



Easy Scan™ T10

**Terrestrial 3D Laser Scanner
Measurement System**

Product Manual

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1 Product Introduction

1.1 Product Overview

T10 terrestrial 3D laser scanner, is a portable 3D laser measurement system independently developed by Wuhan Eleph-Print Tech. Co.,Ltd. It takes lightweight and humanization as the design concept, integrates multi-line LiDAR, image acquisition and other technologies, and integrates high-precision laser scanner, angle measurement instrument and other sensors, which can ensure the rapid and effective acquisition of high-precision true color point cloud under different application scenarios, redefine a new development direction of the terrestrial 3D laser scanner.

T10 can be widely used in BIM, underground space measurement, digital factory, infrastructure management, industry survey, power bin measurement, minging survey and other scenarios due to its lightweight and compact, fast and efficient characteristics.

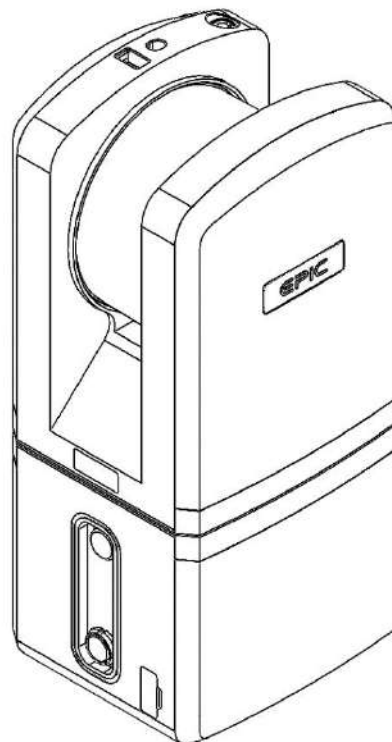


Figure 1- 1 T10 system

1.2 Main Technical Parameter

The main technical parameters of T10 laser measurement system are shown in the table below:

Table 1- 1 Main technical parameter of T10

	Index	Parameter
T10 System Parameter	Weight ^①	3.2kg
	Dimension	L125×W113×H275 (mm)
	System Consumption	28W
	Battery Life ^②	3hr
	Data Storage	U-Disk 64GB
	Operating Temperature	-10°C to 50°C
	Storage Temperature	-20°C to 60°C
	Compatible Platform	Aluminum alloy tripod
Weight1.92kg, Safety Load 8kg, Maximum 1.49m		
Laser Scanning Unit	Scan Principle	ToF
	Laser Class	Class I
	Laser Wavelength	905nm
	Maximum Range	0.5~100 m @20% reflectivity
	Horizontal FoV	360°
	Vertical FoV	268°
	Point Frequency	320000pts/sec
Panoramic Camera(External)	Camera Dimension(with protection case)	L66×W22.5×H160(mm)
	FoV	360°
	Image Resolution	18MP (6080×3040)

Remark:

- ① The whole machine weight includes laser scanning unit 3.2kg, panoramic camera 0.2kg, power supply and other modules.
- ② The test temperature is within the range of 25°~27°.

- ③ Ranging accuracy may be affected by the distance to the target, the ambient temperature and the reflectivity of the target. The typical value is the average value measured by each channel within the range of 0.5 ~ 70m, when the outdoor ambient temperature is 30℃ and the reflectivity of target is 50%.

2 Product System Composition

T10 system is mainly composed of mainbody, power cord, U-Disk, battery, panoramic camera component, tripod, etc.

2.1 Mainbody

The mainbody and interface of T10 system are shown in the figure below.

