

SingularXYZ



H1 Handheld 3D Laser Scanner

User Manual

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1.1 Overview

H1 leverages advanced SLAM technology to generate highly accurate point clouds with a relative point accuracy of 1.5cm. The integrated RTK and IMU module helps to deliver precise georeferenced point clouds in real-world coordinates. With a 360°×63.5° ultra-wide field of view and 480,000 points-per-second capture rate, it ensures efficiency across complex outdoor environments.

With dual fisheye cameras and a vision tracking camera, the H1 integrates imaging and point cloud acquisition. Its 3.9-inch touchscreen allows users to view point cloud rendering in the built-in software during data collection. Powered by an 8-core processor, the system supports both high-speed generation and efficient colorization simultaneously.

Weighing only 900 grams and built with IP65-rated protection, H1 is lightweight, compact, and performs reliably in challenging outdoor conditions. A high-capacity 12,000mAh battery supports uninterrupted operation for long-duration scanning projects. Built-in Wi-Fi and Type-C ports enable fast data transfer, helping users move smoothly from field capture to final delivery.

This manual will introduce how to install and how to use the H1 handheld 3d laser scanner.

1.2 Packing list

The H1 handheld SLAM device includes one Scanner body and two handheld batteries. A detailed packing list is shown in the table below.

No.	Name	Quantity
1	Scanner body	1
2	Silicone protective case	1
3	External GPS	1
4	Power adapter	1
5	Power Cable	5
6	Manual	1
7	Handle Battery	2
8	Handle holder	1
9	Ring screw	1

10	USB flash drive	1
11	Card reader	1
12	Memory card adapter	1

2.1 Hardware assembly

Before you begin equipment installation, please check the parts list to see if any parts are missing.

2.1.1 Scanner Body Installation

First, take out the Scanner body and Handle Battery, and remove the silicone protective cover.



The second step is to install the SD card to enable data storage (the SD card is pre-installed inside the instrument at the factory).



After the SD card is installed, align the connectors of the Scanner Body and the Handle Battery.



Next, install the Handle holder so that the device can be placed flat on a flat surface. After installation, please tighten this screw.



Install the External GPS after the Handle holder is installed.



2.1.2 Charger Assembly and Use

The package includes five different power cables; you can choose the one that best suits your socket to connect to the power adapter.



After selecting the correct option, please connect the power adapter and plug in the power source.



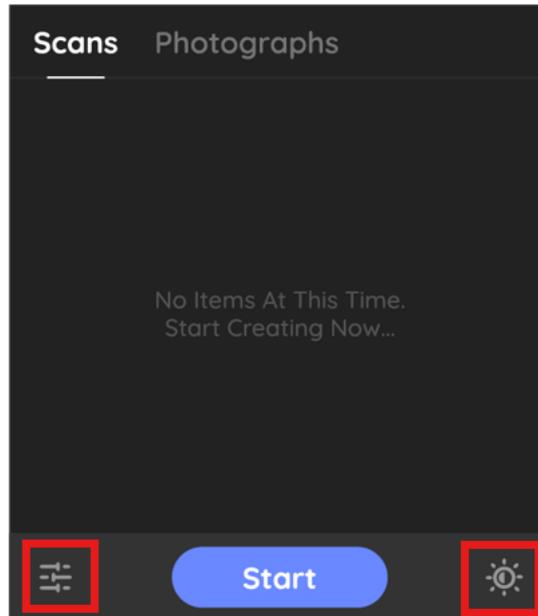
2.2 Power On

Press the power button to turn on the device. To turn it off, press and hold the power button for 5 seconds.



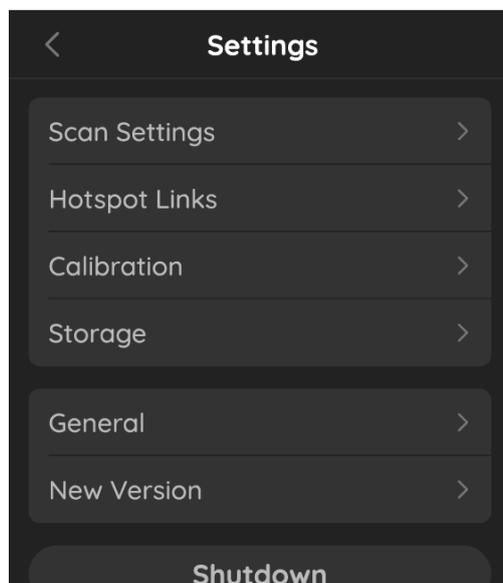
2.3 Software Interface

After powering on, the device will enter the main interface. The system settings button is located at the bottom left, and the scan scene settings button is at the bottom right.



2.3.1 System Settings

Click the settings button to enter the system settings interface.



Scan Settings: Set the point size and point cloud density. (All configurations in the scan settings take effect only when scanning, but do not affect the captured data.)

Hotspot Links: supports data transmission, remote collection, etc. (For more details, please refer to 3.3.2)

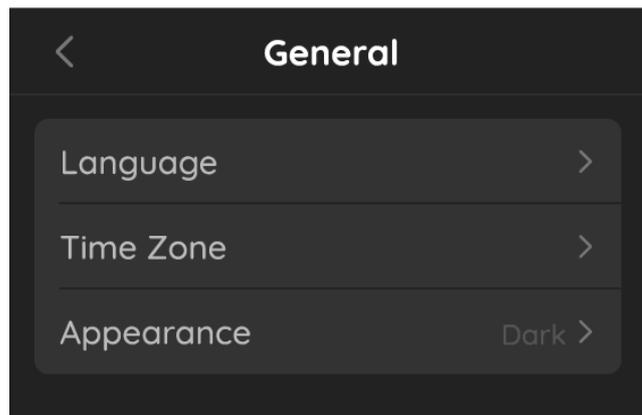
Calibration: Import the calibration file. (For More details, please refer to 3.4)

Storage: Check the storage space and format the SD card.

New Version: View Version Info

General: Switch languages, time zones, and appearance settings.

Click "General" to enter the general settings interface.



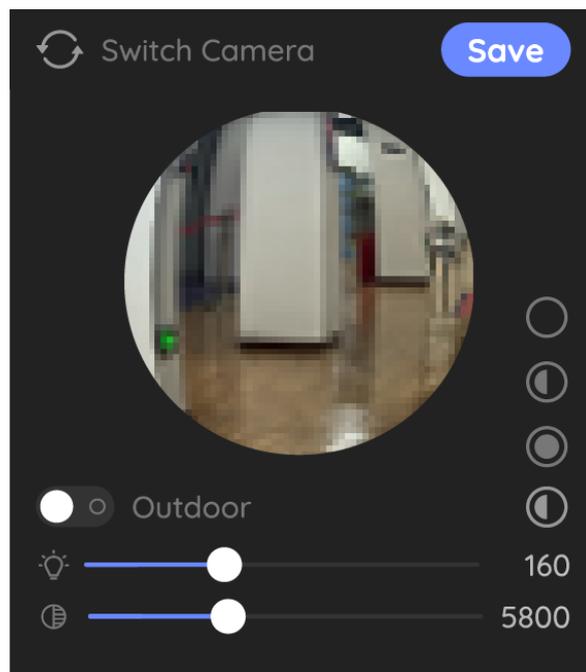
Language: Select the device language

Time Zone: Switching the time zones will affect the display of the scan time.

Appearance: Set the background color when scanning, and you can switch between dark and light mode.

2.3.2 Scan Scene Settings

Click the scan scene button in the lower left corner of the main interface to enter Scan scene settings.



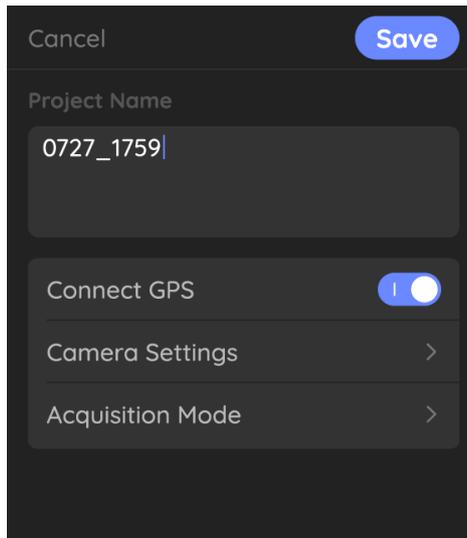
 **Switch Camera**: Switch between left, center, and right camera views (all configuration options apply to all three cameras simultaneously).

 **Outdoor**: Enable outdoor mode; the brightness will automatically adjust for outdoor environments.

: The device features three brightness levels for optimal visibility.

3.1 Scanning Setting

Click the Start button on the main interface to enter the scan settings interface.



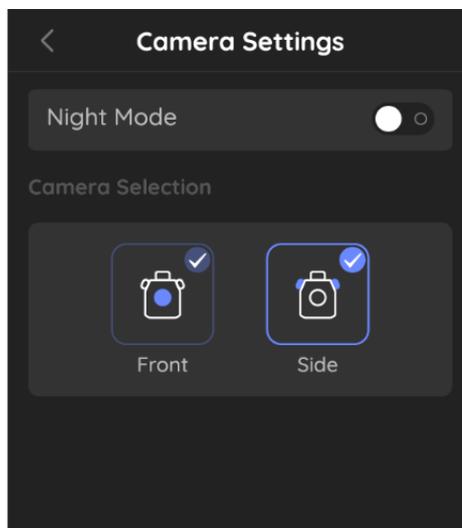
Connect GPS: Enable or disable GPS.(Please refer to 4.5.1 for details)

Camera Settings: Enable or disable night mode and cameras. (Please refer to 3.1.1 for details.)

Acquisition Mode: Choose between two acquisition modes, continuous or fixed point mode. (Please refer to 3.1.2 for details.)

3.1.1 Camera Settings

This interface will appear after clicking on camera settings.

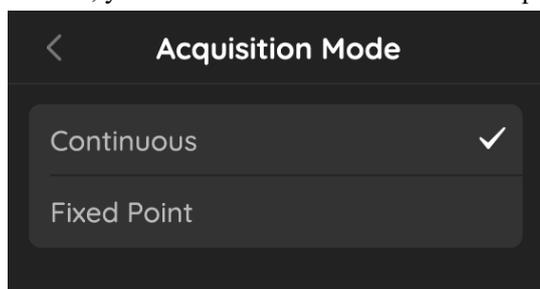


Night Mode: All cameras will be disabled automatically if you enable night mode.

Camera Selection: All cameras will be enabled automatically if night mode is disabled; the left and right cameras can be manually turned off.

3.1.2 Acquisition Mode

In the acquisition mode settings interface, you can choose between two data acquisition modes.

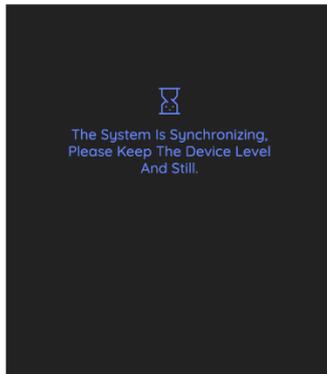


Continuous: used for point cloud settlement, point cloud shading, Gaussian Splatting, network construction, and texture mapping.

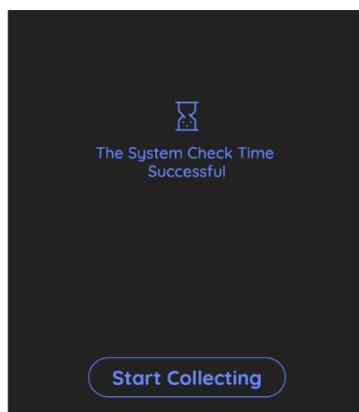
Fixed Point: used for point cloud settlement, network construction, and panorama stitching. When collecting, you can take a photo manually, and the photo can be viewed in the camera folder.

3.2 Start Scanning

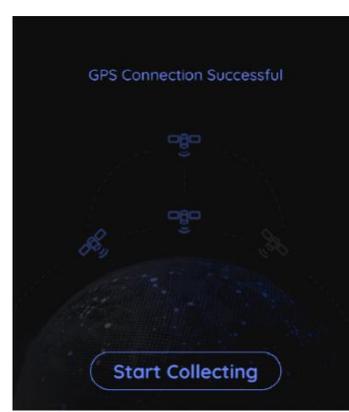
After clicking save, a time synchronization interface will appear. (It takes a long time to align the time for the first time after device startup. Please wait until the process is complete.)



Time synchronization (GPS disabled)

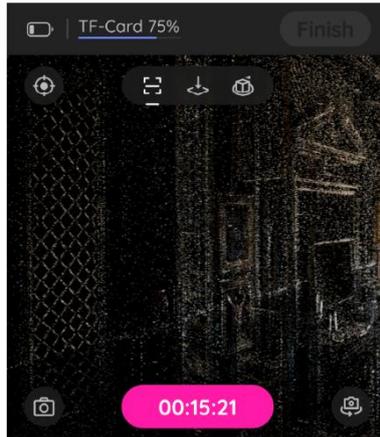


GPS connection and time Synchronization (GPS enabled)



3.2.1 Scanning Interface

After clicking "Start Collecting", you will enter the point cloud data collection interface.



: Click to add a new marker point, which makes it easier to modify the control point coordinates later.

: Top view with a 45° inclined

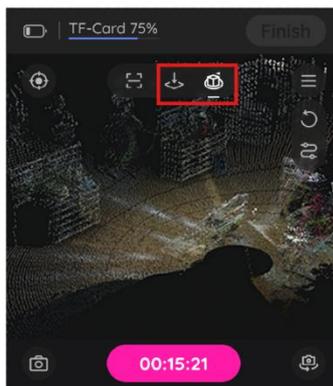
: Top view

: Front camera view

: In fixed-point acquisition mode, click to take photos.

: Live/point cloud display when split-screen mode is off.

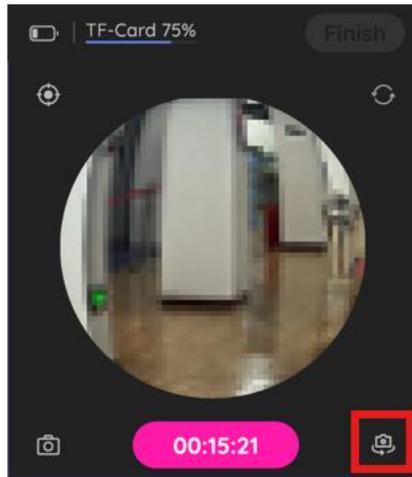
Switch between the top view with a 45° inclined and front camera view to check the initial view and trajectory line.



: Initial view, for returning to the initial scanning view.

: Trajectory line, for viewing the shooting trajectory while scanning.

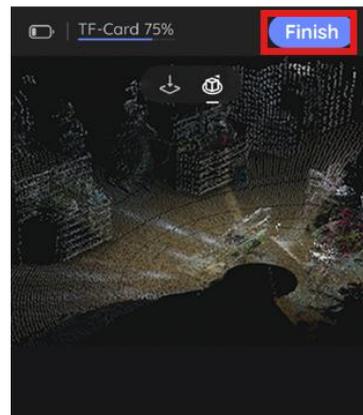
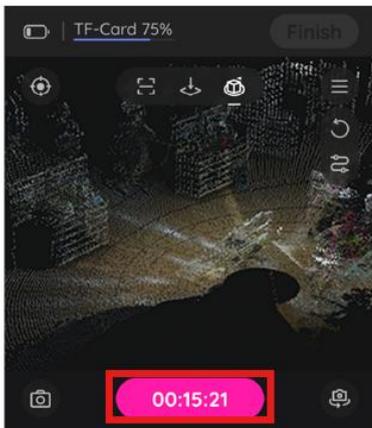
Click the switch button to enter the live camera view.



