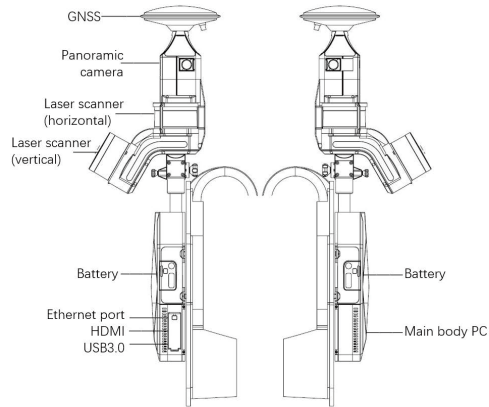


I01 Illustration of each component



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LiBackpack DGC50
 LiBackpack DGC50 Quick Guide



I02 Backpack installation



1. Plug the scanner arm into LiBackpack DGC50 storage and control unit. The tilted laser scanner should be opposite to the main body.

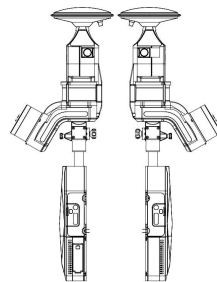
2. You can hear a sound when locking the scanner on main body. Then, tight the screw to secure mounting. Loose ther two locking rings of the telescopic rod counterclockwise, the telescopic rod can rise and fall freely.

3. Plugin the connection cable into the scanner arm and mainbody separately. Note: Align the port by the red dot. Assembly done.



I03 Acquisition process

Prepare for collection: Route planning



Note :

To power on the battery, you need short press, and then long press till all lights on, indicating that the laser scanner and system are ON. To power on the camera, please short press. You will hear “di” sound, indicating that the camera is ON.

- ①. Laser scanner cover
- ②. Battery charge and power cable
- ③. Battery
- ④. Laser scanner arm
- ⑤. Main body (for storage and control)
- ⑥. Surface tablet
- ⑦. Ethernet cable
- ⑧. Surface power charger
- ⑨. Camera data transfer
- ⑩.USB flash drive

Optional accessories: iPad Mini tablet

- 1 Power on battery
- 2 Switch on the camera
- 3 Wait about 8s for laser scanner and system ON

One Minute Later

- 4 Connect to Google Chrome on Mobile Device

For wired connection
 Tablet IP: 192.168.1.99
 Subnet mask:
 255.255.255.0
 Page address: 192.168.1.200

For WIFI connection
 SSID: LiBackpack
 Password: greenvalley
 Page address:
 192.168.12.1

- 5 Click “Start” button to start data collection.

Note:
 Start collecting after the GPS status becomes “locked”

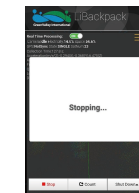


6

Wait in an open area until the satellite number is more than 20 and keep static for further 30 seconds, then walk in figure eight for initialization.

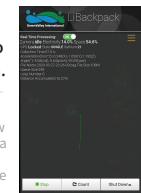
7

Data collection process



- 9 Click “Stop” button to finish data collection.

Note:
 1. When the Stop window automatically shut down, data collection ends.
 2. It is suggested to end at the start place for loop closure.



8

Wait in an open area until the satellite number is more than 20 and walk in figure eight, then keep static for 1 minute.

04 Data transfer

Part one, raw data transfer

For wireless mode:

1. Ensure that the power is on and WIFI is well-connected, plug in the USB drive.
2. Click “Copy” button, select files to be transferred. (*bag, *ply, *xyz, *log)
3. Wait for the Copy process bar done and unplug USB drive.

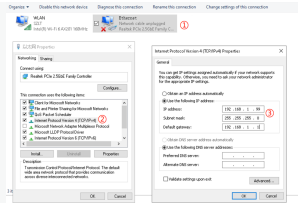
Note: Please do not unplug USB drive before copy process is done.

For wired mode:

1. Ensure that the power is on, connect ethernet cable to working computer.



2. Set IP address as 192.168.1.99, Set subnet mask as 255.255.255.0.



3. Enter \\192.168.1.200 in the folder page and get into the share folder. user name: share, password: 111111.

4. Find the data and copy it to local disk.

Part two, camera file transfer

1. Connect camera and working computer using a dual USB cable.
2. Get into the camera folder and copy data.



05 Interface specification

Real Time Processing:

ON: real-time processing is ON, .ply and .xyz will be generated.

OFF: real-time processing is OFF, .ply and .xyz will not be generated.

