



Linker Hand O30

Product Manual



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Version Revision History

Version number	Change date	Change Description
V1.0	2026.7.14	First edition

Safety Instructions

Before installing or using this product, please read this manual and any related manuals carefully. The relevant information described in the manuals is safety instructions. Please be sure to read the relevant instructions carefully.

1. Ensure that this product is connected using the matching or specified cable and is properly secured according to the regulations. Do not use damaged power cords, plugs, or loose outlets.
2. This product must comply with the installation requirements described in this manual. Using this product under any conditions exceeding the specified installation requirements may shorten its lifespan and could lead to serious safety issues.
3. If this product is operated at high power for an extended period, the temperature may rise. If the temperature becomes too high, please stop operation, let it sit and cool down for a while before use.
4. This device may only be used by trained personnel. Do not open the casing or disassemble it yourself. If the device malfunctions, do not attempt to repair it yourself—please contact our after-sales service department.
5. The illustrations and photographs in this manual are representative examples and may differ in detail from the product you purchased. Furthermore, this manual will be appropriately revised based on product improvements, specification changes, and other related reasons.

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1 Product Introduction



Linker Hand O30 Product Image

Linker Hand O30 is a 20-degree-of-freedom dexterous hand that integrates high-performance brushless hollow-cup motors with worm gears. Joint module capable of simulating human hand movements to achieve precise pinching and stable grasping, featuring both high-power density and efficient transmission characteristics. Moreover, thanks to its self-locking design, the device can achieve zero-power gripping, offering an advanced solution for industrial applications that outperforms traditional grippers.

This dexterous hand achieves high-precision motion control and stable movement, making it suitable for high-precision automotive assembly. Demands such as aerospace special operations, sorting of oddly shaped logistics packages, and substitution for operations in high-risk environments are driving the advancement of automation. A revolutionary tool for enhancing proficiency.

1) High-Precision Control and Bionic Operation

By combining a brushless motor with a worm gear transmission at the micrometer

level, precise closed-loop control of both position and torque is achieved. It is capable of performing delicate tasks such as precision assembly and handling fragile items.

2) Powerful and efficient power output

Brushless motors deliver ultra-high-power density, paired with high-efficiency worm gear drive, achieving a rated load of 30 kg, opening & closing time is as short as 0.8 seconds, ensuring an efficient and stable “grab-move-place” operation process.

3) Energy-efficient and reliable continuous operation

The rated static current is only 0.4A, with excellent power consumption control, and supports 24V industrial power supplies as well as 24 hours of continuous operation.

4) Lightweight and Rapid Integration

Overall lightweight design, enabling quick installation and deployment, widely applicable to 3C, automotive, aerospace, and other high precision manufacturing scenario.

1.1 Product Features

1.1.1 Position control

It can precisely control the spatial position of the entire hand as well as each individual finger joint, enabling smooth execution of pre-set trajectories. Motion ensures operational accuracy—from overall movements to fine adjustments of individual joints—meeting the requirements of precision assembly and path-based operations, and the scenarios with high requirements for positional accuracy.

1.1.2 Speed control

The finger movement speed can be flexibly adjusted according to task requirements, precisely matching different work rhythms—high-speed mode. The high-speed mode boosts efficiency, while the low-speed mode ensures safe and precise operation, thereby efficiently balancing operational efficiency with safety. It is adaptable to diverse task scenarios.

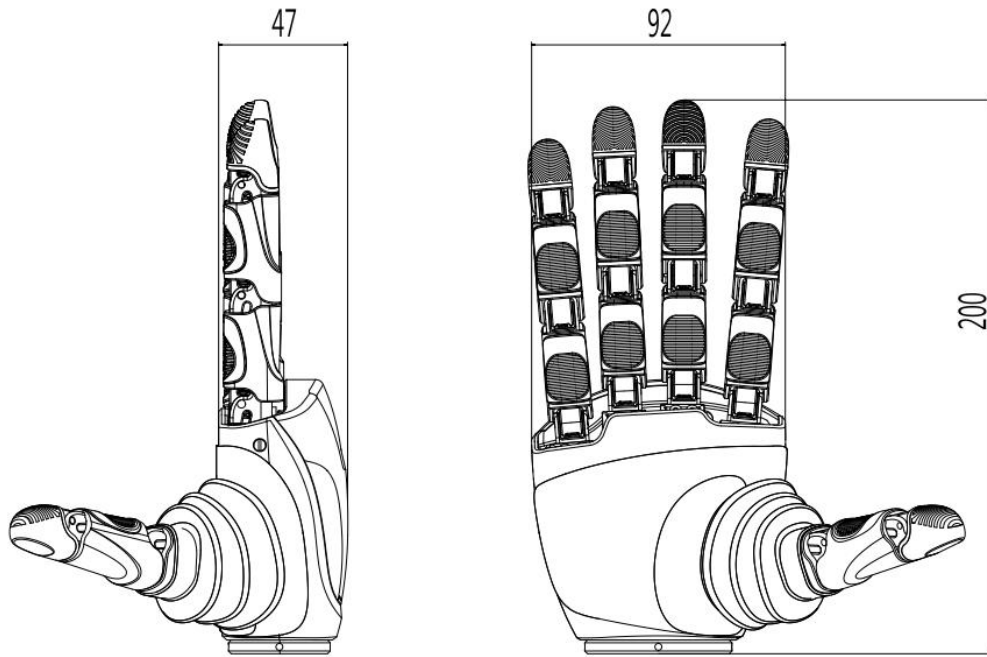
1.1.3 Haptic feedback

By using fingertip sensors to perceive in real time and precisely control the magnitude of force and torque applied by the fingers, it can dynamically adjust output force. This prevents damage to fragile objects caused by excessive force, while also avoiding slippage due to insufficient force. The grip provides reliable force control for delicate operations such as screw fastening and thin-sheet handling.

1.1.4 Online upgrade

Supports online firmware updates for the dexterous hand system via a host computer, enabling continuous iteration of functional modules and optimizing core performance parameters to meet the needs of industrial scenarios and scientific research that require long-term upgrades and iterations, ensuring equipment reliably long-term operation in a highly efficient state.

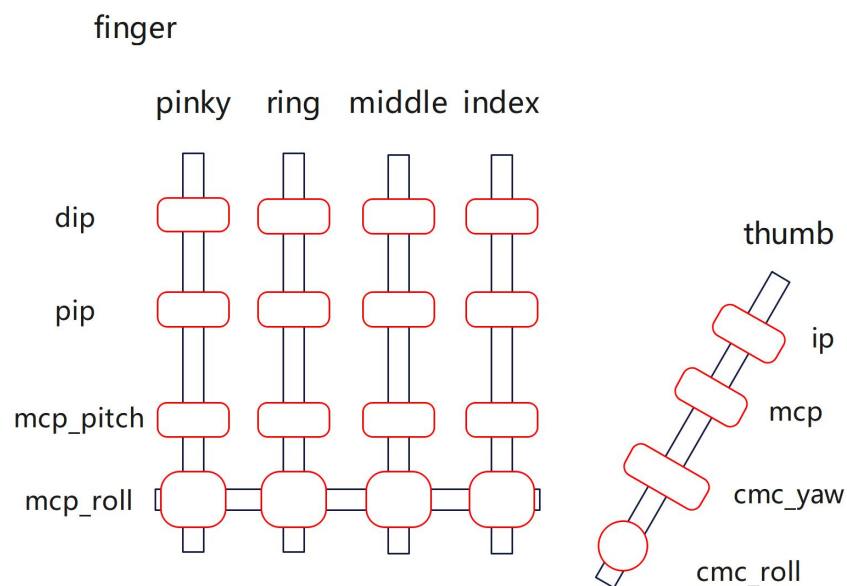
1.2 External dimensions



Dimensional drawing (unit mm)

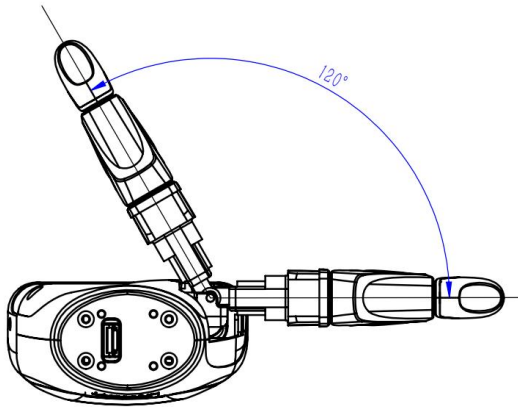
1.3 Degrees of Freedom and Range of Motion

This product has a total of 20 degrees of freedom and 20 joints, of which 20 are active joints, as shown in the figure below.