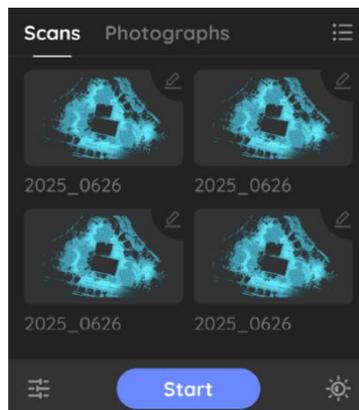
: Click to switch between available camera views

3.2.2 Scan Ended

When your scan is complete, tap the time display button at the bottom to end the scan, and click the Finish button in the upper right corner to save this data.



After saving, the project file will appear on the main interface.



3.3 Data Export

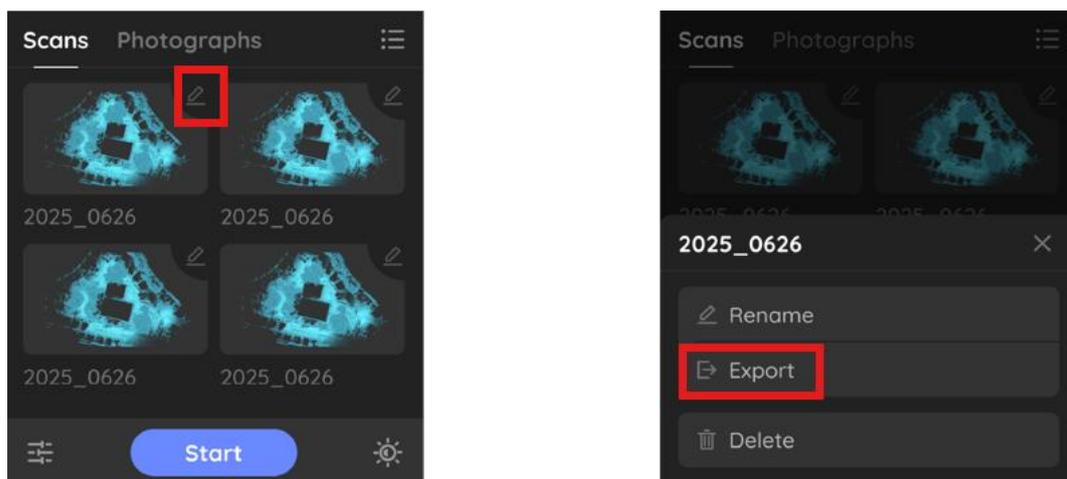
Data can be exported either by using a USB drive or by connecting through a hotspot.

3.3.1 Export using USB drive

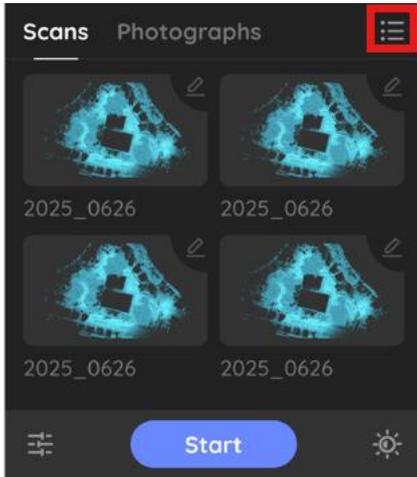
Connect the USB drive to the adapter, and insert it into the device data port.



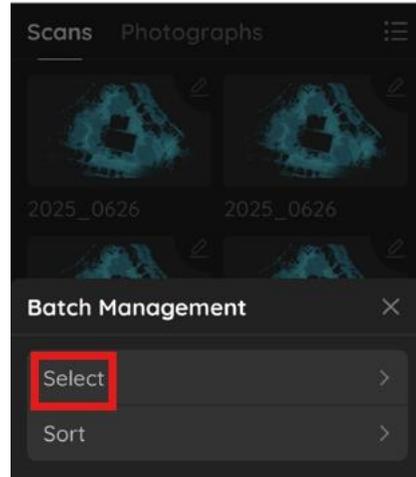
After the USB drive is detected, you can select to export the project file on the main interface.



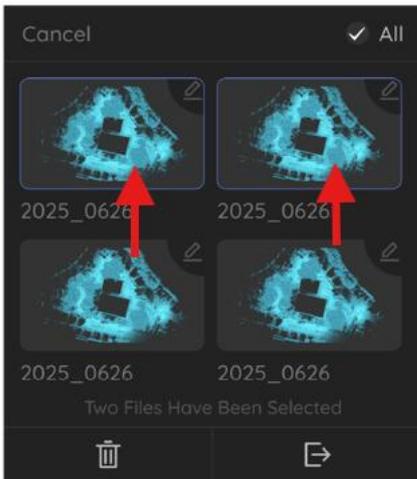
If you want to export multiple files, tap  to manage the data list, set the sorting method and proceed to the selection page.



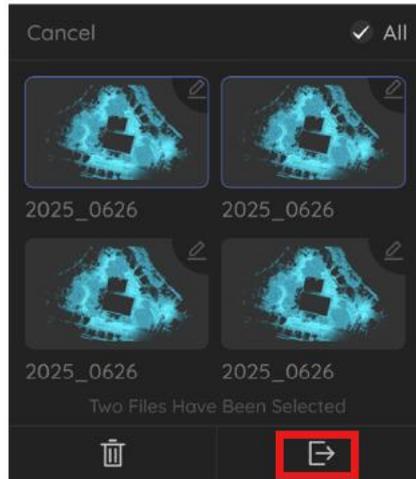
P1



P2



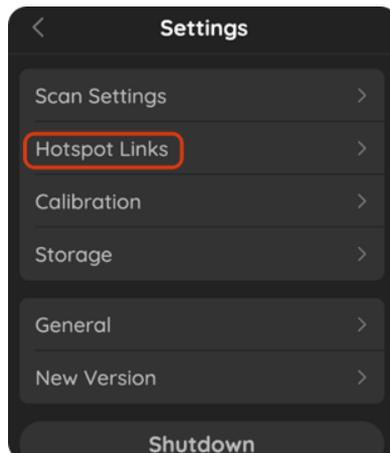
P3



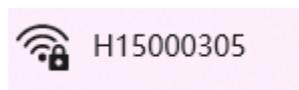
P4

3.3.2 Export via Hotspot Connection

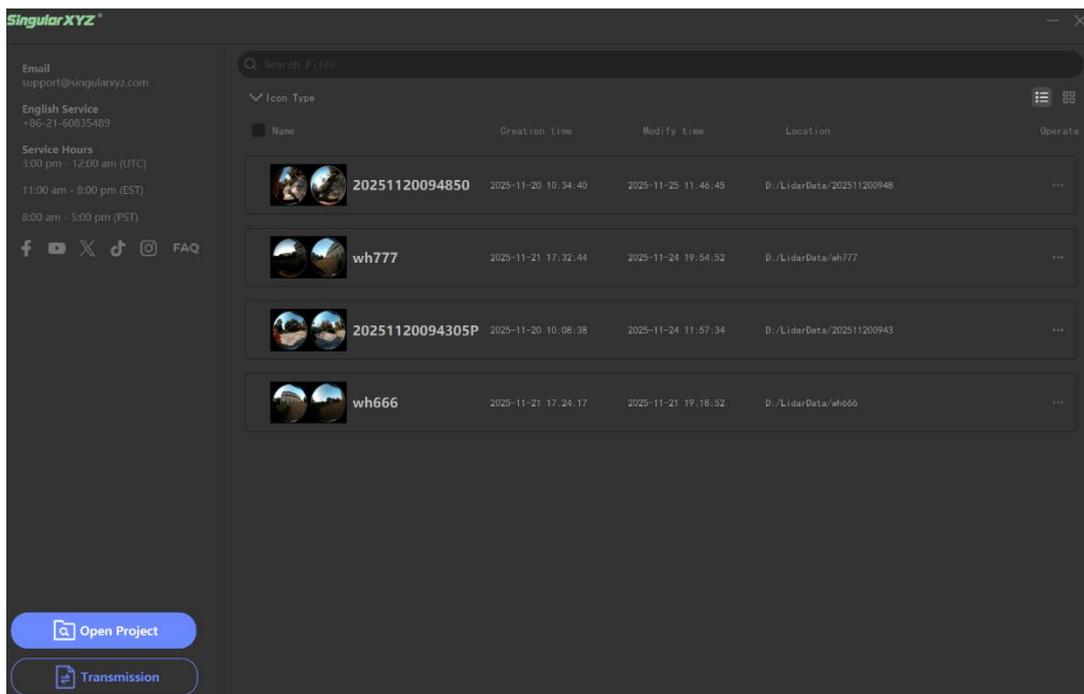
Turn on the device, go to the System Settings, select Hotspot Links, and enable this option will activate your device's Wi-Fi.



On your computer, connect to the instrument's Wi-Fi. The default password is 12345678.



After connecting, open the processing software on your computer and select Transmission.

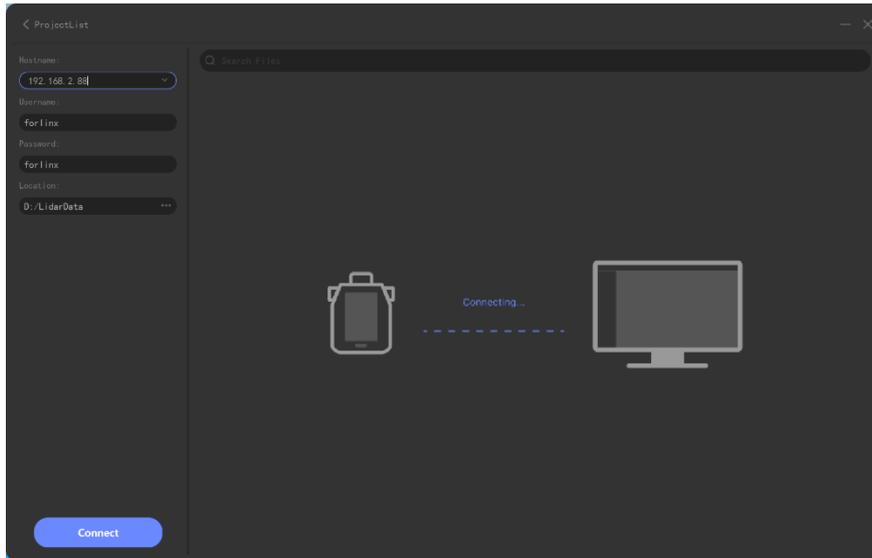


In the pop-up window, enter the IP address and username/password shown in the image.

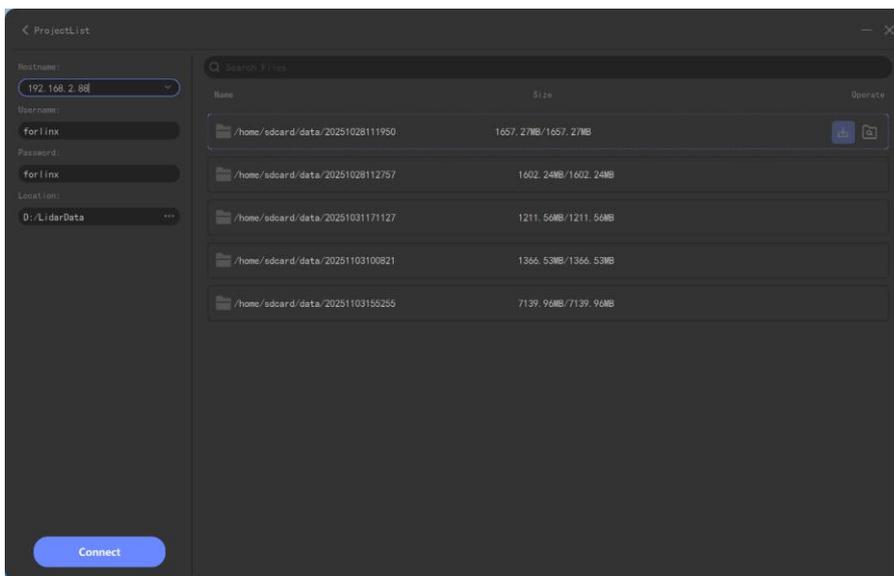
IP:192.168.2.88

Username: forlinx

Password: forlinx



After completing the input, click "Connect." The device's project file will appear on the right side of the interface. Select the file you want to download and click "Download."



3.4 Import the Calibration File

The device has been calibrated at the factory. If your device needs to be re-calibrated, please follow the steps below to import a new calibration file.

3.4.1 Preparation before Importing the file

1. Download the calibration file to the USB flash drive on your computer and save it in the folder named Calibration.

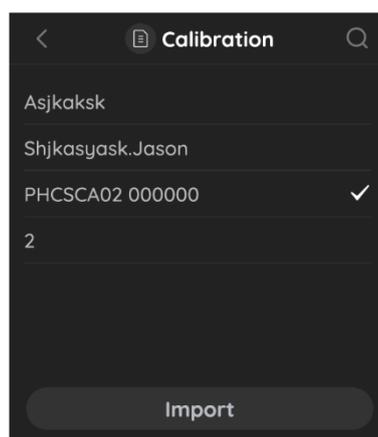
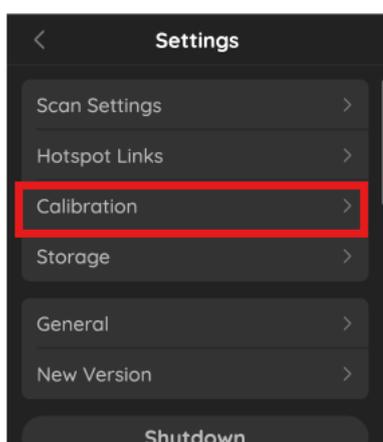
*Note: The Calibration folder needs to be created manually if there's no such folder in the USB.

2. Connect the USB flash drive to the adapter and insert it into the device via device data port.



3.4.2 Import

Tap "Calibration" in the settings page, and import the calibration file.



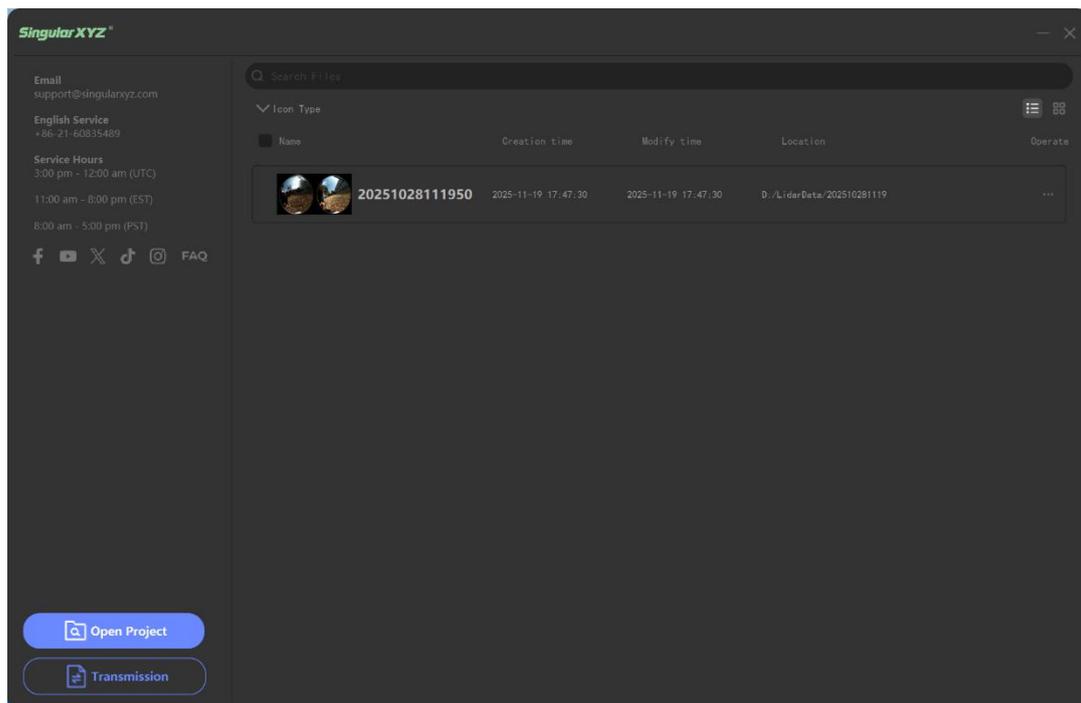
4.1 Data Import

There are two ways to import data into the software.

