

OmniHand 2025 Product User Manual

韩晓璇 9793

韩晓璇 9793

韩晓璇 9793

韩晓璇 9793

韩晓璇 9793

韩晓璇 9793

韩晓璇 9793

韩晓璇 9793

韩晓璇 9793

韩晓璇 9793

User Manual

OmniHand 2025

Language: English



AGIBOT Innovation (Shanghai) Technology Co., Ltd.
www.AGIBOT.com

VERSION 1.6

VERSION 1.6

1. Important Safety Precautions

- 1.1 Notes for Use**
- 1.2 Risk Assessment**
- 1.3 After-Sales Service Commitment**
- 1.4 Disclaimer**
- 2. Product Profile**
 - 2.1 Overview**
 - 2.2 Features**
 - 2.3 Technical Specifications**
 - 2.4 Range of Joint Angle**
 - 2.5 Product Dimensions**
- 3. Installation Instructions**
 - 3.1 Packing List**
 - 3.2 Installation**
 - 3.3 Electrical and Communication Interfaces**
 - 3.4 Communication method**
- 4. Communication Protocols**
 - 4.1 CAN-FD Communication**
 - 4.2 USB/Serial Communication**
 - 4.3 Communication Protocols**
 - 4.4 Firmware/Host Software Version**
 - 4.5 Precautions for Control**
 - 4.6 Indicator Light Instructions**
 - 4.7 Caution: Hot-plugging is NOT Supported**
- 5. Host Software Instructions**
 - 5.1 Environment and Dependencies**
 - 5.2 Download and Install**
 - 5.3 Login Interface**
 - 5.4 Main Interface**
 - 5.5 Console**
 - 5.5.1 Custom Action Playback/Loop Panel**
 - 5.5.2 Action File Export and Import**
 - 5.6 Tactile Panel**

5.7 Upgrade Panel

1. Important Safety Precautions

This section describes the safety requirements that must be met during the installation and operation of the OmniHand 2025. As the OmniHand 2025 is a semi-finished mechanical product, it is essential to carefully read this manual and fully understand the relevant safety features and potential hazards prior to first use. All relevant personnel must conduct risk assessment before each OmniHand 2025 installation and strictly adhere to all instructions in this manual during operation.

1.1 Notes for Use

Do Not operate or store the OmniHand in any high-temperature or high-humidity environment.

Do Not subject the OmniHand to excessive mechanical load or shock.

Do Not apply excessive force on fingertips.

Do Not forcibly pull or twist any finger of the OmniHand.

Do Not bring the OmniHand near an open flame or heat source.

Do Not operate or store the OmniHand in a flammable or explosive environment.

Do Not use the OmniHand in any strong electromagnetic fields, such as near high-voltage power lines or high-power machinery.

Do Not use the OmniHand to grasp any object that are excessively heavy, overheated, sharp, rough or corrosive.

Do Not expose the OmniHand to any liquid (alcohol, water, beverage, etc.) or dust without proper protection. In case of accidental contact, be sure to power off immediately and contact our after-sales service technicians.

Do Not disassemble the OmniHand without authorization, otherwise, the warranty in the After-Sales Service Commitment will be voided. In case of any malfunction, please contact our after-sales service technicians.

Do Not operate any hazardous machinery with the OmniHand. The company assume no liability for personal injury or property damage resulting from such actions.

1.2 Risk Assessment

List of Potential Hazards:

Mechanical hazards: Crush injuries, abrasions, etc., caused by contact with the OmniHand or any sharp object being held.

Electrical hazards: Electric burns or electric shocks caused by contact with live parts.

High-temperature hazards: Burns caused by prolonged contact with hot surfaces of the OmniHand.

Noise hazard: No significant hazard identified.

Vibration hazard: No significant hazard identified.

Radiation hazard: No significant hazard identified.

Material/substance hazard: No significant hazard identified.

Ergonomic hazard: No significant hazard identified.

Environmental Hazard: No significant hazard identified.

1.3 After-Sales Service Commitment

The OmniHand 2025 is covered by a 6-month limited warranty. If any defect due to manufacturing or material flaws occurs after the Product is put into use, we would provide necessary spare parts for replacement or repair. The product warranty shall be void if defects result from improper handling, failure to follow the instructions provided manual, or unauthorized disassembly of the product. Without prejudice to terms of this warranty, if the Product has exceeded its warranty period, we reserve the right to charge customers for the cost of replacement or repair.

Beyond the warranty period, if the device exhibits any defect, we should not be held liable for any damages or losses incurred, including but not limited to production losses or damage to other production equipment.

1.4 Disclaimer

We are committed to continuously improving the product reliability and performance, and therefore reserve the right to make product improvements or upgrade without further notice. We strive to ensure the accuracy and reliability of this Manual but shall not be held liable for any errors or omissions it may contain. Defects or malfunctions caused by the following circumstances are not covered within the scope of warranty:

1. Failure to install, wire or connect other control devices as required by the user manual;
2. Unauthorized disassembly/assembly of the OmniHand;
3. Use of the OmniHand beyond the specifications or standards stated in the user manual;
4. Damage resulting from improper transportation;
5. Damage caused by accidents, impacts, or collisions;
6. Damage caused by natural disasters, including but not limited to fire, earthquake, tsunami, lightning strike, strong winds and floods.

We shall not be held liable for any loss, damage, injury or expense caused by customers violating the disclaimers in this Section. Customers are kindly requested

to carefully read and agree to this disclaimer before purchasing and using the Product.

2. Product Profile

2.1 Overview

OmniHand 2025 is a compact and high-degrees-of-freedom(DoF) robotic dexterous hand featuring a miniaturized and versatile design, optimized for interactive applications.

OmniHand 2025 supports a wide range of applications, including gesture interaction, touch interaction and light-duty tasks, accommodating multiple common interactive gestures and covering 400+ tactile sensing points across the palms, hand backs and all five fingers.

The hand features a soft-touch coating and pinch-prevention safety design; lightweight and agile, it is ideal for humanoid robots across a wide range of models.

2.2 Features

- **Compact and lightweight:** 180 mm in total length, just 510g in weight—adaptive to humanoid robots of various models.
- **Adaptive interaction:** 16 DoFs for more human-like gesture interaction, covering all common gestures plus an exclusive back-of-hand touch interaction.
- **Safe and user-friendly:** Over 300 force-sensing taxels across the hand and an pinch-prevention design for safer interaction.

