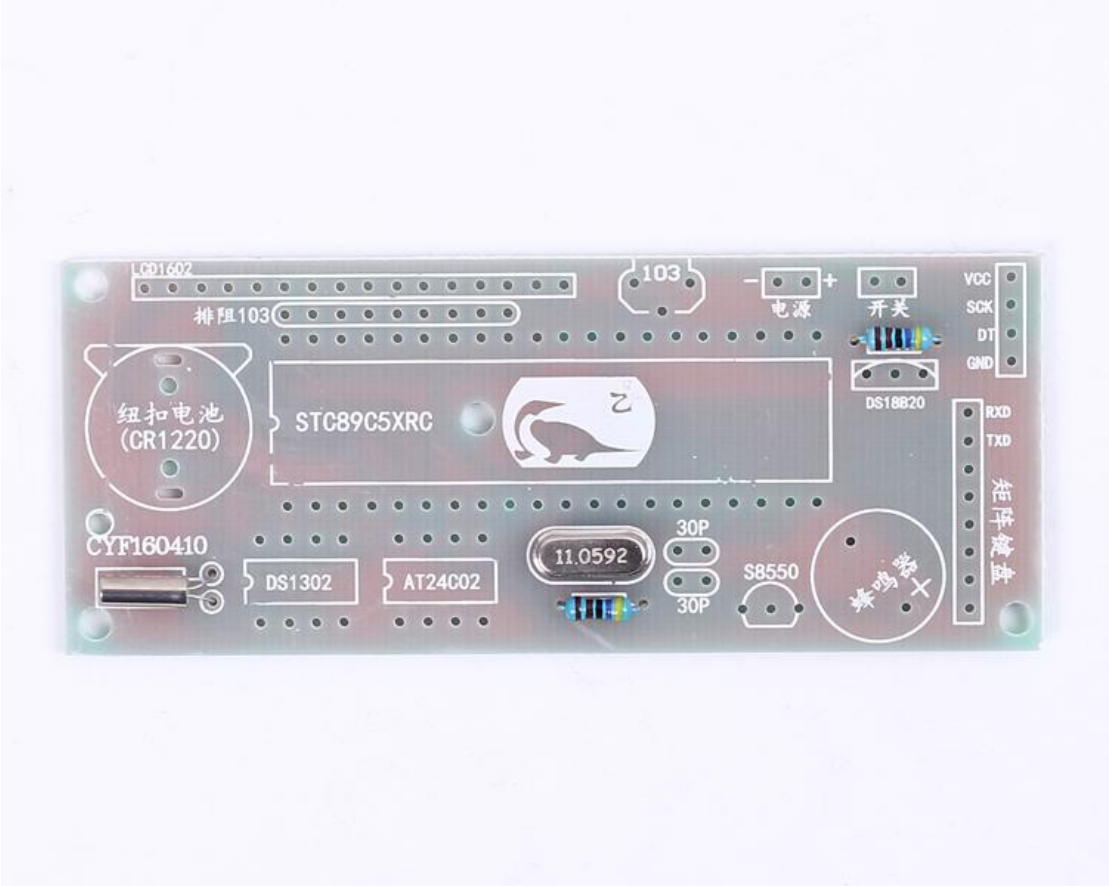
D: switch to the “counting scale mode”

5>. System calibration method

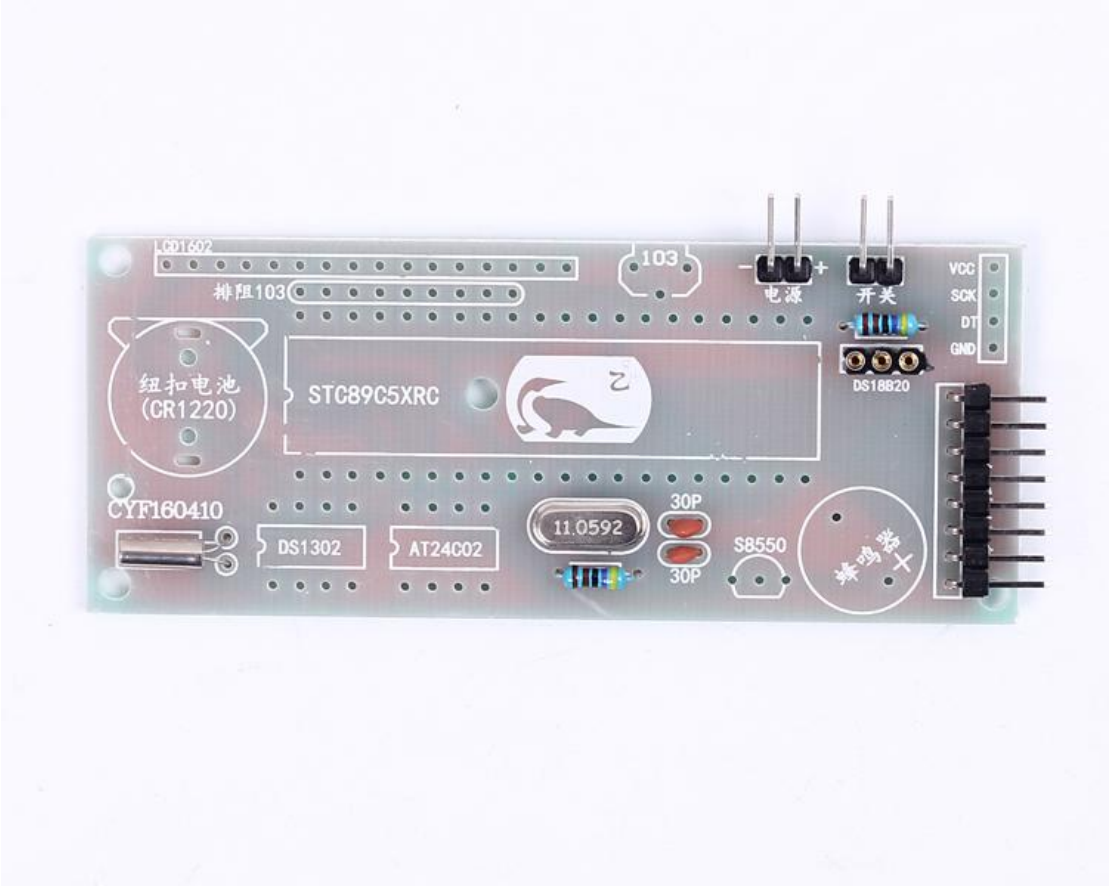
After the switch on, the system is stable, put a fixed weight object(Known weight items) on the scale. If the system is not equal to the fixed weight display, then press button “#” for 3 seconds. Then the right side of the first line of the screen shows the “calibration factor". After the calibration factor appears, the calibration factor can be increased and reduced by the buttons C and D respectively. By adjusting the "calibration factor", the weight displayed on the screen is exactly equal to the weight of the object. Finally, press button "#" for 3 seconds, the calibration factor disappears, the calibration is complete.

