5. Assembly Guide

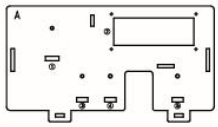
Check the board A~I and parts in the first place.

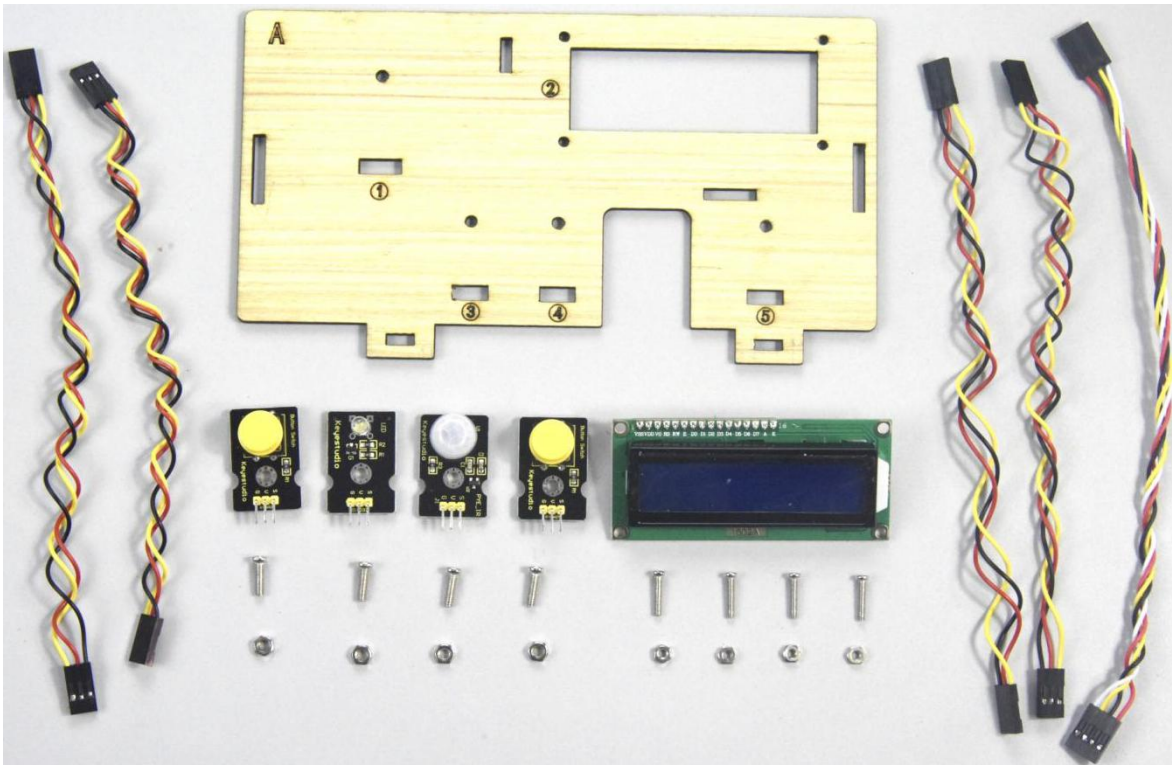
Step 1: Install sensors on A board

Prepare components as follows;

- A board*1
- M3*10MM round screw*4
- M3 nickel plated nut*4;
- M2.5*10MM round screw*4
- button sensor*2
- white LED*1

- PIR motion sensor*1
- LCD1602 display*1
- 4pin F-F dupont Cable*1
- 3pin F-F dupont cable*4

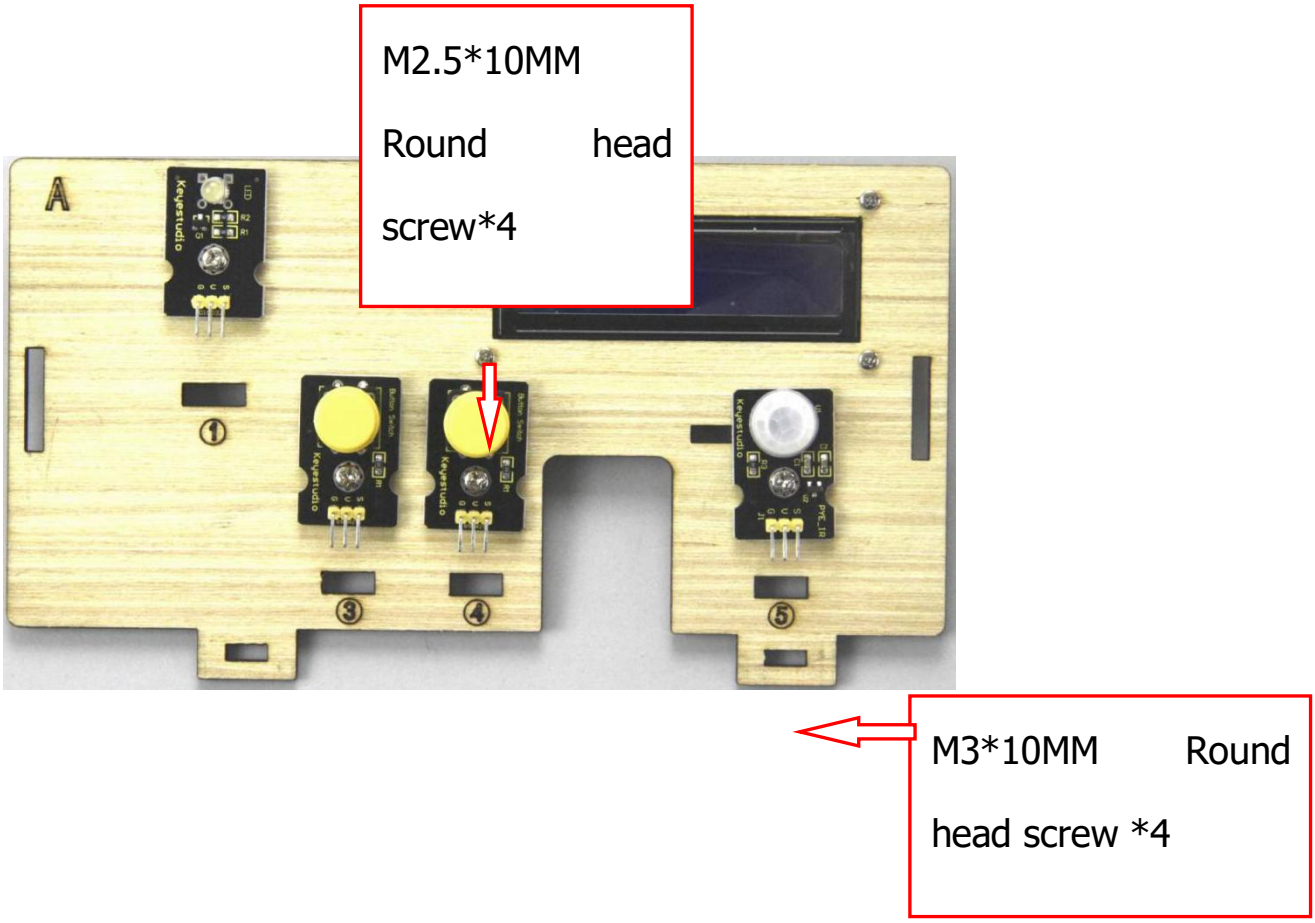
A Board*1	Button module*2	White LED*1	PIR motion sensor*1	LCD1602 Display*1	4pin F-F Dupont line*1
					
M2.5 Nickel plated nut*4	M3 Nickel plated nut*4	M2.5*10MM Round head screw*4	M3*10MM Round head screw*4	3pin F-F Dupont line*4	
					

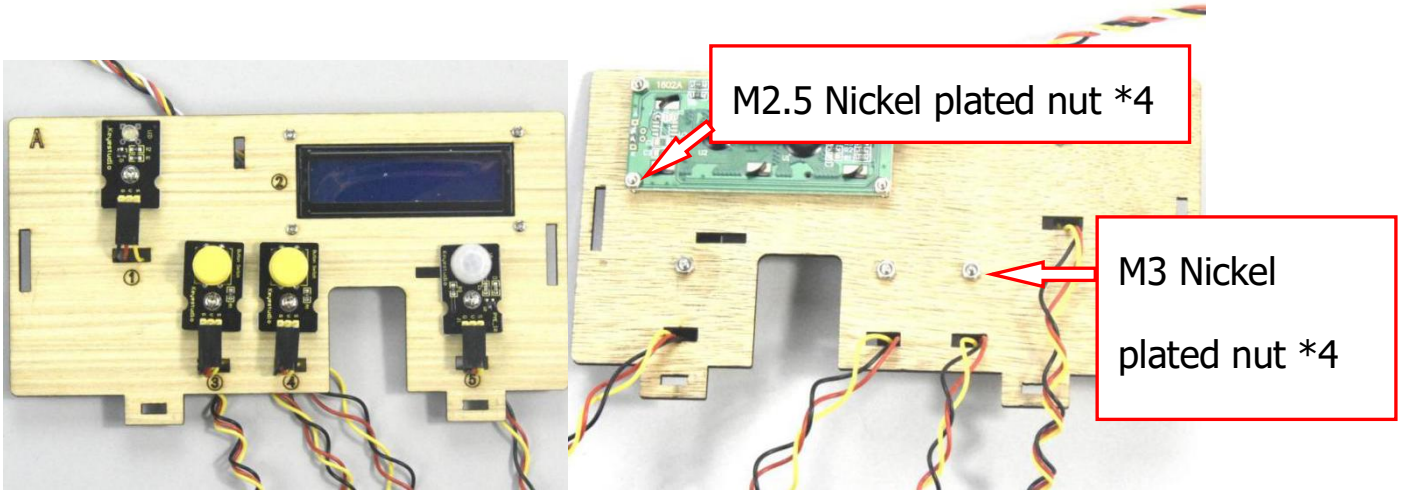


a. Fix the white LED, 2 button sensors and the PIR motion sensor on the corresponding areas of the A board with 4pcs M3*10MM round head screws and 4pcs M3 nuts.

b. Then install the LCD1602 display on A board with 4pcs M2.5*10MM round head screws and 4pcs M2.5 nuts.

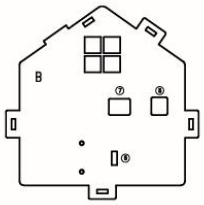
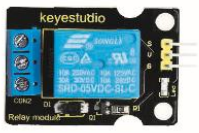
c. Connect them with 3pin and 4pin dupont cables.

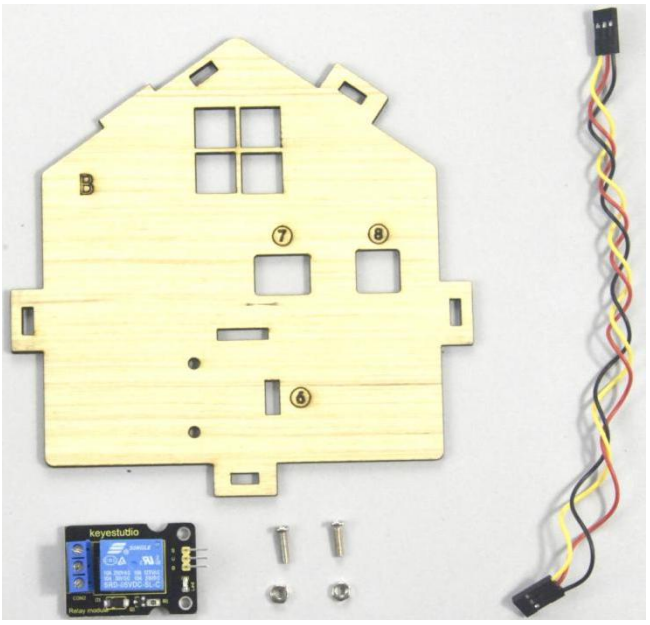




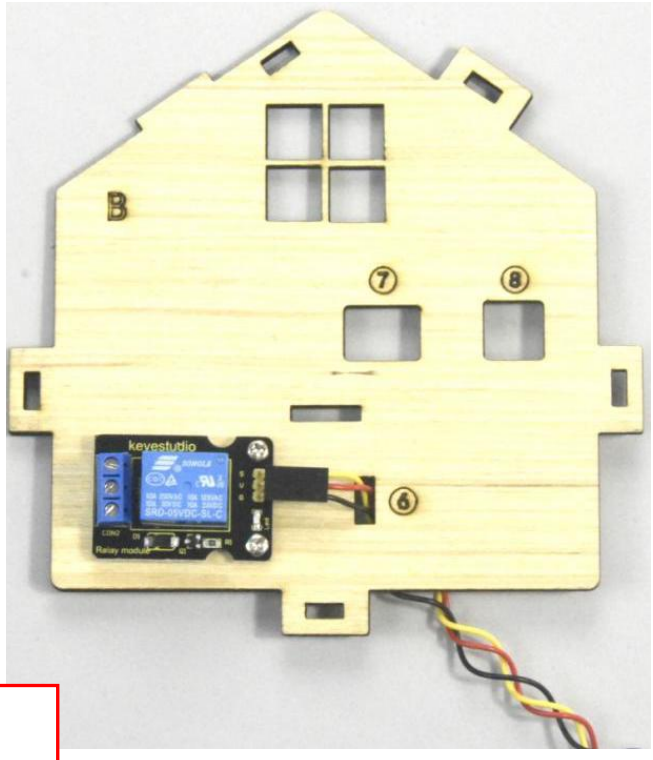
Step 2: Install sensors on B board

- B board,
- 3pin F-F dupont line*1,
- M3*10MM round head screw*2,
- M3 nickel plated nut*2
- A relay module

