HS-A07 Intelligent chase Learning kit assembly instructions

This product must be used with U+ Program Card with U+ Program Card to support Arduino IDE, Mixly, ArduBlock, Scratch and other programming software

⚠️ **Warning:** Persons under the age of 14 must be under the guidance of a professional teacher or knowledgeable adult! The assembly and debugging of the product require the use of relevant tools, please take safety precautions when assembling to avoid injury!

Bill of Materials

Self-provided materials are not the materials in this product kit, need to be equipped by yourself

	name	Image		name	Image		name	Image
1	micro usb (Owned) 1		2	U+ Program Card (Owned) 1		3	18650 lithium battery (Owned) 1	
4	LED + 18650 Lithium battery case 1 / 1		5	solar panel + Double-sided tape 1 / 1		6	9g Servos + Servo disc 2 / 2	
7	U+A5 Expansion board 1		8	Four-way photosensitive sensor + Colorful diodes 1 / 1		9	Main structural panel 1	
10	4mm screw 12 + 7mm screw 36 + 10mm screw 2		11	1.3cm Hit the head axis 1 + Fixed ring 1 + Key caps 1		12	3PDuPont Line (10cm) 1 + 6PDuPont Line (30cm) 1 + Cable ties 1	

Wiring diagram

DuPont line color random distribution, line connection please refer to the corresponding identification information of the entrance!

Bottom turntable servo
Brown line > D5/G
Red line > D5/V
Orange line > D5/S

Head turntable servo
Brown line > D6/G
Red line > D6/V
Orange line > D6/S

LED
S > D9/S
V > D9/V
G > D9/G

3P

Four-way photosensitive sensor
GND > G
VCC > V
A1|S > A5
A2|S > A4
A3|S > A3
A4|S > A2

6P

U+ program card slot

U+A5

U+A5 Expansion board

Product Introduction

The intelligent light chaser is an intelligent kit composed of four-way photosensitive sensor, servo and other accessories.
This kit allows the light to be shone on a four-way photosensitive sensor, and the solar chaser will rotate with the light. You can also modify the sample program through programming software such as Arduino IDE, Mixly or write new programs yourself to control the smart light chaser.

Preparation of tools and assembly considerations

Self-equipped assembly tools: 3mm diameter Phillips screwdriver, scissors.
Self-provided debugging tools: 1 computer with Windows 7, 8, 10, 11 operating system, 1 U+ program card, 1 data cable, 1865 lithium battery
1 pair.
If you want to easily assemble the kit, you need to read the assembly manual carefully, assemble step by step
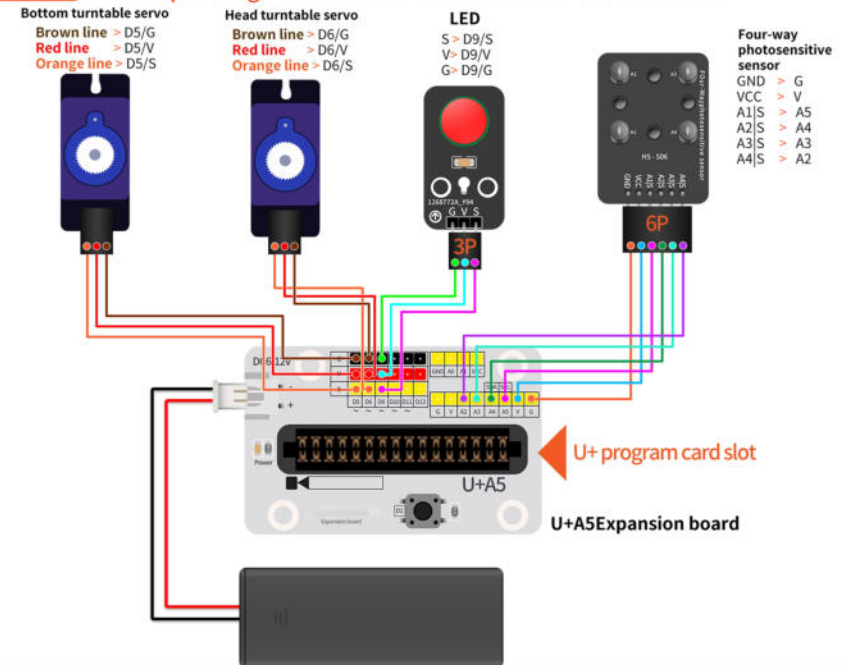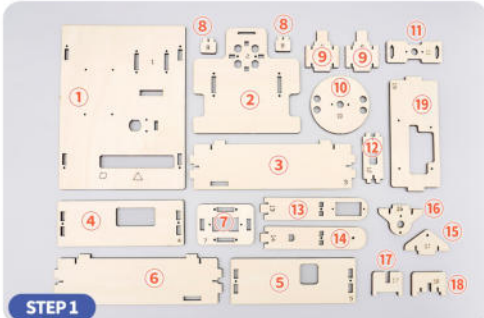
Security warnings ⚠️

