pudu

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PuduTech

BellaBot

User manual V1.3

SV1、BL100、BL110、BL101、BL111

Declaration:

This device complies with part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception,

which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.

-- Increase the separation between the equipment and receiver.

-- Connect the equipment into an outlet on a circuit different

from that to which the receiver is connected.

-- Consult the dealer or an experienced radio/TV technician for help.

To maintain compliance with FCC's RF Exposure guidelines, This equipment should be installed and operated with minimum distance between 20cm the radiator your body: Use only the supplied antenna.

FCC ID: 2AV7T-HL100

The W52 and W53 band can only be used indoors.

Packing list:

The whole machine × 1, Bella User Manual × 1, Certificate of approval × 1, Warranty card × 1, Charging line × 1, Qr code × 100, Power key × 1

CATALOG

Service functions

# Product Maintenance

Troubleshooting

After-sales Service

Safety Instruction

Instructions for use

1. DO NOT place any item with weight over the load of the tray: 10kg/tray(standard)，5kg/tray(obturated)

2. Click Finish to deliver the next task immediately, please take the food before clicking Finish.

3. Do NOT pick up and drop the food when the robot is moving, if necessary, please click the screen to pause the robot, and then pick and drop the food.The pause time of cruise mode is 20s, and the pause time of other modes is 10s, after the pause, the robot will resume walking automatically.

4. DO NOT press hard on the screen or tap the screen.

5. DO NOT pull the robot during operation.

6. DO NOT push the robot backwards while the robot is powered on.

7. If the robot enters the wrong position due to factors such as blockage, please pause the task and push it to the correct route to continue the task.

8. In the event of a collision, please cancel the current task or pause, re-enter the task, DO NOT artificially block the robot.

9. In the absence of special custom-made trays, it is not recommended in principle to deliver soup with PuduBot.When using, be sure to prevent the soup from being splashed and being scalded by the hot water.

10. Pay attention to the change of state of the robot during its travel, please avoid the robot when it is carrying hot tableware or soup pot to prevent collision with the robot and high temperature burns.

11. The top camera is used for precise positioning of the robot, DO NOT block it with a cover during starting and running.

12. DO NOT tap or make other actions to the robot, otherwise it may easily cause equipment damage.

Environmental notes

1. The robot is suitable for use in flat environments such as floors, tiles, and thin carpets, it is not suitable for use in environments where there are steps, the slope is too large, or the environment is too tight.

2. It is not recommended to use the robot on wet or obviously watery ground.

3. Any kind of debris such as the power cord that has been scattered on the ground may catch or wrap the robot, be sure to remove it before use.

4. The use of this product in the case of obvious protrusions such as sills may cause the food to sprinkle, please make sure that the height of the protrusions is within 1cm.

5. The minimum travel width of the robot should be greater than 80cm, the width of the long pass should be greater than 1m; if the width is greater than 2m, two robots can be set to travel side by side in opposite direction (the specific width is evaluated by the technical staff based on the actual scenario), otherwise it will move by making the way; the standard entrance of the kitchen should be greater than 1.2m, and less than 1.2m may cause certain human-machine congestion.

Minimum pass width is 0.8m

Minimum pass width is 2m
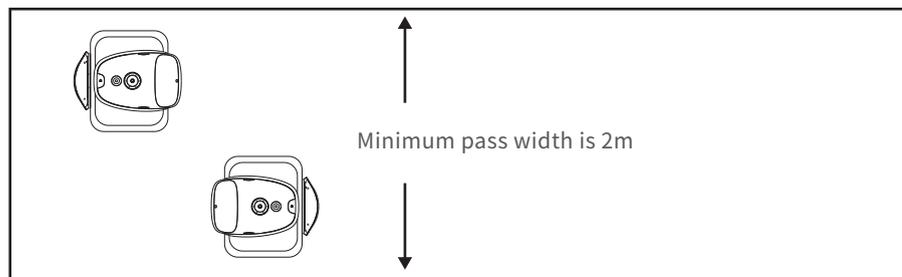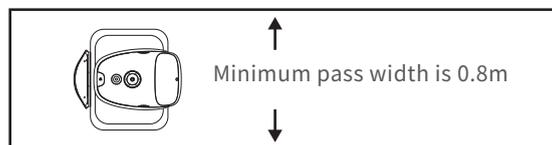
6. The pure black (such as skirting), mirror surface (such as wall), or full transparency (such as floor-to-ceiling glass) items within 16~22cm from the ground, it may interfere with the robot radar reflection, causing the robot to move abnormally, and it may be necessary to make some modifications to the site so that the radar can reflect (such as applying stickers).

16~22cm
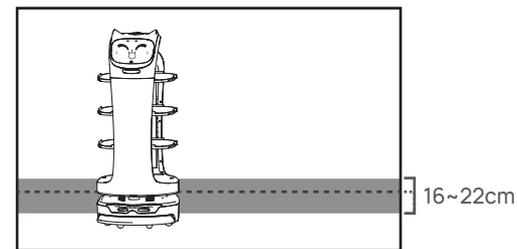
7. The ceiling height is within the range of 2-8 meters (higher or lower may require technical evaluation); taking the height of 3 meters as an example, it is necessary to apply a graphic mark every 2 meters or so, there is no lighting fixture or other strong light source in the 30cm area around the graphic mark. (Data for specific interval needs to be provided by Technology Dept.)

Marker
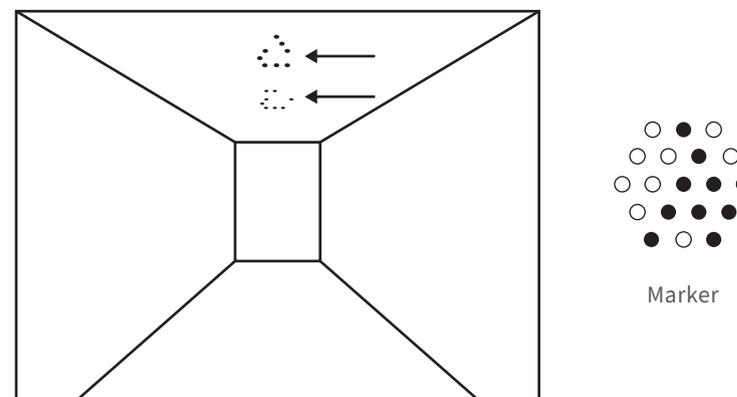
8. The designed maximum climbing angle of the robot is 7.5°, but in order to prevent the dishes from toppling, it is recommended that the slope of the dishes is within 5°; to prevent possible risks caused by the robot slipping back and forth, avoid pausing the robot while it is going uphill; to prevent the robot from falling accidentally on the slope, the width of the slope should not be less than the minimum passing width of 0.80cm, and the rollover angle should not exceed 5°
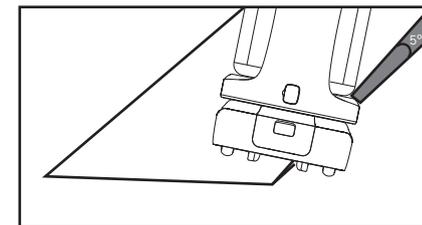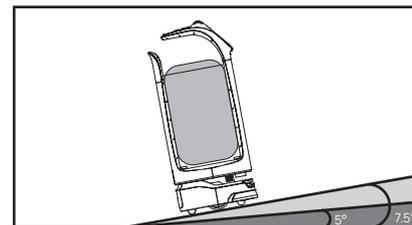
9. There is a 35cm space between the two robots placed side by side at the standby point, and a clearance of 15cm from the rear wall and 35cm from the side wall.
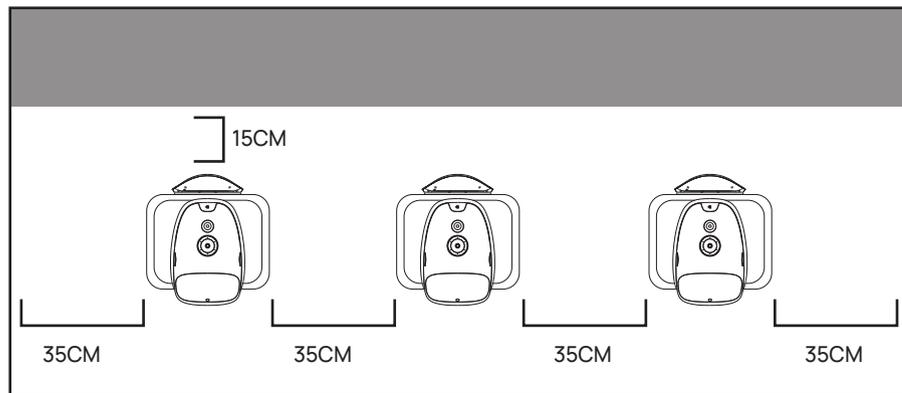
10. It is necessary to add fences or other blocking protection at the locations, such as the edge of the stairs and entrance of the downhill, where there is a risk of the robot falling.

