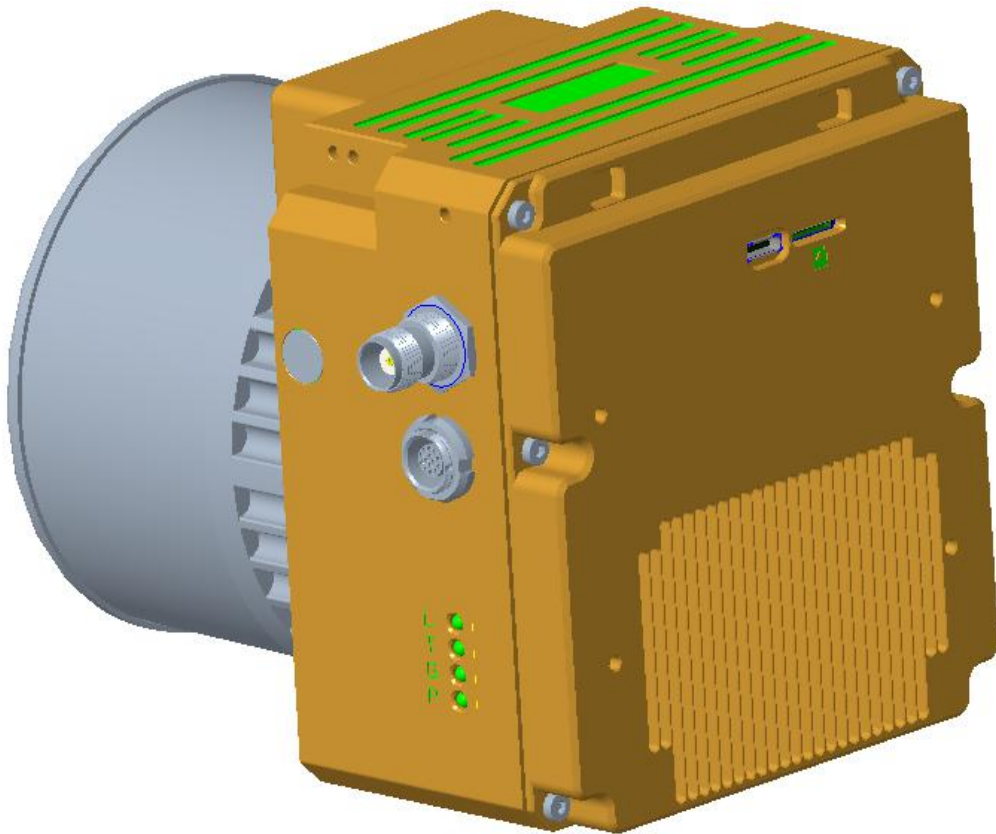




## gAirHawk GS-130X uav LiDAR Scanning System

### Operation Manual



**Wuhan Geosun Navigation Technology Co.,Ltd (V02)**



## Introduction

gAirHawk GS-130X is a kind of short range & compact LiDAR point cloud data acquisition system, integrated HESAI Pandar XT laser scanner, GNSS and IMU positioning and attitude determination system, Camera and storage control unit, is able to real-time, dynamically, massively collect high-precision point cloud data and rich image information. It is widely used in the acquisition of 3D spatial information in surveying, electricity, forestry, agriculture, land planning.

## Interface

Interface type	Interface Model	Function
GNSS Antenna Interface	TNC Connector	Connect External GNSS Antenna
Power Input Interface	<a href="#">Fourteen Pin Aviation Connector</a>	Connect the Power Supply, Voltage 12~16V
TF Card Slot	TF Card	Copy & Paste the Data & Image
USB Interface	USB Type-C Data Cable	Copy & Paste the Data inside

