

LiSurvey Software User Guide



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Quick Guide

1. Create Project

To create a new project, you can go to Main Interface > Project > Project Management > Create, then you enter a project name and select coordinate system: Datum or Existing Project. You can also select Code and enter Operator. Click OK to finish creating project.

← Project		← Create
Project list 20220520_104902 China/CGCS2000 20-05-2022 10:49:07	View >	Project 20220520_105026 Image: Constant in the sect in the sec
Dpen Create		ОК

2. Connect Device

Go to Device > Connection, then select Connection type >Bluetooth and Target device. When Available devices appears, click it to connect with bluetooth.

Tip: Click the scan button and you can scan the QR code on the device to connect.



3.Set Base or Rover

3.1. Internal Radio 1+N Mode

- 1. Base station: Go to Connection > Base station > Default: Internal Radio and select.
- 2. Rover station: Go to Connection > Rover station > Default: Radio Mode and select.

At this time, the rover station starts to receive the differential data of the base station with the frequency 460.0500 MHz transmitted by the radio channel 6, and the status bar shows: fixed;

3.2. Internal GSM 1+1 Mode

- 1. Base station: Go to Connection > Base station > Default: InternalGSM and select.
- 2. Rover station: Go to Connection > Rover station > Default: InternalGSMand enter base station name (default: SN).

3.3. Internal GSM CORS Mode

- 1. Add working mode At Main interface, go to Device > Rover station > Add > InternalRadio, then enter IP, protocol from CORS center, aquire source list, and enter user name, passwork. Click OK > Save work mode, enter a mode name and click OK.
- 2. Apply working mode Select work mode from previous step and click Apply.

3.4. External GSM CORS Mode

- 1. Add working mode At Main interface, go to Device > Rover station > Add > ExternalRadio, then enter IP, protocol from CORS center, aquire source list, and enter user name, passwork. Click OK > Save work mode, enter a mode name and click OK.
- 2. Apply working mode Select work mode from previous step and click Apply.

To use external GSM mode, please ensure that handbook have Internet access.

CDL3 external radio channel-frequency table

Channel	frequency (MHz)	Channel	frequency (MHz)
Customize	Customize	5	459.0500
1	455.0500	6	460.0500
2	456.0500	7	461.0500
3	457.0500	8	462.0500
4	458.0500	9	463.0500

4. Calculation and Base Station Translation

Calculation:

When surveying a new area, you can do calculation to match target point to known point coordinates:

4.1 Measure Control Point

Go to Measure Point > Measure times: 5, use default settings for other parameters and click OK. Put the centering rod to the control point, and level it, then enter control point name (e.g. a) and antenna height, click Measure. The data will be automatically saved. Measure three control points one by one.

4.2 Enter Control Point Coordinates

Go to Point Coordinates Datum > Add > Enter point name, coordinates and select control point, enter local plane coordinates and click OK.

Tip: When the input control point name is consistent with the measurement point, adding a point pair in the subsequent steps can be automatically paired with the measure point.

4.3 Parameter Calculation

Go to Tool > Parameter Calculation, click Add > Manual Pair/Auto Pair, select Known point and GNSS point(input control point and measure point respectively), calibration: horizontal and vertical and click OK. Click calculation and check horizontal residual (residual should be less than 2 cm). If OK, click Apply.

Base Station Translation:

Under below two circumstances, you need base station translation:

- 1. Base station is reset or moved;
- 2. Base station is restarted.

Go to Device > Connection, when rover station is fixed, select Tool> Base station translation > Measure or select GNSS point > select or enter known point > Calculation > Apply.

After base station translation is done, you need to remeasure other control points and compare them with known point to make sure the translation is well down.

5、 Measure and Loft

Measure Point

Select Measure > Measure point, click bottom-right button to measure. Click rightside toolbar Point library to check measured points.

Loft Point

Select Measure > Loft point > Coordinate library, select point to be lofted and click bottom-left button to start.

Click Options to change parameters.

When [Front, Back, Left and Right] and [Handbook electronic compass to determine the forward direction] are enabled (open by default), the top of the handbook screen is the forward direction;

6、 Export data

Go to Task > Export data, and export result data, take care of file name and output path. You can also go to Export data to export measure coordinates, such as Cass software data format.

7. Transfer files

Connect Handheld to the computer via USB cable, and select Transfer file. Then open device folder on your computer to transfer files.

Export data path: GreenValley/ls/export
Project path : GreenValley/ls/Project

8、 Input data

Go to Task > Input data > Select data type, point type, file path > click OK.

Please notice the suffix you set, especially when you cannot find the file you wish to select.

9、System settings

You can hide it by long pressing the button.

Project

Project includes below modules:

Project

Datum

• Datum Store

Element

Surface

Import

Export

ExportResult

Setting

Code List

BaseMap

Features



Wizard

In order to make you familiar with the workflow of application faster, a project wizard has been prepared, and you can start working in just 4 steps.

When using the application for the first time, it will automatically jump to the project wizard.

Enter: [Project] -> [Wizard].

1. Project



[Select] : If there is no project, it will jump to the new project interface; if there is a project, the project management interface will appear, and you can choose to open or create a new project. For details, see: Project. After completion, execute [Next].

← Project		← Create
Project list 20220520_104902 China/CGCS2000 20-05-2022 10:49:07	View >	Project 20220520_105026 Image: Constant of the second
Dpen Create	•••	ок

2. Connection

After completing the project, enter the connection device: [Previous] Return to the first project or click [Select] Connect the device, please refer to Connection for the specific operation of the device.



3. Work mode

[Previous] Return to connect the device;

[Select] Select a default work mode, or [Add] start the rover or base station after a new work mode;

After completing the working mode, there will be different prompts according to whether the mobile station or the base station is activated;



Choose rover station

← Rover		÷	Rover	
Current Mode: Rover-Non Work mode list	e	Curren Work r	t Mode: Rover-PDA COR node list	IS
PDA CORS nValley://211.144	4.120.104:8888/03102941	0	PDA CORS nValley://211.144.120).104:8888/03102941
		R	over Config	
Default: RadioMo	ode 60.0500MHz	1	Connect Source List	~
2		2	Setup receiver paramet	ters 🗸
Default: Internal	GSM(LiSurvey)	Su	icceed!	
GreenValley://211.	144.120.104:8888/	So	ource List: 03102941	
			ОК	
			Will cl	losed after 3 seconds.
Add	Apply		Add	Apply

Choose base station



Rover Station

[Next step] Select the type of work to be started [measure point, stake point, stake line].

÷	Workflow
	Project 20220520_104902
	Connection N63500055
	Work mode Rover/PDA CORS 211.144.120.104:8888
4	Start work Select work type and start working!
	Stake Point
	Stake Line

Base Station

[Next] Disconnect the base station, and prompt whether to set the rover station; if you select [Yes], then disconnect the current base station and enter the Connection step, start connecting the rover station and set the working mode.



Project Management

A project is a management unit for field data.

← Project		← Create
Project list 20220520_104902 China/CGCS2000 20-05-2022 10:49:07	View >	Project 20220520_105026 × Datum Existing Project Datum Use Last project > Code List Click > Operator
Dpen Create	•••	ок

1. Create

Click the [Create] button to create a new project.

[Project] :Give a meaningful name to the measurement or stakeout work that needs to be carried out at present, which is convenient for later management;

Default project name: year month day _current time

[Datum] :The datum supports three methods: [Use Last project], [Datum store], [Scan QR code];

[Code List] :Select a code list to provide a default template (CASS); you can also select an imported file after importing (to import a code list file, you must first import a code list in the [Project]->[Code List] function before creating a new file.);

[Operator] :Enter the information of the current surveyor;

[Comment] :Enter some description information of the current project;

[OK] :After the new task is completed, open the task by default and return to the main interface;

← Create	
Project	20220520_134836 ×
	Datum Existing Project
Datum	Use Last project 🗦
Use Last proj	ect
Datum store	
Scan QR code	e
	UN

1.1. Local Datum

Select a defined datum in the datum list, or enter the datum parameters according to the job requirements in [Add User Defined].

1.2. Use Last Project

Datum parameters used in previous project can be quickly applied.

1.3. Scan QR Code

You can quickly apply a certain project datum parameter through the QR code.

2. Open Project

Click the project, it turns gray, click [Open] to switch to the current project.

3. View

Only the current project supports viewing

← Details			
Project name	20220517_114519		
Path	/storage/emulated/0/ GreenValley/ls/Project/ 20220517_114519		
Code List	20220517_114519		
Create time	17-05-2022		
Operator			
Comment			
Datum	China/CGCS2000		
Ellipsoid	WGS 84		
а	6378137.000		
1/f	298.257223563000		
Azimuth System	North		
Positive Direction	N, E		
Projection	UTM		
Zone	50		
Edit			

Tips: Click the project name in the title bar to quickly enter the current task interface

4. Delete



[Project] -> Bottom Menu -> [Three Small Dots] -> [Delete]

5. Recycle Bin

[Recover]: Select any task and click Recover, and the task will be restored to the task list.

[Delete]: Select any task and click Delete, the task will be permanently deleted.

[Clear]: This function clears all tasks in the recycle bin.

← Recycle t	bin	
Project list		
20220513_16203	8	
20220408_18171	6	
5 Recover	回 Delete	× clear

Current projection datum

Home -> [Project] -> [Datum].

← Current	projection datum		
		Datum Sto	re
Datum	China/CGCS2000		
Source ellipsoid		WGS 84	>
Target ellipsoid		WGS 84	>
Projection		UTM	>
Seven parameters		Close	>
H.RMS		Close	>
V.RMS		Close	>
Geoid model		Not use	>
Grid correction		Not use	>
	ок		

1. Current projection datum parameters

The source ellipsoid, target ellipsoid, projection, seven parameters, plane correction, elevation fitting and ground level model parameters can be modified. For settings, please refer to Datum Store.

The modification of the current projection datum parameters will not modify the datum in the Datum Store.

1. Datum Store

Click [Datum Store] to jump to Datum Store.

Datum Management

Home -> [Project] -> [Datum] -> [Datum Store].

Datum management is managing the datum store. It is different from the datum of the current project. The datum parameters edited in the datum management will not affect he datum of the current project, even if the datum name is the same as the current project. The datum will only be synchronized to the current project when the [OK] button is clicked.:

[Datum list]: Display the datum you have added.

1. Add Predefined Datum

We provide some pre-defined coordinate systems classified by country for you to choose. When you select [Country] -> Click on the datum in the predefined interface, the clicked datum will be added to your [Datum list].

Modifications in the Datum list are not synchronized to the predefined datum list.

← Datum Store				
Datum list				
China/Beijing 1	954			
China/Xian 198	30			
China/CGCS20	00			
China/WGS 72				
China/WGS 84				
China/Shangha	ai			
			Ĩ.,	
Predefined	User defined	OK	:	

2. Edit Datum

A datum includes parameters such as coordinate system, source ellipsoid, target ellipsoid, projection, seven parameters, plane correction, elevation fitting, etc. Long press the coordinate system in the [Datum list] to pop up the modify and delete menu, and click [Modify] to enter the Datum edit interface.

← Datum Store		← Datum e	dit	
Datum list		Datum	China/Beijing 1954	
China/Beijing 1954				
China/Xian 1980		Source ellipsoid	WGS 84	>
China/CGCS2000		Target ellipsoid	Beijing 1954	>
China/WGS 72		Projection	TM	>
China/WGS 84		Seven parameters	Close	>
China/Shanghai		H.RMS	Close	>
		V.RMS	Close	>
		Geoid model	Not use	>
		Grid correction	Not use	>
Predefined User defined OK	:		ок	

2.1. Ellipsoid Parameters

Both the source ellipsoid and the target ellipsoid can input relevant parameters, or you can select the defined ellipsoid parameters.

← Ellipsoid		
Ellipsoid	Beijing 1954]:≡
а	6378245.000	
1/f	298.30000000000	
Azimuth System	North	>
Positive Direction	N, E	>
ок		

2.2. Projection Parameters

Projection		
Projection	TM >	
Origin lat	00°00'00.00000"	
Central meridian	120°00'00.00000"	
False Easting	500000.000	
False Northing	0.000	
Scale	1.00000000000	
Project height	0.000	
ОК		

The relevant parameters can be entered and the current central meridian parameters can be obtained based on the receiver position.

2.3. Seven Parameters

← Seven parameters		
Seven paramete	rs 🔵	
input parameters	s, or use Site Calibration	
DX(m)	0.0000000000	
DY(m)	0.0000000000	
DZ(m)	0.0000000000	
RX(")	0.0000000000	
RY(")	0.0000000000	
RZ(")	0.0000000000	
K(ppm)	1.0000000000	
	ок	

Seven Parameters: The translation, rotation, and scale parameters between the two ellipsoids in the space vector, and the rotation angle should be small, it is a relatively strict conversion model, requiring three points to solve, suitable for WGS-84 to national coordinates system conversion; you can also apply the calculated parameters after parameter calculation.

2.4 H.RMS and V.RMS

You can manually click to open the horizontal correction and elevation fitting parameters, and then enter the relevant parameters, or you can apply the calculated parameters after Parameter calculation.

← H.RMS	← H.RMS
H.RMS	H.RMS
	input parameters, or use Site Calibration
	North origin 0.0000000000
	East origin 0.0000000000
	N.Shift 0.0000000000
	E.Shift 0.0000000000
	Rotate 00°00'00.00000"
	Scale(ppm) 0.00000000000
ОК	ОК



2.5 Geoid Model

The default geoid model is EGM96 and this can also be user-defined.



2.6 Grid Correction

Select two files of N grid and E grid respectively, or select a single file of NE grid to perform grid correction.

← Grid		
N grid		-
File		Click >
E grid		-
File		Click >
NE grid		
Country	O Greece	O Belgium
	ОК	

3. Add User-defined Datum

The interface is the same as the Datum edit, and you need to input the complete datum parameters.

← Datum Store	← Add datum
Datum list	Datum Please enter name
China/Beijing 1954	
China/Xian 1980	Source ellipsoid Choose ellipsoid >
01-inc (00.002000	Target ellipsoid Choose ellipsoid >
China/CGCS2000	Projection Please select projection >
China/WGS 72	
China/WGS 84	Seven parameters Close >
China/Shanghai	H.RMS Close >
	V.RMS Close >
	Geoid model Not use >
	Grid correction Not use >
Predefined User defined OK	е ок

4. Logout

In [Datum list], select Coordinate System -> [...] -> [Logout].

← Datum	Store		
Datum list			
China/Beijing 1	954		
China/Xian 198	30		
China/CGCS20	000		
China/WGS 72			
China/WGS 84			
China/Shanghai			
	Logout		
Predefined	User defined	ОК	÷

Element

Home -> [Project] -> [Element]

The element library displays and manages input points, control points, measurement point, and stakeout points, and can quickly enter the point stakeout interface.

Symbols		
Symbols	Definition	
б	Base Station	
•	Input Point	
	Control Point	
×	Normal Measurement Point	
\rightarrow	Automatic Measurement Point	
\odot	Stake out point	
Ξ	Pile Point in the Road	
÷	Road Crossing Point	

← Element				
🔊 Input point	5			
Ocontrol point	7			
Base:p1 Surv	11	Auto base	e No off	
C E Stake Detail	S	Q earch	+ Add	

1. Element Library

Click [Project] -> [Element]

1.1. Input Points

← Element	← Input
 Input point 6 Control point 7 Base:p1 Surv 11 Auto base No off 	Name 07 Code
Image: Constraint of the second se	ок

Click [Add] to enter the add point interface

Add points support local plane coordinates, WGS84 latitude and longitude coordinates

Input point name, ocal plane coordinates (N, E, Z) or WGS84 latitude and longitude coordinates (B, L, H)

B, L Input format: degreesdegrees.minutesminutessecondssecondssecondssecondssecondsseconds ; Example: input 32.303022222 (32°30'30.22222")

Attribute: Input point, control point, stakeout point

1.2. Detail

Select point -> click [Detail]

- All values can be modified for points under the Input Points, Control Points, No Base Points and Stakeout Points classes.
- The measurement point under the base station category can change the point name (note: it allows points with the same name), code, antenna height and type, click [OK] to complete the change operation.
- The base station can change the base station type and base station shift parameters.

← Input		← p10			
Name	07	Name	p10		
Code		Code			
Attribute	Inpu ○ Cont ○ Stak	Comment			
Display type	WGS84 LatLon >	Bottom of device	e(1.800		
В	⊒ # :- "00.00000"N		Bottom of device(H) Slant(S)		
L	≌ ⊪ ≔ "00.00000"E	Antenna type	AT1		
Н	F7.000	N	3 # : "21.440		
		E	3 1 0.257		
		Z	FF.530		
		В	IT: "07.74195"N		
		L	III I'16.52809"E		
		Н	F7.530		
		Status	Fixed		
ОК		Image t	ag OK		
← Base:p	1				
---	---	--	--	--	--
Message type	RTCMV3				
Station type	Auto base Fix position				
WGS84 Coordina	ate				
X	B82.341				
Υ	82.868				
Z	58.530				
В	31.12829 "N				
L					
н					
Local grid coordi	nate				
N	58.363				
E	4.976				
Z	.■ ■.002				
Base offset para Support math (plus/	meters /subtract) expressions,like:2.0+3.0				
Δx	0.000				
ОК					

Select the measurement point, click -> [Detail] -> [Image Marker]

Click the icon 1 in the lower left to take a photo, and you can mark the photo on the spot.

Click the icon 2 in the lower left to mark the selected pictures in the album.

Note: After the image is marked, click Save. After returning to the detail interface, click OK to save it permanently.



[Brush]: Click the brush to choose the appropriate color and thickness of the brush line.

[Text]: Click the text to select the appropriate color and font size, and enter the text to mark the text.

[Point Information]: You can choose the color and font size, in addition to this, you can choose to display the point name, code, N, E, Z.

[Eraser]: Selectively erase the lines drawn by the brush.

[Save]: Click save to save the added mark.

[Clear]: Slide the bottom edit box to the left, and the clear button will appear on the far right. Clicking clear will clear all tags (excluding pictures).

[Undo]: You can restore or undo the previous operation, click the button on the left to undo the previous operation, and click the button on the right to restore the previous operation.

1.3. Search

← Search		
Input point nan	ne	Q
© Stake	E Detail	

[Search] Enter the point name to query (support fuzzy search)

The queried point can be clicked -> [Detail] the same as the main interface of the element library, [Multi-select] the same as the main interface of the element library, and [Delete] the same as the main interface of the element library to delete.

1.4. Multi-select

Click [Multi-select] in the three small dots in the lower right corner to enter the multi-select mode, which can be deleted in batches.

← Element	Cancel Please select point Select all
Input point 6	Dinput point 5
Ocontrol point 7	Control point 7
Base:p1 Surv 11 Auto base No off	Base:p1 Surv 11 Auto base No off
Multi-select Delete Coordinate type Import Recycle bin	
Switch display mode	ណ្
Stake Detail Search Add	Delete

1.5. Stake

Jump to the [Point Stake] interface.

1.6. Delete and Import

1)Delete: select the point to delete.

2)Import: Refer to Data Import.

← Element				
No Base	1			
Base:01 Survey	4	Auto base	No offset	
b Base:01(Base)				
N:58.363	Z: 13.00	02		
E:4.976	Code:			
🗙 p12(Fixed) 🍍				
N:03.710	Z: 13.7	19		
E: ====================================	Code: s	urface222		
⊙ 00(Fixed) 📕	Delete eu	hear		
N:03.720	Delete su	cceed		
E:	Code: p	oint		
⊙ 01(Fixed) [►]				
N: ==== _03.716	Z: 13.7	12		
E:2.079	Code: p	oint		
V E	Q	-	+	
Stake Detail	Sear	ch A	dd	

1.7. Coordinate Type

Plane coordinates or WGS84 coordinates.



1.8. Recycle Bin

← Element		Cancel	Please select point	Select all
● Input point 6	5	🔲 🕥 Input p	pint 1	
Ocontrol point 7	7			
Base:p1 Surv 1	1 Auto base No off			
	Multi-select Delete			
	Coordinate type			
	Import			
	Recycle bin			
C E Stake Detail	Q + Search Add	5 Recover		ل Delete

[...] -> [Recycle Bin]

[Restore]: Long press the point -> select point -> [Restore] The restored point will enter the point library. [Delete]: Long press the point -> select point -> [Delete] The deleted point cannot be retrieved, please operate with caution.

1.9. Switch Display Mode

← Element	← Element
Input point 5	Category N
Ocontrol point 7	Input point 5
Sase:p1 Surv 11 Auto base No off	Ocontrol point 7
b Base:p1(Base)	Base:p1 Surv 11 Auto base No off
E: IIIE1158.363 Z: E1.002 E: IIIE114.976 Code:	(b) Base:p1 58.363 195 4.976
× p10(Fixed)	× p10 5 1965 21.440 1965 0.257
E: 334221.440 2: 76.530 E: 334221.440 Code:	× p9 5 1965 19.049 1965 0.708
× p9(Fixed)	× p8 5.148
E: SERIES 0.708 Code:	× p7 5 1365 12.340 1365 7.431
× p8(Fixed)	× p6 5 1965 12.415 1965 1.170
E: 3381255.148 Code:	× p5 5 10.382 10.585 3.617
× p7(Fixed)	× p4 505 06.912 1505 3.934
N: 2616212.340 Z: 43.358 F: 261637.431 Code:	
♥ E Q + Stake Detail Search Add	♥ E Q + Stake Detail Search Add

Surface

Home -> [Project] -> [Surface].

1. Search

← Su	rface				← Su	rface			
Please in	put nam	е		Q	te			×	Q
Surface na	Point	Triangular	Area(2D:m²)	Area(Surface na	Point	Triangular	Area(2D:m²)	Area(
test	3	1	5.500	8.382	test	3	1	5.500	8.382
01	4	2	17.500	34.27					
© Stake	+ Add	도 Edit) Preview		© Stake	+ Add	도 Edit) Preview	

1.Search: You can enter a part of the name to search. When there is only a face with this name in the face library, the search is successful.

2. Stake, Delete, Preview



1) Stake: First select the surface to stake out and then click Stake to jump to the surface stake interface. For details of surface stakeout, please refer to Surface Stake.

2) Delete: Select the surface to be deleted and click Delete to delete it.

3) Preview: Select a surface and click Preview to preview the shape and size of the surface.

3. Add, Edit

Click [Add] and enter a surface name.



1) Add: Jump to the point library selection interface, select three or more points that make up the surface, you can query the point name and select the desired point.

2) Preview: After adding, click Preview to display the shape of the surface formed by the current point.

3) Save: Click Save to save the created surface in the surface library.

4) Delete: If you want to delete some points or select a point again, you can long press the selected point to delete it.



4. Import

Click Import to import surface data. Only .siw and .xml formats are supported here.



5. Export

Select the appropriate surface and click Export to jump to the Grid export interface.

← Grid ex	port	← Export
File name(.sjw)	test ×	/storage/emulated/0/ GreenValley/Is/Export
Path	/GreenValley/Is/Export >	Upper folder
		1.sjw 5.00 B 13-05-2022 13:39:15
		20220513_162038.csv 638.00 B 14-05-2022 17:30:01
		20220513_162038.dat 70.00 B 14-05-2022 17:23:34
		20220513_162038.dxf 48.45 KB 14-05-2022 17:29:42
		171.00 B 14-05-2022 17:55:38
	ок	ок

1) File name: It can be input freely, the default name is the original surface name.

2) Path: You can click the path to choose freely.

Data Import

Home -> [Project] -> [Import]

Data import: Import the points conforming to the file type into the element management, and the imported point type can be selected.

1. Import

← Import		← Import		
Data format	Add	File format	CASS	
CASS(.dat)	>	Point type	Input point	>
Name,Code,N,E,Z(.csv)	>	* 👸 🎕	/storage/emulated/0/ ls/Data	'GreenValley/
Name Code N E Z(.txt)	>	Upper fol	der	
Name,N,E,Z(.csv)	>			
Name N E Z(.txt)	>			
Name B L H(.txt)	>			
B L H Name(.txt)	>			
Name,Code,B,L,H(.csv)	>			
B,L,H,Name,Code(.csv)	>			
More formats	>	File type		Points(*.dat)
			ок	

[File format]: Select the data format that matches the imported file, and jump to the import interface;

[Point Type]: Select input point, control point and stakeout point;

[Path]: Select the location to import data;

If the import is successful, it will jump to the main interface prompt: data import is successful!

2. Add Format

All import methods can be selected and combined according to the needs of the content. After adding, long press to rename or delete.

Data Export

Home -> [Project] -> [Export].

1. Data format

[Data format]: Select the export format, and jump to the export interface.

← Export		← Export
Data format	Add	Select Survey point >
CASS(.dat)	>	File name 20220518_170346
Name,Code,N,E,Z(.csv)	>	Data type CASS
Name Code N E Z(.txt)	>	/storage/emulated/0/GreenValley/ Is/Export
Name,N,E,Z(.csv)	>	Upper folder
Name N E Z(.txt)	>	2.08 KB 19-05-2022 13:47:28
Name B L H(.txt)	>	3.21 KB 18-05-2022 17:54:02
B L H Name(.txt)	>	20220518_170346_point.txt 166.00 B 19-05-2022 13:48:48
Name,Code,B,L,H(.csv)	>	
B,L,H,Name,Code(.csv)	>	
More formats(DXF,KML,RAW,RW5,HTML)	>	
		ОК

[Filter]: Select the point type to be exported, the collection time and export according to the keyword.

