

ALPS1

Technician Manual

Copyright © SOUTH SURVEYING & MAPPING TECHNOLOGY CO., LTD.

*All Rights Reserved

Content

Chapter 1 Preface	1 -
§1.1 Introduction	1 -
§1.2 Applications	1 -
§1.3 Main Features	2 -
Chapter 2 ALPS1 receiver introduction	5 -
§2.1 Receiver components	5 -
§2.2 Receiver screen menu	7 -
§2.2.1 Main display interface	7 -
§2.2.3 Work mode	8 -
§2.2.4 Set Datalink	8 -
§2.2.5 System Setup	10 -
§2.3 Hardware Operation	11 -
Chapter 3 Web UI Management	13 -
§3.1 Overview	13 -
§3.2 Access by WiFi	13 -
§3.3 Access by USB	14 -
§3.4 Web UI main interface	18 -
§3.4.1 Status	19 -
§3.4.2 Configuration	21 -
§3.4.3 Satellite Information	29 -
§3.4.4 Data Record	31 -
§3.4.5 Data Transfer	34 -
§3.4.6 Network Config	
§3.4.7 Radio Config	41 -
§3.4.8 Firmware Update	
§3.4.9 Track Manage	46 -
§3.4.10 Coordinate System(reserve)	48 -
§3.4.11 Online Service(reserve)	49 -
§3.4.12 User Management	49 -
§3.4.13 System log	50 -
Chapter 4 New functions	51 -
§4.1 AR Stakeout	51 -
§4.2 Photogrammetry	55 -

67 -
72 -
72 -
73 -
73 -
73 -
74 -
75 -
78 -
79 -

Chapter 1 Preface

Read this chapter, you will have a brief knowledge of SOUTH Company and ALPS1 measurement system.

§1.1 Introduction

Welcome to SOUTH SURVEYING & MAPPING TECHNOLOGY CO., LTD., which is China's leading manufacturer of surveying equipment including GNSS receivers and Total Stations. To know more about SOUTH, please visit our official website https://www.southinstrument.com//

Our company detailed information as follows:

Add: South Geo-information Industrial Park, No. 39 Si Cheng Road, Tian He IBD, Guangzhou 510663, China

Tel: +86-20-23380888 Fax: +86-20-23380800

E-mail: mail@southsurvey.com export@southsurvey.com impexp@southsurvey.com gnss@southsurvey.com

This manual takes the new ALPS1 positioning system for example, to explain how to install, set up and use the RTK system as well as the use of the accessories. We recommend that you read these instructions carefully before using the instrument.

§1.2 Applications

Control Survey: dual-band (dual-frequency) system static measurements can accurately complete the high-precision deformation observation, photo-control point measurement.

Highway Survey: quickly complete the encryption of the control points, road topographic mapping, cross-section measurement, profile measurement with Survstar

CORS Application: provide more stable and convenient data link for field operations. It is seamlessly compatible with all types of domestic CORS applications.

Data acquisition measurement: perfect match South's various measurement software to do quick and easy data acquisition.

Stakeout shot: large-scale point, line, plane lofting.

Electric Power Measurement: power line measurement orientation, ranging, angle calculation.

Marine application: oceanographic research, dredging, piling, inserted row, making the marine operations convenient and easy.

§1.3 Main Features

AR Stakeout

Augmented Reality (AR) stakeout revolutionizes conventional surveying methods by integrating various sensory modalities, including visual and auditory. This approach eliminates the proficiency gap between experienced surveyors and novices by providing real-time visual guidance within authentic environments. Additionally, voice prompts are employed when nearing designated targets. This streamlined process allows surveyors to stake out targets without the need for leveling the pole, relying on visual and auditory guidance for precise stakeout each time.

Laser Survey

Laser survey is an instrument that accurately measures the distance to a target by modulating a certain parameter of the laser. Pulse laser ranging involves emitting a brief pulse or sequence of pulses towards the target during operation, with the photodetector receiving the reflected laser beam from the target. The timer measures the time it takes for the laser beam to travel from emission to reception, allowing for calculation of the distance from the rangefinder to the target. Point acquisition is carried out according to the position of the laser point.

Visual Positioning

ALPS1 visual positioning broadens the scope of RTK applications through the synergistic integration of photogrammetry and RTK positioning technologies. With an 8-megapixel camera, "Fast" IMU and the latest positioning algorithm, ALPS1 is adept at capturing and processing images or videos to derive precise coordinates. Therefore, it excels in surveying targets that pose challenges for traditional methods, including intricate corners beneath roofs, obstructed fields, and bridges spanning rivers. This capability enhances surveying versatility, allowing for the

efficient and accurate surveying and mapping of locations that were previously difficult to access with RTK surveying techniques.

BDPPP: Keep working in remote aeras with no CORS network coverage

ALPS1 can receive B2b signal of BDS GEO satellites(Asian Pacific area), and E6- B signal from GALILEO. After waiting 20 min in open environment, ALPS1can achieve 10-20cm horizontal accuracy and 20-40cm vertical accuracy. If you have specific needs, please contact us.

Color Round Screen

HD 1.14 inches and 135*240 pixel TFT screen color LCD screen with high brightness and low power consumption is more suitable for field work, which is convenient and, efficient to complete mode settings, information browsing, function settings.

Intelligent Platform

New generation of embedded Linux operating system platform improves RTK performance and work efficiency. Its operating efficiency is higher; a unique core processing mechanism which can respond to more than one command at one time; it starts faster and more responsive in real time. While the stability of system is much higher, it can be adapted to the job of longer uninterrupted power.

The "Fast" IMU: More Fast, More Stable and More Accurate

ALPS1 is integrated with a new generation IMU module that it only needs 2-5s of shaking or walking to complete the initialization, and the maximum tilt compensation angle can be 60 degrees. it can ignore magnetic interference while RTK receiver works in such a magnetic environment. This professional IMU module can keep the tilt effect for about 40s if RTK

receiver stays on a point without moving.

Internal Web UI management

Embedded Web UI management platform supports WIFI and USB mode connection. Users can monitor the receiver status and configure it via the internal Web UI management platform.

WiFi

As a feature and technology adopted on ALPS1, it not only can be used as data link to access to internet, but also can be as a hotspot which can be accessed by any other smart devices to configure the receiver.

Advanced UHF module

ALPS1 adopts new and excellent datalink system, which is compatible with current radio protocols in the market, and realizes the random switching of the radio range 410MHZ-470MHZ and the power level as well.

Intelligent Interaction

Support to access the internal web UI manage page of receiver with WiFi and USB connection, monitor host state real-time, configure receiver freely.

Electronic Bubble & Tilt Compensation

Integrated with a new generation IMU module which makes tilt measurement more stable, accurate and fast that without strict leveling the receiver to measure the point at will.

NFC Function

The internal NFC module can make the complicated Bluetooth communication easy and simple.

Chapter 2 ALPS1 receiver introduction

§2.1 Receiver components







Type-C port: for static data downloading, OTG (for external storage) and charging.

> 5-Pin port:

- 1) As a power port connected with an external power supply device.
- 2) As a differential transmission port connected with an external radio.
- 3) As a serial port to check data output and debug.
- Power indicator light: Displays the current battery, with one bar representing 25% charge.
- Speaker: Voice broadcast.
- **UHF antenna port**: Instill UHF antenna.

§2.2 Receiver screen menu

§2.2.1 Main display interface



Ref	Component	Description
	Power Button	1) Power on/off
0		2) Select menu
B	Function Button	Shift between menus.
It.	Data Indicator	Keep yellow when turn on.
<u>+1</u>		Flash green when Fixed solution.
		Flash red when not Fixed with the correction signal.



§2.2.2 Main menu

After the device is powered on, the current working status is displayed. The status interface consists of ICONS and text.

Main menu: by Function Key right or left, Power Button to shift between menus.



[Receiver information], [Work mode], [Set Datalink], [System Setup]

§2.2.3 Work mode

To switch work mode between Rover mode, Base mode and Static mode.



§2.2.4 Set Datalink

To configure datalink and there are 7 datalink modes as below:





§2.2.5 System Setup









Radio Config



§2.3 Hardware Operation

Power on

After pressing the power button for three seconds, the instrument can be turned on and used normally.

Power off

Press the power button and hold for a while, after 3 beeps and the "Power off" voice prompt at the third beeping, release power button, the instrument will switch off.

Check working mode

Press the power button for once in the state of power-on, the instrument will prompt with voice message about current working mode (for example, "Rover, internal radio mode").

Self-check

Self-check is an useful operation to simply check the main hardware components if the instrument is abnormal or not working properly.

Press and hold the power button for about 10 seconds and pass over the state of power off and mode selection (do not release the button even the instrument says power off and start to set work mode), then ALPS1 will say "start to self-check", at this moment, release power button, the instrument will perform self-check automatically for the modules one by one.

The sequence of modules checking is:

OEM board checking

UHF module checking

Sensors checking

WiFi module checking

Bluetooth module checking

EPPROM checking

If all the modules are normal during self-check, the instrument will get into the state of power-on.

Factory reset

Press and hold the power button for about 15 seconds and pass over the foregoing states (power off, mode selection, self-check, USB mode setting), ALPS1 will get into factory reset progress with voice message saying "start to restore factory default", at this moment, release power button, the instrument is performing the factory reset automatically. After this progress complete, the instrument will restart automatically with the factory default settings.

Charging

Charging state, in the middle of the charging process, the red light will turn green when full. Lamp power display current power, each light on represents 25% power.





Full charged

Chapter 3 Web UI Management

§3.1 Overview

Because of using the smart embedded Linux operating system and SOUTH intelligent cloud technology, the web UI allows users to configure and monitor the status of ALPS1 in real-time. The accessing way is not only by WiFi connection, but also can be USB mode.

§3.2 Access by WiFi

The WIFI hotspot is default broadcasted by ALPS1, search the WIFI hotspot which named with SOUTH_xxxx using smartphone, tablet or laptop, then establish the WIFI connection, input the **default IP (10.1.1.1)** into broswer, on the login interface, apply "admin" for the username and password.

For example, search the WIFI hotspot broadcasted by a ALPS1 receiver using a laptop PC, choose the WIFI hotspot and click on connect button to establish the connection without password.

Run IE broswer on computer and input the default IP (10.1.1.1) into address bar, after a while, the system login interface is refreshed, then apply "admin" for username and password to login.



ALPS1		SOUTH
		• ▶ • • • • • • • • • •
IP Address: 10.1.1.1	GNSS Web Server	Username: admin Password: admin

§3.3 Access by USB

On this mode, the Type-C USB port of ALPS1 must work as an Ethernet port, then internal web UI shall be accessed via USB cable connection with computer.

First of all, a corresponding driver is required to install to the computer, then this function could be activated.

Due to different operating system is installed on computer, the drivers should be applied to a suitable one. The file bugvista64.inf is applied to 64bit operating system, and linux.inf is for 32bit operating system.

		-	and some in	tei@	-
🚱 🔵 🔹 📕 K. Compute	・ 工作(E) + RTK + Galaxy G6 + G6時日間波		44 Servit BS/020	10	P
File Edit View Tools	Help				
Organize • Include in	illerary * Share with * New folder			iii • 🗇	
+ 👷 Favarter	j hane "	Quie modified	Type	Ste	
Desktop	 bugvittelit ovt finaciat 	1916/3/15 1529 1915/38/19 1538	Satup Information Satup Soformation	118 748	
Decaments					

Choose the folder which contains the drivers

+> =

SOUTH



NOTE: The driver can be downloaded from official website automatically or please contact with us for more supports.