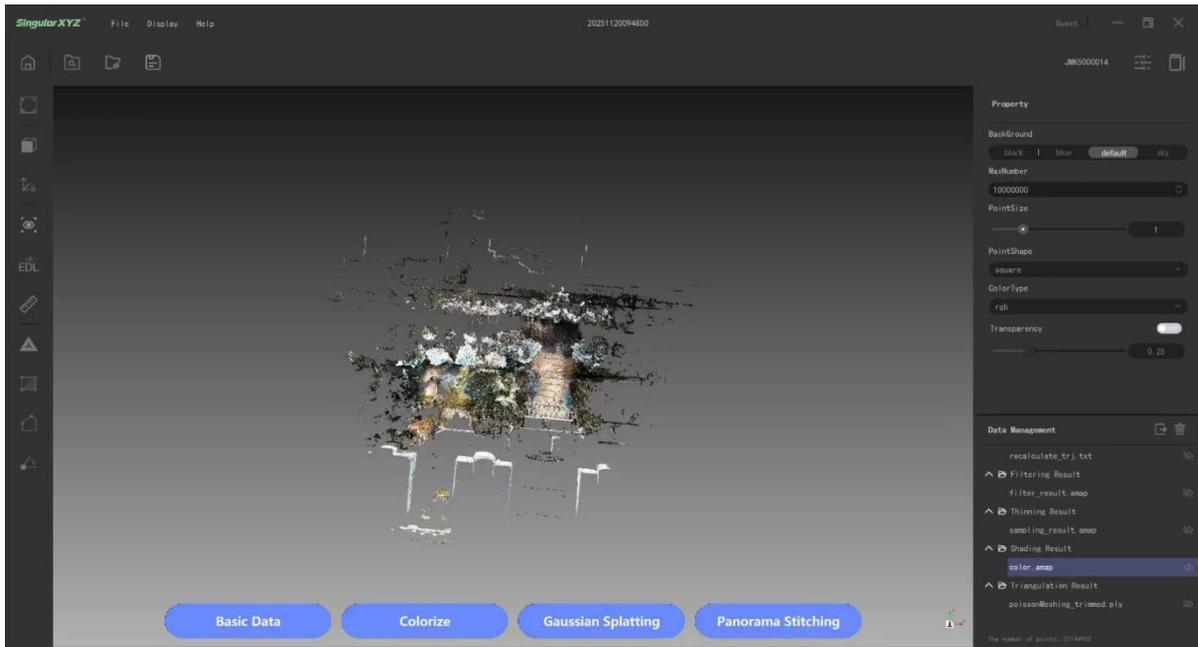
1. One way is to download the project file from the device to a USB flash drive, then insert the USB flash drive into the computer to import the project file.
2. The other way is to connect to the device's Wi-Fi hotspot and import the data directly into the software. Please refer to section 3.3 for detailed instructions.

4.2 Main Interface

After opening the software on your PC, you will be taken directly to the main interface, where all imported project files are listed.



Click on a project to enter its project workspace.



 : Return to the learning page

 : Import files

 : Import a single data

 : Save data

 : Calibration document

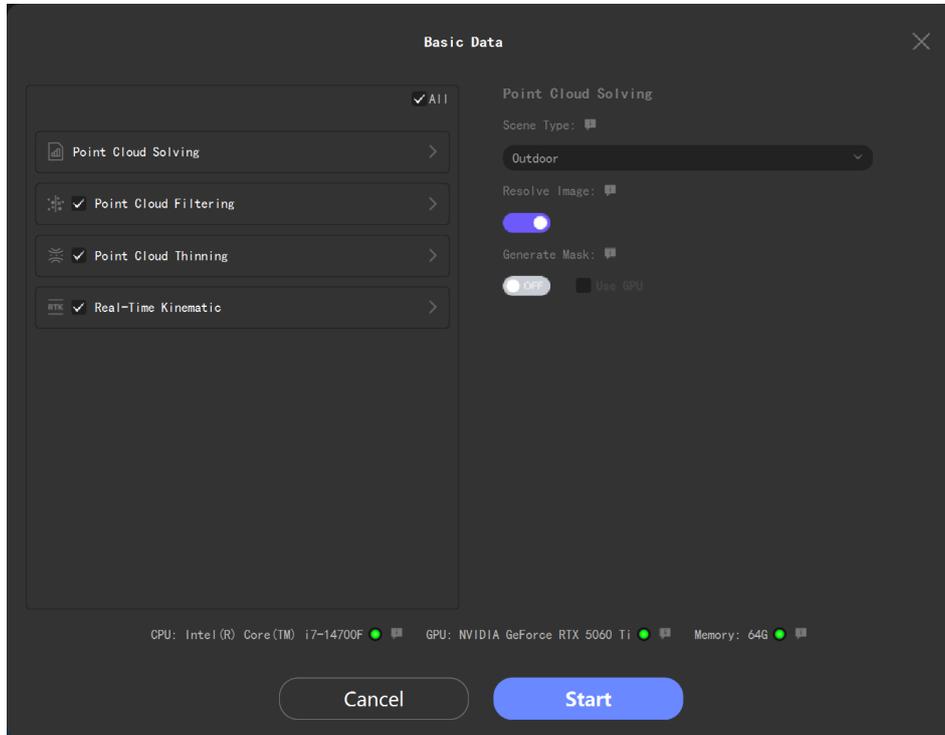
 : System Settings

 : Full-screen browsing

4.3 Data processing

4.3.1 Basic Data

Click "basic data" to enter the basic data processing interface, then select the option you need



Point Cloud Solving : Point cloud computation, reading scanned data

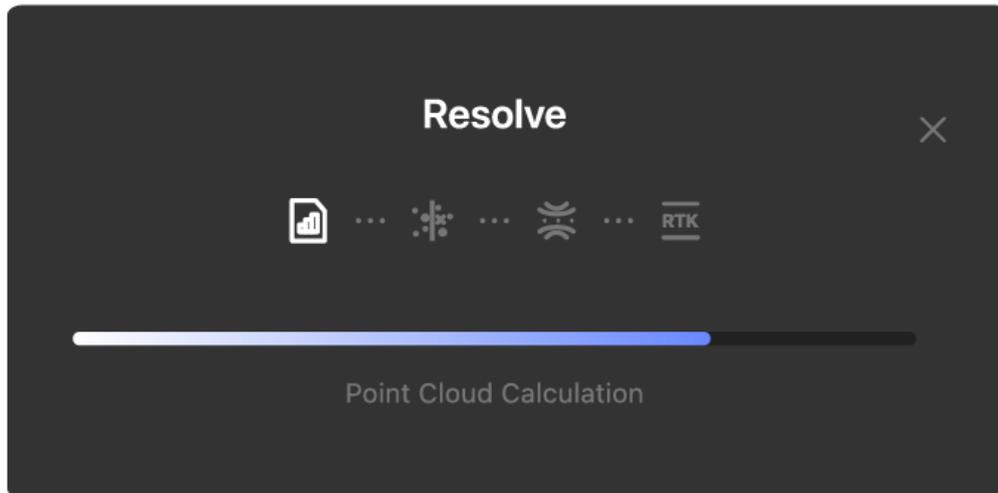
Point Cloud Filtering : Filtering can reduce or eliminate unwanted noise in a signal.

Point Cloud Thinning : Removes redundant points while preserving original geometry and structural features.

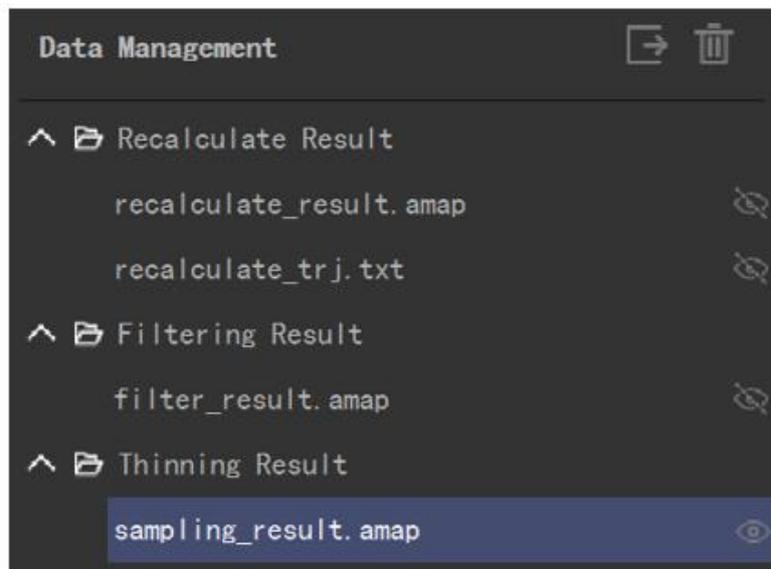
Real-Time Kinematic : For detailed instructions on RTK, please refer to the RTK section.

Resolve Image : If you have your camera on, please enable this feature to process the image.

After clicking Start, the software will begin processing your data.



After processing the data, some data is hidden by default. Click the research symbol in the data list to display them.



`recalculate_result.amap`: Solved point cloud data

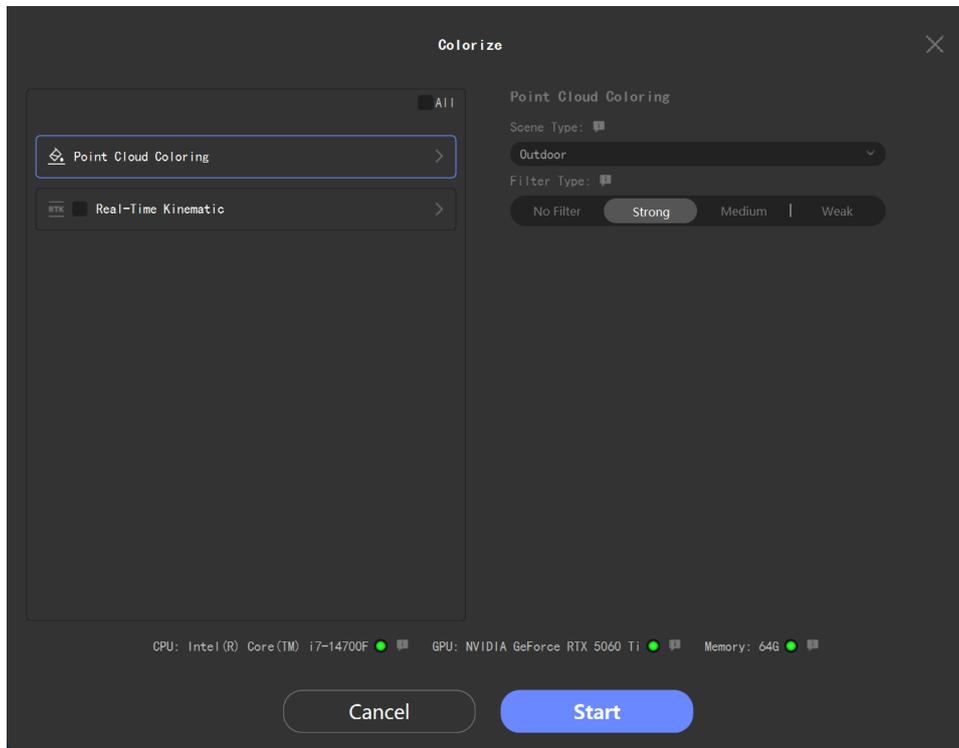
`recalculate_trj.txt`: The filming route

`filter_result.amap`: Selecting "Filter" during the solution process will generate filtered data.

`sampling_result.amap`: Selecting "Thinning" during the solution process will generate thinned data.

4.3.2 Colorize

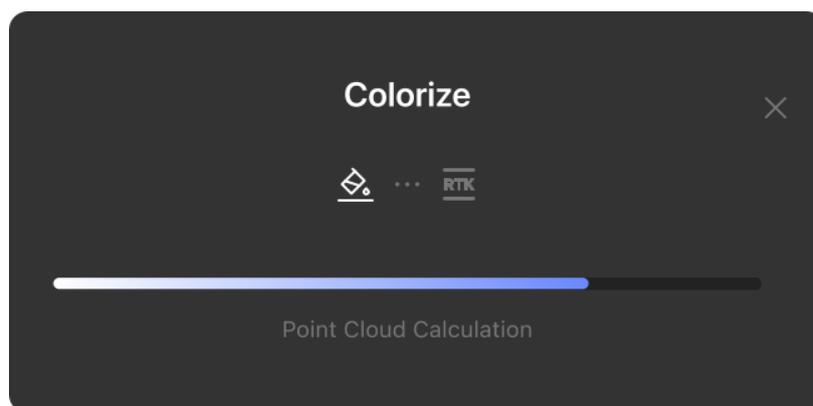
Click "Colorize" to enter the colorization interface, then select the option you need



Point Cloud Coloring: Point cloud coloring (Default selection, no additional settings required.)

Real-Time Kinematic: For detailed instructions on RTK, please refer to 4.5

After clicking Start, the software will begin to process your data.

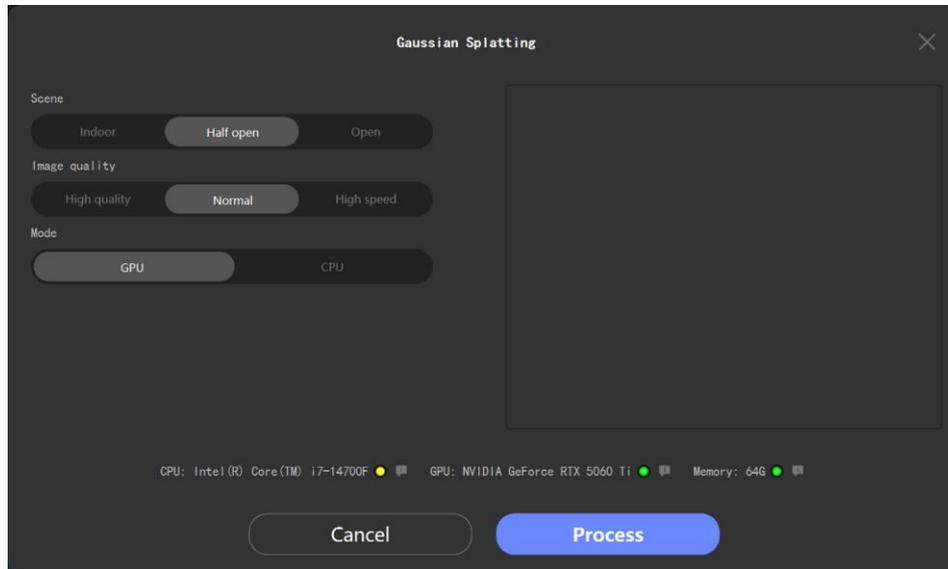


The processing results can be viewed in the data list.



4.3.3 Gaussian Splatting

Click Gaussian Splatting to enter the basic data processing interface, then select the option you need (Processing may take a long time. Please wait until the process is complete..)