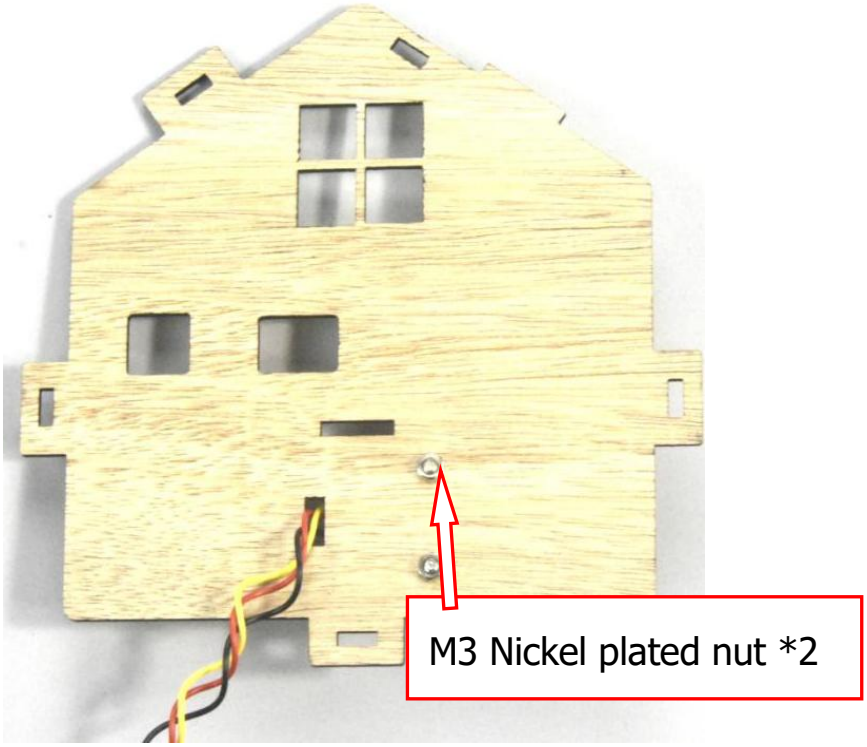
B Board*1	Relay module*1	M3 Nickel plated nut*2	M3*10MM Round head screw*2	3pin F-F Dupont line*1
				



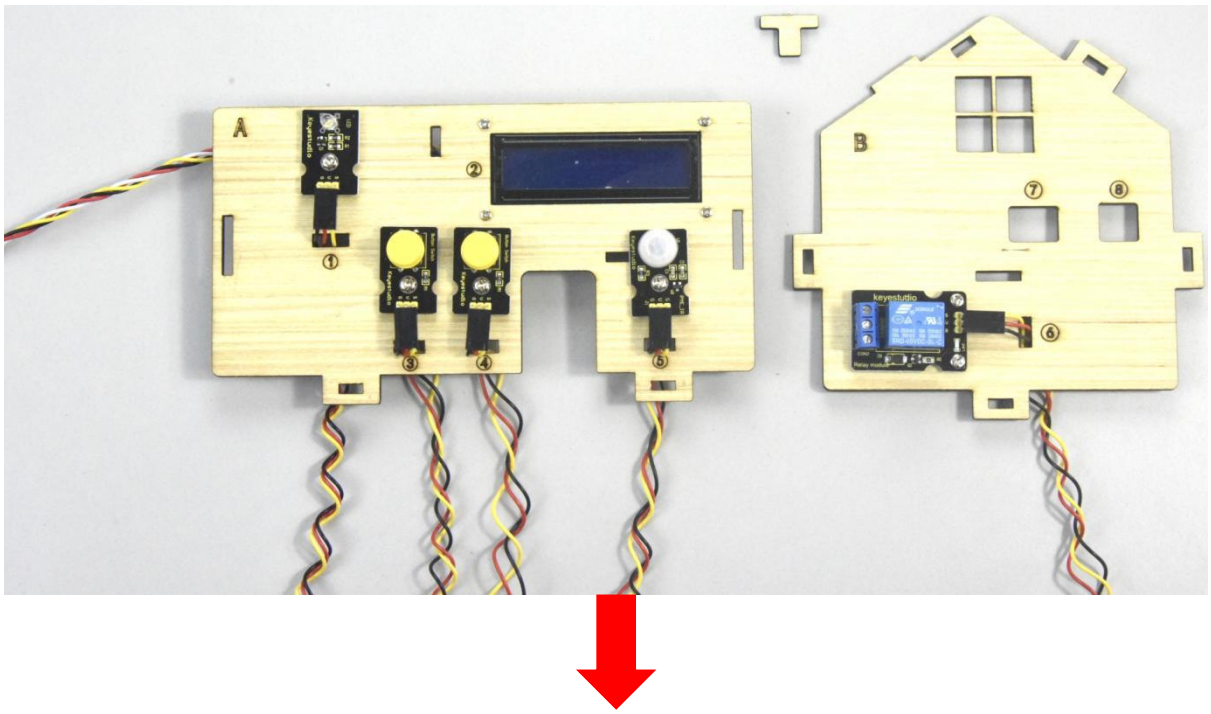
Assemble the relay module on B board with 2 pcs M3*10MM screws and 2pcs M3 nickel plated nuts, and attach a 3pin F-F dupont cable to the relay module

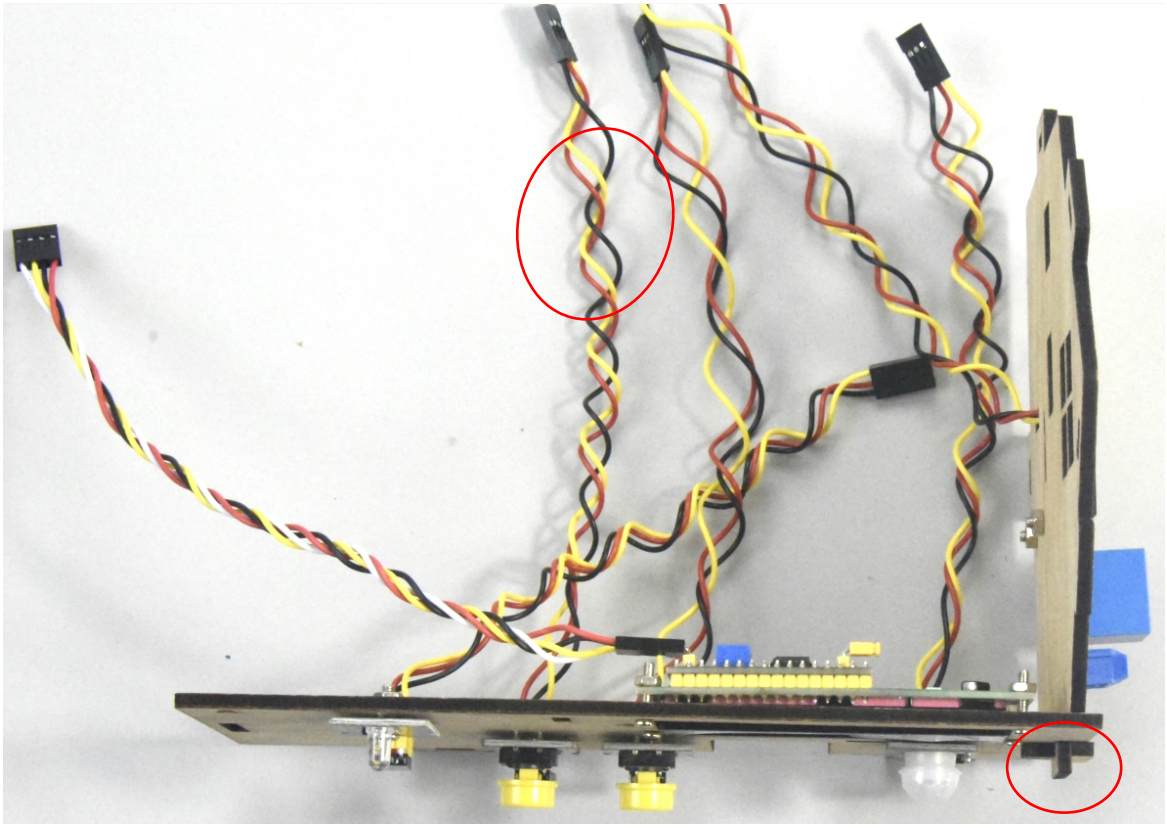


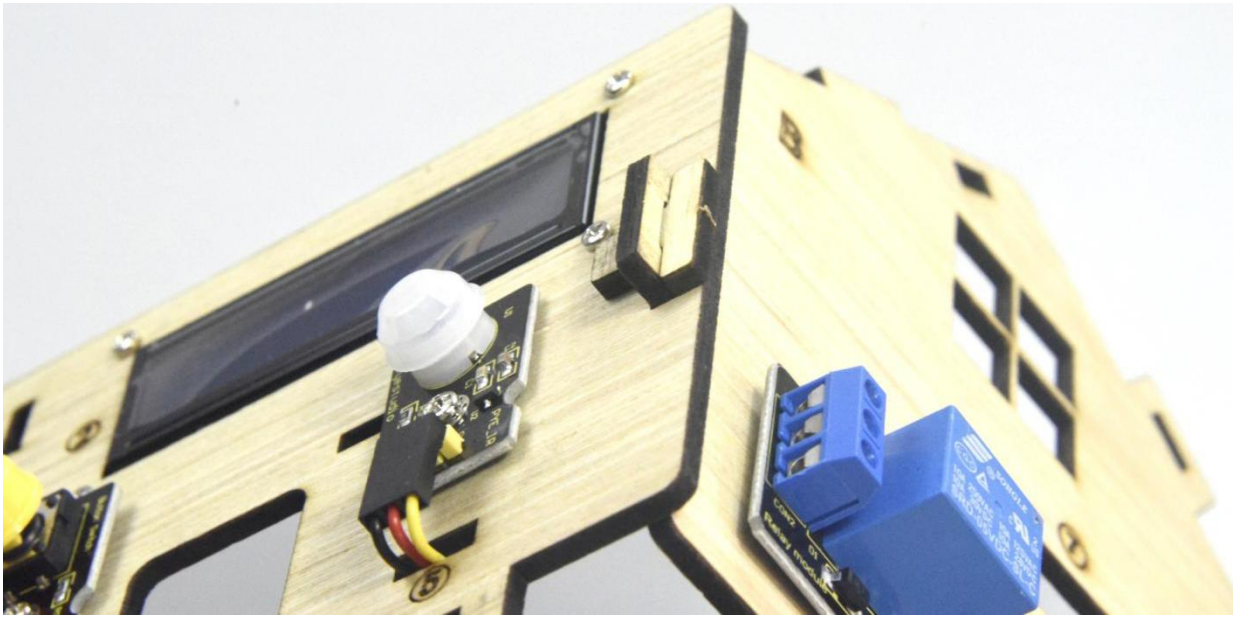
M3*10MM Round head screw*2



Step 3: Fix A board and B board together with a "T" bolt







Step 4: Assemble sensors and a battery holder on C board

C board*1

MQ-2 gas sensor*1

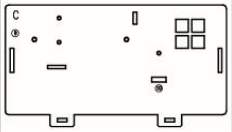
A battery holder

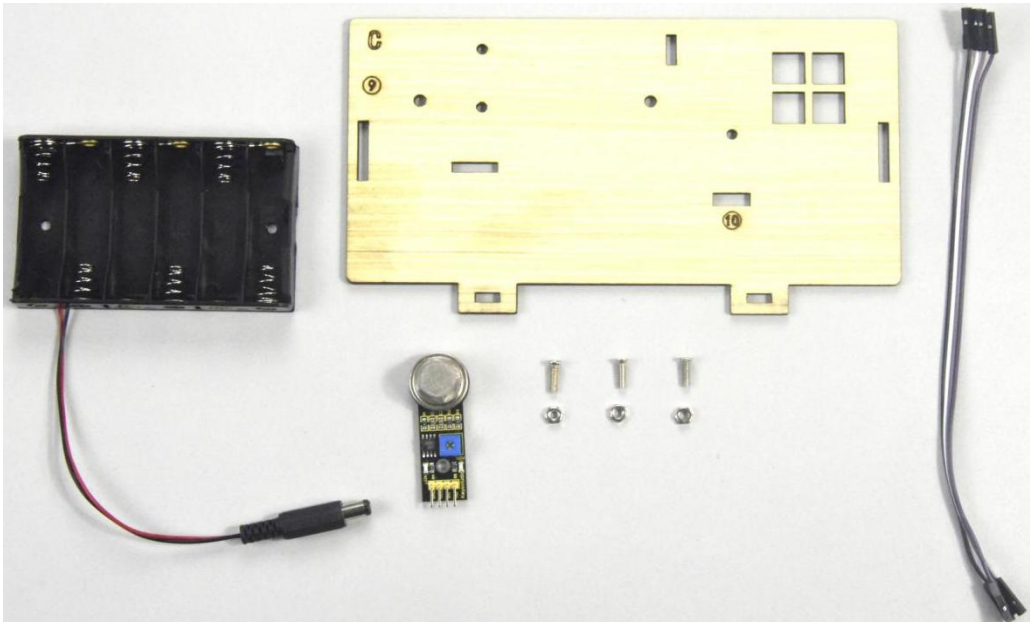
M3*10MM flat head screw*2

M3*10MM round head screw*1

M3 nickel plated nut*3

4pin F-F dupont line*1

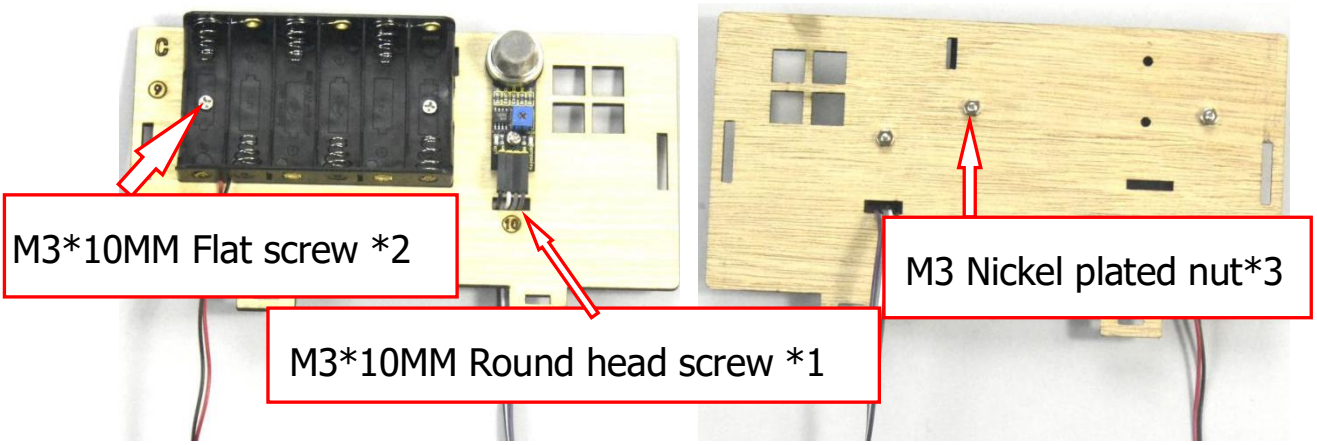
C Board*1	MQ-2 Gas sensor*1	Battery holder*1	M3*10MM Flat head screw*2	M3*10MM Round head screw*1	M3 Nickel plated nut*3	F-F Dupont line*4
						



A. Fix the battery holder on C board with 2pcs M3*10MM flat head screws and 2 pcs M3 nickel plated nuts.

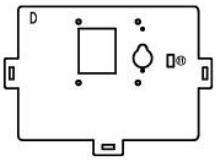
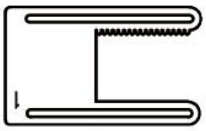
B. Then install the MQ-2 gas sensor on the corresponding area of C board with a M3*10MM round head screw and a M3 nickel plated nut.