Power and power requirements

1. 1.When the remaining power of the robot is less than 20%, please charge it in time, long-term operation with low power may shorten the service life of the battery.
2. Before charging, please make sure that the battery of the robot is installed in the robot,and it is forbidden to charge the robot without battery.
3. It is strictly forbidden to remove the quick detachable battery during charging.
4. It is strictly forbidden to remove the quick detachable battery when the power is on.
5. When charging is finished, please disconnect the power supply in time. Do not charge the machine for a long time when the machine power is full.
6. If the robot is not used for a long time, please lock the robot through the key switch and cut off the power supply to protect the battery.
7. It is necessary to use the battery and charging equipment specially provided by the original factory. It is strictly prohibited to use non original charger to charge the robot.
8. Charge the main engine with power voltage marked on the charger nameplate.
9. The quick detachable battery can be charged only by the original charger.The battery charging progress can be notified by the lights,the details is below:

| Current battery remaining capacity	Light Mode
0%~10%	● ○ ○ ○ Red
10%~25%	● ○ ○ ○ Blue
25%~50%	● ● ○ ○ Blue
50%~75%	● ● ● ○ Blue
75%~90%	● ● ● ● Blue
90%~100%	● ● ● ● Green

10. Please make sure that the robot is power off before changing the battery and it is strictly prohibited to change the battery when robot is NOT power off.
11. Please make sure the input voltage is fit for the requirement voltage, whitch may damage the charger if not.
12. Please protect the charging line carefully and do NOT pull or twist the line.
13. Please designate a person in charge to charge the machine. Do not charge the robot or the battery alone without being on duty.

14. Do not place the machine near flammable and explosive objects to charge.

15. The storage and charging position of the robot should be kept dry and at normal temperature. It is strictly prohibited to place the machine and charger in the high-temperature area (> 40°C), and water is strictly prohibited to enter the machine or charger.

16. It is strictly prohibited for the charger to collide with external objects and cause damage to the charger.

17. If the charger is found damaged and the charging current is abnormal, please replace the charger in time.

18. If you receive the robot alarm, please disconnect the charging device immediately.

Safety instructions

1. DO NOT place any open flame on the tray, and DO NOT place any flammable solids, gases or liquids.

2. It is forbidden to do cleaning and maintenance work when the machine is powered on.

3. To ensure safety, it is recommended to adjust the robot speed to medium or below, and it is forbidden to play in front of the robot to avoid unnecessary injury.

4. Temporary tray loading adjustment is prohibited during the robot's travel, all operations should be performed after clicking the screen to make the robot pause.

5. When the robot delivers food to the designated table number area, DO NOT perform the operation such as picking up the food before the machine body is stopped, so as to avoid the loss of food or personal injury caused by accidental collision.

6. If the robot is going away and the screen operation is invalid, or other emergency situations occur, please use the toe to kick the emergency switch at the charging port.

7. This product is a wheeled robot, which is limited to indoor flat environment (smooth ground, slope less than 5 degrees, protrusions not higher than 1cm), DO NOT use it in outdoor environments (such as open balconies) or on rugged floors (such as stairs).

8. DO NOT use it in an environment where the ambient temperature is above 50°C or below 0°C, or if there is any liquid or viscous material on the floor.

9. Please put away all kinds of wires on the ground in the environment before use to avoid dragging when the main unit is running. Remove sharp objects on the ground (such as decoration waste, glass, nails, etc.) before use to avoid damage to the machine chassis.

10. To push or move the robot while it is moving, first tap the screen to pause it.

11. DO NOT spill any liquid into the product.

12. DO NOT place any non-transportable objects (including children, pets) on a stationary or moving robot.

13. The robot has automatic obstacle avoidance function, but it is strictly forbidden to block the robot suddenly during the high-speed operation, otherwise it may cause a safety accident.

14. The blind-spot recognition area of the robot is shown below.
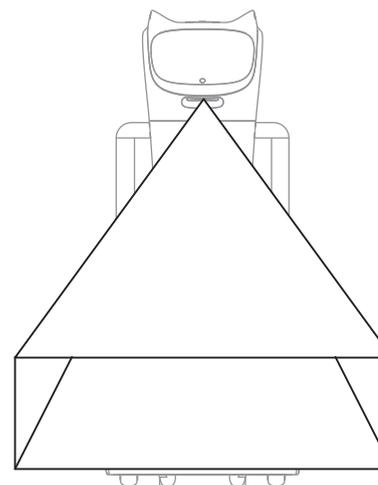
* Our company does not assume any responsibility for all accidents caused by improper operation.
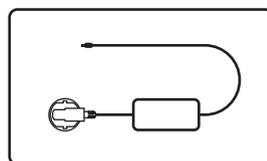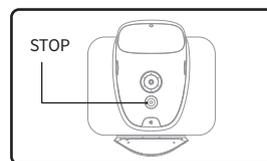
Product Composition

Component description

Front Side **Back**
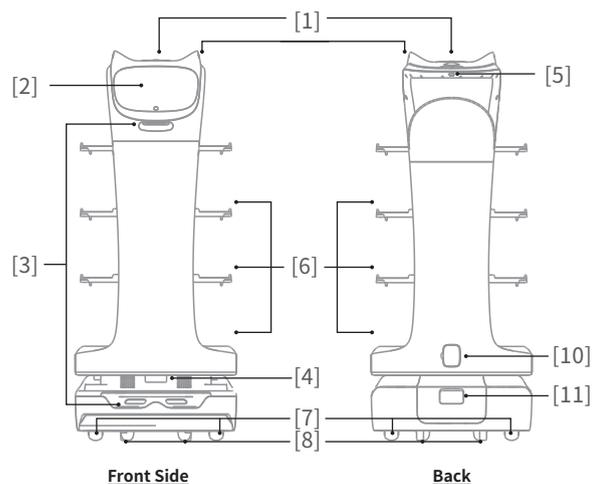
[1] Vision positioning sensor
[2] Screen
[3] Depth vision sensor
[4] Lidar
[5] Power Switch
[6] Tray
[7] Drive Wheel
[8] Auxiliary Wheel
[9] E-stop Switch
[10] Charging Jack
[11] Key Switch
[12] Flash Button
[13 Ear light

Top
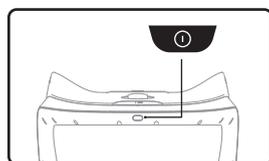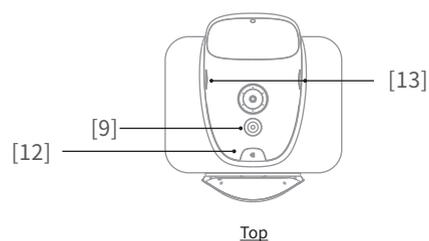
Power Switch