If the driver has been successfully installed, the USB port of ALPS1 will be recognized as Linux USB Ethernet/RNDIS Gadget, and a local area connection will generate in Network

ALPS1

Connections on the computer. For example, Local Area Connection 138 generates after connectingALPS1 receiver to computer via USB network interface.



However, sometimes the computer cannot detect the receiver by USB network interface because there is something wrong with acquiring IP automatically, therefore, we need to do something to avoid such problem, that is to set a fixed LAN IP for the connection:

Right click on the local area connection which newly generates, choose properties to call out the local area connection properties window.



Then double click on Internet Protocol Version 4 (TCP/IPv4) option or click on properties button to call out Internet Protocol Version 4 (TCP/IPv4) properties window, set the fixed LAN IP address as shown in following, then click OK button and confirm the settings, return to the IE browser and use the IP address 192.168.155.155 to access the internal web UI.

SOUTH

Internet Protocol Version 4 (TCP)	1944) Properties	
General		
You can get IP settings assigned	automatically if your network supports	
this capability. Otherwise, you need to ask your network administrator for the appropriate IP eartings.		
⊙ Obtain an IP address autor	ataly	
(i) Use the following IP address	в.	
Paddress:	102 . 368 . 155 . 100	
Subret neals	215 . 255 . 255 . 0	
Confault gateves:	192 .368 .155 . 1	
Colum DMS server address	advectorly	
@ Lise the following DHS serve	er addressec	
Preferred DhG server:	- (4 - (4 - 16 - 1	
Preferred DhG server: Alternate DNG server:	4 4 4 4 4	
	Ceneral You can get IP settings assigned this rapability. Otherwise, you is for the appropriate IP settings. Cottan on IP address autor @ Use the following IP address IV address: Subnet made: Default gateway: Cottan DMS server address	

Run IE broswer on computer and input the default IP (192.168.155.155) into address bar, after a while, the system login interface is refreshed, then apply "admin" for username and password to login.

IP Address: 192.168.155.155						
GNSS Web Server	Use. Pass	rname sword	e: ad	lmin min		

§3.4 Web UI main interface

After login the Web UI management of ALPS1 by WIFI or USB connection, the main interface appears with displaying configuration items and positioning. As shown at following figures.

Status	-	Langnum:			
		1.41: 2311/54 40478914	Law, 113/350.66162215	At: 57.140850/y	Dipost: WG8-84
< Configuration					
Satelite Information		x: -2551556-275560	Y: 5580107.000805	Z: 3485260-727084	
🗄 Data Record		HCK Balan			
DetaTratafer		Satution: Single	ConstitutionDelay: 0	HR56: 0 (E)	VRUS: 1 HE
-	-	fame X) 0.000500	base Y: 0.009008	5epe 2: 0.900900	forme (D) - D
or Network Config		Offered: NOVE			
Radio Config	•	(R)4			
 Firmware Update 		5N: Norm		TrackingTime: 8	
II Track Manage		April 10		Elevation: 4.00	
Coordinate System		SNR: 8.00		Solution: 0	
Online Service		Tracout Samilian 2011			
lir - User Masagement		GP5(6): 18,23,25,28,31,	u:	SEDMASS(4): 3.4.14,15	
20 Extended		808(15): 1,2,3 8,8 9,13	16,20 32,37,38,39,59,60	GALLEO(2): 19.21	
an system rod	-	SBASE: None		0255(5): 2.4.7	
		19985833 FROME			
		Unit Sub-Be(22)			

In the Web UI home page, the configuration items are listed at left side. And the positioning information including coordinates information and satellites are displayed at right side

Ref	Component	Description
	Status	Positioning information, satellite tracking and the others will
Logged	Status	be displayed in this page
104204		It contains registration for receiver, base configuration,
×	Configuration	antenna configuration, satellite configuration, receiver
		configuration and system configuration.
茶	Satellite Information	Display and control the satellites are used or not
, all south a		Configure the parameters for static mode and raw data
[11]	Data Record	download
		Contains NTRIP configuration, TCP/IP configuration and data
	Data Transfer	transferring with PC
A	Network Config	Contains network parameters configuration, WIFI
0		configuration and the other functions

ALPS1		<u> </u>
Î	Radio Config	Configure the parameters and frequency for radio modem
£	Firmware Update	It is used to upgrade the firmware for receiver and each modem
	Track Manage	Record track file while doing measurement
	Coordinate System	Setup a local coordinate system forALPS1
	Online Service	Upload data onto a server in real-time
25	User Management	Add and manage the Web UI users
Î.1	System Log	System and data log

§3.4.1 Status

System Information, Work Status and Position Information are listed under Status menu.

System Information

In this page, all the information of ALPS1 is diplayed such as serial number, hardware ID, MAC address, firmware version and so on.

Care -	admin Azzakusaasikoze B	asys logouli	> System listoon	Mone
100	Status		PAGERT:	Digit.
-	Tydays internalization	100	Herse Tracities:	\$2365740H803
1000	WATE THIRD.	1.10	Hardware D:	H0K8.N008120088831255646228
2	Asking bit employs		Diffusion II.	3.40.40010008008
*	Configuration		Etherner MAG:	se de acies de an
	companies	-	Ethered F:	152.160.1.1
1.15	Satulite Information		1941) AF	0.114
100	Data Hecond		Anarute MAC:	14 00 75 dc 49 07
	DataTuesder	-	Hardware Manich:	8
	Contentine of the	-	Fernancianse:	100240007/822899.001A
1.2	Network Config	-	DEM Vermen	800/T-82544-1
2	Redic Config		Web Yesset:	1.00.0x0x00.m0e0x400
	Firmware Update		Espire:	15040625
577	Track Manage			
	Coordinate System			
0	Online Service			
di.	Live Management	-		
- 54	System Log			

ALPS1

The physical state of ALPS1 such as working mode, datalink, host temperature, remaining power and the free memory is obtained from this page

admin 05/5 SZZBESF46210579 (06000)	2 Work Status	
Status G System Utilizmution = Vicek Status = Position Utilizmution ==	Work Model Higher Databas Hawfoods High Tampanasas (02:20 % OEN Tampanasas NA	
% Configuration	EatTower Yolkage + 00 V	
🚿 Satellite Information 🛄	Bataryyotage 1.80 v	
🔅 Data Record 🛅	Etoolgie Type Tellsonial Monocry	
🗟 DataTransfer 🔂	WoldTine 00.35/32 Hitsensp	
Network Config	Safery Romaning	Dire Capacity
I Radio Config 🛄	Buildery Honoradosystem	E Datument Bellet W
🏦 Tirmwere Update 🗧		6 3
💷 Track Manage 🔂		
Coordinate System		
🙃 Online Service 🛄		
🎄 Duer Management 📴		
🕮 System Log 🛄		

Position Information

In this page, users can be clear at a glance on current position information and satellite information

admin #579 52280948310579 [Ropek]	> Position Information			
Sata 📴	Las: 201854-425561	Lan: HIPSEG BEFRETS	AR SERPERA	Elganii: W22-84
Work Status = Produce Information =	N : -8501318 170540	Y: \$583108.533184	Z: 3495200 043/64	
K Configuration	ichdor: Segle	Correctordistag: 0	HR051: 0.101	VBdi 110
is Satellite Information	kaur II. D.D.R.R.M.	Convery II (BODDOD)	1014 E: 0.00000	Taken (11) D
E DateTransfer	DefForest: NONE			
Network Config	NPU Parke		TakegTree: ()	
🗉 Racko Config 🗾	Acresh: 0.00		Elevation: 5.08	
± Firmare Update 🛄	BAR DOD		Boluteer 0	
🗐 Track Manage 🛄	GP561/ 10.23.25.28.31.	22	GLOWISSIN) 3.4,14,15	
Coordinate System	808(10) 1,2,2,1,8,9,13	16.20.32.37.38.39.68.63	04(8502): 19,21	
& User Management	SEALSON Nexe		G2585(2): 3,4,7	
🖂 System Log 🖸	VerSette00			

§3.4.2 Configuration

General Config, Base Setup, Antenna Setup, Satellite Tracking, Receiver Operate and Default Language are contained under Configuration menu. Users are able to configure all kinds of parameters for ALPS1 under Configuration menu, and all the settings are immediate effect after saving.

General Config

The registration for receiver working mode setting can be completed in this general configuration page.

-		_	Bastoni		
4	Status	0	Heyeren		
×.	Configuration		Renal Northern	6220E3F45238679	
÷	General Cardle		Geter	074011170CE1855434465488885478852548	Regular
			CrementOuter	20240825	
	Antonio Setap		OnineRegimatory	OvinsRep	
	Soldle Locarry		(G)/Represtode:	6	Register
	Receiver Operation			4	
	Watern Setup		And the second		
	Cala Dia Independent	-	CALCULATION OF THE		
٩.	satesine autonnation		Ware Moder	Raver v	
7	Data Record		Conairea	Reveals 4	
8.	DetaTranafer		Rails Reder	Norm w	
6	Network Config		Hado Tranaler:		
1	Redit: Config		RTK Record:		
£,	Firmware Update		shikingar		
	Track Manage		1995:	1	
	Coordinate System		Ware and the de-		
	Challeng Kanadara	-	EVENT		
	STREE STREET		CVERT Polenty	Patter	

If the code of ALPS1 has expired or is going to be run out, please provide the serial number of your ALPS1 for us to apply for another available code, then input the code into the blank or register the receiver online.

SOUTH

moral Config			
gister:			
Serial Number:	5ZZ8E5F48318579		
Code:	87A5FFF7BCEFB5541A46348B8BAF8E5254E	Register	
ExpiredDate:	20240925		
OnlineRegistration:	OnlineRegi		
OEMRegisterCode:	0	Register	
DEMRegisterCode:	0	Ragistar	

ALPS1 allows users to setup the working mode and datalink from this Web UI that only need the mobile phone or tablet PC is able to connect the wifi hotspot of ALPS1.

Mode Setting:			
Work Mode :	Rover	*	
Detalirk :	Radio	v	
Radio Router:	None	*	
Radio Transfer:			
R7K Record:	10 C		
xFilEnsble:			
1PPS:	9		
WeeLinkRouter			
EVENT:			
EVENT Polarity:	Negative	*	
BDSPPP:	Disable	~	
	Enter	Cancel	

Work Mode: There are Rover, Base and Static contained in this dropdown list

Datalink: Pull down the list, there will be all kinds of options for datalink, such as radio, Network, External, Bluetooth, WIFI.



Radio	~
None	
Radio	
Network	
External	
Dual	
Bluetooth	
WiFi	
IntelligentDataLink	

RadioTransfer: This is the function that ALPS1 is able to transfer the correction from Base station to the other rovers with the internal UHF, definitely,ALPS1 can work as a radio transfer (radio repeater).

Work Mode:	Rover	*	
Detaink:	Radio	~	
Radio Router:	None	~	
Radio Transfer:			
RTK Record:			
xFilEnable:			
1PPS	V		
WeeLinkRoute:			
EVENT			
EVENT Polarity:	Negative		
8D9PPP	Disable	~	

Operation:

1, check the box of "RadioTransfer" on "General Config" dialog for Base station.