÷	Export			
Sele		uniou coliet		>
File	Select			
	Point type			
Data	D Input point	Control point	Stake point	-
*	Survey point	Base	Mapping point	ey/
	Compute	Point	n - 1999 (5) (6)	
F	Date			
	TODAY	SEVEN DAYS	ALL	
	Start date	~	End date	
	Name			
	[1	
		Cano	cel OK	
		ок		

Press and hold a data format to list it in the uncommon interface (more formats interface); on the contrary, long press on the uncommon interface to list it in the common interface.

← Export		← More formats	
Data format	Add	Ex. Stake Ps	>
CASS(.dat)	>	Ex. Stake Ls	>
Name,Code,N,E,Z(.csv)	>	Export Survey Points	>
Name Code N E Z(.txt)	>	Export mapping result	>
Name,N,E,Z(.csv)	>	Export DXF	>
Name N E Z(.txt)	>	Export KML	>
Name B L H(.txt)	>	Export RAW	>
B L H Name(.txt)	>	Export RW5	>
Name,Code,B,L,H(.csv)	>	Export HTML	>
B,L,H,Name,Code(.csv)	>	Export SHP	>
More formats(DXF,KML,RAW,RW5,HTML)	>	CASS feature export	>
		N F 7 Name(tyt)	>

2. More Formats

2.1 [Point stakeout results]

Path, file name, and format and content, click [OK] to export the result, you can find the file in the corresponding format under the corresponding path. Currently, the export format supports txt and html formats, which are the clean version and the detail version.

dy

00_112	708.txt	±	0
Name	Code	N	Е
Z	RMS_x	RMS_y	
RMS_h	RMS	Antenna heigh	it
Measure time	Name	Code	N
E	Z	Distance H	dx
dv	dh		
p2 ceshi 5456	06.405 = 54.9	50 5-000 0.33	5
0.335 0.252 0.	365 1.800 2022/	05/20 15:11:23	5 p1
ceshi == 606.	950 5-55,313	- 835 0.655 -	0.545
-0.364 0.166		. 1000 01000	01010
n1 ceshi - 6	07 535 5- 53 3	73 5- 214 0 63	8
0 638 1 205 1	023 1 800 2022/	05/23 15:52:31	n28
E- 605 405 E	52 950 5- 000	2 207 2 120	0 577
1 214		2.207 2.150 -	0.3//
01 1 === 602 7	16	- 712 0 002 0	002
011603.7	10	/12 0.002 0.	002
0.002 0.002 1.	800 2022/05/26	16:34:15 009 0	1523
⊒=2 603.015 ⊒=	== 52.780 ⊒=.823	0.991 0.701 -	0.701
-8.111			
00 1 ====:603.7	20 === 52.082 ⊃	713 0.002 0.	002
0.002 0.002 1.	800 2022/05/26	16:34:50 009 0)523
∃-E_603.015 ∃- -8.110	±52.780 5±.823	0.992 0.705 -	0.698

2.2

dh | Stake Difference | ![concise](images/export/concise.jpg)

[Line stakeout results] The operation is the same as point stakeout.

Stake out export list properties

Column Name	Description
Line Name	Stake Line Name
Length	Distance from start to end
Method	Line Stakeout Method
Start station	Start station of the line
starting point	starting point roll call
Starting point N/E/Z	Starting point local plane coordinates
End Point	Point Name of the End Point of the Line
End point N/E/Z	End point local plane coordinates
Azimuth	Azimuth from start to end point
Slope	Slope from Start to End
Attribution line	Line to which the stakeout point belongs
Distance line	The distance of the stakeout point from the home line
Stake Number	Stake Point Stake Number
From start point	Horizontal distance of stakeout point from start point
Height difference/Cut and fill	Height difference from start point and end point
To the end point	The horizontal distance of the stakeout point to the end point

2.3[Export measurement results], [Export root point results], [Export KML], [Export RAW], [Export RW5], [Export measurement results HTML]

← Export Survey Points		← Export S	Survey Points
File name(.csv)	20220518_170346	File name(.csv)	20220518_170346
Path	/GreenValley/Is/Export >	Path	/GreenValley/Is/Export >
		Prompt File export s	ucceed! OK
	ок		ОК

The attributes of the graph root point export list are as follows:

Test Rounds Information Table Properties

Column Name	Description
Roll Call	Tugen Roll Call
Rounds	Number of Rounds
Smooth data	Point coordinates B/L/H, N/E/Z Smooth point error
Average coordinates of measuring rounds	Coordinates of the average point within a measuring round B/L/H, N/E/Z
Average coordinates for each round	Average point coordinates for all rounds B/L/H, N/E/Z

Statistics table properties

Column Name	Description
xrms	x coordinate error
yrms	Y coordinate error
Total number of acquisitions	Number of all smoothed points acquired
Number of Qualified Points	Number of Smoothed Points Not Exceeding the Tolerances of the Plane Root and Elevation Tolerances
Exceeding Points	Number of Smoothing Points Exceeding Root Plane Tolerance and Elevation Tolerance
hP-max(mm)	HDOP: Horizontal accuracy
hP-max(mm)	VDOP: vertical direction accuracy
Pass Rate	Percentage of smoothed points that do not exceed the root plane tolerance and elevation tolerance

Test Returns Poor Information Table Properties

Column Name	Description
"1-2/1-3"	"1" represents the first round, and so on
dB/dL/dH/dN/dE/dZ	Average measurement point difference between two rounds

Raw data info table properties

Column Name	Description
Roll Call	Smooth Point Roll Call
Point coordinates	B/L/H, N/E/Z
Solution Type	Point State
HRMS	Elevation Root Mean Square
VRMS	Vertical Residual
Differential age	Delay time for one reset
PDOP	Position Precision Factor
Number of satellites	Number of satellites searched at the current point
Local time	Time information at the measurement point

2.4 [Export DXF], [Export Shapefile]

1) Select the data and layers to export.

2) The text height can be changed in DXF format, the default is 0.5.

← Expor	t DXF	🔶 Ехро	rt SHP
Path	/GreenValley/Is/Export >	Path	/GreenValley/Is/Export >
File name	20220518_170346	File name	20220518_170346
Data	Survey point 🔲 Input point	Data	🗹 Survey point 🗹 Input point
	Control point Stake point		🗹 Control point 🗌 Stake point
	Base Line		✓ Line
	Curve Polygon	Layer	Name Code
Layer	🗹 Name 🔽 Code		Height
	Height		
Text height	0.500		
	ОК		ОК

Enter the export file name, the default name is date_task name_coordinate type, the file format: yyyyMMdd_Task_pjk or yyyyMMdd_Task_84, can also be customized. After selecting [Filter] and [Path], click [OK]. The default export path to the SD card or storage is: GreenValley/ls/Export, and you can find the corresponding export file name.

3. Add Format

[Name]: Customize the setting name.

[Use header]: You can choose to use the header or not to use the custom setting.

[Separator]: optional comma (,), space (), semicolon (;).

← User-defined		← User-defined	
Name	Pls name for the format	Name	Pls name for the format
Header		Header	
Other info		Other info	
Operator	Datum	Operator	Datum
Receiver model	Firmware		- 1
Work mode		Comma(,)	
Delimiter	Comma(,) >	Space()	
File format	.csv >	Semicolon(;)	
Degree type	dd.mmss.sssss >	Degree type	dd.mmss.sssss >
Available Select all	Selected Clear	Available Select all	Selected Clear
Code	Name	Code	Name
Preview Name(.csv)		Preview Name	(.csv)
ок			ок

[File format]: .csv, .dat, .txt.

← User-defined		← User-defined	
Name	Pls name for the format	Name	Pls name for the format
Header		Header	
Other info		Other info	
Operator	Datum	Operator	Datum
Receiver model	Firmware		- 1
Work mode		.csv	
Delimiter	Comma(,) >	.dat	
File format	.csv >	.txt	
Degree type	dd.mmss.sssss >	Degree type	dd.mmss.sssss >
Available Select all	Selected Clear	Available Select all	Selected Clear
Code	Name	Code	Name
Preview Name(.csv)		Preview Name(.csv)
ОК		ОК	

[Angle format]: degrees.minutes seconds, degrees°minutes'seconds", degrees:minutes:seconds, degrees, seconds.

← User-defined		← User-defir	ned
Name	Pls name for the format	Name	Pls name for the format
Header		Header	
Other info		Other info	
Operator Receiver model	Datum	dd.mmss.sssss	
Work mode		aa mmss.sssss	
Delimiter	Comma(,) >	dd:mm:ss.sssss	
File format	.csv >	ddd.dddddddd	
Degree type	dd.mmss.sssss >	\$\$\$\$\$\$.\$\$\$\$\$	
Available Select all	Selected Clear	Available Select	all Selected Clear
Code	Name	Code	Name
Preview Name(.csv)		Preview M	Name(.csv)
ок			ОК

[Attribute selection]: Select the required attributes or select all the attributes to be selected, and the selected attributes can be cleared.

← User-defined		← User-defined	
Delimiter	Comma(,) >	Delimiter	Comma(,) >
File format	.csv >	File format	.csv >
Degree type	dd.mmss.sssss >	Degree type	dd.mmss.sssss >
Available Select all	Selected Clear	Available Select all	Selected Clear
В	Name	В	Name
1	Code	L	Code Delete
	N		N
н	E	н	E
X RMS	Z	X RMS	Z
Y RMS		Y RMS	
V.RMS		V.RMS	
Preview Name,C	ode,N,E,Z(.csv)	Preview Name,C	ode,N,E,Z(.csv)
ОК		0	к

After adding the format, click "OK" to jump to the main interface of data export and pop up a prompt: The file format is saved successfully!

Swipe left to remove the added format.

Export Result

1. Export of point stakeout results

← More formats		← Expo	rt stake points	
Ex. Stake Ps	>	Path	/Green	Valley/Is/Export >
Ex. Stake Ls	>	File name	20220518_17	70346_point
Export Survey Points	>	Format	🗹 txt	html
Export mapping result	>	Content	Simple	O Complex
Export DXF	>			
Export KML	>			
Export RAW	>			
Export RW5	>			
Export HTML	>			
Export SHP	>			
CASS feature export	>			
NE7 Name(tyt)	\ \		OK	

The path, file name, and format and content, click [OK] to export the result, you can find the file in the corresponding format under the corresponding path. Currently, the export format supports txt and html formats, which are the clean version and the detail version.

1.1 Point Stake Export List Properties

Stake out point
Column Name Description : :
у
h The local plane coordinates of the stakeout point Remarks x precision
y precision
h precision local plane coordinate precision of stakeout point rms Medium Error Antenna height Antenna height during
measurement Measurement time Date and time of the measurement point
Known Point
Column Name Description Name Known Point Name Code Point Code x
у
h Known point local plane coordinates Remarks
Stake Difference
Column Name Explanation
known point dx
dy
dh Stake Difference ## 2. Line stakeout results and measurement results export ![line-loft](images/exportResult/export-stake-

line.jpg) The operation is the same as [Export Point Stakeout Results] Stake out export list properties

Column Name	Description
Line Name	Stake Line Name
Length	Distance from start to end
Method	Line Stakeout Method
Start station	Start station of the line
starting point	starting point roll call
Starting point x/y/h	Starting point local plane coordinates
End Point	Point Name of the End Point of the Line
End point x/y/h	End point local plane coordinates
Azimuth	Azimuth from start to end point
Slope	Slope from Start to End
Attribution line	Line to which the stakeout point belongs
Distance line	The distance of the stakeout point from the home line
Stake Number	Stake Point Stake Number
From start point	Horizontal distance of stakeout point from start point
Height difference/Cut and fill	Height difference from start point and end point
To the end point	The horizontal distance of the stakeout point to the end point
	01[1].csv [Read-Only] - Excel

The	Tioffic	moert ra	ge cayout	Tonnula	is Data	INCONCON	view	Theip	Acrobat	C100,003m	A it	an me what	you want	10 40											74 Share
G35	÷	: × •	/ fx	0.423																					
	A	В	С	D	E	F	G	н	1.1	J	к	L	м	N	0	P	Q	R	S	Т	U	v	W	х	Y
1	Name	Code	N	E	Z	Depth	RMS_x	RMS_y	RMS_h	RMS	PDOP	Used SV	Elevation	End time	В	L	84H	To base_>	To base_\	To base_H	To Base	tenna heig	easure tim	Solution	Diff age
2	p32	test111	5452613	545.637	544616	0	0.003	0.003	0.007	0.005	0.828	40	10	M26D17H3	3'07.4.	30'16.44	1 1616	-2545.4	-1458.2	52.614	2933.94	1.8	1	fixed	1
3	p33	test111	5402617	545 634	5-4587	0	0.002	0.002	0.006	0.005	0.812	40	10	M26D17H3	3'07.4	30'16.	1.587	-2541.8	-1460.6	52.585	2932.06	1.8	1	fixed	1
4	p34	test111	5462611	545.642	54638	0	0.002	0.002	0.005	0.004	0.763	39	10	M26D17H3	3'07.4	30'16.	*4.638	-2547.4	-1452.6	52.635	2932.97	1.8	1	fixed	1
5	p35	test111	5492611	542642	54:621	0	0.002	0.002	0.004	0.003	0.763	39	10	M26D17H3	3'07.4	30'16./**	.621	-2547.4	-1452.7	52.619	2932.96	1.8	1	fixed	1
6	p36	test111	5422603	546.642	54(731	0	0.003	0.003	0.006	0.005	0.867	37	10	M26D17H3	3'07.4.	30'16.74	**.731	-2555.6	-1452.7	52.728	2940.14	1.8	1	fixed	1
7	p37	test111	5452609	545.643	54581	0	0.002	0.002	0.005	0.004	0.818	38	10	M26D17H3	3'07.4.	30'17.75	*4.581	-2549.7	-1452	52.579	2934.68	1.8	1	fixed	1
8	p38	test111	5432603	542650	54/568	0	0.003	0.003	0.007	0.005	0.805	38	10	M26D18H3	3'07.4	2'30'17.74	*1.568	-2555.4	-1444.6	52.566	2935.93	1.8	1	fixed	1
9	1	1	5422604	546652	54712	0	0.002	0.002	0.002	0.002	1.631	23	10	M26D16H3	3'07.	-°30'17.74	44.712	-2554.6	-1442.9	15.71	2934.01	1.8	2	fixed	1
10	0	1	543.2604	540652	54713	0	0.002	0.002	0.002	0.002	1.63	23	10	M26D16H3	3'07.4	2'30'17./**	1 16.713	-2554.6	-1442.9	15.711	2934.01	1.8	2	fixed	1
11	p12	surface22.	25432604	540652	54(719	0	0.001	0.001	0.001	0.001	1.65	23	10	M26D17H3	3'07.4	2°30'17.74	*8.719	-2554.7	-1442.9	15.716	2934.02	1.8	1	fixed	1
12	p13	surface22	25422604	545.652	54649	0	0.002	0.002	0.002	0.002	1.832	22	10	M26D17H3	3'07.4.	2°30'17.74	.649	-2554.7	-1442.9	16.647	2934.03	1.8	1	fixed	1
13	p15	test111	5422604	540652	54619	0	0.004	0.004	0.004	0.005	1.584	24	10	M26D17H3	3'07.4.	2°30'17.74	1 1.619	-2554.6	-1442.9	16.617	2933.99	1.8	1	fixed	1
14	p16	test111	5452604	540652	5-614	0	0.005	0.005	0.005	0.006	1.584	23	10	M26D17H3	3'07.4.	°30'17.74	1.614	-2554.6	-1442.9	16.612	2933.98	1.8	1	fixed	1
15	p17	test111	5422604	545652	54613	0	0.003	0.003	0.004	0.004	1.584	23	10	M26D17H3	3'07.4.	-30'17.	1 ** .613	-2554.6	-1442.9	16.61	2933.99	1.8	1	fixed	1
16	p18	test111	5452604	542652	5-4.62	0	0.004	0.004	0.005	0.005	1.584	23	10	M26D17H3	3'07.4	30'17.75	**1.62	-2554.6	-1442.9	16.617	2933.99	1.8	1	fixed	1
17	p19	test111	5452604	545652	5-0634	0	0.004	0.004	0.005	0.005	1.583	23	10	M26D17H3	3'07.	30'17.7	1 *1.634	-2554.6	-1442.9	16.632	2934	1.8	1	fixed	1
18	p20	surface22	2542 2608	545.643	54605	0	0.002	0.002	0.006	0.004	0.773	40	10	M26D17H3	3'07.4	2°30'17.74	1 14.605	-2550.1	-1451.6	52.602	2934.81	1.8	1	fixed	1
19	p21	surface22	25 2608	542643	5∸605	0	0.002	0.002	0.006	0.005	0.773	40	10	M26D17H3	3'07.4	30'17.	1 **1.605	-2550.1	-1451.6	52.603	2934.81	1.8	1	fixed	1
20	p22	surface22	2542.2608	542643	5603	0	0.003	0.003	0.006	0.005	0.773	40	10	M26D17H3	3'07.	30'17.74	**1.603	-2550.1	-1451.6	52.6	2934.81	1.8	1	fixed	1
21	p23	surface22	25432608	545643	54603	0	0.002	0.002	0.006	0.005	0.773	40	10	M26D17H3	3'07.4	30'17.74	*1.603	-2550.1	-1451.6	52.6	2934.81	1.8	1	fixed	1
22	p24	surface22	2545 2608	542643	5-603	0	0.002	0.002	0.006	0.004	0.773	40	10	M26D17H3	3'07.4	30'17.7	1 **1.603	-2550.1	-1451.6	52.6	2934.81	1.8	1	fixed	1
23	p25	surface22	2542 2608	542643	5-:604	0	0.003	0.003	0.006	0.005	0.773	40	10	M26D17H3	3'07.4	30'17.74	1 *1.604	-2550.1	-1451.6	52.602	2934.81	1.8	1	fixed	1
24	p26	surface22	25422608	545.643	5⇒601	0	0.002	0.002	0.006	0.005	0.773	40	10	M26D17H3	3'07.	30'17.74	1.601	-2550.1	-1451.6	52.599	2934.81	1.8	1	fixed	1
25	p27	surface22	2545 2608	542643	5≕602	0	0.002	0.002	0.005	0.004	0.773	40	10	M26D17H3	3'07.	30'17.74	1 11.602	-2550.1	-1451.6	52.6	2934.8	1.8	1	fixed	1
26	p28	surface22	25422608	542643	5-0602	0	0.003	0.003	0.006	0.005	0.822	40	10	M26D17H3	3'07.4	30'17.74	1 14.602	-2550.1	-1451.6	52.6	2934.81	1.8	1	fixed	1
27	p29	surface22	25422608	545643	54:591	0	0.003	0.003	0.007	0.005	0.821	40	10	M26D17H3	3'07.4.	30'17.		-2550.2	-1451.6	52.588	2934.82	1.8	5	fixed	1
28	p12	line	545.2604	542652	54/745	0	0.002	0.002	0.003	0.003	1.637	23	10	M26D16H3	3'07.	30'17.	1 //1.745	-2554.6	-1442.9	15.743	2933.96	1.8	2	fixed	1
29	p10	line	5452604	542652	5-4:694	0	0.003	0.003	0.004	0.004	1.354	22	10	M26D14H3	3'07.4	30'17.75	**.694	-2554.6	-1442.9	15.692	2934.02	1.8	5	fixed	1
30	p11	line	5452604	546.652	5-1.72	0	0.003	0.003	0.004	0.004	1.359	22	10	M26D14H3	3'07.4	30'17.75	160.72	-2554.7	-1442.9	15.717	2934.02	1.8	5	fixed	1

3. Export DXF, export KML

← Export	t DXF	← Export H	ſML
Path File name	/GreenValley/Is/Export > 20220518_170346	File name(.kml) Path	20220518_170346 /GreenValley/Is/Export >
Data Layer	 Survey point Input point Control point Stake point Base Line Curve Polygon Name Code Height 		
Text height	0.500		
	ОК		ОК

Export can support CAD opening of version 2002 and above (including version 2002) The exported .kml file can be opened directly with GoogleEarth.

4. Export RAW, measurement results export as HTML

1) The exported .RAW file is the original data record file, which needs to be opened with Notepad.

2) The exported .HTML file is a web page format file. It is recommended to use IE9 or later to open it. The content is too large and will not be described here.

5. Export Shapefile



Software Settings

Home -> [Project] -> [Settings].

← Settings	
Auto connect	
Automatically enter kboard mode.	
Mock Location	
Display	>
Voice	>
Language	>
Hot key	>
Units	>
Work range	>
Screen orientation	>
About	>

Auto connect: It is used to automatically connect to the receiver after the Bluetooth is disconnected, and the software starts to automatically connect to the last receiver.

Automatically enter kboard mode: if it is on, the software will automatically enter the suite mode interface when it is connected to the suite, and if it is closed, it will enter the software classic interface.

Mock Location: Used to control software to provide location information to other programs.

Display: It can be switched from NE to EN, and the display method can be selected according to the user's needs.

Language: used to switch the display language of the current software.

Feedback: User feedback on the software.

Share and rate: You can share the software to third-party programs.

About: Information about the software and app updates.

1. Hot key

Hot key: Set the function of volume + and volume -.



2. Voice

Speech: prompts for information such as connecting and disconnecting the receiver. Voice Engine: Select the appropriate speech engine.

Engine Settings: Set the speech engine.

← Voice	
Voice	
Speech	
Voice engine	3.0 >
Engine settings	>

3. Units

Length: It can be set to meters, international feet, and US feet.

Angle format: Set the angle format to degrees or degrees, minutes and seconds.



Export dicimal: accurate up to the fifth place after the decimal.

← Units	
Length	m >
Angle format	dd°mm'ss.sssss" >
_	_
0.0	_
0.00	
0.000	
0.0000	
0.00000	

4. Work range

Apply to single project or all projects.



Quick code: that is, the common code in the measurement interface to quickly measure.

Single project: that is, only the current task has the shortcut code set.

All projects: that is, a new project also has a shortcut code that has been set.

The opening method is [Survey]--[Stake Point]--[Measure with Quick Code] to open.



CAD file: The background map of the Stake CAD interface.

Single project: that is, only the current task has the imported CAD background map.

All projects: the imported CAD background map also exists in the newly created project.

The opening method is [Survey]--[Stake CAD]--[Data]--[Import].

Note: This function only supports the CAD staking basemap of the survey interface, and does not support the imported basemap of the project interface.

5. Screen orientation

Automatic, Horizontal, Vertical (default)
← Settings					
Auto connect	0				
Automatically enter kboard mode.					
Mock Location					
Disalau					
Automatic	0				
Horizontal screen	0				
Vertical screen	0				
Horkey	,				
Units	>				
Work range	>				
Screen orientation	>				
About	>				

Code

Home -> [Project] -> [Code List]

1. Add or import a code list

Code list:

← Code	e List			← Code I	₋ist		
Template	Points	Lines	Polygons	Template	Points	Lines	Polygons
Current task c	0	0	0	Current task c	0	0	0
11	0	0	0	11	0	0	0
1ad	0	0	0	1ad	n	٥	٩
mgd	1	0	0	n Add tem	plate		
				Input temp	late name		
						CANCEL	ок
E Modify	ビ Import	+ Add		Modify Ir	⊮	+ Add	

1) Apply: Select the code list to apply to the current task.

2) Import: Click [Import] -> Select File -> [Confirm].

3) Add: Enter the code list name to add a code list.

2. Modify code list

Select a code list and click Modify to enter the code list details.

← 1	Details			← Modi	fy	
POINT	LINE	PO	LYGON	Code	test	
Code	Description	Color	Style	Description	001	
test	001		۲	Group		Undefined >
test1	002		\odot	Туре	Point	
				Style	\odot	
Group		Unde	efined >			
+	E	ធា	唱		and the second	
Add	Modify	Delete	Group		Confirm	

The following operations can be performed on the code in the current code list:

1) Add: Add code.

2) Modify: Edit and modify the code.

3) Delete: Delete the code.

4) Group: You can view, add and delete groups.



3. Delete and export



1) Code list deletion: Click to delete the currently selected code list, select "OK" to delete, and select "Cancel" to cancel.

2) Code list export: Click [...] -> [Export] -> enter the file name -> select the export path -> [OK].

The default format is txt, the codes are separated by spaces or , signs.

4. Apply



Enter the code in the code box of the measurement interface, click Measure, and the code can be saved to the current task code list.



Click the code box to continue using it without re-entering it.

← Crea	te	← c	ode List		
Project	20220523_141147 ×	Template	Points	Lines	Polygons
	Datum Existing Project	test	2	0	0
Deture		11	0	0	0
Datum	Use Last project	1ad	0	0	0
Code List	Click >	mgd	1	0	0
Operator					
Comment					
	ОК	∲ ОК			+ Add

When creating a new project, you can choose to use a code list. This code list can be a default code list, or the code list that has been imported.