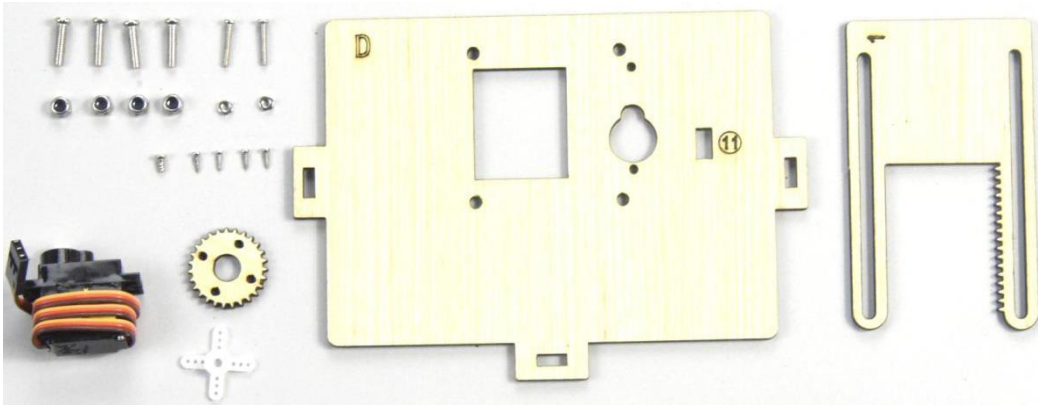
C. Connect a 4pin dupont line to the MQ-2 gas sensor



Step 5: Install the sensors and parts on D board

- A servo
- M1.2*5 self-tapping screw*4
- A white cross mount (included in servo)
- M2*5 round head screw (included in servo) *1
- M2*12MM round head screw*2
- M2 nickel plated nut*2
- M3*12MM round head screw*4
- M3 stainless self-locking nut*4
- D board
- A gear
- Board1

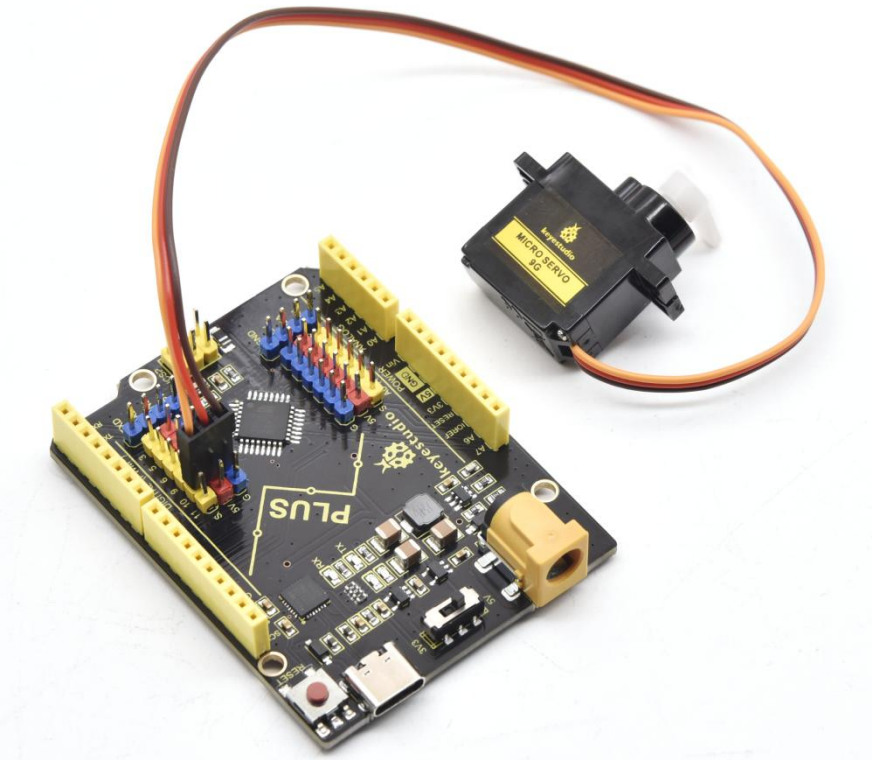
D Board*1	Board 1*1	Gear*1	Servo motor*1	White cross mount*1	M2*5 Round head screw*1
					
M2 Nickel plated nut*2	M3 Stainless self-locking nut*4	M3*12MM Round head screw*4	M2*12MM Round head screw*2	M1.2*5 Self-tapping screw*4	
					



We need to set the servo to 90° before installing. Just follow the steps below

Connect servo to Keyestudio PLUS Control Board and upload test code to make servo rotate to 90°

Servo Motor	
Brown wire	GND
Red wire	5V
Orange wire	S （10）



Test Code:

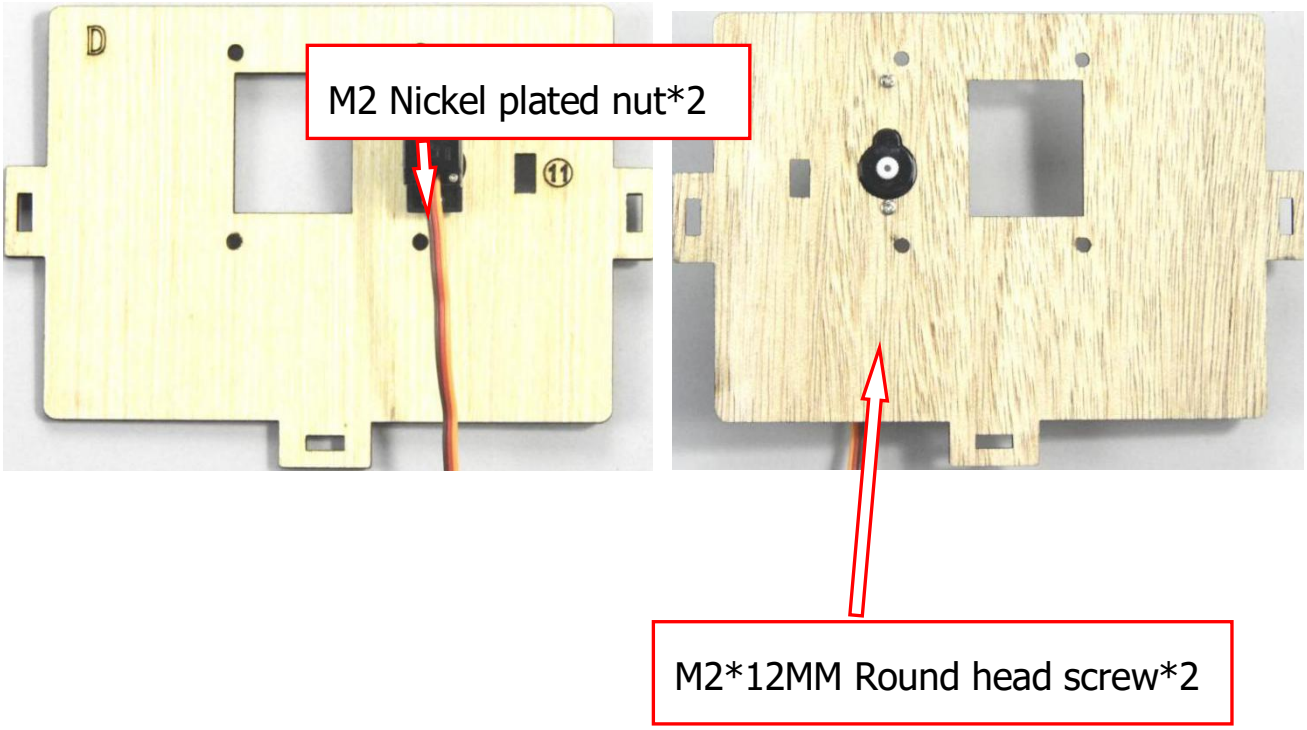
```
#include <Servo.h>
Servo servo_10;

void setup(){
  servo_10.attach(10);
}
void loop(){
  servo_10.write(90);
  delay(500);}
```

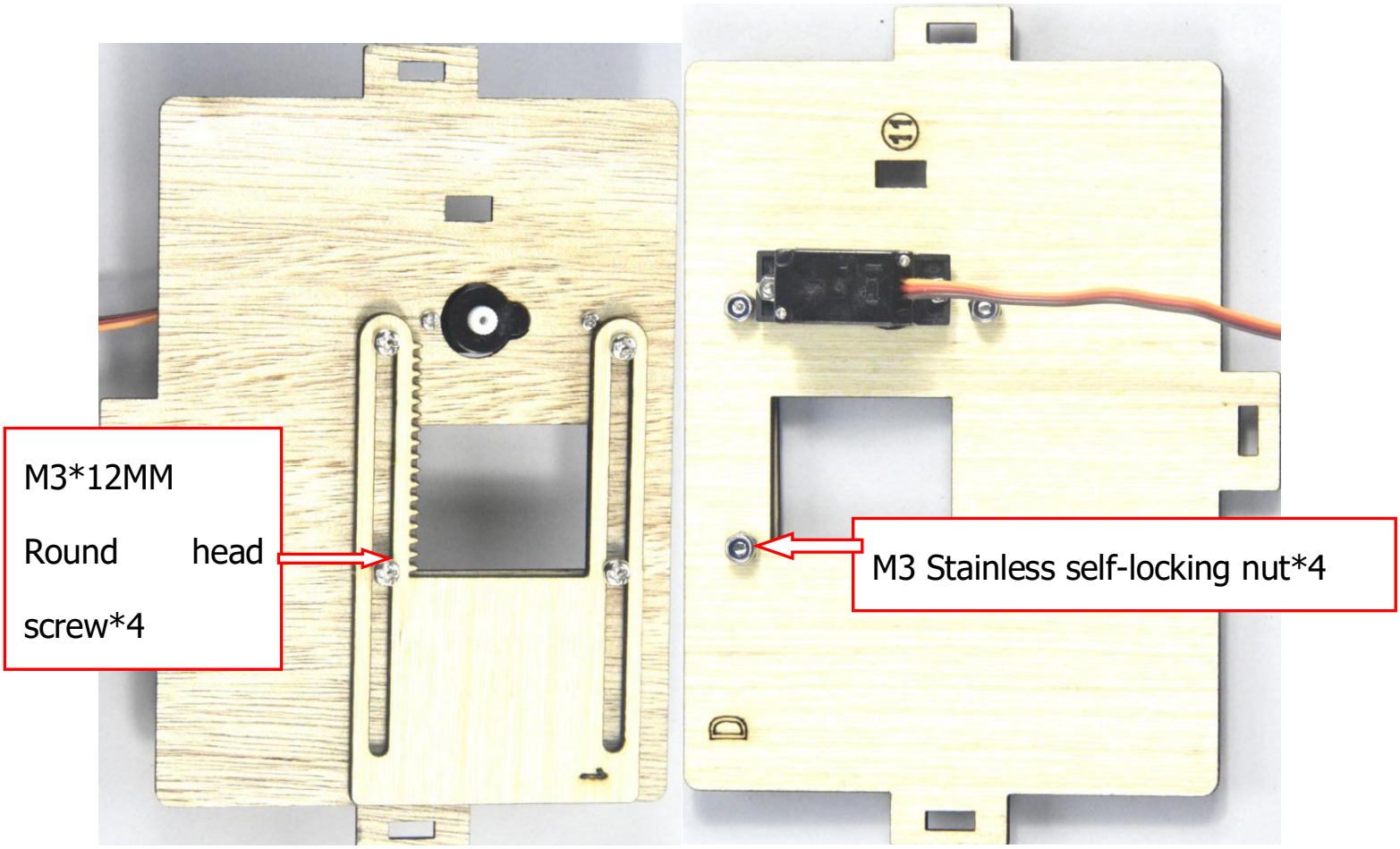
After the test code is uploaded successfully, the servo will rotate to 90°

A. Fix the servo on the corresponding area of D board with 2pcs M2*12MM

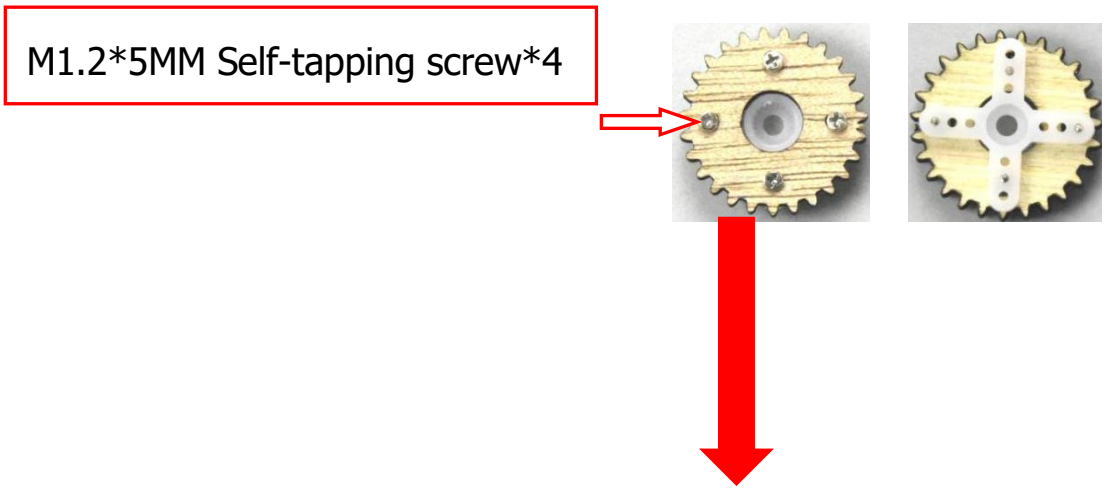
round head screws and 2pcs M2 nickel plated nuts.