Charging Cable

E-stop Switch

Performance parameters

Model	SV1、BL100、BL110、BL101、BL111
Operating voltage	DC 23-29.4V
Power input	AC 100-240V, 50/60Hz
Power output	29.4V-4A
Charging time	4.5h
Battery lifetime	12~24h(Replaceable Battery)
Cruise speed	0.5~1.2m/s adjustable
Number of trays	4 layers
Tray load	SV1/BL100/BL101/BL111: 10kg/layer BL110: 5kg/layer
Climbing slope	7.5° at maximum and 5° for safe delivery of dishes (depending on whether the dishes delivered are easy to be spilt)
Machine material	ABS/aviation-grade aluminum alloy
Battery capacity	21000mAh
Machine weight	55Kg
Machine size	565*537*1290(mm)
Screen specifications	10.1-inch HD color touch screen
Audio power	20W*2 Stereo
Design life	5 years
Working temperature	0~40°C
Storage temperature	-40~65°
Charging method	Manual plugging and charging
Operating humidity	85%RH
Environmental pollution	Grade 3
Operating altitude	below 2000m
Working environment	Indoor environment, flat and smooth ground
Enclosure	IP20

Tray size and height

Layer height between trays:
180mm

Layer height between trays:
200mm

Tray size：
410X500mm

Layer height between trays:
200mm

Layer height between trays:
200mm

Layer height between trays:
220mm

Layer height between trays:
220mm

Tray size：
355X453mm

Layer height between trays:
220mm
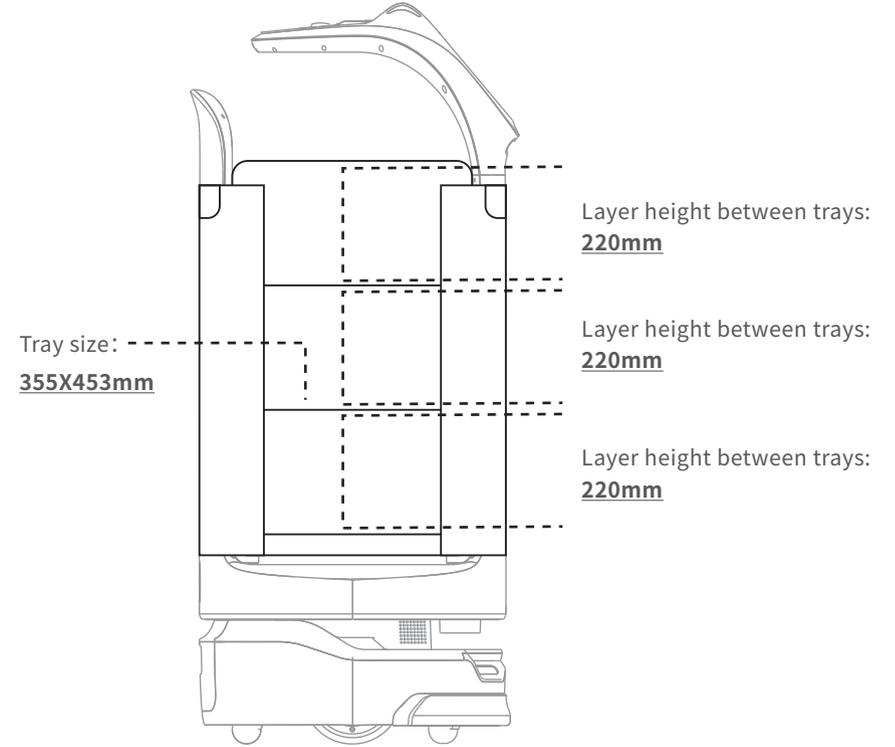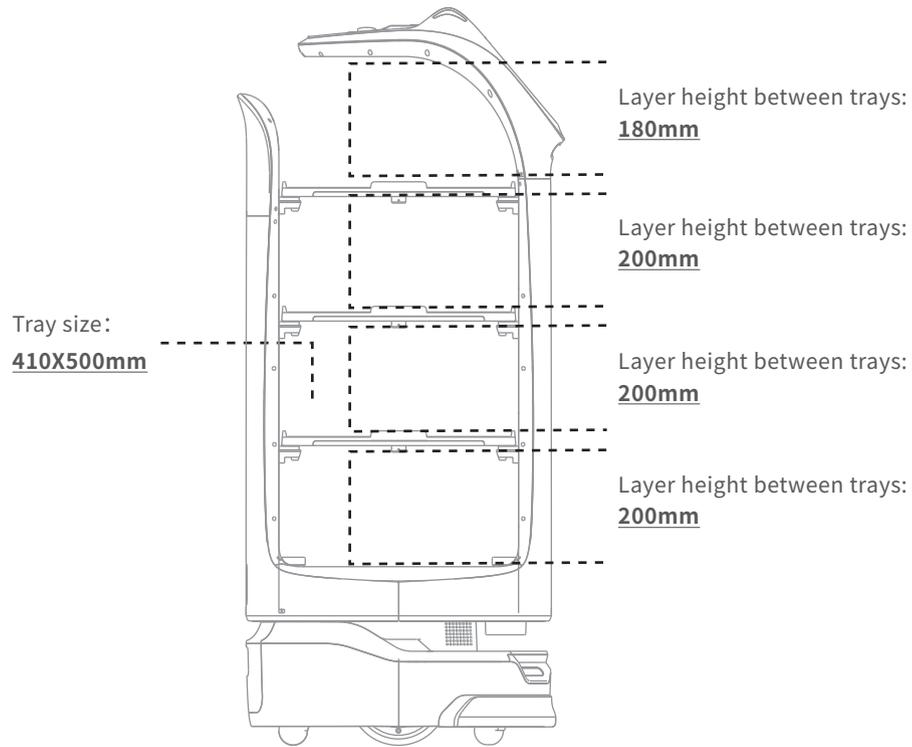
Product Use

Charging instructions

Charging mode: Connect the charging interface of the robot to the charging cable to ensure that the charging port of the robot is connected to the charging cable, if the connection is successful, the robot will prompt it is charging.

Power requirements:

1. In order to ensure the efficiency of the robot and battery life, please keep the robot power at 10% or more at any time;

2. When the power is lower than 10%, the robot is in a low battery state and needs to be charged as soon as possible;

3. When the power is lower than 2%, the battery is protected, the robot will not be able to perform the task, and it needs to be charged before use.

Charging interface

67%

Charging...

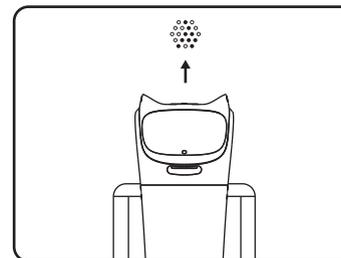**100**%

Charging completed
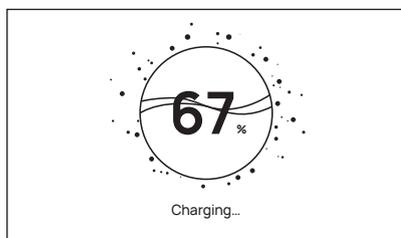
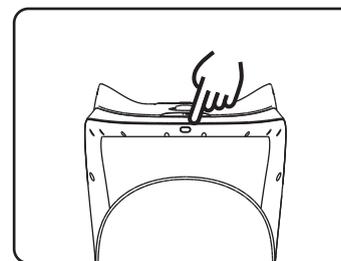The screen displays an indication that charging is in progress, indicating that the machine is charging.
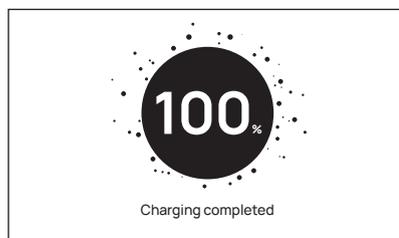
After charging is complete, the screen displays a reminder that the charging container is saturated.
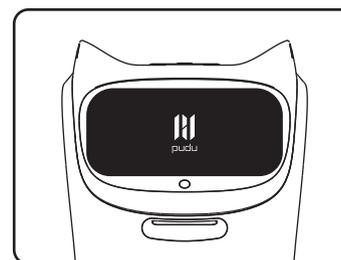
Power ON, Power OFF, Pause, Start

Before each power-on

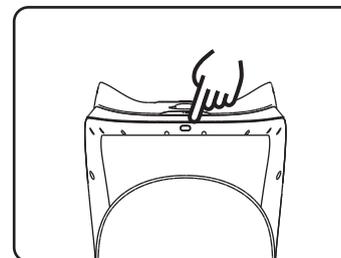Move the robot directly below the visual mark before each power-on.

