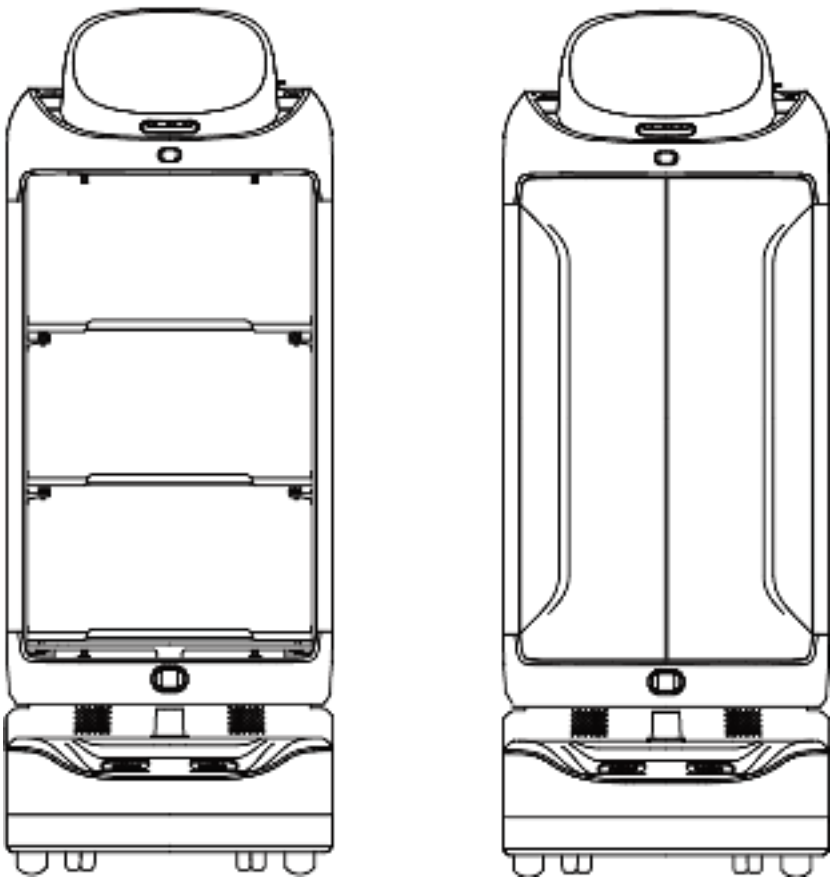


PuduSwiftBot Operation Guide

Version: V1.0

Model: SWFD01/SWFD11

Shenzhen Pudu Technology Co., Ltd.

Introduction

Purpose

This manual describes the functions, technical specifications, and detailed operations ofPuduSwiftBot to help users better understand and work with the robot.

Audiences

This manual is intended for:

- Customers
- Sales engineers
- Installation and commissioning engineers
- Technical engineers

Revision History

Time	Revision History
2022/01/15	Initial release

Signs

The signs listed below may appear in this manual with the following meanings.

Sign	Description
Danger	Indicates high potential hazards, which could cause death or serious personal injury if not avoided.
Warning	Indicates moderate or low potential hazards, which could cause minor personal injury or robot damage if not avoided.
Caution	Indicates potential risks, which could cause robot damage, data loss, or unpredictable consequences if neglected.
Note	Provides additional information as the emphasis and supplement to the main text.

Table of Contents

1. Safety Instructions

1.1 Power Usage

- Do not charge your robot using non-original chargers. If the charger is damaged, replace it immediately.
- When the battery drops to 20%, the robot should be charged timely. Running at a low battery for a long time may impair battery life.
- Make sure that the power voltage matches the voltage indicated on the charger, or it may cause damages to the charger.
- Unplug the charger timely after the charging cycle is complete. Do not leave the charger plugged in for a long time if the robot is fully charged.
- If the robot is not used for a long time, please turn the key switch in the battery box to OFF.
- Do not expose the charging pile to high temperatures or heating equipment, including sunshine, heaters, microwave ovens, and water heaters.
- Please dispose of the battery according to local regulations and do not dispose of it as household waste. Improper handling may cause the battery to explode.
- Please do not drop the battery, charging pile and charger or hit them with foreign objects to avoid damage.
- Do not use the battery or the charging pile if it is damaged.
- Designate a person to charge the robot. Do not charge the robot in an unattended manner.
- When using the charger, ensure that the fastener of the charging interface is fully engaged to avoid overheating during charging, which may cause burns or damage to the equipment.
- When using the charging pile, do not move the pile away from the designated place.
- Disconnect the robot from the charging pile when the indicator light on the pile turns red. Please use the charging pile after the indicator light turns blue. If the red light persists, contact Shenzhen Pudu Technology Co., Ltd. for technical support.
- In case of malfunction of the charging pile (e.g., smoke, burning smell), cut off the power supply of the pile immediately and contact Shenzhen Pudu Technology Co., Ltd. for technical support.

1.2 Robot Usage

- Do not cover the robot's top camera while it is working to prevent it from moving abnormally. If the camera is covered, pause the current task and move the robot to the correct route before continuing the task.
- Do not remove the SIM card by yourself. Otherwise, the robot may work improperly.

- Do not clean or maintain the robot when it is powered on and working.
- Do not put open-flame stoves or any flammable and explosive articles on the robot.
- Do not pick or place dishes while the robot is moving to avoid any food loss or personal injury caused by accidental collision.
- To avoid damage to the robot, please ensure that no scattered power cords and sharp objects such as decoration wastes, glass, and nails are on the ground.
- When the robot is in motion, no playing is allowed in front of the robot to avoid unnecessary harm.
- Do not move or transport the robot while it is working to prevent it from moving abnormally.
- In case of emergency, stop the robot by pressing the emergency stop button on the top.
- The robot must not be disassembled or repaired by untrained personnel. In case of malfunction, contact Shenzhen Pudu Technology Co., Ltd. for technical support in time.
- Observe the maximum weight a person is allowed to lift as required by local laws and regulations when transporting the robot. Keep the robot upright during transportation. Never attempt to transport it by lifting the tray or the box.
- Do not spill any liquid into the robot to avoid any damage.
- Although the robot features automatic obstacle avoidance, never block the robot moving at a high speed to avoid any accidents.
- Please prevent the robot from violent impact or shock to avoid any damage.
- Do not clean the robot with caustic chemicals, cleansers, or detergents. Always clean the robot by wiping it with a clean and dry cloth.

1.3 Working Environment

- Do not use or charge the robot in a high temperature/pressure environment, areas with fire or explosion hazard, or other dangerous scenarios to avoid personal injury or robot damage.
- The robot can only be used in an indoor environment on a flat and smooth surface with a slope less than 5° and protrusions not more than 1.5 cm high.
- Do not use the robot in a humid environment or on surfaces covered with fluid or gooey stuff to avoid damage to the robot.
- Do not use the robot in places where the use of wireless devices is explicitly prohibited, otherwise it may cause interference to other electronic devices or lead to other dangers.
- The minimum travel width for a single robot is 0.8 m. The travel width is recommended to be greater than 2 m when two robots pass head-on.

- There is a 35 cm space between the two robots placed side by side at the standby point, and a clearance of 15 cm from the rear wall and 35 cm from the side wall.

- Things that are black (e.g., skirting line), polished, or transparent (e.g., French window) at the height of 20 cm to 25 cm may interfere with the radar reflection and cause abnormal movement of the robot. Such sites should be modified (e.g., posting stickers). Please contact Shenzhen Pudu Technology Co., Ltd. for technical support
- The maximum climbing angle of the robot is 5°. Do not pause the robot on the slope to avoid any sliding of the robot that may cause loss of dishes.
- Do not dispose of the robot or its accessories as household waste. Always dispose of the robot and its accessories according to local laws and regulations, and recycle wherever possible.

2. Product Components

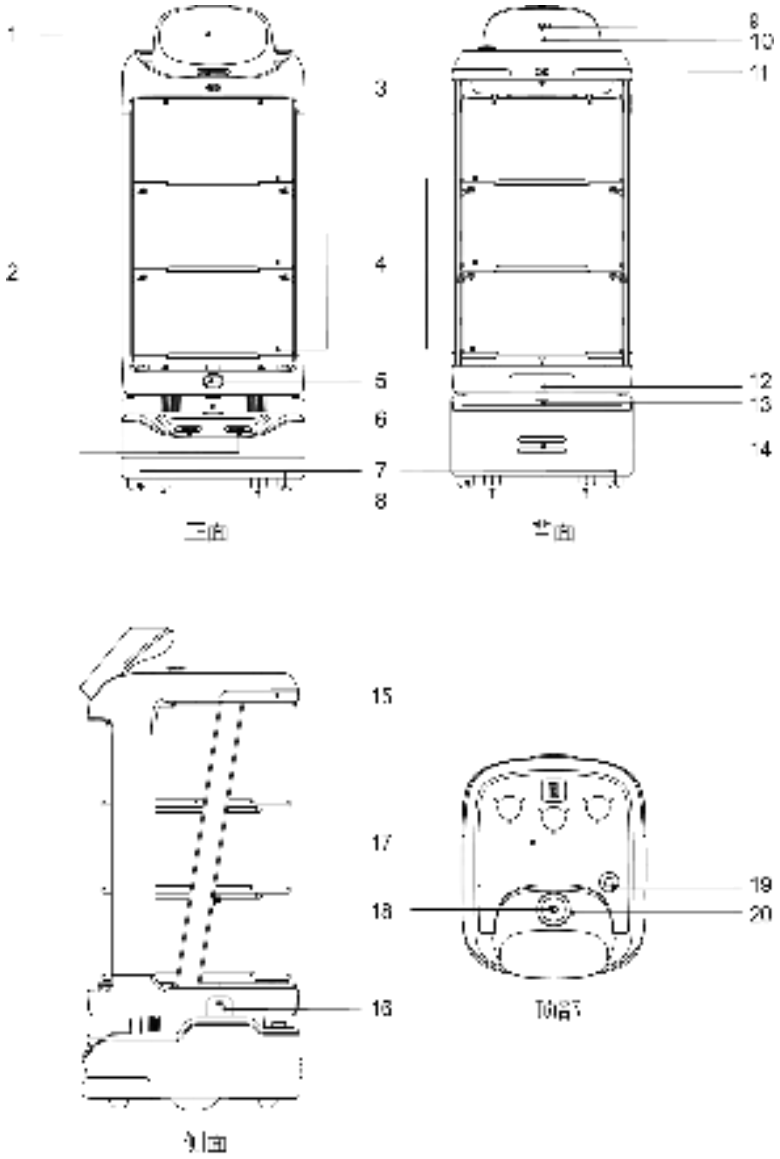
2.1 Overview

PuduSwiftBot is an indoor robot that supports SLAM positioning and navigation solutions integrating both Lidar and visual positioning. Featured with new interactive features such as compartment door auto-open/close, voice interaction, laser projector, and peak hours algorithms, it can be efficiently, safely, conveniently, and flexibly used in various scenarios. In addition, PuduSwiftBot has a wide range of expansion interfaces and various communication methods including 4G, Wi-Fi, Bluetooth, and Type-C USB. It can be connected with peripherals such as code scanners and elevator controls, greatly enhancing the user experience.

