智元机器人

Expedition A2 Ultra Robot

V1.2 User Manual

Zhiyuan Innovation (Shanghai) Technology Co., LTD

October 21,2025

孙冬鸽 7294

Version Update Content Navigation

The main updates in the new version are as follows. You can directly click the hyperlinks to jump to the corresponding sections in the document.

1. Motion Capabilities：

a. Slope Climbing: Supports climbing slopes of up to 10°. Motion Capabilities

b. Speed: Maximum speed supported is 0.8 m/s. Motion

c. Waist Motion with Remote Operation: Remote operation now supports waist joint movement. Other Functions

2. Interaction：

a.Greeting Function: Supports greeting strangers. Greeting Function

b.Obstacle Avoidance During Interactive Movements: The robot can avoid obstacles while performing upper limb movements. Upper Limb Movements

c.English Wake Word: Supports waking the robot with an English wake word. Waking the Robot

d.Voice Control: Optimized voice control for robot movement; added voice commands for guided tours and singing. Automatic Guided Tours / Voice Commands

e.Voice Tone Switching: Supports switching between three different broadcast voice tones. Broadcast Voice Tones

3. Operation

The Standard and Pro versions have been merged and can be switched via the Logo function. LOGO Function

4.Other Highlights

The following content is non-standard. This document does not contain specific details, and detailed guidance documents will be provided later.

1. Tic-Tac-Toe interactive game.
2. VR remote operation video streaming.
3. Seated package unpacking experience — one person, 5 minutes of independent unpacking.

5.Other updates:

a.Multi-device simultaneous connection to the robot is no longer supported. The new version allows only one Aim-Master to connect to the robot at a time.Orin

b.Orin no longer requires an internet connection; the remote controller's Wi-Fi connection has been switched to x86.

Statement

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The content of this manual is intended solely for the operation and use of the general-purpose humanoid robot Expedition A2 Ultra model developed by Zhiyuan Robot.

The robot hardware version is P1, and the software version is 1.2.24. The remote control software Aim-Master version is 1.2.23.

Precautions during use are highlighted in red font at corresponding locations. Please be sure to take note.

If the actual robot information does not match the content of this document, the document is for reference only. For practical operation methods, please consult a Zhiyuan engineer or call 400-186-0818 for assistance.

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Chapter1 Safety Regulations

1.1. Safety Guidelines

1. Please use the machine only after fully understanding its functions, operating methods, and safety precautions.
2. Ensure the machine is used in an environment that meets operational requirements.
3. The robot's operating environment must provide sufficient space to prevent collisions and crushing, which could cause product damage.
4. The robot is equipped with a remote controller and an emergency stop switch. In case of an unexpected situation during use, prioritize using the remote controller to stop the robot based on the circumstances. If the remote controller fails, use the emergency stop to halt the robot. Please note: after using the emergency stop, the robot's joints will lose power, and the robot may collapse. Therefore, do not use the emergency stop in non-emergency situations.
5. The robot must not be used for any improper, hazardous, or illegal purposes.

1.2. Precautions

1.2.1. Before Startup

1. Ensure the venue meets the robot's usage requirements.
2. Reserve sufficient activity space for the robot according to specific needs.
3. Prepare the robot battery and confirm it has sufficient charge.
4. Inspect the transfer machine to ensure it has sufficient charge and check for abnormalities such as loose bolts or hoisting ropes.
5. Prepare the remote controller and emergency stop switch. Confirm their serial numbers match the robot and their versions are compatible with the robot.
6. Confirm that the personnel who will operate the robot have fully mastered the robot's functions and operating methods through training, reading the manual, etc.,

to avoid misuse.

1.2.2. During Operation

1. Strictly adhere to the robot's usage limitations, such as working environment and end-effector load.
2. Pay attention to the robot's battery level and recharge promptly when the battery is low.
3. Do not directly or indirectly contact the robot while it is in operation.
4. When not holding the remote controller or emergency stop switch, ensure they are readily accessible to handle emergencies.
5. Do not directly intervene in the robot's actions. If intervention is necessary, use the remote control device, or ensure the robot is in a protected state and powered off first.
6. In automated task scenarios, ensure there are no purely transparent or purely black obstacles within the robot's task path.
7. In certain specific scenarios, such as exhibitions, be mindful of signal interference.

1.2.3. After Use

1. When hoisting the robot, ensure its feet are raised higher than the base of the transfer machine to prevent foot impact and damage during movement.
2. Fully charge the robot battery, remote controller, emergency stop switch, and transfer machine, then power them off for storage.
3. For long-term storage, place the equipment in a dry, cool, moderately temperatured, indoor environment with a flat floor. Lock the transfer machine.

Store the equipment in a location where it is not easily accessible.

1.3. Privacy Policy

1.3.1. Data Collection Scope

The robot's cameras only temporarily capture image information within the

necessary field of view when performing functions such as environmental perception and obstacle recognition. This data is used for real-time operational judgments (e.g., obstacle avoidance, path planning).

1.3.2. Information Protection Measures

1. Transmitted image data will be desensitized using techniques like pixelation to remove identifiable personal identity or specific scene information.
2. Data is used solely for real-time computation, is immediately deleted after processing, and is not stored locally or in the cloud.

1.4. Maintenance and Management Guidelines

1.4.1. Fault Handling

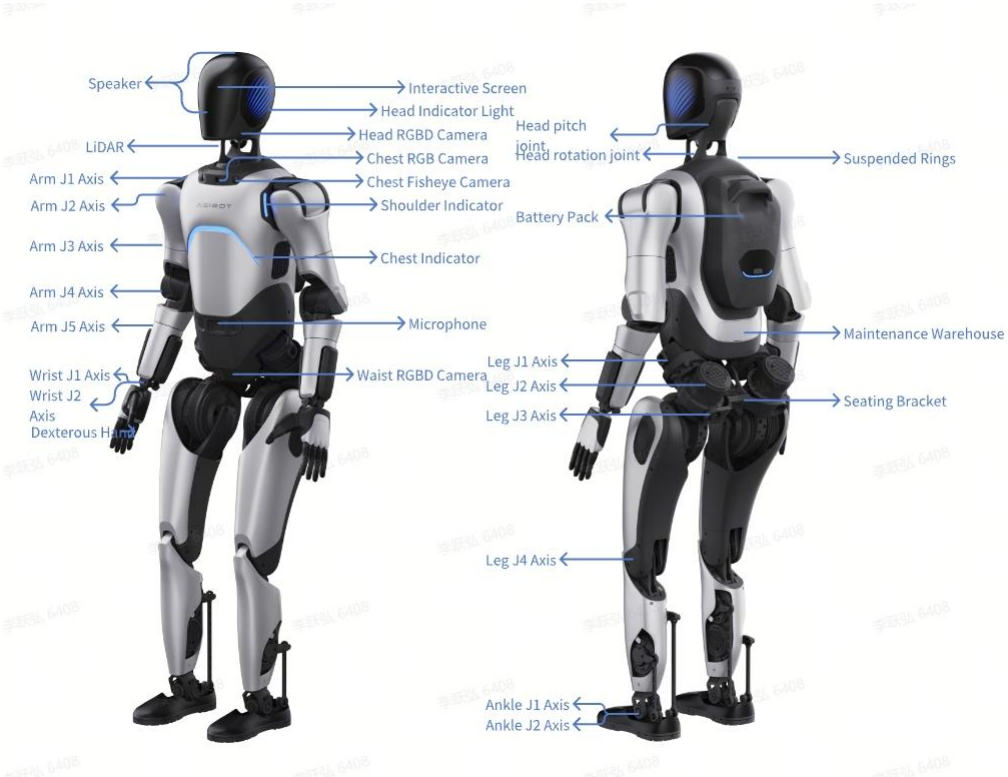
1. Fault Response: If a fault occurs during robot operation, immediately cease operation and notify professional technical personnel for inspection and repair.
2. No Unauthorized Repair: Unauthorized disassembly or attempted repair is strictly prohibited to prevent further damage.

Chapter 2: Product Introduction

1.5. Product Model

	Chinese	English
Brand Name	Smart Journey	AgiBot
Model	A2	A2

1.6. Product composition



1.7. Essential parameter

Level 1	Secondary classification	Clauses and subclauses	Concrete content
Product Basic Information		stature	169cm
		size	169(H)*75(W)*30(L)cm
		net weight	≈69kg
		Active freedom	7*2dof for both arms, 6*2dof for both legs, 2dof for the head, and 6*2dof for the dexterous hand
Product features	**Behaviour of electricity**	continuation of the journey	Stand and voice announcement with full machine power control: approximately 3h The machine can walk on the flat ground with straight legs for about 1.5h
		battery capacity	14.4Ah
		charging interval	2h
		Charging Power	≤500W
		charging voltage	48V DC
	Environmental suitability	Working temperature and humidity	0 ~ 40℃, relative humidity 10% ~ 90%, no condensation
		Store temperature and humidity	-20℃ ~ 70℃, relative humidity 10% ~ 90%, no condensation
		IP grade	Joint Module: IP5X
	Space Adaptability	Minimum width	The body remote control requires a minimum width of 1m, while navigation requires a minimum width of 2m.
		Maximum obstacle clearance height	20mm
		Maximum operating slope	8% (4.57°)
	Safety	Arm collision detection	support
		Maximum obstacle detection range	5m
		Minimum obstacle	30cm

		detection height	
	Operations and interactions	remote control operation	Wireless remote
		Interactive screen	The facial interaction screen features an expression display function. The module's overall dimensions are 105.50 × 67.20 × 3.0 mm (including the frame), with an actual display area of 95.04 × 53.86 mm. The screen measures 4.3 inches with a resolution of 800 × 480 pixels. It has a brightness of 500 cd/m² and a contrast ratio ranging from 1000:1 to 1500:1.
		microphone	Array Microphone
		loudspeaker	Double 5W
		pilot lamp	Multi-color ambient light
Product capabilities	**Sensing capability**	Environmental awareness	LiDAR*1 + fisheye camera*2 + RGBD camera*2 + RGB camera*1
	Navigation sense	positioning accuracy	±10cm , ±10°
		Navigation obstacle avoidance	Supports real-time autonomous navigation and obstacle avoidance
	Mobile capability	Maximum speed	0.8m/s
		Move Mode	Supports omnidirectional translation, left turn, and right turn
	IoT capabilities	protocol	TCP、IP
		Communication Module	WiFi, mobile network
	Arm Parameters	Handy Delivery	Hands down: <3kg Hands up: <8kg
		Whole machine (with flexible arm) Maximum weight you can grab with your arm	2kg
		End line speed	1m/s
		Arm movement range	J1(Shoulder pitch): ±170°
			J2(Shoulder roll): -30° ~95°

			J3(Shoulder yaw): ±170°
			J4(Elbow pitch): -1° ~118°
			J5(Wrist roll): ±170°
			J6(Wrist pitch): ±45°
			J7(Wrist yaw): ±30°
	Leg Parameters	Leg movement space (There is a certain deviation)	J1(Hip roll):-37~40°
			J2(Hip yaw): ±75°
			J3(Hip pitch): -50° ~110°
			J4(Knee pitch): -5° ~140°
			J5(Ankle pitch): -30° ~52°
			J6(Ankle roll): ±28°
	Head parameters	Head space	Flexion-joint: ±23°
			Rotate joint: ±45°

1.8. Product orientation

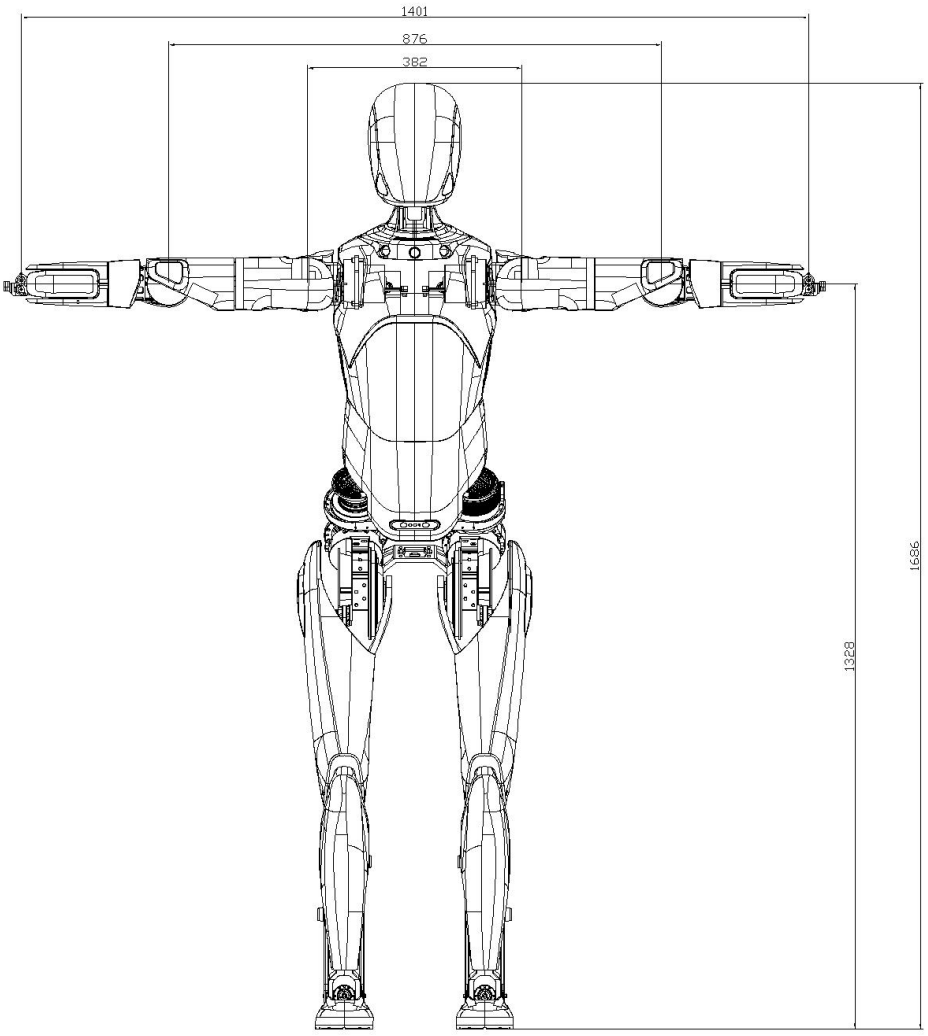
The Yuanzhen A2 Ultra model is a versatile robot developed by Zhiyuan for interactive services. It is ideal for roles such as marketing customer service, showroom guidance, supermarket navigation, front desk reception, and business consultations.

1.9. Application scenarios

Indoor flat environments, such as exhibition halls, 4S stores, business halls, science museums, and research laboratories.

1.10. Workspace

Please note the workspace of the robot. Keep a safe distance when using the robot.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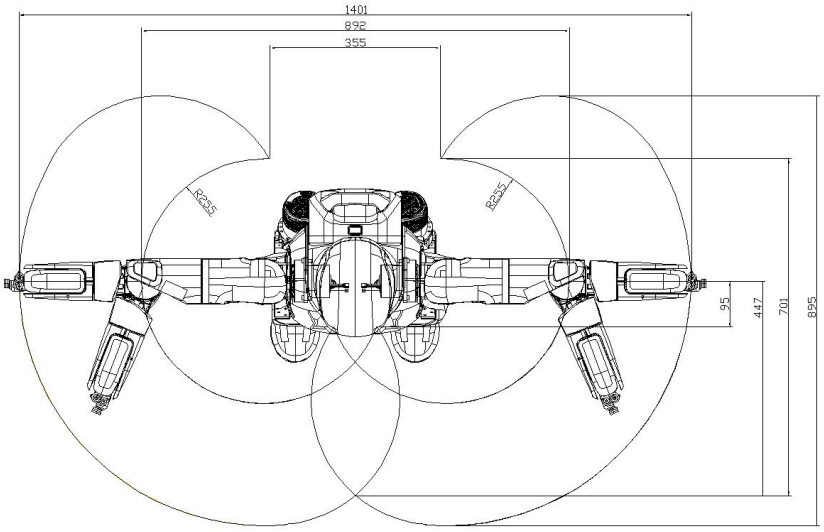
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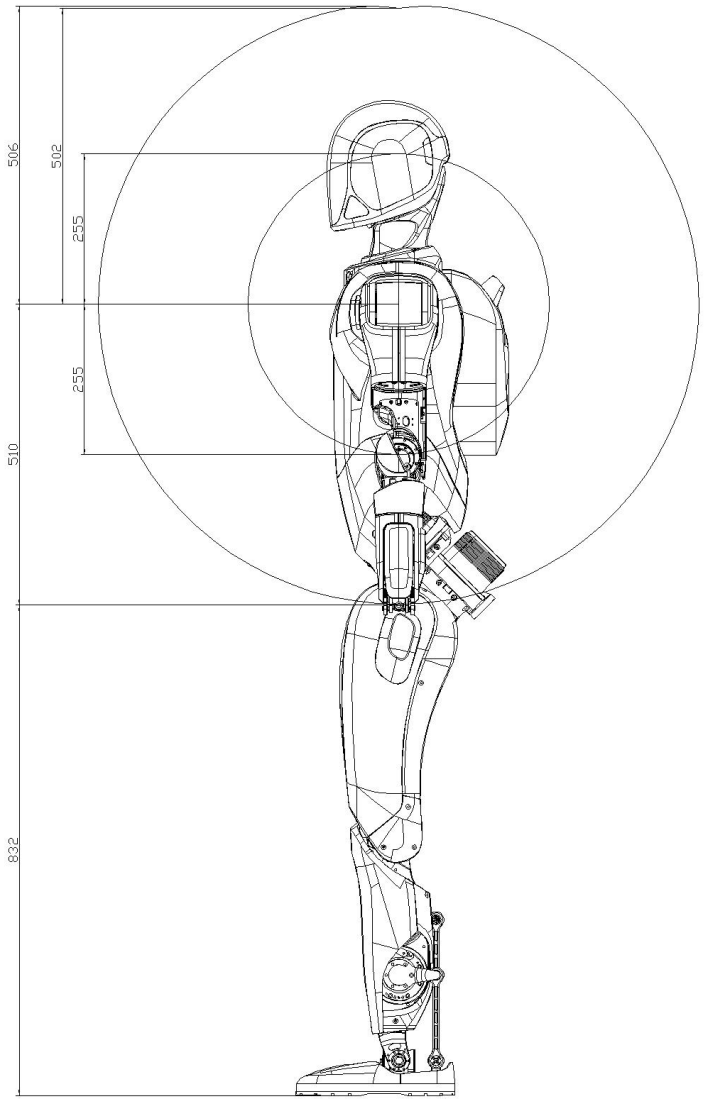
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1.11. Product boundary

1. 11. 1. Voice interaction

1. Supports Chinese and English interaction.
2. Supports interaction between built-in and external microphones.
3. Voice interaction heavily relies on network. To ensure optimal performance, the network must maintain a minimum upload/download speed of 100Mbps, a latency of less than 100ms, a packet loss rate of less than 1%, and consistent stability.
4. Speech recognition and semantic understanding combined with accuracy> 95%.
5. Voice interaction requires a wake word. The system supports both Chinese and English wake words. The default Chinese wake word is "Yuan Zheng Yuan Zheng", and the English wake word is "hi luka". You can customize the Chinese wake word. After customization, the original wake word will no longer be effective.
6. After waking up, you can have a 60-second conversation. This time is updated with each interaction.
7. For built-in AI voice interaction, the user must stand within 0.5m～1.5m of the robot's front. The recommended interaction distance is 1.2m. Adjust the sound volume or distance based on the desired effect.
8. The external microphone only supports two models: the depushengW4 USB wireless microphone (recommended to purchase separately; plug the receiver into the robot's debugging chamber USB port, and the robot will automatically switch to external microphone interaction mode) and the Shanke T5 wireless lavalier microphone Type-C version (included with the robot's debut, requiring manual switching during use).
9. When using an external microphone for voice interaction, keep it at least 10cm away from your mouth.
10. Voice interaction can automatically switch the robot operation mode. Switching the operation mode during walking may cause the robot to lose balance. Therefore, voice interaction is not recommended during remote walking.
11. The robot makes too much noise when walking, which may affect the built-in

microphone noise reduction. Do not use the built-in microphone for voice interaction when walking.

1.11.2. Athletic ability

1. The gait is anthropomorphic, with straight knees and natural arm swing.
2. It supports walking on flat ground but does not support ground with a drop.
3. Supports omnidirectional translation and left/right steering.
4. Supports 10° uphill climb, but does not support staying on slope.
5. The remote-controlled walking speed is up to 0.8m/s, the automatic navigation speed is 0.6m/s, and the braking distance is less than 1.7m at the maximum moving speed.
6. The minimum turning radius is 800mm and the minimum passing width is 2000mm (with obstacle avoidance).
7. Avoid allowing robots to enter narrow passages to avoid inconvenience caused by failure to turn autonomously.
8. In the operation control mode, the system automatically adjusts balance when the force is less than 60N. Excessive force may cause a fall.

1.11.3. Obstacle avoidance

1. The maximum obstacle detection range is 5m.
2. The safe distance for obstacle avoidance is 1.5m.
3. The obstacle size that can be recognized is: h>30cm, w>20cm.
4. There is a blind area of about 0.5m around the robot.
5. Obstacles cannot be pure black, transparent, or mirror objects.
6. It supports obstacle avoidance during upper limb movement. There are movement and speed limits for adults, but it does not guarantee obstacle avoidance for children, pets or static objects such as glass at close range.

1.11.4. Work capacity

1. The following requirements apply to the Three-Board game environment:
   (1) The desktop is 98cm high.

(2) The robot is about 23cm away from the table.

(3) Place the accessory mat on the table, aligning the edges, and position the red grid side facing the player.

(4) Place the chessboard in the black nine-square grid in the middle of the table mat.

(5) Place the green pieces in the green squares and the red pieces in the red squares.

Charpter 2 Product disassembly box

2.1. Pack

2. 1. 1. Package appearance

The Expedition A2 Ultra model's standard package includes two boxes, as shown in the image below.

1. The contents of the air box are the robot body and related supporting equipment.
2. The carton contains a robot-assisted transfer machine.

2. 1. 2. Packing measurement

Pack	Length (cm)	wide （cm）	Gao （cm）	repeat（kg）
Air Box (Robot)	185	85	65	130
Carton (positioner)	133	67	33	45

2.2. Unbox the relocation machine

2. 2. 1. Unpack

The contents of the mobile Lift after unpacking are as follows:

Order number	Name of material	Order number	Name of material
1	lampstand	5	lifting rope
2	body frame	6	cliver
3	sweep	7	control box
4	Description & Armrest Cover	8	Electric Pushrod

2. 2. 2. Mobile Lift installation

1. Complete the image

2. Installation Steps

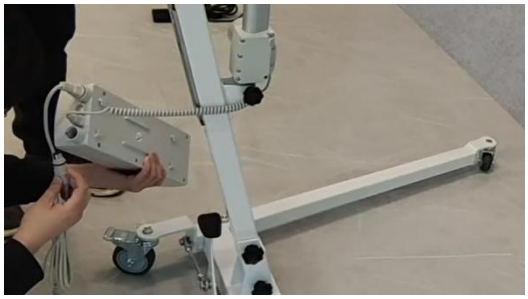
1. Note the front-to-back orientation of the main frame. Insert it into the base and secure it with hand-tightened bolts.

2. Use a hand-tightened bolt to connect the boom and the main frame.

3. Use a hand-tightening bolt to connect the electric push rod to the main frame and the lifting arm.

4. Pay attention to the direction of the hook. Use a hand-tightened bolt to connect the boom and the hook.

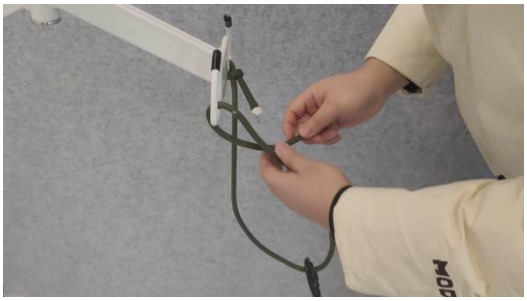
5. Connect the electric push rod and manual controller harness to the control box.



6. Install the control box on the main frame: Align the control box with the snap-fit slot on the back of the main frame and slide it down.

7. Attach the manual controller to the main frame armrest and organize the charging cable and manual controller harness.

8. Install the suspension rope and hook.



2.3. Use the mobile lift

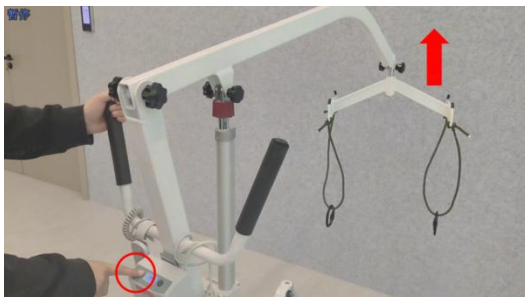
2. 3. 1. Control box operation

1. Emergency stop: When the emergency stop button is pressed, the height of the transfer machine's lifting arm is locked, and the lifting button becomes unavailable. If the transfer machine loses power during operation, the lifting arm height will also be

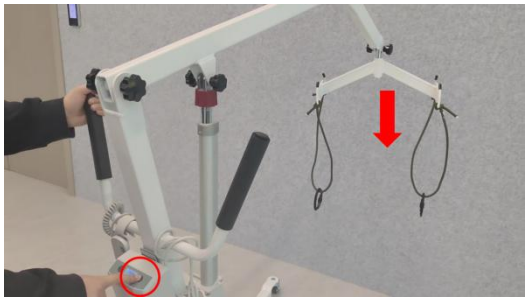
2. Resume: Rotate the emergency stop button clockwise until it pops up. The lifting button will resume operation.

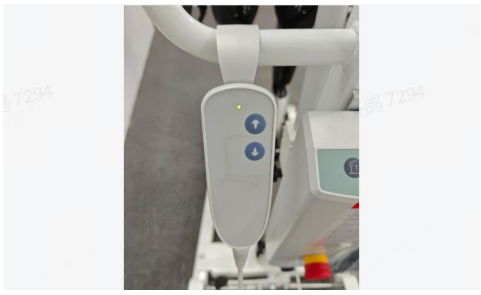
locked.

3. Lift the boom: Press and hold the up button on the control box or manual controller to continuously raise the boom.



4. Lower the boom: Press and hold the lower button on the operation control box or manual controller to lower the boom continuously.

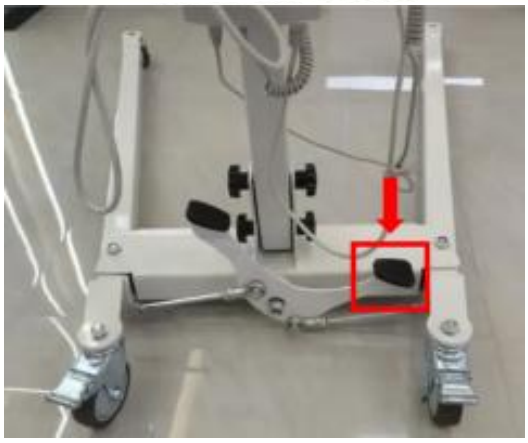




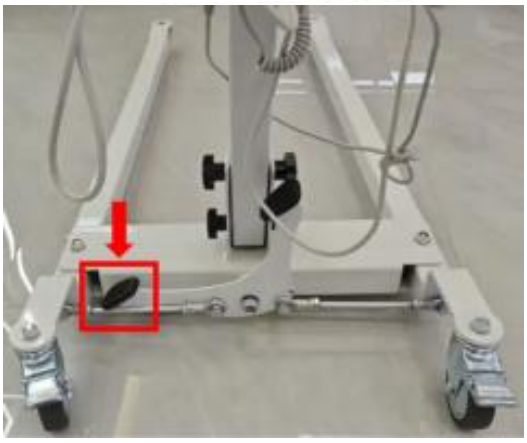
2. 3. 2. Base operation

1. Expand the mobile Lift space: Press the right pedal to expand the mobile Lift space. The space needs to be expanded when the robot is operated with protection.

2. Reduce the space of the mobile Lift: Press the left pedal to reduce the space of the mobile Lift. It is recommended to reduce the space when moving or placing the robot for a long time.



3. mobile Lift Wheel Locking and Unlocking: The left wheel in the diagram is locked, preventing movement. It can be locked for extended periods. The right wheel is unlocked, allowing normal operation. To unlock: Press the orange arrow. To lock: Press the red arrow.



4. mobile Lift charging: When the battery is down to one cell (about 25%), charge the machine by connecting the control box charging cable to a 220V/50Hz power supply. During charging, the display will show a dynamic charge level increase. Never recharge after the battery is completely drained, as this may damage the battery and prevent it from recharging.

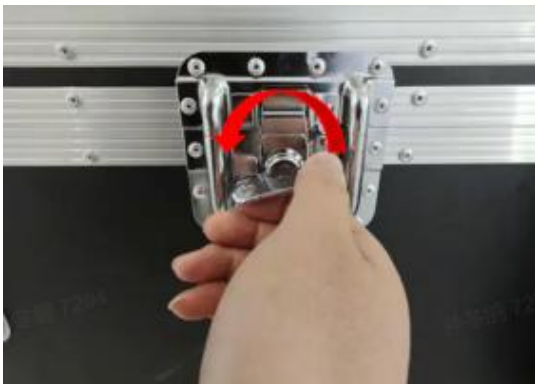
2.4. Unbox with a robot

2. 4. 1. Unpack

1. There are two clips on each side of the cargo box, a total of four clips.

2. Pull the latch lever upward, then rotate it counterclockwise until the latch

is fully raised.



3. Pull outward to open the buckle.

4. The two men are at opposite ends of the box, holding the handles and pulling upward to open the lid of the aero box.

5. After opening the robot, the contents of the package are as follows:

Number	Name	Quantity
①	Robot body	1
②	battery charger	1
③	Clasp	1
④	telecontroller	1
	emergency stop switch	1
	charger	1
⑤	cell	1

2.4.2. Repack the robot

Repack the robot. It is recommended that 3 people operate the robot, and at least 2 people are required. The following is how to Repack the robot with only 2 people.

pay attention to ：

When adjusting the robot arm with external force, hold the upper limb shell of the robot and do not pull the dexterous hand.

When lifting the lower limb of the robot, do not put your hands into the lower leg rod to avoid crushing.

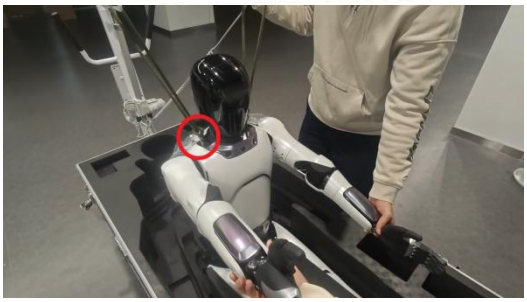
1. Follow these steps to Repack the robot:

1. Insert the positioner at one end into the bottom of the robot packaging box as shown in the diagram. Lower the lifting arm to the indicated position. Lock one wheel of the packaging box to prevent movement when removing the robot.

2. Two people stand on both sides of the air box and lift their arms at the position of the robot's forearm as shown in the figure to prevent the upper body from scraping the upper limb when sitting up.

3. Each person holds a robotic shoulder ring and pulls up the upper body until the robot sits up. Be careful not to scratch the head.

4. One person steadies the robot, while the other secures two suspension ropes (one end attached to the robot's shoulder ring and the other to the positioner's hook).



5. Release the upper body of the robot, but keep the arms raised. Raise the legs of the robot while moving the mobile Lift to lift it until its buttocks are suspended. You can then grasp the lower leg shell of the robot.

6. After the robot is higher than the top of the packing box, move the position machine backward, and when there is enough space, lower the limbs and Repack the robot to complete.

2. 4. 3. Robot packing

Robot packing is recommended for 3 people, but at least 2 people are required. The following is the packing for 3 people. For 2 people, the hand-held controller can be used to operate the mobile Lift.

pay attention to ：

When adjusting the robot arm with external force, hold the upper limb shell of the robot and do not pull the dexterous hand.

When lifting the lower limb of the robot, do not put your hands into the lower leg rod to avoid crushing.

2. Use the following method to box:

1. Shut down the robot, lift it to the indicated position, and remove the

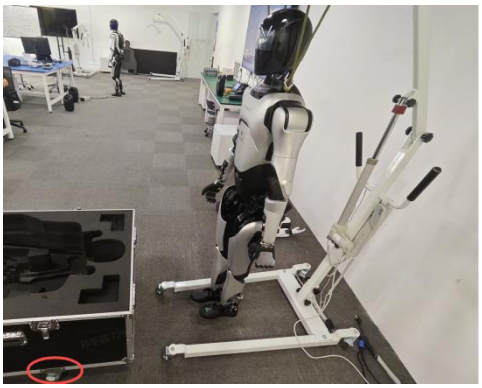
2. The aircraft cabin opens, the head is turned toward the robot, and a wheel is

battery.

3. Two people on either side lifted one leg and one arm of the robot, while a third person pushed the mobile Lift into the bottom of the shipping container.

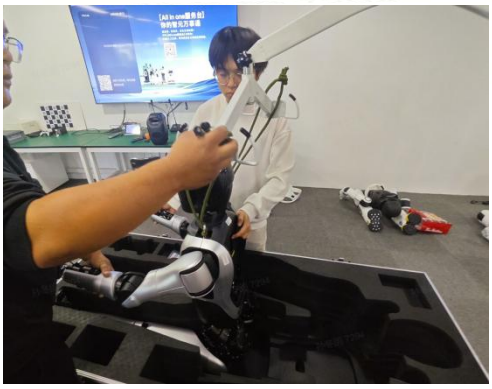
5. Keep putting the robot down until it is fully seated inside the air box. One person holds the robot steady in a sitting position while the other removes the suspension rope.

locked.



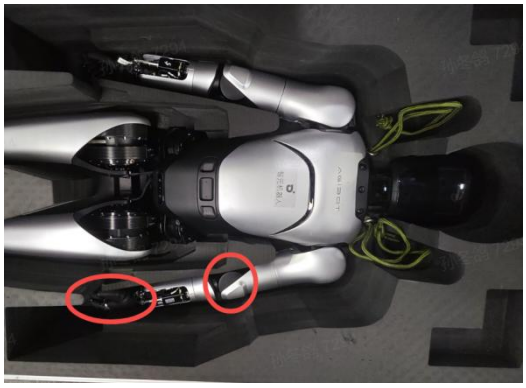
4. Control the continuous descent of the mobile Lift. Before the robot's buttocks touch the bottom, pull the robot's legs with force to make the two feet as close to the inner wall of the air box as possible.

6. Move the positioner.



7. Lift the robot's upper limb with one hand to avoid crushing it when lying down, and slowly lower the robot with the other hand by pulling the suspension rope until it lies in the air box.

8. Lower your arms. If you cannot do so naturally, adjust the joints to keep the elbows straight and place the arms at your sides. Then insert the spare parts, close the lid, and complete the packaging.



Charpter 3 Product Usage

3.1. Battery usage

3. 1. 1. Battery Introduction

正面

背面

顶部

底部

Order number	Name	Explain
①	handle	The location of the hand when carrying and moving batteries temporarily
②	Battery level indicator	Press to turn on the battery indicator
③	Battery indicator	There are four indicator lights. When the battery level display button is pressed, the corresponding number of lights will light up according to the battery level. Each light corresponds to 25% of the battery level. When the battery level is higher than 25%, all lights will light up with white light. When the battery level is lower than 25%, only the first light will light up with red light. The other lights will not light up.
④	fastener	The battery gets stuck on the back of the robot when installing. This helps secure the battery.
⑤	Battery charging port	Use a dedicated charger to charge the battery
⑥	Clip button	Press to retract the latch for easy battery removal. Release to pop out and secure the latch on the robot's back.
⑦	card slot	The battery installation is stuck on the back of the robot to help secure it.
⑧	Power supply	Install on the back of the robot to power it

	port	

3.1.2. Battery installation

Ensure the battery is fully charged before installing.

Hold the battery with both hands as shown in the picture, slide it down from the top to the battery slot on the back of the robot, and finally, as shown in the picture on the right, the battery is successfully installed.

3.1.3. Low battery

Always pay attention to the battery power when using the robot. If the battery power is low, replace the battery or charge it in time.

Pay attention to ：

When the battery power is lower than 15%, the body indicator light will show red light flashing, and the robot voice broadcast "low battery power, please charge in time". At this time, it is strictly prohibited to use the machine without protection.

Do not power off the device when it is low on battery, as it may damage system files.

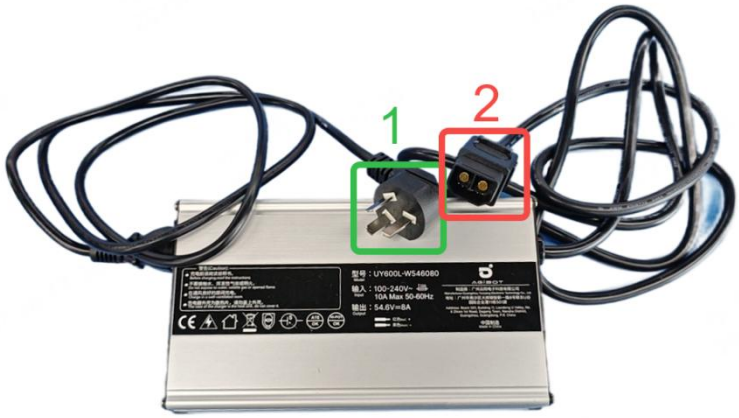
3. 1. 4. Battery charging

There are two ways to charge the battery

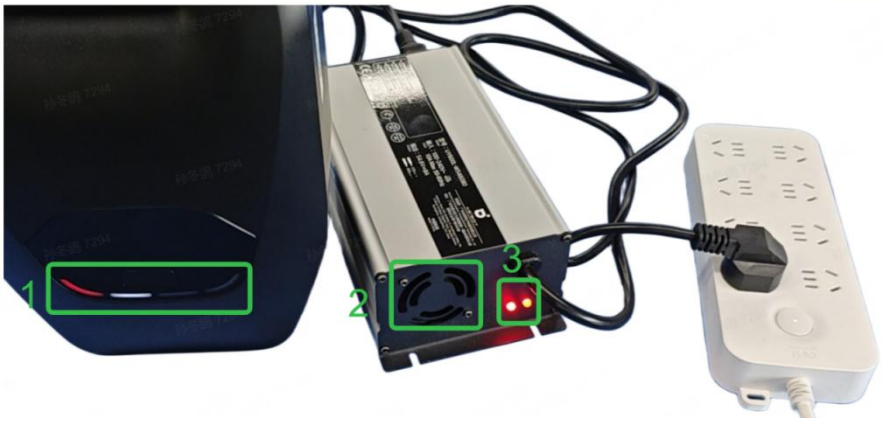
(1) The charger connects directly to the battery to charge it. It takes 2 hours to fully charge.

(2) Install the battery on the robot. Connect the charger to the charging port of the robot debugging chamber to power the robot and charge the battery. It takes 2h40min to fully charge the battery.

The image below shows the standard charger for the robot. During charging, the 1st plug connects to a 100-240V power supply, while the 2nd plug connects to the robot's charging port or battery charging port.



The following figure shows the normal charging state of the robot:



During charging, there is a delay of 2-3 seconds after the power supply is connected. Pay attention to the following conditions to indicate normal charging:

(1) When the battery is low, the "Battery Indicator" in the existing battery 1 position will light up the corresponding number of indicators, among which the first is the red breathing light and the others are the white permanent light.

(2) The fan at charger 2 will operate, producing a 'whooshing' sound.

(3) The two indicator lights in position 3 of the charger are red.

When the battery is fully charged, the charging protection will be triggered, the fan will stop running, the battery indicator light will be completely off, and the charger's two indicator lights will also be completely off.

pay attention to ：

Do not use non-standard chargers to charge the battery.

Avoid charging the charger for a long time.

3. 1. 5. Remove battery

The Expedition A2 supports battery replacement without shutting down the robot. Therefore, removing the battery can be done in two ways: with the system powered on or off.

1. Shut down and remove the battery: First, shut down the robot according to the standard procedure, and then remove the battery.

Note: The robot system will be immediately powered off after the battery is removed. Do not remove the battery without charging.

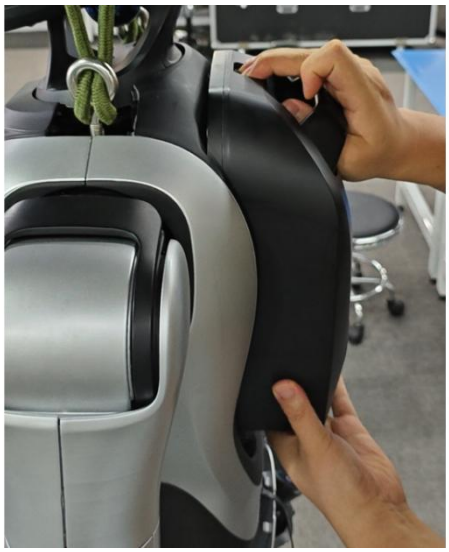
2. Do not remove the battery without shutting down the robot. Avoid shaking the robot too much when removing the battery while charging.

pay attention to ：

The charging process has a 4-5s delay. Ensure the charger is fully charged before removing the battery.

After removing the robot battery, replace it with a new battery as soon as possible. It is strictly prohibited to operate the machine without battery.

To remove the battery, refer to the figure below. Hold the battery handle with one hand and press the clip button, while sliding the battery out from the back of the robot with the other hand.



3.2. Power on the robot

3. 2. 1. Test Chamber Introduction

The robot's defensive midfield position is a debugging chamber, which is normally closed. Press the protruding position of the chamber cover to pop it up and open the debugging chamber.

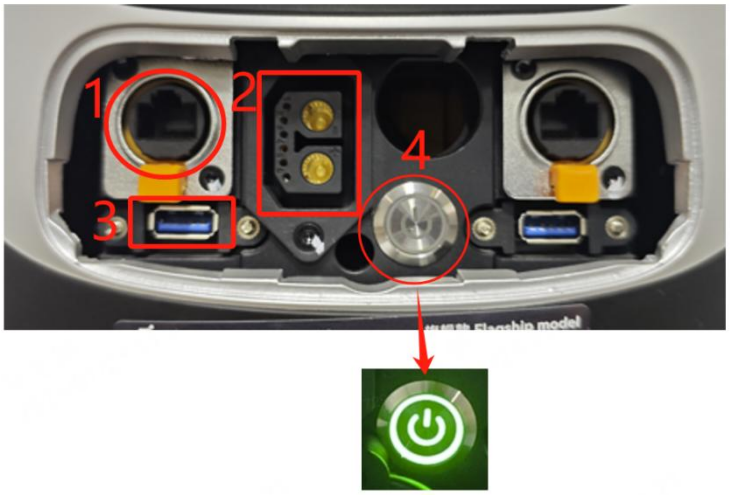
The debug warehouse after opening is shown in the figure, where:

(1) 1. Position the robot's debugging port, which connects the computer to the debugging machine via a network cable.