2.3 Technical Specifications

		OmniHand 2025	OmniHand 2025 w/ Tactile
Body Parameters	Weight (excluding wrist end cap and screws)	≤ 510g	≤ 520g
	Dimension	180*85*38.5 mm	
	Active DoF	10 (Thumb: 3; Index finger: 2; Middle finger: 1; Ring finger: 2; Little finger: 2)	
	Total DoF	16 (Thumb: 4; Index finger: 3; Middle finger: 3;	

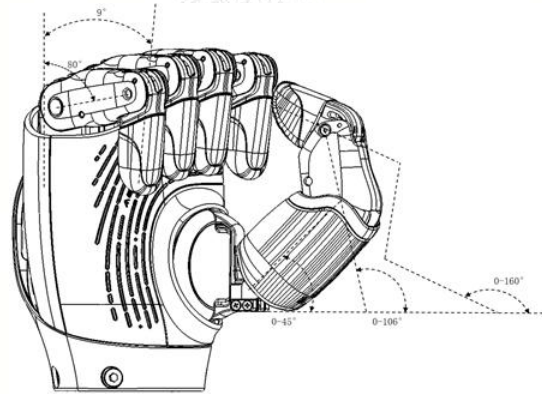
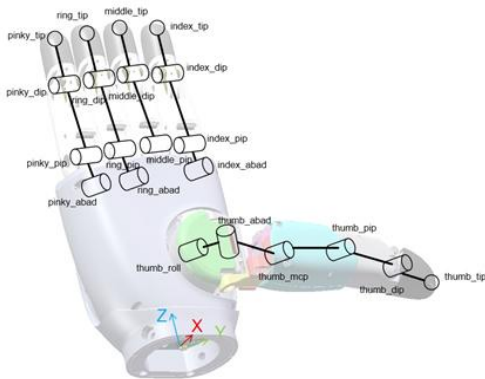
		Ring finger: 3; Little finger: 3)	
	Minimum opening/closing time	0.5s / 0.5s	
	Fingertip Repetitive Positioning Accuracy	0.3mm	
	Five-finger grip force (hybrid force control mode)	≥ 5kg	
	Operating Voltage	18-27V	
	Communication	CAN-FD / RS485	
	Operating Temperature	0~45°C	
	Upgrade	OTA Upgrade	
Tactile sensor	Force sensing type	/	Fingertip + palm + hand back: One-dimensional force
	Array resolution	/	0.1N
	Range of sensing	/	0-20N
	Maximum acceptable force (nondestructive)	/	200N

2.4 Range of Joint Angle

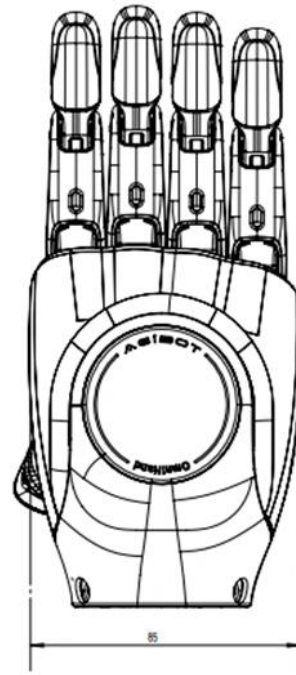
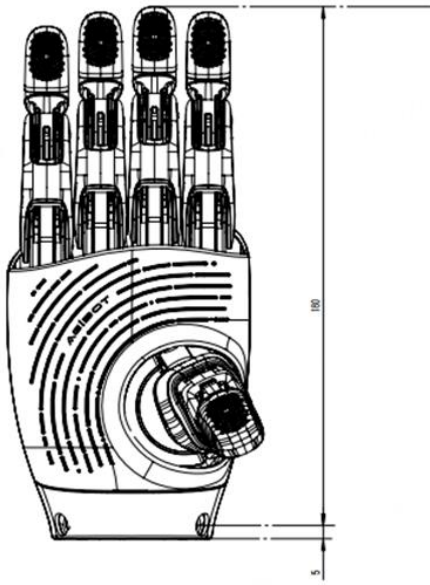
Finger	Joint	Left		Right	
		Min (°)	Max (°)	Min (°)	Max (°)
Thumb	thumb_roll_joint	-2	64	-64	2
	thumb_abadd_joint	-94	3	-3	94
	thumb_mcp_joint	0	48	-48	0
	thumb_pip_joint	NA /Coupled joints, coupling relationship reference in the SDK.			
	thumb_dip_joint	NA /Coupled joints, coupling relationship reference in the SDK.			
Index Finger	index_abad_joint	-9	0	0	9
	index_pip_joint	0	85	0	85
	index_dip_joint	NA /Coupled joints, coupling relationship reference in the SDK.			
Middle Finger	middle_pip_joint	0	85	0	85
	middle_dip_joint	NA /Coupled joints, coupling relationship reference in the SDK.			
Ring Finger	ring_abad_joint	0	10	-10	0
	ring_pip_joint	NA /Coupled joints, coupling relationship reference in the SDK.			

	ring_dip_joint	0	85	0	85
Fifth Finger	pinky_abad_joint	0	11	-11	0
	pinky_pip_joint	0	85	0	85
	pinky_dip_joint	NA /Coupled joints, coupling relationship reference in the SDK.			

Please refer to the chart above.



2.5 Product Dimensions



韩晓璇 9793

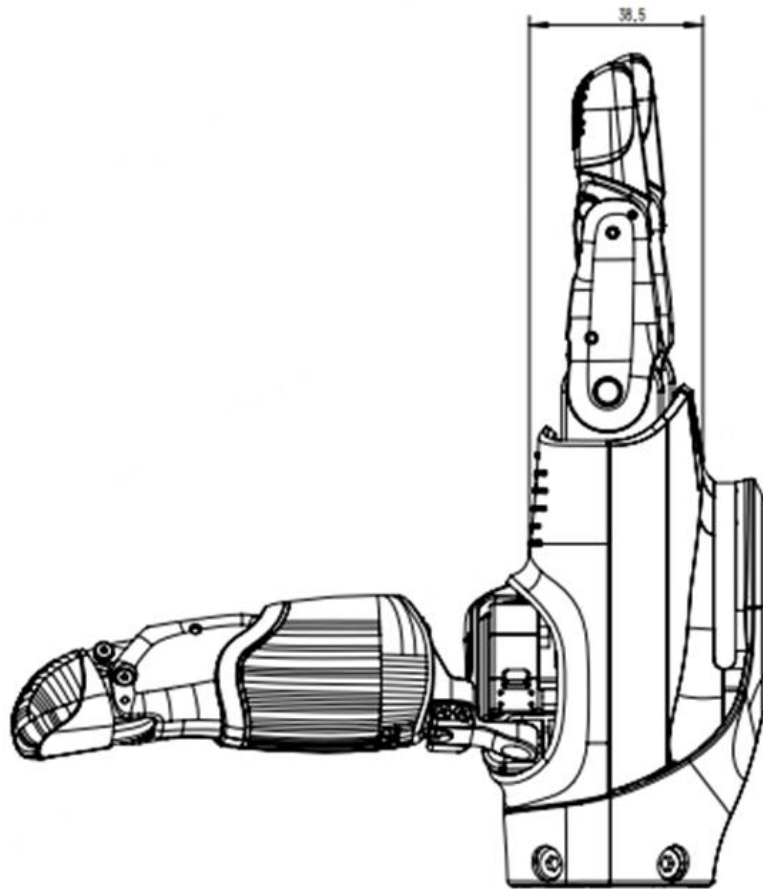
韩晓璇 9793

韩晓璇 9793

韩晓璇 9793

韩晓璇 9793

韩晓璇 9793



3. Installation Instructions

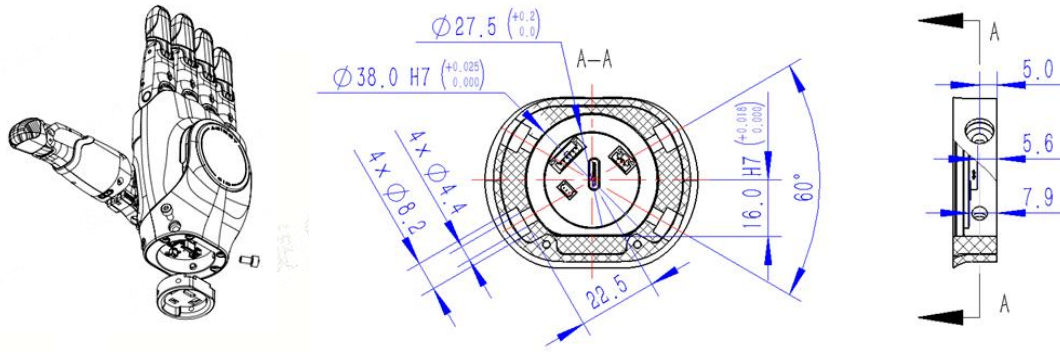
This Section describes how to install the OmniHand 2025 and related information about its electrical and communication interfaces.

