

SOUTH 2AJTU-ROBOTSLAM ROBOTSLAM Handheld 3D Laser Scanner



SOUTH 2AJTU-ROBOTSLAM ROBOTSLAM Handheld 3D Laser Scanner User Manual

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SOUTH 2AJTU-ROBOTSLAM ROBOTSLAM Handheld 3D Laser Scanner



Getting to know RobotSLAM

Unboxing



ID	Part Name	Quantity
A	Handheld include handheld grip and target base	1
B	GNSS antenna&cable for built-in GNSS module	1
C	Smartphone Holder	1
D	Shoulder strap	1
E	Main cable	1
F	Battery compartment	1
G	Rechargeable battery	2
H	Battery charger&cable	1
I	Ethernet cable	1
J	USB flash drive	1

K	External TF card	1
L	SD card reader	1
M	Cleaning cloth	1
N	Hand-carry case	1
O	Panorama camera optional	1
P	Fill-in light	1

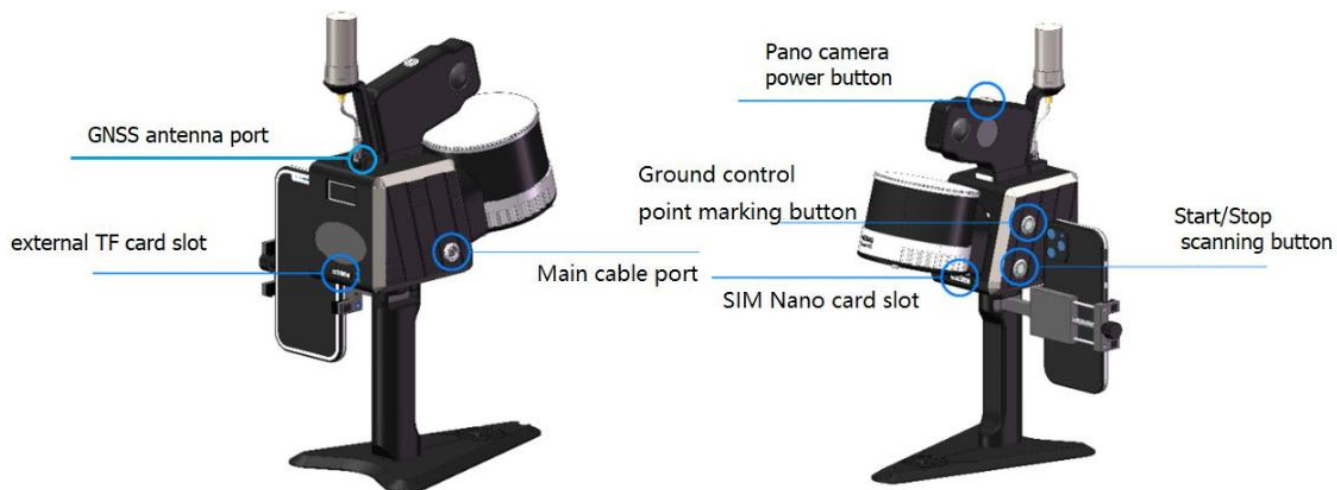
Technical Specifications

Specification	Parameter	
Principle	mechanical rotation	
Models	RobotSLAM	RobotSLAM Plus
Laser sensor	16-line	32-line
System accuracy	1cm highest	
Laser safety class	CLASS 1	
Measuring range	0.05 ~ 120 m	
FOV(horizontal)	360°x285°	
Angle resolution(H.)	0.18° 10 Hz	
Angle resolution(V.)	2°	1°
Scanning frequency	5Hz/10 Hz	
Scan Rate	320,000points/sec	640,000point/sec
Storage	Built-in storage 512G SSD	
	Camera built-in storage 128G TF	
	External TF card standard 128G support extend to 512G	
Weight(only handheld)	1.92 kg	

Induration time	Single battery≥2h two batteries≥4h
Environment	-20℃ 65℃ working /-40℃ 85℃ storage
Data acquisition time to data processing	1:2

Device details

Device interface display







ID	Port Name	Functions	descriptions
1	Start/Stop Scanning button	Start/Stop Scanning	the button is to control the device to start scanning or stop scanning; if the RTK function works, the button color is blue, if not, the button color is purple;
2	Ground control point marking button	Press once to record the current ground control point location	place the device on the ground control point marks, and press the button shortly one time to record the GCP location
3	Main cable port	DC 12V ~ 16.8 V	please use the standard battery
4	GNSS antenna port	OOS signal	please use the standard GNSS antenna
5	Nano SIM card slot	SIM card	Able to access CORS via N
6	External TF card slot	TF card	insert the external TF card

LED screen display



ID	Item	Content	Description
1	GNSS solution status	N1/N2	number of locked satellites/numbers of searched satellites
2	Data recording status	Storing	Recording...
		Instore	Stop recording
		Cam data download	Camera data is downloading, please wait...
3	RTK Positioning status	No GNSS	No GNSS signal
		Single	there is a GNSS signal, but don't reach a differential solution; Solution: please check the RTK account settings, if RTK settings are correct, the satellite signal is weak;
		Float	Not fixed, the accuracy is between meter and centimeter
		Fixed	1 3cm positioning accuracy
4	Collection tie	h m s	Collected time

5	Network access		SIM card loaded
			No SIM card
6	External storage		Not detected TF card
			TF card detected
		If there is O on the left of the TF card sign	External storage works

device connection



 **Internet cable connection**



Main cable connection  **Power button** 

- **Internet cable connection**—it is used to download the data, one end connects to the device, and the other end connects to the computer;
- **Power button**-it is designed to power on the lidar system;

1. insert one or two batteries into the battery compartment;
2. connect one end of the main cable to the laser scanner, and the other end to the battery compartment;

Install the GNSS antenna

Push the GNSS antenna base plate to the slot, and insert the antenna cable into the port;



Notes: It is better to remove the GNSS antenna carefully, not to rotate the antenna cable;

Install the panorama camera (it is an optional part)



Press the lock button with the left hand, and push the camera to the camera slot with the right hand; the same method is to uninstall the camera.

Notes: Please remove the panorama camera carefully so, as not to hurt the laser scanner in front.

Data capture

1. Connect the battery and the main cable with the battery compartment;



2. Press the power button and the LED light is on;



Press power button

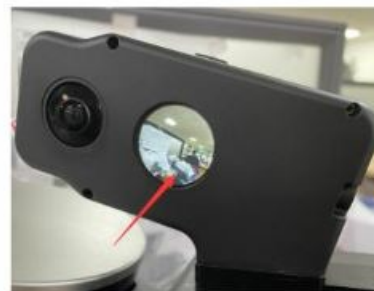


LED light ON

3. Long Press the camera power button, and the camera is on;



long press the camera power button



Camera ON

4. Go to the start point, put the instrument on the ground(flat ground)



- Press the start recording button, the scanner starts scanning
- The camera will start recording too at the same time or after a few seconds

5. After starting the scan, please keep the instrument in one place without moving for 1 minute or so, and then get up and start scanning;



Initialization time(1minute)



Scanning



Finalization time(1minute)

6. when finishing the scan, keep the instrument in the same place without moving for 1 minute too, and then press the start recording button again to stop the scan.



Notes:

1. When initializing, don't move the instrument;
2. Keep the instrument in front of the operator in the scanning process.