7. Installation Steps

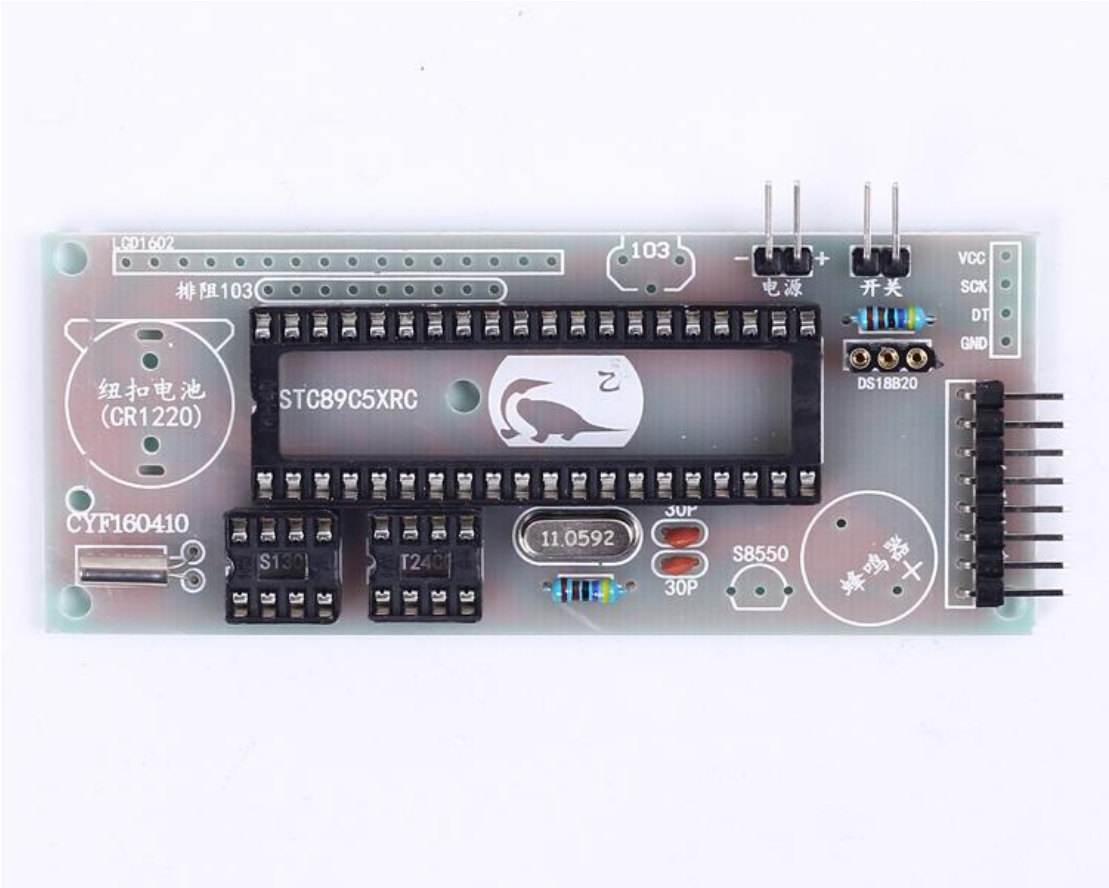
Step 1: Install the PCB.Install 2pcs 4.7K resistor and 1pcs 11.0592MHz crystal and 1pcs 32.768KHz crystal in right place.



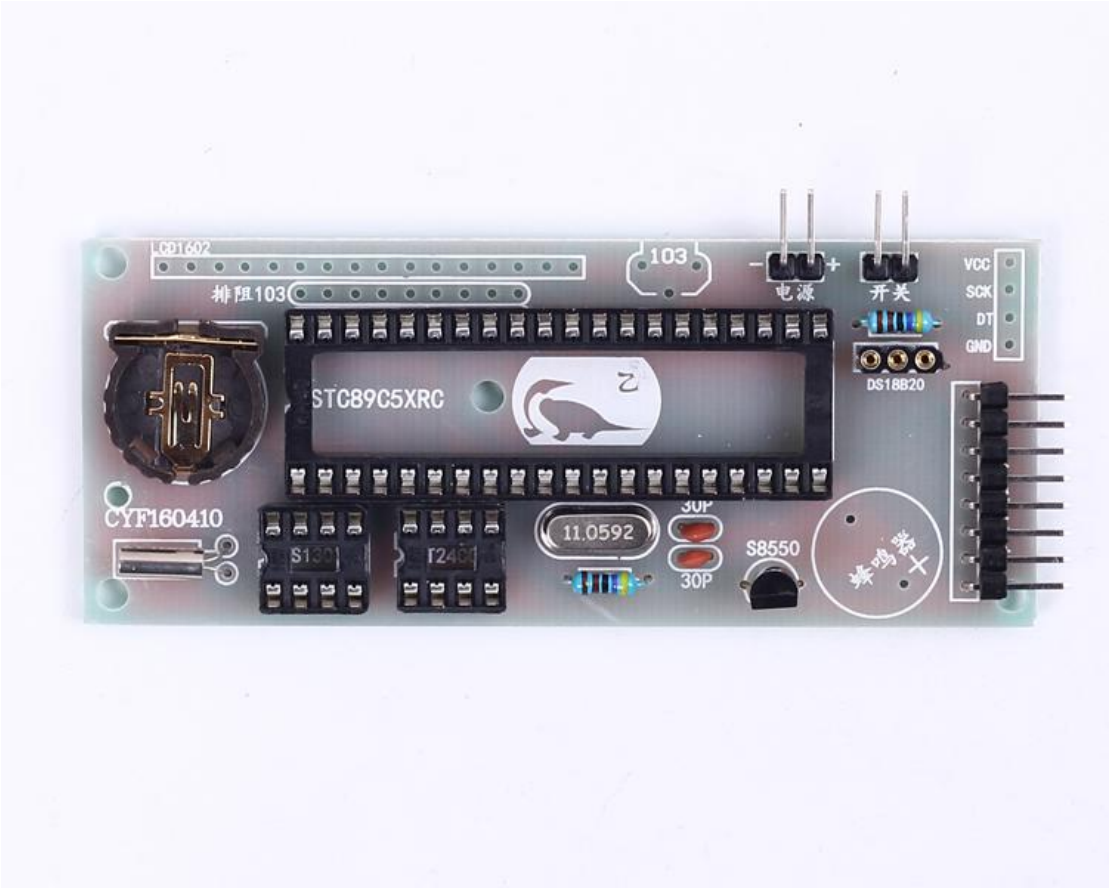
Step 2: Install 2pcs 30pf capacitor,2pcs Right Angle 2P Male Pin for power and switch,1pcs Right Angle 8P Male Pin for keyboard,1pcs 3P Round Pin for DS18B20 sensor.



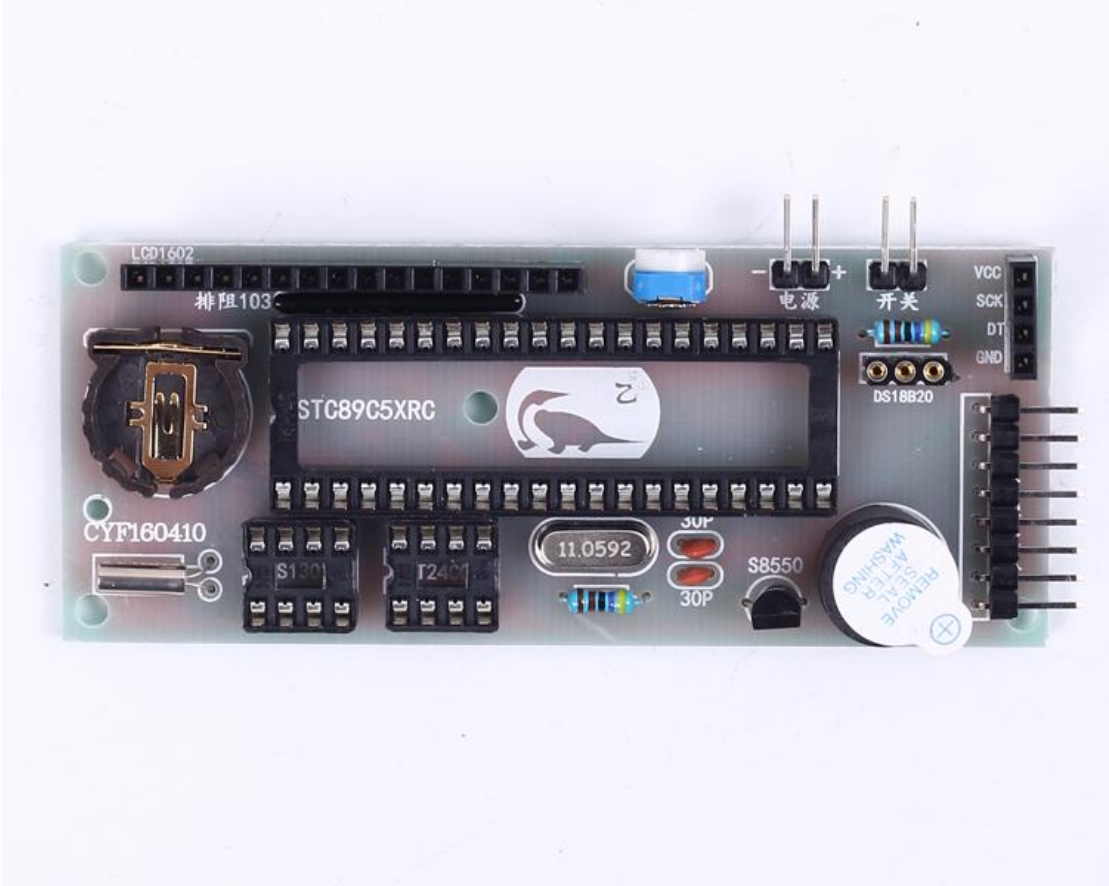
Step 3: Install 2pcs DIP-8P IC socket and 1pcs DIP-40P IC socket.Pay attention to the installation direction.



