Pro Edition Tianyi 2.0 User Manual

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Preface

- Software versions applicable to this user manual:**v2.0.5 and later versions**.
- Thank you for choosing our company's humanoid robot product Tianyi.
- Before you start using this product, please make sure to read this user manual carefully and follow the instructions strictly. By using this product, you are deemed to have read and agreed to comply with all the terms and regulations in this manual.
- We are committed to continuously optimizing product performance and user experience. Therefore, the product may undergo continuous iteration, and the content of the manual will also be updated irregularly without prior notice. In case of any inconsistencies with the actual product functions or appearance, please refer to the physical product.
- Thank you for your understanding and support. Wish you a pleasant experience!🙂

1. Legal Notice

- Users shall be responsible for their own usage behavior and commit to using this product solely for legal and legitimate purposes;
- When using this product, users shall comply with the laws and regulations of the jurisdiction where they are located, and it is strictly prohibited to use it to harm or intimidate others or animals, or to use it as a weapon or its supporting tools;
- If property damage, personal injury, or safety hazards occur due to violations of the usage specifications in this manual, the Company shall not assume any liability arising therefrom;
- To the fullest extent permitted by law, the Company makes no express or implied warranties with respect to this product, including but not limited to warranties of fitness for a particular purpose or non-infringement.

- To the fullest extent permitted by law, the Company shall not be liable for any indirect, consequential, incidental, collateral, special, or punitive damages (even if it has been advised of the relevant risks), and its total liability shall not exceed the amount you paid for the product and the amount paid to the Company;
- While the content of this manual has been compiled as comprehensively and accurately as possible, due to product design changes and feature iterations, there may still be discrepancies with your actual use of the product;
- The Company has the final right of interpretation of the above terms and complies with relevant laws and regulations. The Company reserves the right to update, modify, or terminate these terms without prior notice.

2. Precautions

2.1 Terms of Use

- The robot is only for use by individuals aged 18 and above;
- It is not recommended that users with limited sensory or cognitive abilities or lack of experience use this product independently without the assistance of others;
- If repair is needed, please contact official after-sales service. It is not recommended that users disassemble the device themselves for handling.

2.2 Operational Safety

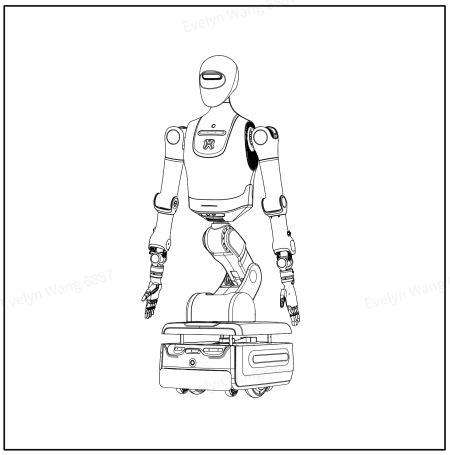
- Please use all components and accessories of the robot correctly. Unauthorized modification and disassembly are prohibited;
- Do not place fingers, toes, clothing, etc. near the robot's joints, chassis gaps, and moving parts to prevent pinching, crushing, or entanglement;
- Do not touch the motor surface during operation to prevent burns;
- Do not cover the sensor areas (such as the torso, head, etc.) to avoid affecting navigation and obstacle avoidance functions;
- Avoid using the robot in harsh environments such as damp, high temperature, and strong magnetic fields. The normal operating temperature is 0 to 30 °C, and the humidity is below 80% RH.

- Do not move or transport the robot when it is powered on or the battery has not entered the sleep state;
- During the operation of the robot, personnel should maintain a safe distance and avoid entering the movement range of the robot arm to prevent collision injuries;
- Standing, sitting, or lying on the robot is strictly prohibited to avoid accidental tipping, collision, or pinching;
- In narrow, complex, or crowded environments, operators must pay special attention to the robot's travel path to avoid accidentally injuring pedestrians or damaging surrounding items;
- In case of abnormal situations such as the robot running out of control (motion out of control), navigation failure, etc., the emergency stop command should be immediately executed using the remote control or control terminal to stop the robot, and the problem should be investigated in a safe state;
- If operations such as remote stop fail to take effect in a timely manner, the emergency stop button on the back of the robot should be quickly pressed to cut off the power supply to ensure safety;
- When the robot is performing a task accompanied by arm movements, if it is suddenly shut down or the emergency stop button is pressed, the arm will drop, potentially colliding with the chassis and posing a risk of damaging the dexterous hand.

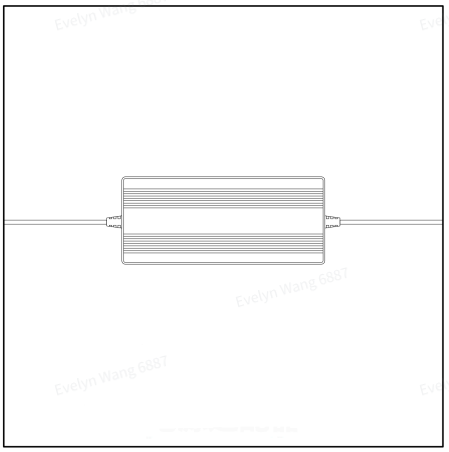
2.3 Charging Instructions

- Although the robot supports charging while powered on, to ensure the safety of human-machine operation, it is recommended to turn off the robot's power before charging to ensure it is in a powered-off state.
- Please unplug the charger in time after it is fully charged to avoid long-term connection;
- The charging environment temperature should be 0～45°C, and the humidity should be below 75% RH;
- Use the original dedicated charger provided by our company for charging, and the use of third-party power supply devices is prohibited;
- It is recommended to start charging after the robot has cooled to room temperature;
- During charging, if any abnormalities such as smoking, strange odor, overheating, deformation, etc. occur, immediately unplug the charger and stop using it;
- If electrolyte comes into contact with eyes or other parts, immediately rinse the eyes with clean water and seek medical attention promptly.

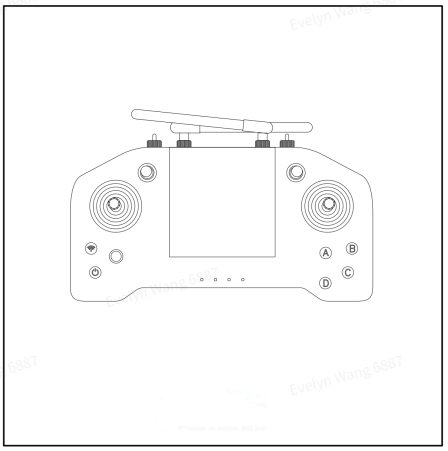
3. Packing List



- Robot Body*1

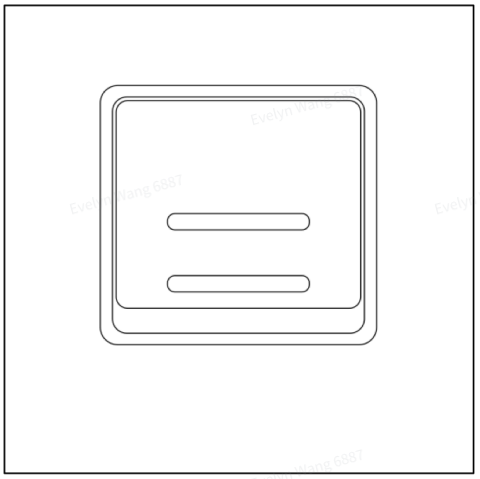


- Power Adapter*1



- Remote Control*1

- User Manual*1



- Charging Pile*1

4. Product Introduction

4.1 Product Information

- Product Name: Tianyi Universal Humanoid Robot
- Product Model: 2.0 Pro

4.2 Product Introduction

- Tianyi is an advanced all-electric wheeled mobile manipulation robot launched by Beijing Humanoid Robot Innovation Center, featuring a highly bionic torso configuration and anthropomorphic motion control capabilities. The entire robot has a total of 35 degrees of freedom, with both arms designed as seven-degree-of-freedom robotic arms, wrists equipped with high-precision six-dimensional force sensors, dexterous five-fingered hands, and a leg lifting function.

- Tianyi can perform a variety of complex tasks, including positioning and navigation, reception and guidance, business handling, venue introduction, VIP guidance, and dance performances. Equipped with powerful joint drives, the overall machine has a battery life of over 3.5 hours.
- In addition, Tianyi Integrated Voice Module integrates with the large voice interaction model, supporting natural language control; it is compatible with the "Huisi Kaiwu" large model, has multiple operation demonstration demos for specific scenarios, supports remote operation and data acquisition, and the overall computing power can reach 275 TOPS.
- As a general-purpose humanoid robot mother platform, Tianyi opens up the control interfaces for all body joints and sensors, facilitating secondary development in the industry and being widely used in scientific research, education, and industrial scenarios.

4.3 Functional Features

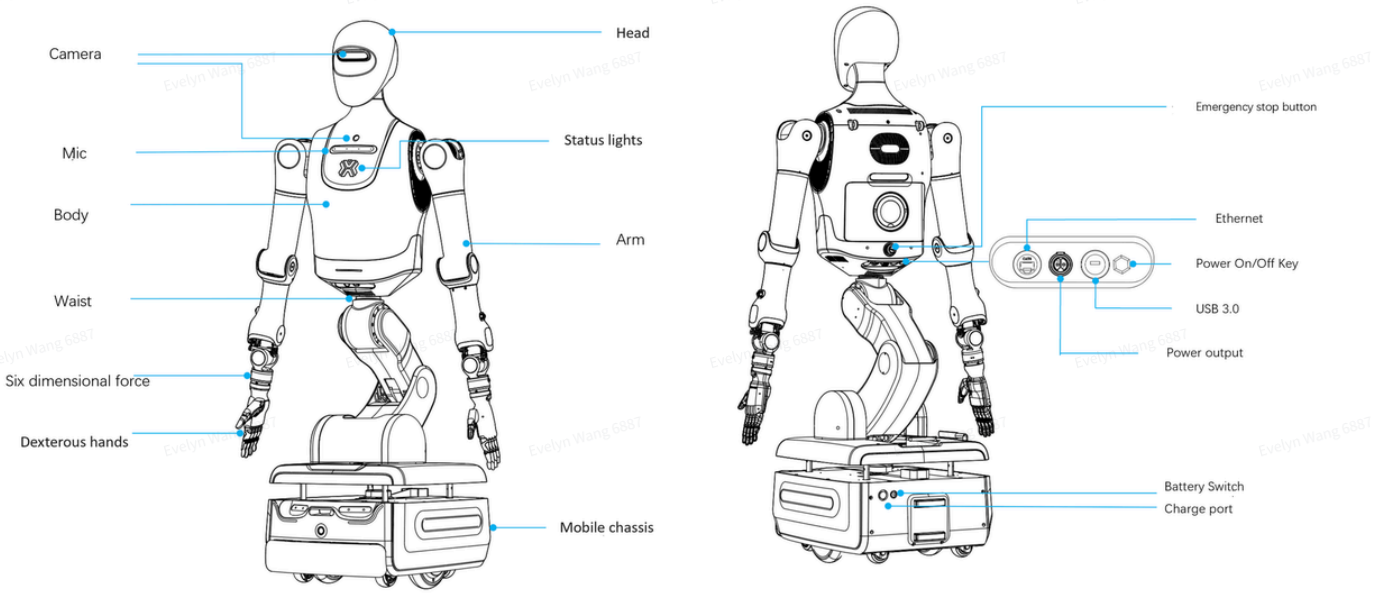
- **Voice Interaction Control**: Equipped with a voice module and a large language model, it supports natural voice commands and interactions;
- **Open Interface Design**: Provides control interfaces for whole-body joints and sensors, is compatible with the "Huisi Kaiwu" large model, and supports teleoperation, Data Acquisition, and secondary development.