Data download and RTK function settings

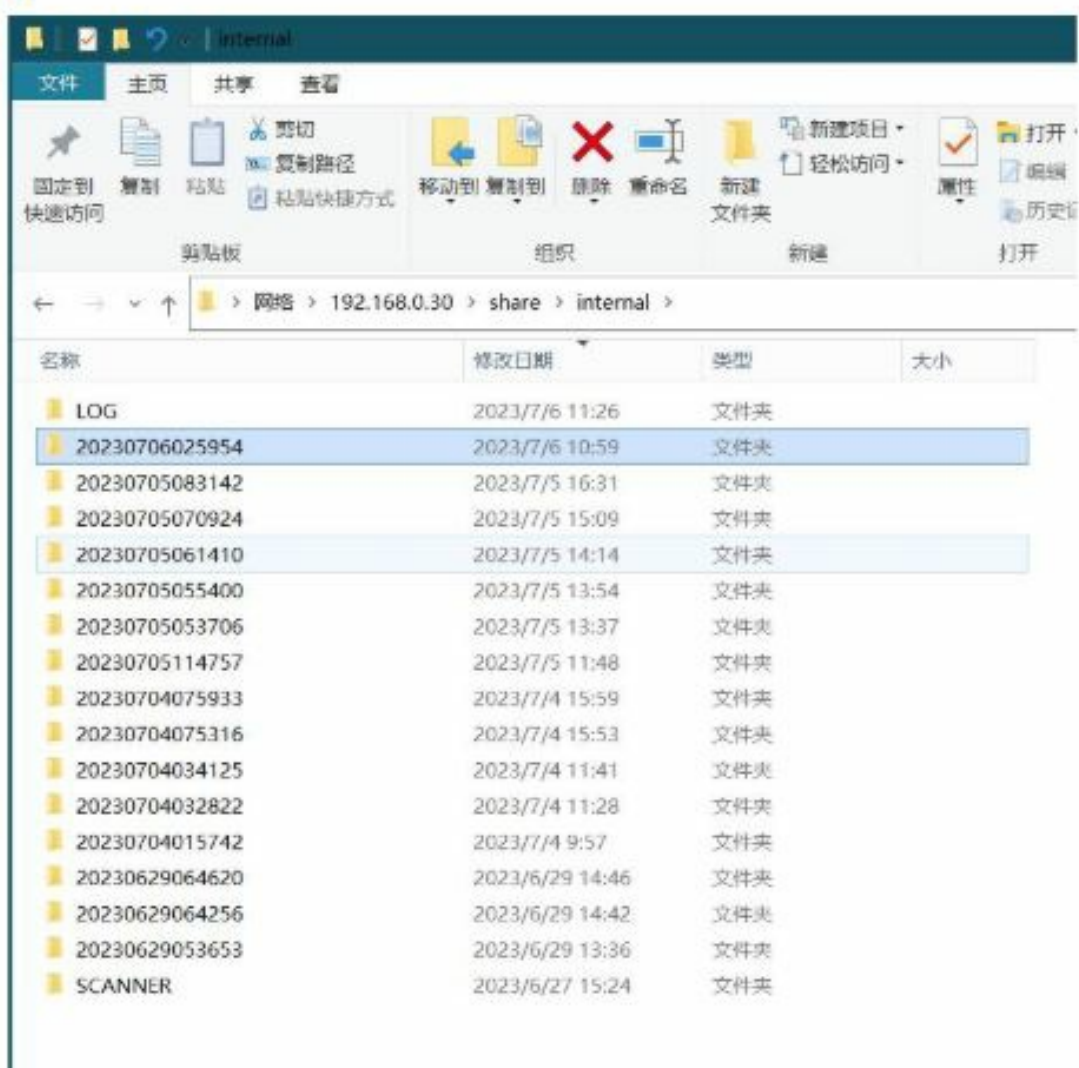
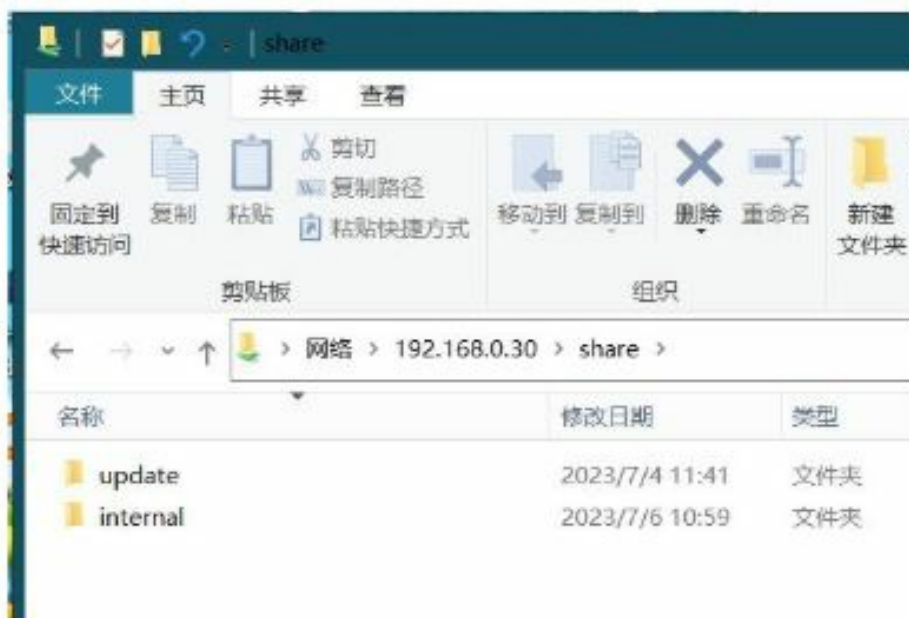
Data download

Connect the LiDAR system with the computer via a network cable:



Input [\\192.168.0.30](#) in your computer





Copy out the data folder, all the information is in the same folder.