(2) 2. The position is the charging port of the robot body, which is used to insert the charger to charge the battery after the robot is installed. After the robot is installed with the battery, it supports working while charging.

(3) 3. The USB port supports external devices such as speakers and microphones.

(4) 4. The button serves as the robot's power switch. Press and hold until the green indicator light turns on to start the robot. To shut it down, briefly press the button and then hold for over 2 seconds.



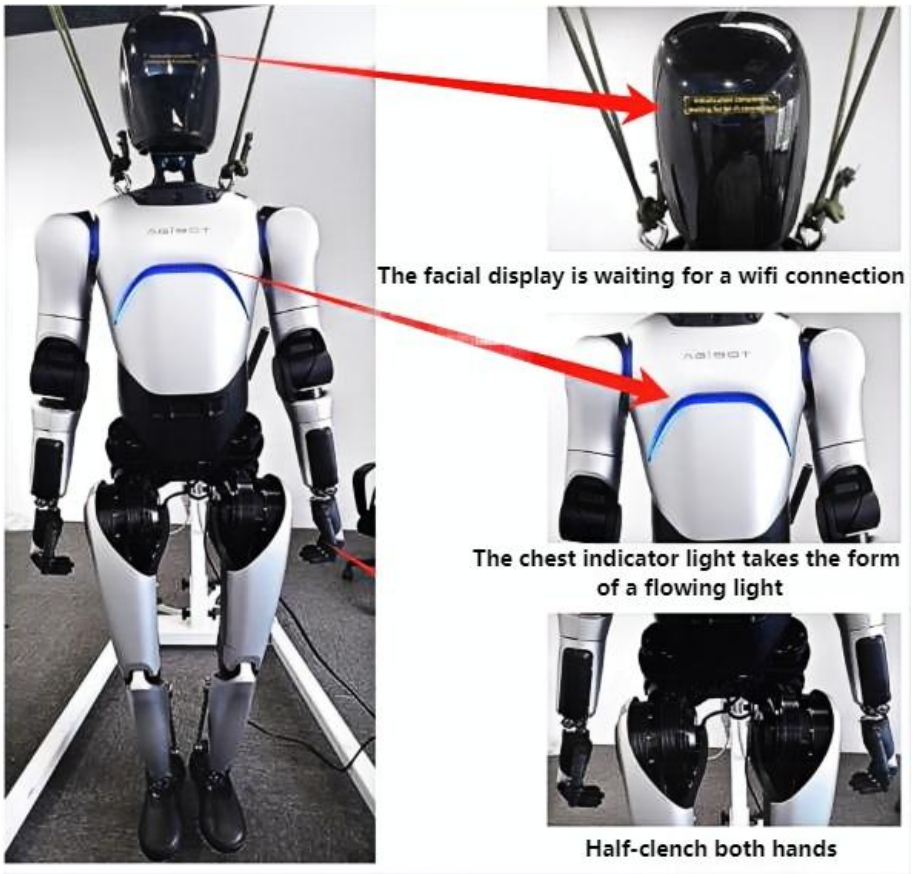
Note: Unspecified ports are reserved for debugging. Contact Zhiyuan technicians for usage.

3. 2. 2. Power on robot

1. Startup preparation
   (1) Verify that the robot number, emergency stop switch number, and remote control number match.
   (2) Ensure the battery is fully charged and installed.
   (3) The robot is in protected mode.
2. starting up

Open the debugging chamber and press and hold the power button until the green indicator light turns on. The robot will be powered on and start up. After about 1 minute of startup, observe the following states of the robot:

(1) The ambient lights of the robot body will be lit, and the chest indicator lights will be in the form of blue flowing lights.
(2) After about 10 seconds, the robot's head and upper limbs will self-test: the head will first rotate up, down, left and right, and then face forward; the palm will first open and turn outward, then the fingers will grip in turn, and finally return to the fist position. After the action is completed, the upper limbs will be initialized and the joints will be locked.
(3) The robot will announce "Audio player ready" while waiting.
(4) After about 1 minute, the robot shows the following status, indicating that the robot is turned on.



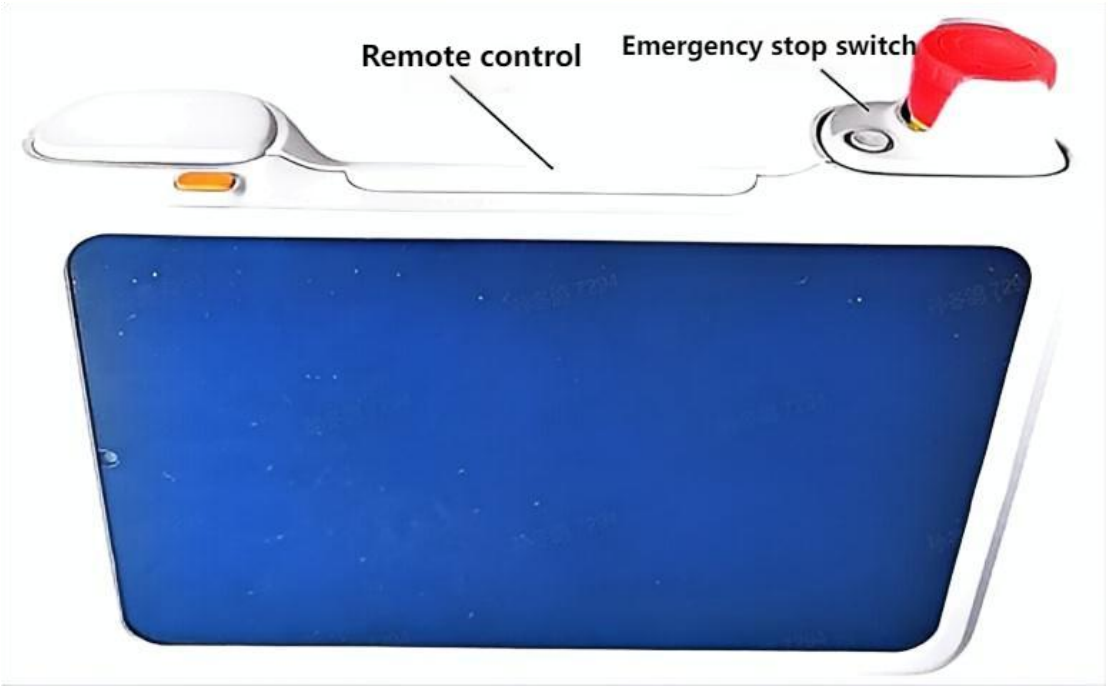
3.3. Remote control and emergency stop switch used

Most of the functions of the Expedition A2 need to be done through the remote control.

The emergency stop switch is used to quickly cut off the robot power in an emergency and force the robot to stop running immediately to avoid personnel injury, equipment damage or dangerous situation expansion.

The remote control and emergency stop switch of the Expedition A2 are shown in the figure below:

For ease of use, the emergency stop switch is located on the right end of the remote control and can be pulled up.



3. 3. 1. Use emergency stop switch

Number	Name	Explain	Graphic
①	Label	Pay attention to the following two items on the label: 1. SN: The emergency stop switch is designed for one-to-one robot matching. Always verify its serial number matches the robot's. 2. Input current: Do not exceed the limit when charging	
②	mains switch	Long press to turn on/off the emergency stop switch	
③	Battery indicator	When the device is turned on, the indicator lights up. The number of lights depends on the battery level.	
④	Charging port	Type-C charging port for charging the emergency stop switch	
⑤	Connection status indicator	When both the robot and the emergency stop switch are turned on, they will automatically connect, and the indicator light will turn green.	
		The robot will disconnect after it is turned off. The indicator light will turn red.	
⑥	scram button	Pressing the button will stop the robot immediately. All joints will be disabled. Proceed with caution. To release the emergency stop, rotate the button clockwise until it pops out. After releasing the emergency stop, the robot's head and upper limbs will perform a self-test. After passing the self-test, the robot can be used normally.	Normal status button height Button height in stop state

3. 3. 2. Remote control usage

3.3.2.1. Remote Control Features

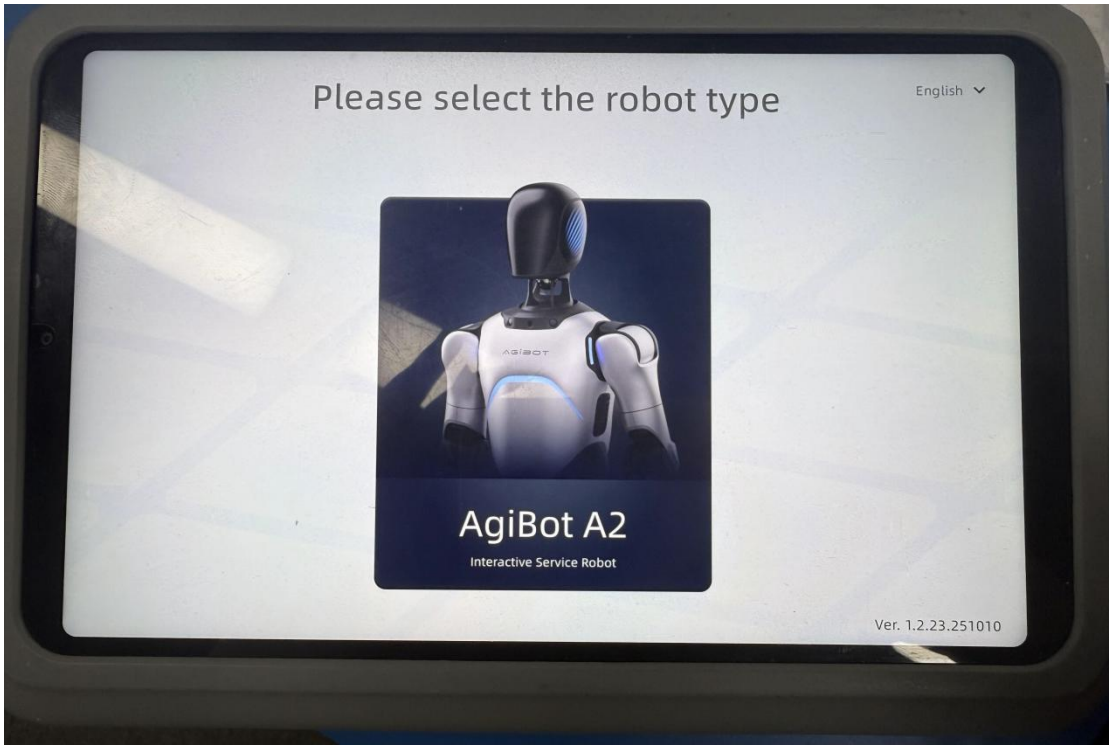
Order number	Name	Explain
①	Label	Note the following two pieces of information: Robot SN: Check the number matches before using the remote Input current: Do not exceed the limit when charging
②	Hollowed-out design on the right side of the remote	Convenient access to the emergency stop switch: Use this notch to turn the emergency stop switch on/off, check its battery level, and charge it.
③	Remote control power button	Long press to turn the remote on/off
④	Remote charging port	Located at the bottom of the remote control, it is a Type-C port.

3.3.2.2. Remote control usage

1. Press and hold the power button until the remote control displays the following screen, then release the button.

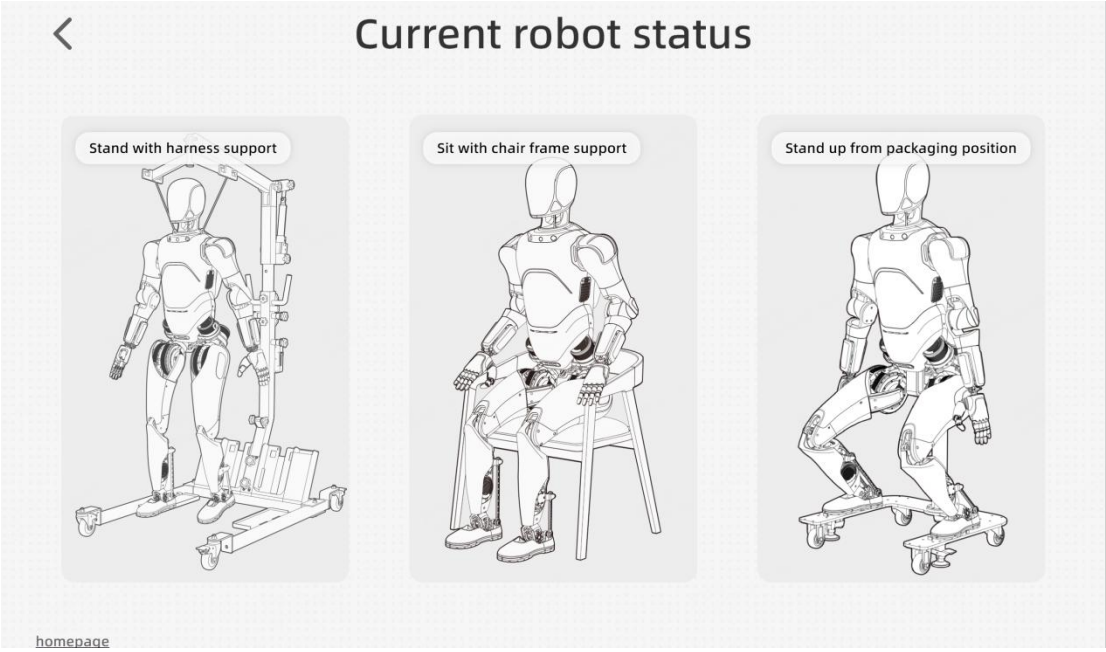
2. After the startup animation ends, you will enter the following interface. The date is displayed in the upper left corner, the remote control battery level in the upper right corner, and the time in the middle. Please pay attention to the battery level and charge it when not in use.

3. Swipe up to unlock and access the "Select Robot Type" interface in Aim-Master. The remote only supports Expedition A2, while other versions like Windows allow A2 and A2-W. Switch between Chinese and English in the top-right corner. The bottom-right corner shows the remote software version and online date.

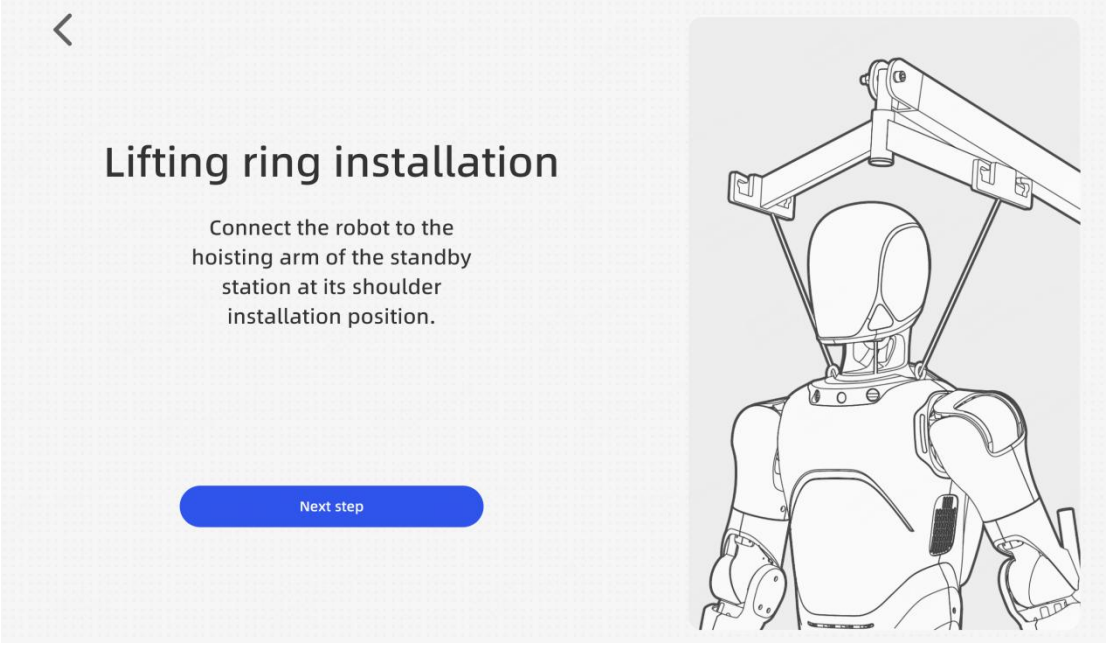


Note: Subsequent operations must be synchronized with the robot and strictly follow the process. Pay attention to the prompt information.

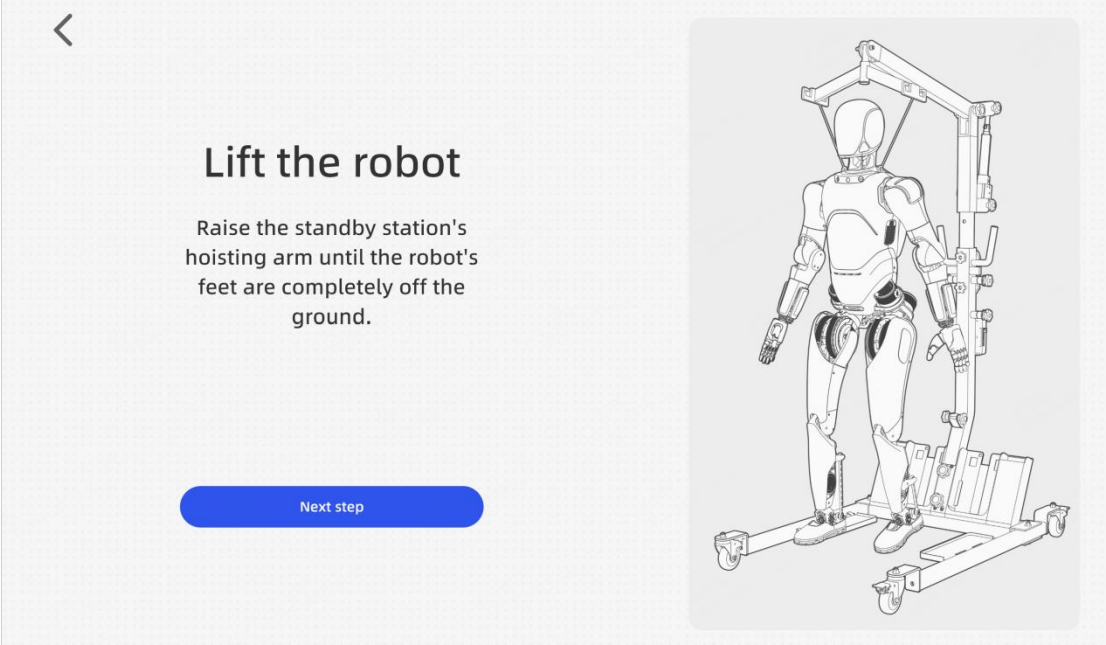
4. Click the robot image to enter the "Current Robot Status" interface, and select the corresponding status based on the actual situation (this document uses "Hanger Standing" as an example).



5. Select "Hanging Stand" to enter the "Ring Installation" interface. Check the robot's hanging ring for abnormalities and click [Next].

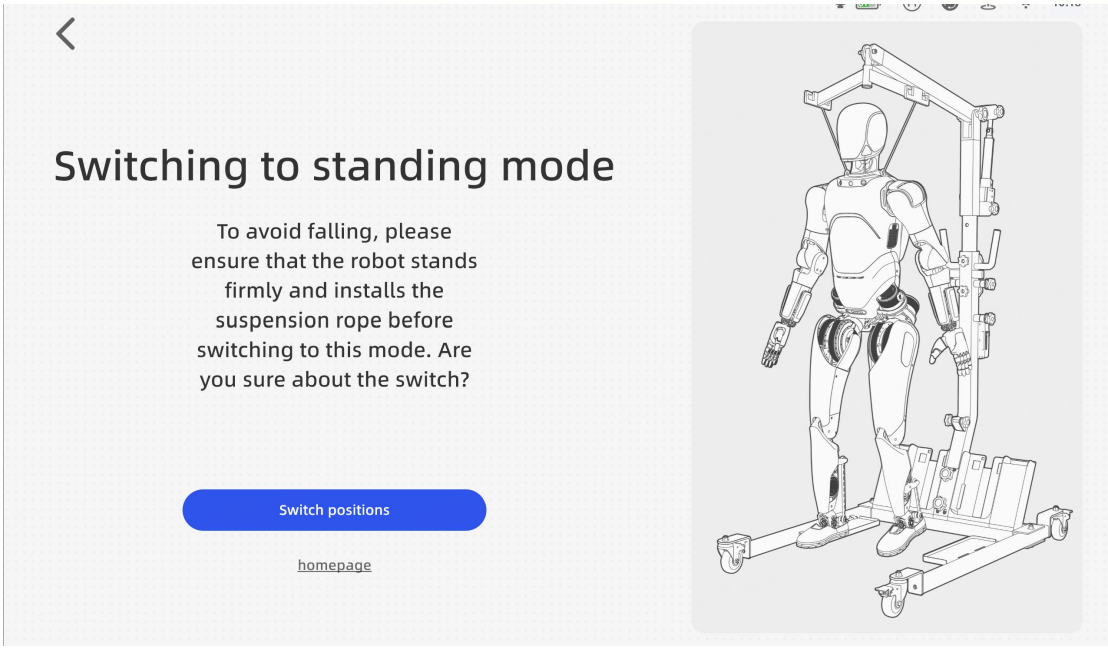


6. Enter the "Lift Robot" interface, confirm the robot is lifted, and click the [Next] button.

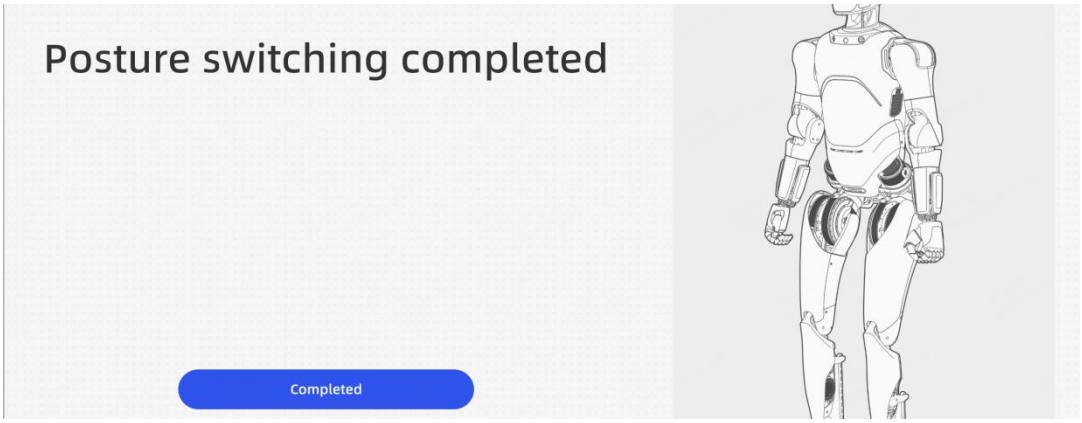


7. Enter the "Power On" interface. Press and hold the power button until the green light turns on, then release. Wait for the robot to start up (about 90 seconds). Alternatively, you can power on the robot first and use the remote control. Click the "Robot Started, Start Connection" button. After clicking, a message will pop up on the screen: "Connecting to the robot..." Once connected, the system will proceed to the next page.

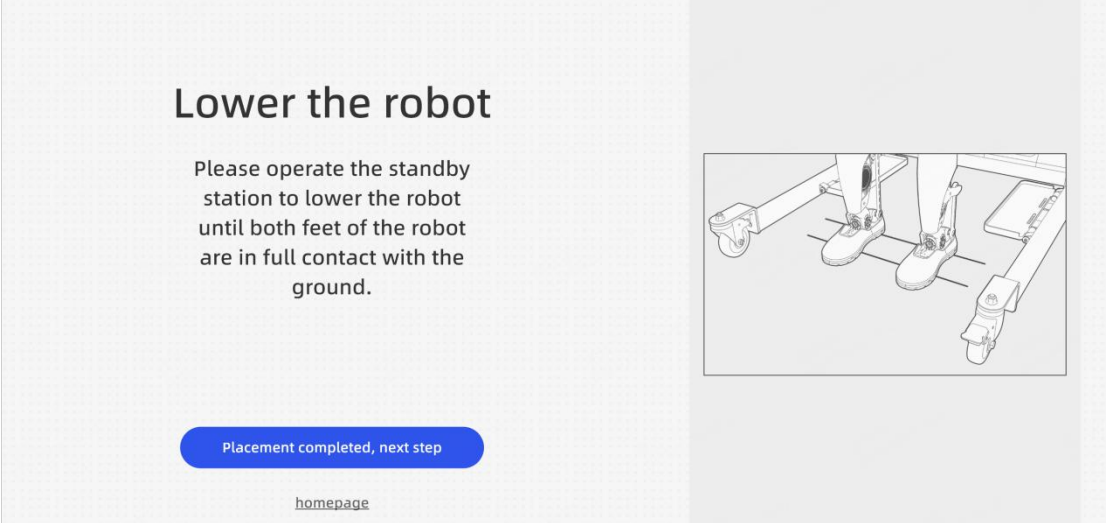
8. After the robot is connected, it will enter the "Switch to standing mode" interface. Click the button [Switch Posture] and a reminder "The robot will move" will pop up. Follow the reminder and make sure there is no person or other obstacles near the robot. Then click the red button [Switch Posture] to complete the robot's standing posture switch.



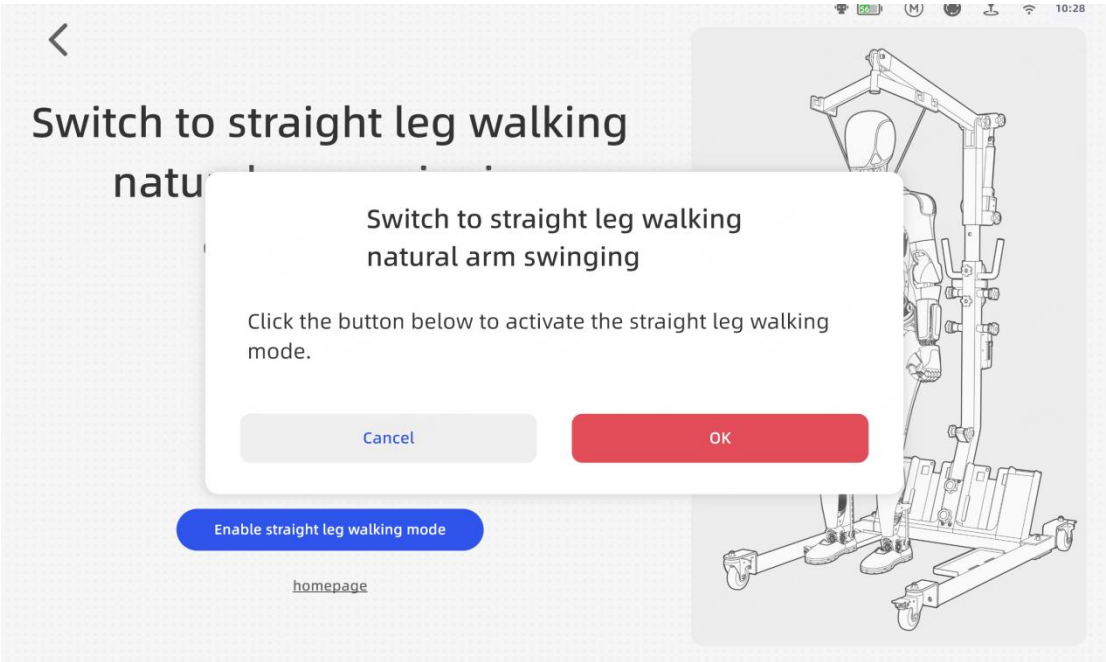
9. After the posture switch is completed, the "Posture Switch Completed" interface will be entered. The robot should appear as follows: the lower limbs will be adjusted to the standard standing posture shown in the figure below and the joints will be locked.This posture corresponds to the [Assisted Straight Leg Stand] state (the robot implements different functions corresponding to different states, which will be explained in detail in the following text). After the robot drops the ground, it can stand steadily.After confirming no abnormalities, click [Next].



10. Enter the "Lower the Robot" interface. Use the positioner to control the robot's descent until its feet fully touch the ground and the shoulder ropes are relaxed with some slack. Then click the button [Place Complete, Next Step].



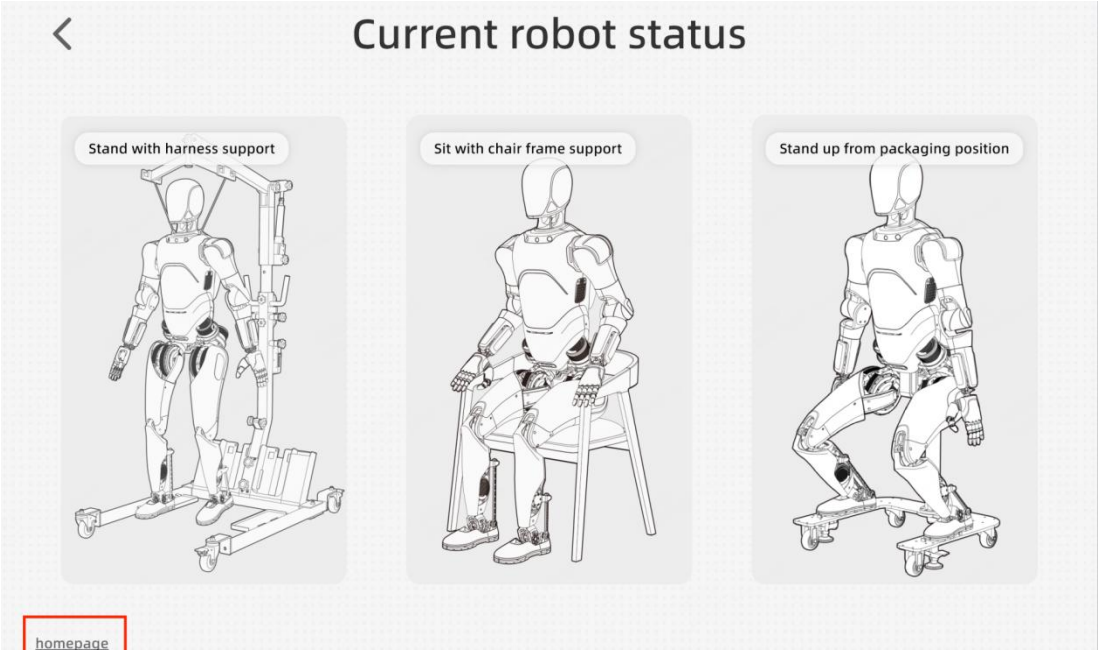
11. Enter the "Switch to straight leg walking natural arm swinging" interface and click the [Enable Walking Mode] button. The system will display a safety alert. Confirm that both legs are firmly planted on the ground. Then click [Switch to straight leg walking natural arm swinging"] to activate the robot's walking mode, corresponding to the [Human-like Walking] state. At this point, the torque output from each joint maintains its balance.



12. Then enter the remote control main interface

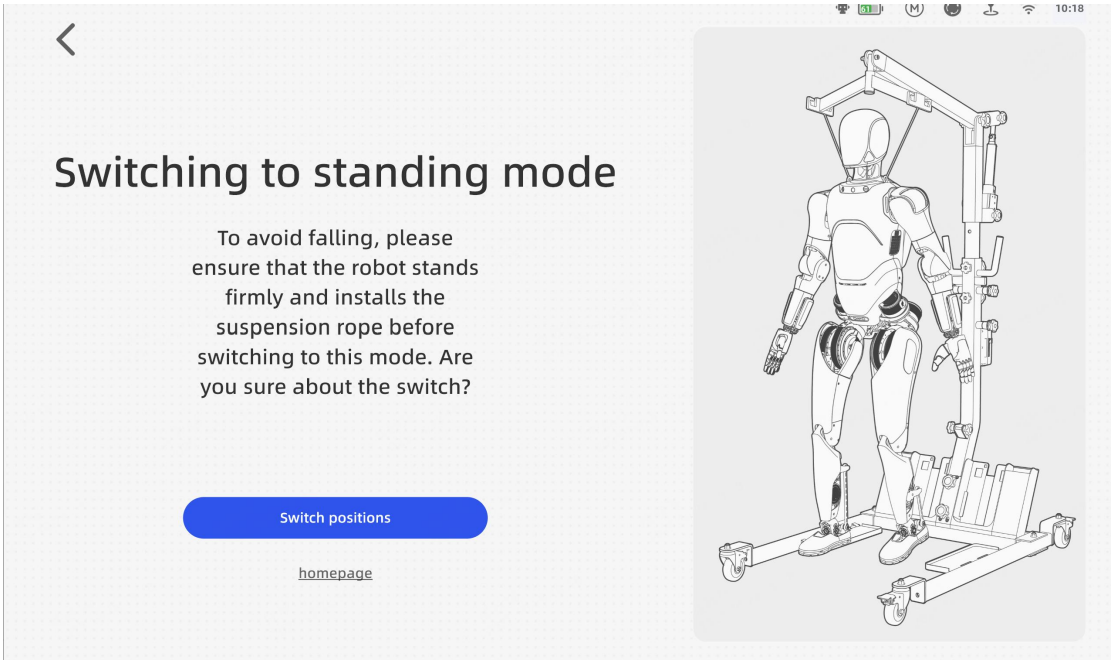
Note: Skip the tutorial and go directly to the Aim-Master main interface, then switch the robot status.

1. In step 4, click [Go to Home] in the lower left corner to skip the rest of the steps.



2. After successfully connecting the remote to the robot (starting from step 7), you can skip each step of the setup process by clicking the [homepage] button in the lower-left corner, directly accessing the main interface of the operation software. After skipping, the robot's status will remain at the previous step. To resume normal operation, you need to switch the robot's status through the [Toolbox] function and synchronize the robot's actions.

It is recommended to follow the machine instructions for the first time. Skip it after you are familiar with the robot.



3. 3. 3. Aim-Master Main Interface Introduction

The Aim-Master main interface consists of the following three sections:

1. Status bar: The topmost row of the interface displays the robot's status.
2. Function Bar: The leftmost column of the interface is the function bar, which is used to implement the functions of the robot.
3. Information bar: The remaining large area in the middle and right is the information bar, which displays the detailed information corresponding to the function bar.

By default, the Aim-Master interface opens with the [Workbench] section (the corresponding button in the function bar turns blue). The [Information Bar] displays relevant workbench details, including the robot's current map and task management panel.

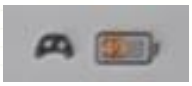
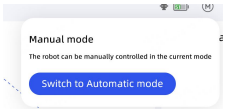
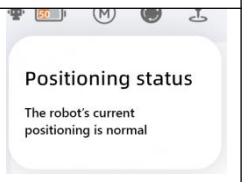
3.3.3.1. Status bar introduction

The status bar displays the robot's status information. All status icons are gray for normal and red for abnormal.

The figure below shows the status bar interface of both the PC-based Aim-Master and the remote-controlled Aim-Master.

The table below shows the status bar details:

order number		Name		Explain	Graphic
1		Robot ID		Display machine number information. To connect to the bot, you must confirm that the number matches the actual bot number.	10030B200130
2	2-1	batt ery	Robot Power	The icon color changes with battery level. When the battery is low, the specific battery level is displayed. Check the battery and charge it in time.	86

	2-1	status	Remote battery	The icon color changes with battery level. When the battery is low, the specific battery level is displayed. Check the battery and charge it in time.	
3		Manual Mode		Switch control mode by clicking the icon. There are two kinds of breakup: active and automatic: M: Manual mode, where the machine can be operated via remote control. A: Automatic mode. In this mode, the robot can only perform automatic tasks and cannot be controlled remotely. Only when the robot performs autonomous explanation tasks should it switch to automatic mode.	
4		E-Stop		Display robot emergency stop status: The icon is gray because the device is not in emergency stop mode. In emergency stop mode, the icon turns red and an exclamation mark appears in the middle.	
5		Position information		Show robot location information: The error will appear for most of the time and will be resolved after successful relocation.	
6		Network status		Robot network status. Display network signal strength normally after networking; If the robot is not connected to the network, the icon appears light gray.	
7		System time		Display the current system time.	

3.3.3.2. Feature Bar Introduction

The function bar is used to control the robot to perform different functions. You need to synchronize the robot. Detailed operation is in the next chapter.

Charpter 4 Expedition A2 Features

This chapter will provide a detailed explanation of Expedition A2's features, focusing on the Aim-Master function bar. The sequence will prioritize the robot's operational habits and the interconnections between functions.

4.1. Zhiyuan logo icon

4. 1. 1. LOGO icon

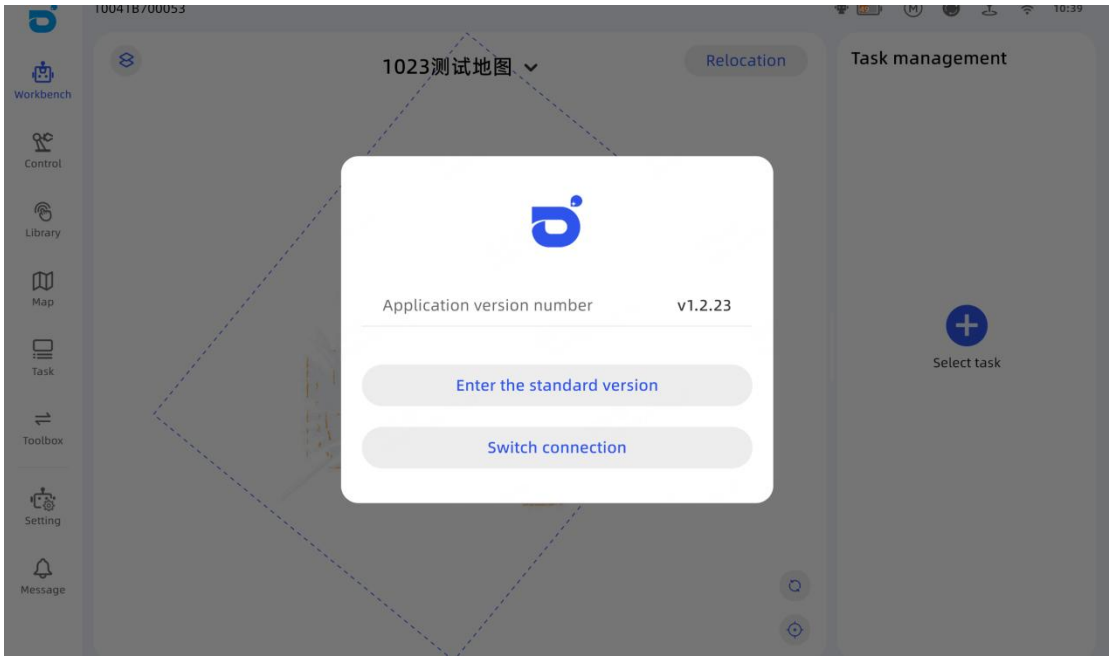
The logo function not only showcases brand identity and communicates corporate values, but also enables three distinct actions through various click interactions:

(1) Check the Aim-Master version number.

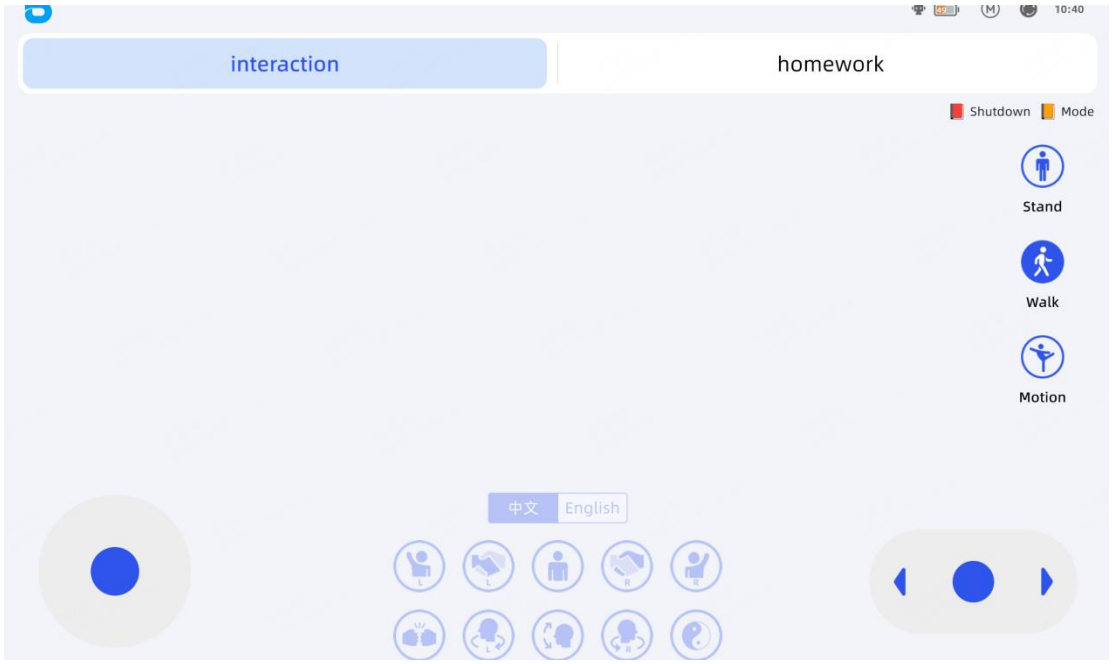
(2) Switch the connected bot.

(3) Enter/Exit the Aim-Master standard version.

1. Click the logo to open the following window, where you can view the current Aim-Master version (version 1.2.23 at the time of writing).



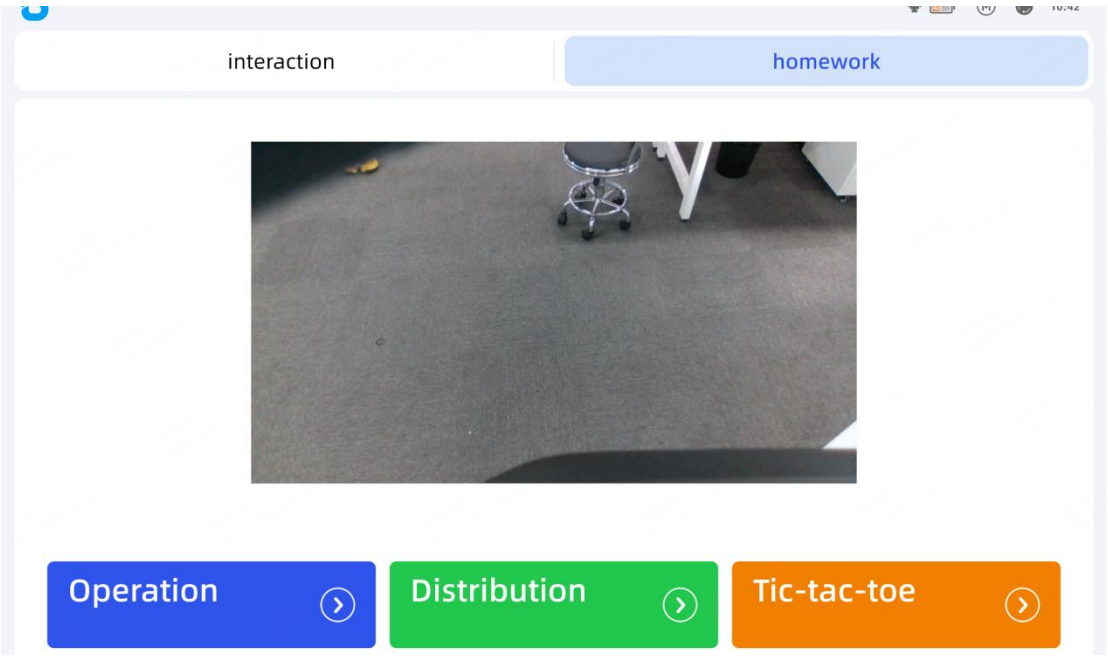
2. Click the [Enter Standard Edition] button to access the standard version of Aim-Master, with the interface shown below.