4.4 Application Scenarios

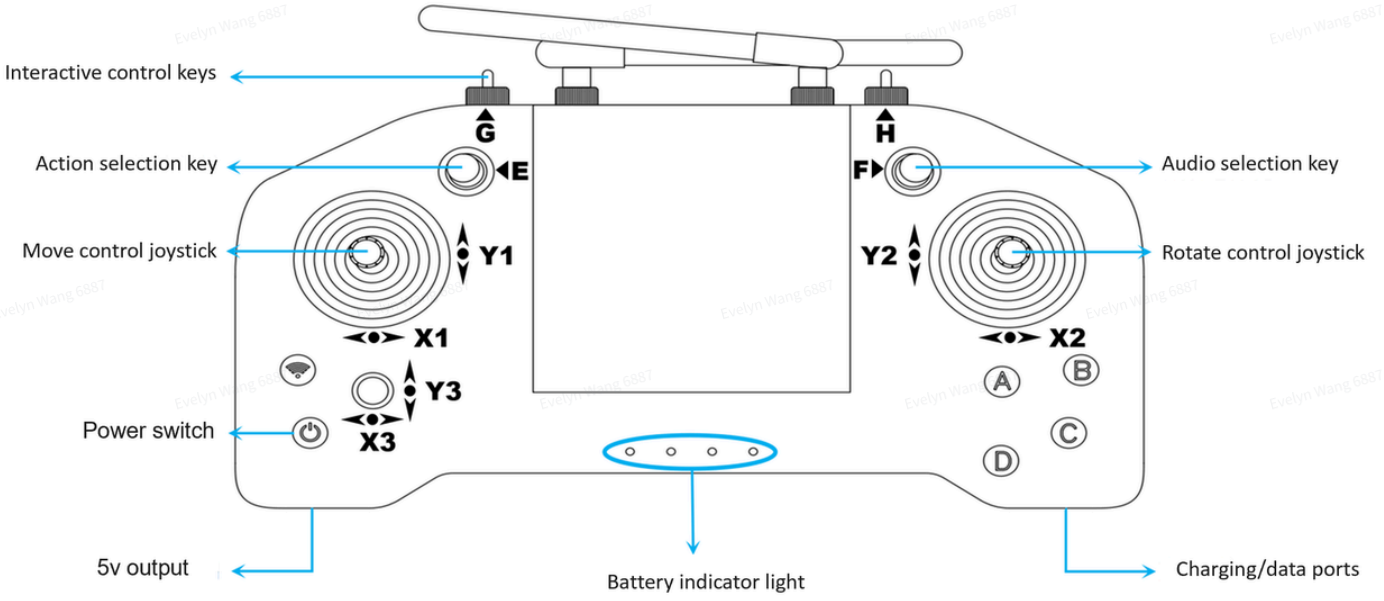
- University scientific research and education
- AI Embodied Intelligence Ontology
- Industrial Automation
- Security and Rescue
- Rehabilitation Medicine
- Performing Arts Exhibition
- Welcome and Reception
- Smart Home

4.5 Product Composition

4.5.1 Robot Composition



4.5.2 Remote Control Instructions



Schematic Diagram of Remote Control Buttons

Key Function Description:

4.5.3 Function Description of the Lever

lever	Functional Position	Gear Position Meaning
F	Button Function Switching	Top: Voice Mode Medium: Default Control (Default) Below: Reserved

H	Switching of motion modes	Left: Move Mode Medium: Default Control (Default) Below: Reserved

4.5.4 Quick Reference and Explanation of Button Functions

button	Function
A	Confirm (short press) Voice Switch (Long Press)
B	Select (switch options by number of clicks)
D	Stop playback/Return to zero

⚠️Note: **Long press** is defined as a single key press lasting **1s** or more, **continuous short presses** are defined as multiple short presses with an interval of less than **600ms** .

4.5.5 Motion Control Mode

Switch Mode: H Lever Left Dial

[Movement] Left control stick —— Move forward, backward, left, and right, supporting vector movement.

[Rotate] Right control stick —— Push left for left turn, push right for right turn.

4.5.6 Voice Announcement Mode

Switch Mode: F Lever Up

[Select Audio] Press the B button N times in quick succession to switch to the Nth audio

[Play Audio] Press the A key to confirm playing the audio

[Stop Playback] D Key: Stop Playback

[Voice Interaction] Long press the A key: Turn on/off the voice interaction function

4.5.7 Zero Position

【Head and Hand Posture Alignment】Short press D

4.5.8 Upper body movement

G, E, F, and H are all centered

【Wave】B+A

[Shaking hands] BB+A

[Group Photo] BBB+A

[Dance] BBBB+A

Be careful not to perform the above actions in the stowed position, otherwise there is a risk of hitting the chassis

4.5.9 Remote Control Head

F Allocation

[Head Left/Right] X1

[Head Pitch] Y1

4.5.10 Remote Control Waist

[Waist Left-Right Rotation] F Down + X2

4.5.11 Remote control leg lift

[Leg Lift] F Down + Y2

4.5.12 One-click packing

F Dial + D

5. Basic Parameter Information

5.1 Hardware basic parameters

Parameter Type	Parameter Name	Description
Specifications	Product Height	1280~1630mm
	Arm span	600mm
	Net weight of the product	88kg
	Product Color	White + Black

	Product Materials	Aluminum alloy + engineering plastic
	Degree of Freedom	35 integrated joints (3 for the head, 7×2 for the arms, 6×2 for the hands, 2 for the waist, 2 for the legs, and 2 for the chassis)
Battery Parameters	battery	Battery type: ternary lithium; Capacity: 15Ah Voltage: 48V
	Charging Time	Approximately 2 hours
	Comprehensive endurance time	Approximately 4 hours
Sensor Parameters	High-precision six-dimensional force	has
	Camera	Head: RGBD*1; Chassis: RGBD*2, RGB*1, collision detection, magnetic induction
	Voice Module	MIC Array: Linear MIC * 4; Speaker*1; Sound card * 1; 720P RGB Monocular Camera * 1
Control calculation parameters	Motion Control Computing Unit	Model: Intel x86 i7-1355U; CPU with 10 cores and 12 threads; The main frequency reaches up to 5GHz; Memory: 16GB; SSD：256GB
	Develop computing unit	Model: Orin AGX *1 Computing Power: 275 TOPS Storage: 512G

	System platform/software	Operating System: Ubuntu 22.04.4 LTS; Middleware: ROS2
Actuator Parameters	Robotic Arm	7-DOF arms * 2, with a maximum payload of 4.5 kg at the end of each single arm
	Dexterous Hand	Single-hand load capacity: 3kg, repeatability accuracy at finger tip: 0.2mm
Communication Parameters	External communication capabilities	WIFI6，Ethernet，Bluetooth5.3；
	Internal Communication Network	Whole-body Can/EtherCat bus communication Upper limb joint communication frequency can reach up to 400Hz Hand control speed can reach up to 100Hz RGBD acquisition communication frequency can reach up to 30Hz Six-dimensional force acquisition communication frequency can reach up to 200Hz

5.2 Status Light Effect and Sound Effect Instructions

On Tianyi's front chest and abdomen positions, there are respectively**the overall machine status light**and**the battery status light**, which together form the status indicator light system. Users can intuitively understand the robot's current operating status through the combined light effects and sound.

In the following table, special attention should be paid to the power indicator. If the battery level is less than 10%, the orange light will flash, accompanied by a sound effect. At this time, do not force the robot to use its motion capabilities, such as joint lifting and other operations. Otherwise, the machine will malfunction.

represents the meaning		**Overall Machine Status Light**	**Power Status Light**	**Sound Effect**
Power On/Off	Power On	White - Colorful - Blue-Green (Constant On)	Blue-Green (Following Battery Level)	The process is accompanied by a beep sound once

	Service Waiting State	Blue-Green (Slow Breathing)		The process is accompanied by a beep sound once
	Press A to start self-check	White		Key tone once
	Self-check process	Blue Green (rapid breathing)		The sound effect lasts until the self-check is successful
	Self-check**successful**	Blue-green (always on)		
	Self-check**Failed**	Red (Flashing)		
	Shutdown	Blue-Green (Off)	Blue-Green (Off)	
Power	Charging process during power-on state	Blue-green (always on)	White	1 beep sound
	Charging completed while the device is powered on		Green (steady on)	
	Battery level 30% - 100%		Blue-Green (Following Battery Level)	
	Battery level 10% - 30%		Orange (steady on)	
	Battery level < 10%		Orange (Flashing)	Every 5 seconds, it beeps twice with a 0.3-second interval between the two beeps (simultaneously, this light also flashes once every 5 seconds, synchronized with the buzzer)
Voice	Wake up	Keep the previous lighting effect unchanged	Blue-Green (Following Battery Level)	Special Sound Effects
		White		

	ASR in Pickup State			
	Model inference in progress	White		
	Voice Response TTS	Colorful (Constant On)		
	Exit voice mode	Blue-green (always on)		Special Sound Effects
Movement	Run	Colorful		
Fault	Static Fault	Red (Flashing)		
	Dynamic Fault			Fault tone once every 2 seconds
	Alarm	Yellow (Flashing)		

Meanwhile, the indicator light of the **power on/off button** on Tianyi's back abdomen will also change with the status **.**

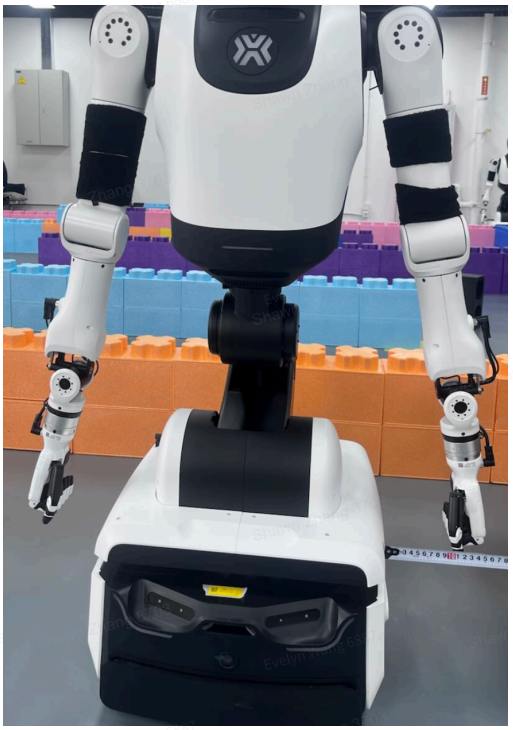
represents the meaning	**Current Operation**	**Power On/Off Key Indicator**
Power On	Move the battery switch to the "ON" position	Blue
	After setting the battery switch to the "ON" position, briefly press the power on/off button	Green
Shutdown	After long-pressing the power on/off button for 6 seconds	Blue
	After long-pressing the power on/off button for 6 seconds, switch the battery switch to the "OFF" position	Extinguish
Emergency Stop	After pressing the emergency stop button	Red

6. Guide to Operating Robots

6.1 Preparations before Use

6.1.1 Environmental Inspection

1. The ground should be flat and non-slip. It is not recommended to use on uneven, steep slope, muddy, loose material, slippery ground and other such sites.
2. Environmental temperature and humidity requirements: operating temperature 0 - 30°C, relative humidity requirement: below 25 - 70%RH;
3. The environment must be free of flammable and corrosive liquids or gases, and there should be no strong sources of electronic noise or magnetic fields nearby;
4. Before using the remote control to operate the robot and execute action commands, the elbow joint should be turned backward, one arm should be straightened, the palm should face inward, and the arm should be 10 cm away from the chassis.

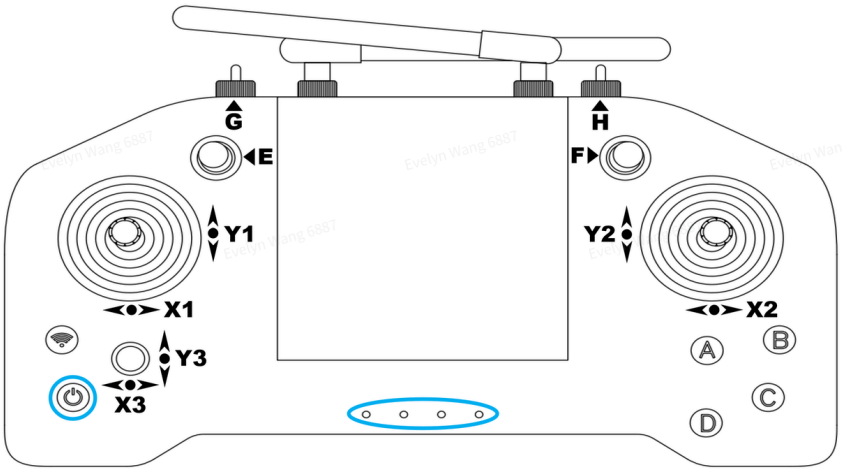


6.1.2 Robot Inspection

1. Check if each part is loose or damaged, and ensure flexible movement without lagging;
2. To confirm that the robot's battery is fully charged, please first ensure that the robot is powered on (see details in 6.3 Starting the Robot), and then you can check the battery level in the following ways:
    - Determine by the length of the power status light on the front abdomen (for details on the correspondence between the light effect and power, see 5.2 Status Light Effect Description);