1. This product is a teaching and experimental product, please do not use its function as a daily necessities, there will be instability.
2. When you do not use this product, please turn off the power switch on the battery box and remove the battery, and keep the battery properly.

Start assembling

STEP 1

● Prepare all accessories and wood materials, and carefully check the number on the materials when assembling the wood materials.**(The board has a number side as the front and no number as the back)**

STEP 2

correct / back

Screw selection ▼
Length 7mm
Coarse screw
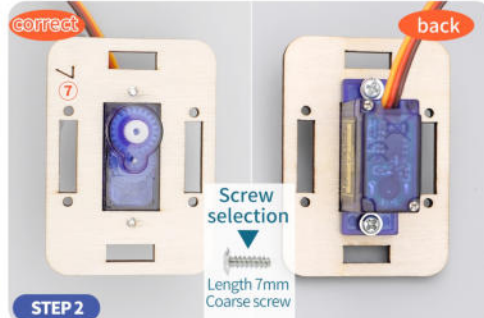
● Refer to the picture above, install the servo on board (7) and fix it with 7mm coarse screws on the back of board (7).**(Note the orientation of the installation)**

STEP 3

Screw selection ▼
Length 4mm
Coarse screw

● Referring to the picture above, first install the two (9) plates from the bottom of the (7) plate and fix them with 7mm rough screws. Then install the (8) plate on the (7) plate and fix it with 4mm rough screws at the bottom of the (7) board.**Note: This is the bottom turntable servo.**
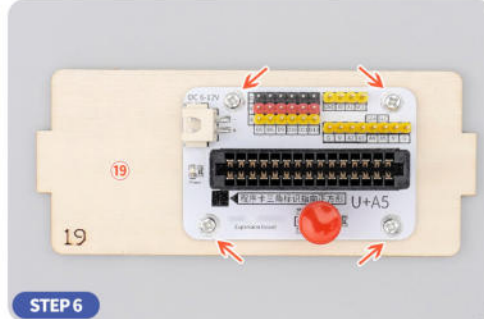
STEP 4

● Referring to the picture above, the head turntable servo is mounted on the back of board (13) and fixed with 7mm coarse screws.**(Note that the servo gear is mounted facing up)**
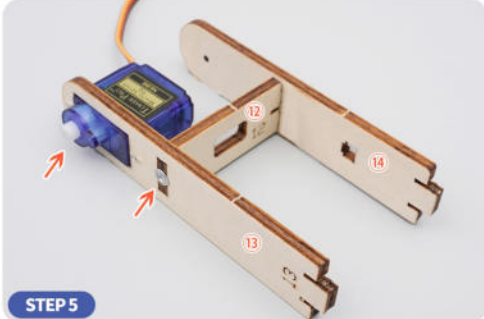
STEP 5

● Referring to the above figure, first install the (12) board on the (13) and (14) plates, and fix it with 7mm rough grain screws.**Note: This is a head turntable servo.**
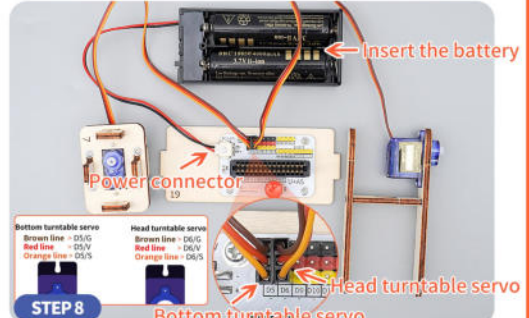
STEP 6

