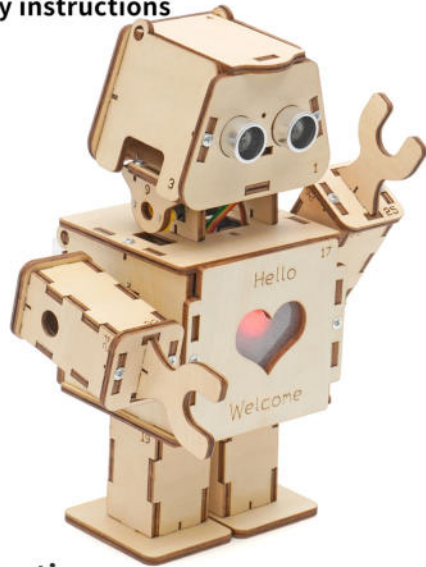# HS-AII Welcome robot
Learning kit assembly instructions

Product Introduction

Welcome Robot is an intelligent kit composed of ultrasonic modules, passive buzzers, LED lights, servos and other accessories.

This kit enables song playback and an auto-sensing welcome mode.

You can also modify the sample program through programming software such as Arduino IDE, Mixly, etc., or write new programs yourself to control the suite.

> This product must be paired with a U+ program card
> (U+ PROGRAM CARD) USE
> U+ Program card Support Arduino IDE, Programming software such as Mixly, Ardublock, Scratch, etc
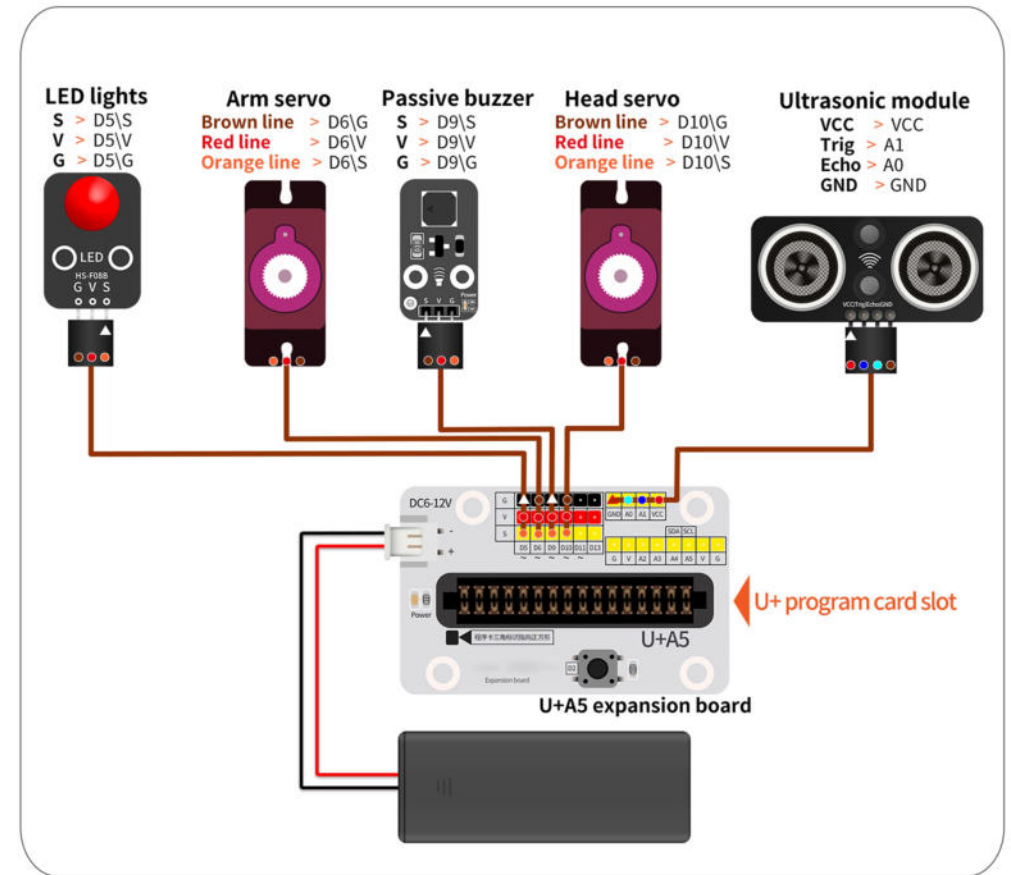
Preparation of tools and assembly considerations

Warning: Persons under the age of 14 must be under the guidance of a professional teacher or knowledge-able adult!