Power-on

Press and hold the power button for 0.5 seconds, and the bottom light strip will display blue.

starting up

The screen enters the working mode, indicating that the boot is successful.

Power-off

Press and hold the power off button for 3 seconds, the bottom light strip is off, and the screen is black, indicating that the shutdown is successful.Press and hold the OFF button for 10 seconds to achieve a forced power-off of the robot (if the robot is not in an abnormal state, this feature is not recommended).
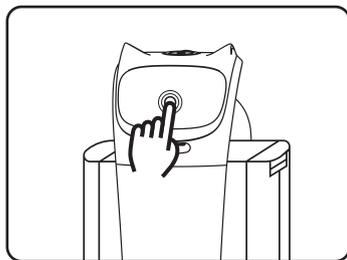
Pause

While the robot is running, touch the screen to make the robot pause.
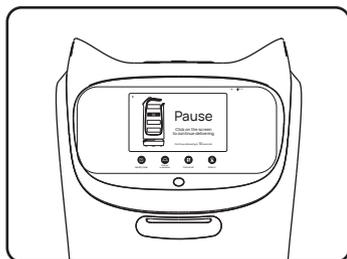

Pauseing

The screen enters the pause interface.

Running

If it is necessary to continue running, you need to click the screen again.In cruise mode, if there is no other action in the pause interface, the robot will automatically resume walking after 20s, and after

Mode selection

In order to be applicable in different business scenarios, the modes can be selected as required. The robot provides six mode selections, which are food delivery mode, cruise mode, direct delivery mode, B-day mode, special mode, and used plate collection mode. After the robot is turned on, the mode can be selected through the menu bar.
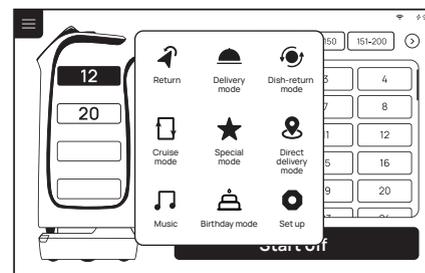
The direct delivery mode, B-day mode, and special mode require a purchase of license to be available, if you need it, please contact technical support personnel.

Food delivery mode

In delivery mode, the robot can be used for food delivery to multiple tables at the same time. Place the food ordered by different customers on several trays, then enter the corresponding table number, it can plan the best path and deliver the food. After the food is delivered, the robot will automatically return to the pick-up position.
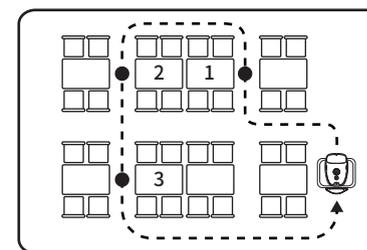
Cruise mode

In cruise mode, it can carry self-service drinks, dessert, snacks, or paper towels, moving along the customized circulation path by the waiter, and inviting customers to enjoy or taste through voice.
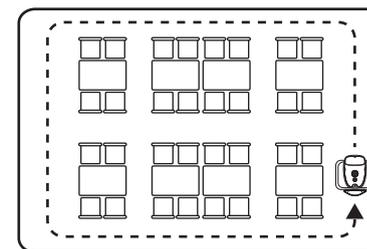
Direct delivery mode

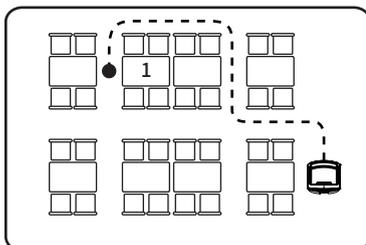In this mode, the robot can perform a one-way transport operation, you can set a table number, a dishwashing room or other places as the destination, after the delivery, the robot will automatically exit the task and will not return to the pick-up position, then you can enter the new destination again.


B-day mode

In B-day mode, the robot can provide the service of delivering birthday cakes or gifts, and automatically play the set music during the transport.

Special mode

after selecting this mode, the interface will prompt to select background music. This mode is suitable for some special scenarios, such as marriage proposal and blessing, the robot can quickly select background music in a single time.

Food delivery mode

The food livery mode is a common mode, and the task delivery method is used for food delivery to a designated location, the specific steps are as follows:
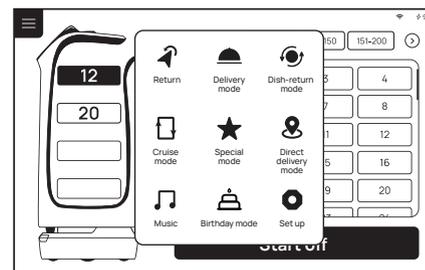
1. At the food delivery location, select the Delivery Mode.
2. Place the food on the tray.
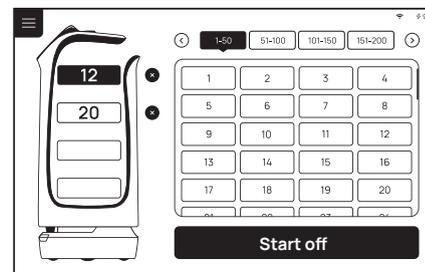
3. Click on the tray where the food is located and select the destination table number. The higher trays are automatically selected by default, and you can select the corresponding table number.
4. After the table number is entered, click to start the delivery, and the robot will start executing the task.
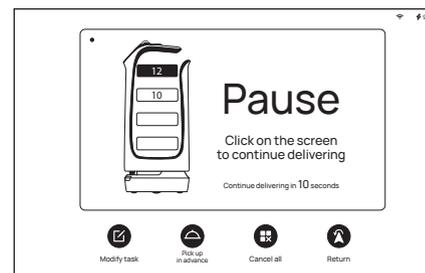
5. The robot quickly arrives at the designated location according to the established trajectory. During the delivery process, you can touch the robot screen to stop the command, and the robot will stop for waiting immediately, if a touch command is not received after 10 seconds, the robot will continue to perform the task.
6. After the robot is paused, the screen enters this interface, you can perform operations such as modifying the task, bringing food in advance, canceling all tasks, and returning.

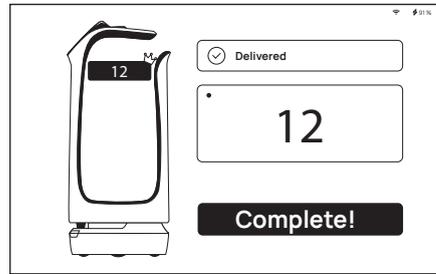 Click to modify the delivery table number

 Click to cancel the current delivery task

 Click to cancel all delivery tasks

 Click to return to the dish ready point

7. At the task destination, the robot will have a voice prompt to the guests that the food has arrived, and the guest can tap the screen to get the food.