● Referring to the picture above, first install the red key cap on the U+A5 expansion board, and then fix the U+A5 expansion board with 4mm rough grain screws on the front of the (19) board.**(Note the alignment of the expansion board holes of plate (19))**
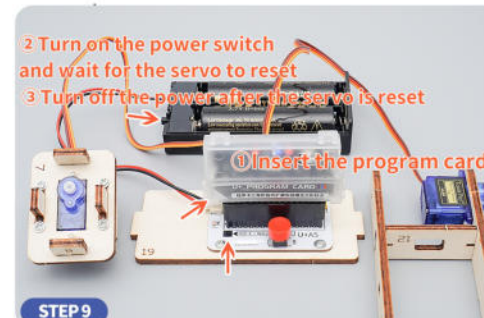
②

STEP 7

● Use the Mixly software to upload the kit's initializer to the U+ program card.

STEP 8

Insert the battery
Power connector
Bottom turntable servo
Brown line ▸ D5/G
Red line ▸ D5/V
Orange line ▸ D5/S
Head turntable servo
Brown line ▸ D6/G
Red line ▸ D6/V
Orange line ▸ D6/S
Head turntable servo
Bottom turntable servo
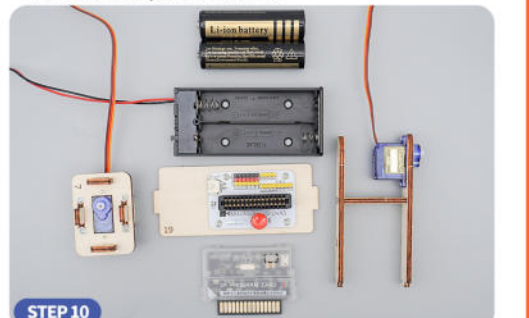
● Refer to [Circuit Wiring Diagram] Plug the wire ports of the head turntable servo and the bottom turntable servo into the D5 and D6 interfaces on the expansion board, and then load the battery in the battery box, and plug the battery box wire port into the power interface on the expansion board.

STEP 9

② Turn on the power switch and wait for the servo to reset
③ Turn off the power after the servo is reset
① Insert the program card

● ①： Snap the program into the card slot of the U+A5 expansion board.
②： Turn on the power switch and wait for thservo to reset.
③： After the servo is reset, turn off the power.
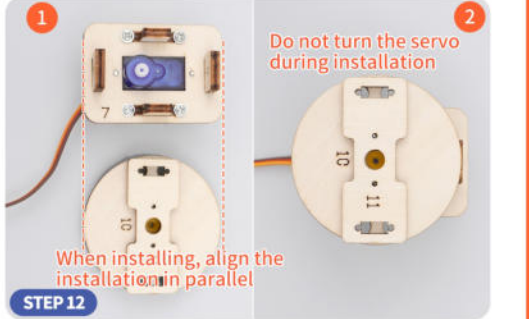**Note: The program card triangle logo points to the expansion board square identification.**

STEP 10

Li-ion battery

● Refer to the picture above to remove the accessory.

STEP 11

correct / back

Screw selection ▼
Length 10mm
Coarse screw

The servo disc protrusion is mounted outward

● Referring to the above figure, first stack the (11) plate on the front of the (10) board, and then install the protruding part of the servo disc facing outward, install it on the back of the (10) board, and fix it with 10mm rough screws.
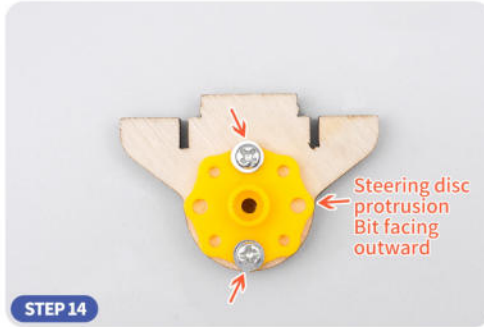
STEP 12

①
②
Do not turn the servo during installation
When installing, align the installation in parallel