Work Mode:	Base	~
Datalink:	Radio	~
Radio Router:	None	÷

2, open the same function for Rover in critical status (when the Rover is close to working distance of Base internal UHF).

Work Mode:	Rover	~
Datalink:	Radio	~
Radio Router:	None	~

3, configure the datalink of the other rovers into internal UHF mode, then make sure the channel, protocol and frequency point are same as "Repeater" rover.

Note: please take in mind that the "Repeater" rover should keep away from Base station to avoid signal interference.

RTK Record: This is used to enable raw data recording in base mode or rover mode for post-processing

xFillEnable: the "Fixed-keep" function, to allow ALPS1 keep the centimiter-level accuracy when the correction is missing

1 PPS: This option is for the 1 pulse per second output

WiseLinkRoute: receivers first priority to use internet transmit and receive corrections (a internet server is needed), if lost the internet signals, then receivers will use radio transmit and receive corrections

EVENT: This option is for the EVENT marker input

EVENT Polarity: EVENT input method.

BDSPPP: Disable BDSPPP function, Dynamic PPP(rover) and Static PPP(static).

		SC
BDSPPP:	Disable	v
	Disable	
	Dynamic PPP	
	Static PPP	
	BDSPPP:	BDSPPP: Disable Disable Dynamic PPP Static PPP

Base Setup

When ALPS1 works as a base, the basic configuration for base can be setup in this page. Users can input the correct coordinates or capture a current position for the base. Also users can define what kind of correction format is transmitted.

admin S914D&152100011 1	obiii Isgout)	> New Setup			
Statue		DVR ID	6	- i	
Contiguration		RTOVE A ID:	a		
General Config		RECKLA ID	0		
Bine father		Section:	10 125 10.0	33143	e w
Saleffile Tracking		Alana Lat:	23 10 54	020733	н э
Render Operation		Save At.	30 249 300		0
			Poséce Spére		
 Satellite Information 	-	Warting Model	Auto Dy Pauri Pauri		
Data Bergett	-	Size Date Accuracy:	L.	Ψ.	
Databandor			Shet Date: Stop flater		
D Network Confin	-	Convertions	H101432		
Exter/ onlin	100	Extent merval.	5	1¥1	
2 Remove the late	-	POOP Value:	35		
Track Manager	-	Roos Statute:	Siat Succes		
Construction for the	-				
Contraine System	-		Enter	Carcel	

CMR ID/RTCM2.X ID/RTCM3.X ID: Users can specify the ID for transmitting correction.

Position: Click this button to capture the coordinates for current position

Spare: This is used to the repeat station

Base Start Mode: Here contains 3 methods to start the Base, manually start base, automatically start base by fixed point, automatically start base by current point.

SLink Base Accuracy: Here contains 3 methods to make sure the Base accuracy, L, M, H. Choose different methods according to different needs.

Correction: Here contains the global general used correction formats including RTD,RTCM23, RTCM30, RTCM32, CMR and SCMRx

DifferInterval: Base differential transmit interval (seconds/once)

ALPS1

PDOP Value: This value is setup for the PDOP limitation.

Status: Here will display the status for base in real-time.

Antenna Setup

The antenna parameters are configured in this page including the antenna height, measuring method.

-	adetin szzacszesztecza I	(1576 Ropout)	Antonios Setup		
Q.	Statue		Autorian NOR	A22855# 483198578	
-55	Configuration		Andecisia Heights	1.821	(m)
0=	General Contig		Manangumor	Dantes Phone, Cemiel	*
	Base Sectors		Made		
	Actinities from kines		RISCI.	0	
	Receiver Operation		Ankered I:	6	
	Weben Setup	0	America 1	710.04	
	Receiver Secondly		Americal T	1799.80	
1.	Satellite Information	-	0 0000000	live w.	
-08	Data Record			n de la companya de l	
.8.	DataBambe		9	Erter Catod	
.0	Network Config				
1	Radio Centig				
2	Firmasee Update				
- 01	Track Manage				
. 0	Coordinate System				
ō.	Online Service				

Antenna Height: This is the value for height of antenna while surveying.

Measuring Method: Here provides several methods for measuring the antenna height such as carrier phase center, slant height, antenna edge, height plate and to the bottom.

MeasuringMethod:	To The Bottom	~
Model: RINEX:	Carrier Phase Center Slant Height Antenna Edge Height Tape To The Bottom	

Satellite Tracking

In this page, users can define the mask angle for satellite tracking, and check on the box of corresponding band from the constellation that to use this band or not

admin 191400152108011	ann) gcouti	> Smith Tooling			
Status		Main Angle: 1		14	
Configuration					
General Contra	-	her.	500	121	
Deve Setup		015	11-04	2	
Autoress Setting		075	11.0	-	
Sanctine Desiting		1475	LE-G/A	2	
Sectors Sector		úrs	1247	1	
liment service		078	10	2	
	-	0.09488	L1-Q4	2	
assure mormation		GLONASS	11.0		
Data Record		GLONASS	L3-6/4		
Data Transfer		(KOW88	12.00	2	
Natavik Confer	-	ICONASS.	4.5	77.5	
	-	803	31	-	
Redio Config	•	809	84	8	
Ermanare Update		803	80	1	
Tack Manage		103	83A	2	
Concellenter Contant		lass	LEGA		
Coordinate system		5849	1.0		
Cinline Service		DALLED	51	1	

Receiver Operation

The page provides all kinds of operations to control the receiver such as self-check operation, clean epochs, factory reset, reboot and power off.



Self-check: Users can also do the self-check from this configuration page, click on the Check all button to check all the modems or click on the check button corresponding to the modem to check one by one.

Clean EPH: Click this button to clear the remaining epochs to let recever track the satellites better.

ALPS1

SOUTH

Factory Default: Click this button to bring the receiver back to factory default setting.

Reboot: Click this button to restart the receiver.

Power Off: Click this button to power off the receiver.

Reset OEM(cold): to reset OEM, and receiver will restart.

Reset OEM(hot): to reset OEM, receiver will not need to restart.

System Setup

This page is used to control Voice prompt, volume of voice, power saving, USB mode and the default language for receiver.

-	dmin anezisztottasz l	lagout)	> System Setup			
а.	Status	0	Voice :	1		
8	Configuration		OEM/setCarErable:	Yes I No.		
	General Config	-	STARryow:	West (e) No		
	Base Settigs		Vetieres:	thefare.		
	Antesna Settap		Douast Market	and the second se		
	Servetillet (rachineg			With St.	- All	
	Receiver Operation		URD.		*	
	JAnnue Peantr		Default Language:	Dight	*	
	pecenes Setality		Time Zone(t):	+0.0xBearing Change	~	
-	Satellite Information		Fundation			
at i	Data Record		The Constant	-imitex		
-	DataTelester	-	Realization:	ON.	-	
-	Datamatore		BelDutre Hoste:	NAL	*	
6	Network Costig	0	Autority Zyne-	ING-6-20897210		
1	Radio Cottig		HTXSelutio:	Adv		
	Ferriware Update	-				
		-	Submitte Verw Nexter	Bolving Satellite		
01	Track Manage	0	Statestica Dystem:	All	¥	
0	Coordinate System		Enforced Postering:	Deaths		
8	Online Service		(18FEast):	2005	*	

Voice: Check on this box to turn on the voice guide for ALPS1, uncheck it to turn off the voice guide.

OEMuserdefEnable: check "No" for ALPS1.

RTKEngine: check "No" for ALPS1.

Voice Volume: Define the voice volume for ALPS1's speaker.

Power Mode: Configure the receiver to use the power saving mode or not.

USB: Now ALPS1 supports the USB mode and Network interface at the same time through the usb type-c cable.

Default Language: Configure the default language for ALPS1 which associates with voice guide.

TimeZone(h): Use this to setup the corresponding time zone for your country or area.

FixedMode: Some receiver has the option for fixed mode narrow or wide, but this option is not

ALPS1

working on ALPS1.

NMEAheader: Choose the output data header in GN, GP or HE format.

Self-defense module: To set a user-defined work mode and output mode for receiver. Usually please choose NULL.

Authority zone: Default means the default area. Global-20991215 means it can work in all around the world.

```
Authority Zone: Default-20231127
```

```
Authority Zone: Global-20991215
```

Satellites View Mode: There are two methods, Solving Satellite and Common Visible Satellite. **Satellites System:** You can choose the different satellite systems in here.

Enhanced Positioning: It has a big influence for RTK when the ionosphere is active, so you can try turn on this feature.

ITRFEpoch: epoch selection, select an epoch at a different time based on the update time.

Receiver security: to backup the receiver system, so that we can use the backup system if the receiver has any problem.



§3.4.3 Satellite Information

The "Satellite Information" provides all kinds of tables, graph and the skyplot to view the information of tracking satellites. And it is allowed to configure to use which satellite in constellation on/off page by checking on the corresponding box.

Tacking Table

Here is the table to list all current used satellites and the other information for these satellites.

SOUTH

ALPS1

admin Pro	31 200	whington								_	
C Satur		140.0	-	time	inner	-	12110	-	1.00545	040	-
S Configuration	4	645	= 10	90.03	89.69	04	35.09	. P.	8.08		11160
		0.48	4.11	218.07	31.00	- 68	30.02	*	27.80	108	to the
S SAVEREINSTRUMES	4	199	81.00	210.02	#5.00	158	48.05			1	In Unit
The strengt her	101	.075	1.25	112.48	80.00	104	0.00		1.08		ir)im
the state of	1.1	075	.00.03	11257	40.00	čk.	47,00	P	40.00		in the
CONTRACTOR OF CONTRACT	1.	(145	1517	102.11	41.00	3A	4190	÷	4.0		9.1%
STR. CEATIN	-	. 025	31.19	15.10	45.00	GA:	11.00	1.1	8.08		1110
		0.04	tics	112.41	41.00	CA.	36.02		100		to Mar
SIM ON/OFF	1.0	1178	24.25	at ini	41.00	68.	01.00				41144
10255 D N/OKT	7	046	74.17	81.19	40.00	Ġ8	4520		40.80	100	in the
INPER-SINCH	- 27	076	49.95	+63.24	35.00	64	45:09	P	41.00	1.1	ALC: No.
Data Record	- H	1045	30.01	106.00	44.00	04	45.00		1.00		1.04
Cl. Datasula		GLOMADO	10.14	210.12	31.00	GA.	0.80	-	8.08	-	Ar Line
en mentamme	1	00.0MM	.8129		40.00	54.	400		.110		31548
Network Config		DLOWAR	2348	333.15	90.00	GA.	40.02		100		11.160
I Ratio Config	0 1	OLOMISS	1.01	20478	15.00	CA.	0.80		1.08		in the
2 Fermann Update		ID. CHARA	3.30	80.84	39.00	- GK	34.94	+	818		te i her
and the later of t	10	GLOWINS	-	19.47	+0.00	64.	44.00		8.08		-
THE R PUBLIC .		di dana da	- name	-	40.00	100	44.00	1.16	10.00		And Ann

Skyplot

In this page, all the tracking satellires are shown on the skypolt, this let users intuitively view and know where the current position of satellite is.



GPS on/off

For all the running GNSS constellations or the augmentation system, ALPS1 allows to configure to use which satellite or not.

In gnss on/off page, all the running satellites are listed, and unselect the box corresponding to the satellite to not use it.