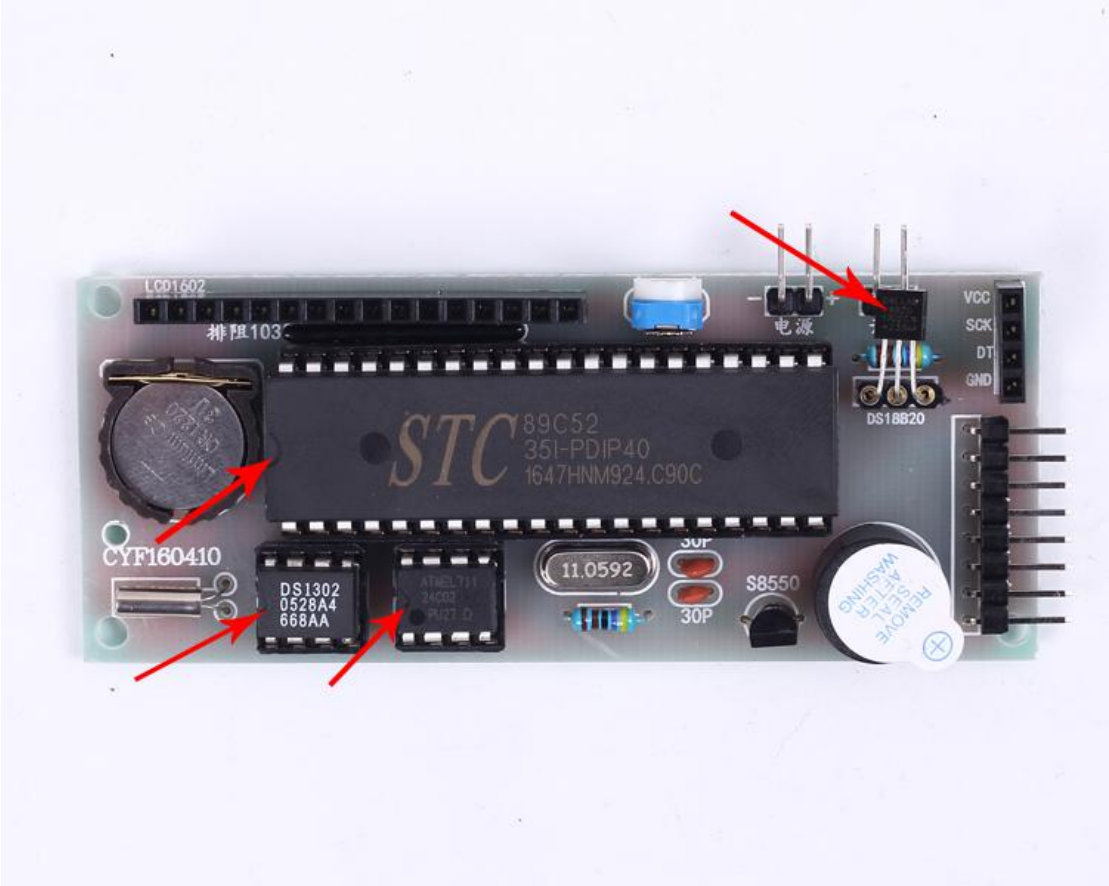
Step 4: Install 1pcs CR1220 battery socket and 1pcs S8550



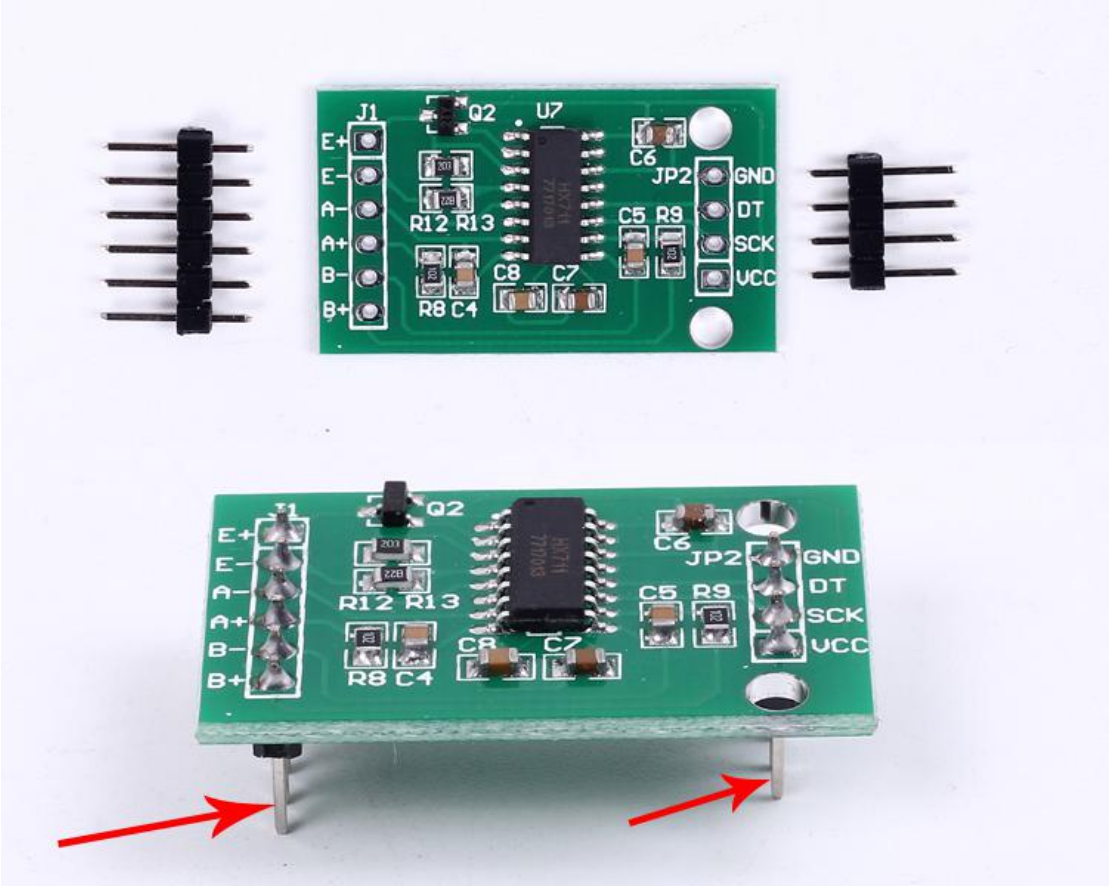
Step 5: Install 1pcs 10k network resistor,1pcs 10k potentiometer,1pcs 4P Female pin for HX711 module,1pcs 16P Female pin for LCD1602,1pcs Buzzer.



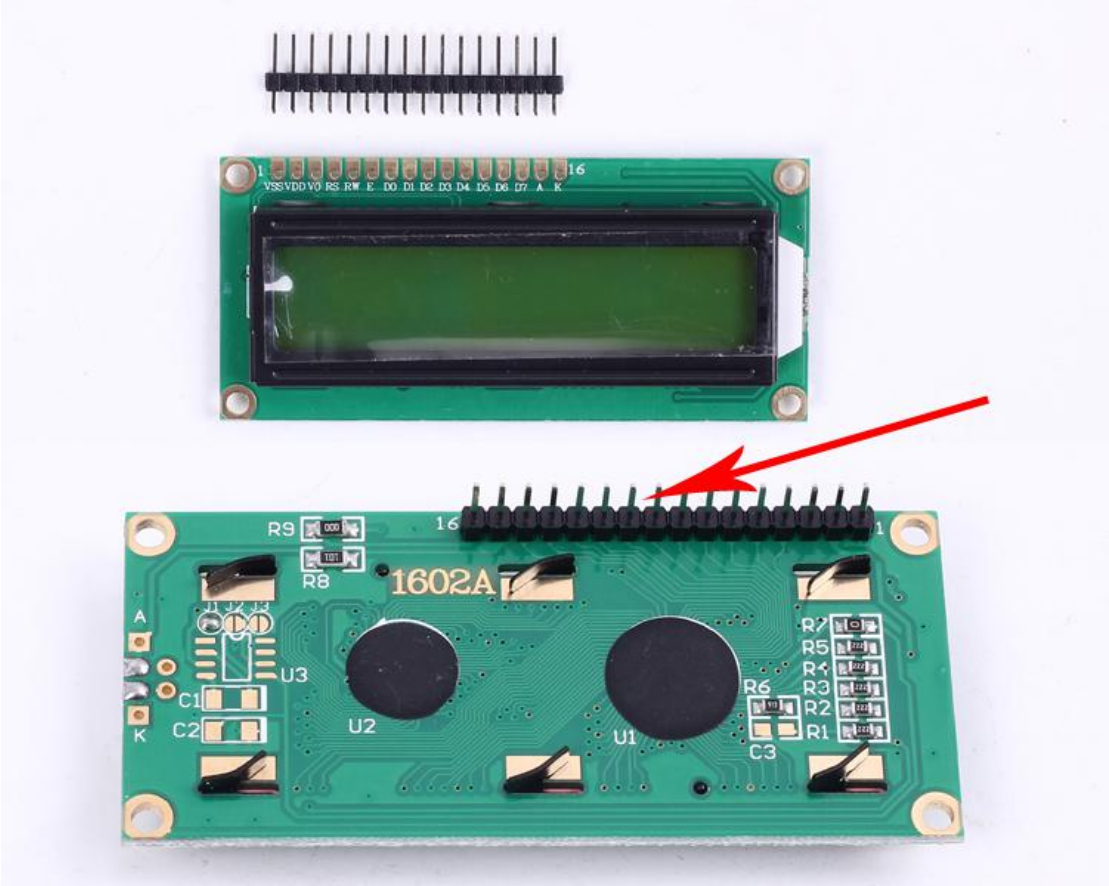
Step 6: Install 4pcs IC and battery.Pay attention to the installation direction.