● Referring to the picture above, the STEP 11 assembled module is mounted on the (7) plate servo with the yellow servo disc facing down, and the turntable is fixed with 7mm screws.
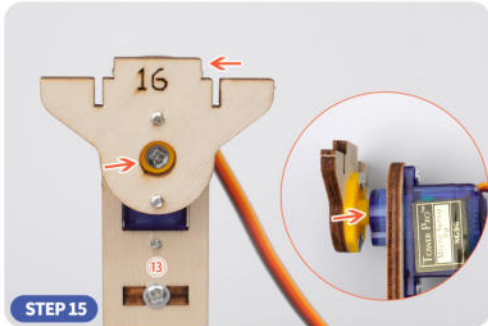
③

STEP 13 — correct / back
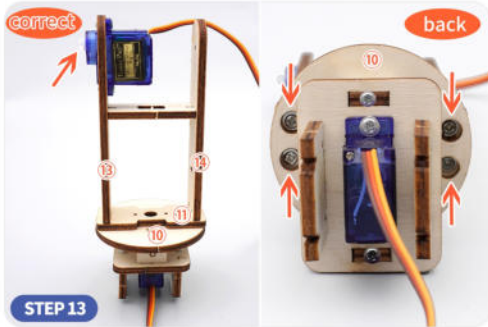
Refer to the figure above, install the STEP 5 assembled modules on boards (10) and (11).
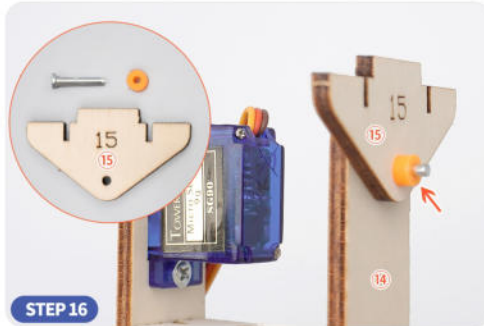
STEP 14

Steering disc protrusion Bit facing outward

Referring to the picture above, the protruding part of the servo disc is mounted outward on the back of the (16) plate and fixed with 7mm coarse screws.

STEP 15

Referring to the picture above, first parallel the (16) plate upwards, and then install the servo disk of the (16) board on the servo of the (13) board and fix it with 7mm rough grain screws.

STEP 16

Referring to the picture above, first place the (15) plate on the outside of the (14) plate and align the round hole, then thread the 13mm head shaft from the (14) plate to the (15) plate, and then fix it with a fixing ring.
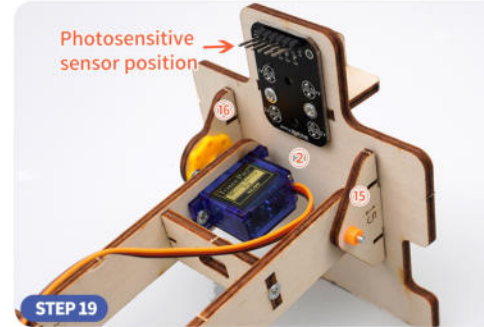
STEP 17

Referring to the figure above, first align the (17) board and install it on the (2) board, and then snap the (18) board into the (17) board and install it on the (2) board.

STEP 18

Mount the pin header facing up
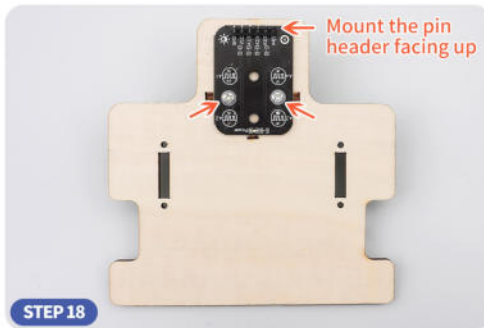
Referring to the figure above, mount the pin header of the four-way photosensitive sensor on the back of board (2) and fix it with 7mm coarse screws.