LPS1				<u>SOUII</u>
admin 521408352100011	an r logouti	> urs oryon		
C Status	-	51		
≪ Configuration		10751	121	
n Satetite information		19952	12	
TrackingList		tar-tea	1	
Skypan		12734	(2)	
-GPS CHUCHT		16°93	1	
HIONARS CRACKED		GP18	1	
IDS ON/OH		07952	1	
Galleo ON/OF		0758	100	
SEAS ON/OFF		107100	1	
G295 DIM/OIT		099.01		
IRNSS ON/OFF	- 20	sP5H	8	
Easte Record		GP5-2	1	
Detalitansler		045.0	1	
and Alabamatic Country	-	OP514	1	
· satisfies ching		07576	1	
I Radio Config	0	04510	1	
🚊 - Ekrowene Upstate		desid.	1	
Track Manager	-	(PS-11	21	
and more monorage.		075.0	17	

GLONASS on/off: to check and uncheck the satellites for tracking BDS on/off: to check and uncheck the satellites for tracking GALILEO on/off: to check and uncheck the satellites for tracking SBAS on/off: to check and uncheck the satellites for tracking QZSS on/off: to check and uncheck the satellites for tracking IRNSS on/off: to check and uncheck the satellites for tracking

§3.4.4 Data Record

The "Data Record" performance is mainly used to configure all the parameters for receiver in static mode. Much more operations can be done on ALPS1 such as storage path, interval, data format and data files download.

Recording Config

The page provides more practical operations for raw data storage.

SOUTH

admin 199402153360011	(logout	 Recording Camilo 		
😂 Status		Branage Options	Internal Monton	*
% Configuration	-	tarval	7	v second
% Satellite Information		file interval	24	w has
Deta Record		Data Format:	() \$14 RHER28	RNDO.E CONDUCTION OF THE CONDUCTION
Recording Conits		Pure Name:	0011	
Data Download UTF Transmission		Auto Deleter	The Tes file	
🚊 DataTransfer		Format:	Format Disk	
Network Config		Recording Vode	845	. *
3 Radio Config		C-201 0.00	Slatt Skip	
1 Firmware Update		Once Record & solder		
Track Manage			a	v 19630
© Coordinate System		Second date.	Merconning on 10101	f an othe General Confe ^r nce
© Online Service				a maintaine descent hely.
& User Management			Enter-	Carcel
& Troquency Spread				
Si Sustem Loci				

ALPS1

Storage Option: Here are the options to be selected for where the raw data will be stored, internal memory or external memory.

Interval: This is the sampling interval for data storage, 50Hz (0.02s) sampling interval now is available for ALPS1.

File Interval: This is used to defined the data storage time for the static file.

Data Format: Here are 3 options to selected for ALPS1 to store what kind of format data, STH, Rinex2.0 and Rinex3.0.

Point Name: A point name is required, the last 4 digits of SN is default setting for the point name.

Auto Delete: This is used to configured ALPS1 to delete the previous data files automatically if the memory is full.

Format: Click this button to format the internal memory for ALPS1.

Recording Mode: Here are 2 options to configure ALPS1 to record raw data automatically or not if it achieves the sampling conditions.

Once Record Enable: to set a Timer for static recording, for example if set 5 minutes, then the receiver will only record 5 minutes, after that receiver will stop record static data.

Recording Status: Here shows the status(time) of static data storage.

Data Download

This page provides the data files to download.

Choose the storage where the static data recorded, and file type, then click on the blank of "Select Date" to choose what date the data was recorded and click "Get Data" button, all the files recorded in the date you choose will show in the table, tap download button to download the data files.

1	edmin READEIS2100011 D	agout)	 Tuta formition! 			
Q,	Status	8	ilara Roquie I	• SD Card College (•)	RTH C AREX Come	HARINES RECEIPTION
×	Configuration					
16.	Satellite Information		Stokest Davis /	Oet Di	An .	
R.	Data Record		Opentit.ced 1	(a) 12, 2125 (a) (a) (a)	ve lagat av1	
	Recording Config	2	041	(1) (2) (3)	date	Data
	Data Download		+			👲 (Drettan)
	110 Transminner		1	EREEEEE		Downood 1
н	Dataliansler		1	BREER		Develop(
6	Network Config		4.	N N N N N N N		· Dourisell
Ξ.	Radio Config	0				🛨 Doomunij
8.	Firmware Update		4			👷 finemadi
-	Tuck Manage		1			2 Develoat
	Constitute Eastern	-				🛊 Dectual
~	COCICIENTIAN System		1			👲 Doomist
G.	Online Service		10			👷 Doomait
h-	User Management	-	-			👳 Deveload
h.	Elequency Spread		19			👷 (Dyorical)
01	System Log	-	13			👲 Danuard

FTP Transmission

FTP is a file transfer protocol.

ALPS1 via FTP protocol, as ftp client mode to automatically send static and dynamic files on receiver disks to the ftp server.

adreis 0011 Messenarisent Popul	> XTP II summasson
💷 Status 💼	Contro:
% Configuration 🔂	Remarking -
· Saturbite Information	Barrar (a) 1920-938 1 1
🗈 Data Record 🖸	Server Port: Dr
Recording Config	utorute: abes
Data Desettised 🛛 💳	anasari
•1P hannium =	Family
E DataTransfer 🖸	Designer (1997) - Tr
6 Network Config Continue Control C	Appendiant: Teat
🛛 Radio Config 🚺	
🗈 Firmware Update 🗧	Enter Carpet
I BackManage	humoround huboround
§3.4.5 Data Transfer

This performance contains General, Serial Port Config, TCP/IP Config, NTRIP Config and Data Flow Config. The "Data Transfer" allows to configure the output mode for raw observation data and differential data, as well as to the NTRIP performance configuration.

General

This page shows the service condition and the output contents of the ports, if the port item display in green, that means the port is being used, and the port is not used while the item display in red.

etinin atinin atinin	10011 [bigold]	> Control			
😂 Status	0	Tree	Usper	10.0	Porto d
% Configuration		Earlai	LININCH FEBSICI)	Hana	Hartgaller Date
-% Satellite Information	-	Bata	densing and adversed	Here	Harigation Date
III Data Becord					
E DataTureAr					
Terral Port Centler					
TEP/IE Gombo					
Poladigane Patrips					
Data How Limits					
ATICM Carried	-				
Network Config					

Serial port Config

This page is allowed to configure the baud rate, odd-even check and the data flow for serial port (5-pin port) and Bluetooth.

3	dmin elabetszteketi 🗆 🖗	spout)	2.505	a Fort Config							
Ģ.	Status		Aut .	Set of Part	Read Fig.		Odes	-	Des Fou		inere:
к.	Configuration		1.3	12540	(1620)	*	Norm .	*	Nevepeton Data		
6.5	Satellite information		1.2	BULETOOTH	115202		nee		Nevgeton Data	-	1
a t.	Data Record	-									
R .;	DataTransfer				Ever		6	ancel			
	Earneral		1								
	Senal Post Centry										
	117// Config										
	hetite? Country										
	MANUTATION PROVIDE										
	Date New Cordig										
	TITCM Canho										



CAUTION: do not change the default value in this page for each item, if you want to change the settings, please contact with SOUTH technician for further support.

In the dropdown list of data flow, there shows 4 items for selection.

Raw observation data: This is the raw observation data straight from OEM board.

Correction Data: This is the correction data straight from OEM board.

Navigation Data: This is the navigation data output from receiver such as NMEA-0183, GSV, AVR, RMC and so on. It is configured in Data Flow Config page.

SIC Observation Data: This is the user-defined format observation data from SOUTH.

OpenSIC Observation Data: This is the open version of SOUTH user-defined format observation data for secondary development.

External Sensor Input: The Data that input via an external sensor.

User Defined Datastream: You can choose this option when you want to defined datastream. **UAVGCS:** UAV data format.



TCP/IP Config

This is used to configured the raw data or navigation data to be uploaded or transferred to a server. And there are Caster and Server working mode for this performance.

Caster: If this working mode is selected, ALPS1 will be a client to upload the data to a specify server if it connects to the internet by WIFI. Input the specified IP and port for server, and the data format what is uploaded. Then users are able to see the uploaded data on server.

Server: ALPS1 will upload the data onto internet by the static WIFI if server is selected, then users are able to obtain its dynamic data by accessing to ALPS1 through the IP from receiver.

|--|

admin set4betts2(0001)	0011 Jogosi€	100	ich/P o	102							-
🖵 Status		-	Plote M	de Local P	in Served ID	Senar Pos	Thes Films	Term Dat	554	Sate	Shaha
% Configuration		. 4	Case	* [11])	59.349.35.138	2010	Navigation Data 🗸	0		Depresented	
% Satellite Information		4	Caller	+	30.240.35.130	2010	havigation Can +	0		Desirvened	
E Dete Record		3	Casher	-	09 248 35 138	2010	Nevquitor Deti 🗸	'n		Depresented	-
💷 Data Transfer		12	Conte		09 249 35 120	2010	Nevigaton Data v	0		Deconnected	-
Cammel Seniel Hert Config	B	÷	Caster	*	58 248 35 138	\$010	Newgative Dats w	0		Decomentest	-
TOTAL Could			Gave	*	90,240,35,130	2020	Nevgeline Dati V	0		Descented	
Million Multiple Million		7	Date	• 2273	90,240,35,128	2090	hivgtini Dis v	a 🗌		Deconscient	-
Date New Cords			Date	¥ =1	59 249 35 138	5025	Novgalane East 4	10		Deconented	
IDCM Config	021		Gener		58.249.35 130	2020	Nevgator Cab v	0	-	Deconvertati	-
Network Coolig		10	Camp	+ mm	58 341 31 139	Ibros	Nevastor Date v	la l		Deconstat	
1 Radio Config					A	Marchan		A		010-0-201	
.1. Firmware Update											
(i) Track Mariana	-				Erter		(58904				

NTRIP Config

This is used to configure the NTRIP performance while receiver is going to connect to internet. ALPS1 supports complete NTRIP performance including NTRIP Client, NTRIP Server and NTRIP Caster.

adiein imri Sin4D6152108011 Događ	> NINP Config		
ct form	MTOP Clevel		
	Since.	Decomposit	
N Configuration			
- Satality information	:- 15404:		
CE DataBased	1000	Eige TGREP LARK Instate CMCC	
L'ANA INICAD	Retroit .	also con env enn	
🗟 DataTransfer 🧧	100020-000	(And A	
Lamonai 😑	TO CONTRACTOR	inter .	
Senial Port Config 💷	Lastora:	10/2	
1001f Curring 🚍	DENVIOL	100	
NIGP Cambra 🔤	Admit Park	TORNY ANALY	
Matipic Mile =	1000		
Data New Costig 👘 💻	Genore Supra	- NET, BOQUITHE .	
ROCM Comby 🔤	With Sever		
Network Config	Table -	Desconactes	
I field Config	Date		
2 Firmwere Update	Venue	87349(3) ····································	
El TackManage	User:	Cape LADE Maillee	
© Coordinate System	Address	3034035-00	
Colore Service	HepCate-Fort	(BH0)	

Multiple Ntrip

To transmit corrections to different server at the same time through Ntrip protocol