PuduSwiftBot comes with various modes, including Food Delivery mode, Delivery mode, Cruise mode, Guidingmode, Birthday mode, and Interactive mode to cater to the needs of different scenarios.

2.2 Appearance & Components

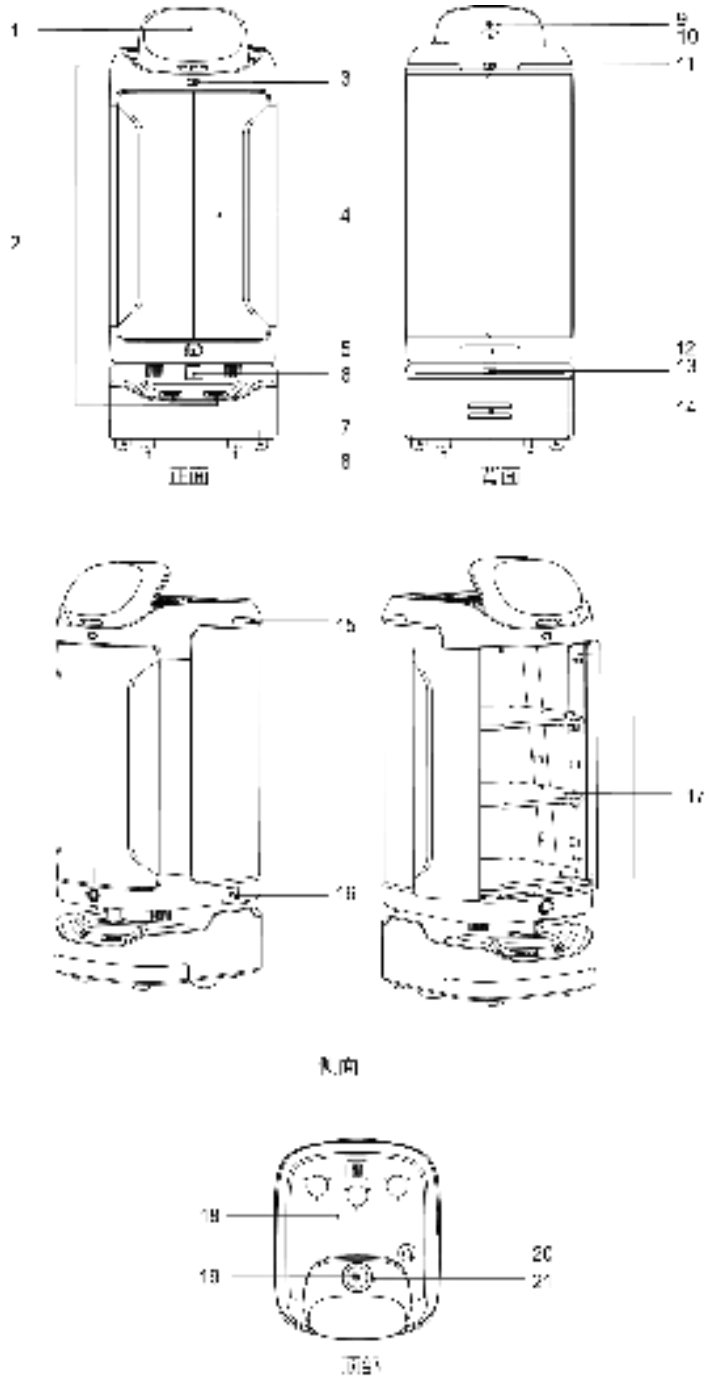
2.2.1 SWFD01 Appearance



No.	Description
1	LCD screen
2	Depth vision sensors
3	Front positioning camera
4	Trays
5	Galvo laser projector
6	Front Lidar
7	Drive wheels

8	Auxiliary wheels
9	Power switch
10	SIM card slot and Type-C USB interface
11	Rear positioning camera
12	Key switch
13	Rear Lidar
14	Charging electrode plate
15	Light strip
16	Charging jack
17	Top tray (cup holder)
18	Vision sensor
19	Emergency stop switch
20	6-mic circular array kit

2.2.2 SWFD11 Appearance



No.	Description
1	LCD screen
2	Depth vision sensors
3	Front positioning camera
4	Compartment door
5	Galvo laser projector

6	Front Lidar
7	Drive wheels
8	Auxiliary wheels
9	Power switch
10	SIM card slot and Type-C USB interface
11	Rear positioning camera
12	Key switch
13	Rear Lidar
14	Charging electrode plate
15	Light strip
16	Charging jack
17	Trays
18	Top tray (cup holder)
19	Vision sensor
20	Emergency stop switch
21	6-mic circular array kit

2.2.3 Instructions for buttons

Button	Description
Power switch	Press and hold the power switch for 1 second to power on. Press and hold the power switch for 3 seconds to power off as instructed on the screen.
Emergency stop switch	In case of emergency, press the emergency stop switch to stop the robot. Rotate the emergency stop switch clockwise, and resume the operation according to the screen tips.
Key switch	Control the power supply of the robot. Make sure the power supply is **ON** before charging or powering on the robot.

2.3 Specifications

Feature	Description
Model	SWFD01/SWFD11

Operating voltage	DC 23–29.4V
Power input	AC 100–240 V, 50/60 Hz
Power output	29.4 V/ 8 A
Battery capacity	25.6 Ah
Charging time	4.5 h
Battery life	10–24 h
Cruise speed	0.5–1.2 m/s (adjustable)
Navigation	Laser and visual integrated SLAM positioning
Automatic compartment door	SWFD01: Not available SWFD11: Available
Min. travel width	80 cm
Max. surmountable height	Full load: 15 mm Empty load: 20 mm
Max. climbing angle	5º
Tray dimensions	502 mm x 433 mm
No. of trays	3
Height between trays	From top to bottom: 228 mm/229 mm/ 236 mm
Tray load	15 kg/layer
Machine material	ABS andPC
Robot weight	SWFD01: 55 kg SWFD11: 65 kg
Robot dimensions	593 mm x 485 mm x 1277 mm
Screen size	10.1-inch LCD screen
Operation system	Android
Microphone	6-mic circular array kit
Speaker power	2 x 10 W stereo speakers
Service life	5 years
Working environment	Temperature: 0 ℃ to 40 ℃ RH: ≤ 85%

Storage environment	Temperature: -40 ℃ to 65 ℃ RH: ≤ 85%	
Working altitude	< 2000 m	
Ground surface standard	Indoor environment, flat and smooth ground	
IP rating	IP22	
Frequency band range	Wi-Fi	2.4G Wi-Fi: 2412–2472 MHz, 2422–2462 MHz 5.2–5.6G Wi-Fi: 5180–5320 MHz, 5500–5700 MHz, 5190–5310 MHz, 5510–5670 MHz, 5210–5290 MHz, 5530–5610 MHz 5.8G Wi-Fi: 5745–5825 MHz, 5755–5795 MHz, 5775 MHz
	Bluetooth	2402–2480 MHz
	3G	B1/B8
	4G	B1/B3/B7/B8/B20/B28/B34/B38/B40
Max. transmit power	Wi-Fi	2.4G Wi-Fi: 17.48 dBm 5.2–5.6G Wi-Fi: 13.35 dBm 5.8G Wi-Fi: 13.85 dBm
	Bluetooth	LE: 5.96 dBm BDR/EDR: 8.49 dBm
	3G	B1: 23.56 dBm B8: 23.43 dBm
	4G	B1: 23.49 dBm B3: 23.96 dBm B7: 24.33 dBm B8: 23.45 dBm B20: 23.36 dBm B28: 23.81 dBm B34: 23.32 dBm B38: 24.76 dBm B40: 23.25 dBm

3. How to Use

3.1 Quick Start Guide

3.1.1 Power On

Step 1 Make sure the key switch is turned to ON.

Step 2 Move the robot to the startup location.

Step 3 Press and hold the power switch for 1 second.

The light strip flashes, and the screen displays boot logo, animation, and Android desktop in turn, indicating that the robot is powered on.

📖Note

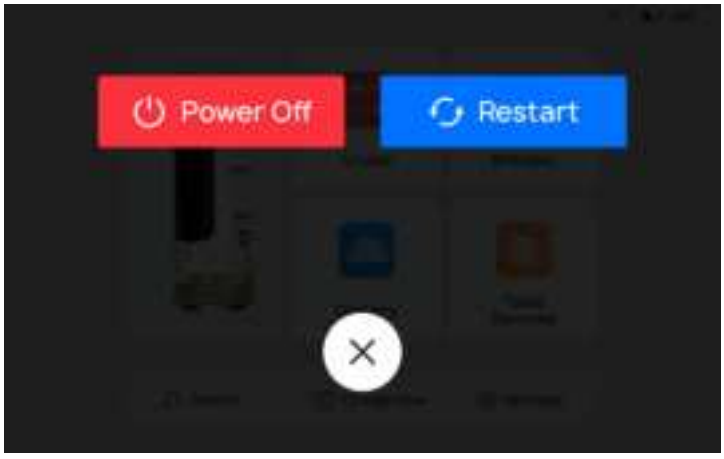
The system will automatically start Pudu App by default after powering on. If not, tap the Pudu App icon on the system desktop to start it.