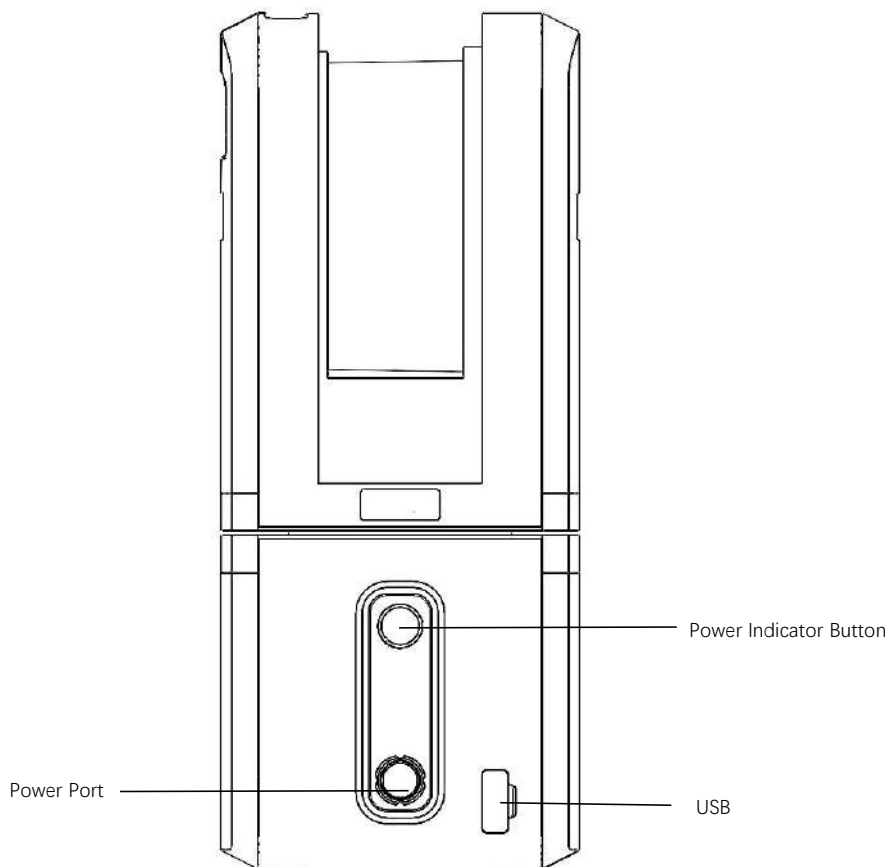


Figure 2-1 Mainbody and interface diagram of T10 system

2.2 Battery

T10 system is powered by battery, as shown in the figure below.

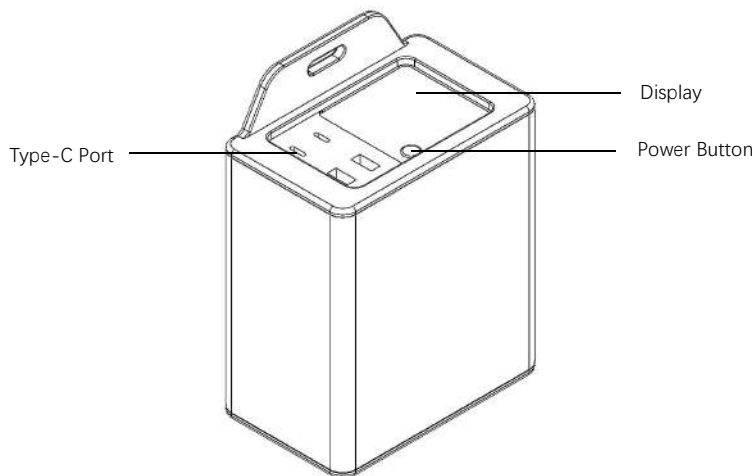


Figure 2-2 T10 system lithium battery



Warning:

- It is forbidden to immerse the battery in liquid (such as water, seawater, etc.), and the battery should be placed in a cool and dry environment when not in use;
- It is forbidden to keep and use the battery near high-temperature sources (such as fire, heater, etc.);
- It is forbidden to knock, press, throw or step the battery;
- If the battery is bulging or deformed, do not continue to use it;
- The battery is equipped with a special battery charger. Do not replace other models of chargers.
- The normal operating temperature range of the battery: 0° ~ 40°.

2.2.1 Turn on the battery

When using the upper Type-C port, connect the power cord when the battery is off, press the power button for more than 2 seconds to turn on the battery. When using the lower Type-C port, the battery is turned on once power cord is connected. The green lightning sign on the top right of the display screen indicated that the power supply has started, and the power indicator shows the current battery power.