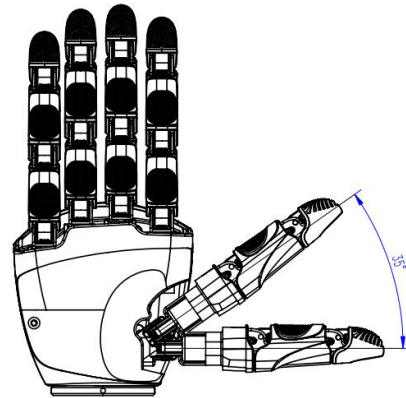


Joint Degrees of Freedom Diagram

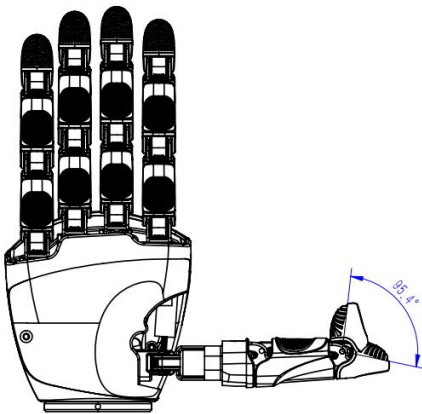
The following are the actual ranges of motion for each joint of this product.



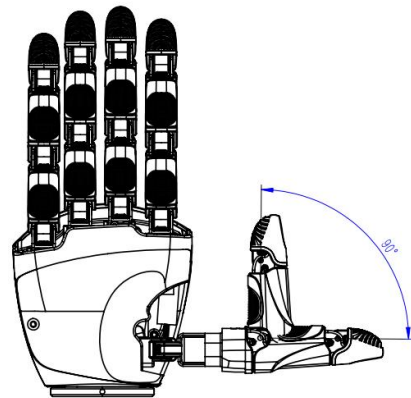
Thumb lateral abduction angle



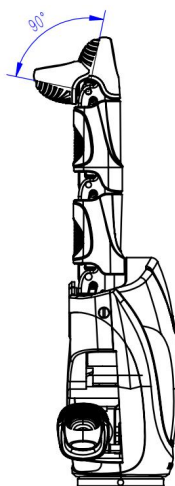
Thumb rotation angle



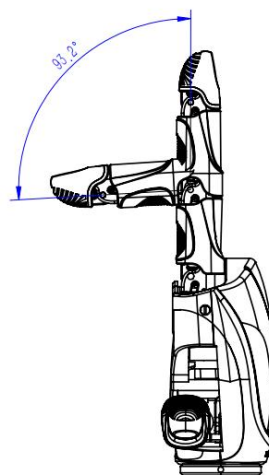
Bending angle of the first thumb joint



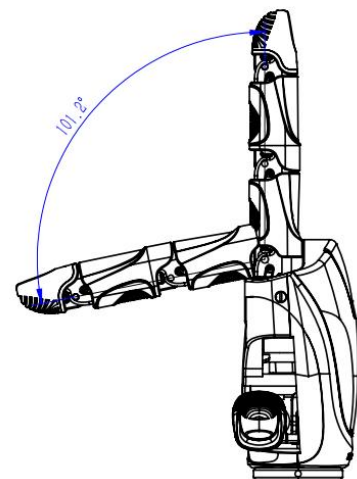
Bending angle of the second thumb joint



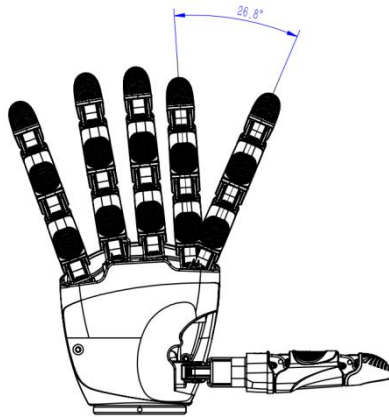
Bending Angles of the First Joint of Four Fingers



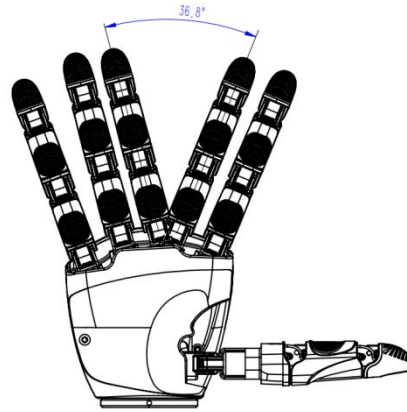
Bending angle of the second joint of the four fingers



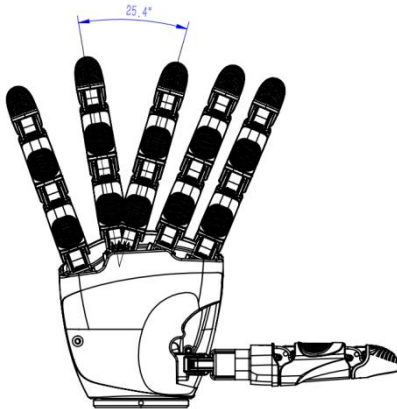
Bending Angles at the Finger Base of the Four Fingers



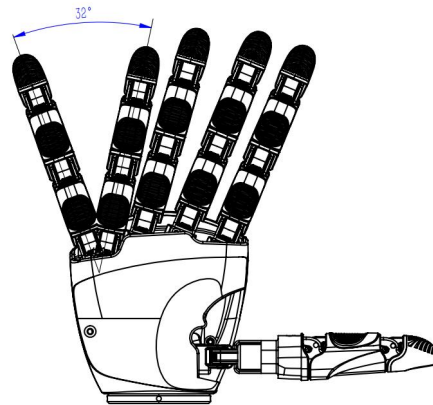
Index Finger Side-Swing Movement Angle



Middle Finger Side-Swing Movement Angle



Ring Finger Side-Swing Movement Angle



Little Finger Side-Swing Movement Angle

The following table shows the actual range of motion and motion speed for each joint of this product.

Joints	Maximum motion angle (°)
thumb_ip	95.4
thumb_mcp	90
Thumb_cmc_yaw	120
Thumb_cmc_roll	35
Finger_dip	90
Finger_pip	93.2
Finger_mac_pitch	101.2

index_mcp_roll	26.8
middle_mcp_roll	36.8
ring_mcp_roll	25.4
pinky_mcp_roll	32

1.4 Product Parameters

1.4.1 Basic parameters

Model	Linker hand O30
Degrees of Freedom	20
Number of Joints	20
Transmission Method	Direct drive
Control Interface	CAN/CAN-FD
Communication Frequency	500Hz
Weight	730g
Payload	30kg
Operating Voltage	DC24V~48V
Static Current	0.4A@24V
No-load Average Motor Current	1.1A@24V
Maximum Power	150W
Fingertip Positional Repeatability	0.2mm
Opening And Closing Time	0.8s

1.4.2 Force Performance Parameters

Performance metrics	Specific parameters
Maximum Fingertip Force of The Thumb	24N
Maximum FingertipForce of Four Fingers	30N
Five-finger Maximum Grip Strength	70N

1.5 Sensor system

Linker Hand O30 Equipped with a pressure-sensitive sensor, with the following specifications.

Parameter	Specification description
Piezoresistive Array	6*11
Spatial Resolution	9.6*16.47mm
Force Detection Range	50g
Measurement Range	0.5~20N
Lifespan	100,000 times
Frame Rate	200FPS

2 Installation and Debugging

2.1 Accessory List

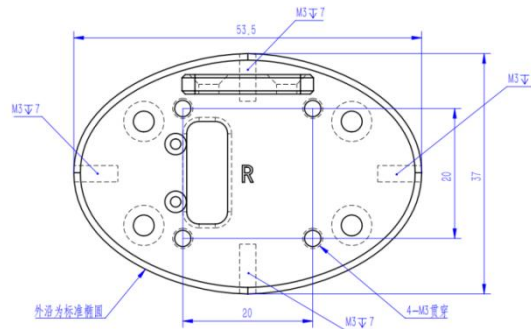
Before installing the dexterous hand, check whether all accessories are complete firstly.