Step 4 The robot is powered on, let's try it out!

3.1.2 Power Off

Step 1 Press and hold the power switch for 3 seconds.

The screen will pop up the **Power Off** and **Restart** options.



Step 2 Tap **Power Off**.

The light strip and screen will go off, indicating that the robot is powered off.

3.2 Task Scenarios

3.2.1 Product Features

The robot comes with various modes, including Food Delivery mode, Delivery mode, Cruise mode, Guidingmode, Birthday mode, and Interactive mode to cater to the needs of different

scenarios.

Mode	Description
Food Delivery mode	The robot delivers food to multiple tables at the same time. After the dishes ordered by different customers are placed on the trays and the table numbers are entered, the robot automatically plans the best routes for delivery. After that, the robot automatically returns to the pickup location.
Delivery mode	The user may select this mode to deliver items in non-dining scenarios. Its operation is generally the same as that of Delivery mode, with differences in interaction voice and interface prompts.
Cruise mode	The robot can cruise along a predetermined route with self-service desserts, snacks, drinks, brochures, or napkins. The user may also set up stay locations along the cruise route. The robot can invite customers to take free samples or try out the food via voice broadcast when cruising.
Birthday mode	The robot delivers birthday cakes or gifts to customers, accompanied by customized background music.
Guiding mode	The robot leads customers to their tables. Then, it automatically returns to the greeting location.
Interactive mode	After the robot delivers to the destination, the customer can tap its screen for a lucky draw.
Return	The robot directly returns to the pickup location or the departure location.
Auto charging	The robot directly returns to the charging pile for charging. This function is only available if the user has purchased a charging pile and set up

Mode	Description
	its location during mapping.
Settings	The user can connect the robot to the Internet and Bluetooth devices, set the number of trays, turn on delivery lights, laser projector, etc.

Note

To ensure a stable and safe operation of the robot, it is recommended that the delivery speed be lower than 0.9m/s, and the cruise speed at 0.5m/s or 0.6m/s.

3.2.2 Food Delivery Mode

Step 1 Tap **Food Delivery** on the main interface.

The Food Delivery mode interface is shown below.

Shortcut buttons on the Food Delivery mode interface are explained below.

Buttons	Description
	View the previous task.
	Set the arrival voice, the music during delivery, etc. See the table below for details.
	Smart search of table numbers. Tap the icon to quickly search for table numbers when there are too many tables.

Buttons	Description
	Open/close the compartment door. This function is only available on SWFD11. If the compartment door is open, the icon changes to 
	Set the Smooth mode. The icon will be displayed after Smooth mode is enabled in the Food Delivery Settings interface. There are three states for Smooth mode: •  : Disabled. Tap the icon to enable the Smooth mode once, and it will be disabled by default after the task is completed; tap and hold for 1 second to enable the Smooth mode permanently. •  : Enabled once. Tap the icon to disable the Smooth mode; tap and hold for 1 second to enable the Smooth mode permanently. •  : Enabled permanently.Tap the icon to disable the Smooth mode. When the Smooth mode is enabled, the robot will move at 0.4 m/s during food delivery. After the task is completed, the robot will return at the currently set return speed.

The Delivery Settings interface and descriptions of the settings are shown below.

Food Delivery Settings	Description

Food Delivery Settings	Description
Show emoticons during task	Choose whether to enable Food delivery animation. If enabled, the robot will show emoticons rather than the table number during delivery.
Arrival voice	Choose whether to enable Arrival voice of delivery and set the custom voice and the playback interval. If enabled, tap + to add custom voices. If the customized voice is selected, it will be played upon delivery arrival but not the system default voice. A random voice will be played if more than one voice is selected. Requirements for custom voices: • Up to 20 custom voices can be added. • Up to 50 characters or 25 Chinese characters for each custom voice. Special characters are not supported. • If you wish to remove a custom voice, tap and hold to delete it.
Play music during task	Choose whether to enable Play music during food delivery. If enabled, tap + to add music from the music library (up to 20 pieces of music). If you wish to remove a piece of music, tap and hold to delete it.If no music is available in the music library, you may scan the QR code in the Settings > Music interface to import music. If a piece of music is added and selected, it will be played during delivery. Only one piece of music can be selected at a time.
Auto-open of compartment door when waiting	Choose whether to enable Auto-open of compartment door when waiting. If enabled, the compartment door will be opened automatically after the robot completes its delivery task and returns to the pickup location. The user can determine whether to enable this function according to the speed of meal preparation and the actual scenario. This function is only available on SWFD11.
Smooth mode	Choose whether to enable the Smooth mode If enabled, the Smooth mode icon will be displayed on the Food Delivery mode interface. The Smooth mode can be set up on the Food Delivery mode interface.
Single-layer multi-table delivery	Choose whether to enable Single-layer multi-table delivery. If enabled, multiple table numbers can be set for a single tray. Up to 10 table numbers can be set for a single tray. If you wish to delete a table number, tap the tray with the table number. A table number management interface will pop up where you can delete the table number.

Food Delivery Settings	Description
Delivery parameter settings	Set delivery parameters. • Automatic pick up time: If **Done** is not tapped within the set time after the robot arrives at the desired table, the robot automatically completes the current task and continues to perform the next one. Value range: 1 to 600 seconds. Default: 30 seconds • Auto resume time of pause: The pause time during delivery, that is, if the robot does not perform any operation during the pause time, it will automatically resume the current task. Value range: 5 to 600 seconds. Default: 20 seconds
Delivery order	Select the delivery order for the robot. • Distance-priority delivery: The robot plans the optimal path and performs delivery tasks from near to far based on the distance on the map. • Sequential delivery: The robot performs delivery tasks from up to down in the order of tray number.
Delivery speed	Set the moving speed of the robot during delivery. If the Smooth mode is enabled, the set speed will not take effect, and the robot will deliver at 0.4 m/s. Speed range: 0.5 m/s, 0.6 m/s, 0.7 m/s, 0.8 m/s, 0.9 m/s
Return speed	Set the speed of the robot during return. Speed range: 0.5 m/s, 0.6 m/s, 0.7 m/s, 0.8 m/s, 0.9 m/s
Pick-up location selection	Select the pickup location. When creating a new map, the user can set different pickup locations according to the actual scenario, which can be manually selected on the Food Delivery Settings interface. This function is applicable to scenarios with multiple pickup locations.

Step 2 (Optional) Tap  to open the compartment door.

Note

This function is for SWFD11 only. You may skip this step if the compartment door is already opened or internaltrays are not used.

Step 3 Put the dishes on the corresponding tray.

Step 4 Tap the tray where the dishes are and select the desired table number.

The desired table number will be displayed on the corresponding tray.

If **Single-layer multi-table** is enabled on the Food Delivery Settings interface, the user can put multiple dishes for different tables on a single tray.

Step 5 After entering the table numbers, tap **Start**.

The robot arrives at the specified table along the predetermined path.

For an SWFD11 robot using trays inside the compartment, the compartment door will be closed automatically after tapping **Start**.

Step 6 After arriving at the desired table, the robot issues a voice prompt. The waiter then takes the dishes following the screen display and voice prompts.

For an SWFD11 robot using trays inside the compartment, the compartment door will be opened automatically.

Step 7 After taking the dishes, tap **Done** and the robot will perform its next task.

For an SWFD11 robot using trays inside the compartment, the compartment door will be closed automatically before the robot starts the next task.

- If **Automatic pick up time** is enabled on the Food Delivery Settings interface, the robot automatically completes the task and performs the next task if **Done** is not tapped within the set time after the food arrives at the destination.
- To make any modifications during food delivery (e.g., modify task, pick up in advance, cancel all, or return), tap the screen to pause the robot before any operation. If no operation is performed within the pause time (Auto resume time of pause), the robot will proceed with its current task. Pause time (Auto resume time of pause) can be set on the Food Delivery Settings interface.

Buttons	Description
Modify task	Tap to modify the table number of food delivery.
Pick up in advance	Tap to pick up the dishes in advance and proceed with the next task.
Cancel all	Tap to cancel all food delivery tasks without returning to the pickup location.
Return	Tap to return to the pickup location.

3.2.3 Delivery mode

In the Delivery mode, the robot delivers items to the designated locations.

Step 8 Tap **Delivery** on the main interface.

The Delivery mode interface is shown below.

Shortcut buttons on the Delivery mode interface are explained below.

Buttons	Description
	View the previous task.
	Set the arrival voice, the music during delivery, etc. See the table below for details.
	Smart search for destinations. Tap the icon to quickly search for destinations when there are too many destinations.
	Open/close the compartmentdoor. This function is only available on SWFD11. If the compartmentdoor is open, the icon changes to 
	Set the Smooth mode. The icon will be displayed after the Smooth mode is enabled in the Delivery Settings interface. There are three states for the Smooth mode: •  : Disabled.Tap the icon to enable the Smooth mode once, and it will be disabled by default after the task is completed; tap and hold for 1 second to enable the Smooth mode permanently. •  : Enabled once. Tap the icon to disable the Smooth mode; tap and hold for 1 second to enable the Smooth mode permanently. •  : Enabled permanently.Tap the icon to disable the Smooth mode. When the Smooth mode is enabled, the robot will move at 0.4 m/s during delivery. After the task is completed, the robot will return at the currently set return speed.

The Delivery Settings interface and descriptions are shown below.