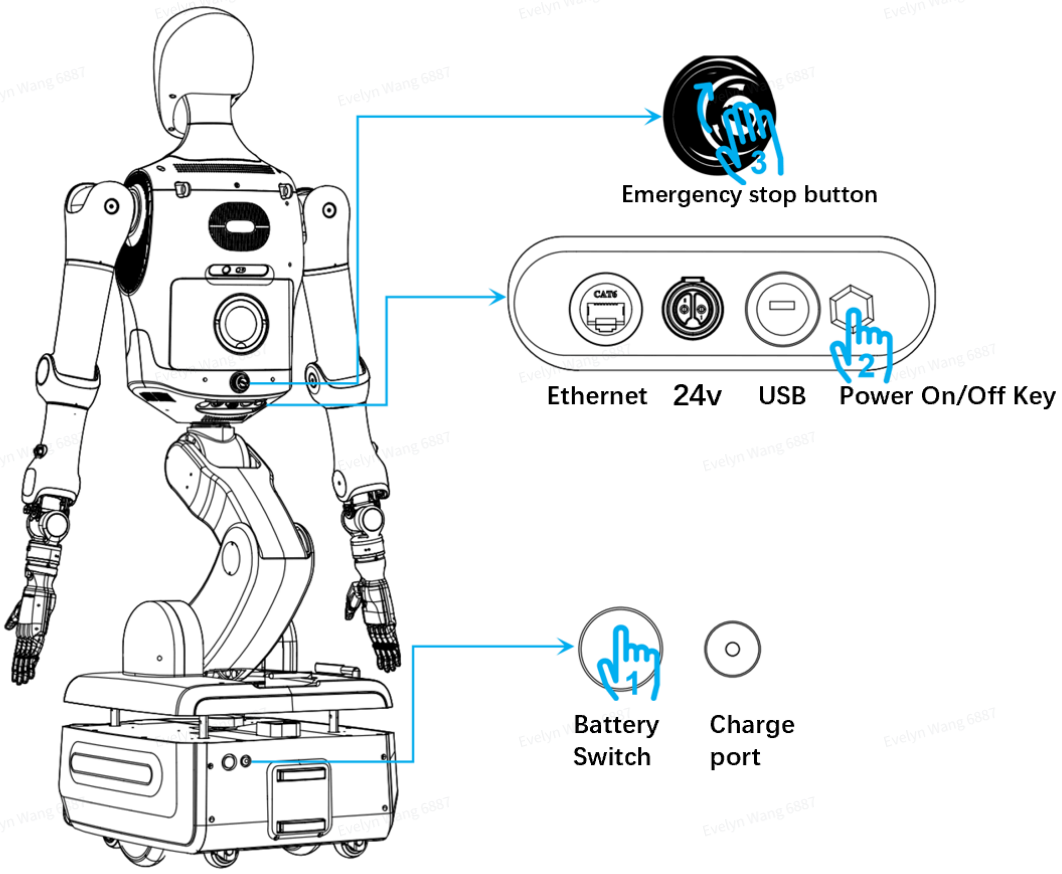
- Check the detailed battery level in the upper right corner of the7.1 Robot Statuspage on the diagnostic page.

3. Turn on the remote control and confirm whether the remote control battery has sufficient power. The specific operation steps are as follows:
   a. As shown in the figure, short press and then immediately long press the power button on the remote control to turn it on;
   b. At this time, the indicator lights in the center below the remote control light up, indicating the battery status of the remote control from left to right. When the 1st, 2nd, 3rd, and 4th lights light up, the corresponding battery levels are 25%, 50%, 75%, and 100% respectively.



6.2 Start the robot

After the robot is powered on, it will automatically complete system startup and enter the service waiting state. The specific operation steps are as follows:



1. **Press the battery switch**
   - Power On/Off Key Indicator: Turns Blue
2. **Short press the power on/off button**
   - Power On/Off Key Indicator: Turns Red
   - Overall machine status light: Initially off → white → colorful → steady blue-green, indicating it is starting up
   - Power status light: Synchronously displays the current power level (blue-green)
3. **Confirm that the emergency stop button is rotated clockwise until it pops out**
   - Power On/Off Key Indicator: Turns green
4. **Automatically enters the service waiting state, at which point the robot can be started via the remote control**
   - Overall machine status light: Blue-green (slow breathing)
5. **With the F lever in the middle position, press the A button on the remote control to start the self-check**
   - Overall machine status light: white flash once → blue-green (rapid breathing)
6. **Self-check result**
   - **Success** :

        - Overall Machine Status Light: Blue-Green (Steady On)
        - Enter the Ready state (operable)
    - **Failure**:
        - Overall machine status light: Red (flashing)
        - Automatically retry after 20 seconds

⚠️ Attention:

- Do not move the robot during self-check.
- Accessories such as the six-axis force sensor of the dexterous hand do not support hot swapping. After unpacking, you need to first install and connect the dexterous hand, and then perform a self-check upon powering on.
- After self-check, the arm joints are not in the enabled state and can be moved. If you wish the arm joints to be in the self-locking state, please perform the zeroing operation on the remote control.

6.3 Main control board login and connection

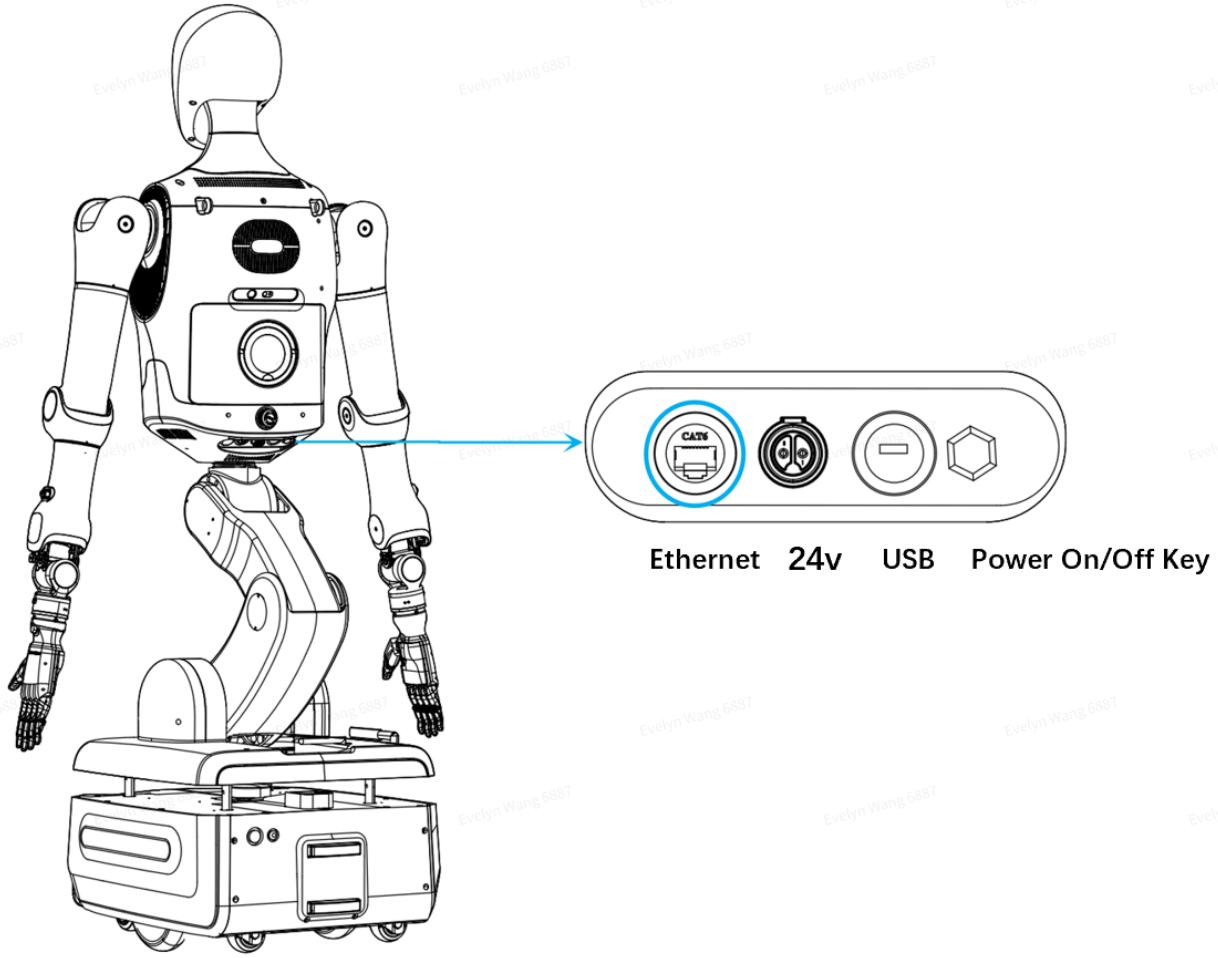
Currently, Tianyi's main control boards consist of two parts: Motion Control x86 and Orin. The usernames and static addresses of each main control board are shown in the following table. After configuring Wi-Fi, you can remotely connect to the robot via the ssh command. Users can configure Wi-Fi for each main control board separately according to their usage requirements.

Main Control Module	Username	Static Address	Wi-Fi
Motion Control x86	ubuntu	192.168.41.1	Independent Wi-Fi
orin	nvidia	192.168.41.2	Independent Wi-Fi

The following specific steps for configuring Wi-Fi and logging in to the connection are exemplified by the Yunkong x86:

- **The steps to configure Wi-Fi are as follows:**

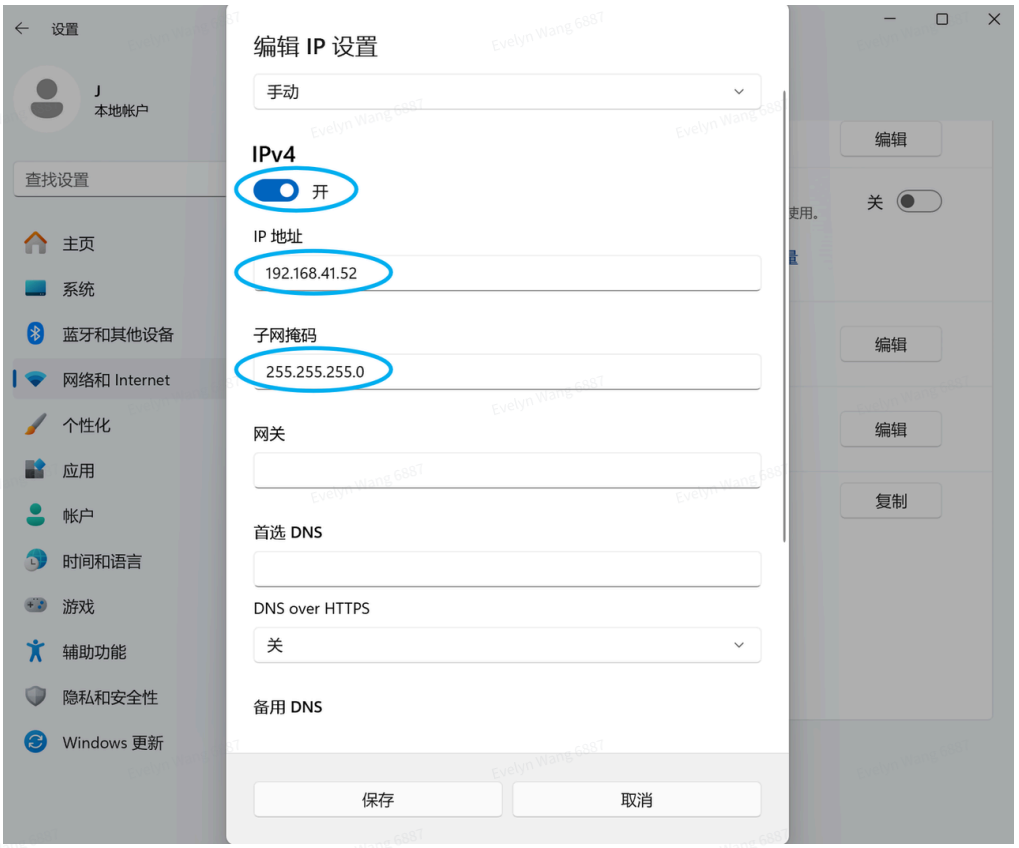
1. Connect the debugging Ethernet interface on the back of the robot to the user's computer using an Ethernet cable;