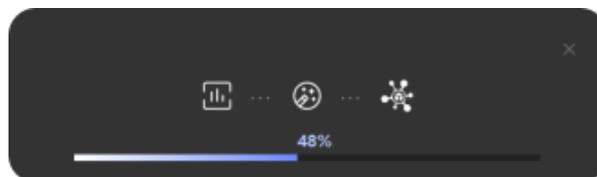


Scene: Select the corresponding scanning scene

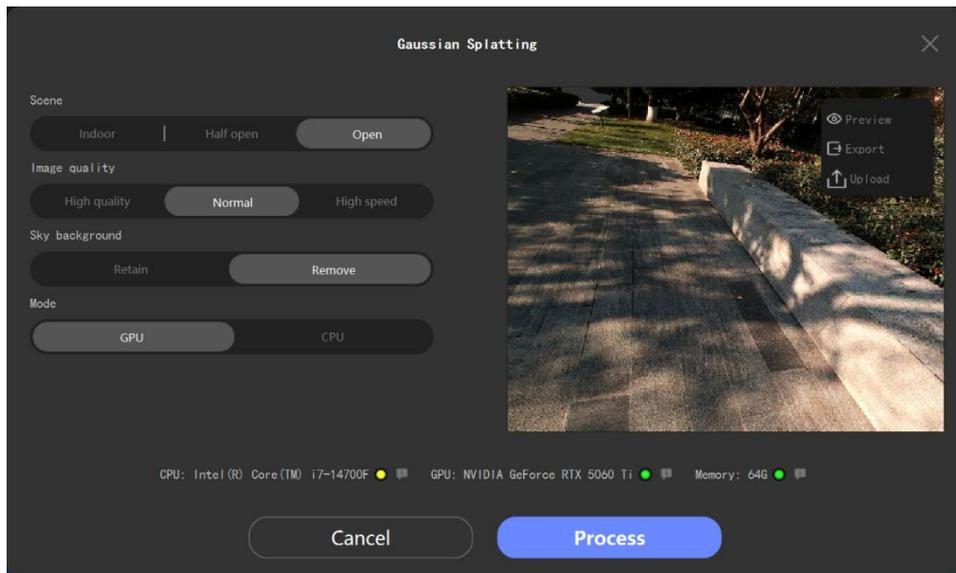
Image quality: Select the image processing mode; high-quality processing is slower but produces better results, while high-speed processing is faster but produces average results.

Mode: Choose the GPU memory allocated by the system to the current software. If no other large processes are using it, it is recommended to choose 12GB or 16GB. In scenarios with excessively large scan data, choosing 8GB may result in failure.

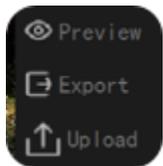
After completing the settings, click "Process".



After processing is complete, the image will be displayed on the right side of the interface.



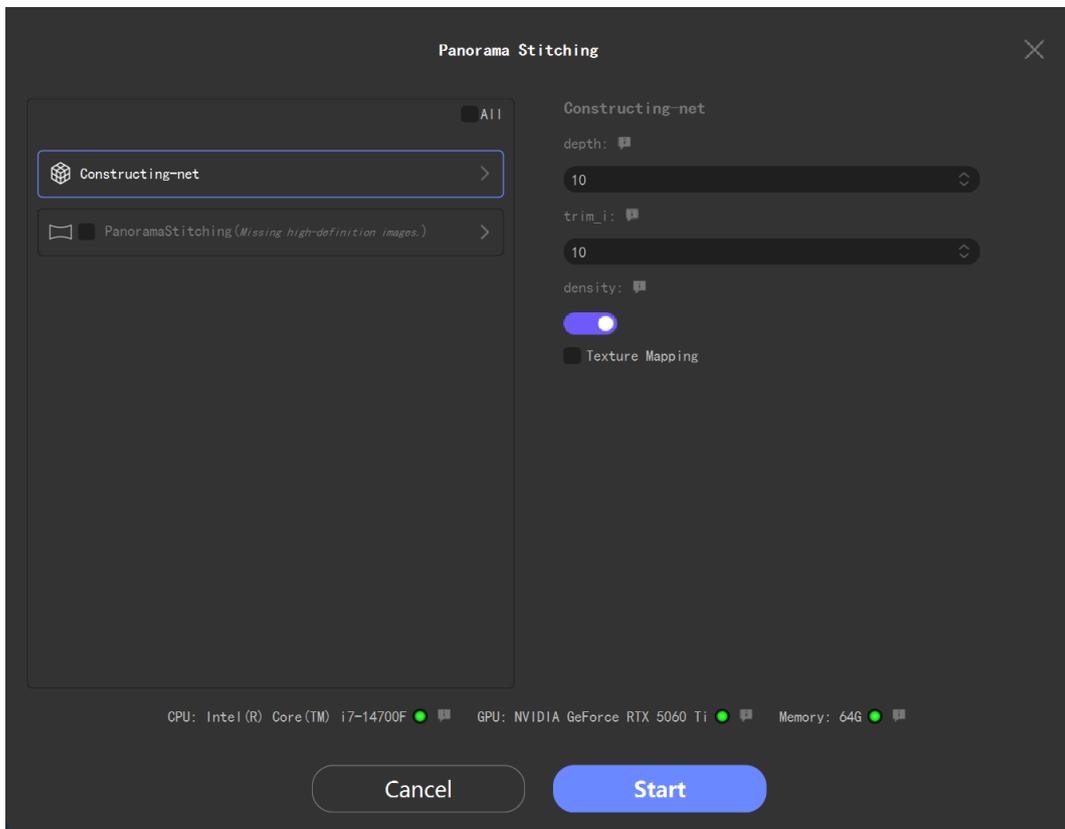
Sky background : Choose whether to retain the sky background in the output.



: The preview image can be viewed in the upper right corner, where you can choose to preview, download, or upload.

4.3.4 Panorama Stitching

Click " Panorama Stitching " to enter the basic data processing interface, then select the option you need



Constructing-net

: This option is enabled by default and requires no further action.



PanoramaStitching (Missing high-definition images.)

: Panoramic stitching (Available only in fixed-point shooting mode)

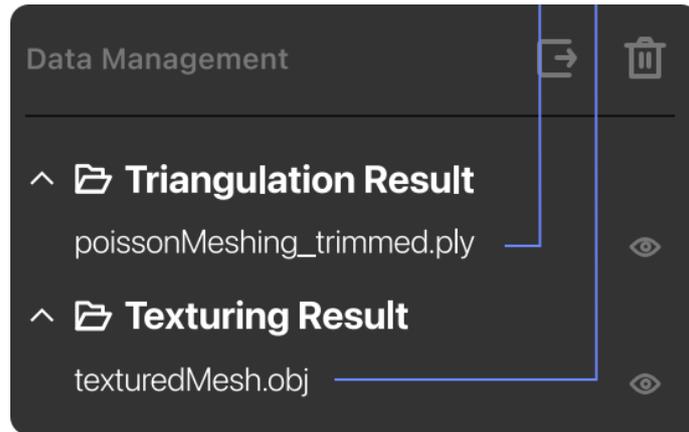
Texture Mapping

: Apply texture patches to mesh data (Available only in continuous acquisition mode).

After completing the settings, click "Process".



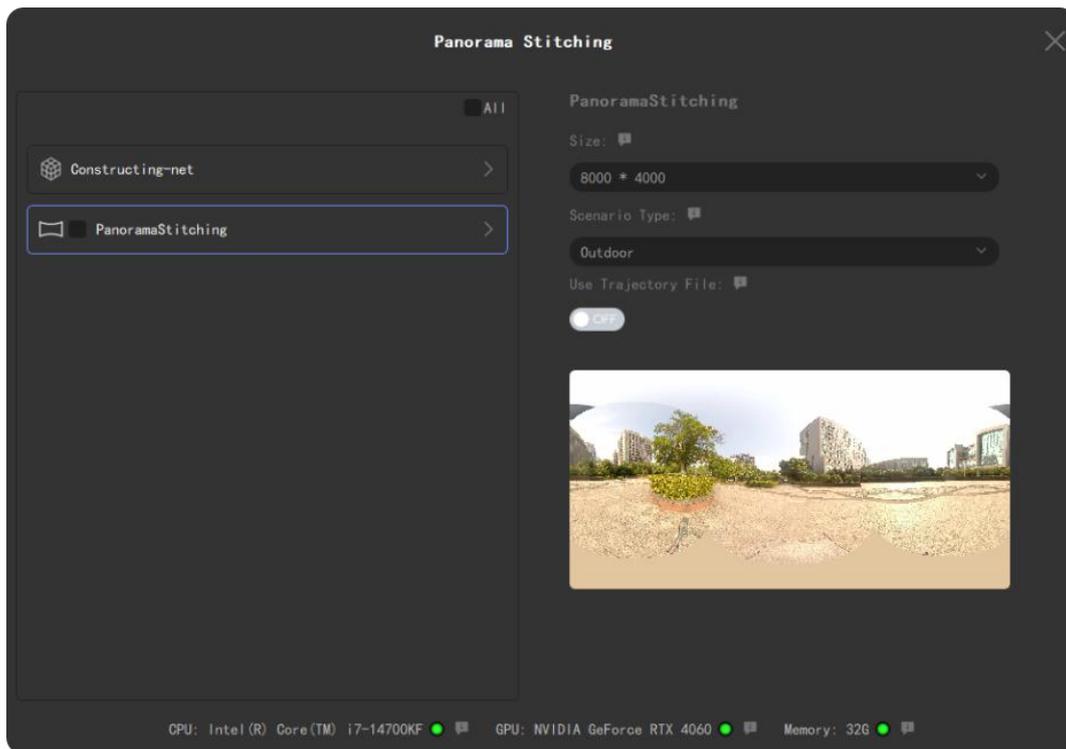
The processing results can be viewed in the data list.



`poissonMeshing_trimmed.ply`: Meshing data

`texturedMesh.obj`: This data is generated when you select panorama stitching.

The panorama stitching can be viewed in the current window.

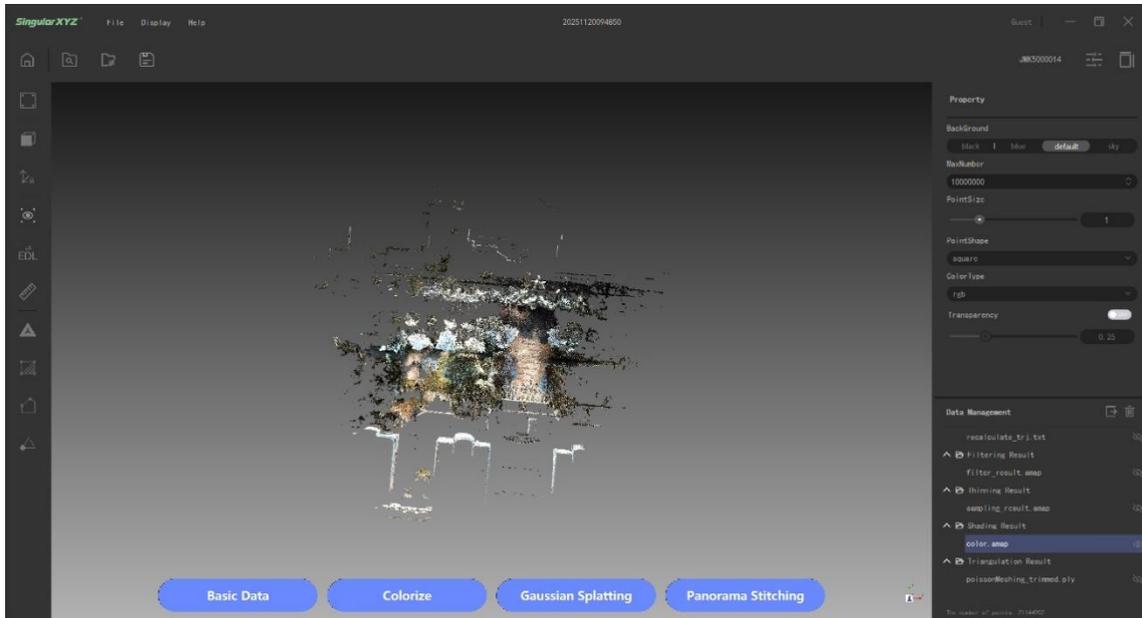


The photos generated by the panorama stitching can also be viewed in the corresponding local folder.

- 📁 calibration
- 📁 camera
- 📁 **panorama** ◀
- 📁 thumbnail
- 📁 tmp

4.4 Data Editor

You can use the tools on the left to edit the point cloud and grid data.



: Reset camera view. This will readjust the viewpoint, restoring the point cloud data to its default top view and centering it.

: It allows you to switch between six perspectives: front view, rear view, left view, right view, top view, and bottom view.

: Coordinate axis locking. Locks the X, Y, and Z axes, preventing any accidental changes to that orientation.

: Entering/Exiting First-Person View. The first-person view primarily mimics the perspective of the human eye observing the 3D world, making point cloud data more realistic and presenting the effect of objects appearing larger when closer and smaller when farther away. (Use WASD to move, Q and E to rise and fall, R and F to tilt the head up and down, and the left mouse button to control the camera view.)

: Enhance the display of ground feature outlines in point cloud data

: Switch the background color based on your viewing preference.

: Sets an upper limit for the number of displayed points after processing.

: Adjusts the display size of point cloud points.

PointShape: This function is used to configure the point cloud display shape.. Square shapes show color more clearly, while circular point clouds are easier to observe for scanning sparsity.

ColorType:

1. Selecting RGB displays the point cloud in its actual colors;
2. Selecting "Elevation" allows the point cloud color values to represent the terrain;
3. Selecting "Intensity" displays the point cloud from weak to strong, or pale to pure hues.

Transparency: Adjust the transparency of the point cloud data displayed in the current window. 0 is the minimum, and 1 is the maximum. The smaller the value, the more transparent the point cloud will appear.

4.4.1 Measurement function

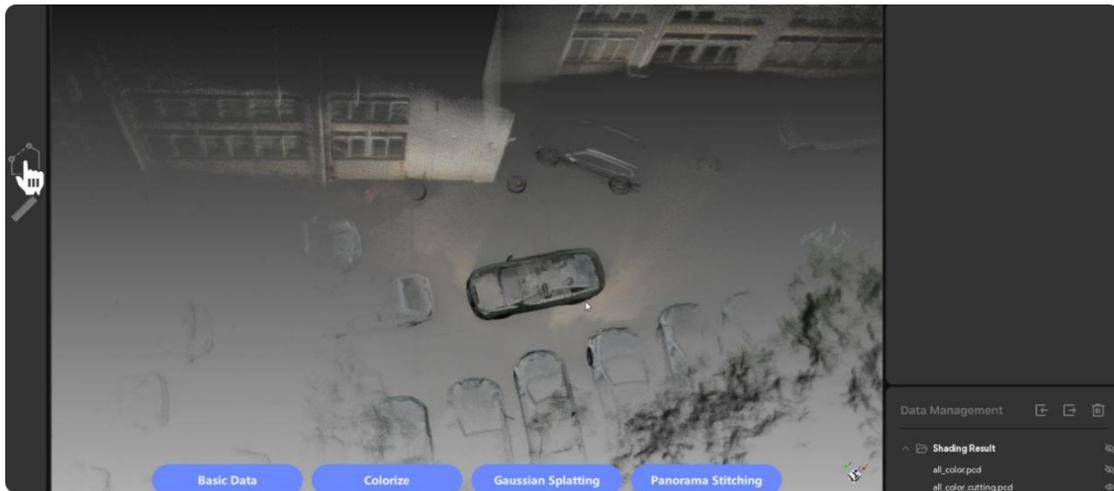
Measurement includes point measurement, line measurement, and volume measurement. Point measurement displays the relative coordinates of selected points; line measurement measures the distance between two selected points; volume measurement allows you to select a point cloud and automatically calculates its volume.