Import Basemap

Basemap: Background layer used for measurement and stakeout, which is convenient to observe the position of the current point. The current basemap supports CAD and Shapefile.

Home -> [Project] -> [Basemap]

Click [Basemap] to select the type of imported basemap.



1. CAD

Import CAD

CAD drawings contain files in both .dxf and .dwg formats.

[Basemap] Select CAD, click [Add] to add and import CAD basemap.

← Basemap		← Basemap	
Basemap	CAD >	Basemap	CAD >
Add points		Add points	-
Prefix	>	Prefix	>
Add lines		Add lines	
Prefix	>	Prefix	>
Add line endpoints		Add line endpoints	-
File list		File list	
🔊 cad .cad	×	Defpoints	
		DLSS	
		gcfw	
		GPSCOMMON	
		hy-ctx	
Add		Add	

After the CAD is imported successfully, you can view all the layers contained in the current CAD, and you can set whether they are visible or not. There is a delete icon after the file list, and the corresponding CAD can be deleted.

Import points and lines

When importing the CAD basemap, you can choose to save the point-to-point library, save the line to the line library, save the line endpoint to the point library, and you can set the prefix for saving points and lines.

Display basemap

Home -> [Survey] -> [Stake Point] -> [Setting] -> [Display] -> [Display Basemap]

After enabling the basemap display, click [OK] to save the settings. After exiting the measurement interface, re-enter the measurement interface, you can see the imported CAD base map, click the "Panorama" button to zoom the base map.



Export DXF

Home -> [Project] -> [Export] -> [More Formats] -> [Export DXF]

For details, see Data Export

2. Shapefile

Home -> [Project] -> [Basemap] -> [Basemap] -> [Shapefile]

Add: Click the [Add] button to add a basemap.

Delete: Click the delete button after the basemap to delete the corresponding shape basemap.

← Basema	р	
Basemap		Shapefile >
Add points		-
Add lines		
File list		
• test/test.sh	ιp	$\square \times$
Up	Down	Add

Layer properties

Move Up/Down: Click to select the basemap to move the basemap up or down to control the order in which the shapes are displayed.

Edit properties: Click the Edit button to enter the property editing interface of the corresponding basemap, where you can edit the displayed colors and properties.



Display shape

Home -> [Survey] -> [Stake Point] -> [Setting] -> [Display] -> [Display Basemap]

After enabling the basemap display, click OK to save the settings. After exiting the measurement interface, re-enter the measurement interface, you can see the imported shape, and click the [Panorama] button to zoom the base map.



Save Point/Save Line

Turn on the save point to point library option, you can import the points of the shape file into the point library when importing the shape basemap.

Turn on the option to save lines to line library, you can import the lines of the shape file into the line library when importing the shape basemap.

← Basema	р	
Basemap		Shapefile >
Add points		-
Add lines		
File list		
• test/test.sh	p	$\square \times$
Up	Down	Add

Export Shapefile

Home -> [Project] -> [Export] -> [More Formats] -> [Export Shapefile]

For details, see Data Export

Data: After selecting, the corresponding data can be exported

Layer: Properties included in the exported Shapefile

Feature Management

Home -> [Project] -> [Features].

Points, lines, and surfaces are displayed in columns; the name and code are displayed under the point column; the name, code, and length are displayed under the line column; the name, code, perimeter, and area are displayed under the surface column.

← Feat	ures		← Feat	tures	
POINT	LINE	POLYGON	POINT	LINE	POLYGON
Bearch		Q	Bearch		Q
Name	Code		Name	Code	Length
рб	point		line1	line	0.055
E Detail		للله Delete) Detail		لیا Delete

← Fe	atures			
POINT		LINE	PO	LYGON
Search				Q
Name	Code		Perimeter	Area
surface2221	surface222		43.772	1.435
surface2222	surface222		23.350	23.78
E Detail				Delete

1. Detail

Click [Details] to view the details of the features; you can move the data up and down, preview the features and change the code. As shown below:



2. Delete

Feature deletion: After selecting the feature data, click Delete to execute the delete operation.

← Featu	res		
POINT	LII	NE	POLYGON
Bearch			Q
Name	Code	L	ength
Prompt Delete?		CANCEL	ок
(E) Detail			U. Delete

Device

Device includes below modules:

Connection

Rover

Base Device Info

Position Info

Register

Static

HTerminal

Antenna

0183Output

DebugData



Device Connection

Main interface-> 【Device】-> 【Connection】.



1. Connection setting



Device type: GreenValley, Simulated device, NMEA Device, Controller GNSS.

There are three typrs of ways to connect LiBase: 1) Bluetooth: Binding connection via Bluetooth; 2) USB OTG: Connect via USB serial port; 3)Serial port: Connect via serial port.

2. Connection

←	Select device	
Blueto	oth	
Availa	ble devices	Э
Y	N63500055	
Y	LAPTOP9701	
\bigtriangledown	LAPTOP-08KP1T50	
\bigtriangledown	LAPTOP-EH1S9D2P	
	Stop searching	

Note:

Blue device: paired bluetooth; Gray device: scanned device;

Long press to cancel binding. You can also click stop search in the search process to interrupt the Bluetooth search, and the button will change to start search.

Directly perform bluetooth search (note the refresh icon in the upper right corner). When a device is available, select the SN of the device to be connected, complete the binding and start the connection, and the connection will turn green (the connection result will be available within 15 seconds).

Click [Connect], the software will automatically connect to the device with the bound SN number. The "Connect" button will change to the "Disconnect" button if it has been connected. If there is already a bound connected device, exit the software and restart it will prompt: automatic connection.



1) The interface displays the connected receiver information and satellite information after sucessful connection.

Rover Station

Icon Meaning			
lcon	Meaning		
(0)	Radio		
0	Host Network		
0	Handbook Network		

Main Interface-> [Device] -> [Rover Station].

÷	Rover			
Current Mode: Rover-None Work mode list				
(*)	Default: RadioM Internal radio: 6/46	ode 50.0500MHz		
0	Default: Internal GreenValley://211.	GSM(LiSurvey) 144.120.104:8888/		
	Add	Apply		

Tips: Check the current mode, if you need to change it, add it yourself or use the default startup mode; and the startup list displays the mode used and the corresponding configuration information.

Default startup: The default startup item cannot be edited and deleted.

Rover Station:

- 1、 Internal Radio Mode:
- a. Internal radio: transparent transport protocol
- b. Channel frequency: 6-460.0500
- 2、 Internal SIM card:
- a. Service: IP 211.144.120.104
- b. Port: 8888.

1. Startup parameters

Long press the list data to enter editing mode.

1.1.Startup item view

← Rover		÷	Rover		
Current Mode: Rover-Internal GSM Work mode list		Datalink	k type		PDA CORS >
PDA CORS nValley://211.144	.120.104:8888/03102941	Protoco Port	l	GreenValley 211.144.120.1	04:8888
Default: RadioMo Internal radio: 6/46	ode 0.0500MHz	Frequer Mask a	ncy ngle	1Hz 10	> ×
Default: InternalGSM(LiSurvey) GreenValley://211.144.120.104:8888/					
Add	Apply			Save	

View: Select a startup to view the current startup configuration

1.2. Copy and edit

← Rover		÷	Rover		
Datalink type	PDA CORS >	Datalink	type		PDA CORS >
Protocol Port	GreenValley 211.144.120.104:8888	Protocol Port	I	GreenValley 211.144.120.10	04:8888
Save wor	k mode	Frequen	cy	1Hz	>
Mode	CANCEL OK	mask an	igie	[I]	~
	Save			Save	

Copy: Select a startup to copy the current startup configuration.

Edit: Select a startup to edit the current startup configuration.

Note: The default startup items cannot be edited.

1.3. Startup deletion



Delete: Select a startup to delete the current startup configuration(the default startup item cannot be deleted).

2. New startup item

Click 【Add】 and perform the following operations



Communication mode: internal radio/host network/handbook network /QXZC optional, internal radio by default.

2.1. Internal radio

← Datalin	k type		
Datalink type	Internal radio	>	
Protocol	Transparent	>	
Channel	6	> ((0))	
Internal radio)		
Internal GSM			
PDA CORS			
L-Band			
	Confirm		

1) Protocal: options from the drop-down list include: TT450S、Transparent、MAC、South;

2) Channel: Please refer to the following table for the corresponding frequency value of the channel;

3) Frequency: Users can manually input the operation of radio frequency power, or set the frequency through the [+/-] symbol, frequency [+/-] step is 0.0125, reference video Frequency: high frequency: 450-470MHZ, medium frequency: 430-450 MHZ, low frequency: 410-430 MHZ;

Frequency table of radio channel

Channel	Frequency
Customize	Customize
1	455.0500
2	456.0500
3	457.0500
4	458.0500
5	459.0500
6	460.0500
7	461.0500
8	462.0500
9	463.0500

2.2. Network boot

Network: Host network and handbook network, their Settings are exactly the same.

Protocol: CORS, GreenValley, TCP。

2.2.1.CORS protocol

← Datalink type		← Transfe	er correction data
Datalink type	PDA CORS >	Datalink type	Internal radio >
Protocol	CORS >	Protocol	Transparent >
	APN 🐼	Power(W)	2.0 >
Server	GreenValley -	Channel	6 > ((0))
DNS/IP address	211.144.120.104	Frequency(MHz)	- 460.0500 +
Port	8888	Range(400-480MHz))
Source List	03102941 - 🗸		
User			
Password			
1021-1022			
Confirm			ок

1)APN: The information about the dial-up Internet access supported by the SIM card needs to be set separately for the Intranet or dedicated card. For details, see the following.

2)Server: The current name of the server can be quickly selected from the drop-down list or entered or changed on the current page.

3)DNS/IP address: The IP address or web address of the server center (for example, rtk.ntrip.qxwz.com); it can also be directly input or changed in the current interface.

4)Port: The port of the server center can also be input or changed in the current interface;

5)Source List: select by quickly droping down, or enter or change in the current interface.

6)User/Password: The user name and password for logging in to the CORS center can also be entered or changed on the current screen.

7)1021-1022、1023-1024、1025-1027: Coordinate conversion parameters broadcast by CORS station;

8)Data forwarding: forward the network differential data through the internal radio. It is turned off by default and can be manually turned on to set the relevant internal radio parameters.

9)VRS using: VRS is a virtual reference station, which can be used or not used.

Note: Mode supports handbook network and host network CORS.

APN setting

← Datalink	type
Datalink type	Internal GSM >
Protocol	CORS >
APN	
APN	
User	
Password	
	CANCEL OK
Password	
Transfer correctio	No transfer >
	Confirm

The APN name, user name and password are configured based on the SIM card support or the dedicated card network.

Add service:

÷ ∻	Service account manager		← Add/Modify
Name	Address	User	Name
GreenValley	211.144.120.104:8888		DNS/IP address
QXWZ	203.107.45.154:8003	qxwgk00	Port User Password
	Add		ок

The server can directly select the server name that has been stored in the server management, and it can be applied directly. You should add the following information: Name DNS/IP address. Port User name Password.

2.2.2.GreenValley protocol

← Datalink	< type		
Datalink type	Internal GSM		>
Protocol	GreenValley		>
APN	CMNET	×	ବ୍ର
Server	GreenValley	•	≣
DNS/IP address	211.144.120.104		
Port	8888		
BaseName		•	$\underline{\downarrow}$
Confirm			

1) APN: The information about the dial-up Internet access supported by the SIM card needs to be set separately for the Intranet or dedicated card. For details, please refer to the CORS protocol.

Server: The current name of the server can be quickly selected from the drop-down list or entered or changed on the current page.
DNS/IP address: The IP address or web address of the server center (for example, rtk.ntrip.qxwz.com); it can also be directly input or changed in the current interface.

4) Port: The port of the server center can also be input or changed in the current interface;

5) Name of base station: Obtain the source list corresponding to the current server center IP address and port (storing historical calls), or you can also customize the input;

Note: Base station name: the name of the base station set in the current protocol. After the rover station obtains the name, it needs to be selected to access differential data normally (because CDC+ server software uses NTRIP protocol).

2.2.3.TCP protocol

← Datalink type				
Datalink type	Internal GSM	>		
Protocol	ТСР	>		
APN	CMNET	ଚ୍ଚ		
Server	GreenValley -]:≡		
DNS/IP address	211.144.120.104			
Port	8888			
Confirm				

1) APN: The information about the dial-up Internet access supported by the SIM card needs to be set separately for the Intranet or dedicated card. For details, please refer to the CORS protocol;

2) Server: The current name of the server can be quickly selected from the drop-down list or entered or changed on the current page;3) DNS/IP address: The IP address or web address of the server center (for example, rtk.ntrip.qxwz.com); it can also be directly input or changed in the current interface;

4) Port: The port of the server center can also be input or changed in the current interface;

Note:

- 1. TCP communication does not require any authentication user name and password, and is generally used on the area network. If the TCP service is used on the Internet, security cannot be guaranteed.
- 2. There are no restrictions on TCP logins.

2.3. Start saving

← Rover	
Datalink type	Internal radio >
Protocol	Transparent
Frequency	6/460.0500
Save wor	k mode
Mode	
	CANCEL OK
	Save

The name must be entered. Click "OK" to complete the saving, and click "Cancel" to cancel the saving item.

Note:

- 1. A prompt will pop up to give instructions when saving with the same name.
- 2. It cannot be modified in the startup items once the name is saved. (Please save the name according to your own homework needs).
Base Station

Icon meaning		
lcon	Meaning	
(0)	Internal radio	
0	Receiver network	
(¹)	External radio	

Main interface-> 【Device】 > 【Base】。

÷	Base	
Currer	nt Mode: Rover-Internal r	adio
Work	mode list	
())	Default: InternalRadi Internal radio: 6/460.05	0 00MHz, 2.0W
(Å)	Default: ExternalRad External radio: 6/460.03	io 500MHz, 30W
0	Default: InternalGSN GreenValley://211.144.	I(LiSurvey) 120.104:8888/
	Add	Apply

Tips: Check the current mode, and if you need to change it, add it or use the default startup mode. The startup list displays the used mode and configuration information. Default startup: The default startup item cannot be edited and deleted.

Base station:

- 1. Start the base station with internal radio:
- a. Internal radio: transparent transport protocol
- b. Transmitted power: 2W
- c. Channel frequency: 6-460.0500
- d. Start mode: automatic coordinates
- e. Differential mode: RTCM (3.2)
- f. Mask angle: 10°
- 2. Start the base station with external radio:
- a. External radio baudrate: 38400
- b. Start mode: automatic coordinates

c. Differential mode: RTCM (3.2)

d. Mask angle: 10°

3、 Internal GSM transmission

- a. Protocol: GreenValley
- b. Address: 211.144.120.104

```
c. Port: 8888
```

d. Start mode: automatic coordinates

e. Differential mode: RTCM (3.2)

f. Mask angle: 10°

Note: The default base station startup items are all automatic base station mode, and the base station automatically obtains coordinates after startup.

1.Startup parameters

Long press the list data to enter editing mode.

1.1.Startup item view



View: Select a startup to view the current startup configuration

1.2.Startup copy and edit

← Base		÷	Base		
Datalink type	Internal radio >	Datalink t	type	1	Internal radio >
Protocol Frequency	Transparent 2.0W/460.0500	Protocol Frequenc	y	Transparent 2.0W/460.050	0
Save wo	rk mode	Differenti Start mod	ial mode de	RTCM3.2 Auto base	>
Mode		Mask ang	gle	10	×
	CANCEL OK				
	Save			Save	

Copy: Select a startup to copy the current startup configuration.

Edit: Select a startup to edit the current startup configuration.

Note: The default startup items cannot be edited.

1.3.Startup deletion

Car	ncel	1	selected	
Currer Work	nt Mode: mode lis	Rover-Int	ernal radio	
	(1)	Default: Internal r	InternalRadio adio: 6/460.0500MHz,	2.0W
	"Å	Default: External	ExternalRadio radio: 6/460.0500MHz	, 30W
	0	Default: InternalGSM(LiSurvey) eenValley://211.144.120.104:8888/		
			Delete	
			Generate QR code	•
(E) Deta	iil	⊕ Copy	ビ Modify	:

Delete: Select a startup to delete the current startup configuration(the default startup item cannot be deleted).

Generate QR code: Select an item to activate, and the QR code can be generated.

Note: The default startup items cannot be deleted.

2.New startup item

Click 【Add】 and perform the following operations

← Base		← Base	
Datalink type	Internal radio >	Datalink type	Internal radio >
Protocol Frequency	Transparent 2.0W/460.0500	Protocol Transpare Frequency 2.0W/460	ent).0500
Differential mode	RTCM3.2 >	CMR	
Start mode	Auto base >	RTCM3.0	
Mask angle	10 ×	RTCM3.2	
		RTCM3.2(MSM5)	
		RTD	
	Save	Save	

Communication mode of base station: Internal radio/Internal GSM/External radio can be selected, internal radio is default.

Differential mode: five differential are opional, the default is RTCM3.2.

Start mode can be auto base or fix position.

Mask angle: the maximum Angle of the receiving satellite signal, input range between 0 and 90 degrees (excluding 90 degrees).

2.1.Internal radio



1) Protocal: options from the drop-down list include: TT450S、Transparent、MAC、South;

2) Power: default is 2W, 1W/0.5W can be selected;

3) Channel: Please refer to the following table for the corresponding frequency value of the channel;

4) Frequency: Users can manually input the operation of radio frequency power,or set the frequency through the [+/-] symbol, frequency [+/-] step is 0.0125, reference video Frequency: high frequency: 450-470MHZ, medium frequency: 430-450 MHZ, low frequency: 410-430 MHZ; Note: The base station has more power options than the rover: in the drop-down list: 0.5, 1, 2.

Frequency table of radio channel

Channel	Frequency
Customize	Customize
1	455.0500
2	456.0500
3	457.0500
4	458.0500
5	459.0500
6	460.0500
7	461.0500
8	462.0500
9	463.0500

2.2.External radio

← Datalink	c type		
Datalink type	External	radio	>
Setup SDL			
SDL	С) SDL1	
Protocol	Transpar	rent	>
Power(W)	30		>
Channel	6		> ((0))
Frequency(MHz)	—	460.0500	+
Range(400-480MHz)			
Air baudrate	9600		>
BaudRate	38400		>
Confirm			

1) Protocal: options from the drop-down list include: TT450S $\$ Transparent $\$ MAC $\$ South;

2) Power: default is 30W, 2W $_{\sim}$ 5W $_{\sim}$ 10W $_{\sim}$ 15W $_{\sim}$ 20W $_{\sim}$ 30W can be selected;

3) Channel: Please refer to the internal radio;

4) BaudRate: the default is 38400, 4800 \smallsetminus 9600 \checkmark 19200 \checkmark 38400 \checkmark 57600 \checkmark 115200 are available;

5) Air baudrate: default is 9600, 9600 \smallsetminus 19200 are avaliable.

2.3.Internal GSM

Protocol: CORS, GreenValley.

2.3.1.CORS protocol

← Datalini	k type	
Datalink type	Internal GSM	>
Protocol	CORS	>
APN	CMNET	෯
Server	GreenValley	- : =
DNS/IP address	211.144.120.104	
Port	8888	
BaseName		- - ↓
User		
Password		
	Confirm	

1)APN: The information about the dial-up Internet access supported by the SIM card needs to be set separately for the Intranet or dedicated card. For details, see the following;

2)Server: The current name of the server can be quickly selected from the drop-down list or entered or changed on the current page; 3)DNS/IP address: The IP address or web address of the server center (for example, rtk.ntrip.qxwz.com); it can also be directly input or changed in the current interface;

4)Port: The port of the server center can also be input or changed in the current interface;

5)Source List: select by quickly droping down, or enter or change in the current interface;

6)User/Password: The user name and password for logging in to the CORS center can also be entered or changed on the current screen.

APN setting

← Datalini	k type	
Datalink type	Internal GSM	>
Protocol	CORS	>
APN		
APN	CMNET ×	
User		
Password		
	CANCEL OK	
Password		
	Confirm	

The APN name, user name and password are configured based on the SIM card support or the dedicated card network. Add service:

← s	ervice account manager		← Add/Modify
Name	Address	User	Name
GreenValley	211.144.120.104:8888		DNS/IP address
QXWZ	203.107.45.154:8003	qxwgk00	Port User Password
	Add		ОК

The server can directly select the server name that has been stored in the server management, and it can be applied directly. You should add the following information: Name DNS/IP address. Port User name Password.

2.3.2. GreenValley protocol

← Datalink type			
Datalink type	Internal GSM	>	
Protocol	GreenValley	>	
APN	CMNET	ବ୍ର	
Server	GreenValley	- : =	
DNS/IP address	211.144.120.104		
Port	8888		
BaseName		- <u>↓</u>	
Confirm			

1) APN: The information about the dial-up Internet access supported by the SIM card needs to be set separately for the Intranet or dedicated card. For details, please refer to the CORS protocol.

2) Server: The current name of the server can be quickly selected from the drop-down list or entered or changed on the current page.3) DNS/IP address: The IP address or web address of the server center (for example, rtk.ntrip.qxwz.com); it can also be directly input or changed in the current interface.

4) Port: The port of the server center can also be input or changed in the current interface;

5) Name of base station: Obtain the source list corresponding to the current server center IP address and port (storing historical calls), or you can also customize the input;

2.4.Start saving

← Base	
Datalink type	Internal radio >
Protocol	Transparent
Frequency	2.0W/460.0500
Save wor	k mode
	CANCEL OK
	Save

The name must be entered. Click "OK" to complete the saving, and click "Cancel" to cancel the saving item.

Note:

- 1. A prompt will pop up to give instructions when saving with the same name.
- 2. It cannot be modified in the startup items once the name is saved. (Please save the name according to your own homework needs).

3.Start startup item

The receiver will automatically get current coordinates when the startup item is auto base.

You need enter known coordinate when the startup item is fix position.

1)Library choose: Select a known point from library.

2)Get: Get a point with GNSS.

← FixPosi	tion
Base station coor.	Library choose Receive
Name	
Code	
Display type	Local grid coordinate >
Ν	
Е	
Z	
Slant(S)	1.800
С) Bottom of device(H) 🔘 Slant(S)
Antenna type	AT1 >
	ок

Device Info

Main Interface-> 【Device】-> 【Device Info】.

← Device Info		
Device info	601AJ-219A2-1 2021/12/01 16:44:21	>
Auto start	Close	>
Solution mode	Reliable mode	>
Datalink type	Internal radio > None	>
Information	Signal, power	>
Register	Register Status	>
Freset	Restart	>

1) Restart: restart the connected receiver;

2) Factory reset: restore the connected receiver to factory settings;

3) Data link: the current working parameter information of the receiver. In the case of a manual network, the connection and disconnection of data links are provided.

← Status		← State	JS
Datalink type	PDA CORS	Datalink type	Internal radio
Server	211.144.120.104	Transfer corre	ctioNone
Port	8888		
Source List	03102941		
Transfer correction	None		
	Disconnect		

Location Information

← Positio	n Info		← Positio	n Info	
N E Z	2607 608.233 2607 43.373 26 591	1	Time Geoid Shift	26-05-2022 17:53:24 unused	5
Status Diff delay(D) Time	Fixed 1.000 26-05-2022 17:53:2	21	H.RMS V.RMS RMS	0.004 0.008 0.003	
Geoid Shift H.RMS V.RMS RMS	unused 0.004 0.008 0.003		PDOP HDOP VDOP TDOP	0.821 0.425 0.702 0.485	
PDOP HDOP VDOP	0.821 0.425 0.702		GDOP Tilt offset	0.953 YES	1
TDOP GDOP	0.485 0.953		North offset Eastern offset Height offset	0.449 0.535 -1.727	2
Tilt offset North offset	YES 0.447	0.751175	Tilt angle	0.007 21°44'19.92120"	
POSITIONING	BASE	SATELLITE	POSITIONING	BASE	SATELLITE

Main interface-> [Device] -> [Location Information] -> [Location].

1) Coordinate information: default N/E/Z, click to switch to B/L/H, such as 1 mark;

2) Differential status: It is displayed according to the current receiver mode and positioning, such as: the base station is displayed as the base station; the mobile station is: single point, differential, floating, fixed;

3) Accuracy index: HRMS, VRMS, RMS value;

4) Satellite accuracy factors: PDOP, HDOP, VDOP, TDOP, GDOP;

5) Differential delay (D): The time of data delay, which will be displayed in the current status bar;

6) Time: the time information output by the current GNSS;

7) Tilt compensation: None by default. If there is, it will display the current compensation value such as 2 mark.

Navigation base station

Main interface-> [Device] -> [Location Information] -> [Base station], View coordinate information of rover station, etc.



Note: The base station navigation information must be available in the differential state.

Satellites Information

Main interface-> [Device] -> [Location Information] -> [Satellite].

