

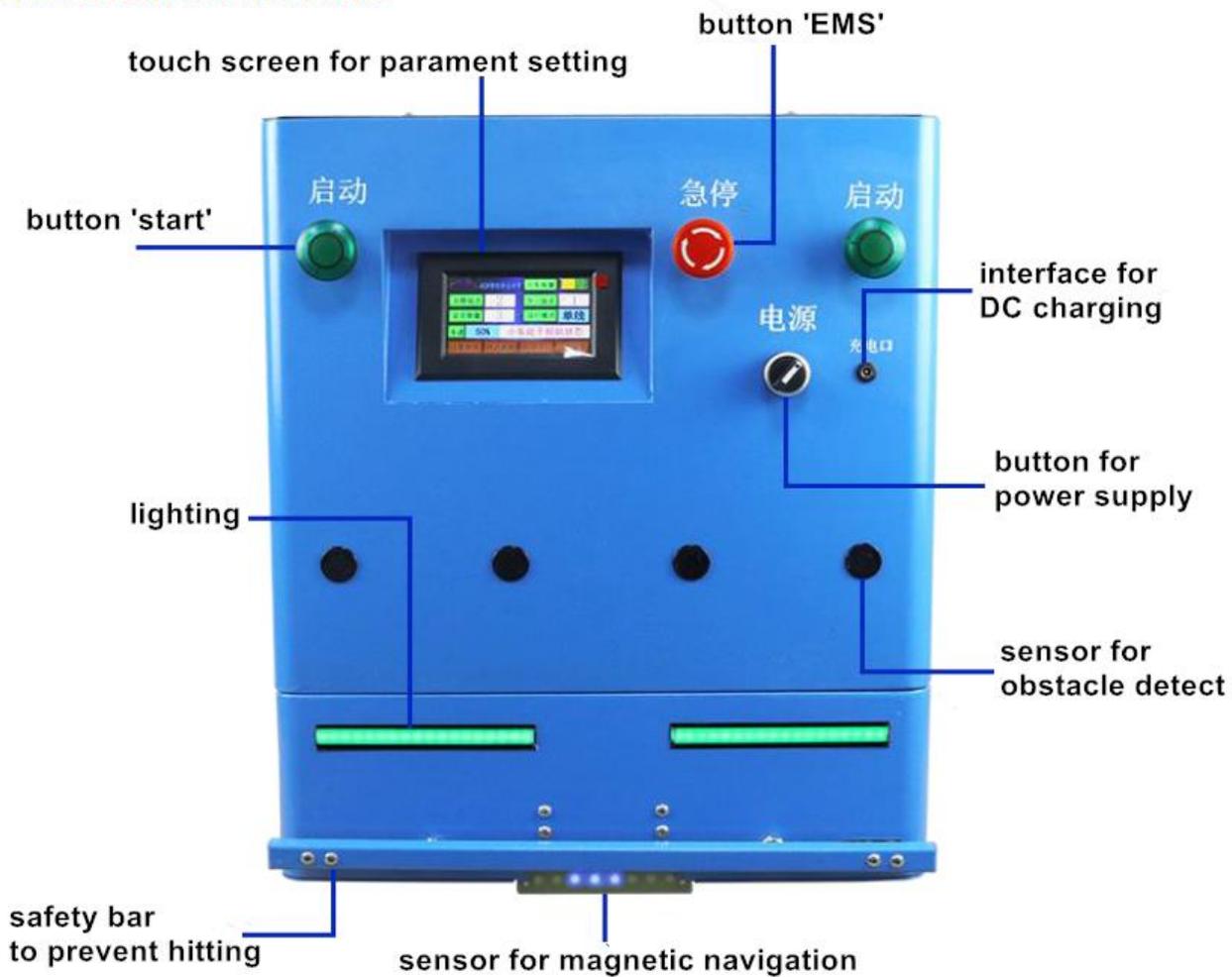
Operational manual about AGV Robot S-AGV60C



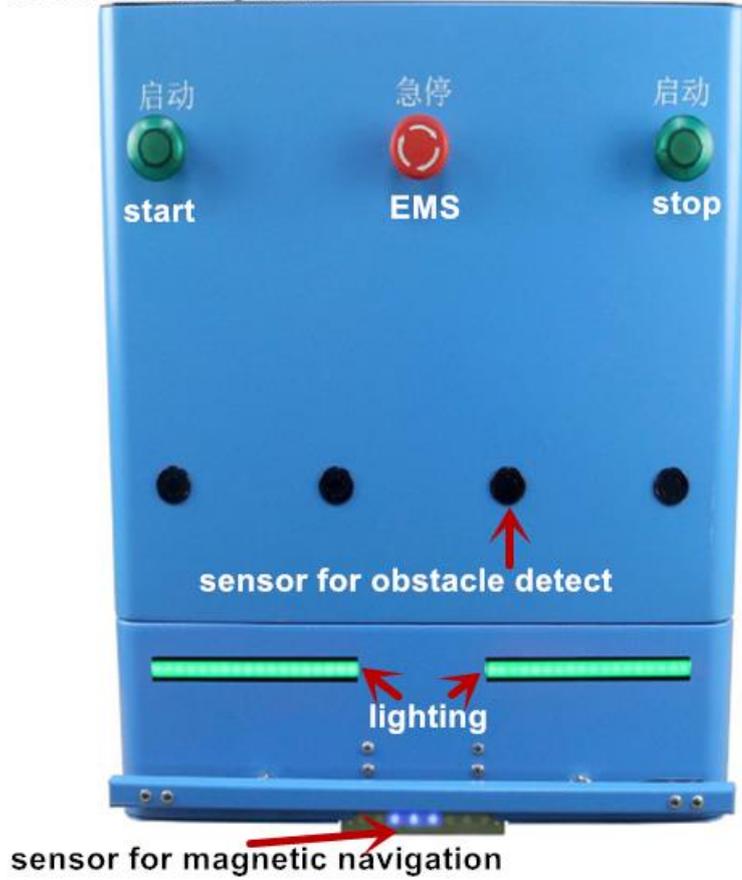
1. Product Presentation

Comments: All button and screen display will be in English when it is sent to customers from abroad.

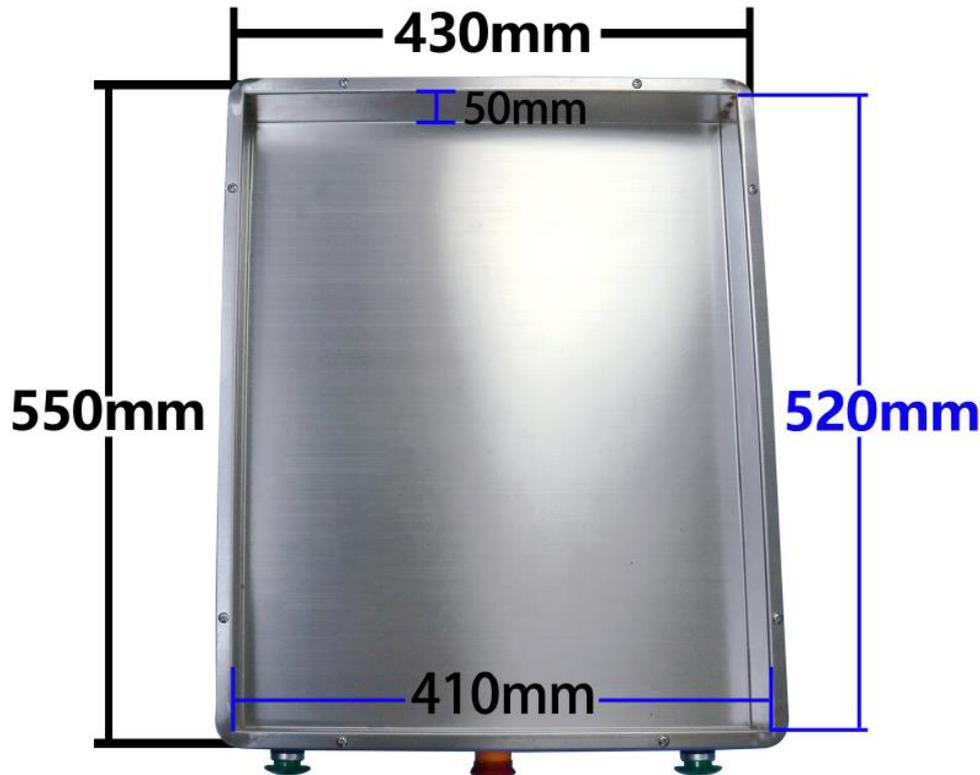
structure of the front side



structure at the back







2. Specification

| | |
|---|--|
| Brand/model | Southern Machinery: S-AGV60C |
| Navigation method | Magnetic strips; forward and backward |
| 2 driving modes of standard configuration | Straight-line driving + Turn circle driving |
| 1 driving mode of optional configuration | Branch route driving |
| Max. loading capacity | 60KG |
| Max. speed rate | 20-45m/minute, adjustable (about 0.4 minutes to drive 17m for SANMINA) |
| Min. RADIUS OF TURNING CIRCLE | 0.8m or 90-degree turning |
| Accuracy for stopping | 2cm |
| Power supply in 2 ways available | Lithium Battery 24V20AH replacement and DC charging |

| | |
|--|--|
| Power life | Can drive more than 15 hours if fully charged |
| Standby time without any loading and driving | 200 hours |
| Charging time | 5 hours |
| AGV outer dimension | LxWxH=550x450x550mm |
| Plate dimension | LxWxH=520x430x50mm(where soldering pallet is placed) |
| AGV net weight | about 35KG |
| Parament setting | touch screen LCD or remote control |
| Drive | Brushless Motor Differential ratio |
| Sensors for obstacles detect | ultrasound 8 sensors in total |
| Remote control | with 2 controls in the package |
| Station choice | AGV can stop at Max.20 target stations; RFID |
| Remaining power display | it is shown at the touch screen; alarm when lack of electricity |
| Spare parts included in the package | navigation strips 20m + 1x charger + 20 RFID cards+ 10 decelerating cards when turning |
| Warranty | AGV-1 year; Battery and charger-1 year |