Prerequisites:

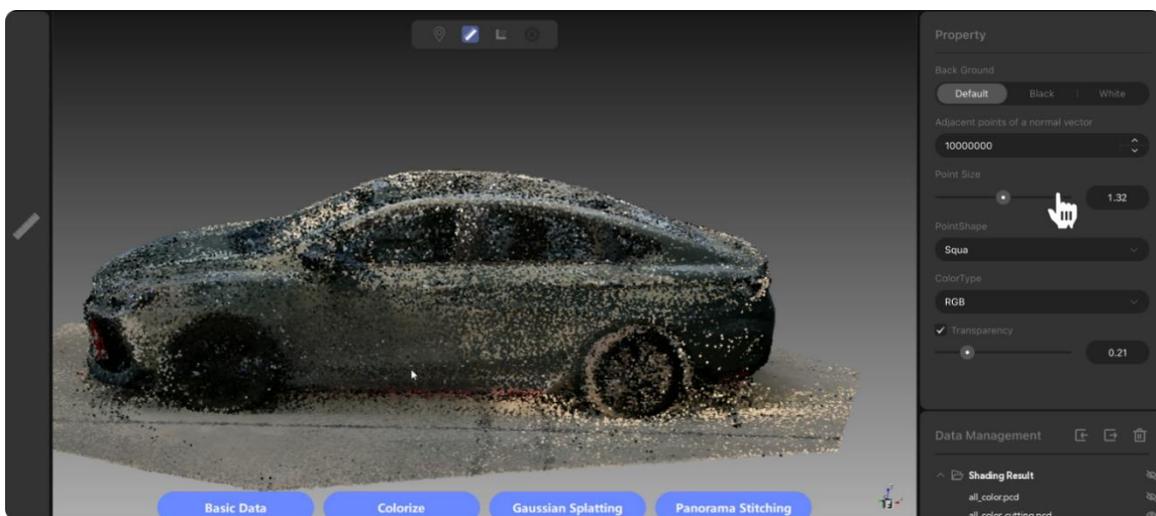
1. First, open the shaded point cloud data and do not display other data.



2. It is recommended to use the point cloud cropping function to crop out all point clouds outside the measurement area (for detailed instructions, please refer to the Point Cloud Cropping section).

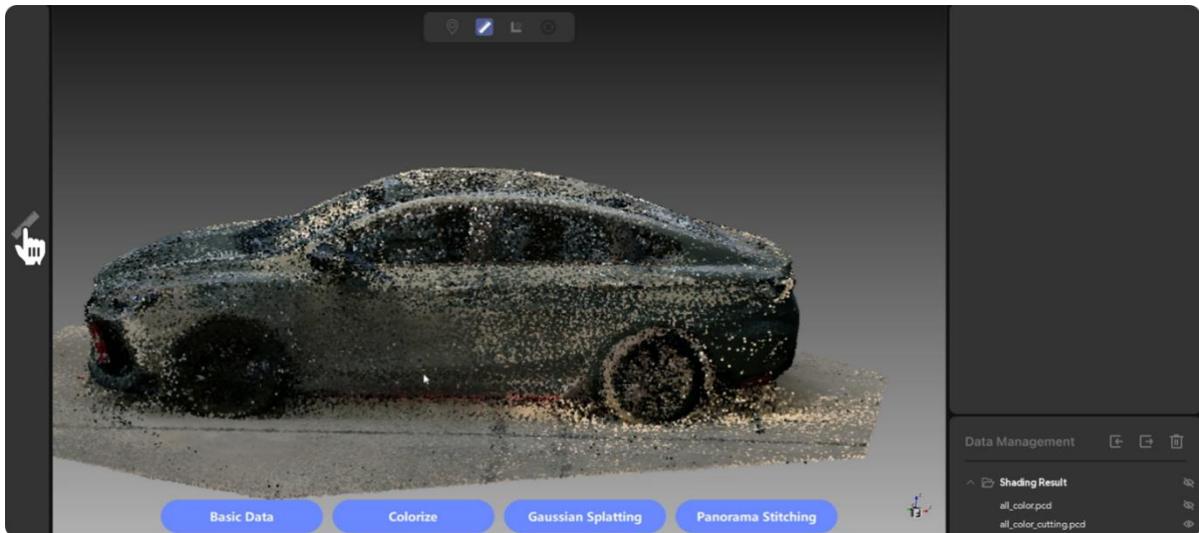


- Depending on the scanning environment, the point cloud size in the properties bar can be appropriately increased to facilitate point selection (avoiding incorrect selection or selecting points behind the surface).



Operating steps:

- ① Click  under point cloud shading data to enter the operation interface (taking shading data as an example).



- ② Select the measurement method according to actual needs.



- : Point measurement: simply left-click the mouse to obtain the coordinates of the point.
- : Linear measurement: Left-clicking to add at least 2 points, and automatically generates the straight-line distance between the corresponding two points.
- : Volume measurement: Hold down the Ctrl key and drag the left mouse button to select an area. The software automatically generates the point cloud volume of the selected area.
- : Clear: Clears all current measurement operations.

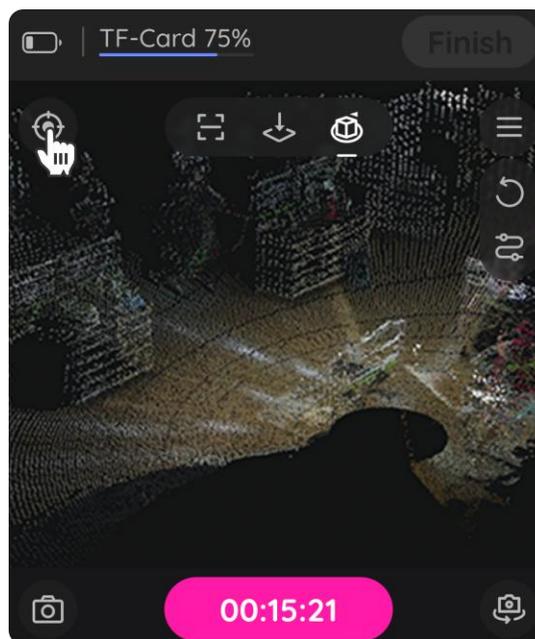
4.4.2 Control point coordinates

The position of the scanned point cloud in the world coordinate system can be calculated by inputting the positions of at least 3 reference points.

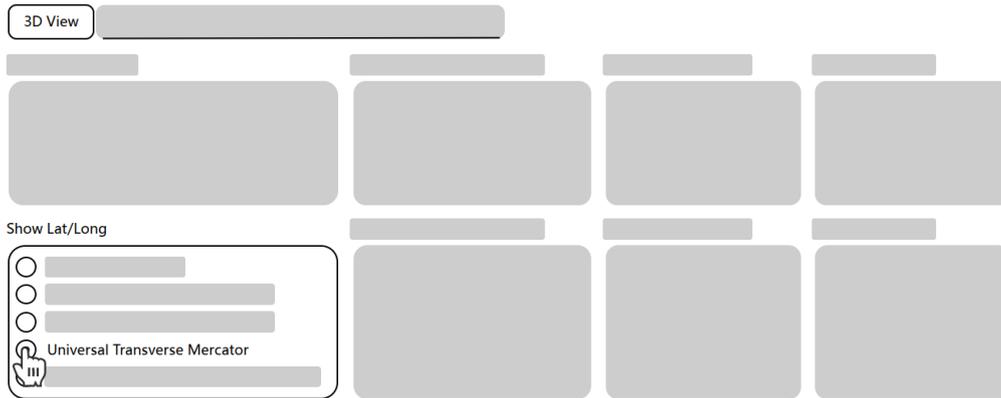
Prerequisites:

Before making any modifications, you need to obtain the actual UTM coordinates of the relevant point cloud in the world coordinate system.

- While scanning and adding marker points, use other auxiliary equipment (such as an RTK measuring instrument) to obtain the actual UTM coordinate information of the marker positions.
 - By selecting point cloud data at the same location, the corresponding UTM coordinates of that location can be obtained in the world coordinate system. Different software may use different methods to obtain these coordinates. The following example is for reference only (using Google Earth Pro as an example).
1. During scanning, marker points (using JMK5 as an example) can be added manually, and tap once to automatically record the current position. (When scanning and adding marker points, the actual UTM coordinates of the point can be obtained simultaneously at the same location using equipment such as an RTK surveying instrument, resulting in higher accuracy.)



2. If there are no other auxiliary tools such as RTK measuring instruments, the coordinates can be obtained through the world coordinate system (taking Google Earth Pro as an example).
 - a. Configure UTM in "Tools > Options..."



- b. Place the mouse over a point with feature points (or a point marked during shooting) to obtain the actual UTM coordinates of the corresponding point. At least three feature points are required.



Operating steps:

1. Click  under "Filter, Sparse or Point Cloud Colorized Data to enter the operation interface (taking colored data as an example).

Note: Colorized data needs to be settled first to obtain the marker points added during the scanning process).



2. Control point coordinates can be calculated in two ways: by manually selecting feature points or by adding points during scanning.
 - Points added during scanning: Marker points have already been added during scanning. Simply enter the actual UTM coordinates of the point cloud at the point cloud location (fill in the actual location information from left to right).



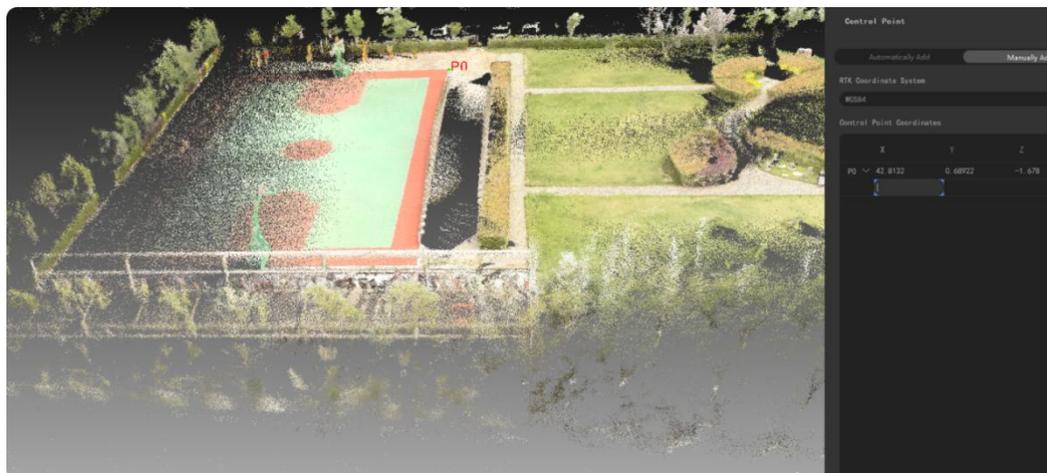
Pole Height (m)

: The height of the equipment above the ground during scanning

Control Point Coordinates

: Actual UTM coordinates of point cloud

- Manually select feature points: Double-click to select the feature point cloud with acquired actual coordinate information, and you can directly enter the actual UTM coordinates of the point cloud below the original data (enter the acquired actual location information from left to right).

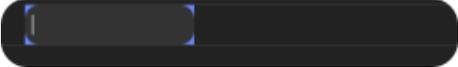


P0 42.8132

0.68922

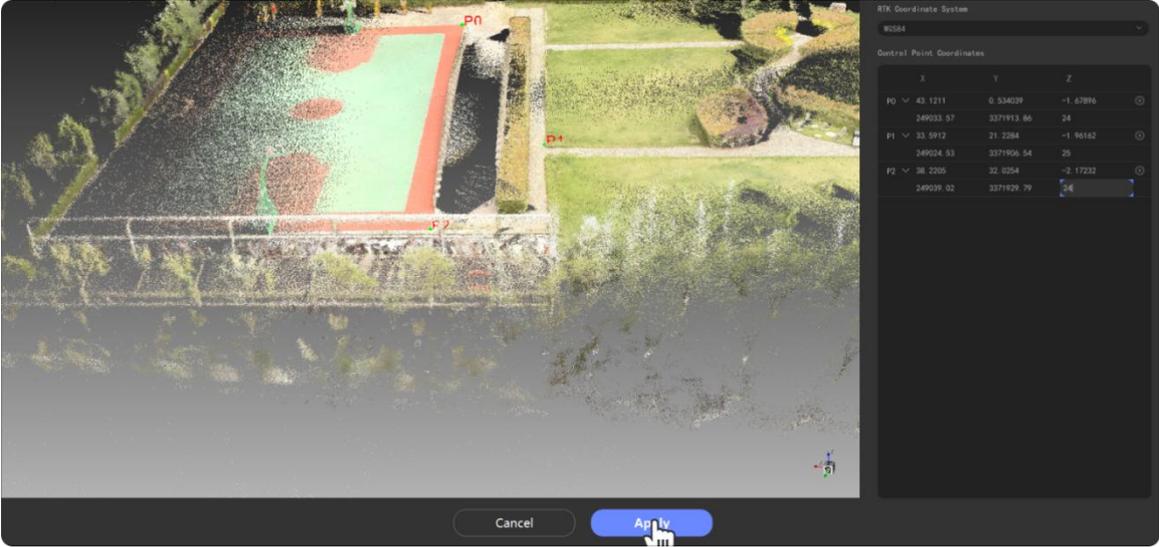
-1.678

: Initial point cloud coordinate information



: Actual UTM coordinates of point cloud

- 3. Enter the coordinates of at least 3 point clouds. When completed, click confirm to generate updated coordinate data.

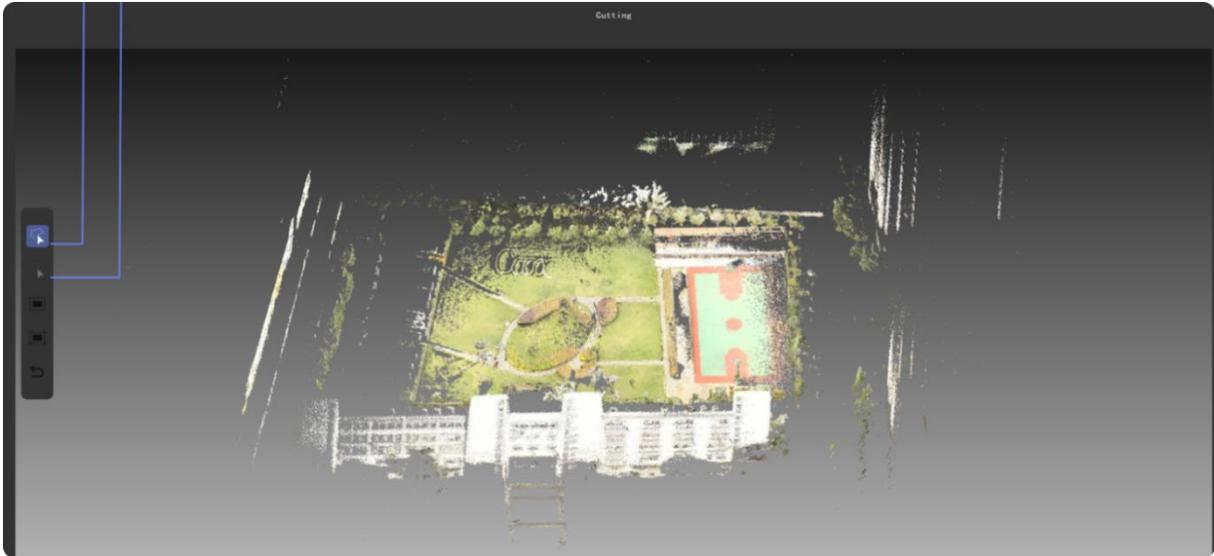


- 4. The processing results can be viewed in the data list:



4.4.3 Point cloud cropping

1. Select the point cloud data to be processed by using polygon clipping or rectangle clipping (polygon clipping shown as an example).



: Polygon clipping. Left-click to add points, right-click to automatically close the points and generate the selected area.