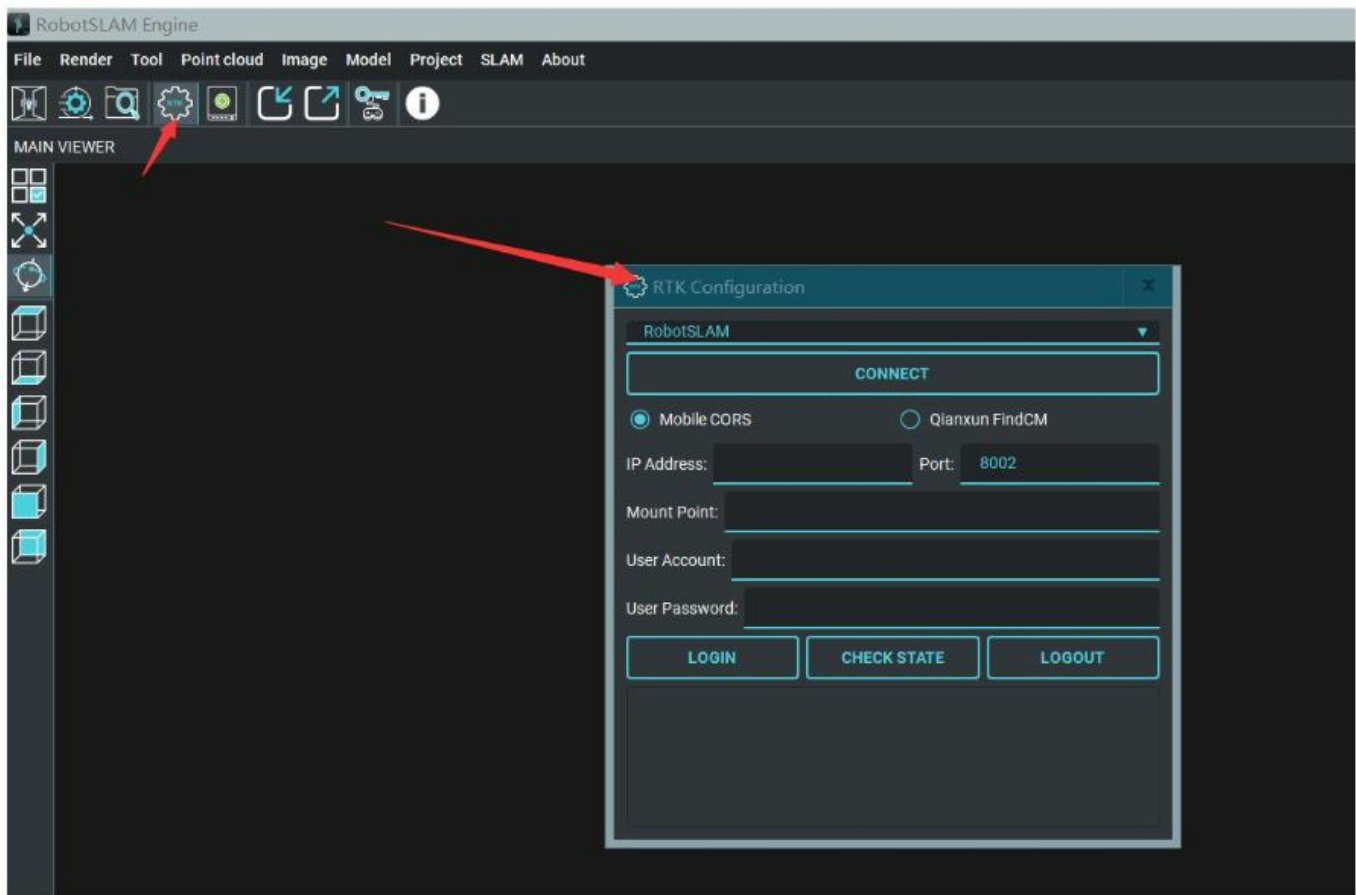
RTK settings

Before using the RTK function, please insert a SIM card first,



SIM card slot

Method 1– Set RTK with the RobotSLAM engine software in the computer



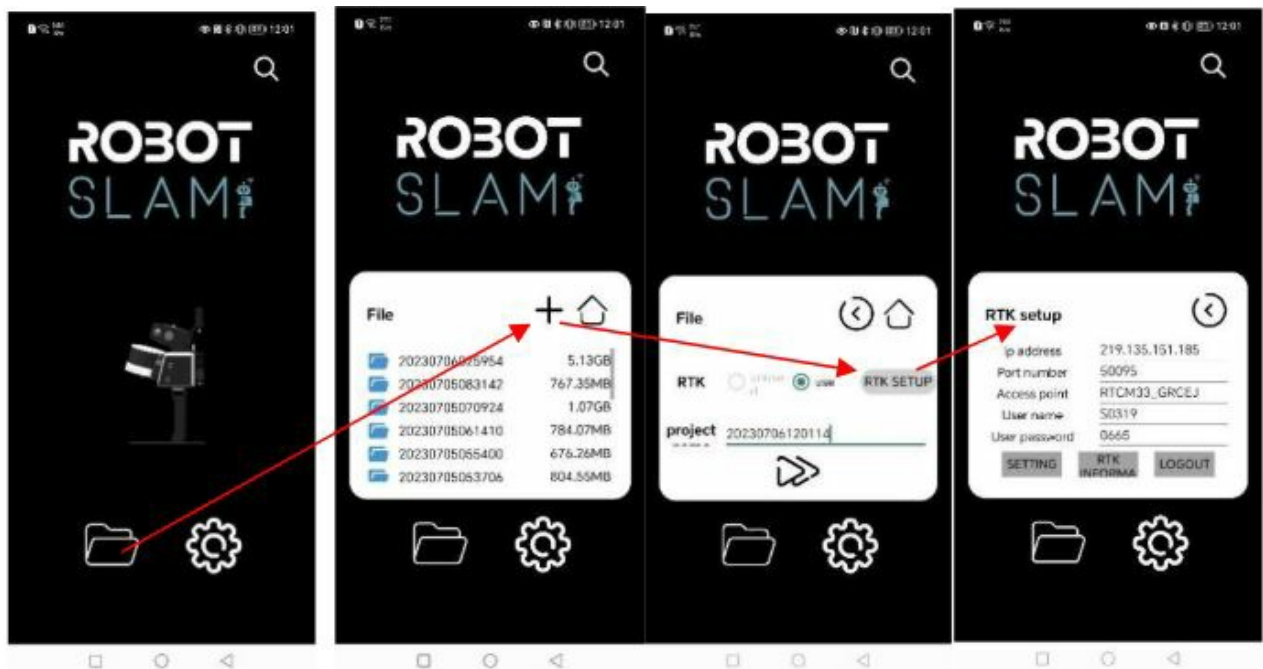
The image shows a software window titled "RTK Configuration" with a close button (X) in the top right corner. Inside the window, there is a dropdown menu currently set to "RobotSLAM". Below this is a large button labeled "CONNECT", which is highlighted by a red arrow. Under the "CONNECT" button, there are two radio buttons: "Mobile CORS" (which is selected) and "Qianxun FindCM". Below these are four input fields: "IP Address:" (empty), "Port:" (containing "8002"), "Mount Point:" (empty), "User Account:" (empty), and "User Password:" (empty). At the bottom of the configuration section, there are three buttons: "LOGIN", "CHECK STATE", and "LOGOUT". Below these buttons is a large, empty rectangular area, likely for displaying status or logs.

Method 2 Using the mobile phone APP-RobotSLAM Palm

1. Connect the device wifi to the Android system mobile phone; the password is 12345678;
2. Run the software RobotSLAM Palm and make sure to connect the device already;

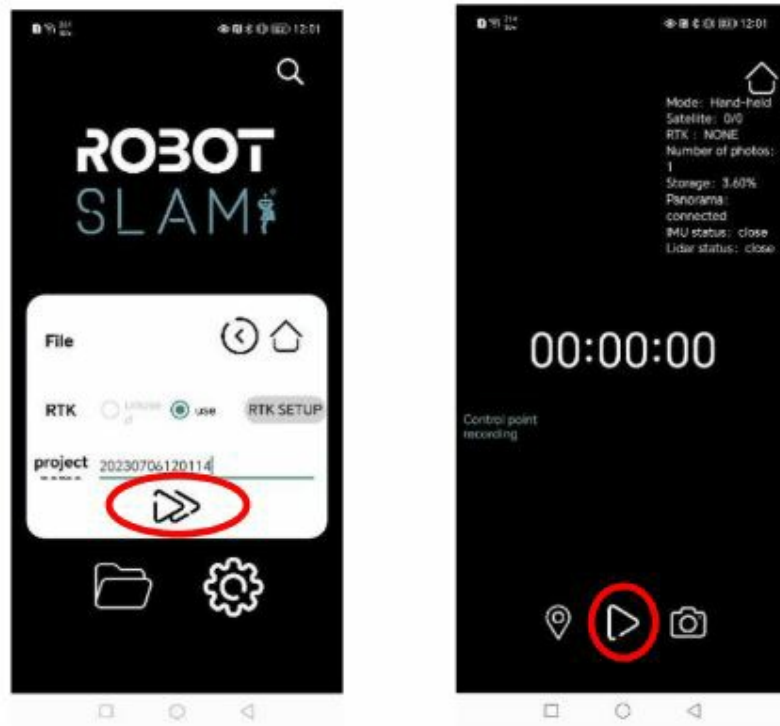


3. Set the RTK information, and if next time, you want to log in to a new RTK information, please log out of the old one, and then input the new information.



Control the RobotSLAM via Palm software

- Click the arrow button to enter the interface to control the device,



Click to start/stop the scan

Activate the device

Please get the activation code from the factory, connect the mobile phone's WIFI, and then input the code to activate it;



Data processing

Computer configuration

Computer	Minimum	Recommended
Operating system	Windows10/Windows11 64-bit	
Graphics card	GTX-3060/RX6600M or above NVIDIA series recommended	
CPU	Intel i7-11800H/AMD R7-5800H or above	Intel i7-12700H/AMD R7-6800H or above
Internal Memory	16GB or above	32GB or above
SSD	1TB or above	2T or above

RobotSLAM Engine software installation



The postprocessing software is RobotSLAM Engine

Before starting processing, there are

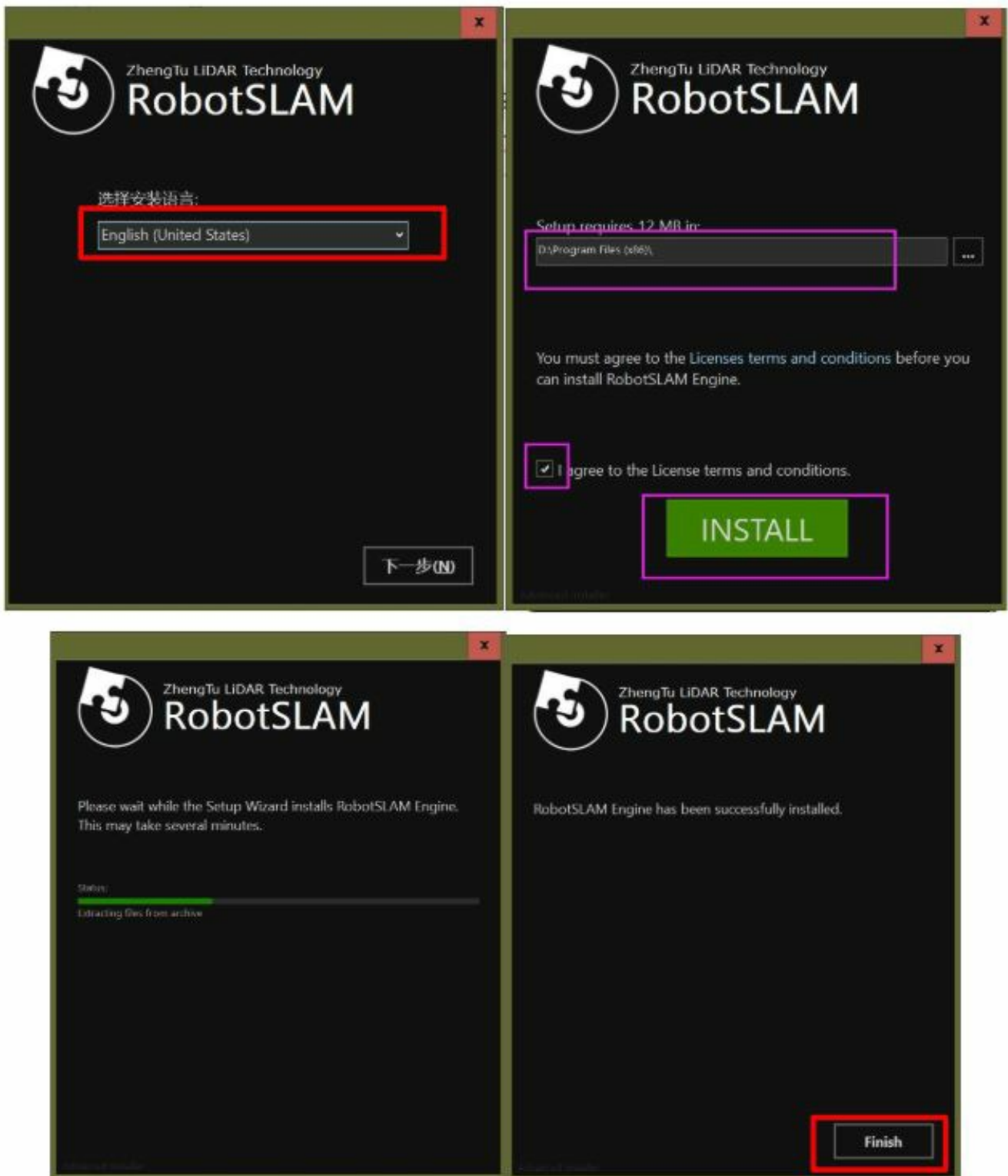
two software to install,

RobotSLAM Engine_V1.1.7-Update-EN.exe	2023/6/7 11:23	应用程序	968,447 KB
RobotSLAM_Server_V1.0.0-Setup-x64-EN.exe	2023/6/16 11:28	应用程序	197,996 KB

1st, double click" RobotSLAM_Server_V1.0.0-Setup-x64.exe" to install it;