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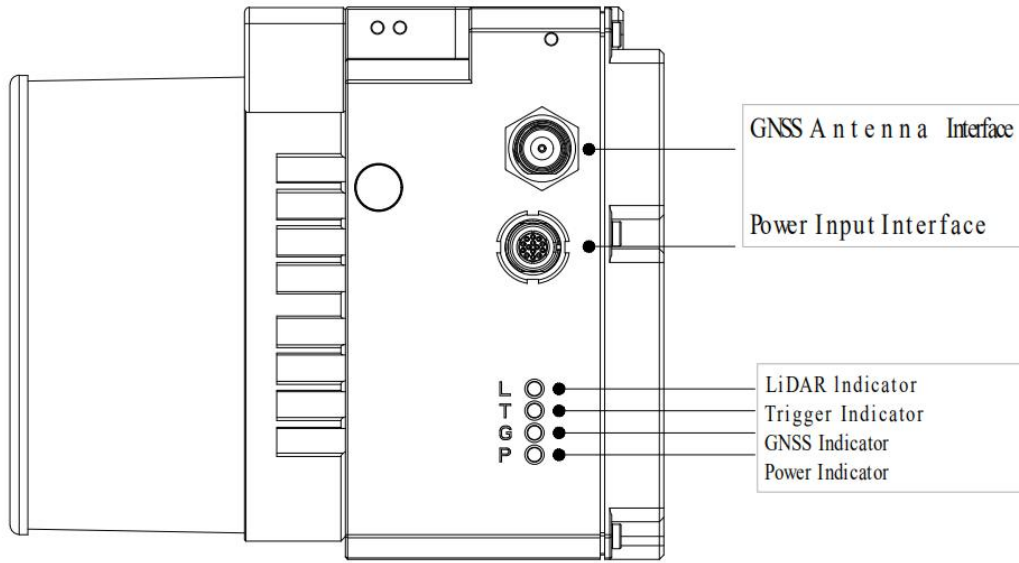
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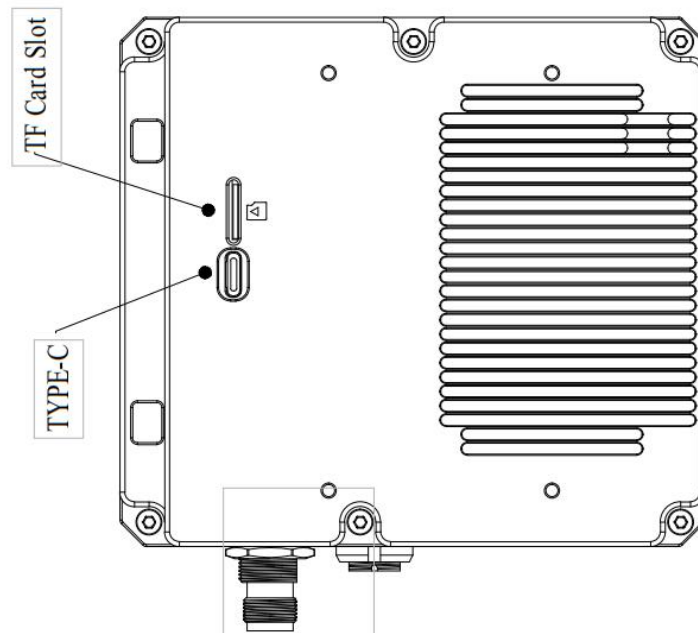
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### GS-130X Side View and LED Indicators



### GS-130X Back View and LED Indicators

1 TF Card Slot, 1 Type C Interface



## Standard Operation Flow

GS-130X LiDAR Scanning System Standard Operation Flow as following,

1. Fix the GS-130X lidar scanning system to the carrier (drone or car, etc).
2. Install the GNSS antenna on the carrier without any interference,  
and connected to GS-130X LiDAR Scanning system directly.

3. Insert the 128GB TF card into slot.

4. Connect the GNSS antenna to the antenna interface of the GS-130X.

Connect the power cable to the drone (power supply voltage range 12~16V).

5. Turn on the base station (user-supplied) to collect base static data.

Turn on the GS-130X LiDAR unit, the system starts to work.

**!! Please make sure the base station starts collecting data one minute earlier than liDAR unit!!**

**!! Please make sure the base station power off one minutes later after flights!!**

6. Wait for the LiDAR system works in order. The system will lock the satellite, then LED indicators blink in normal. (The power indicator is on, the GNSS indicator flashes one time in 1 intervals, and the LIDAR indicator flashes one time in 1 intervals).

7. After the G indicator blinks, the system is required to do 3 minutes static and initiate to do self-calibrate the internal Inertial Navigation System.

When do multiple flights, if the intervals between two flights is short, the next flights can shorten to 120 seconds.

Some drones have the function of battery replacement without electricity. In this case, after landing, there is no need to do a initialization if the LiDAR system is not powered off.

8. Start the mission. After mission, disconnect the power of the device, copy & paste the data from the TF cards, and perform the calculation operation by Shuttle and gAirhawk software on PC.