3. How to do target route parament setting

Screen interface: high-definition touch 4.3-inch display.

3.1 Presentation about main display



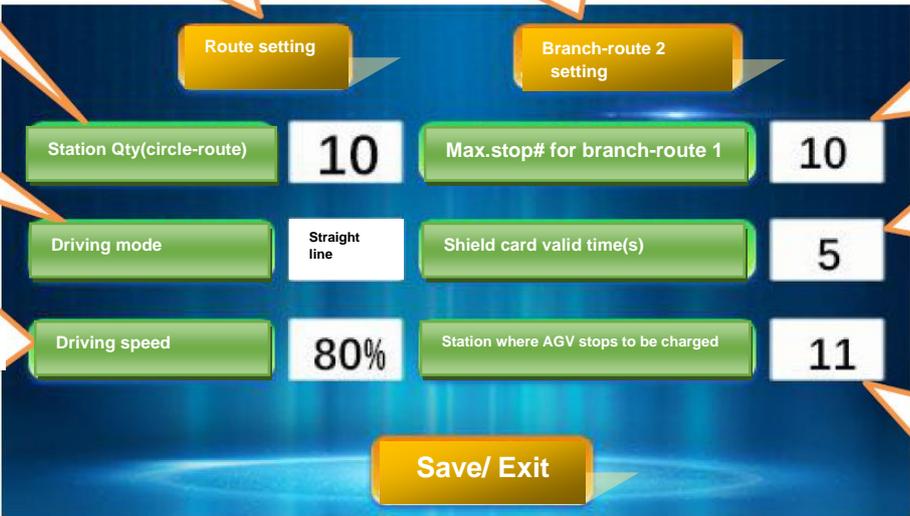
The main display interface includes the following elements:

- Current station:** 1
- Target Station:** 3
- Power Display:** 80%
- Station Selection:** A grid of 18 buttons labeled Stop 1# through Stop 18#.
- Status:** A green button labeled 'Status'.
- System Message:** A white banner displaying 'System is successfully initialized!'.
- Control Buttons:** Four yellow buttons at the bottom: 'Setting', 'Auto-driving mode', 'Start', and 'Go to be charged'.

Callout boxes provide the following information:

- Currently AGV stops at station 1#** (points to Current station)
- Next stop** (points to Target Station)
- Remaining power** (points to Power Display)
- Station numbers. You can choose one of them at random.** (points to the Stop 1#-18# grid)
- It shows the driving status of AGV.** (points to the Status button)
- Click this menu to do AGV parament setting,speed setting,driving mode & route** (points to Setting)
- Enter into 'auto-route' driving** (points to Auto-driving mode)
- Make the AGV start driving** (points to Start)
- Click it to make AGV charged** (points to Go to be charged)

3.2 Interface of parament setting



Route setting **Branch-route 2 setting**

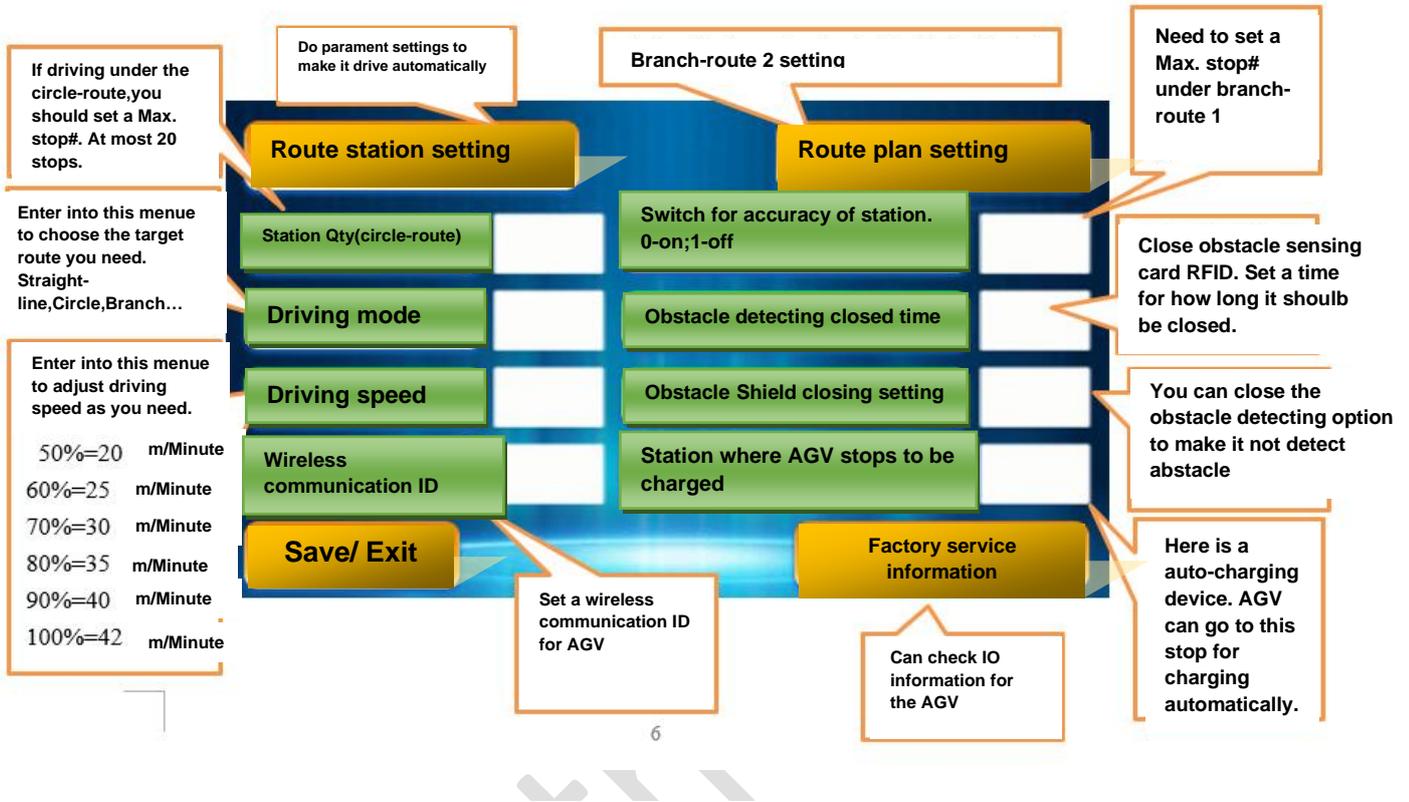
| | | | |
|---------------------------|---------------|---------------------------------------|----|
| Station Qty(circle-route) | 10 | Max.stop# for branch-route 1 | 10 |
| Driving mode | Straight line | Shield card valid time(s) | 5 |
| Driving speed | 80% | Station where AGV stops to be charged | 11 |

Save/ Exit

Callouts:

- If driving under the circle-route, you should set a Max. stop#. At most 20 stops.
- Do parament settings to make it drive automatically
- It means that you have set it as branch-route
- Need to set a Max. stop# under branch-route 1
- Close obstacle sensing card RFID. Set a time for closing
- Here is a auto-charging device. AGV can go to this stop for charging automatically.
- Enter into this menu to choose the target route you need. Straight-line, Circle, Branch...
- Enter into this menu to adjust driving speed as you need.
 - 50%=20 m/Minute
 - 60%=25 m/Minute
 - 70%=30 m/Minute
 - 80%=35 m/Minute
 - 90%=40 m/Minute
 - 100%=42 m/Minute

3.2、设置界面介绍:



Route station setting

Do parament settings to make it drive automatically

Branch-route 2 setting

Need to set a Max. stop# under branch-route 1

If driving under the circle-route, you should set a Max. stop#. At most 20 stops.