STEP 19

Photosensitive sensor position

Refer to the above picture, install the (2) board on the (15) and (16) plates, please be sure to install it according to the direction shown above.
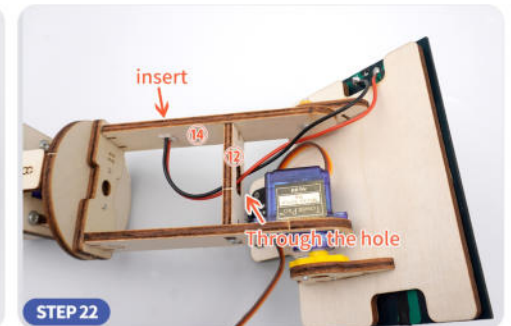
STEP 20 — 正

Double-sided tape

Refer to the picture above, fix the front of board (2) with 7mm coarse grain screws, and then attach double-sided tape to board (2).
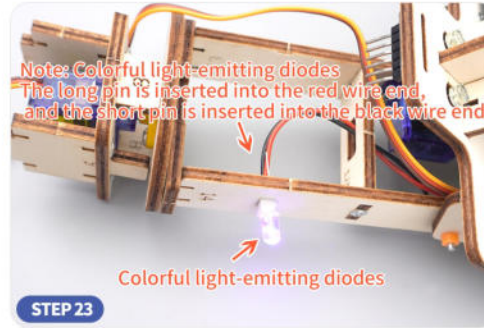
STEP 21

solar panel Close to board (17).

The wire faces to the left

Refer to the picture above, glue the solar panel to board (2) with the wire facing to the left.

STEP 22

insert

Through the hole
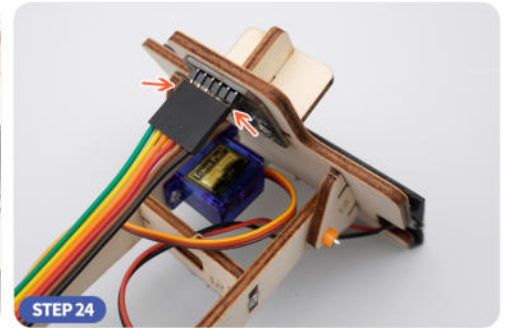
Referring to the figure above, first pass the wire of the solar panel through the middle hole of plate (12), and then insert the wire terminal into the hole of board (14).
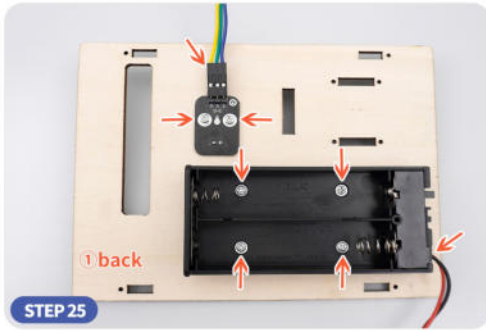
STEP 23

Note: Colorful light-emitting diodes The long pin is inserted into the red wire end, and the short pin is inserted into the black wire end.

Colorful light-emitting diodes

Referring to the picture above, insert the colorful light-emitting diode into the terminal, the long pin into the red wire end, and the short pin into the black wire end.
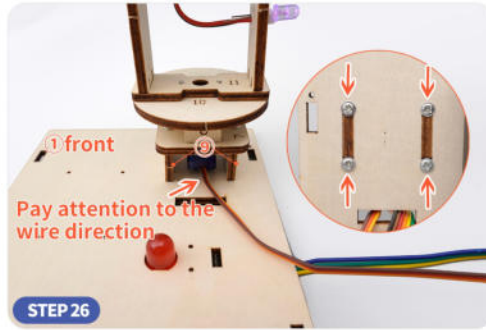
STEP 24

Referring to the figure above, insert a 6P DuPont line port into the [GND, VCC, A1| of the four-way photosensitive sensor S 、A2| S 、A3| S 、A4| S] on.

STEP 25

① back

① front

Pay attention to the wire direction

STEP 26

- Referring to the above figure, first install the battery box wire outward on the back of the (1) plate, and fix it with 4mm coarse screws, then install the LED light module on the back of the (1) board, and fix it with 4mm coarse screws, and finally plug the 3P DuPont wire into the pin of the LED light module.