8. The robot will automatically return to the food pick-up position and wait for the next task.
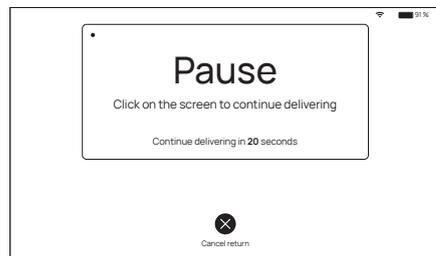
Cruise mode

Cruise mode is a commonly used mode, the robot patrols in a specific environment, covering a large area, and the specific steps are as follows:
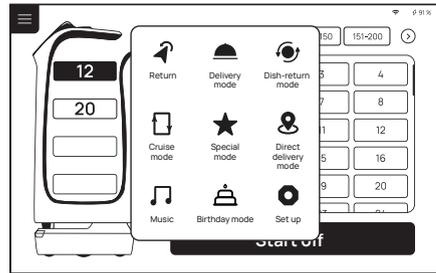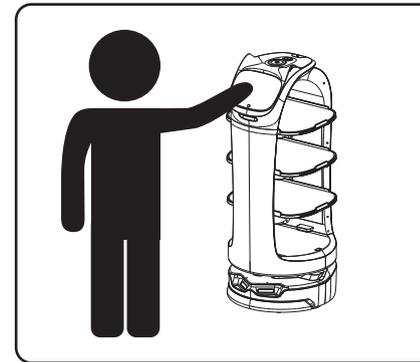

1. At the start of food delivery, select cruise mode.
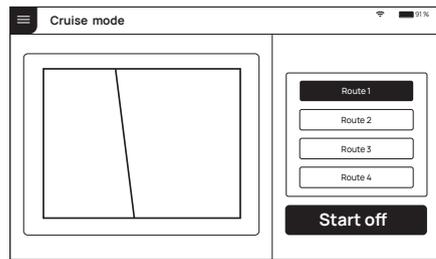
2. Select the automatic cruise route.

3. Select Start and the robot will start the cruise task.

4. During the cruise process, you can touch the robot screen to stop the command, and the robot will stop for waiting immediately, if a touch command is not received after 20 seconds, the robot will continue to perform the task.

5. When picking up the food, please stand in front of the robot or touch the robot display screen, the robot stops running, and the screen enters the pause page, indicating that the robot stops running, and the diners can pick up food at will.

6. After the food is completely picked up, the diners only need to click again on the robot display or pause to wait for over 20 seconds, the robot returns to the operation mode again from the original stop.

B-day mode

The B-day mode is used to deliver gifts and play birthday songs for birthday scenario, the specific steps are as follows:

1. At the food delivery location, select the B-day Mode.

2. Place the gift on the tray, supporting only one destination at a time.

3. Select the table number of target destination.

4. After the table number is entered, click to start the delivery, and the robot will start executing the task. The robot starts playing the playlist set in B-day mode.
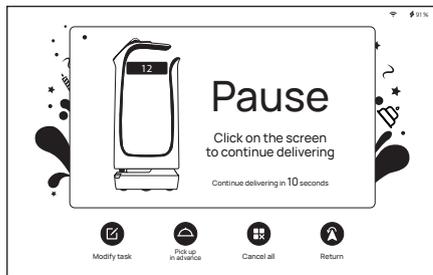
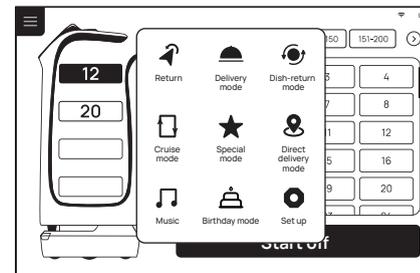5. The robot quickly arrives at the designated location according to the established trajectory. During the delivery process, you can touch the robot screen to stop the command, and the robot will stop for waiting immediately, if a touch command is not received a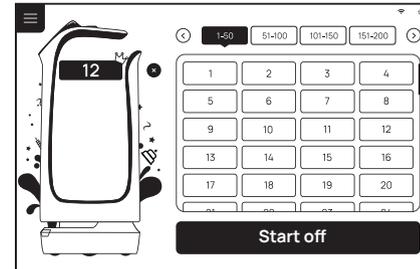fter 5 seconds, the robot will continue to perform the task.After the pause, the screen enters this interface, you can perform operations such as modifying the task, bringing food in advance, canceling all tasks, and returning.

6. After reaching the task destination, click "Finish" to return to the food pick-up position.

Direct delivery mode

In the direct delivery mode, the robot can set any table, transfer position or food delivery position, the specific steps are as follows:
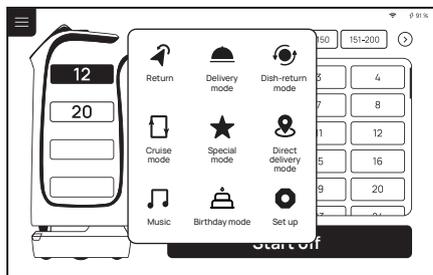
1. Select the Direct Delivery Mode.
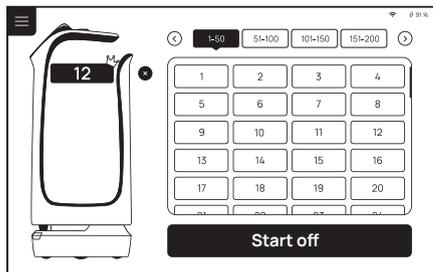
2. Select a destination, the direct delivery mode only allows you to select one destination.
3. Confirm the destination, the robot starts execution.
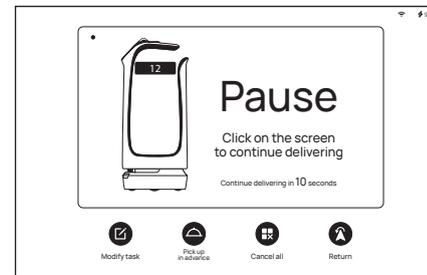
4. During the motion process, you can click the robot screen, and the robot will stop for waiting immediately, if a touch command is not received after 20 seconds, the robot will continue to perform the task.
5. After reaching the destination, return to the main interface of the direct delivery mode, select a destination, and the robot can proceed with the next task.

Special mode

The special mode is used for food delivery services with robot in special scenario, you can quickly set the music played during food delivery, and the specific steps are as follows:
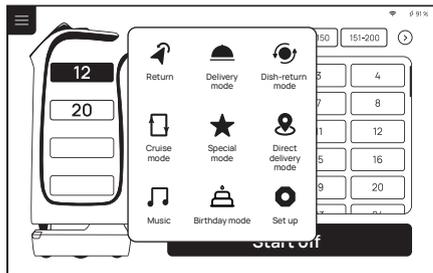
1. At the food delivery location, select the Special Mode.
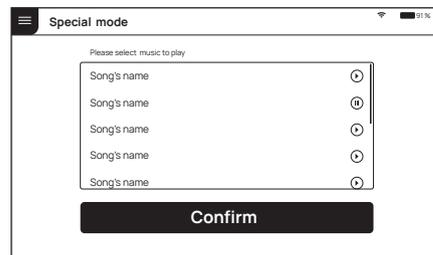
2. Place dishes or gifts on the tray, supporting only one destination at a time.
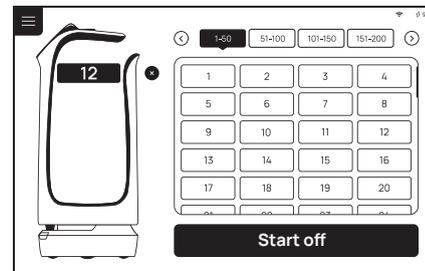
3. Select the background music used for the service, and choose the table number for the food delivery.
4. After the table number is entered, click to start the delivery, the robot will start executing the task and start playing the playlist set for the Special Mode.


5. The robot quickly arrives at the designated location according to the established trajectory. During the delivery process, you can touch the robot screen to stop the command, and the robot will stop for waiting immediately, if a touch command is not received after 10 seconds, the robot will continue to perform the task.
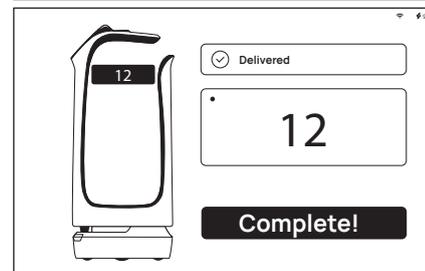
6. After reaching the task destination, click "Finish" to return to the food pick-up position.