Enter into this menu to choose the target route you need. Straight-line, Circle, Branch...

Enter into this menu to adjust driving speed as you need.

| | |
|---------|----------|
| 50%=20 | m/Minute |
| 60%=25 | m/Minute |
| 70%=30 | m/Minute |
| 80%=35 | m/Minute |
| 90%=40 | m/Minute |
| 100%=42 | m/Minute |

Station Qty(circle-route)

Switch for accuracy of station. 0-on;1-off

Driving mode

Obstacle detecting closed time

Driving speed

Obstacle Shield closing setting

Wireless communication ID

Station where AGV stops to be charged

Save/ Exit

Factory service information

Set a wireless communication ID for AGV

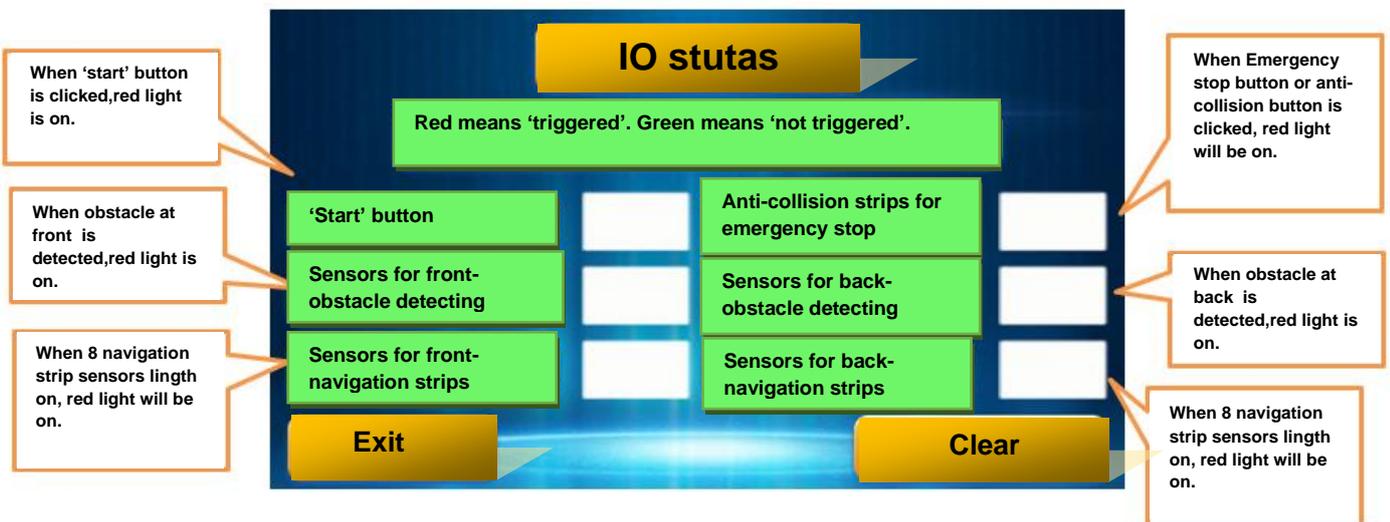
Can check IO information for the AGV

Close obstacle sensing card RFID. Set a time for how long it should be closed.

You can close the obstacle detecting option to make it not detect abstacle

Here is a auto-charging device. AGV can go to this stop for charging automatically.

6



IO stutas

Red means 'triggered'. Green means 'not triggered'.

When 'start' button is clicked, red light is on.

When obstacle at front is detected, red light is on.

When 8 navigation strip sensors lighth on, red light will be on.

When Emergency stop button or anti-collision button is clicked, red light will be on.

When obstacle at back is detected, red light is on.

When 8 navigation strip sensors lighth on, red light will be on.

'Start' button

Anti-collision strips for emergency stop

Sensors for front-obstacle detecting

Sensors for back-obstacle detecting

Sensors for front-navigation strips

Sensors for back-navigation strips

Exit

Clear

3.3 Automatically driving route setting interface.

It drives in sequence if you set it as "auto-driving"

How long should AGV stay in this stop? If the value=0, it means that you need AGV to start driving

| Stops available in | Target station where you need AGV stop | Time for staying(S) | Material loading/unloading | Output option when arriving at the station |
|--------------------|--|---------------------|----------------------------|--|
| 1 | 1 | 5 | | |
| 2 | 3 | 5 | | |
| 3 | 5 | 0 | | |
| 4 | | | | |
| 5 | | | | |

When setting finished,click this button to 'confirm' and 'exit'.

5 stops can be set at each page. 20 stops will occupy 4 pages in taotal.

You can click this button to remove history paramant settings.

It needs to have an output signal for the arrival station, which can be a relay pull-in.

Used to realize automatic loading and unloading at the station, control the forward and reverse

Branch route setting

Input the Max. Station Number of branch route. Eg: If there are station 1#, 2#,3#,4#, please input '4' in this cocolumn.

Station 1#=The original station

The original station

Branch 1

Branch 2

Branch 3

Branch 4

Branch 5

Branch 6

Branch 7

Branch 8

Branch 9

Branch 10

The terminal station

OK/ Return

Clear All

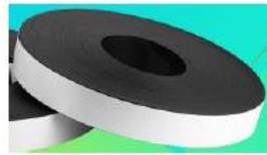
What will be included in the package?



AGV Robot x1



Remote control x2



**Meganetic Navigation
stripsx20m**



RFID station card x20pcs

4. How to install and use the Meganetic Navigation Strips?

4.1 Introduction about Meganetic Navigation Strip

The AGV can automatically run back and forth on the ground because magnetic strips are attached on the floor to guide the vehicle. The AGV automatically calibrates the running direction of the vehicle by reading the signal of the magnetic stripe, and the algorithm of the software. Finally, the AGV trolley runs stably on the magnetic strip.

**S pole with adhesive tape, it should
attached to the ground.**



Glue tape

N pole without adhesive, it should be upward.

Width=30mm

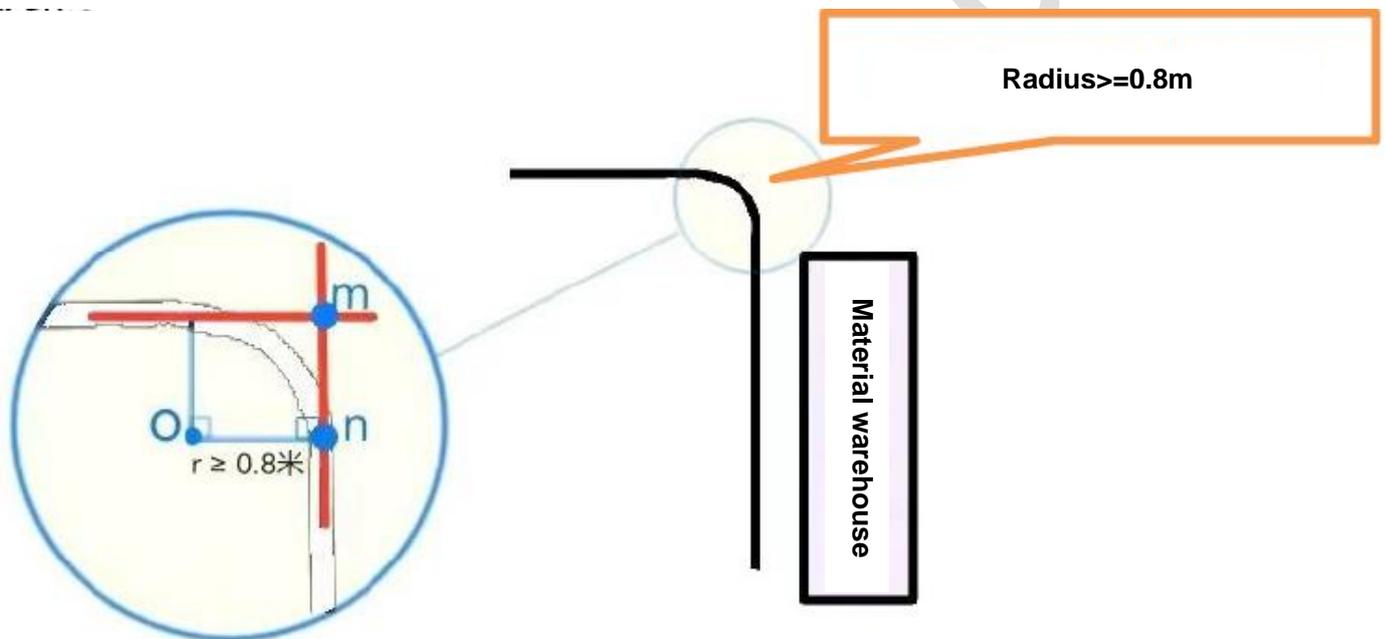
4.2. How to install the magnetic navigation strip?