- Referring to the picture above, install the two (9) plates on the front of the (1) plate, and pay attention to the wire of the turntable servo facing the direction of the threading hole. Then fix the (1) plate from the back of the (1) plate with 7mm rough screws.
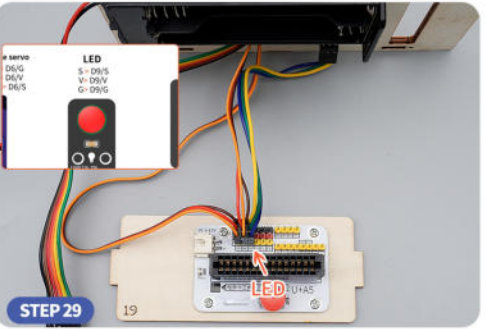

STEP 27

Bottom turntable servo

Head turntable servo
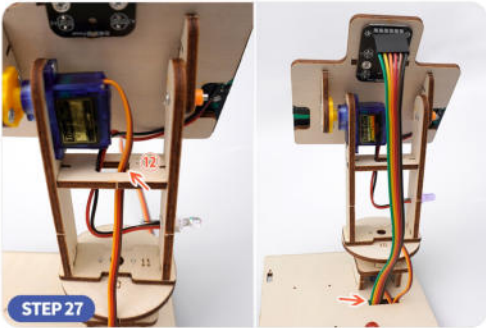
STEP 28

- Referring to the figure above, first pass the head turntable servo wire through the (12) wire hole, and then pass all the wire through the line hole of the (1) plate.
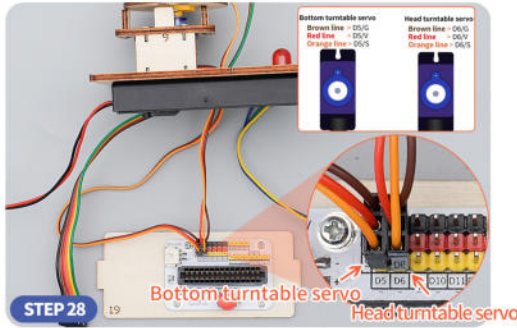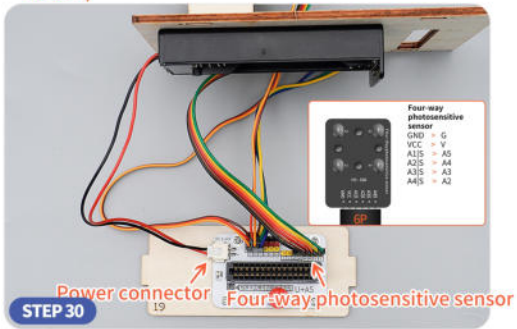
- Refer to [Circuit Wiring Diagram] Plug the wire ports of the bottom turntable servo and the head turntable servo into the D5 and D6 interfaces on the expansion board.**(Note: Please check the port order before inserting, the wrong line order may burn the board.)**


STEP 29

LED

Power connector

Four-way photosensitive sensor

STEP 30

- Refer to [Circuit Wiring Diagram] to plug the lead port of the LED light into the D9 interface on the expansion board.**(Note: Please check the port order before inserting, the wrong line order may burn the board.))**

- Refer to [Circuit Wiring Diagram] first plug the wire port of the four-way photosensitive sensor into the A2, A3, A4, A5, V, and G interfaces on the expansion board, and then plug the battery box wire port into the power interface on the expansion board.**(Note: Please check the port order before inserting, the wrong line order may burn the board.)**
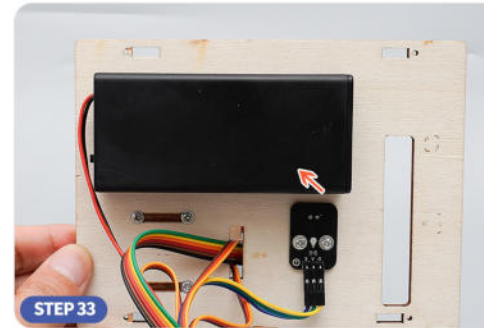
6
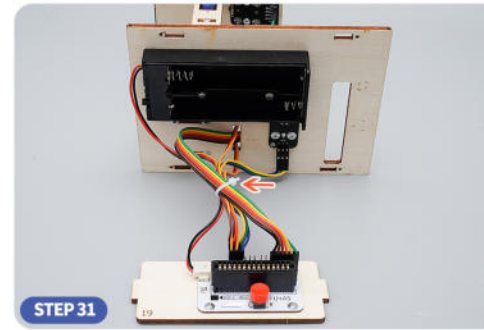
STEP 31