The assembly and debugging of the product require the use of relevant tools, please take safety precautions when assembling to avoid injury!

This product is a teaching and experimental product, please do not use its function as a daily necessities, there will be instability!

When you are not using this product, please turn off the power switch on the battery compartment and remove the battery, keep the battery safe!
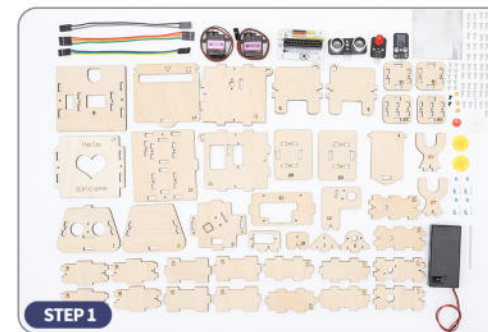
Self-equipped assembly tools: 3mm diameter Phillips screwdriver, scissors.

Self-provided debugging tools: 1 computer with Windows 7, 8, 10, 11 operating system, 1 U+ program card, 1 data cable, 1 pair of 14500 lithium battery.

If you want to easily assemble the kit, you need to read the assembly manual carefully, assemble step by step

LED lights
S > D5\S
V > D5\V
G > D5\G

Arm servo
Brown line > D6\G
Red line > D6\V
Orange line > D6\S

Passive buzzer
S > D9\S
V > D9\V
G > D9\G

Head servo
Brown line > D10\G
Red line > D10\V
Orange line > D10\S

Ultrasonic module
VCC > VCC
Trig > A1
Echo > A0
GND > GND

DC6-12V

U+ program card slot

U+A5

U+A5 expansion board
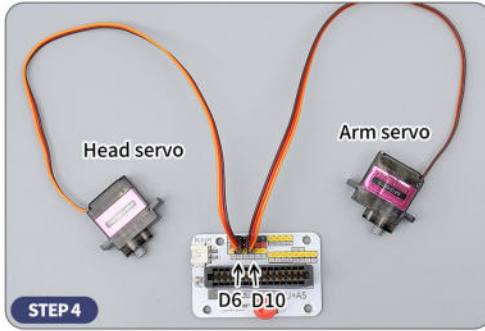
• Circuit wiring reference diagram

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

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

STEP 3
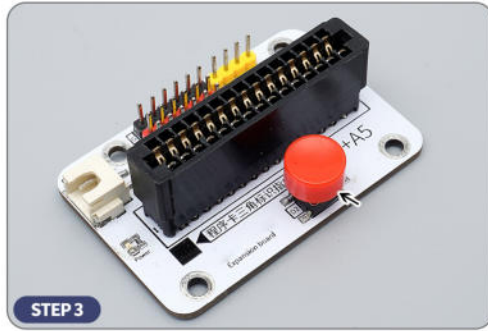
● Install the red keycap on the expansion board.

STEP 4

Head servo   Arm servo

D6 D10

● Refer to [Circuit Wiring Diagram] to plug the two servo wire ports into the D6 and D10 interfaces on the expansion board.**Note: Please check the port order before inserting, the wrong line order may burn the board.**

STEP 5

Power on
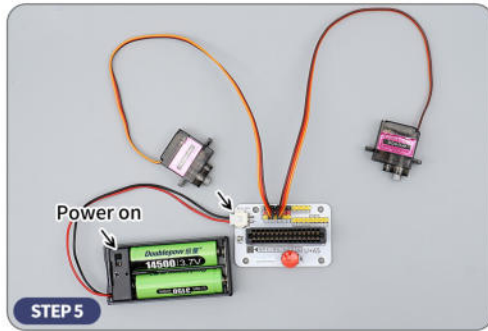
● First load the battery in the battery box, then refer to [Circuit Wiring Diagram] to plug the battery box wire port into the power interface on the expansion board, and finally turn on the power switch.