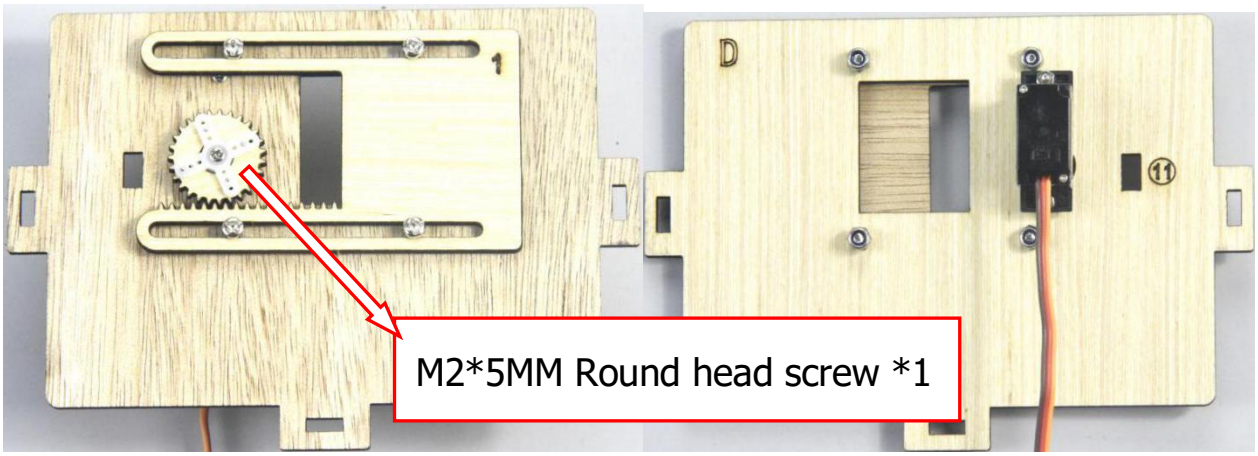
B. Then install the square board 1 on the D board with 4pcs M3*12MM round head screws and 4 M3 self-locking nuts.



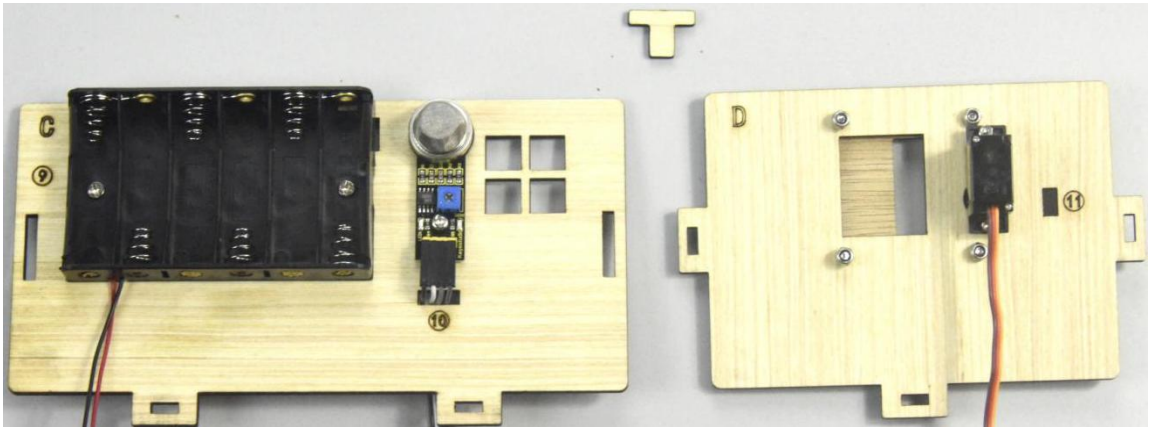


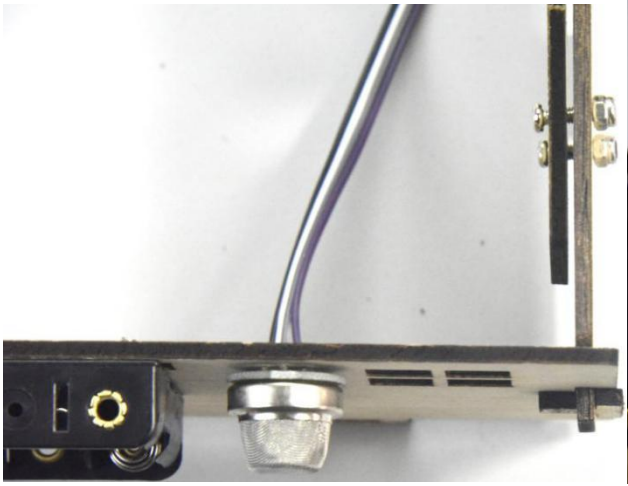
Install the white cross mount on the gear with 4pcs M1.2*5MM self-tapping screws, and mount the gear on the servo motor with 1 M2*5MM round head screw.

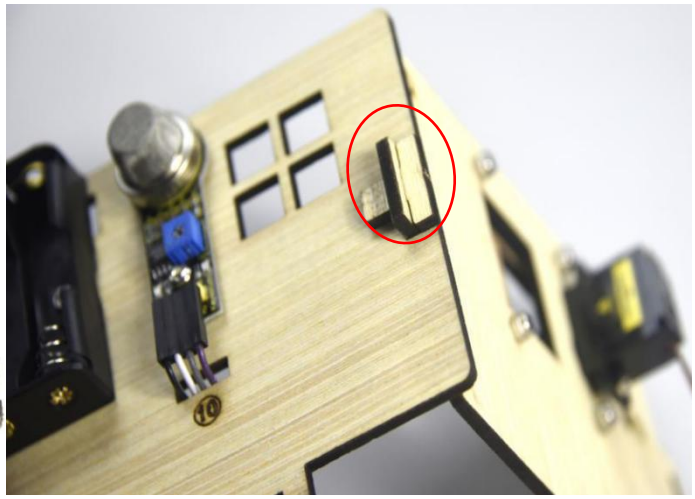




Step 6: Assemble C board with D board with a "T" bolt.

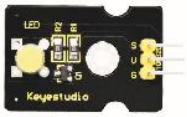


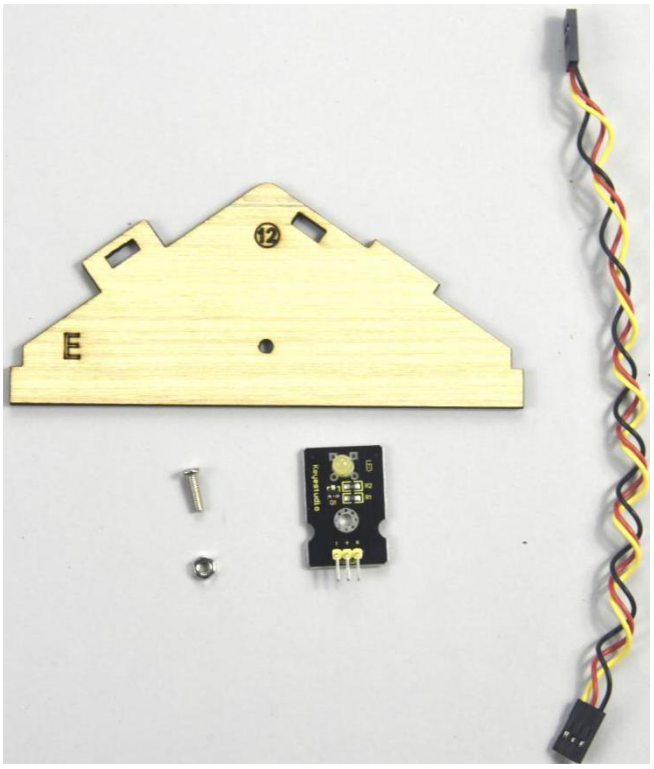




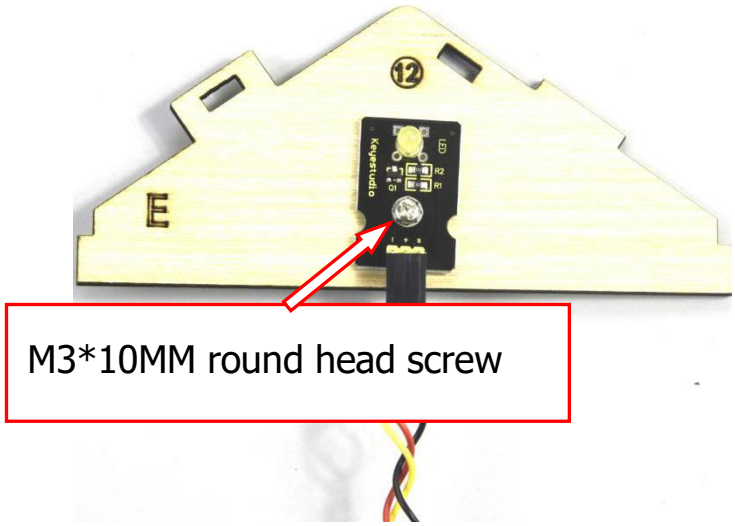
Step 7: Install the yellow LED on E board

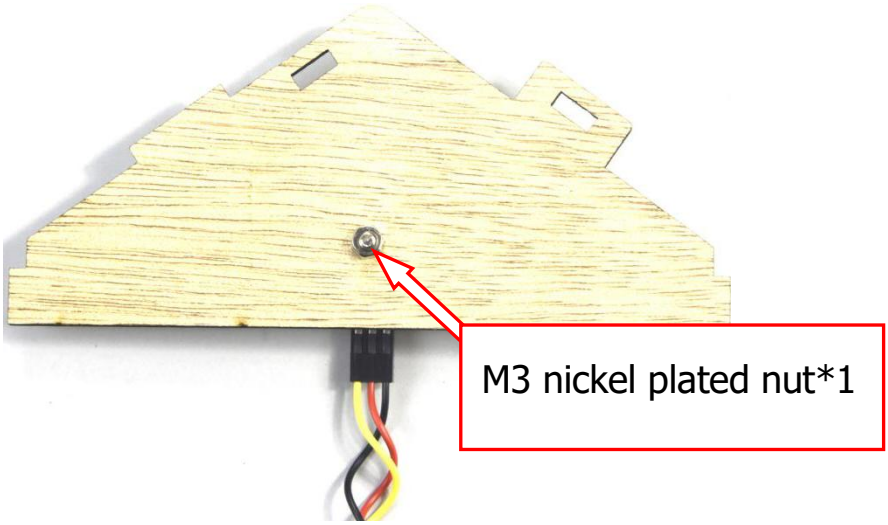
- A yellow LED module
- A E board
- M3*10MM round head screw*1
- M3 nickel plated nut *1
- 3pin F-F dupont line*1

E Board*1	Yellow LED*1	M3 Nickel plated nut*1	M3*10MM Round head screw*1	3pin F-F Dupont line*1
				



Mount the yellow LED on the corresponding area of E board with 1 M3*10MM round head screw and 1 M3 nickel plated nut, then connect a 3pin dupont line to it.





Step 8: Install control board, sensors and parts on H board

A servo

A passive buzzer

M1.2*5 self-tapping screw*4,

A white cross mount(included in servo)*1

A M2*5 screw(included in servo)

M2*12MM round head screw*2

M2 nickel plated nut*2

M3*10MM round screw*1

M3 nickel plated nut*1

M3*6MM round head screw*8

M3*10MM dual-pass copper pillar*4

A Keyestudio PLUS Control Board

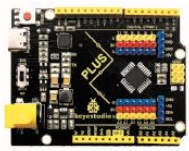
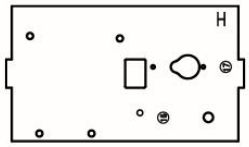
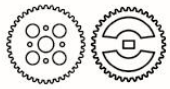
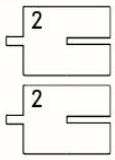
A sensor shield

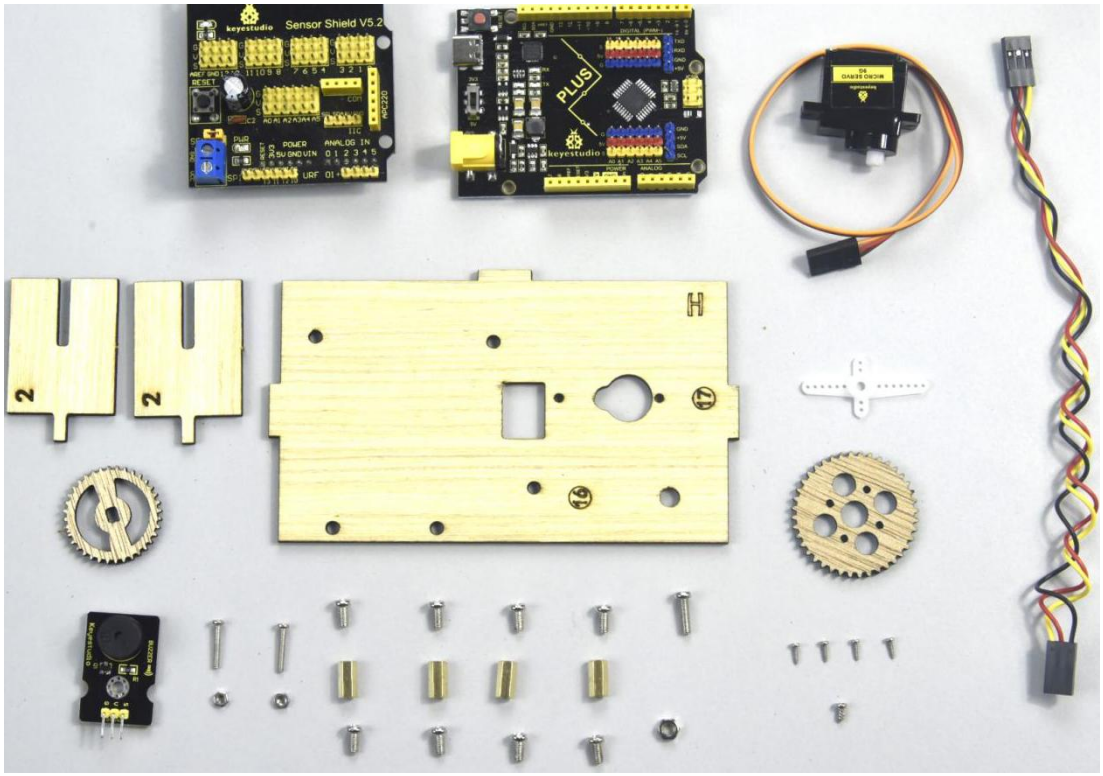
3pinF-F dupont line*1

H board E

2 gears

Board 2*2

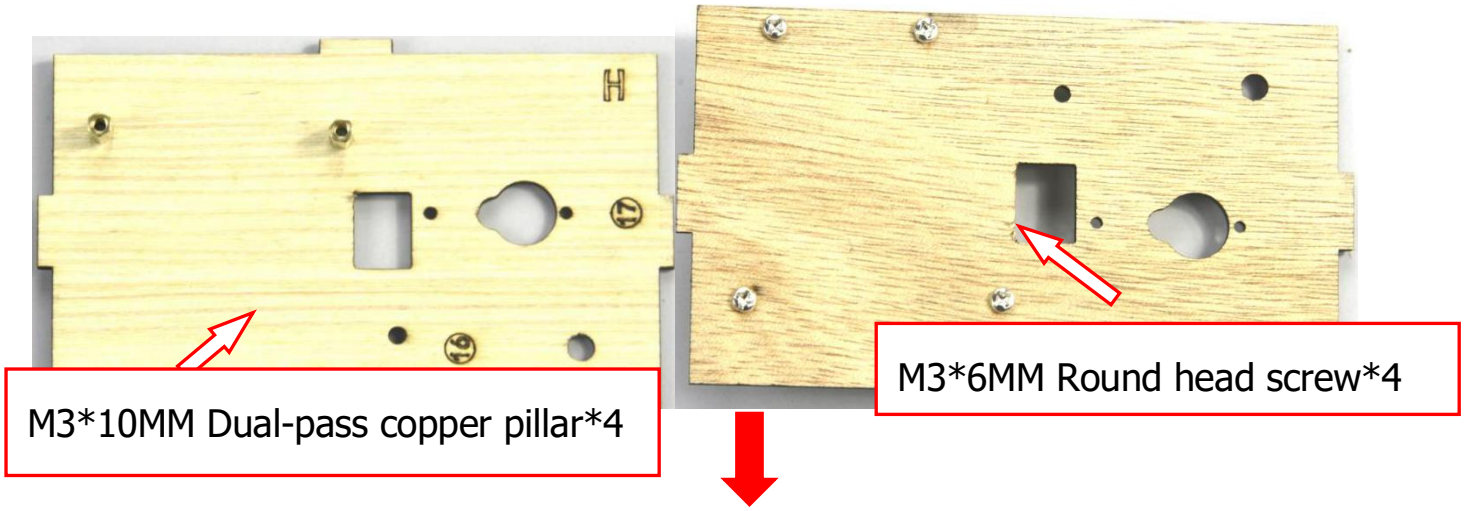
Keyestudio PLUS control board	Sensor shield	H Board*1	Gear*2	Board 2*2	M3*6MM Round head screw*8
					