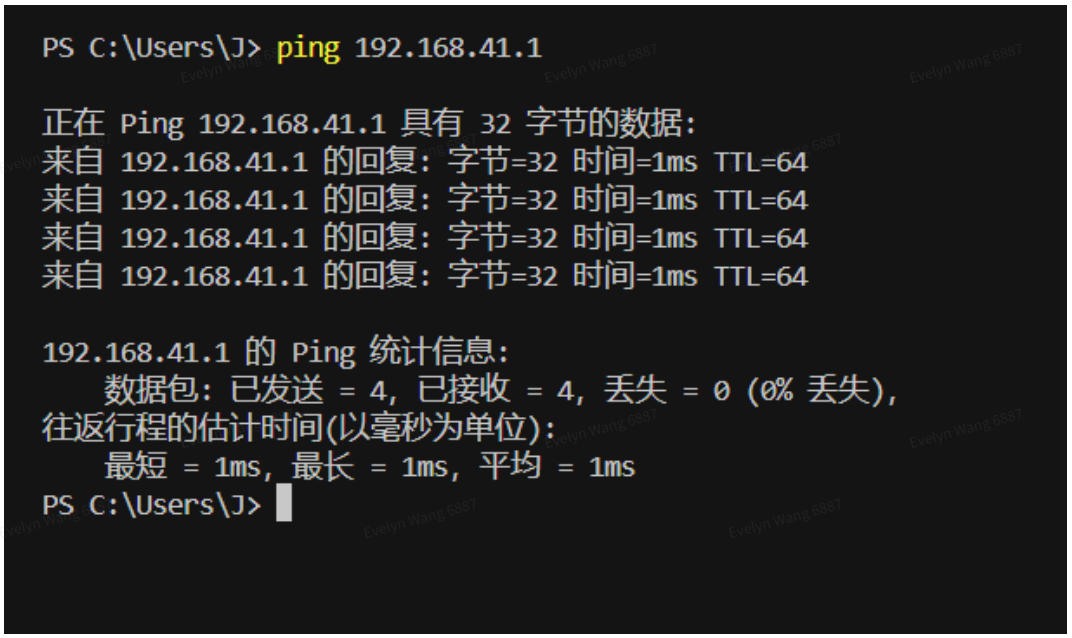
2. To configure the Ethernet port IP address on the user's computer to 192.168.41.xx/255.255.255.0, the specific steps are as follows, taking the Windows system as an example:

   a. Open Settings, click "Network & Internet", then click "Ethernet", and then click "Edit" on the right side of IP Assignment;

   b. Open the IPv4 button as shown in the figure below, and configure the IP Address to 192.168.41.xx and the Subnet Mask to 255.255.255.0;



3. Open any terminal and enter `ping 192.168.41.1`. If the following figure is displayed, it indicates that the network connection with the x86 industrial computer server is normal, and you can proceed with the login operation;



4. Continue to enter in the terminal `ssh ubuntu@192.168.41.1`, then enter `yes`, and the login password. If the following figure is displayed, it indicates successful login to the x86 industrial computer;

```
PS C:\Users\J> ssh ubuntu@192.168.41.1
The authenticity of host '192.168.41.1 (192.168.41.1)' can't be est
ED25519 key fingerprint is SHA256:x0HTXVckaFJUEd/gY/0JwljVbfkw1GGpP
SeHb+Y2eAI.
This host key is known by the following other names/addresses:
    C:\Users\J/.ssh/known_hosts:10: 192.168.160.183
    C:\Users\J/.ssh/known_hosts:13: 192.168.160.79
    C:\Users\J/.ssh/known_hosts:14: 192.168.160.201
    C:\Users\J/.ssh/known_hosts:15: 192.168.31.147
Are you sure you want to continue connecting (yes/no/[fingerprint])
? yes
Warning: Permanently added '192.168.41.1' (ED25519) to the list of
known hosts.
ubuntu@192.168.41.1's password:
Welcome to Ubuntu 22.04.4 LTS (GNU/Linux 6.5.0-35-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/pro

Expanded Security Maintenance for Applications is not enabled.

55 updates can be applied immediately.
40 of these updates are standard security updates.
To see these additional updates run: apt list --upgradable

23 additional security updates can be applied with ESM Apps.
Learn more about enabling ESM Apps service at https://ubuntu.com/es
m

Last login: Fri Jun 28 18:29:00 2024 from 192.168.160.91
ubuntu@ubuntu-22:~$
```

5. Continue to enter the following command in the terminal from the previous step to view the currently available Wi-Fi hotspots, and record the SSID of the Wi-Fi you want to connect to:

代码块

```
$ sudo nmcli device wifi list
```

6. Connect to a Wi-Fi network via the Wi-Fi SSID and its password:

代码块

```
$ sudo nmcli device wifi connect 'Wi-Fi SSID' password 'Wi-Fi密码'
```

7. Enter the following command to view the current configuration and status of the wireless network interface, to check and confirm whether you have successfully connected to the specified Wi-Fi network. Once the Wi-Fi configuration is complete, you can unplug the Ethernet cable.

```
代码块 ifconfig
```

- **On the premise that Wi-Fi configuration is completed, the steps for the robot to directly connect to the x86 industrial computer via Wi-Fi without reconfiguration each time are as follows:**

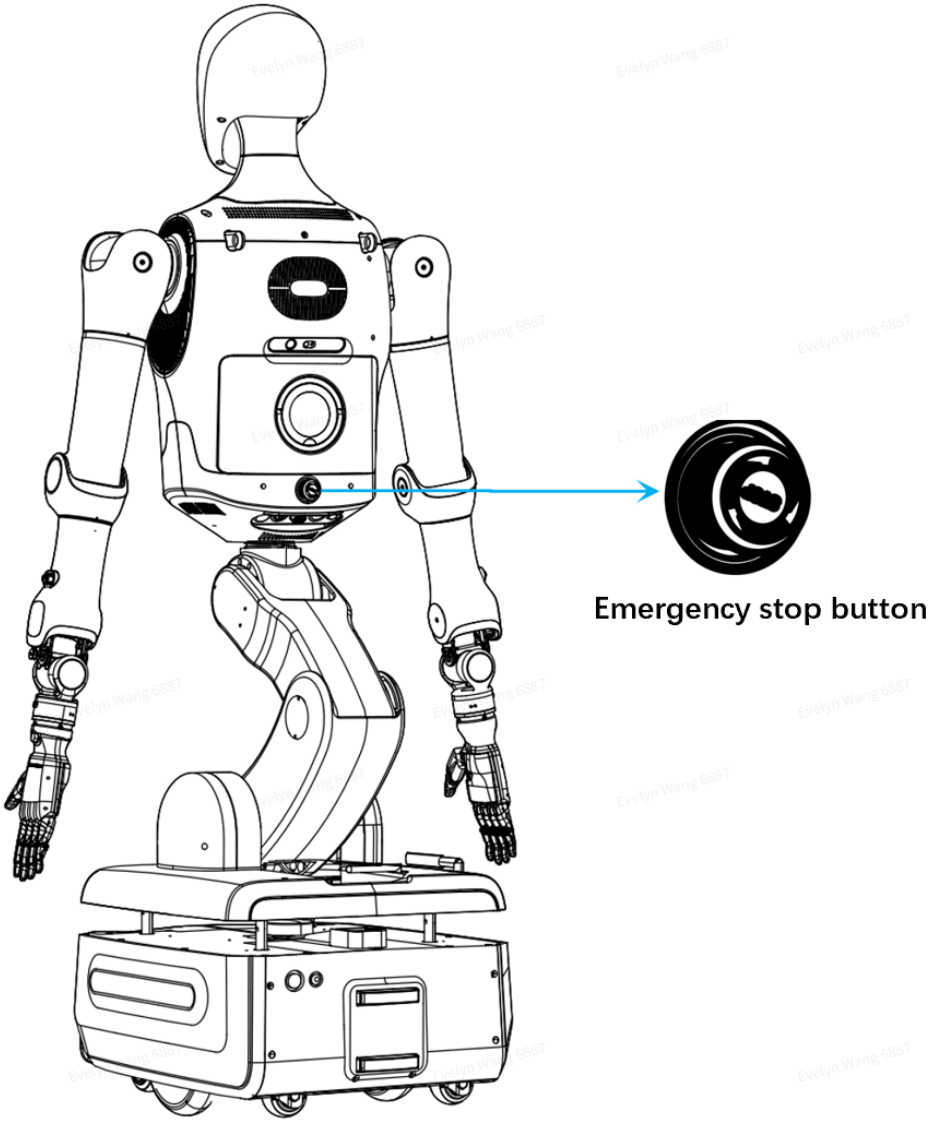
1. Open any terminal on the user's computer, enter the command `ifconfig` , and check the IP Address configured for the wireless network interface, i.e., the IP Address after the 'inet' field under the 'wlan0/wlp2s0' interface;
2. Enter the command `ssh ubuntu@x.x.x.x` to directly connect to the x86 industrial computer server, where `x.x.x.x` is the IP Address obtained in the previous step. Then enter `yes` , as well as the login password, and you will be logged in successfully from this point on.

6.4 Emergency Stop Method

1. **Emergency Stop Button**:

In case of the following critical situations, please immediately press the emergency stop button on the back of the robot, then long press the power on/off button for 6 seconds, finally press the battery switch to cut off all power, and contact our after-sales service. At this time, the robot will stop moving, and its arms will naturally hang down.

After the robot completes the above emergency stop and power-off operation, it needs to be restarted from the beginning according to 6.3 Starting the Robot .



- The robot is smoking or has a burning smell;
- Water or other foreign objects have entered the robot;
- The robot is out of control and cannot be stopped by the remote control or other means;
- Robot damage may lead to further danger;
- Emergency avoidance, such as loss of control during high-altitude operations or in a hazardous environment;
- Sudden changes in the external environment, such as earthquakes, fires, etc.

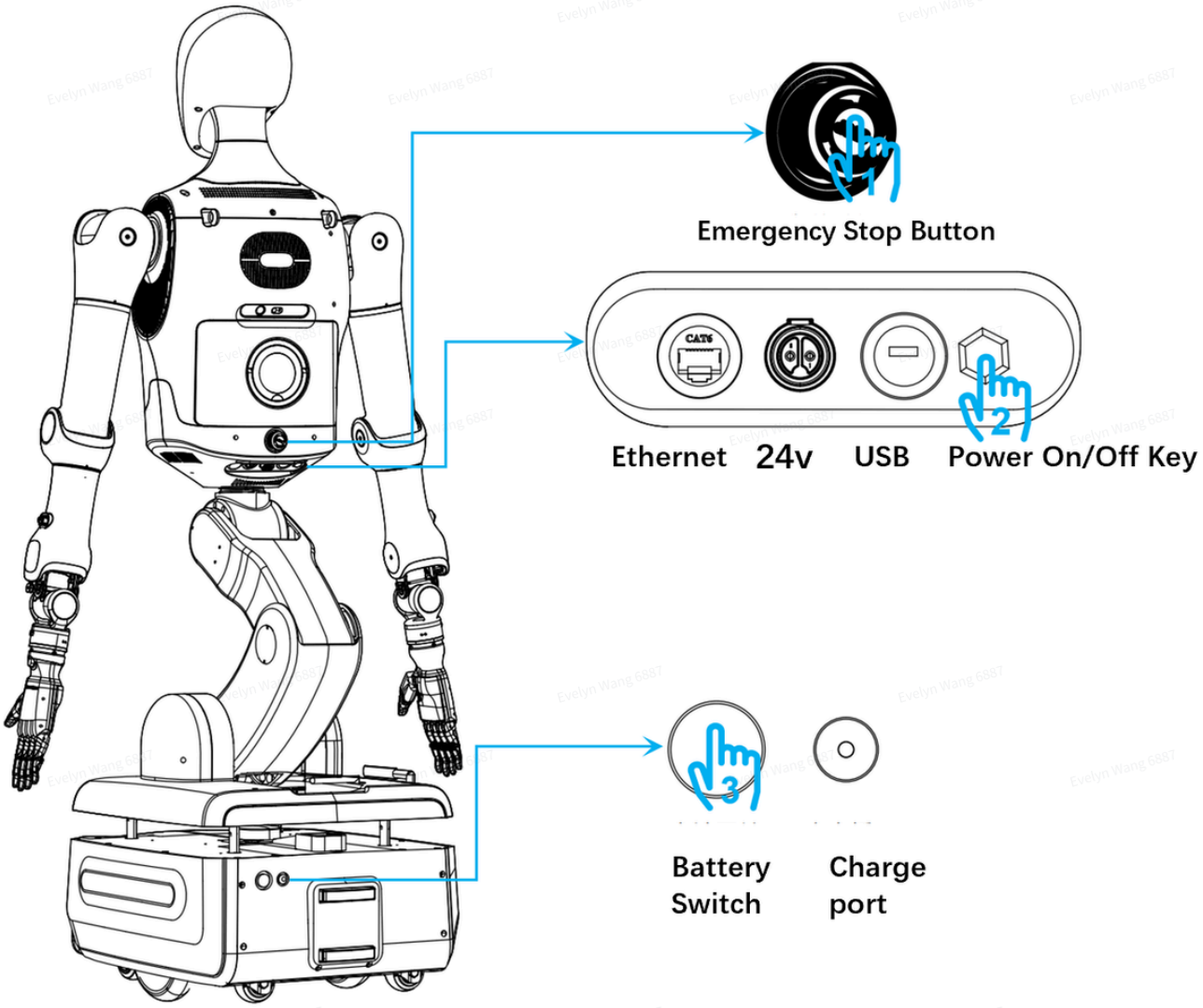
Through the above emergency operation guidelines, you can quickly take action in various emergency situations to ensure the safety of the robot and the surrounding environment.