4.2.1 Firstly please confirm which route the AGV should drive? And then clean the position (with a dry rag) where will be attached with strips. Please make sure there is no oil/grease in the ground.

4.2.2 Tear off the backing paper of the magnetic strip. The back side of the S pole is on the ground, and the smooth side of the N pole is upward.

4.2.3 How to attach strips into a straight-line: Two people. Stick it at one end first. One person is straightening the magnetic strip vigorously, while the other is tearing the back paper off. Please make it as straight as possible.

4.2.4 How to make Circular navigation line: Firstly you can use a pen to draw a circular arc on the ground (the radius cannot be less than 0.8 meters, the larger the space, the larger the arc), and then tear off the back glue of the magnetic strip, follow the drawing. A good arc is attached and the adhesive paper is torn off at the same time.



5. How to install and use the AGV?

5.1 Firstly let us know the AGV direction.



The rear of AGV

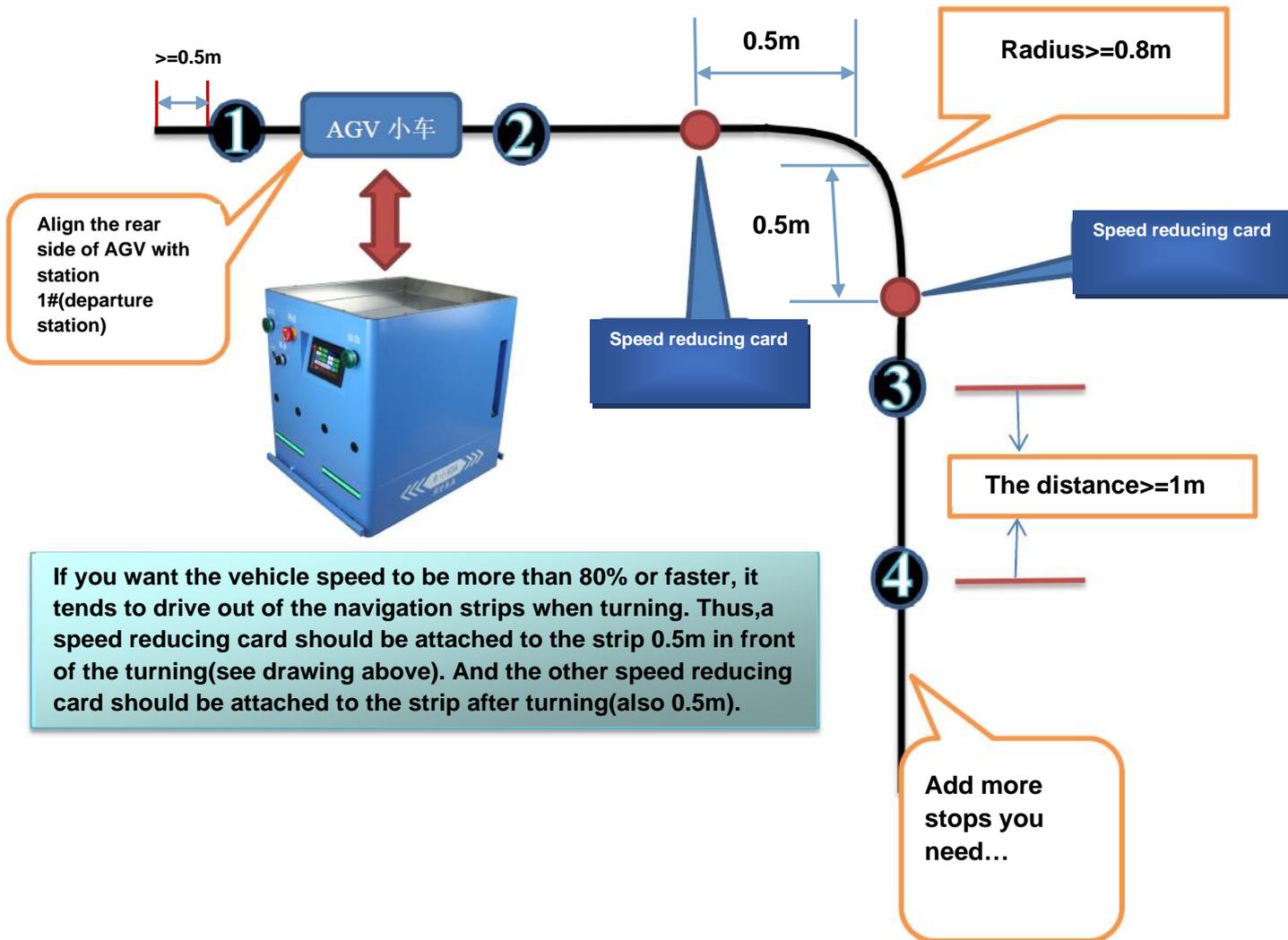


The front of AGV

5.2 How to make AGV drive in a signal line?

Put the RFID site card on the installation navigation magnetic strip, and place the site card in sequence.

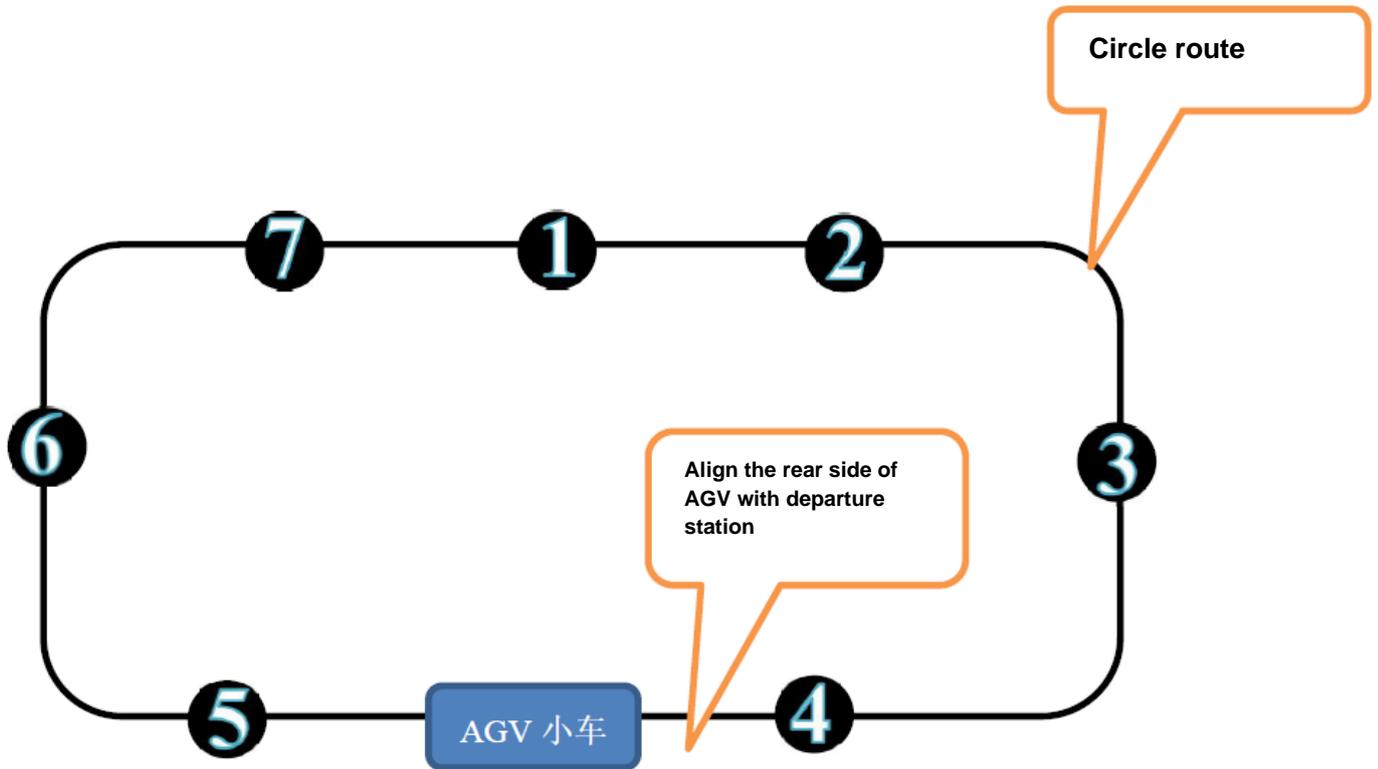
The distance between the site and the previous site is not less than 1 meter.



If you want the vehicle speed to be more than 80% or faster, it tends to drive out of the navigation strips when turning. Thus, a speed reducing card should be attached to the strip 0.5m in front of the turning (see drawing above). And the other speed reducing card should be attached to the strip after turning (also 0.5m).