3. Click the [Switch Connection] button to disconnect from the robot and return to the Aim-Master "Select Robot Type" interface. This feature is typically used to switch control of other robots or restart Aim-Master.

4. 1. 2. Standard Edition Features

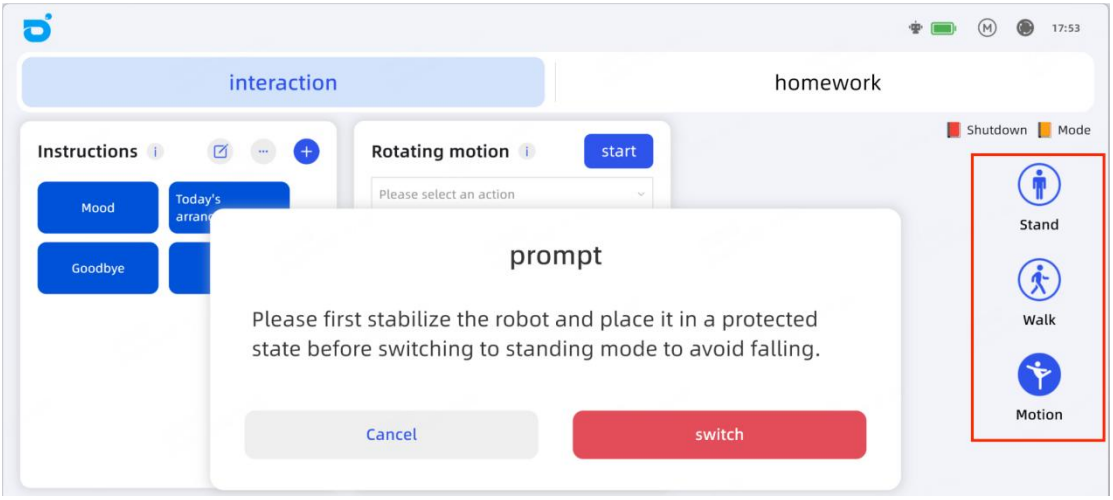
The standard version defaults to an interactive interface. Click the [homework] button above to switch to the homework interface, which currently supports three types of assignments.



The task requires a special environment. This document does not cover it.

4.1.2.1. Switch robot mode

Three mode buttons are on the right side of the interface. Double-click to switch the robot mode. Safety tips are displayed when switching. Please pay attention.

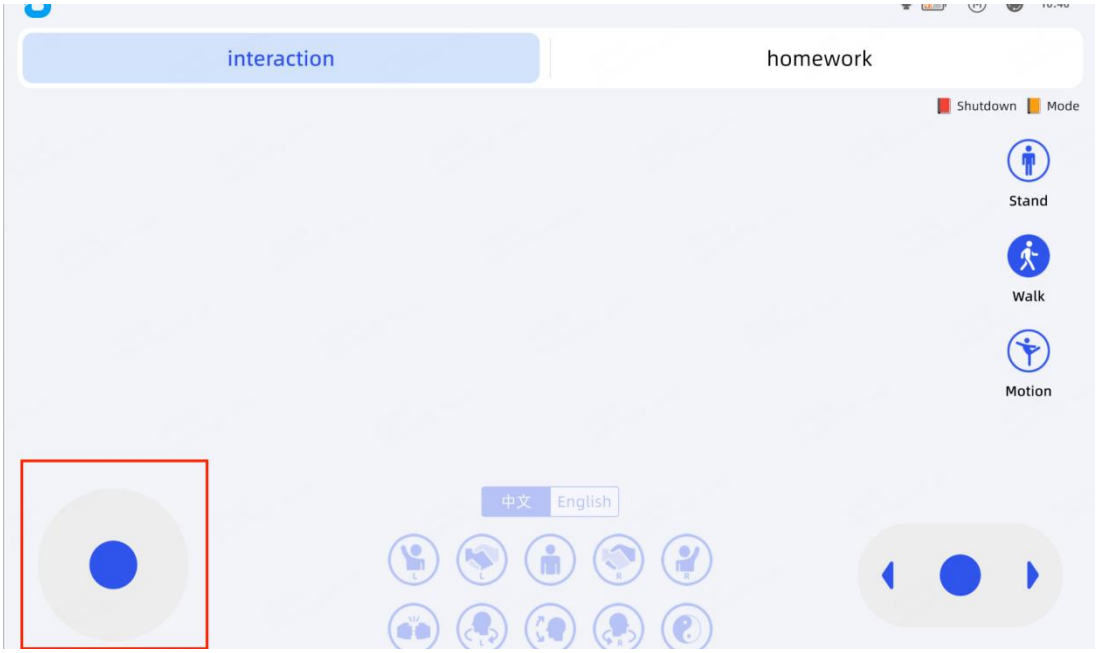


1. Stand mode: corresponds to the [Auxiliary Stand] state. In this mode, the robot has no autonomous stabilization capability and needs to be in a protected state.

Generally, the robot is switched before landing or lifting.

2. Walking mode: Corresponds to the [Huamnoid Walking] state. In this mode, you can remotely control the robot's movement using the following virtual buttons.
3. Action mode: Corresponds to the [Upper limb action] state. You can interact with the robot in this mode.

4.1.2.2. Walk Mode Details



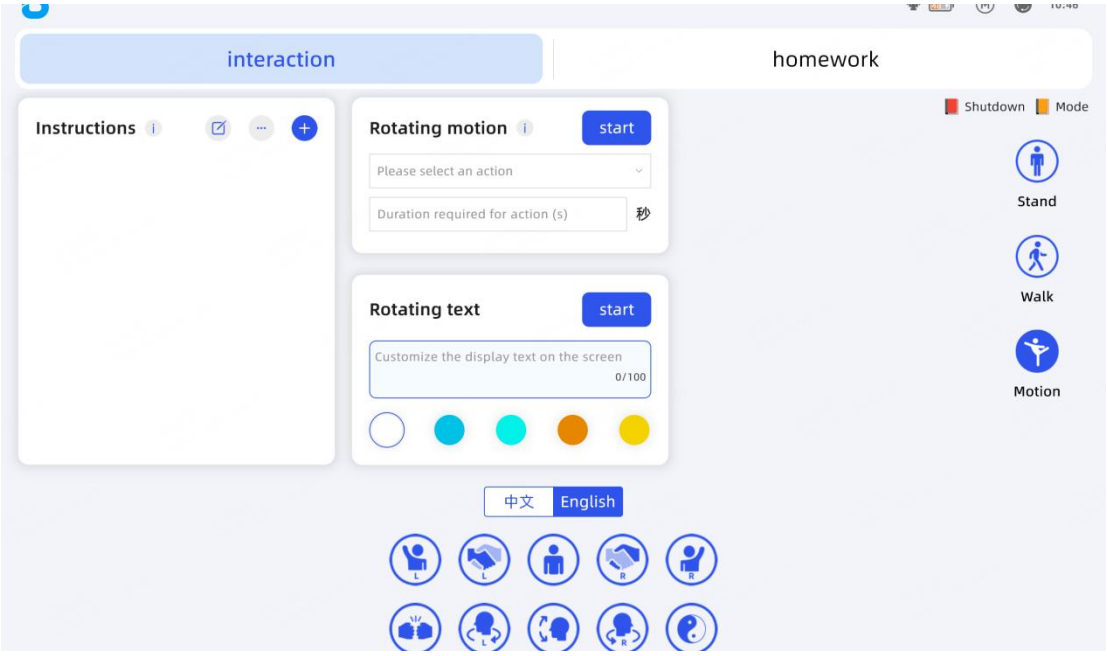
1. In walking mode, you can control the robot to move in all directions by pressing and dragging the virtual button on the left:
   (1) Drag the button in the direction of the robot's movement.
   (2) The distance you drag the button affects the robot's speed.
   (3) Release the button to stop the robot.
2. Press and hold the right button to control the robot's turn:
   (1) The direction of the drag button is the robot's steering direction, and the steering speed is fixed.
   (2) Release the button to stop the robot from turning.

   Note: The stopping time and distance of the robot movement are related to its speed. Please adjust the machine accordingly.

Start the next move after the robot stops completely.

4.1.2.3. Interaction Mode Details

The Interaction mode interface is as follows. The main functions in this mode are: customize instructions for the robot, set the rotation action, set the rotation text, and play the preset action with Chinese and English voice.



1. Custom command

You can create instructions for the robot that include voice, action, and expression. After creating the instructions, a command button is generated. Double-click the button to trigger the instructions. This function is generally used in dialogue scenarios that need to ensure the interaction effect, so as to avoid the robot from misrecognition or inappropriate answers.

You can edit, delete, modify, or sort created instructions.

You can copy commands or import commands copied from other sources.

(1) Create command

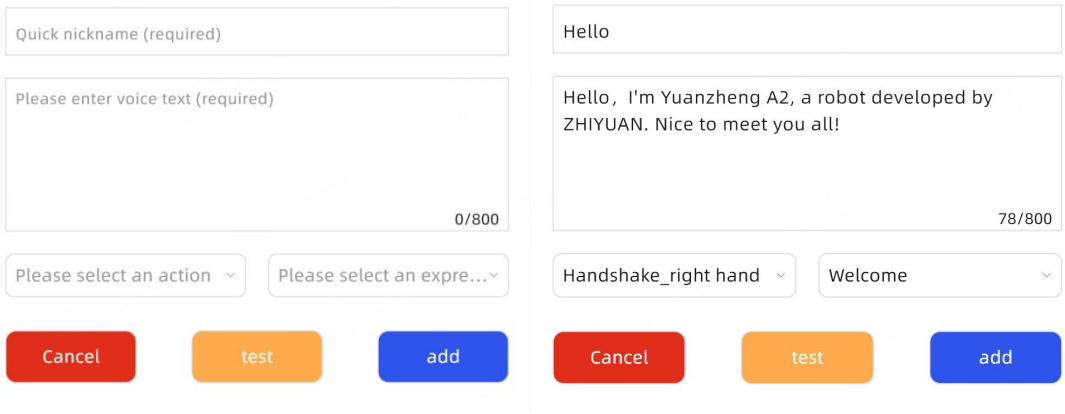
Click the [+] button to open the command creation interface. Follow the prompts to complete the following four command items:

① Shortcut nickname: The name of the command. It should summarize the command content so you can easily understand it by name.

② Enter voice text: The text input when the robot executes this command will be converted into speech and read aloud.

③ "Select action": The action the robot will perform when executing this command. You can select one from the action library.

④ "Select a face": The robot will display this face when executing the command. You can select one from the face library.

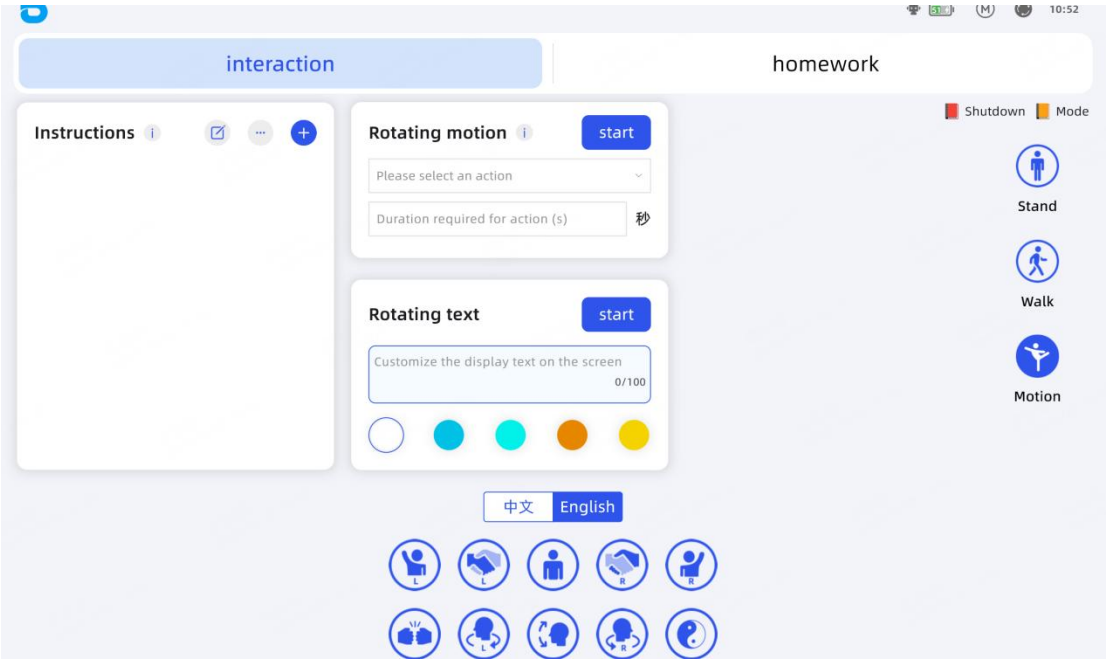


After completing the above four items, you can select the following three buttons:

[Cancel]: Discard this command.

[TEST]: Test the effect of the instruction. Generally, it mainly tests whether the action duration matches the speech duration, and whether the action and expression are consistent with the situation. If not, you can directly modify the instruction content.

[Add]: Save the command. After saving, the command button will appear in the blank area below. Double-click to execute the command. The robot will play the voice content and display the corresponding actions and expressions.

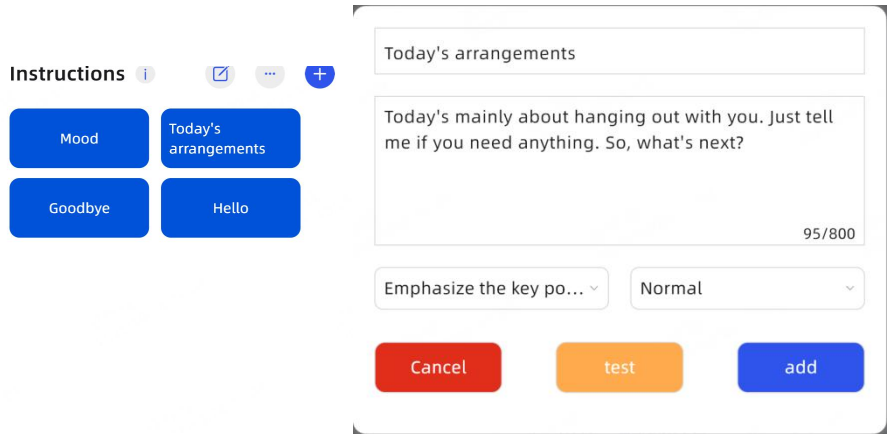


(2) Edit instruction

Click the icon to enter command editing mode. In this mode, tap the red [x]

icon in the upper-right corner to delete a command. Press and hold the command name until the shadow effect appears, then drag to reorder. Double-tap the command name to access the content adjustment page. Click [Exit Edit] to exit the mode.

Note: Unlike the [Cancel] button when creating a command, clicking [Cancel] in edit mode will discard the edited content and keep the original command.

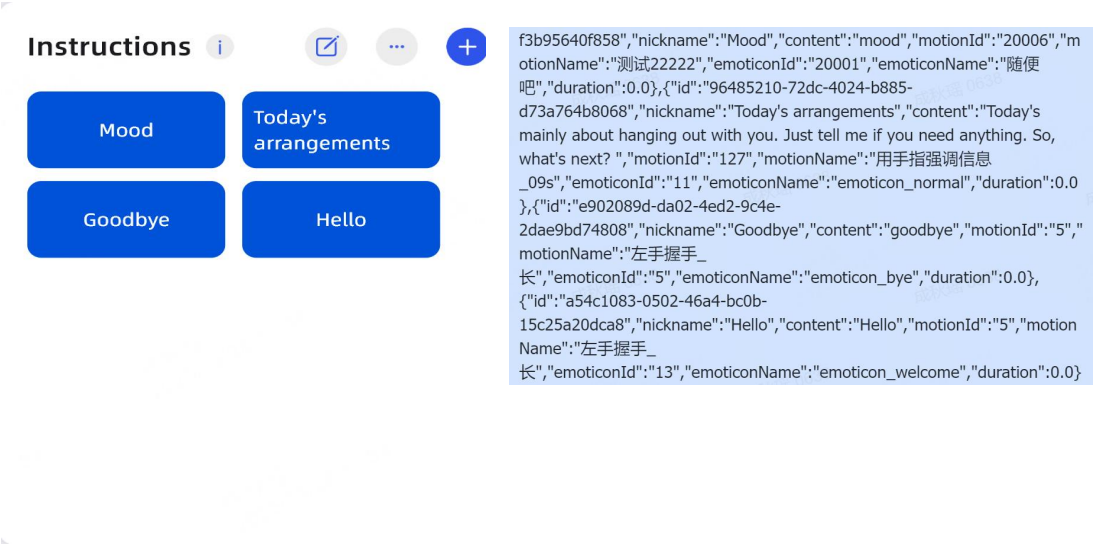


(3) Copy and Import Commands

Custom commands are stored on the remote control and do not migrate with it. After replacing the remote control, you need to manually copy and import them.

Custom commands from the same remote device can be executed on any connected robot.

Click ··· the icon to copy and import all command content. Select [Copy to Clipboard] to send commands to others via messaging apps. Choose [Import from Clipboard] to paste copied commands into the remote control platform. This will overwrite existing commands, so proceed with caution.



2. Rotation motion

Select an action from the action library, set a specific time, and click the [Start] button. The action will repeat at the set time until you click the [Stop] button again.

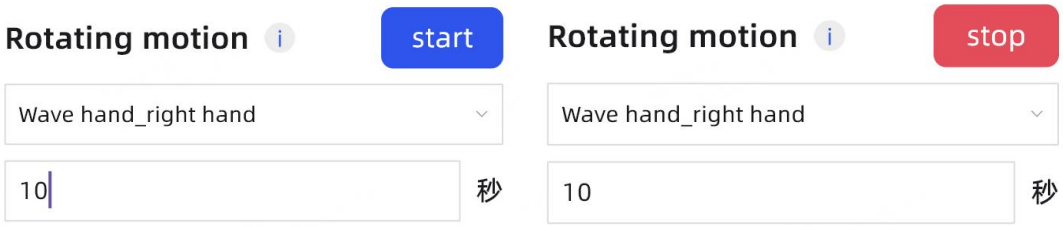
It is generally used in fixed work scenarios that do not require interaction, such as setting up a right hand waving action every 10 seconds, which is similar to the money cat function in convenience stores.

Note: The interval time refers to the time after which the selected action starts again. Actions have different durations, so this function may appear in the following three cases. Set it according to the specific situation in the actual application process.

The action time is shorter than the interval time: for example, the action duration is 6s and the interval time is 10s. In this case, the robot will be silent after the 6s action is completed and will start the action again at the 10s.

The action duration exceeds the interval time: for example, if the action duration is 10s and the interval time is 6s, the action will be interrupted and restarted at the 6th second.

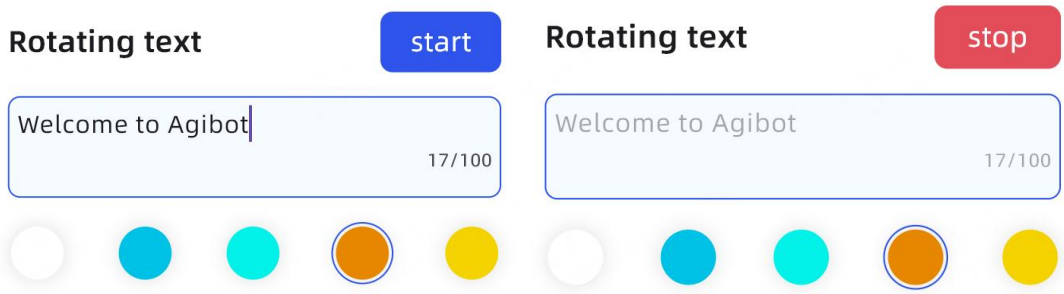
The action time equals the interval time: if the action duration is 6s and the interval time is 6s, the robot will immediately start the next action after completing the action for 6s.



3. Carousel text

This feature displays custom text on the robot screen continuously. The text length cannot exceed 100 characters. After editing, click the [Start] button. Click the [Stop] button to end the text rotation.

You can choose five font colors. After changing the color, you need to stop and start again.



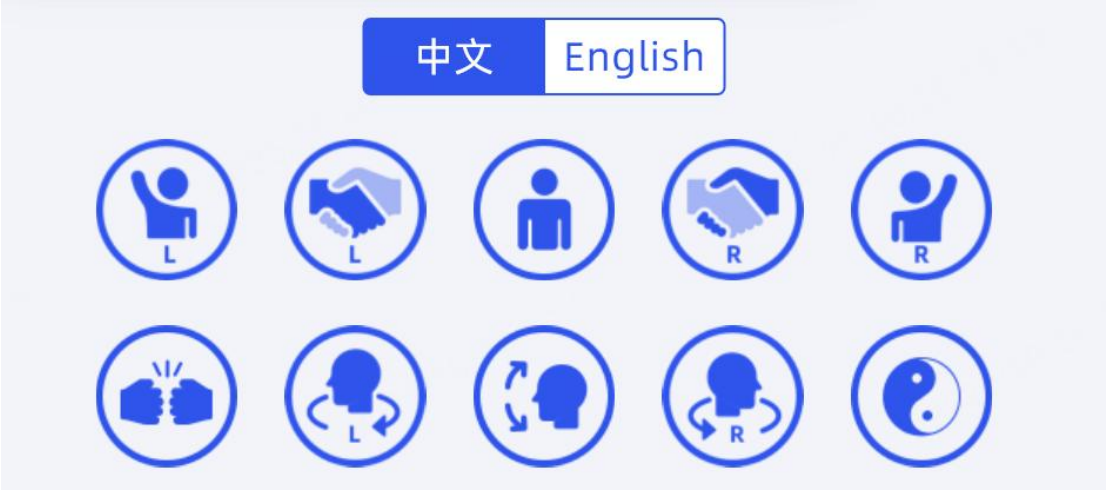
4. Play preset voice actions

The voice support for the current action is available

in both Chinese and English. You can switch between them using the button.

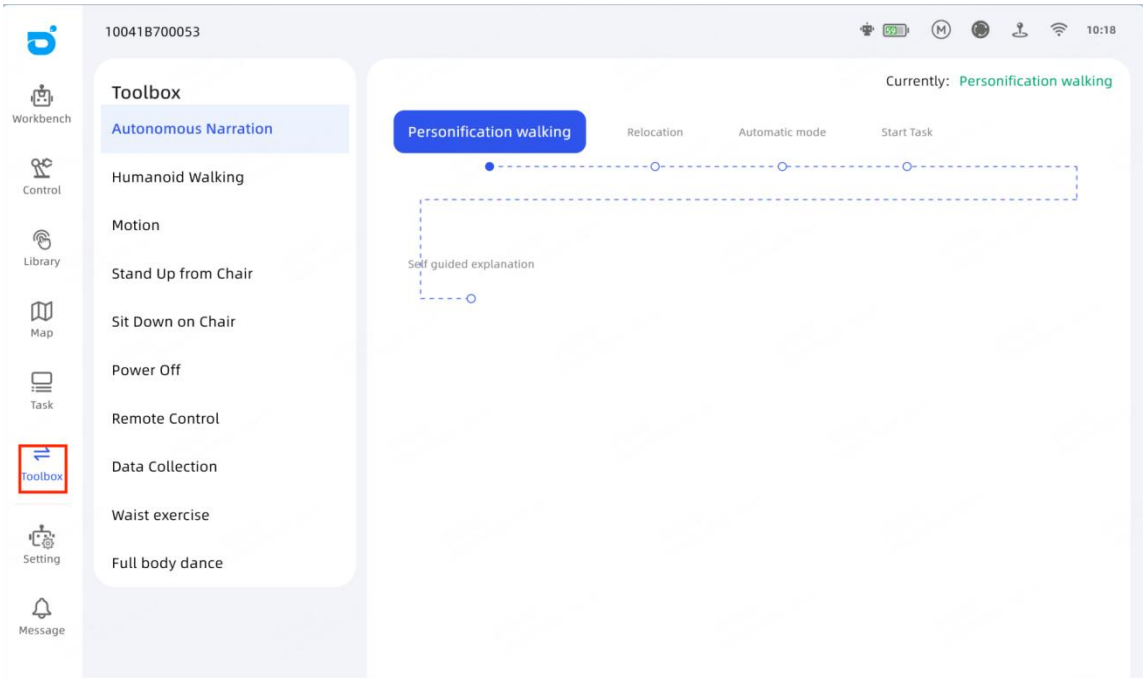
There are 9 actions to support playback, including waving left/right hand, shaking hands left/right hand, right fist, turning head left/right, nodding and practicing tai chi.

This is a reset button. Click it to end the robot's current action early.



4.2. Toolbox

The Toolbox feature allows switching between different robot states. All robot functions require switching to the corresponding state to be activated.

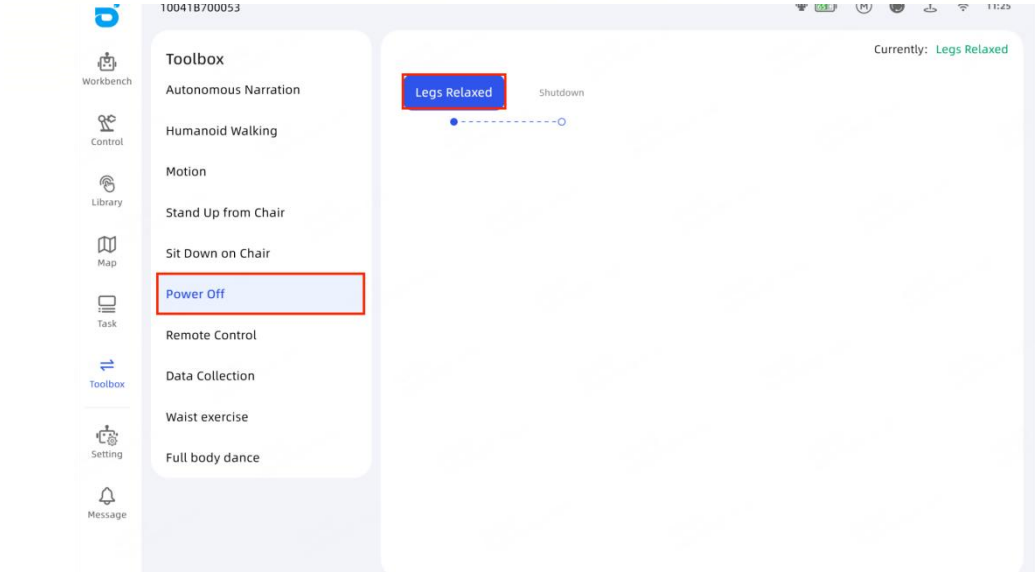


This function involves robot joint movement, there are many precautions, operation must be familiar with the precautions, to avoid accidents.

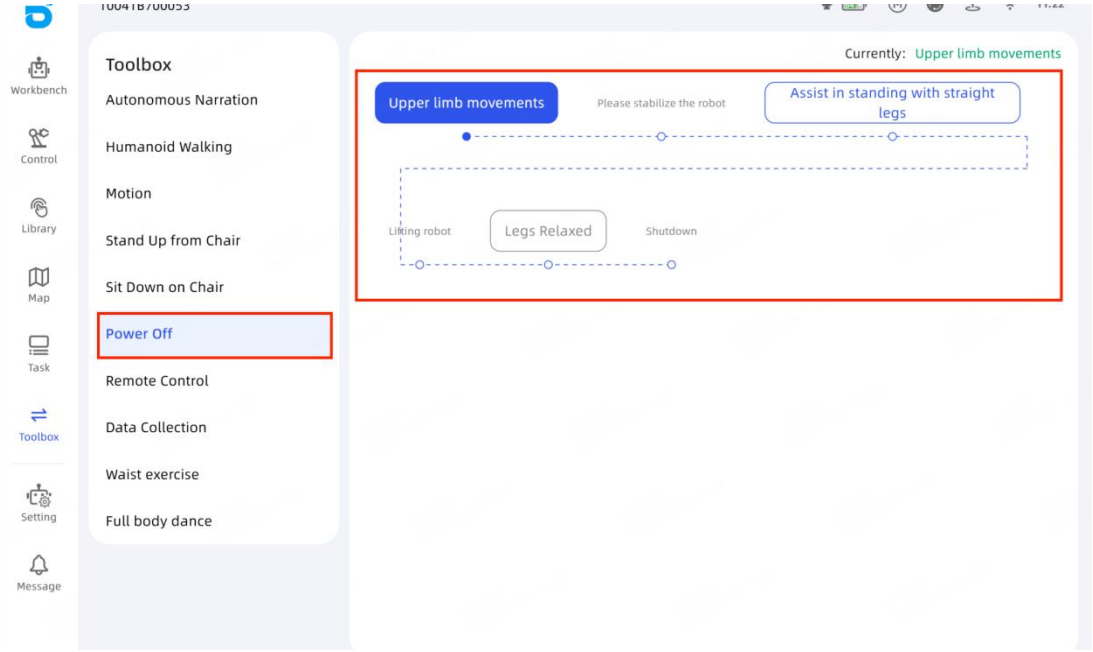
After selecting the Toolbox feature, the left-hand function list bar in the information interface displays all the robot's functions, while the right-hand side shows the corresponding operation flow for each function.

Take the "Shut down" process as an example:

The process of turning on and off the device is as follows:



To shut down in interactive mode, follow these steps:



In the operation process, the font with a border is the robot status switch button. Double-click the button to manually switch the robot status.

Note: All operations will affect the robot. You must be familiar with the following information and strictly follow it during operation.

1. "Blue background with white text" indicates the robot's current status, such as the [Upper Limb Movement] in the above process.
2. "Blue border, blue font" is the next state to switch to, such as [Assist in standing with straight legs] in the above process. However, pay special attention to the instructions or prompts before switching and strictly follow them.
3. "Gray border, gray font" is currently unavailable. Complete the required steps,

such as [Legs Relaxed] in the above process.

4. The borderless font is for instructions or prompts for different operations. Please check carefully and strictly follow them, such as "Please hold the robot firmly" in the picture.

4.2.1. Status Description

4.2.1.1. Common robot states

There are four common states:

1. [Legs Relaxed]: This state of joint decompression for the lower limbs applies in two specific scenarios:
   (1) Before landing: The robot is in the default state of [Legs Relaxed] after startup. Switch to [Assist in standing with straight legs] state before landing, and then lower the robot.
   (2) Before shutting down: Switch to [Legs Relaxed] after lifting to relieve pressure on the lower limb joints before shutting down.

Note: In the [Legs Relaxed] state, the lower limb joints of the robot are disabled. The switch must be in the lifted state of the displacement machine. You must be familiar with and strictly comply with the usage conditions. It is strictly prohibited to switch the [Legs Relaxed] state when the robot is on the ground.

2. [Assist in standing with straight legs]: The state the robot transitions to before landing and lifting. Once in this state, all joints rotate to fixed positions and lock to maintain balance.

Note: In this state, the robot can be regarded as a model, unable to adjust the balance, and it is easy to fall when affected by external forces. Therefore, it is not possible to remove the protection or stand for a long time in this state after landing. It is necessary to switch to other states as soon as possible.

3. [Upper Limb Movement]: The state to switch between when interacting with the robot remotely. When the robot's lower limbs are standing or walking, the upper limbs can perform interaction actions (voice interaction can be performed in any state, see 5.3.2 for voice interaction).

Note: In this state, the robot's joints will output a certain torque to counterbalance the external forces (such as gravity) that cause it to lose balance to maintain stability. If

the force is unbalanced and insufficient to fall, the robot will automatically move its lower limbs to adjust the balance.

In this state, do not lift the robot. Sudden weightlessness will cause the lower limbs of the robot to swing irregularly and greatly, which may cause injury to personnel or damage to the machine.

4. [Humanoid walking]: The state corresponding to the robot's walking function. In this state, the robot can move through remote control, and the robot can achieve human-like walking with natural swinging of the upper arm.

Note: The robot cannot be lifted in this state.

4.2.1.2. Other statuses

The following states require strict compliance. Before use, ensure you understand the robot's status and can manage the situation.

It is recommended to operate under the guidance of professionals and confirm that you have mastered it before operating independently.

[Sit]: For the "sit on chair" function, which allows the robot to sit on a specific chair.

[Chair Stand Up]: Used to make the robot stand up after sitting on the chair.

[Waist Movement]: Controls the robot's waist movement during remote operation.

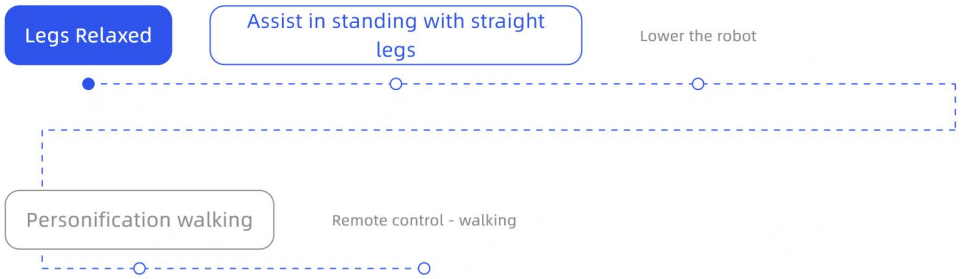
4.2.2. Function Implementation

4.2.2.1. Humanoid walking

The humanoid walking function can be controlled by the remote control to realize humanoid walking.

Select "Humanoid Walking" from the function list. After selection, the interface will display the robot's operation flow from the current state to achieving the anthropomorphic walking function on the right side.

Switch the robot to [Humanoid Walking] mode to enable walking.



The operation steps are as follows. Since the process varies depending on the state, this is for reference only. Follow the actual process when operating. Subsequent functions will not list the switching steps.

(1) Switch the robot to [Assist in standing with straight legs] mode.

(2) Move the robot down with the manipulator.

(3) Switch the robot to [Humanoid Walking] mode.

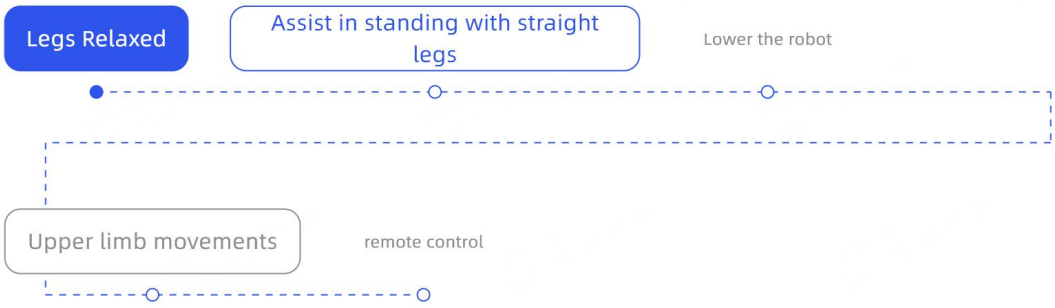
(4) You can use the remote control to control the robot to walk.

4.2.2.2. Interactive Features

Voice interaction can be performed in any state. Here, we demonstrate remote interaction with a robot.

Select the Action Mode feature in the function list. The process of actions required to transition from the current state to the interaction function will be displayed on the right side of the interface.

Follow the workflow to synchronize the robot. After switching the robot status to [Upper Limb Action], you can use the remote control to control the robot for motion and expression interaction. For details, refer to Remote Control Interaction.

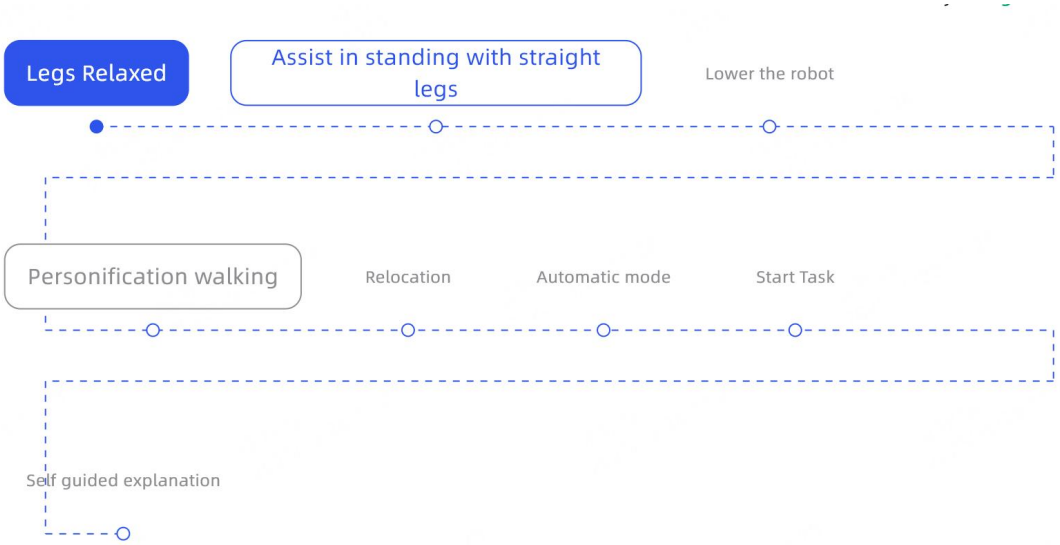


4.2.2.3. Self-Explanation

Select "Self-Explanation" from the "Function List". After selection, the robot's

workflow from the current state to implementing the self-explanation function will be displayed on the right side of the interface.

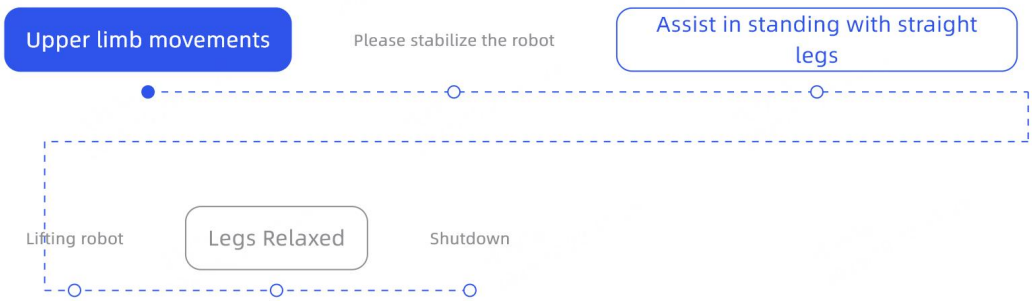
Follow the workflow to synchronize the machine, and switch the robot status to [Humanoid Walking] to start the task autonomously by referring to the workbench in the chapter.



4.2.2.4. Power Off

Shutting down the robot will cut off the power. Do so while the robot is protected. If shutting down the robot while it is on the ground, follow these steps:

1. Connect the manipulator boom to the robot shoulder ring.
2. Stabilize the robot.
3. Switch to [Assist in standing with straight legs].
4. Move the manipulator crane to lift the robot so that its feet are higher than the base of the manipulator.
5. Switch the robot to [Legs Relaxed] to turn off the joints.
6. Press and hold the robot shutdown button until the operating noise stops, then turn off the machine.



4.2.2.5. Other features

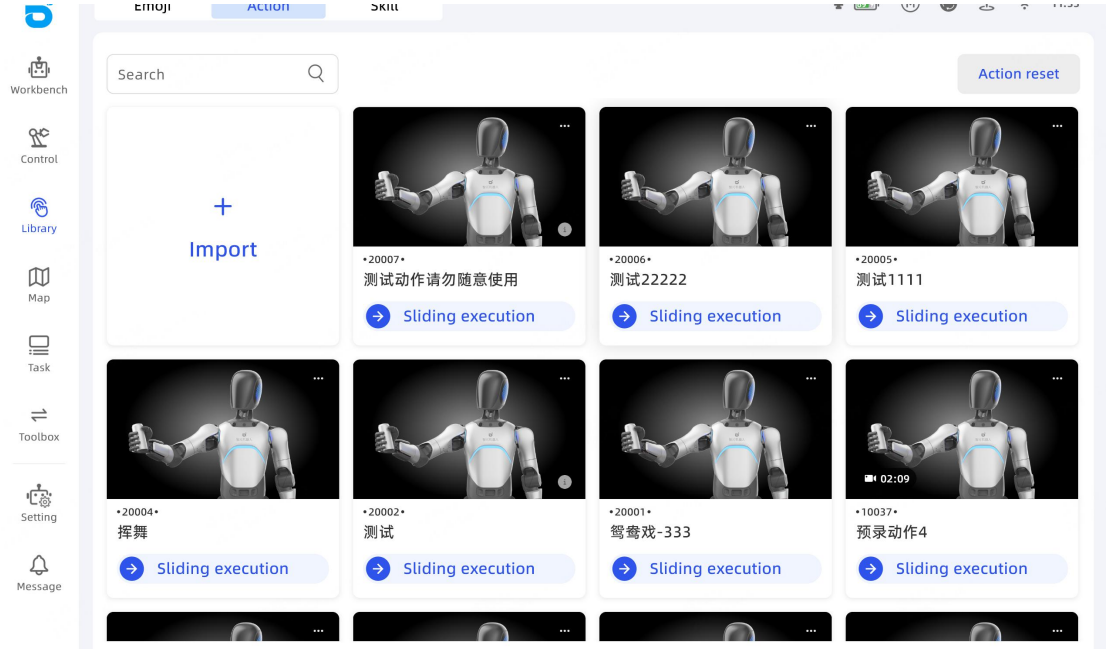
The current version of the robot also has other features, such as chair standing, chair sitting, remote operation, and data collection. These features are non-standard and require additional equipment, so this document does not provide detailed explanations.

4.3. Interaction

Interactive features enable human-robot interaction. The Expedition A2 features: displaying various facial expressions, performing upper limb movements, voice dialogue, and responding to commands with corresponding feedback.

The Yuan Zheng A2 features two interaction modes: remote control and voice commands.

1. Remote interaction: Send commands to the robot with a remote control to control the robot to interact with the person.
2. Voice interaction: Interact with the robot through voice dialogue.