6.5 Turn off the robot

When shutting down the robot, please follow these steps:

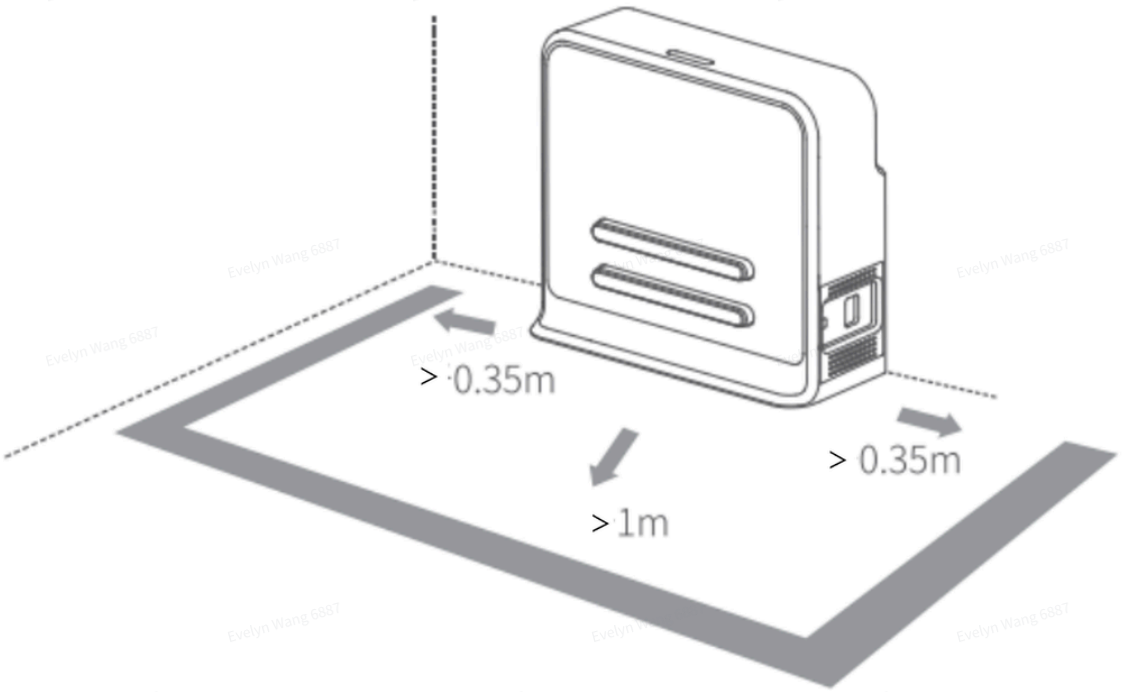
1. Confirm that the robot has stopped and returned to the standing state;

2. Press the emergency stop button;
    - Power On/Off Key Indicator: Turns Red
3. Press and hold the power on/off button for 6 seconds;
    - Power On/Off Key Indicator: Turns Blue
4. Press the battery switch, at which point all indicator lights will go out;



5. Short press and then immediately long press the power button on the remote control to turn it off.

6.6 Charging Pile Deployment



1. The distance between the left and right sides and the obstacle must be greater than **35** cm;
2. The charging pile needs to be **placed against a wall or other fixed objects that do not transmit infrared light** (the width of the object needs to be greater than that of the charging pile, with at least 35 cm of extra width space on each side), and should not be placed in areas such as mirrored walls or walls with hollow backs;
3. The charging pile should not be placed on uneven surfaces such as carpets or slopes; otherwise, height differences may occur, the pile may slide when powered on, and the charging function cannot be guaranteed.
4. The position of the charging pile in the scene needs to be fixed. If there is a need for temporary movement, marks should be made on the ground to prevent abnormal return to the pile caused by incorrect positioning after movement.
5. The robot can be manually pushed onto the charging dock for charging. The automatic recharging function can only be implemented after the map is built.
6. Note that you should not press the emergency stop button on the charging pile, otherwise the remote control will be unable to control the robot to move forward or backward. The new version will be released soon. If you accidentally press it, you can restore normal operation through the remote control's soft reset.

7. Operation Diagnostic Guide

Tianyi has deployed a diagnostic integrated management platform, which enables remote monitoring and device operation through WebSocket connections. The platform displays status

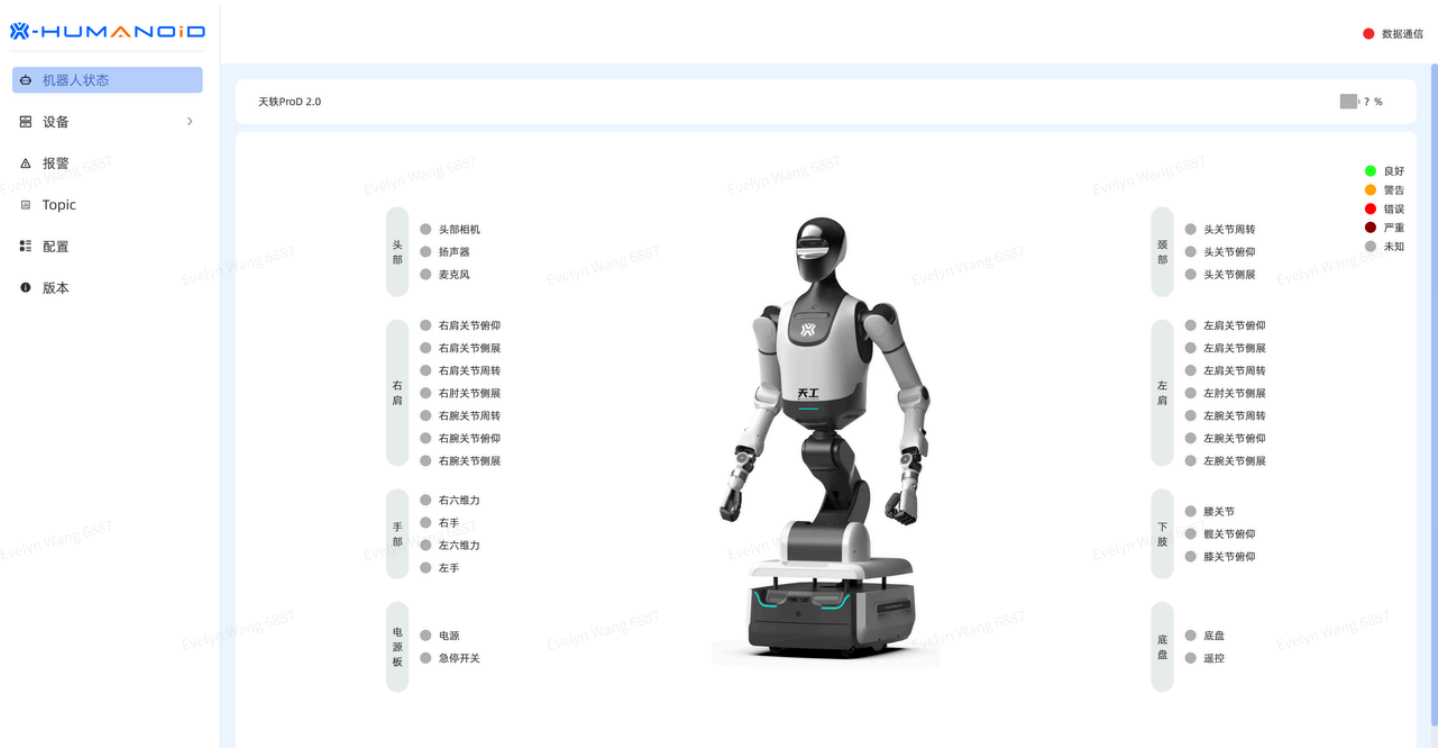
information of each component of the robot, covering detailed content such as joints, power supplies, batteries, etc., and also allows users to view version and system information. In addition, users can view the topic data of the robot system in real time and use the convenient update button to keep the information synchronized, ensuring that the device is always in optimal operating condition.

Startup Mode:

After the robot is successfully started, it will automatically start the diagnostic platform, and the platform access address is: `http://<x86 ip>:8080` .

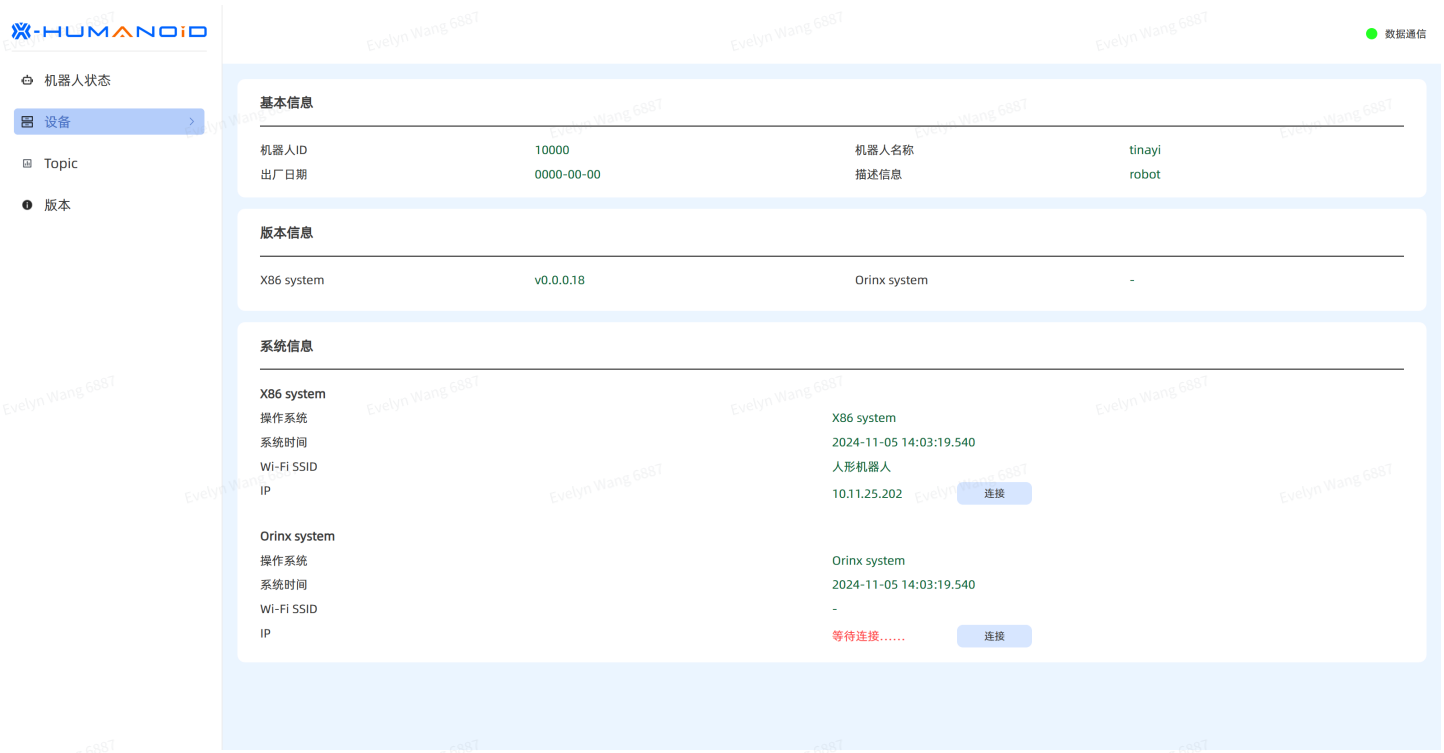
7.1 Robot Status

- The robot status page indicates the status of each joint and the current battery level through colors. For the specific meanings of the colors, please refer to the status legend in the upper right corner of the figure;
- The data communication status indicator in the upper right corner shows the WebSocket connection status: red 🔴 indicates a disconnected connection, and green 🟢 indicates a normal connection.



7.2 Device

- The device page displays the robot's basic information, the current version information of each component, and the detailed system information of each main control board;
- Users can connect to a Wi-Fi network by clicking the "Connect" button, entering the Wi-Fi SSID and its password, and configure the IP Address for each main control board.