1.Satellite Map

By default, GPS, BDS, GLONASS, and GALILEO are ticked by default, and a certain type of satellite is blocked, so the differential calculation does not use such satellite calculation applications. As shown below:



2.Signal to noise ratio

The current Signal-to-noise ratio diagram is displayed, with the green line representing the best L1 value and the red line representing the best L2 value:



3.Satellite List

The contents displayed in sequence include serial number, satellite, azimuth, altitude Angle, L1/B1, L2/B2, L5/B3; In the figure, black represents the satellites participating in the calculation, and gray represents the satellites not participating in the calculation.

÷	Po	sition	nfo					
SK	Y VIEW		SI	SNR		LIST		
No.	Sat	Azi	Ele	L1	L2	L5	B1C	B2A
1	C04	116	30	36	42	40	0	0
2	C27	101	22	46	0	46	42	45
3	C29	319	38	44	0	43	37	41
4	C30	52	64	52	0	50	49	49
5	C32	63	53	53	0	54	51	52
6	C38	337	67	47	0	45	44	46
7	E05	104	41	41	46	46	-	•
8	E09	51	18	47	46	46	-	•
9	E34	8	56	49	52	50	•	
POSI	TIONIN	G	BA	SE		SA	TELLI	TE

Register

Main Interface-> [Device] -> [Register].

1) Registered function status: Beidou, globalization, base station, rover station;

2) Registration code: The registration code input area of the software; you can also quickly scan the QR code to register, click "Register" and verify the correct registration code to complete the registration operation.

Static

Main Interface -> 【Device】->【Static】.

1. Local storage

[Local storage] -> [Start recording] The status is as follows:

← Static		← Static	
 Cartering Path File name Station name Antenna Sampling(s) 	Controller /GreenValley/ls/Raw > 20220518_163236 01 × ♥ 1.800 1Hz >	 Static Path File name Station name Antenna Sampling(s) 	Controller /GreenValley/ls/Raw > 20220518_163236 01 ♀ 1.800 1Hz > 00:03
	Start record		Stop record

1) Recording mode: local storage by default;

2) Path: default GreenValley/ls/raw, modifiable;

3) File name: By default, the file name is the creation time of the current task. Users can also customize the file name;

4) Station: blank by default, user-defined;

5) Antenna: 2 meters by default, user-defined;

6) Sampling interval: 1s by default, user-defined.

Note: if the user exits, it will prompt whether to keep the record, if so, continue to record, select "Cancel" to stop recording and close the interface.

When the record is completed, you can directly click the path to view the file in the format of XXX.cnb.

H-Terminal

Main interface-> [Device] -> [H-Terminal], send commands to the board through the terminal to operate the receiver.



1.Send

	←	H-Terminal	
10. 3.0 (00) 100 100 100 100 100 100 100 100 100	000,0.0 00,2.00 00%* H \$GPYBI IMEA,C 10,2151 980e-07 11,45,5 PGGA,1 0.0.0.5	00,COM3,RTCM1033,BINARY,ONTIN 0,*6f4885f0 0	Clear Pause Save 55 1,2022,5, 295275,E,
\$0	log b	estposb ontime 1	74
8 ∢ ⊘	log c	om1 bestposb ontime 1	? 26,114551
#T 22 80	log s	atmsg ontime 1	ID,-1.0765
17 \$0	log c	om1 satmsg ontime 1	995275,E,
\$0 •	log c	omconfiga	• • 7 • 1 • • 7 •
88	log lo	ogiista	Send
Ŀ	og		Jenu

Send by input related commands, command input has the function of automatic completion. (Whether the instruction is valid depends on whether the currently connected hardware supports it.)

The receiver can be set or debugged by instructions, and the conventional application commands are embedded inside. After input, the required commands will pop up.

2.Clear and pause



Click the clear button to clear the current interface, and click the pause button to stop scrolling the current interface.

3. Instruction set

Click the instruction, and the instruction set pops up. The first line is the new instruction set, and the rest is the defined instruction set.

÷	H-Terminal		
80980e-07, 17,11,46,10 \$GPGGA,11 0,00,0.0,50 \$GPZDA,11 D 220 A D 22 A D 22 A D 22 A D 2 AD 2 A D 2 AD 2 A D 2 ADD 2 ADD 2 ADDDDDDDDDDDDD	0.000000000e+00,-1 1000,VALID*592f4a31 14610.00,3033.10500 5877,M,0.000,M,,*50 4610.00,17,05,2022,, 0.00Z 0 0.000000,000 A 0 F 0 0 F 0 0 0 M2,0,60.0,UNKNOWN 39.000,0000000,000 0.000000000e+00,-1 000 VALID*7201507	7.99999999942 45,N,11430.29 *64 � D III � � � W H & II � W H & II � Y B M,S N0901: I, I0,1114;INVALI 7.99999999942	Clear 95275 E, Pause Save ? 2626,114 D,-1.0765 1,2022,5,
		Co	ommand
New			
Curre	nt output message		
Log re	egsource		
Log re	eglist		
Log s	ysconfig		

3.1 Instruction set creation

Click New Instruction Set to create a new instruction set.

	÷	H-Terminal		
♦ b 9.0 #TI 221 809 17	0, 0, MEA,C 10,215 80e-0] A F JUq ,0,0,,,,,,,*5C OM2,0,60.0,UN 197.000,000000 7,0.00000000000	©\$GPYBM,SN090 KNOWN, 000,0000,1114;INV e+00,-17.99999999	ALI Pause 5,
\$0,0 \$0	Cu	stomized o	command	÷,
Ť	Nan	ne		
	Con	nmand		
l			CANCEL	ок
	Log	regsource		
	Log	reglist		
	Log	sysconfig		

Antenna Settings

Main interface -> [Device] > [Antenna Settings].



1.Vertical height

Height: Enter according to the actual measurement value.

1.1. Add antenna

← Modify a	intenna
Name	1 ×
R(R)	1.0000
Middle(L)	1.0000
Phase center to bottom(V)	1.0000
	H:Bottom of receiver S:Slant R:Radius V:Distance from bottom to phase center L:Receiver mark to phase center H+V-L:Ground point to receiver mark i=H+V:Ground point to Phase center $i = \sqrt{S^2 - R^2} + L$
	ок

1.2.Edit antenna

You can long press to edit and delete the antenna type, the default type cannot be deleted.

÷	Antenna manage	er		
Name	R(R)	Mid	dle(L)	Bottom(V)
AT1	0.0615	0	0243	0.0623
1	1.0000	Modif	Delete	1.0000
	Ad	d		

Select an antenna and delete it.



Note: Click [OK] in the upper right corner and the software prompts "Antenna setting is successful" after the antenna setting is completed.

2.Pole Height

The default pole height is 1.80, and the slant height can also be selected. Height: input according to the actual measurement value.



Other settings are the same as above.

Note: Custom antennas are stored in the task by default.

0183 Output

Main interface -> [Device] -> [0183 Output].

← NMEA 0183 Output	← NMEA 0183 Output		
NMEA port Bluetooth >	NMEA port Bluetooth >		
Baud rate 115200 >	Baud rate 115200 >		
Continue output when receiver restart Continue output when receiver restart			
Data transfer	Data transfer		
NMEA Туре	Serial port		
GPGGA 1.0 × s GPRMC 1.0 s	Bluetooth		
GPGLL 1.0 s GPVTG 1.0 s	GPGLL 1.0 s GPVTG 1.0 s		
GPGRS 1.0 s GPZDA 1.0 s	GPGRS 1.0 s GPZDA 1.0 s		
GPGSA 1.0 s GPGSV 1.0 s	GPGSA 1.0 s GPGSV 1.0 s		
GPGST 1.0 s	GPGST 1.0 s		
ок	ОК		

1) Output port: default com1, you can choose Bluetooth.

2) Baud rate: default 115200, selectable from: 4800-115200.

3) Restart the receiver to output normally: It means that the output settings are saved, and the message is still output after restarting the receiver.

4) Output message: Select all to default to all messages, or select GPGGA, GPGSV, GPRMC, GPGSA, GPGRS... as shown in the figure, click "OK" to complete.

5) Data forwarding: Turn on data forwarding, enter the server and port, and the current receiver message will be forwarded to the server.

← NMEA 0183 Output				
NMEA port	Bluetooth >			
Baud rate	115200 >			
Continue output when receiver restart				
Data transfer	-			
Server				
Port				
NMEA Type				
GPGGA 1.0	×s ✓ GPRMC 1.0 s			
GPGLL 1.0	s SGPVTG 1.0 s			
GPGRS 1.0	s SGPZDA 1.0 s			
ок				

Debug Data

Main interface-> 【Device】-> 【Debug Data】。

1.Debug Data

← Debug D	ata	← Debug Da	ta
Path	/GreenValley/Is/Raw >	Path	/GreenValley/Is/Raw >
File name	20220518_163721	File name	20220518_163721
Message list	Click >	Message list	Click >
	Start record	٤	Stop record

The measurement results can be viewed in GreenValley/ls/Raw , opened by notepad.

Survey

Survey includes below modules:

TopoSurvey

• Option

MappControl Survey

Detail Survey

AutoSurvey

Stake Point

Stake Line

Stake Arc

Stake CAD

Area Survey

Road Design

Road Stake

Road Store

Surface Stake

PPK

Feature Survey


Topo Survey

Interface icon meaning						
lcon	Meaning	lcon	Meaning			
Que Layer	Layer Options	@	Settings			
с ¬ ц ј	Full screen center		Point Library			
*	Single Perspective		File			
¥	Multi-view	Ê	Solution reset			

Main interface -> [Measurement] -> [Point Measurement] .



Inertial Navigation Inclination Measurement

Connect the GreenValley LiBase receiver and use the inertial navigation tilt measurement function. Inertial Navigation Inclination Measurement IMU (English Inertial measurement unit, IMU for short).

Click the **[**Tilt**]** button on the left to turn on the tilt measurement function, and a text prompt is displayed in the figure: Tilt is unavailable and needs to be initialized; Before initialization, set the pole height: set the antenna position and set the pole height;

Initialization steps:

1. Click the tilt icon on the right: prompt to confirm the height of the rod, click Modify to jump to the modification interface;



1. Stand the receiver horizontally for about five seconds: the icon and voice prompts keep the receiver still;



1. Slowly shake the receiver back and forth with the panel toward you (large amplitude, low frequency shaking);

2. The receiver slowly rotates 90 degrees;



1. Slowly shake the receiver back and forth (large amplitude, low frequency shaking);



1. The initialization is complete: Click the [Hide] button in the prompt box to hide the prompt information; you can check the [Auto hide after initialization] to automatically hide the prompt information after the initialization is completed. After the initialization is completed, the measurement interface displays a bubble box;



Graphical measurement

Graphical measurement can specify measurement points, line segments, polylines, squares, rectangles, polygons, circles, arcs, and curves; when measuring, select the graphic icon to be measured, click the measurement button, measure the first point, and then follow the prompts on the interface, one by one. The measurement point completes the measurement of the graph.



Graphic measurement steps:

a) Point: Click to select "Point", click the measurement button to complete the measurement;

b) Line segment: Click to select "Line segment", measure the first point and the second point to complete the measurement of the line segment, after measuring the first point, click [Cancel] to cancel the first point;

c) Polyline: Click to select "Polyline", measure the first point, the next point and other points to complete the measurement of the polyline. After measuring the first point, click [Cancel] to cancel the previous measurement point;

d) Square: Click to select "Square", measure the diagonal point 1 and the diagonal point 2 to complete the measurement. After measuring the first point, click [Cancel] to cancel the previous measurement point;

e) Rectangle: There are two ways to measure the rectangle. 1: Origin + width limit point + height limit point, automatically form a rectangle after measuring three points; 2: Center point + width limit point + height limit point, automatically form a rectangle after measuring three points; click [Cancel] to cancel the previous measurement point;

f) Polygon: measure at least three points to form a polygon. After measuring three points, click the [Finish] button to form a polygon; click [Cancel] to cancel the previous measurement point;

g) Circle: There are two ways to measure a circle. 1: The center of the circle + a point on the circle, the measurement is completed to automatically form a circle; 2: The three points measured are three points on the circle, and the measurement is completed to form a circle, click [Cancel] to cancel the previous measurement point;

h) Arc: measure three points to form an arc, click 【Cancel】 to cancel the previous measurement point;

Curve: Measure at least three points to form an arc, click [Finish] to form an arc; click [Cancel] to cancel the previous measurement point;

1. Layer



Layer: You can choose to open point name, code, elevation, map, and apply it according to user needs.

2. Code

\leftarrow Setting		÷	Topo Survey		
Survey Display	Road Tilt survey	ррк			
Fixed		Layer	i.		@.
Duplicate name		• 53		0723	Elem
Auto save	1	•		PB	Tapo Survey
Code measure		<u>í</u> MU		∇m	
Save PPK data		•	2		i h
Occupation time	5		J int02	line	+
Point stepsize	1	Name p10		Antenna 🍸 1.800	5
Staking range	0.500	Code line	•		\odot
Staking alarm 2	0.020	N: BORES	•03.720 2.076		Status: Fixed
	ОК	£	22/22		D:1 H:0.003 V:0.002

Enter the option settings, click the icon 1 to enable quick measurement using common codes, click the icon 2 to save the settings, return to the measurement interface, as shown in 3, click the plus sign to add a common code, and then click any desired code as shown in the icon, Measurement operations can be performed quickly and directly.

3. Auto save point

Enter the option setting, close the automatic save point, return to the measurement interface to perform the measurement operation, and the save point interface will pop up.

← Setting			← p11	
Survey Displa	y Road Tilt survey	РРК	Name	p11
Fixed			Code	line
Duplicate name			Comment	
Auto save			Bottom of device(H)	1.800
Code measure				Bottom of device(H) Slant(S)
Save PPK data		0	Antenna type	1
Occupation time	5	×	N	sasasi)3.712
Point stepsize	1		E	13126 2.077
Staking range	0.500		B	₩.723 \$383£**07.18228"N \$383£**17.36105"E
Staking alarm	0.020		H	题;723 Eived
	ОК		Image tag	ок

4.Options

← Topo Survey	← Setting
	Survey Display Road Tilt survey PPK
€ Layer 3 @	Fixed
	Duplicate name
Table Survey	Auto save
Bottom of device(H) 1 800	Code measure
Bottom of device(H) Slant(S)	Save PPK data
ок	Occupation time 5
Name p11 Antenna \$ 1.800 1 5	Point stepsize
	Staking range 0.500
N:= = 03.718 Status: Fixed	Staking alarm 0.020 4
E:= 2.076 Z:5 = 1.708 € #70 222/22	ОК

1) Pole height setting: Click to enter 2 as shown in 1 to enter the pole height quick setting.

2) Option setting: Click to enter as shown in 3 and then click 4 to complete the setting (please refer to the option setting operation for the specific option setting content).

3) Point library: Click on the right column "point library" to execute, enter the point library operation.

Note: Please refer to Measurement Options for details.

5. Save PPK data

1) Open and save PPK data: a pop-up prompt to set the PPK file will pop up.

← Setting			🔶 Торо Survey	
Survey Displa	ıy Road Tilt survey	РРК		() 102 m
Fixed			Sector Layer	0
Duplicate name			[]	Bem
Auto save		•	Prompt	1920 19
Code measure			After open the buttor storage files.	n,need to setup
Save PPK data			Setting in [File] toolba [Save PPK data] butte	ar or turn off the on.
Occupation time	5	×		ок
Point stepsize	1		+	-
Staking range	0.500		Name p1 Anten	na 🌱 1.800 5
Staking alarm	0.020		N: 3: 03.687	Status: Fixed
	ок	E	2.072 68 \$22/22	Z: 😳 .656

2) Click the file icon on the right to jump to the PPK file management interface. For details, see PPK Survey.

← PPK file	manager	
20220520.cnb 20-05-2022 16:13:12	2	3642630byte
20220526.cnb 26-05-2022 14:28:34	1	359472byte
Refresh	Open	Add

6. Inclination point measurement

1) Click the normal point icon on the right, and a selection box will pop up to select the inclined point.

2) Click on the measurement to enter the tilt point measurement, and the antenna can be set.

Note: Inclination point measurement means collecting four tilt points at the same position to obtain more accurate measurement points.



7. Eccentric point measurement

1) Click the normal point icon on the right, and a selection box will pop up to select the eccentric point.

2) Click the measurement icon to pop up the eccentric measurement parameter setting box, set the parameters, and click OK to complete the measurement.

🔶 Торо	Survey
Offset su	irvey Parameters
H.distance	H.distance(AP')
V.distance	V.distance(PP')
Azimuth	ddd.mmsssssss
	CANCEL OK
Name p12 Code line	Antenna Y 1.800
N: 💷 2003.711	Status: Fixed
E:302.062	Z: =712
B70 \$22/23	D:1 H:0.002 V:0.002

8. Indirect measurement

1) Click the normal point icon on the right, and a selection box will pop up to select indirect measurement.

2) There are three selection methods for A and B: custom input; point library selection; direct measurement;

3) L1, L2: Custom input.

Note: The L1 and L2 inputs conform to the triangular relationship rule, that is, "L1+L2 is greater than the distance between points A and B".



9. Solve reset

Click [Settings] -> [Display] -> [Safe Mode] to open, and the solution reset function will appear on the point measurement interface. [Solution reset] : Re-acquire the differential signal to prevent flying spots.



Options

Main interface -> [Measure] -> [Measure] / [Stakeout] ->Options.

Measurement Stakeout

Click the option icon on the right interface to enter.

← Setting			
Survey Display	Road	Tilt survey	PPK
Fixed			
Duplicate name			
Auto save			
Code measure			
Save PPK data			
Occupation time	5		×
Point stepsize	1		
Staking range	0.500		
Staking alarm	0.020		
	ок		

Description of measurement stakeout:

1) Fixed solution: It is checked by default. After canceling it, the stakeout point can be measured without limiting any accuracy;

2) Allow same-name points: the roll call can be repeated when it is opened, and a prompt will pop up when the roll call is repeated when it is closed;

3) Automatically save points: when the measurement point is completed, a confirmation interface will pop up;

4) Use common codes for quick measurement: open the selection box to use common codes, and close the selection box without common codes;

5) Save PPK data: when opening, click OK to pop up a prompt to select a PPK file;

6) Measurement times: 5 times by default, users can customize the settings;

7) Rolling step: default 1, user can customize the setting;

8) Stakeout range: the default is 0.500 meters, the user can customize the setting (large circle);

9) Alarm difference: the default is 0.02 meters, the user can customize the setting (small circle), which is mainly different from the stakeout range. When the mobile station is 0.02m away from the stakeout point, an automatic alarm sound prompts, while the stakeout range is only in the circle without any alarm;

10) Output frequency: the default is 1Hz, the user can customize the settings according to the options;

11) Stake-out point name: The name of the measuring point is used by default. You can choose to use the prefix and use the current stake number. If the prefix is used by default FY_, the user can customize and modify the content of the prefix.

Display

Click to toggle - show

÷	Setting			
Survey	Display	Road	Tilt survey	РРК
Direction g	juide N	lorth/South/	East/West	>
Height diff	ref S	take point		>
Height diff	F	ill/Dig		>
Electronic	compass			
Auto cente	ered			
Keep cente	ered			
Display sur	vey points			
Safe mode				
Display ma Re-enter surv	ip vey function afte	er setting		
		ок		

Display description:

1) Direction display: southeast, northwest, front and rear, left and right, azimuth distance;

2) Height difference datum: start point, end point, stakeout point;

3) Height difference display: default positive/negative, optional filling/digging, positive and negative are displayed according to the difference between the stakeout point and the current mobile station position, high is positive, low is negative, filling is low, and digging is high;

4) The electronic compass of the handbook determines the forward direction: it is turned on by default, which means that the electronic compass on the PDA is used as an auxiliary pointing;

5) Automatic centering: enter the starting interface of point measurement, and the measurement arrow is centered;

6) Keep centered: no matter what operation is performed, the measurement arrow is automatically centered;

7) Display historical measurement points: off by default, can be turned on;

8) Safe Mode: The solution reset function can be turned on;

9) Display map: display two map types, map or satellite;

10) Display basemap: multiple display basemaps can be selected;

11) Measurement Boundary: Boundary lines can be added by definition, and measurement points or known points can be used to display in the measurement stakeout graph in real time according to the current defined value.

Note: The settings of the basemap must be re-entered to take effect normally.

measurement boundaries

1) Add border

Click [Add] to enter the add interface, and then enter the new boundary parameter value.

← Survey bo	oundary		← Input	
Display survey bound	ary	•	Name	p4 ×
Name	N	E	Code	
			Attribute	O Inpu O Cont O Stak
			Display type	Local grid coordinate >
			Ν	
			E	
			Z	
0				
Library choose M	ビート Iodify Add	юк		ОК

Return to the measurement interface and display the measurement boundary. If it is not within the boundary, a red prompt will be given.



2) Library selection boundary

Click 【Library Selection】 to enter the selection point interface.

← Survey bou	ndary		Ca	ncel	Please	e select po	pint S	Select all
Display survey boundar	у			Base:K2+48	31.00	5	Auto base	No offse
Name	N	E		 Base:K2 N: I: 55 58 E: I: 55 68 X: 011(Fixe N: I: 55 03 E: I: 55 03 	2+481.0 3.363 976 3.725 092 000_1(0) 3.726 100 000_0(F 3.723 094 000_0(F 3.719 090 rvey	00_0(Bac Z: f5.0 Code: Z: f5.7 Code: Z: f5.7 Code: iixed) Z: f5.7 Code: iixed) Z: f5.7 Code: iixed) Code:	se) 754 0523 757 0523 750 0523 724 0523 Auto base	No offse
Library choose Mo	₫ + : dify Add	ок	C	Stake point Contemporate Point Contemporate Point Contemporate Point Poi		1 + Add		бк

3) Clear the border

Click 【Clear】 or three dots 【Clear】 the border.

← Surve	ey boundary			
Display survey be	oundary			
Name		N		E
(Clear data			
Library choose	M odify	+ Add	:	ок

4) Enable borders

Click OK to apply the measurement boundary.

Safe mode

The safety mode is disabled by default. When the safety mode is turned on, the solution reset function button will appear on the measurement interface.

Click to reset the solution, and the device will obtain the differential signal again.



Road

← Setti	ng				
Survey Di	splay Road	i Tilt survey	РРК		
Station ID	Stake out	of current mile			
Station ID		K0+000.000	+		
cross	🔲 mide	dle stake as a result o middle stak	of the se		
spacing	1.500				
cross		0.000	+		
Cross-section in	ndicator				
left amplitude	60.000				
right amplitude	60.000				
ок					

Road Description:

1) Stake out method: stake out according to stake number, you can select stake stake of current mileage;

2) Stake number: the target stake number of stakeout, the user can define the input, the default starts from the starting stake, which can be added or subtracted quickly;

3) Lateral deviation: the lateral deviation distance on the pile in the road (the lateral deviation on the tangent line), the default distance can choose the offset, the distance is negative on the left and positive on the right, and the offset is offset by the coordinate change of $\triangle x$ and $\triangle y$. If the check box is checked: [Stakes] (as the results of the middle piles), it will be regarded as the results of the middle piles;

4) Spacing: the spacing distance in the lateral direction, the default is 1.5 meters, the user can customize and modify;

5) Horizontal offset: the default distance can choose the offset; the distance is negative on the left and positive on the right; the default value is 0, which can be added or subtracted quickly;

6) Cross-cutting indicator line: Define the length value of the displayed cross-cutting red line. The default width of the left and right widths is 60m, and the user can customize the settings.

Tilt measurement

Connect the receiver with the bubble or inertial navigation tilt measurement function, and click the tilt measurement in [Options] to enable or disable the bar height prompt.

The tilt measurement options are displayed in the options:

← Setting			
Display Road	Tilt survey	РРК	CAD
Tilt survey	Disable Bubble		>
Open pole height prom	pt		
-			
Disable Bubble			- 1
eBubble			- 1
Tilt compensatio	n		
	ок		

Tilt measurement: Disable tilt, electronic bubble, tilt correction.

disable tilt

No bubbles are used.

Electronic bubble

Use electronic bubbles to assist measurement, enter the measurement interface, and bubbles will be displayed.



Tilt correction

Inertial Navigation Inclination Measurement

Description of bubbles:

1) Tilt tolerance: The default is 1 meter, which is determined by the current antenna parameters. When the antenna height is higher, the tilt tolerance will be larger. Generally, the antenna height is 2 meters, and the tilt tolerance is the best value of 1 meter (default bubble tilt angle). 30 degrees);

2) Magnetic field strength: The default is 70, which can be adjusted according to the local magnetic field. You can also click "Device" -"Location Information" to view the current magnetic field strength;

3) Calibration period: 20 days by default, 60 days, 180 days and 360 days can be selected;

4) Magnetometer: read the current receiver magnetometer status and status (calibrated, uncalibrated, calibration expired), you can click "calibration" to calibrate according to the operation diagram;

5) Accelerometer: Read the current receiver accelerometer status and status (calibrated, uncalibrated, calibration expired), click "Calibration" to calibrate according to the operation diagram.