8	admini shiwasinsznaccow (P	0004	> No.1214 1974	i i restitu serie	ILE THERE	a ta meting	te imenati		aradim taart		
0	Statua		men belgevernige	Server la	Poll	Sectors	paincest	MountPaint	Data Ferry	Time Out	Sola Gran
×	Configuration		1. HORPy21.+ 1	52.106.1.1	1110.	0	0	0	Ray Observ 🐱	0	Discoverated
×.	Satelitte Information		1. 11798942.0 + 1	07.168.1.1	7228	10	0	0.	Rey Olasin 🗸	0	Disconacted
31	Deta Record		1.0000021	62.168.1.1	3938	0	0	0	Nav Oteers v	0	Documented
用:	DataTransfor	-	4. 10 TRUE V2. (* 1	62.168.1.1	4448	6	b.	0	flav Olycki v	Į.	Discontine
	Senal Part Coring		6. n88044.5 v [1	DQ. 160.1.1	5558	[0	0	<u>a</u>	Ray Unawy 🗸	a	Decoverse
	TEPAP Carbo HEIRP Corby		s.n889-21.+[1	62 168 1 1	6858	0	0	0	Ray Diney 9	0	Decoverse
	Sebulinguler Material		1 #89992.5 × 1	02.166,1.1	7778	0	0	9	Ray Otoev 9	ο.	Басрумски
	RECHTGHING	a	a attravely 1	11,168.1	6666	0	Þ	9	Ras Onary 🗸	e.	Decement
-	Network Cookg		8 10000-02 C v 1	10-16E.1 1	Hate	10	8	a	Res Clasma v	8	Deserved
1	Radio Config		10.0000-020-	100.108.1.1	Sece	ú	U	4	Res Opens w	n	Deserved
	Pirmaware Update		LAURICOSAN		1000000	38 	10.x X	07.940		AND IN	
35	Track Manage				Eres	201		Genal			
-	Coordinate System										

Data Flow Config

In this page, users can optionally to configure the content and the update rate of data flow that to output or not to output what kind of data format.

Click on the dropdown list for each data format to define the update rate

-	actinin seri-spectartopport 1	anti-	> Dillo	New Coulty							
	Status	-	Invice	ton Data							
16	Configurations	-	0.04	orr iv	-	OFF	÷	NEV. GPF		wer we	w.
	Satelline initramedian	1	204	077 -	-	OFF	*	HUE DIF	~	BALL OFF	
	Cheix Second	-	NOC.	017 1		099		MOT: OFF		SHOP, OFF	~
100	Detallatella	-	1946.	orr w	. Ince	CPT .					
~	CHIAT AVAIL	-	mil Ne	Cogener Date:							
	Sector Part Londen	100	inger-	1 =	-			800) NO.	-	111.011	+
	107/1P-Camily		YOY	011 -	974	240		SEY Worth		AND DRY	-
	INTERP CONTRA		950	C#1 -	DAL.	18	-	EDPC OFF		SAD OFF	14 C
	Mattele Altere		1964.	011 -	Par	OFF	+	WHE CHP	-	TOP: OPT	14
	HICH Could		900	011 -							
	Network Corrig	-	C Ban O	Design of Design							
- 3	Radio Config			-		y 9					
	Firmware Update		1.1.1	ONS Representation	Vibrei	(Arrient			-		
- 20	Tack Manage		16.09	AND TO SHARE	Villenter	Chargest			-		
.0	Coordinate System	-	1.1	1003 \$4747010	WHEE	charged			-		
	Online Service	13	(64)	DLED EDMANNESS	Veloped	Changed			-		

RTCM Config

In this page, users can set different differential signal formats.

									50
adrian 0413 Serricziwadzieni Trepod	> marcan	8							
🛛 Status 🔛	Gune								
Configuration	A10(#10)								
Situation Information	NUCREASES	-	-	PTC-HINK-	-	-	RTCM/006-	211	1.1
	HITLHIGHT.	100	-	WEDNESS.	10-	-	-	-019	1.1
a carse ractord	- artanon	111	-	anovine:			187036-0003;	211	
DataTométr 🛄	RITEREDA	44		HTTEUTONA.			ancontes:		
Gennel	ettimestae			RTCHING2	1.00	- 3	RECONTRACT.		100
King Control	attractor.	-		merculated.				-	
HTEP Curling 📟				(inclusion)			100000		
Mukicki Millir 👄	Representation		- 1						
Class New Config 👘 👄	1005								
RTEM Loong III	RTGATUTA	1910							
🗧 Network Config 🚺	120								
E Recko Config 📫	ATUMS								
E Picerware Opdate 📫									
Tinds Marcone									
				Inter					

§3.4.6 Network Config

WIFI Config

This is mainly used on the WIFI configuration for ALPS1, there are AP mode and Client mode for optional.

AP: This is used to enable the WIFI hotspot for ALPS1 to broadcast for mobile terminals such as smartphone or tablet to connect and access the Web UI.

Check the box of AP in Work Mode to enable the WIFI hotspot forALPS1, and define the SSID, password, encryption method and broadcasting channel for WIFI connection.

DHCP IP Range: This is allowed to user-defined the IP for Web UI login.

	admin setscatasegoett	0013 (logiout)	5 With Carific
-	Shatsay	-	Grades:
N	Configuration		Plant Marine 🕐 AP Class
- 26	Satisfite Information		AP,380 SOUTH_OOH
(#	Data Record	-	AP_Parament (configers carrier)
	DataTransfer	-	Without (204
- 0	Network Config	-	APDuse 7 4
	Will Condig Bluetooth Condig PortForwarding Poster		172
-	Network Texting		Contract Contract Contract
- A-	Radio Coneg		
£	Firmware Opdate	-	
00	Track Menage	12	
	Coordinate System	-	

Client:

This option enables ALPS1 to search and connect the other WIFI hotspot which connects to the internet, the receiver is able to download and use the mountpoint from reference station.

Client_SSID: This is the WIFI hotspot which ALPS1 is going to connect

Scan: Click this button to search the surrounding available WIFI hotspot.

Password: This is the password which the WIFI hotspot requires.

IP fields: If ALPS1 successfully connects to the WIFI, there will be an LAN IP address generated by ALPS1.

ClearSSID: Click this button to clear the SSID list.

1	0910AC148502017 8222	st	> Will Config.						
9	Status		5ster	-					
\mathcal{K}	Configuration		Wen Mode.	AP.		ioni			
.6	Satellite Information						S		
.03	Data Record		Citert_004D	southan	198		Scan		¥3
	DataTransfer	-	passacre	soution	iss.com.cn				
1000	sala na site	-	Ercobe	WPM2					
. 0	Network Config	•	CHOP	2					
	WIFI Config			124					
	Burtacth Config		PAdden	<u>80</u>	0	0	D		
	PortForwarding		Balance March.	258	215	250	D		
	Route		Defect Galeryin	0.5	0	0	0		
	Network Testing	120		101	Det I.	ne.			
1	Radio Config		STR.C.	channel					
		1000	Signal	TXII					
2	Firmware Update	A	Chevi 55/0 Livi	Clear	This set	Dame and strained	af namerican second	on, piesiese he surreful!	
.61	Track Manage								

Bluetooth Config

In this page, users can view the information and connection status of Bluetooth, such the MAC of Bluetooth, discoverable or not, the PIN code, and the connection devices in following table. The advanced Settings module enables Bluetooth search.



	Server (200			
	Dietito 📝			
	exem NAC 04.0	DB318.02.0F		
1	Dauvende 🔽			
	PIN Dote: 0			
C2973	etad Device/			
ni.	Densice Mad	RECOMM Channel	Device Name	Discontent Auton
5				Discovered
				Disconnect
¥.)				at.
7. ()	1. Crime			

Port Forwarding

This page is mainly used to view and configure the internet transmission port for ALPS1, customize and debug receiver.

admin ymregraaktoora >	Serie > Ponto	welding				
😂 Status	0		lee.			
% Configuration	•	no to your	100		-	
Satellite Information	11	FTP Port.	21			
E Data Record		TELNET Port	23			
🗄 Dataltansfer		TP Passwell				
Network Config						
WITCHING			Partici	11 County		
Hurtsoft Circlin	100		Crow I	Caros		
Durtressenting						
Nameur Techno	-					
E Radio Config	-					
Firmware Update						
Track Manager	-					
© Coordinate System						



NOTE: Usually we will keep the default setting in this page, if you would like to modify it, please contact with SOUTH technician for more supports.

Route

This is mainly used to view and configure the parameters for router, only under the condition of customize and debug receiver.

SOUTH

0013 [00004]	3-Bats				
	Destrador	Subway.	Trave.	190	unitate
	192 108 156.0	5400	0000	.0	beged.
tion 🛄	Change the default roots Refered	5.000	- Juditta		
la 🗖					
Au =					
	Add Route				
ei =	Destroitere				
. 🚥	-Talenatir				
	Maren:				
ate 🗖					
e 🖪	0.00100-0-	STR. SA	(Histead		
	0013 (Report) 0 0 0 0 1 0 1 0 1 0 1 0 1 0 1 0	0011 INERNAL Destruction 0 0 0 0 0 0 0 0 0 0 0 0 1 0 <td>Out J (Deptwork) Deptwork Mathematy 0 0 0 0 0 0 0 0 dion 0 0 0 dion 0 0 0 f 0 0 0 f 0 0 0 f 0 0 0 f 0 0 0 f 0 0 0 f 0 0 0 f 0 0 0 f 0 0 0 f 0 0 0 f 0 0 0 f 0 0 0 f 0 0 0 f 0 0 0 f 0 0 0 f 0 0 0 f 0 0 0 f 0 0 0</td> <td>Oold Toepool Destruction Mathematics Destruction Destruction Stock Destruction Stock Stock Participation Stock Stock Destruction Stock Stock <</td> <td>Soil I Destruction Destruction Destruction IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII</td>	Out J (Deptwork) Deptwork Mathematy 0 0 0 0 0 0 0 0 dion 0 0 0 dion 0 0 0 f 0 0 0 f 0 0 0 f 0 0 0 f 0 0 0 f 0 0 0 f 0 0 0 f 0 0 0 f 0 0 0 f 0 0 0 f 0 0 0 f 0 0 0 f 0 0 0 f 0 0 0 f 0 0 0 f 0 0 0 f 0 0 0 f 0 0 0	Oold Toepool Destruction Mathematics Destruction Destruction Stock Destruction Stock Stock Participation Stock Stock Destruction Stock Stock <	Soil I Destruction Destruction Destruction IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII



AT DC1

NOTE: Usually we will keep the default setting in this page, if you would like to modify it, please contact with SOUTH technician for more supports.

Network testing

In this page, after entering the IP address, the user can query the network status.

estrin serictionsterie	logout	> Retwork Technol	
Status	-	transf?	PING
% Configuration		Peglidas	File distant
4 Satellite Information			
🖂 🛛 Data Record			
E DataTransfer		Profinal	
Network Config			
WHI Criming	=		8 5
Bluetwoth Contig	1200		
Theifdorwarding			
Network linding			
1 Radio Corrig			
± Firmware Update			
🗐 Track Manage			
······································	-		

§3.4.7 Radio Config

As the name implies, the parameters of radio can be done in "Radio Config", it is divided into

Radio Parameter and Radio Frequency.