Servo motor*1	Passive buzzer*1	M2 Nickel plated nut*2	M3 Nickel plated nut*1	M3*10MM Round head screw*1	M2*12MM Round head screw*2
					
M1.2*5 Self-tapping screw*4	White cross mount*1	M2*5 screw*1	M3*10MM Du-al-pass pillar*4	3pin F-F Dupont line*1	
					

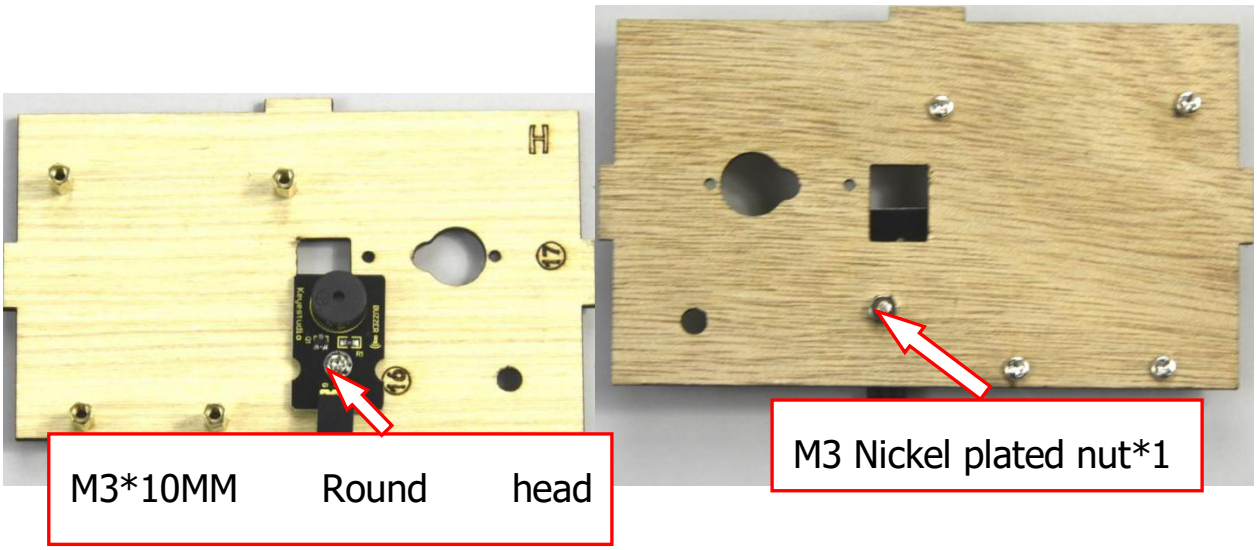


A. Mount 4pcs dual-pass copper pillars on the H board with 4pcs M3*6MM screws

B. Then fix the passive buzzer on H board with 1 M3*10MM round head screw and 1 M3 nut.

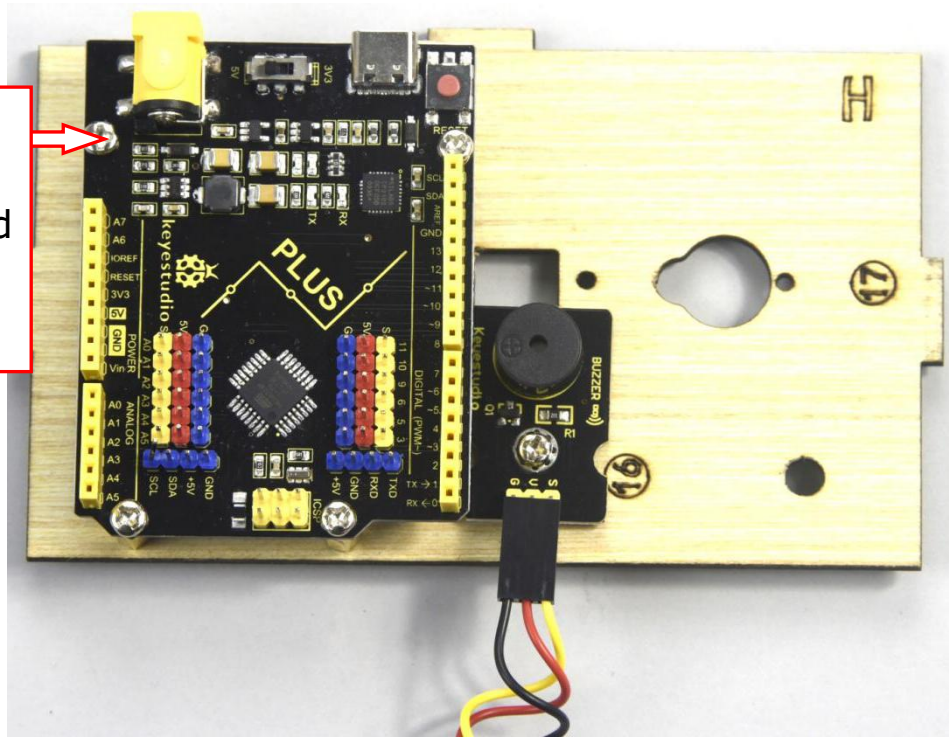
C. Connect a 3pinF-F dupont line to the passive buzzer.

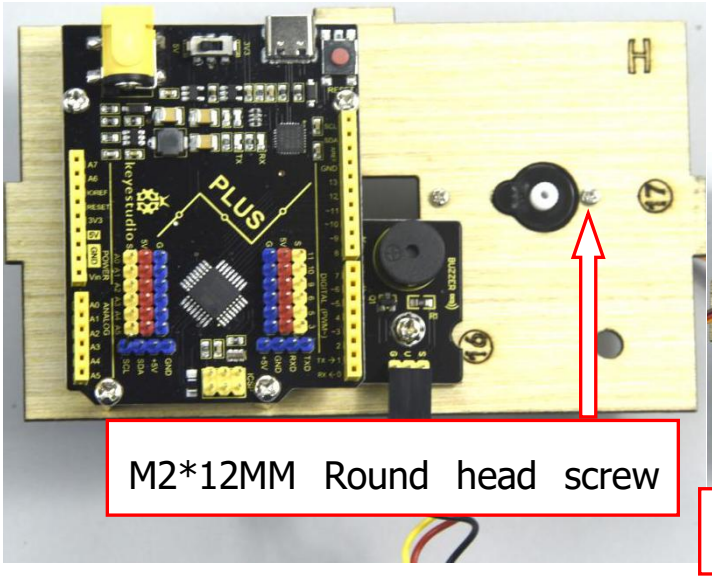


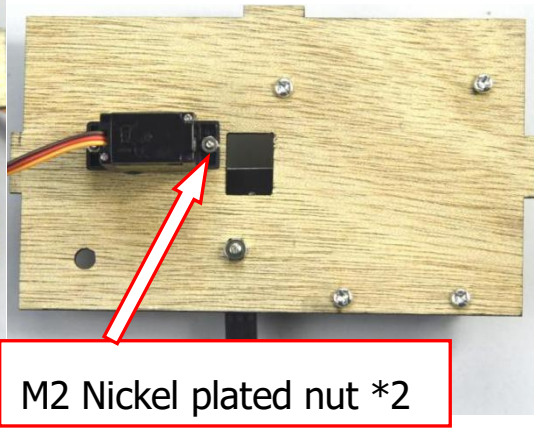


Set the servo to 90° before installing, and the method is same as the step 6.

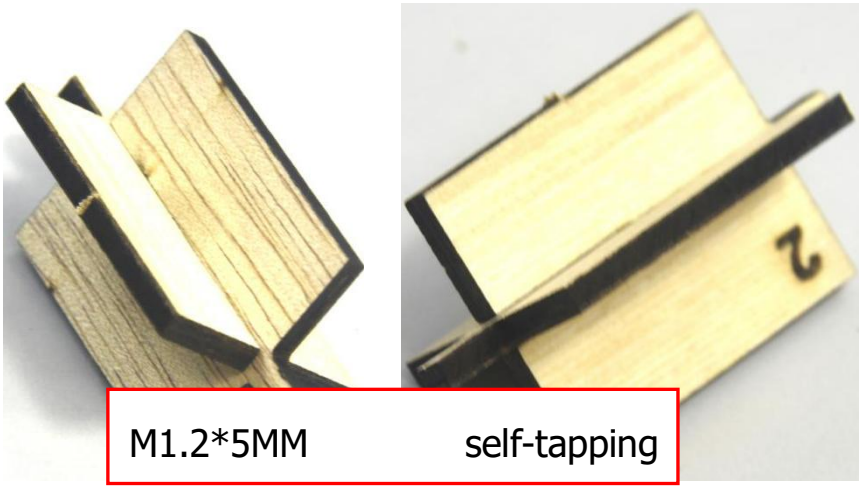
Fix the 4pcs M3*10MM copper pillars on the Keyestudio PLUS control board with 4 M3*6MM round head screws, then mount the servo on the corresponding area of H board with 2 M2*12MM round head screws and 2 M2 nuts.