STEP 6
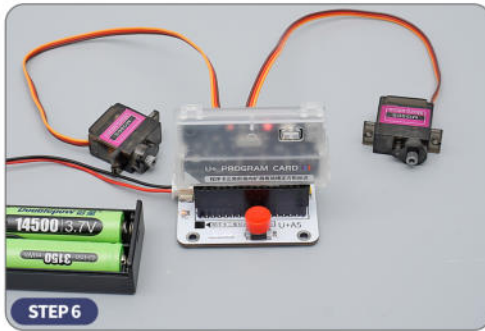
● Insert the downloaded program card into the card slot on the expansion board, and the helmsman will automatically reset to initialization.**Note: The triangle identification of the program card points to the shield square identification.**
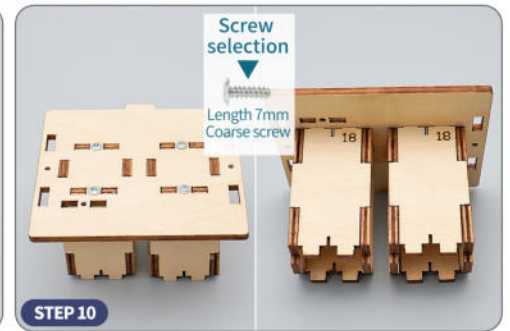
STEP 7
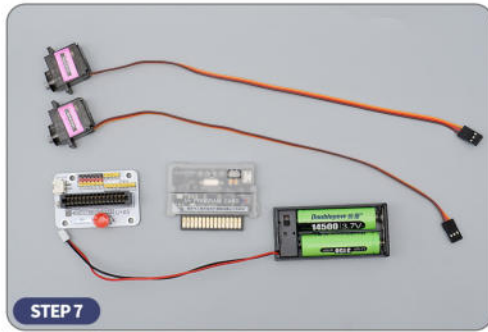
● Dial the servo wire port, battery compartment wire port, and program card from the expansion board.
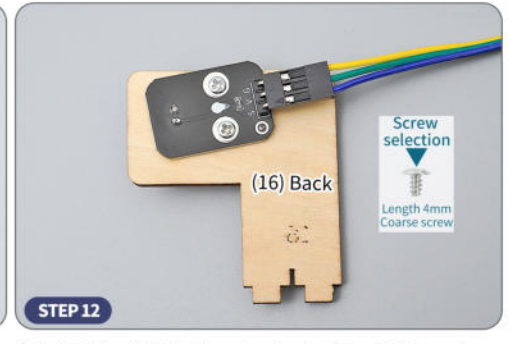
STEP 8
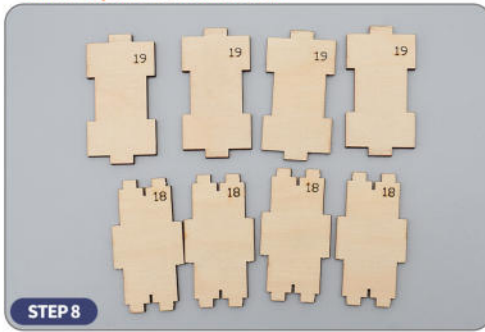
● Locate boards (18), (19).

STEP 9

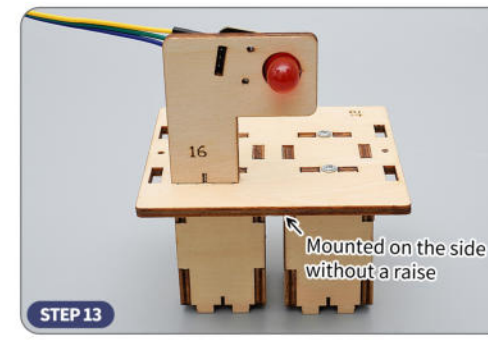● Assemble plates (18) and (19) into the two legs of the robot.

STEP 10

Screw selection
▼
Length 7mm Coarse screw

● First install the (12) board on the (18) and (19) plates, and then fix it with 7mm rough screws.

STEP 11

The triangle identifies the S

● Plug a 3P DuPont cable port into the LED connector.

STEP 12

(16) Back

Screw selection
▼
Length 4mm Coarse screw

● Install the LED light on the back of the (16) board with 4mm rough screws.

STEP 13

Mounted on the side without a raise

● Install the (16) plate on the (12) board with 7mm rough screws.