3.1 Packing List

- OmniHand 2025 × 1
- Power + CAN-FD Cable × 1 (power cable connector type: XT30 female)
- RS485 Cable × 1
- USB Type-C Cable × 1
- OmniHand Quick Start Guide × 1
- Product Certificate × 1

3.2 Installation

1. Remove the wrist end cap by unscrewing the four M4 screws located at the wrist joint.
2. Connect the communication cable and power cable;
3. Mount the OmniHand onto the robotic arm (refer to the mechanical interface design in the diagram below) and secure the M4 screws removed in Step 1 to complete the installation.



3.3 Electrical and Communication Interfaces

Pin Definitions

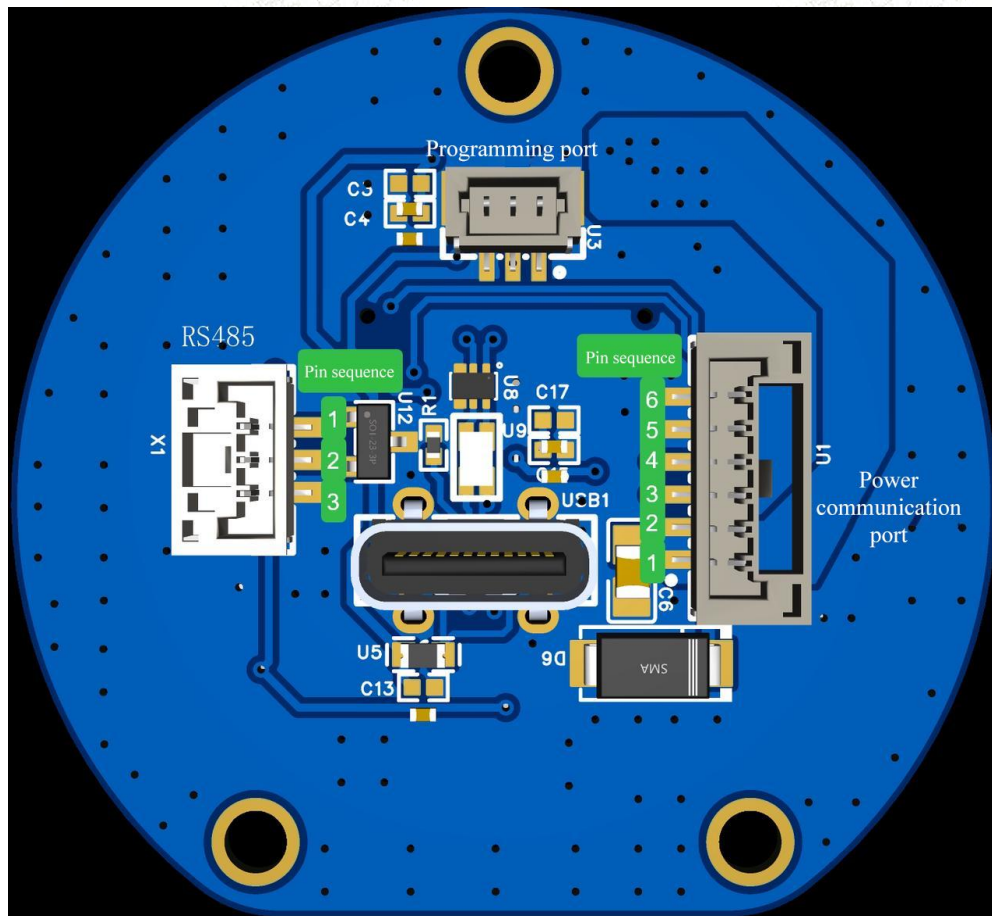
WAFER-GH1.25-6PLB used as connector (Tag. No.: U1) with CANFD supported. Specific pin definitions are as follows:

Pin	Pin Definitions
1	24V
2	24V
3	CAN_H
4	CAN_L
5	GND
6	GND

GH125-S03CCA-00 used as connector (Tag. No.: XI) with RS485 supported. Specific pin definitions are as follows:

Pin	Pin Definitions
1	RS485_A

2	RS485_B
3	GND



3.4 Communication method

Supports connection to the host computer via USB communication;

Supports secondary development based on CAN-FD/RS385 communication protocols.

Please check SDK doc here <https://github.com/AgibotTech/Omnihand-2025-SDK>

4. Communication Protocols

4.1 CAN-FD Communication

CAN-FD communication parameters: arbitration field baud rate 1M (80% sampling point), data field baud rate 5M (75% sampling point). This device supports **CAN- FD**


```

-----*/
#include "crc.h"

/* Private types -----
-----*/
/* Private macro -----
-----*/
/* Private constants -----
-----*/
/* Private variables -----
-----*/
static const uint16_t crc16Tab[256] = {
    0x0000, 0x1021, 0x2042, 0x3063, 0x4084, 0x50a5, 0x60c6,
    0x70e7, 0x8108, 0x9129, 0xa14a, 0xb16b,
    0xc18c, 0xd1ad, 0xe1ce, 0xf1ef, 0x1231, 0x0210, 0x3273,
    0x2252, 0x52b5, 0x4294, 0x72f7, 0x62d6,
    0x9339, 0x8318, 0xb37b, 0xa35a, 0xd3bd, 0xc39c, 0xf3ff,
    0xe3de, 0x2462, 0x3443, 0x0420, 0x1401,
    0x64e6, 0x74c7, 0x44a4, 0x5485, 0xa56a, 0xb54b, 0x8528,
    0x9509, 0xe5ee, 0xf5cf, 0xc5ac, 0xd58d,
    0x3653, 0x2672, 0x1611, 0x0630, 0x76d7, 0x66f6, 0x5695,
    0x46b4, 0xb75b, 0xa77a, 0x9719, 0x8738,
    0xf7df, 0xe7fe, 0xd79d, 0xc7bc, 0x48c4, 0x58e5, 0x6886,
    0x78a7, 0x0840, 0x1861, 0x2802, 0x3823,
    0xc9cc, 0xd9ed, 0xe98e, 0xf9af, 0x8948, 0x9969, 0xa90a,
    0xb92b, 0x5af5, 0x4ad4, 0x7ab7, 0x6a96,
    0x1a71, 0x0a50, 0x3a33, 0x2a12, 0xdbfd, 0xcbdc, 0xfbbf,
    0xeb9e, 0x9b79, 0x8b58, 0xbb3b, 0xab1a,
    0x6ca6, 0x7c87, 0x4ce4, 0x5cc5, 0x2c22, 0x3c03, 0x0c60,
    0x1c41, 0xedae, 0xfd8f, 0xcdec, 0xddcd,
    0xad2a, 0xbd0b, 0x8d68, 0x9d49, 0x7e97, 0x6eb6, 0x5ed5,
    0x4ef4, 0x3e13, 0x2e32, 0x1e51, 0x0e70,
    0xff9f, 0xefbe, 0xdfdd, 0xcffc, 0xbf1b, 0xaf3a, 0x9f59,
    0x8f78, 0x9188, 0x81a9, 0xb1ca, 0xa1eb,
    0xd10c, 0xc12d, 0xf14e, 0xe16f, 0x1080, 0x00a1, 0x30c2,
    0x20e3, 0x5004, 0x4025, 0x7046, 0x6067,
    0x83b9, 0x9398, 0xa3fb, 0xb3da, 0xc33d, 0xd31c, 0xe37f,
    0xf35e, 0x02b1, 0x1290, 0x22f3, 0x32d2,
    0x4235, 0x5214, 0x6277, 0x7256, 0xb5ea, 0xa5cb, 0x95a8,
    0x8589, 0xf56e, 0xe54f, 0xd52c, 0xc50d,
    0x34e2, 0x24c3, 0x14a0, 0x0481, 0x7466, 0x6447, 0x5424,
    0x4405, 0xa7db, 0xb7fa, 0x8799, 0x97b8,
    0xe75f, 0xf77e, 0xc71d, 0xd73c, 0x26d3, 0x36f2, 0x0691,
    0x16b0, 0x6657, 0x7676, 0x4615, 0x5634,