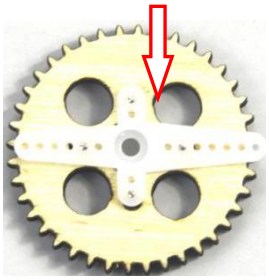




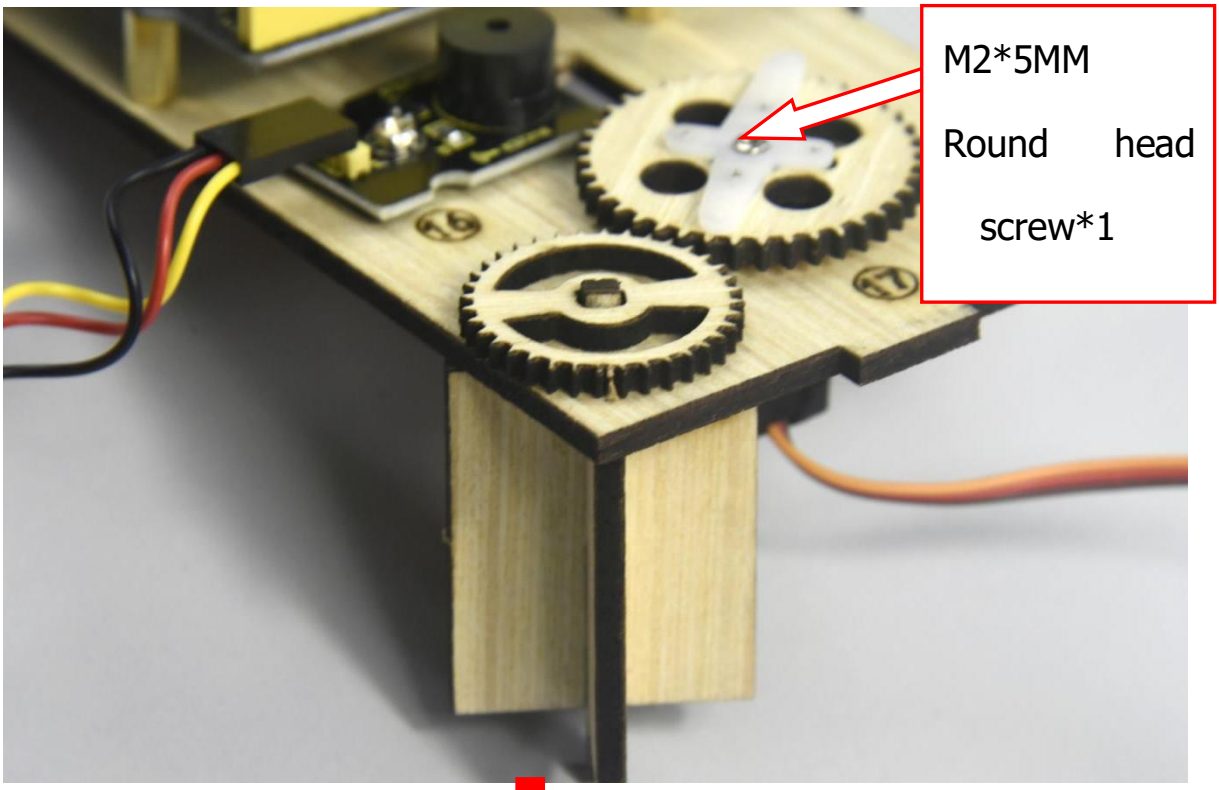


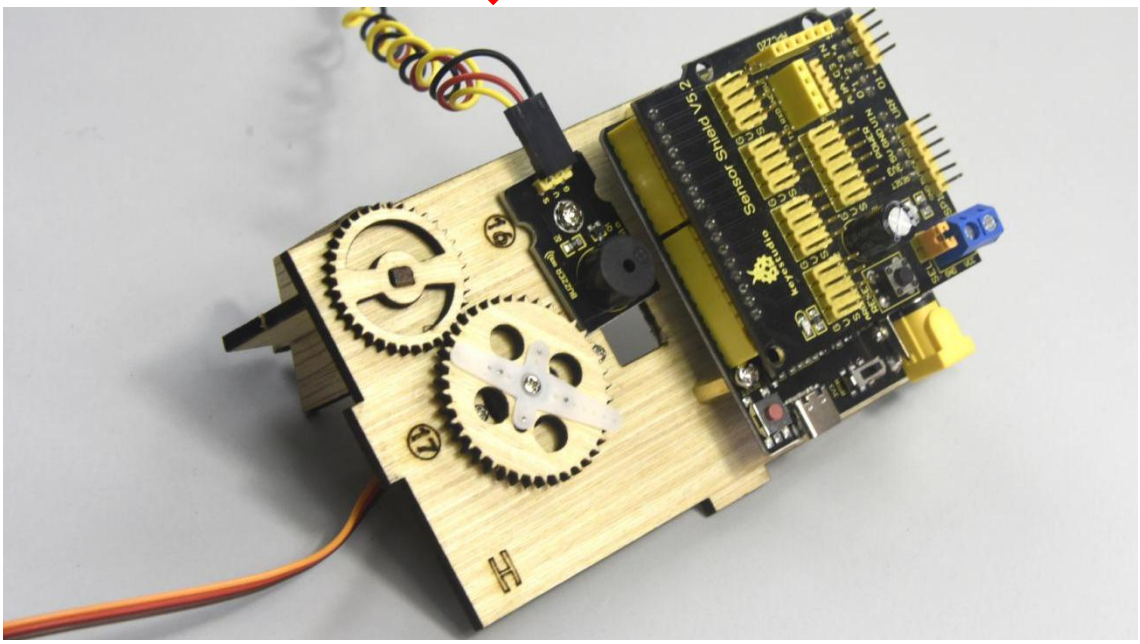
Mount 2pcs board 2 together, then fix white cross mount on the gear with 4pcs M1.2*5 self-tapping screws





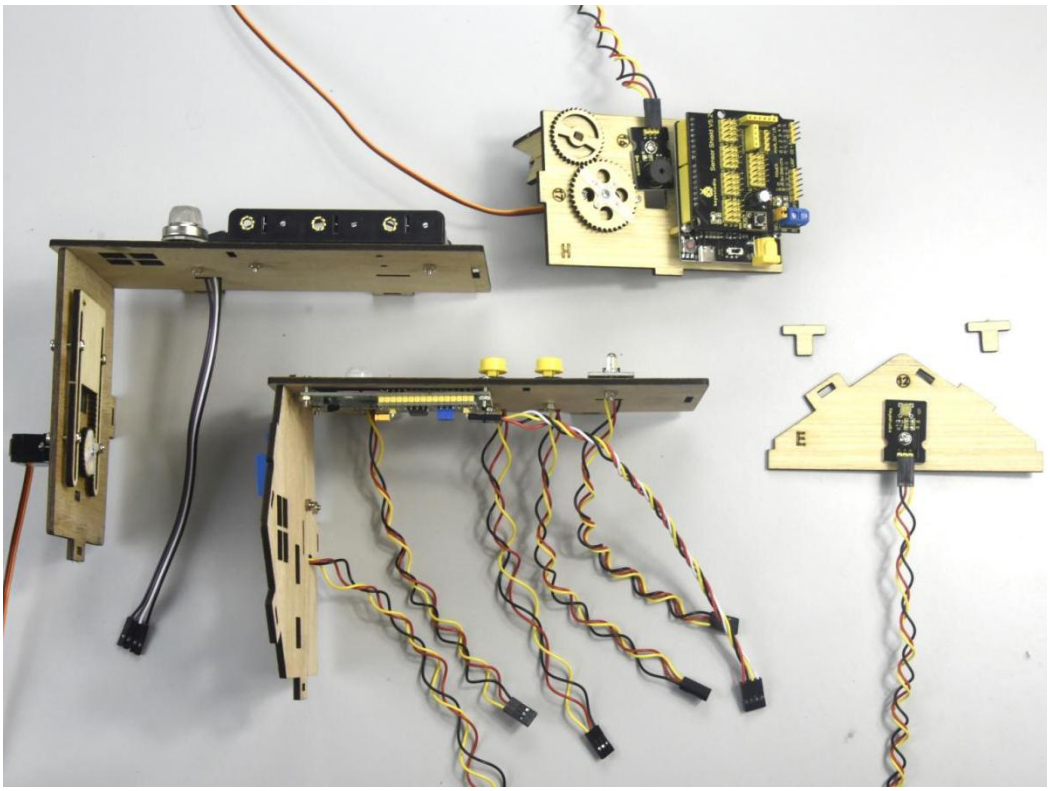
Fix the gear with white cross mount on the black servo with 1 M2*5MM screw(included in servo), then install the combination of 2pcs board 2 and another servo on the corresponding area of H board, finally stack the sensor shield on the Keyestudio PLUS control board.

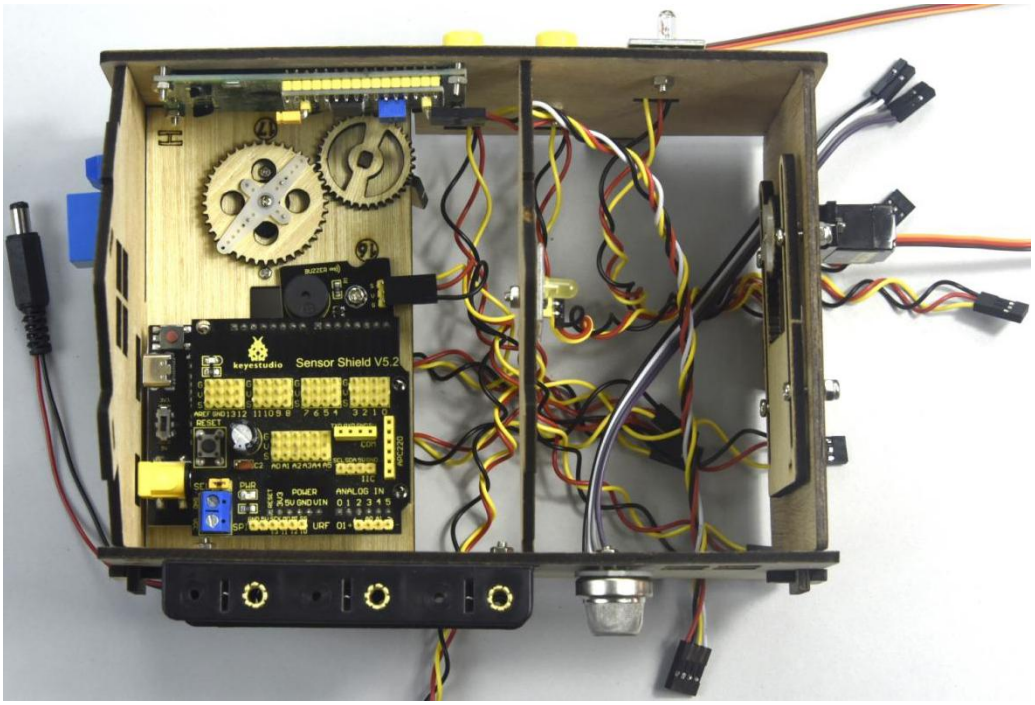


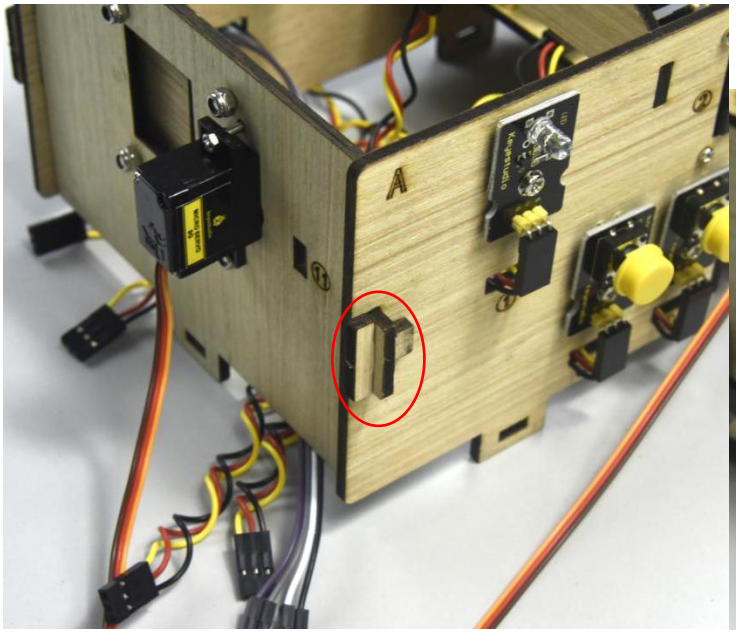


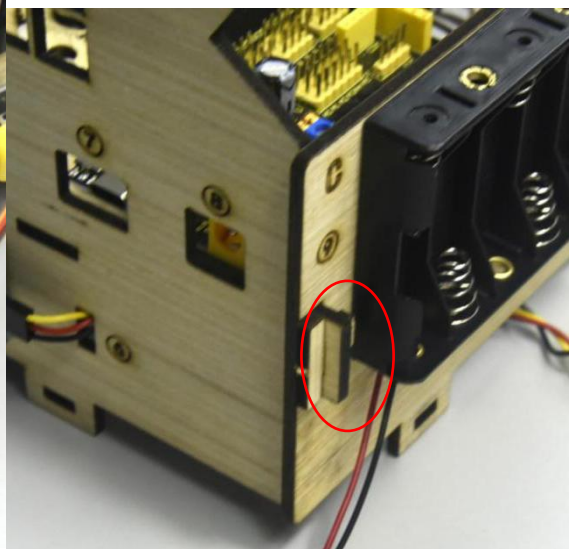
Step 9: Assemble all boards together with 2 "T" type bolts.

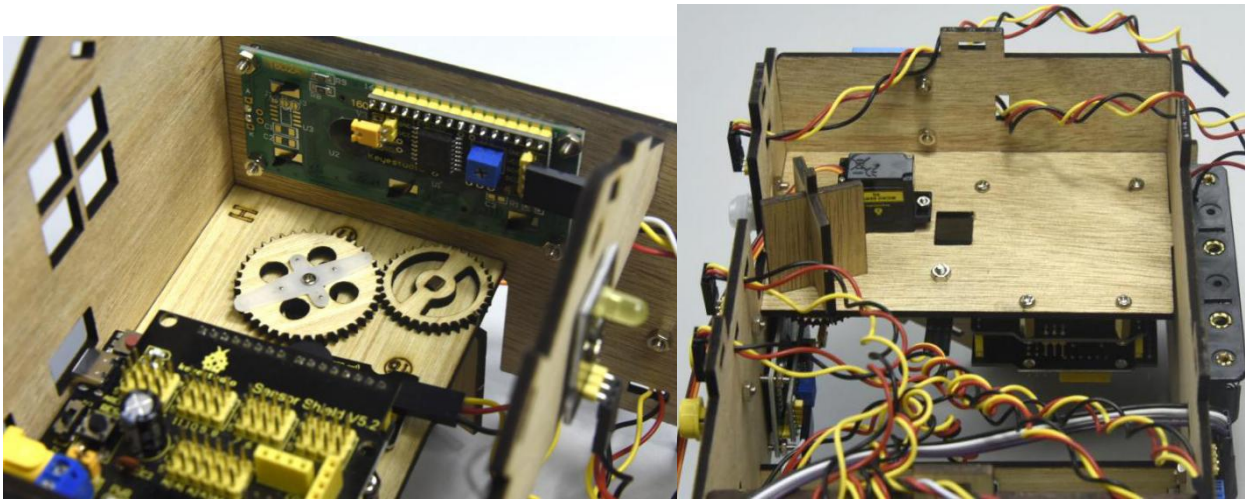
(Note: the port of PLUS Control Board is aligned with the hole ⑧ on board B, and the interface of USB cable is aligned with the hole ⑦ on board B)




keyestudio
Sensor Shield V5.2







Step 10: Install sensors on F board

A steam sensor,

A photocell sensor

A fan module(with fan)