Alarm display

In the following cases, the robot will stop working and give an alarm tone, the tablet interface will prompt the corresponding instructions, and the machine will need your assistance.

Alarm display	Solutions
Battery is too low	Please push the robot back for charging(Figure 1)
Loss of positioning	Push the robot directly below the visual mark (Figure 2)
The drive wheel, the auxiliary wheel is stuck or entangled	Please clean the drive wheel, auxiliary wheel
Suspended	Please put the robot on the flat ground
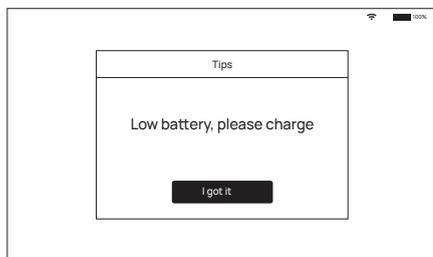
(Figure 1)

(Figure 2)

Emergency handling

An abnormal state of the robot or an unexpected situation may cause damages to the surrounding environment, the user can press the emergency stop switch on the back of the robot to stop the robot.
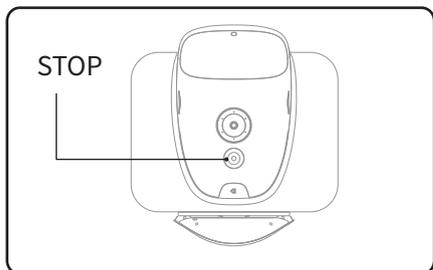
Key switch

The key switch can turn on/off the power of the robot, and realize the lock function of the robot, its location is shown below.
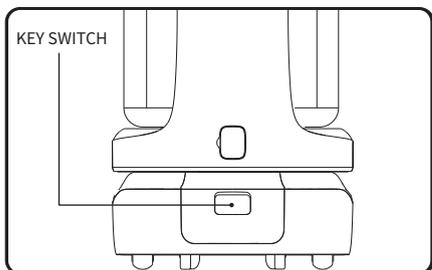
Service functions

Map settings

In the "Map settings" function, you can select from multiple maps. In the robot one-to-one parking mode, select the current map to configure the parking position for the robot.
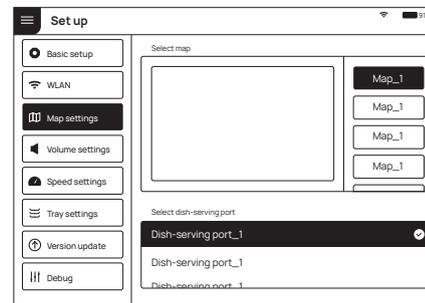
Voice settings

The "Voice settings" function provides voice packet replacement and custom settings of cruise voice.
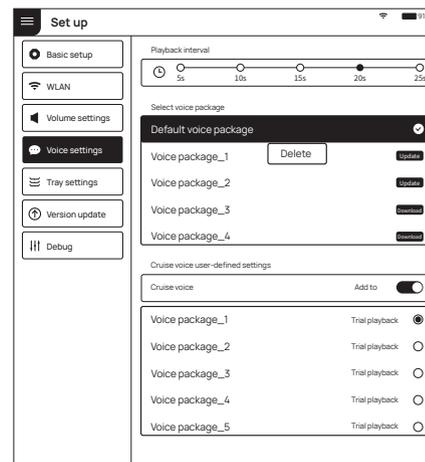
1. Check the available voice packets for update support and choose to download the voice packets.
2. After downloading, select the corresponding voice packet for replacement.
3. Select "Default" to restore the default voice packet
4. Press and hold the voice packet to delete it.

The operating steps for custom settings of cruise voice are as follows:
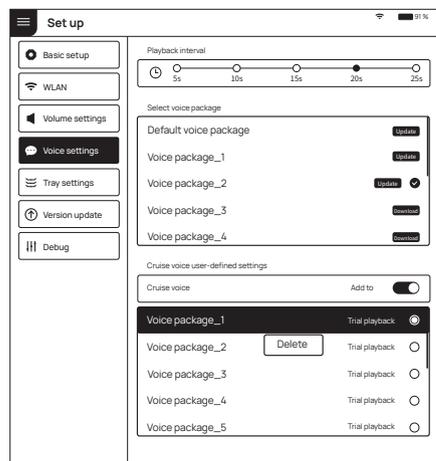
1. Select "Add voice" to pop up the voice text editing box, enter the text to be played, and click OK to generate a custom voice.
2. It supports adding multiple voices, if multiple voices are selected, these will be played at random.
3. Turn off the cruise voice switch to restore the default voice packet
4. Click for voice preview, press and hold a voice packet to delete it.

Speed settings

With the "Speed settings" function, you can set the food delivery speed and cruise speed respectively, supporting the speed settings of 0.5m/s, 0.6m/s, 0.7m/s, 0.8m/s and 0.9m/s.
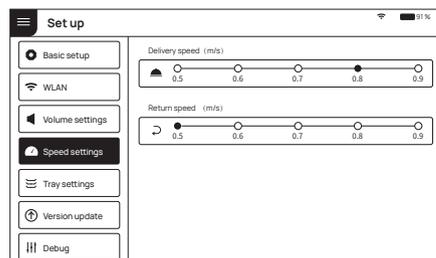
LED dot-matrix setting

The dot-matrix playback content in cruise and return mode can be set, which supports both Chinese and English.
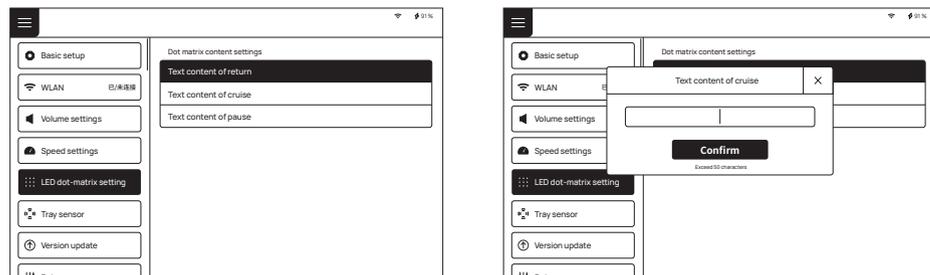
Version upgrade

With the "Version upgrade" function, you can check the current version and whether it is up-to-date. If it is not up-to-date, you can choose to check for updates, download and update the latest version.
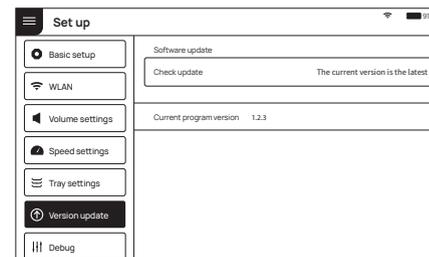
Advanced settings

Select "Advanced settings" to choose the mode of used plate collection. You can also set the speed for food delivery mode and cruise mode, which supports 1.0m/s, 1.1m/s and 1.2m/s.
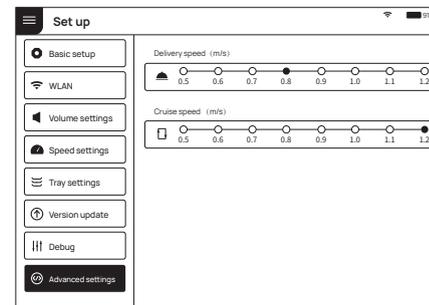
Note: The commissioning setting is advanced robot operation, which requires consulting technical support personnel before proceeding with the operation, the Company does not assume any responsibility for all accidents caused by unauthorized operation.