4. 3. 1. Remote Interaction

Remote interaction includes two types of interaction: expression interaction and action interaction. In addition to the default actions built into the robot, you can

customize the robot interaction actions by using motion capture devices.

Emotion interaction can display different expressions on the robot's face, which can be done in any state after the robot is turned on.

Motion interaction involves the movement of the robot's upper limb joints, and the following preparations are required:

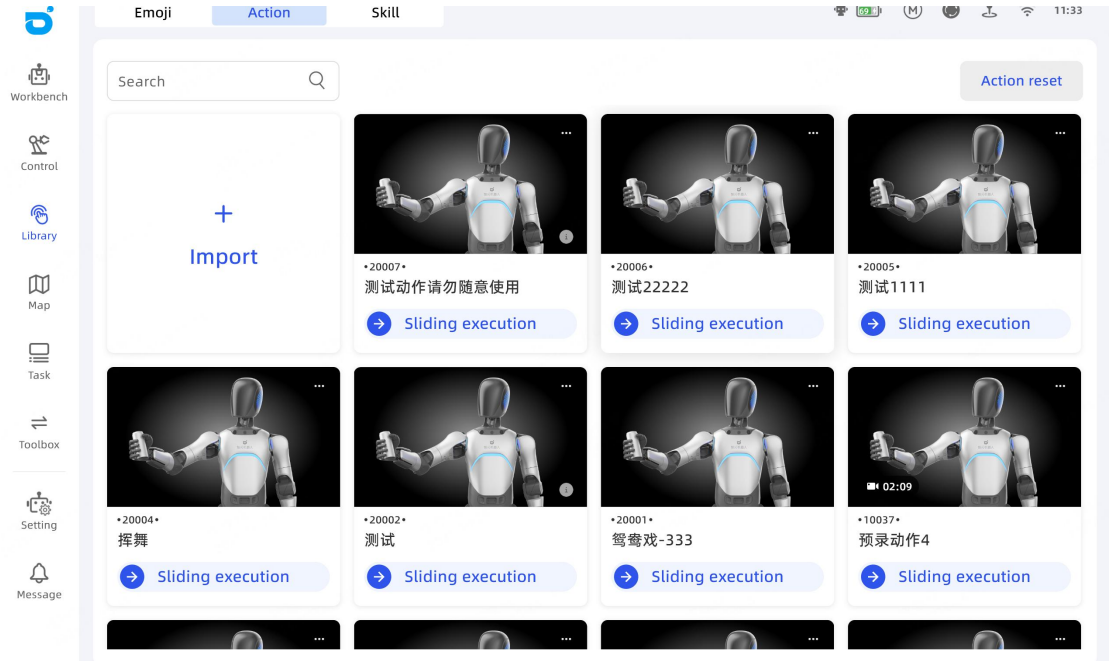
(1) The robot is now on the ground. Switch to Upper Limb Movement mode.

(2) No personnel or obstacles are present within the working space of the machine (1m).

(3) If the machine is in the mobile Lift protection state, another person is needed to assist in pushing the mobile Lift.

In the interaction details page, the status bar has three interaction options: "Emoji" (for emoji interaction), "Action" (for action interaction), and "Skill" (not available in the current version). The default is "Action" interaction. Click different buttons to switch between the corresponding methods.

4.3.1.1. Action Interaction



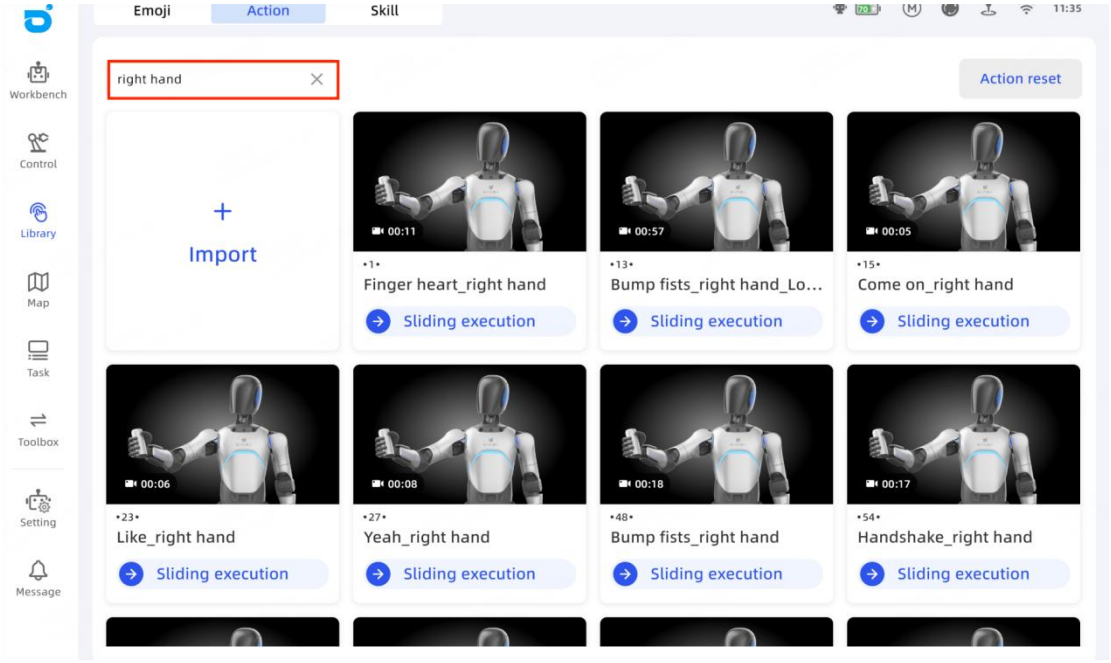
1. Action Play

Under the "Action" list, you can control the robot to do the corresponding action by sliding the slider below the action label. The action file is executed once, and each action has a different duration, which is displayed in the lower left corner of the label. After the robot completes the action, the upper limb will return to the natural hanging

posture.

2. Action Search

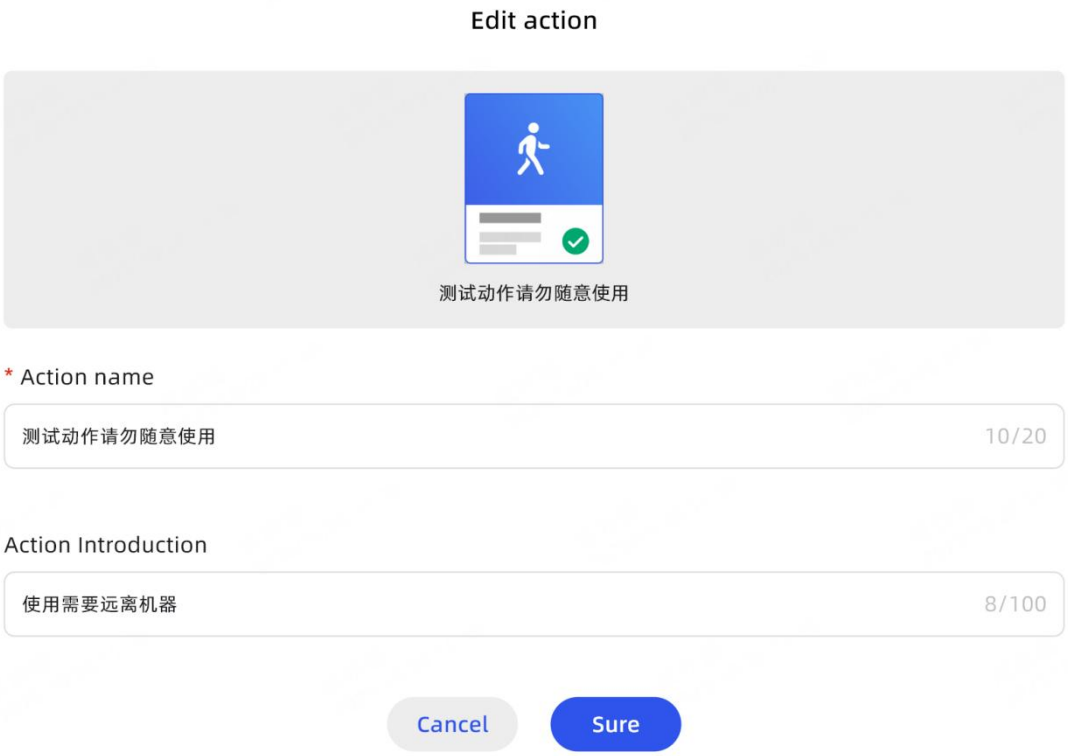
Enter the action number or name in the search box to filter the required actions. The search function uses fuzzy matching. After entering the content, the action list below displays all actions containing the input.



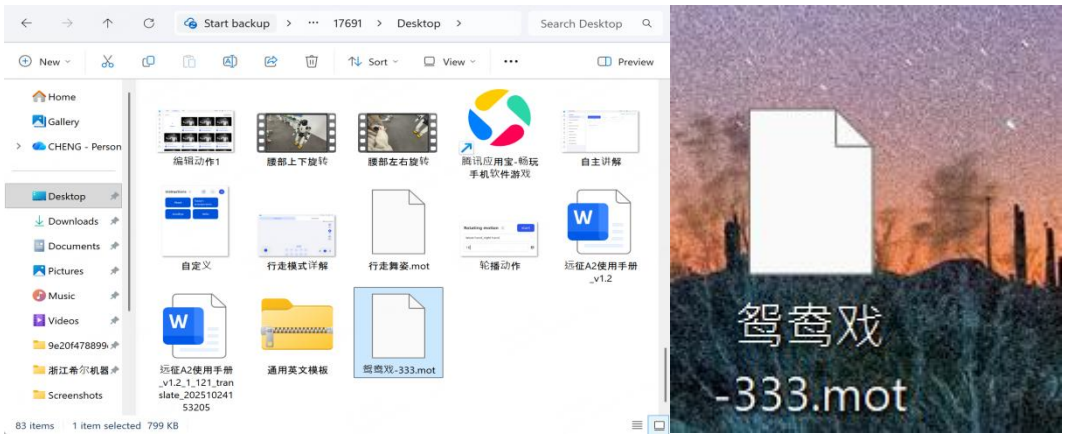
3. Action Edit

Click the button in the upper ··· right corner of the action tab. In the pop-up options, you can choose to edit, export, or delete actions. This operation applies only to your own action files. System preset actions cannot be edited.

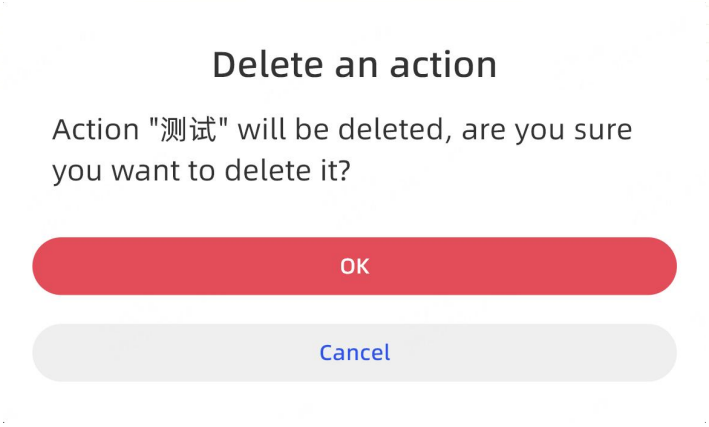
(1) Edit: You can modify the action name and description.



(2) Export: You can export the action file to a local device. The exported file is in.mot format. This feature can be used for action backup or to import the action file into other robots of the same model.



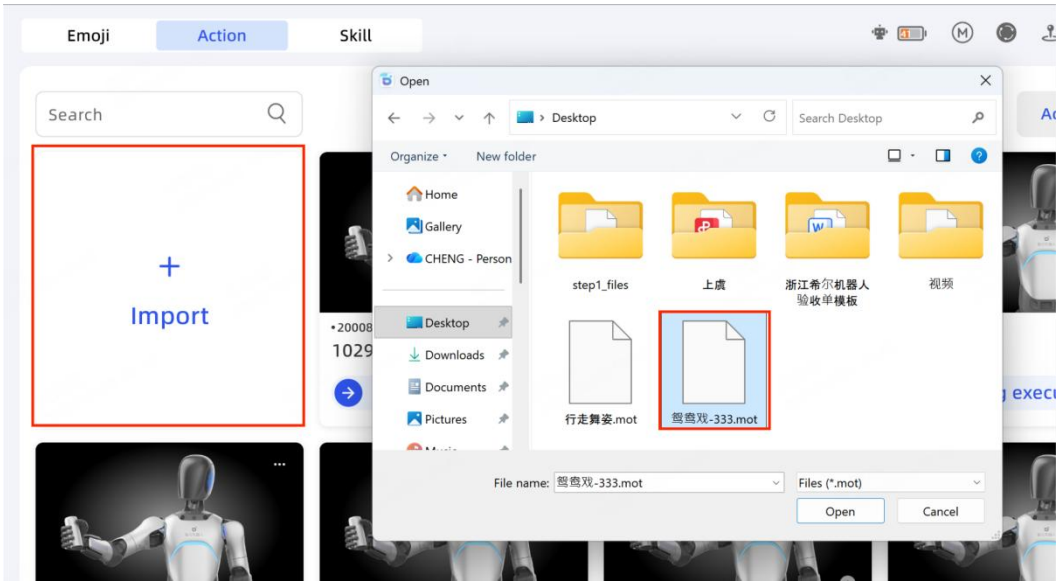
(3) Delete: Delete the selected action file.



Note: Deleting will permanently remove the actions saved in the bot body. This operation cannot be undone. If you need to perform the same actions again, you must record them again. A pop-up will appear when deleting. Be careful.

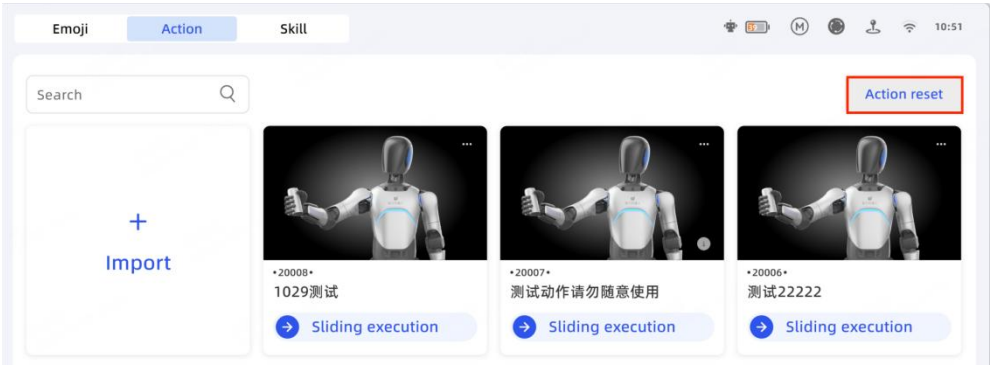
4. Import action

Click the [Import] button to select a local emoji file. The local action file can be imported into the robot and displayed and played in the action list.

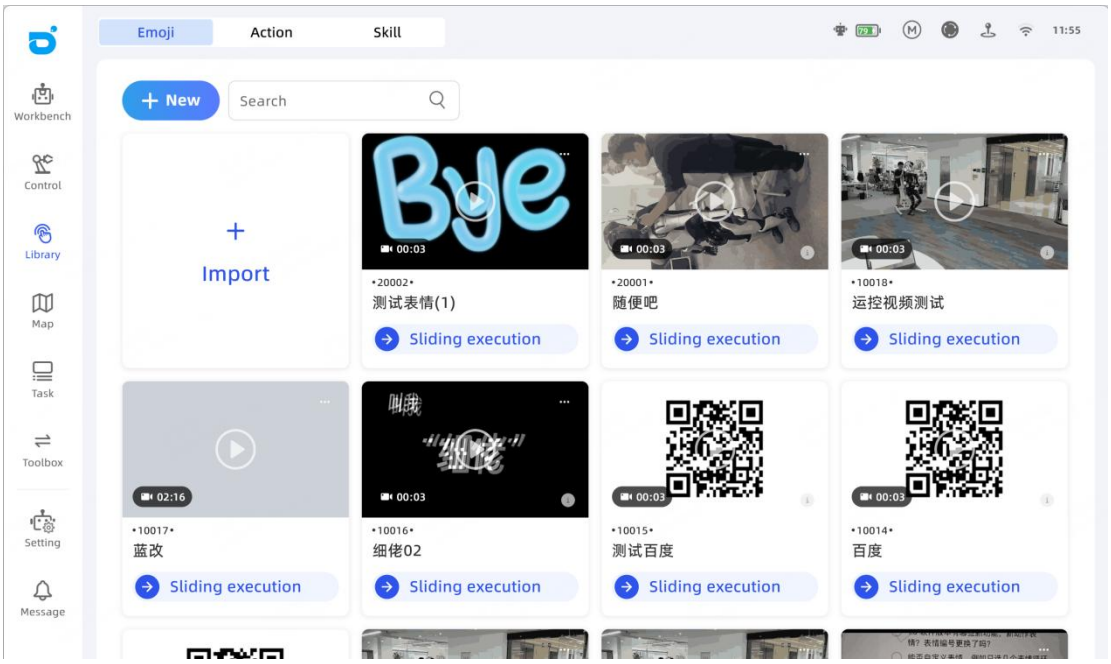


5. Action Reset

To end the action early, click the [Action Reset] button in the upper right corner.



4.3.1.2. Emoji interaction



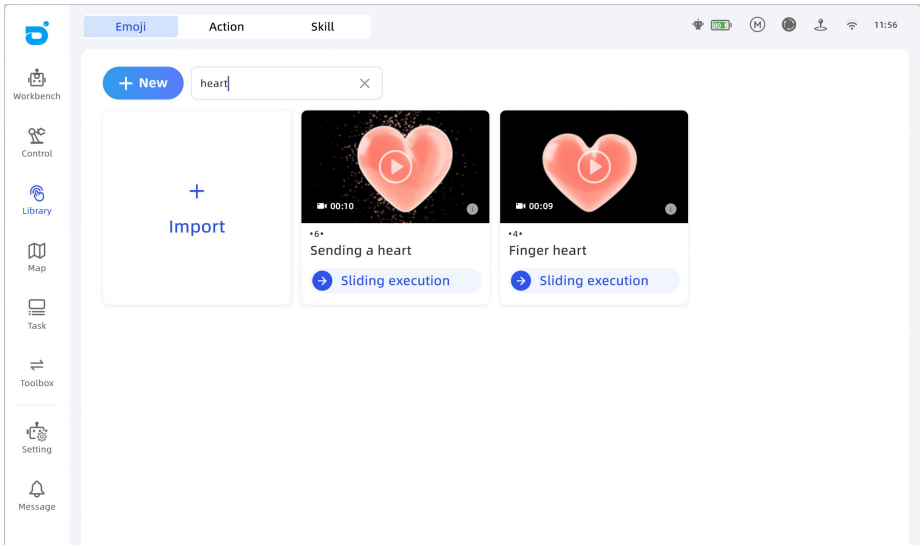
1. Emotion play

Click the [Emoji] button in the status bar to switch to emoji interaction.

Under the "Emojis" list, you can control the robot to play the corresponding facial expressions by sliding the slider below the emoji tag. The duration of the expression is displayed in the lower left corner of the tag. After selecting an emoji, if no other conditions trigger the emoji switch, the emoji will play in a loop.

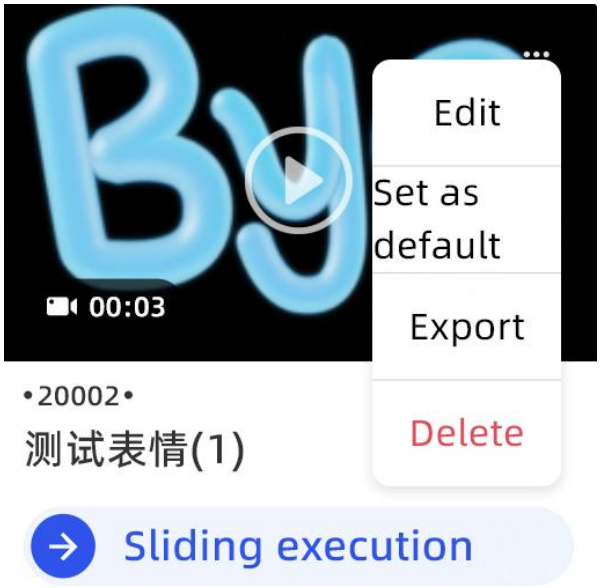
2. Face search

Enter the emoji name in the search window to filter emojis. The search function uses fuzzy matching, and the list displays all emoji files containing the input text.



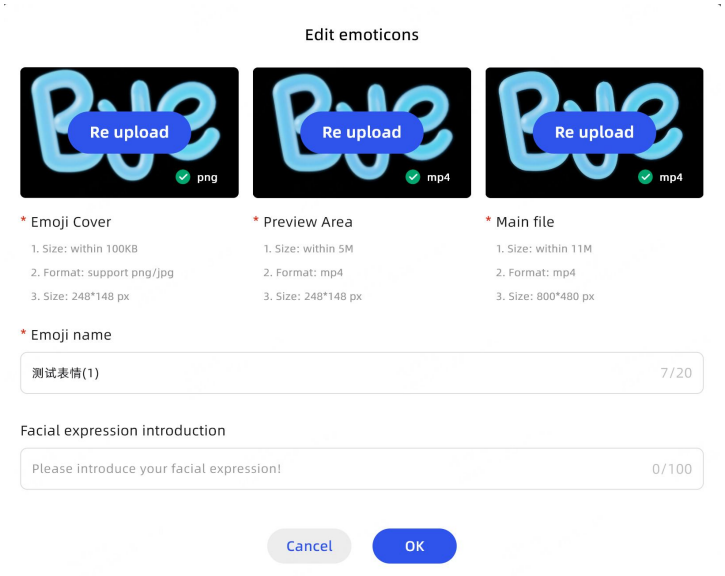
3. Emotion Edit

Click the button in the upper ··· right corner of the emoji tag. In the pop-up options, you can choose to edit, set as default, export, or delete. This operation applies only to your own emoji files. System preset emojis cannot be edited.



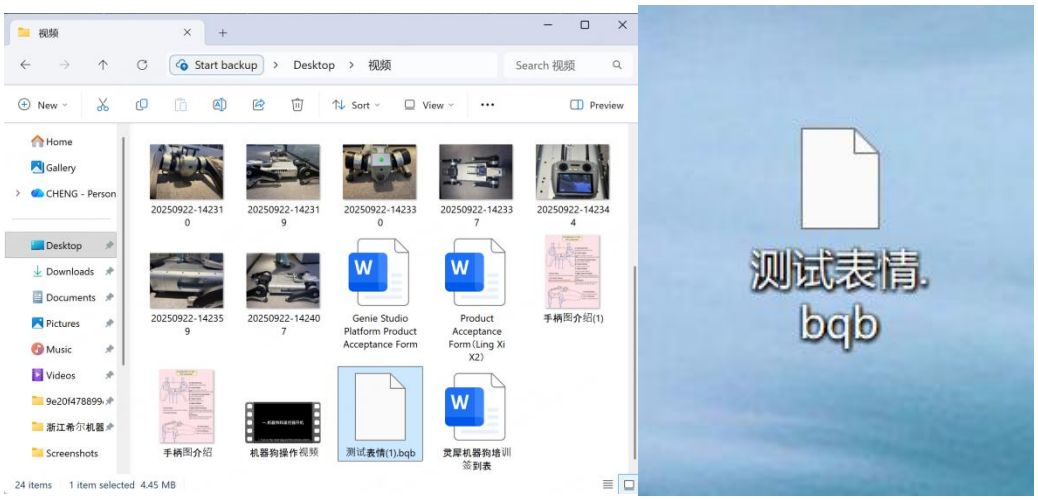
(1) The emoticon for Expedition A2 consists of three files. You can re-upload these files and modify the emoticon's name and description.

- Cover (a 248×148px PNG/JPG image file under 100KB);
- Preview the file (an MP4 video file with dimensions of 248*148px and a size of up to 5 MB);
- Main file (an MP4 video file with dimensions of 800*480px and a size of up to 11 MB).

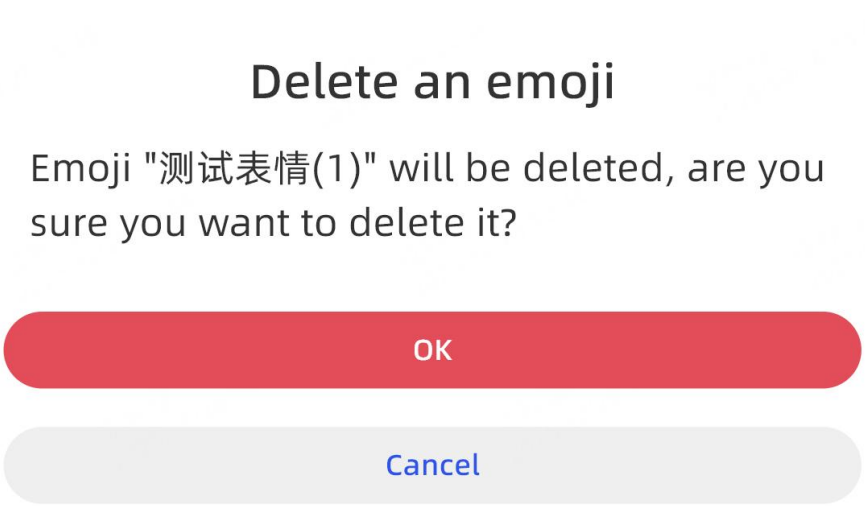


(2) Set as default: You can set the corresponding emoji as the default (standby emoji). After setting, you need to switch the emoji once for it to take effect.

(3) Export: You can export emoji files to your local device. The exported files are in.bqb format. This feature can be used for emoji backup or to import emoji files into other bots of the same model.



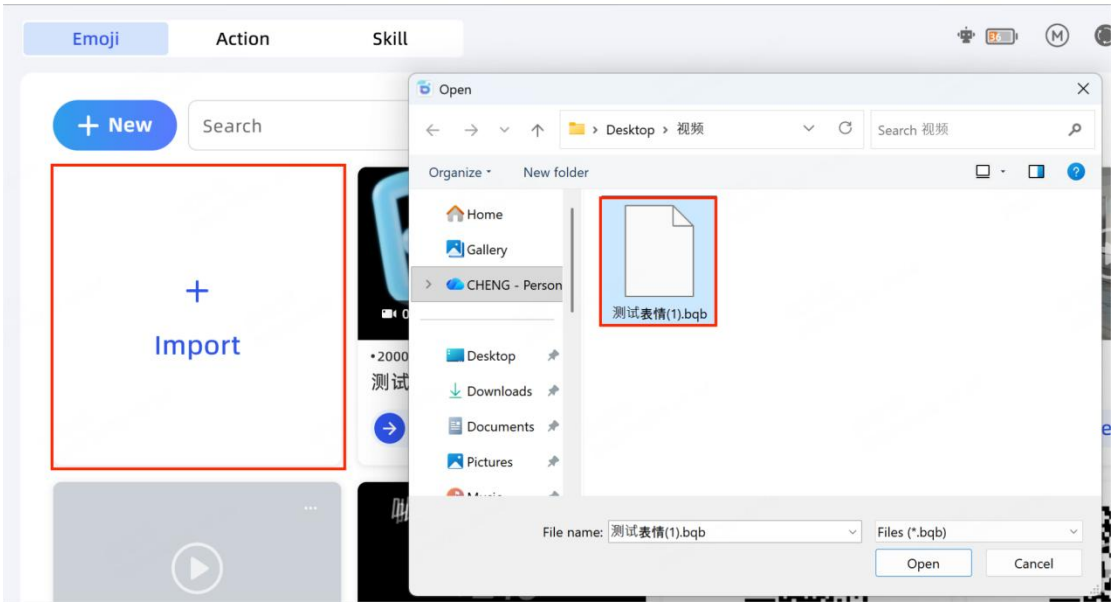
(4) Delete: Delete the selected emoji file.



Note: Deleting will permanently remove the saved emojis from the bot. This action cannot be undone, and you will need to recreate the same emojis later. A pop-up will appear when deleting. Be careful.

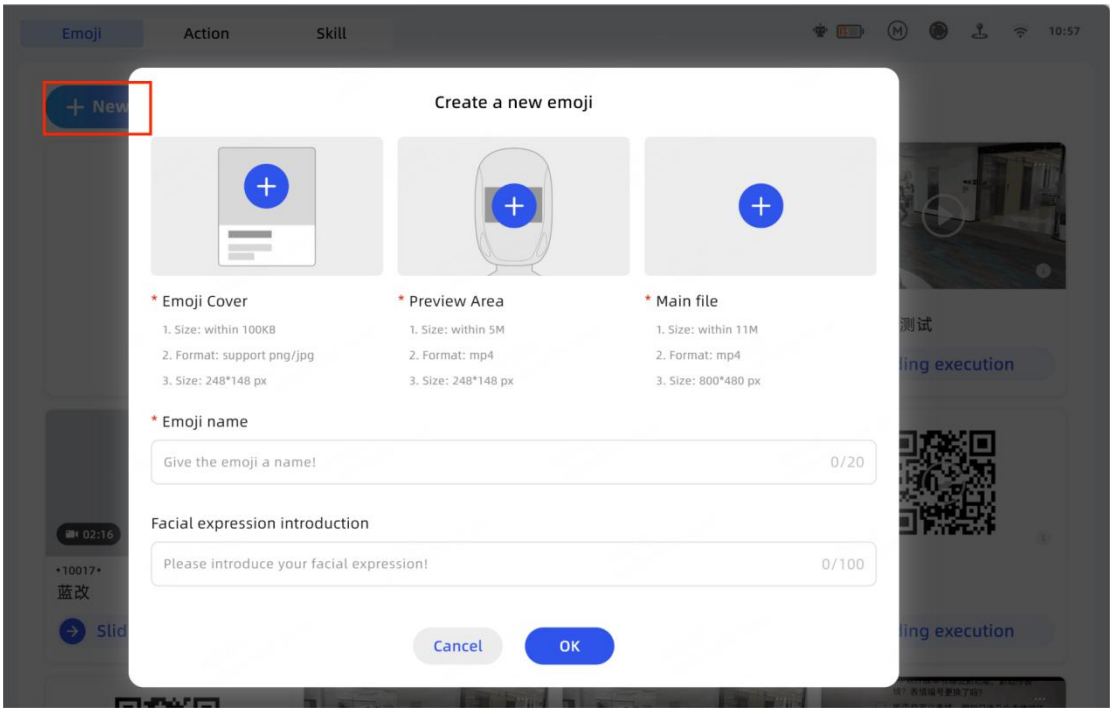
4. Import Emotion

Click the [Import] button to select a local emoji file. The emoji will be imported into the robot and displayed and played in the emoji list.



5. New Emotion

Click the [New] button, upload three emoji files as required, set the emoji name, and create a new emoji.



4. 3. 2. Voice interaction

Voice interaction with the robot is conducted through voice dialogue and heavily relies on the network. Ensure the robot's network is available before interaction. The recommended upload and download speeds should be no less than 100Mbps.

Voice interaction requires a distance of 0.5～1.5m in front of the robot. If the robot is standing manually, it is recommended to maintain a safe distance of 1.2m. Adjust the sound level according to the actual effect during interaction.

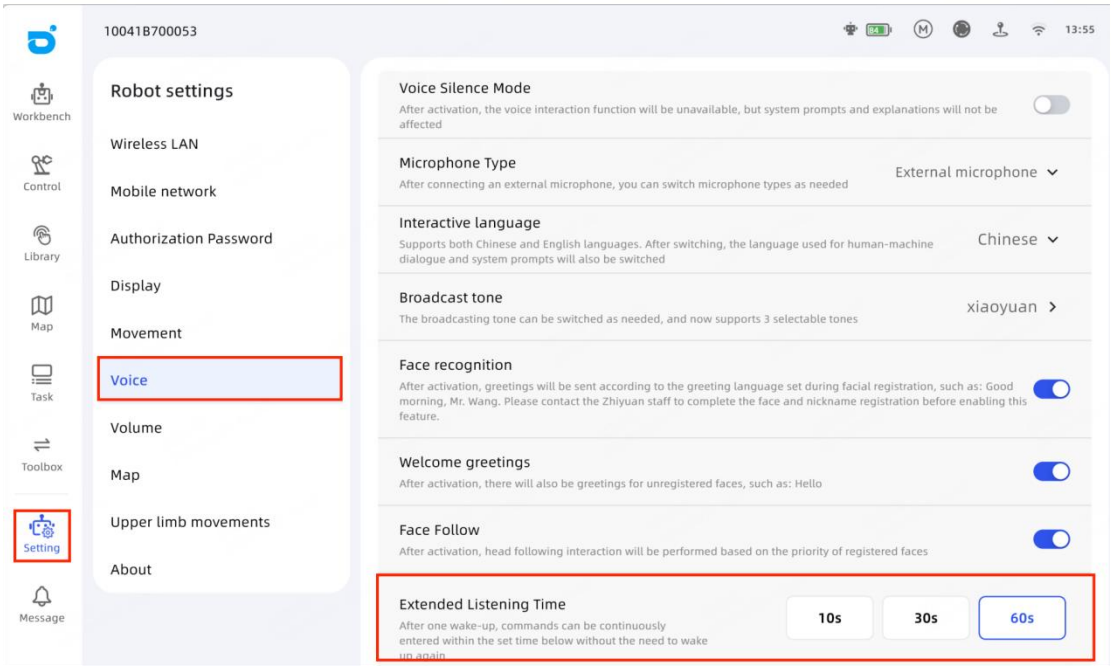
Voice interaction will affect the robot's movement. Keep a safe distance.

4.3.2.1. Wake up the robot

To activate the robot for voice interaction, say "Expedition Expedition" or "Hi luka" (default wake word, can be changed). Confirm activation when the robot responds with "I am" or "May I help you?"

After voice wake-up, the robot's facial expression will respond accordingly: when not awake, the face displays the "prompt word" expression, showing "call me expedition expedition"; after wake-up, the face displays the "general" expression, showing a vertical eye with curved eyebrows.

After waking up the robot, you have 60 seconds of interaction time. Each interaction refreshes this time. If no interaction occurs within 60 seconds, the wake-up will end. The next interaction requires a new wake-up. You can adjust this duration in Settings> Voice> Extend Listening Time to 10s or 30s.



4.3.2.2. Voice command

Under normal network conditions, the robot can carry out voice interaction in any state after being started and connected to the network. The interaction content is different in different states.

pay attention to ：

This analysis applies to normal voice interactions. Voice interactions are not recommended in abnormal states, such as remote operation, work, or full-body dancing.

All voice-triggered interactive robots respond with voice. If there is no response, check whether the robot did not recognize the voice.

Robotry	Voice interaction capability
starting up	Chat/emoji switch
Assist in standing with straight legs	Chat/emoji switch
Get down and don't stand with your legs straight	Chat/emoji switch/upper limb movement/lower limb movement/play music
Get down and don't stand with your legs straight The scene has created a corresponding	Chat, switch emoji, arm movement, leg movement, play music, self-guided tour

map and is now in use. Fixed named points have been added to the map The robot is positioned accurately and switched to automatic mode	

1. Chat: No commands needed. Just wake up and start talking.
2. Face switching: Switch to preset emojis using voice commands, such as "smile" (smile), "blink" (blink), "cry" (sad), etc.
3. Upper limb movements
   (1) The system supports voice commands for direct control of robot actions and facial expressions. For example, the command "wave" triggers the robot to wave its right hand and display a "hello" emoji, while "make a fist" activates a right-fist gesture with an "ok" emoji. The voice command "take a photo" activates a series of posed actions, each paired with a corresponding emoji.
   (2) Supports actions and emojis triggered by certain scene dialogues. For example, the voice command "Goodbye" triggers the "Waving right hand" action and the "Goodbye" emoji. The voice command "Welcome, welcome" triggers the "Waving right hand" action and the "Hello" emoji.
4. Lower limb movements: Support simple movement of the robot through voice commands.

Note: This feature does not require accurate positioning, so the robot does not have obstacle avoidance function. Be sure to observe the terrain before issuing voice commands to ensure that no unexpected situations occur.

   (1) When the "Go forward" command is given, the robot will respond with "Okay, I will go forward" and move forward;
   (2) For the "Move Left/Right/Back" command, the robot will voice confirm "Are you sure you want to move left/right/back?" After the operator replies "Yes", the robot will reply "Okay, I will move left/right/back" and move in the corresponding direction.
   (3) The robot responds with "Okay, I will turn left/right/back" and then turns in the corresponding direction.
5. Play music: By saying "Sing a song", the robot will randomly sing a copyrighted song. You can also control the robot to sing the corresponding song by saying

"Happy birthday". The robot will switch the upper limb movements and expressions when singing.

Note: Due to copyright restrictions, the number of songs you can sing is limited. Your voice will be a robot voice when you sing.

6. Self-guided tour: After completing the following steps, you can use the voice command "Take me to xxx (location name)" to control the robot to guide you.
   (1) Create a map of the robot's actual environment and add named points (not default navigation points).
   (2) Set the map to use the map.
   (3) Robot repositioning.
   (4) The robot switched to automatic mode.

Matters need attention ：

(1) When interacting with voice commands, if the robot is on the ground and not in the [Assisted Straight Leg Stand] state, the robot will respond with upper limb movements (refer to the hand movements of a person speaking). Keep a safe distance.
(2) Only common gestures or expressions can be called by voice, such as shaking hands, fist bumping, and waving.
(3) Voice interaction supports external microphone and speaker access.
(4) The robot's movement time is fixed. When the robot comes into contact with the robot limbs, especially when shaking hands, please pay attention to let the robot move first and the human hand retract first to avoid collision or pulling and cause injury to people.

4. 3. 3. Multimodal Interaction

The current version supports multimodal interaction with the robot. Use: Wake up the robot and say to the robot: "What did you see?"

The robot will recognize all elements in the camera, including scenes, people, objects, words, and so on, and describe them in a voice play after reasoning.

4.4. control

The control function enables humanoid walking for the robot. It primarily uses a

remote control, while also supporting real-time synchronization of operator actions through a remote operation device to perform specific tasks.

In the control function details page, the status bar has two buttons: [Remote Walk] and [Remote Operation]. Clicking these buttons switches to the corresponding control mode, with [Remote Walk] as the default.

1. Remote walking mode: Use the remote to control the robot's movement.
2. Remote operation mode: The robot can be remotely operated using motion capture equipment or VR glasses. This is not standard content, and the specific process will be provided in the remote operation document, which will not be repeated here.

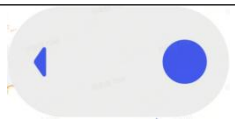
4. 4. 1. Control the robot with the remote

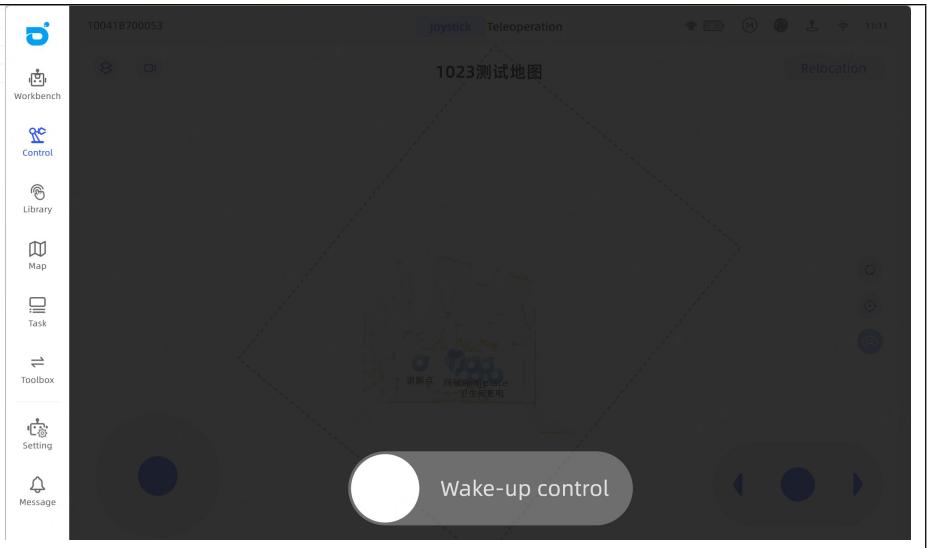
The robot is controlled via the remote's virtual buttons. The current version supports omnidirectional movement, left/right turns, and stops. As shown in the figure, the left button controls omnidirectional movement, while the right button controls left/right turns. These buttons can be combined to enable left/right turns.

The Aim-Master status for the robot's walking function is [Human-like Walking]. Before controlling the robot's movement, switch this status via the toolBox function.

Use the remote control to control the robot to do different movements in the following ways.

Order number	Operate	Machine movement	Graphic
1	Move the button by swiping in a specific direction and holding	The robot moves in the corresponding direction. The sliding distance of the button directly affects the robot's moving speed. The closer the button is to the initial position, the slower the robot's moving speed is. The farther the button is away, the faster the robot's moving speed is.	Move forward at anappropriate speed Move forward and to the right at a relatively fast speed.
	Release the move button	The robot stops after adjusting its balance, with a delay of 1-3s.	

2	Swipe left on the toggle button and hold	Robot turns left on spot	
3	Swipe the toggle button right and hold	Robot turns right on spot	
	Release the steering button	The robot stopped after balancing	
4	Swipe forward to move the button and swipe left to turn it	The robot turns left front	
	Swipe forward to move the button and right to turn it	The robot turns right front	

5	Screen lock and unlock	
		Screen lock is automatically set: In the control function interface, the robot's limbs will be locked automatically after 30s of no movement, so as to prevent accidental touch of the screen and cause the robot to move. Unlock: Swipe the screen slider to unlock.