Radio Parameter

This page is mainly used to configure the parameters for internal radio module of ALPS1.

	edirán sevapensztocem (P	0011 00006	> Tails Parameters		
9	958.0		11.0°3-	(?)	
×	Configuration	-	High Politicianica Martin		
	Satellite Information		Nor Broad Physic-	9690	
05	Deta flacord	-	Data Datal Sala-	+11200	*
禄	Detaillenster		Charlest North	9-06	w
. 0	Network Condig		Danet	6	×
1	Ractio Contry			44	*
1111	Rolle Parameters	121	Pretocol	Fartyw	*
	Radio from the	103	ListhBara	Oxyotha	*
2	Firmulare Update		Beserverior	4044	
-01	Track Manage		Banaddaren:	Rade	-
. 0.	Coordinate System		Factory Salar	C. Dennis Tarley	
-0	Online Service		and the second		
. 20	Ilser Management	-		Gree Cancel	
	Prequency Spread				

High performance mode: To increase the radio performance in the forest and harsh environment, both Base and Rover should be enable this function at the same time, and the protocol should be farlink. If Rover doesn't support Farlink protocol, then the Base should disable this function, otherwise Rover cannot get fixed solution. Usually we suggest clients disable this function.

Air Baud Rate: This represents the data transmission rate in the air of internal radio, the higher value, the bigger of data size transmitted per second, usually keep the default setting with 9600.

Data Baud Rate: This represents the rate of data transmission port of internal radio. The rate should be the same in both Base and Rover. In general, the data baud rate of SOUTH radio module has been unified to be 19200, keep it as default.

Channel: This is the communication channels for internal UHF, the value of the channel must be the same both in Base and Rover.

Power: This appears only in Base mode, the radio transmitting power is allowed to define in High, Middle or Low power.

Protocol: This is radio communication protocol for data transmission, SOUTH (SOUTH), Farlink and TRIMTALK are optional in this page and SOUTH is the default setting, if it is

changed, Base and Rover must use the same protocol for communication.

LockBase: If users choose FarLink protocol, the signal sent when the base station connects to the mobile station will be locked and will not be interfered by other base stations.

BaseNetID: If enable the LockBase, then you can input the ID of the Base you will receive.

BaseAlarm: If Base receiver moves(by some unexpected reasons), rover will receive a

notification about the base movement.

Factory Default: Click this button to restore the factory default for internal UHF module.

Radio Frequency

For ALPS1, the powerful internal radio module supports much more radio channels apply to the legal frequency in different countries or areas.

There are 16 radio channels listed in this page after clicking on radio frequency. Users are able to change the frequency freely in the channel spacing, click Restore button to bring the frequency of each channel back to default setting.

admin 0011 SS3408152108313 (Kipad	> Ratio Temperica					
😂 Status 🖸	Charteri Nerr	1-10				
% Configuration		0.000	No.04		Participation of the	1.2.5
ni Satellite Hiformation	ChattertTHEARTY	450.000	Mark .	Clamatif sparsy	455.000	0412
I Data Bacout	Character Income	451.000	0.6-62	Channel Tringuency	458.000	14-12
	Cherw@reckery	452.000	WH2	Chevel? wp.wrsy	457.000	NH2
🗵 Dataliander 🖸	Charlest meansy	112.000	jui-c	Charlest Superity	Jate oop	10.02
Network Config Config	Characteristics	Lasa cont.	ue.c	CONTRACTOR NO.	leono	interest
I Redo Config 🖸	a coperation and	Leaves.			Pressent	132
Ballo Paranetero 💷						
Natio frequency 🛛 🕿		1004	Cance		Restate	
1 Frankare Update 📋						
🗏 Track Manage 📴						
Coordinate System C	5					
i Online Service 🚦						

§3.4.8 Firmware Update

Update the latest firmware for receiver or for corresponding modems can be done in "Firmware Update".

Firmware Update

This page displays all the information of the firmware which current installed on ALPS1, and allows to update the latest version firmware for receiver. To get latest version firmware please contact with SOUTH technician.

1	JOU
adenin (Rint University select (Dopod)	3 Linnaret Minte
Status Configuration N Configuration Configuration A Satellite Information C III Data Record C	Formation Information Formation Network: 128-2011/0549010071-00278 Down English Network: AutorConst 108 Network Calde: 2020129
🗟 DetaTrensfer 🔂	D fee Lotan
🗉 Network Contig 🚨	Labor Versen
👔 Radio Coolig 🛄	Gauge Street
🗈 firmwer-Updele 🖸	Downed Rate: Pe
Madale Igalian	Last County Trees #
🔲 Track Manage 🔂	
🐵 Oscielinate System 😆	The company of the second s
🚓 Onlau Service 🖸	
2r Menagement 😆	Local Lipsian
🚁 Frequency Spread 🗧	Linux Sulat: (a) 229 For HILL
III System Log C	invasi.

Online Update:ALPS1 supports to update the firmware online anytime if there is something update or optimized.

Local Update: Update the latest firmware by using a firmware file.

How to upgrade the firmware with Local Update

a) Click on "Browse" button to load firmware file (Please take in mind that the firmware is ended with .img as the extension name).

实			III A	
^	名称	修改日期	2542	大小 ^
	1.09.230915.RG60PY.img	2023/9/25 10:30	FeiRatling	17,71
	1.09.230920.RG60PV.img	2023/10/8 13:59	FeiRarling	17,7
	1.09.231008.RG60GL.img	2023/10/26 13:45	FeiRatling	15,0
	1,09.231019.RG60PY.img	2020/10/30 13:45	FeiRenimg	17,71
	1.09.231108.RG60GL.img	2023/11/22 18:22	FeiRatling	15,9
	1.09.231108.RG60PY.img	2023/11/22 10:32	Feillating	17,8
	1.09.2308291009.RG60PY.Beta.img	2023/8/31 14:22	Feißar.img	47,7
	OEM708.K708_V399C4.img	2021/8/2 10:15	Feißening	3,0
	OEM708.KB03-V601AA.ling	2021/9/7 9:17	FeiRør.img	9
11	OEM708.K803-V601D2.img	2021/11/10 16:38	FeiRarling	.9
	OEM708.KB03-V609A9.limg	2022/6/14 14:10	FeiRar.long	9.
	OEM708.K803-V610T5.img	2023/11/10 15:33	FeiRar.img	9.~
~	¢			5
文内名	S(N): 1.09.231108.RG60PY.img	v	新有文件(**)	÷
			打开(0)	取割

b) And then click "Installation" button to start upgrading.

ALPS1				SOUTI
		Data Trender		Tennes Back Sec. 0
	0	Network Cantig		(Annual Contraction of the Contr
	12	Radia Contig		and as weath
	12	Firmware Update		🔒 🔒 Roman updated buccentraliji Hott seboot, pieze log in later
		FITTANT COOM	-	the second se
		Nixtun; Updale	-	- OK
	4	User Management		
	2	Help		Chiline Robiter Rodet #
				la cul Apinisi
				Finance Parks E. MTE Voltagy of (2014-1, 04, 100 E7, 800001-1, 85, 10087 _ Borran,
				Statut Firmers in missing bloats and

c) After the firmware is completed upgrading, a dialog will appear saying "Firmware updated successfully! Host reboot, please log in later...", then the receiver will restart automatically.





SPECIAL REMIND: ALPS1 doesn't support to update the firmware with the help of INstar program any more, in the future, update the firmware for ALPS1 shall be done through the Web UI.

Module Update

This page is used to update the firmware for corresponding modem such as OEM board, radio module and sensor.

1		S	DU
admin sci i cerveaarovis P	1945 agauli	3 Monule Epidam	
Status Configuration Solutile Information Data Record Data Record Data Record	000000	CENTINENE: FormatioFarPart: (AREX)* #28/#20* Index Series: No.Actor Forman: Mo.Actor Forman: ADIP1-2204-1 Too: Under-Innene and atop 20 conded	
Network Config Redio Config Fornware Update	0	Form Update Formated advant - INFERM (12)ANSIN-	
Emission Lipitate Ministe Cipitate Track Manage	0	Partial Update Status: No Action ReadoType: #ERRIT Formate Version: #ERRIT11.0.200641	
Online Service User Management Frequency Spread	0	Server Lander -	
🗏 System Log		Instal	

§3.4.9 Track Manage

ALPS1 now supports to record the track while doing measurement, and upload the data onto the server.

Parameter Setting

SOU	HT

	admin Vinasentancen 9	opost	> Pearson Conig		
0	Status		Recording Carify		
×	Coefiguration		Delte		
	Salette Information		-	1	
22	Data Record		Necoding Status	Ne Neceré	
22	DataTransler		Octor Switzig		
	Network Config		7406	Citocontoles	
1	Radio Config		Cratter		
£	Pirmwire Update		Service Perfocult	ori ha ha ha ha	v.
22	Track Menager		Security:	Sa Sau In Lin	-
	Factories Setting	-	Loervre	USER	
-0	Coordinate System		inserve i	Pewer	
ō.	Online Senice		1		
20	Illier Management	-		Enter Euroal	

Record Setting

Check on the box of "Record Enable" to activate track recording function, and choose a proper recording interval in dropdown list of "Record Interval".

Recording Config:		
Eneble:		
interval:	1:	v s
Recording Status:	No Record	

EchoEnable Setting

This configuration dialog is used to upload the recording data to a server in real-time.

Status :	Disconnected	
Enable:		
Service Protocol :	OFF	~
Server lp:	58.248.35.130	
Server Port:	2010	
usemame:	USER	
paseword:	PSWD	

Data Download

On this page, users can download the track data file from receiver. Choose the recording date and click "Get Data" to load all the data files recorded at that day, then choose the files and click download button.

admin 0011 sariacensarioont Propul	> Date Download	
J Status 🖸	Searther Get Des.	
C Configuration	Download Tr in in 12 2021 in in writing to	e
ii. Satellite Information 📋	April	Der Dek
E Data Record 🛄		🔶 (Downstaal)
E OutuTransfer ES		🛨 Downaati
Protocol Constant		🛓 [Downtoial]
 Terrivork Cotalg. 		2Downson()
Radio Config 🚺	a a second	(Downsai)
. firmwere Lipdete 🖸		🛓 Downwatt
🗉 Track Manage 🔂	1	🖕 [Downmail]
Fearrates Selling 🚍		🛨 Downanti
Title Download 👘		🔶 (Downiai)
Constituele System	*	🔒 Downani)
5 Online Service 🚦	н	🛓 Downmail
User Management	u	👷 Dormal)
	u	👲 (Dormal)
e mednency streng	14	(Doenal)
🗄 System Log 🚺	16	Economia (

§3.4.10 Coordinate System(reserve)

ALPS1 allows users to setup the local coordinate system on internal web UI management. The instrument would output the local coordinates according to this coordinate system.

SOUTH

ALPS1

#4040 0011 1000001 10000	2 Combastic System	
C. Max .	Consult Possibili	
W Conferences 1	Paninaliana	Weese
A Lough Information	Tigetie A	NUTREAT AND
a server cosmoore D	Popular I	101237023183
Daris Record	Angectus 88	8.0
IS DataTraveles	Projection (2)	1141
Refuscels Config 🔲	Presence Lit:	140000 a
🔅 Illeito Config 🔂	Propresentation	0.0
2. Honware Updame 🖬	Projection 2000	100
🗉 Tuck Merage 📴	Personal PA	0.0
🐵 Goodhate System 🗖		
Constitute Subary 🐨	Territe comm	
-0 Online Service 🚺	2916	0.9
dr Uter Management 🚦	aren)	410
Jr Request latest	anet	0.0
III System (og	8071	60
1. 2.	6011	00

§3.4.11 Online Service(reserve)

This function is to upload the data onto a server real-time, including Navigation data, raw observation data, correction data, SIC observation data and open SIC observation data, basic information data.

