



CLOUDS

Airborne LiDAR System

Flexible | Precise | Efficient | Compact



SureStar Headquarter

5th Floor, building 1, No.5 YongFeng Road, Haidian District, Beijing, China Tel : +86 10-58717175 Email : bkth@isurestar.com Website : www.isurestar.com

SureStar Suzhou

6th Floor, Building B1, Dongfang Chuangzhi 3rd -5th Floor, Building A2, Zhihui Industrial Park, Garden, No. 18, Jinfang Road, Suzhou Industrial Park, China Tel: +86 512-62886015

SureStar Hefei

Baohe Economic Development Zone, Hefei, China Tel: +86 0551-66167968

Surestar International Inc. A: 28287 Beck Road, Unit D3, Wixom, MI 48393 T: +1-248-773-7768



Introduction

Clouds airborne LiDAR System

Clouds is a complete LiDAR system comprising our medium-range AP-1500 LiDAR, IMU system, digital camera and power supply. Clouds is small in size and light in weight - at 4.8kg the lightest in its class – and can be mounted to most flight platforms. The Clouds system boasts fast data acquisition, high precision, and long acquisition range. It is eminently suited to 3D city modeling, transmission line inspection, island reef survey, forestry census, cadastral survey, geological deformation monitoring, water conservancy survey and disaster assessment.







Characteristics



01

Large FOV, long acquisition range

FOV 100° Maximum range is 1500 m Swath is greater than 700 m @ 300 m range

03

Parallel line scanning

Perfect parallel scan lines Point cloud is evenly distributed.

05

Small size, light weight

Suitable for multiple flight platforms including traditional fixed-wing, multi-rotor drone, and VTOL fixed-wing UAV.



Characteristics

High frequency, high precision

Pulse frequency: 600 KHz Scanning frequency: 150 Hz Range accuracy: 10 mm @ 100 m

04

Modular design

Built-in GNSS receiver configurable with one or two antenna IMU interface module enables flexible configuration USB memory provides synchronized acquisition of images and data.

06

Open software interface

The software kit allows users to further develop the system to meet their specific needs. A high level of component integration makes for easy system operation.

0000



Applications







Equipment diagram









Dimensions









Pulse frequency vs acquisition range at $p \le 20\%$ and $p \ge 60\%$ surface reflectance

Point densities at various operational settings				
FOV = 100°, Air speed = 90km/h, Scan rate = 2,000rpm				
Altitude (m)	Swath width (m)	Pulse frequency (kHz)	Point density (pts/m ²)	
100	238	200	34	
100	238	300	50	
100	238	400	67	
100	238	500	84	
200	477	200	17	
200	477	300	25	
200	477	400	34	
300	715	200	11	
300	715	300	17	
400	953	200	8	
500	1192	150	5	
600	1430	100	3	

Point densities at various operational settings (theoretical value)

	System components	AP-1500
	Operational altitude AGL	100 -10
	FOV	100°
	Elevation accuracy	< 0.05 r
m specifications	Time synchronization accuracy	< 1 ms
	No control mapping scales	1:500、
	Data storage	SD card
	System weight	4.8 kg/5
	Scanner model	AP-150
	Minimum acquisition range (m)	3
	Maximum acquisition range (m)	1500 (p
	Pulse frequency range (kHz)	50 - 600
	Laser safety class	Class I
	Wave length (nm)	1550
	Echo mode	Multiple
	Beam divergence (mRad)	~0.35
	Scanning FOV (°)	100
Scanner	Strip width	>700 m
	Scanning frequency (Hz)	30-150
	Range accuracy (mm)	10@100
	Angular resolution (°)	> 0.005
	Intensity resolution	12 bits
	Scanner weight (kg)	3.3 kg
	Operating temperature range (°C)	-20~55
	Storage temperature range ($^{\circ}$ C)	-35 ~ 70
	Power supply range (V DC)	24~28
	Average power consumption (W)	48
	IMU type	ulMU-I0
	IMU refresh rate	200 Hz
	GNSS antenna connections	1~ 2
	Satellite systems	GPS L1/
		Horizon
POS	Position accuracy (post-processed)	Vertical
	Heading accuracy (post-processed)	0.009° (
	Pitch accuracy (post-processed)	0.005° (
	Roll accuracy (post-processed)	0.005° (
	Operating temperature	-20°C ~
Camera	Models	Optiona
	Processing mode	Support
	Base station number	≥ 7
NSS software	IMU error model	Support
	Post-processing software	Support



Specifications

, GNSS card, uIMU-IC, digital camera
0 m
ncluding GNSS, LiDAR, IMU, and camera
1:1000、1:2000
for LiDAR and POS
6 kg/6.3 kg
=80%)
echoes
@300 m
m

/L2 、GLONASS L1/L2、BDS B1/B2

ntal: 0.01m (locked), 0.3m (GNSS signal loss of lock for 60 seconds) I: 0.02m (locked), 0.1m (GNSS signal loss of lock for 60 seconds) (locked), 0.03° (GNSS signal loss of lock for 60 seconds) (locked), 0.02° (GNSS signal loss of lock for 60 seconds) (locked), 0.02° (GNSS signal loss of lock for 60 seconds) ~ 55°C

al:Sony α7R2; Sony α7R2(Custom version);Canon 5D rt for differential and PPP processing

rts processing customization rts 3-D coordinate transformation

> Clouds High precision survey grade LiDAR system