Camera: idle/recording/OFF

Electricity: Remaining battery percentage
Space: Remaining storage space
Clear: Clear camera data

GPS Status, including :

GPS: GPS timesyncing status. Should be “Locked” when working. Otherwise, the system is not working properly.

State: GPS solving status. Should be “single” or “narrow int” when working. Otherwise, GPS locations are not correctly solved.

SatNum: number of connected satellites, used to determine GPS work environment.

Collection Time: Time elapsed since the user hit the Start button.

Acceleration: Triaxial acceleration information.

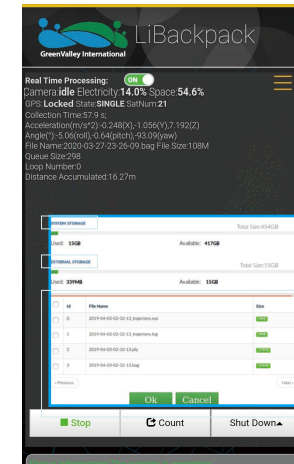
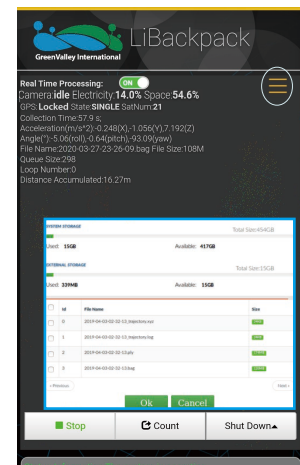
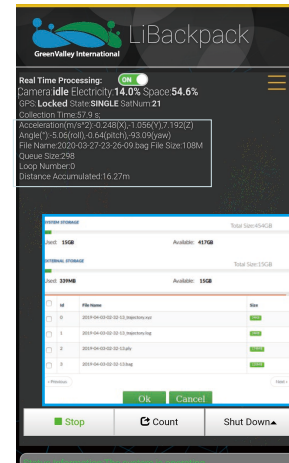
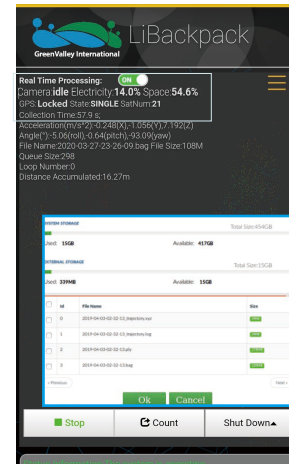
Angle: Laser Scanner angle information (make sure the first two numbers are under 20° during collection).

File Name/Size: File name and size of current data being collected.

Queue Size: Current data processing queue size.

Loop Number: The current number of loops (tells the status of closed-loop detection).

Distance Accumulated: Current accumulated collection distance.



System Storage: LiBackpack system storage space and available space.

External Storage: USB Flash Drive storage space and available space.

LiBackpack system file list and sizes :

- .xyz: trajectory file
- .log: GNSS information file
- .ply: point cloud file
- .bag: raw LiBackpack data

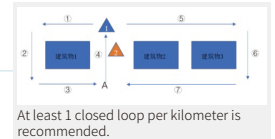
06 Route planning

1 Remember to initialize the system.

2 Crossing routes are preferred over straight lines.

3 Closed loops are preferred over open area.

4 low down when making turns or entering doors. Leave doors open and unmoved during collection.



At least 1 closed loop per kilometer is recommended.

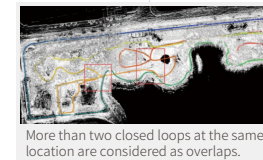
3. Enter \\192.168.1.200 in the folder page and get into the share folder. user name: share, password: 111111.

4. Find the data and copy it to local disk.

Dropdown menu :

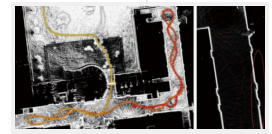
1. Clear system data
2. System firmware update
3. System information
4. System settings, including:
 - a): Min Points Num (minimum number of points per frame)
 - b): Max Distance (maximum distance of laser ranging)
 - c): Min Distance (minimum distance of laser ranging)
 - d): File Name Suffix (names of point cloud file and trajectory file are generated using this suffix.)
5. WiFi setting button: Set up Wi-Fi name and password

5 Avoid overlapping routes.



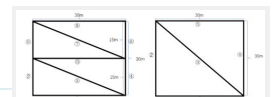
More than two closed loops at the same location are considered as overlaps.

6 Overlapping routes can cause objects to appear “thicker” in the point cloud.



A winding round-trip route overlapping with itself

7 Suitable routes for forested areas vary with tree density.



Avoid data redundancy: recommended routes for low-tree density should be the right figure, and high tree density should be the left one.