PPK

÷	Setting			
Display	Road	Tilt survey	РРК	CAD
Occupat	ion time	15		×
Init. time	: (s)	300		
Valid SV:	S	7		
Locking	time(s)	10		
SNR		25		
PDOP		6		
		ок		

PPK description:

1) Measurement times: 5S by default, can be customized;

2) Initialization time (seconds): default 300s, can be customized;

3) The number of valid satellites: the default is at least 7 satellites, which can be customized;

4) Locking time (seconds): default 10s, can be customized;

5) Signal-to-noise ratio value: the default is 25, which should be customized according to L1, L2, and L3;

6) PDOP value: default 6, can be customized.

CAD

Display Road T Background color	filt survey	РРК	CAD
Background color			
			White >
Use UCS to capture			
Language			
	ОК		

Background color of CAD basemap: black, gray, white

Use UCS to Snap Points: When this feature is turned on, the user coordinate system is used.

Mapping Survey

1. Mapping Survey

Click [Survey] -> [Iviapping Survey]	rvey] -> [Mapping Survey]	.>	[Survey]	Click
--------------------------------------	---------------------------	----	----------	-------

÷	Mapping Survey		← Mappin	ig Survey
MAPP	ING SURVEY	SMOOTH POINT	Plane tolerance me	et Overall >
N	:∷ ≣ :∺05.495	B :⊡:≣⊒s'07.24128"N	H.RMS	0.020
E	∷ ∎-3.661	L 🕮 🕮 4/17.41896"E	V.RMS	0.030
Z	≝.931	н 🕮.931	Rounds number	3
Solution	Float	VRMS 1063	Round H.RMS	0.020
Namo	mol	×	Round V.RMS	0.030
Cada	0522	^	Sample interval	1
Antenna	¥ 1.8		Fixed	
Dolay	30		Smooth number	10
Delay	50		Smooth precise	
Setting		Start		ок

[Point Name] : The default point name is mp1, and the point name of the root point can be customized.

【Code】: Select the code, please refer to Code Set for details.

[Antenna] : The default is 1.8, and the input can be customized.

[Delay] : The default delay is 30, and the input delay can be customized, that is, the reset delay seconds.

[Start] : Measure the root of the graph. After the smoothing, mapping and reset are completed, the root of the graph is measured.

set up:

[Plane tolerance mode] : There are two ways to choose the overall and each component (dN, dE), that is, the overall tolerance setting or the tolerance setting for each component.

[Graph root plane tolerance] : Set the smooth point plane tolerance, the default is 0.020, which can be defined by yourself.

[Plot root elevation tolerance]: Set the elevation tolerance of the smooth point, the default is 0.030, which can be defined by yourself.

[Number of test rounds] : Select the number of test rounds, the default is 3, which can be defined by yourself.

[Measurement round plane tolerance] : the average tolerance of smooth points between the measurement rounds, the default is 0.020, which can be defined by yourself.

[Elevation tolerance of measurement rounds] : Similarly, the average tolerance of smooth points between measurement rounds, the default is 0.030.

[Sampling interval] : The sampling time interval between smoothing points, the default is 1s, which can be set.

[Smoothing times] : The number of smoothing point measurements in one round, the default is 10, and the minimum cannot exceed 3.

[Smoothing Accuracy] : This part can limit the point coordinates more precisely, all defaults to 0.020.

2. Smoothing Point Data

Displays all measured smooth point data.

÷	Mapping Survey			
MAPF	PING SURVEY	SMOOTH POINT		
Round		the	1 round >	
N XRES	03.678	σ -0.000		
E 3835X	2.066	σ -0.000		
Z 65.741		σ -0.000		
Name	N	E	z	
1	LE 203.680	18 8-2.067	₩ .749	
2	IE ₽03.680	18 ₩-2.066	₩.739	
3	IE ₽03.686	18 8-2.067	₩ .735	
4	IE ₩03.682	18 8-2.065	₽0.734	
5	LE 2003.681	12 ∺-2.065	₽0.738	
6	IE ₽-03.660	IE ₩-2.069	₩752	
	Stop	Pau	ise	

 σ : Represents the error value within a measurement round.

[Measurement rounds] : Display the smoothed point data in each measurement round in this measurement process.

Graph root point export: If you have finished measuring the graph root point, please click [Tasks] -> [Data Export] -> [More Formats] -> [Graph Root Point Results Export] to export. For export details, please refer to Export Data.

Detail Survey

Main interface -> [Survey] -> [Detail Survey] .



The detail survey and point survey tools have the same functions, but the map-related functions are missing.

Automatic Survey

Interface icon meaning					
lcon	Meaning	lcon	Meaning		
Generation Control Con	Layer options	ବ୍ର	Settings		
	Full screen		Point library		
	Single POV	[m²]	Calculate		
(¥)	Multi POV		Mapped point		
Ê	Reset				

Main interface -> [Survey] -> [Automatic Survey].



Auto survey: an uninterrupted measurement method.

When measuring, it must be ensured that the input point name and the differential requirements are met, and the following content must be input:

1) Point name: set the survey point name;

2) Code: Set the survey code, which can be used directly by inputting the code (the input code can be reused by clicking the code box. For details, please refer to Code Collection);

3) Survey method: time/distance, the default time is 1s, which can be modified as needed, meaning that the interval is 1s measurement, and the distance is also the same as the time method (unit is m), which cannot be parallel to the time;

4) Other operations are the same as ordinary survey modes.

When clicking to survey, the point information can be measured only when the accuracy of the current epoch information meets the accuracy in the measurement parameters set by the user. Otherwise, if the user does not stop the measurement, the measurement time will be suspended until the accuracy of the epoch information meets the setting.

Note: The measured distance is a straight line distance.

1.Point Library

Click the point library icon on the right interface to enter.

← Element			
No Base	18		
Base:p1 Survey	6	Auto base	No offset
Stake point	1		
Stake Detail	Q Sear	ch Ad	

For detailed operations, please refer to Point Library.

2.Options

See Survey Options.

Point Stake

interface icon meanings				
lcon	Meaning	lcon	Meaning	
٢	Enable big font display orientation indication	Ø	Disable large font display orientation indication	
\oslash	Show compass	Ą	Show map	
*	Previous stakeout point	>>>	Next stakeout point	
Layer	Layer options	•	Settings	
[]	Full screen center		Point library	
	Single POV	C	Solution reset	
۲	Multi POV	E	Nearest point	

Main interface-> [Measurement] -> [Point Stake] .



When two circles appear in the graph and the viewing angle arrow and the red flag are in the small circle at the same time, it means that the physical point of the stakeout point is found. A large circle means entering the target range circle by default 0.5m, and a small circle means entering the alarm range circle by default 0.02m (for details, see: Stakeout Options).

Graphical indication of stakeout points:

1) The guide bearing scale is displayed in the graph.

2) Stake out point name, click the stake out point name on the picture, you can enter the editing design elevation interface, and modify the elevation.

3) The red arrow represents the location of the rover.

4) The small red flag represents the stakeout point.

5) Direction indication: The default is southeast, northwest, or you can select front, back, left, right, and azimuth in the options.

6) Current status: It is displayed as the fixed status of the current mobile station. If it is a base station, it is displayed as a base station.

7) The rotation direction of the pointer in the figure is the current direction.

1. Point library

If there is no stakeout point in the current task, first enter the coordinate point library. If there is a stakeout point, click the point library icon on the right interface to enter the coordinate point library.

← Element				
Base:p1 Surv	3	Auto bas	e N	o offs
Stake point	1			
O p28 ► N:)))22:05.405 E:)))22:3.950	Z: L Code	.000		
C E Stake Detail	C Sea	ch ,	+ Add	

Point library operation:

1) Stakeout: quick stakeout for point stakeout. 2) For the detailed operation of the coordinate point library, see: Coordinate Point Library.

2. Point Design Elevation


Click the icon 1 in the upper left picture, you can jump to edit the design elevation interface, you can modify the height of the stakeout point (such as the icon 2), and other information can be viewed but not edited.

3. Stake out nearby points

Click near the mark to switch the nearby point stakeout.



4. Turn on the large font display direction indicator



Click the ① icon in the upper left picture to display the large font (mark ②), and click ③ to close the display.

5. Show compass



Click the 1 icon in the upper left picture to display the compass (mark 2), and click 3 to switch back to the map.

6. Options

For details, see Measurement Options.

7. Solve reset

The same point measurement is consistent, and the differential signal function is re-acquired.

Line Stake

lcon	Meaning	lcon	Meaning
<	Previous line	\$	Settings
>	Next line		Point library
S Layer	Layer Options		Line Library
63	Full Screen	Type	Method
*	Single POV	Ê	Reset
¥	Multi POV	0	Endpoint name control

Main interface -> [Survey] -> [Line Stake].



1.Line Library

Click [Line Stake] if there is no stakeout line in the current task, first enter the line stakeout library. If there are stakeout lines, click the line library icon on the right interface to enter the line library.

÷	Stake lir	nes		← Add Lin	e
Inpu	t code or nam	e	Q	Two points	O Point+Azimuth+Distance
Line ty	Name	Start point	End point	Line type	3D line
1	line1	K2+481.000_0	K2+500.000_0	Name	line2 ×
				Code	
				Start point	K2+481.000_2
				N	 01.815
				E	2.475
				Z	- .605
				End point	p4 :=
				N	 02.909
© Stake	E Detail	ビ Import	+ Add		ОК

1.1. Add Line

Lines can be added by two points, starting point + azimuth + distance, and the input information is as follows:

[Three-dimensional line] If selected, it is a three-dimensional line, otherwise it is a two-dimensional line without elevation;

3D Line: The pile points are calculated in space when staking out, and the pile points are calculated horizontally when not selected.

[Name] is the name of the line. By default, the first line of the task is line1 and the second line is line2, and so on. You can also customize the input.

[Code] Line code, you can customize the input, see Code Set for details.

[Starting point] is the starting point of the line, you can customize the input, or click the icon.

[N] Input coordinate numerical value, must be input.

[E] Input coordinate numerical value, must be input.

[Z] Input coordinate numerical value, must be input.

Input when constructing a line with two points

[End point] : It is the end point of the line, which can be customized and input, or click the icon.

- [N] : Input coordinate numerical value, must be input.
- [E] : Input coordinate numerical value, must be input.
- 【Z】: Input coordinate numerical value, must be input.

When starting point + azimuth + distance, enter

【Azimuth】 from the true north as 0 degrees.

[Slope] plus or minus 90 degrees .

【distance】horizontal distance.

[Starting point number] The starting point number when the line is staked

1.2. Stakeout

Click Select Line > to stake out.

1.3. Edit, Import

[Details] Click to select line > [Details] to view or edit lines; [Import] Select the line file to be imported > [Confirm]

1.4. Delete, Clear

[Delete] Click the selected line > [Delete] to delete the selected line;

【Clear】 【…】 > 【Clear】 Delete all lines in the line library;

2.Method

Main interface -> [Line Stake] -> [Method].



2.1. On Line



On the straight line, find the position of the straight line according to the staking direction indication on the interface:

1) Display the length of the line name and the current stake number: the line name is the current stakeout line and the total length, and the stake number shows the stake number where the current mobile station is located;

2) Display line and start and end point: display the name of the current stakeout line and start and end point;

3) Display the traction line of the distance line of the current mobile station: display the traction line of the distance line of the current position of the receiver, and display the dotted line when it is an extension line;

4) Display the connection between the current position of the receiver and the starting point and the ending point;

5) Display the vertical distance between the receiver pole ground point and the line (dotted line).

2.2. Straight Line Stakes



1) Stake distance: the current stake interval distance can be input by the user;

2) Stake number: the current stake number, the stake number refers to the current straight-line distance calculated from the starting mileage of the starting point to the current position (it can be added or subtracted, step by step according to the distance between the stakes, and can also be input by yourself)

Adding stakes and subtracting stakes: The addition or subtraction is performed with the currently set stake distance, and the current stake distance value is displayed when the distance is 20m (simultaneously displayed according to the settings in the method, or can be set directly in this graphical interface).

2.3. Distance Between Points



1) Two-point distance: The currently displayed bearing indication uses the two-point distance height difference, which corresponds to the distance height difference from the start point and the end point, as well as the corresponding horizontal offset and vertical offset.

The graphic display is roughly the same as the graphic on a straight line, and the azimuth indicator shows the distance from two points.

2.4. Stake Offset From Line



1) Horizontal distance: plane distance (left negative, right positive);

2) Vertical distance: vertical distance (upper positive, lower negative);

3) Stake distance: the distance between the current stakes (users can customize the input);

4) Stake number: the stake number to be staked out (additional or subtractive, step by step according to the stake distance, or can be input by definition).

Adding stakes and subtracting stakes: the addition or subtraction is performed with the currently set stake distance, and the current stake distance value is displayed at 20m (simultaneously displayed according to the settings in the method, or can be set directly in this graphical interface).

The graphical interface displays the distance between the current moving site and the current stake and the offset pulling line (when the stake is 0, it is the starting point, and a dotted line is displayed on the extension line), and the distance to the current point plane that needs to be offset is the pulling line.

2.5. Station declination from a straight line



1) Declination: Rotation of stake on the straight line or on the chain of the straight line (positive to the right, negative to the left);

2) Distance: the position of the declination angle of the current required stakeout line. ;

3) Stake distance: the distance between the current stakes (users can customize the input);

4) Stake number: the stake number to be staked out (additional or subtractive, step by step according to the stake distance, or can be input by definition).

The graph displays the currently set rotation angle (if the whole decimal angle is too long to be displayed in the graph, an integer is displayed).

2.6. Segmentation



1) Segmentation: that is, the dividing line;

2) Number of segments: the number of segments currently required to be set (default 1, minimum 1, only integers are supported, addition and subtraction can be customized input);

3) Add segment: add to the next segment;

4) Subtract segment: reduce to the previous segment.

The current segment number is displayed in the graph, and each segment is marked with the current segment and the segment end on the line.

3. Options

For details, see Survey Options.

4. Reset

Reacquire the differential signal to avoid inaccurate spots.

5. Endpoint Name Switch



The Endpoint name switch is mainly used for [Tasks] -> [mport Basemap] -> [Save Line to Line Library], this function is also applicable if [Save Line End Point to Point Library] is checked.

The default endpoint name is displayed, when the endpoint name switch button is clicked, the endpoint name is hidden.

Note: This function is not available when 【Save Line End Point to Point Library】 is only checked.

ArcStake

Interface icon meaning						
lcon	Meaning	lcon	Meaning			
Que Layer	Layer Options	()	Settings			
Г 7 L J	Full screen		Point Library			
*	Single POV		Line Library			
¥	Multi POV	\bigcirc	Direction			
Ê	Reset					

Main interface-> [Survey] -> [CurveStake].

When there is a stakeout arc, enter the stakeout interface; when there is no stakeout arc, enter the arc library.



Staking Graphical Indications:

1) The guide bearing scale is displayed in the graph;

2) The name of the stakeout arc, click the left and right arrows to switch the stakeout previous or next arc;

3) The current stake number is displayed below the stakeout arc name, click the plus or minus sign to add or subtract stakes;

4) The red arrow represents the location of the mobile station;

5) The small red flag represents the stakeout point;

6) Direction indication: the default is southeast, northwest, or you can choose front, back, left, right, and azimuth in the options;

7) Current status: It is displayed as the fixed status of the current mobile station, if it is a base station, it is displayed as a base station;

8) The rotation direction of the pointer in the figure is the current direction.

Stakeout function descriptions:

- 1) Setting: Please refer to Survey Options for details.
- 2) Reset: Re-acquire the differential signal.
- 3) Line library: jump to the curve staking library.
- 4) Point library: Jump to the coordinate point library, please refer to Coordinate Point Library for details.
- 5) Layer: Please refer to Point Survey for details.

Curve Library

Click the curve library icon on the right interface to enter the staking curve library.

÷	Arc sto	re		
Please	e input nam	ie		Q
Line type	Name	Start Pt mile	Length	
(c1	0.000	10.000	
		Sett	ings	
		Impo	ort	
		Expo	ort	
		Dele	te	
		Clea	r data	
(C) Stake	E	(C) Broviou	+	

Curve library operations:

- 1) Stake out: select the line to stake out;
- 2) Details: After selecting the point, you can access the detailed information;
- 3) Preview: Select the curve, click to preview the graph and pile-by-pillar table;
- 4) Setting: Set the stake spacing;

5) Three small points: import (quick import staking curve), export (export existing staking curve), delete (delete staking curve), clear (clear staking curve).

Add Curve

Click the Add button to enter the curve design interface, where you can add circular curves, transition curves, circles and polylines.

- Arc store	← Arc design
Please input name	Line type Arc >
Line type Name Start Pt mile Length	Name c2 ×
С c1 0.000 10.000	Method One Pt >
Settings	Arc
Spacing	Spiral
23.000	Circle
CANCEL OK	Polyline
	z
	Azimuth
	Line length
Image: Constraint of the second se	Confirm

Circular Curves

Methods of adding circular curves: one-point method, two-point method (knowing the arc length), two-point method (knowing the center angle), two-point method (knowing the radius), two-point method (knowing the center of the circle), three-point method; Know the data and choose different ways to add the circular curve.

\leftarrow Arc des	ign	← Arc design
Line type	Arc >	Line type Arc >
Name	c2 ×	Name c2 ×
Method	One Pt >	One Pt
Start Pt mileage		Two Pts(arc length)
	≣ @	Two Pts(central angle)
N		Two Pts(radius)
E		Two Pts(central point)
Z		Three Pts
Azimuth		Azimuth
Line length		Line length
	Confirm	Confirm

Circles

The method of adding a circle: center + radius, three-point method; you can choose different ways to add according to the known data.

← Arc	design	÷	vrc design	
Line type	Circle	Line type	Circle	>
Name	c2 >	Name	c2	×
Method	Central point + Radius	Method	Central point + Radius	>
N E Z		Central Three P	point + Radius ts	
Input start point, o start point	r software will defaultly set the point on the west as	Input start poi start point	nt, or software will defaultly set the point on t	he west as
N		N	:=	2
	Confirm		Confirm	

Spirals and Polylines

For the parameters of spirals, follow the prompts to enter the parameter information;

Add a polyline: Click the [Add] button to enter the point library, select the point to be added and add it to the polyline point, and click [OK] to form a polyline with the selected points in the selected order.

← Arc des	ign	← Arc de	sign	
Line type	Spiral >	Line type	Polyline	>
Name	c2 ×	Name	c2	×
Start Pt mileage		Name	Mileage	N
Ν				
E				
Z				
Azimuth				
Line length				
Start radius	0=∞			
	Confirm	+ Add	Ū Delete	бк

Options

For details, see Survey Options.

CADStake

	Interface icon meaning							
lcon	Meaning	lcon	Meaning					
٢	Turn on enlarged direction display direction indicator	Ø	Turn off enlarged direction display direction indicator					
\oslash	Display compass	\triangleleft	Display map					
<	Last stake	>	Next stake					
Layer	Layer options	ବ୍ର	Settings					
Г Л Ц Ј	Full screen		Point library					
	Single POV	Ľ	Nearby Points					
۲	Multi POV	Q	Search					

Main interface -> [Survey] -> [CADStake] Click the data to import background, realistic background layer or save background.



[Search] : Enter the point name in the project to search. [Settings] : Please refer to Survey Options for details.



After importing the background, select a line on the basemap, and the feature information and stakeout settings of the line will be displayed:

[Delete] : The line can be deleted. After deletion, click on the blank interface to save the background image.

[Element information] : Including the elements, layers, and key points of the line, select the element points and click the stakeout button to stake out;

[Stakeout Settings] : Set the starting point mileage, stake-by-pile coordinate stakeout, offset distance, and calculation method (specified distance, line segment equalization, key nodes);

÷				÷		
Element	Arc			Start Pt mileage	0.0	×
Layer	XRoad			Reverse mileage		
Name	N	E	z	Stake by coordinate		
p1	-40041.151	-+84.610	0.000	Offect	0.0	
p2	-+34.244	400-66.897	0.000	Unset	0.0	
				Method	S	specified distance >
				Spacing	20.0	
				~		
	Sta	ike			Stake	

When selecting [Stakeout Method] , the calculation method is as follows:

【Specified distance】: the interval distance of the specified line segment;

[Equal division of line segment] : Divide the line segment into the set number of segments equally;

[Key node] : You can click the key point in the line segment, such as "start point", "end point" and so on.



[Point click arrow]: Select the point click arrow, drag the selected coordinate point to set out, and add it to the input point of the point library;

Graphical indication of stakeout interface:

1) The guide bearing scale is displayed in the graph;

2) The red arrow represents the location of the mobile station;

3) The small red flag represents the stakeout point;

4) Direction indication: The default is southeast, northwest, and you can also choose front, back, left, right, and azimuth in the options;

5) Current state: It is displayed as the fixed state of the current mobile station, if it is a base station, it is displayed as a base station;

6) The rotation direction of the pointer in the figure is the current direction.

Stake out point library



Point library operation

1) Stakeout: select points for quick CAD stakeout; 2) For other detailed operations, see: Stake out point library;

nearby point stake out

Click the attachment button, the stakeout point will be switched to the attachment point at the current position for stakeout.



Basemap color

Set the base image color in the measurement survey CAD settings; the base image color is optional: gray, white, black.

Note: When changing the color of the map, you need to exit the cad stakeout and re-enter for the display to renew.

Turn on enlarged direction display direction indicator



Click the eye icon in the upper left picture to turn on enlarged direction display, click the icon again to turn off.

Display compass



Click the compass icon in the upper left picture to display the compass, and click the icon again to turn off.

Area Survey

Interface icon meaning

lcon	Meaning	lcon	Meaning
S Layer	Layer options	ବ୍ର	Settings
	Full screen		Point library
	Single POV	m²,	Calculate
	Multi POV		Mapped point
Ê	Reset		

Area survey: a quick measurement method to form a map while measuring, and the resulting area can be quickly calculated and stored.

Main interface -> [Measurement] -> [Area Survey].



1) Click the surveyed points to automatically close the area according to the order of the points to form a closed area graph (for specific measurements, such as: the common survey settings are the same);

2) Click [Mapped Point] to view the order of the list data, you can long press "Point Name" to adjust the order;

3) Click 【Calculate】 to calculate the resulting area.

1. Point Editing



Graph editing: Click the point to add and click to delete the area calculation, as indicated by $\widehat{1}$ (2) in the above figure.

2.Save Calculation



After clicking save, the current path is defined according to the user output, and the above path is the default path of the software.

Project: 2022	0520_112651			
1. Result				
Area:		1.112 m ² 0.005000 are		
Perimeter:		5.111 m		
Points:		3		
2. Points				
Name	Code	Ν	E	Start time
p5	0523	3 ⇒ €04.040	52.279	2022/05/23 20:16:54
p4	0523	3 58 602.909	3 3 652.655	2022/05/23 17:40:11
p4	0523	3 3 204.143	3 54.210	2022/05/23 17:16:26

Open the file in ***.html format, the display result is as shown above.

3.Point List Library

Point library: Click to enter the point library interface, see the coordinate point library for details.

4.Options

See Survey Options.

5.Plot Points

Click [Plot Point] to enter Area Calculation.

6.Point Library

Click 【Point Library】 to enter Point Library.

7.Reset

Click Reset to reacquire the differential signal.

Road Design

Main interface -> 【Measurement】 -> 【Road Design】.

road managemen	t	← road	
1 C/L method	24-05-2022 00-48-07	broken chainage	>
o/Emetiou	24-03-2022-03.40.07	Horizontal alignment	>
TEST PI method	24-05-2022 09:47:41	Vertical alignment	>
		Standard cross section	>
20220520_112651_rod PI method	23-05-2022 17:51:22	superelevation	>
20220513_162038_rod PI method	13-05-2022 16:34:35	Widening	>
11 PI method	13-05-2022 11:01:47		
20220411_092600_rod PI method	Delete		
g d	+		
Modify Open	New		

1) Edit: Select a road file to edit, and edit the elements of the current road file.

2) Open: Select a road file to open, prompt: road stakeout or traverse survey. Select any one to execute the survey stakeout job.

3) Delete: Select a road file to delete, and prompt: Are you sure to delete it. Confirm to delete, cancel to undo.

Open the road



For details on entering stakeout, see [road stakeout].

1. Flat curve

1.1 Intersection method

road management	
co Coordinate method	24-05-2022 11:36:34
create road	
Design method PI C/L method method	Coordinate method
Name	
20220520_112651_rod	×
	CANCEL OK
20220520_112651_rod PI method	23-05-2022 17:51:22
Modify Open	+

1.1.1 Add Click [Add] to operate as follows:

÷	Horizontal alignn	nent(PI)	
Name	N	E	Radius of c
QD	St. 101 70.01200	S41018.78700	0.00
JD1	SM 101 51.00800	SM:1016.37100	40.00
JD2	34.10124.58900	34.1010.16600	30.00
JD3	3410181.93000	34/10/16.82300	30.00
JD4	SUID141.47300	34.1019.80500	30.00
JD5	SU10165.03400	341017.27200	45.00
JD6	SLI0121.40200	SLI019.73400	20.00
JD7	SLI0162.78100	SM 101 6.05400	80.00
JD8	SLI0185.22700	341019.57200	50.00
JD9	3410173.68500	341019.36600	60.28
JD10	Skiini 53.76200	SM 101 4.49300	55.0€
ビ Import	Settings Preview	Save Add	

New operations for the intersection method:

1) Intersection method - click "Add" to add an intersection element, enter the page to enter the name, N, E, or select the point in the point library as the intersection.