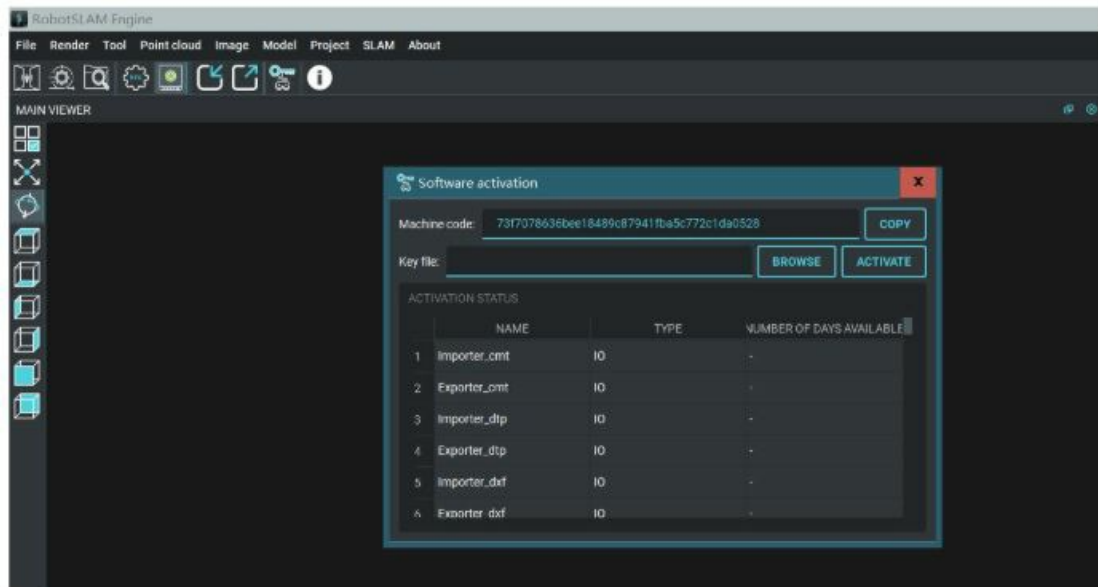
2nd, double click" RobotSLAM Engine_V1.1.5-Update-EN.exe" to install it, select

"English(US) or English(UK)"; click "下一步(Next)"; set the installation path,



Apply for a software license

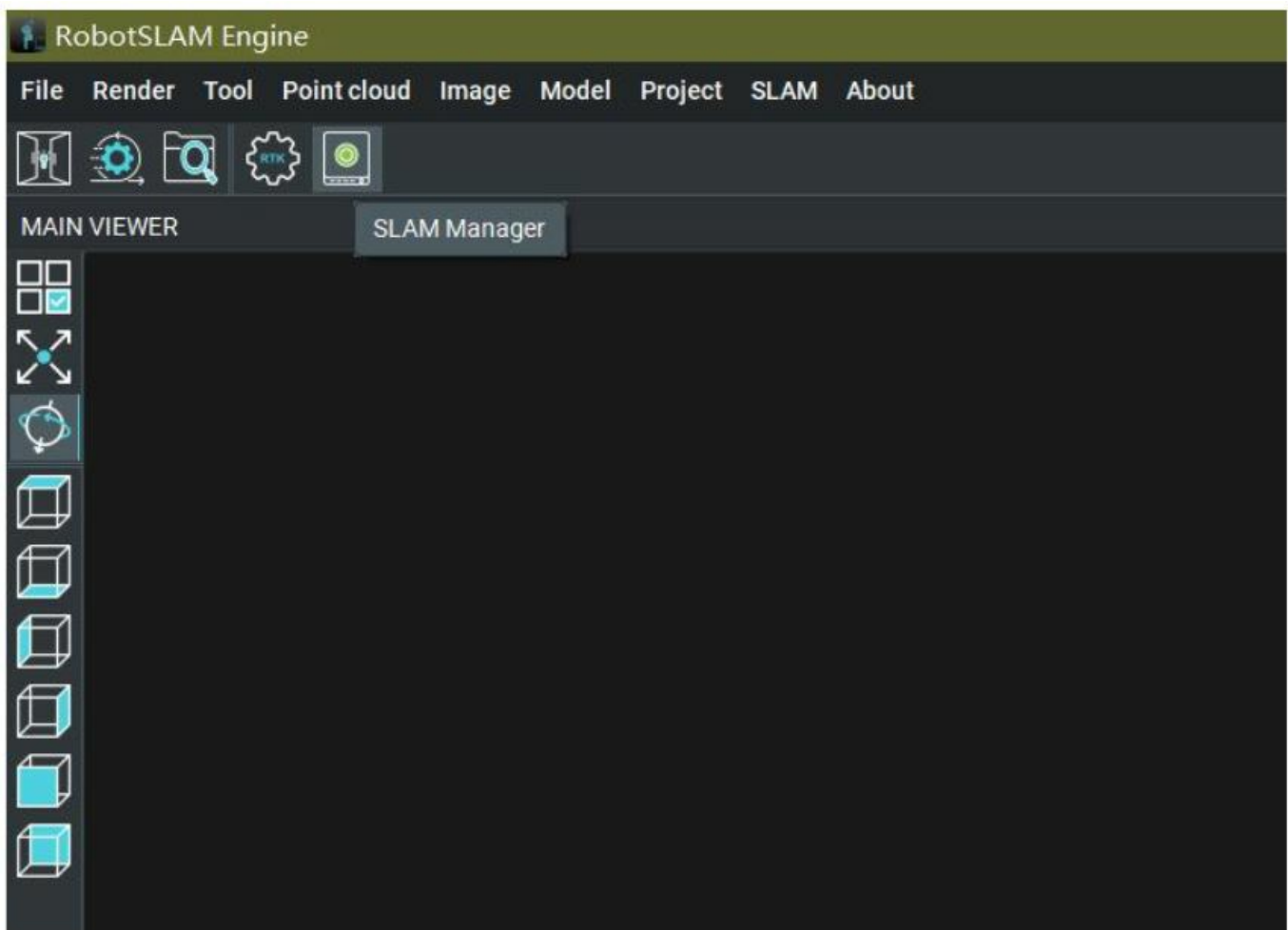
1. send the factory your machine code to apply a license file:

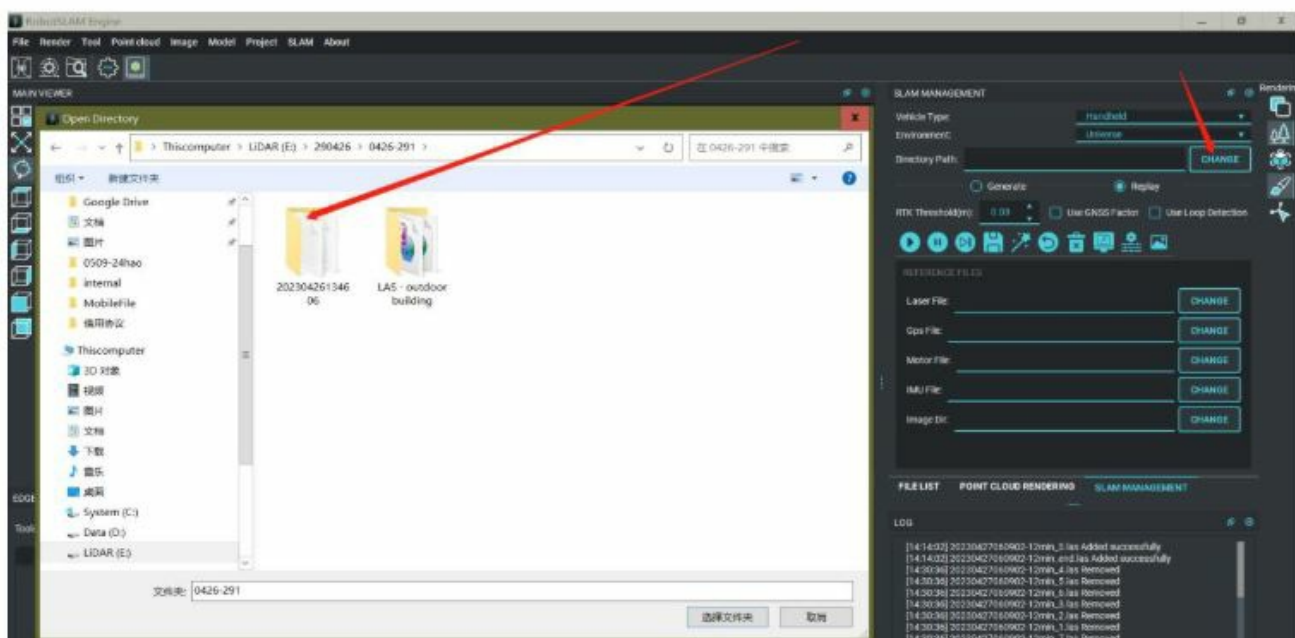
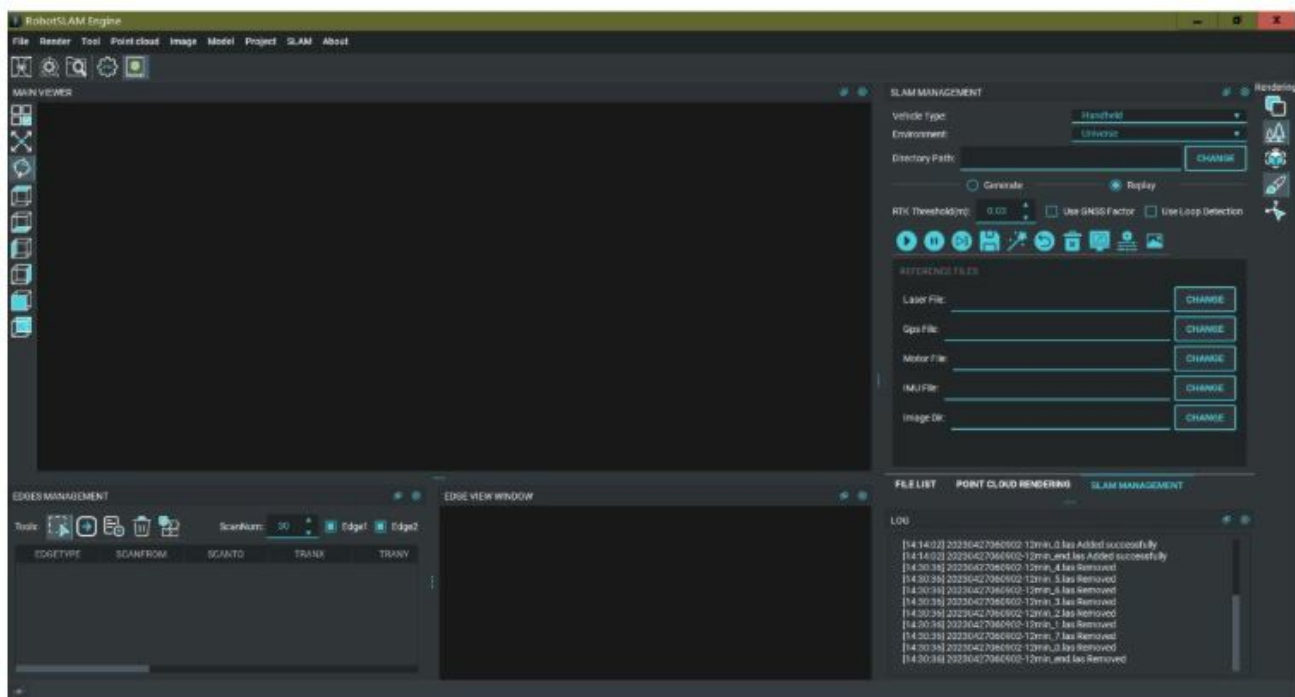