STEP 32

- Tie the wire with a cable tie and trim off the excess cable tie with scissors.**Note: Handle carefully when using scissors to avoid injury.**
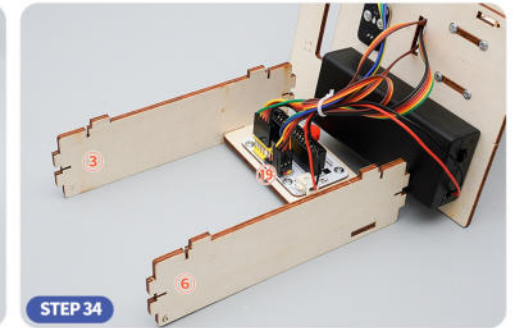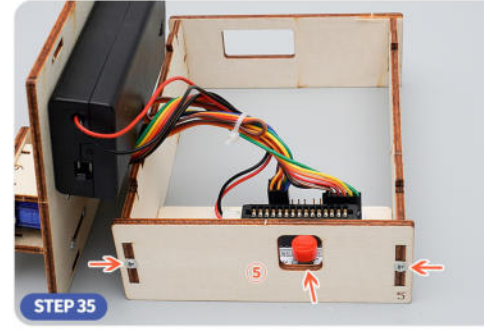
- Place the battery in the battery compartment.

STEP 33

STEP 34

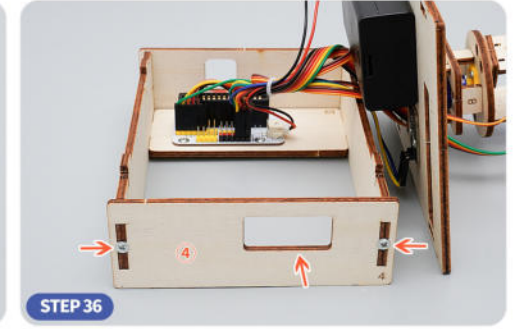- Close the battery compartment cover.
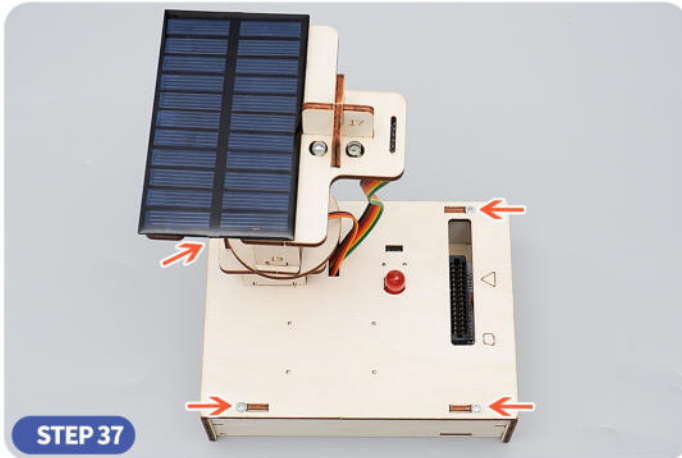
- Install plates (3) and (6) on board (19).

STEP 35

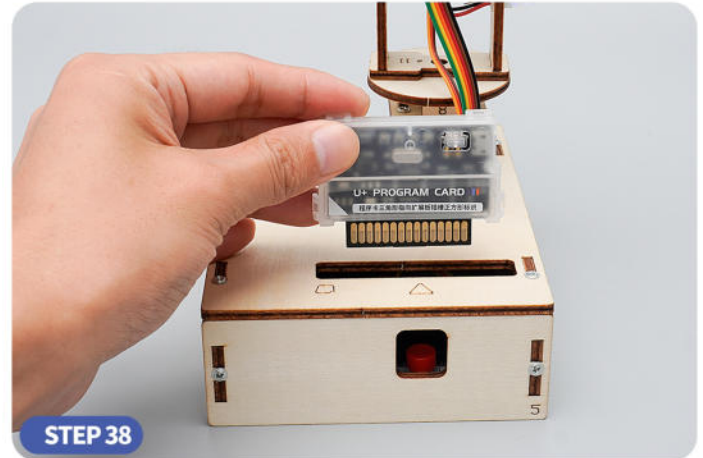**STEP 36**

- Install plate (5) on board (3) and (6) with 7mm rough screws.