2) Line type: selectable starting point, arc, transition curve and end point.

3) Starting point: The first intersection is generally used as the starting point, and a road flat curve design file has only one starting point.

4) Arc: Enter the arc radius value.

5) Easing curve: input arc radius, ease in (into the helix), ease out (out of the helix).

6) End point: The last intersection is generally used as the end point, and a road flat curve design file has only one end point.

7) After inputting the relevant road elements in the new addition, click "OK" to complete the addition.

1.1.2 List operation editing

insert
÷	Horizontal alignn	nent(PI)		← Pl m	ethod
Name	N	E	Radius of c	Name	
QD	SLI01 70.01200	Sul 101 8.78700	0.00	N	
JD1	SLI01 51.00800	RM:101 6.37100	40.00		
JD2	SMII(1) 24.58900	341010.16600	30.00	E	
JD3	SLI0181.93000		(Î) (Line type	Start point
JD4	3410141.47300	145019.80500	Delete 30.00	Station ID	К0+000.000
JD5	SLID165.03400	SM101 7.27200	45.00		
JD6	SLIM 21.40200	SLI01 9.73400	20.00		
JD7	SM 101 62.78100	Sil 101 6.05400	80.00		
JD8	Sil 101 85.22700	SM:101 9.57200	50.00		
JD9	Salami 73.68500	8410119.36600	60.28		
JD10	St. 101 53.76200	SMI014.49300	55.0€		
ビ Import	Settings Preview	Bave Add			ок

Intersection method list - long press and pop-up function selection: insert, modify, delete, click to enter the editing operation of the element information.

Modification and deletion



Delete: Select a row of information to delete, and a pop-up prompt "Are you sure you want to delete?" Select "Yes" to delete, select "No" to cancel and return to the list interface.

Modify: Select a row of information to edit, and click "OK" to complete the modification.

1.1.3 The import preview is detailed in the following figure:

÷	Horizontal alignn	nent(PI)		÷	TEST	
Name	N	E	Radius of c	*	8 🙈	/storage/emulated/0/GreenValley/ls/ Road/TEST
QD	×#1 € 70.01200	÷#1 € 8.78700	0.00		•• Upper folder	
JD1	⇒art € 51.00800	-#1 # 6.37100	40.00		TEST.pqx 1.94 KB	24-05-2022 09:49:04
JD2	>a⊓ # 24.58900	>∎™≢ 0.16600	30.00			
J Po	pup info		.OC			
JI The	e original data will b porting data. Are yo	e cleared before u sure to continue	.00			
JI IMP	porting?		.oc			
JI		CANCEL	окос			
JD7	×#T # 62.78100	⇒#1 € 6.05400	80.00			
JD8	÷#1 # 85.22700	HIII ■ 9.57200	50.0C			
JD9	.×#1 # 73.68500	÷∎1 ∎ 9.36600	60.28			
JD10	×∎TI# 53.76200	×∎T=≣ 4,49300	55.0€	File typ	e	Standard horizontal alignment(*.pqx)
L Import	Settings Preview	Save Add				ок

1.1.4 Preview

← roa	ad calcution res	sult		÷	road calcution rea	sult	
CIRCLE	MAIN POINT LIST	STAKE LIST	CHECK	CIRCLE	MAIN POINT LIST	STAKE LIST	CHECK
[]				Name	Station ID	N	E
				QD	K2+481.000	3≓ ■1 70.012	ä i ≓∎18.787
	ġ	ZY ZY		ZY	K2+491.553	≌≕∎1 59.543	≌≕∎17.456
		Z Y		QZ	K2+500.028	S≕ ∎1 51.312	S≕ ∎1-5.508
	CH YZ	2		YZ	K2+508.503	3- :∎143.674	S ~ ∎11.872
	dz.	79	Ž	ZY	K2+519.856	3 ■1 33.996	S≕ ∎1 5.936
	ZYZ Z	ZX ² Y	Ê	QZ	K2+530.431	ä≕ ∎1 24.203	ä≕ ∎1 2.093
ze				YZ	K2+541.006	≌ ≕ ≣1 13.685	S≕ ∎11.868
QZ YZ	YOZZYOZZZY	VZ OZ OZ ZY, ZD		ZY	K2+554.576	S≕ ∎1 00.277	5≕ ∎13.960
		YZ YZ		QZ	K2+571.204	S≕ ∎183.984	S≕ ∎11.957
		Z A		YZ	K2+587.831	ä ∺ ∎1 71.185	a≕∎11.679
				ZY	K2+619.124	S≕ ∎153.076	S ∺ ∎1 6.157

checksum stub-by-segment checksum

← ro	oad calcution result			← roa	ad calcution re	sult	
CIRCLE	MAIN POINT LIST	STAKE LIST	CHECK	CIRCLE	MAIN POINT LIST	STAKE LIST	CHECK
Station ID	N	E	desigi	STATION	TO POINT	POINT TO	STATION
K2+481.000	3410170.012	341018.787	3416.0			-	
K2+491.553	3=101159.543	34101.7.456	34-6.4	Stake mark			
K2+500.000	34101 51.338	34101 5.517	3≕ 6.3	cross			
K2+500.028	3410151.312	34101 5.508	3≅ 6.3	Preceded by * m Cross:start point	neans long chain sta t to end point is forw	tion number vard,left is negative,rig	ht is positive
K2+508.503	34101 43.674	341011.872	3≅5.9		Con	npute	
K2+519.856	34101 33.996	3=1015.936	3= 4.8				
K2+520.000	34101 33.873	341015.861	3≞ 4.8				
K2+530.431	34101 24.203	34101 2.093	34-3.5				
K2+540.000	34101 14.681	34101 1.729	34-2.4				
K2+541.006	34101 13.685	34101 1.868	34-2.2				
K2+554.576	34101 00.277	34101 3.960	3410.6				

The above operation preview can quickly understand the road editing situation, the process of drawing, main point, pile by pile, and checking the pile number information.

1.2 Line element method

1.2.1 New

← road management			÷	Horizon	tal alignn	nent(C/L)		
CL			Start p	point	(34	10170.012,4	K2+480.000 445968.787	} >
C/L method	24-05-2	2022 11:30:24	number	Line ty	Length	Start radius	End radius	
			1	straigh	10.553	0.000	0.000	18
create road			2	rightcir	16.950	40.000	40.000	18
Design method		ate	3	straigh	11.353	0.000	0.000	21
U method U method	∪ method		4	leftcirc	21.150	30.000	30.000	21
20220520_112651_rod		×	5	straigh	13.570	0.000	0.000	17
			6	rightcir	33.255	30.000	30.000	17
	CANCEL	ок	7	straigh	31.293	0.000	0.000	23
			8	leftcirc	35.350	30.000	30.000	23
20220513_162038_rod			9	straigh	26.845	0.000	0.000	16
PI method	13-05-2	2022 16:34:35	10	rightcir	54.984	45.000	45.000	16
Modify Open	+ New		ビ Import	⊘ Settings	© Preview	E Save	+ Add	

1.2.2 Starting point

← Horizontal	l alignment(C/L)		← C/L-star	t point
Start point number Line ty	ا (0. Length Start radius	(0+000.000 > 000, 0.000) > End radius 1	N	0.000 × :== 0.000
			Start station	K0+000.000
Import Settings P	Preview Save	+		ОК

Click the mark 1 to enter the starting point setting, you can input the starting point or select the starting point element, and click OK to complete after completion.

1.2.3 Add click 【Add】

← Horiz	ontal alignment(C/L)		← C/L meth	^{iod} 2	
Start point	1	K0+000.000 > (0.000, 0.000) >	Line type	straight line	>
number Line ty	Length Start radius	End radius	Azimuth		
			Line length		
			straight line		
			Arc		_
			spiral		
			3		
		_			
Import Setting	s Preview Save	+ 1		ок	

Line element method new operations:

1) Click 【Add】 to add a new line element to the new interface.

2) Line type: straight line, arc, and transition curve are optional.

- 3) Straight line: Enter the line length of the straight line.
- 4) Arc: Input the starting point radius, line length and select the direction. (radius: 0=infinity)
- 5) Easing curve: input start point radius, end point radius, line length and select direction. (radius: 0=infinity)

6) After entering the relevant road elements in the new addition, click "OK" to complete the addition.

1.2.4 Edit

÷	Horizon	tal alignn	nent(C/L)		
Start p	point	(34	10170.012, 4	K2+480.00 145968.787)) >
number	Line ty	Length	Start radius	End radius	
1	straigh	10.553	0.000	0.000	18
2	rightcir	16.950	insert		
3	straigh	11.353	0.000	0.000	21
4	leftcirc	21.150	30.000	30.000	21
5	straigh	13.570	0.000	0.000	17
6	rightcir	33.255	30.000	30.000	17
7	straigh	31.293	0.000	0.000	23
8	leftcirc	35.350	30.000	30.000	23
9	straigh	26.845	0.000	0.000	16
10	rightcir	54.984	45.000	45.000	16
L Import	کی Settings	P review	Save	+ Add	

1) Line element method list - long press to pop up function selection: insert, modify, delete.

2) Insert: Select a row of information, insert it in the middle, the inserted content is the same as the new one, and will not be described here.

3) Modify: Select a row of information to edit, and click "OK" to complete the modification.

4) Delete: Select a row of information to delete, a pop-up prompt "Are you sure you want to delete XX? [Select] "Yes" to delete, select "No" to cancel and return to the list interface.

1.2.5 Import settings



1) Import: You can import flat curve files (*.pqx), and also import roadstar and surveyor data files (if it is a table, you need to ensure that the format is ".xls).

2) Setting: Set the current road pile distance.

3) Preview: Consistent with the intersection method.

1.2.6 Clear

÷	Horizon	ital alignn	nent(C/L)			~	Horizon	ntal alignm	ent(C/L)		
Start p	point	(34	10170.012,4	K2+480.000 445968.787)	>	Start p	point	(341	K 0170.012, 44	2+480.000 15968.787)) >
number	Line ty	Length	Start radius	End radius		number	Line ty	Length	Start radius	End radius	
1	straigh	10.553	0.000	0.000	18	1	straigh	10.553	0.000	0.000	18
2	rightcir	16.950	40.000	40.000	18	2	rightcir	16.950	40.000	40.000	18
3	straigh	11.353	0.000	0.000	21	3 P	opup info	D			21
4	leftcirc	21.150	30.000	30.000	21	4 A	re you sure	to clear da	ta?		21
5	straigh	13.570	0.000	0.000	17	5					17
6	rightcir	33.255	30.000	30.000	17	6			CANCEL	. ОК	17
7	straigh	31.293	0.000	0.000	23	7	straigh	31.293	0.000	0.000	23
8	leftcirc	35.350	30.000	30.000	23	8	leftcirc	35.350	30.000	30.000	23
9	straigh	26.845	0.000	0.000	16	9	straigh	26.845	0.000	0.000	16
10	rightcir	54.98	Clear			10	rightcir	54.984	45.000	45.000	16
ビ Import	⊘ Settings	© Preview	Save	+ 1		L Import	کی Settings	Preview	E Save	+ Add	

Click on the three small dots of the logo 1 to display the logo 2 to clear, click to clear the prompt: Are you sure you want to clear the data? Confirm to clear, cancel to cancel.

1.3 Coordinate method

1.3.1 New

road management		÷	Но	rizontal alignm	ent(coordinate met	hod)
CL		num	Line ty	Mileage	X1 X2	Y1 Y2
C/L method	24-05-2022 11:30:24	1	straigh	K2+480.000 K2+490.553	70.012 59.543	44996 44996
create road		2	rightcir	K2+490.553 K2+507.503	59.543 43.674	44596 44596
Design method	- 1	3	straigh	K2+507.503 K2+518.856	43.674	44996 44995
O PI O C/L method	O Coordinate method	4	leftcirc	K2+518.856 K2+540.006	33.996 - 13.685	44995 44995
Name	×	5	straigh	K2+540.006 K2+553.576	13.685	44995 44995
		6	rightcir	K2+553.576 K2+586.831	00.277	44995 44994
	CANCEL OK	7	straigh	K2+586.831 K2+618.124	- 71.185 - 1 53.076	4594 44591
		8	leftcirc	K2+618.124 K2+653.474	53.076 21.927	44991 44990
20220513_162038_rod PI method	13-05-2022 16:34:35	9	straigh	K2+653.474 K2+680.319	21.927	44990 44991
Modify Open	+	[] Impo	rt Sett	ings Preview	B + Save Add	

2. Vertical curve

2.1 New

← Ver	tical alignment			÷	Point of slope change
Grade change po	Grade change po	Vertical alignmer	.	Grade cha	inge point
K2+480.000	636.0100	0.0000			Preceded by * means long chain station number
K2+500.000	637.2100	220.0000		Grade cha	inge point
K2+700.000	613.2100	300.0000		Vertical al	lignment ra
K2+745.000	611.8600	400.0000			
K2+995.000	584.3600	400.0000			
K3+050.000	582.1600	400.0000			
K3+350.000	552.1600	500.0000			
K3+400.000	550.1600	800.0000			
K3+750.000	520.4100	900.0000			
K4+090.000	507.0000	0.0000			
ビ Import P	review Save	+ Add			OK

2.2 Import empty

← Verti	ical alignment		← Verti	cal alignment		
Grade change po	Grade change po	Vertical alignmen	Grade change po	Grade change po	Vertical alignmen	
K2+480.000	636.0100	0.0000	K2+480.000	636.0100	0.0000	
K2+500.000	637.2100	220.0000	K2+500.000	637.2100	220.0000	
K2+700.000	613.2100	300.0000	K2+700.000	613.2100	300.0000	
к Popup i The origin importing importing	nfo al data will be cle data. Are you su ?	eared before re to continue	K Popup in Are you su	nfo ure to clear data?		
Ku	0011000	CANCEL OK			CANCEL OK	
		000.0000	Kurrow	001-1000		
K3+400.000	550.1600	800.0000	K3+400.000	550.1600	800.0000	
K3+400.000 K3+750.000	550.1600 520.4100	800.0000 900.0000	K3+400.000 K3+750.000	550.1600 520.4100	800.0000 900.0000	
K3+400.000 K3+750.000 K4+090.000	550.1600 520.4100 507.0000	800.0000 900.0000 0.0000	K3+400.000 K3+750.000 K4+090.000	550.1600 520.4100 507.0000	800.0000 900.0000 0.0000	

1) Import: Import the vertical curve design file (file format: xxx.sqx).

2) Save: Save the design file. If it is opened, the original name can be used to overwrite and save. If it is a new road, the project name will be used by default.

3) Clear: Click the three small dots to display clear, clear all data.

2.3 Preview

Operation Click Preview - Enter Graphics

← ve	ertical alignment		÷	road ca	lcution result	
Grade change p	o Grade change po	Vertical alignmen	C	IRCLE	MAIN POINT LIST	STAKE LIST
K2+480.000	636.0100	0.0000	5			
K2+500.000	637.2100	220.0000				
K2+700.000	613.2100	300.0000				
K2+745.000	611.8600	400.0000				
K2+995.000	584.3600	400.0000	(11)			
K3+050.000	582.1600	400.0000				75504990090.000
K3+350.000	552.1600	500.0000				
K3+400.000	550.1600	800.0000				
K3+750.000	520.4100	900.0000				
K4+090.000	507.0000	0.0000				
ビ Import	Preview Save	+ Add				

Click to switch between graphics, main point table, and pile-by-pile table.

÷	road calc	ution result		\leftarrow road	calcution result	
CII	RCLE	MAIN POINT LIST	STAKE LIST	CIRCLE	MAIN POINT LIST	STAKE LIST
Name		Station ID	z	Station ID	z	Comment
QD	K2+480.00	0 £36.010		K2+480.000	+idi6.010	QD
SZY	K2+480.20	0 046.022		K2+480.200	oi#6.022	SZY
SJD	K2+500.00	0 £36.319		K2+500.000	oi#6.319	SJD
SYZ	K2+519.80	0 😽		K2+519.800	+684.834	SYZ
SZY	K2+686.50	0 £34.830		K2+520.000	oa4.810	
SJD	K2+700.00	0 ÷d13.514		K2+540.000	od 2.410	
SYZ	K2+713.50	0 632.805		K2+560.000	+680.010	
SZY	K2+729.00	0 就 2.340		K2+580.000	֊7.610	
SJD	K2+745.00	0 É31.540		K2+600.000	+45.210	
SYZ	K2+761.00	0 ∻30.100		K2+620.000	.⇔a2.810	
SZY	K2+981.00	0 £35.900		K2+640.000	6dt0.410	

3. Broken chain

3.1 Import



Import: Import the broken link design file. (Note that the existing road disconnection data will be cleared)

3.2 Added



1) Save: After clicking, it will prompt: "Save successfully"

Save: The saved road disconnection data is saved under the rod road path.

2) Mileage before breaking: Enter the current value of the mileage before breaking.

3) Mileage after disconnection: Enter the current value of the mileage after disconnection.

4. Standard cross section



1) Add: Create a new cross section.

2) Import: Import the cross section file.

3) Apply, apply the currently added or imported cross-sectional data.

5. Super wide and wide

5.1 Import



Roadstar and surveyor data can be imported. When the imported cross-section data contains superelevation widening data, superelevation widening will be automatically imported.

5.2 Added



1) Station: Add the station of superelevation or widening change point.

2) Cross slope: The cross slope of superelevation or widening change point.

3) Change method: the change method of the current superelevation/widening.

6. The format is explained separately

6.1 Description of the road flat curve pqx file

E PI. pax	
1 0	
2 OD,****170.01200,****68.78700,2481.000	1 1
3 JD1,****151.00800,****66.37100,40.0000,0.000,0.000	2 ****170 01200 ****60 70700 2400 000
4 JD2,****124.58900,****50.16600,30.0000,50.000,50.000	2 110.01200, 11.00.2400.000
5 JD3,****081.93000,****56.82300,30.0000,0.000,0.000	3 L,0.0000,0.0000,10.553,0,187.144276000
6 JD4,****041.47300,****99.80500,30.0000,50.000,50.000	4 A , 40, 0000, 40, 0000, 16, 950, 1, 187, 144276000
7 JDS,965.03400,17.27200, 45.0000, 0.000, 0.000	
0 TD2 ****862 78100 ****56 05400 80 0000 0 000 0 000	5 1,0.0000,0.0000,11.353,0,211.312/48000
10 JD8, ****785, 22700, ****99, 57200, 50,0000, 50,000, 50,000	6 A, 30.0000, 30.0000, 21.150, 0, 211.312748000
11 JD9,****773.68500,****79.36600,60.2880,0.000,0.000	7 L. 0. 0000, 0. 0000, 13, 570, 0, 171, 074960000
12 JD10,****753.76200,****64.49300,55.0610,50.000,50.000	2 20 0000 20 0000 22 255 1 171 074060000
13 JD11,****708.84800,****80.20600,21.0000,0.000,0.000	8 A, 30.0000, 30.0000, 33.255, 1, 171.074960000
14 JD12,****700.88600,****01.36600,220.0000,0.000,0.000	9 L,0.0000,0.0000,31.293,0,234.383291000
15 JD13, ****685.43900, ****49.13900, 94.5000, 0.000, 0.000	10 A.30.0000.30.0000.35.350.0.234.383291000
10 5014,	11 7 0 0000 0 0000 26 045 0 167 074222000
18 JD16, ****622, 71600, ****67, 86000, 20,0000, 0,000, 0,000	11 1,0.0000,0.0000,26.845,0,167.074223000
19 JD17-1,****578.40000,****27.39500,15.0000,0.000,0.000	12 A,45.0000,45.0000,54.984,1,167.074223000
20 JD17-2,****557.96000,****57.71000,15.0000,0.000,0.000	13 L.0.0000.0.0000.36.567.0.237.080986000
21 JD18,****617.30000,****83.48800,50.0000,0.000,0.000	
22 JD19,****662.75700,****63.54200,50.0000,0.000,0.000	14 A, 20.0000, 20.0000, 22.092, 0, 237.080986000
23 JD20, ****704.98100, ****58.25700, 50.0000, 0.000, 0.000	15 L,0.0000,0.0000,15.750,0,173.504791000
24 JD21, *** 751.63100, ****83.66900, 28.0000, 0.000, 0.000	16 A.80.0000.80.0000.58.949.1.173.504791000
26 JD23-1, ****896 50000, ****31 51500, 20,0000, 0,000, 0,000	
27 JD23-2,****886.51100,****69.00100,20.0000,0.000,0.000	17 1,0.0000,0.0000,54.339,0,216.035606000
28 JD24,****825.07900,****44.11200,60.0000,0.000,0.000	18 A, 50.0000, 50.0000, 21.117, 1, 216.035606000
29 JD25,****765.87100,****38.97300,28.0000,0.000,0.000	19 A, 60, 2880, 60, 2880, 24, 750, 0, 240, 155141000
30 JD26,****722.32700,****94.11900,50.0000,0.000,0.000	20 2 55 0610 55 0610 24 222 1 216 442202000
31 2D,****680.23200,****05.70600,0.0000,0.000,0.000	20 A, 55.0610, 55.0610, 24.223, 1, 216.443202000

1) Save: Select the path and file to output, and the user can modify it as needed; the name is the task name by default, and the user can modify it as needed.

2) Format: xxx.pqx can be opened with Notepad.

3) Format details:

6.1.1 Intersection method format

🚽 P	I. pqx	
1	0	
2	QD,*	***170.01200, ****68.78700,2481.000
3	JD1,	****151.00800, ****66.37100, 40.0000, 0.000, 0.000
- 4	JD2,	****124.58900, ****50.16600, 30.0000, 50.000, 50.000
5	JD3,	****081.93000, ****56.82300, 30.0000, 0.000, 0.000
6	JD4,	****041.47300, ****99.80500, 30.0000, 50.000, 50.000
7	JDS,	****965.03400, ****17.27200, 45.0000, 0.000, 0.000
8	JD6,	****921.40200, ****49.73400, 20.0000, 05.000, 05.000
9	JD7,	****862.78100,****56.05400,80.0000,0.000,0.000
10	JD8,	****785.22700, ****99.57200, 50.0000, 50.000, 50.000
11	JD9,	****773.68500, ****79.36600, 60.2880, 0.000, 0.000
12	JD10	,****753.76200,****64.49300,55.0610,50.000,50.000
13	JD11,	,****708.84800,****80.20600,21.0000,0.000,0.000
14	JD12	,****700.88600,****01.36600,220.0000,0.000,0.000
15	JD13	,****685.43900,****49.13900,94.5000,0.000,0.000
16	JD14	,****698.94600,****31.61900,40.0000,0.000,0.000
17	JD15	,****653.73400,****42.48600,40.8000,0.000,0.000
18	JD16	,****622.71600,****67.86000,20.0000,0.000,0.000
19	JD17	-1,****578.40000,****27.39500,15.0000,0.000,0.000
20	JD17	-2,****557.96000,****57.71000,15.0000,0.000,0.000
21	JD18	,****617.30000,****83.48800,50.0000,0.000,0.000
22	JD19	,****662.75700,****63.54200,50.0000,0.000,0.000
23	JD20	,****704.98100,****58.25700,50.0000,0.000,0.000
24	JD21	,****751.63100,****83.66900,28.0000,0.000,0.000
25	JD22	,****828.15800,****95.19500,100.0000,0.000,0.000
26	JD23	-1,****896.50000,****31.51500,20.0000,0.000,0.000
27	JD23	-2,****886.51100,****69.00100,20.0000,0.000,0.000
28	JD24	,****825.07900,****44.11200,60.0000,0.000,0.000
29	JD25	,****765.87100,****38.97300,28.0000,0.000,0.000
30	JD26	,****722.32700,****94.11900,50.0000,0.000,0.000
31	ZD, *	***680.23200, ****05.70600,0.0000,0.000,0.000

The corresponding line format content sample is:

The first line: 0 means the intersection method.

Second line: qd, xxxx170.012, xxxx68.787, 2481.00

The second line explains: qd is the first intersection, xxxx170.012, xxxx68.787 are NE coordinates, and 2481.000 is the starting stake.

The third row Jd1, xxxx151.008, xxxx66.371, 40.000, 0.000, 0.000

Intersection name	Coordinate N	Coordinate E	Radius	In-spiral length	Out-spiral length
Intersection	Intersection coordinate x	Intersection coordinate y	Circle curve radius	Ease in	Ease out

The third line description: Jd1 is represented as an intersection (the first intersection name is defined by the user), xxxx151.008, xxxx66.371 are NE coordinates, 40 is the radius of the circular curve, the first 0 is the length of the spiral into the spiral, and the last 0 is the length of the spiral out of the spiral.

Fourth row Jd2, xxxx124.589, xxxx50.166, 30.000, 0, 0

The fourth line description: Jd2 is expressed as the intersection (the second intersection name is defined by the user), xxxx124.589, xxxx50.166 are the NE coordinates, 30 is the radius of the circular curve, and the first 50 is the slow

And curve into the helix length, after 50 is the spiral curve out of the spiral length.