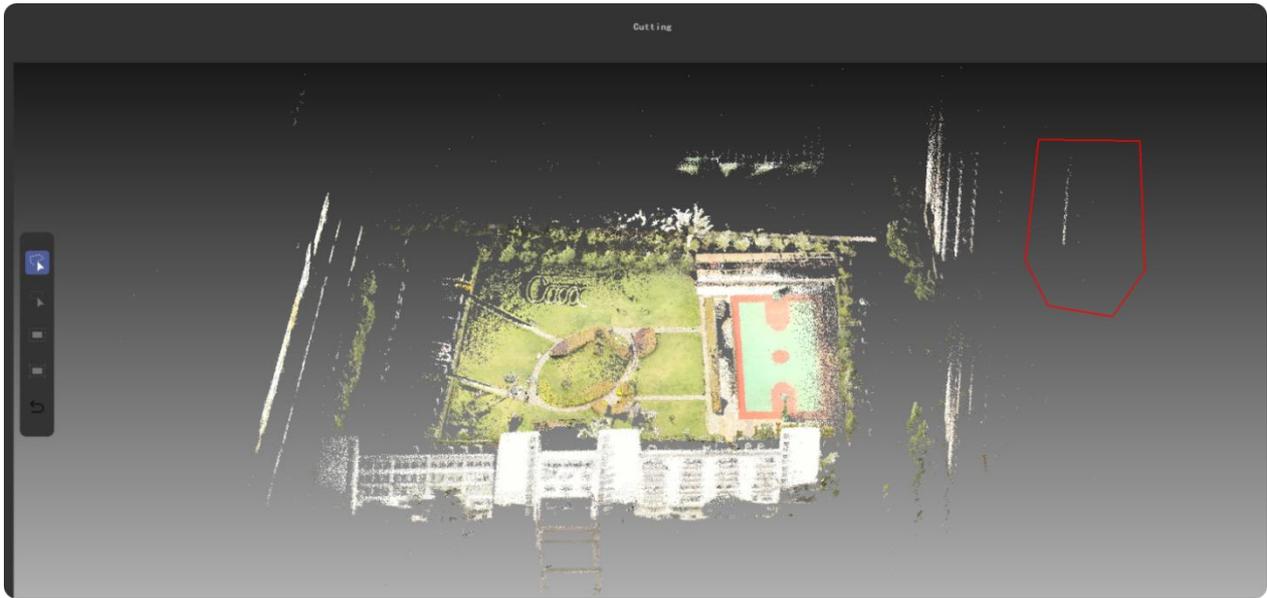


: Rectangular cropping. Drag the mouse with the left mouse button to create a rectangular selection area.



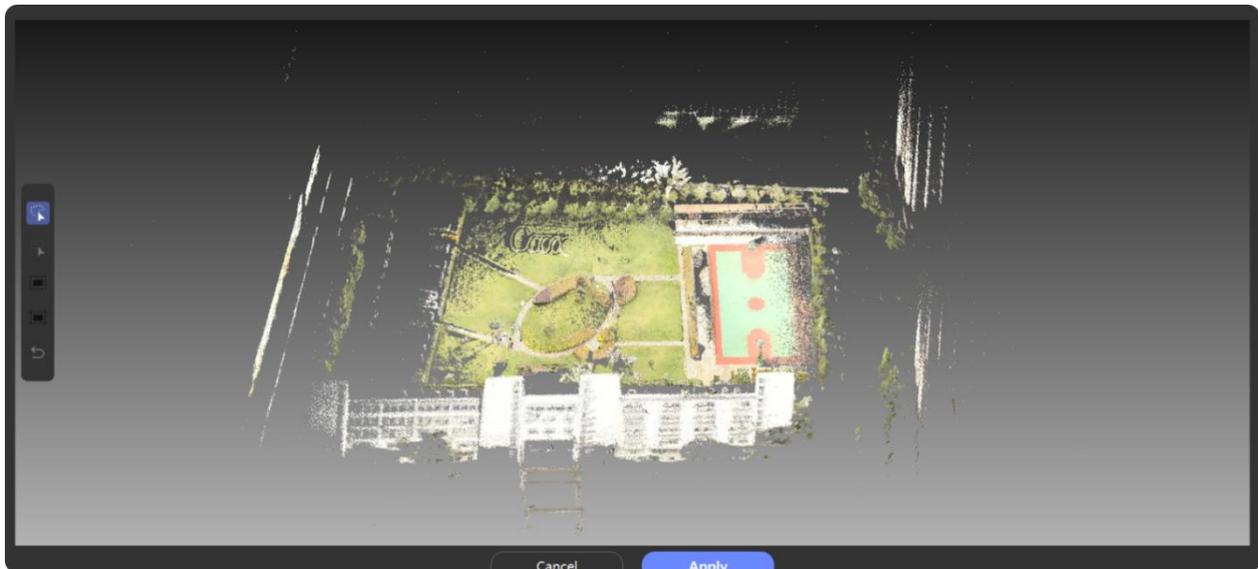
2. Choose whether to delete point cloud data inside or outside the selected area (deleting data inside the selected

area shown as an example).



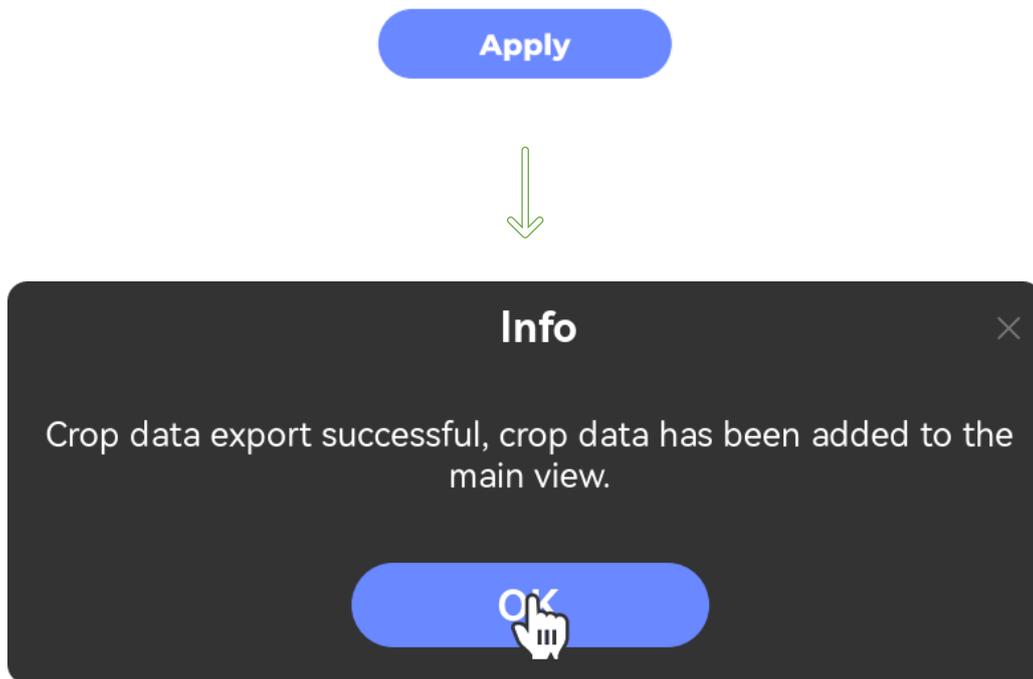
 : Within the selected area: Delete point cloud data within the selected area.

 : Remove outside: Delete point cloud data outside the selected area.

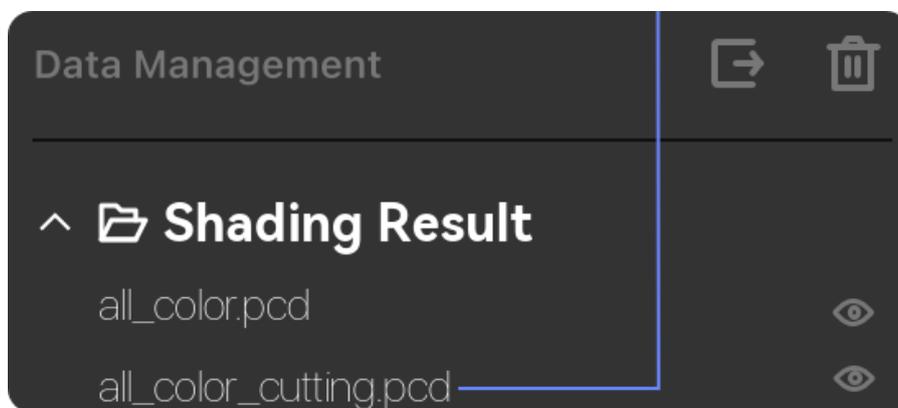


 : Restore the previously deleted data.

3. If you want to keep the current cropped data, click "Apply" to generate new cropped data.



4. Click "Cancel" to exit the cropping interface. The cropped data can be viewed in the data list.

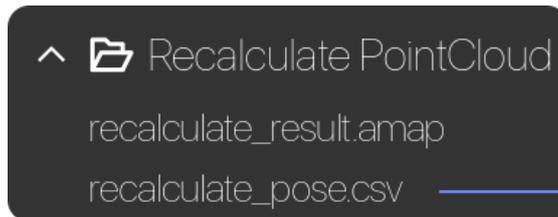


4.4.4 Path Closure

More accurate data can be obtained by verifying single-frame point cloud data from the same starting and ending points. Before performing this operation, data processing must be performed to obtain the movement trajectory at the time of scanning.

Prerequisites:

Data processing is required to obtain the captured movement trajectory route file.



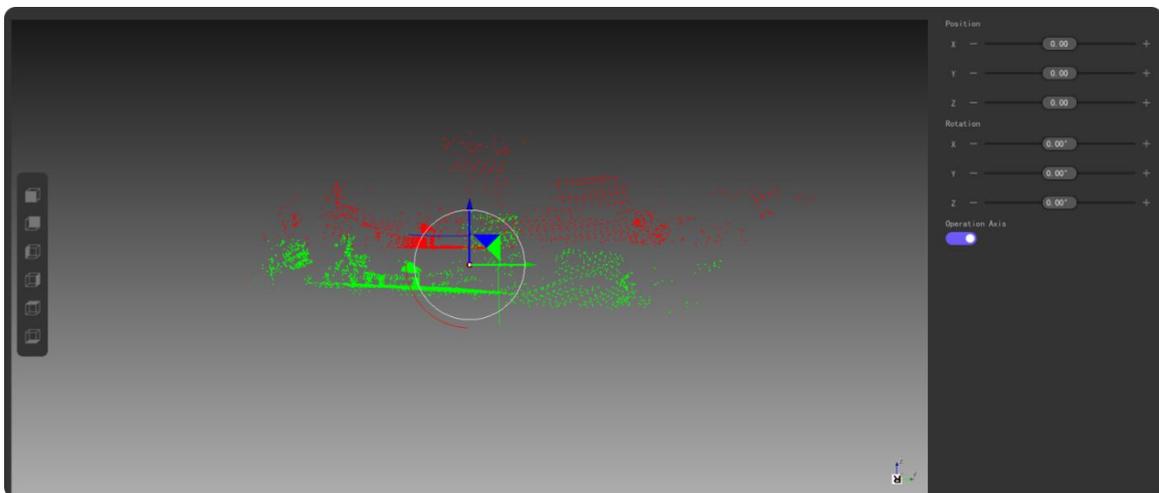
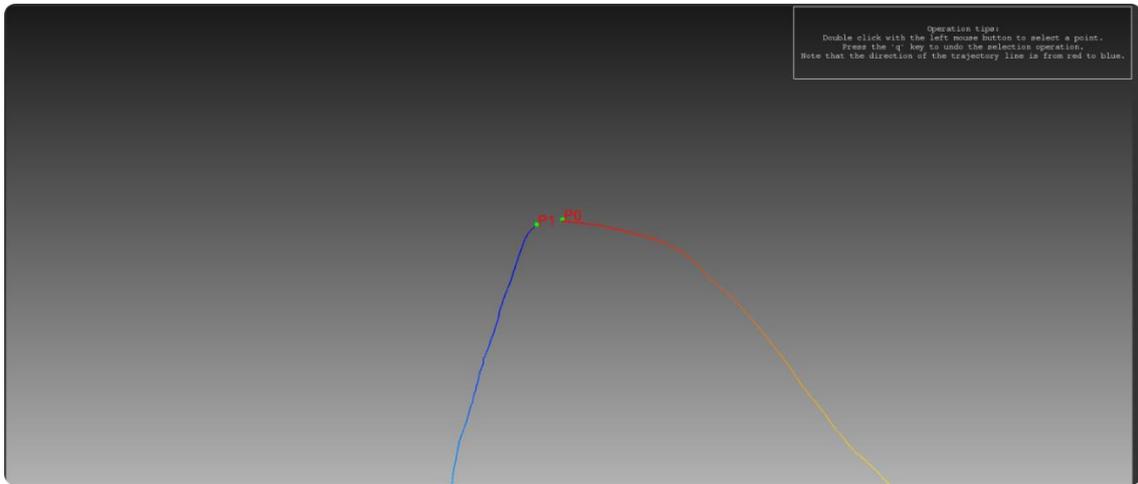
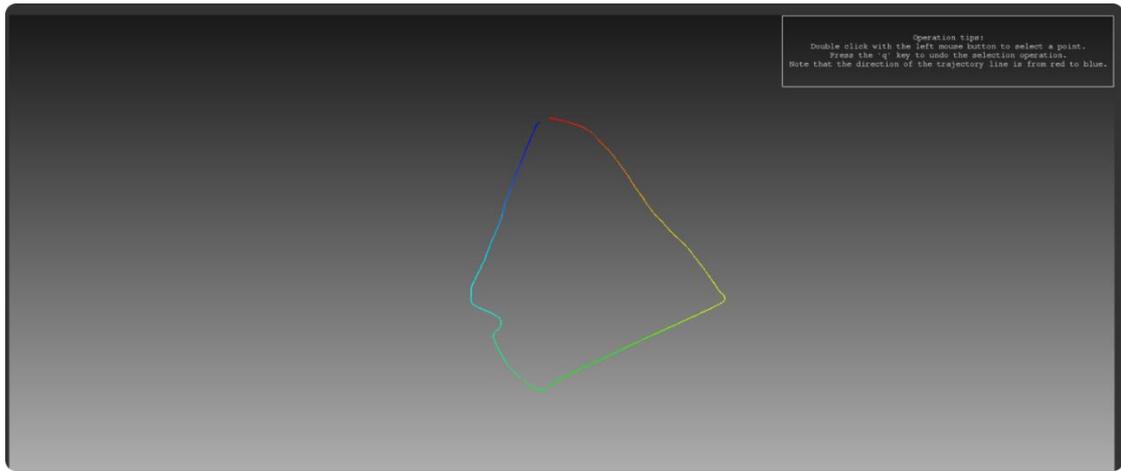
`recalculate_pose.csv`: The filming route

Operating steps:

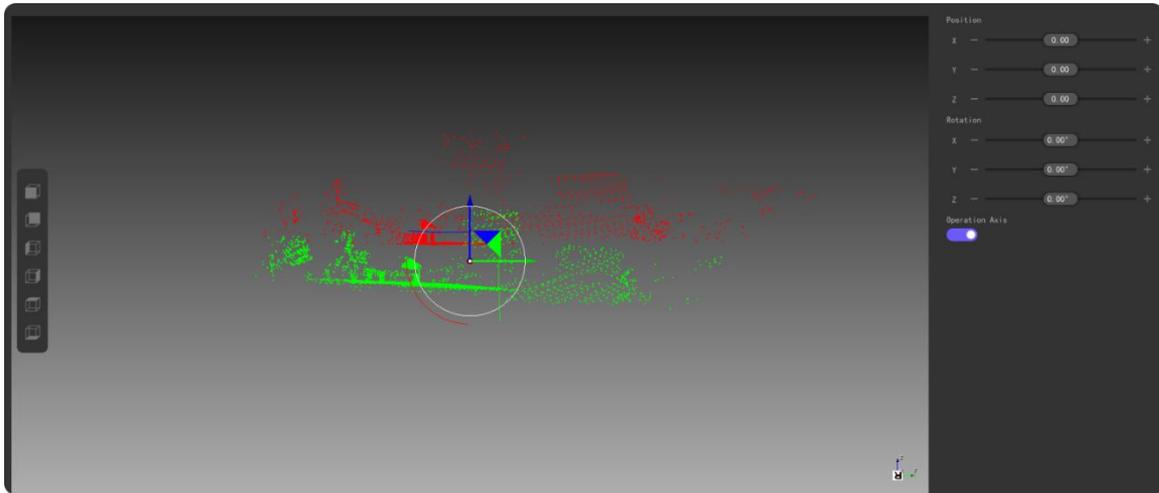
1. Click  under the filtering, thinning, or point cloud coloring data to enter the operation interface (coloring data shown as an example).



