

SGO USER MANUAL

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Contents

Chapter 1 Installation and Uninstallation	5
1.1 Installation	5
1.1.1 SGO Recommending Installation Environment	5
1.1.2 Installation steps	5
1.2 Uninstallation	7
Chapter 2 Quick Start Guide	9
2.1 Static data processing	9
2.1.1 Create a new project	9
2.1.2 Import raw data	. 10
2.1.3 Baselines processing	. 12
2.1.4 Network adjustment	. 17
2.2 Kinematic data processing	. 19
2.2.1 Single frequency data processing	20
2.2.2 Dual frequency data processing	23
Chapter 3 Main Interface	29
3.1 Menu	30
3.2 Toolbar	30
3.3 Project Management	30
3.4 Display window (Plan View)	31
3.5 Property window	32
3.6 Output window	33
Chapter 4 File	. 34
4.1 New project	34
4.2 Open project	39
4.3 Project setting	40
4.4 Close	41
4.5 Save	. 41
4.6 Save as	42
4.7 Print	42
4.8 Options	43
4.8.1 Show	43
4.8.2 Save	. 43
4.8.3 Port	44
Chapter 5 Common operations	45
5.1 Toolbar edit	45
Chapter 6 View	48
6.1 Window settings	48
6.2 Plane view tools	49
6.3 Plane view	. 49
6.4 Station list	50
6.5 Station edit	51
6.6 Station time	51



6.7 Residual analysis	52
6.8 Baselines list	52
6.9 Closure loops list	53
Chapter 7 Survey	55
7.1 Import and export	55
7.2 Download IGS	55
7.3 Processing setting	56
7.3.1 Cal.parameters	57
7.3.2 Cal.quality	58
7.3.3 Satellite	59
7.3.4 Dynamic Baseline	59
7.4 Process baseline	60
7.4.1 Quality check result	61
7.4.2 View	
7.5 Adjust failed baseline	66
7.6 Delete baseline and rebuild baseline	
7.7 Kinematic processing	71
7.8 Network adjustment	
7.8.1 Network adjustment type	
7.8.2 Step of network adjustment	
7.9 Report	73
7.9.1 Baseline report	73
7.9.2 Baseline list report	74
7.9.2 Closure loop report	
7.9.3 Net adjust report	75
7.9.4 Dynamic route report	75
7.9.5 Quality check report	76
7.9.63D adjustment report.	
7.9.7 2D adjustment report	
7.9.8 closedloop report	
Chapter 8 CAD	
8.1 CAD tools	
8.1.1 Draw point	
8.1.2 Draw polyline	
8.1.3 Draw polygon	
8.1.4 Draw text	
8.1.5 Draw circle	
8.1.6 Draw arc	
8.1.7 CAD edit	
8.1.8 COGO	
Chapter 9 Tool	
9.1 Coordinate system	
9.2 Coordinate conversion	
9.3 Antenna management	86



9.4 Road design	87
9.5 Instar	88
9.6 GPSdecoder	88
9.7 Quality check	89
9.8 Data template	
9.9 Export Rinex	
9.10 RTK check	
9.11 Software registration	
-	



Chapter 1 Installation and Uninstallation

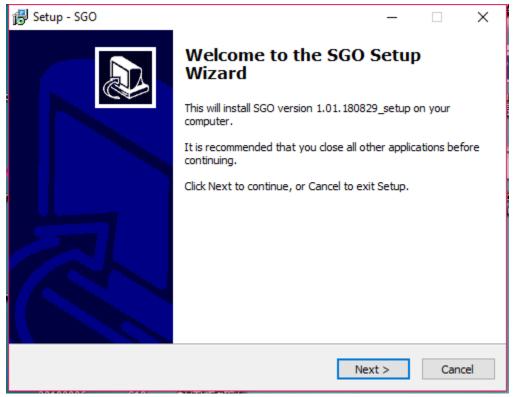
1.1 Installation

1.1.1 SGO Recommending Installation Environment

SGO software can be installed directly from the CD or the hard disk. It needs at least Windows XP OS and 1G internal storage.

1.1.2 Installation steps

Double click on the SGO.exe installation program and then choose installing language from the appearing dialog. After that the install shield wizard will detect the installation component automatically, then appears the interface as shown following. Click on "Next" button to continue.

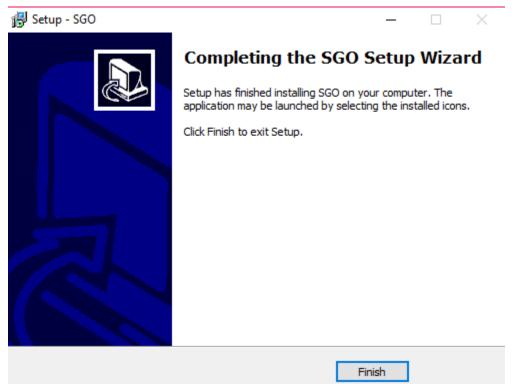


Then select the installation location, then the program will start to install. The installation process will take several minutes, please wait patiently until the installation finish.



