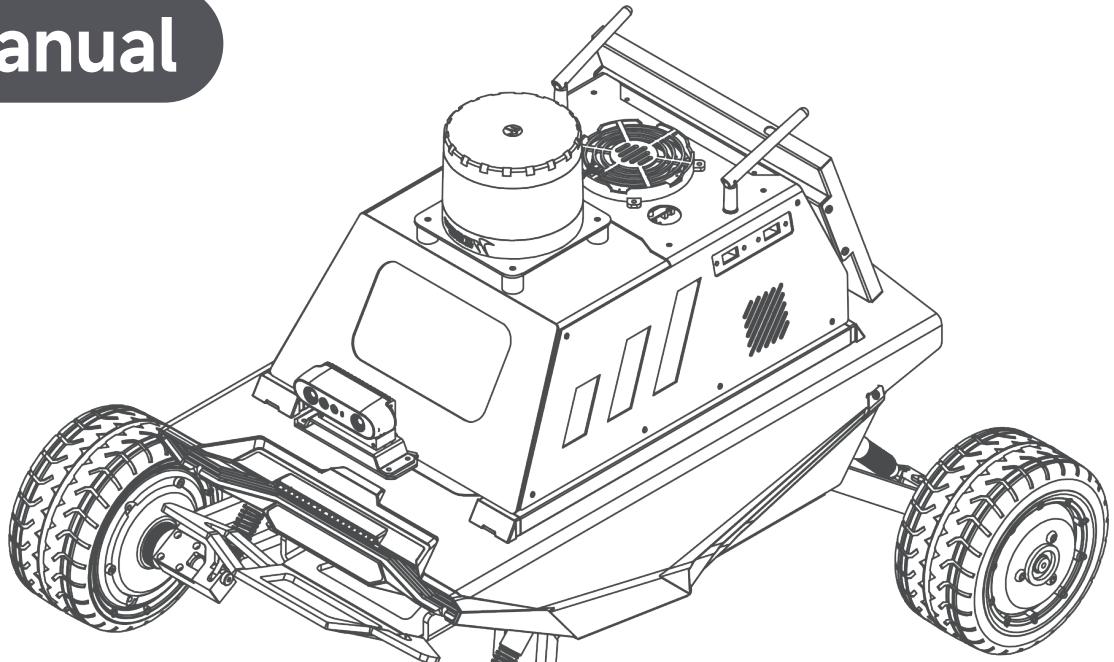


NAVROBO

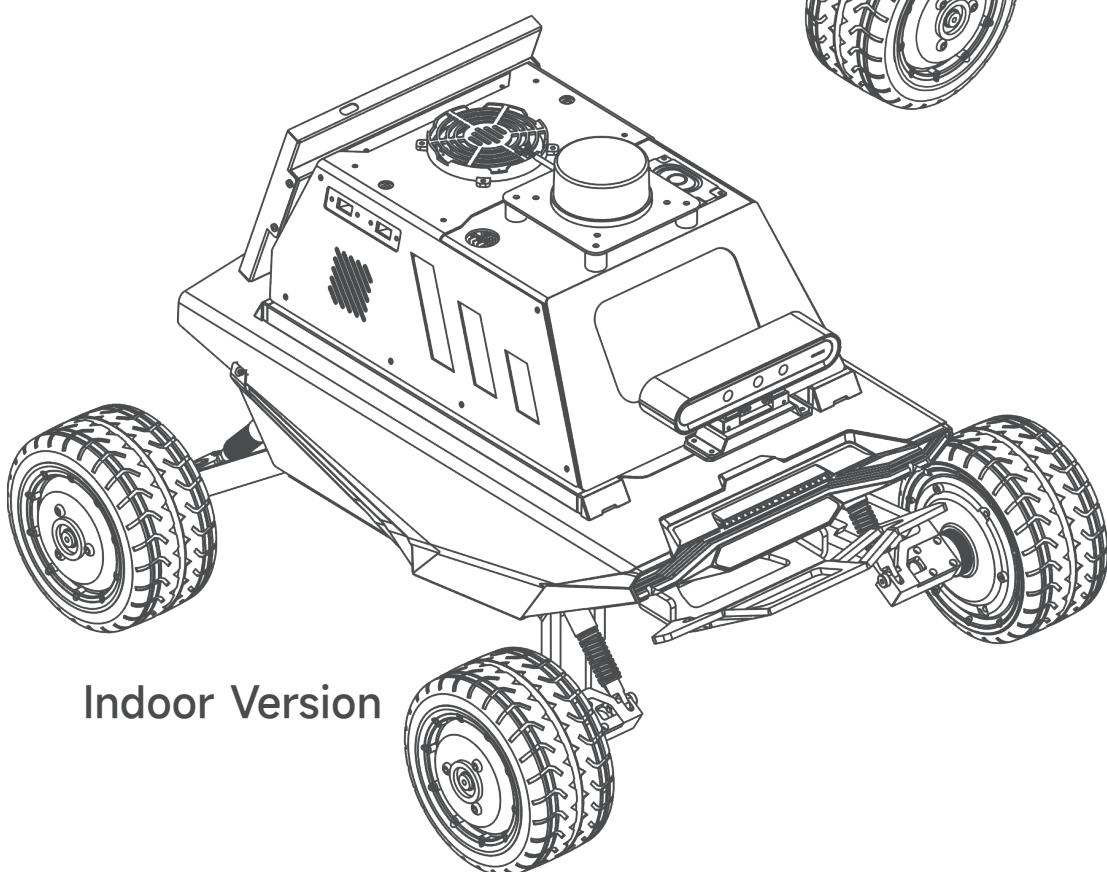
Navigation Robot Kit

YAHBOOM

User Manual



Outdoor Version



Indoor Version

Shipping details

NAVROBO

NAVROBO Navigation Robot [Indoor Version]

	NAVROBO Navigation Version Body		Instruction Manual
	Remote Control Handle		Charger

NAVROBO Navigation Robot [Outdoor Version]

	NAVROBO Navigation Version Body		Instruction Manual
	Remote Control Handle		Charger
	4G Antenna		WiFi Antenna

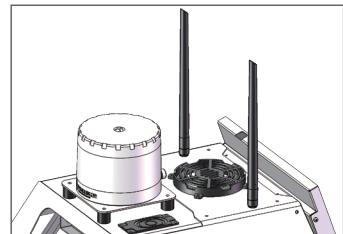
Installation steps [Outdoor version only]

NAVROBO

Antenna installation

Only the outdoor version needs to install 4G antenna and WiFi antenna.

*Note the difference between 4G antenna and WiFi antenna



Installation completed



4G antenna WiFi antenna

NAVROBO

Remote controller key description

(key settings not mentioned below are undeveloped keys)

The remote controller has preset key mappings when it leaves the factory. Please do not change the case mapping at will. Changes may cause abnormal control.

1. SWB switches the control mode
2. SWC controls the speed mode
3. SWD is the manual light control switch
4. The left joystick controls forward and backward
5. The right joystick controls the left and right rotation of the vehicle body

Please pay attention to the chassis on the internal controls is mapped according to percentages, so when the stick is in the same position, its speed is constant.



- | | |
|------------------|---|
| ① SWA | ⑦ Power switch button 1 |
| ② SWB | ⑧ Power switch button 2 |
| ③ SWC | ⑨ Mobile phone/tablet fixing home interface |
| ④ SWD | ⑩ Hanging ring interface |
| ⑤ Left joystick | ⑪ LCD display panel |
| ⑥ Right joystick | |

*When the user gets the remote control, all settings have been set, no need to set separately.