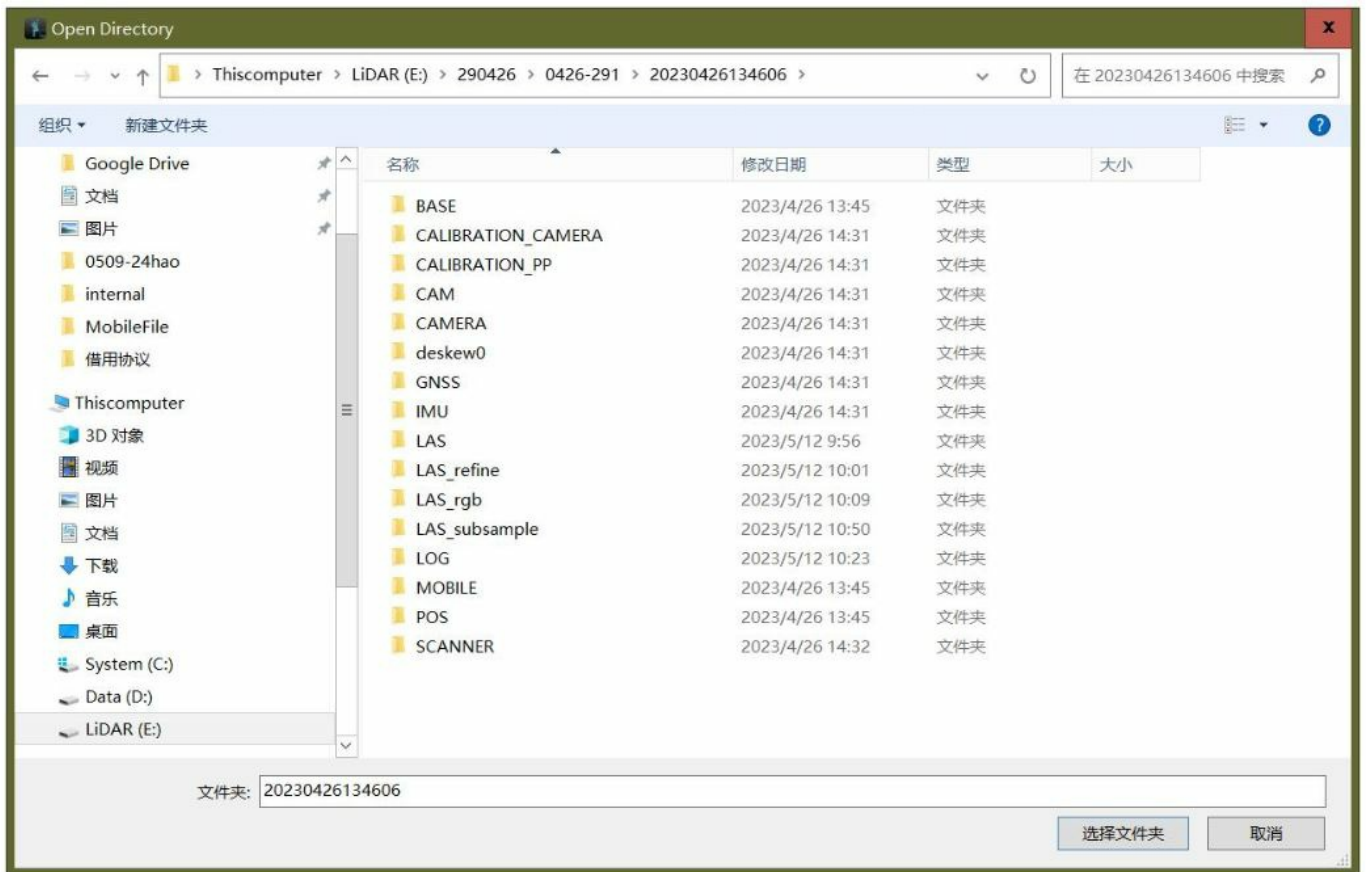
2. click “BROWSE” to import the license file and click ACTIVATE;

Data processing in RobotSLAM Engine

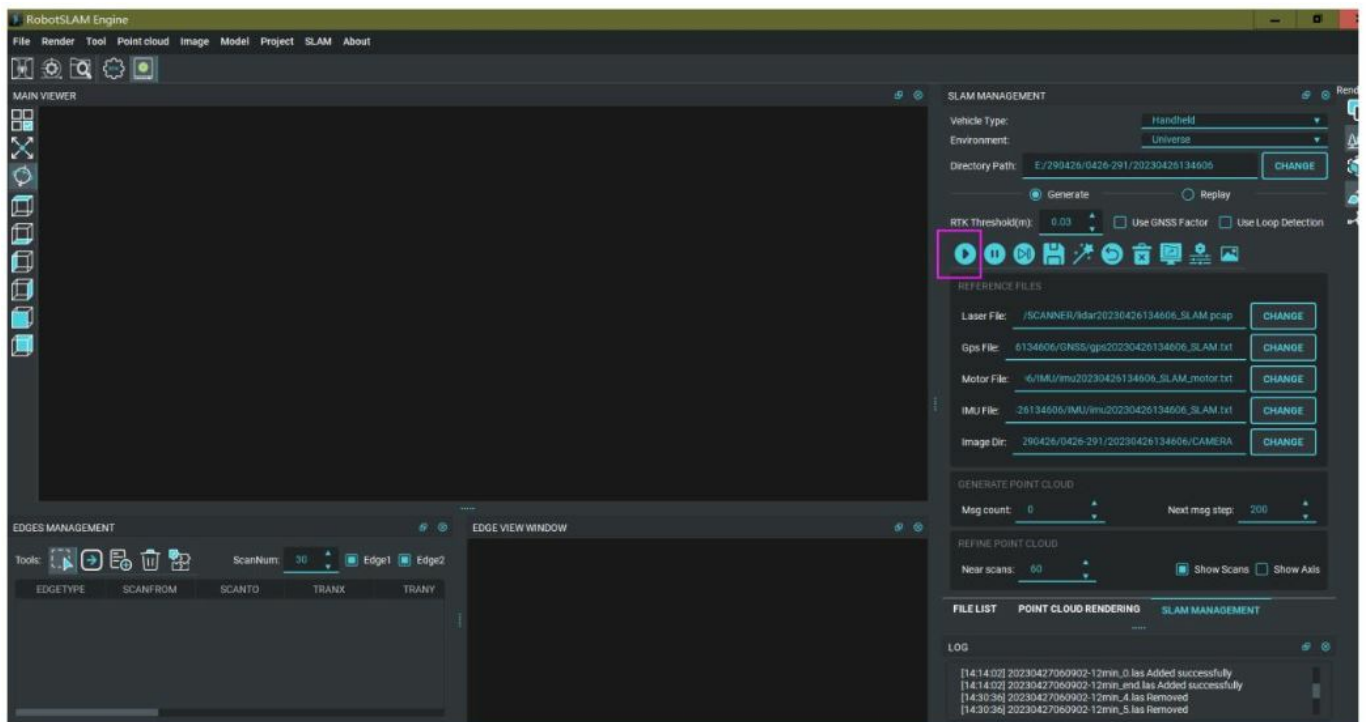
- 1st, Double click to run RobotSLAM Engine software,
- 2nd, Open SLAM Manager, and click” CHANGE” to load the project folder;