😽 Setup - SGO	_			×
Select Destination Location Where should SGO be installed?			() ()	
Setup will install SGO into the following folder.				
To continue, click Next. If you would like to select a different folder	r , clic k	Browse	2.	
C:\SouthGnss\SGO		Brows	æ	
At least 501.5 MB of free disk space is required.				
< Back Ne	xt >		Canc	el

Click on "Finish" button and return to your computer desk, the SGO shortcut is automatically generated there. Then you can double click on this shortcut to start it,







1.2 Uninstallation

In this section, you will get the steps how to uninstall SGO program from your computer. This section provides two methods to uninstall the program.

1, You can find the uninstalling program from Start—All Programs—SouthGNSS, then tap on "SGO Uninstall" option to start your operation.



2. Go to "Control Panel—Uninstall a program" interface on PC server, find SGO option in "Programs and Features" interface, then right click on this option and choose "Uninstall" option to perform program uninstallation.

Before uninstalling the program, please make sure if the software has been turned off and save all useful data and parameters already.

Programs and Features

← → × ↑ 🙆 > Control Panel → Programs → Programs and Features Control Panel Home Uninstall or change a program View installed updates To uninstall a program, select it from the list and then click Uninstall, Change, or Repair.

Name	Publisher	Installed On	Size	Version
Votepad++ (32-bit x86)	Notepad++ Team	3/28/2018	10.4 MB	7.5.4
NrsEagleServer	Your Company Name	1/19/2018	165 MB	1.00.0000
NrsStation	Your Company Name	1/15/2018	6.89 MB	1.00.0000
🔚 On Screen Display		3/28/2018		7.12.21
Power Nav	SOUTH SURVEY Ltd.	12/20/2017	9.90 MB	1.00.0000
PptPlex from Microsoft Office Labs	Microsoft Office Labs	12/1/2015	3.73 MB	1.1.0.0
REALTER Bluetooth Driver	REALTEK Semiconductor Corp.	5/15/2014		3.769.769.100613
B REALTEK Bluetooth Filter Driver	REALTEK Semiconductor Corp.	10/2/2016	50.7 MB	1.3.886.030716
Realtek Card Reader	Realtek Semiconductor Corp.	6/16/2014	13.5 MB	6.2.9200.21236
Realtek Wireless LAN Adapter Software	REALTEK Semiconductor Carp.	6/16/2014	10.2 MB	1.00,0048.0
Revo Uninstaller Pro	VS Revo Group, Ltd.	10/2/2016	38.7 MB	3,1.6
👩 Samsung Printer Live Update	Samsung Electronics Co., Ltd.	3/28/2018		1.01.00:04(2013-04-
🐔 SendSpace Wizard	SendSpace	3/28/2018		1.4.2
Sentinel HASP Vendor Library	Trimble Navigation Ltd.	6/12/2015	2.06 MB	2.33.1.36535
Sentinel Protection Installer 7.6.1	SafeNet, Inc.	7/12/2016	11.0 MB	7.6.1
Sentinel System Driver Installer 7.5.0	SafeNet, Inc.	3/5/2015	2.51 MB	7.5.0
SG Miner	Open Source	3/28/2018	1.50 MB	5.1
SGD version 1.01.180829_setup	SouthGnss	9/3/2018	499 MB	1.01.180829_setup
Skype version 8.28	Skype Technologies S.A.	8/24/2018	186 MB	8.28
B STC	South surveying and mapping i	3/31/2018	205 MB	1.2.8
Synaptics Pointing Device Driver	Synaptics incorporated	3/28/2018	46.4 MB	19.0.17.115
Tekle Model Sharing Foundation, IFC import plugin 2	Tekla Corporation	6/12/2015	12.9 MB	2.8.0
O ThinkVantage Active Protection System	Lenovo	6/16/2014	13.9 MB	1,77.0.26
😫 TIM	腾讯科技(深圳)有限公司	3/28/2018	194 MB	1.2.0.21645
V Weli-fity WBE DOK 5011	Validity Sensors Inc	6/16/2014	170 MB	4 5 740 0



Chapter 2 Quick Start Guide

In this chapter, we will explain the general procedure via SGO software to resolve the data of static, dynamic. You can find details or advance usage in the following chapters. This chapter helps you to complete data processing rapidly.

2.1 Static data processing

SGO software can process static data in STH, Rinex format, with straightforward and simple operations giving you bran-new experience on your work. We will demo a process below for one static job surveyed in the field to show general operational procedures on SGO.