STEP 14

Pay attention to the wire direction
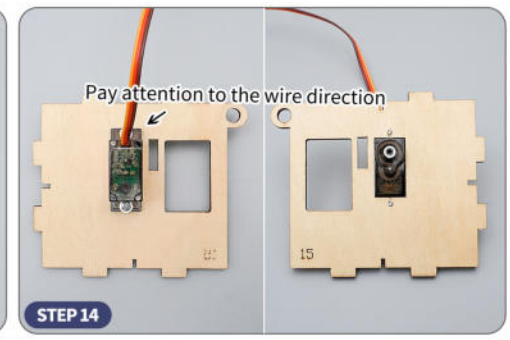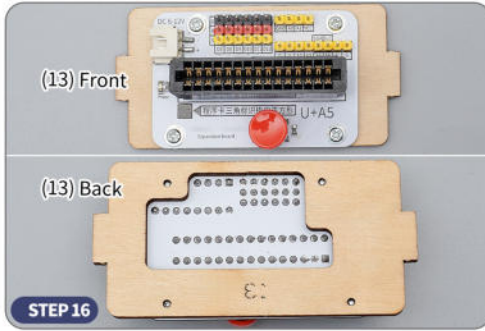
● Install the arm servo on the back of the (15) plate with 7mm rough screws.
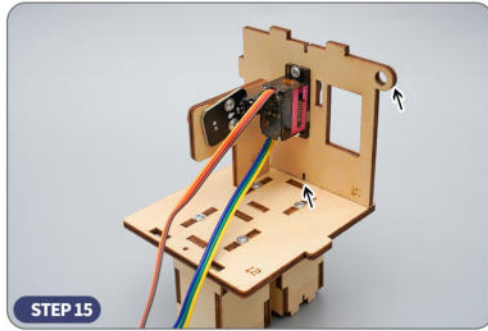
STEP 15
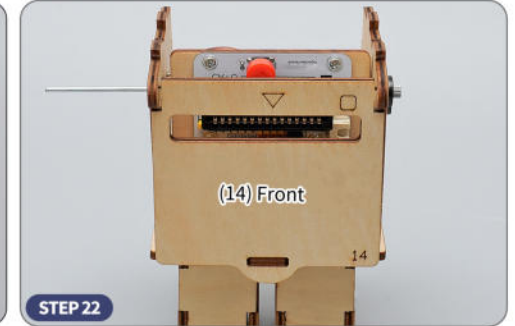
● Install plate (15) on board (12) with 7mm rough screws.

(13) Front

(13) Back

STEP 16

● Install the expansion plate on the front of board (13) with 4mm rough screws.

Note the red button direction

STEP 17

● Install board (13) on board (15).

Fifth

STEP 18

● Pass a 5cm shaft through the white gear.

(11) Front

STEP 19

● Install the white gear on the front of plate (11) with 7mm rough screws.

Pay attention to the direction of the round hole

STEP 20

● Install the (11) plate on the (12) and (13) boards with 7mm rough screws.
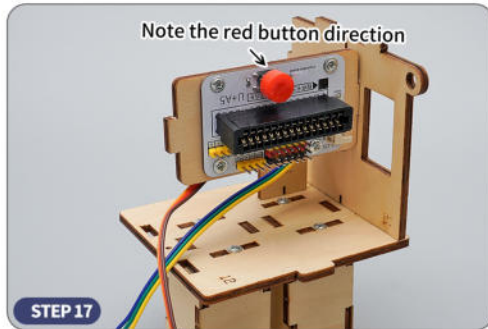

Arm servoD6   LED light D5

STEP 21

● Refer to [Circuit Wiring Diagram] Plug the LED light wire port into the D5 interface of the expansion board, and plug the arm servo wire port into the D6 interface of the expansion board.**Note: Please check the port order before inserting, the wrong line order may burn the board.**
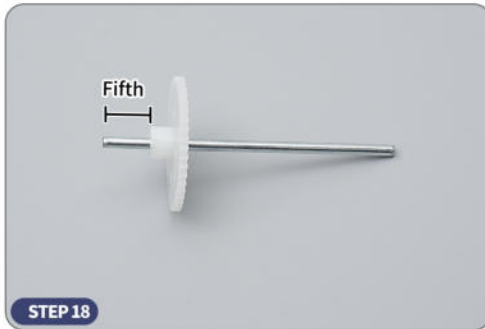