Figure 2-3 T10 system battery turn on diagram

2.2.2 Turn off the battery

After the test is complete, turn off T10 equipment normally. After it is shut down, unplug the power cord directly to turn off the battery. The green lightning sign on top right of the display screen is off.



Figure 2-4 T10 system battery turn off diagram

2.2.3 Battery charging

The lower Type-C port is used for battery charging. Please use the charger and charge cord provided with T10 system when charging.



Warning:

➤ It is forbidden to use the battery while charging.

2.2.4 Battery parameter

The battery capacity is 25700mAh, the battery type is lithium battery, the battery nominal voltage is 3.7V, the energy is 95Wh, the battery weight is 624g.

2.3 Power Cord

T10 system is equipped with 1 power cord, as shown in the figure below.



Figure 2- 5 Power cord

Power cord: It is used to connect the power port of T10 mainbody to the battery compartment.



Warning:

- **The cable above is a directional connecting wire, and the positioning pin (the position marked by the red dot of the connector) faces upward during connection.**
- **The cable above is special power cord for the system, please do not mix or use other cables to connect the equipment.**
- **Please operate gently when connect the cable to prevent excessive force from damaging the equipment.**

2.4 Panoramic Camera Component

T10 system is equipped with panoramic camera component, as shown in the figure below.

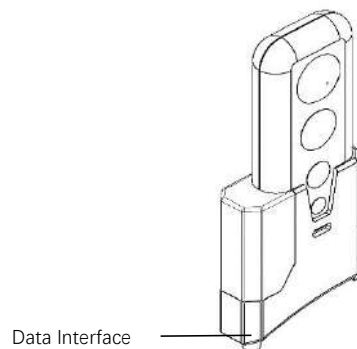


Figure 2-6 T10 panoramic camera component

2.5 Tripod

T10 system is equipped with a tripod, as shown in the figure below. The battery fixing holder is on the supporting rod.

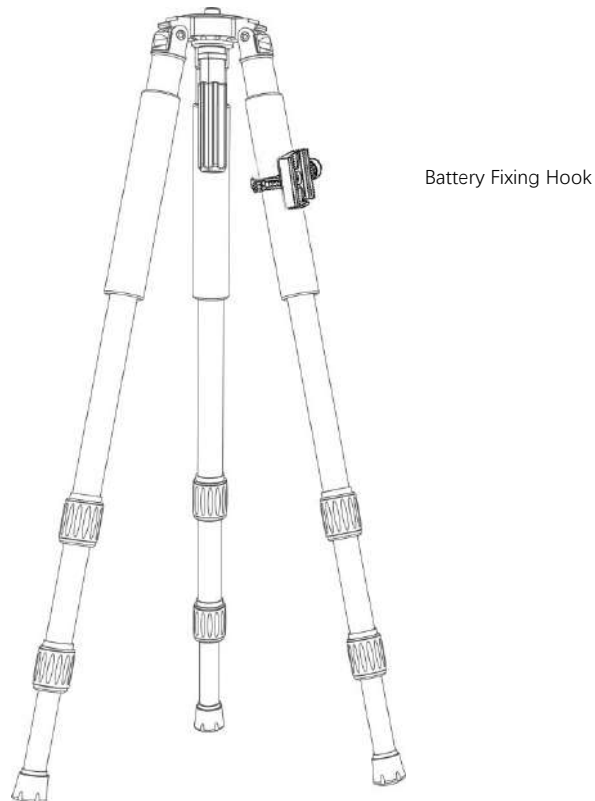


Figure 2-7 T10 system tripod

3 Equipment Installing and Disassembly

3.1 Preparation before Installation

Before install T10 system, please check if the equipment is complete according to the packing list.


Table 3- 1Equipment List

No.	Part Name	Unit	Quantity
1	T10 mainbody	PCS	1
2	Camera component	PCS	1
3	Tripod component	PCS	1
4	Battery	PCS	2
5	Power adapter component	PCS	1
6	Power cord	PCS	1
7	Dongle	PCS	1
8	U-disk	PCS	1
9	Transport case	PCS	1
10	Certification	PCS	1

11	Warranty card	PCS	1
12	Product manual	PCS	1
13	Packing list	PCS	1

Note: the preceding list is only an example. For details, please refer to the packing list attached with the equipment.