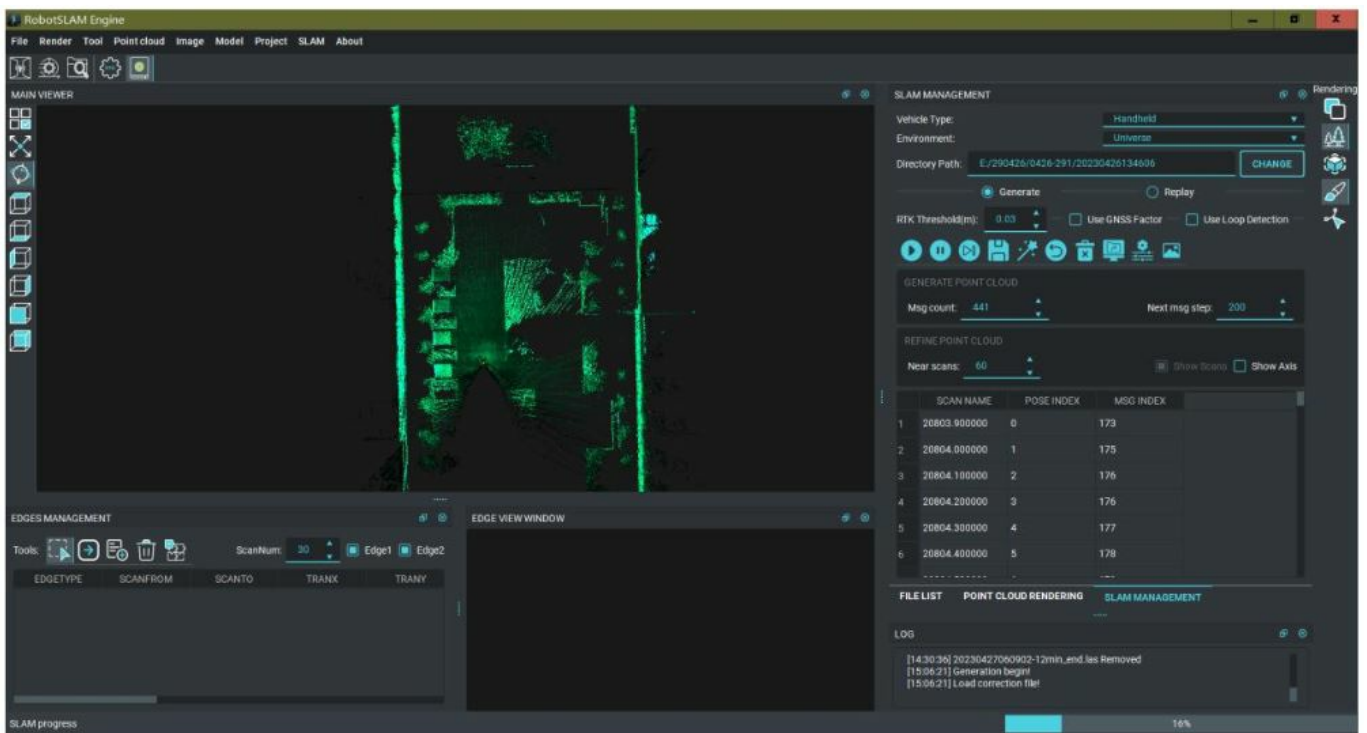




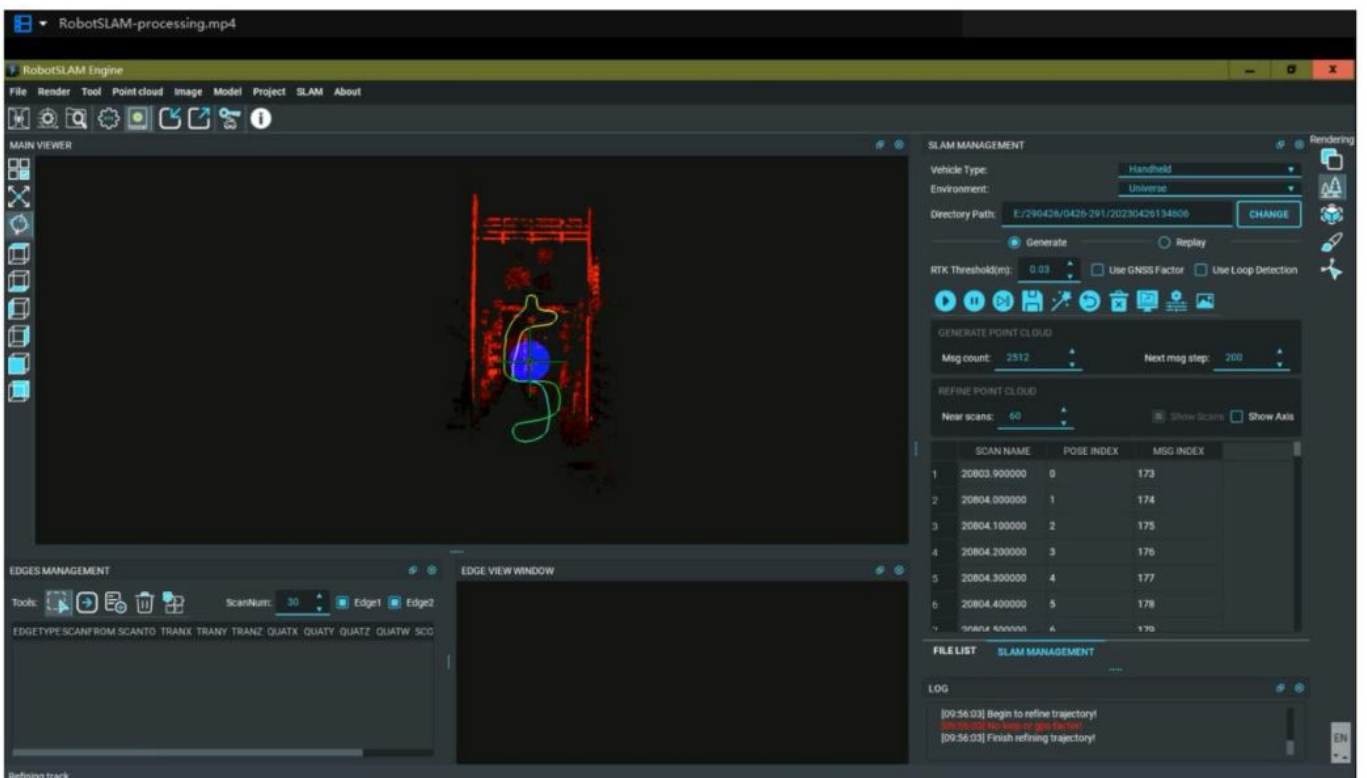


3rd, if the scanning time is less than 20 minutes, directly click “Run Bag file”