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## GS-130X Data Storage Instruction

GS-130X is used one TF SD cards, respectively [store POS, LIDAR and Image folder](#) .

Each flight, the system will automatically create a folder named as the current time in time, and store all the data collected in this folder directory.

Regarding the TF card, please use it according to the following terms:

[1] Please select a TF card above C10 U1 level.

[2] Approximately 5.5GB of data is generated every 10 minutes when runs LiDAR system (in the triple echo mode). Please make sure that the remaining space in the TF card is sufficient for next flights.

[3] When the TF card is connected to the computer, the computer system will pop up a dialog box prompting that the storage device needs to be scanned. At this time, be sure to select "Scan and Repair", otherwise the data in the TF card may not be read and written normally.

GS-130X contains G64GB eMMC (The real capacity is 54 GB) Flash memory for backing up the collected data to prevent data loss due to accidental damage of the TF card.

If users need to read the data in eMMC Flash, please use USB type-C data cable.

(Please make sure the cable has a data transmission function. Some cables may only have a power function. This type of cable cannot be used.) Connect the LiDAR unit to the user's computer (the power cable does not need to be connected). The computer will automatically recognize the TF card as a mobile storage device, and then can perform data operations.

When each flight, it will automatically determine the remaining free space in the eMMC flash memory. If the remaining space is less than 20GB, the system will automatically delete the oldest data files until the remaining space is greater than 20GB.

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## GS-130X LED Indicators Instruction

Refer to the 4 LED indicators as above mentioned, description as following	
P LED Indicator Is on after Power on	Light on : Power on Turn off : No power or abnormal Fast blink: the TF card is not inserted, or it is inserted but the connection is not good
G LED Indicator Blinks Internal: 0.5 S	Light off : Unlock the satellite. 1Hz frequency blink: the satellite is locked, and internal Flash memory data are saved normally. Steady blinks for more than 60s: The system is abnormal, please refer to troubleshoot instructions
T LED Indicator Blinks Internal: 2 S	Light off: no trigger signal output Blink: According to user configuration, it can be set as time trigger or distance trigger, blink when triggered
L LED Indicator Blinks Internal: 0.5 S	Light off: Lidar data is not read Light off: The lidar data are not read 1Hz frequency blink: Lidar data is normally. Steady blink for more than 60s: The system is abnormal, please refer to troubleshoot instructions



## GS-130X LiDAR configuration file

Users can configure some functions of GS-130X

The standard configurable functions currently provided are as follows,

Trigger signal interval: isochronous interval trigger, unit: second and equidistant interval trigger, unit: meter

Trigger signal mode: high level trigger (normal low level, high level when triggered); low level trigger (normal high level, low level when triggered) Trigger signal pulse width: 15ms~999ms

The LiDAR is configured to be at a 3-second isochronous interval, low-level trigger, and pulse width 15ms in default.

If you need to configure other trigger methods, please contact our technical support staff. The technical support staff will provide a configure.ini file, put this file into the root directory of the TF card, then insert the LiDAR and power on, the device will automatically Read the configuration file and complete the configuration.

When the configuration is successfully completed, the configure.ini file in the TF card will disappear after power off.

**!! Do not edit and change the configure.ini file by yourself!!**

**!! Otherwise the device will not work normally!!**

## GS-130X Troubleshoot

An abnormal situation happen when use, please handle it according to this table.	
After power on, the power indicator is not on	Please check whether the power polarity is correct and the power connector is connected
Power indicator fast blink	The micro SD card is not inserted, or it is inserted but the connection is not good
The system start, the GNSS indicator is off for a long time	Please make sure the GNSS antenna, cable and LiDAR are firmly connected, and the device is in an environment without any interference and the satellite signal is not blocked
LIDAR indicator is off for a long time	The LiDAR data will be read and stored only after the system completes the locking stars. Please make sure the system locks the star normally. If the LIDAR indicator is still off after more than 5 minutes, please check whether there is slight vibration and sound when running. If there is no such phenomenon, please check the power supply voltage and the current load capacity and make sure the voltage range is 12~15V and there is a current load capacity of 3A or more
The P, G and L indicators are all on	The system is abnormal, please turn off more than 30 seconds, and then connect the power to restart
If you are unable to resolve the anomaly or other abnormal conditions, please contact our technical staffs	