3.2 Installation and Disassembly



Warning:

- When installing T10 system equipment, please handle it carefully to protect the equipment;
- When installing and disassembling the power supply equipment, please ensure that the power supply equipment is turned off to avoid damaging the equipment by live operation;
- After disassembling the equipment, please put all the parts of the equipment back into the transportation case according to their positions and check whether the parts are complete.

3.2.1 Camera installation

Make sure T10 system mainbody is turned off. Please install the camera component on top of the mainbody in the direction shown in the figure, and pay attention to align the data interface.

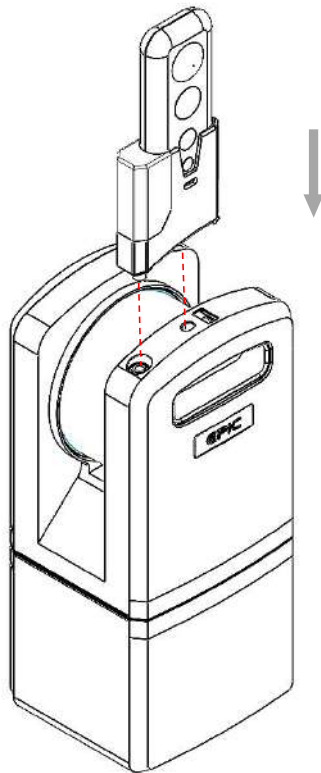


Figure 3-1 T10 system camera installation diagram



Warning:

Before using T10 equipment, please check if the camera is loose to avoid affecting the safety of the equipment.

3.2.2 Camera disassembly

Make sure T10 system mainbody is turned off. Press the buckle by hand, and remove the camera component in the direction shown in the figure.

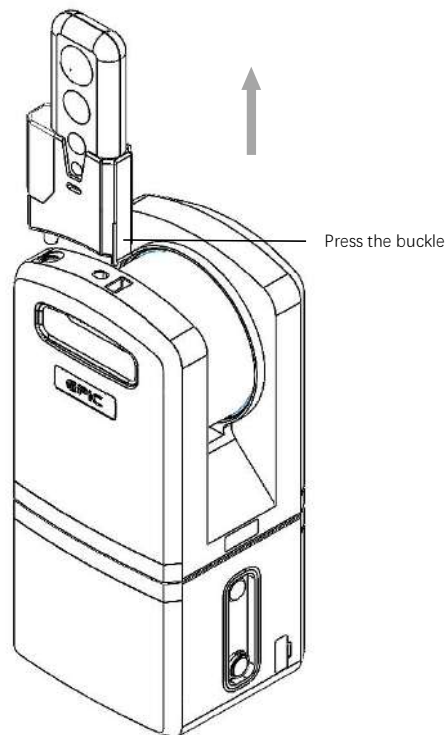


Figure 3-2 T10 camera disassembly diagram

Note: please cover the protection cover of the camera lens carefully after removing the camera to prevent the damage of the camera lens.

3.2.3 Battery installation and disassembly

The battery is fixed by the fixing hook on the tripod.

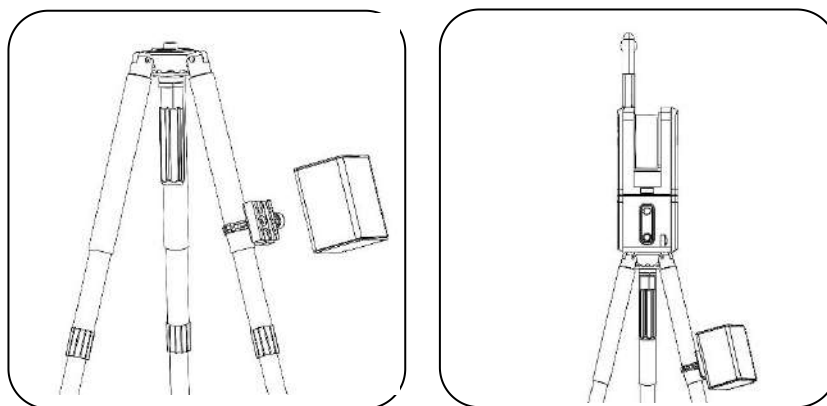


Figure 3-3 T10 system battery installation diagram

3.2.4 Mainbody installation

Make sure T10 system is turned off. Put the mainbody on top of the tripod,

roughly align the center hole at the bottom of the mainbody with the center hole of the tripod fixing platform. Then tighten the hand screw nut at the bottom of the tripod fixing platform to fix the mainbody with the tripod.