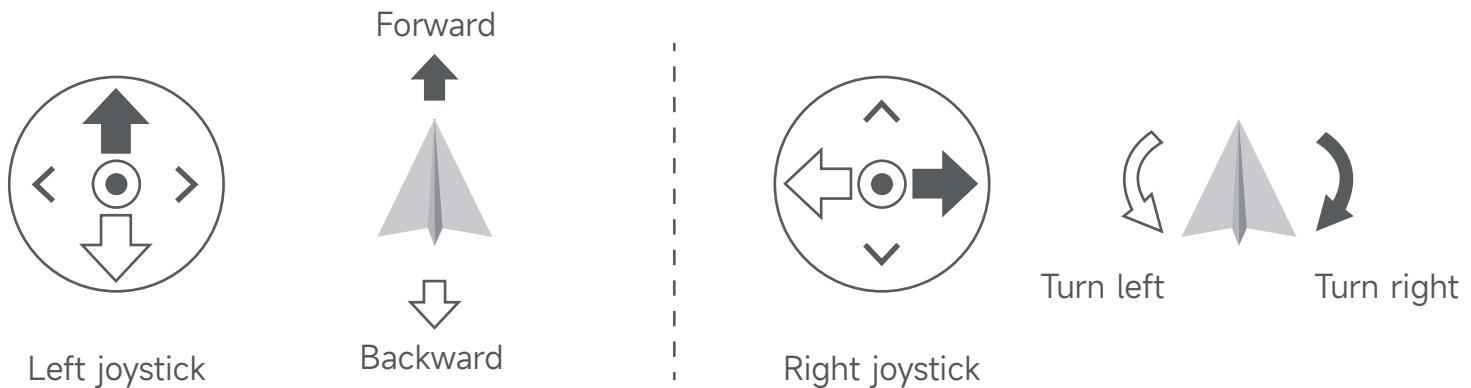
Remote motion control and command control instructions

1. In remote control mode (SWB mid-gear)



Pushing the left joystick of the remote control forward will move forward, and pushing it backward will move backward; when pushed forward to the maximum value, the forward movement speed is the maximum, and when pushed backward to the maximum value, the backward movement speed is the maximum.

The right joystick of the remote control controls the rotation of the car body left and right. Pushing the car body to the left will rotate to the left, and pushing the car body to the right will rotate to the right. When pushing the left to the maximum value, the counterclockwise rotation line speed is the maximum, and when pushing the right to the maximum value, the clockwise



2. Control command mode (SWB up position)



Enter control command mode and control remotely through the host computer.

A positive value of the host computer linear velocity indicates forward movement, and a negative value of the host computer linear velocity indicates backward movement.

A positive value of the host computer angular velocity indicates that the vehicle body turns right, and a negative value of the host computer angular velocity indicates that the vehicle body

3. Prohibited control mode (SWB down position)



No vehicle control can be performed.

4. Speed mode control



 SWC (upper gear): high speed mode
SWC (middle gear): normal mode
SWC (lower gear): low speed mode

5. Lighting mode control



 SWD (upper gear): breathing light mode
SWD (middle gear): normally open mode
SWD (lower gear): normally closed mode

Normally closed mode: In this mode, if the chassis is stationary, the light will be off; if the chassis is driving at normal speed, the light will be on;

Normal open mode: In this mode, if the chassis is stationary, the light is always on; if in sports mode, the light is on;

Breathing light mode: The light is in breathing light mode.

Handle remote control

1. Push all four buttons SWA/SWB/SWC/SWD upwards to release the warning



2. Turn SWB to the middle and select the desired control position



Select the control mode as remote control mode, and you can control the platform movement through the remote control

3. You can try to switch the lighting mode manually to confirm whether the mode selection is correct.

Try to push the left joystick forward slightly, just a little bit, and you can see that the car moves forward slowly;

Try to push the left joystick back slightly, just a little bit, and you can see that the car moves back slowly;

Release the left joystick, and the car stops.