Serial number	Name	Quantity	Image
1	USB to CAN-FD Debugging Cable	1	
2	Power Adapter	1	
3	Power Cord	1	

2.2 Installation Instructions

2.2.1 Structural Installation Instructions

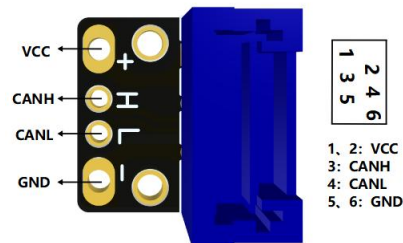
The installation requires M3 screws. The specific length should be adjusted according to the thickness of the mounting component. The installation flange structural diagram is shown below.



Flange structural diagram

2.2.2 Electrical Installation Instructions

The smart hand uses connector model R20_V3.0_PAB20260529, and its wire sequence is shown in the figure below.



2.3 Introduction to Software Debugging

2.3.1 Debugging Preparation

1) Debugging cable connection

Use the USB to CANFD debugging cable to connect the dexterous hand to the debugging PC, and connect the power cable. After connecting the power adapter, plug it into the power port of the USB to CANFD debugging cable, plug another end into the AC 220V power strip.

2) USB to CAN driver installation

Windows users are plug-and-play.

2.3.2 Host Computer Software Instructions

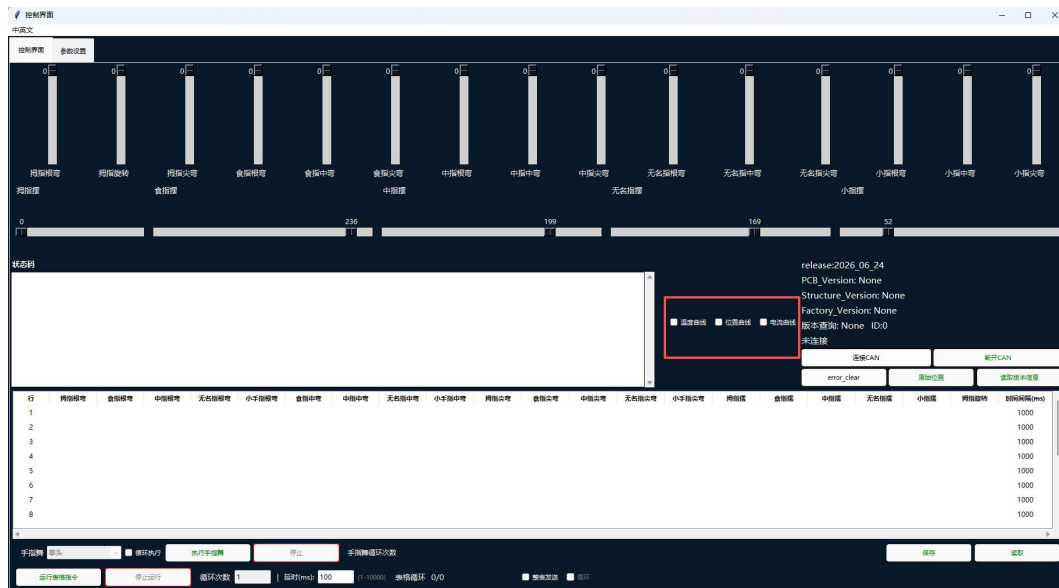
The main functions of the Linker Hand O30 host computer software include device control, parameter setting, and firmware upgrade function, the page is shown as in the figure below.

1) Host computer control

- Double-click O30_hand_ui.exe to launch the control interface. Three hidden curve panels are also available.

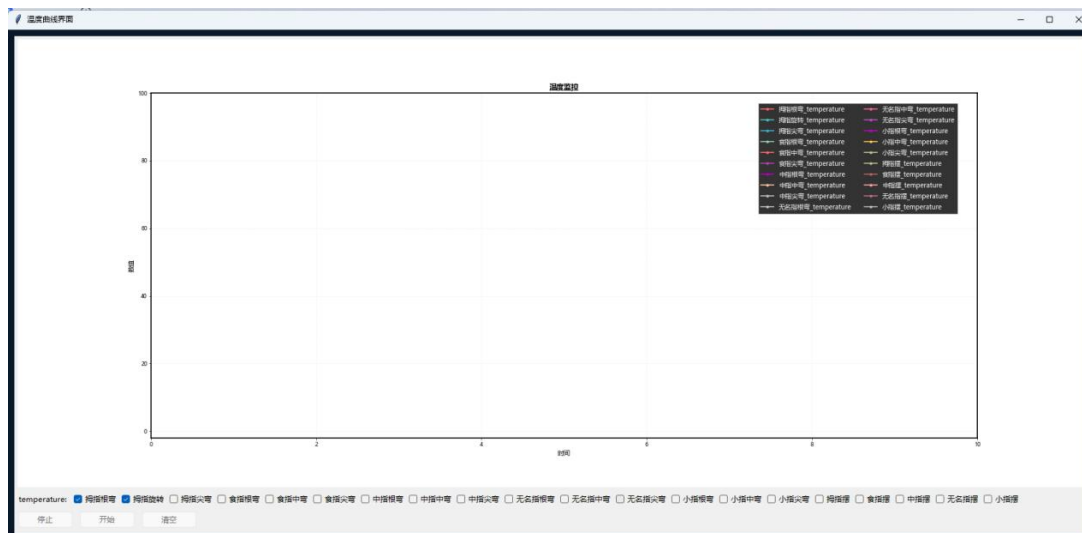


- The control interface contains three checkboxes for Temperature Curve, Position Curve and Current Curve respectively.
- Tick the checkbox to display the corresponding curve panel; untick to hide it. All curve panels are hidden by default.

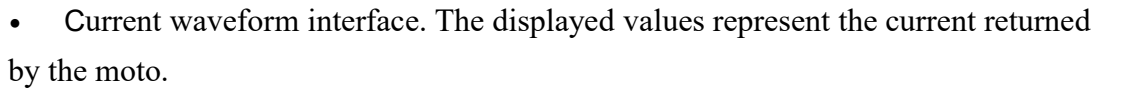


2) Interface Introduction

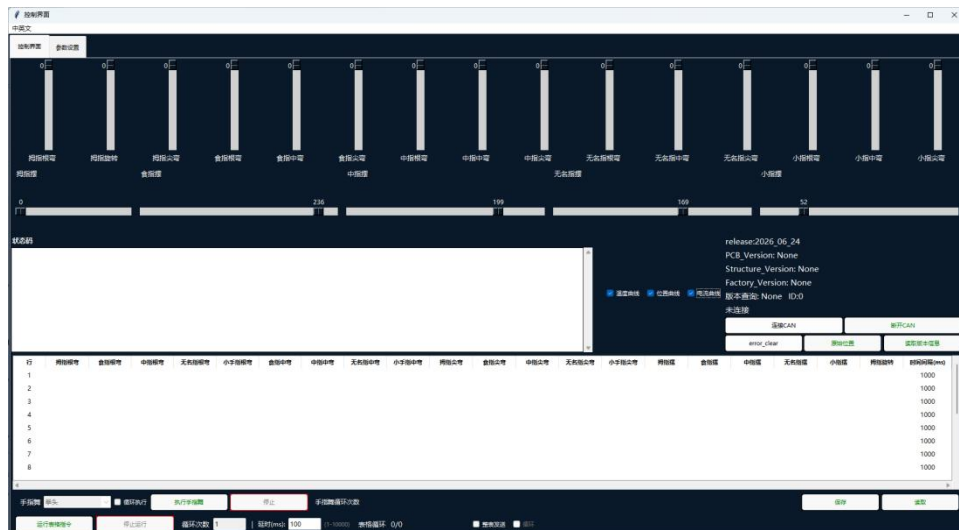
- Temperature curve interface. The displayed value is the motor temperature.