5.3 How to make AGV drive in a circle loop?

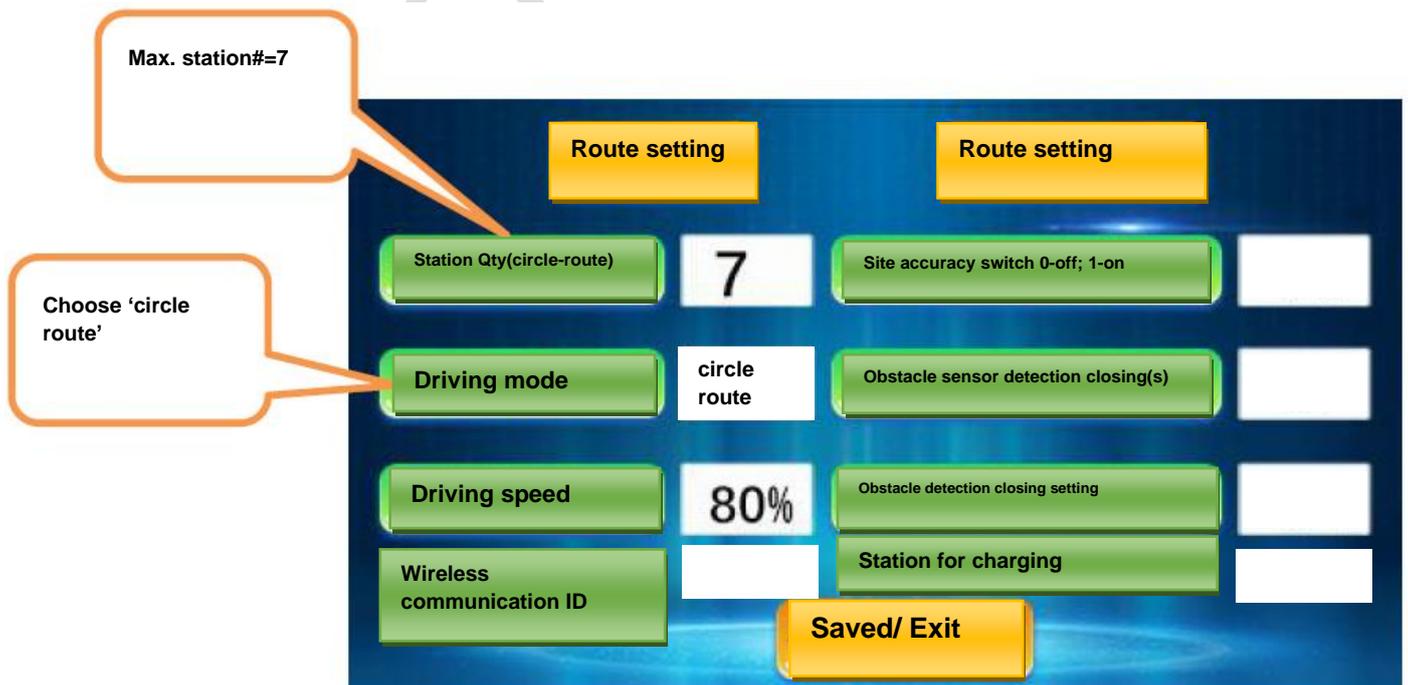
Paste the magnetic strip into a closed-loop circuit, the AGV runs in the closed circuit. Put the RFID station card on the installation navigation magnetic strip. The site cards need to be placed in order from low value to high value. The distance between the neighboring stations is not less than 1 meter.



In the circle route, the AGV automatically calculates about what is the nearest station, and automatically judges that it is going forward go or go back.

eg: The current station of the AGV is at station 4#, and if your target station is at station 2#, it will go backwards.

The current station of the AGV is at station 6#, and if your target station is 1#, it will move forward.



The screenshot shows the AGV control interface with the following settings:

| Route setting | | Route setting | |
|---------------------------|----------------------|--------------------------------------|--------------------------|
| Station Qty(circle-route) | 7 | Site accuracy switch 0-off; 1-on | <input type="checkbox"/> |
| Driving mode | circle route | Obstacle sensor detection closing(s) | <input type="checkbox"/> |
| Driving speed | 80% | Obstacle detection closing setting | <input type="checkbox"/> |
| Wireless communication ID | <input type="text"/> | Station for charging | <input type="text"/> |

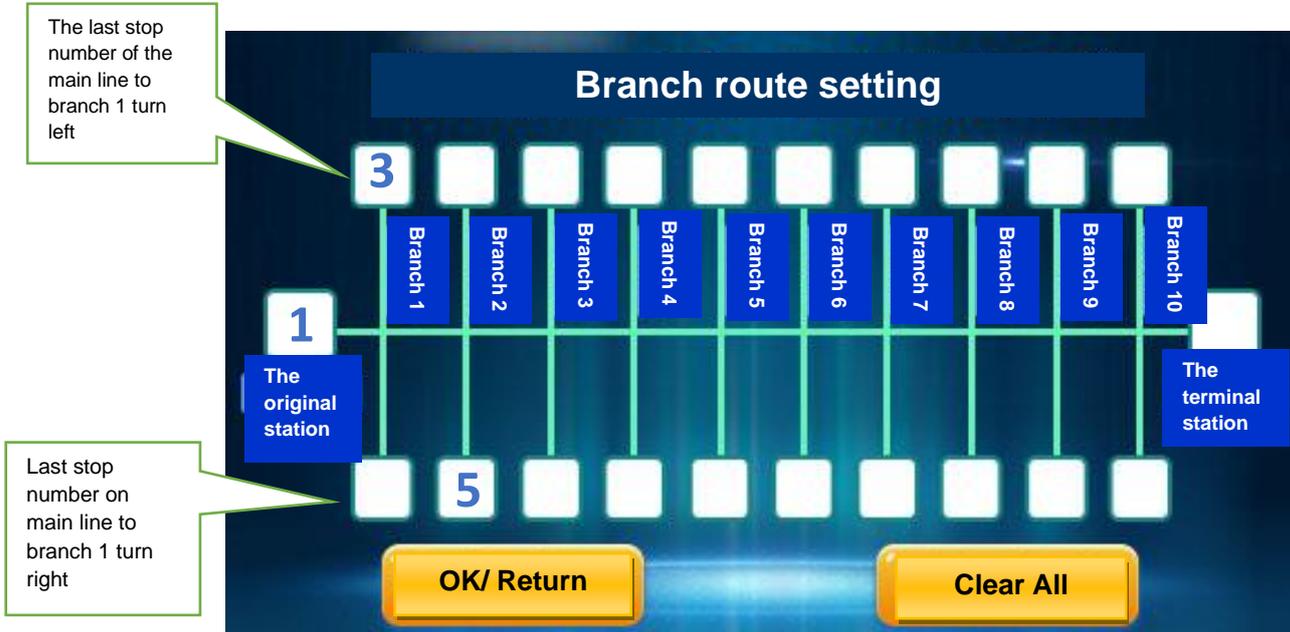
Buttons: Saved/ Exit

Callouts:

- Max. station#=7
- Choose 'circle route'

5.4 How to make AGV drive in a branch-route type 1?

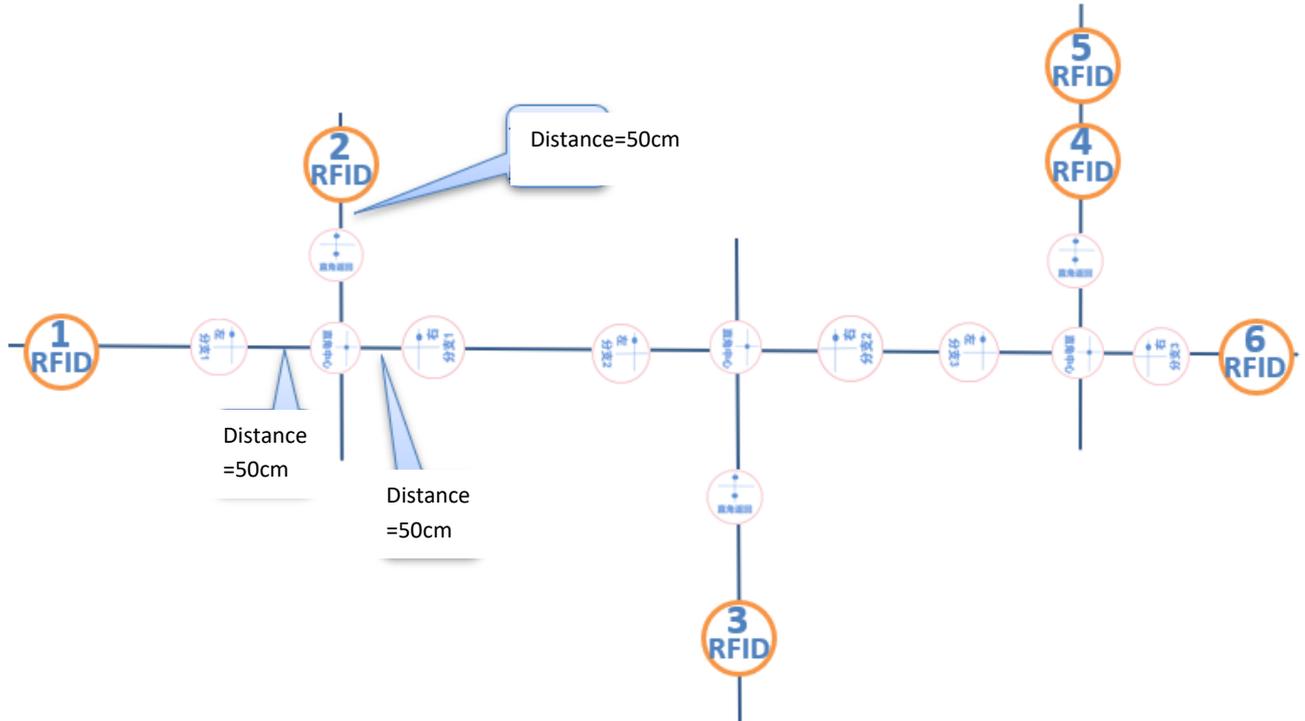
Interface Introduction:



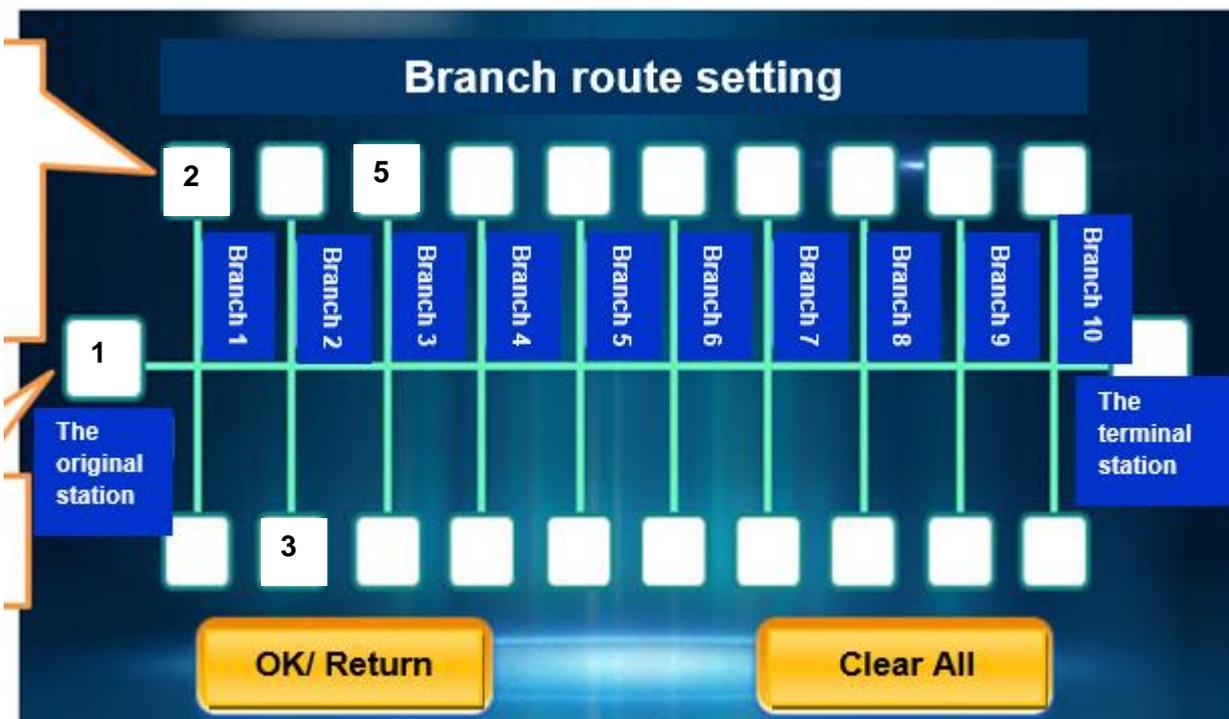
The functions shown in the parameters set in the above figure are:

The starting point of the main line is station No. 1, and the maximum number of stations for the first branch line of the main line turning left is 3, indicating that the stations turning left are station numbers 2-3. Every two branches of the main line turn right and the maximum number of stations is 5, indicating that the stations that turn right are stations No. 4-5, and so on. The setting method of other station numbers is the same. run.

5.5 How to make AGV drive in a branch-route type? How to install RFID tags?



Set the AGV trolley branch line according to the above operation line



Set the car to run automatically according to the above bifurcation line diagram

Click it to set the stations

Click it to choose the driving mode

| Auto-driving route setting | | Path Planning Settings | |
|----------------------------|----------------------|--------------------------------------|----------------------|
| Station Qty(circle-route) | <input type="text"/> | Site accuracy switch 0-off; 1-on | <input type="text"/> |
| Driving mode | single route | Obstacle sensor detection closing(s) | <input type="text"/> |
| Driving speed | 70% | Obstacle detection closing setting | <input type="text"/> |
| Wireless communication ID | <input type="text"/> | Station for charging | <input type="text"/> |
| Saved/ Exit | | Manufacturer service information | |



Click 'route setting' to enter into 'setting' interface.

| Stops available in this page | Target station where you need AGV stop | Time for staying(S) | Material loading/unloading | Output option when arriving at the station |
|------------------------------|--|---------------------|----------------------------|--|
| 1 | 1 | 0 | <input type="text"/> | <input type="text"/> |
| 2 | 2 | 5 | <input type="text"/> | <input type="text"/> |
| 3 | 3 | 5 | <input type="text"/> | <input type="text"/> |
| 4 | 5 | 8 | <input type="text"/> | <input type="text"/> |
| 5 | 6 | 3 | <input type="text"/> | <input type="text"/> |
| OK/ Return | | Next Page | | Clear All |

After the line specifications and settings are completed, the AGV trolley operates as follows:

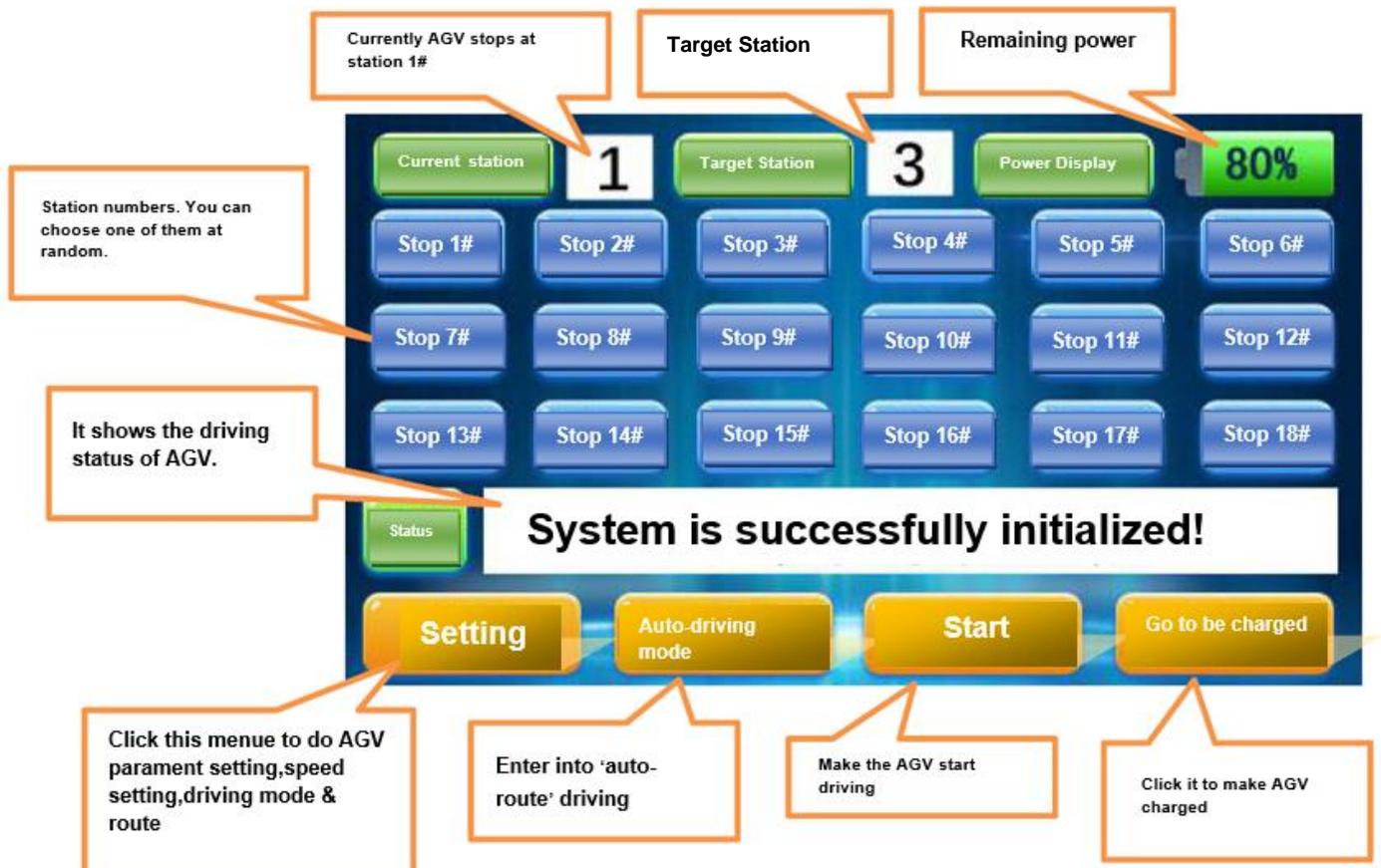
The trolley waits at station No. 1 to manually start the trolley (when the dwell time is set to 0, the start switch needs to be manually pressed for permanent stop).