Try to push the right joystick left slightly, just a little bit, and you can see that the car slowly rotates to the left;

Try to push the right joystick right slightly, just a little bit, and you can see that the car slowly rotates to the right;

Release the right joystick, and the car stops;

You can try to control freely in a relatively open area to get familiar with the speed of vehicle movement

APP remote control [Indoor version]

- After the vehicle is turned on, connect the phone to the vehicle's WiFi: navrobo_ap, password: yahboom890729
- Open the NAVROBO APP on the phone

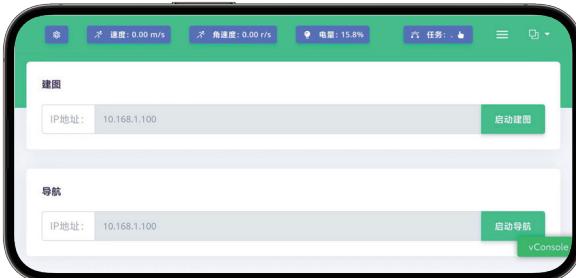


3. Then enter IP: 10.42.0.1 in the input box. Note that this IP is the IP of the vehicle in AP mode. If the vehicle is connected to the local area network, you need to enter the real IP of the vehicle. For detailed methods, please refer to the "App Start Mapping Mode" section of the experimental guide.

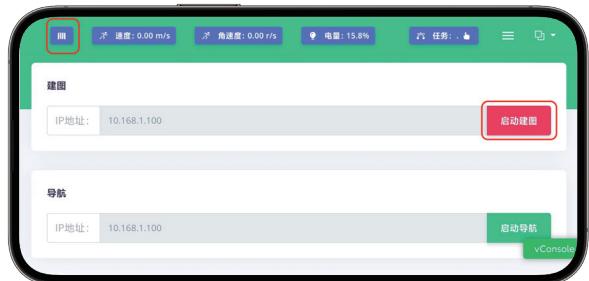


Enter the IP address you just obtained here, such as: 192.168.2.244

- Then click the login button to enter the APP interface



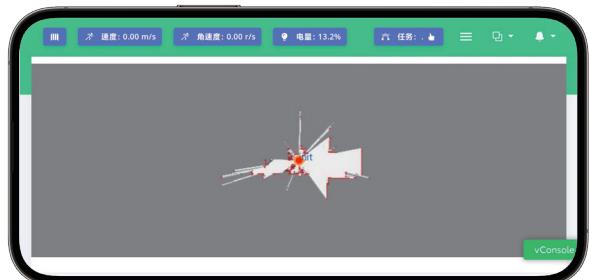
- Click the Start Mapping button to start the mapping mode



- Click the Settings button in the upper right corner, and then click the online map to view the current mapping situation



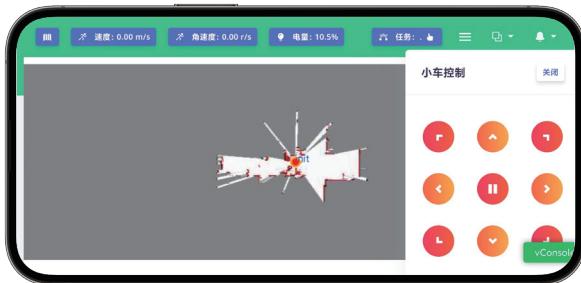
- The following figure shows the mapping situation



- Click the button in the upper right corner and then click Remote Control to control the vehicle movement through the mobile phone



9. The following figure is the remote control interface



10. After the mapping is completed, you can click the button in the upper left corner, then click Save Map, and enter the map name in the pop-up box to save



11. For more operations, you can check the tutorial "Mobile APP"

APP remote control [Outdoor version]

- After the vehicle is turned on, connect the mobile phone to the vehicle's WiFi: yahboom_navrobo Password: yahboom890729
- Open the NAVROBO APP on the mobile phone