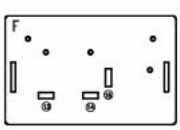
Board F

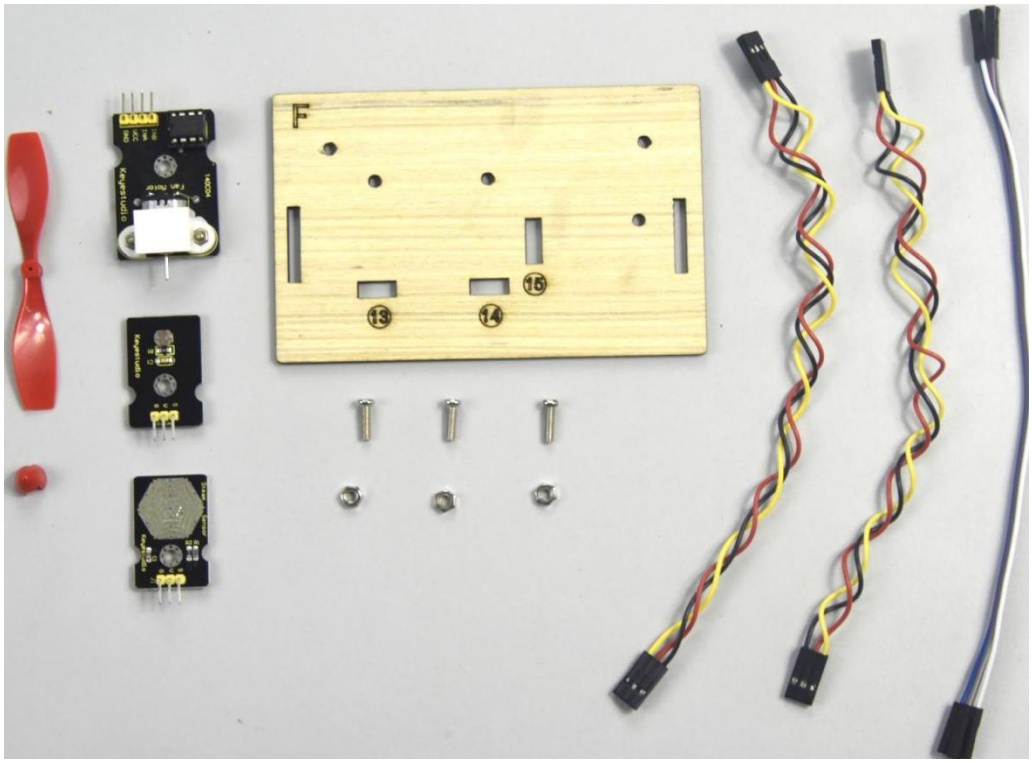
3pinF-F dupont line*2,

4pin F-F dupont line*1

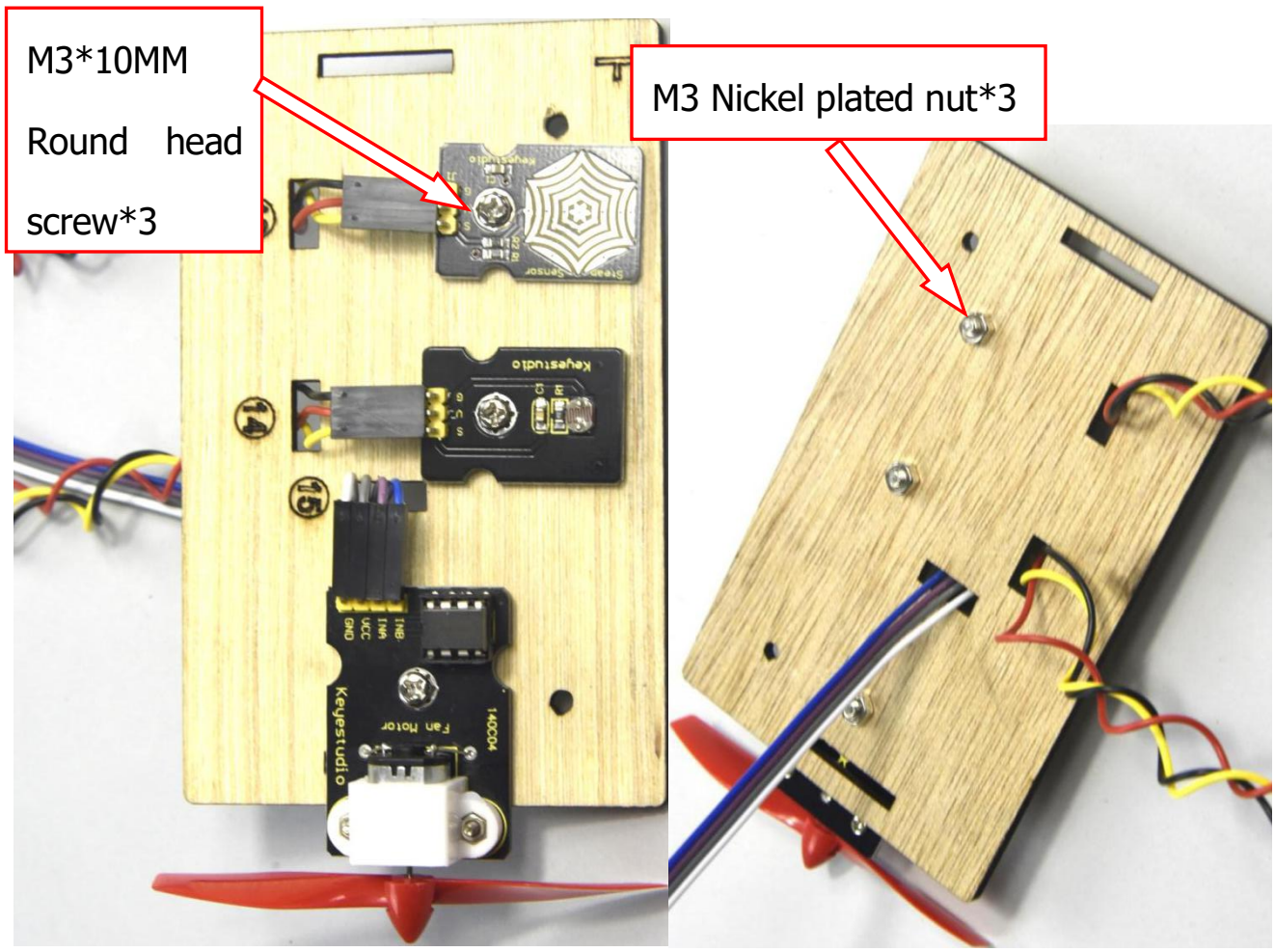
M3*10MM round head screw*3

M3 nickel plated nut*3.

F board*1	Steam sensor*1	Photocell sensor*1	Fan module*1	M3*10MM Round head screw*3	M3 Nickel plated nut*3	F-F Dupont line*4	3pin F-F Dupont line*2
							

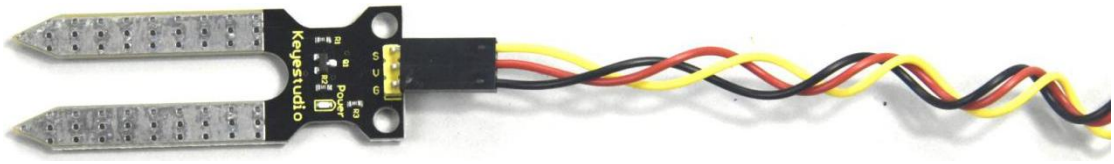


Separately fix the steam sensor, the photocell sensor and the fan module on the F board with 3pcs M3*10MM round head screws and 3pcs M3 nuts, then attach 3pin and 4pin dupont lines to sensors



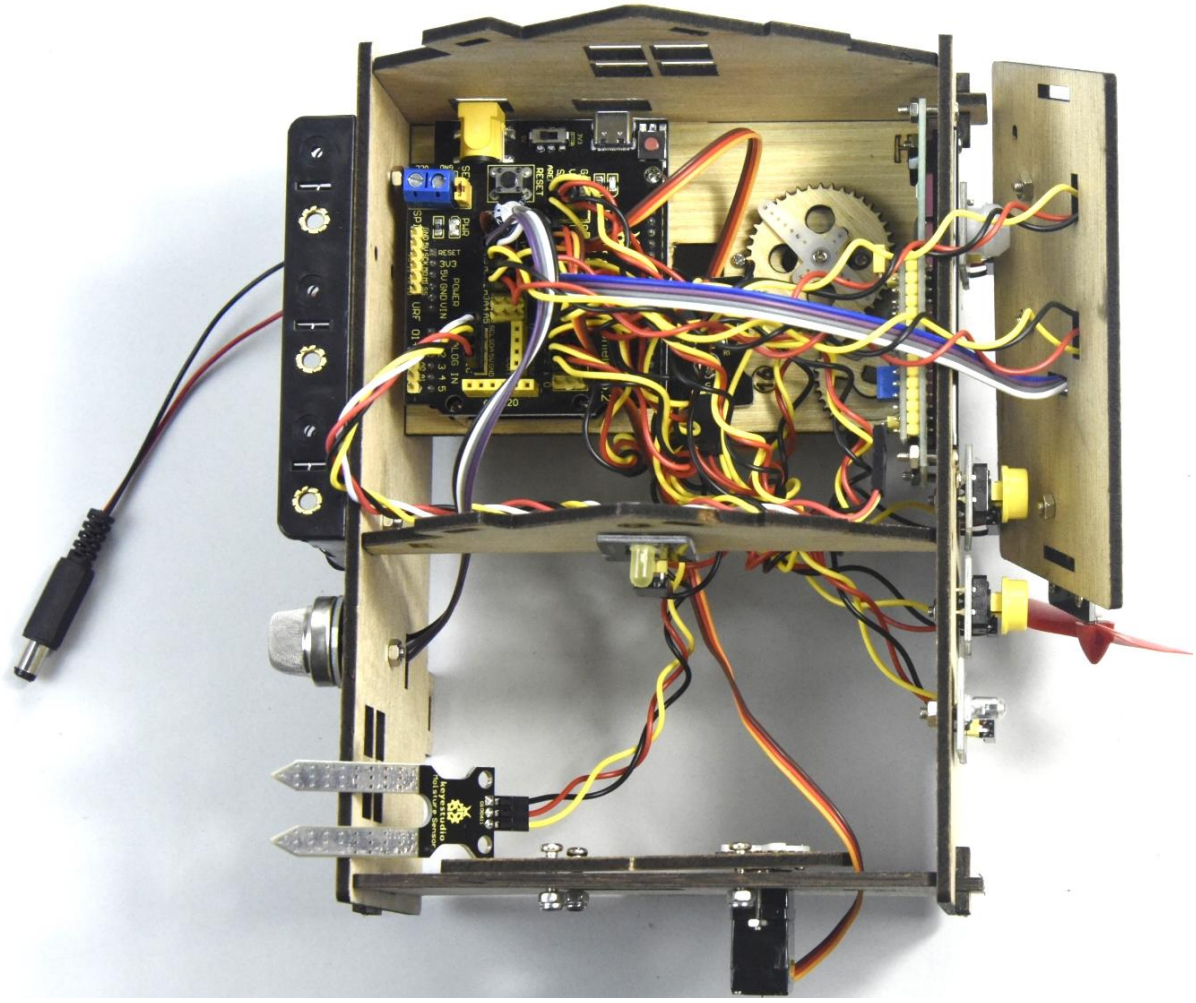
Step 11: Connect sensor/module

Connect one end of a 3pin dupont line to soil humidity sensor, then link all sensors with the sensor shield. (make dupont wires of the servo go through the holes of board)



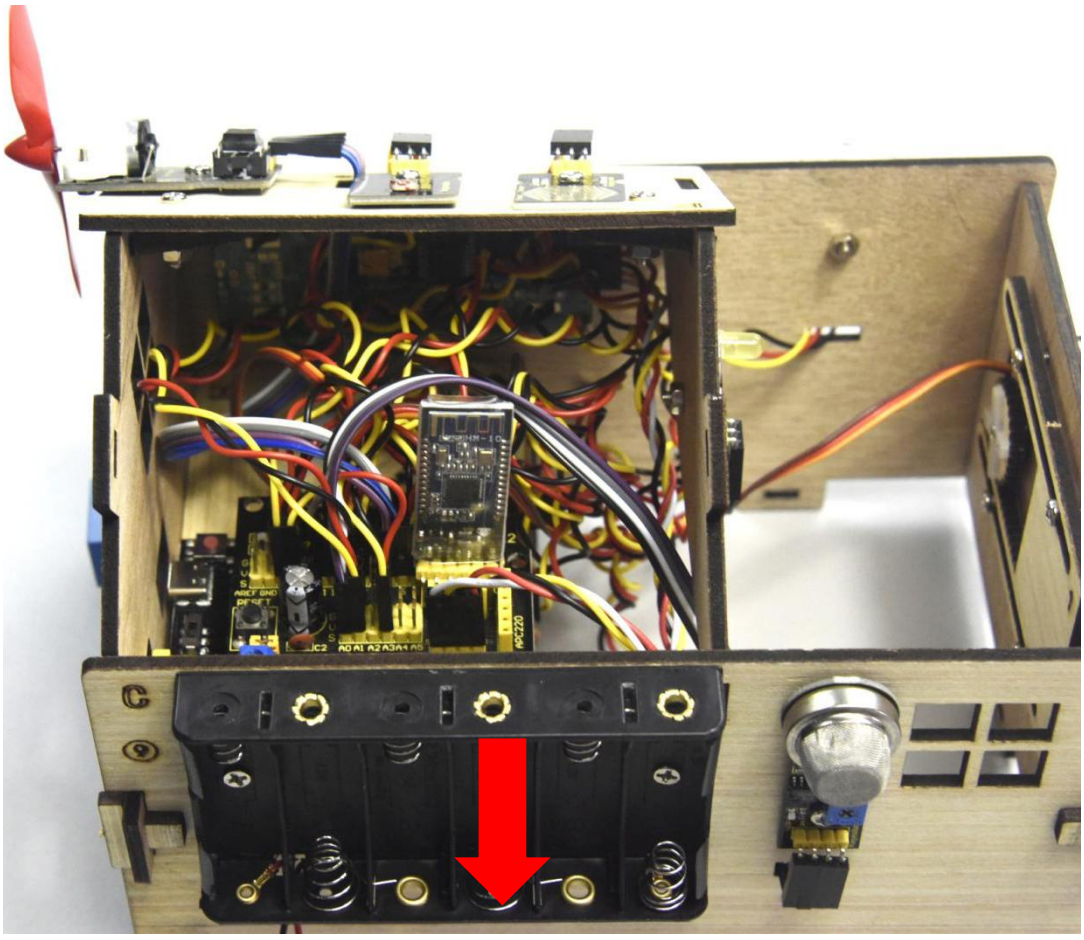
Name	The corresponding interfaces of sensors and sensor shield		The corresponding installed area on the board
PIR Motion Sensor	G/V/S	G/V/2	⑤
Passive buzzer	G/V/S	G/V/3	⑯
Button module 1	G/V/S	G/V/4	③
Yellow LED	G/V/S	G/V/5	⑫
Fan module	GND/VCC/INA/INB	G/V/7/6	⑮
Button module 2	G/V/S	G/V/8	④
Servo 1 controlling the door	Brown/Red/Orange wire	G/V/9	⑰
Servo 2 controlling the windows	Brown/Red/Orange wire	G/V/10	⑪
MQ-2 Gas Sensor	GND/VCC/D0/A0	G/V/11/A0	⑩
Relay Module	G/V/S	G/V/12	⑥
White LED	G/V/S	G/V/13	①
LCD1602 Display	GND/VCC/SDA/SCL	GND/5V/SDA/SCL	②