Depart from station 1 --- turn left 90 degrees --- arrive at station 2 (stay for 5 seconds) --- come out and turn left 90 degrees --- go forward --- turn right 90 degrees --- arrive at No. 3 Station (stay for 5 seconds) --- come out and turn right 90 degrees --- forward and run --- turn left 90 degrees to reach station No. 5 (stay for 8 seconds) --- come out and turn left 90 degrees --- go forward and arrive Station No. 6 (stay for 3 seconds) --- Return directly to Station No. 1 (waiting for the car to be started manually)

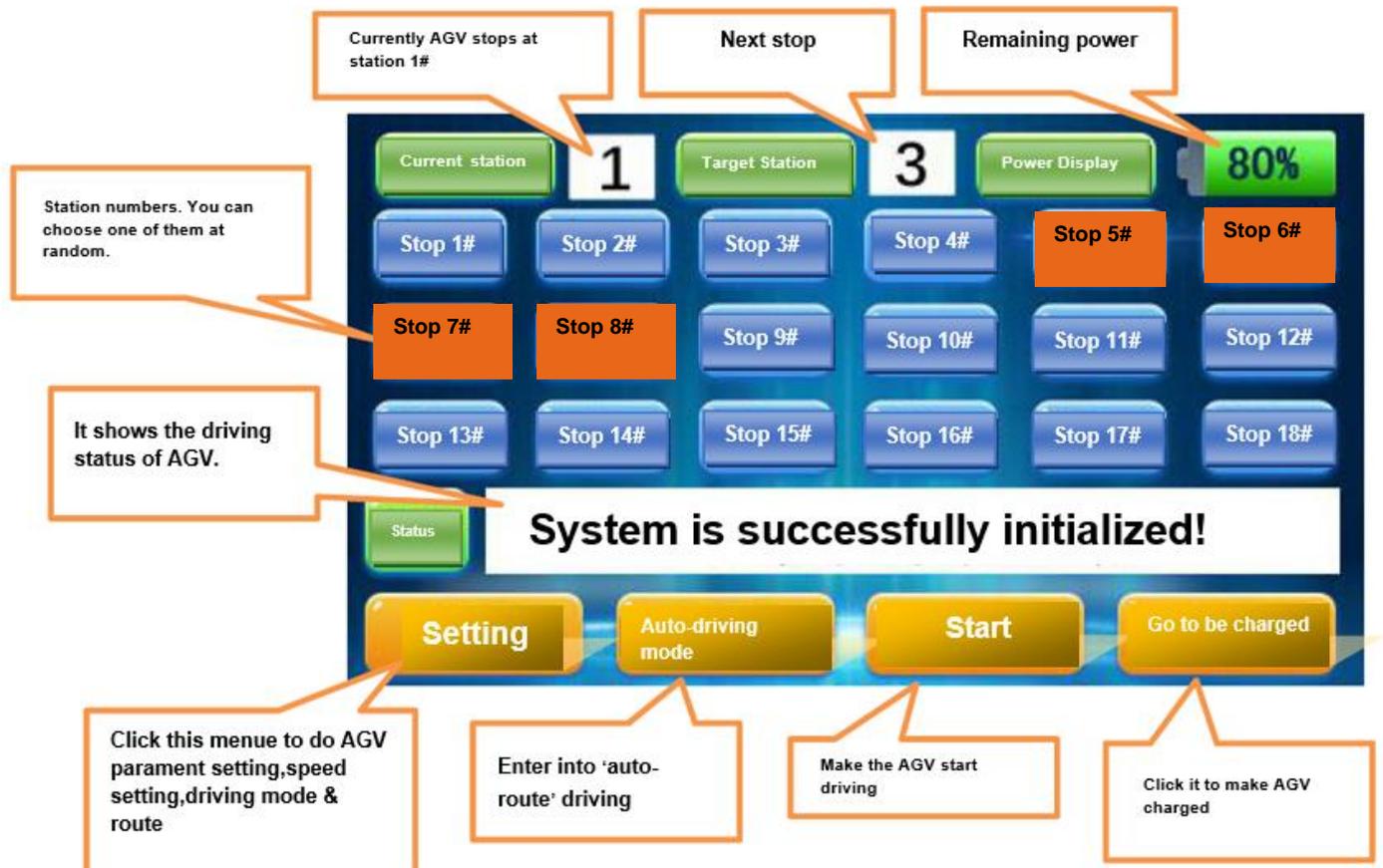
6. How to drive the AGV by manual?

6.1 Input your target stop# in the touch-screen to make AGV drive

Notes: Current station should be different from target station.



6.2 Click the station number on the display screen to select multiple target stations, and the trolley will reach the target stations in sequence. After reaching the target station, the car needs to manually press the start switch to go to the next station. As shown in the figure below: Click on No. 5--No. 6--No. 7--No. 8 to select the station, and the selected station number will change from blue to orange. Press the start switch at this time, and the trolley will run from the current station 1 to No. 5 site



6.3 Press the start button on the touch screen or the physical start button on the AGV body, and the AGV can run to station No. 5



7. Remote Site Selection

When the trolley is in the manual state, use the 10-key remote control to control the trolley station to select stations 1-8. Just press the number keys on the remote control, and the trolley will automatically run to the corresponding station, which is convenient for active operations. Personnel complete the handling work.

7.1 How to use the car to run under the magnetic strip navigation

When the trolley is in the manual state, use the 15-key remote control to control the trolley station to select stations 1-13. Just press the number keys on the remote control, and the trolley will automatically run to the corresponding station, which is convenient for active operations. Personnel complete the handling work.

When the trolley is running on the automatic line, the start button on the trolley can be used instead of the start switch on the trolley, and the trolley can also be stopped by pressing the slow stop button during running.

Ltd.

Remote control antenna. It can be lengthened, which can extend the signal distance. The max. control distance=1000m



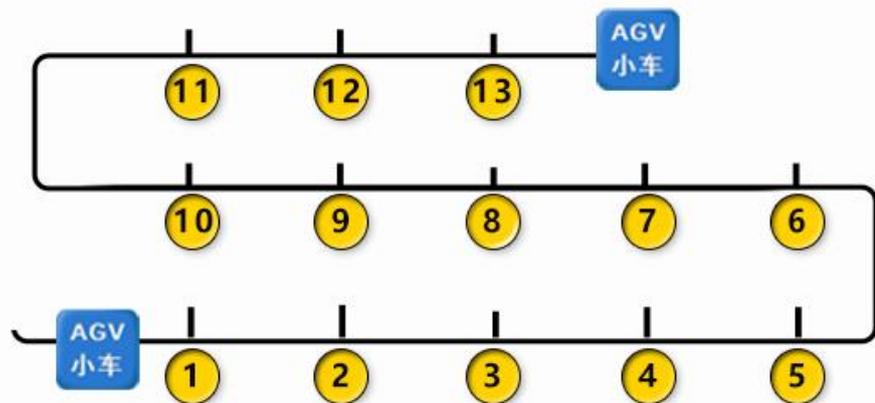
In the navigation state: 1-13 number keys, indicating the station number 1-13

In derailed state:

The car does not need magnetic strip guidance, it can control the car's forward, backward, left turn, right turn stop function

'Suspend': When you push this button, AGV will stop driving. Meanwhile you can also input other station#, and it will drive towards the new target station that you input. When you push 'start' button, it continues to drive.

Navigated by magnetic strip



You can choose the target station on the remote control.