配送设置
任务中显示表情
任务中播放音乐
音乐_1
音乐_2
音乐_3
任务到达播放语音
自定义TTS语音_1
自定义TTS语音_2
自定义TTS语音_3
单层多地点模式
等待状态电动门自动打开
平稳模式
未开启
单次开启
任务参数设置
自动完成任务时间
30
暂停自动恢复时间
20
任务顺序
距离优先任务
顺序优先任务

Delivery Settings	Description
Show emoticons during task	Choose whether to enable Delivery animation. If enabled, the robot will show emoticons rather than the destinations during delivery.
Arrival voice	Choose whether to enable Arrival voice of delivery and set the custom voice and the playback interval. If enabled, tap + to add custom voices. If the customized voice is selected, it will be played upon delivery arrival but not the system default voice. A random voice will be played if more than one voice is selected. Requirements for custom voices: • Up to 20 custom voices can be added. • Up to 50 characters or 25 Chinese characters for each custom voice. Special characters are not supported. • If you wish to remove a custom voice, tap and hold to delete it.
Play music during task	Choose whether to enable Play music during delivery. If enabled, tap + to add music from the music library (up to 20 pieces of music). If you wish to remove a piece of music, tap and hold to delete it.If no music is available in the music library, you may scan the QR code in the Settings > Music interface to import music. If a piece of music is added and selected, it will be played during delivery. Only one piece of music can be selected at a time.
Auto-open of compartment door when waiting	Choose whether to enable Auto-open of compartment door when waiting. If enabled, the compartment door will be opened automatically after the robot completes its delivery task and returns to the departure location. The user can determine whether to enable this function according to the delivery requirements and the actual scenario. This function is only available on SWFD11.
Smooth mode	Choose whether to enable the Smooth mode If enabled, the Smooth mode icon will be displayed on the Delivery mode interface. The Smooth mode can be set up on the Delivery mode interface.
Single-layer multi-table delivery	Choose whether to enable Single-layer multi-table delivery. If enabled, multiple destinations can be set for a single tray. Up to 10 destinations can be set for a single tray. If you wish to delete a destination, tap the tray with the destination. A destination management interface will pop up where you can delete the destination.

Delivery Settings	Description
Delivery parameter settings	Set delivery parameters. • Automatic pick up time: If **Done** is not tapped within the set time after the robot arrives at the destination, the robot automatically completes the current task and continues to perform the next one. Value range: 1 to 600 seconds. Default: 30 seconds • Auto resume time of pause: The pause time during delivery, that is, if the robot does not perform any operation during the pause time, it will automatically resume the current task. Value range: 5 to 600 seconds. Default: 20 seconds
Delivery order	Select the delivery order for the robot. • Distance-priority delivery: The robot plans the optimal path and performs delivery tasks from near to far based on the distance on the map. • Sequential delivery: The robot performs delivery tasks from up to down in the order of tray number.
Delivery speed	Set the moving speed of the robot during delivery. If the Smooth mode is enabled, the set speed will not take effect, and the robot will deliver at 0.4 m/s. Speed range: 0.5 m/s, 0.6 m/s, 0.7 m/s, 0.8 m/s, 0.9 m/s
Return speed	Set the speed of the robot during return. Speed range: 0.5 m/s, 0.6 m/s, 0.7 m/s, 0.8 m/s, 0.9 m/s
Departure location selection	Select the departure locations. When creating a new map, the user can set different departure locations according to the actual scenario, which can be manually selected on the Delivery Settings interface. This function is applicable to scenarios with multiple departure locations.

Step 9 (Optional) Tap  to open the compartment door.

Note

This function is for SWFD11 only. You may skip this step if the compartment door is already opened or internaltrays are not used.

Step 10 Put the items on the corresponding tray.

Step 11 Tap the tray where the items are and select the destination.

The destination will be displayed on the corresponding tray.

If **Single-layer multi-table** is enabled on the Delivery Settings interface, you can put multiple items for different destinations on a single tray.

Step 12 After entering the destination, tap **Start**.

The robot arrives at the destination along the predetermined path.

For an SWFD11 robot using internaltrays in the compartment, the compartment door will be closed automatically after tapping **Start**.

Step 13 After arriving at the destination, the robot issues a voice prompt. The userthen takes the dishes following the screen display and voice prompts.

For an SWFD11 robot using trays inside the compartment, the compartment door will be opened automatically.

Step 14 After taking the dishes, tap **Done** and the robot will perform its next task.

For an SWFD11 robot using original trays in the compartment, the compartment door will be closed automatically before the robot starts the next task.

- If **Automatic pick up time** is enabled on the Delivery Settings interface, the robot automatically completes the task and performs the next task if **Done** is not tapped within the set time after arriving at the destination.
- To make any modifications during delivery (e.g., modify task, pick up in advance, cancel all, or return), tap the screen to pause the robot before any operation. If no operation is performed within the pause time (Auto resume time of pause), the robot will proceed with its current task. Pause time (Auto resume time of pause) can be set on the Delivery Settings interface.

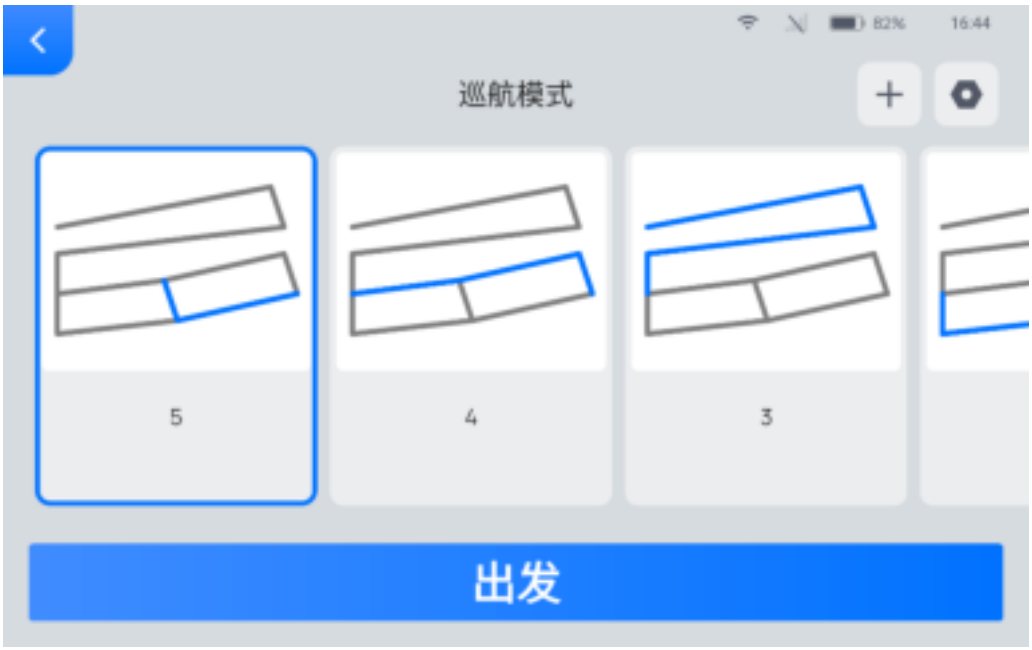
Buttons	Description
Modify task	Tap to modify the delivery destination.
Pick up in advance	Tap to pick up the items in advance and proceed with the next task.
Cancel all	Tap to cancel all delivery tasks without returning to the departure location.
Return	Tap to return to the departure location.

3.2.4 Cruise Mode

In the Cruise mode, the robot cruises around a specific large area.

Step 15 Tap **Cruise** on the main interface.

The Cruise mode interface is shown below. If a cruise route is created during mapping, it will be displayed on the Cruise mode interface. The cruise route is shown in blue on the map below.



Shortcut buttons on the Cruise mode interface are explained below.

Buttons	Description
	Add custom cruise routes for a fixed-point cruise.
	Set the arrival voice, the music played when cruising, etc. See the table below for details.
	Set the Smooth mode. The icon will be displayed after the Smooth mode is enabled in the Cruise Mode settings. There are three states for the Smooth mode: •  : Disabled.Tap the icon to enable the Smooth mode once, and it will be disabled by default after the task is completed; tap and hold for 1 second to enable the Smooth mode permanently. •  : Enabled once. Tap the icon to disable the Smooth mode; tap and hold for 1 second to enable the Smooth mode permanently. •  : Enabled permanently.Tap the icon to disable the Smooth mode. When the Smooth mode is enabled, the robot will move at 0.4 m/s when cruising.

Follow the steps below to customize cruise routes.

1. Tap + to enter the interface for selecting stay locations during cruise.

Please select at least two stay locations. You can select up to fifty stay locations for cruising. One stay location can be selected multiple times, but not in a row.

2. Select stay locations on the interface and tap **Next**.

The interface for customizing cruise routes is shown below.

3. Rename the cruise route on the cruise route customization interface and tap **Save**. A custom cruise route is now generated.

On the interface for customizing cruise routes, you can check the list of stay locations,

change the order of stay locations, or delete the current cruise route.

The Cruise Settings interface and descriptions of the settings are shown below.

Cruise Settings	Description
Play voice during task	Choose whether to enable **Play voice when cruising** and set the custom voice and the playback interval. If enabled, tap + to add custom voices. If a custom voice is selected, it will be played when cruising rather than the system default voice. A random voice will be played if more than one voice is selected. Requirements for custom voices: • Up to 20 custom voices can be added. • Up to 200 characters or 100 Chinese characters for each custom voice. Special characters are not supported. • If you wish to remove a custom voice, tap and hold to delete it. Note: **Play voice during task** and **Play music during task** cannot be enabled at the same time.
Arrival voice	Choose whether to enable Arrival voice of cruise and set the custom voice and the playback interval. If enabled, tap + to add custom voices. If the customized voice is selected, it will be played upon the arrival at stay locations when cruising but not the system default voice. Only one piece of voice can be selected at a time. Requirements for custom voices: • Up to 20 custom voices can be added. • Up to 50 characters or 25 Chinese characters for each custom voice. Special characters are not supported. • If you wish to remove a custom voice, tap and hold to delete it.
Play music during task	Choose whether to enable **Play music when cruising**. If enabled, tap + to add music from the music library (up to 20 pieces of music). If you wish to remove a piece of music, tap and hold to delete it.If no music is available in the music library, you may scan the QR code in the Settings > Music interface to import music. If a piece of music is added and selected, it will be played when cruising. Only one piece of music can be selected at a time. Note: **Play voice during task** and **Play music during task** cannot be enabled at the same time.
Manual control switch at stay locations	Choose whether to enable **Manual control switch at stay locations**. If enabled, after the robot arrives at stay locations, manual operations are required before proceeding with its tasks. This function is only available when cruise routes are customized.