Music function

Select the "Music" switch to control the playback and start of the music.
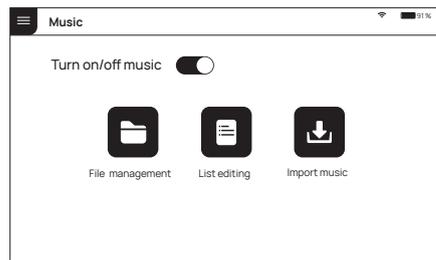
Music playlist

Select "List editing" to view the music settings of each music mode. Click the corresponding list to view the music playlist. With the "Edit menu" function, you can modify the configuration list, and you can click "Add music" to configure other music.
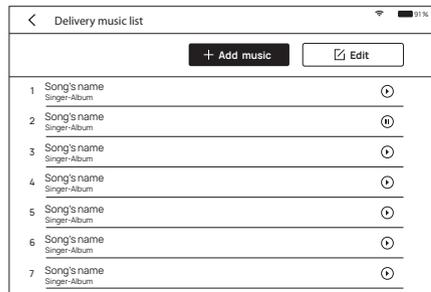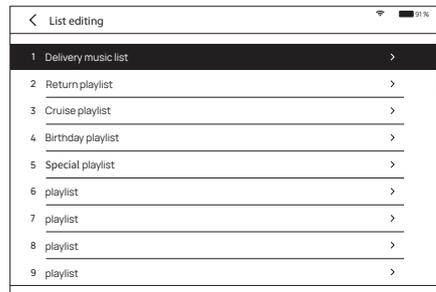
Music import

The user can use a mobile phone to connect to the same Wifi with the robot, and can scan directly to upload music. When uploading music files, you need to make sure that the uploaded files are in music format.

Parking instructions

Depending on the size of the restaurant, there are three robot parking options available.

1. One-to-one parking: fixed parking locations can be set for each robot.

2. Free mode: multiple parking locations can be set the robots, and the robots can be parked according to priority.

3. Parking replenishment mode: In addition to the settings of parking locations in 1) and 2), you can also set temporary parking locations in other areas, and when there is location available, the robot can automatically go to the parking location for replenishment.When a robot is parking at non-parking location with no task designated, you can choose the "Return" command to let the robot return to the parking location automatically, or push the robot to the parking location.

Note: The robot at the temporary location will display "Temporary parking" in the normal state, when there is location available at food pick-up position, the robot will automatically to to the pick-up position for parking.

Instructions on voice interaction

When the robot is not in motion, it can be awakened by voice to achieve voice interaction with it.

1. Voice interaction depends on the network, if the network connection fails, voice interaction cannot be performed.
2. After the voice is entered, the interface displays the voice content.
3. The content of the system response is played by voice, and the specific text content is displayed on the interface.
4. Tap the screen to end the voice interaction and end the voice wake-up, the system will also exit automatically if there is no interaction for a certain period of time.
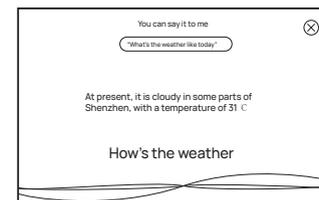
Instructions on touch interaction

In the non-moving state of the robot, the user can touch the robot's head or ears to achieve touch interaction with it.

1. On the first touch, the robot will show a friendly and cheerful expression and play a voice.
2. Go on touching to trigger further pleasant expressions and voices.
3. Multiple consecutive touches may trigger the angry expression and voice of the robot.
4. f the user keeps touching when the robot is in an angry state, it will trigger a very angry expression and voice.
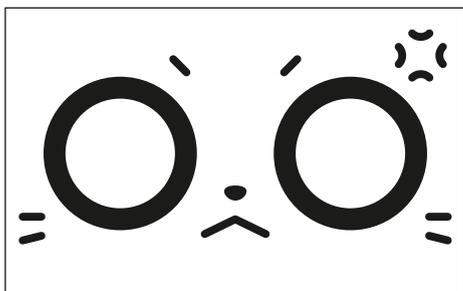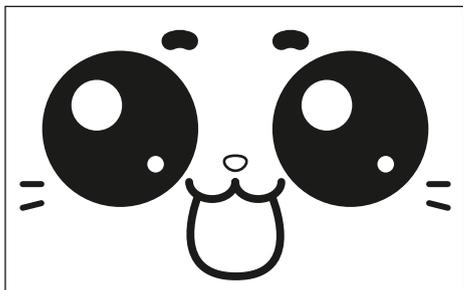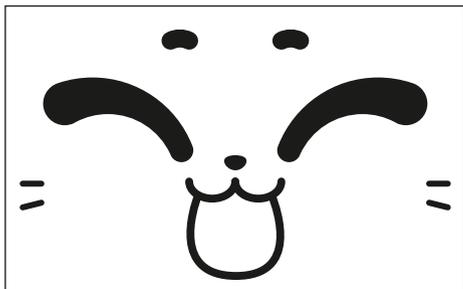
Product Maintenance

Trays, drive wheel and auxiliary wheel

Keep the tray clean and clean with a clean cotton cloth,Please check for cleaning at least once a week.when the bottom wheel is entangled or stuck by debris, the robot needs to be lifted for cleaning.

Sensor maintenance

Inspect and clean the positioning sensor on the top and the 3D obstacle avoidance sensor at least once a week. In case of unexpected contamination, be sure to clean it immediately so as not to block the sensors and cause abnor- mal operation of the product. Use soft tissue or other lens cleaner for cleaning.

Robot body maintenance

Keep the robot body clean with clean cotton cloth. Do not lift, climb, bump, push, or break the robot or stack things on its body. If it operates abnormally, do not uninstall any screw or open any cover without permission or instruction of our technical support engineers.

Handling of robot

During the transportation of the robot, it is necessary to meet GB/T 4857.23-2012 requirements for road transport of steel spring vibration-damped trucks, please use forklifts and other handling tools for transportation.

The robot is a valuable equipment, when you need to manually move the robot, please strictly follow the instructions below.As shown in the figure, the left and right profiles of the robot (indicated by the arrows) are the parts that can be stressed, and you can lift the robot through this part. Please ask two colleagues to lift the profile from both sides, pay attention to balance, and keep the robot's upright posture during the handling. It is strictly forbidden to carry out the handling by lifting the tray.
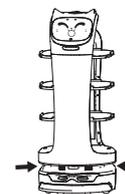
Sign maintenance

No other objects (such as balloons, barbed wire, slogans, etc.) can be hung directly under the sign, and no billboards or safety exit signs can be hung near the sign; pay attention not to damage the sign during routine ceiling cleaning and maintenance, and the sign cannot be moved or rotated.

Troubleshooting

POST fails

If the robot has sufficient battery power, restart the robot under the positioning mark, if the self-test still fails, please contact the after-sales service personnel in time.

Robot stops during operation

1. Click the interface to show the pause page, the robot pauses, click again to run normally.
2. Voice prompt "Excuse me": Click the screen to pause the robot, then the robot will be on the right track, then click Continue.

"Signal Loss" prompt

The robot interface prompts "I am lost, please push me directly below the positioning mark".At this time, the robot will issue a voice prompt for help, please push the robot directly below the positioning mark.

Robot can't boot normally

1. Check if the emergency switch is pressed or damaged, if it is damaged, please contact customer service.
2. The battery is insufficient, please connect the robot through the adapter for charging.
3. For other reasons, please contact customer service staff for processing.

After Sales

Free Warranty Services

Shenzhen Pudu Technology Co.Ltd. promises to meet the following conditions. From the date of product receipt, within the effective warranty period of the product (the warranty period of different parts of the product may be different, See "warranty period of major parts" for details.), we will provide free products warranty service. Customers do not need to pay after-sales service fees. Circumstances beyond the warranty period or not covered by the free product warranty service. We will charge a normal price. Please contact the official website after-sales service hotline for product maintenance.