2. Double-click to select the start and end points (click "Q" to deselect the points), then click "Next" to obtain the point cloud data for a single frame at the start and end points.



3. By adjusting the position of the green point cloud data, the point cloud data of the two parts can be made to roughly match.

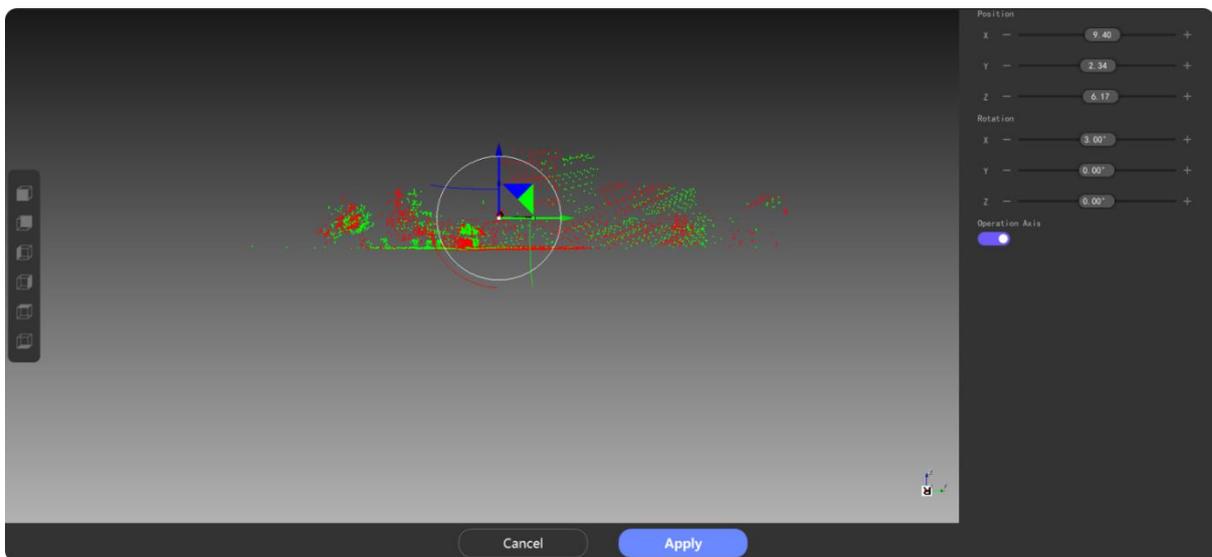


The left side of the interface displays six views, allowing you to adjust the current point cloud viewpoint. Using the front and top views makes it easier to assess the alignment between the current two point cloud frames.

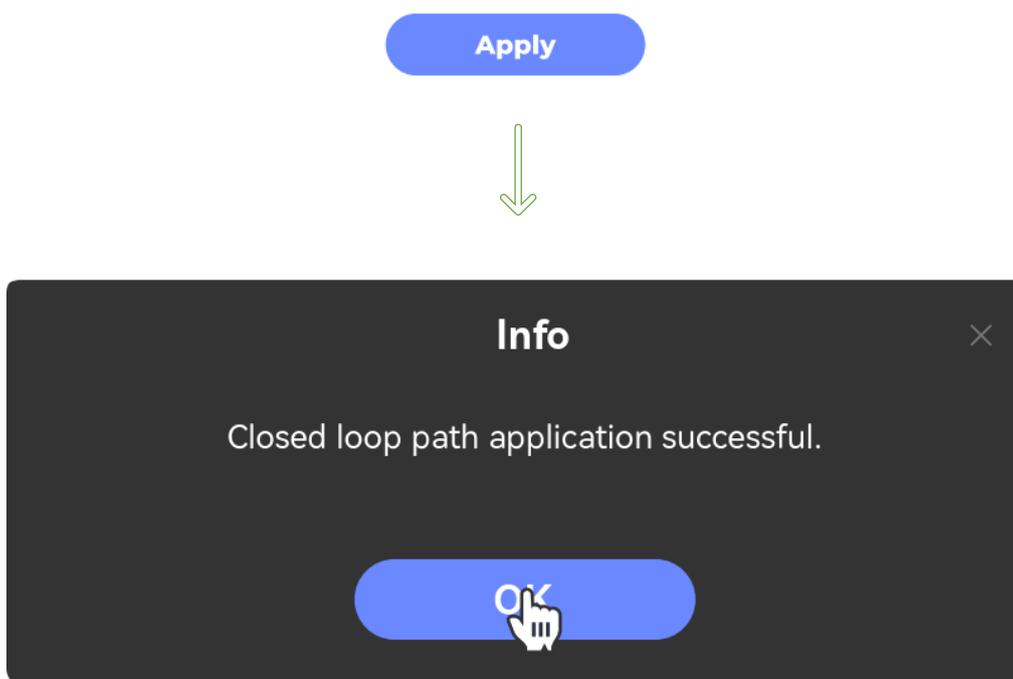
Position: Translation. Change position by translating along the X, Y, and Z axes.

Rotation: Rotation. Change position by rotating around the X, Y, and Z axes.

Operation Axis: Free Transform. When enabled, the point cloud image displays a circular coordinate system with X, Y, and Z axes, allowing for position changes by directly dragging the coordinate system.



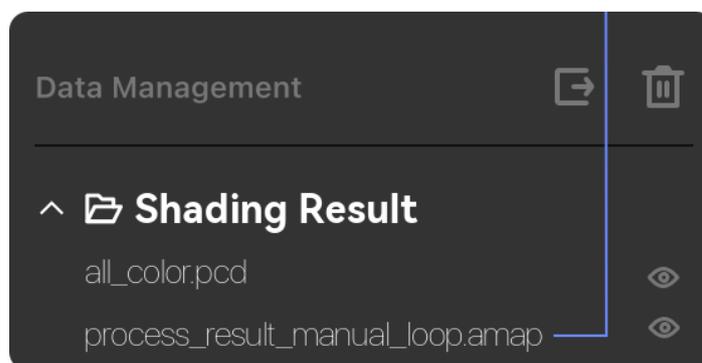
- Click "Apply" to generate the data after point cloud closure.



- Click "Cancel" to exit the interface.



- The processed data can be viewed in the data list.

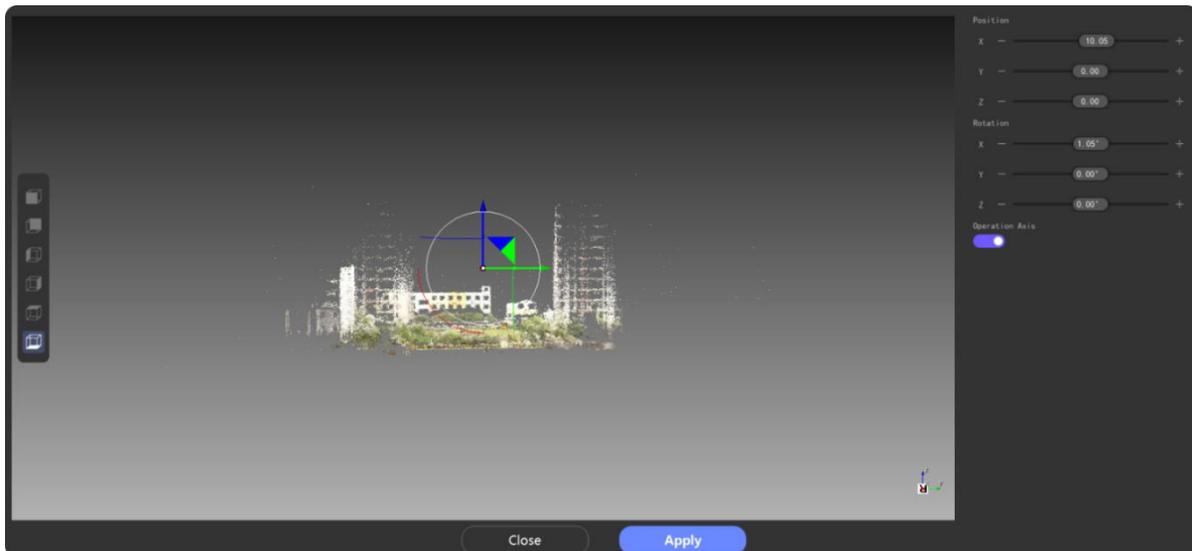


4.4.5 Point cloud angle correction

1. Click  to enter the point cloud angle correction interface.



2. Adjust the data location according to requirements.



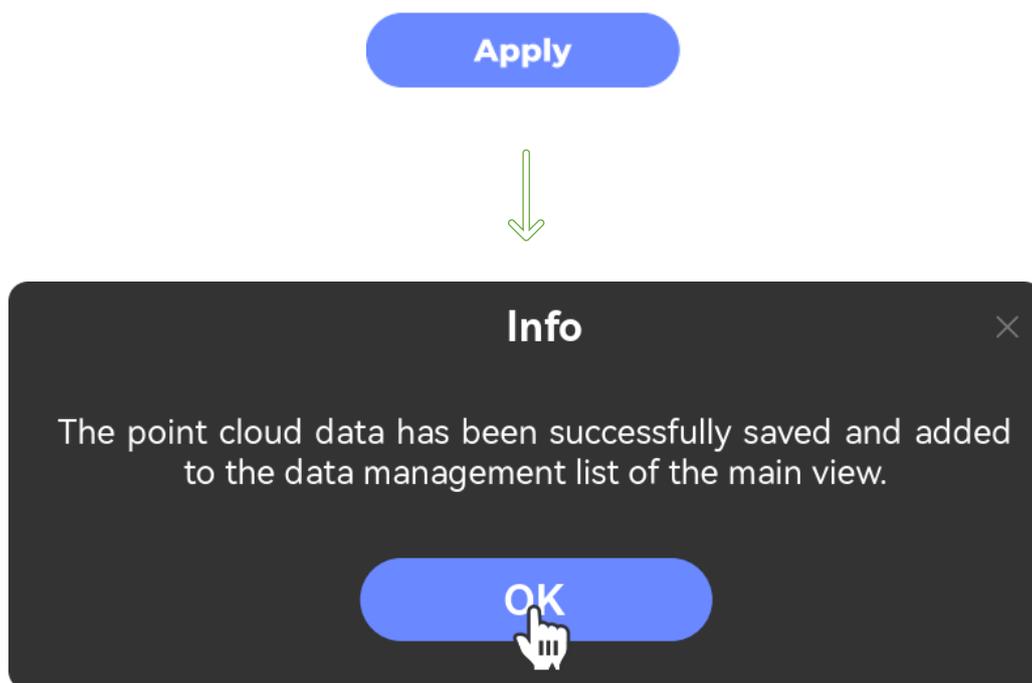
The left side of the interface displays six views, allowing you to adjust the current point cloud viewpoint. Using the front and top views makes it easier to assess the alignment between the current two point cloud frames.

Position: Translation. Change position by translating along the X, Y, and Z axes.

Rotation: Rotation. Change position by rotating around the X, Y, and Z axes.

Operation Axis: Free Transform. When enabled, the point cloud image displays a circular coordinate system with X, Y, and Z axes, allowing for position changes by directly dragging the coordinate system.

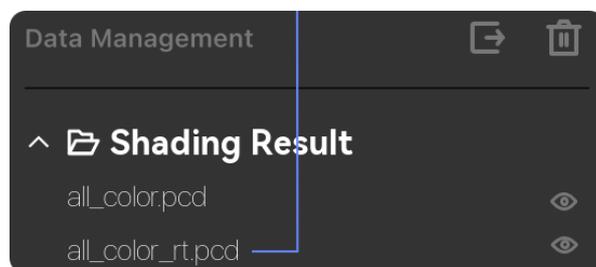
3. Click "Apply" to generate the modified data.



4. Click "Close" to exit the point cloud angle correction interface.



5. The processed data can be viewed in the data list.



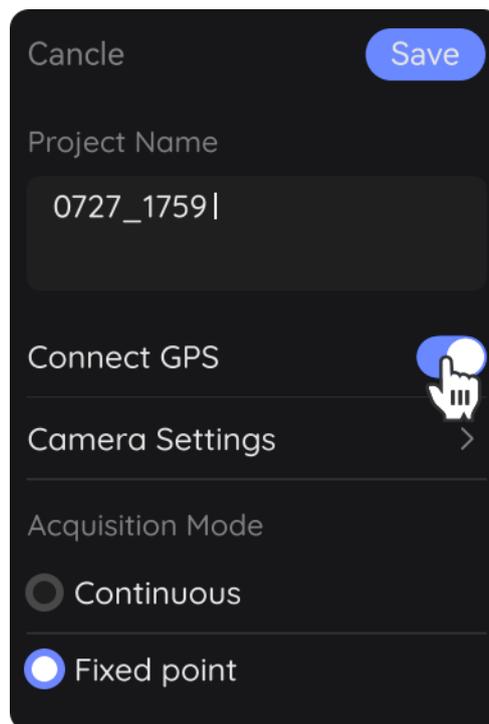
4.5 RTK

RTK supports positioning via built-in GPS alone, as well as high-precision positioning via base station .o observation data files and .p parameter files or position data.