Cruise Settings	Description
Stay time at stay locations	Set Stay time at stay locations. After the robot arrives at a stay location, it stays at the stay location for the preset time. When the Stay time at stay locations is up, the robot will proceed with its tasks. Value range: 5 to 600 seconds. Default: 30 seconds If **Manual control switch at stay locations** is enabled, this time will be invalid. This function is only available when cruise routes are customized.
Auto-open of compartment door at stay locations	Choose whether to enable Auto-open of compartment door at stay locations. If enabled, the compartment door will be opened automatically after the robot arrives at a stay location. The compartment door will be closed automatically after the task is completed. This function is only available on SWFD11.
Smooth mode	Choose whether to enable the Smooth mode If enabled, the Smooth mode icon will be displayed on the Cruise mode interface. The Smooth mode can be set up on the Cruise mode interface.
Auto resume time	Set the pause time in the Cruise mode. If the robot does not perform any operation during the pause time, it will automatically resume the cruise. Value range: 5 to 600 seconds. Default: 20 seconds
Cruise speed	Set the moving speed of the robot when cruising. If the Smooth mode is enabled, the set speed will not take effect, and the robot will cruise at 0.4 m/s. Speed range: 0.5 m/s, 0.6 m/s, 0.7 m/s, 0.8 m/s, 0.9 m/s

Step 16 Put desserts, snacks, or other items on the trays.

For an SWFD11 robot taking a non-custom cruise route, only the top tray is available.

Step 17 Select the desired cruise route and tap **Start**.

The robot then begins to circulate along the cruise route.

If a robot is taking a non-custom cruise route and you need to pick something up during the cruise, tap the robot's screen to pause the robot before any operation. If no operation is performed within the pause time (Auto resume time of pause), the robot will proceed with its current task. Pause time (Auto resume time of pause) can be set on the Cruise Settings interface.

3.2.5 Guiding Mode

In the Guiding mode, the robot acts as a receptionist and guides them to a designated location.

Step 18 Tap **Guiding** on the main interface.

The Guiding mode interface is shown below.

Shortcut buttons on the Guiding mode interface are explained below.

Buttons	Description
	Set the arrival voice, music, etc. when the robot is guiding customers. See the table below for details.
	Smart search of table numbers. Tap the icon to quickly search for table numbers when there are too many tables.

The Guiding Settings interface and descriptions of the settings are shown below.

Guiding Settings	Description

Guiding Settings	Description
Voice upon guided arrival	Choose whether to enable Voice upon guided arrival and set the custom voice. If enabled, tap + to add custom voices. If the customized voice is selected, it will be played upon guided arrival but not the system default voice. A random voice will be played if more than one voice is selected. Requirements for custom voices: • Up to 20 custom voices can be added. • Up to 50 characters or 25 Chinese characters for each custom voice. Special characters are not supported. • If you wish to remove a custom voice, tap and hold to delete it.
Play music when guiding customers	Choose whether to enable **Play music when guiding customers**. If enabled, tap + to add music from the music library (up to 20 pieces of music). If you wish to remove a piece of music, tap and hold to delete it.If no music is available in the music library, you may scan the QR code in the Settings > Music interface to import music. If a piece of music is added and selected, it will be played when guiding customers. Only one piece of music can be selected at a time.
Show emoticons when guiding customers	Choose whether to enable **Animation when guiding customers**. If enabled, the robot will show emoticons rather than the table number when guiding customers.
Guiding location selection	Select a guiding location. While creating a new map, the user can set different guiding locations according to the actual scenario, which can be manually selected on the Guiding Settings interface. This function is applicable to multiple-entrance scenarios.
Delivery speed	Set the moving speed of the robot when guiding customers. Speed range: 0.5 m/s, 0.6 m/s, 0.7 m/s, 0.8 m/s, 0.9 m/s
Return speed	Set the moving speed of the robot when returning to the guiding location. Speed range: 0.5 m/s, 0.6 m/s, 0.7 m/s, 0.8 m/s, 0.9 m/s
Guiding parameter settings	Set Guiding parameters. • Auto complete time of guiding: If **Done** is not tapped within the set time after the guiding is completed, the robot will automatically complete the task and return to the guiding location. Value range: 1 to 600 seconds. Default: 30 seconds • Auto resume time of pause: The pause time when guiding customers, that is, if the robot does not perform any operation during

Guiding Settings	Description
	the pause time, it will automatically resume the current task. Value range: 5 to 600 seconds. Default: 20 seconds

Step 19 Select the desired table number and tap **Start**.

The robot will then guide the customers to the desired table.

Step 20 Tap **Done** after the robot reaches the desired table.

The robot returns to the Guiding location.

If **Auto complete time** is enabled on the Guiding Settings interface, the robot will automatically complete the task and return to the Guiding location if **Done** is not tapped within the set time after the robot arrives at the destination.

To cancel the task when guiding customers or return to the Guiding location, tap the screen to pause the robot before any operation. If no operation is performed within the pause time (Auto resume time of pause), the robot will proceed with its current task. Pause time (Auto resume time of pause) can be set on the Guiding Settings interface.

3.2.6 Birthday Mode

In the Birthday mode, the robot delivers gifts and plays birthday songs for customers who celebrate their birthdays.

Step 21 Tap **Birthday** on the main interface.

The Birthday mode interface is shown below.

Shortcut buttons on the Birthday mode interface are explained below.

Buttons	Description

	Set the delivery arrival blessings and the music during delivery, etc. See the table below for details.
	Smart search of table numbers. Tap the icon to quickly search for table numbers when there are too many tables.
	Open/close the compartment door. This function is only available on SWFD11. If the compartment door is open, the icon changes to 
	Set the Smooth mode. The icon will be displayed after the Smooth mode is enabled in the Birthday Settings interface. There are three states for the Smooth mode: •  : Disabled. Tap the icon to enable the Smooth mode once, and it will be disabled by default after the task is completed; tap and hold for 1 second to enable the Smooth mode permanently. •  : Enabled once. Tap the icon to disable the Smooth mode; tap and hold for 1 second to enable the Smooth mode permanently. •  : Enabled permanently.Tap the icon to disable the Smooth mode. When the Smooth mode is enabled, the robot will move at 0.4 m/s during delivery. After the task is completed, the robot will return at the currently set return speed.

The Birthday Settings interface and descriptions are shown below.


生日设置
任务中显示表情
任务中播放音乐
音乐_1
音乐_2
音乐_3
任务到达祝福语
今天是个值得纪念的日子,祝您生日快乐,幸福成长,心想事成,笑口常开,
请许个愿吧,祝您愿望早日实现。
等待状态电动门自动打开
平稳模式控制开关
未开启
单次开启
长按锁定
暂停自动恢复时间
20

Birthday Settings	Description
Delivery arrival blessings	Choose whether to enable **Delivery arrival blessings** and set or customize blessings. If enabled, the default or customized blessings will be played upon delivery arrival. Default blessings: General blessings: Happy birthday! Make a wish, and may all your wishes come true. The user can enter the following information according to the actual scenario, and the robot will automatically generate blessings based on the general blessings. • Store name: Enter the store information. Up to 50 characters can be entered. If the store name is entered, "Welcome to xxx" will be added to the front of the general blessing text. • Objects: children, women, men, or the elderly. The default blessings vary by different objects. • Name: Up to 50 characters can be entered. If the name is not entered, "you" will be addressed by default. • Age: Up to 3 digits can be entered. If the age is not entered, it will not be played by default. Custom blessings: Tap + to add custom blessings.If a custom blessing is selected, it will be played upon delivery arrival. A random blessing will be played if more than one blessing is selected. Requirements for custom blessings: • Up to 20 custom voices can be added. • Up to 200 characters or 100 Chinese characters for each custom voice. Special characters are not supported. • If you wish to remove a custom voice, tap and hold to delete it.
Play music during task	Choose whether to enable Play music during delivery. If enabled, tap + to add music from the music library (up to 20 pieces of music). If you wish to remove a piece of music, tap and hold to delete it.If no music is available in the music library, you may scan the QR code in the Settings > Music interface to import music. If a piece of music is added and selected, it will be played during delivery. Only one piece of music can be selected at a time.
Show emoticons during task	Choose whether to enable Food delivery animation. If enabled, the robot will show emoticons rather than the table number during delivery.

Birthday Settings	Description
Auto-open of compartment door when waiting	Choose whether to enable Auto-open of compartment door when waiting. If enabled, the compartment door will be opened automatically after the robot completes its delivery task and returns to the pickup location. The user can determine whether to enable this function according to the speed of meal preparation and the actual scenario. This function is only available on SWFD11.
Smooth mode	Choose whether to enable the Smooth mode If enabled, the Smooth mode icon will be displayed on the Birthday mode interface. The Smooth mode can be set up on the Birthday mode interface.
Auto resume time	Set the pause time during delivery in Birthday mode. If the robot does not perform any operation during the pause time, it will automatically resume the current task. Value range: 5 to 600 seconds. Default: 20 seconds
Delivery speed	Set the moving speed of the robot during delivery. If the Smooth mode is enabled, the set speed will not take effect, and the robot will deliver at 0.4 m/s. Speed range: 0.5 m/s, 0.6 m/s, 0.7 m/s, 0.8 m/s, 0.9 m/s
Return speed	Set the speed of the robot during return. Speed range: 0.5 m/s, 0.6 m/s, 0.7 m/s, 0.8 m/s, 0.9 m/s
Pickup location selection	Select the pickup location. When creating a new map, the user can set different pickup locations according to the actual scenario, which can be manually selected on the Birthday Settings interface. This function is applicable to scenarios with multiple pickup locations.