```

```

    0xd94c, 0xc96d, 0xf90e, 0xe92f, 0x99c8, 0x89e9, 0xb98a,
    0xa9ab, 0x5844, 0x4865, 0x7806, 0x6827,
    0x18c0, 0x08e1, 0x3882, 0x28a3, 0xcb7d, 0xdb5c, 0xeb3f,
    0xfb1e, 0x8bf9, 0x9bd8, 0xabbb, 0xbb9a,
    0x4a75, 0x5a54, 0x6a37, 0x7a16, 0x0af1, 0x1ad0, 0x2ab3,
    0x3a92, 0xfd2e, 0xed0f, 0xdd6c, 0xcd4d,
    0xbdaa, 0xad8b, 0x9de8, 0x8dc9, 0x7c26, 0x6c07, 0x5c64,
    0x4c45, 0x3ca2, 0x2c83, 0x1ce0, 0x0cc1,
    0xef1f, 0xff3e, 0xcf5d, 0xdf7c, 0xaf9b, 0xbfba, 0x8fd9,
    0x9ff8, 0x6e17, 0x7e36, 0x4e55, 0x5e74,
    0x2e93, 0x3eb2, 0x0ed1, 0x1ef0};

/* Private function prototypes -----
-----*/
/* Private user code -----
-----*/
uint16_t crc16(const uint8_t* buf, uint32_t len) {
    uint16_t crc = 0;
    while (0 < len--) {
        crc = (crc << 8) ^ Crc16Tab[((crc >> 8) ^ *buf++) & 0x00FF];
    }
    return crc;
}

```

4.3 Communication Protocols

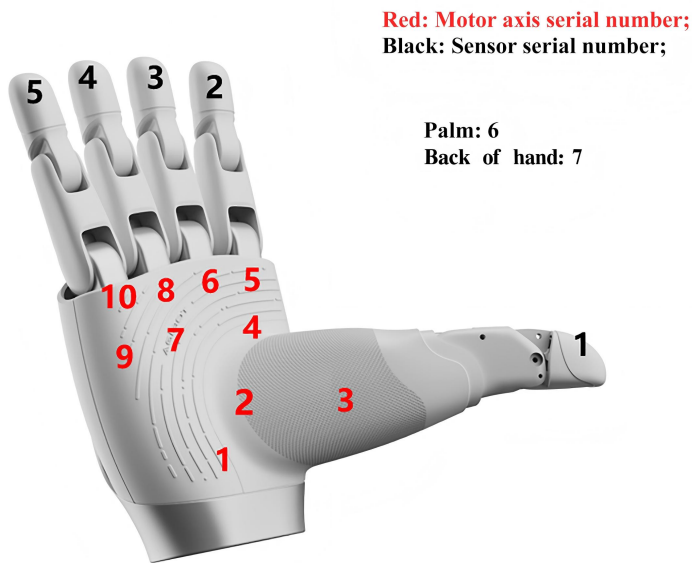
The internal active shafts of the hand are distributed according to their serial numbers, indexed from 1 to 10 (shown in red in the figure below); the tactile sensors are sequentially distributed from the thumb, indexed from 1 to 7 (shown in black in the figure below).

韩晓璇 9793

韩晓璇 9793

韩晓璇 9793

韩晓璇 9793



The command fields for sending and replying are identical.

Command	Definition	Downstream Data	Upstream Data	Remarks
0x01	Device enable/disable	1 byte 00: Disable 01: Enable 02: Calibration mode	1 byte 00: Failure 01: Success	
0x02	Query current device enable status		1 byte 00: Disable 01: Enable 02: Calibration mode	
0x06	Set single axis position	3 byte d0: Axis index d1-d2: Target position (uint16 type), range of 0 - 4096; the entire angular operating	3 byte d0: Axis index d1-d2: Current position (uint16 type), range of 0 - 4096; the entire angular operating	

		range is divided into 4096 segments, for example, if a finger is moving at $\alpha = 0.0^\circ \sim 90.0^\circ$, target position = $4096 * \alpha / 3600$, with the angle precision up to 0.1°	range is divided into 4096 segments, for example, if a finger is moving at $\alpha = 0.0^\circ \sim 90.0^\circ$, target position = $4096 * \alpha / 3600$, with the angle precision up to 0.1°	
0x07	Read single axis position	1 byte, axis index Range: 1-10	Same as 0x06 command response	
0x08	Set all axis positions	20 byte d0-d19: Target position data for all axes Each axis has two-byte position data of uint16 type, sequentially arranged starting from Axis 1, with the position of each axis ranging 0 - 4096, and the entire angular operating range is divided into 4096 segments. For example, finger movement $\alpha = 0.0^\circ \sim 90.0^\circ$, target position = $4096 * \alpha / 3600$, with the angle precision up to 0.1° d20-d23: 0, reserved DoF;	60 byte d0-d19, current position data for all axes 2-byte position data per axis, uint16 type, arranged sequentially from axis 1, with each axis position range 0 - 4096 d20-d39: Speed feedback for all axes; d40-d49: Torque feedback for all axes; d50-d59: Fault status of all axes;	