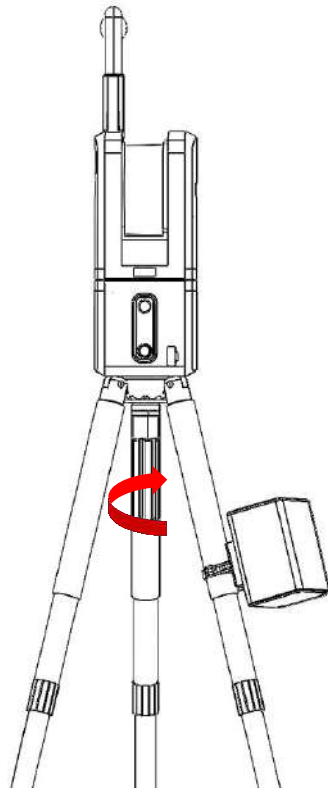


Figure 3-4 T10 system mainbody installation diagram

Note: before installing T10 equipment, please check if the tripod is placed stably and reliably to avoid affecting the safety of the equipment.

3.2.5 Mainbody disassembly

Make sure T10 system mainbody is turned off and unplug the external cables of the mainbody. Loosen the hand screw nut at the bottom of the tripod fixing platform by hand, remove the mainbody with both hands and put it in the transportation case or other safe place.

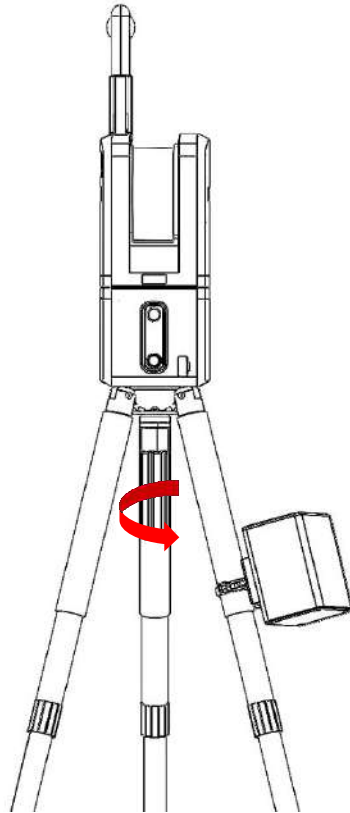


Figure 3-5 T10 system mainbody disassembly diagram

Note: T10 equipment should be held by hand during the disassembly process to avoid any accidental falling of the equipment after loosening the fix screw nut.

4 Equipment Operation

4.1 Equipment Startup

After the equipment installation is completed according to the steps described in Section 3.2, T10 system equipment can be used;

According to the steps described in Section 2.2.1, turn on the battery, wait for 2 seconds, then press the power button of T10 mainbody, the indicator light is on and the equipment is started;

When the indicator light is on, search for WiFi hotspots using a smart phone or a computer. When the WiFi access point named “T10” is searched, the system will start normally.

Note: Since it takes time(usually less than 1min) to initialize after the equipment is started,

please wait patiently during the equipment system initialization.

4.2 Camera Operation

After T10 system is powered on, press and hold the camera power button for 3 seconds to start the camera.

4.3 Mainbody Connection

T10 system provides the wireless connection mode:

1. Search for WiFi hotspots using a smart phone or a computer, find a WiFi access point named “T10-xxxxxx”;

2. Join the “T10” hotspot by entering the password “12345678”, and set the wireless network IP obtaining mode to obtain IP automatically.