X-HUMANOID
数据通信
机器人状态
设备
Topic
版本
基本信息
机器人ID
10000
机器人名称
tinayi
出厂日期
0000-00-00
描述信息
robot
版本信息
X86 system
v0.0.0.18
Orinx system
-
系统信息
X86 system
操作系统
X86 system
系统时间
2024-11-05 14:03:19.540
Wi-Fi SSID
人形机器人
IP
10.11.25.202
连接
Orinx system
操作系统
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系统时间
2024-11-05 14:03:19.540
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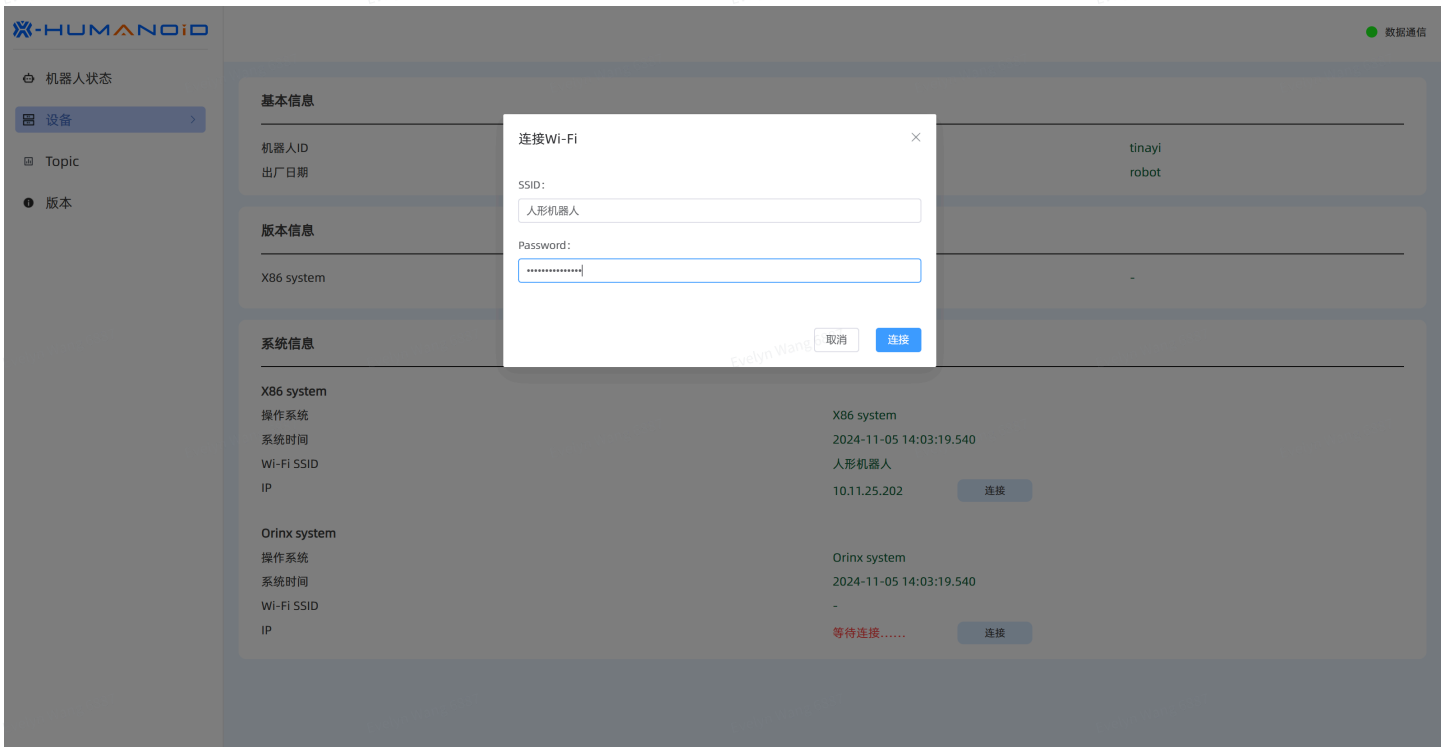
等待连接.....
连接


X-HUMANOID
数据通信
机器人状态
设备
Topic
版本
基本信息
机器人ID
tinayi
出厂日期
robot
版本信息
X86 system
-
系统信息
连接Wi-Fi
SSID:
人形机器人
Password:
取消
连接
X86 system
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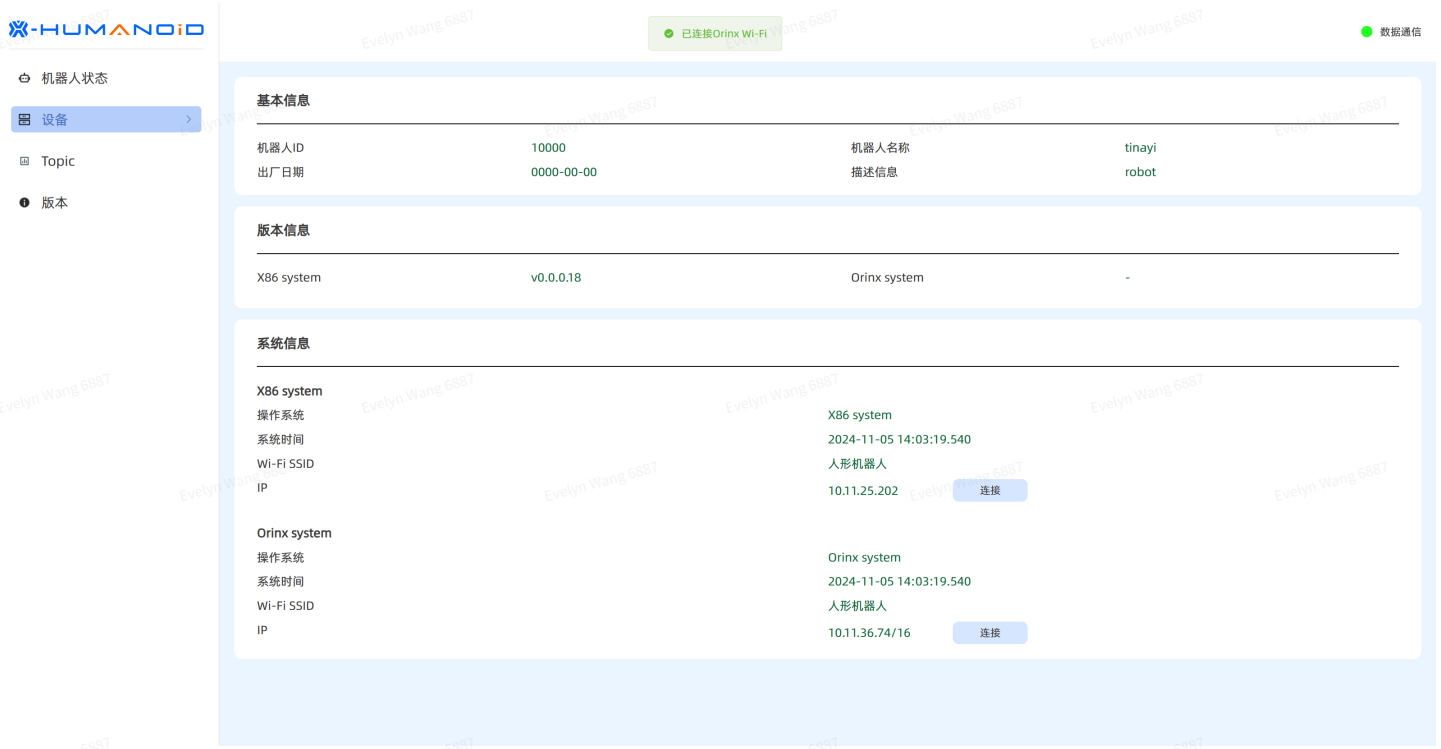
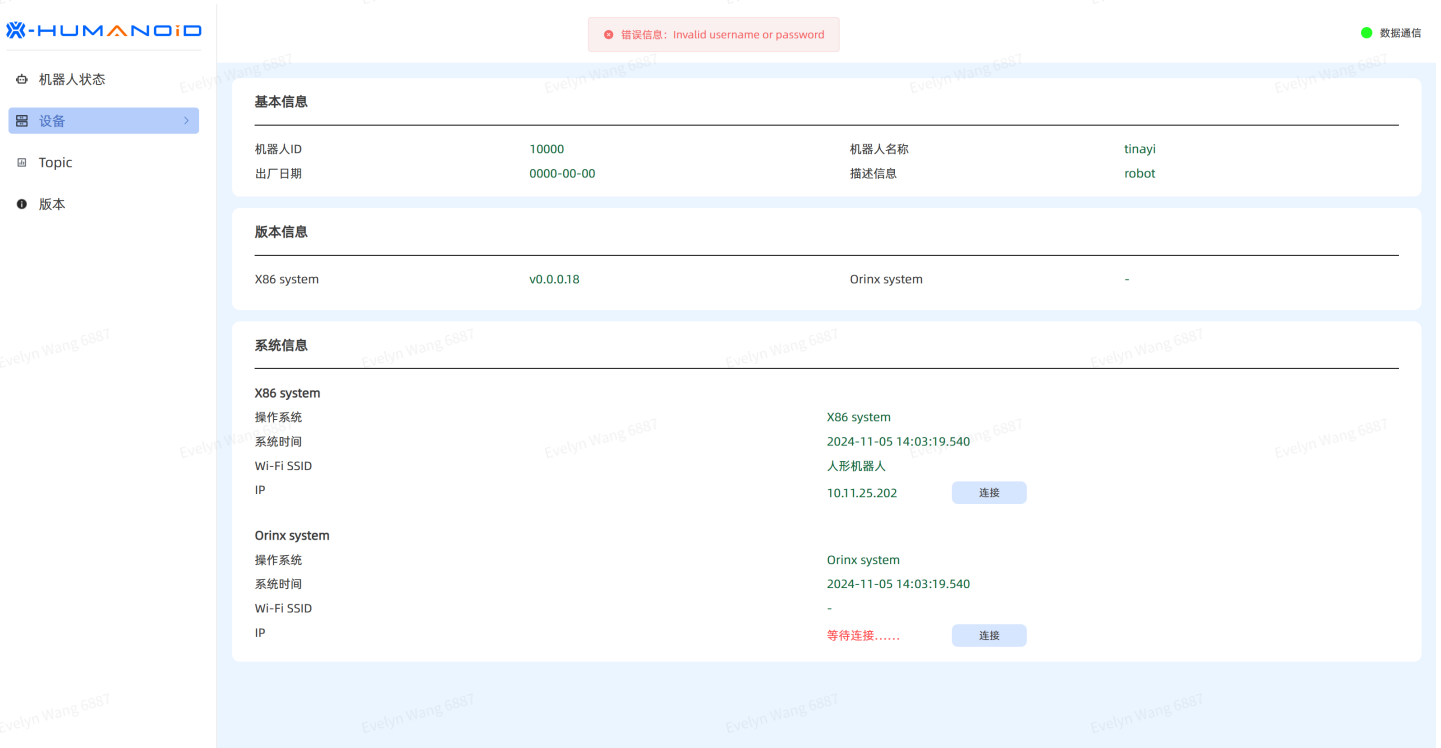
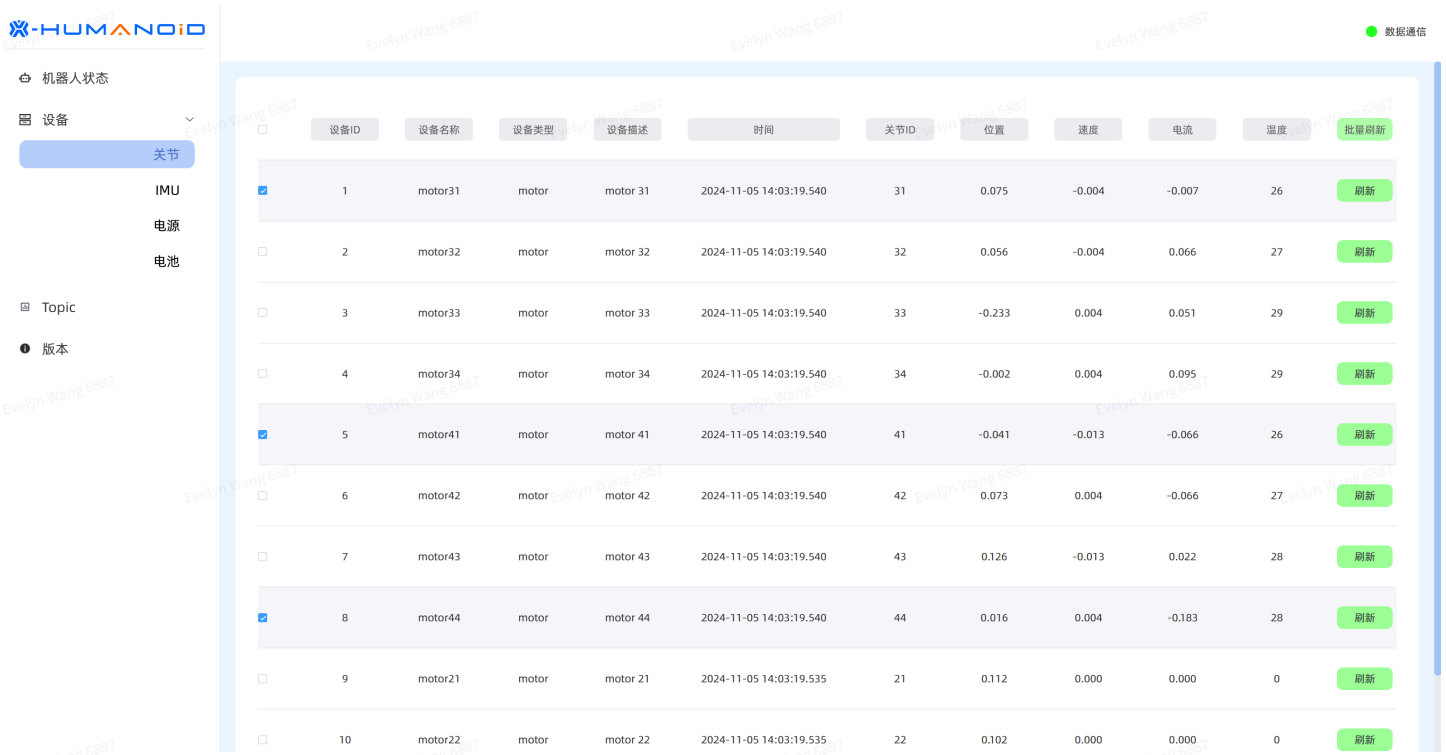
连接