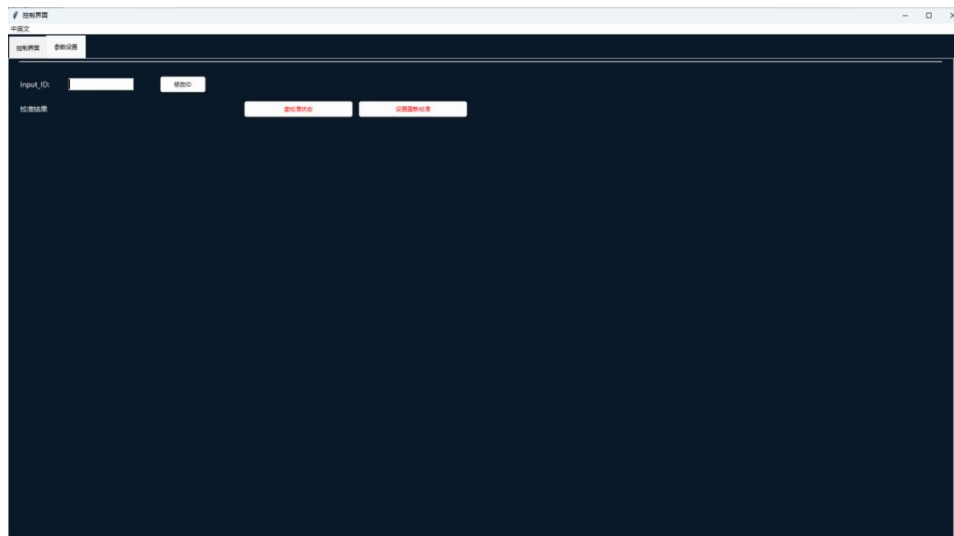
- Position curve interface. The displayed values represent the position returned by the motor and the position sent by the host computer.



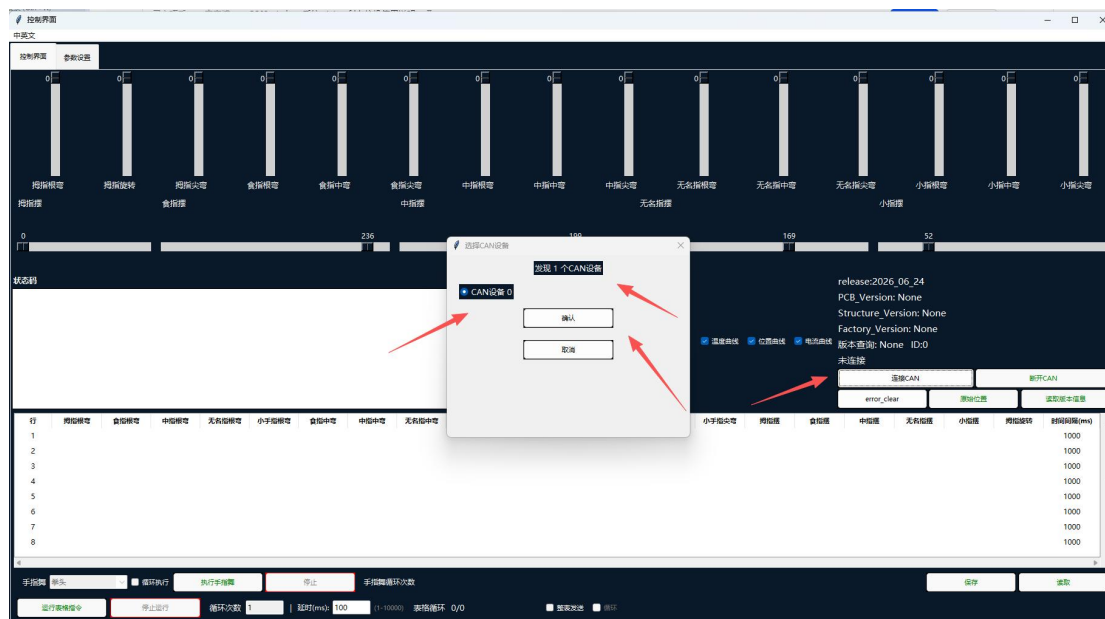
- Control Interface



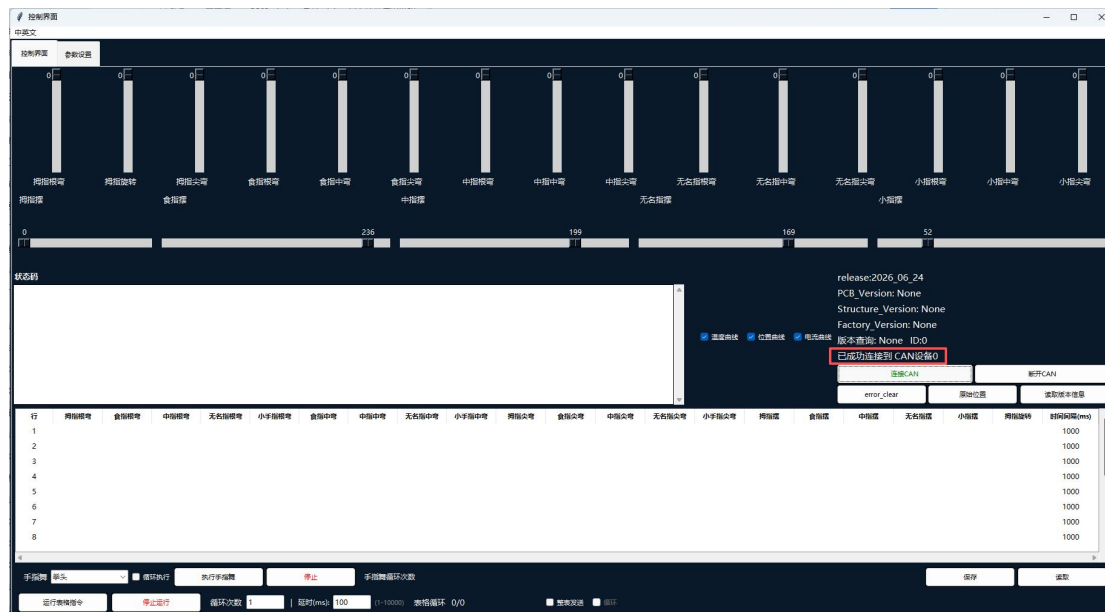
- Parameter Settings



3) Connect the robotic arm

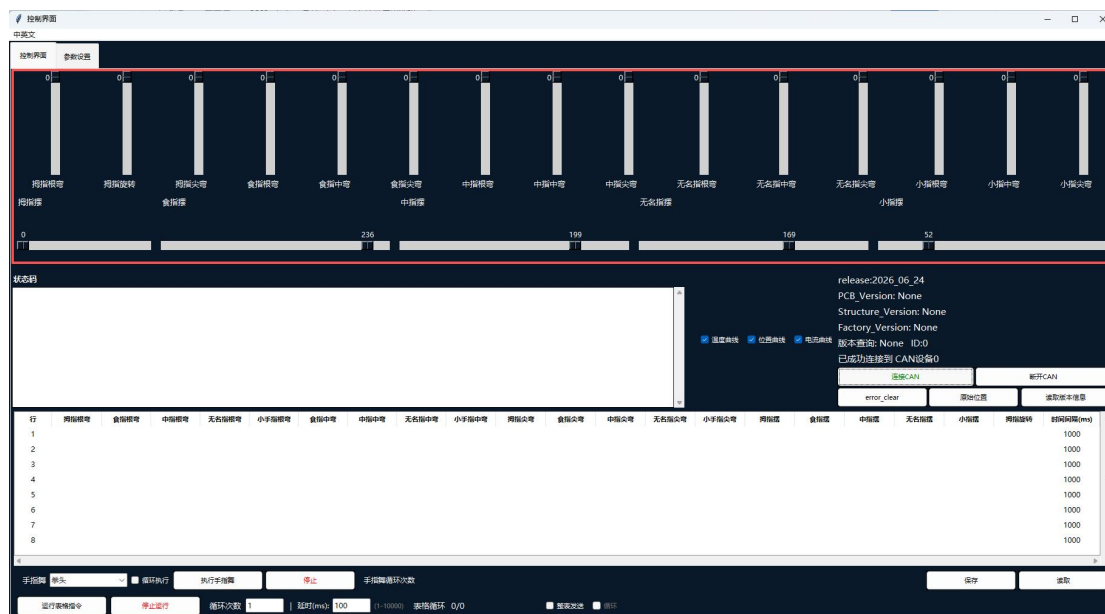


- Click the CAN button. After the connection is successful, the font color of the CAN button will change from black to green. Black indicates that the button is enabled and clickable, while green indicates that the button is disabled and non-clickable.