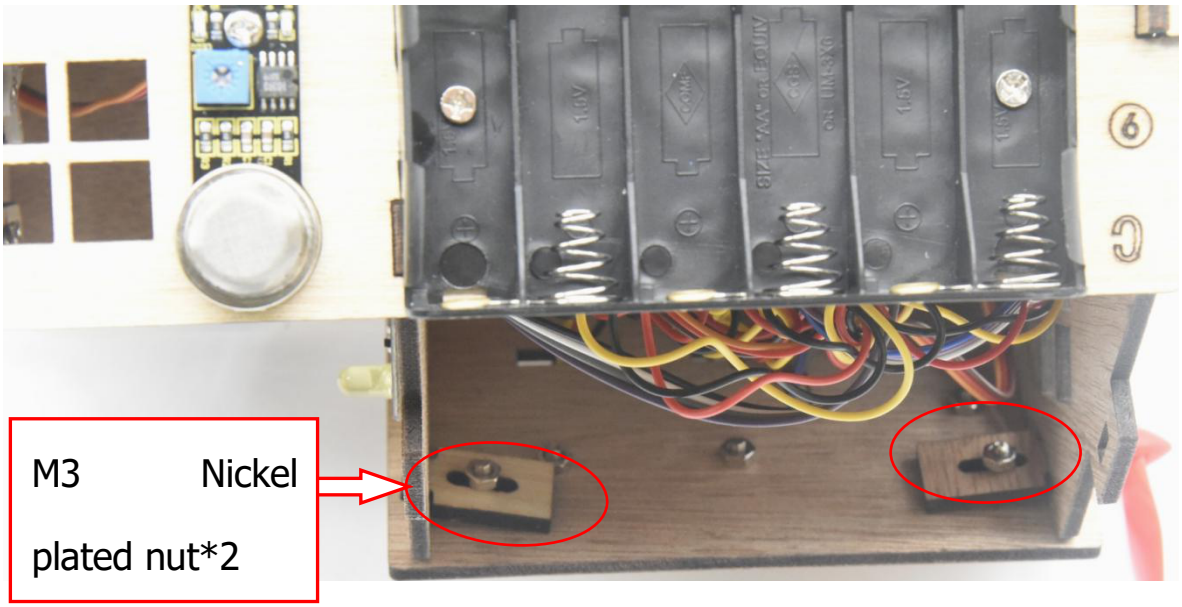
Photocell Sensor	G/V/S	G/V/A1	⑭
Soil humidity sensor	G/V/S	G/V/A2	
Steam sensor	G/V/S	G/V/A3	⑬

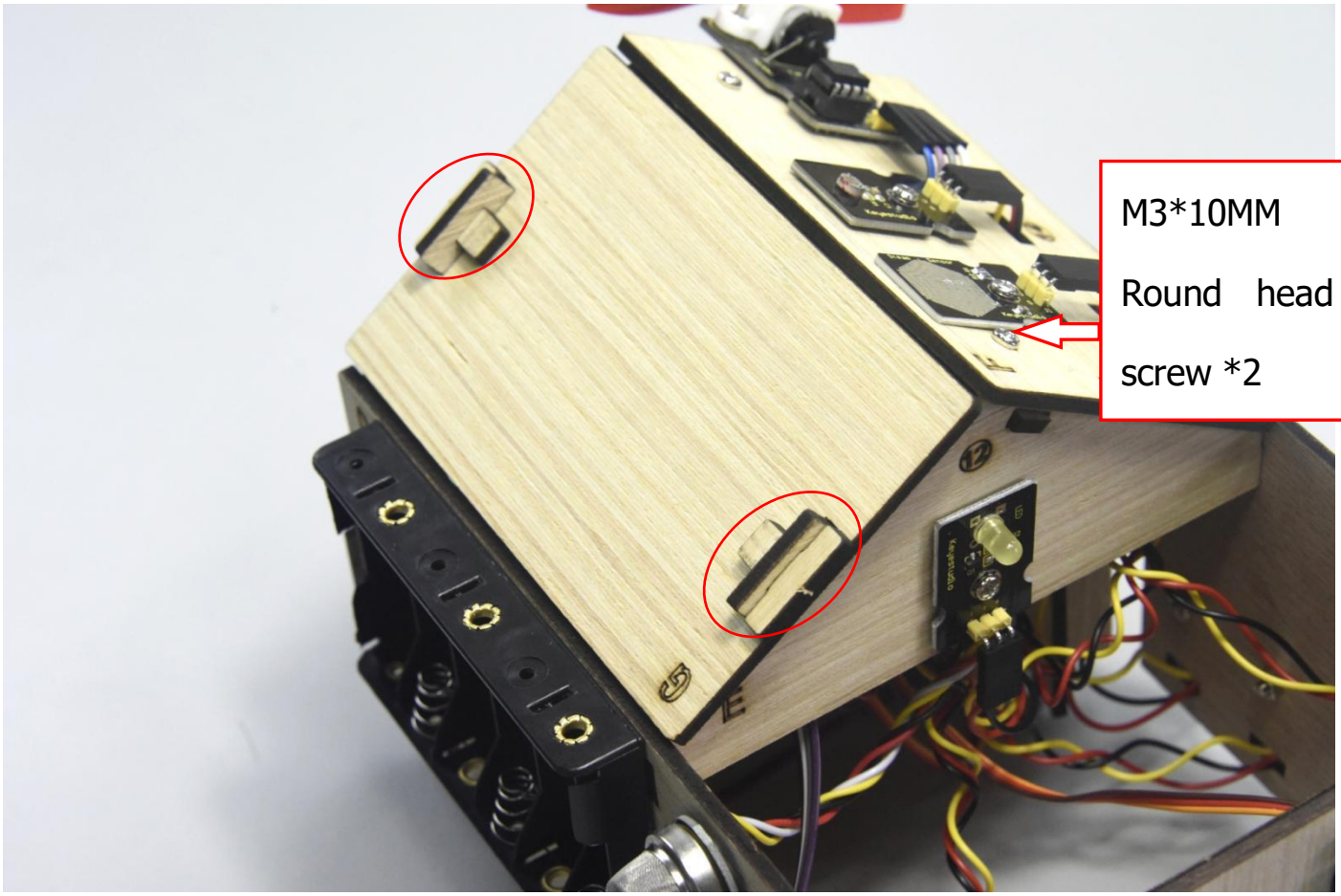


Insert the Bluetooth module into sensor shield, then fix the F board with 2 M3*10MM round head screws, 2 M3 nuts and 2 pcs parts and mount G board with 2 "T" bolts.

Bluetooth Module	Sensor shield
VCC	5V
GND	GND
TXD	RXD
RXD	TXD

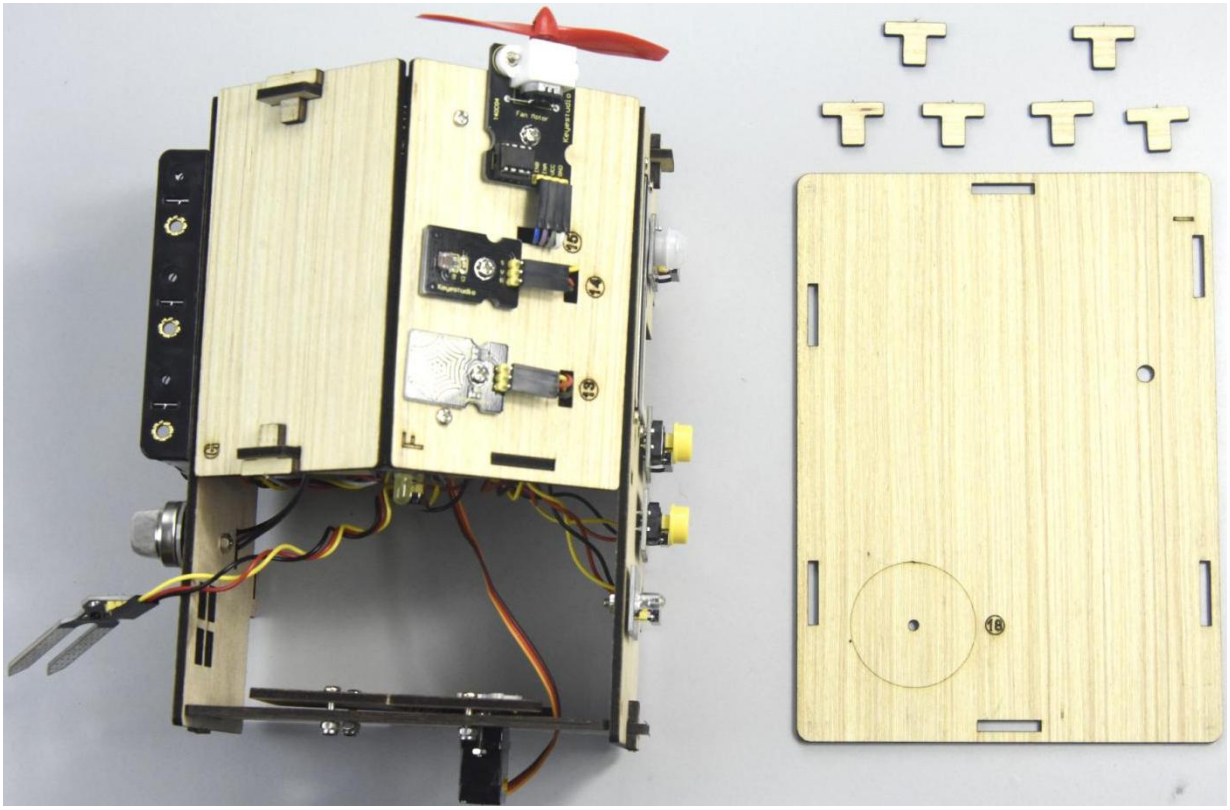


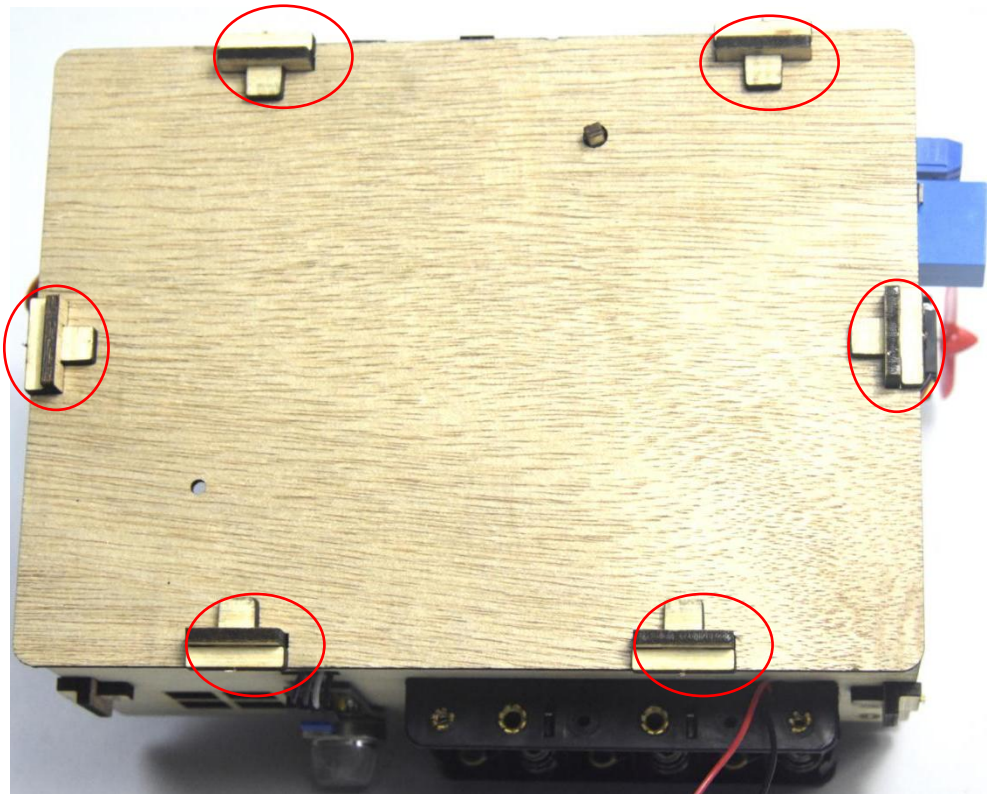

M3 Nickel plated nut*2

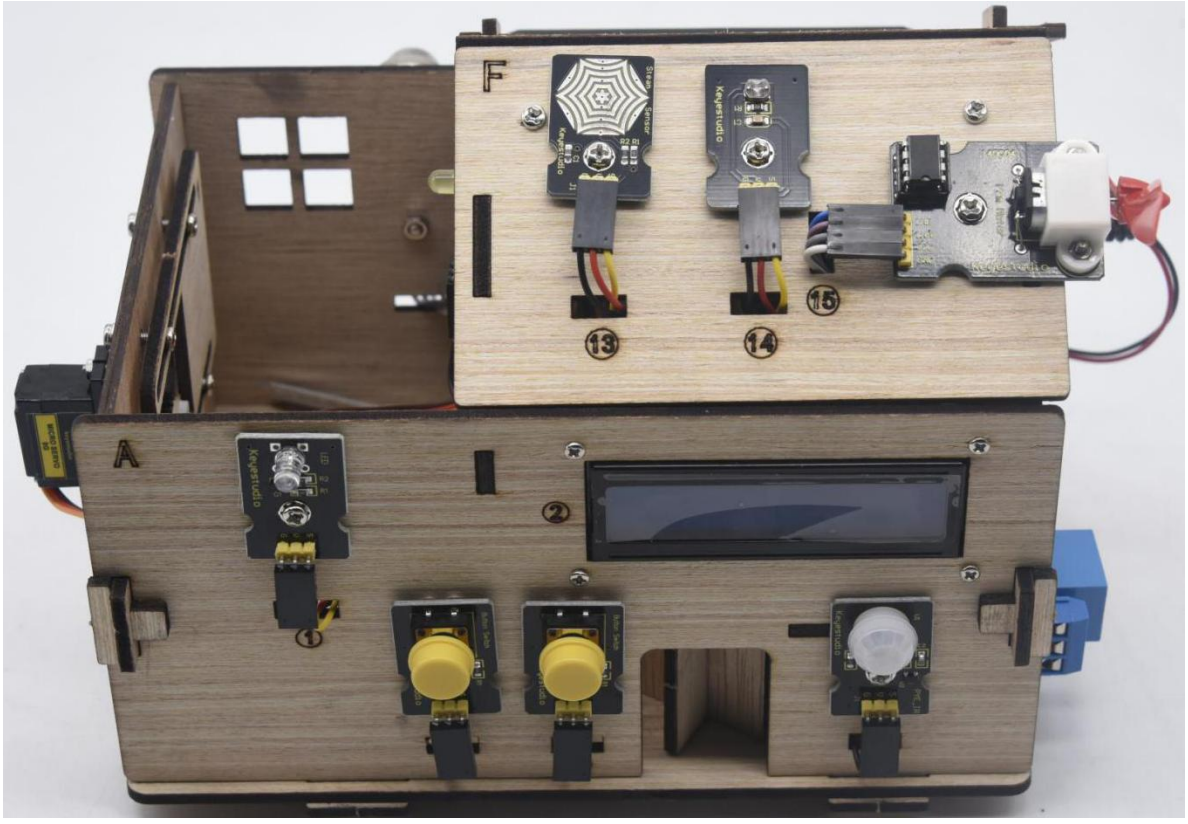

M3*10MM Round head screw *2

Step 12: Assemble the kit

Fix the board I with 6 “T” bolts







The smart home kit is established.