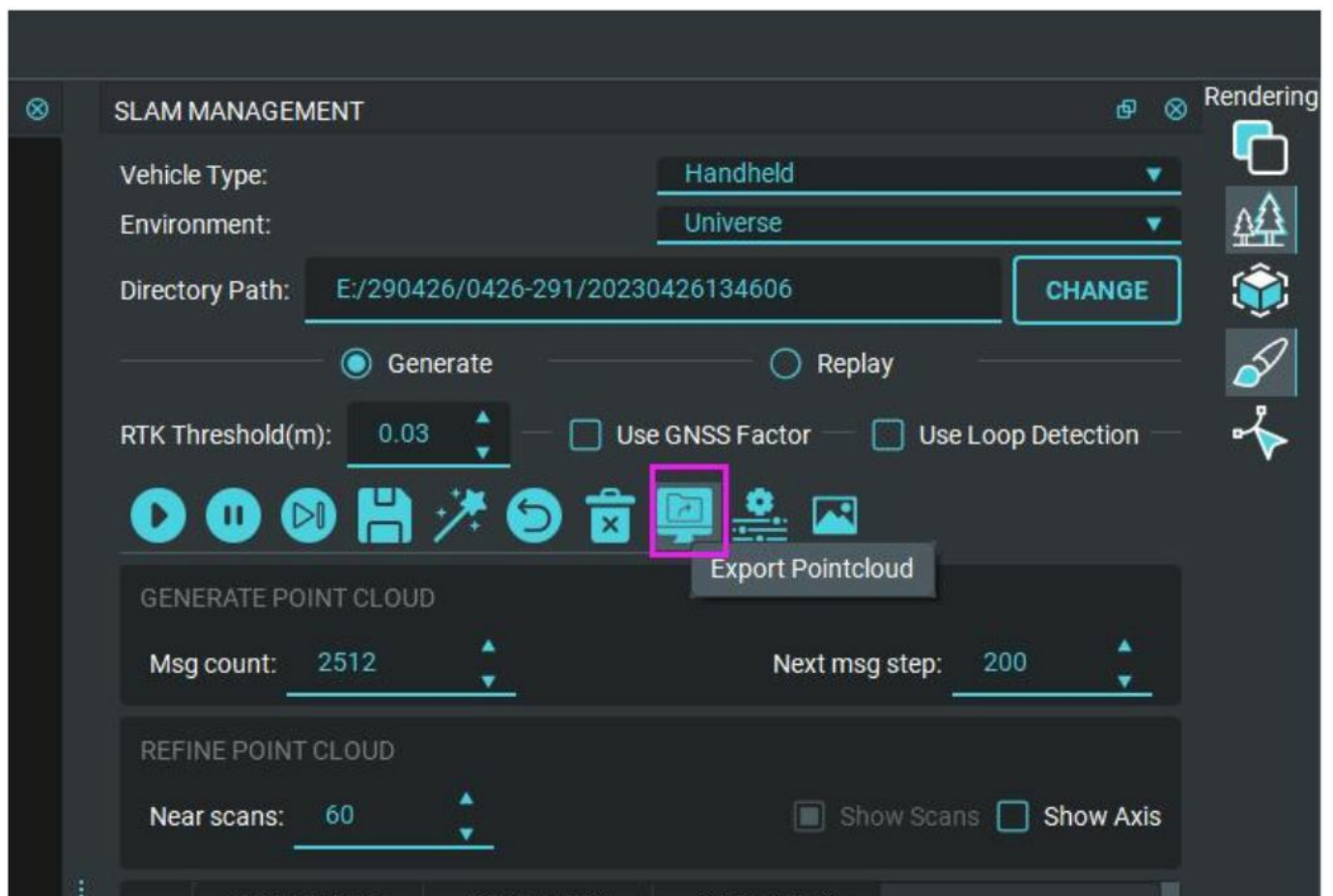




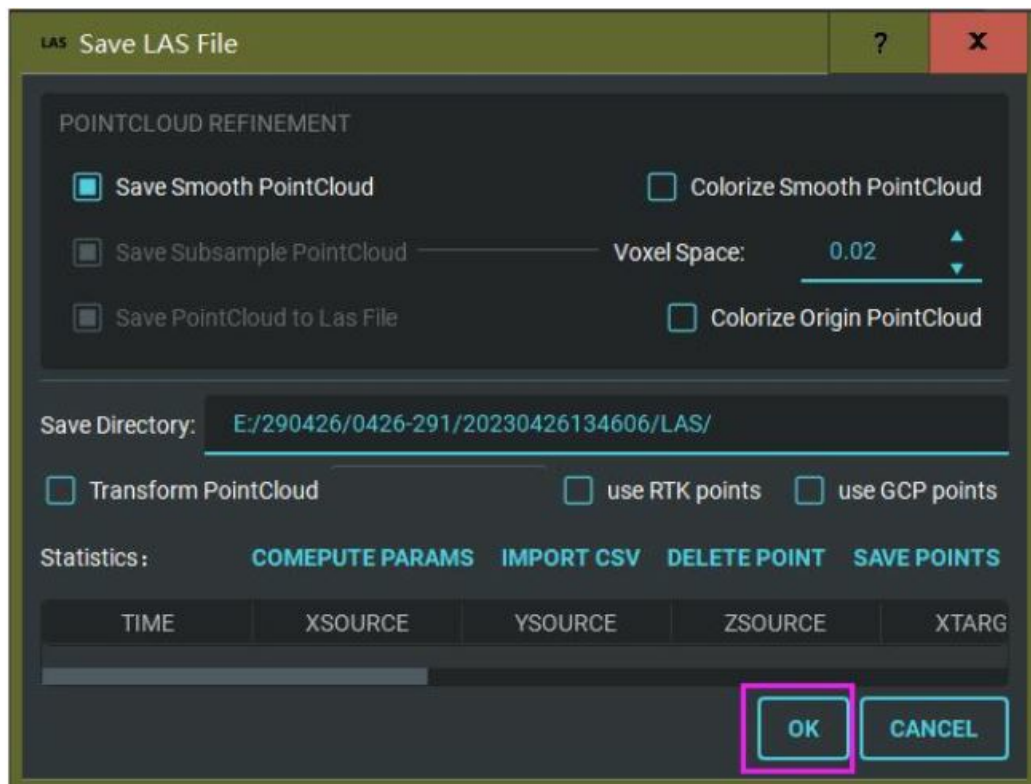
4th, wait for the processing, when the processing bar reaches 100%, and shows “Finish refining trajectory”, the processing finish.



5th, Export point cloud by clicking the following icon:

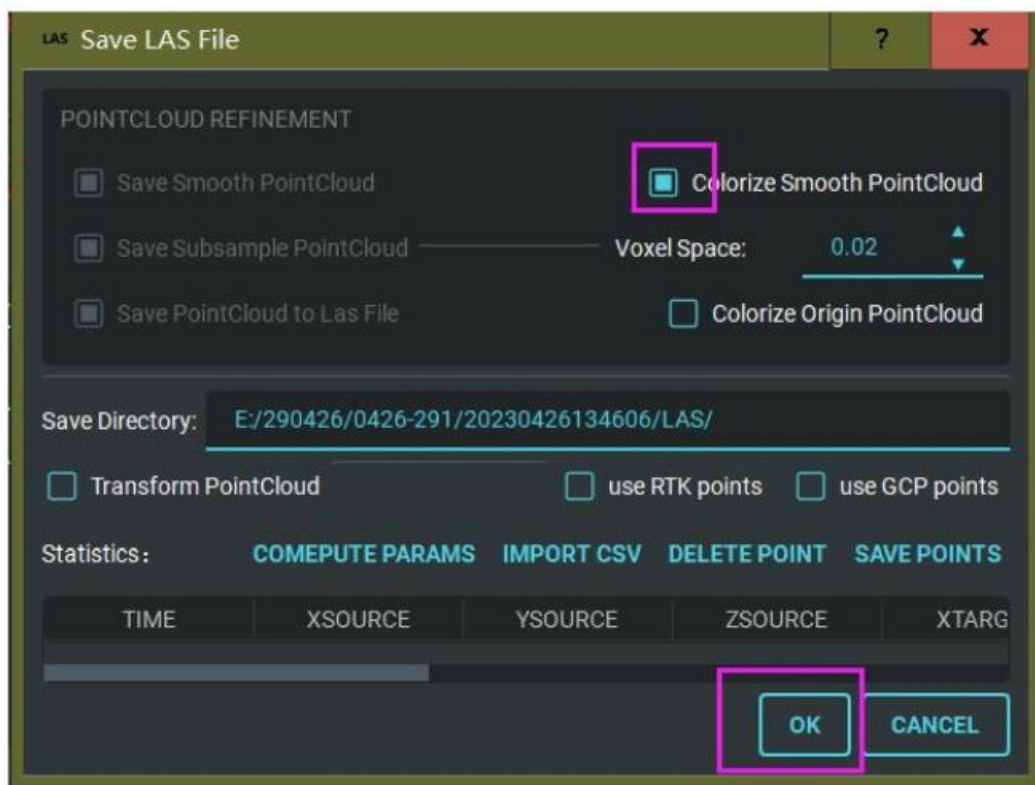


6th, and then click “OK” to export the point cloud.



Export colored point cloud

If the data also collects video with the panorama camera, check “Colorize Smooth Pointcloud” or “Colorize Origin Pointcloud” to export the point cloud, and then click OK.



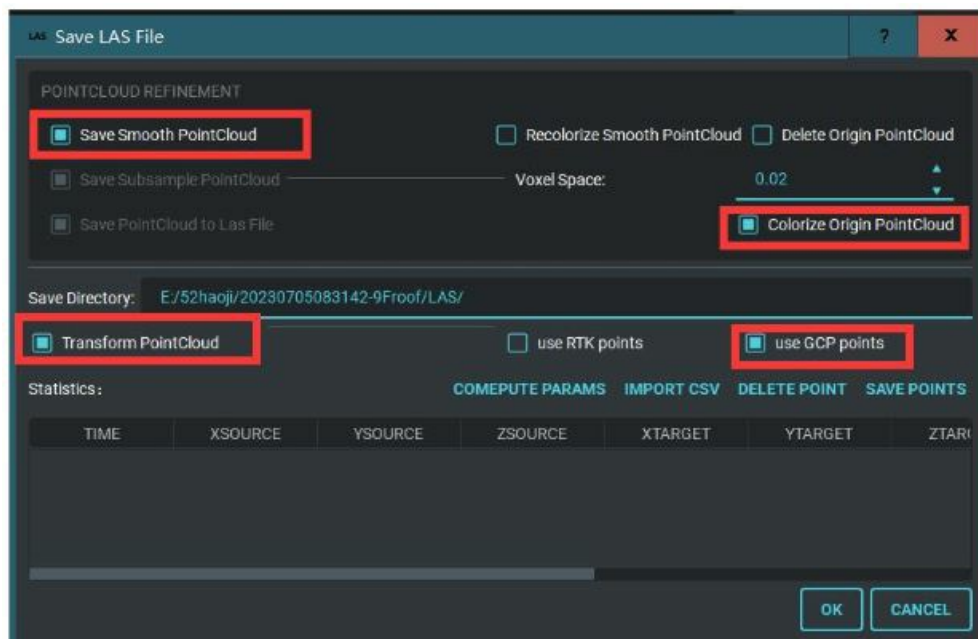
Export Absolute Coordinates

1. If marks GCPs in the scanning process



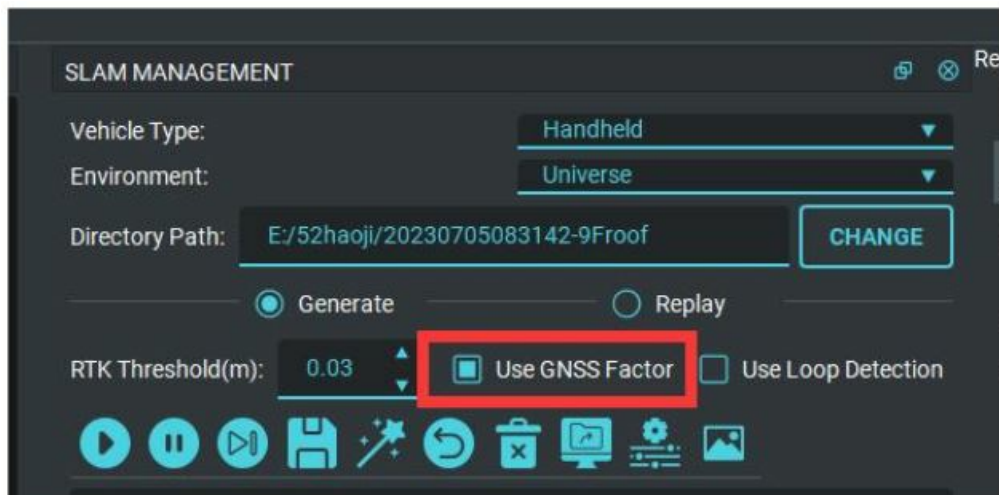
Marking GCPs on the ground

If some Ground Control Points are marked and get the coordinates file for the GCPs, please check "Transform Point Cloud" and "Use GCP points" to receive absolute coordinates;