(14) Front

STEP 22

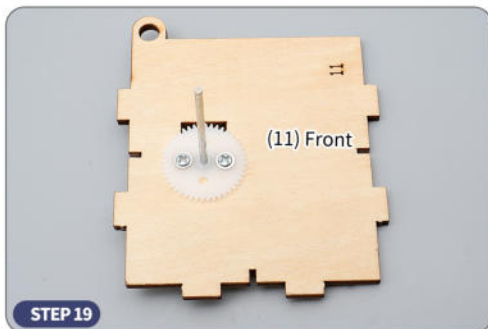● Install board (14) on board (11) and (15).

STEP 23

● Install two (20) plates on (18) and (19) plates with 7mm rough screws.
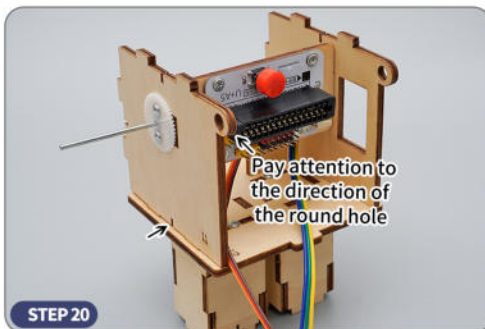

(8) Front

STEP 24

● First install the (10) plate on the (8) board with a 7mm rough grain screw, then install the (7) board with a 1.3cm head nail, and finally fix it with an orange fixing ring.
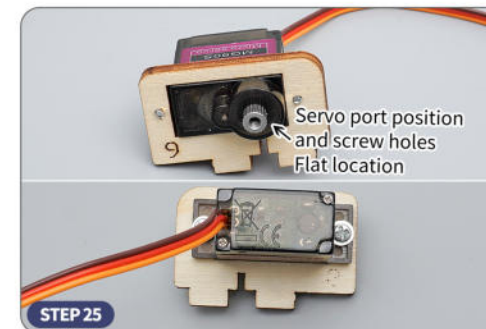

Servo port position and screw holes Flat location

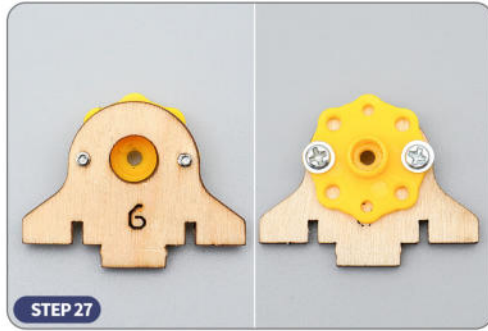**STEP 25**

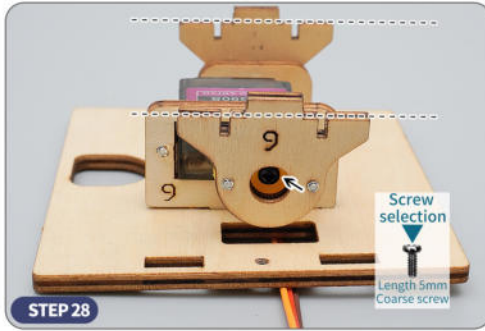● Use 7mm rough screws to mount the head servo on board (9).
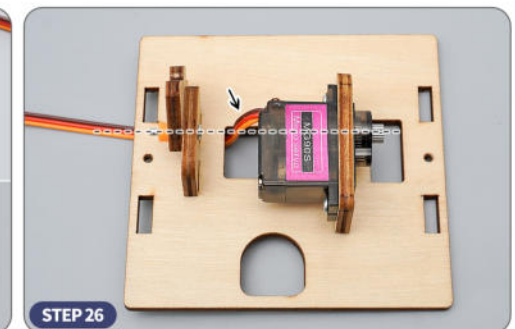
STEP 26

● First pass the servo wire through the wire hole of plate (8), and then use 7mm rough screws to install board (9) on board (8).

STEP 27

- Install the servo disc on board (6) with 7mm rough screws.