0x09	Read position data for all axes		<p>20 byte</p> <p>d0-d19: Current position data for all axes</p> <p>2-byte position data per axis, uint16 type, arranged sequentially from axis 1, with each axis position range 0 -4096</p>	
0x0A	Read current information for all axes		<p>20 byte</p> <p>d0-d19: Current data for all axes; Unit: 0.01A;</p> <p>Each axis has 2-byte current data, uint16 type, sequentially arranged from Axis 1.</p>	
0x0B	Read speed information for all axes		<p>20 byte</p> <p>d0-d23: Current speed data for all axes</p> <p>Each axis has 2-byte speed data, uint16 type, sequentially arranged from Axis 1.</p>	
0x0C	Read temperature data for all axes		<p>10 byte</p> <p>d0-d9 : Current temperature data for all axes</p> <p>Each axis has 1 byte of temperature data, int8 type,</p>	

			sequentially arranged from Axis 1; Unit: degree	
0x0D	Read error code		<p>2 bytes, uint16 type</p> <p>0x0000: No error</p> <p>1-10: Motor 1-10 stalling</p> <p>21-30: Motor 1-10 overtemperature</p> <p>41-50: Motor 1-10 current abnormal</p> <p>61-70: Motor 1-10 encoder abnormal</p> <p>81-90: Motor 1-10 communication error</p> <p>101: Communication abnormal</p> <p>102: Motor initialization failed</p> <p>103: Tactile sensor initialization failed</p> <p>104: Auto-calibration failed</p> <p>105: Parameter error</p>	
0x0E	Clear error		<p>1 byte</p> <p>00: Failure</p> <p>01: Success</p>	
0x11	Read data from a single fingertip sensor	1 byte, sensor index	<p>17 bytes (fingers) / 26 bytes (palm and back of hand)</p> <p>d0 : sensor index</p>	

			<p>d1-d16: finger sensor data, formatted as a 4*4 array, with each point stored as a uint8 value read in a row order.</p> <p>d1-d25: palm/hand back sensor data, formatted as a 5*5 array, with each point stored as a uint8 value read in a row-major order.</p>	
0x12	Read data from all fingertip sensors-1		<p>48 bytes, in the following order:</p> <p>Thumb 4*4 + Index finger 4*4 + Mid-finger 4*4</p> <p>With each point stored as a uint8 value and each sensor read in a row-major order;</p>	
0x13	Read data from all fingertip sensors-2		<p>32 bytes, in the following order:</p> <p>Ring finger 4*4 + Fifth finger 4*4</p> <p>With each point stored as a uint8 value and each sensor read in a column-major order;</p>	
0x14	Read data from all fingertip sensors-3		<p>50 bytes, in the following order:</p> <p>Palm 5*5 + Back of hand 5*5</p> <p>With each point</p>	

			stored as a uint8 value and each sensor read in a row-major order;	
0x32	Set all axes position (force-position hybrid mode)	<p>50 bytes</p> <p>d0-d19: Target position data for all axes. Each axis has two-byte position data of uint16 type, sequentially arranged starting from Axis 1, with the position of each axis ranging 0 - 4096, and the entire angular operating range is divided into 4096 segments. For example, finger movement $\alpha = 0.0^\circ \sim 90.0^\circ$, target position = $4096 * \alpha / 3600$, with the angle precision up to 0.1°</p> <p>d20-d39: Speed data for all axes</p> <p>Each axis has two-byte position data of uint16 type, sequentially arranged starting from Axis 1, valid speed range: -4095 to 4096; maximum motor speed: 4096</p> <p>d40-d49: Torque</p>	<p>60 字节</p> <p>d0-d19, 所有轴当前位置数据</p> <p>每个轴两字节位置数据, uint16 类型, 从 1 号轴开始依次排布, 每个轴位置范围 0 - 4096</p> <p>d20-d39: 所有轴速度反馈;</p> <p>d40-d49: 所有轴力矩反馈;</p> <p>d50-d59: 所有轴的故障状态;</p> <p>60 bytes</p> <p>d0-d19: Current position data of all axes</p> <p>Each axis has two-byte position data of uint16 type, sequentially arranged starting from Axis 1, position range: 0-4096</p> <p>d20-d39: Speed feedback for all axes</p> <p>d40-d49: Torque feedback for all axes</p> <p>d50-d59: Fault</p>	

		<p>data for all axes</p> <p>Each axis uses 1 byte, torque range: 0–255</p>	<p>status for all axes</p>	
0x80	Control source	<p>1 byte, control source setting:</p> <p>0: Robot body control (default)</p> <p>1: HMI operator control.</p>	<p>Return: Original data</p>	
0x81	Control source query	<p>0 byte</p>	<p>Return: Control source status</p> <p>0: Robot body control;</p> <p>1: HMI operator control.</p>	
0xC2	Read product serial number		<p>19 bytes:</p> <p>d0-d2: 3-digit vendor cipher</p> <p>d3-d8: 6-digit material cipher</p> <p>d9-d14: YYMMDD</p> <p>d15-d18: 4-bit serial number</p>	
0xCD	Query device model and software/hardware version		<p>8 byte</p> <p>d0: Device type</p> <p>2: O10 Dexterous Hand</p> <p>d1-d2: Product status (ASCII Codes, e.g., T1, T2, P1)</p> <p>d3-d5: Software version (d1.d2.d3)</p> <p>d6-d8: Hardware</p>	<p>Compatible with OmniPicker commands</p>

			version (d4.d5.d6)	
			d9: DoF	

Note: In upstream/downstream data descriptions, "d" represents data, where d0 is the first byte.

4.4 Firmware/Host Software Version

Latest firmware and host software versions are available for download on the official website (<https://www.zhiyuan-robot.com/DOCS/OS/Omnihand-O10>).

4.5 Precautions for Control

For controlling the OmniHand 2025 of the robot body, it is recommended to use a hybrid position/torque control mode. Apply appropriate torque when grasping objects. If the grasping torque is excessive, **it is advised not to grasp frequently, instead, grasp for one minute and then release for one minute.**

4.6 Indicator Light Instructions

Indicator Color	Definition	Action Required
Blue	System initializing	Wait until initialization completes
Green	Initialization complete	Ready for operation
Blue (no change)	Voltage abnormal	Check that voltage is $24\text{ V} \pm 10\%$

4.7 Caution: Hot-plugging is NOT Supported

When the entire hand is powered on, hot-plugging of power cord or signal cable is not supported and users shall use it properly; in case of malfunction due to unauthorized hot-plugging, the customer should be held solely liable.

5. Host Software Instructions

5.1 Environment and Dependencies

- CPU: Intel Core i5 8th Gen or above, dual-core 1.5GHz+
- Memory: 8GB+
- Display: Support OpenGL 3.3+ (integrated graphics are sufficient)

