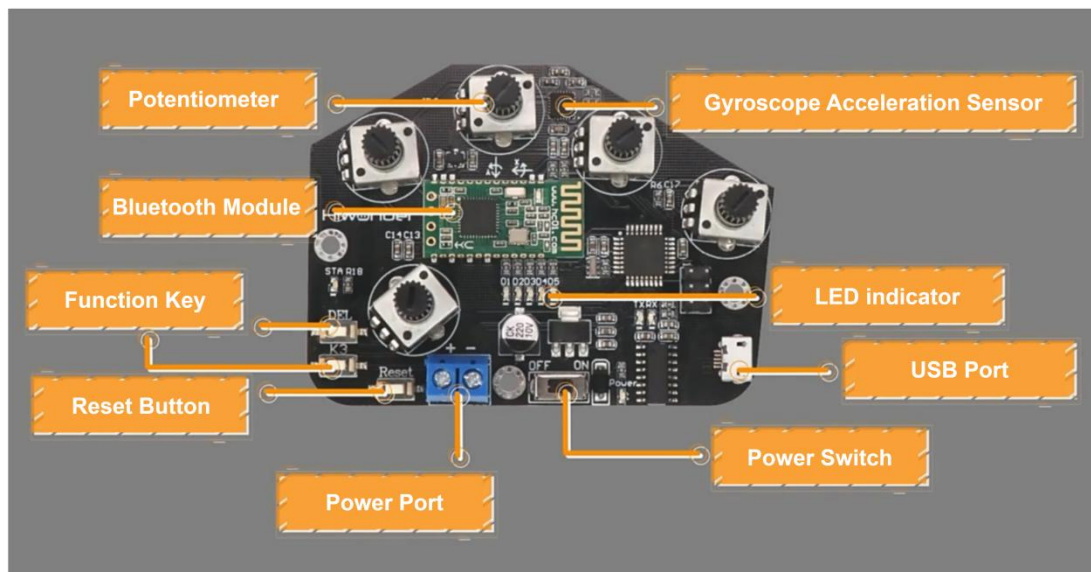# 1. Wireless Glove Introduction and Wearing

The wireless glove consists of five potentiometers and uses a Bluetooth module to communicate with devices.

1. Structure Introduction

1) **Potentiometers**: There are five potentiometers on the back of the wireless glove, which are key components that control the opening and closing of the uHand UNO.

2) **Gyroscope Acceleration Sensor (MPU6050)**: It can obtain the acceleration and tile angle of the wireless glove in the x,y, and z axes. You can control the uHand UNO by rotating the wireless glove for more operations.

3) **Bluetooth Module**: It is mainly used for communication between the wireless glove and the uHand UNO.

4) **Function Keys**: The functions of these two keys are as follows:

① DEL: Clear the history of Bluetooth connections.

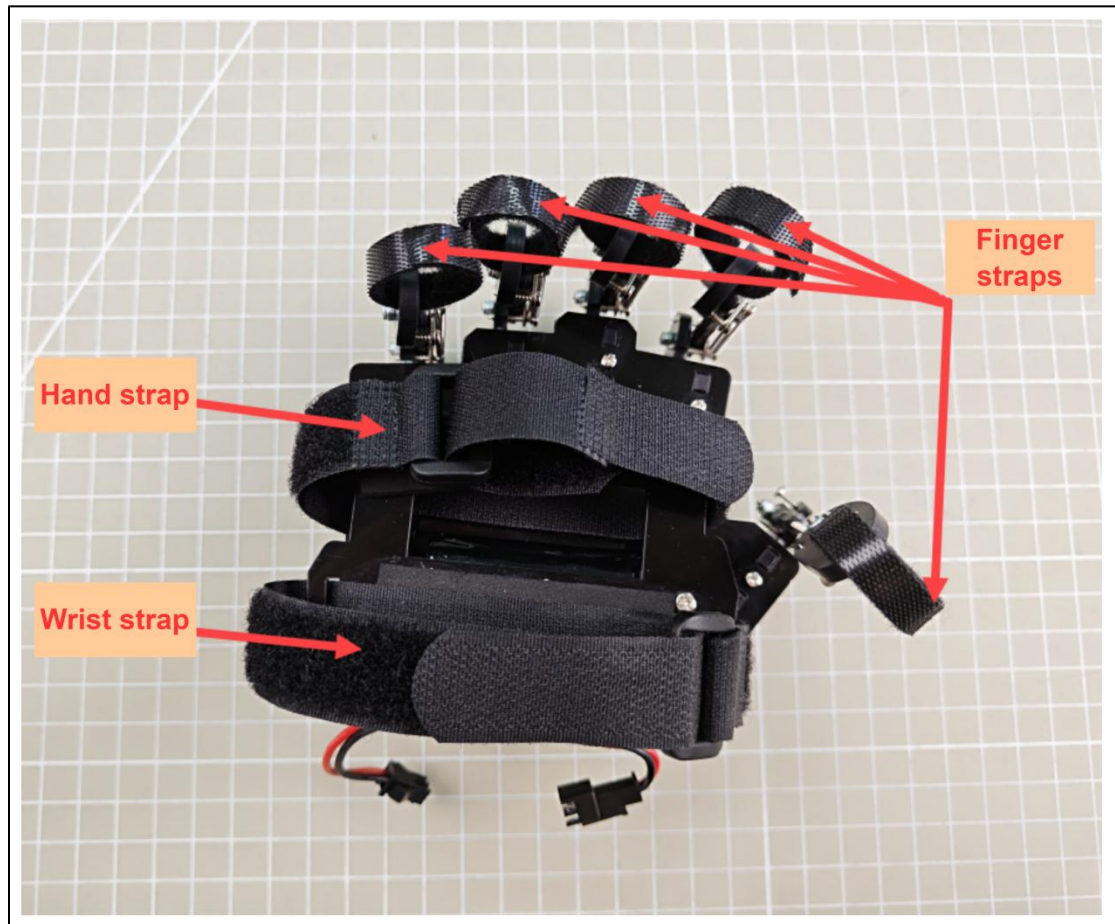② K3: Switch the control mode of the wireless glove.