Step 7: Install 4P and 6P male pin for HX711 sensor module.Pay attention to the installation direction.



Step 8: Install 16P male pin for LCD1602 display module.Pay attention to the installation direction.



Step 9: Assemble PCB board,HX711 module,LCD1602,Pressure Sensor,and keyboard.Note the direction of the keyboard.

Pressure Sensor and HX711 module connect type:

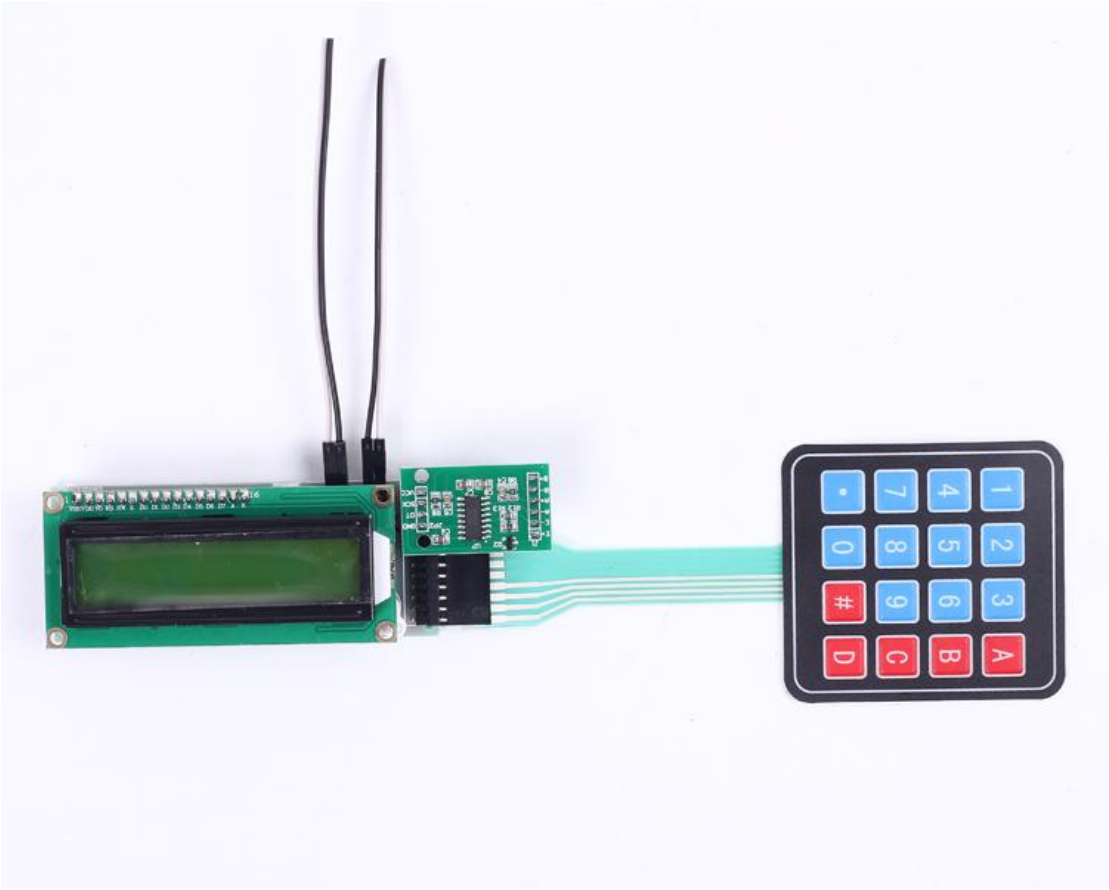
Red==>E+

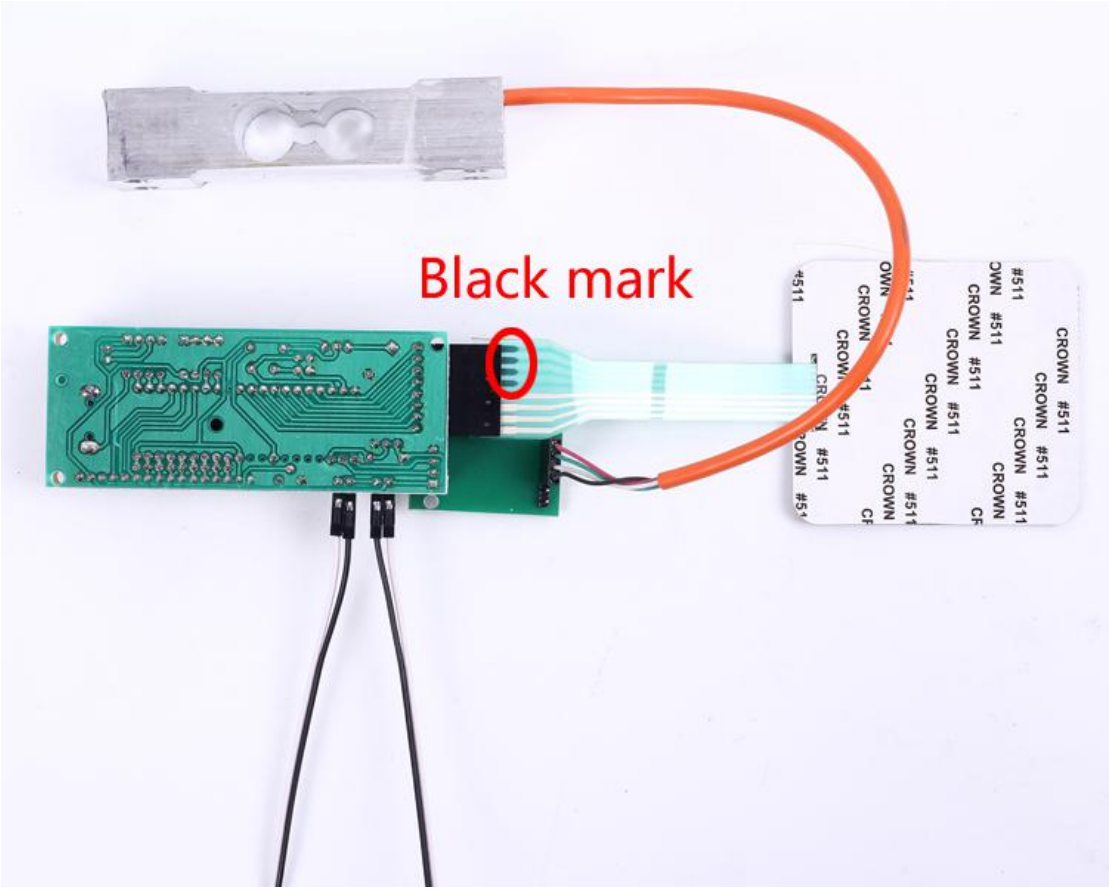