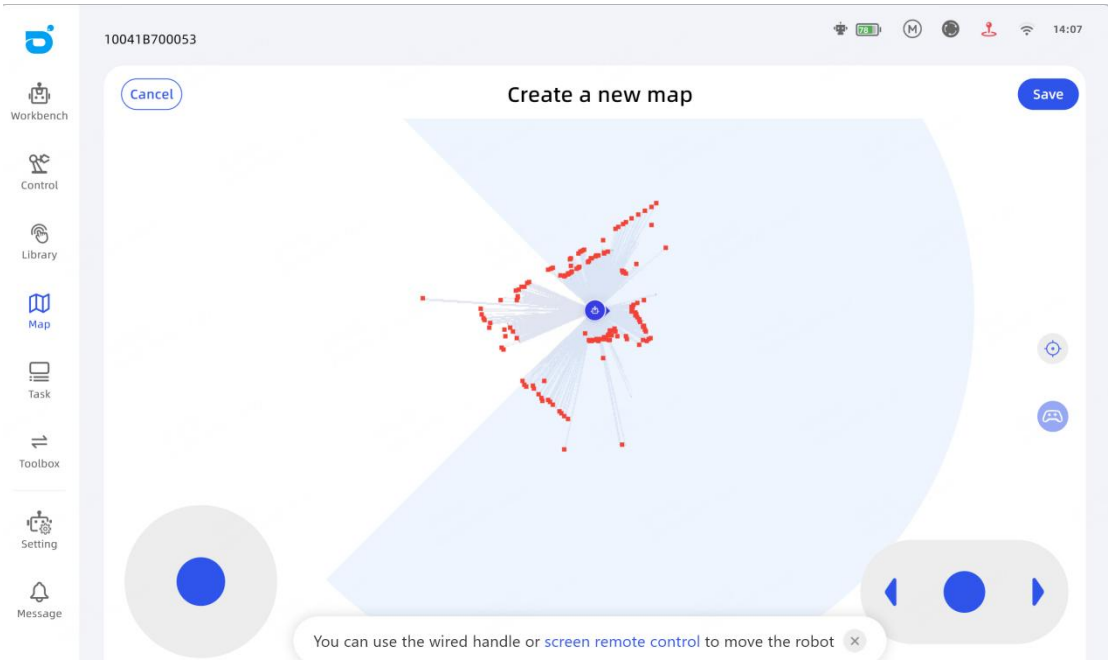
4.5. Map

The map function can scan real-world scenes to create and upload maps, which can be used by robots for navigation in real-world scenarios. The related operations include map construction, map storage, map editing, and map application.

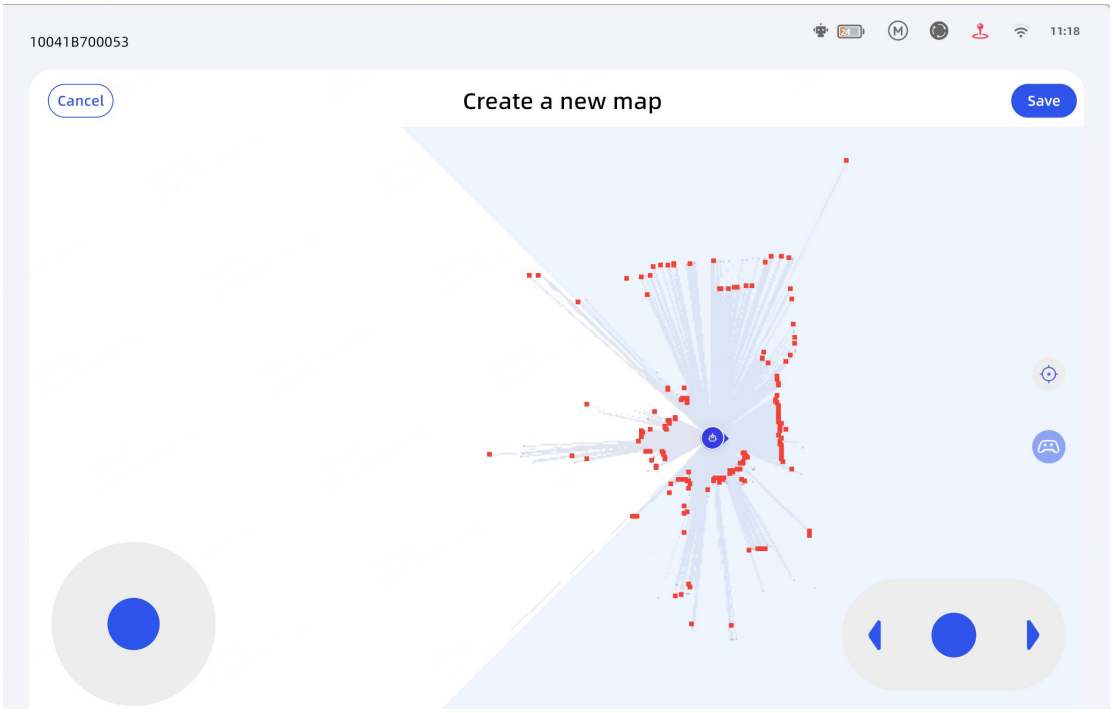
1. Map building: The robot can build a map of the environment by sensing the environment with its own sensors and calculating its position in real time.
2. Map storage: The completed map is stored in the robot's control unit, where relevant operations can be performed in Aim-Master.
3. Map editing: Rename, delete, add points, and edit information.
4. Map application: The map application supports robots to achieve autonomous navigation, environment interaction, and task execution.

4. 5. 1. Map Building

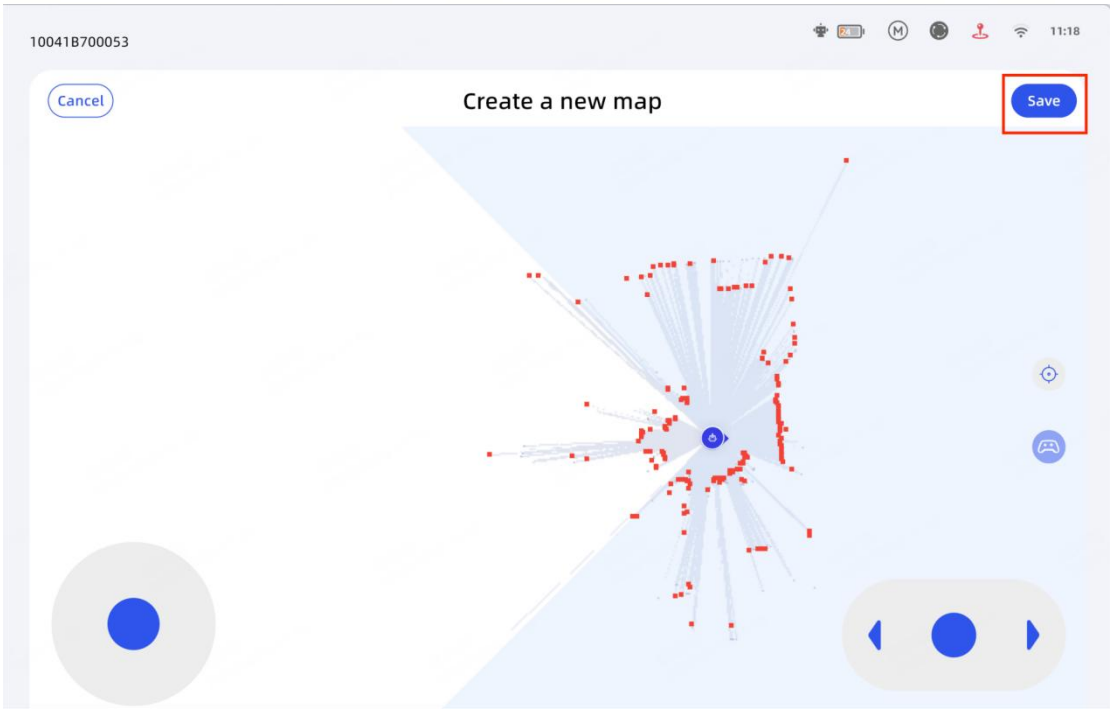
1. On the map feature details page, click the [Create New Map] button to call the lidar to scan the site, record the site boundary and obstacle contour information, and display them as dense red dots on the screen.



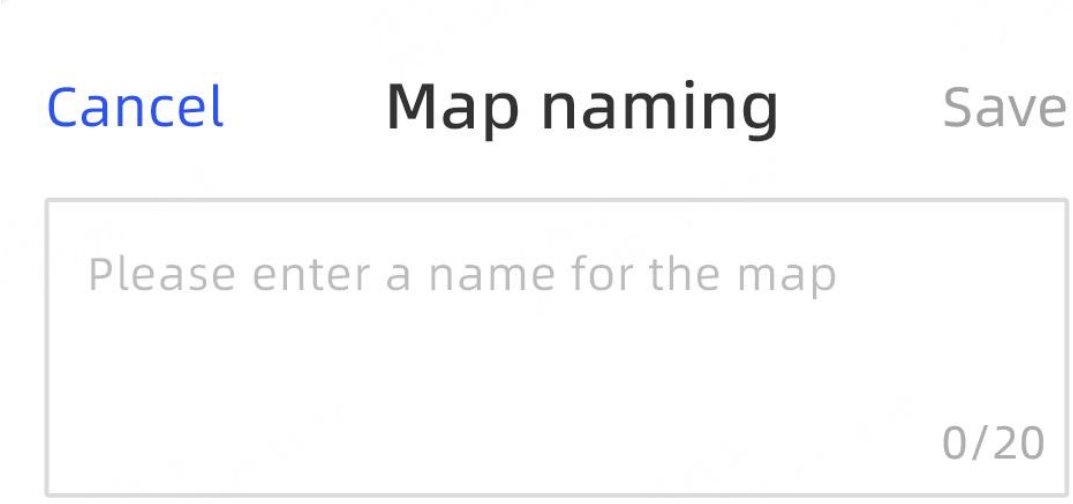
2. Keep Aim-Master in the "Create New Map" interface, then drive the mobile Lift (robot in hoisting state) or remote-controlled robot (robot in humanoid walking state) to circle the activity area of the field. At the same time, observe the screen to ensure all field boundaries and obstacles affecting the robot's movement have been recorded.


10041B700053
11:18
Cancel
Create a new map
Save

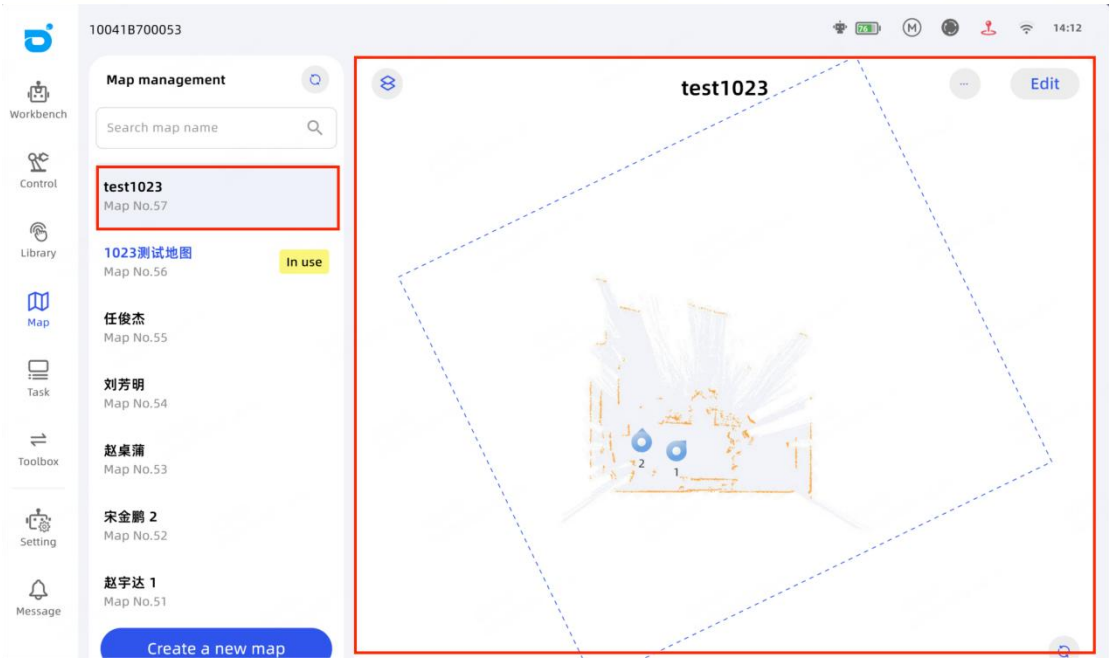
3. Click the [Save] button to open the map name editing interface.

4. 

5. Enter the map name based on your actual situation, then click the [Save] button in the upper right corner of the window to complete the map creation.



4.5.2. Map Storage



All created maps are stored on the robot's industrial PC and displayed in the' Map Management 'section of the Aim-Master' Map' feature details page, showing both the map name and number.

4. 5. 3. Map editing

All saved maps can be edited when not in use. If the robot is using the map to perform an autonomous tour, wait until the task is completed or manually ended before editing.

The map editing function consists of three main parts:

(1) Map file itself: supports map search, map selection, information viewing, deletion, and renaming.

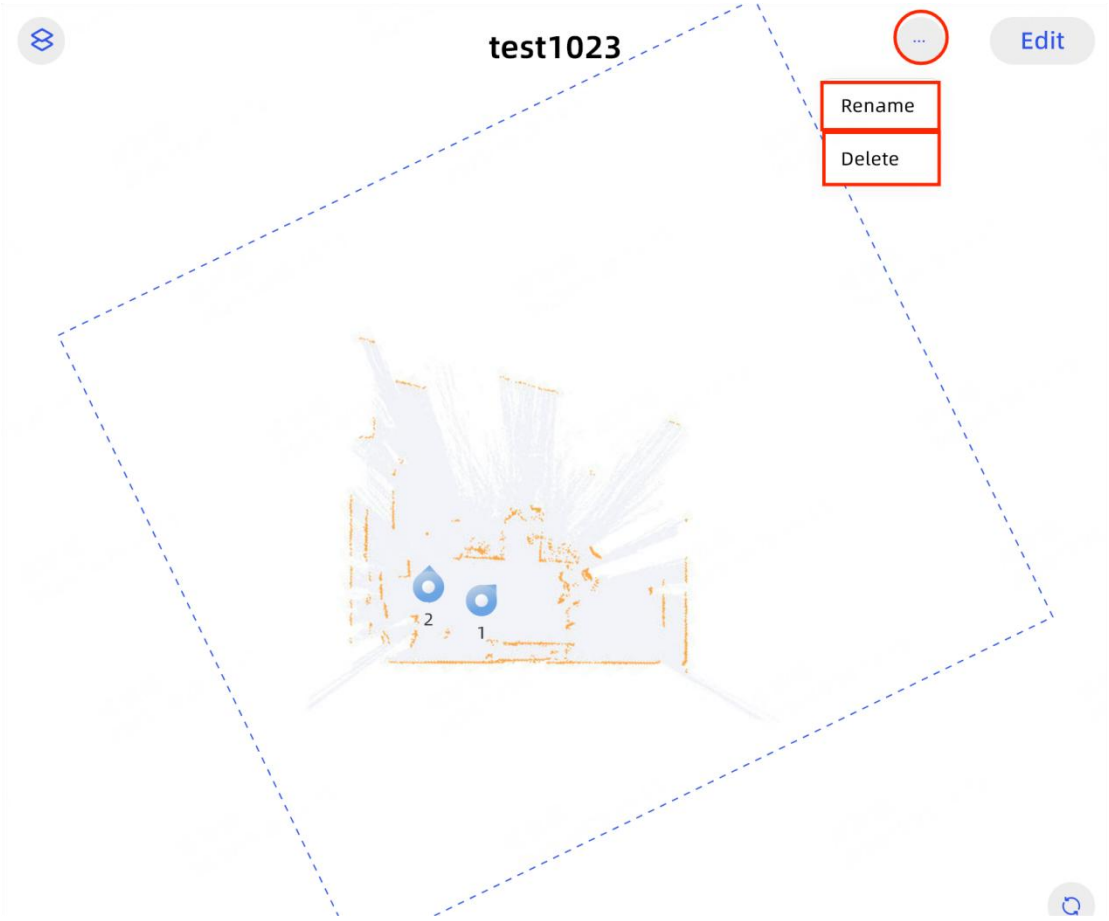
(2) Background information: Adjust the background to change the boundaries and obstacles in the map.

(3) Navigation points: Support adding, deleting, and editing navigation points.

4.5.3.1. Map file itself

1. Map search: In the "Map Management" interface, if there are too many maps, you can enter the map name in the search box for precise filtering. The search function uses fuzzy matching and displays all maps with the input content in the list below.

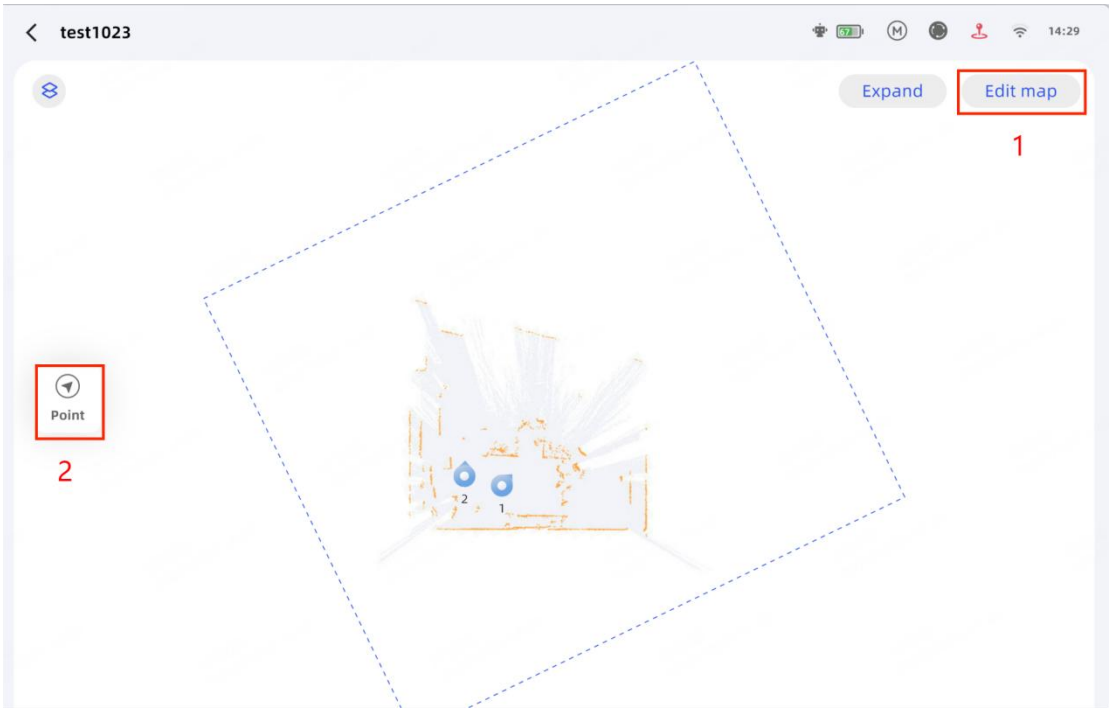
2. Map selection and information view: After finding the target map, click the map name to select the corresponding map. The map information will be displayed on the right side of the screen, including map boundaries, obstacle contours, etc. You can compare it with the actual scene to determine the correspondence between the map and the actual site.
3. Rename or delete a map: After selecting a map, click the [• • •] button to the right of the map name. Two options will appear:
    - Rename: Change the map name.
    - Delete: Remove the map file from the bot system.



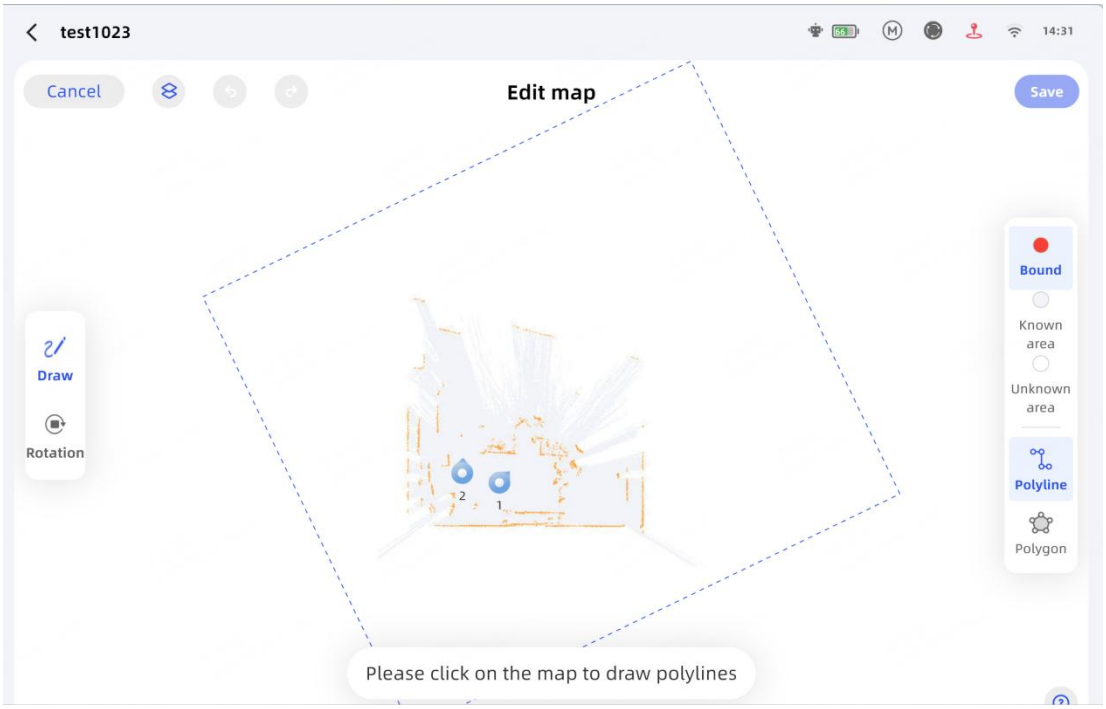
4.5.3.2. Background information

The purpose of modifying the base map information is to continuously match the "real environment" and "actual task" by changing the contour information of the boundary and obstacles in the map, so as to improve the stability and usability of the map.

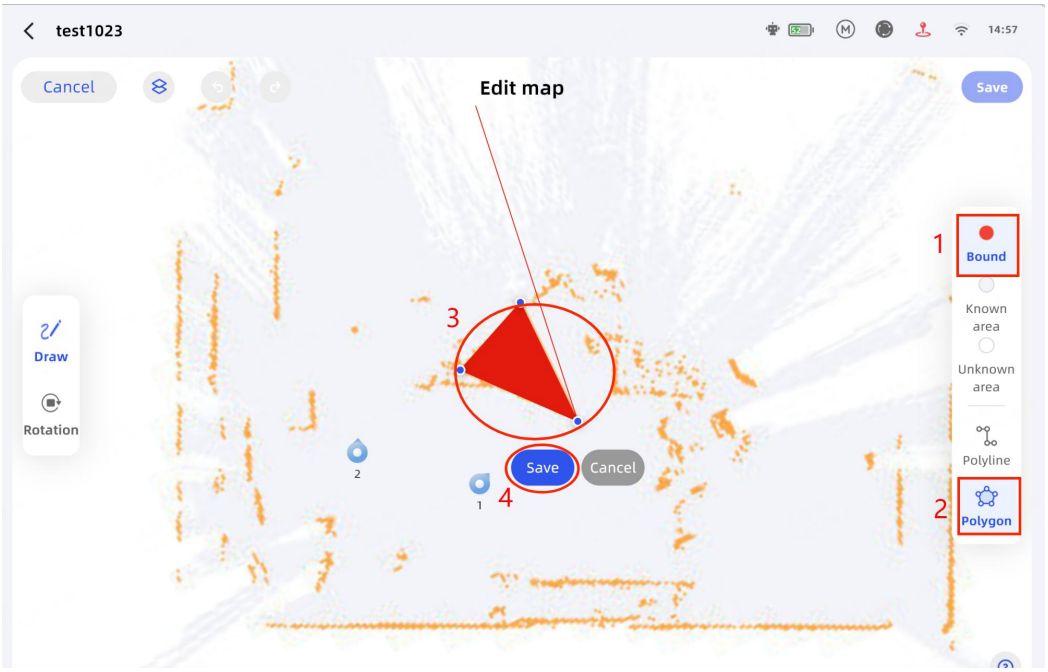
1. When you need to modify the base map: If the base map does not require modification, but the built map shows the following issues, you should modify it.
   (1) The composition is flawed: The transparent, mirror, and solid black obstacles cannot be accurately identified when creating the map. Ensure there are no such obstacles in the robot's movable area. If such obstacles are necessary in the actual scene, modify the base map.
   (2) The map contains interference information: pedestrians or temporary objects in the field are recorded when the map is built, but these obstacles are not in the field when the robot performs the task.
   (3) Edit the base map information when the scene content changes slightly. If the content changes too much, the repositioning will not succeed. Re-compose the scene.
   (4) You need to plan the robot's activity area manually.
2. The specific steps to modify the background image are as follows:
   (1) To enter the modification page, click the [Edit] button in the upper right corner of the screen. In the pop-up interface, click the [Background Adjustment] button to access the "Background Adjustment" interface. The right side of the screen will display operation buttons.

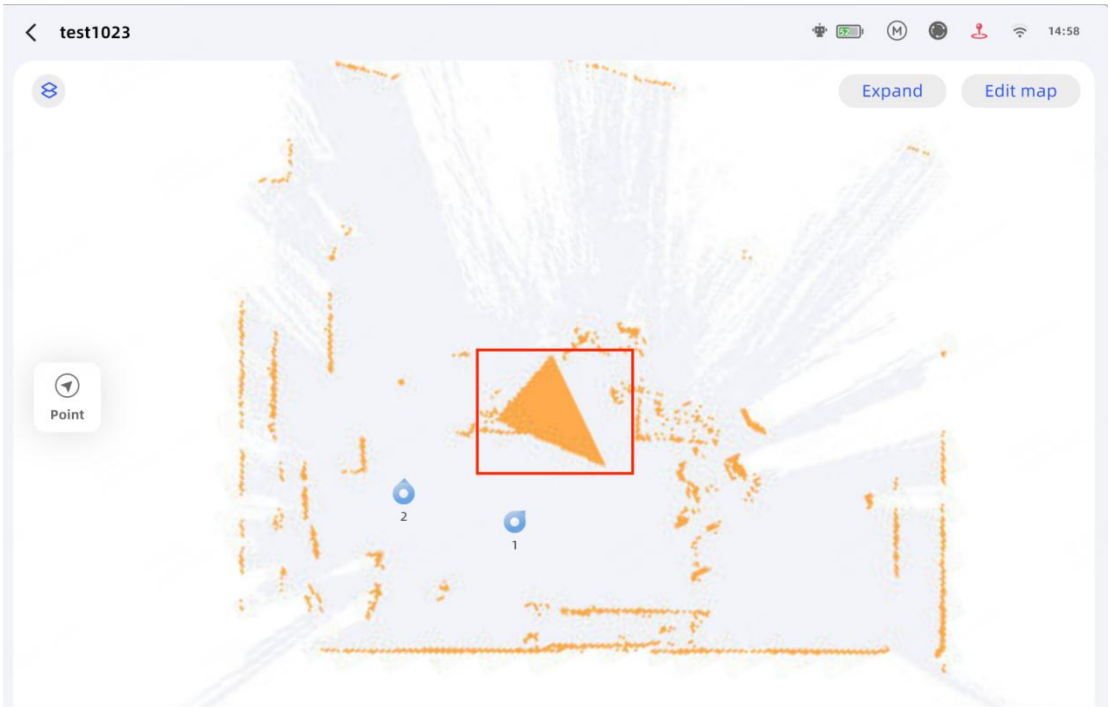


(2)



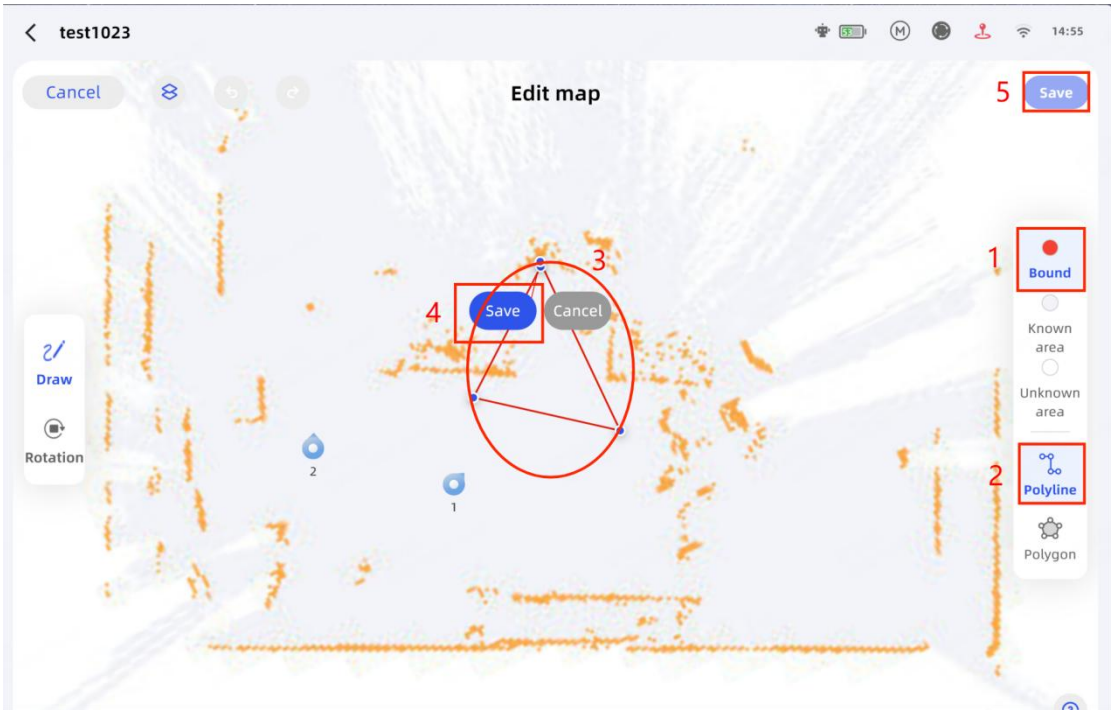
Remove obstacles: This feature is typically used to eliminate interference information on the map, such as temporary items. Follow the steps shown: Click [Bound] → Select polygon → Circle the obstacle to remove → Click [Save] on the map → Click [Save] in the upper right corner.

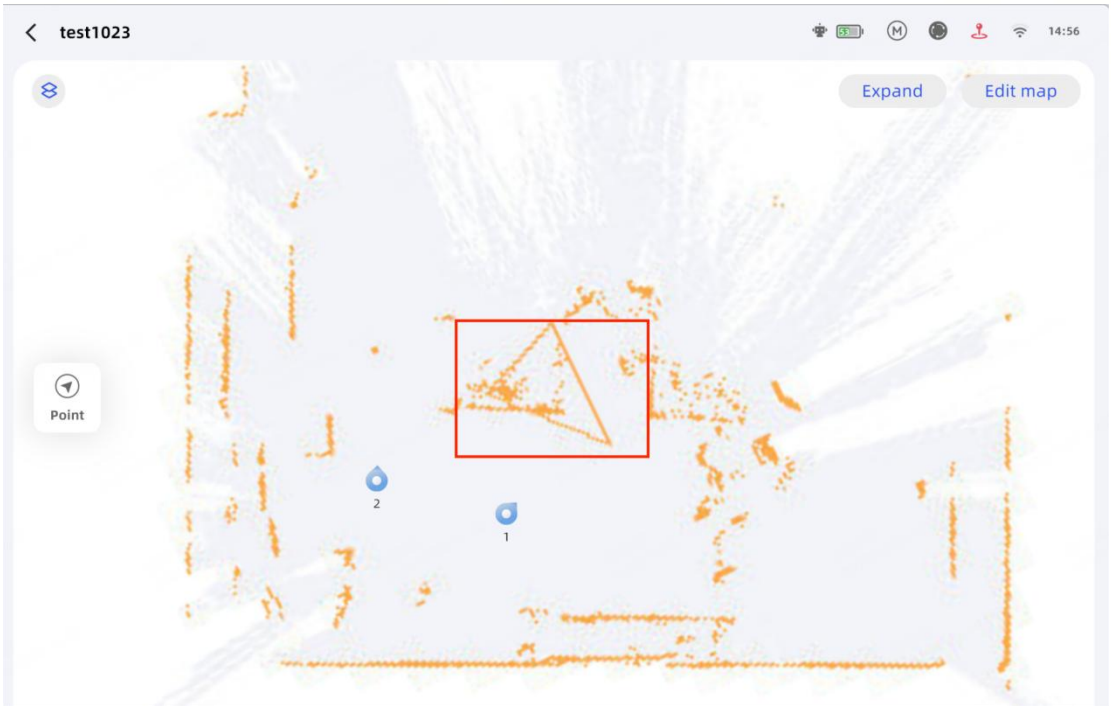




(3) Add obstacles: This feature is used to add obstacles to the map, so that the robot can plan a path around (polygon) or cannot reach (broken line block boundary) a location. It is commonly used in scenarios with glass/mirror/black boundaries.

Click [Bound] → select Polyline → add the corresponding shape to the map where obstacles need to be added → click [Save] on the map → click [Save] in the upper right corner.




test1023
14:56
Expand
Edit map
Point
2
1

4.5.3.3. Navigation Point

In the autonomous navigation task of Expedition A2, the navigation point plays a very important role as the target position of path planning. Without the navigation point, the robot cannot perform the autonomous navigation task.

1. Add navigation point

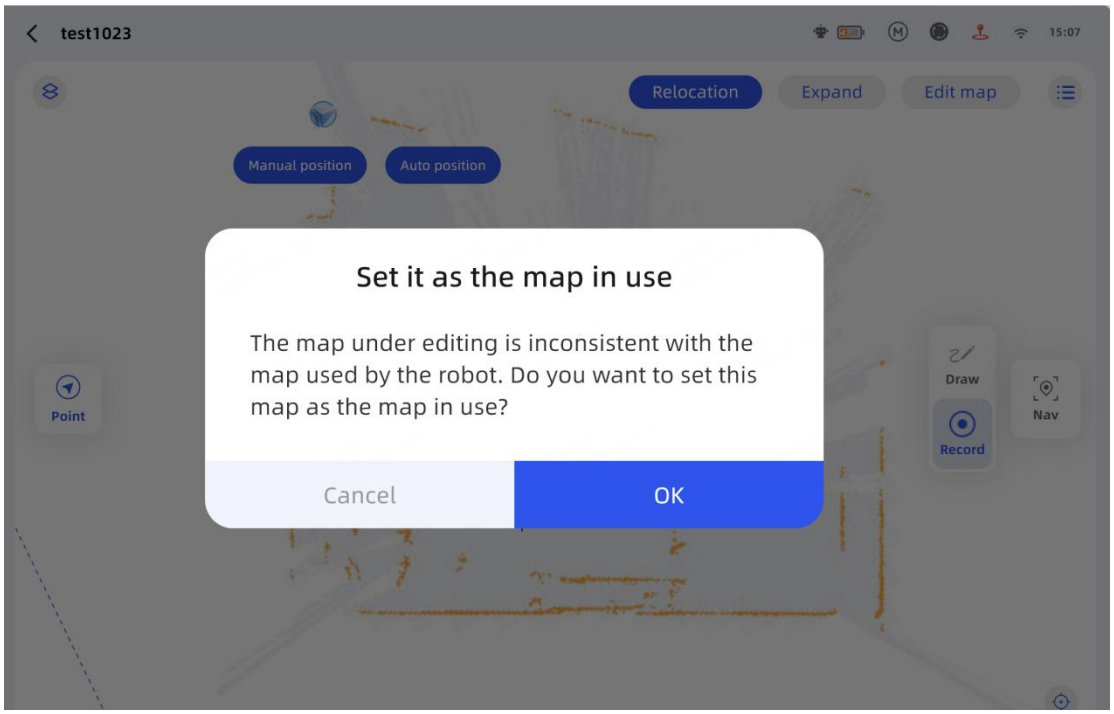
You can add navigation points by recording or drawing.

Recording is suitable for situations where the direction and location of navigation points require precision. Hand-drawing is suitable for situations where the location and direction of navigation points do not require special precision.

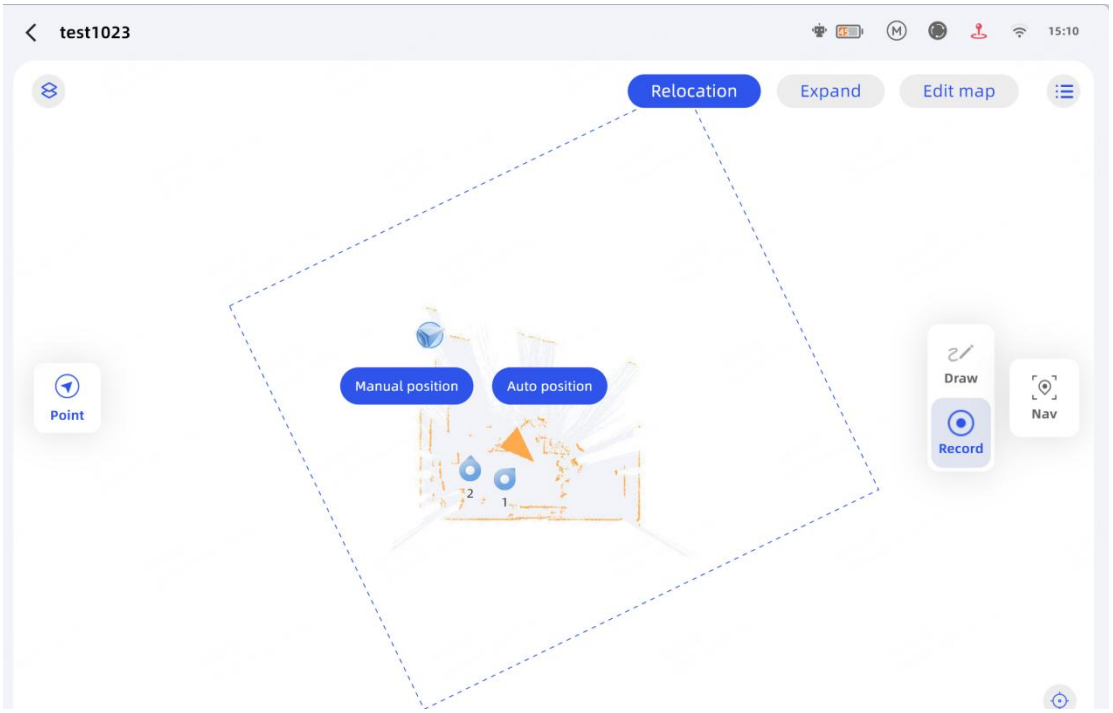
Here's how to record navigation points:

After entering the map editing interface, follow these steps to record the robot's position and orientation in the actual site onto the map, generating navigation points. The following method comprehensively considers various scenarios for the robot. During actual operation, some steps may be omitted — for example, if the robot's positioning is accurate, there's no need to repeat the positioning step when recording navigation points.

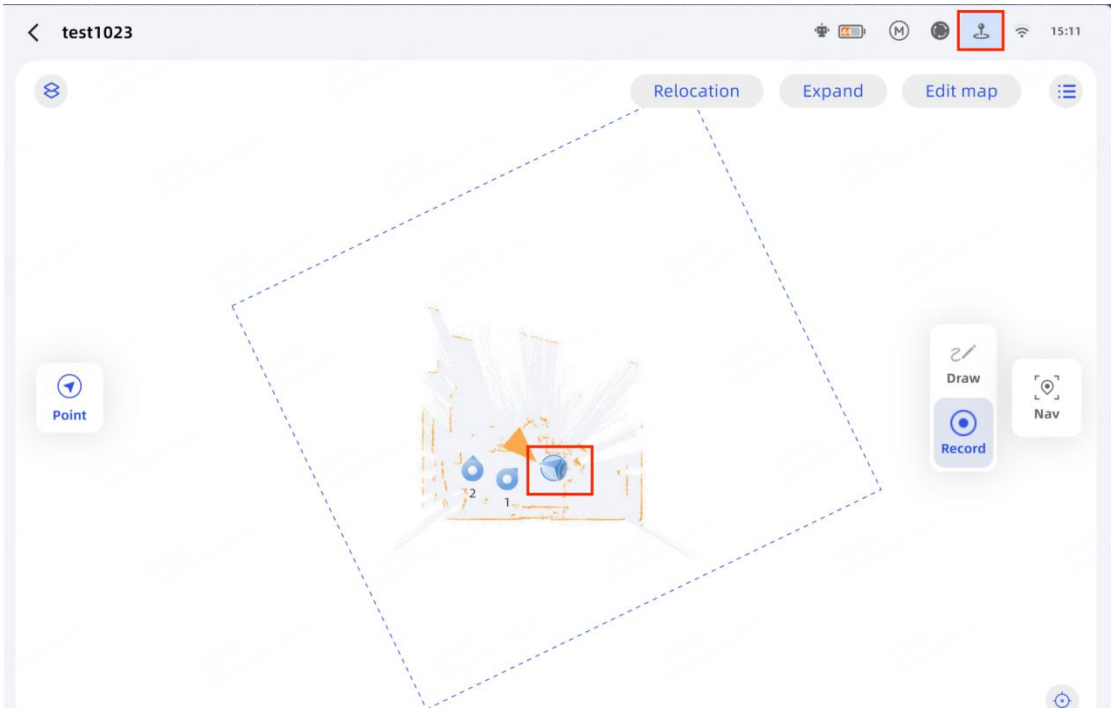
(1) Click the [Relocation] button. After the location operation buttons appear on the right, click [Record]. If the current map differs from the one used in the workspace, the "Set as Map" interface will pop up. Click [OK].



(2) After switching maps, the location may be inaccurate (the status bar icon turns red). The system will automatically redirect to the location page. Click the [Auto position] button to automatically reposition the robot.