5) **Reset Key**: Restart the wireless glove.

6) **LED Indicators**: Display the control mode of the wireless glove.

7) **USB Port**: Used to connect to a PC for debugging and downloading programs.

8) **Power Port**: Connect to a lithium battery to power the wireless glove, with a standard voltage of 7.4V.
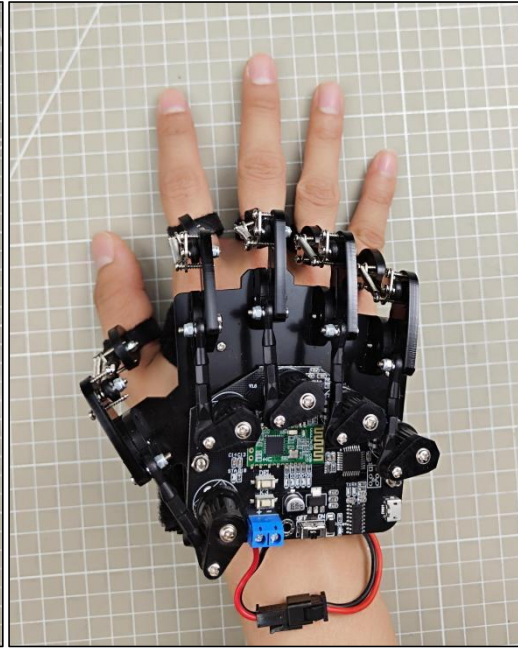
2. Wearing Method

Open all straps. First, tie the finger straps at the last knuckles of each finger, and then tie the hand strap and wrist strap at the hand and wrist respectively. The final wearing effect is as follows (please refer to the video in the same path as this document for details):
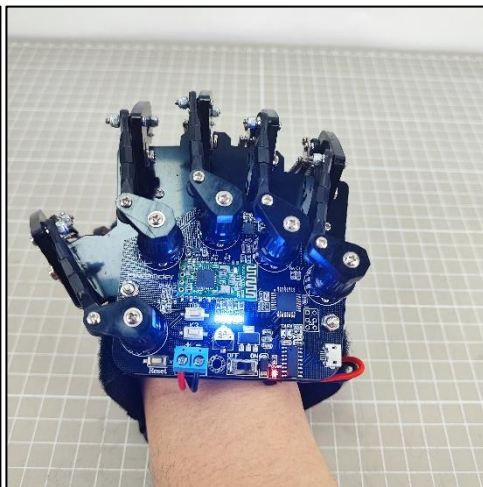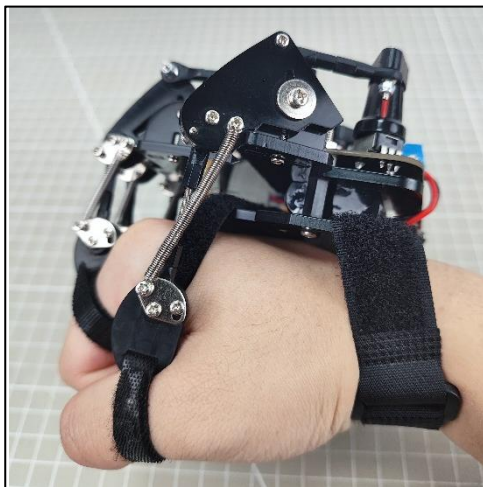
Front   Back

3. Device Pairing

1) First, switch on the controlled device and ensure it is connected to the Bluetooth module.