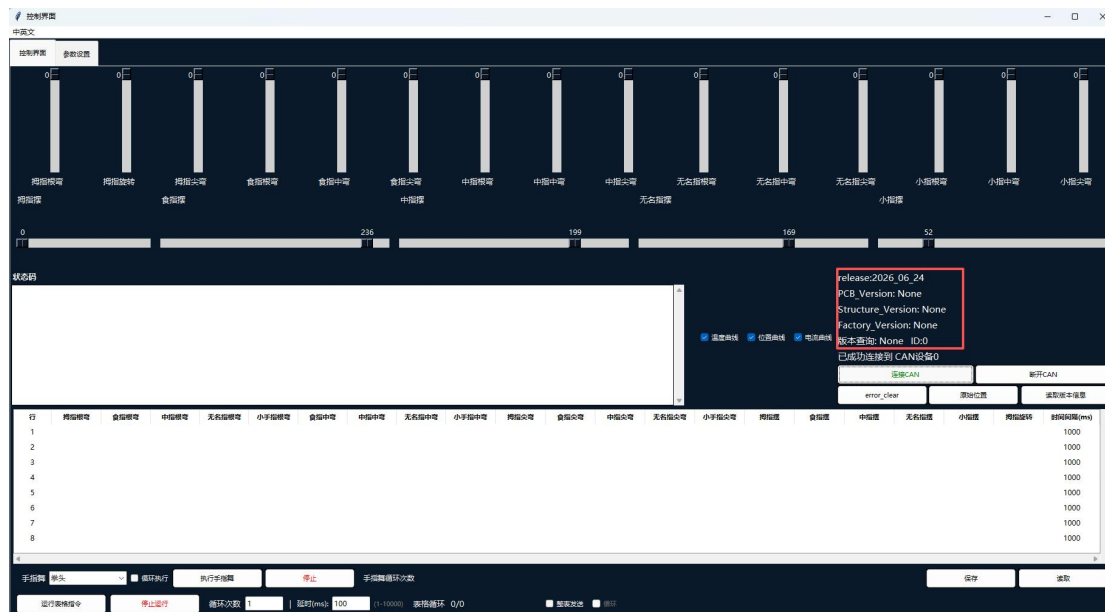
After the connection is successful, it will display that you have successfully connected to the CAN device 0 (where 0 represents the module serial number 0)

4) Slider control



- The slider can be controlled by dragging it with the left mouse button, using the mouse wheel, or pressing the arrow keys on the keyboard. Note: When using the mouse wheel or keyboard controls, you must first click once on the slider you wish to control with the left mouse button.

5) Relevant Information Description



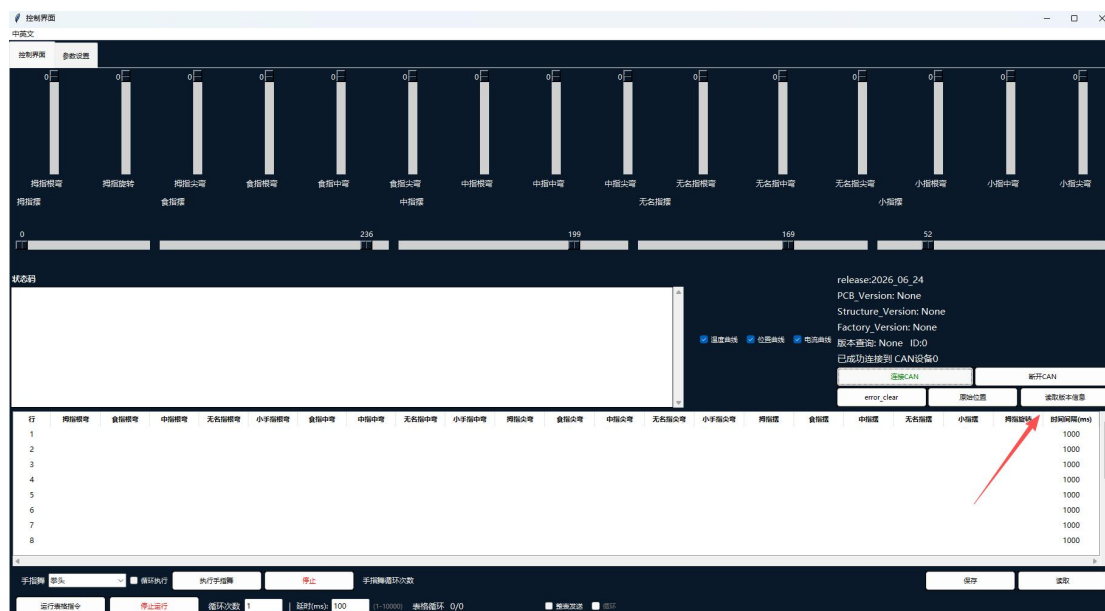
Release:2026_03_30 Indicates the release date of the host computer.

PCB_Version: None Indicates the PCB version number.

Unique_id: None Indicates the device's unique identifier

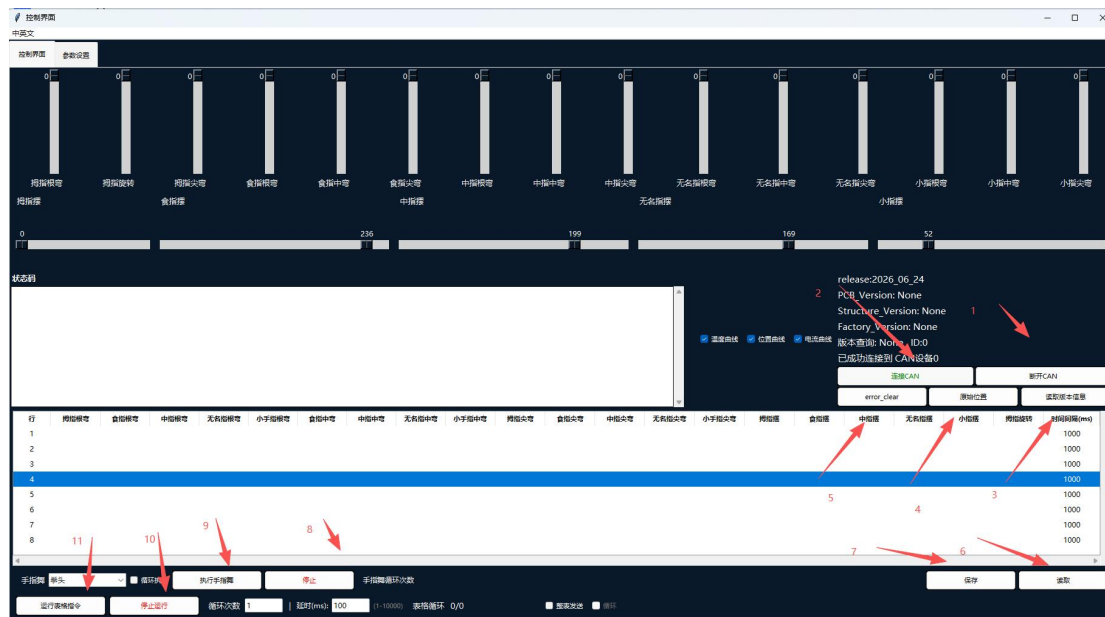
Factory_Version: None Indicates the device's factory coding (handback serial number)

Version Query: None Indicates the embedded software version number. ID: 0, which represents the robotic arm ID



- Click the “Read Version Information” button to retrieve the robot’s relevant version information and ID.