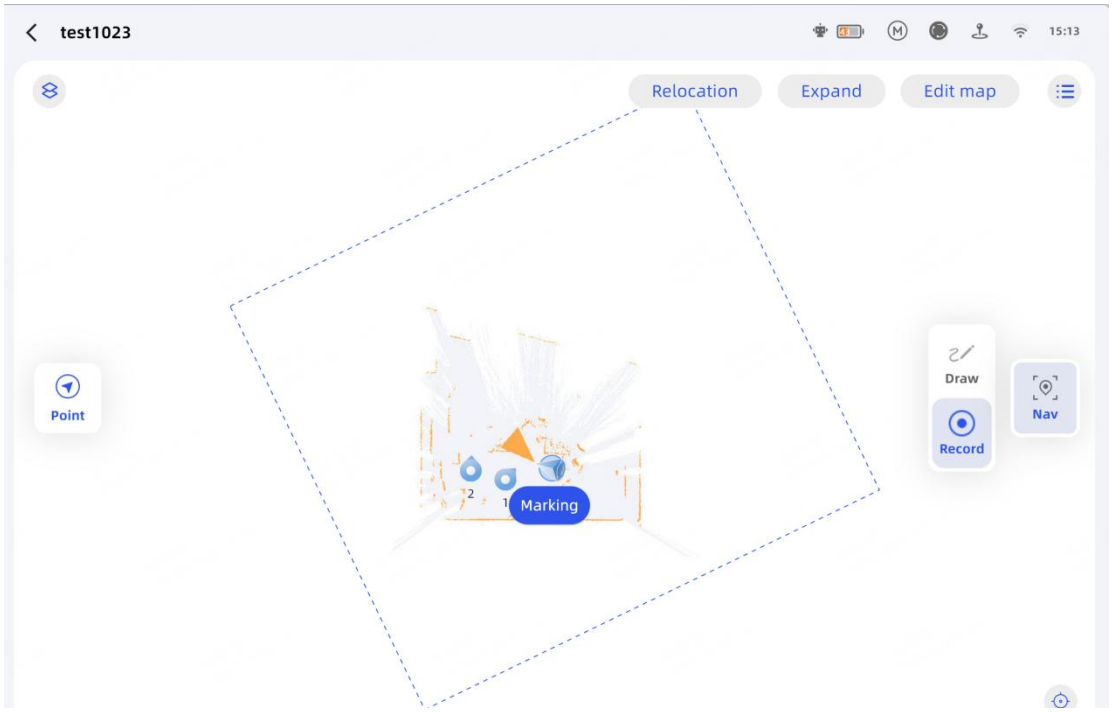


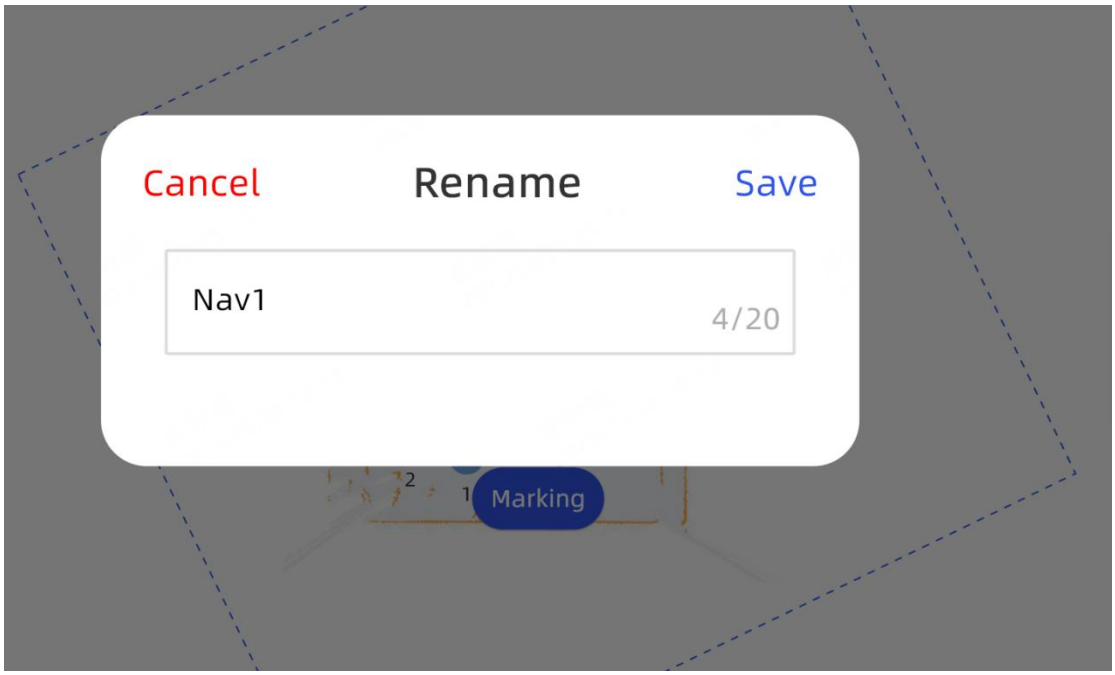
(3) After successful relocation, the status bar icon turns gray and the robot icon moves to the corresponding position in the actual scene.



(4) Click the [Navigation Point] button on the right to display the [Mark] button below the robot's corresponding icon. Click [Marking], enter the point name

in the pop-up window, and click [Save]. The navigation point is recorded, capturing the robot's position and orientation in the actual environment.





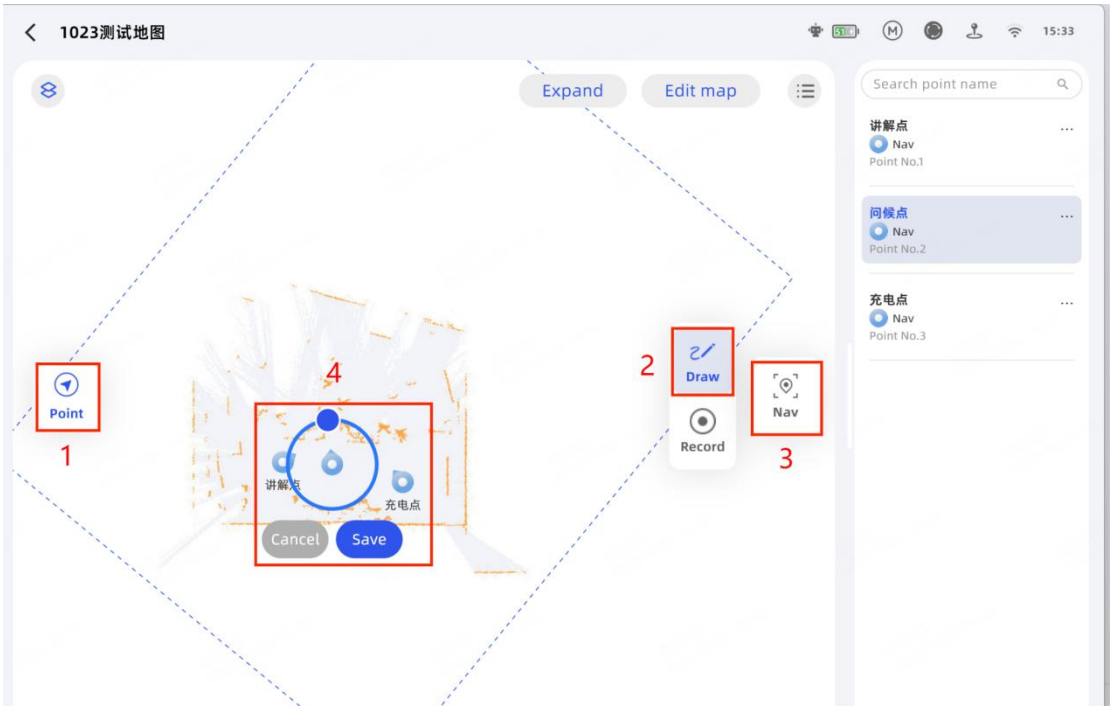
Here's how to hand-draw navigation points:

After entering the map editing interface, you can manually add navigation points to the map by following these steps:

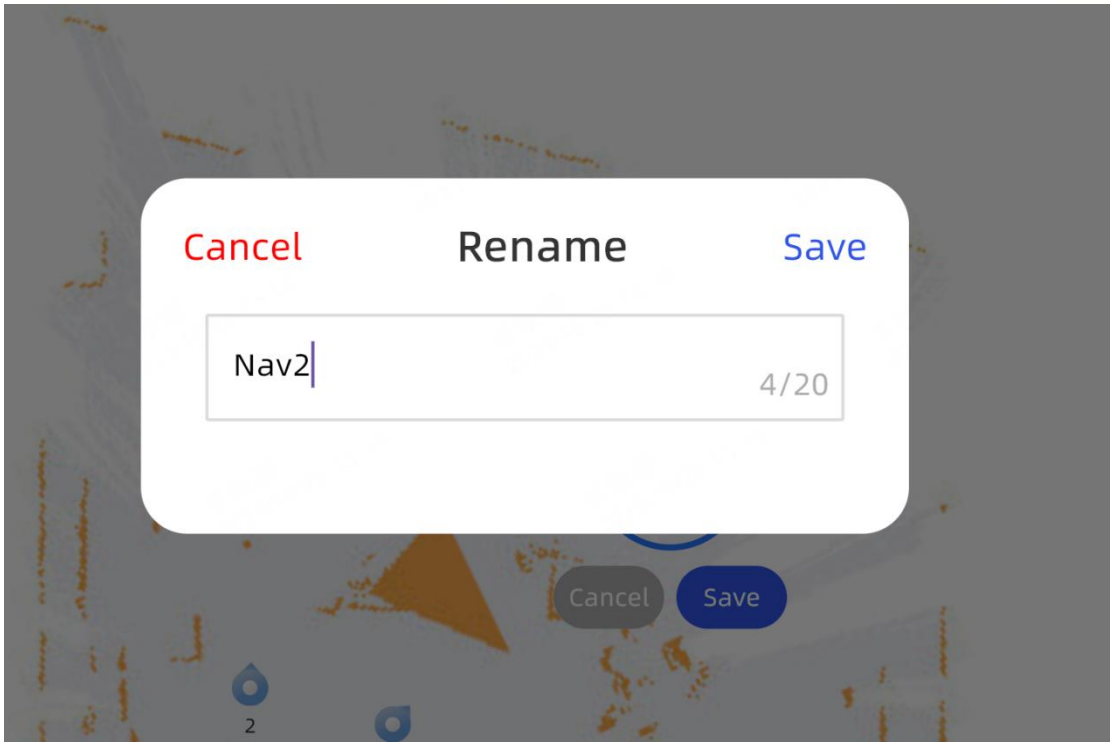
(1) Click the following buttons in sequence: [Point] → [Draw] (shown on the right) → [Navigation Point]. Then, add the navigation point to the desired location on the map.

(2) Drag the dark blue dot and rotate it along the blue circle to adjust the point direction.

(3) Click other locations on the map to move the navigation point. Drag cannot adjust the position.



(4) Click the [Save] button to open the navigation point naming interface. Enter the name and click [Save] to save the hand-drawn navigation point.



2. View navigation point information

The navigation point icon in the map can show three pieces of information:

(1) Name: The navigation point name, such as the "Start Point" in the figure.

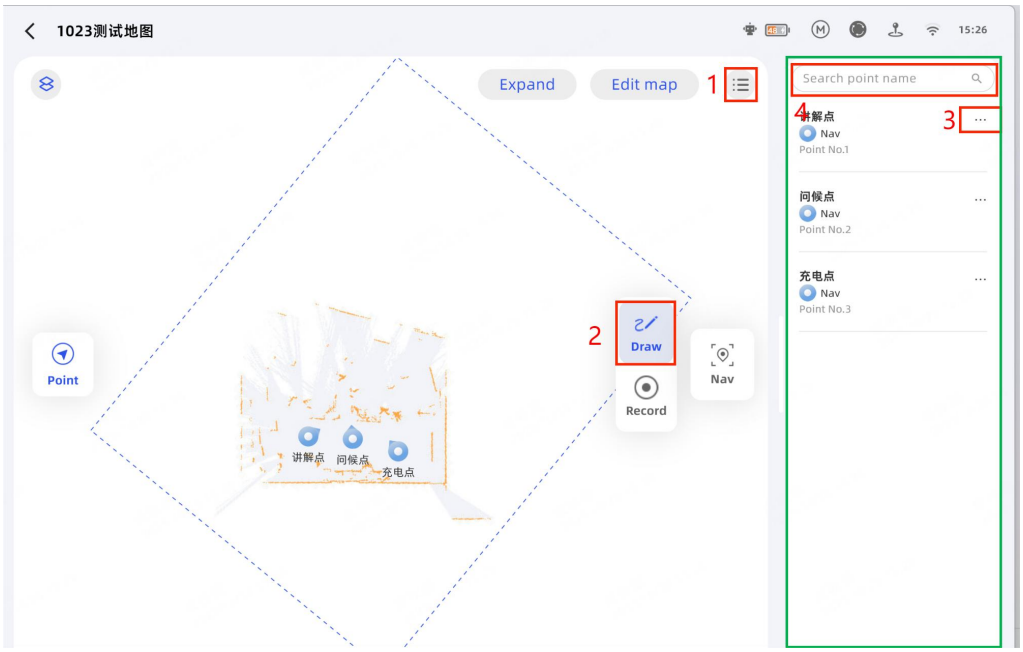
(2) Location: The icon location determines the robot's position in the actual scene.

(3) Direction: The direction of the robot is determined by the direction of the arrow on the icon.

3.Edit navigation points

(1) Open the edit interface

Click the point editing button at position 1 in the image to display the interface shown in the green box, where you can edit the point.



(2) Rename or delete navigation point

Click the [• • •] button to the right of the navigation point name to delete or rename the navigation point from the options.

(3) Find navigation points

If there are too many locations, enter the location name in the search box to

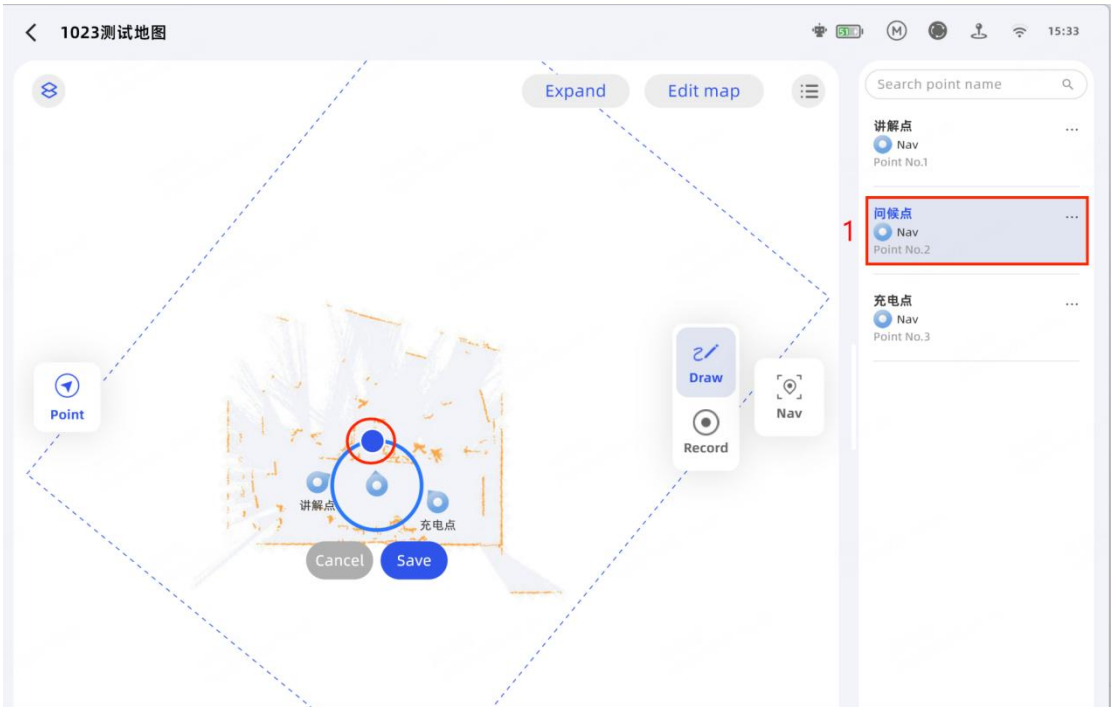
quickly find it.

(4) Adjust navigation point position and direction

This action must be performed in hand-drawn mode. Recording mode cannot edit.

In hand-drawn mode, click the navigation point name to switch the corresponding point on the map to edit mode. Then you can perform the following editing operations:

- Move navigation point: Click any location on the map to move the navigation point to the corresponding location.
- Adjust the navigation point direction: Drag the dark blue dot to adjust the navigation point direction.
- Exit editing: Click [Cancel] to discard all changes to the navigation point and restore it to its original state.
- Confirm modification: Click [Save] to save the updated point information.

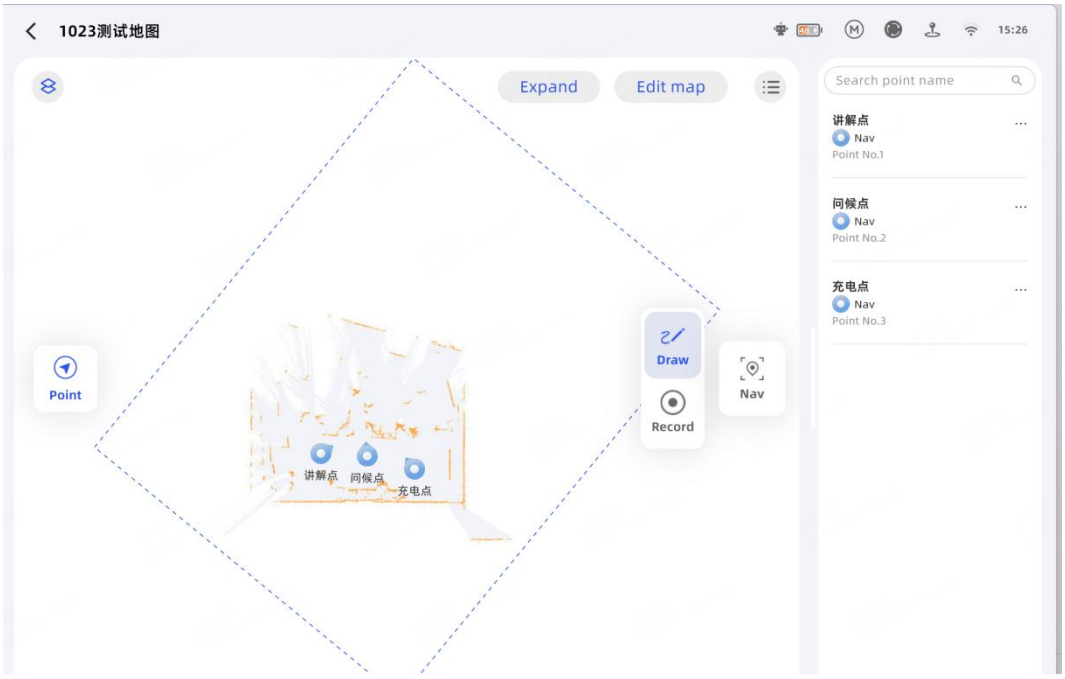


4.5.3.4. Self-guided tour

After creating a location on the map, wake up the robot and say "Take me to xxx" (xxx is the actual name of the location on the map, not the default navigation point name). The robot will autonomously take you to the xxx location.

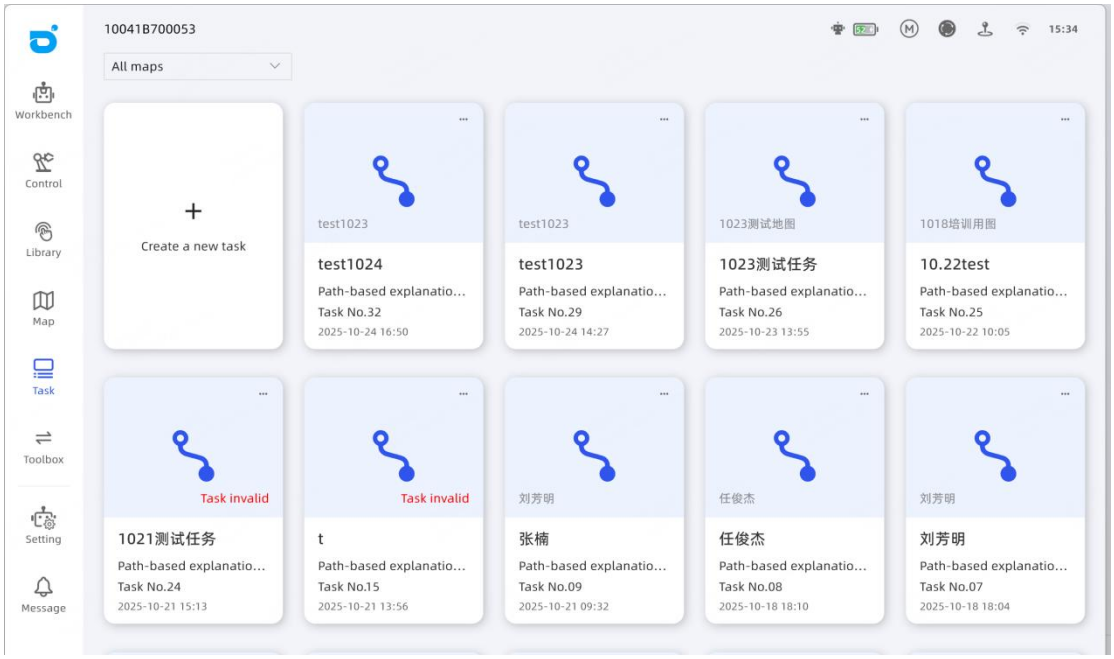
This feature does not require creating a navigation task.

As shown in the figure below: say "Take me to the point of explanation" to the robot, and the robot can take the road to the point of explanation autonomously.



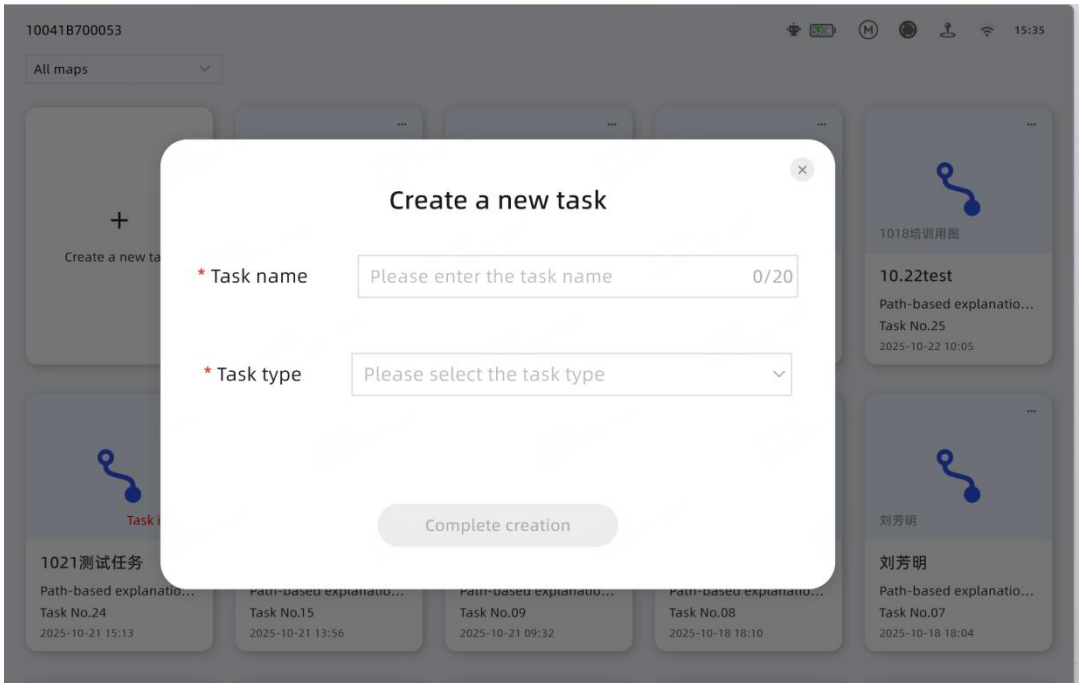
4.6. Assignment

The task function can create and manage autonomous explanation tasks. After the corresponding configuration is made in the workbench interface with the map function, the robot can conduct autonomous navigation and explanation according to the task content.

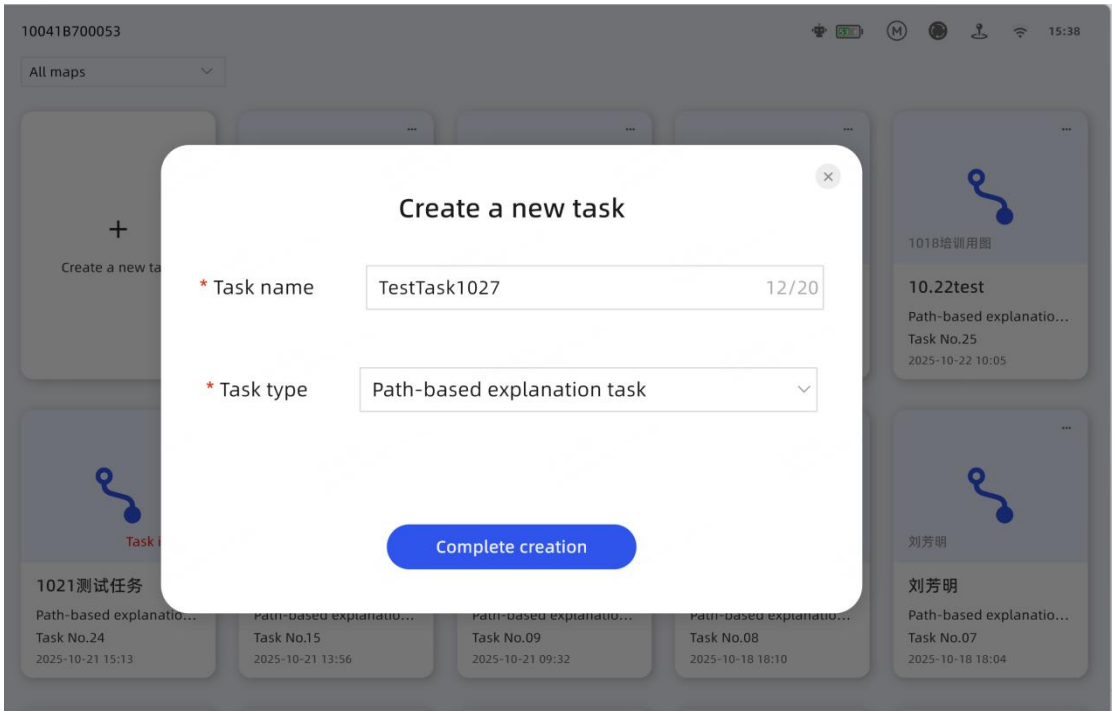


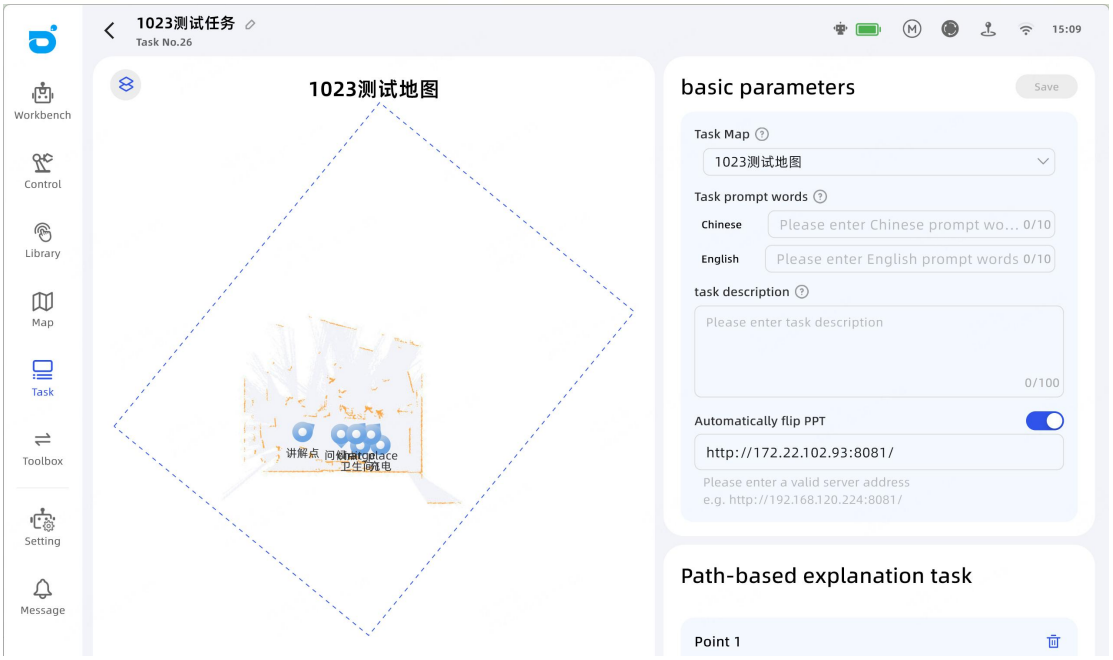
4.6.1. Create Task

1. On the task details page, click the [Create New Task] button to open the [Create New Task] window.



2. Enter the task name and select a task type. The current version has only one type option by default. Click the [Complete Creation] button to create a new task and enter the task content configuration interface.

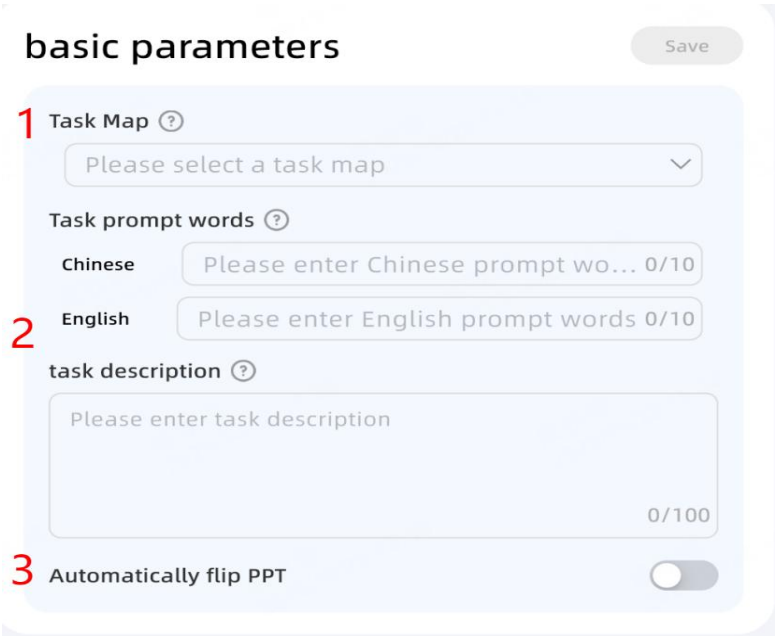




4. 6. 2. Configure task content

After creating a task, you must fully configure the task content. Only then can the robot provide an autonomous tour based on the task content.

4.6.2.1. Underlying parameter



1. **Task Map**

Bind the map for this task. You can only continue editing the task content after binding. In the dashboard interface, select the corresponding map to execute this autonomous navigation task.

2. **Task prompt and task description**

This feature is not available in the current version.

3. **Auto flip slides**

The current version adds the feature for the robot to automatically flip through the PPT during explanations. You can click the button on the right to turn this feature on or off.

To use this feature, you need a computer with PowerPoint playback capability and appropriate configuration. Detailed instructions will be provided once the "Flow Explanation Task" content is completed.

4.6.2.2. Movement path explanation task

1. Basic configuration

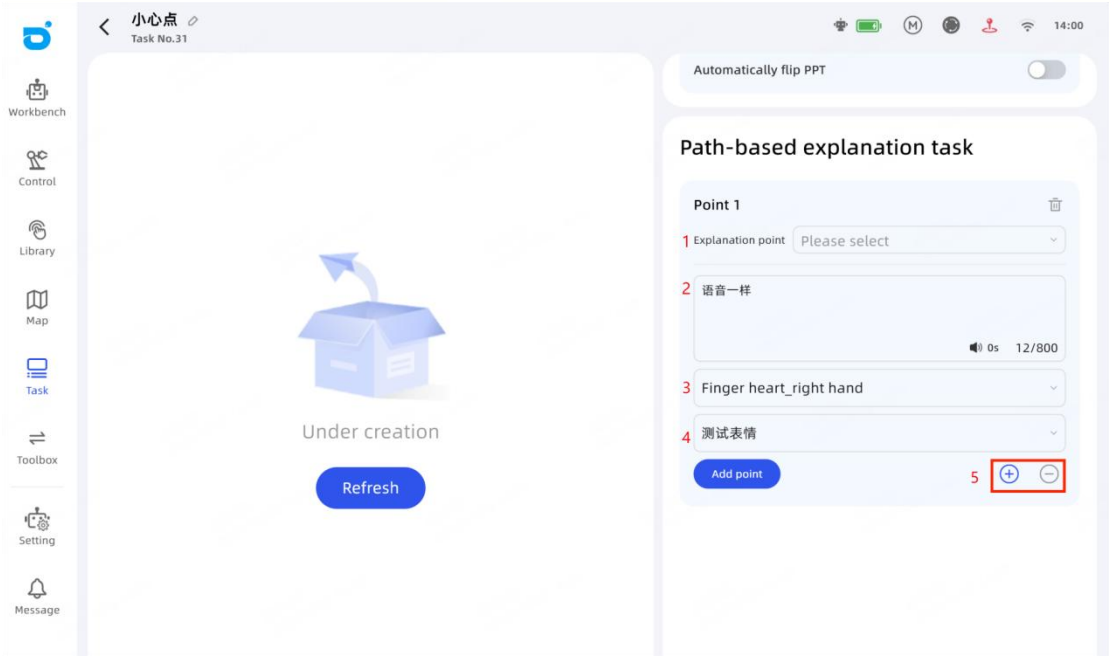
As shown in the figure below, you can configure task points for the robot. The robot performs autonomous tasks using the navigation points added to the map as target locations. Each point requires corresponding task content configuration, which consists of four parts. The first 123 items can be selected directly via the dropdown triangle, while the fourth item requires text input. The specific content types are as follows:

(1) Select the navigation point corresponding to the current location.

(2) The robot performs actions at the current position.

(3) The robot displays the expression at the current position.

(4) The location editing robot will broadcast the text content at the current point. When the robot performs the task, it will convert the text into speech. Note that if the input content is not standardized, the text will appear in red and needs to be adjusted promptly, otherwise the task cannot be executed.



2. Exceptional case

(1) No robot narration required

If a point only requires the robot to arrive and does not require any display, you can select a small amplitude action (such as nodding) when configuring the corresponding content, select the same expression as the previous one, and enter only a space in the text content.

(2) When you need to add item 5

If any of the following conditions apply, add item 5:

- The single-point explanation exceeds 800 characters.
- A single point needs to display multiple actions;
- A single point needs to display multiple emojis;
- The text content does not match the action duration. Split the text into multiple segments to match the action duration.

Click the [+] button to add a configuration template at the corresponding point to display additional actions, expressions, and voice announcements. You can add up to 20 templates. Click the [-] button to delete redundant templates.

3. Add point

The current version can add any number of points according to specific requirements, corresponding to the number of times the robot explains in the actual scene.

After completing the content configuration for the previous point, you can add

more points using the [Add Point] button. All points follow the same configuration method.

3. Channel Broadcast

After the last point is selected, the system calculates the walking time from the end of the broadcast at the last point to the next point.

Click the [Add a string broadcast] button to enable the robot to broadcast voice announcements while moving to the next navigation point. When adding intermission text, pay attention to the following information:

1. Position: After the previous task ends, the transition script for position 2 will be

broadcast after the corresponding interval (5s).

2 Location: Scene transition script.

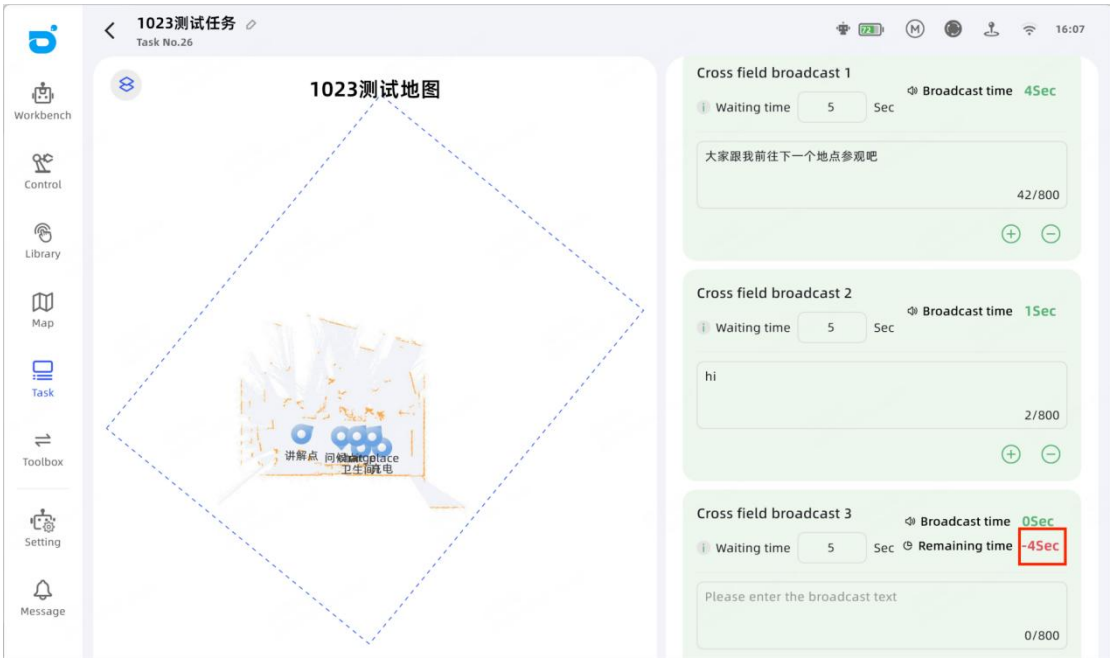
3 Position: Current interlude text broadcast time (3s).

4. Position: Click the [+] button to add a scene transition, or click the [-] button to delete the current one.

5 Position: Remaining time to reach the next position.

6 Position: The interval between multiple narration lines.

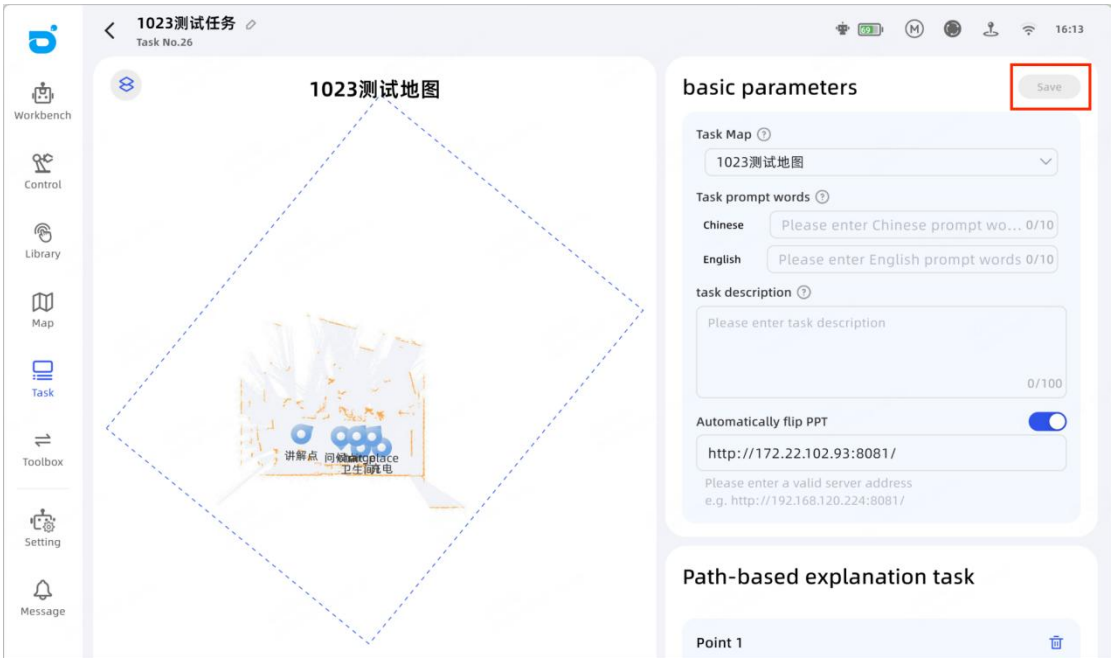
Note: If the combined duration of the interlude announcement and interval exceeds the total time for the robot to reach the next position, the interlude will not be added. Delete part of the content.



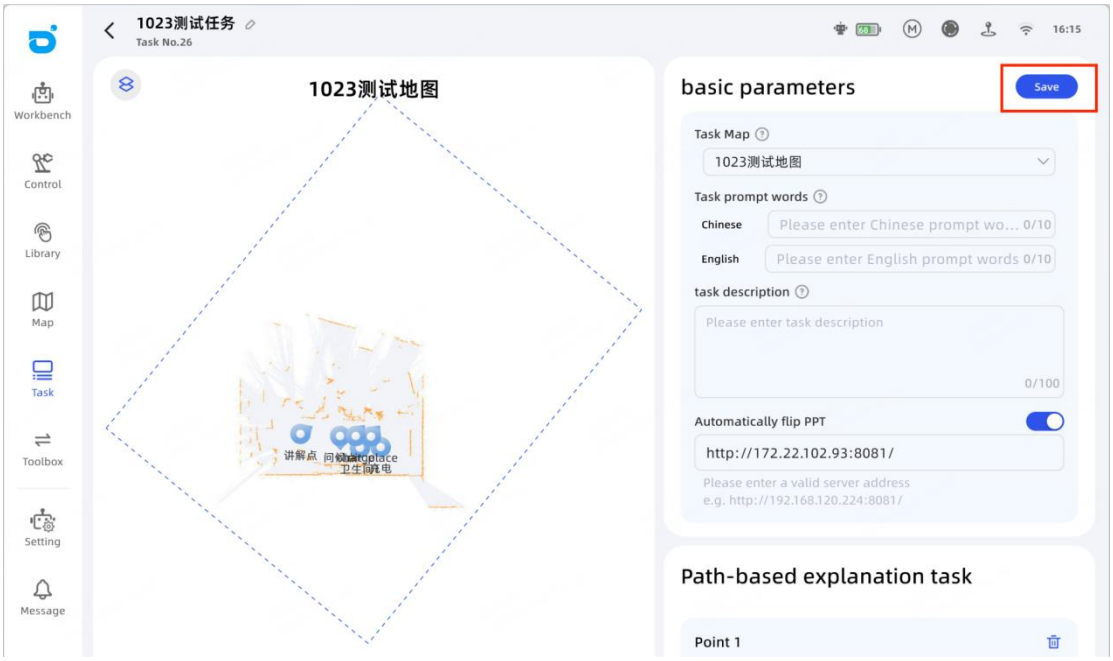
4. Save Task

The task cannot be saved until the task content is fully configured. The [Save] button appears gray. Click [Save] to save the task only after completing the task content configuration.

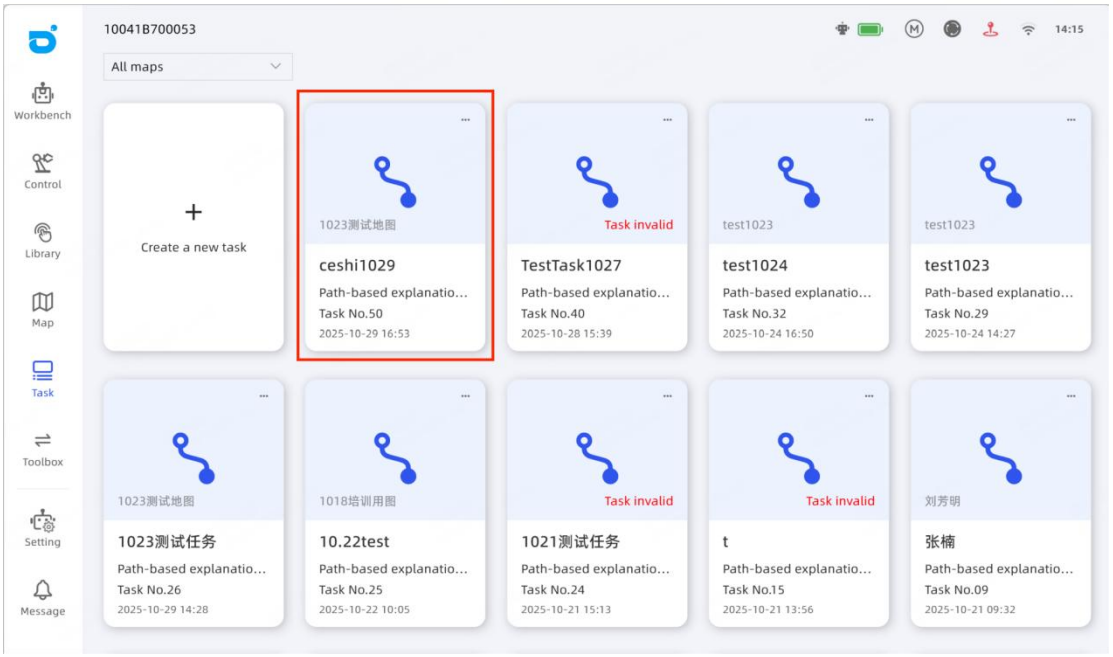
Cannot save：



Content configuration is complete and can be saved.