Note: IP address of T10 system is 192.168.0.110;

4.4 Mainbody Shutdown

After the system stops collecting data and completes the data transmission, click the “POWER OFF” button through the operation software client to turn off the equipment, as shown in Figure 4-1.



Figure 4- 1 Turn off the equipment

After the status indicator of T10 mainbody is off, turn off the battery to complete the shutdown of the equipment mainbody.



Warning:

- To prevent the equipment damage, don't power off the mainbody before it is completely shut down.

4.5 Battery Charging

The lithium battery of T10 system is charged with a special 65W charger, as shown in Figure 4-2.



Figure 4-2 T10 charger



Warning:

- If you don't use the battery for more than 10 days, please discharge the battery to about 50% for storage.
- If the battery is idle for a long time, it is required to charge and discharge every 3 months to maintain the battery activity.

5 Data Collection

5.1 Client Installation

Insert the U-disk of the product accessory to PC, copy the Easy Point Access T xxxx.apk installation package to PC. Copy the installation package to “Download” folder of smart phone through a USB connection cable.

Visit the “Download” folder of smart phone, select the installation package and click to install.



Figure 5-1

Authorize required software permission in the pop-up permission dialog, otherwise, some software functions can't be used.

Click “Continue to install” and wait until the software installation is completed.

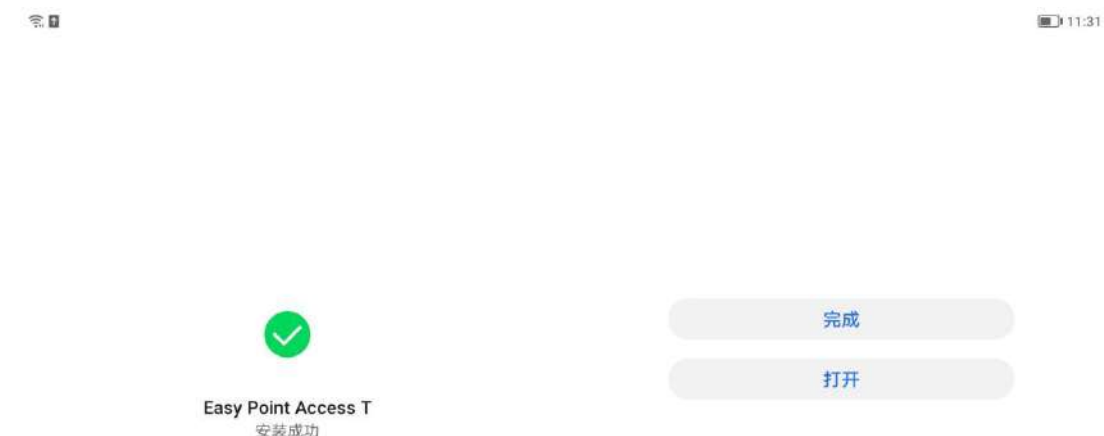


Figure 5-2

Note: Android 10 and 11 system, HarmonyOS 2.0 system are recommended as software clients.

5.2 Software Startup

- Wait 30 seconds after startup, connect the WiFi signal named T10xxxx(xxxx is the equipment number)
- The initial password of WiFi is 12345678.
- Start the Apps installed in the mobile terminal device.

5.3 Software Interface



Figure 5-3

- ① Setting button, click it to enter the setting interface.
- ② Equipment connection status shows the equipment status changes of disconnected and connected.
- ③ Display the remaining storage space of U-disk.
- ④ Camera connection status shows the camera status changes of disconnected and connected.
- ⑤ The point cloud collection status is displayed, and the animation effect during the collection indicates that the collection is in progress.
- ⑥ The setting parameters display bar, indicates the current settings.
- ⑦ Start collection button, click the button and the equipment begins to collect point cloud.
- ⑧ Camera trial shot button, click the button to take a trial photo which will be displayed, but not be stored in the memory.
- ⑨ Collection progress bar, the collection progress will be displayed in the form of progress bar.

- ⑩ Data increase status during the data collection.
- ⑪ Horizontal bubble button, click the button to enter the horizontal bubble leveling interface.