Free warranty service must meet the following conditions

1. Self-purchased products are used normally within the specified product warranty period, and non-artificial quality problems occur;
2. No unauthorized disassembly, no modification or installation under the guidance of non-official instructions, other non-man-made failures;
3. Product serial number, factory label and other signs have no signs of tearing or alteration;
4. Provide valid proof of purchase, documents;
5. Damaged spare parts replaced during the free warranty period are owned by Pudu Technology and should be returned as requested by Pudu Technology, otherwise Pudu Technology reserves the right not to grant free warranty service.

The following conditions are not included in the free product warranty service

1. Collision, burnout caused by non-product quality problems, and quality problems caused by foreign body intrusion (water, oil, sand, etc.);
2. Damage caused by unauthorized modification, disassembly, opening of the shell, etc., as instructed by unofficial instructions；
3. Damage caused by improper installation, use and operation without following the instructions；
4. Damage caused by customer repairs without official instructions；
5. Damage caused by improper use of circuit modification, battery pack, and charger under the guidance of unofficial instructions；
6. Damage caused by use in excess of the safe load weight；
7. DDamage caused by insufficient discharge when the battery is low or the use of a battery with quality problems；
8. Services such as secondary on-site deployment or installation and commissioning due to customer's own reasons；
9. Malfunction and damage caused by force majeure (such as earthquake, fire, etc.).

Warranty period

The product receipt date recorded by Pudu's after-sales service system is used as the warranty start date.

If you meet one of the following conditions, you can ask for a refund

Within 7 natural days of receiving the goods, the customer found obvious manufacturing defects without using the goods. Round-trip freight is borne by Pudu.

We have the right to reject the customer's return request in the following cases

1. The goods were damaged, but the delivery staff was not requested to return them on the spot when receiving the goods;
2. If the return request is made after the return period of the product exceeds 7 natural days (calculated from the date of receipt);
3. Incomplete returned goods, incomplete packaging, accessories, gifts, manuals, or damage caused by appearance;
4. Failure to provide legal proof of purchase or documents when returning goods, or forging or altering documents;
5. Quality problems caused by collisions, burns caused by non-product quality problems, artificial modifications, foreign objects (water, oil, sand, etc.), improper installation, or failure to use and operate according to the instructions;
6. Torn, altered labels, machine serial numbers, waterproof marks, anti-counterfeit marks, etc.;
7. Products damaged due to force majeure such as fire, flood, lightning, traffic accident, etc.;
8. After contacting Pudu Technology Co., Ltd. to confirm the return service, Pudu Technology has the right not to accept the corresponding items within 7 days from the date of contacting Pudu Technology.

If you meet one of the following conditions, you can request a replacement

1. Within 15 natural days of receiving the goods, the customer found obvious manufacturing defects without using the goods. Pudu Technology bears the return freight;
2. Within 15 natural days after the customer receives the goods, after the product is unpacked, it cannot be started normally according to the instructions or under the guidance of a technician, or a non-artificial product quality defect is found. Round-trip freight is borne by Pudu;
3. When customers receive the goods, they need to unpack and inspect them in front of the deliveryman, and find that the product has been damaged due to transportation. Pudu Technology bears the return freight;
4. There was a clear discrepancy between the actual received goods and the description of the goods. Round-trip freight is borne by Pudu.

We have the right to reject the customer's replacement request in the following situations

1. Cannot provide legal purchase vouchers or documents when exchanging goods, or forge or alter the documents;
2. The goods were damaged, but the delivery staff was not required to return or exchange them on the spot when receiving the goods;
3. Requests for replacement after the replacement period of 15 natural day products (calculated from the date of receipt);
4. Incomplete replacement, incomplete packaging, accessories, gifts, manuals, or damage caused by appearance;
5. The goods have been tested by the technical support department of Pudu Technology Co.Ltd. and there is no quality problem;
6. Product quality problems caused by collisions or burns caused by non-self quality problems, artificial modification, foreign objects (water, oil, sand, etc.), improper installation, or failure to use and operate according to the instructions;
7. Torn, altered labels, machine serial numbers, waterproof marks, anti-counterfeit marks, etc.;
8. Products damaged due to force majeure such as fire, flood, lightning, traffic accident, etc.;
9. After contacting Pudu Technology Co. Ltd. to confirm the return service, the corresponding items were not sent within 7 days from the date of contacting Pudu Technology. Pudu Technology has the right not to accept it.

After-sales service process

1. Please contact Pudu technical support staff in time, call: 400-0826-660;
2. Technical support staff fill in relevant forms according to your product situation;
3. Technical support staff will review and confirm and follow up within 7 working days as soon as possible.

Remote technical guidance service free on-site maintenance

Pudu Technology officially provides online and remote technical support channels, and customers need to cooperate with technical engineers for problem diagnosis and troubleshooting.

On-site service

If the Pudu technology engineer diagnoses that the problem must be solved at home, Pudu Technology assigns professional and technical personnel to provide on site service.

Return processing time

After your return application is reviewed and approved, Pudu Technology Co.Ltd. will process the returned goods for you within 7 days from the date of receipt of the problem product you sent back.

Exchange processing time

After your replacement request is approved, Pudu Technology Co.Ltd. will process the replacement for you within 15 days you receive the problem product you sent back.

Return to factory for processing time

After your repair application is approved, Pudu Technology Co. Ltd. will process the repair for you within 30 days from the date you receive the problem product you sent back. If the service is postponed due to national statutory holidays or after-sales service centers of some brand manufacturers, the repair time will be extended accordingly.

Refund time

After approved by Pudu technology, the refund will be transferred to the bank account of the other party within 10 working days after receiving the returned product.

Out-of-warranty service

For after-sales services that are not covered by the free warranty (beyond the warranty period or do not meet the free warranty terms during the warranty period), Pudu Technology will charge for after-sales services.

Remote Technical Guidance Service

Pudu Technology officially provides online and remote technical support channels, and customers need to cooperate with technical engineers for problem diagnosis and troubleshooting.

On-site service

If the Pudu technology engineer diagnoses that the problem must be solved on the site, Pudu Technology assigns professional and technical personnel to provide on site service.

After-sales service cost standard

For after-sales services not covered by the free warranty, you need to fill in the Pudu Technology After-Sales Record Form in accordance with the requirements. Pudu's after-sales service costs include after-sales maintenance costs and spare parts costs;

Pudu technology technicians provide remote technical guidance services. Customers assist in handling after-sales issues. Pudu technology only charges the cost of spare parts;

After-sales service of Pudu technology technicians providing on-site services. Service costs include spare parts costs and after-sales maintenance costs;
After-sale maintenance fees are charged as follows: 500USD / day / person and round trip travel expenses;
The cost standard of spare parts is listed in "quotation of spare parts delivered by Pudu technology ".

After-sales Service Contact

If you have any question, please call our service hotline: 400-0826-660
PuduTech's after-sales service hours are: Monday to Saturday, 9:00 am to 12:00 am, 14:00 to 18:00 pm.

Main Parts Warranty

Main components	Warranty period
Upper computer master control board	12 months
Upper computer expansion board	12 months
Upper computer cooling fan	12 months
Lower computer master control board	12 months
Audio amplifier board	12 months
Lidar	12 months
Upper view RGBD vision sensors	12 months
Lower view RGBD vision sensors	12 months
Audio device	12 months
Camera module	12 months
Trays	No
Tray sensors	12 months
Tray light	12 months
Head touch sensor	12 months
Ear touch sensor	12 months
Array Microphones	12 months
LED Dot-matrix screen	12 months
Ear light	12 months
Flash button	24 months
Chassis shell	6 months
Display assembly	12 months
Waterproof light strip	12 months
Universal wheel	No
DC hub motor	12 months
Battery	12 months
Battery cover	12 months
E-stop switch	12 months
Key switch	12 months
In-line charger	12 months