After saving a task, it will appear in the task list. You can add or switch tasks in the Workbench for the robot to execute.



4.6.2.3. Play PPT with robot

Note: The IP addresses in this feature description are for testing purposes only. Replace them with your actual IP addresses during use.

1. Function setup

(1) To use this feature, you need a computer for PPT playback. The system requires Windows or macOS.

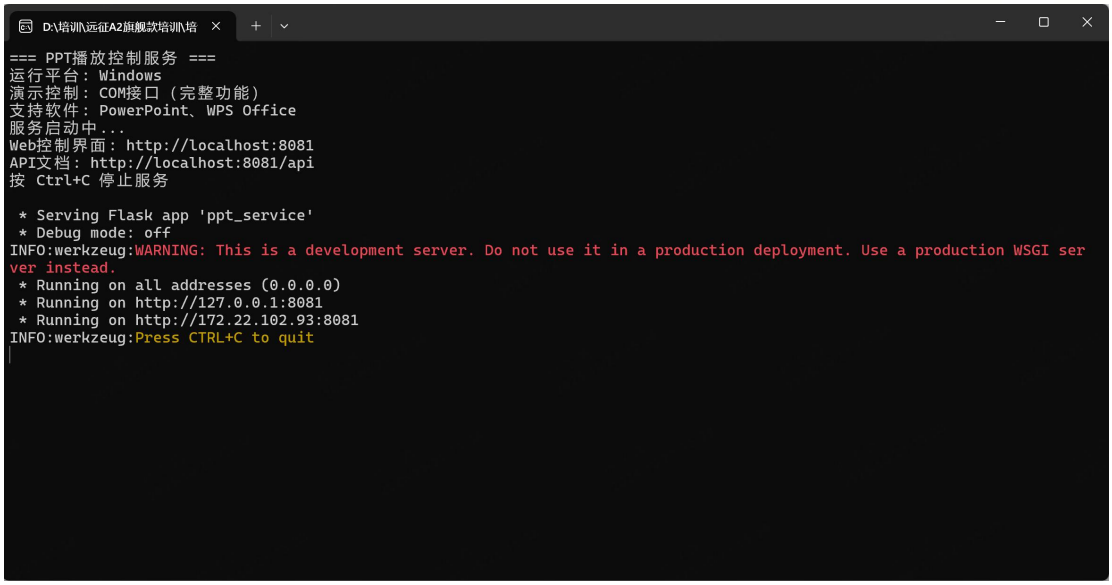
(2) Install PowerPoint, WPS Office, or Keynote on your computer.

(3) Connect your computer and robot to the same WiFi.

2. Install the feature plugin

Get the feature plugin from Zhiyuan

staff and double-click to run it. After running, the following command line will open on your computer:



Note: If antivirus software is installed on the computer, you need to manually grant permissions when running.

3. Check if the plugin is running properly

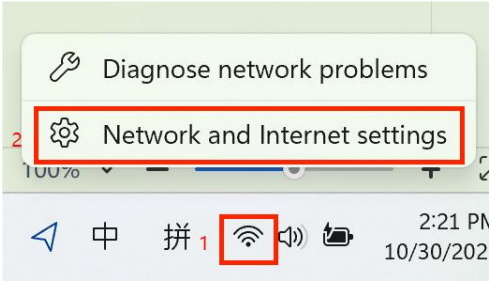
Enter http://localhost:8081 in the browser. The default listening port for the plugin is 8081. If the browser displays the following message, the plugin is running normally.

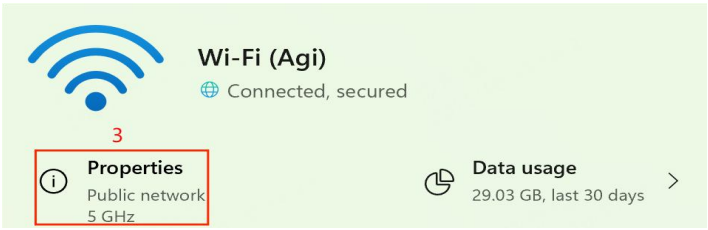
4. Associate with Task Bot

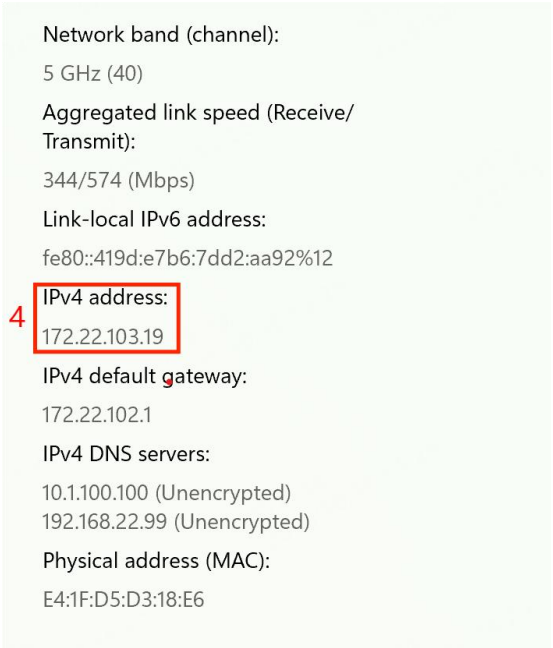
(1) Query the computer IP address by following these steps

Right-click the network icon on the taskbar → Select [Network and Internet Settings] → Click the [Properties] button for the current WiFi connection → View the IPv4 address.

The IP address at the time of writing this document is 172.22.103.19.

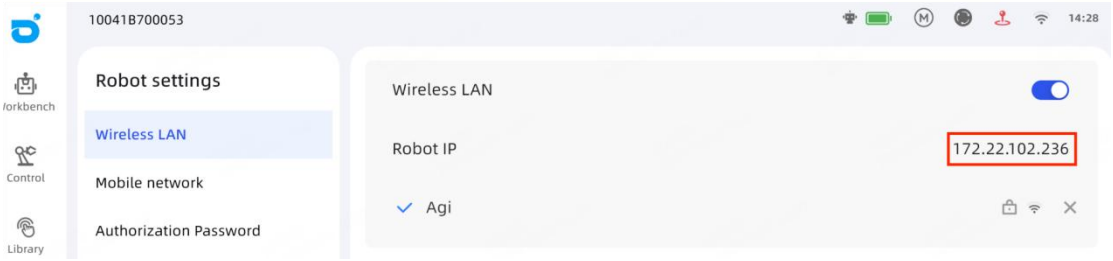






(2) Access the robot control machine via wireless network

Check if the robot shares the same WiFi as the computer using the remote control, then obtain the robot's IP address.



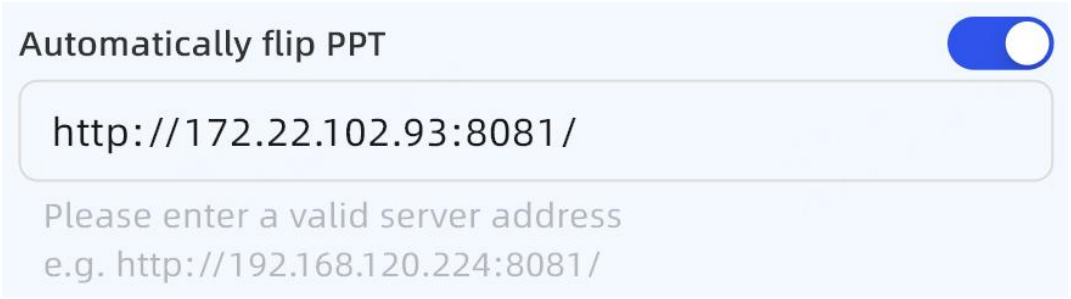
Open a command line on the computer and enter the command to remotely access the industrial computer: ssh agi@172.22.102.236. The password is: 1

```
PS C:\Users\admin> ssh agi@172.22.102.236
agi@172.22.102.236's password:
Welcome to Ubuntu 22.04.4 LTS (GNU/Linux 6.8.1-1020-rt x86_64)
```

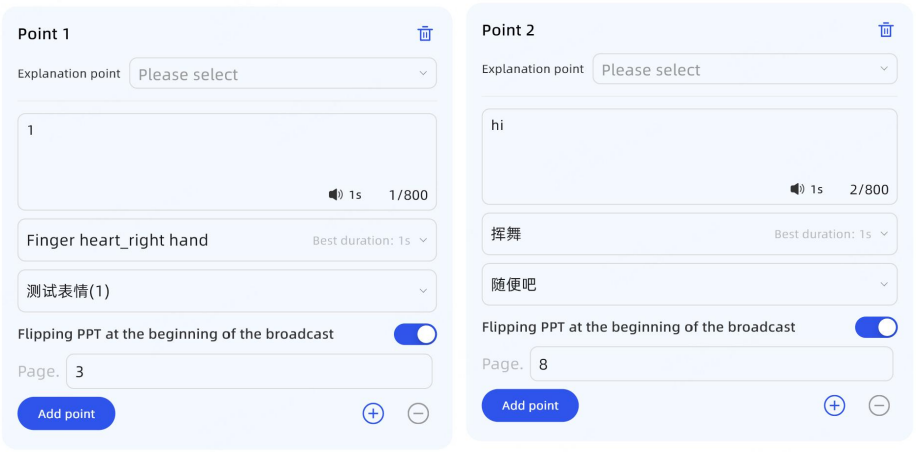
Run the following command to connect the task robot to the computer playing the PPT. Use the newly obtained IP address: curl http://172.22.102.93:8081/. If the message appears, the connection is successful.

```
agi@agibot:/agibot$ curl http://172.22.102.93:8081/
{"description":"通过HTTP接口控制PowerPoint、WPS Office、Keynote等演示文稿播放","notes":["在Windows上优先使用PowerPoint，然后是WPS Office","在macOS上优先使用PowerPoint，然后是Keynote","在Linux上主要通过文件关联使用LibreOffice或WPS Office","WPS Office的COM接口支持可能有限，部分功能需要手动操作"],"platform_info":{"control_method":"COM接口（完整功能）","platform":"Windows","supported_apps":["PowerPoint","WPS Office"]},"service":"PPT播放控制服务","supported_formats":[".ppt",".pptx",".key"],"traditional_json_api":{"control":{"goto":"POST /ppt/goto - 跳转 {\"slide\": 5}","next":"POST /ppt/next - 下一张","previous":"POST /ppt/previous - 上一张","start":"POST /ppt/start - 开始放映","stop":"POST /ppt/stop - 停止放映"},"file":{"list":"GET /ppt/files - 列出PPT文件","open":"POST /ppt/open - 打开文件 {\"file_path\": \"/path/to/file.pptx\"}"}},"url_examples":{"file_operations":{"list_dir":"GET /files?dir=/path/to/directory - 列出指定目录的PPT文件","list_files":"GET /files - 列出当前目录的PPT文件","open":"GET /open?file=/path/to/presentation.pptx - 打开PPT文件","open_direct":"GET /open/presentation.pptx - 打开当前目录下的PPT文件"},"playback_control":{"start":"GET /start - 开始幻灯片放映","status":"GET /status - 获取当前状态","stop":"GET /stop - 停止幻灯片放映"},"slide_navigation":{"first":"GET /first - 第一张幻灯片","goto":"GET /goto/5 - 跳转到第5张幻灯片","goto_param":"GET /goto?slide=5 - 跳转到第5张幻灯片","last":"GET /last - 最后一张幻灯片","next":"GET /next - 下一张幻灯片","previous":"GET /prev - 上一张幻灯片"}},"version":"2.0.0","web_interface":"访问 http://localhost:8081 查看Web控制界面"}
agi@agibot:/agibot$
```

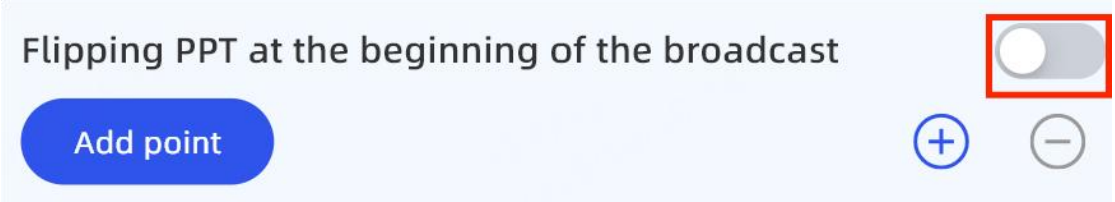
5. Access the task details page on the robot remote control. In the input box below the 'Auto Flip PPT' function, enter the computer IP and port: http://172.22.102.93:8081/



6. Set PPT page numbers for each point in the "Movement Line Explanation Task"



7. If a page does not need to be flipped, you can disable the page-flipping feature for that page. Save the task after configuring all content.



8. Enable PPT playback on the computer and set it to manual mode.
9. By configuring the workstation and launching the task, the robot can automatically navigate through the PPT.

4. 6. 3. Manage tasks

1. View task information

Each task label contains five pieces of information. When adding a task, check for errors in the task information.

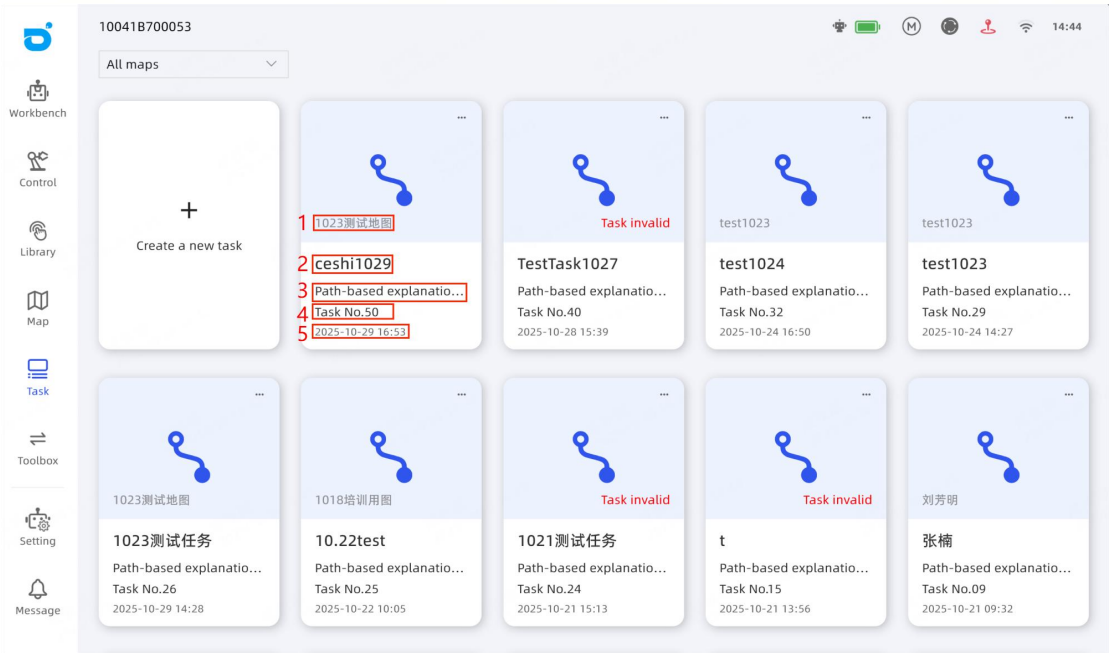
(1) 1 Location: The map where the task is located.

(2) 2 Location: Task name.

(3) 3 Location: Task type.

(4) 4 Location: Task number.

(5) 5 Location: Last modified time of the task.



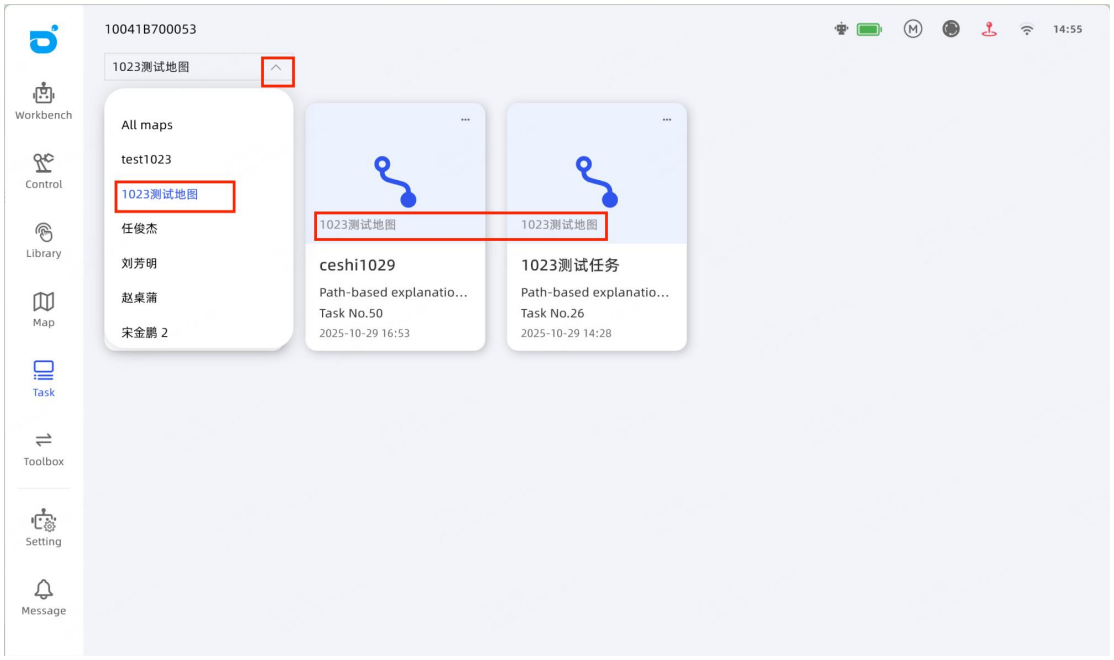
2. Rename or delete task

Click the [...] button in the upper right corner of the task tab to rename or delete the task.

Note: The current version allows up to 50 tasks per machine. Once the limit is reached, you cannot recreate tasks, but there is no explicit notification. Please be aware when using the service.

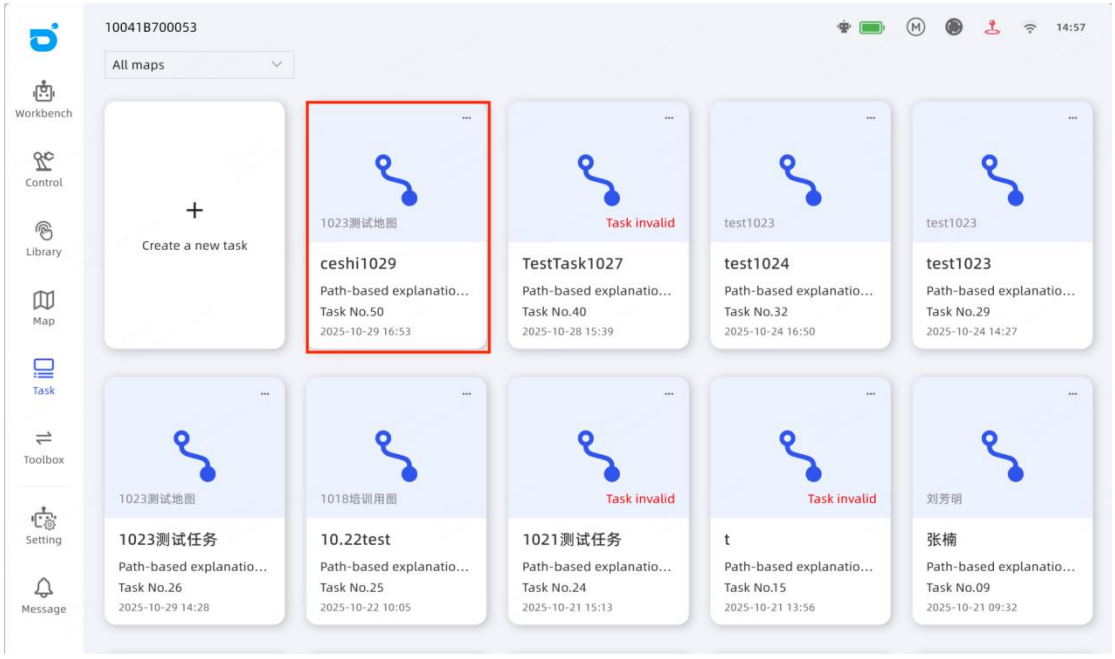
3. View task on map

When you enter the task interface, all saved tasks on the robot will be displayed by default. Click the drop-down triangle in the upper left corner to view all map names as a list. Select a map to display only the tasks created on that map on the right.



4. Edit task

In the task list interface, click the task tab to enter the task details interface to modify the task content. The operation method is the same as configuring the task content.



4.7. Workstation

The workstation can realize the robot autonomous navigation and explanation function by configuring the navigation map and tasks.

4.7.1. Self-Explanation

Autonomous navigation is a key feature of robots: They can autonomously plan routes in real-world scenarios, deliver guided tours at specific locations, and interact with users through human-like gait, voice announcements, dynamic gestures, and expressive facial expressions. Additionally, they can automatically flip through PowerPoint slides. These capabilities are widely used in exhibition halls, 4S stores, science museums, and educational settings.

To execute the self-explanation task, you need to complete the following preparations. The specific operations are given in the following text:

(1) The robot is placed in the scene where the explanation task is performed and switched to the [Humanoid Walking] state.

(2) The current scene has created a map for executable tasks: the map information matches the actual scene (obstacles, boundaries, etc.) and navigation points have been added.

(3) An executable self-guided tour task has been created. The task is linked to a navigation point on the map and configured with actions, emojis, and text content, which is normal.

The specific operation is as follows:

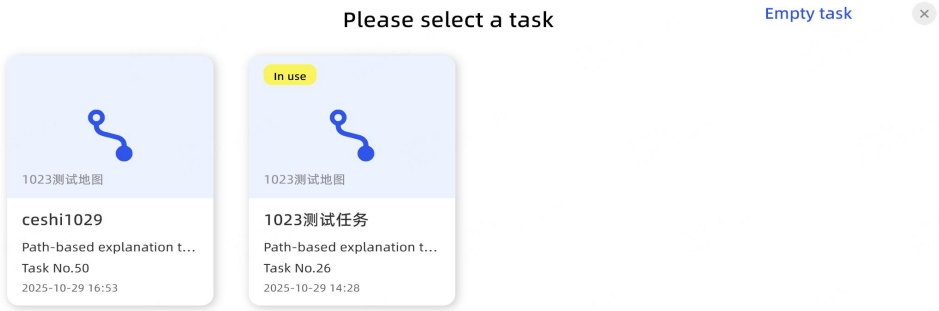
4.7.1.1. Switch to navigation map

When the robot is turned on, it first enters the Aim-Master default display showing the last navigation map used.

(1) Tap the drop-down triangle to the right of the map name to view the map list. Tap the map corresponding to the current scene to switch.

4.7.1.2. Add navigation task

After the robot is powered on, it first enters the Aim-Master interface, which initially shows no tasks. Click the [+] button to select a navigation task, then click the task tab to add it to the task management interface.



4.7.1.3. Resolve location error

For autonomous navigation, robots must maintain precise positioning. The Far Horizon A2's LiDAR remains inactive during non-navigational tasks and map creation, frequently causing' positional loss' issues. To ensure navigation accuracy, the system must first resolve these positioning anomalies.

You can resolve positioning errors by manually or automatically repositioning. We recommend automatic repositioning for convenience and speed. Click the [Reposition] button to display [Manual Position] and [Auto Position] on the map.

Auto-relocate:

Click the [Auto Position] button. The robot will automatically scan the scene and determine its position. The icon of the robot will then move to the corresponding location on the map.

Note: When using the auto-positioning feature, ensure the current map matches the actual scene for accurate robot positioning. If auto-positioning fails, the robot will automatically explore the area to confirm its location. Be cautious of potential equipment and personnel damage.

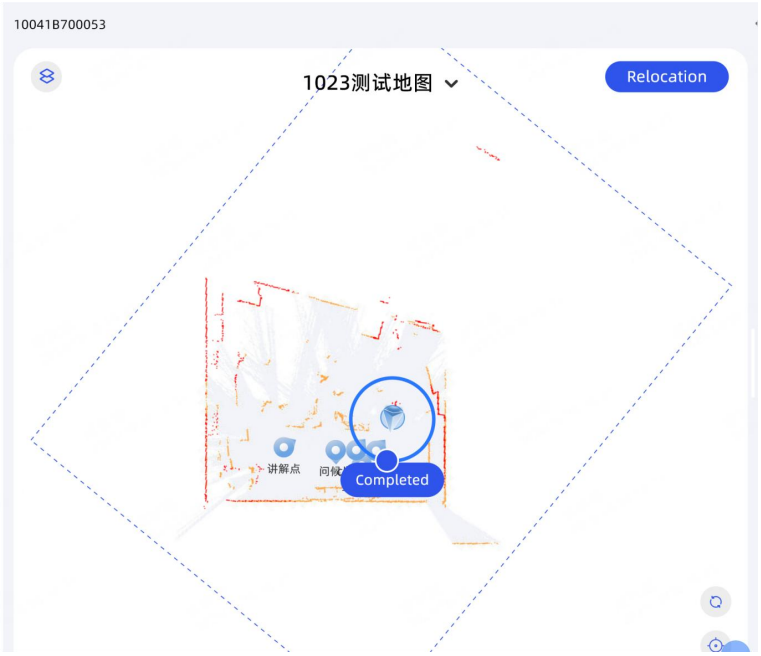
Manual repositioning:

(1) Click [Manual Position]. The LiDAR will scan the scene and generate a red map.

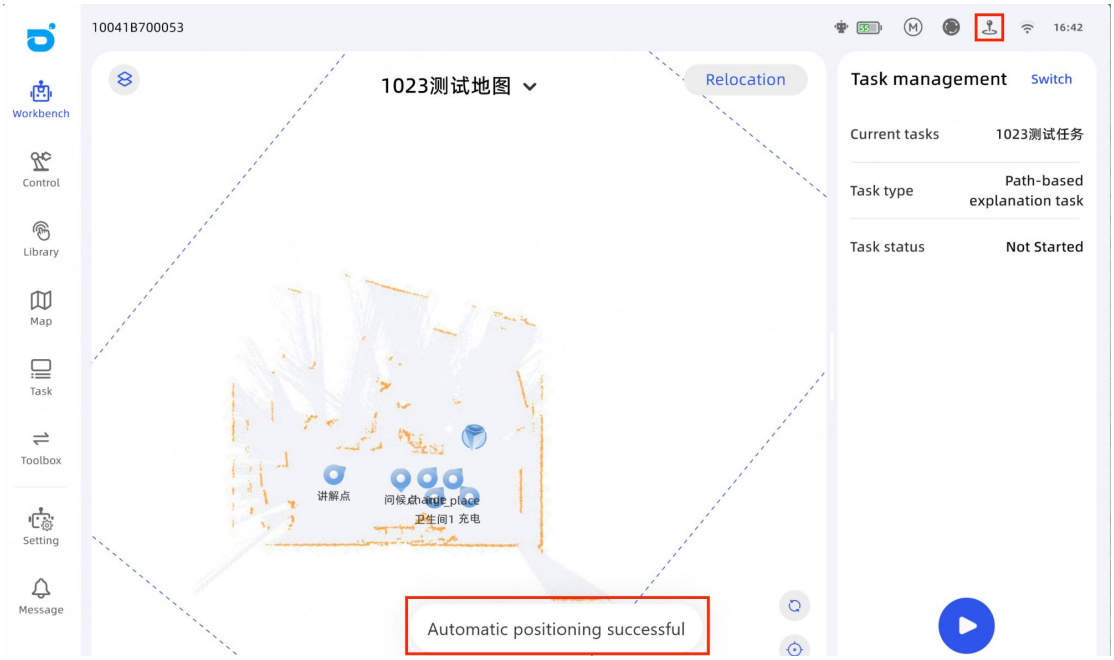
(2) Align the red map with the orange map:

- Drag the icon in the middle of the blue circle to move the red map.
- Drag the dark blue dot along the blue circle to adjust the red map direction.

(3) After confirming the red map overlaps with the orange map, click the [Completed] button.



(4) If the repositioning is successful, a notification will appear at the bottom of the screen and the status bar icon will turn gray.



Follow the above steps to successfully relocate. For special cases, refer to the following steps:

(1) If the red map and orange map do not overlap sufficiently, the robot cannot

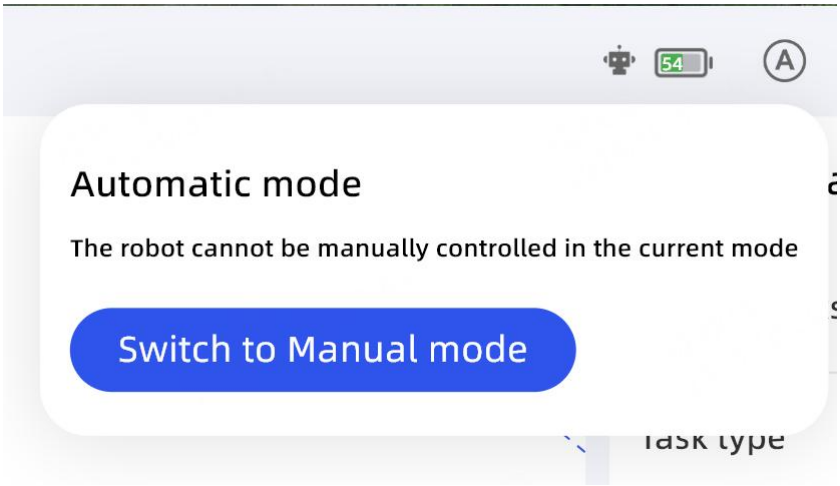
relocate successfully. Try relocating multiple times or move the robot to a different position.

(2) If you add a lot of items to the scene after building the map, remove them when you reposition. If the items are permanent, scan the map again.

(3) If the scene is too large and the boundary exceeds the working range of lidar, the robot can be pushed to a corner of the scene or an area with many facilities, so that there are more reference boundaries to improve the success rate of repositioning.

4.7.1.4. Switch to robot mode

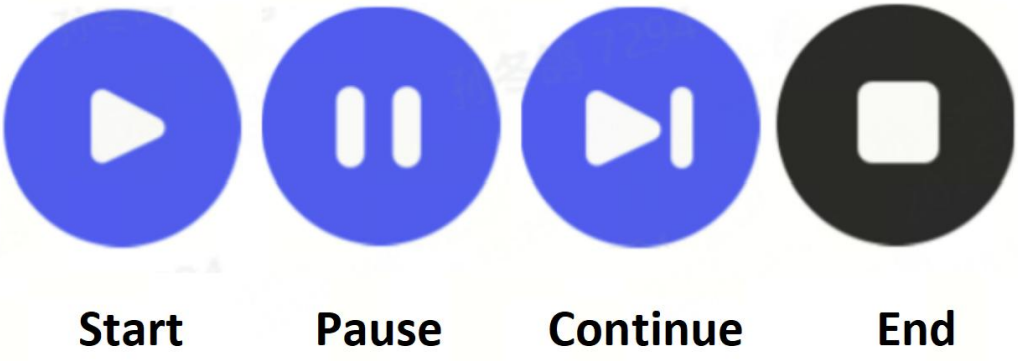
To enable the robot to perform the self-guided tour, set the control mode to "Automatic mode". Click the mode icon in the status bar to switch the robot to automatic mode.

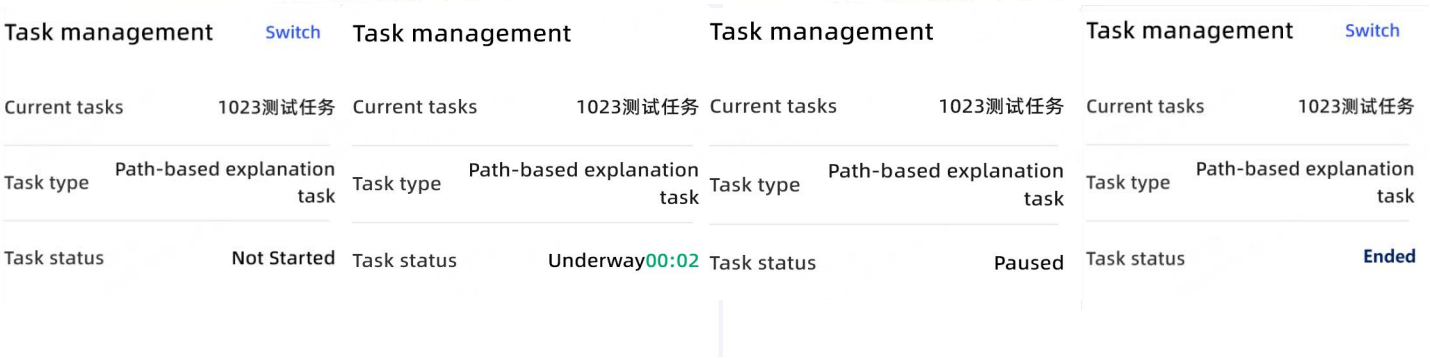


4.7.1.5. Execute navigation tasks

Start/Pause/Continue/End self-explanation task

(1) Navigation task: toggle buttons and interface display for different states





(2) Start task

- Before the task starts, the Task Management interface shows only the [Start] button, and the task status is "Not Started".
- Click the [Start] button to begin the task. The robot will move and explain autonomously according to the task content, avoiding obstacles.
- After the task starts, the [Start] button disappears and the [Pause] and [End] buttons appear. The task status changes to "In Progress" and the task duration is recorded.
- The task is a one-time task and will end automatically after completion.

(3) suspend task

- After starting the task, click the [Pause] button to pause the task. The [Pause] button will switch to [Continue], and the task status will change to "Pausing".
- After the pause, the robot stops in place.

(4) Continue task

- When paused, click the [Continue] button to resume the task.
- The robot will continue the unfinished explanation task. If the robot pauses the task while explaining, the unfinished part of the content will be lost when the task is resumed.

(5) End task

- After the task starts, press the [End] button to finish it.
- After the task is completed, unfinished tasks will not be executed.
- The task interface shows only the [Start] button, and the task status is switched to "Completed".

4.7.2. Other operations

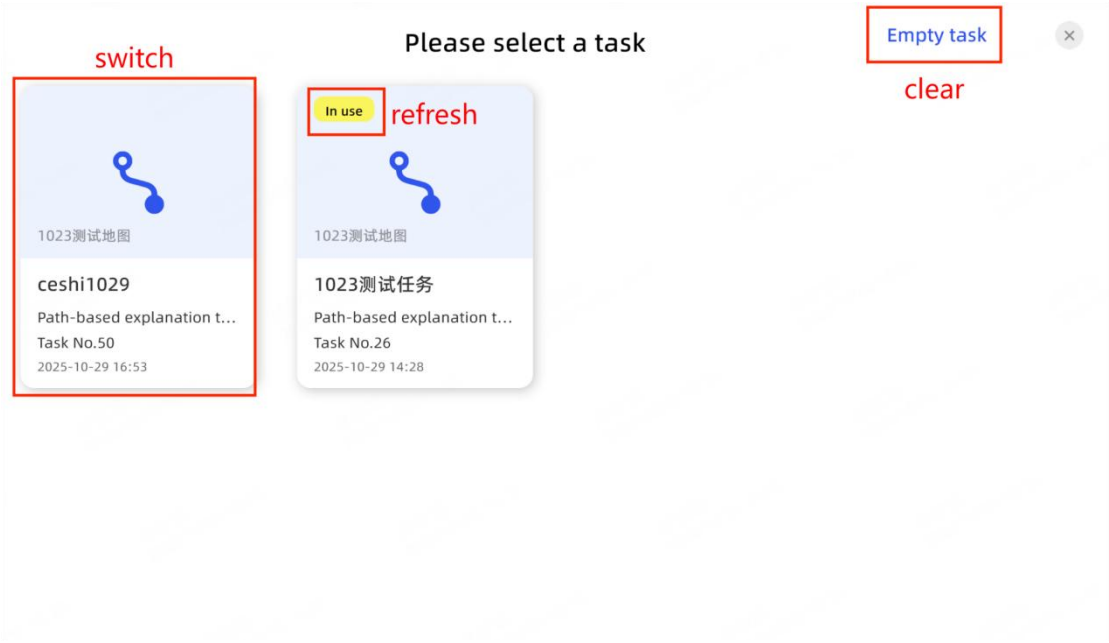
4.7.2.1. Switch task

In the task management interface, after adding navigation tasks, click the [Switch] button to switch tasks. The specific conditions for different options are as follows:

(1) Select another task to switch the navigation task to the target task.

(2) Select the task in use to refresh its content. This is typically used for debugging tasks to verify the robot's execution after modifying the task content in real time.

(3) Selecting an empty task clears the task management interface and returns to the initial state.



4.7.2.2. Voice control auto explanation

The self-explanation feature supports voice control, and voice control and remote control can be used alternately.

(1) Prepare voice control

Voice control requires the robot to be in a voice-controlled state, meaning all the following preparations must be completed. The Aim-Master interface is shown below:

- The current map matches the actual scene.
- An executable self-explanation task has been added to the Task Management

interface.

- Positioning is accurate.
- The robot is in automatic mode.

(2) Start task

- Wake up the robot with the voice command "Expedition expedition";
- When you say "Start the exhibition hall tour", the robot will reply "Ok, please follow me", and automatically switch to the [Anthropomorphic Walking] state and start the autonomous tour.

(3) Suspend task

- To start the task, say "Expedition Expedition" to wake up the robot.
- When the robot responds with "I am", the task will pause automatically and the status will switch to [Walking on straight legs, upper limbs moving].
- You can interact with people while paused.

(4) Continue task

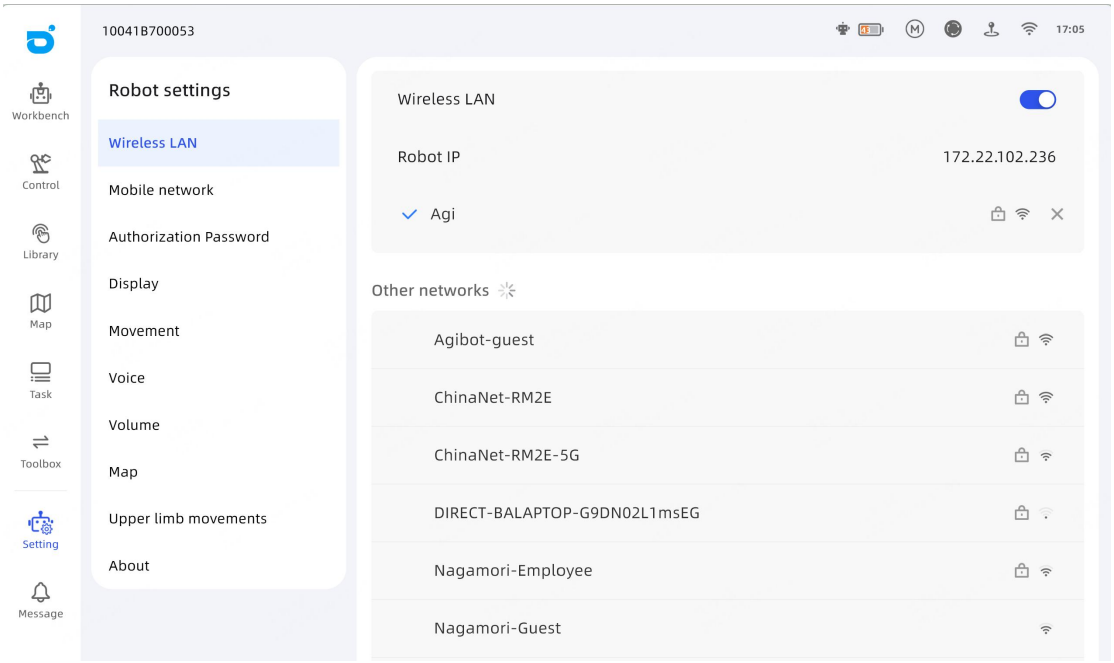
- When paused, you can resume the task by following these two voice commands after the robot replies:
  - The voice command "Go to the next stop" is recognized by the system. The AI assistant responds: "Alright, I'll go to the next stop."
  - The voice command "Continue task" or "Continue explanation" prompts the robot to reply "Resuming task".

(5) End task

- When you say "End task", the robot will respond with "Canceling task" and end the task.

4.8. Set up

The settings function is primarily used to modify the configurations of the robot and Aim-Master.

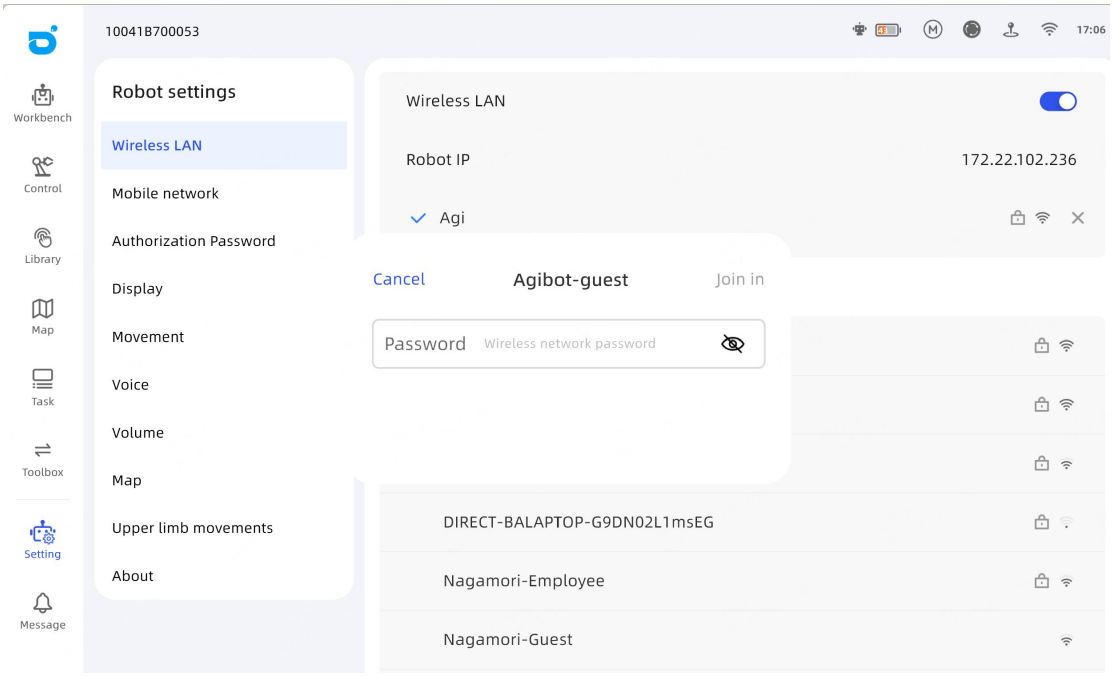


4. 8. 1. WLAN Wireless Local Area Networks

Note: The new version uses x86 industrial computer network.