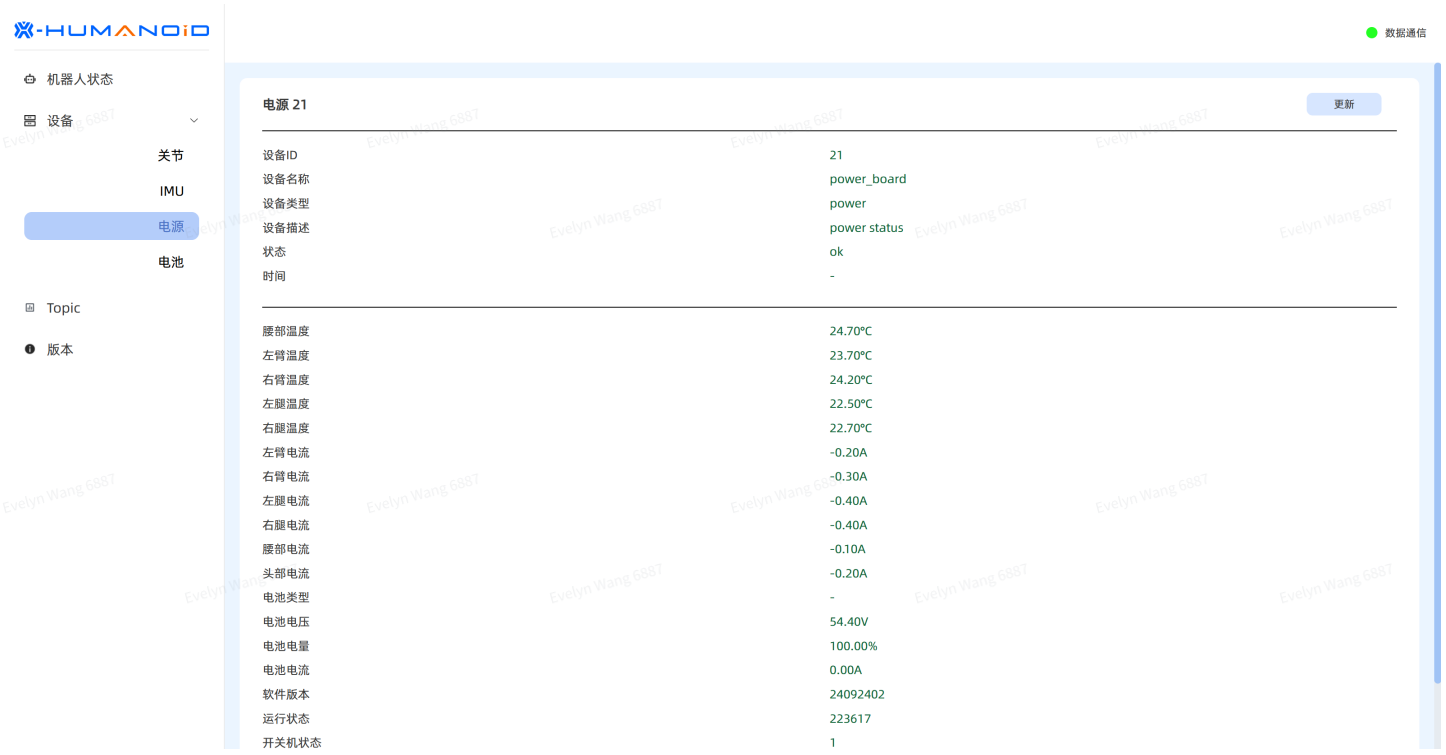
7.2.1 Joint

- On the joint page, you can view the detailed information list of each joint. Click the "Refresh" button to refresh the row data of a single joint; after checking multiple items, click the "Batch Refresh" button to refresh the row data of multiple joints simultaneously.



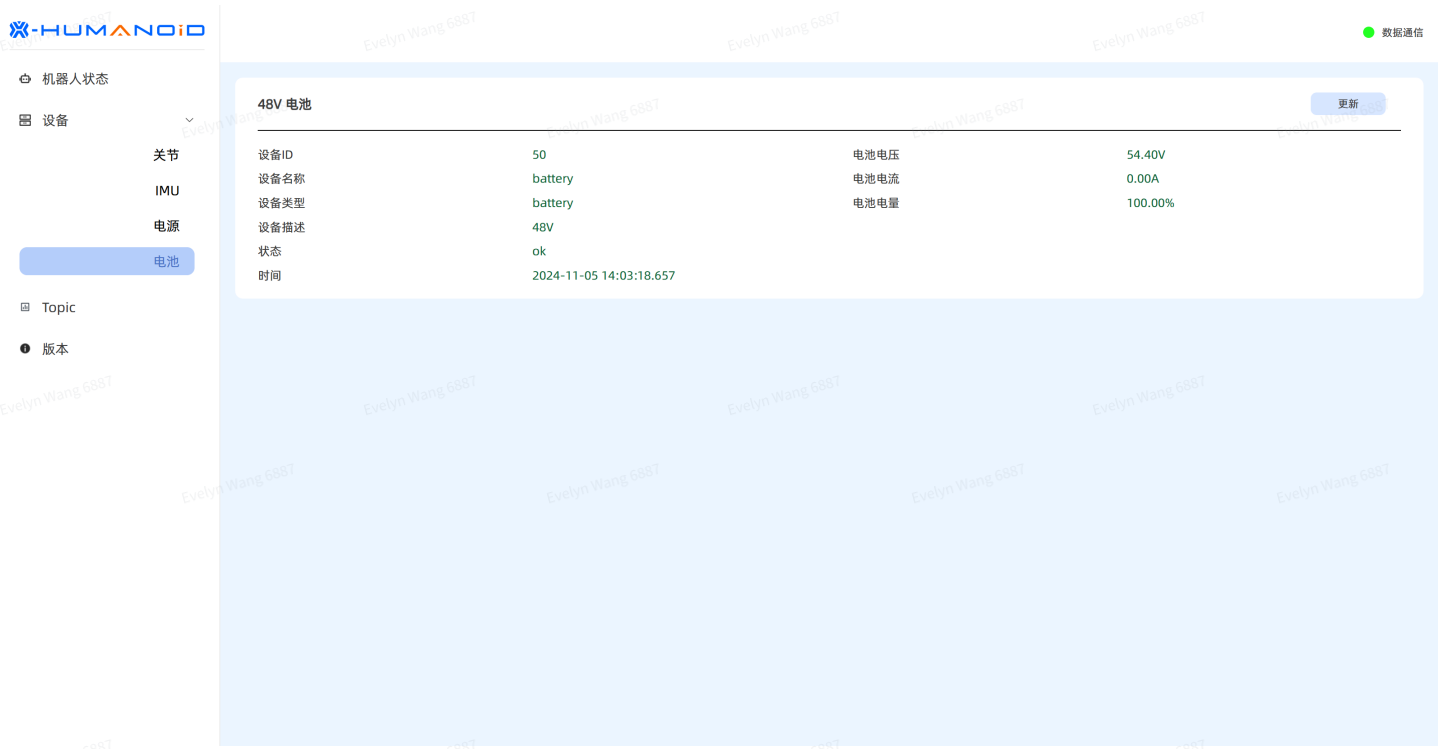
7.2.2 Power Supply

- On the power supply page, you can view the detailed information of each power supply. Clicking the corresponding "Update" button can refresh the data of that power supply.



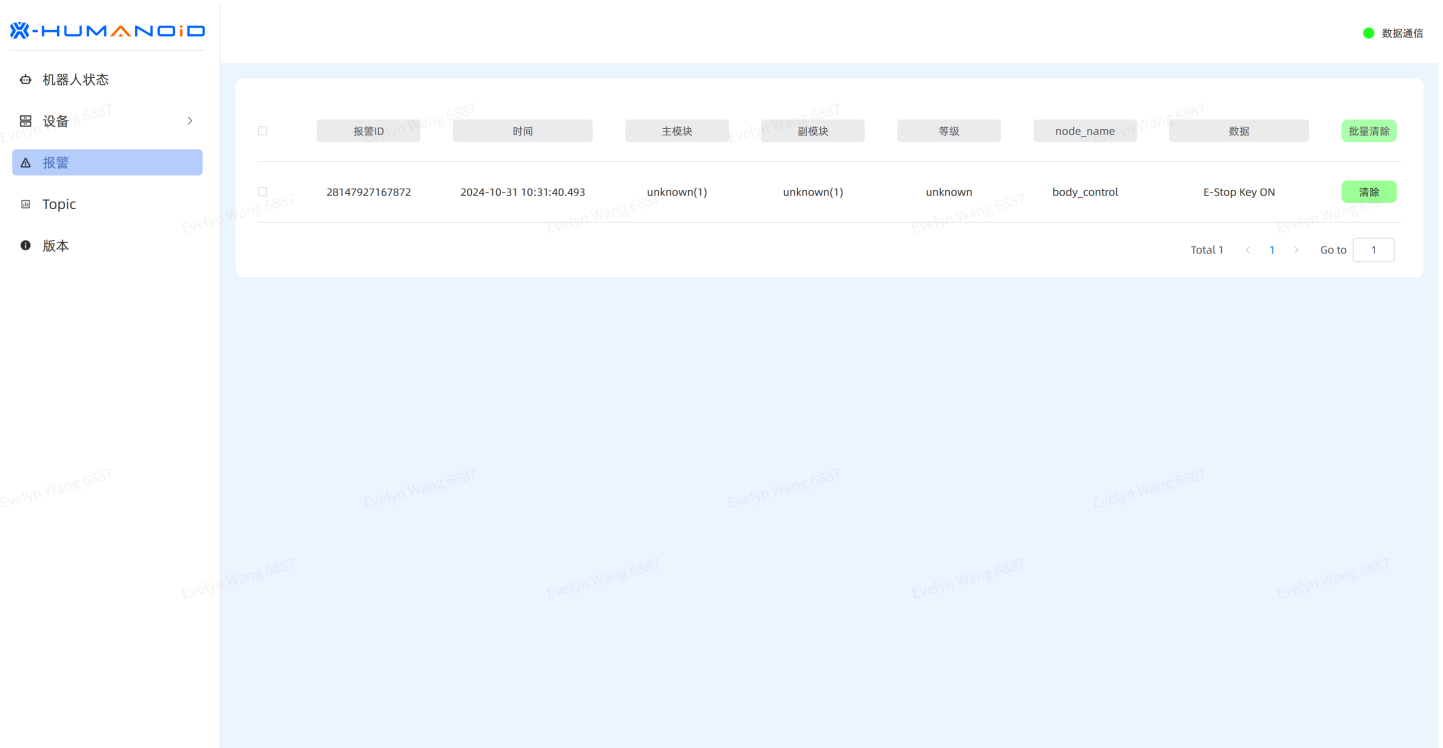
7.2.3 battery

- On the battery page, you can view the detailed information of each battery. Clicking the corresponding "Update" button can refresh the data of that battery.