2) Wear the wireless glove on the right hand, and make a fist with the palm facing down. Then power on the wireless glove and its LED indicators will light up.


3) After the LED indicators go off, stretch your hand. When the LEDs

complete the second flashing, it means that the initialization of the wireless glove is completed. (This process must be done every time you restart the glove.)
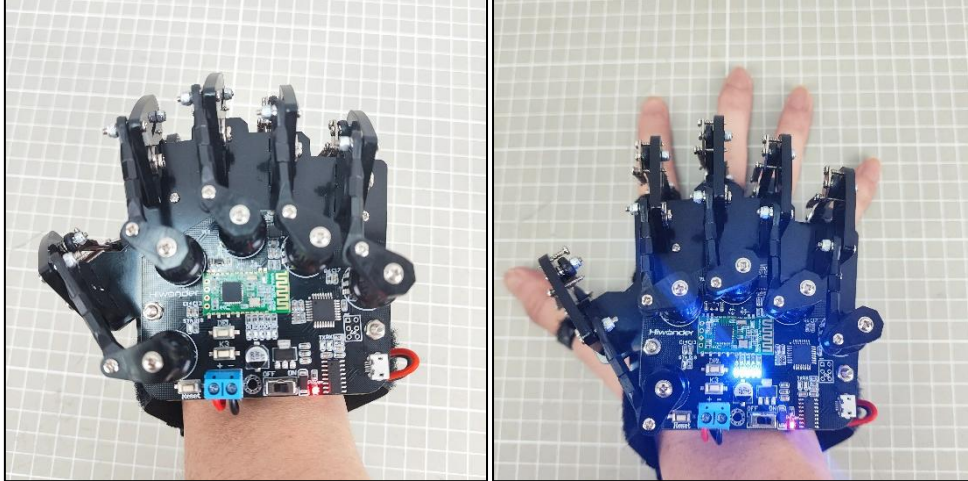

4) Press the **'DEL'** key to clear the history of the Bluetooth connections.

5) After the clear is completed, the **'STA'** indicator starts to flash, and the wireless glove will automatically connect to the device. When the connection is successful, the "STA" indicator stays on.
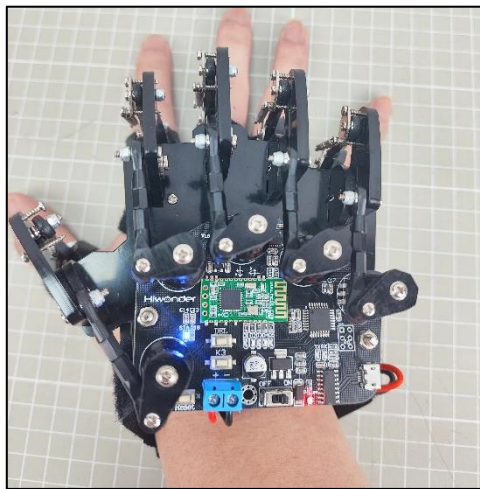
4. Control Modes Switching

You can press the **'K3'** key on the wireless glove to switch control modes. The LEDs (D1 to D5) will provide feedback on the currently selected mode.
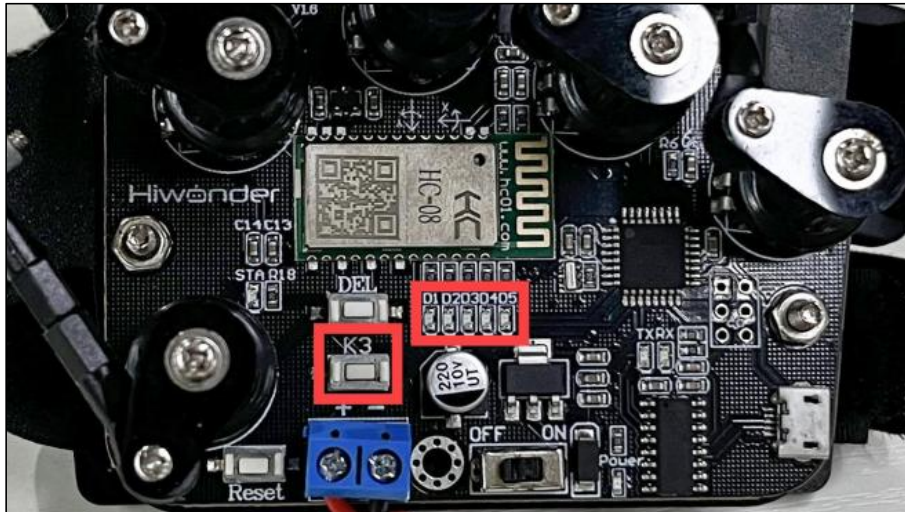
The corresponding relationship between the LED status and the mode is shown in the following table:

LED status(D1-D5)	Mode
All off	Biorobot Control Mode
1 on (D1)	Robotic Hand Control Mode (Right Hand)
2 on (D1, D2)	Tank Control Mode
3 on (D1, D2, D3)	Robotic Arm Control Mode (PWM Servo Drive)
4 on (D1, D2, D3, D4)	Robotic Hand Control Mode (Left Hand)
5 on (D1, D2, D3, D4, D5)	Robotic Arm Control Mode (Bus Servo Drive)

5．Control Mode Instruction

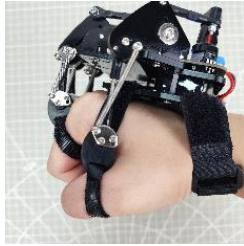The wireless glove has four control modes, which are used for controlling

products in the biorobot series, robotic hand series, tank robot series, and robotic arm series with a built-in Bluetooth module. The specific control methods for each type of product are shown in the table below:

Product Type	Examples
Biorobot Series	Narrow-footed robot, Cross-footed robot, Spiderbot
Tank Robot Series	Tankbot
Robotic Hand Series	uHand, uHand UNO
Robotic Arm Series	LeArm, xArm 1S, MiniArm

5.1 Biorobot

The control of biorobot is mainly achieved through gesture control to make the robot perform a set of action groups:
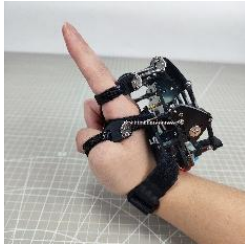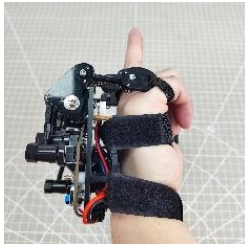
Gesture Description	Gesture Image	Biorobot Feedback Action(from the robot's view)
Extend your middle finger, crook your ring finger, and tilt the palm to the right.		Turn right
Extend your middle finger, crook your ring finger, and tilt the palm to the left.		Turn left

Make a fist with the palm facing down.		Stop
Stretch your hand (straighten your middle finger) with the palm facing down.		Move forward
Crook your middle finger, and straighten your little finger with the palm facing up (Spider-Man gesture).		Move backward
Stretch your hand with the palm facing up.		Stop

5.2 Tank Robot

You can control the tank robot by making specific gestures. The following table shows the available gestures and their corresponding feedback actions from the tank:
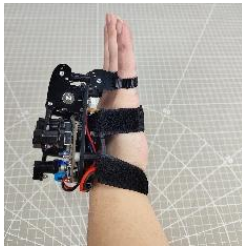
Initial Gesture	Gesture Description (from your perspective)	Gesture Image	Feedback Action from the Tank Robot (from the tank robot's perspective)

Straighten your index and middle fingers, with the palm facing down (other fingers crooked in).	Raise your wrist, that is, your straightened fingers point forward and upward.		Move forward
	Bend your wrist downward, that is, your straightened fingers point forward and downward.		Move backward
	Bend your wrist clockwise, that is, the palm faces to the left.		Rotate clockwise in place.
	Bend your wrist counterclockwise, that is, the palm faces to the right.		Rotate counterclockwise in place.
Other Gestures			Stop

5.3 Robotic Hand

By bending or straightening your fingers, you can control the bending or straightening of the robotic hands' corresponding fingers:
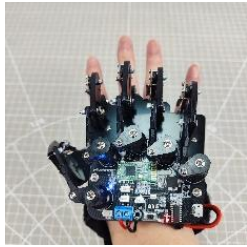
Potentiometer Position	Gesture Image	Servo Controlled

Thumb	Servo 1
Index Finger	Servo 2
Middle Finger	Servo 3
Ring Finger	Servo 4
Little Finger	Servo 5
Stretch your hand with the palm facing down, and your wrist rotates clockwise.		The Pan-tilt rotates counterclockwise (from the perspective of the robotic hand).
Stretch your hand with the palm facing down, and the wrist rotates counterclockwise.		The Pan-tilt rotates clockwise (from the perspective of the robotic hand).

5.4 Robotic Arm

You can control the robotic arm servos by making specific gestures. The following table shows the available gestures and the corresponding servo numbers they control:

Initial Gesture	Gesture Description	Gesture Image	Servo Controlled

	Extend your index finger and tilt to the left or right.		Servo 1
	Extend your index and middle fingers, and tilt to the left or right.		Servo 2
The palm faces down.	Extend your middle, ring, and little fingers, and tilt to the left or right.		Servo 3
	手掌向下，伸出四指，左倾或右倾 Extend your four fingers, and tilt to the left or right.		Servo 4
	Stretch your hand with the palm facing down, and tilt to the left or right.		Servo 5
The palm faces down.	Make a fist with the palm facing down, and tilt to the left or right.		Servo 6