States C Configuration C Configurati	
Configuration Configu	
N Sakible Information (2) Processes Data Record (2) Averyment Lager Data Transfer (2) Process (2) Motor	
Data Record Data Reco	
🗄 DataTravelor 😋 Haulten in 20 Moles	
Network Config C Comprovid State: 0	
E Racko-Coving 👩 Den Trans. H	lavgarian Daia 🔷
E. Farsware Update 👔 Jacor II: [1	10.1007.1
S Track Manage C	080
Coordinate System C	bothame
6 Online Service C	
Califier Service 📼	
li User Managament: 📫	Delar Diesari
b Frequency Spread	
🗄 Systeming 🙀	

§3.4.12 User Management

This page is used to manage the authority of login Web UI for users, including the username, password and add users.

|--|

	eerdcarphylopolit P	otional	2.00	er Menagement				
¢.	SGADAS			All User				
×.	Configuration							
ń	Satellite Information				Astadetes	Patra	Caroling	Question
-1	Data Record			American	Advertising	Other	Deck	1.00
R	DatoTransfer			Autoos	Administratio	Office	Dete	64
à	Network Config			Charl	Advertable	064	Databas	- 644
ī.	Radin Config							
2	Firmwere Opdate							
-	Track Manage							
0	Coordinate System							
a.	Online Service							
21	User Management							
	User Management	2						
à,	Inequency Spread							

§3.4.13 System log

System log

In this page, users can download the system log book of receiver (the log book can help to backtrack the working status of receiver).

NOTE: Only the administrator can modify any parameters for receiver and manage users, and the ordinary users only have the right to view the relative parameters.

-	admin 101400152100011 0	0011	3 Taster Ing
34	Status		Sunterni, oplinative:
-55	Configuration		DownLoad: Download
.6	Satellite information		
. 00	Data Record		
- 53	DataTildesder		
	Network Conflig		
I	Badio Coring		
.2	Permasor Lipidate		
: 00	Track Message		
	Coordinate System		
0	Ordine Service		
de.	User Management		
	Frequency Spread		
: 03	System Log		
	Notion Log data Log	-	

Data log

In this page, users can record data and choose duration.



Chapter 4 New functions

§4.1 AR Stakeout

Augmented Reality (AR) stakeout revolutionizes conventional surveying methods by integrating various sensory modalities, including visual and auditory. This approach eliminates the proficiency gap between experienced surveyors and novices by providing real-time visual guidance within authentic environments. Additionally, voice prompts are employed when nearing designated targets. This streamlined process allows surveyors to stake out targets without the need for leveling the pole, relying on visual and auditory guidance for precise stakeout each time.

This function must be tilt survey initialization. After completing the tilt survey initialization, select the point to be lofted, click the [AR] icon on the right side of the screen, and then lofted according to the direction and position displayed on the interface. (Note that the direction of the device camera is the same as the direction of the controller)

WIFI connect

Use wifi connection to connect to the device. The device is connected to CORS to achieve a fixed solution.

SOUTH



IMU activation

Click the "Point stakeout" function, select a point and turn on the tilt survey function. Shake the device as prompted to initialize the tilt survey. (Note that the pole height is consistent with the actual pole height)





SOUTH

After the initialization page is displayed, perform initialization as prompted. After the initialization succeeds, the tilt measurement icon is displayed as follow.





Choose point and open AR

Click the AR icon to realize the real scene lofting.





Over 10 meters (default) use the rear camera for orientation, after approaching to switch the bottom camera real scene to find points;







§4.2 Photogrammetry

ALPS1 visual positioning broadens the scope of RTK applications through the synergistic integration of photogrammetry and RTK positioning technologies. With an 8-megapixel camera, "Fast" IMU and the latest positioning algorithm, ALPS1 is adept at capturing and processing images or videos to derive precise coordinates. Therefore, it excels in surveying targets that pose challenges for traditional methods, including intricate corners beneath roofs, obstructed fields, and bridges spanning rivers. This capability enhances surveying versatility, allowing for the efficient and accurate surveying and mapping of locations that were previously difficult to access with RTK surveying techniques.

When surveyors have a high-quality internet connection, they can process image data online through the network and cloud servers. ALPS1 can obtain coordinate data for image measurements with 2cm accuracy in just a few minutes. This processing mode balances high accuracy and fast processing speed.

When outside the coverage area of internet, surveyors can achieve offline processing of image data through the data controller app. This processing mode boosts the fastest processing speed by saving time of uploading image data, providing 4cm accuracy results within 30 seconds.

There are three modes for you to choose from: 'Takin Photos Mode', 'Taking Videos Mode' and 'Modeling for Post-processing'. Use 'Taking Videos Mode', keep the target inside the frame, take at least 5 photos around or in a circular motion, with a walking distance of more than 2 meters.

Use 'Taking Videos Mode', click to start shooting, keep the target to be measured in sight, walk horizontally or in a circular motion to shoot video for at least 5 seconds, and walk more than 2 meters. Click to end the shoot.

SOUTH



Online solution

1) Use wifi connection to connect to the device. The device is connected to CORS to achieve a fixed solution.

SOUTH

Communi	sation ③	K Ntrip(Eagle) Connection - Bluetooth
el	RTK 0	Network<219.125.151.185/50095+
inufacturer	SOUTH 0	
ommunication Mode	WLAN >	
evice list	SOUTH_1628	
		Add Edit De
Search Debu	Disconnect	Connect Disconnect

2) To enter photogrammetry, this function needs to be combined with the tilt survey function. If the tilt survey function is available, shake the device as prompted to initialize the tilt survey. (Note that the pole height is consistent with the actual pole height)



ALPS1

SOUTH



3) There are three modes for you to choose from : 'Takin Photos Mode', 'Taking Videos Mode'and 'Modeling for Post-processing'. Use 'Taking Videos Mode', click to start shooting, keep the target to be measured in sight, walk horizontally or in a circular motion to shoot video for at least 5 seconds, and walk more than 2 meters. Click to end the shoot. (Photo transfer in progress: The picture taken by the device is being transferred to the controller)

SOUTH



4) Click OK to perform the upload server calculation. (The calculation time is related to the number of uploaded pictures, the more pictures, the longer it takes)



5) After the solution is completed, click OK, select three pictures, select the same target point, you can calculate the coordinates

SOUTH

ALPS1



Local solution:

This feature can be used when the controller or phone without SIM card or cannot access the internet, not need to upload images or videos to the server for processing and calculate. The calculate is done solely by the device's processor, you can use the photogrammetry to be performed normally even in areas without internet access, greatly convenience work in difficult environments.

1) Photogrammetry when the device does not have Internet access.Click Click on top right corner in main page for Photogrammetry, then choose Solution method.





2) After online solution successful, if you want to offline recalculate, choose Select photos when enter Image Gallery, click bottom-left Recalculate then choose Local Solution.









3) After online solution failed, if you want to if you want to offline recalculate, choose Select photos when enter Image Gallery, then click Local Solution.





<u>SOUTH</u>

SOUTH's 3D modeling technology are fully utilized and transformed in ALPS1. The results of image measurements by ALPS1, can be seamlessly integrated with data outcomes from UAV. UAV surveys often face challenges of data gaps, leading to incomplete model outcomes. In such cases, surveyors can use ALPS1 to collect image data on the ground and use SGO to modeling then incorporate it into aerial survey data as a supplement, thereby enhancing the overall model outcome.



UAV Survey for SOUTH building, Lion statue detail lost





ALPS1 scan the Lion statue

Detailed steps:

1) New project in SGO.



2)Right-click Toolbar area to choose Modeling manager.

SOUTH



2) Right-click Modeling manager to choose photos folder. In Survstar-projectdata-default.







4) You can setting the parameters and preview photos in Import image group page.

ma	gewidth.	19070			imageheigte	1000		Service Size	8.9	
¢¢	e Length	6743	615717455729		HK.	943.22437204		PPV	540.1539207	
		0.505	5635		ek:	-0.15470210		6	ů.	
ŧ.		-0.000	60793		р2;	0.09943483				
	788.8	ne i	Lotitude	Longitude	a Abita	de Roll	- 11			
ŧ	1120724	00.1	21 fat toos2	113416830	91 25.17W	-108.34	-0.57			
2	1129_03	m0_1	31 10116210	112.4108121	si 31,100	-106.62	1300	100 100	and the second second	
	1129,54	1.R	21.10110771	115.4168325	105.25.00	-108.76	6.6T	N	of the local day	
4	1129,00	mQ_1	23.18116969	113.4166348	23.195	-111.06	431	1	100	1000
	1129,00	mD_1	21.10117052	115,4168348	23,177	-110.00	249)	16	-	-
	1128-04	-1 0an	23.10112234	113.4166353	7/ 23:163	-110.07	215	1000		100
	1120_00	m0_1	33.10117509	(13.416633)	1 23.104	-108.04	157	2		赤
	1129.00	-1_0m	23.18117621	113,4168371	10 21.000	-104.59	5,91	N	-	and the second s
	1129 cm	m0 1	23 10117707	113,4166362	80.15 5	109.18	4.04			

5) Click Modeling when you finished settings.



§4.3 Laser Survey

Laser survey is an instrument that accurately measures the distance to a target by modulating a certain parameter of the laser. Pulse laser ranging involves emitting a brief pulse or sequence of pulses towards the target during operation, with the photodetector receiving the reflected laser beam from the target. The timer measures the time it takes for the laser beam to travel from emission to reception, allowing for calculation of the distance from the rangefinder to the target.

SOUTH

Point acquisition is carried out according to the position of the laser point.

Features:

- 1) Laser distance survey(indoor, outdoor)
- 2) Laser points survey
- 3) Laser AR(connect the ALPS1 WiFi)
- 4) Laser Intersection feature to improve the accuracy of laser survey(Direct rendezvous, Point library rendezvous)

5) Laser stake out

Functional main interface.



Laser distance and points survey

Connect the ALPS1 Bluetooth or WiFi(if use the Laser AR) by SurvStar, choose Laser survey in Survey.



Make sure the IMU available then turn on the laser function, the laser is shone onto the selected point. When you got a stable with the laser point, you can collect points now.

PM02:44 0	÷ =		1.014	82-64 1
< 7 P	ed e1	H0.004 V0.004	# 32	0
		0.306m 9.42545		
	5	Å		× ×
 Int 	16,756m		ñ	ø
* *			1	0
Pt name Pt1 East.440269. Base Dist.66	102 m 745 m	North	1:2564799 11:15:837 n	237 m 1
	1			

PM0218 0 =	8 8 8 8 1 40 ▲ 8
< Тор	o Point
Ptiname	Ptd
Gode	1
Antenna Height	1,400 m
Antenna Height Type	Pole Height >
Detail Info	
Record	«1/1 «Collection Finished
Solution	<36/36=Fixed
North	2564780.942 m
Photo Mark	ок
4	• =
ALPS1





Intersection function

By intersecting two or more points, you will get more accurate point coordinate. Click the setting menu, choose the intersection method.



Direct rendezvous is when the points are collected, you will directly obtain directly the coordinates of the intersection points.