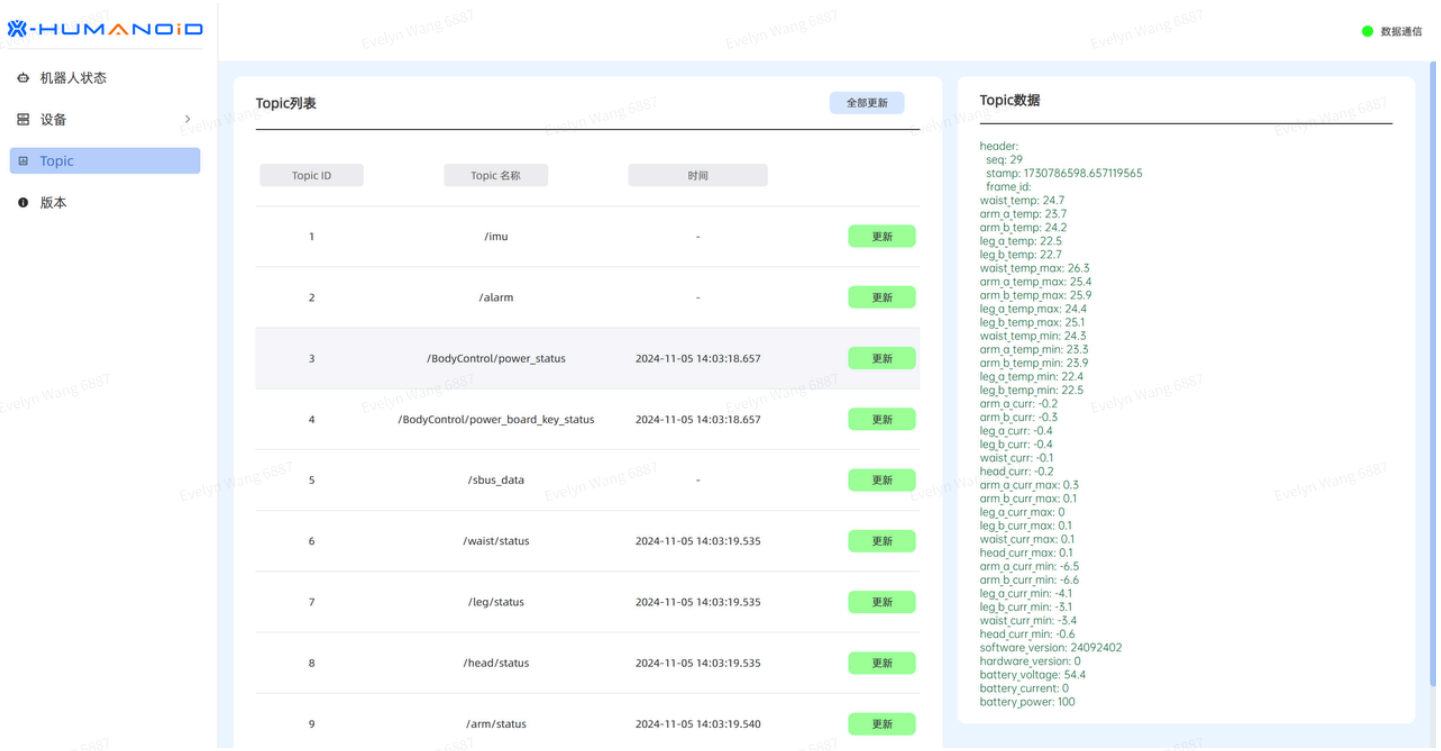
7.3 Alarm

- On the alarm page, you can view detailed alarm data. Click the "Clear" button to clear the data of a single alarm; click the "Batch Clear" button to clear the data of all alarms.



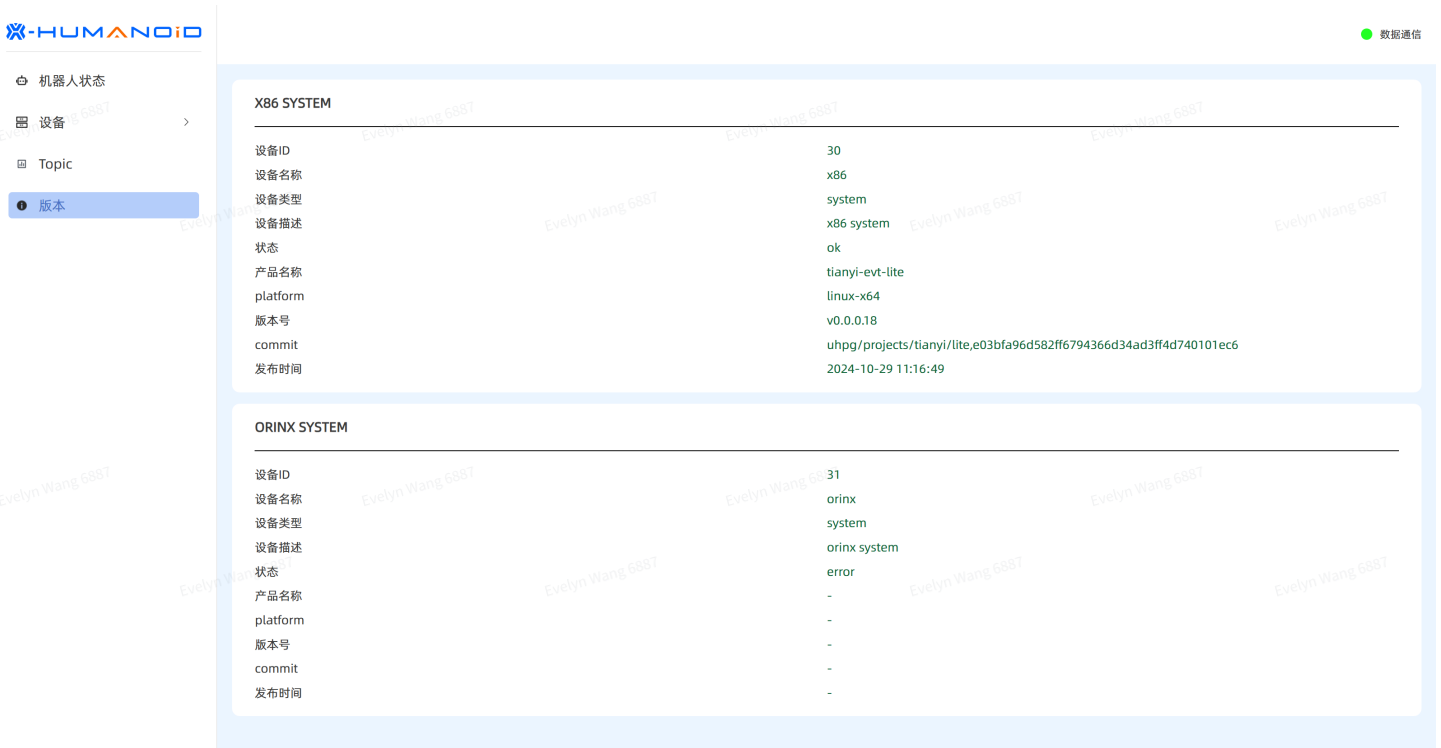
7.4 Topic

- On the Topic page, you can view detailed topic data. Click the "Update" button to update the data of a single topic; click the "Update All" button to refresh the data of all topics.
- Click on a topic row, and its detailed topic data will be displayed in the panel on the right.



7.5 Version

- On the version page, you can view the detailed device information of each main control board.



8. Daily Maintenance and Management

8.1 Daily Inspection

- Check if the housing has any damage, deformation, or looseness;
- Whether the battery and connector are firmly connected;
- Whether each sensor is clean;
- Check whether the motor is operating normally, and whether there is any abnormal jitter or noise;
- Check if each indicator light is constantly on;
- Ensure that the control functions of the remote control are working properly.

8.2 Handling

- Before moving the mobile robot, please completely shut it down and cut off the power, and confirm that the emergency stop button is in the popped-out state;
- Each joint of the robot may pinch fingers and other parts of the body, or entangle loose clothing, long hair, etc., so extra caution is required.

8.3 Cleaning

- Before cleaning the robot, please completely turn it off and disconnect the power supply, confirm that the emergency stop button is in the popped-out state, and that the charger is not connected;
- It is prohibited to use sprays, alcohol-based solutions, water guns, etc. to directly contact the robot;
- It is recommended to use a soft dry cloth to wipe the housing and sensor areas, especially sensor parts such as the camera.

8.4 Battery Maintenance

- Batteries should avoid overcharging/overdischarging and be powered off promptly after use;
- It is not recommended to keep the charger plugged in for an extended period of time;
- When not in use for an extended period, please maintain a 50% charge level before storage and recharge once every two months to prevent rapid decline in battery capacity caused by deep discharge and to avoid shortening the battery's cycle life;
- If battery aging, swelling, or a sharp drop in battery life occurs, please contact technical support promptly for replacement.
- It is recommended to use the official charging cable with a 5V, 1-2A USB port to charge the remote control, and try to avoid using various fast charging heads.

8.5 Storage Recommendations

- The storage environment should be kept dry, well-ventilated, and dust-free, with the temperature recommended to be between -4°C and 45°C;
- Do not allow contact with corrosive gases, flammable materials, or strong electromagnetic sources;

9. Troubleshooting

- When an abnormality occurs during product operation, please refer to the following table to troubleshoot the issue.

Fault Phenomenon	Possible causes of failure	Solution
The robot fails to boot up properly	Battery is depleted	Check if the battery level is normal
The initial position of the robotic arm is incorrect	The zeroing program has not been updated and is inconsistent with the current zero position attitude of the whole machine, resulting in an initial angle deviation of the robotic arm	Contact after-sales service to re-zero
Robot zero position attitude is incorrect	The standard version of the zeroing attitude of the whole machine is inconsistent. The deployed zeroing program is an old version, which does not match the attitude definition adopted by the current operator.	Contact after-sales service to re-zero

- If you encounter other usage anomalies, please contact the after-sales engineer for professional support.

10. After-sales Warranty

10.1 Warranty Policy

- The product is eligible for warranty service starting from the date of receipt, with the warranty coverage limited to performance failures not caused by human factors;

- During the warranty period, free repair or component replacement will be provided;
- The main warranty duration is as follows:

Type	Content	Warranty Period
Host	Robot Host and Its Components	1 year
Execution Unit	Joint motors, etc.	1 year
Attachment	Batteries, power adapters, etc.	1 year
Protective Part	Shell etc.	No warranty

- If a user modifies, disassembles, or repairs the product without authorization, it will be considered as an automatic waiver of the warranty eligibility.

10.2 Non-warranty Terms

- Beyond the warranty period;
- Damage caused by improper use or failure to operate in accordance with the instructions;
- Damage caused by all human or accidental factors such as misoperation, dropping, water stains, impact, etc.;
- Problems caused by disassembly, repair, or replacement of components by unauthorized personnel outside the company.

- **Risk Warning and Disclaimer Regarding Self-Added or Modified Open Source and Other Third-Party Software** Any open source framework, open source software, or other third-party software or system modules that users install, integrate, add, use, or modify on this product on their own, **as well as any modifications, reconfigurations, etc. made to the pre-installed software (if any) of this product** (including subsequent upgrades, replacements, and configuration changes, hereinafter referred to as "user additions") are all beyond the scope of the company's native design and security control for this product. The Company makes no express or implied warranties regarding the safety, compatibility, functionality, or legality of User Additions, and shall not be liable for any consequences (including but not limited to property damage, data loss, business interruption, third-party claims, compliance risks, and other adverse consequences) directly or indirectly caused by User Additions. Users shall ensure that the User Additions they add, use, or modify comply with the terms of applicable open-source licenses, third-party authorization agreements, and relevant laws and regulations; If any disputes, administrative penalties, or third-party claims arise due to the user's violation of the aforementioned license, authorization agreement, or laws and regulations, and cause the Company to suffer losses (including but not limited to compensation, fines, settlement amounts, attorney's fees, investigation and evidence collection fees, etc.), the user shall be liable for compensating all losses suffered by the Company.

10.3 Maintenance Service Liability Description

- When returning the product, the user shall bear the shipping fee by themselves;
- Users shall be responsible for any losses caused by incorrect addresses or recipients' refusal to accept the item;
- After inspection, our company has confirmed it as a quality issue and will bear the inspection fees, material costs, and return shipping fees;
- If the problem does not meet the warranty conditions, the user may choose:
  - Paid repair (including labor costs, inspection fees, material costs, transportation fees, etc.);
  - Return the original device (return shipping costs to be borne by the sender);
- Product repair may result in data loss. Please back up in advance; otherwise, the user shall be responsible for any consequences arising therefrom.
- The maintenance process may involve system operations and log access, and it is assumed that you have authorized our company to access them by default;
- The replaced damaged parts belong to our company, while the new replacement parts shall be the property of the user;

- Replacement parts may not be brand new, but their performance is equivalent, and the warranty period is the same as that of the original parts;
- Our company does not authorize any third party to provide repair services. If you have after-sales needs, please contact our company directly.

Warranty Card

- Please keep this warranty card properly; it will not be reissued if lost.
- When applying for warranty service, this warranty card must be provided;
- The information filled in this warranty card is true; otherwise, it is invalid.

User Profile

Product Model:

Product Number:

Customer Name:

Purchase Date:

Contact Number:

Warranty Record

Warranty Date	Faults and Handling Methods	Completion Date	Customer Signature

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