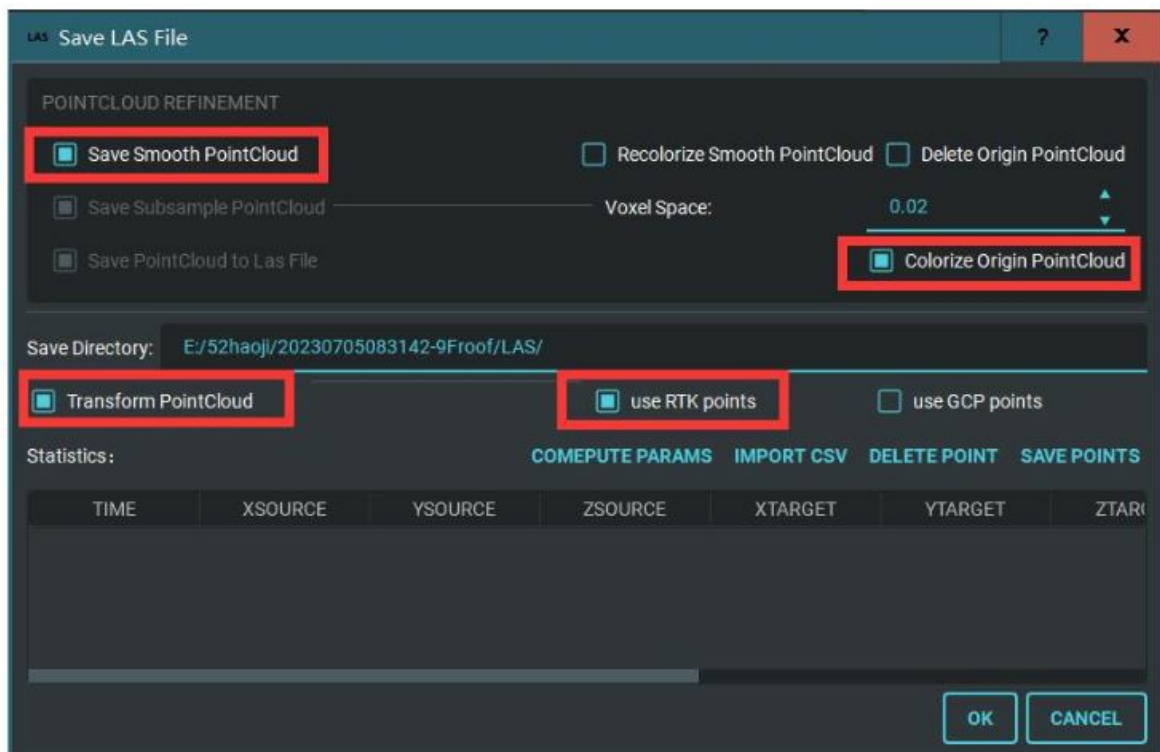


If RTK access to the CORS network during the scanning process

If the RTK function works and the GNSS solution is Fixed most of the time, before the processing, please check "Use GNSS Factor",



When exporting point cloud, please check the following:



Battery

RobotSLAM includes two batteries, one battery can work for 2hours, and two batteries totally can work for about 4hours.



Battery charging

Battery LDE display (remaining power display)



Usage Guidelines

This chapter will talk about guidelines for how to use RobotSLAM to receive desirable surveying results. As we know, SLAM can work both indoors and outdoors and doesn't rely on satellite signals to do the scanning and get a 3D point cloud. But it doesn't mean we can scan randomly to get the results. And some rules need to be taken

care of.

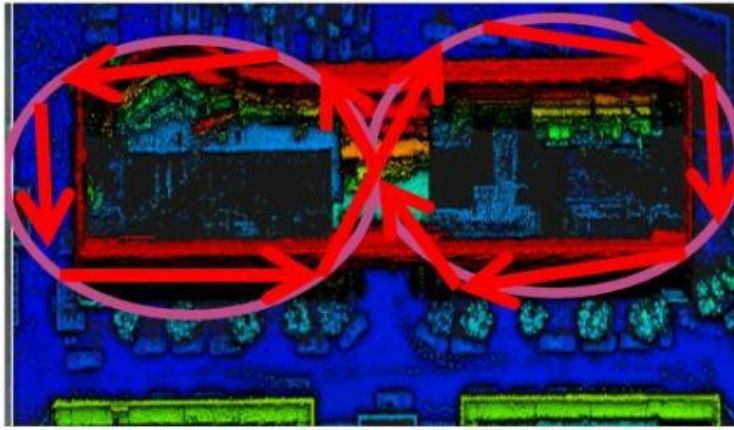
Walking Speed

1. The scanning speed is normally walking speed;
2. Don't shake the device violently during the process. When turning, turn around slowly, especially for indoor environments or stairs scanning.



Loop closure

The operator must start scanning and end scanning in the same position to close the loop. Because there are cumulative errors in the SLAM scanning, the loop works well to eliminate the error.



Outdoor small scene route planning



Outdoor large scene route planning

indoor scanning

1. For indoor environment scanning, please open all doors in advance;
2. Plan walking route;
3. Avoid walking people as much as possible;



Open the door before start scanning

FCC Caution

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

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used by 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 the receiver.
- Connect the equipment to 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.

The device has been evaluated to meet general RF exposure requirements. The device can be used in portable exposure conditions without restriction.

Specific Absorption Rate (SAR) information

This device meets the government's requirements for exposure to radio waves. The guidelines are based on standards that were developed by independent scientific organizations through periodic and thorough evaluation of scientific studies. The standards include a substantial safety margin designed to assure the safety of all persons regardless of age or health. FCC RF Exposure Information and Statement The SAR limit of the USA (FCC) is 1.6 W/kg averaging over one gram of tissue. Device types: This device has also been tested against this SAR limit. This device was tested for typical body-worn operations with the back of the This device kept 0mm from the body. To maintain compliance with FCC RF exposure requirements, use accessories that maintain a 0mm separation distance between the user's body and the back of This device. The use of belt clips, holsters, and similar accessories should not contain metallic components in its assembly. The use of accessories that do not satisfy these requirements may not comply with FCC RF exposure requirements and should be avoided.

Specifications

- **Principle:** Mechanical rotation
- **Models:** RobotSLAM, RobotSLAM Plus
- **Laser Sensor System Accuracy:** 16-line 1cm highest (RobotSLAM), 32-line (RobotSLAM Plus)
- **Laser Safety Class:** CLASS 1
- **Measuring Range:** 0.05 ~ 120 m
- **FOV (Horizontal):** Angle resolution(H.)
- **Angle Resolution (Vertical):**
- **Scanning Frequency:** 5Hz/10 Hz
- **Scan Rate Storage:** 320,000 points/sec (RobotSLAM), 640,000 points/sec (RobotSLAM Plus)
- **Built-in Storage:** 512G SSD (Camera), 128G TF (External TF card standard 128G support extend to 512G)
- **Weight (only handheld):** 1.92 kg
- **Induration Time:** Single battery 2h, two batteries 4h

FAQ


Q: How do I know when to replace the batteries?

A: The device will indicate low battery levels either through on-screen prompts or LED indicators. It is recommended to keep spare batteries for continuous operation.

Q: Can I use the device for outdoor scanning?

A: The device is suitable for indoor scanning. For outdoor applications, ensure proper environmental conditions and calibration for accurate results.

Documents / Resources

<div><div>SOUTH</div><div>RobotSLAM User Manual</div><div></div></div>	<div>SOUTH 2AJTU-ROBOTSLAM ROBOTSLAM Handheld 3D Laser Scanner [pdf] User Manual 2AJTU-ROBOTSLAM ROBOTSLAM Handheld 3D Laser Scanner, 2AJTU-ROBOTSLAM, ROB OTSLAM Handheld 3D Laser Scanner, Handheld 3D Laser Scanner, 3D Laser Scanner, Laser Scanner, Scanner</div>
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References

- [User Manual](#)

[Manuals+](#), [Privacy Policy](#)

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