STEP 28

Screw selection
Length 5mm
Coarse screw

- Use 5mm servo screws to mount the servo disc on the head servo.

STEP 29

The triangle identifies the S

- Plug a 3P DuPont cable port into the passive buzzer connector.

STEP 30

(5) Positive

- Install the passive buzzer on board (5) with 4mm rough screws.

STEP 31

(1) Back

- Install the ultrasonic module on the back of board (1) with 4mm rough screws.

STEP 32

- Install plate (5) on the back of board (1).

STEP 33

The triangle points to GND

- Plug a 4P DuPont cable port through the cable hole in board (5) to the ultrasonic module connector.

STEP 34

Thread the wire through the wire hole
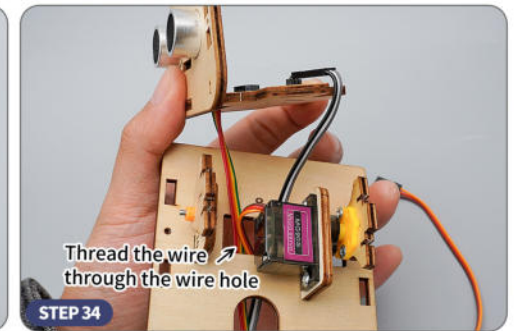
- Pass the ultrasonic module and passive buzzer DuPont wire through the line hole of board (8).

STEP 35

Pay attention to the direction

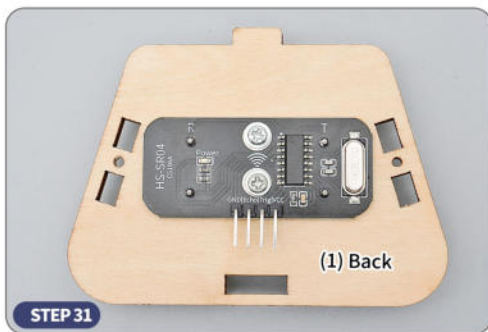- Use 7mm rough screws to mount plate (5) on board (7) and (6).
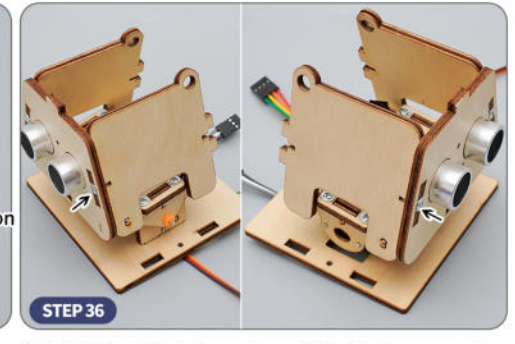
STEP 36

- Install two (3) plates on board (1) with 7mm rough screws.

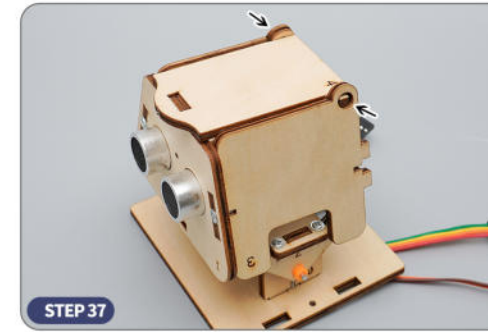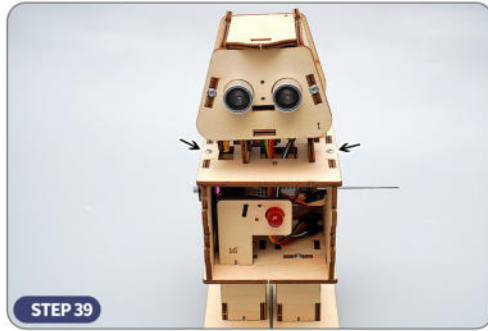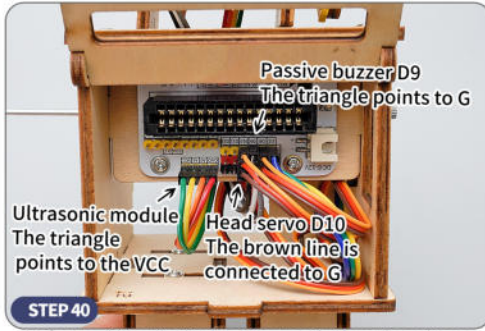**STEP 37**

- Install plate (4) on two (3) plates.