3. Then enter IP: 10.168.1.100 in the input box



Enter the IP address just obtained here, such as: 10.168.1.100

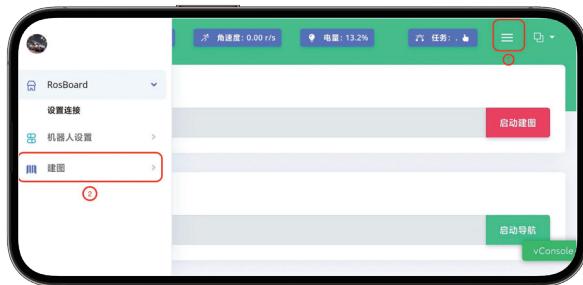
4. Then click the login button to enter the App interface



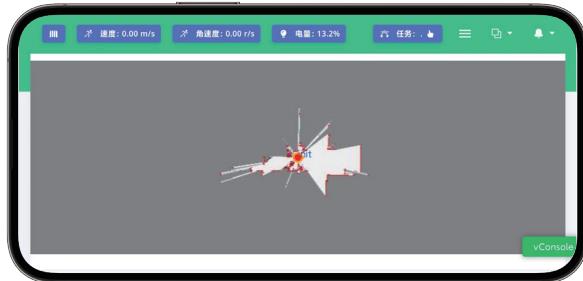
5. Click the Start Mapping button to turn on the mapping mode



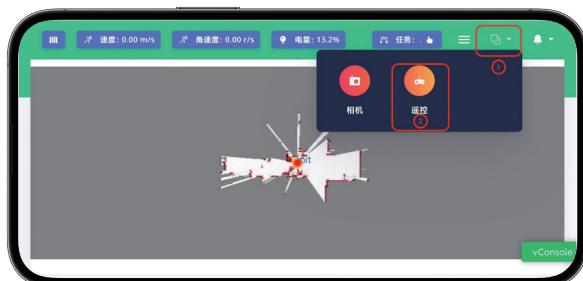
6. Click the Settings button in the upper right corner, and then click the online map to see the current mapping situation



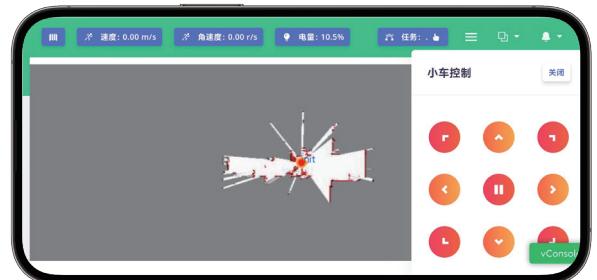
7. The figure below shows the mapping situation



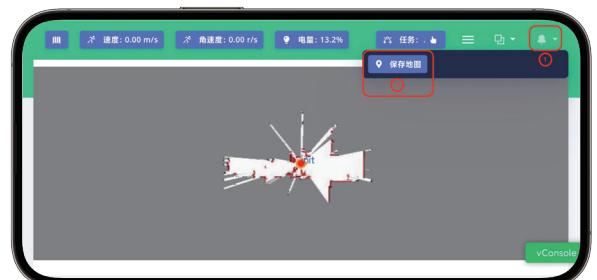
8. Click the upper left button and then click Remote Control to control the vehicle movement through the mobile phone



9. The figure below shows the remote control interface



10. After the mapping is completed, you can click the upper left button, then click Save Map, and enter the map name in the pop-up box to save



11. For more operations, you can view the tutorial "Mobile APP"

Charging Instructions

NAVROBO

When NAVROBO is low on power, it will emit a "beep" reminder to remind the user to charge in time

Charging Diagram:

1. Connect the power adapter to the power socket



2. Open the charging cover at the rear of the chassis



3. Connect the charging plug of the power adapter to the charging port at the rear of the chassis



Note: After the port is inserted, the bayonet will make a "click" sound, indicating that the connection is normal