6) Button Function Description

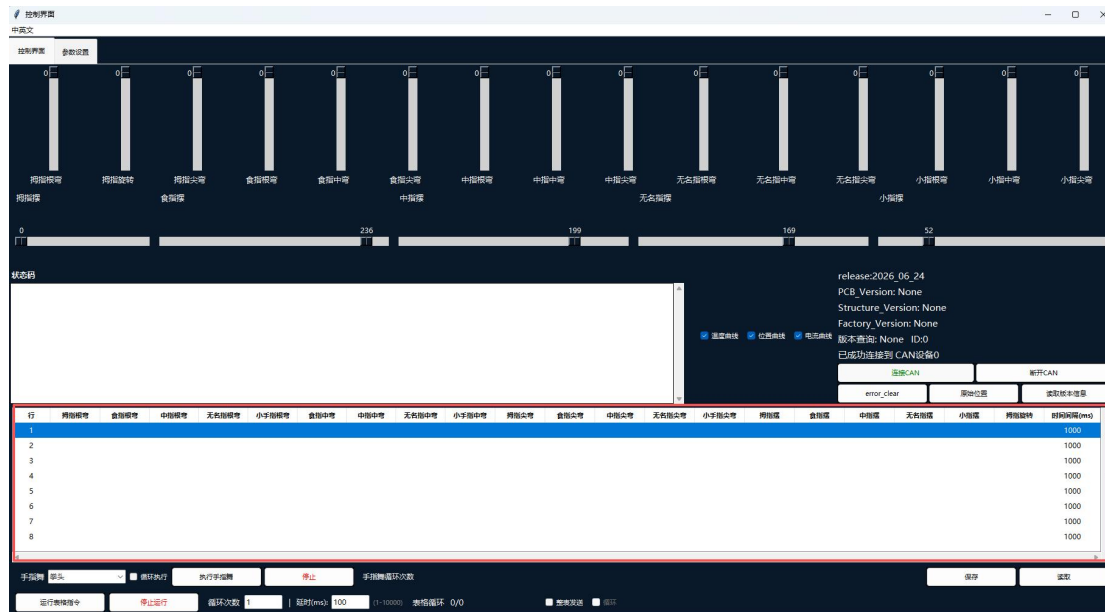


- Serial Number 1: The button is responsible for canceling communication with the CAN module.
- Serial Number 2: The button is responsible for connecting to the CAN module; clicking it will initiate communication with the CAN module.
- Serial Number 3: The button for reading version information will retrieve the relevant version information of the robotic arm and ID.
- Serial Number 4 is the original-position button. When clicked, it returns all of the robotic arm's joints to their zero-position.
- Serial Number 5: The button is responsible for clearing the error code display field.
- Serial Number 6 is the button for reading the action sequence file. After clicking it, a browse window will pop up. Select the action sequence file (.txt), and it will then be displayed in the table area.
- Serial Number 7 is the Save button, which will save the data from the action sequence table into a file in .txt format.
- Serial number 8 is the stop button. When clicked, it will halt the continuous execution of the finger dance or the currently moving finger dance.
- Serial Number 9 is to executes the finger dance button, click it to play the current finger dance displayed in the finger dance dropdown menu.
- Serial Number 10 is the stop button. Clicking it will terminate the loop of table

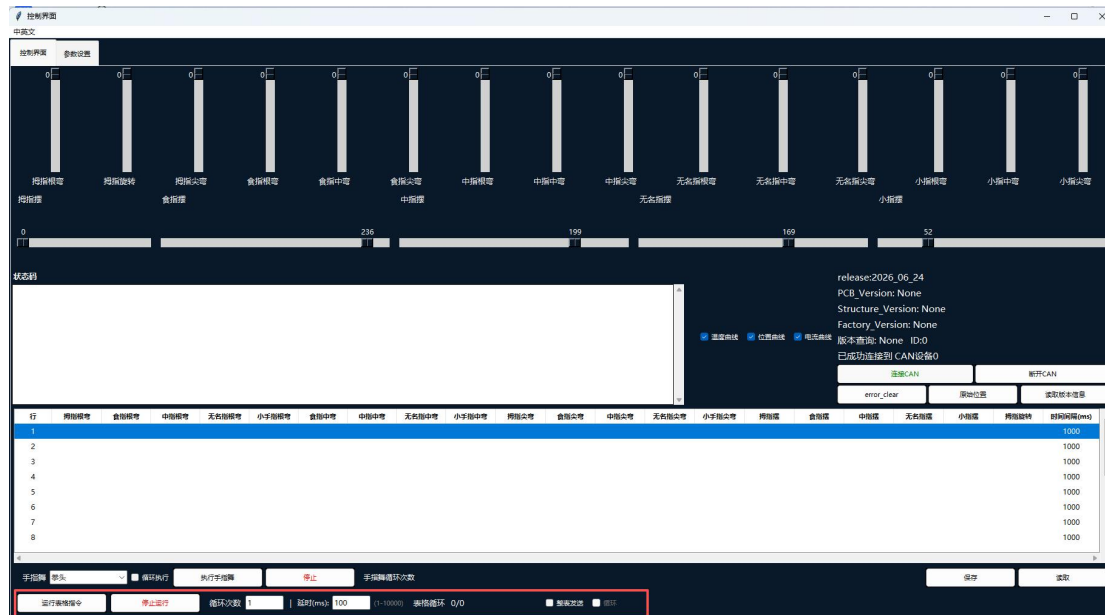
sequence actions or any sequence action that's currently being executed.

- Serial Number 11 is the button for executing table commands. When clicked, it will perform the sequential actions in the table according to the situation (single row, entire table, or entire table in a loop).

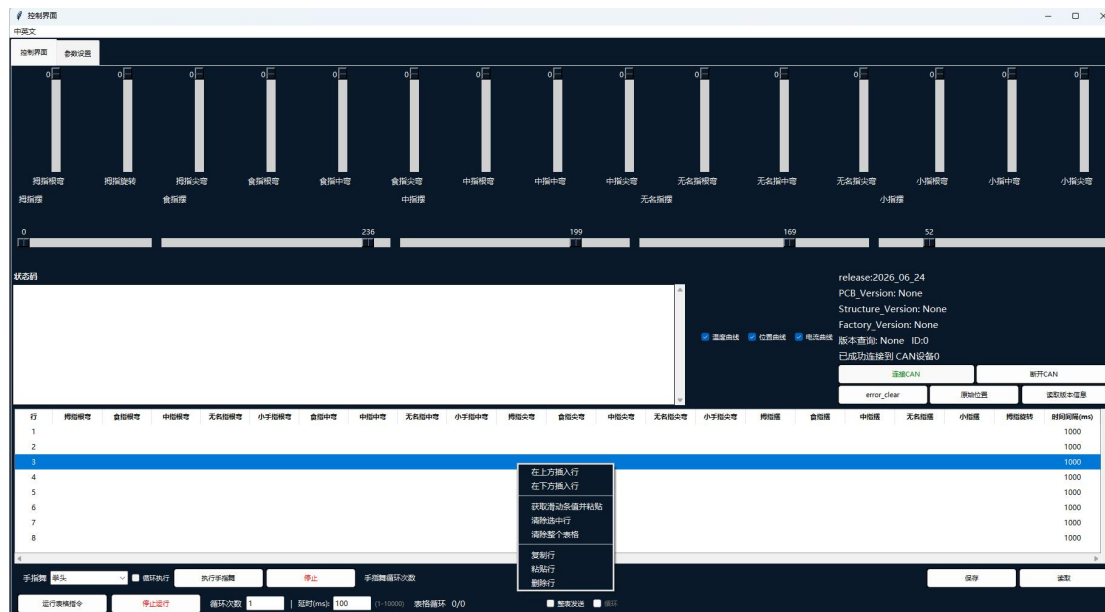
7) Action Sequence Table Control



- This is a table of action sequences. Each row in the table represents a complete hand movement and is used to customize robotic hand actions.
- The data in the table can be saved, or the saved actions can be displayed.
- Each row has 22 columns. The first column is the row number, and columns 2 through 21 correspond to the individual joints of the robotic arm, while column 22 indicates the time interval between two actions.