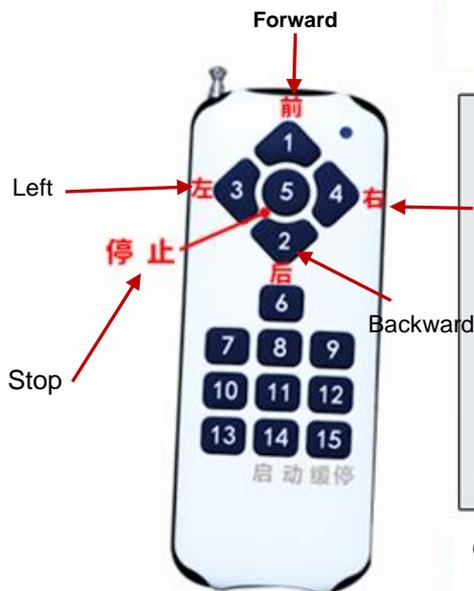
Click the number 1-13 on the remote control and then AGV will drive towards station 1-13#.

If you need to control the AGV without navigation strips, please choose the driving mode 'Remote Control'. Save it and exit.

Click it to set the stations

Click it to choose the driving mode

| Auto-driving route setting | | Path Planning Settings | |
|----------------------------|----------------------|--------------------------------------|----------------------|
| Station Qty(circle-route) | <input type="text"/> | Site accuracy switch 0-off; 1-on | <input type="text"/> |
| Driving mode | Remote Control | Obstacle sensor detection closing(s) | <input type="text"/> |
| Driving speed | 70% | Obstacle detection closing setting | <input type="text"/> |
| Wireless communication ID | <input type="text"/> | Station for charging | <input type="text"/> |
| Saved/ Exit | | Manufacturer service information | |



Driving without navigation strips



Click the number 1-5 to control AGV direction.

Ltd.

8. How to do the settings to make AGV drive automatically?

When the AGV needs to run according to the station we set, just set the running sequence of the AGV and the staying time at the station.



For example: In single-line mode, there are 1-5 stations, the operation requirements are as follows.

‘Start driving’ by manual at station 1# » » » Drive to station 3# and stay for 10 seconds» » » Drive to station 5# and Stay for 5 seconds» » » Run to station No. 2 and wait for manual start switch» » » Run to station No. 4 and stay for 10 seconds» » » Return to station 1# Set is as a cycle.



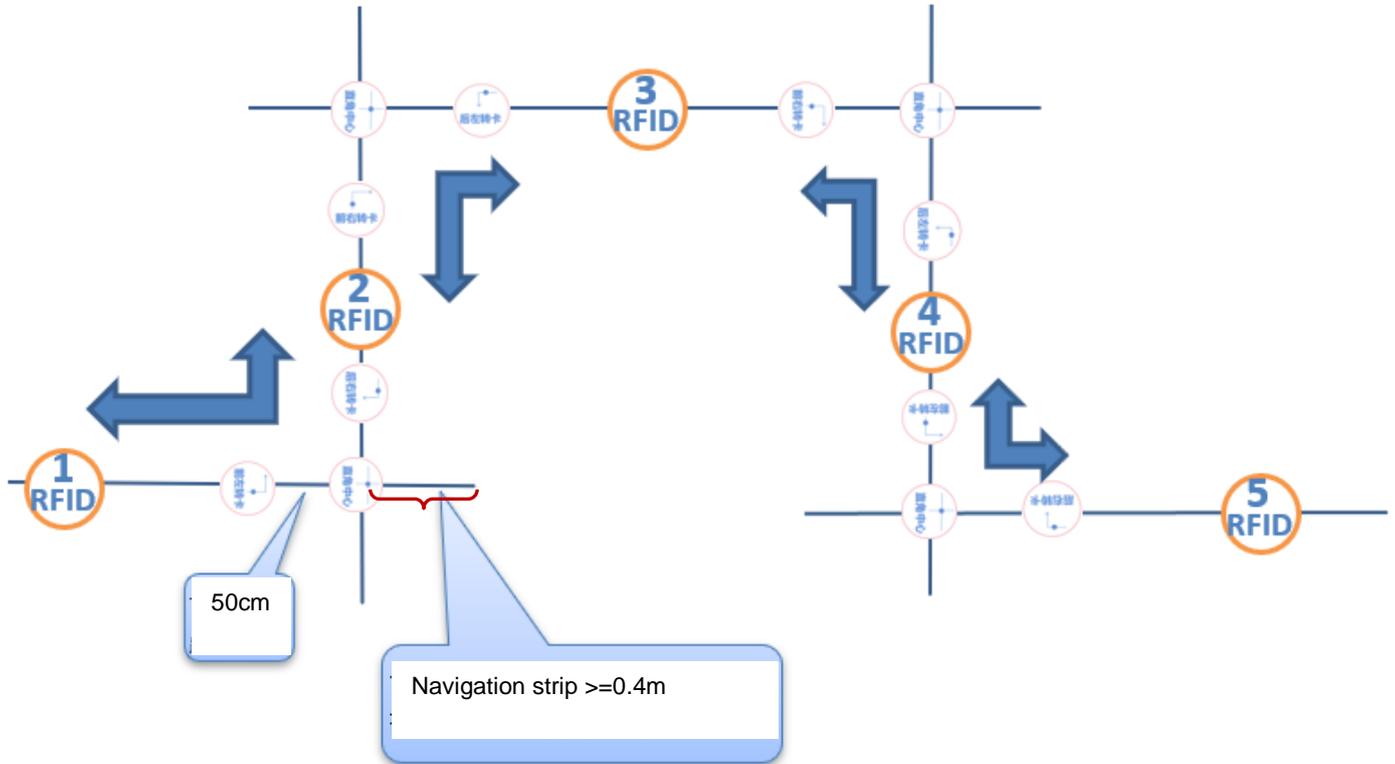
Finish the settings on the screen display as follows.

Saty at station 1# for 0 S. It is waiting for a person to start it.

| 次项 | Target station where you need AGV stop in sequence | Staying times(S) | 分分转向设置 |
|----|--|------------------|---|
| 1 | 1 | 0 | 转向 (L1) <input type="text"/> (R2) <input type="text"/> |
| 2 | 3 | 10 | 转向 (L1) <input type="text"/> (R2) <input type="text"/> |
| 3 | 5 | 5 | 转向 (L1) <input type="text"/> (R2) <input type="text"/> |
| 4 | 2 | 0 | 转向 (L1) <input type="text"/> (R2) <input type="text"/> |
| 5 | 4 | 10 | 转向 (L1) <input type="text"/> (R2) <input type="text"/> |

Confirmed/ Exit Next Page Clear all

9. How to make AGV drive in 90° turning (L type turning)?



When the AGV turns 90 degrees, it first reads the left or right RFID card, then automatically decelerates and runs directly to read the right-angle center card, then automatically rotates 90 degrees on the spot, and then continues to run.

10. How to supply power to AGV?

2 methods. 1.Charge AGV directly. 2.Take out the battery and supply power to the batter off-line.

The power display ranges from 10% to 100%. When the power is lower than 10%, the car display will automatically pop up a dialog prompt box, and there will be an alarm sound to remind the staff to charge the car. It is recommended to charge the car when the power of the car is less than 20%.

Be sure to pay attention when charging, the AGV car should be turned off (shut down) first, then plug the DC plug of the charger into the car, and then plug in the 220V power supply after the DC plug is plugged in.

There is an LED light on the charger, and the red light is: charging
Green light means: charging is complete



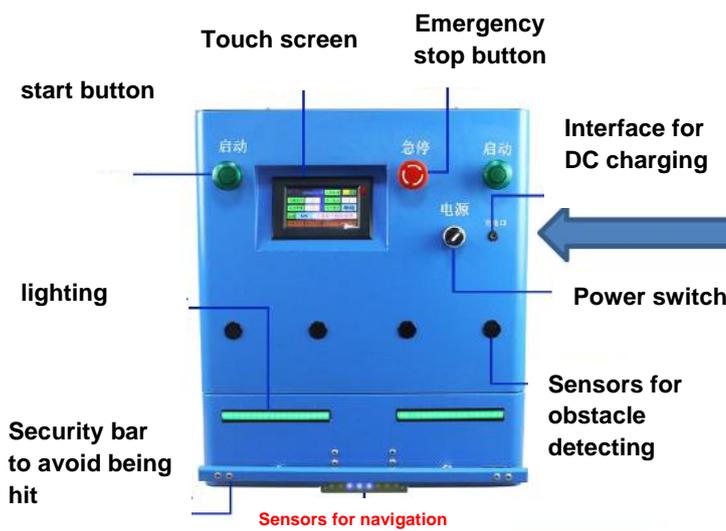
Low power. 10%

You can also click the 'OK' button, and then AGV will continue driving. But it is not recommended. It can drive about 30 minutes with 10% power.

The battery is too low, so please charge it in time.

继续当前任务

取消当前任务



Male plug



220V It can be the plug of EU standard

Step 1. Power off by manual

Step 2. Insert the male plug from the charger



Step 3. When the red light is on, it is being charged.

Step 4. When the green light is on, it is with full power.