Green==>E-

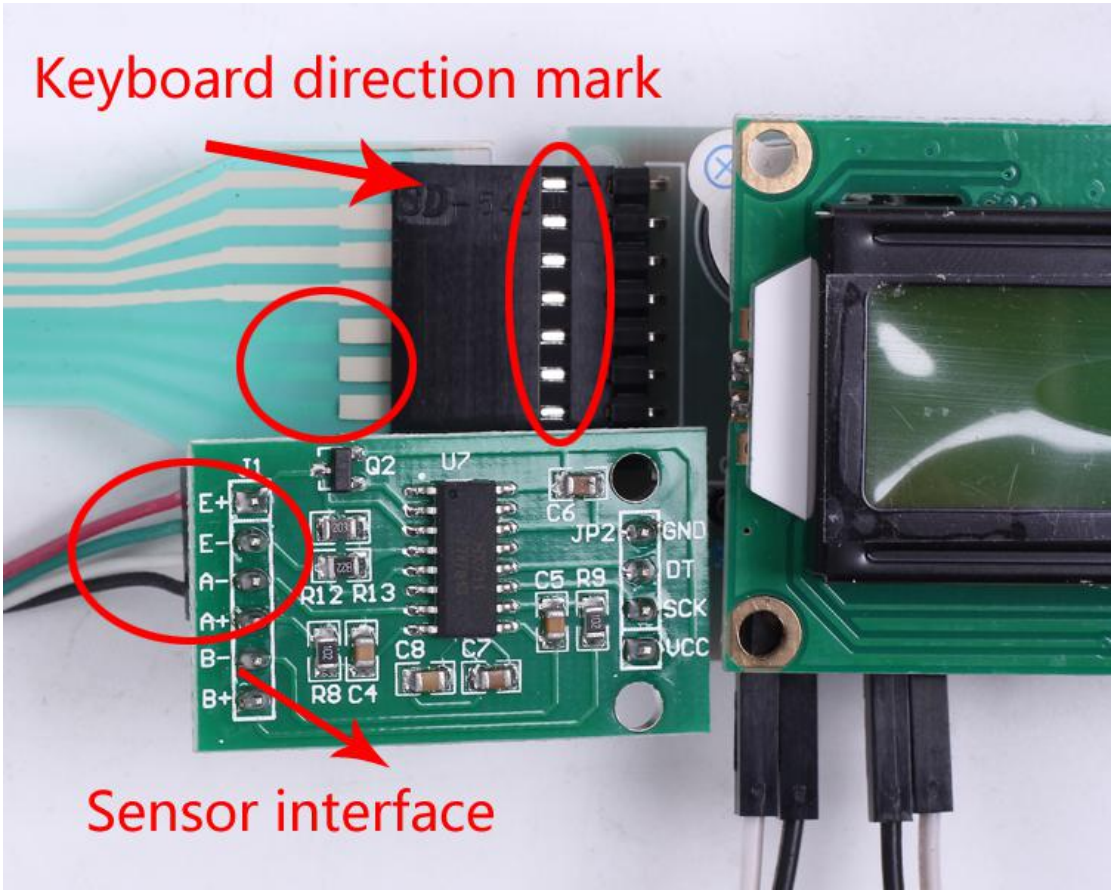
White==>A-

Black==>A+

B+ and B- on HX711 do not use.


1 2 3 A
4 5 6 B
7 8 9 C
* 0 # D


Black mark

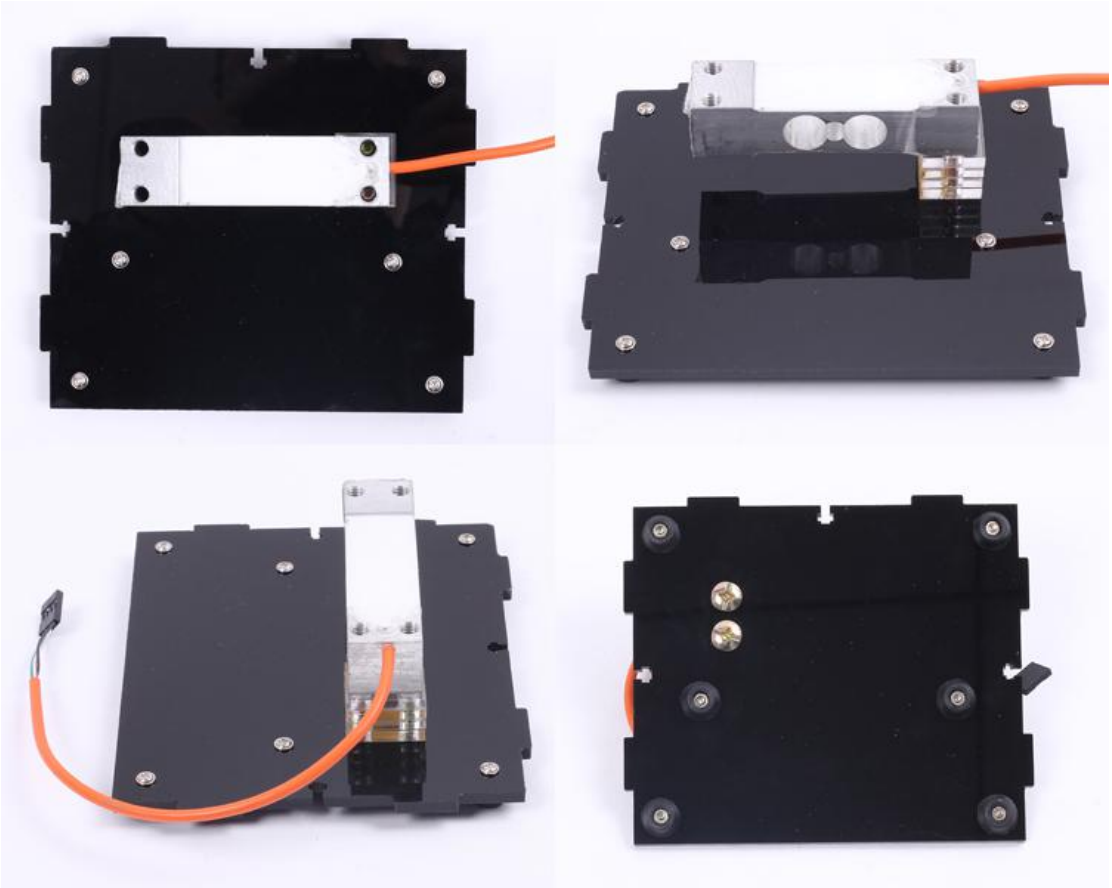


Step 10: Install brackets.Tear off the protective film.Install 6pcs Seat Cushion.

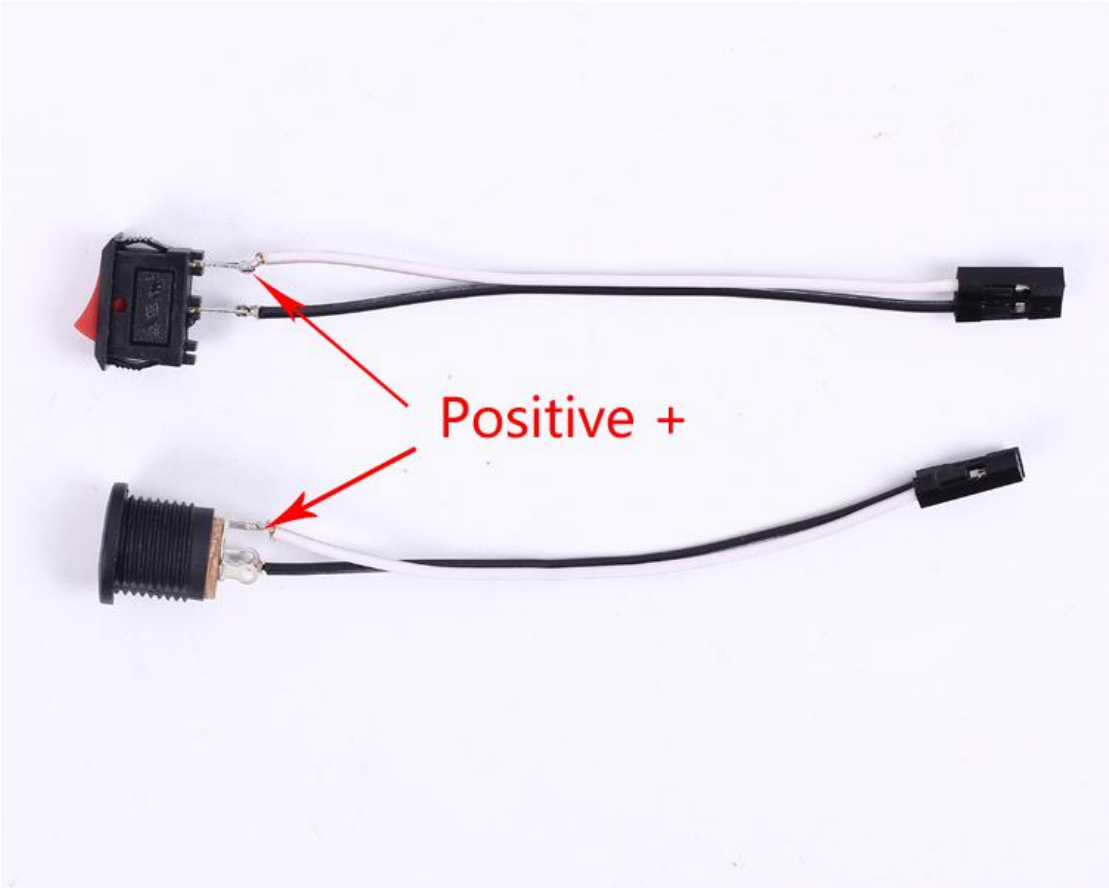
There are transparent and black acrylic. The installation manual use black acrylic as an example.The same way of installation.