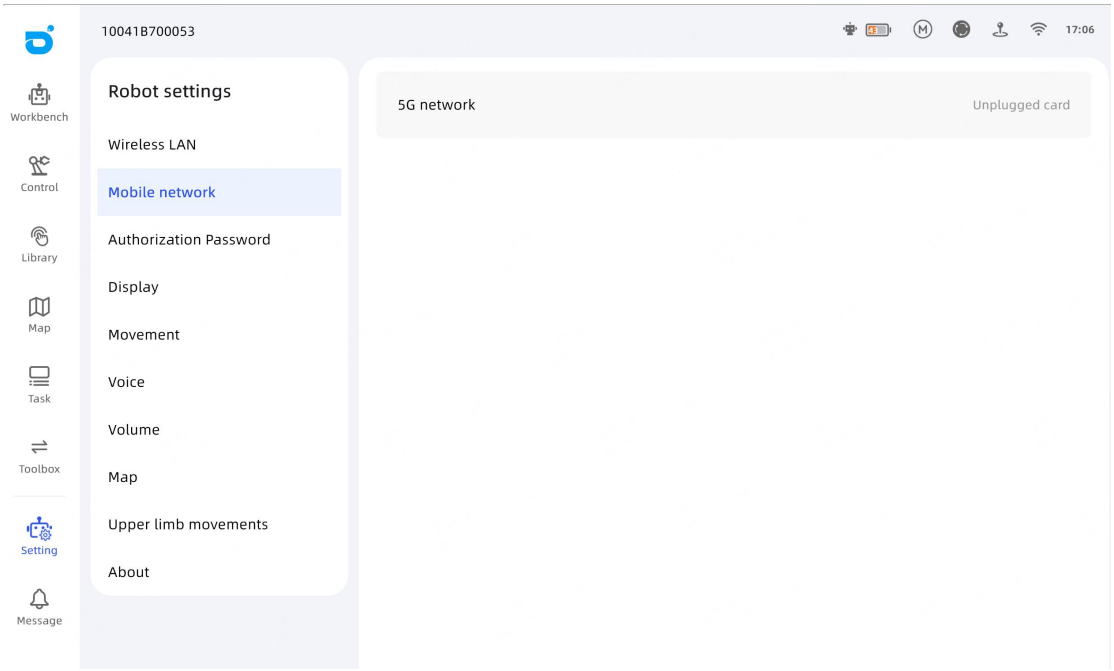
You can set the network connection of the robot: Click the network to connect, enter the password, and click the [Join] button to connect to the network.

The robot's IP will appear after network connection. This IP can be used to connect the robot through Aim-Master on other platforms (Windows/Linux/mac/Android).



4. 8. 2. Mobile network

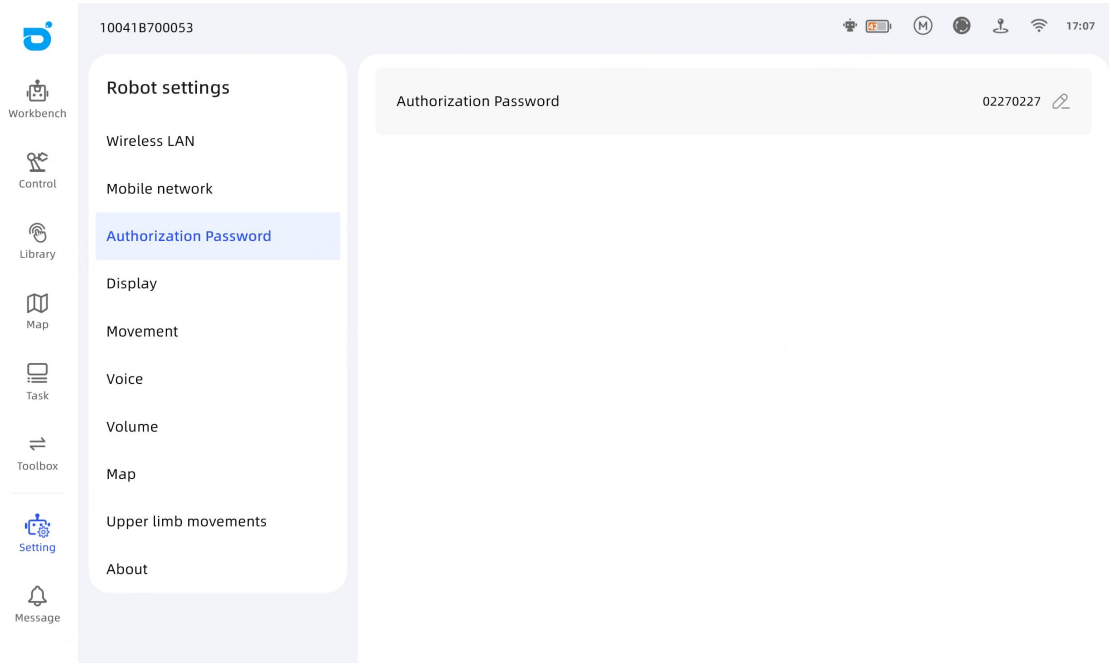
This feature supports using an IoT card instead of external WiFi. It is under development. Stay tuned.



4. 8. 3. Authorization password

You can change the password for connecting to the robot via IP. The default

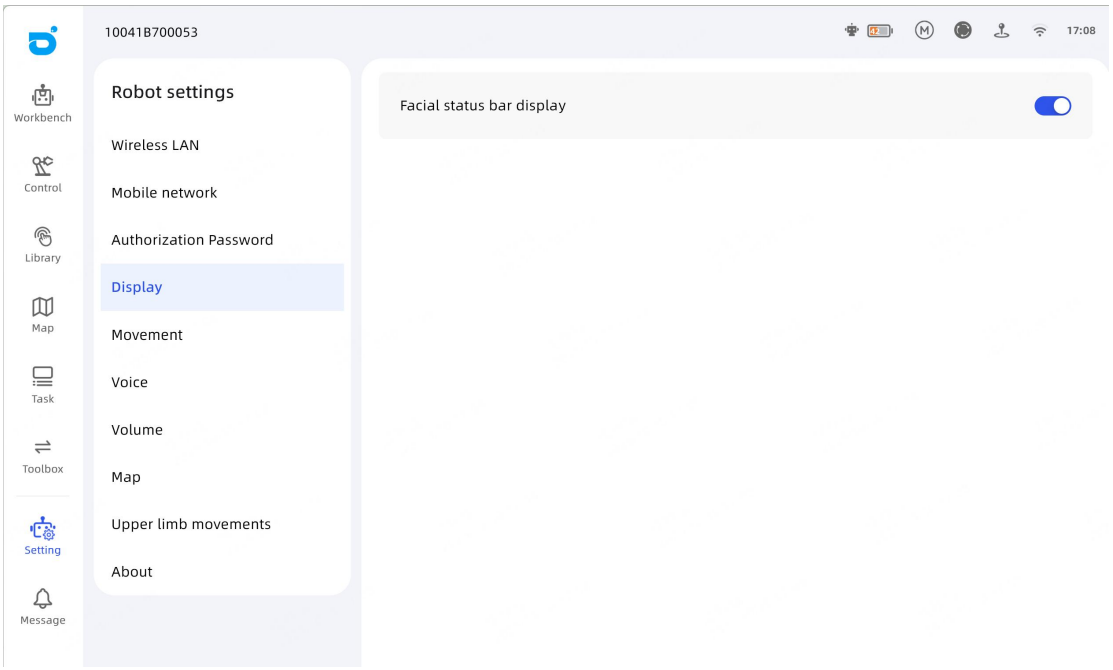
password is 02270227. Change it as soon as possible after deployment.



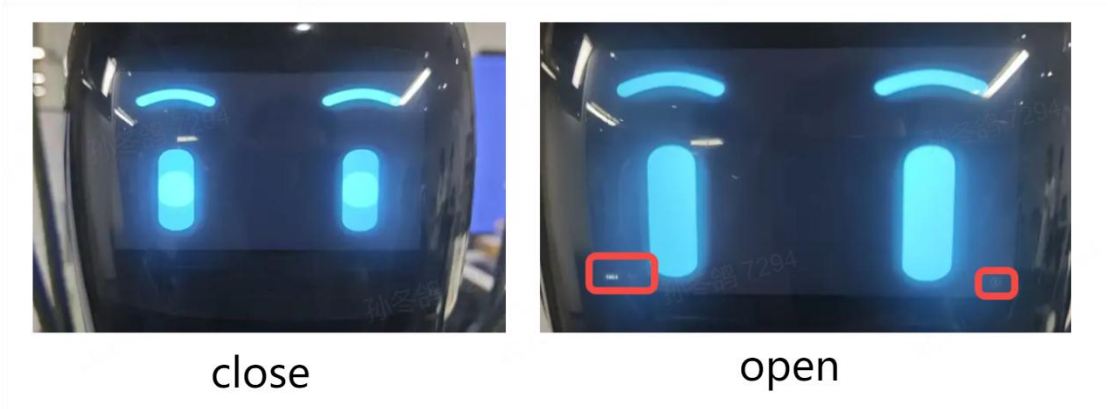
4.8.4. Display

This feature displays the status bar of the robot's face (tablet). It is off by default. When turned on, it shows battery level, Wi-Fi status, and other information.

When the feature is enabled, the text corresponding to the voice recognized by the robot will be displayed in the middle of the bottom of the screen when you talk to the robot.



Below is the facial display of the robot in different states: closed and open.



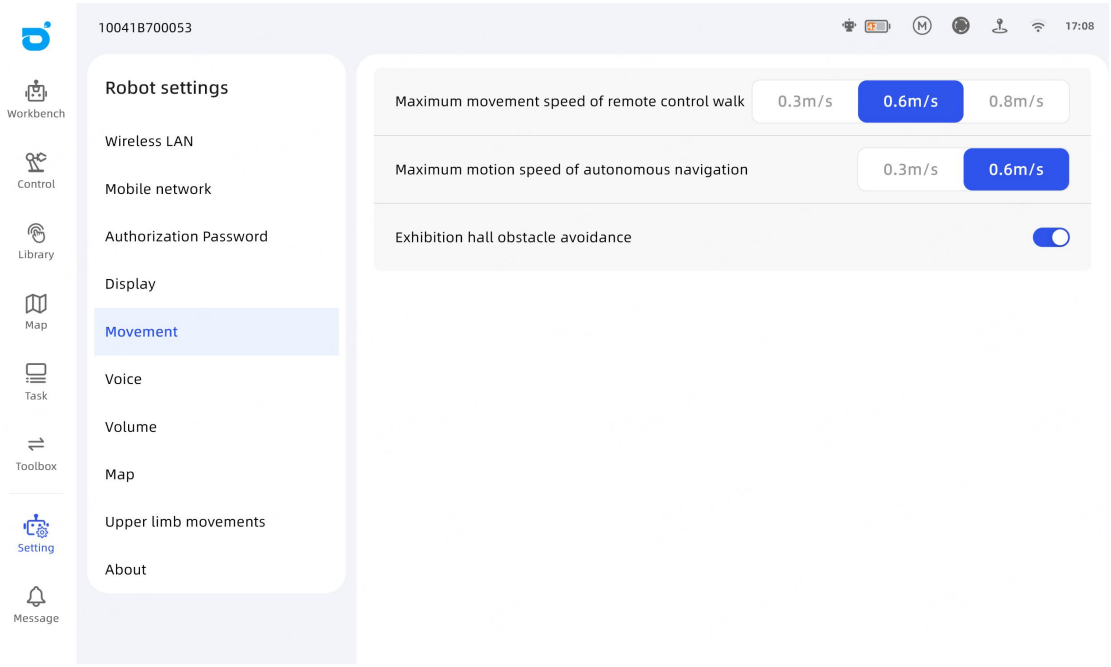
4.8.5. Movement

You can modify the motion function:

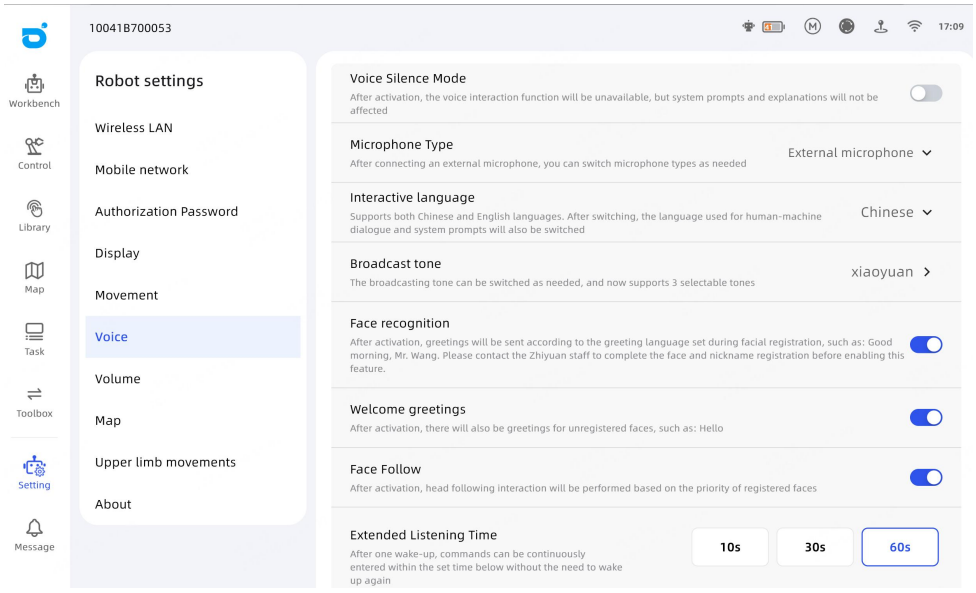
1. Set the maximum remote walking speed: the default is 0.6 m/s, and you can set it

to 0.3 m/s or 0.8 m/s (maximum speed).

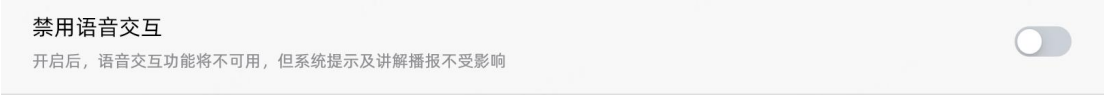
2. Set the maximum motion speed for autonomous navigation: Default is 0.6 m/s (maximum speed), and can be set to 0.3 m/s.
3. Enable/disable obstacle avoidance in the exhibition hall: Default is enabled, which triggers automatic obstacle avoidance during guided tours. If disabled, obstacle avoidance will not occur. Use with caution. For group control, disable this option to prevent multiple devices from triggering avoidance and causing uncoordinated movements.



4. 8. 6. Phonetic



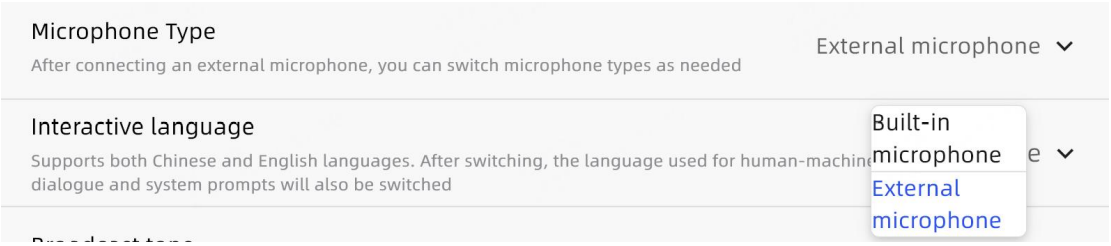
4.8.6.1. Disable voice interaction



The default is off, allowing normal voice interaction with the bot.

When voice interaction is disabled: The robot will not receive any external voice signals, and the screen will display "Voice is disabled". This does not affect the robot's voice announcement function or the volume of the announcement.

4.8.6.2. Microphone type



The system defaults to the built-in microphone (the robot's built-in microphone). Voice interaction supports external microphone access, and a flashkey T5 external lavalier microphone is provided as a standard accessory. When in use, manually switch to the external microphone here. After switching, the robot will voice 播报提示信息.

In noisy environments, the use of a collar microphone can greatly improve the effectiveness of voice interaction.

The Lianjia Mai is compatible with robots. The diagram below shows the red box as the robot's SN. When in use, verify that the number matches the robot's.

The Lingjia microphone comes with a detailed user manual. For basic usage, refer to the manual. This section focuses on how to use the microphone for voice interaction with the robot.

When the lead clip is in the charging cabin, the red light indicates that it is charging, and the green light indicates that it is fully charged. After taking it out, it can be automatically matched with the robot. If the matching is successful, the light will turn blue, indicating that it is in use.

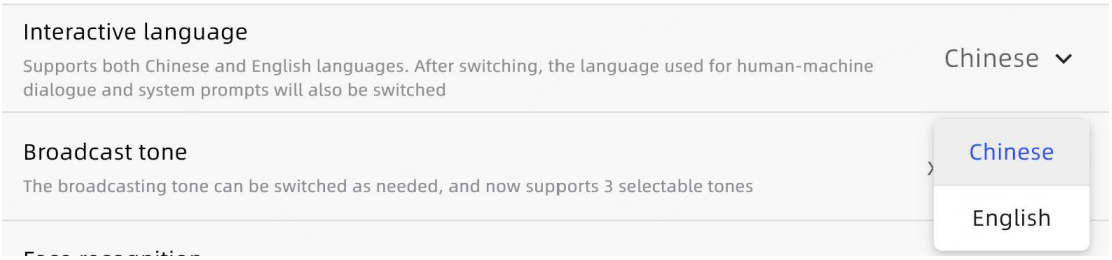
Switch microphone type to External microphone.

Hold the handheld clip microphone about 3-5 cm from your mouth, or attach it to your collar. Keep the distance under 10 cm. Refer to Section 5.3.2 for voice interaction with the robot.

Note: Charge the device promptly after use. Low battery may cause connection failure. Check the battery level if the headset cannot connect to the robot.

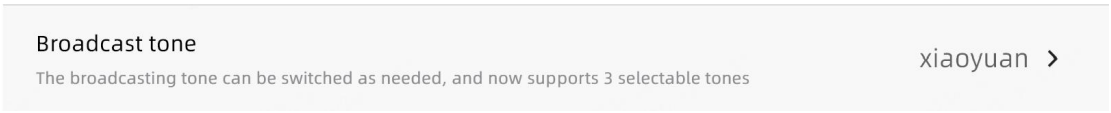
You can also purchase a Depusheng external microphone. When in use, simply plug the USB receiver into the robot's debugging compartment, and it will automatically switch.

4.8.6.3. Interactive Language



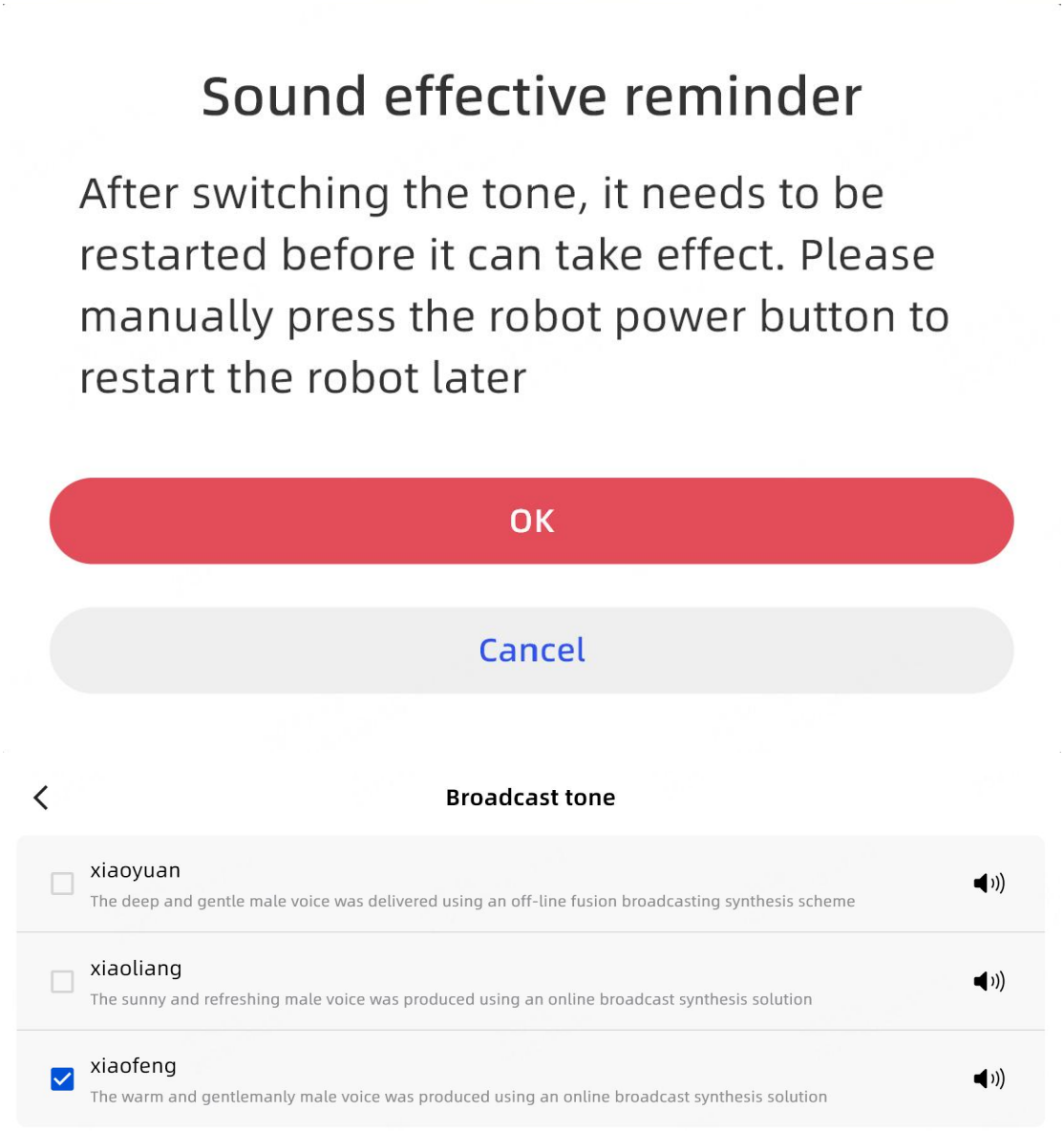
Supports Chinese and English with manual switching. Used to change the language for the robot's announcement prompts.

4.8.6.4. Notification tone



Default is "Zhi Xiaofeng". You can switch between three voice effects. The robot needs to restart to take effect. Click to enter the audio preview interface. Select a voice effect and click the speaker icon on the right to preview it.

A pop-up will appear when switching. You can ignore it during the trial and click [OK].

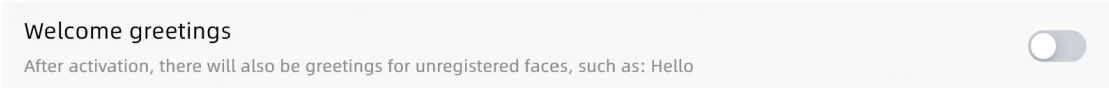


4.8.6.5. Face recognition & Face tracking

This feature requires collecting user facial data and backend information input. After input, when the user appears in front of the robot, facial recognition is triggered. The robot greets the user and turns its head to follow the user's face.

For assistance, please contact the Zhiyuan staff.

4.8.6.6. Greeting



This feature is off by default and can be turned on manually. When enabled, it

triggers greetings when it detects unfamiliar faces. The greetings are smartly adjusted based on the number of people detected.

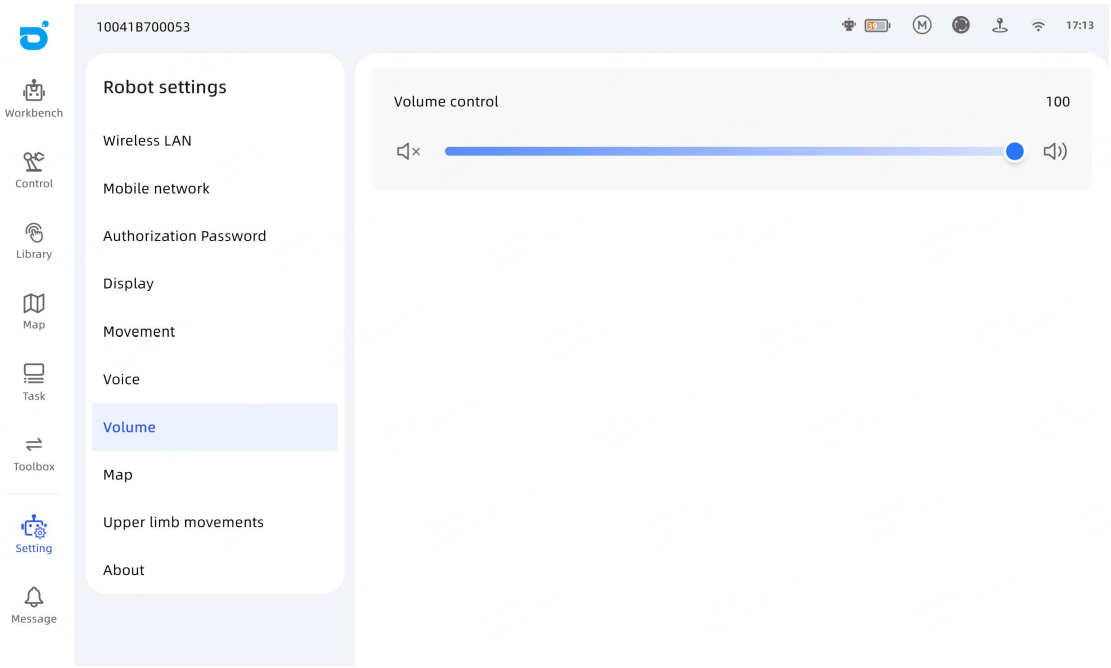
4.8.6.7. Extend listening time

The default interval for voice interaction after a single wake-up is 60 seconds. This means you can interact with the robot without needing to wake it up again within 60 seconds after the first wake-up. Each interaction has a refresh time. If no interaction occurs for more than 60 seconds, the interaction will be terminated, and you need to wake it up again for subsequent voice interaction.

You can set the interval here. Currently, there are three options: 10s,30s, and 60s.

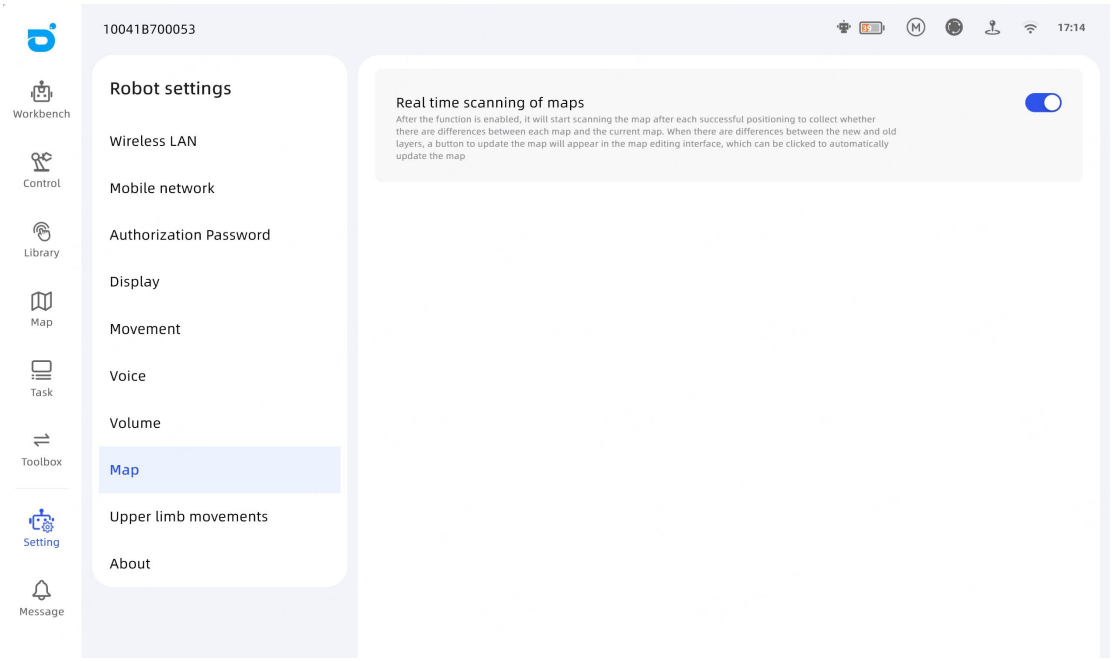
4. 8. 7. Volume

Adjust the volume of the robot's voice announcement.

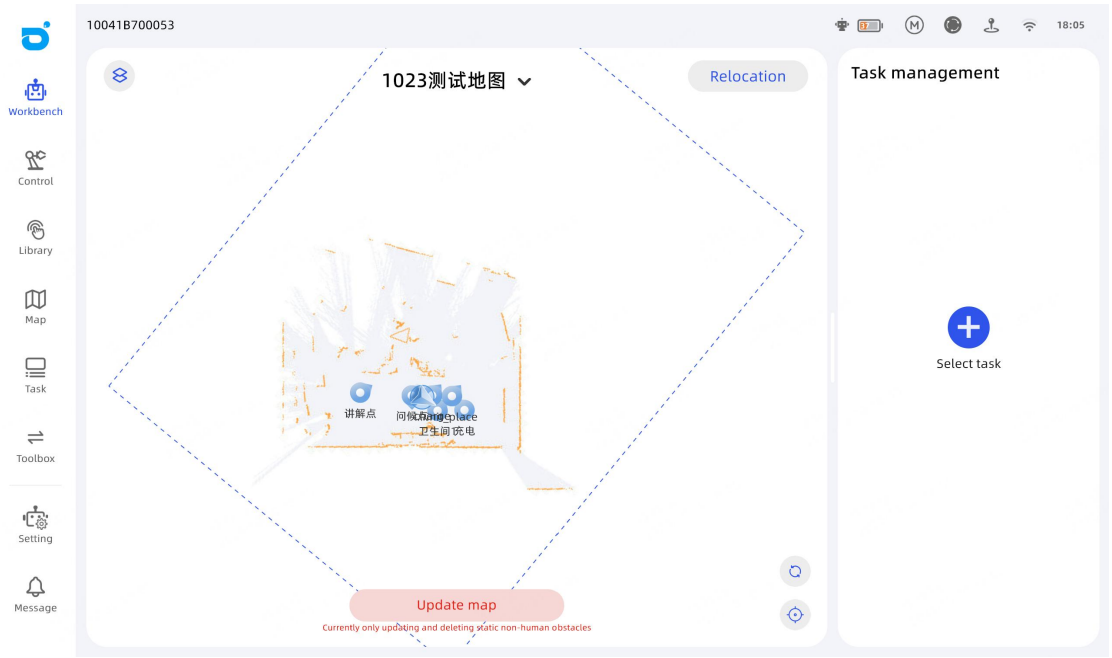


4. 8. 8. Scan maps in real time

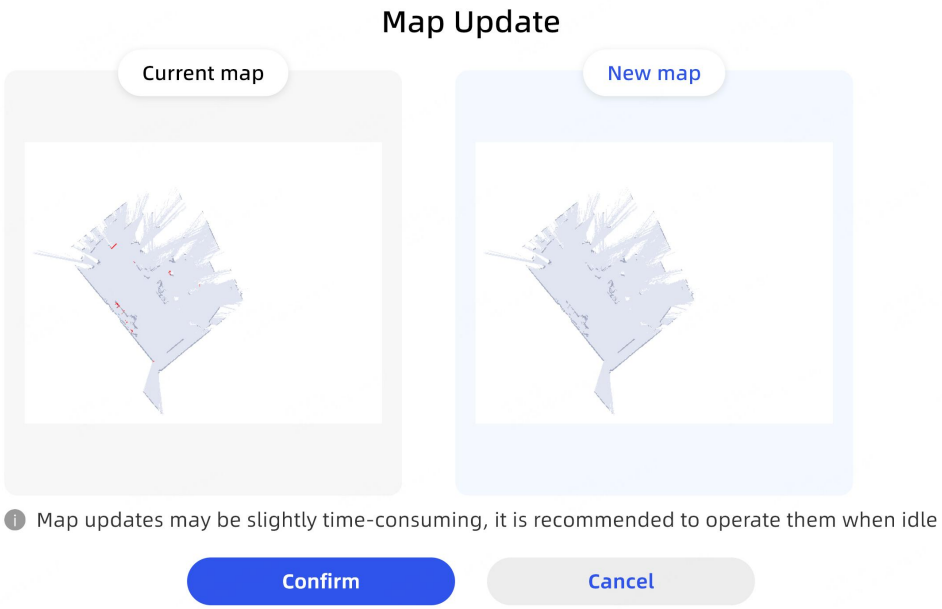
This feature is enabled by default. The robot scans the current scene and collects real-time map data during each navigation task. It compares the data with the map created during task editing. If differences are detected, the dashboard prompts for map updates. When disabled, scanning stops.



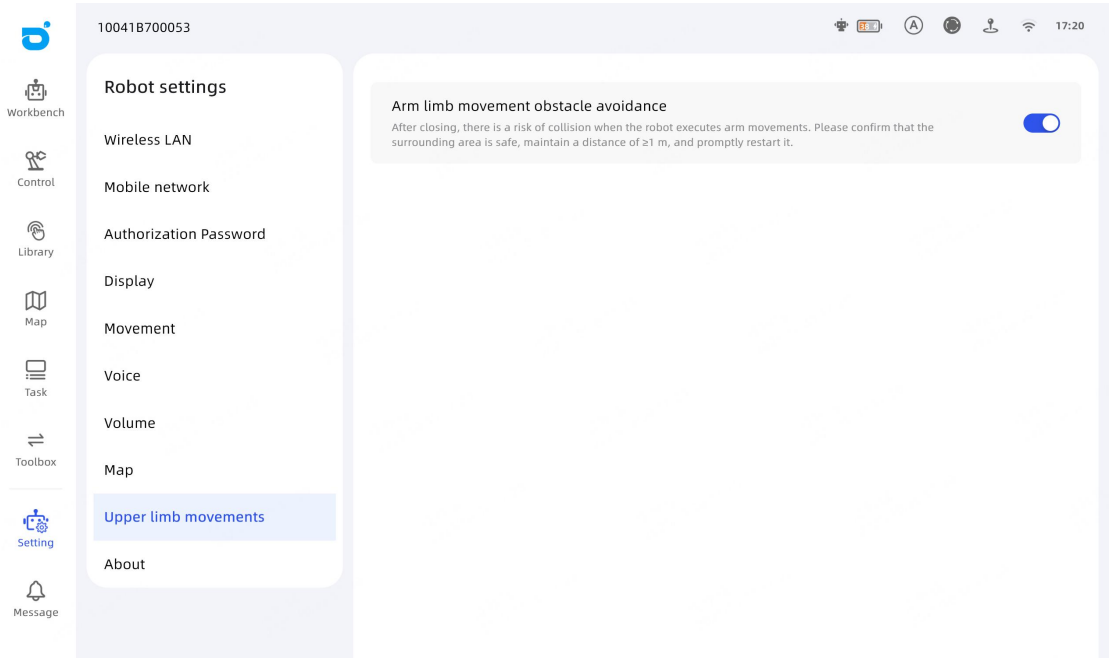
Update reminder.



Click the [Update Map] button to view the map comparison interface. Differences will be highlighted in red. You can decide whether to update based on the comparison.



4.8.9. Upper limb movements



Supports upper limb movement avoidance on the robot. Disabled by default.

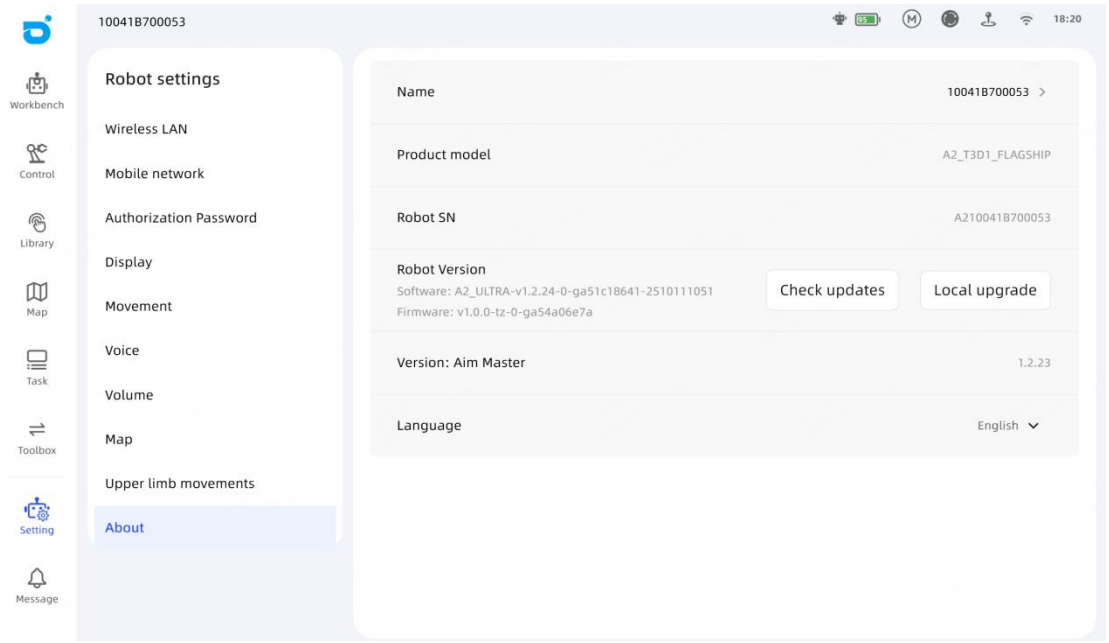
When enabled, the robot will trigger obstacle avoidance and maintain a fixed posture until the obstacle is removed, and the action will end (no further action will be taken) when an obstacle enters the 1m range during the upper limb movement.

You can turn this feature on or off based on your needs. If you're demonstrating special skill packs, such as drumming, be sure to turn this feature off in advance.

4. 8. 10. About

View the robot's name, model, SN, system version, Aim-Master version, and language.

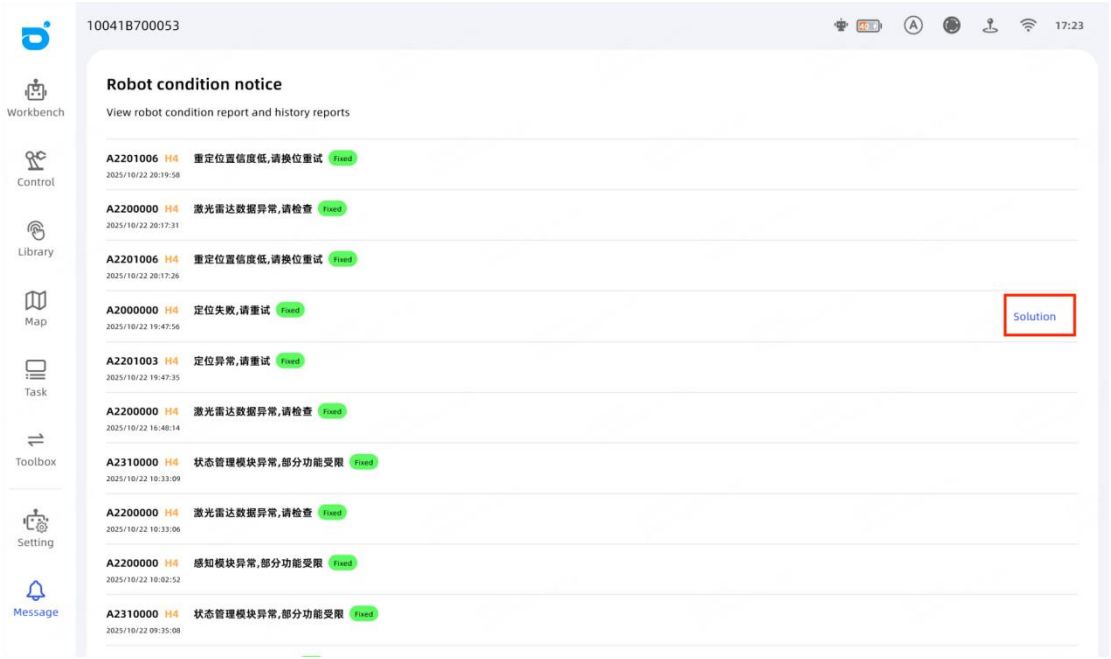
The language bar allows you to set the language for Aim-Master display. Currently, only Simplified Chinese and English are supported.



4.9. Notice

This feature displays the robot's health status and historical reports, as well as removing certain abnormal information.

Click the [Clear Fault] button on the right to try resolving the issue. If unsuccessful, click [Solution] to view the solution. If the error persists, contact Zhiyuan technical support.


10041B700053
17:23
Workbench
Control
Library
Map
Task
Toolbox
Setting
Message
Robot condition notice
View robot condition report and history reports
A2201006 H4 重定位置信度低,请换位重试 Fixed
2025/10/22 20:19:58
A2200000 H4 激光雷达数据异常,请检查 Fixed
2025/10/22 20:17:31
A2201006 H4 重定位置信度低,请换位重试 Fixed
2025/10/22 20:17:26
A2000000 H4 定位失败,请重试 Fixed
2025/10/22 19:47:56
Solution
A2201003 H4 定位异常,请重试 Fixed
2025/10/22 19:47:35
A2200000 H4 激光雷达数据异常,请检查 Fixed
2025/10/22 16:48:14
A2310000 H4 状态管理模块异常,部分功能受限 Fixed
2025/10/22 10:33:09
A2200000 H4 激光雷达数据异常,请检查 Fixed
2025/10/22 10:33:06
A2200000 H4 感知模块异常,部分功能受限 Fixed
2025/10/22 10:02:52
A2310000 H4 状态管理模块异常,部分功能受限 Fixed
2025/10/22 09:35:08