- The table supports editing via right-click.

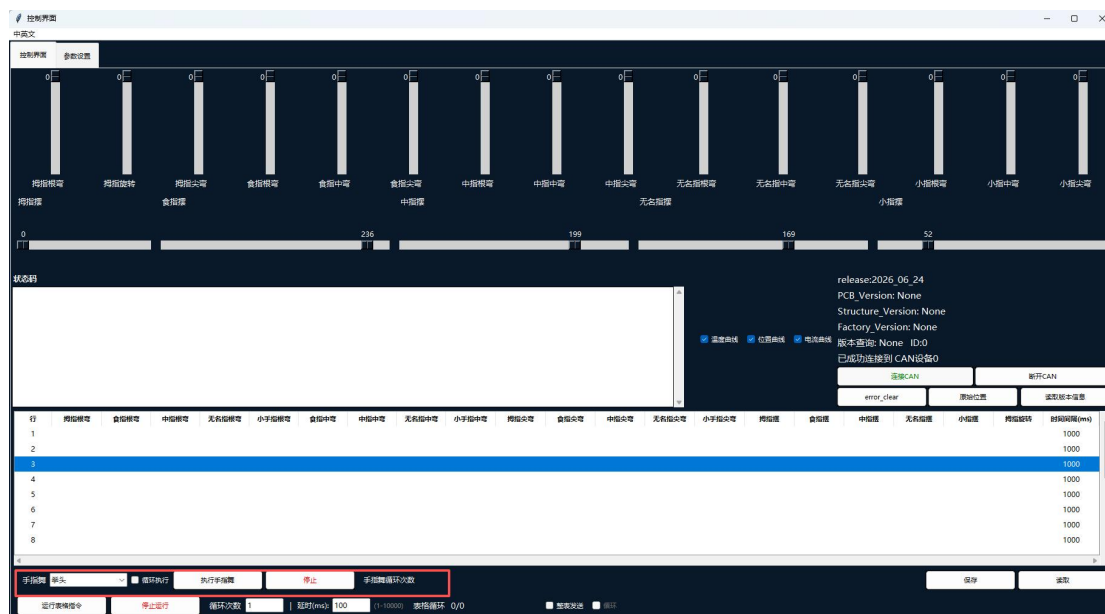


- There are three control modes: single row, entire table, and entire table in loop.
- By default, the mode is single-line mode. Use the left mouse button to select a specific row, and after clicking the "Run Table Command" button, the robot arm will send the joint data of the selected row.
- Check the "Send Entire Table" checkbox to switch to full-table mode. Once you click the "Run Table Command" button, the robot arm will receive each row of data from the entire table. The sending interval is determined by the value in the "Time Interval" column, with a default of 1000ms.
- When both the "Send Entire Table" checkbox and the "Loop" checkbox are

selected, the system switches to the "Entire Table Loop" mode. In this mode, the number of loops is determined by the value entered in the "Number of Loops" field, and the looping continues until the specified number of loops is completed. By default, the "Loop" checkbox is disabled; it becomes enabled once the "Send Entire Table" checkbox is selected.

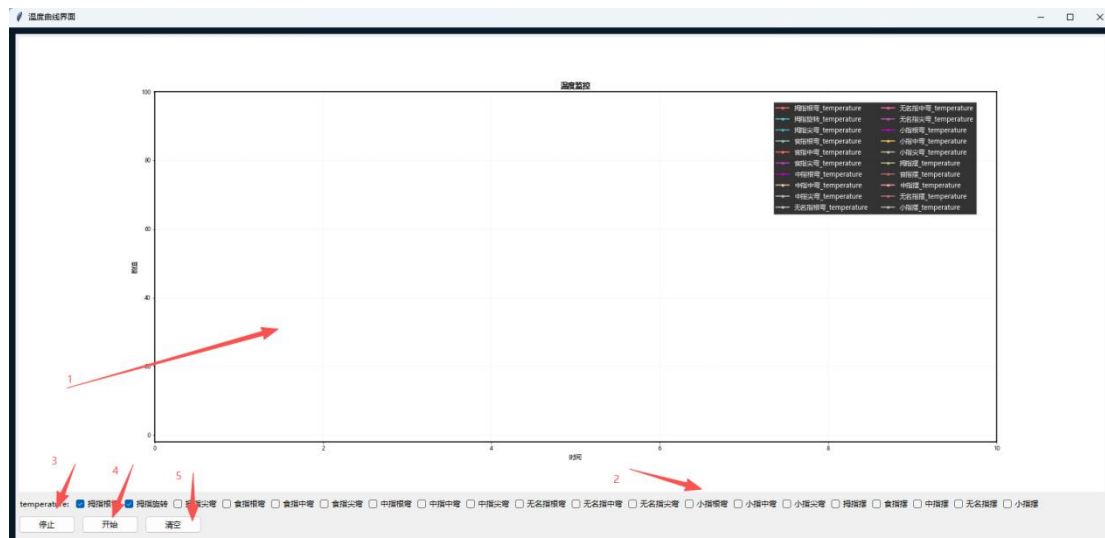
- When the robotic arm malfunctions or you want to stop its movement, you can click the "Stop" button.

8) Finger dance control

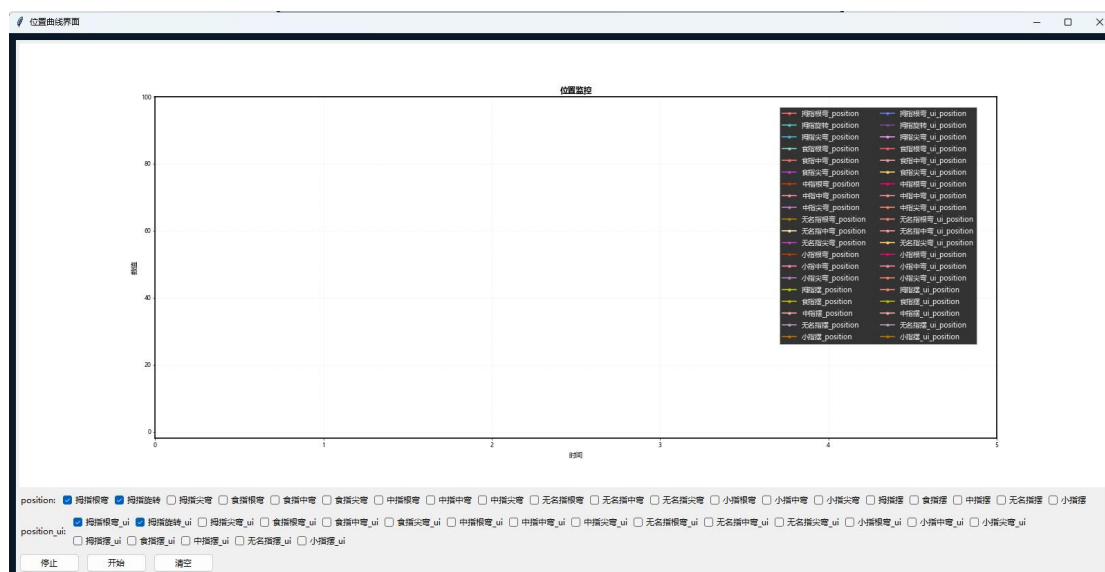


- Similar to action sequence table control, the difference lies in that it executes pre-defined finger dances already defined in the program.
- After checking the "Loop Execution" checkbox, the system will loop according to the numbers entered in the loop count field.
- The stop button will halt the finger dance from running.