M3 Nut

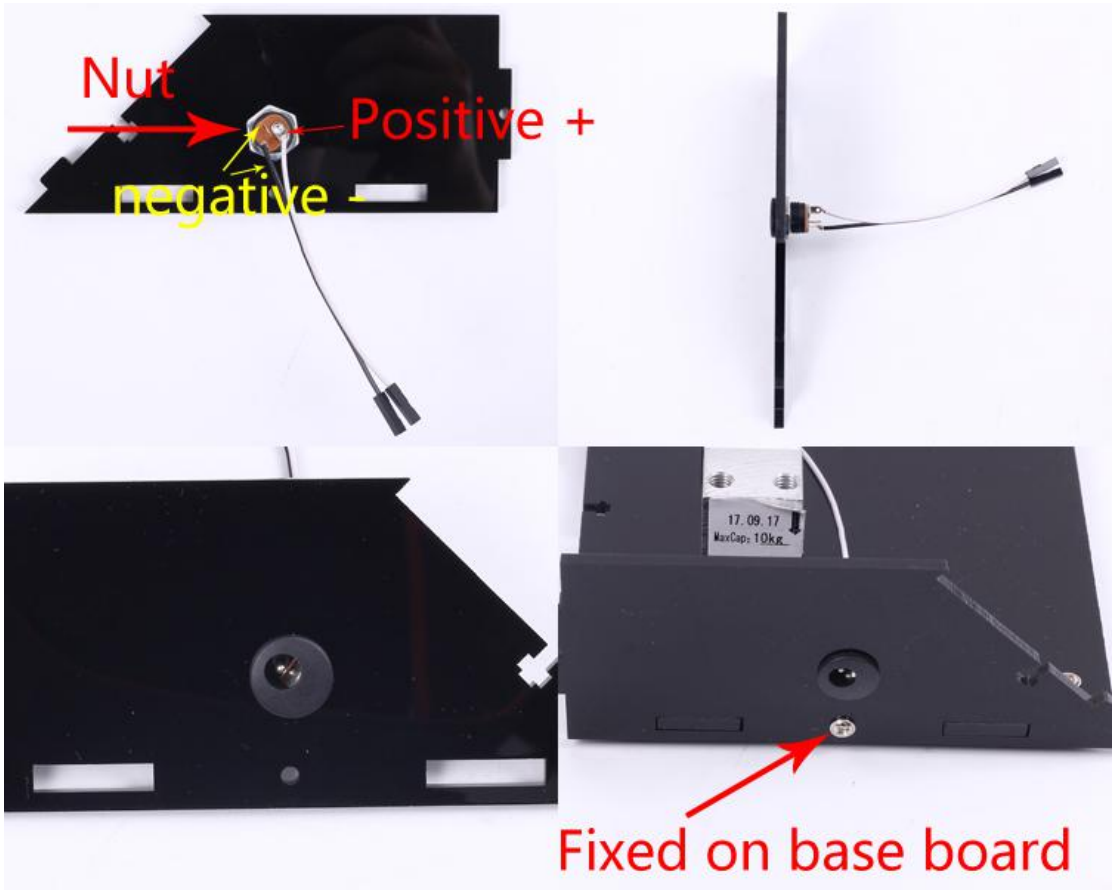
Step 11: Install Pressure Sensor with 4pcs Acrylic Gasket by M7*30 screw fixed.Pay attention to the sensor installation direction.

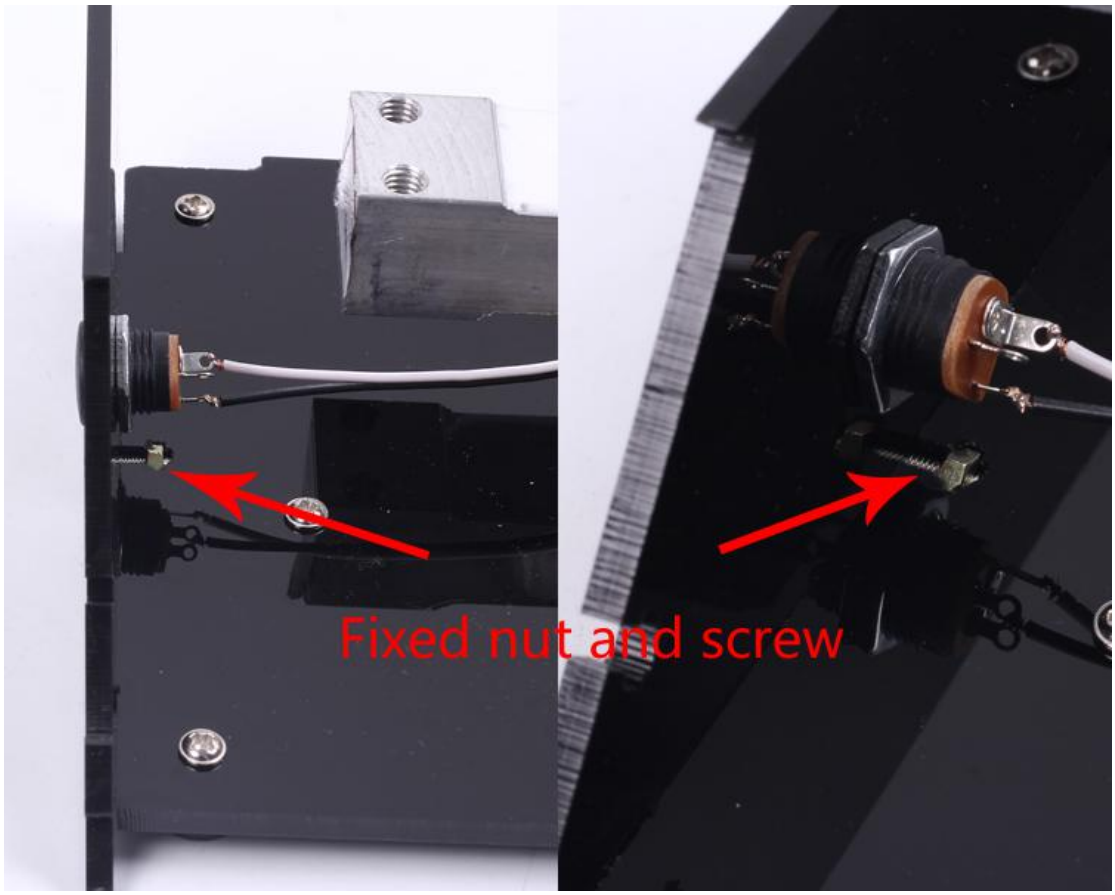


Step 12: Install cable to power socket and switch.