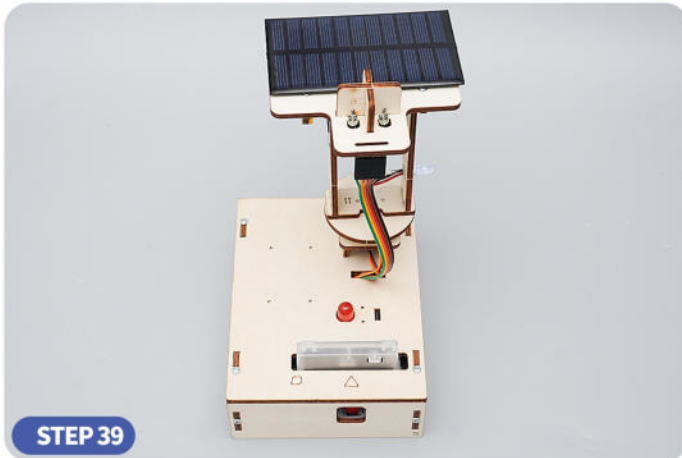- Install plate (4) on board (3) and (6) with 7mm rough screws.

7

STEP 37

- Install plate (1) and board (3) and (6) with 7mm rough screws.

STEP 38

- Refer to the method in STEP 9 to insert the program card into the expansion board and turn on the power.

STEP 39

- Solar chasing mode: controlled by the Arduino program, the position of the light is calculated by using four photosensitive sensors, and the servo is adjusted to align the solar panel in the direction where the light is most abundant.
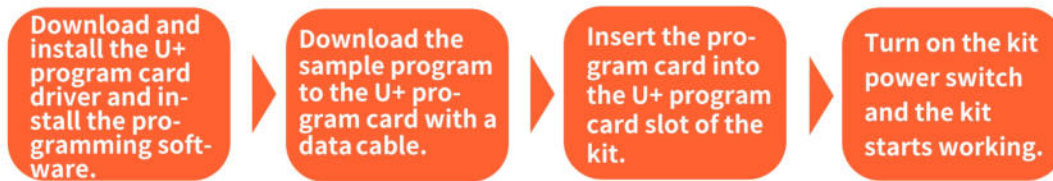

STEP 40

- Intelligent light control mode: use the light sensor to determine the intensity of the light, the red indicator lights up when the light is weak, and the red indicator lights up when the light is strong. Press and hold the D2 button to control the steering gear and adjust the direction of receiving light.

After the assembly is completed, you also need to check whether the installation is correct to avoid danger during commissioning!

1. Carefully check whether the whole kit has the wrong accessories, if there are wrong accessories, it will cause the whole kit to not operate normally.

2. Carefully refer to the circuit wiring diagram to check whether the wire connection is correct, the wrong wire connection will lead to a short circuit in the circuit, burn electronic components, and seriously lead to fire, explosion and other dangerous situations.

3. Carefully check whether the pins at the bottom of the circuit board accessories are in contact with other metals, and if there is contact, please check whether the accessories are not installed, resulting in the circuit board and other metals are not isolated.

4. Please check the power supply type and battery model used in this kit, the wrong use of the power supply or battery will cause fire, explosion and other dangerous situations.

5. If you encounter problems that you do not understand, please contact the online customer service of the official service website or find relevant professionals for consultation during working hours from Monday to Saturday 9:00-18:00, do not operate blindly, otherwise there will be danger.

Refer to the following procedure to debug and experiment with the kit

Download and install the U+ program card driver and install the programming software.

> Download the sample program to the U+ program card with a data cable.

> Insert the program card into the U+ program card slot of the kit.

> Turn on the kit power switch and the kit starts working.

You may encounter the following problems during debugging, refer to the tips below to see if you can troubleshoot!

Smart Light Chaser not working after installation?

1. Check whether the wiring is loose and wrong, please refer to the circuit wiring diagram for details.

2. Check whether the battery has run out of power, it is recommended to replace the new battery.

3. Check whether the DuPont wire of the sensor and the expansion board is connected correctly, please refer to the circuit wiring diagram.

4. Check whether the U+ program card downloads the program.

5. Check whether the U+ program card is inserted backwards, if the program card indicator light is not light or dim, please pull it out immediately, plugging in backwards will cause short circuit, please refer to the card insertion method of STEP 9 for inserting the card.