9) The data shows



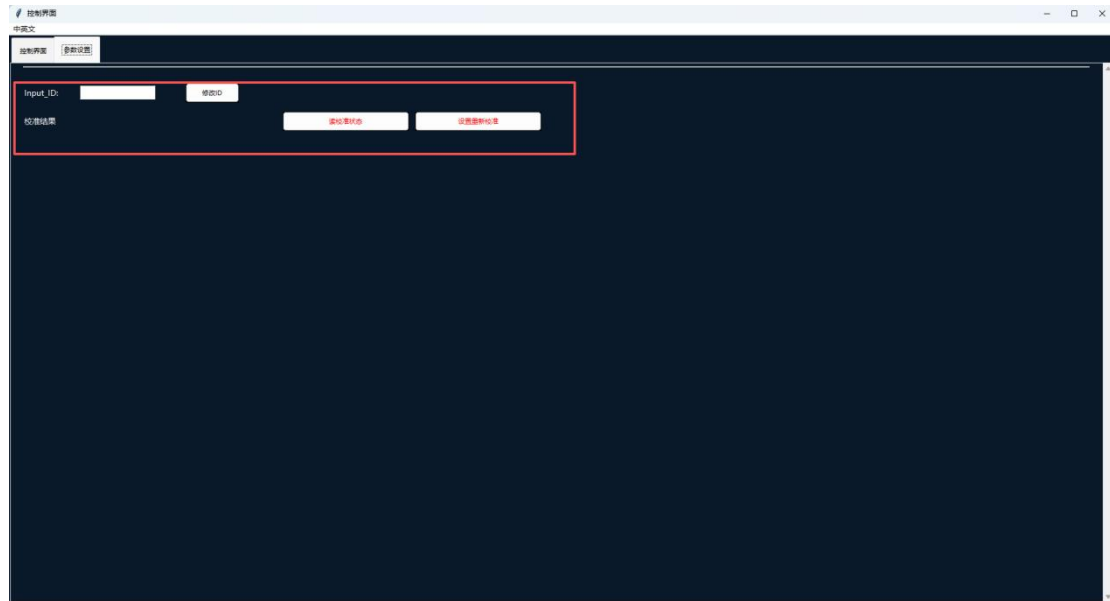
- Serial Number 1 is the curve chart.
- Serial Number 2 is a checkbox for finger curves. Checking any one of them will display the haptic sensor data for that particular finger. By default, the thumb and index finger are displayed.
- Serial Number 3 is the stop button. When clicked, it will halt the sending of inquiry commands to the robotic arm.
- Serial Number 4 is the Start button. When clicked, it will initiate a query command sent to the robotic arm.
- Serial Number 5 is the clear button. When clicked, it will clear the curve chart data.
- The operational logic of the temperature curve, current curve, and pressure curve is consistent.



- The position tag corresponds to the actual position data returned by the motor.
- The position UI tag corresponds to the target position data sent by the host computer.

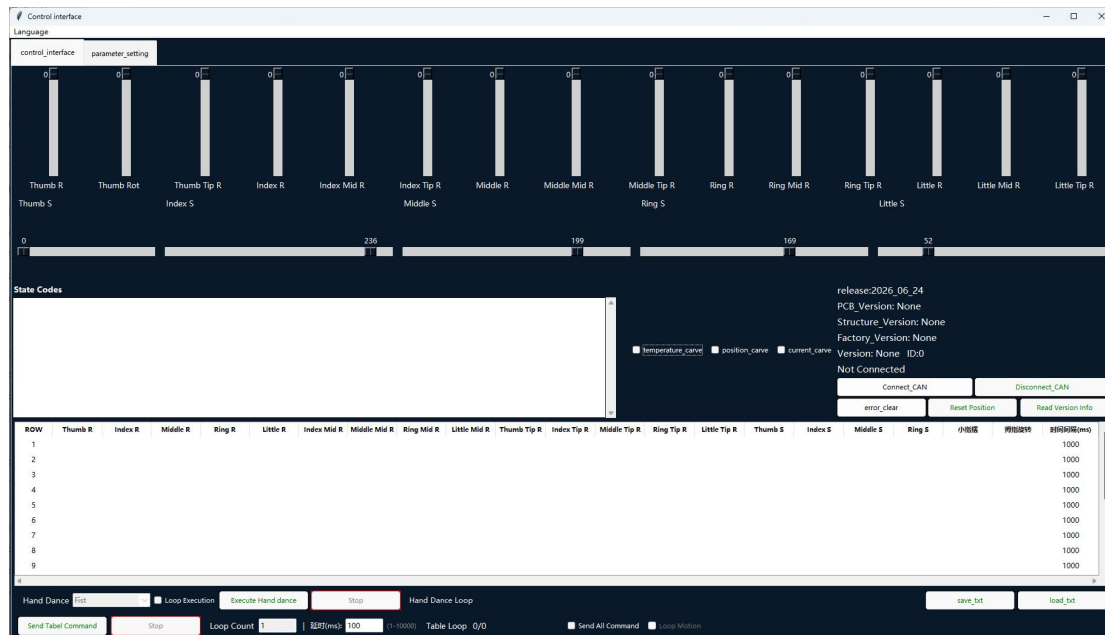
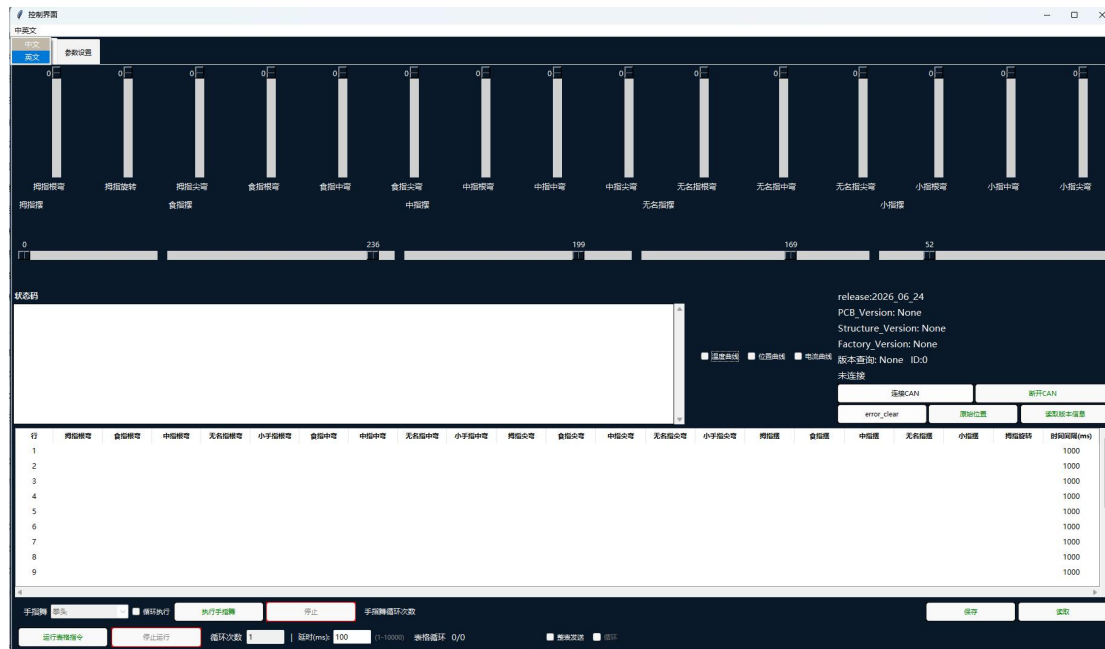
10) Parameter Settings

Parameter Settings



- Modify ID: Enter a decimal ID value (0 ~ 1022) in the Input ID box and click Modify ID. The change takes effect after the manipulator is power-cycled.
- Calibration: Click Start Recalibration to send joint calibration commands; click Read Calibration Status to view calibration results.

11) Switch between Chinese and English



3 After-Sales and Service Notes 知

- 1) The product is covered by a limited warranty for 12 months from the date of purchase.
- 2) During the warranty period, we will provide free repair or replacement parts for failures caused by manufacturing or material defects.
- 3) Disclaimer: The following situations are not covered under the warranty:
 - Cosmetic wear and tear caused by normal use.

- Damage caused by improper operation, accidents, unauthorized disassembly, or failure to follow the guidelines.
- 4) No returns or exchanges will be accepted unless the issue is not related to quality.
 - 5) If any malfunction occurs with the product, please contact official after-sales service immediately. Do not disassemble the product by yourself.
 - 6) Repairs performed outside the warranty period will incur corresponding charges.

Appendix

ROS SDK: <https://github.com/linker-bot/linkerhand-ros-sdk>

ROS2 SDK: <https://github.com/linker-bot/linkerhand-ros2-sdk>

Python SDK <https://github.com/linker-bot/linkerhand-python-sdk>