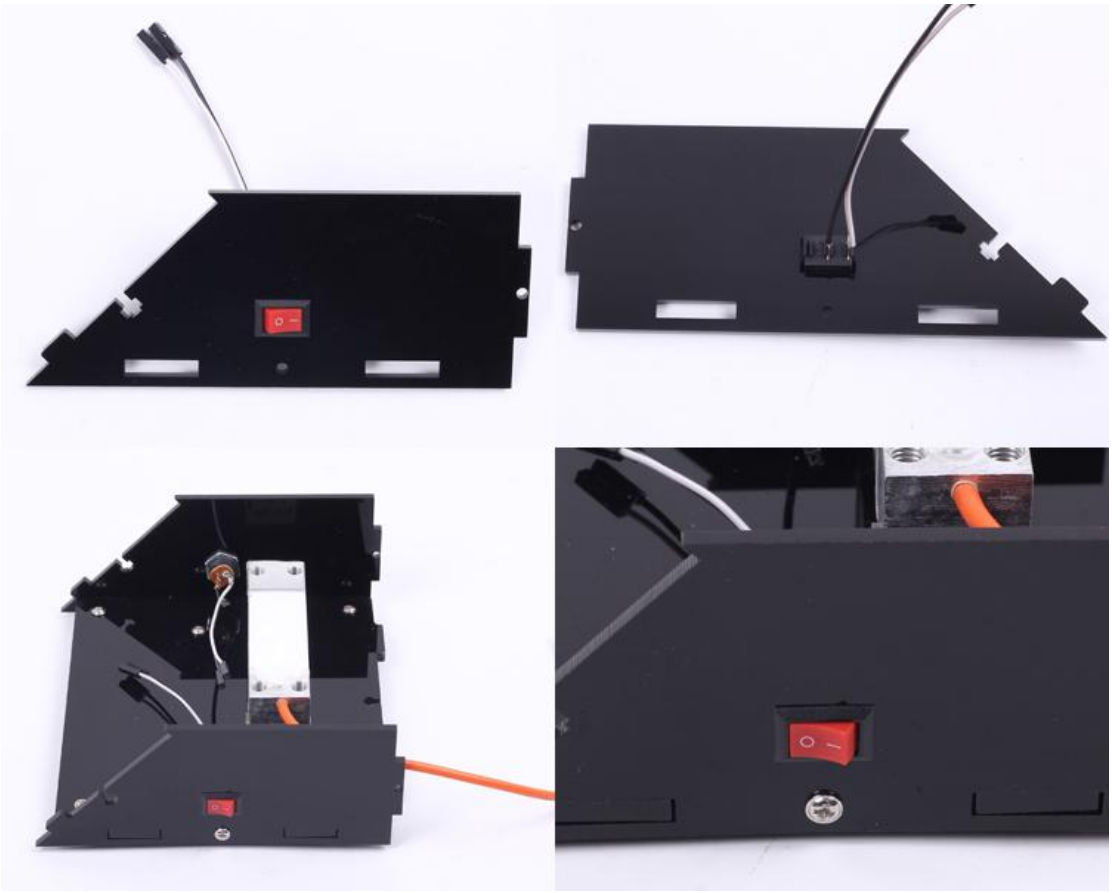


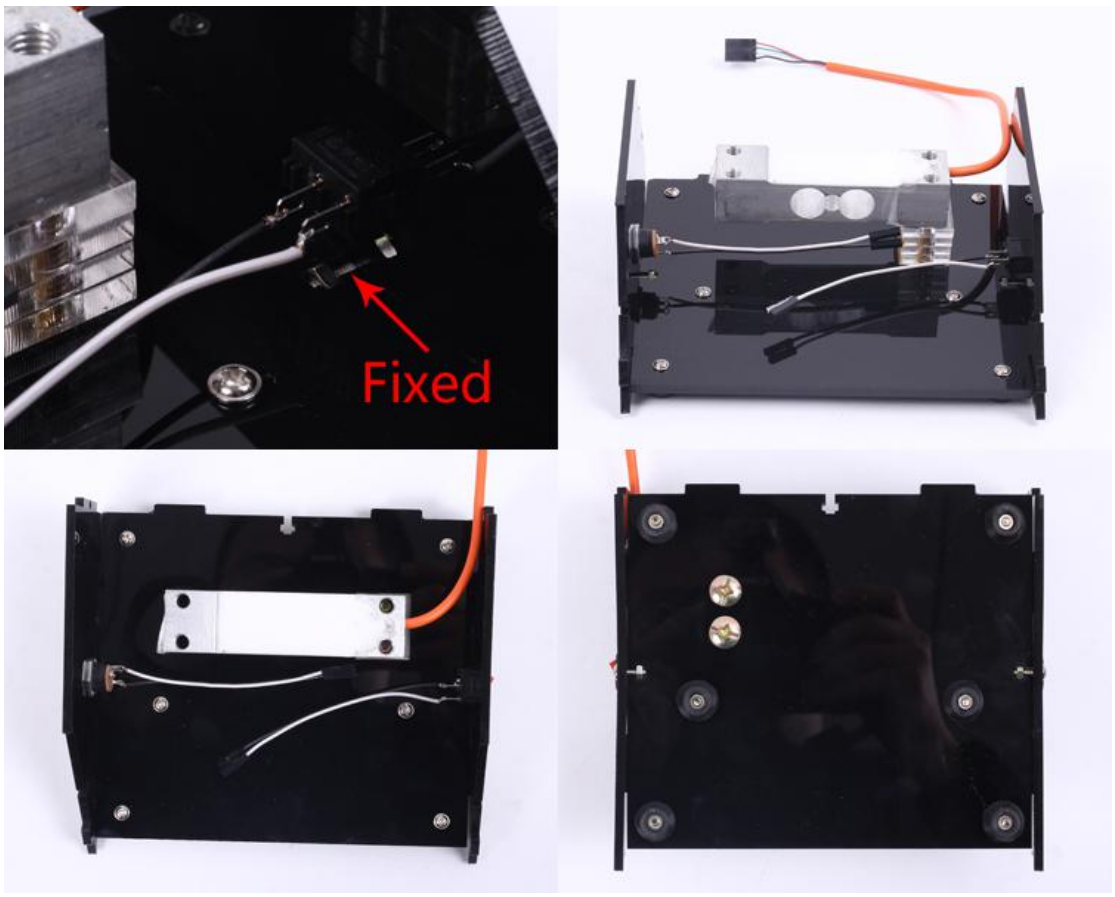
Step 13: Install Power socket on side Acrylic board and fixed by nut.And then fixed it on base board.


Nut
Positive +
negative -
17. 09. 17
MaxCap: 10kg
Fixed on base board

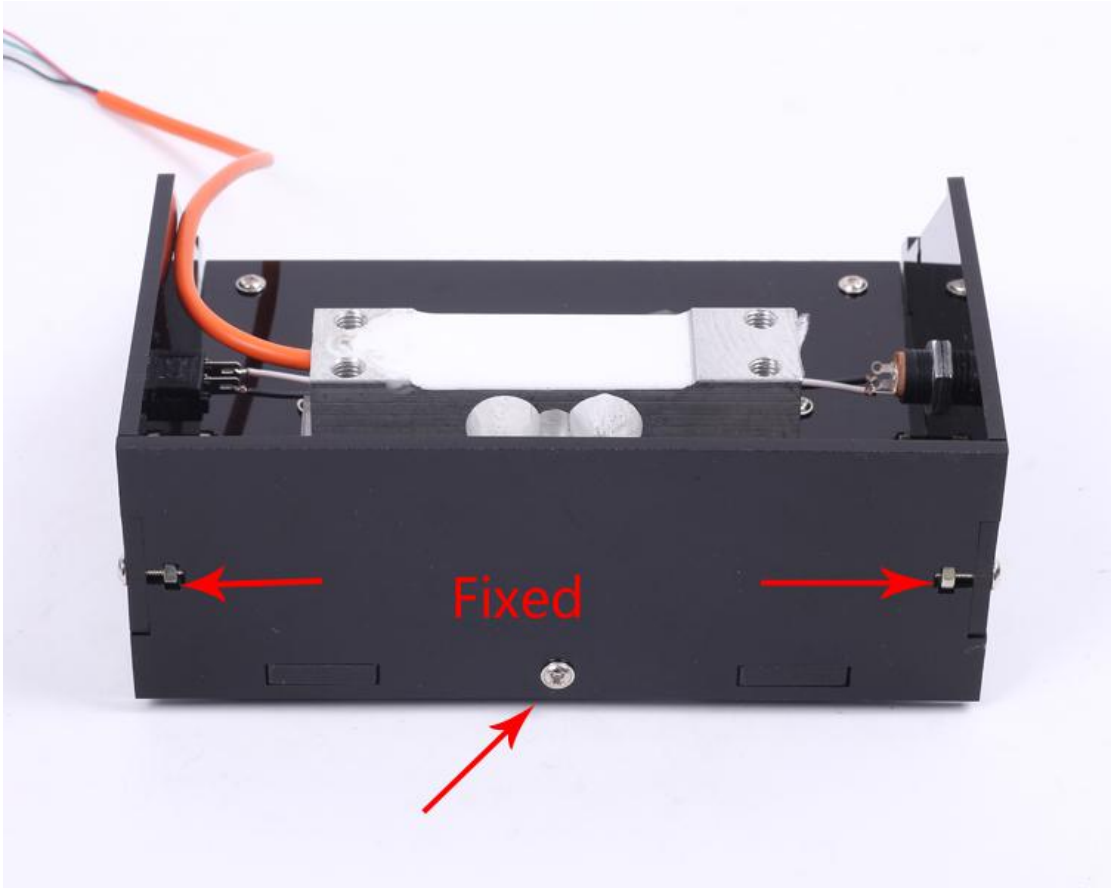

Fixed nut and screw

Step 14: Install switch on side Acrylic board and fixed by nut.And then fixed it on base board.Press the switch firmly,use buckle to fixed.