5.4 Parameters Setting

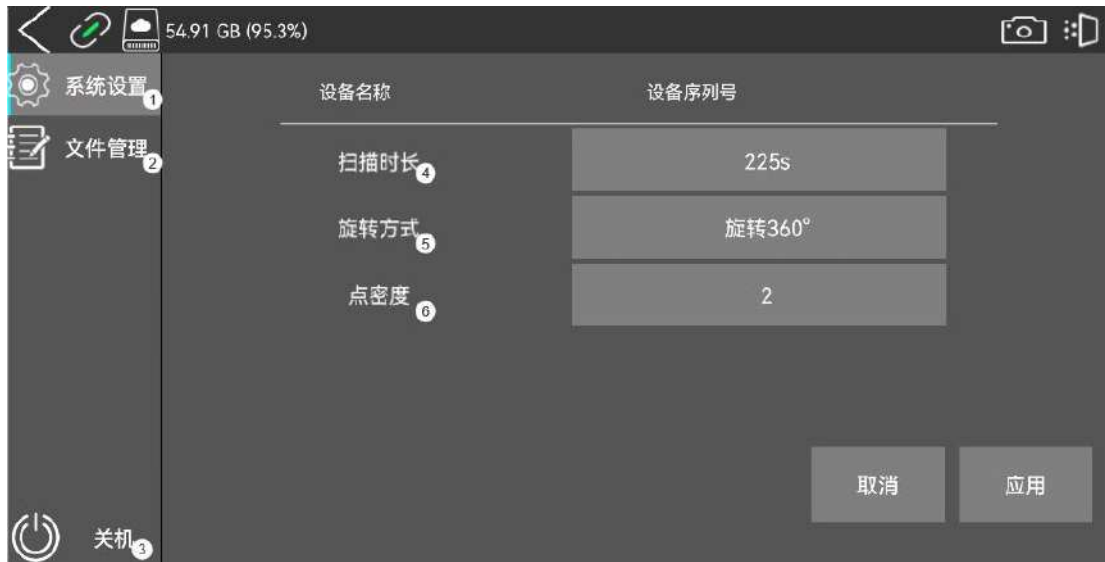


Figure 5-4

- ① Set the equipment collection mode.
- ② Storage management of the collected data.
- ③ “Turn Off Device” button, click to turn off the equipment.
- ④ Scanning time, to set the time required for the scanner to collect data in a single turn.
- ⑤ Rotation mode, to set the scanner rotate a single turn or half turn.
- ⑥ Set collection mode to Selected Mode or Full Mode.

5.5 Data Collection

After setting the collection parameters, return to the main interface, click the start collection button, the equipment begins to collect point cloud data automatically. After the collection of point cloud data is completed, the image data will be collected automatically and all the data will be stored in the corresponding folders according to the specified format.

When the data of all survey stations are collected, unplug the U-disk to copy the collected data to computer, use post-processing software for data calculation.

5.6 Data Copy

Remove the U-disk from the equipment and insert the U-disk to computer.

Open the U-disk, the folder name is the date of data collection, and each folder contains point cloud data and image data.

6 Appendix

6.1 Daily Maintain

- Please handle the equipment gently to avoid collision during using;
- Cover the protection cover of the camera after image collection completed, to avoid scratching the camera lens;
- Pay attention to protection of scanner in daily use, to avoid the scanner appearance to be scratched. If there is dust, use the dust-free cloth dipped in clean water to wipe clean gently;
- After using the equipment, it is necessary to remove all the accessory parts, put the mainbody and all accessory parts in the transport case.

6.2 Common Fault Diagnosis

- The camera turns off immediately after being started up, which probably caused by the low power of the camera because it hasn't been charged for a long time. Turn the equipment to charge the camera for about 10 minutes and then it could be turned on normally.
- If it is found that the camera doesn't take pictures during use, please turn on the camera manually.
- If the USB-disk is removed and inserted many times during the collection process, it may cause the configuration parameters of the laser scanner to return to the factory settings. If this happens, please contact with the after-sales staff to set the scanner remotely, the normal use of the equipment will not be effected after the successful setting.