Other line intersection method road elements can be deduced by analogy.

6.1.2 Line element method format

	CL.	pqx🔀	
	1	1	
	2	****	170.01200,****68.78700,2480.000
	3	L,0.	0000,0.0000,10.553,0,187.144276000
	4	A,40	.0000,40.0000,16.950,1,187.144276000
	5	L,0.	0000,0.0000,11.353,0,211.312748000
	6	A,30	.0000,30.0000,21.150,0,211.312748000
	7	L,0.	0000,0.0000,13.570,0,171.074960000
	8	A,30	.0000,30.0000,33.255,1,171.074960000
	9	L,0.	0000,0.0000,31.293,0,234.383291000
1	10	A,30	.0000,30.0000,35.350,0,234.383291000
1	1	L,0.	0000,0.0000,26.845,0,167.074223000
1	12	A,45	.0000,45.0000,54.984,1,167.074223000
1	13	L,0.	0000,0.0000,36.567,0,237.080986000
1	.4	A,20	.0000,20.0000,22.092,0,237.080986000
1	15	L,0.	0000,0.0000,15.750,0,173.504791000
1	16	A,80	.0000,80.0000,58.949,1,173.504791000
1	17	L,0.	0000,0.0000,54.339,0,216.035606000
1	18	A,50	.0000,50.0000,21.117,1,216.035606000
1	.9	A,60	.2880,60.2880,24.750,0,240.155141000
2	20	A, 55	.0610,55.0610,24.223,1,216.443202000

The corresponding line format content sample is:

The first line: 1 indicates the line element method.

Second line: xxxx170.012, xxxx68.787, 2480.000

Description of the second line: the starting point of the line element, xxxx170.012, xxxx68.787 are the NE coordinates, and 2480.000 is the starting station number.

Third line: L, 0.000, 0.000, 10.553, 0, 187.144276000

Line Type	Start Radius	End Radius	Length	Direction
L straight line/A circular curve/S transition curve				Left 0/Right 1

The third line description: straight line, starting point radius 0, ending point radius 0, straight line length 10.553, direction is left offset, azimuth angle is 187°14'42.76000".

Fourth row A,40.0000,40.0000,16.950,1,187.144276000

Description of the fourth line: circular curve, the starting point radius is 40, the ending point radius is 40, the arc length is 16.950, and the direction is rightward, azimuth angle is 187°14'42.76000".

Other line element method road elements can be deduced by analogy.

Flat Curve Design Notes:

1) When opening the horizontal curve design file, you must pay attention to check whether the current road is the intersection method or the line element method. The road edited by the line element method can only be opened by the line element method, and the road edited by the intersection method. Open the design file with Notepad to see if the first line is 0 or 1).

2) For the flat curve designed for the first time, there will be a prompt to save when returning or exiting, and all designs will be cleared when canceled.

3) After the opened road design file is modified, there will be a prompt to save it when returning or exiting, and the edited element will not take effect if it is canceled.

4) The road flat curve design file can be edited in the notepad format after familiar with the composition of the road file to complete the design and save it as .pqx for use.

6.2 Description of vertical curve sqx file

📄 Ro	ad. sqx🗙
1	K2+480.000,636.0100,0.0000
2	K2+500.000,637.2100,220.0000
3	K2+700.000,613.2100,300.0000
4	K2+745.000,611.8600,400.0000
5	K2+995.000,584.3600,400.0000
6	K3+050.000,582.1600,400.0000
7	K3+350.000,552.1600,500.0000
8	K3+400.000,550.1600,800.0000
9	K3+750.000,520.4100,900.0000
10	K4+090.000,507.0000,0.0000
11	

The corresponding line format content sample is:

Description of the first line: k0+480.000 is the first slope change point, 636.01 is the slope change point elevation, and 0.000 is the slope change point radius.

Second line: k0+500.000, 637.2100, 220.000

Explanation of the second line: k0+500.000 is the second slope change point, 637.2100 is the slope change point elevation, and 220.000 is the slope change point radius

Other row and vertical curve road elements can be deduced by analogy.

6.3 Description of cross section hdm file

6.3.1 No super widening

📄 RO.	AD. hdm
1	0,Motorway,1.75,1.5,0.0
2	0,Sidewalk,0.5,-3.0,0.0
3	1,Motorway,1.75,-1.5,0.0
4	1,Sidewalk,0.5,-3.0,0.0

Corresponding row format content samples such as: left/right plate, standard plate type, standard plate width, standard plate cross slope, standard plate height difference. Description of the first line: 0, left plate, motor vehicle lane, means plate, 1.75 means standard plate width, 1.5 means standard plate cross slope, 0.0 means standard plate height difference.

The third line description: 1, right plate, motor vehicle lane, means plate, 1.75 means standard plate width, -1.5 means standard plate cross slope, 0.0 means standard plate height difference.

Other row elements can be deduced by analogy.

The following are the details of the section information element:

Left and right panels

Plate Orientation	Number Type
Left	0
Right	1

Cross slope and height difference of standard slabs

Name	Cross Slope Slope Direction
Standard plate transverse slope (unit % user does not need to input)	Up positive and down negative (positive value uphill, negative value downhill)
Standard plate height difference (relative to the previous plate, in meters)	High positive low negative o

6.3.2 Contains super high

블 Cubic Parabola.hdm🛛			📄 Linear. hdm 🛛		
1	0, Motorway, 1.75, 1.5, 0.0	1	0, Motorway, 1.75, 1.5, 0.0		
2	0,K2+480.000,1.5,1	2	0,K2+480.000,1.5,0		
3	0,K2+490.552,2.56,1	3	0,K2+490.552,2.56,0		
4	0,K2+500.000,3.0,1	4	0,K2+500.000,3.0,0		
5	0,K2+518.855,-2.27,1	5	0,K2+518.855,-2.27,0		
6	0,K2+520.000,-2.73,1	6	0,K2+520.000,-2.73,0		
7	0,K2+529.431,-3.0,1	7	0,K2+529.431,-3.0,0		
8	0,K2+540.000,-2.72,1	8	0,K2+540.000,-2.72,0		
9	0,K2+540.006,-2.72,1	9	0,K2+540.006,-2.72,0		
10	0,K2+553.576,2.71,1	10	0,K2+553.576,2.71,0		
11	0,Sidewalk,0.5,-3.0,0.0	11	0,Sidewalk,0.5,-3.0,0.0		
12	0,K2+480.000,1.5,1	12	0,K2+480.000,1.5,0		
13	0,K2+490.552,2.56,1	13	0,K2+490.552,2.56,0		
14	0,K2+500.000,3.0,1	14	0,K2+500.000,3.0,0		
15	0,K2+518.855,-2.27,1	15	0,K2+518.855,-2.27,0		
16	0,K2+520.000,-2.73,1	16	0,K2+520.000,-2.73,0		
17	0,K2+529.431,-3.0,1	17	0,K2+529.431,-3.0,0		
18	0,K2+540.000,-2.72,1	18	0,K2+540.000,-2.72,0		
19	0,K2+540.006,-2.72,1	19	0,K2+540.006,-2.72,0		
20	0,K2+553.576,2.71,1	20	0,K2+553.576,2.71,0		

Corresponding line format content sample, such as: file type, station number, cross slope, change mode

Description of the first line: 0, superelevation, K2+480.000, superelevation change point stake, 1.5, superelevation change point cross slope, 1, superelevation change method

The first red square indicates: this superelevation data is the left lane data

Description of the second red square: This superelevation data is the left hard shoulder data

Below is the superelevation data on the right

And so on...

Superelevation change method

Name	Number Type
Linear	0
Cubic Parabola	1

Document superelevation display order

Name	Order
Main section on the left	First
Other plates on the left	Second
Main section on the right	Third
Other plates on the right	Fourth

File type

Name	Number Type
super high	0
Widen	1

6.3.3 Including widening

📄 ro	ad. hdm🛛	🔚 road. hdm 🔀		📄 roa	d. hdm 🗵
28	0,K2+740.000,1.84,0	28 0, K2+74	40.000,1.84,0	28	0,K2+740.000,1.84,0
29	0,K2+760.000,-0.74,0	29 0,K2+76	60.000,-0.74,0	29	0,K2+760.000,-0.74,0
30	0,K2+771.870,-4.0,0	30 0,K2+7	71.870,-4.0,0	30	0,K2+771.870,-4.0,0
31	0,K2+780.000,-4.0,0	31 0,K2+78	30.000,-4.0,0	31	0,K2+780.000,-4.0,0
32	0,K2+782.916,-4.0,0	32 0,K2+78	32.916,-4.0,0	32	0,K2+782.916,-4.0,0
33	1,K2+480.000,1.75,0	33 1,K2+48	30.000,1.75,1	33	1,K2+480.000,1.75,2
34	1,K2+490.552,1.75,0	34 1, K2+49	90.552,1.75,1	34	1,K2+490.552,1.75,2
35	1,K2+500.000,1.75,0	35 1,K2+50	00.000,1.75,1	35	1,K2+500.000,1.75,2
36	1,K2+518.855,2.54,0	36 1,K2+51	18.855,2.54,1	36	1,K2+518.855,2.54,2
37	1,K2+520.000,2.61,0	37 1,K2+52	20.000,2.61,1	37	1,K2+520.000,2.61,2
38	1,K2+529.431,2.65,0	38 1,K2+52	29.431,2.65,1	38	1,K2+529.431,2.65,2
39	1,K2+540.000,2.61,0	39 1,K2+54	40.000,2.61,1	39	1,K2+540.000,2.61,2
40	1,K2+540.006,2.61,0	40 1,K2+54	40.006,2.61,1	40	1,K2+540.006,2.61,2
41	1,K2+553.576,1.79,0	41 1,K2+55	53.576,1.79,1	41	1,K2+553.576,1.79,2
42	1,K2+560.000,1.75,0	42 1,K2+56	60.000,1.75,1	42	1,K2+560.000,1.75,2
43	1,K2+570.204,1.75,0	43 1, K2+5	70.204,1.75,1	43	1,K2+570.204,1.75,2
44	1,K2+580.000,1.75,0	44 1,K2+58	30.000,1.75,1	44	1,K2+580.000,1.75,2
45	1,K2+586.831,1.75,0	45 1, K2+58	36.831,1.75,1	45	1,K2+586.831,1.75,2

The widening data is usually below the superelevation data, and the corresponding format style is such as: file type, station number, cross slope, change method

The first line: 1, representing widening, K2+740, representing the chainage of the widening change point, 1.84, representing the width of the widening change point, 0, representing the linearity

The data display order is consistent with the superelevation.

Widening change method

Name	Number Type
Linear	0
Cubic Parabola	1
quartic parabola	2

Document Display Order

Name	Order
The main section on the left is super high	The first
Left main section widened	Second
The other plates on the left are super high	The third
Widening of other plates on the left	Fourth
The main section on the right is super high	Fifth
The main section on the right is widened	Sixth
Other plates on the right are super high	Seventh
Widening of other plates on the right	Eighth

Icon:

Tread. hdm 🛛	
1 0,lane,1.75,1.5,0.0	
2 0,K2+480.000,1.5,0	
³ 0, K2+490.552, 2.56, 0 I eft lane superelevation	
4 0,K2+500.000,3.0,0	
5 0,K2+518.855,-2.27,0	
6 1,K2+480.000,1.75,2	
⁷ 1, K2+490.552, 1.75, 2 Left lane widening	
8 1,K2+500.000,1.75,2	
9 1,K2+518.855,2.54,2	
10 0,earth shoulder,0.5,-3.0,0.0	
11 0,K2+480.000,1.5,0	
¹² 0, K2+490.552, 2.56, 0 Left shoulder superelevation	
13 0,K2+500.000,3.0,0 Left Shoulder Supercievation	
14 0,K2+518.855,-2.27,0	
15 1,K2+480.000,1.75,2	
16 1, K2+490.552, 1.75, 2 left dirt shoulder widening	
17 1,K2+500.000,1.75,2	
18 1,K2+518.855,2.54,2	
19 1, Iane, 1.75, -1.5, 0.0	
20 0,K2+480.000,-1.5,0	
21 0, K2+490.552, -2.56, 0 Kight lane superelevation	
22 0,K2+500.000,-3.0,0	
23 U,K2+518.855,2.27,0 -	
24 1, K2+480, 000, 1.75, 0 Dight lane widening	
25 1, K2+490. 552, 2.50, 0 KIGHLIAHE WIDEHING	
20 1, K2+500, 000, 2.03, 0	
28 1 earth shoulder 0.5 -3.0.0.0	
29 0 K2+480 000 1 5 0	
30 0 K2+490 552 2 56 0	
Right shoulder superelevation	
32 0.K2+518.8552.27.0	
33 1,K2+480,000,1,75,2	
34 1,K2+490.552,1.75,2	
35 1, K2+500,000, 1, 75, 2 Right dirt shoulder widening	
36 1,K2+518.855,2.54,2	

Road Stake

Interface icon meaning						
lcon	Meaning	lcon	Meaning			
Que Layer	Layer Options	()	Settings			
	Full screen center		Point Library			
*	Single View	Q	Query			
*	Multi-view	Ê	Solution reset			

Main interface-> [Measurement] -> [Road Stakeout] .



The whole map of the staked road and the staked road points are displayed.

Stake out direction:

1) South-east, north-west: Refers to the current azimuth application of south-east, north-west indication.

2) Front, back, left and right: Refers to the current orientation using the front, back, left and right directions.

3) Distance: the horizontal distance between the current target point and the mobile station.

4) Height difference/fill and cut: the height difference between the current target point and the mobile station (the height reference is: when setting out the point).

5) Offset/Navigation: Switch the current bearing display mode.

The azimuth display content is set according to the stakeout options: there are southeast, northwest, front, back, left, right, and azimuth distance. For details, see: [Measurement Options].

Right shortcut menu:

- 1) Solution reset: Re-acquire the differential signal.
- 2) Point library: Quickly enter the road point library.
- 3) Pile distance: The default distance between piles is 20, which can be quickly entered into the settings.
- 4) Add piles: Quickly add piles according to the pile distance.
- 5) Pile reduction: Quickly reduce piles according to the pile distance.
- 6) Query: Quickly query mileage or station number.

1. Road file

Open: The current road file will be staked out.

2. Target Mileage Pile



You can set it quickly in the stakeout interface.

← Road Stake		← Road Stak	e TEST	
Stake m	nark K2+481.000 + 🕑	Stak	e mark K2+481.000 s: 4.500	+ ③
Stake mark 2481.000	×	cross 4.500		×
Interval 20.000		offset distance		x
c	CANCEL SETTING at		CANCEL	SETTING at
Name K2+481.000_0	Antenna 🖞 1.800	Name K2+481.000_0 Code 0523	Antenna 🍸 1.800	5
N:=====03.722 E:=====2.089	Status: Fixed Z:E0.740	N: = = 03.724 E: = = = 2.092		Status: Fixed Z: 🗐 .756
\$20 \$21/22		2 820 221/22		🖞 D:1 H:0.002 V:0.002

1) Add/Subtract: You can increase or decrease the target value.

2) Click the center post or the horizontal offset, and a dialog box will pop up to quickly set the relevant properties.

3. Current Mileage Pile



4. Stakeout point

Middle stakes



Crossing Stakeout Points

Cross-Stakeout Points: Add points for the cross-out measurement.



Crossing point

Cross-section point: Select the point measured by $\c Cross-section$ Acquisition] .



5. Query

calculation	and inverse calculation of road	<i>←</i>	calcu	lation	and inver	se calcula	ation of r	oad	
CALCULATION	INVERSE CALCULATION		CALCULA	ΓΙΟΝ		INVERSE	CALCULA	TION	
Stake mark	Preceded by * means long c	Stake	mark		K2+481			×	
cross	From the start point to the e	cross			1.000	000			
included angle	90°00'00.00000"	includ	included angle		90°00'0	90°00'00.00000"			
	No data	-2.7 4 3 2 1 0 -1 -2 -3 -3 -4 -2.7	-1.8	-0.9	0.0	0.9	1.8	2.7	
design coordinate N	design elevetion	design .	oordinate N 70.138			design elevet 636.069	ion		
design coordinate E	Side pile height	design (design coordinate E 67.795			Side pile height 636.053			
Plate	Cross slope of the plate	Plate				Cross slope o •1.600	f the plate		
	Vertical slope				1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.	Vertical slope 5.636	E.		
Compute	Stake		Сотри	ıte		S	Stake		

Positive calculation: Enter the pile value and the lateral deviation value.

1) Station number: Input the station number to be calculated.

2) Horizontal offset: Enter the horizontal offset value (left negative and right positive) that need to calculate the chainage.

3) Design coordinates N, E: the coordinates calculated according to the above data.

4) Sector: the sector where the calculation point is currently located.

5) Design elevation: the elevation value of the center line where the point is calculated based on the above values.

6) Side pile height: the height of the calculated point.

7) Cross slope of the plate it belongs to: the current cross slope value of the plate where the calculation point is located.

8) Vertical slope: the current vertical slope value of the plate where the calculation point is located.

calculation and inverse calculation of road			calc	ulation	and inver	se calcula	ition of ro	ad
CALCULATION	INVERSE CALCULATION		CALCULATIO			INVERSE CALCULATION		
	≣				_		:= :	0
N		N			 3.	725		×
E		E				92		
z		z			∎ 754			
	No data	-2.7 4 3 2 1 0 -1 -2 -3 -4 -2 7	-1.8	-0.9	0.0	0.9	1.8	2.7
Stake mark	offset distance	Stake K3+0	mark)29.354	0.7	0.0	offset distand 187058.37	се 74	der F
designed elevetion	Side pile distance	desigr 582.	ned elevetion 986			Side pile dista 187058.37	ince 74	
Side pile height	Cross slope of the plate	Side p 582.	ile height 986			Cross slope o 0.000	f the plate	
Plate	Vertical slope	Plate		-		Vertical slope		
Compute	Stake		Comp	ute		\$	Stake	

Inverse calculation: Enter the coordinates N, E and Z values.

1) Station number: the currently queried station number value.

2) Design elevation: the elevation value of the center line where the point is calculated according to the input value.

3) Side pile height: Calculate the point elevation.

- 4) Section: The section to which the query result belongs.
- 5) Width of the plate: the width of the plate where the query result is located.
- 6) Offset: the horizontal offset value of the current plate.

7) Side pile distance: Calculate the lateral offset value of the point.

8) Cross slope of the plate it belongs to: the current cross slope value of the plate where the calculation point is located.

9) Vertical slope: the current vertical slope value of the plate where the calculation point is located.

6. Options

See Measurement Options.
Road Point Library

Enter:

- 1. Main interface -> [Measurement] -> [Road Point Library].
- 2. Main interface-> [Survey] -> [Road Stakeout] -> [Point Library] .

÷	Road Stor	re			÷	Road Sto	re		
Road nam	ne		TE	est >	Road nam	ie		T	EST >
MIDDLES	STAKE	CROSSING POINT	STAKEO	DUT	MIDDLES	STAKE	CROSSING POINT	STAKE	OUT
Name	Station ID		Distance	Z	Name	Station ID		cross	z
⊡ K2+481	K2+481.00	0	187355.449	-10.962	≑ K2+481	K2+481.00	00	180359.950	-10 .671
					≑ K2+481	K2+481.00	00	180359.861	
	Detail		Export			Detail		Export	

÷	Road Sto	re			
Road nan	ne			т	EST >
MIDDLE	STAKE	CROSSIN POINT	١G	STAKE POINT	OUT
Name	Station ID			cross	z
≑ K2+500	K2+500.00	00	1657	24.735	
	Detail			Export	

1) Station number: the station number to which the measurement point belongs.

2) Distance: the horizontal distance between the measuring point and the middle pile.

3) Lateral deviation: the vertical distance from the measuring point to the tangent of the middle pile.

4) Z: Measurement point elevation

1. Point Details

← К2+481.0	00_0
Name	K2+481.000_0
Code	0523
Comment	
Bottom of device(H)	1.800
Antenna type	1
N	0000602.571
E	0000002.569
Z	<u>⊒.</u> 962
В	0000007.14560"N
L	000000'17.38047"E
н	<u>⊒.</u> 8.962
Status	Single
Last distance	0000648.734
X RMS	0.063
Y RMS	0.063

2. Middle stub and transection export

2.1. Middle pile results export

← road result export	\leftarrow middle stake result
middle stake result 1 >	File name(.txt) 20220520_112651_TEST_zz
vertical alignment stake result	Path 2 /GreenValley/Is/Export >
cross section stake result >	
cross section survey result >	
Weft middle stake results >	
Haiti middle stake results	
Weft cross survey result >	
Haiti cross survey result >	
	3
	ОК

2.2. Export results of middle pile results

```
20220520_112651_TEST_zz.txt

Name,mileage,N,E,Z

K2+481.000_0,K2+481.000, 602.571, 52.569,40.962

3
```

2.3. Vertical curve stakeout export

2.4. Cross section stakeout export

```
20220520_112651_TEST_hdf.txt

1 mileage,Design height
2 Left:Cross distance,Slope,Name,N,E,Z,Start time,RMS_x,RMS_y,RMS,Cross difference,dh
3 Right:Cross distance,Slope,Name,N,E,Z,Start time,RMS_x,RMS_y,RMS,Cross difference,dh
4 K2+500.000,636.319
5 -
6 3.000,1357.799,K2+500.000_0, 601.840, 52.429,40.734,2022/05/24 10:12:35,0.061,0.061,0.096,165721.735,40.734
7
```

2.5. Transverse measurement export

```
20220520_112651_TEST_hdc.txtX
1 mileage
2 Left:Count,Cross,Height
3 Right:Count,Cross,Height
4 K2+000.000
5 2, 1.540, 129.031, 3.4.400, 129.026
6 2, 1.493, 129.062, 2.815, 129.106
7
```

Description of the format of cross-sectional measurement results:

The first line: 0+000.000 is the first stake, and so on.

Second row: 2, 1.540, 129.031, 3.4.400, 129.026.

In order: the left frame of the second row, the total number of measured cross-sections is 2, the order is: a distance and the measured elevation (1.540, 129.031), and so on.

Third row: 2, 1.493, 129.062, 2.815, 129.106.

In order: the third row of the right frame, the total number of measured cross-sections is 2, the order is: a distance and the measured elevation (1.493, 129.062), and so on.

2.6. Results of latitudinal piles

```
20220520_112651_TEST_hint_zz.dmxX
1 HINTCAD5.8_DMX_SHUJU
2 2481.000,40.962
3
```

Format description of the results of the piles in the latitude ground (this is defined according to the specification of the latitude ground):

The first line: information about the file version and file type name, each of the following lines

Record the ground level of a stake. The format is divided into station number and ground level.

2.7. Haitian Pile Results

```
E 20220520_112651_TEST_hand_zz.dmg ≥ 
1 2481.000,40.962
2
```

Description of the format of Haitian medium pile results (this is defined according to the Haitian specification): Each line records the ground level of a chainage. The format is divided into station number and ground level.

2.8. Haiti Transverse Survey Results

```
20220520_112651_TEST_hand_hdc. dmx

1 1
2 0.000
3 2, 1.540, -0.071, 3.4.400, -0.076
4 2, 1.493, -0.040, 2.815, 0.004
5
```

Description of the format of the Haitian transect measurement results (this is defined in accordance with the Haitian specification):

First row: 1

Indicates the first format used in Haiti. There are a total of 6 formats in Haiti, and the software currently supports the first format.

Second line: 0.000

Indicates the stake number, and so on.

Third row: 2, 1.540, -0.071, 3.4.400, -0.076

In order: the left frame of the second row, the total number of measured cross-sections is 2, the order is: a distance and a height difference (1.540, -0.071), and so on.

Fourth row: 2, 1.493, -0.040, 2.815, 0.004

In order: the third row of the right frame, the total number of measured cross-sections is 2, the order is: a distance and a height difference (1.493, -0.040), and so on.

Note:

1) The latitude and ground format is absolute height difference, which means that both distance and height difference are calculated according to the measured value of the middle pile.

2) When measuring multiple intermediate stakes, use the nearest intermediate stake for calculation.

skills: If you need the second type of Haitian transect survey results, you can change the information of the version and file type name of the latitudinal format file to 2, and then change the suffix to dmx. The other four formats are not supported temporarily.

2.9. Results of latitudinal transect

Line	Data	Remark
Line		noman
1	File version and file type information	Exp:HINTCAD5.8_HDM_SHUJU
2	Medium stake	
3	Total points, horizontal distance 1, height difference 1, horizontal distance 2, height difference 2,	Left data
4	Total points, horizontal distance 1, height difference 1, horizontal distance 2, height difference 2,	Right data
5	Medium stake	
6	Total points, horizontal distance 1, height difference 1, horizontal distance 2, height difference 2,	Left data
7	Total points, horizontal distance 1, height difference 1, horizontal distance 2, height difference 2,	Right data
8	Medium stake	
9	Total points, horizontal distance 1, height difference 1, horizontal distance 2, height difference 2,	Left data
10	Total points, horizontal distance 1, height difference 1, horizontal distance 2, height difference 2,	Right data

Note: If you need to export the latitudinal Haiti transection measurement results, you need to set out the middle pile. If there is no middle pile result, the current transection pile result cannot be exported.