Point library rendezvous is choose the points in point database, then obtain the coordinates of the intersection points.



ALPS1

Select all 3 Selected Nume Northing Sawing Height PM 2564780.153 440327.417 16.514 H22 PM 2564780.163 440327.405 16.506 H22 PM 2564780.067 440327.405 16.506 H22 PM 2564795.607 440327.916 16.504 H23 PM 2564779.568 440326.627 16.504 H23	Pt na	me v			Saa	ich)
Name Northing Easting Height PM 2564780.153 440327.417 16.514 H27 PM 2564780.067 440327.417 16.514 H27 PM 2564780.067 440327.416 16.508 H27 PM 2564790.067 440327.416 16.508 H27 PM 2564779.667 440325.627 16.508 H27 PM 2564779.688 440325.627 16.516 H27	Sei	ect all	3 Se	fected		
PH 2564780.153 440327.417 16.514 H27 PH3 3564780.087 440327.465 16.508 H27 PH3 2564790.087 440327.465 16.508 H27 PH3 2564790.087 440327.916 16.508 H27 PH3 2564790.087 440327.916 16.508 H29 PH3 2564779.088 440326.627 16.508 H29 PH1 2564779.088 440326.627 16.516 H29	'n	ene	Northerg	Sates	Height	19
Pra 3564780.087 440327.465 16.508 H22 Pra 2564779.677 440327.916 16.504 H23 Pra 2564779.687 440327.916 16.504 H23 Pra 2564779.688 440328.627 16.504 H23	2 条	109	2964700.153	440327.417	16.514	H27
PH 2564779.077 440227.216 16.504 123 IF PT 2564779.568 440236.627 16.816 123	2 *	PG	2564780.097	440327.465	16.508	H27
PT1 2564779.568 440226.627 16.816 N23	2 条	Pti	2564779.677	440327-216	16.504	N29
	*	PTI	2964779.588	440325-627	16.818	N23
	*	PT1	2864779.588	440326.627	16.918	NZS

Pro	ompt
Point name	P15
Code	Please Trans. 2
Northing	2564780.834
Easting	440327.315
Height	16.509
	SAVE
Pt name Pt0 East 0,000 m Rans Dat 48,300 m	North 0.000 m Height 0.000 m

Laser point stake out

After the laser collect point, enter the point stake out mode, select the point to stake out.

PM02:28 🗢 =	1 ⊜1€1-0⊿∎
К Тор	io Point
Ptname	P12
Code	
Amenna Height	1.800 m
Antenna Height Type	Pole Height
Detail Info	
Record	<1/1>Collection Finished
Solution	<39/39»Fixed
North	2564779.677 m
Photo Mark	OK
4	• =









Chapter 5 Accessories

§5.1 Instrument Case



The instrument case for ALPS1 contains two layers of packing: the inner layer is filled with

anti-collision foam, the host and other accessories can be dispersed and embedded; the outer layer is a hard instrument case, sealing-strong, wear-resistant anti-wrestling. Compact, durable, can effectively prevent the impact, easy to clean.

§5.2 Charger & Adapter

ALPS1 is equipped with a rechargeable internal battery, it uses a type-c cable and a PD adapter for the charging.



§5.3 Differential Antennas



The differential antennas are as shown above;

The UHF differential antenna is required to install to the interface at the bottom of receiver if ALPS1 is set up into internal UHF mode.

§5.4 Cables

Type-C cable

This cable is used to connect the receiver with computer for static data transmission, Web UI accessing and firmware update.



§5.5 Other Accessories

Other accessories include carbon fiber pole, controller bracket, connector, tribrach, etc.

The model and type of instrument accessories will change with the upgrade of the instrument.

The specific configuration can refer to accessories list.

reference received, including interference that may cause undesired operation.

Appendix technical specifications

GNSS Features	
Channels	1698
GPS	1C, L1C/A, L2C, L2P(Y), L5
GLONASS	G1, G2, G3
BDS	B1I, B2I, B3I, B1C, B2a, B2b
GALILEO	E1, E5a, E5b, E6, AltBOC*
SBAS	L1*
IRNSS	L5*
QZSS	L1, L2C, L5*
MSS L-Band*	Reserve
Positioning Output	1Hz~20Hz
Initialization Time	< 10s
Initialization Reliability	>99.99%
Positioning Precision	
Code Differential	H: 0.25 m + 1 ppm RMS
Positioning	V: 0.50 m + 1 ppm RMS
GNSS Static	H: 2.5 mm + 0.5 ppm RMS
	V: 3.5 mm + 0.5 ppm RMS
Static (Long	H: 2.5 mm + 0.1 ppm RMS
Observation)	V: 3 mm + 0.4 ppm RMS
Rapid Static	H: 2.5 mm + 0.5 ppm RMS
	V: 5 mm + 0.5 ppm RMS
РРК	H: 3 mm + 1 ppm RMS
	V: 5 mm + 1 ppm RMS
RTK(UHF)	H: 8 mm + 1 ppm RMS
	V: 15 mm + 1 ppm RMS
RTK(NTRIP)	H: 8 mm + 0.5 ppm RMS
	V: 15 mm + 0.5 ppm RMS
SBAS Positioning	Typically<5m 3DRMS
RTK Initialization	2~8s
IMU Tilt Angle	0°~60°
Hardware performance	
Dimension	$130 \text{mm}(\phi) \times 75 \text{mm}(\text{H})$
Weight	870g (battery included)
Material	Magnesium aluminum alloy shell

SOUTH

ALPS1

Operating Temperature	-45°C~+75℃		
Storage Temperature	-55°C~+85°C		
Humidity	100% Non-condensing		
Waterproof/Dustproof	protected from long time immersion to depth of 1m,		
	fully protected against blowing dust		
Shock/Vibration	Withstand 2 meters pole drop onto th	e cement ground naturally	
Power Supply	6-28V DC, overvoltage protection		
Battery	Inbuilt 6800mAh rechargeable Lithium-ion		
Battery Life	25h (static)		
Communications			
I/O Port	5-PIN LEMO interface (external pow	ver port + RS232)	
	Type-C interface (charge+OTG+Ethe	ernet)	
	UHF antenna interface		
Internal UHF	2W, RX/TX, radio repeater and route	er	
UHF Frequency	410-470MHz	26-30dBm	
UHF Modulation	GMSK		
UHF Protocol	Farlink, Trimtalk, SOUTH, HUACE, Hitarget, Satel		
Range	Typically 8km with Farlink protocol		
Bluetooth	Bluetooth 3.0/4.1 standard,	8dBm	
	Bluetooth 2.1 + EDR		
	(2402 ~ 2470 MHz)		
Bluetooth Modulation	GFSK, π/4-DQPSK, 8-DPSK		
NFC	support		
Wi-Fi	802.11 b/g/n standard	13-16dBm	
	(2412 ~ 2468 MHz)		
Modulation	IEEE 802.11b: DSSS(CCK,DQPSK,DBPSK)		
	IEEE 802.11g/n: OFDM(64QAM, 16	6QAM, QPSK, BPSK)	
Data			
Storage	4/16GB SSD internal storage		
	Automatic cycling storage		
	Support external USB storage (OTG)		
Data Transmission	Plug and play mode of USB data transmission		
	Supports FTP/HTTP data download		
Data Format	Static data format: STH, Rinex2.01, Rinex3.02 and etc.		
	Differential data format: RTCM 2.1, RTCM 2.3, RTCM 3.0, RTCM 3.1, RTCM 3.2		
	GPS output data format: NMEA 0183, PJK plane coordinate, Binary code		
	Network model support: VRS, FKP, MAC, fully support NTRIP protocol		
Sensors			
IMU	Built-in IMU module, calibration-free, 60°		



Camera	Visual positioning camera: 8MP (can be used in AR stakeout)
	AR stakeout camera: 2MP
Laser	3R green laser
Electronic Bubble	Controller software can display electronic bubble,
	checking leveling status of the carbon pole in real-time
Thermometer	Built-in thermometer sensor, adopting intelligent temperature control
	technology, monitoring and adjusting the receiver temperature
User Interaction	
OS	Linux
Buttons	Dual buttons
Indicators	Satellites, data and power indicators
Display	1.14', 135*240 pixel
Web Interaction	With access to Web UI via WiFi or USB connection, users can
	monitor the receiver status and change the configurations
Voice Guidance	Chinese/English/Korean/Spanish/
	Portuguese/Russian/Turkish/French/Italian
Secondary	Provides secondary development package,
Development	and opens the OpenSIC observation data
	format and interaction interface definition
Cloud Service	The powerful cloud platform provides
	online services like remote management,
	firmware updates, online registers, etc.
FCC	FCC ID 2AJTU-INNO8
*Reserve for future upg	grade.
Romarks Maasuromon	t accuracy and operation range might vary due to atmospheric conditions

Remarks: Measurement accuracy and operation range might vary due to atmospheric conditions signal multipath, obstructions, observation time, temperature, signal geometry and number of tracked satellites. Specifications subject to change without prior notice

Appendix Technical Terms

Ambiguity: unknown quantity is the integer number of cycles of the carrier phase measured from the satellite to the receiver.

Baseline: The connection line of the two measurement points, on which to receive GPS signals and collect observation data simultaneously.

Broadcast ephemeris: message released by the satellite demodulator satellite orbit parameters.

SNR (Signal-to-noise ratio): an endpoint signal power to noise power ratio.

Cycle skipping: interfere loop skips a few cycles from a balanced point, and stabilize in the new equilibrium point, this makes the phase integer number of cycles to generate an error.

Carrier: As the carrier, Frequency, amplitude or phase modulation of the modulated wave by a known reference value.

C / A code: GPS coarse / acquisition code, modulate the pseudo-random binary code for the 1023 bit duplex, the bit rate of which is 023MHz, and code repetition period of 1ms.

Difference measurement: GPS measurements employ cross-satellite cross-receiver and cross-epoch.

Difference Positioning: the method of determining the relative coordinates between two or more receiver by tracking the same GPS signal.

Geometric dilution of precision: Describe the contribution of satellite geometry errors factor in dynamic positioning

Eccentricity: where a, b of the semi-major axis and semi-minor axis.

Ellipsoid: mathematical graphics formed when an ellipse moves around the minor axis of rotation in Geodetic Survey.

Ephemeris: the position of celestial bodies over time parameters.

Flattening:

ALPS1

a is the semi-major axis, b is the semi-minor axis, e is the eccentricity.

Geoid: similar to the mean sea level and extends to the mainland special planes. Geoid everywhere perpendicular to the direction of gravity.

Ionosphere delay: delay of radio waves through the ionosphere (non-uniform dispersion medium)

L-band: The radio frequency range of 390-1550MHz.

Multipath error: the positioning error caused by the interference between two or more radio signal propagation path.

Observing session: the use of two or more receivers at the same time to collect GPS data period.

Pseudo Range: GPS receiver in the time required to copy the code aligned with the received GPS code offset and multiplied by the speed of light to calculate the distance. This time offset is the difference between the signal reception time (time series of the receiver) and the signal emission time (satellite time series).

Receiver channel: GPS receiver RF mixer and IF channel, can receive and track satellites two carrier signals.

Satellite configuration: the configuration status of the satellite with respect to a specific user or a group of users within a specific time.

Static position: do not consider the point of measurement of the movement of the receiver.

FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.

• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

• Consult the dealer or an experienced radio/TV technician for help.

Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.