Detailed package list

NAVROBO

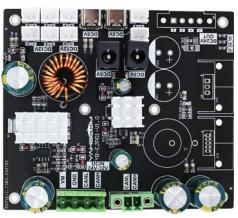
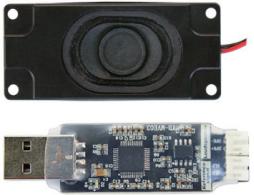
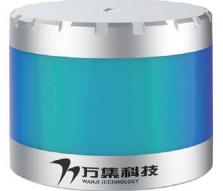
NAVROBO navigation robot [Indoor version]

	13-port 3.0 sub-control HUB		Jetson Orin Nano 8GB kit
	NAVROBO-voltage regulator		Dual-microphone voice module
	Dual-microphone voice module shell		USB driver-free sound card + speaker
	10.1-inch HD IPS touch screen		10-axis IMU inertial navigation module
	YDLIDAR 4ROS laser lidar		Astra Pro2 depth camera
	4010 glare fan (5V 8000 rpm) *2		5010 blower fan (12V 7200 rpm)

Detailed package list

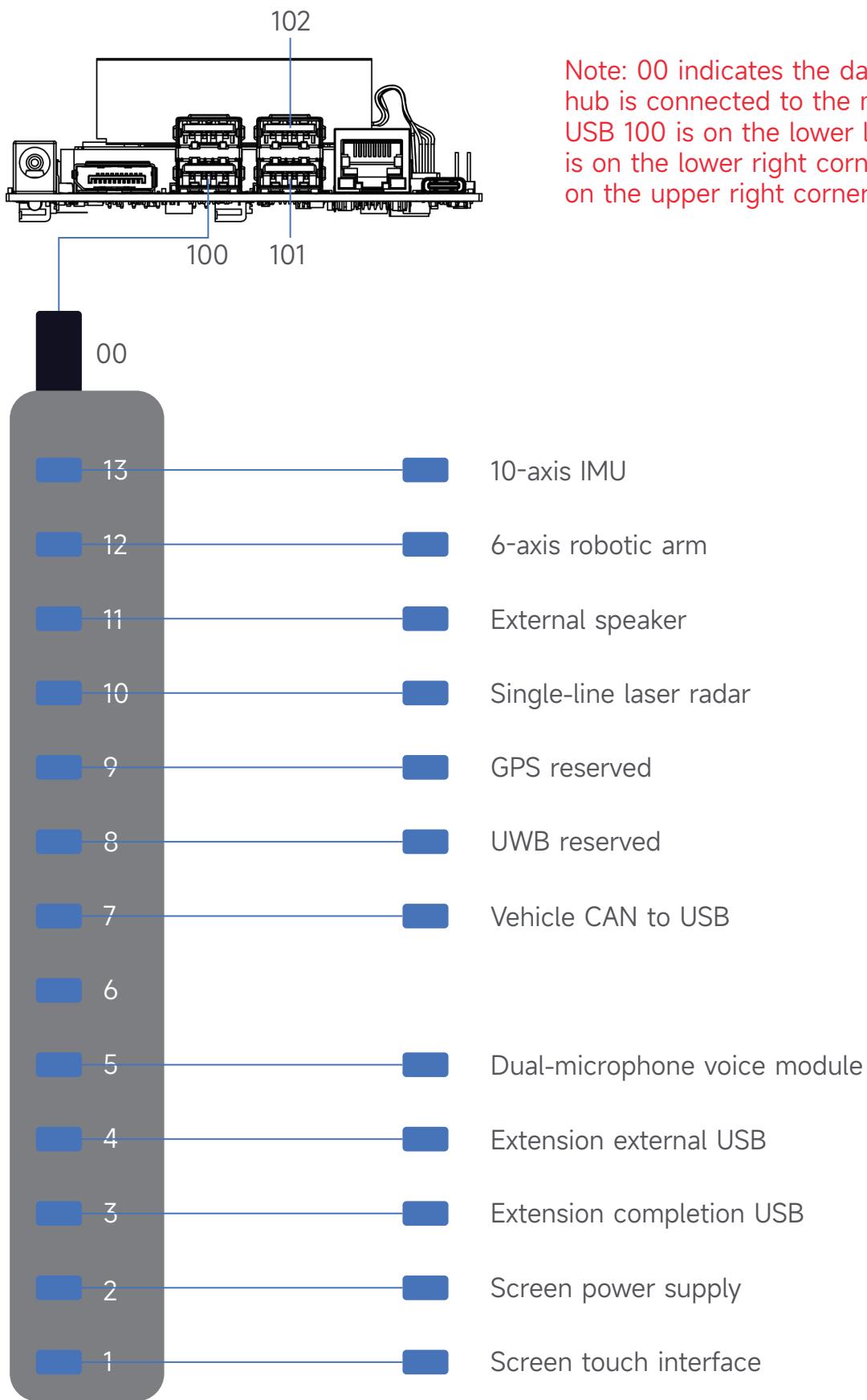
NAVROBO

NAVROBO navigation robot [Outdoor version]

	13-port 3.0 sub-control HUB		Jetson Orin NX 16GB kit
	NAVROBO-voltage regulator		Dual-microphone voice module
	Dual-microphone voice module shell		USB driver-free sound card + speaker
	10.1-inch HD IPS touch screen		10-axis IMU inertial navigation module
	VAN JEE WLR-720 16-line laser lidar (including accessories)		Gemini 335 depth camera
	4010 glare fan (5V 8000 rpm) *2		5010 blower fan (12V 7200 rpm)
	Dandelion industrial router		

Wiring diagram

NAVROBO



Note: 00 indicates the data cable of the hub is connected to the motherboard. USB 100 is on the lower left corner, 101 is on the lower right corner, and 102 is on the upper right corner.

1. After the vehicle is started, no data is displayed when building the map

A: Enter the command in the terminal: sudo supervisorctl restart all to restart the chassis service

2. There is no device number when using OpenCV

A: For the outdoor version, enter the command in the terminal: sudo supervisorctl ChassisServer; for the indoor version, enter the command in the terminal: sudo supervisorctl ChassisServer, and start the camera pull streaming service

3. Wukong Voice Assistant cannot answer questions

A: It may be that the free voice service times have been used up. You can apply for and register your own voice service robot according to the "Voice Control" chapter of the experimental guide