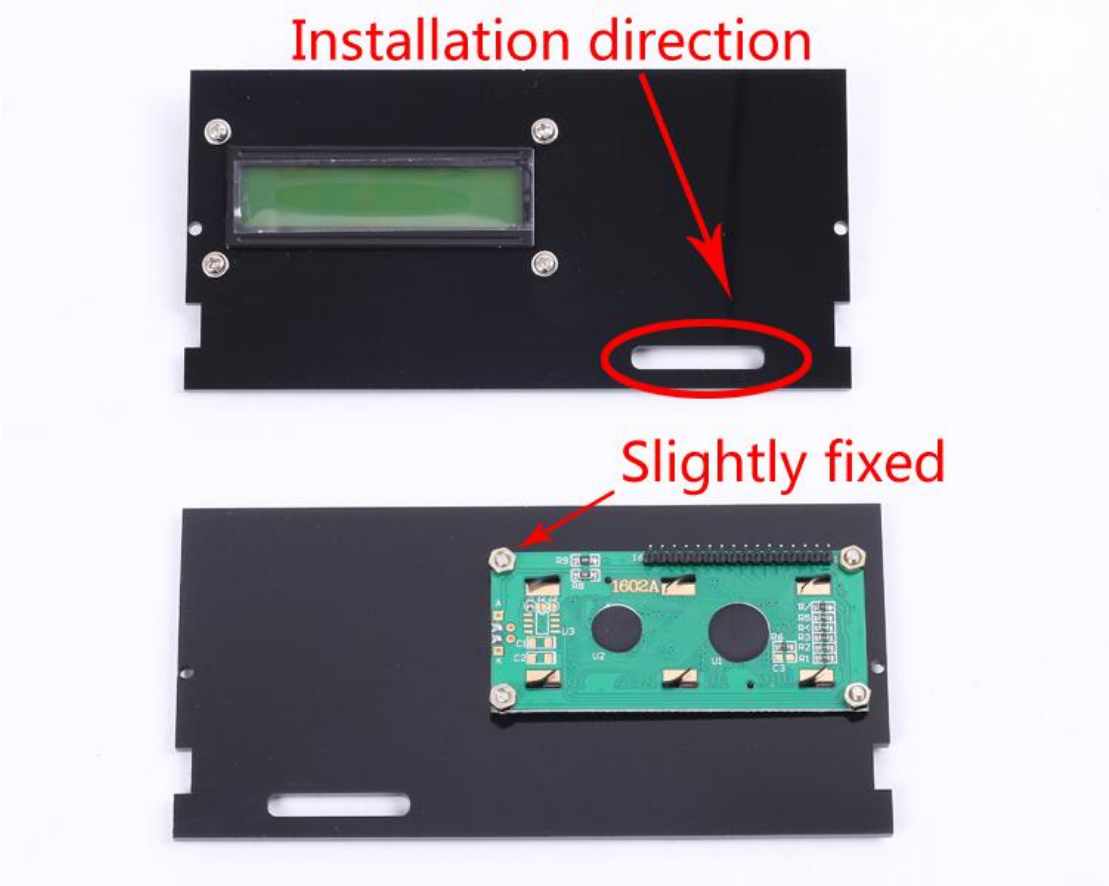



Fixed

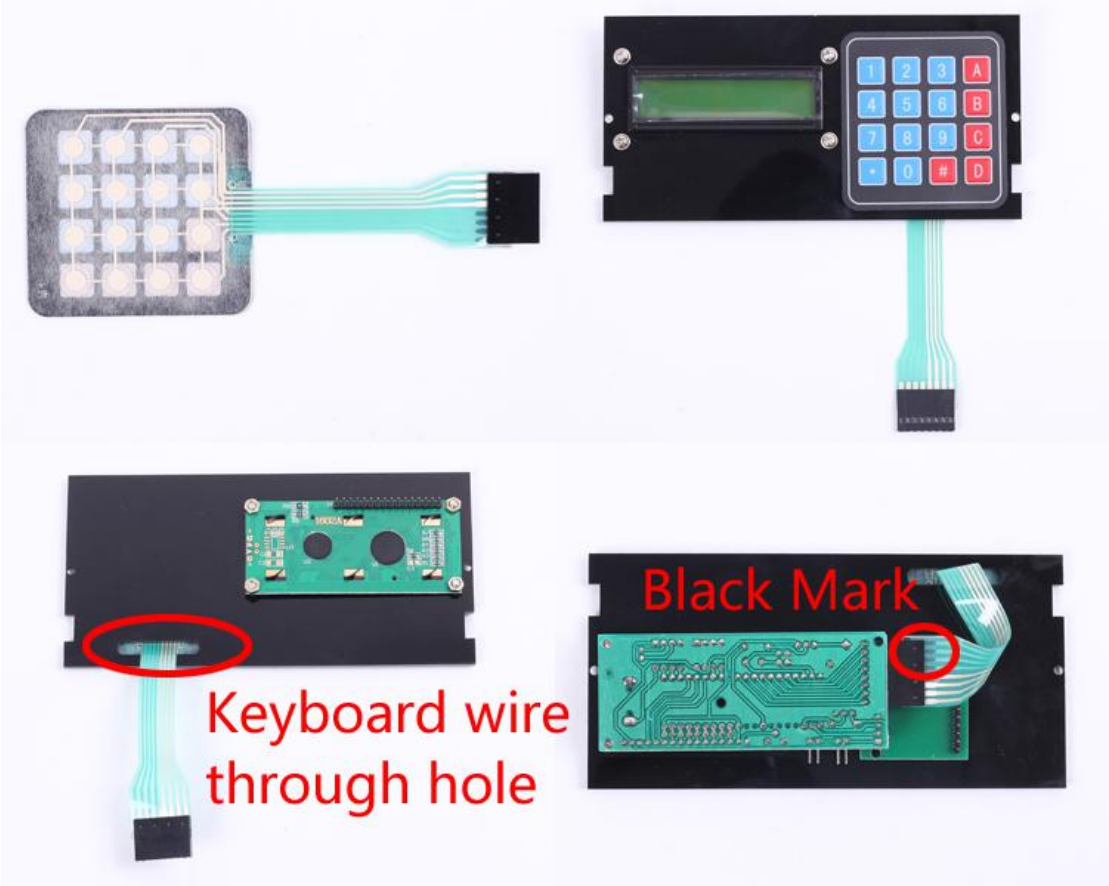
Step 15: Install rear acrylic.



Step 16: Install LCD1602 on front acrylic.Pay attention to the sensor installation direction.Slightly fixed, do not install the screws too tight, otherwise it may damage the PCB or even LCD.



Step 17: Install keyboard.Tear off the back of the film foil Paste on the acrylic And then connect it to PCB.Pay attention to the black mark.



Step 18: Fixed front acrylic and connect wire as Step 9. Switch wire can be connect arbitrary.

Step 19: Install Load-bearing acrylic with 4pcs Acrylic Gasket by M7*30 screw fixed.

1
2
3
A
4
5
6
B
7
8
9
C
*
0
#
D

Step 20: Test!

1
2
3
A
4
5
6
B
7
8
9
C
*
0
#
D

2017-12-08 Week5
13:43:45 20.6C
1 2 3 A
4 5 6 B
7 8 9 C
* 0 # D

Alarm time:#
23:59:00
1 2 3 A
4 5 6 B
7 8 9 C
* 0 # D

Alarm time:#
23:59:00
1 2 3 A
4 5 6 B
7 8 9 C
* 0 # D

0.000kg
P=001.0 M=000.0
1 2 3 A
4 5 6 B
7 8 9 C
* 0 # D

0.000kg
D=005.0g N=0000
1 2 3 A
4 5 6 B
7 8 9 C
* 0 # D

1
2
3
A
4
5
6
B
7
8
9
C
*
0
#
D

0.140kg
P=005.0 M=000.7
1
2
3
A
4
5
6
B
7
8
9
C
*
0
#
D