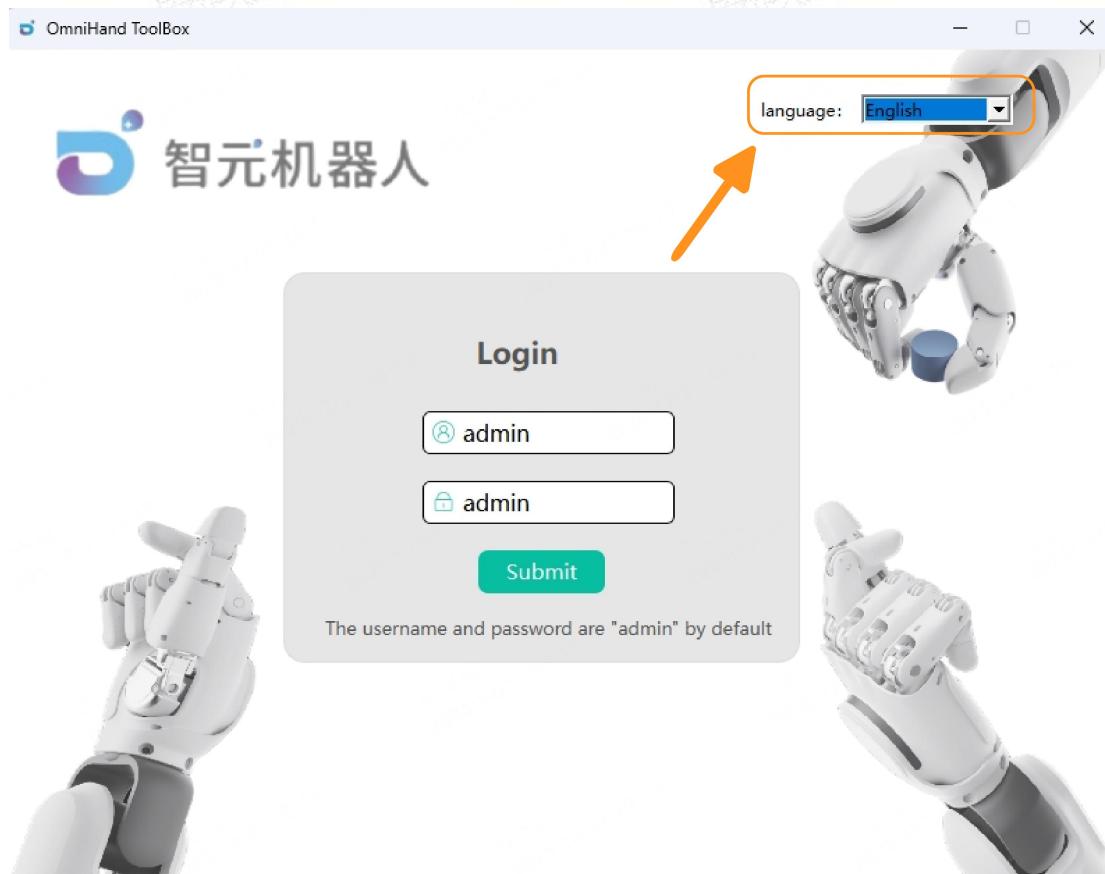
- OS: Windows 10/11
- Interface: USB 2.0+
- Software Dependency: VC++ 2019 Redistributable, .Net Framework 4.8

5.2 Download and Install

The host software for OmniHand 2025 can be downloaded as a compressed package from the official website; see Section 4.4 for the link.

Extraction is required after the download is completed. Before launching, make sure to install VC++ redistributable and .NET Framework dependencies. Once the installation is completed, double-click OmniHand-ToolBox to run the host software.

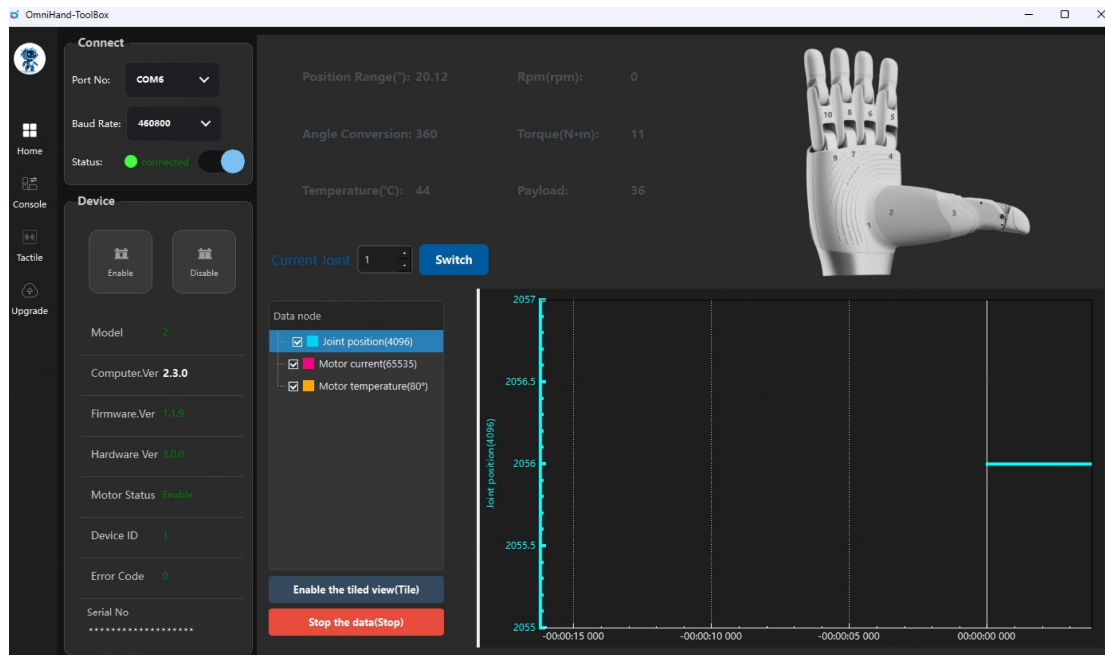
5.3 Login Interface



By clicking the “Submit” button, the system will proceed directly to the main user interface without requiring a username or password.

The interface language can be adjusted from the language menu located in the upper- right corner of the screen. The system currently supports Chinese and English.

5.4 Main Interface



The OmniHand 2025, once powered on, shall be connected to the host computer via a USB cable; once it is properly connected, the host software will automatically search for available port numbers, which will then be displayed in the port number section of the left sidebar.

The baud rate is fixed at `460800` and cannot be modified at this time.

Slide to connect and wait for handshake process to complete. Once the connection is successfully established, the connection status will be **"Connected"** and you can check the Device panel for basic device information.

In the main interface, users can also view detailed information for each joint. By selecting a specific joint, the system will display its position range, torque, rotational speed, and other related parameters. Real-time data such as current and temperature can also be viewed in the lower section of the interface.

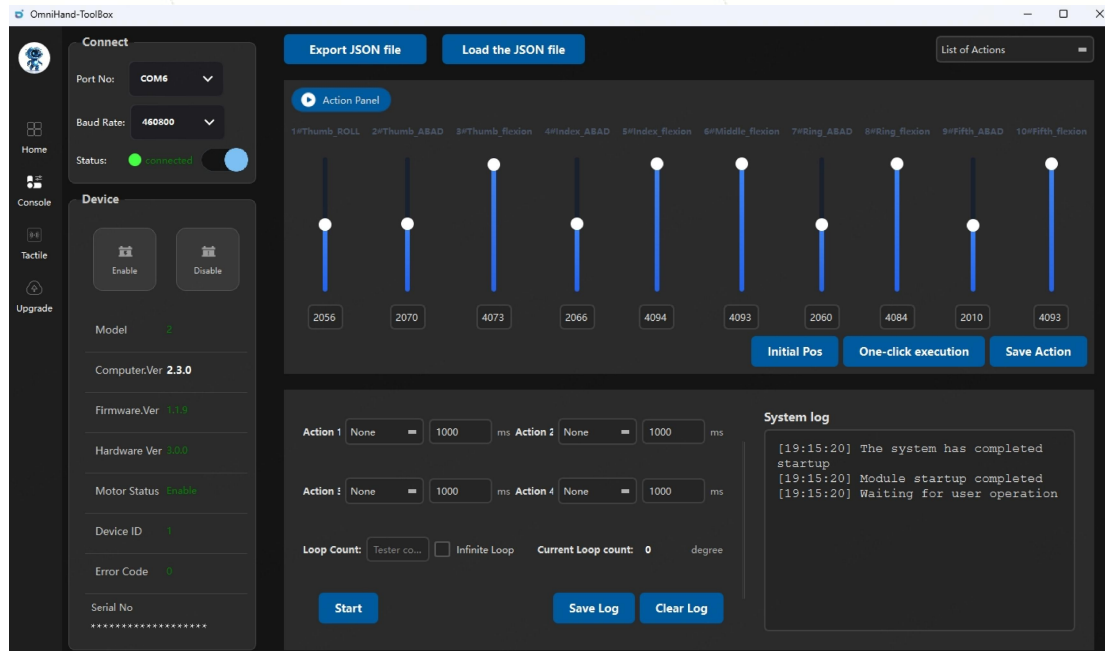
Possible errors and solutions:

- If the status displays “Connected” but the OmniHand cannot be operated, check whether other port options are available in the “Port Number” dropdown list. Select the correct port and reconnect.
- If a connection failure occurs, verify whether the port can be detected in the “Port Number” field at the upper-left corner of the software interface:
 - If a port number is shown but the connection status remains “Disconnected,” close the software and try again.
 - If no port number is detected, check the following:
 - Ensure that the USB device driver is installed and determine whether the driver requires an update.
 - Confirm that the device is properly powered.
 - Check whether a docking station is being used for the connection; docking

stations may cause issues, so removing it is recommended.

- Inspect the cable connection for poor contact. The USB cable used must support data transmission.

5.5 Console



In the Control Panel, users can operate and control the OmniHand.

In the Action Panel, items #1 to #10 correspond to the ten joints supported by OmniHand. Each joint's definition is displayed above its respective slider. The thumb contains three degrees of freedom; the index finger, ring finger, and fifth finger each have two degrees of freedom (lateral movement and flexion); the middle finger has only one degree of freedom (lateral movement not supported).

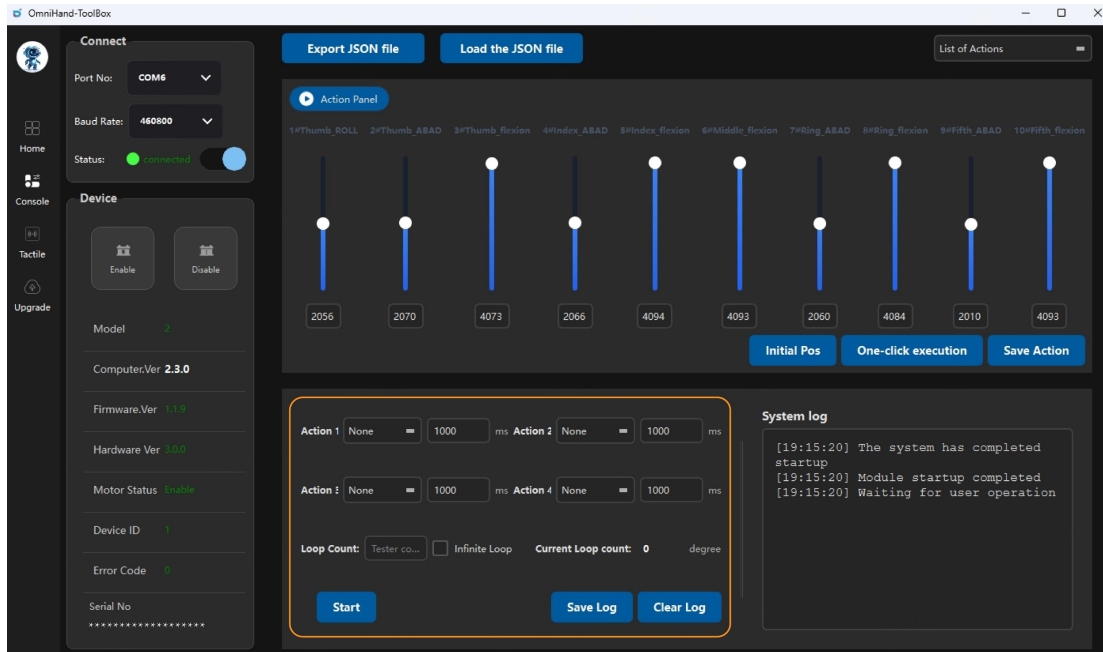
To adjust the hand posture, users may control each joint by either dragging the slider or entering a specific value in the corresponding input field. The valid input range is 0 – 4096. When entering values manually, press Enter to apply the command. The precise joint value will be displayed below the slider.

To adjust all joints simultaneously, enter the target values into each joint's input field and click "One-click execution", all joints will then move to their specified target positions.

"Initial Pos" allows all joints to move back to their preset initial position at once.

"Save Action" stores the current values of all degrees of freedom as a customized action. After clicking "Save" enter a name for the action. Once saved successfully, the action will appear in the action list for future use.

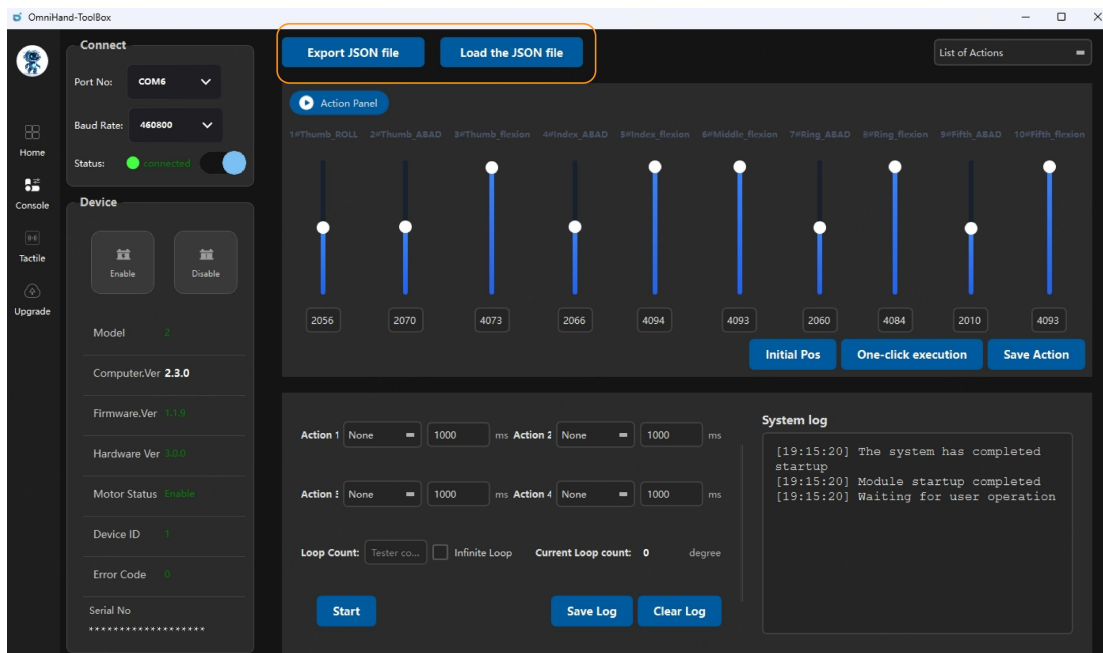
5.5.1 Custom Action Playback/Loop Panel



In the Action Playback and Loop Panel, users can select actions from the existing action list to form an action sequence. Each sequence can contain up to four actions. After selecting the actions, the interval time between consecutive actions can be entered in the corresponding input fields.