Step 22 (Optional) Tap  to open the compartment door.

📖Note

This function is for SWFD11 only. You may skip this step if the compartment door is already opened.

Step 23 Place the gifts on the first tray and select the desired table number.

The desired table number will be displayed on the corresponding tray.

📖Note

Only a single table number can be selected in the Birthday mode.

Step 24 Tap **Start**.

The robot arrives at the desired table along the predetermined path and plays songs in the set playlist for Birthday mode.

Step 25 Tap **Done** after the task is completed.

The robot returns to the pickup location.

To make any modifications during the delivery of birthday gifts (e.g., modify task, pick up in advance, cancel all, or return), tap the screen to pause the robot before any operation. If no operation is performed within the pause time (Auto resume time of pause), the robot will proceed with its current task. Pause time (Auto resume time of pause) can be set on the Birthday Settings interface.

Buttons	Description
Modify task	Tap to modify the table number ofdelivery.
Pick up in advance	Tap to pick up the dishes in advance and return to the pickup location.
Cancel all	Tap to cancel the delivery task without returning to the pickup location.
Return	Tap to return to the pickup location.

3.2.7 Interactive mode

In the Interactive mode, customers can attend a lucky draw or other store activities upon delivery arrival of the robot.

Note

To use the Interactive mode, please set up interactive functions in **Advanced Settings** to set the winning rate of each prize in the lucky draw.

Step 26 Tap **Interaction** on the main interface.

The Interactive mode interface is shown below.

Shortcut buttons on the Interactive mode interface are explained below.

Buttons	Description
	View the previous task.
	Set the arrival voice, the music during food delivery, etc. See the table below for details.
	Smart search of table numbers. Tap the icon to quickly search for table numbers when there are too many tables.
	Open/close the compartment door. This function is only available on SWFD11. If the compartment door is open, the icon changes to 

	Set the Smooth mode. The icon will be displayed after the Smooth mode is enabled in the Interactive Settings interface. There are three states for the Smooth mode: •  : Disabled. Tap the icon to enable the Smooth mode once, and it will be disabled by default after the task is completed; tap and hold for 1 second to enable the Smooth mode permanently. •  : Enabled once. Tap the icon to disable the Smooth mode; tap and hold for 1 second to enable the Smooth mode permanently. •  : Enabled permanently.Tap the icon to disable the Smooth mode. When the Smooth mode is enabled, the robot will move at 0.4 m/s during delivery. After the task is completed, the robot will return at the currently set return speed.

The Interactive Settings interface and descriptions are shown below.

Interactive Settings	Description

Interactive Settings	Description
Show emoticons during task	Choose whether to enable Food delivery animation. If enabled, the robot will show emoticons rather than the table number during delivery.
Arrival voice	Choose whether to enable Arrival voice of delivery and set the custom voice and the playback interval. If enabled, tap + to add custom voices. If the customized voice is selected, it will be played upon deliver arrival but not the system default voice. A random voice will be played if more than one voice is selected. Requirements for custom voices: • Up to 20 custom voices can be added. • Up to 50 characters or 25 Chinese characters for each custom voice. Special characters are not supported. • If you wish to remove a custom voice, tap and hold to delete it.
Play music during task	Choose whether to enable Play music during food delivery. If enabled, tap + to add music from the music library (up to 20 pieces of music). If you wish to remove a piece of music, tap and hold to delete it.If no music is available in the music library, you may scan the QR code in the Settings > Music interface to import music. If a piece of music is added and selected, it will be played during delivery. Only one piece of music can be selected at a time.
Auto-open of compartment door when waiting	Choose whether to enable Auto-open of compartment door when waiting. If enabled, the compartment door will be opened automatically after the robot completes its delivery task and returns to the pickup location. The user can determine whether to enable this function according to the speed of meal preparation and the actual scenario. This function is only available on SWFD11.
Smooth mode	Choose whether to enable the Smooth mode If enabled, the Smooth mode icon will be displayed on the Interactive mode interface. The Smooth mode can be set up on the Interactive mode interface.
Single-layer multi-table delivery	Choose whether to enable Single-layer multi-table delivery. If enabled, multiple table numbers can be set for a single tray. Up to 10 table numbers can be set for a single tray. If you wish to delete a table number, tap the tray with the table number. A table number management interface will pop up where you can delete the table number.

Interactive Settings	Description
Delivery parameter settings	Set delivery parameters. • Auto complete time: If the button **Please click this button after taking a picture** is not tapped within the set time after the customer attends the lucky draw, the robot will automatically complete the current task and proceed with the next one. Value range: 1 to 600 seconds. Default: 120 seconds • Auto resume time of pause: The pause time during delivery, that is, if the robot does not perform any operation during the pause time, it will automatically resume the current task. Value range: 5 to 600 seconds. Default: 20 seconds
Delivery order	Select the delivery order for the robot. • Distance-priority delivery: The robot plans the optimal path and performs delivery tasks from near to far based on the distance on the map. • Sequential delivery: The robot performs delivery tasks from up to down in the order of tray number.
Delivery speed	Set the moving speed of the robot during delivery. If the Smooth mode is enabled, the set speed will not take effect, and the robot will deliver at 0.4 m/s. Speed range: 0.5 m/s, 0.6 m/s, 0.7 m/s, 0.8 m/s, 0.9 m/s
Return speed	Set the speed of the robot during return. Speed range: 0.5 m/s, 0.6 m/s, 0.7 m/s, 0.8 m/s, 0.9 m/s
Pickup location selection	Select the pickup location. When creating a new map, the user can set different pickup locations according to the actual scenario, which can be manually selected on the Interactive Settings interface. This function is applicable to scenarios with multiple pickup locations.

Step 27 (Optional) Tap  to open the compartment door.

Note

This function is for SWFD11 only. You may skip this step if the compartment door is already opened or internaltrays are not used.

Step 28 Put the dishes on the corresponding tray.

Step 29 Tap the tray on the screen and select the desired table number.

The desired table number will be displayed on the corresponding tray.

If **Single-layer multi-table** is enabled on the Interactive Settings interface, you can put multiple dishes for different tables on a single tray.

Step 30 After entering the table numbers, tap **Start**.

The robot arrives at the specified table along the predetermined path.

For an SWFD11 robot using trays inside the compartment, the compartment door will be closed automatically after tapping **Start**.

Step 31 After arriving at the desired table, the robot issues a voice prompt. The waiter then takes the dishes following the screen display and voice prompts.

For an SWFD11 robot using trays inside the compartment, the compartment door will be opened automatically.

Step 32 After taking the dishes, customers can tap **Attend lucky draw** to participate in the lucky draw.

If a customer wins a prize, he or she will be reminded to contact the waiter to redeem the prize after taking a picture. Tap **Please click this button after taking a picture** for the robot to perform the next task. If the customer doesn't win a prize, the robot will perform the next task after 5 seconds.

For an SWFD11 robot using trays inside the compartment, the compartment door will be closed automatically before the robot starts the next task.

- If **Auto complete time** is enabled on the Interactive Settings interface, the robot automatically completes the task and performs the next task if the button **Please click this button after taking a picture** is not tapped within the set time after the customer attends the lucky draw.
- To make any modifications during food delivery (e.g., modify task, pick up in advance, cancel all, or return), tap the screen to pause the robot before any operation. If no operation is performed within the pause time (Auto resume time of pause), the robot will proceed with its current task. Pause time (Auto resume time of pause) can be set on the Interactive Settings interface.

Buttons	Description
Modify task	Tap to modify the table number of food delivery.
Pick up in advance	Tap to pick up the dishes in advance and proceed with the next task.
Cancel all	Tap to cancel all food delivery tasks without returning to the pickup location.
Return	Tap to return to the pickup location.

3.2.8 Settings

The user can connect the robot to the Internet and Bluetooth devices, set the number of trays, turn on delivery lights, laser projector, etc.

3.2.8.1 General Settings

Settings	Description

Settings	Description
Basic settings	Set screen brightness, language, voice volume, music volume, key tone volume, etc.
Network settings	Set up the network connection. The robot cannot be upgraded or perform voice interaction without a network connection. Please install a SIM card first if you wish to use 4G networks. Make sure that the robot is powered off before installing or removing the SIM card.
Bluetooth	Choose whether to enable Bluetooth. If enabled, the devices that can be connected will be displayed on the interface.
Music library	Scan the QR code to import music for the robot to play during tasks. Only Android phones are supported.
Map settings	Create a new map or switch maps.
Charging settings	Choose whether to enable the Auto charging function and set the threshold and time slot for charging. If the auto charging function is enabled and a low battery threshold is set, when the battery level drops below the set threshold, the robot will automatically return to the charging pile for charging after it completes its current task or during a cruise. After the robot is fully charged, it automatically returns to a pickup location or departure location. The threshold ranges from 5% to 50%. You can also set the time slot for the robot to perform Auto charging. Up to three time slots for auto charging can be set. If it is disabled, Auto charging can be performed throughout the day by default. This function is only available if the user has purchased a charging pile and set up its location during mapping. Otherwise, the robot may work improperly. To use this function, please enable **Auto charging** in **Advanced Settings** first.
Projector settings	Choose whether to enable laser projector. If the laser projector is enabled, the user can set the projection brightness, color, and size and turn on the reference lines. If reference lines are enabled, they will be projected to navigate the robot during its movement.
Tray settings	Choose whether to enable the top tray and set the number of internaltrays. If the top tray is disabled, it cannot be used in Food Delivery mode, Delivery mode, and Interactive mode. The top internal tray is enabled by default. On the Tray Settings interface, tap **Delete** on the first and second layers to delete the corresponding tray. The deleted trays will not be displayed in any mode.