STEP 38

- First install the (2) plate on two (3) and (5) plates, and then fix it with 7mm rough screws.

STEP 39

- Install plate (8) on board (11) and (15) with 7mm rough screws.

Passive buzzer D9
The triangle points to G

Ultrasonic module
The triangle points to the VCC

Head servo D10
The brown line is connected to G

STEP 40

Refer to [Circuit Wiring Diagram] Plug the ultrasonic module DuPont line port into the GND, A0, A1, VCC interface of the expansion board, the passive buzzer DuPont line port into the D9 interface, and the head servo DuPont line port into the D10 interface.**Note: Please check the port order before inserting, the wrong line order may burn the board.**
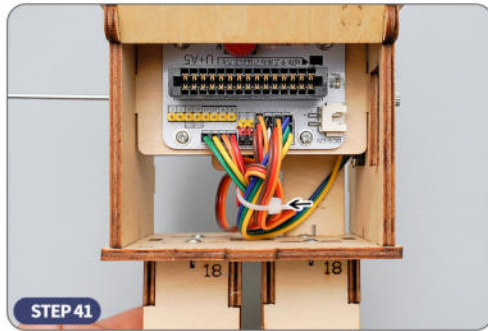
STEP 41

- Tie all the wires with cable ties first, and then trim off the excess cable ties with scissors.**Note: Please handle with caution when using scissors to avoid injury.**
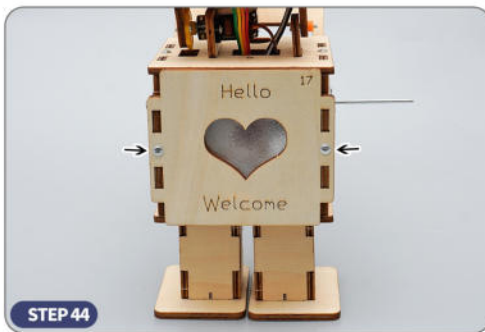

STEP 42

- Peel off the protective film and apply the four sides of the matte paper to the four sides of the doubbed tape.
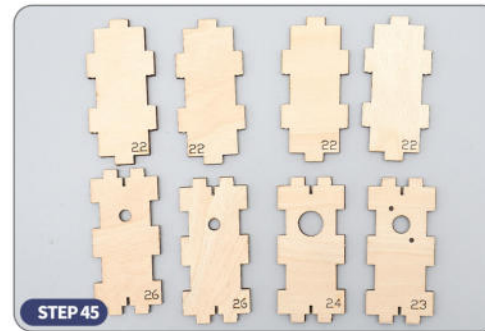

(17) Back

STEP 43

- Attach the matte paper to the back of plate (17).

Hello
Welcome

STEP 44

- Use 7mm rough grain screws to mount the (17) plate on the (11) and (15) plates.

STEP 45

- Locate boards (22), (23), (24), (26).

STEP 46

- First assemble the (22) and (26) plates into the robot's arm, and then assemble the (22), (23), and (24) plates into another arm.
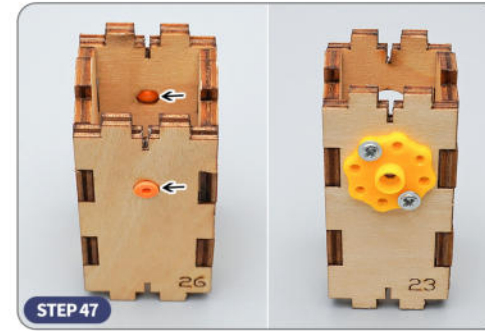
STEP 47

- The two orange retaining rings are first installed in the round holes of the two (26) plates, and then the servo disc is mounted on the (23) plate with 7mm rough screws.
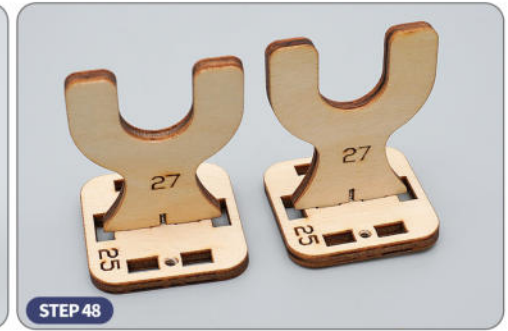
STEP 48

- Install the two (27) plates on each (25) plate with 7mm rough screws.