In the “Loop Count” field, enter the number of times the action sequence should be repeated. Click “Start” to begin execution. The system will perform the selected actions in order and record the execution details in the system log. Click “Stop” to terminate the process.

5.5.2 Action File Export and Import



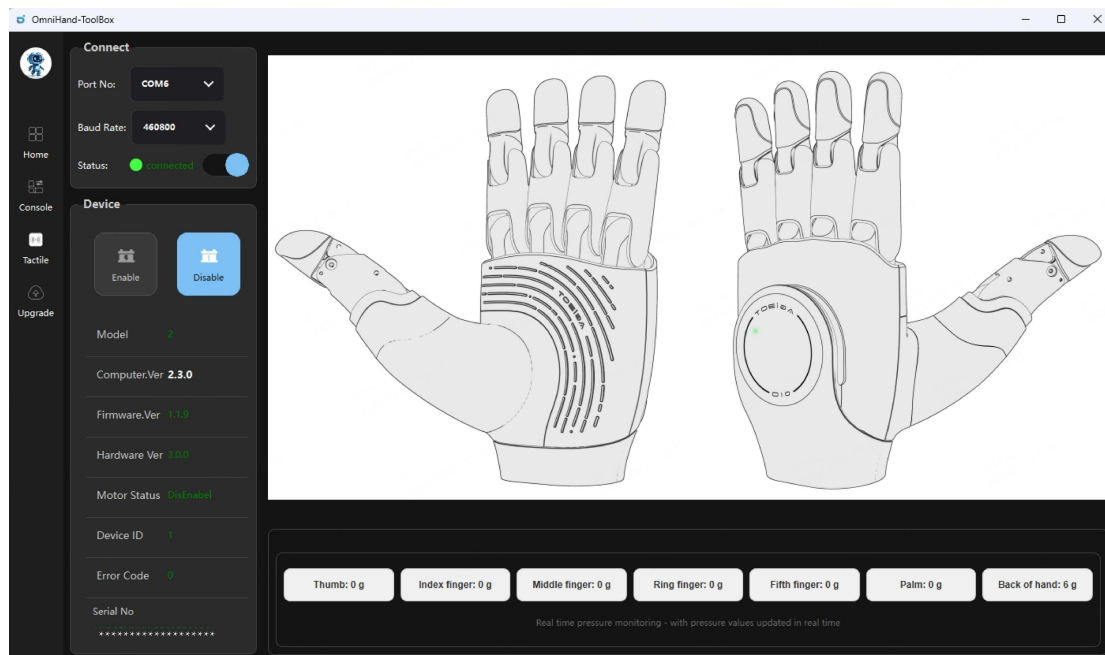
Custom actions in the Action List can be exported as action files, allowing users to

reuse them the next time the host software is opened. By clicking "Export JSON File," all actions in the Action List can be exported at once.

When using the software again, click "Load JSON File" and select the desired local file. All actions contained in the file will be imported into the Action List.

For manual action formatting, add a JSON object separated by commas, with object content enclosed in "{}" curly braces. Inside the curly braces, the "name" field should be filled with the action name; the "pos_axis_x" field represents the target joint position (currently only 1-10 is required) as desired by the user.

5.6 Tactile Panel

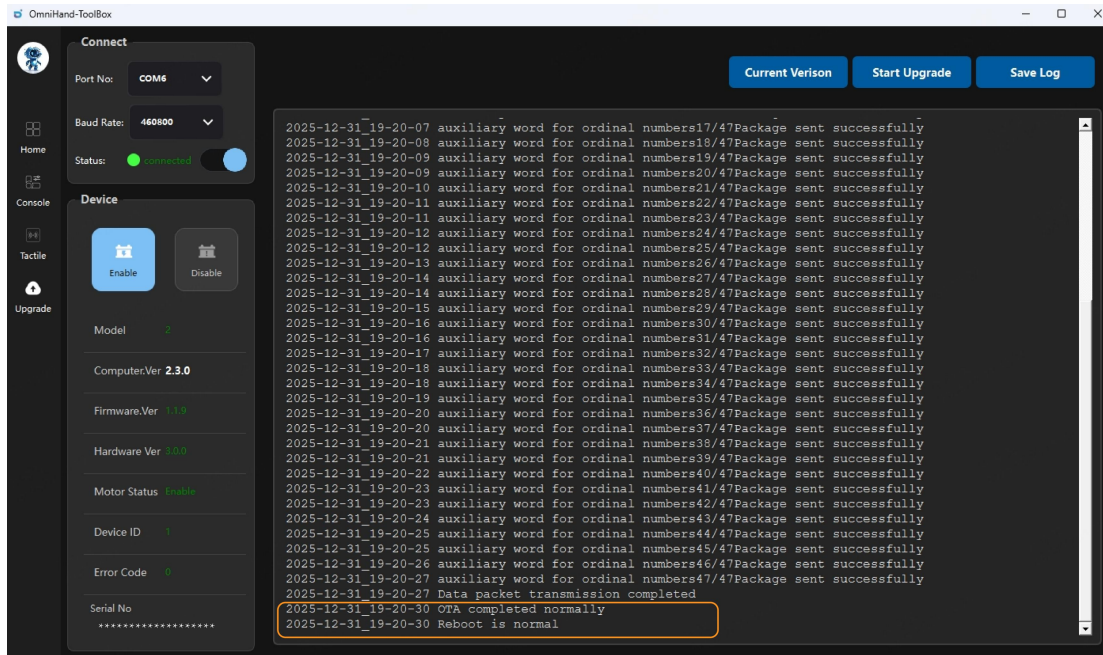


Click the "Tactile" button to view the pressure distribution for the five fingertips, palm and the back of hand;

For each fingertip, the pressure measurement point is a composite of three individual points, the palm contains nine points, and the back of hand contains five points.

The total pressure for each region is displayed at the bottom.

5.7 Upgrade Panel



In the Upgrade Panel, click the “current version” button to view the current firmware version and other related information of the device.

To perform a firmware upgrade, click “Start Upgrade,” then select the prepared firmware file (*.bin). OmniHand will begin updating its firmware.

Before starting the upgrade, ensure that the device is properly connected. Once the upgrade begins, please wait patiently for the process to complete. Progress and status messages will be printed in the log. By checking the log, you can confirm whether the upgrade is successful. A successful upgrade will display messages such as “OTA completed normally” and “Reboot is normal.”

If “Upgrade Failed” appears, try performing the upgrade again by clicking “Start Upgrade” and repeating the operation. If the upgrade still fails, review the log messages. If the log indicates a connection failure, you may need to update the MCU firmware using an ST- Link programmer before retrying.

This manual is based on OmniHand 2025, Hardware Version 3.0.0, Firmware Version 1.1.9, and Host Software Version 2.3.0.

For any items not specified in this product manual, please refer to the official AGIBOT website or contact our customer support for further information.