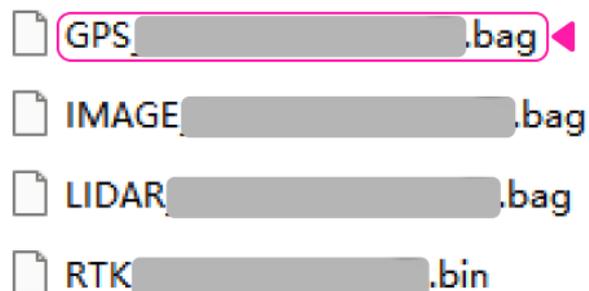
4.5.1 Built-in GPS

Scanning requirements:

1. GPS needs to be enabled during scanning



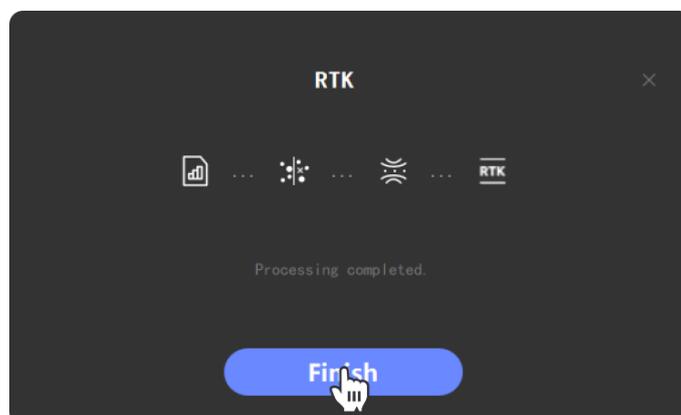
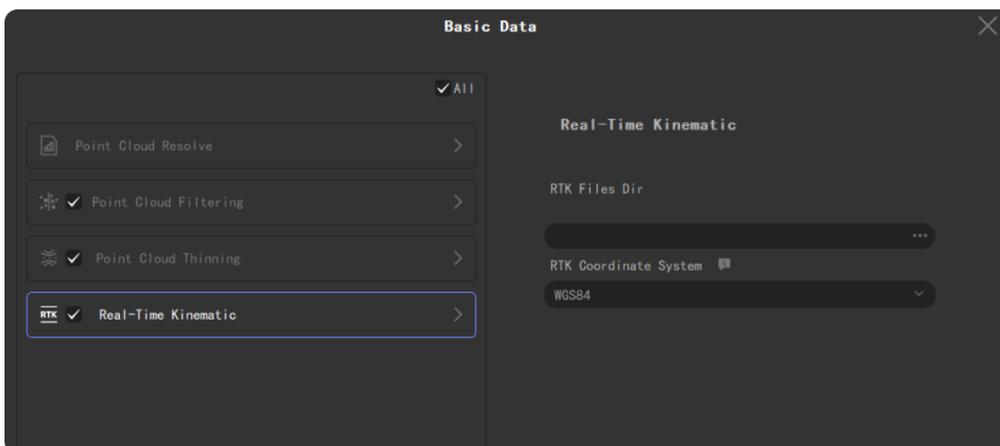
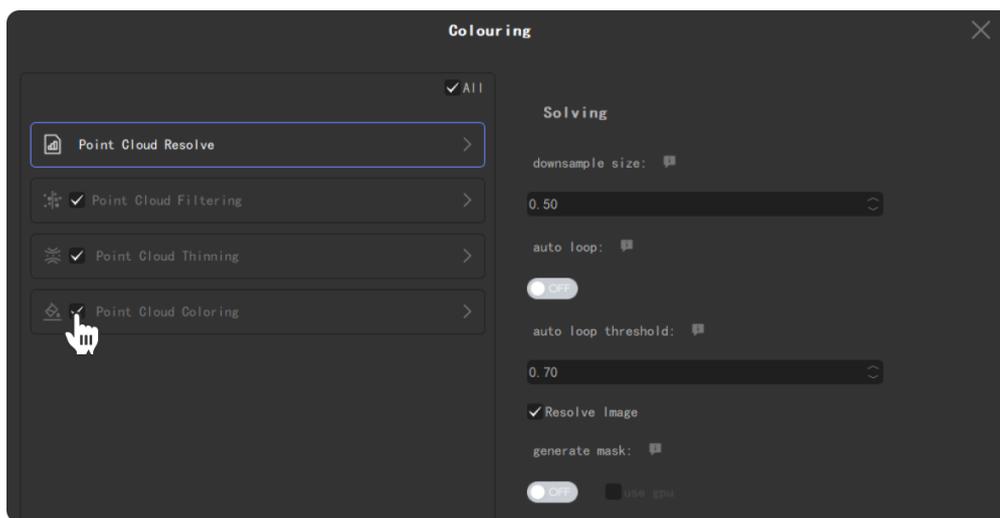
2. The exported model contains a file named *GPS_XXXXXX.bag* (if GPS is enabled during scanning, the exported scan data file automatically generates data named *GPS_XXXXXX.bag* during export).



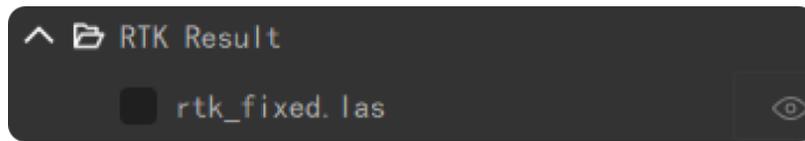
Operating steps:

After importing the scan data that includes *GPS_XXXXXX.bag*, you can process it directly if you select RTK configuration. The specific steps are as follows.

1. During data settlement or point cloud coloring, select the RTK configuration.



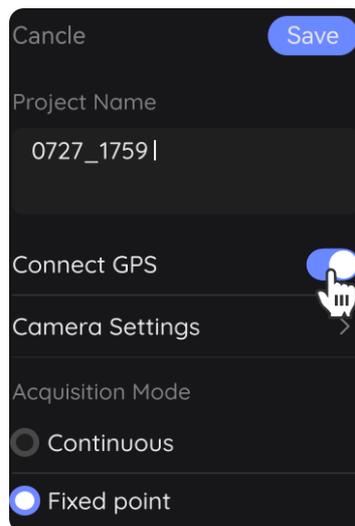
2. The processed RTK result will be generated in the data list



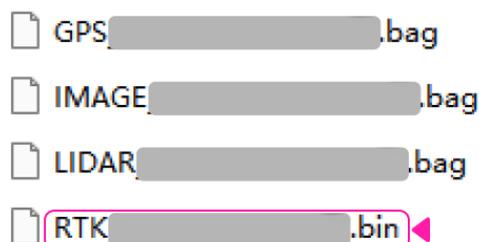
4.5.2 High precision base station

Scanning requirements:

1. The scanning device needs to be equipped with RTK accessories (including a built-in positioning chip and an external GPS).
2. Base station setup before scanning
 - a. Turn on the base station and keep it still.
 - b. Connect the data collector to the RTK device
 - c. Set the base station mode to Static.
3. GPS function needs to be enabled during scanning.



4. The exported model contains data must include a file named *RTK_XXXXXX.bin* (for devices with RTK functionality, if GPS is enabled during scanning, the exported scan data file automatically generates data with the name *RTK_XXXXXX.bin*).



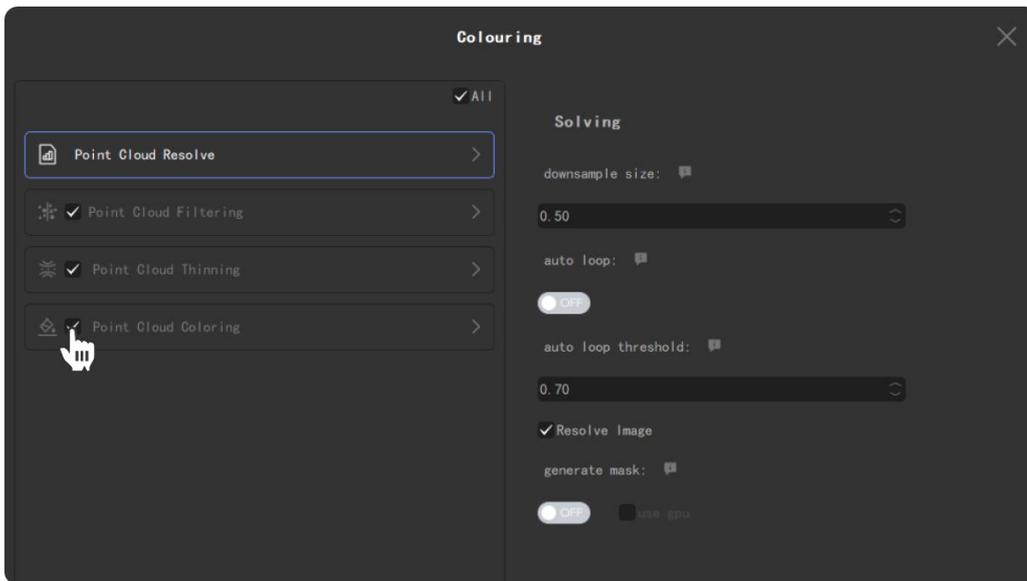
Other requirements:

You need to obtain the relevant .o and .p files from the RTK base station.

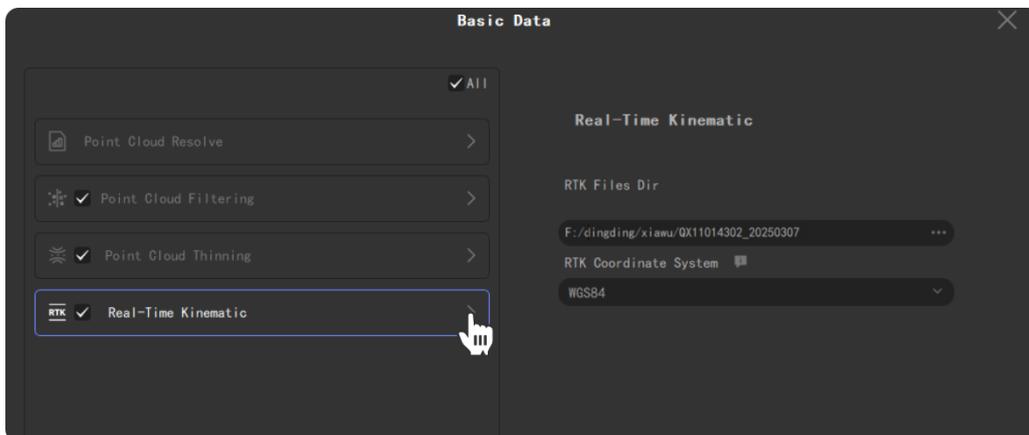
Operating steps:

After importing the scan data named *RTK_XXXXXX.bin*, if RTK configuration is selected, you can import the file path obtained from the RTK base station and then perform RTK-related processing. The specific steps are as follows.

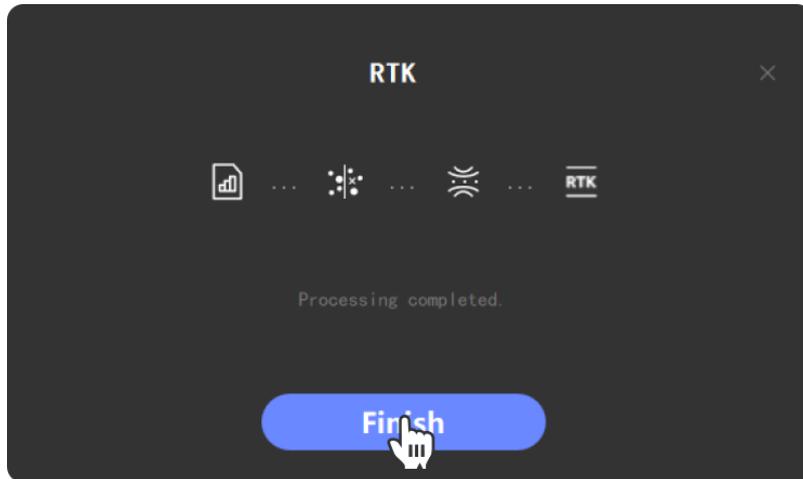
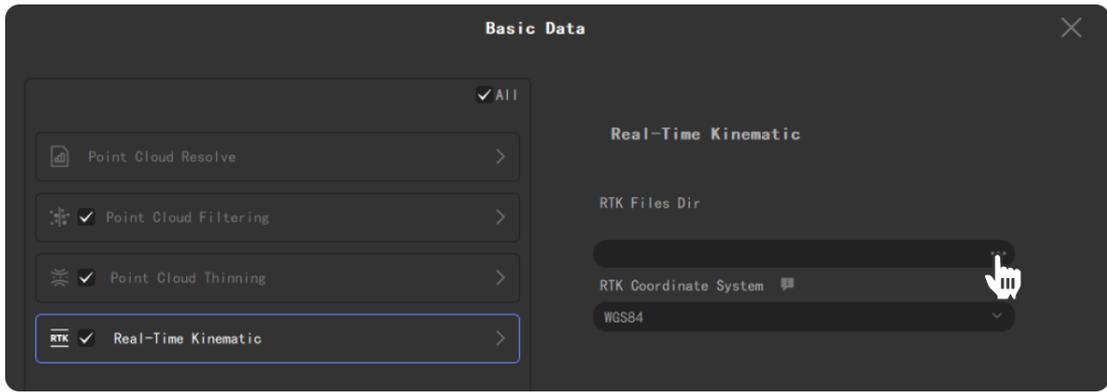
1. When performing data settlement or point cloud coloring, select the RTK configuration.



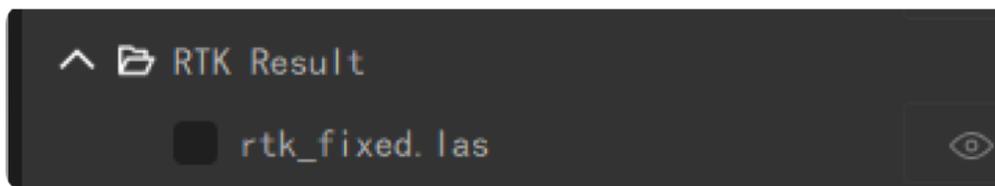
2. Click to enter the RTK configuration interface



3. Select the folder where the RTK base station data (including .o and .p files) is stored locally, and click Start to process the data.

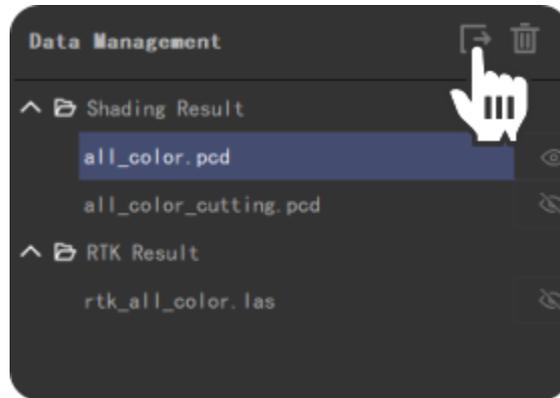


4. RTK data is generated from the data list.



4.6 Export Model

Click "Export" in the "Data Management" at the bottom right:



Currently, the software supports exporting point cloud data in LAS, PCD, and PLY formats.

Appendix A

The SLAM point cloud data acquired by this device has broad compatibility, and you can choose the appropriate processing software according to the following application scenarios:

Application areas	Business output	Recommended supporting software
Surveying and mapping	Digital drawings, CAD line drawings	AutoCAD
Volume calculation	Stack measurement	CloudCompare, LiDAR360, MicroStation
Digital Twin	3D Visualization of Cities/Factories, Precision Modeling	ContextCapture (CC), 3Dxtras

Appendix B

LASER

Laser product classification	Class 1 Eye Safe
Accuracy	1.5cm@10m; 3cm@20m; 5cm@40m
Scan Radius	40-70m (measured at >10% or >80% reflectivity)
Scan Range	80-140m
Max. effective measurement rate	480,000 points/sec
Wavelength	905nm
FOV (Horizontal)	360°
FOV (Vertical)	63.5°
Scanning Channel	30-lines

CAMERA

Camera System	Fisheye camera*2 NIR tracking camera*1
Resolution	13 MP (fisheye camera)
Sensor size	1-inch CMOS (fisheye camera)
HDR Mode	Supports 3-5 EV
FOV	360° × 300°

GNSS PERFORMANCE

Channels	1408
BDS	B1I, B2I, B3I, B1C, B2a, B2b
GPS	L1C/A, L1C, L2C, L2P(Y), L5
GLONASS	G1, G2, G3
Galileo	E1, E5a, E5b, E6
QZSS	L1C/A, L1C, L2C, L5
NavIC	L5

SBAS	WAAS, EGNOS, SDCM, BDSBAS, GAGAN
RTK Accuracy	8mm+1ppm Horizontally 15mm+1ppm Vertically

CONNECTIVITY & EXPANSION

Interface	USB Type-C×2 (1 for external power, 1 for data transmission)
Screen	3.9" AMOLED touchscreen
CPU	8-core 2.4 GHz
Storage	32 GB storage (expandable via TF card)
IMU	High-precision 6-axis IMU
Network	WiFi 5

DATA OUTPUT

Point Cloud (color)	PCD, LAS, E57, PLY
Mesh (color)	OBJ
3D Gaussian Splatting	PLY

PHYSICAL & ELECTRICAL

Size	120*145*85mm (without handle)
Weight	900g without handle
Battery Handle	Dual battery handles - 12000mAh, support up to 1-hour continuous work - Size: 64*158*38mm - Weight: 342g

ENVIRONMENT

Waterproof & dustproof	IP65
Operating temperature	-10°C~50°C