Settings	Description
Calling	Choose whether to enable Calling. If enabled, the robot can work with PuduBeeper and support third-party APIs. To use this function, please enable **Third-party APIs** in the Advanced Settings interface first.
Advanced settings	Enable Auto charging, third-party APIs and set up Interactive Functions, etc. The Advanced settings are used for advanced operations of the robot. Please contact technical engineers for details. Pudu shall not be held responsible for any accident caused by unauthorized operations.
Software update	Check if the current version of the software is the latest. If not, you can download the latest version and upgrade the software. Please keep the battery level above 30% to ensure a successful upgrade.
About	Check the robot of the MAC address, serial number, hardware version, etc.
Debug	Debug robot parameters (for technical engineers only). Pudu shall not be held responsible for any accident caused by unauthorized operations.

3.2.8.2 Advanced settings

The Advanced settings are used for advanced operations of the robot. Please contact technical engineers for details. Functions supported by Advanced settings are shown below.

Function	Description
Enable high-speed gear	Choose whether to enable high-speed gear. If enabled, the robot can move at higher speeds: 1.0 m/s, 1.1 m/s, 1.2 m/s. The user can set the speed in different modes.
Auto charging	Choose whether to enable Auto charging. If enabled, the Charging function will be displayed on the Settings interface. This function is only available if the user has purchased a charging pile.

Function	Description
Third-party APIs	Choose whether to enable third-party APIs. If enabled, the Calling function will be displayed on the Settings interface. It can be used with PuduBeeper and supports third-party APIs.
After-sales display in menu	Choose whether to enable after-sales information display in the menu. If enabled, after-sales-related information will be displayed on the About interface.
Interactive function	Set the winning rates for lucky draws of the Interactive mode.
Restore all settings	Choose whether to restore the robot to factory settings. Doing so will delete contents such as the downloaded music, custom voice packets, and maps. Please proceed with caution.

3.3 Docking Instructions

PuduSwiftBot supports three docking modes. In actual scenarios where multiple robots cooperate, users can select any docking mode during mapping. This section only covers the description of the three docking modes. For details about mapping, please contact our technical engineers.

Three docking modes:

- One-to-one Docking mode: Each robot has its fixed pickup location (docking location).
- Free Docking mode: Set multiple pickup locations (docking locations) for the robot to dock by priority, i.e., the robot chooses the nearest pickup location for docking.
- Waiting mode: Set temporary docking location. When the robot has no task and there's no vacancy at the pickup locations (docking locations), the robot docks at the temporary docking location. Once a vacancy appears at a pickup location (docking location), the robot automatically goes there for docking.

4. Troubleshooting

4.1 Troubles during Operation

Troubles

The following errors may be reported during the robot operation:

- Motor parameters error
- Sensor parameters error
- Sensor connection error
- Motor rotation anomaly

Solution

Step 1 Following the prompts on the screen, tap **OK** or **Continue operation** to see if the robot can continue operation.

Step 2 If not, reboot the robot and re-enter the task.

Step 3 If the problem persists after the reboot, please contact our technical engineers.

4.2 Positioning Failure

Troubles

The robot screen prompts **I'm lost. Please push me under the positioning mark** or **Location failed, please click retry button**.

Possible Causes

- The robot is not powered on at the startup location.
- The map selected on the robot does not match the actual site.

Solution

Step 1 Select the correct map in the Map settings interface if the current map of the robot does not match the actual site.

Step 2 Check if the robot is right below the marker. If the robot deviates too far from the marker, move the robot right below the marker. If the problem persists, please reboot the robot and try again.

Step 3 Check if the vision sensor or the front positioning camera is blocked by obstacles such as oil stains. If so, clean it with a lens cleaning kit.

Step 4 Check if the fill light of the vision sensor is red. If not, please contact technical engineers in time.

4.3 Charging Failure

Troubles

Charging failure

Solution

- Check if the key switch is turned to ON.
- Check if the charger indicator is on. If not, the charging failure may be caused by a

damaged charger. Please contact our technical engineers in time.

4.4 Power-on Failure

Troubles

Power-on failure

Solution

- If the battery is low, please charge the robot.
- If the battery level is normal, check if the key switch is turned to ON.
- If the problem persists, please contact our technical engineers.

4.5 Robot Does Not Move Smoothly

Troubles

The robot does not move smoothly or stops moving.

Solution

- Check if there are obstacles in front of the robot.
- Check if there are stains like oil or soup on the depth vision sensors.
- Check if the passageway is wider than the minimum travel width.
- Check if there are mirrored and reflective metal surfaces on either side of the passageway that may affect the robot's operation. If so, attach matte stickers 20 cm–25 cm above the ground.

5. Maintenance and Care

5.1 Component Maintenance

Components	Robot Status	Inspection Interval	Method
Trays, drive wheels, and auxiliary wheels	Powered off	Weekly	Wipe the surface with a clean cloth.
Vision sensor, depth vision sensor, front positioning camera, rear positioning camera, front Lidar, rear Lidar, Galvo laser projector	Powered off	Weekly	Use a clean cloth or lens cleanser for the cleaning.
Robot	Powered off	Monthly	Wipe the surface with a clean cloth.

5.2 Cleaning Method

⚠Warning

Do not use water or any other liquid to clean the robot. Always make sure that the robot is kept dry.

Step 1 Press and hold the power switch for 3 seconds to ensure that the robot is powered off.

Step 2 Turn the key switch to OFF, and make sure that the robot is powered off.

Step 3 Wipe the robot surface with a clean cloth.

Step 4 Wipe the trays, drive wheels, and auxiliary wheels with a clean cloth.

🕮Note

- If the drive wheels or auxiliary wheels are entangled or stuck with debris, please place the robot down on its side for cleaning. Keep the ground clean and tidy (a mat can be used) to avoid scratches on the robot surface when placing the robot down on its side.
- If there are oil stains on the tray pad, take it out and wash it separately. Put back the tray pad after it dries off completely.

Step 5 Clean the vision sensor, front positioning camera, depth vision sensors, and Lidar with a clean cloth or specialized lens cleanser.

🕮Note

In case of unexpected contamination, address it immediately to avoid blocking the sensor and preventing the robot from working improperly.

6. After-sales Service Policies

6.1 Free Warranty Service

Shenzhen Pudu Technology Co., Ltd. promises to meet the following conditions, within the effective warranty period of the product (the warranty period of different parts of the product may be different, See " Warranty Schedule for Major Components " for details.). We will provide the spares parts for free, Customers do not need to pay it again, Circumstances beyond the warranty period or not covered by the free product warranty service. We will charge a normal price.

- Free warranty service must meet the following conditions
  - Self-purchased products are used normally within the specified product warranty period, and non-artificial quality problems occur.
  - No unauthorized disassembly, no modification or installation under the guidance of non-official instructions, other non-man-made failures.
  - Product serial number, factory label and other signs have no signs of tearing or alteration.
  - The SIM card has not been removed or replaced without permission, and the SIM card stickers have no signs of tearing or alteration.
  - Provide valid proof of purchase, documents.
  - 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.
  - Collision, burnout caused by non-product quality problems, and quality problems caused by foreign body intrusion (water, oil, sand, etc.).
  - Damage caused by unauthorized modification, disassembly, opening of the shell, etc., as instructed by unofficial instructions.
  - Damage caused by improper installation, use and operation without following the instructions.
  - Damage caused by customer repairs without official instructions.
  - Damage caused by improper use of circuit modification, battery pack, and charger under the guidance of unofficial instructions.
  - Damage caused by use in excess of the safe load weight;
  - Damage caused by insufficient discharge when the battery is low or the use of a battery with quality problems.
  - Services such as secondary on-site deployment or installation and commissioning due to customer's own reasons.
  - Malfunction and damage caused by force majeure (such as earthquake, fire, etc.).
  - Other circumstances that do not meet the free warranty conditions.
- Warranty period: The warranty period starts from the date when the system records the

activation of the productor extend the delivery date by 60 days as the starting date of the warranty period, whichever comes first as the warranty starting date. The warranty period of different parts of the product is shown in the *Warranty Period Table of Main Parts.*

6.2 Out-of-warranty Service

6.2.1 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;

6.2.2 Standard of After-sales Service Fee out of the Warranty.

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 the product is paid for maintenance, Pudu technology provides a 90 days warranty for the replaced spare parts, and the other spare parts do not enjoy the warranty.

After-sale maintenance fees are charged as follows: 300USD / day / person and round trip travel expenses; The cost standard of spare parts is listed in "quotation of spare parts delivered by Pudu technology ".

6.3 After-sales Service Consultation

If you have any questions, please contact the customer service. Email: techservice@pudutech.com.

6.4 Warranty Schedule for Major Components

Main Part	Guarantee Time
KettyBot screen	12 months
Array microphone module	12 months
Integrated control-drive board	12 months
Master computer boards	12 months
Button board	12 months
Front positioning camera kit	12 months
Vision sensor kit	12 months
Trays	12 months
Battery	12 months

Main Part	Guarantee Time
Charger	12 months
Advertising screen motherboard	12 months
Lidar components	12 months
Hub motor	12 months
Speaker components	12 months
Omni-directional wheels	None
Advertising screen	12 months
Dish-return box	None
Self-charging components	12 months
Front shell of chassis	12 months
Rear shell of chassis	12 months

6.5 Disposal and Recycling Information

The Waste Electrical and Electronic Equipment (WEEE) Directive aims to minimize the impact of electrical and electronic goods on the environment, by increasing re-use and recycling and by reducing the amount of WEEE going to landfill. The symbol on this product or its packaging signifies that this product must be disposed separately from ordinary household wastes at its end of life. Be aware that this is your responsibility to dispose of electronic equipment at recycling centers in order to conserve natural resources. Each country should have its collection centers for electrical and electronic equipment recycling. For information about your recycling drop off area, please contact your related electrical and electronic equipment waste management authority, your local city office, or your house hold waste disposal service.