4. When following the target, the program is interrupted and stops following

A: After starting the program, you need to move slowly and try to stay within the camera's field of view. If you leave the camera range for too long, it will cause the target ID to be lost and the following will fail.

5. During navigation, the route has been planned and there is a speed command, but the vehicle does not move

A: Check whether the remote control is turned on. If it is turned on, please turn the remote control SWB button to the bottom

6. During navigation, the initialization point is sent, but it has not been matched successfully for a long time

A: There may be fewer feature points at the location of the vehicle. Move the vehicle to a place with more feature points and re-send the initialization point.

7. The vehicle emits intermittent alarm sounds

A: Check whether the vehicle battery is too low, and then recharge the vehicle.

8. Abnormal tire noise when rotating

A: It may be that the friction between the vehicle tire and the ground is too large, resulting in excessive vibration between the tire skin and the ground. It is recommended to drive outdoors or in places with some layers of soil. Or slow down the speed when rotating, which can also effectively reduce the abnormal tire noise.

Tips: Our company provides detailed user manuals, operation guides and related technical documents, covering the installation, operation, teaching and other contents of NAVROBO, providing users with official reference materials for reference at any time. Equipped with a professional technical support engineer team, we provide users with technical consultation and fault reporting services through multiple channels such as email and Whatsapp instant messaging. Engineers have deep professional knowledge and rich experience, can respond quickly and accurately diagnose problems, and provide effective solutions.