Surface Stake

1. Surface lofting

Interface icon meaning							
lcon	Meaning	lcon	Meaning				
Generation Control Con	Layer Options	()	Settings				
	Full screen center		Point Library				
	Single Perspective		File				
	Multi-view	Ê	Solution reset				

Main interface-> [Measurement] -> [Surface Stakeout] .



1) 【Rolling】: You can customize the rolling;

2) 【Code】: You can choose the code you want to set;

3) 【Antenna】: Set the height of the antenna pole or the slant height;

4) If it is within the design surface, the filling data will be displayed. If it is not within the design surface, it will prompt "Not within the design surface!"

5) [Design surface] : Select this button, the software will calculate the fill and cut value according to the current position elevation and the design surface elevation;

6) [Design Elevation] : Select this button and give a design elevation, the software will calculate the fill and cut value according to the current position elevation and this input elevation;

7) [Point Library] : Jump to the coordinate point library interface, please refer to Point Library for details.

8) [Surface Store] : Jump to the Surface Store interface, please refer to Surface Store for details.

9) [Settings] : Jump to the options interface, please refer to Options for details.

10) 【Reset solution】: Re-acquire the differential signal.

PPK Survey

Interface icon meaning							
lcon	Meaning	lcon	Meaning				
	Single Perspective	()	Settings				
	Multi-view		File				
Ê	Solution reset						

Main interface -> [Survey] -> [PPK].

← PPK Please cr	eate PPK file!
	()
•	<u>ଚ</u>
	File
-	7
Epoch Name p4 X Ant	tenna 🌱 1.800
N:=====06.394 E:====4.587	Status: Float Z: 13.497
	💓 gỗ D:1 H:0.125 V:0.085

1. File

Click the icon on the right interface -> 【File】.

Click 【Add】 to create a new file.

← PPK Please create Pl	PK file!	← PPK file	manager	
•	(ی) این ا این ا ا این ا ا ا ا ا ا ا ا ا ا ا ا ا ا ا ا ا ا ا	20220520.cnb 20-05-2022 16:13:12	2	3642630byte
1	File	File name Name 20220526		×
Epoch Name p4 Antenna V Init 300	1.800 15		CAN	CEL OK
N:15555106.394 E:1555514.587	Status: <mark>Float</mark> Z: <u>⊒</u> 497			
	🧿 🖧 D:1 H:0.125 V:0.085	Refresh	Open	Add

When the file name is named, it will detect whether it has the same name, and the same name will prompt.

PPK measurement meaning: a special method of dynamic measurement, which is used as an auxiliary post-processing result measurement when there is no differential data, and the accuracy is equivalent to RTK measurement.

← PPK file	manager	
20220520.cnb 20-05-2022 16:13:12	2	3642630byte
20220526.cnb 26-05-2022 11:57:10)	Obyte
Refresh	Open	Add

PPK file management:

1) Add: You can create a new PPK file task.

2) Refresh: The current PPK file management can be refreshed.

3) Open: The file can be opened as the current PPK task.

2. Measurement

Normal measurement can be performed only after initialization.



Every epoch recorded is counted.

1) Point name: Set the measurement point name.

2) Code: Set the measurement code.

3) Layer: You can choose to open point name, code, elevation, map, and apply it according to user needs.

Note: PPK measurement must be initialized before normal measurement, and is not affected by any differential state.

3. Options

See Measurement Options.

Feature Survey

Main interface -> [Survey] -> [Feature Survey] .

Select a code set: You can select a code set when creating a new task, or enter the code set application after the task is created successfully.



Select point, line, area code for feature survey.

÷ 1	Feature Survey		← Featur	re Survey	
	1. 100000 - 00 P8-00	Si 24 Si 24 Elem		1585.3 På 1 758	So dan So dan Elem
Cancel	Features	ОК	Cancel	Features	ОК
	Undefine	ed	Point	Undefine	d
Poir	nt point	point02	Line	line02	line22
Lin	e test		Polygon		
Polyg	on				
N: 1082 1-03 E: 1082 1-2.2	3.424 268	Status: Float Z:⊑∔.336	N:108-103.418 E:108-12.266		Status: Float Z:⊑∔.319
B \$70 \$217/	17	🜔 🖞 D:1 H:0.143 V:0.221	\$70 \$316/16		🜔 🛃 D:1 H:0.143 V:0.220



Use shortcut code survey: In the measurement option, enable quick survey using common codes, click "+" to enter shortcut code management, and you can add and delete codes.



When surveying, it must be ensured that the input point name meets the differential requirements, and the following contents are input:

1) Point name: set the measurement point name

2) Code: Set the measurement code, you can directly input the desired code and automatically save it into the current code set (for details, see Code Set).

3) Receiver system height: The default is 1.8 meters, which can be modified as needed. The measurement method of the pole height can be modified, the pole height or the oblique height.

4) Point library: Click on the right column "point library" to execute, enter the point library operation.

5) After the feature survey is completed, it is saved with the point name and the feature name by default. You can also customize the feature name in the feature name input box, and save it as a custom point name after surveying.

6) At least two points for line feature surveys, the feature name is generated by default, and can be customized; click [Tick] to complete the feature survey and save the feature; click [three small dots] to choose to delete or cancel the survey point.

7) At least three points are measured for surface features, and the name of the feature is generated by default, which can be customized and modified; click [Tick] to complete the feature survey and save the feature; click [three small dots] to choose to delete or cancel the surveyed point.

8) When the previous code survey is not completed, switch to other types of code survey, you can click the inverted triangle of the feature name to display the previously surveyed feature, and switch to the feature to continue to complete.

9) Reset: Re-acquire the differential signal to prevent flying spots.

Note: Please refer to Survey Options for details.

Tool

Tool includes below modules:

Site Calibration

Grid Shift

Area Calc

Earthwork Calc

COGO

FTP

E-mail





Parameter Calculation

Tool > Parameter Calculation: Match control point with measure point.

÷	Site Calibr	ation			÷	Site Calibra	ation		
At least to partic	2 pairs of points ipate in elevation	are required f	or plane calcula	ition,1 point	At least 2 pairs of points are required for plane calculation,1 point to participate in elevation calculation				
Name	H.Resid	V.Resid	Use Horiz	Use Altitud	Name	H.Resid	V.Resid	Use Horiz	Use Altitud
					1-p1			Yes	Yes
					2-p2			Yes	Yes
					3-p3			Yes	Yes
					4-p4			Yes	Yes
⊘ Settings	+ Add	Compute	☆ Apply		⊘ Settings	+ Add	tin Ki	Apply	

Parameter calculation is to find the mathematical conversion relationship (conversion parameter) between WGS-84 and the local plane Cartesian coordinate system. The data collected by the GPS satellite positioning system in engineering applications is the WGS-84 coordinate system data, and currently our measurement results generally use the coordinate data based on the CGCS2000 coordinate system or the local (arbitrary | local) independent coordinate system. Therefore the WGS-84 coordinates must be converted to the CGCS2000 coordinate system or a local (arbitrary) independent coordinate system.

1. Apply

1.1.Add points

The same point name parameter calculation can be automatically paired and added. If there are multiple GNSS points with the same point name, the first survey point is used. Select the control point and GNSS point, select the calibration method, and click OK to save. Control points can be selected and entered, and GNSS points can be selected, measured or entered.

← Edit	← Edit
Control point	Control point
Name	Name 1
N	N 1.000
E	E 1.000
Z	z 1 X
GNSS point	GNSS point
Name	Name p2
В	B ■. "==\$07.23265"N
L	L
н	н 🖂 11.684
Use Horizontal	Use Horizontal
ок	ОК

1.2.Settings and Calculate

Click Settings to set the coordinate conversion method, height fitting method (automatic selection is the most reasonable method), horizontal accuracy threshold and vertical accuracy threshold; click Calculate in the menu bar to calculate and confirm the parameter calculation information.

← Parameter ca	lculation settings	← Calcula	tion result
Convert method	One-step method >	Convert method	One-step method
Vertical control Horizontal accura Vertical accuracy	Weighted average > 0.020 0.020	Use plan correction North origin East origin N.Shift E.Shift Rotate	on para → → → ▶ 05.947111988400 → → ▶ 2.776496244860 -3380692.003111988300 -259930.427746244850 -09°28'05.81482"
		Scale	730.193908935393
		Use height fitting	para
		AO	-259.516302339984
		A1	-0.548493675646
		A2	1.000333331317
		XO	1913.94400000000
		YO	712.348750000000
	0/		01/
	UK		UK

Check the calculation results "horizontal adjustment", "vertical adjustment" to apply.

1.3. Calibration

÷	Site Calibra	ation			÷	Site Calibr	ation		
At least to partic	2 pairs of points ipate in elevation	are required calculation	for plane calcula	ition,1 point	At least 2 to partici	2 pairs of points pate in elevation	are required n calculation	for plane calcula	ation,1 point
Name	H.Resid	V.Resid	Use Horiz	Use Altitud	Name	H.Resid	V.Resid	Use Horiz	Use Altitud
1-p1	0.000	0.000		Yes	1-p1	0.000	0.000	Yes	Yes
1-p2	0.000	0.000	Yes	Yes	1-p2	0.000	0.000	Yes	Yes
							lm Ex	port port	
⊘ Settings	+ Add	Compute	Apply		⊘ Settings	+ Add	Compute	Apply	

Input or export: Can input or export .loc file.

Delete: Select the data in the list and long press the modify/delete button; Click modify to edit data, or click delete to delete data.

Purpose: Solve the conversion parameters from WGS84 coordinates to local coordinates (such as CGCS2000). After "parameter calculation", if the prompt dialog box that pops up is all selected, the obtained parameters are saved under "current task parameters" and "coordinate system management".

The points selected for parameter calculation should preferably cover the entire work area, and the more points selected, the higher the precision. If the survey area is relatively small (generally the longest distance does not exceed 3 kilometers), and the selected coordinates are standard coordinates, such as CGCS2000, Beijing 54 or Xi'an 80, selecting one can basically meet the accuracy requirements.

Note: If there are three pairs of points in the points calculated by parameters, there will be "horizontal residuals", and four pairs of points will have "vertical residuals". Generally speaking, "horizontal residuals" and "vertical residuals" should not exceed 2cm. If it exceeds 2cm, it means that the control points involved in the parameter calculation are not in the same system or have gross errors (the maximum may be the point with the largest residual error), and the software will prompt the residual error to exceed the limit during application.

Grid Shift

Go to Tool > Grid Shift, which need to select or measure GNSS point, select or enter known point. Move the point related to the current base station to the coordinate system with the known point as the origin:

← Grid S	hift
GNSS point	8 2
Ν	
E	
Z	
Known point	
N	
E	
Z	
ΔN	
ΔE	
ΔZ	
Compute	Apply

1. Select Point

1. select or measure GNSS point

Cancel Plea	se select point		← Su	rvey point	
Base:p1 Surv 11	Auto base No o	off	Name	p13	×
 Base:p1(Bas N: 58.363 E: 1.976 	se) 5 Z: 118.002 Code:		Occupation til Solution	me 1/1 Fixed	
× p10(Fixed) N: ★★★★ 21.440 E: ★★★★ 0.257	Z: #8.530 Code:		N E		03.709 2.069
× p9(Fixed) N: 19.049 E: 19.049	Z: 33.924 Code:		B		, 07.18217"N #17.36077"E
× p8(Fixed) N: 14.779 E: 5.148	2: #=.917 Code:		1.800	049 	
X p7(Fixed) N: 112340 E: 112340	0 Z: 비료.358 Code:		Antenna type	AT1	ttom of device(H) 🔘 Slant(S)
× p6(Fixed) N: =====12.415 F: =====1.170	5 Z: # 8.542 Code:				
Q Search	+ Add	бк	Setting	Survey	ОК

Select point: Go to point library. Measure point: Measure a point directly.

1. Select or enter known point

2.Calculation and Apply

After selection, it will automatically calculate the shift along N, E, Z direction, and click Apply to set the shift to base station related to GNSS point.

Area Calculation

Go to Tool > Area calculation on main interface.

1. Select from Store

← Area Cal	C		Cancel Please select point Select all
Name	Ν	E	D Input point 4
			Base:p1 Surv 11 Auto base No off
			● Base:p1(Base) ● N: 認識158.363 Z: 蒼1.002 E: 認識14.976 Code:
			× p10(Fixed) [■] N: 認識121.440 Z: 直1.530 E: 認識10.257 Code:
			× p9(Fixed) [■] N: 記述19.049 Z: 約1.924 E: 記述10.708 Code:
			× p8(Fixed) N: 記聞14.779 Z: 眉1.917 E: 記聞15.148 Code:
			× p7(Fixed) 「 N: 記述112.340 Z: 首1.358 E: 記述17.431 Code:
	<u> </u>		× p6(Fixed)
Compute	Shape Library	choose	Search Add OK Go

store and select point, you can select single point or all points.

2. Graphics and Sort



Click Grphacis to check area's graphic, and drag graphic to sort.

3. Calculation and Save



Click Calculation and save the result, set output path and name, then click OK.

4. Clear and Delete

Click the button to clear, select OK to clear point stored, or click cancel to go back to the point list.

<i>← /</i>	vrea Calc			÷	Area C			
Na	ne N	E			Name	N	E	
1111 p8	battai 14.779	Julia 5.148	75		p8	2 W № 14.779	7 V ₩ 5.148	75
іііі р9	19.049 (Jacobs)	0.708	76		р9	7 V X 19.049	7 V 24 0.708	76
1111 p1	0 000000 21.440	0.257	76	III	p10	7 W W 21.440	J W W 0.257	76
							CANCEL OK	
	Cle	ar data				0	G	
Comp	ute Shape L	ibrary choose	:	Co	mpute	Shape Li	brary choose	

Ca	ncel		1 selected	Select all
		Name	N	E
		p8	14.779 (Jan 14.779	000000 5.148
		p9	19.049 in 19.049	000000 0.708
		p10	21.440	Jan 125 0.257
			ជា	
			Delete	

Earth Work

Go to Tool > Earth Work on the main interface.

← Earthwork Calc	← Result
Surface 001 >	Result of surface and Reference elevation
Reference elevation	Surface name 001
Height 76.000	Reference elevati76.000
□ Reference := ② □ Reference :=	Excavation(m ³) 57.582
└─ surface ·—	Fill(m ³) 0.011
	Intersect area(m ²) 0.000
	Surface: 001
	Area(2D:m ²) 67.167
	Area(3D:m ²) 78.670
Compute	Export report

1. plane: The plane on which to cut or fill.

- 2. reference elevation: The earthwork is calculated according to the elevation.
- 3. reference point: Calculate the earthwork according to the elevation of the reference point. The reference point can be obtained through the point library or on-site measurement.
- 4. reference plane: Earth work calculation between planes.

Volume calculation report				
Path	/GreenValley/Is/Export >			
File name	20220518_170346			
	ок			

1. export report: Export earth work report.

LiSurvey Volume calculation report

Basic information

Project name:	20220518_170346
Calculation date:	5/18/22 5:54 PM
Coordinate system:	China/CGCS2000
Input surface name:	001
Reference method:	Reference elevation

Calculation result

Surface(2D):	67.167 m ⁴		
Surface(3D):	78.670 m ²		
Excavation:	57.582 m ³		
Fill:	0.011 m ³		

Reference elevation: 76.000 m

Coordinate list of input surface:

Point name	N	E	Z
p1	□= == -=04.483	1.206	 .684

The export report includes: task information, calculation date, calculation method, calculation result, and coordinates of points in the plane.

Other Calculation

Task > Other Calculation provides functions including: Angle Conversion, Two-Point Calculation, Point-Line Distance, Eccentric Point, Deflection Angle, Deflection Point, Intersection Point, Equal angle Point, Isometric Point Set, measure point average.

Angular transformation	>
Two Points	>
Point to line	>
Offset point	>
Deflection angle	>
Deflection point	>
Intersection point	>
Bisection point	>
Points from line	×
Point average	>

Point selection have two types: 1. Select from point library. 2. Select Measure point.

Measure point: Click Measure to get coordinates of receiver, click OK and set start/end location. Click Setting to set measure point.See Option for detailed information.

Cancel	Pleas	e selec	t point S	elect all	← su	irvey point	
🗌 💿 Input	t point	4			Name		
Base	:p1 Surv	11	Auto base	No off	Occupation Solution Diff delay(D N E Z B L H 1.800 Antenna typ	time)) dd.mr ddd.n oe o e o Bot	msssssss nmsssssss tom of device(H) () Slant(S)
Q Search		+ Add		бк	Setting	Survey	ок

1. Angle Conversion, Two-Point Calculation

Angle Conversion: You can choose the appropriate format, including degrees, minutes, seconds, degrees (°), radians (rad), and degrees (gon); enter the value to be calculated in the input box below, and click Calculate to calculate below. displayed in the results. Two-Point Calculation: You can select two points from point library, or click button to measure calculation.

🔶 Angula	ar transformation		← тwo	Points	
Format		DMS >	Start point	p1	\equiv
DMS	01°00'00.00000"		Ν	1.000	
Result			E	1.000	
DMS	01°00'00.00000"		Z	1.000	
Degree(*)	1.00000000000		End point	p2	∷≣ ©
radian(rad)	0.017453292520		Ν	42.000	
gradian(gon)	1.111111111111		E	19.000	
			Z	14.000	
			Azimuth	23°42'09.52542"	
			H.Dist	44.7772	
			Distance	46.6262	
			V.Dist	13.0000	
			٨h	13,000	
Compute				Compute	

2. Point-Line Distance, Eccentric Point

Point-Line Distance: Calculate distance between point and line.

Eccentric Point: Calculate eccentric point coordinates, after calculation, you can add this point to point library.

← Point	to line	← Offset p	oint
P d B	Known: Point P, A, B Compute: Distance(d) from point P to line AB		Known: Point A; Azimuth of AP; H.dist and V.dist from A to P.(N shows north direction) Compute: P coordinate
Ρ	01 🗄 🙎		01 😑 🧕
Ν	1.000		j I
E	1.000	N	1.000
Z	1.000	E	1.000
A	02 📃 🧕	Z	1.000
		H.distance	1.000
Ν	14.000	Malatanaa	1 000
E	52.000	v.distance	1.000
Z	19.000	Azimuth	30°00'00.00000"
-	· <u> </u>		
Clear	Compute	Clear	Compute

3. Deflection Angle

Calculation is performed through the point library or the points obtained by measurement, and the calculation result is displayed at the bottom.

← Deflec	tion angle	← Deflect	ion angle
Bejo A	Known: Point A, B, C Compute: Deflection angle from AB to BC	E	1.000
A CO	p1 🗄 🙎	В	p2 ∷≣ ②
Ν	1.000	N	42.000
E	1.000	E	19.000
Z	1.000	Z	14.000
В	p2 ∷≣ ②	С	p3 ∷≣ ②
Ν	42.000	Ν	18.000
E	19.000	E	33.000
Z	14.000	Z	55.000
		126°02'27.30079	
Clear	Compute	Clear	Compute

4. Deflection Point

Calculation is performed through the point library or the points obtained by measurement, and the calculation result is displayed at the bottom.

← Deflec	tion point	← Deflection point		
	Known: Point A, B; angle from AB to AP; distance of AP(AP=AB by default). Compute: P coordinate	A L P	Known: Point A, B; angle from AB to AP; distance of AP(AP=AB by default). Compute: P coordinate	
A	p1 🗄 🙎	r	.1 := 0	
Ν	1.000	Prompt		
E	1.000	Result: x:42.000 y:19.000 b:0.000		
Z	1.000	Save to Elem	ent?	
В	₽2 🗮 🙎		CANCEL ADD	
Ν	42.000	N	42.000	
E	19.000	E	19.000	
Z	14.000	Z	14.000	
Clear	Compute	Clear	Compute	

4. Intersection Point

Calculation is performed through the point libraryor the points obtained by measurement, and the calculation result is displayed at the bottom.
← Inter	section point			← Interse	ction point
A C	A C C Known: Point A, B, C, D Compute: Intersection point of AB and CD			A C	Known: Point A, B, C, D Compute: Intersection point of AB and CD
A N E Z	B 01 1.000 1.000	C		Prompt Result: x:3.600 y:11.200 h:0.000 Save to Eler	nent? CANCEL ADD
Clear		Compu	ite	Clear	Compute

5. Equal Angle Point

Calculation is performed through the point library or the points obtained by measurement, and the calculation result is displayed at the bottom.

← Bisection	n point	← Bisection	point
P'. B A P	Known: Point A, B, C; distance of BF P is a point on angle bisector, negative shows direction. Compute: P coordinate	P'. B A P	Known: Point A, B, C; distance of BP, P is a point on angle bisector, negative shows direction. Compute: P coordinate
A A N E Z	в с 	Prompt Result: x:32.016 y:19.572 h:0.000 Save to Elem	ent?
BP		BP	10.000
Clear	Compute	Clear	Compute

6.Isometric Point Set

← Intersectio	n point	← Points f	from line
A C A	nown: Point A, B, C, D ompute: Intersection point of AB nd CD	Z End point N	
Prompt Result: x:35.563 y:16.174 h:0.000 Save to Elemen	nt? CANCEL ADD	E Z Method Stepsize	Fixed stepsize >
		First name Point stepsize Code	
Clear	Compute	Clear	Compute

Plane step size: The interval value set in the two-dimensional plane. After setting the step size, the first point name, the point name step, and the code (optional), click Calculate to calculate the plane between the two points. The distance divides the points according to the interval value, and the obtained points are stored in the coordinate point library->input point.

Space step length: The interval value set in the three-dimensional space. After setting the step length, the name of the first point, the step of the point name, and the code (optional), click Calculate to calculate the spatial distance between the two points. The points are divided according to the interval value, and the obtained points are stored in the coordinate point library->input point.

Number of segments: The number of line segments between two points. After setting the number of segments, the name of the first point, the step of point name, and the code (optional), click Calculate to calculate the space distance between the two points according to the number of segments. Divide the points, and the obtained points are stored in the coordinate point library -> input points.

7. Average Point Measurement

7.1. Library and measurement

Consistent with other point selection methods, you can select points through library selection, or select points by measurement.

← Р	oint averag	e			С	ancel	Please	e select	point S	elect all
Catego	Ŋ	N	E			🔊 Input po	int	4		
						🔊 Base:p1	Surv	11	Auto base	No off
Library					(2		1		54
choose	Survey	Compute	Delete	:	Se	arch		Add		OK

7.2. Calculate and delete

← Р	oint average			÷	Point averag	e		
Categor	у	N	E	Categ	jory	N		E
(b) Base:p1	2004-58.363	1001 4.976	25.0C	b Base	p1 (300)	58.363	100414.976	5 25.0C
			36	× p1	20081	04.483	00411.206	5 77.68
Avera	age value		36	× p2	23081	05.487	2.034	77.68
N	506 5	4 2.960	1E					IE.
E	596.5	=1.310		Po	oup info			
Z	5=.2	65		Do y	ou want to de	elete sele	cted points	s?
В	556.5	■'15.03274"N	53					53
L	55	21.63362"E	1			C	ANCEL	OK M
н	.2	65						
			5	× p7	20081	12.340	7.431	77.35
		CON	FIRM 11	× p8	33000	14.779	100415.148	3 75.91
× p9	T004119.049	200510.708	76.92	× p9	23081	19.049	1904110.708	3 76.92
× p10	1000121.440	3000 0.257	76.53	× p10	200812	21.440	0.257	7 76.53
Library choose	Survey Com	pute Delete	e :	Library	Survey	Compu	te Dele	te :

7.3 Coordinate Type

7.3.1 local plane coordinates

Click the coordinate type option in [three small dots], you can choose local plane coordinates or WGS84 latitude and longitude coordinates, the default local plane coordinates.



7.3.2 WGS84 latitude and longitude coordinates

← Р	oint averag	je		
Catego	ry	В		L
(b) Base:p1	5433	31.1282	<u>⊒</u> '09.359	. ≣ -=.0C
× p10	546.	07.7419	<u> </u>	. ≣ =.53
Library choose	Survey	Compu	te Delete	:

7.4. Clear

← Р	oint average			← ፣	Point average	•		
Catego	ry	N	E	Category	,	N		E
• p1	1.000	1.000	1.000					
• p2	42.000	19.000	14.00					
Pop	up info							
Are yo	ou sure to clear	all data?						
		CANCEL	OK			Succeed		
	_	CANCEL	UK					
Library				Library	Current	0	Delete	
choose	Survey Co	mpute Del	ete :	choose	Survey	Compute	Delete	:

FTP transfer

Go to Tool > FTP on the main interface.

← FTP	← FTP
WLAN Status	WLAN Status
Manage device files manually after running FTP	Please go to 'Computer' and enter address: ftp://192.168.19.45:2121
Run FTP	Stop FTP

Click Start service > enter FTP address on the computer.

Mail

Go to Tool > Mail on the main interface.

← E-mail	
Address	
Subject	
Content	
	Send

 $\ensuremath{\textbf{Note}}\xspace$ the email address, topic and content are not allowed to miss.