Before placing electrical and electronic equipment (EEE) in the waste collection stream or in waste collection facilities, the end user of equipment containing batteries and/or accumulators must remove those batteries and accumulators for separate collection.

FCC Compliance Statement

1. This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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

FCC information

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.

Industry Canada compliance statement

CAN ICES-3(B)/NMB-3(B)

English:
This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:
1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

French:
L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :
1. L'appareil ne doit pas produire de brouillage;
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

EU:

Manufacturer's Name: SHENZHEN PUDU TECHNOLOGY CO., LTD.
Address: Room 501, Building A, Block 1, Phase 1, Shenzhen International Inno Valley, Dashi 1st Road, Nanshan District, Shenzhen, China 518057
Product name : Pudu SwiftBot
Model number: SWFD11, SWFD01
Operating Temperature: 0° C to 40° C
This device in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU. All essential radio test suites have been carried out.

1. The product shall only be connected to a USB interface of version USB 2.0
2. Adapter shall be installed near the equipment and shall be easily accessible.
3. The plug considered as disconnect device of adapter
4. The device complies with RF specifications when the device used at 20cm form your body
5. Operations in the 5.15-5.35GHz band are restricted to indoor usage only.

CE

Restrictions in the 5 GHz band:

According to Article 10 (10) of Directive 2014/53/EU, the packaging shows that this radio equipment will be subject to some restrictions when placed on the market in Belgium (BE), Bulgaria (BG), the Czech Republic (CZ),Denmark (DK), Germany (DE), Estonia (EE), Ireland (IE), Greece (EL), Spain(ES), France (FR), Croatia (HR), Italy (IT), Cyprus (CY), Latvia (LV), Lithuania(LT), Luxembourg (LU), Hungary (HU), Malta (MT), Netherlands (NL), Austria(AT), Poland (PL), Portugal (PT), Romania (RO), Slovenia (SI), Slovakia (SK),Finland (FI), Sweden (SE), Turkey (TR), Norway(NO), Switzerland (CH), Iceland (IS), and Liechtenstein (LI).

According to Radio Equipment Regulations (SI 2017/1206), the packaging shows that this radio equipment will be subject to some restrictions when placed on the market in the United Kingdom (UK)

BG	DE	EE	IE	EL
IT	CY	LV	LT	SK
MT	NL	AT	PL	PT

RF POWER

Function	Operation Frequency	Max RF outputpower:	Limit
BLE	2402MHz–2480MHz	4.39dBm	20 dBm.
BT(BR+EDR)	2402MHz–2480MHz	7.97 dBm	20 dBm.
2.4G	2402.4MHz-2482MHz	7.78 dBm	20 dBm.
WIFI 802.11b/g/n(HT20,HT40) 2.4G	802.11b/g/n(20MHz): 2412~2472MHz; 802.11n(40MHz):2422~2462MHz	16.84 dBm	20 dBm.
5.2G WIFI 802.11a/n(HT20,HT40)	802.11a/ac/n20:5180~5240MHz; 802.11ac40/n40:5190~5230MHz; 802.11ac80：5210~5210MHz	12.85dBm	23 dBm.
5.3G WIFI 802.11a /n(HT20,HT40)	802.11a/ac/n20: 5260~5320MHz; 802.11ac40/n40: 5270~5310MHz; 802.11ac80:5290~5290MHz	13.16 dBm	23 dBm.
5.6G WIFI 802.11a/n(HT20,HT40)	802.11a/ac/n20: 5500~5700MHz; 802.11ac40/n40: 5510~5670MHz; 802.11ac80:5530~5610MHz	12.76 dBm	23 dBm.
5.8G WIFI 802.11a/n(HT20,HT40)	802.11a/ac/n20: 5745-5825 MHz 802.11ac40/n40: 5755-5795 MHz 802.11ac80:5775~5775MHz	12.90 dBm	13.98dBm
WCDMA Band 1	Tx(Uplink): 1920MHz~1980MHz; Rx(Downlink): 2110MHz~2170MHz	23.2dBm	Class3 24 (dBm) +1,7/-3,7 (dB)
WCDMA Band 8	Tx(Uplink): 880MHz~915MHz; Rx(Downlink): 925MHz~960MHz	23.3dBm	Class3 24 (dBm) +1,7/-3,7 (dB)
FDD-LTE Band 1	Tx(Uplink): 1920MHz~1980MHz; Rx(Downlink): 2110MHz~2170MHz	23.07dBm	Class3 23 (dBm)+2.7/-2.7(dB)
FDD-LTE Band 3	Tx(Uplink): 1710MHz~1785MHz; Rx(Downlink): 1805MHz~1880MHz	23.83dBm	Class3 23 (dBm)+2.7/-2.7(dB)
FDD-LTE Band 7	Tx(Uplink): 2500MHz~2570MHz; Rx(Downlink): 2620MHz~2690MHz	23.33dBm	Class3 23 (dBm)+2.7/-2.7(dB)
FDD-LTE Band 8	Tx(Uplink): 880MHz~915MHz; Rx(Downlink): 925MHz~960MHz	23.42 dBm	Class3 23 (dBm)+2.7/-2.7(dB)
FDD-LTE Band 20	Tx(Uplink): 832MHz~862MHz; Rx(Downlink): 791MHz~821MHz	22.95dBm	Class3 23 (dBm)+2.7/-2.7(dB)
FDD-LTE Band 28	Tx(Uplink): 703MHz~748MHz; Rx(Downlink): 758MHz~803MHz	23.65 dBm	Class3 23 (dBm)+2.7/-3.2(dB)
TDD-LTE Band 34	Uplink & Downlink: 2010 MHz to 2025 MHz	22.44 dBm	Class3 23 (dBm)+2.7/-3.2(dB)
TDD-LTE Band 38	Tx(Uplink): 2570MHz~2620MHz; Rx(Downlink): 2570MHz~2620MHz	24.03 dBm	Class3 23 (dBm)+2.7/-2.7(dB)
TDD-LTE Band 40	Tx(Uplink): 2300MHz~2400MHz; Rx(Downlink):	23.51dBm	Class3 23 (dBm)+2.7/-2.7(dB)

	2300MHz~2400MHz		

DECLARATION OF CONFORMITY

I hereby declare that the product

Pudu SwiftBot
Model: SWFD11, SWFD01
Brand name: PUDU

(Name of product, type or model, batch or serial number)

Adapter 1# :
Model: HK240A-CF
Input: 100-240V~50/60Hz 3.0A Max
Output: 29.4V⎓8.0A
Adapter 2# :
Model: AP-PN360CH02940080
Input: 100-240V~50-60Hz 3.5A Max
Output: 29.4V⎓8.0A

Battery 1#:
Model: 7S8P SDI 18650 32E
DC 25.55V,25.6Ah, 654.08Wh
Battery 2#:
Model: S2420
DC 25.6V,20000mAh

Module1:BT/WIFI AntennaType: FPCB Antenna ; Antenna Gain: 5dBi
Module2:BT/WIFI AUX Antenna Type: FPCB Antenna ; WIFI2.4G/BT Antenna Gain: 5.4dBi;WIFI5G Antenna Gain: 5.2dBi;
Module2:WIFI Main Antenna Type: FPCB Antenna ; Antenna Gain: 5.9dBi; WIFI5G Antenna Gain: 6.1dBi;

WCDMA/LTE Antenna Type: FPCB Antenna; Antenna Gain:WCDMA 5.5dBi, LTE: 5.5 dBi;

2.4G Antenna Type: FPCB Antenna; Antenna Gain:5.4dBi

Hard Ware Version: 42.0.1
Soft Ware Version: V10.0.4.23

Satisfies all the technical regulations applicable to the product within the scope of Council Directives 2014/53/EU: and declare that the same application has not been lodged with any other notified body.

HEALTH & SAFETY (Art. 3(1)(a)):	EN 62311:2008
	EN 62368-1:2014+A11:2017
EMC (Art. 3(1)(b)):	ETSI EN 301 489-1 V2.2.3 (2019-11)
	ETSI EN 301 489-3 V2.1.1 (2019-03)
	ETSI EN 301 489-17 V3.2.4 (2020-09)
	ETSI EN 301 489-52 V1.2.1 (2021-11)
	EN 55032:2015+A11:2020
	EN 55035:2017+A11:2020
	EN IEC 61000-3-2:2019
	EN61000-3-3:2013+A1:2019
Radio Spectrum (Article 3.2)	ETSI EN 300 328 V2.2.2 (2019-07)
	ETSI EN 301 893 V2.1.1 (2017-05)
	ETSI EN 300 440 V2.2.1 (2018-07)
	ETSI EN 301 908-1 V13.1.1 (2019-11)
	ETSI EN 301 908-2 V13.1.1 (2020-06)
	ETSI EN 301 908-1 V13.1.1 (2019-11)
	ETSI EN 301 908-13 V13.1.1 (2019-11)

(Title(s) of regulations, standards, etc.)

All essential radio test suites have been carried out.

NOTIFIED BODY: MiCOM Labs Inc

- **Address**:

575 Boulder Court
Pleasanton
CA 94566, USA
Identification Number: 2280

MANUFACTURER or **AUTHORISED REPRESENTATIVE**:

- **Address**:

SHENZHEN PUDU TECHNOLOGY CO., LTD.
Room 501, Building A, Block 1, Phase 1, Shenzhen International
Inno Valley, Dashi 1st Road, Nanshan District, Shenzhen, China 518057

This declaration is issued under the sole responsibility of the manufacturer and, if applicable, his authorised representative.

Point of contact:

2022-04-21
Le Cai /Manager

Name (in block letter)	Le Cai
Title (in block letter)	manager
Company Name	SHENZHEN PUDU TECHNOLOGY CO., LTD.
Address	Room 501, Building A, Block 1, Phase 1, Shenzhen International Inno Valley, Dashi 1st Road, Nanshan District, Shenzhen, China 518057
Email	caile@pudutech.com
Tel	0755-26909874