STEP 49

- Use 7mm rough screws to mount two (25) plates on each arm.

STEP 50

- Use 7mm rough screws to mount two (21) plates on each arm.

STEP 51
- Mount the arm equipped with the servo disc on the arm servo and keep it parallel to the leg vertically downward.

STEP 52
- Use 5mm servo screws to fix the servo disc to the arm servo.

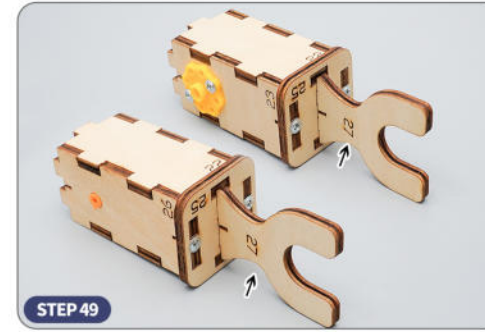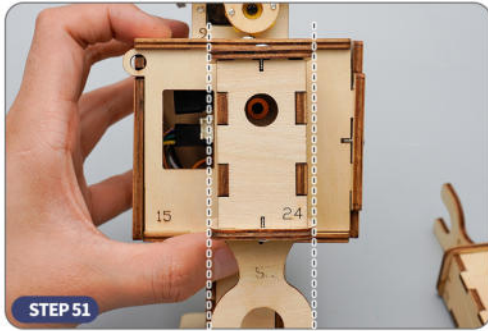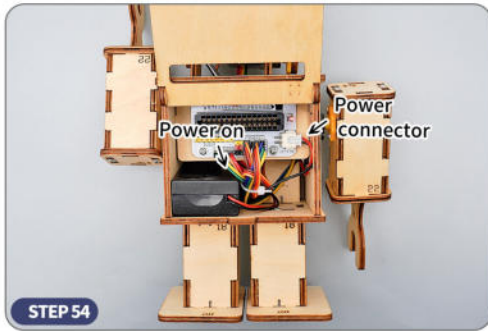**STEP 53**
- Install the arm with the retaining ring on the other side of the robot through the 5 cm axis.

Power on
Power connector

STEP 54
- First load the battery in the battery box, then plug the battery box wire port into the power interface on the expansion board, and finally stuff the battery box into the robot.

STEP 55
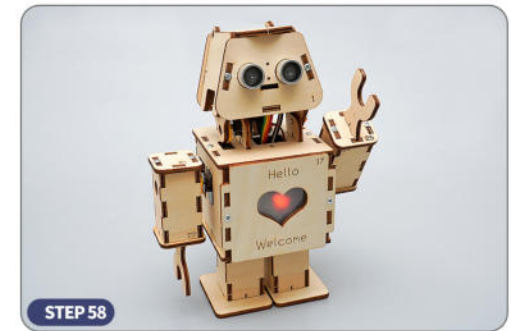- Use the Mixly software to upload the kit's sample program to the U+ program card.

U+ PROGRAM CARD

STEP 56
- Turn the (14) board down, and then insert the program card into the card slot of the expansion board.

STEP 57
- 【Welcome Robot】Program: When the ultrasonic module senses a human body or object, the welcome robot will make a welcome gesture and make a sound.

STEP 58
- [Singing Robot] program: When the ultrasonic module senses the human body or object, play Happy Birthday when the distance is less than 10cm, play a twinkle and a shiny crystal when the distance is less than 30cm and more than 10cm, play two tigers when the distance is less than 50cm and more than 30cm, and stop playing the current song when it exceeds 50cm.

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 procedure below to debug the kit

Download and install the U+ program card driver and install the pro- ▷ Download the sample program to the U+ program card with the data cable. ▷ Insert the U+ program card into the expansion board 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!

1. Check whether the wiring is loose or incorrectly connected, 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 program card has downloaded the program.
5. Check whether the U+ PROGRAM CARD program card is plugged in backwards, which will cause a short circuit, please refer to the [STEP6] card insertion method for inserting the card.