GreenValley International

LiAirX4Plus

Autonomous Flight LiDAR Data Acquisition System



LiAirX4Plus is a highly intelligent autonomous airborne LiDAR system developed by GreenValley International (GVI). As a comprehensive upgrade to the LiAirX4, it retains autonomous flight capabilities and integrates the panoramic camera module internally for a more compact design and faster airborne/handheld switching. The system combines a lightweight 32-line LiDAR, high-precision INS, a 26- megapixel mapping camera, triple 12-megapixel panoramic cameras, and a high-performance edge computing platform. In handheld mode, the built-in SLAM algorithm captures high-precision 3D point clouds, achieving centimeter-level integration of airborne and handheld data for comprehensive 3D mapping.



Autonomous Flight Function



- Above Powerline Following Flight

Automatic line intersection identification, autonomous crossing of intersections, real-time tree obstacle reporting and pole/tower log generation, and automated pole/tower identification and photography.



- Side Powerline Following Flight

Capture RGB photos of conductors, autonomous tower crossing and line switching.



- Real-time Terrain Following Flight

Real-time DSM construction for terrain-following flight, meet the demand of large height difference terrain data collection for short-range LiDAR system.

Advantages

Multi-Mode Operation, Adapting Flexibly to Diverse Scenarios

The system supports handheld, backpack, and airborne modes with modular kits for rapid switching, and integrates GNSS with LiDAR SLAM fusion algorithms to capture high-precision point cloud data in handheld mode(thickness<2 cm, elevation accuracy<5 cm).

Intelligent Inspection Flights with Omnidirectional Autonomous Obstacle Avoidance

Equipped with a high-precision integrated motor, the system performs 360°×270° omnidirectional scanning, detecting obstacles in real time and intelligently chooses climbing or bypass strategies based on the environment to ensure safety with minimal manual intervention.

Integrated Aerial-Terrestrial Workflow with Multi-Source Data Fusion

With triple 12-megapixel panoramic cameras, LiAirX4Plus achieves full scene coverage on airborne or handheld platforms. By fusing airborne and handheld point clouds with high-resolution panoramic images, it enables seamless multi-platform data integration and supports large-scale, high-fidelity 3D Gaussian Splatting models for more complete and detailed scene reconstruction.

Support GNSS Antenna-Free Solution, Simplifying the Installation Process

When mounting the system on DJI M300/M350RTK aircraft, there is no need to install external antennas, yet it can still acquire high-precision GNSS information. Post-processing can then generate a centimeter-level high-precision point cloud.

GreenValley APP: Intelligent Assistance for Real-Time Quality Control

In airborne or handheld/backpack mode, the APP provides real-time point cloud display and RTK data acquisition, delivering absolute coordinate point clouds for timely surveys. Additionally, 720p/30fps video streaming enables clear field monitoring, enhancing control and safety.

729 Heinz Ave. Ste 9, Berkeley, CA 94710, USA I www.greenvalleyintl.com I info@greenvalleyintl.com

Specifications

System Specifications

Detection Range	80 m @ 10% reflectivity 200 m @ 54% reflectivity 300 m @ 90% reflectivity	System Accuracy (Vertical)	<5 cm @ 100 m
Typical Flight Speed	10 m/s	FOV	360°(Horizontal)×270°(Vertical)
Internal Storage	256 GB TF Card + 512 GB Internal SSD	Weight	1.6 kg
Dimensions	208×120×184 mm	Voltage	12-28 V
Power Consumption	36 W	Operating Temperature	-20~50 ℃
Storage Temperature	-30~60 ℃		
LiDAR Sensor Parameters			
Wavelength	905 nm	Number of Channels	32
Laser Class	Class1	Point Rate	1920 kHz (Triple Return)
Inertial Navigation System			
GNSS	GPS, GLONASS, Galileo, BDS	Azimuth Accuracy	0.038°
Attitude Accuracy	0.008°	IMU Data Frequency	200 Hz
Camera Parameters			
Pixels	26 MP	Focal Length	16 mm / 24 mm (Equiv. Focal Length)
Image Resolution	6252×4168		
Panoramic Camera Parameters			
Pixels	12MP×3	FOV	H190°×V190°
Software			
Control Software	GreenValley	Pre-Processing	LiGeoreference
Post-Processing	LiDAR360 / LiPowerline (Optional)		

Handheld Mode Specifications

Handheld Size	245×120×441 mm	Handheld Kit Weight	2.2 kg(Including device and handle)
Protection Level	IP54	Working Time of One Battery Block	1.5 h
Accessory Specifications			
Frontpack Kit Weight	2.1 kg	Frontpack Kit Outer Packaging Dimensions	560×340×160 mm
Backpack Kit Weight	3.9 kg	Backpack Kit Dimensions	580×303×145 mm
Mapping Method			
Mapping Principle	SLAM, PPK-SLAM	Real-Time Calculation	Supported
Data Results			
Absolute Accuracy	<5 cm	Point Cloud Thickness	<2 cm
Point Cloud Format	LAS, LiData	3DGS Format	Lisplat, ply