Battery considerations

1. The battery of NAVROBO is not fully charged when it leaves the factory. The specific battery power can be read through the voltage display at the rear of the chassis or the CAN bus communication interface. The green indicator light of the charger indicates that the charging is complete, but after the green light is on, the battery will still charge slowly at a current of 0.1A, and can be charged for about 30 minutes;
2. Please do not charge the battery after it is used up. Please charge it in time when the chassis prompts that the battery is low;
3. Static storage conditions: The best storage temperature is -10°C~45°C. The battery must be stored at a full voltage state after being charged and discharged once every 2 months when not in use. Do not put the battery in fire or heat the battery. Do not store the battery at high temperature;
4. Charging: You must use the matching lithium battery charger for charging. Do not charge the battery below 0°C. Do not use non-original standard batteries, power supplies, and chargers.

The right to amend and interpret these after-sales service terms belongs to our company within the scope permitted by law.

I. Repair service

1.1 Within 1 year after the product is sold (or shipped and signed for), if there is a product performance failure [as shown in the third item of this after-sales service clause, which is not within the warranty scope], our company will perform after-sales repair/maintenance on the product according to the actual situation. If the product has been sold for more than 1 year, users can enjoy paid repair/maintenance services without iteration of the original product.

1.2 The customer needs to bear the shipping costs in the following cases

1.2.1 Cases not covered by the warranty

1.2.2 Return of products for after-sales service

1.2.3 Product inspection does not meet the return/exchange conditions

II. Warranty Scope

2.1 If the product encounters the following situations after it is sold, you can enjoy free repair service:

2.1.1 It cannot be used normally when the package is opened for the first time;

2.1.2 During the warranty period, under normal use and storage (non-human damage), the product has performance failures;

2.1.3 If the failure occurs within 90 days from the date of acceptance of the goods (non-human damage), free repair or replacement of accessories of the same specification;

2.1.4 If the internal structure of the robot is modified without permission, the warranty will no longer be provided;

III. Non-warranty Scope

If the product is damaged due to accidents, improper use, unauthorized repairs, etc., and is not used in accordance with the official user manual, the user will not be able to enjoy the warranty service, including but not limited to:

3.1 Failure to operate in accordance with the official manual or damage caused by improper use, storage, or maintenance, such as product immersion, corrosion, oxidation, burns, falling, squeezing, or exposure to abnormal temperature and humidity.

3.2 Failure or damage caused by natural disasters or external environmental factors, such as floods, earthquakes, lightning strikes, abnormal voltage in external power supply lines, and other environmental factors;

3.3 Failure or damage caused by disassembly, modification, or replacement of non-original parts by yourself or by unauthorized maintenance personnel;

3.4 The content recorded in the sales voucher and product purchase voucher of the sales unit does not match the warranty product;

3.5 Other human factors, placing the product in an environment that exceeds the product's own use environment parameter index, causing failure or damage;

3.6 Failure or damage caused by other force majeure.

*Special note: Product packaging, instructions, and consumables for normal use are not covered by the warranty.

IV. In the following cases, our company will provide paid repair services:

4.1 The situation listed in "non-warranty scope" occurs, and the user agrees to submit the product to our company for repair/maintenance;

4.2 The product/parts, accessories, etc. have exceeded the warranty period listed in this repair clause;

4.3 Other paid repair items confirmed by both parties.

V. Notes on paid repair services

5.1 The paid repair fee for the product includes: parts fee, repair service fee, and logistics fee;

5.2 Our company will inform the user of the possible repair costs and repair time limit before the repair, and confirm with the user whether to agree to the relevant fees;

5.3 If our company determines that the product needs to be paid for repair, but the user gives up the repair, our company will send the user's repaired product back to the user's designated delivery address and will not bear the relevant logistics costs.

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