2.1.1 Create a new project

From the main menu of SGO, select **File** \rightarrow **New Project**, or tap on the shortcut **b** located in toolbar to create a new project.

S	🔟 New proje	ct		×
	Meter:		Create a project in metre	
	Feet:			
	Name	Ne	ew project1	
	Location	C:\	Users\PC8739\Documents\南方地理数据处理平台软件 Browse	ų.
			OK Cancel	

Here you can define project **Name** and storage **Location**, and choose either Metric or English unit for your project. Click **OK** to enter Project Setup window, then set up the parameters for your current project, such as company information, <u>coordinate system</u>, angle and coordinate display format, limitation value for processing quality and so on.

For more detail information of Project setup, please move your step to chapter VI Project.



800 Project setting		×
General info	General info	
Coordinate system	Project location	C:\Users\PC8739\Documents\南方地理数据处理平台软件\
Unit options	Time	9/4/2018 4:43:55 PM
Closure loop tolerance Export setting	Project unit	
Dynamic view	Unit name	Default
Control point template	Address	
	Telephone	
	Operator	
	Field person	
	Indoor person	
		OK Cancel Apply

Click Apply to confirm all settings and click OK to finish creating new project.

During processing, you can click **Common operations** \rightarrow **Project setting** to review and modify all settings above.

2.1.2 Import raw data

Select **Import**→**Import observation file** to import all static files you want to process. SGO supports importing of STH files downloaded from SOUTH GPS receiver directly, or commonly-used Rinex format. Click **Open** to start importing



Import files	ocuments > 123 > 123123 >	v Č Sea	arch 123123		: م
		• •			
Organize 🔻 New fold	er		•===	•	?
This PC	Name	Date	e modified	Туре	
🗊 3D Objects	📊 Image	9/6/	2018 1:37 PM	File folder	
Desktop	📊 Report	9/6/	2018 1:37 PM	File folder	
🔮 Documents	📄 123123.sgo	9/6/	2018 11:28 AM	SGO File	
Downloads	G001007Q.12O	6/7/	2018 7:59 PM	120 File	
Music	G002007Q.12O	-1 -1	2018 7:59 PM	120 File	
	G005007Q.12O		2018 7:59 PM	120 File	
P10_XDD	G007007Q.12O		2018 7:59 PM	120 File	
Pictures	JZ25007Q.12O	6/7/	2018 7:59 PM	120 File	
Videos					
🏪 Windows8_OS ((
🕳 Local Disk (D:)					
🕳 Local Disk (E:)					
Local Disk (F:)					
• • • • • • • • • • • • • • • • • • •	<				
File n	ame: G005007Q.120	∽ St	h/Rinex File(*.*o	*.sth)	\sim
			Open	Cancel	

After SGO gets all files imported, it will prompt a window to show Observation period, Data Type, Manufacturer, Antenna Type, Antenna Height, Serial Number of the receiver observed the file, File storage path. Importantly, we can modify antenna height in this window for our observation if we didn't set it a correct value in this field.

ID	Starting	time	Ending time	Data type	Manufacturer	Antenna type	Antenna heigi
G001	2012-01-07	16:00:00	2012-01-07 16:59:59	Static -	Default -	Default -	0.000
G002	2012-01-07	16:00:00	2012-01-07 17:00:00	Static -	Default -	Default -	0.000
G005	2012-01-07	16:00:00	2012-01-07 17:00:00	Static -	Default -	Default -	0.000
G007	2012-01-07	16:00:01	2012-01-07 17:00:00	Static -	Default -	Default -	0.000
JZ25	2012-01-07	16:00:00	2012-01-07 17:00:00	Static -	Default -	Default -	0.000

Click **OK** and the graph of static network will appear.



E I I III III III III IIII IIIIIIIIIII	SGO (SOUTH GEOMATICS OFFICE) ~C./Users/a/Documents/SGO (SOUTH GEOMATICS OFFICE)/TEST/TEST.ago rey CAO Tool	- _ Log	5 ×
New project Project Project	Processing Process Process Cleare Net LocalOnd Report Process Clear Rebuild Report 9 Construction Process Clear Rebuild Report 9 Construction Clear Rebuild Report 9 Construct	10.00 × 14 11 00 rev	
roject management 🖉 🛪	Homepage × Plane view × Station edit ×	Properties management	a
4 矛 Station	Q G007	N Rover info	
▲ 示 G001	Nacos	Point ID	G00
- G001007Q.120 本 系 G002		File location	CAU
G0020070.120	3912030N	Starting time	2012
▲ 示 G005	\sim	Duration	0 ho
G005007Q120	6 G005	Antenna height	0.000
4 🛱 G007		Antenna measuring metho	d Phas
G007007Q,120		Manufacturer	Defa
JZ25007Q.12D		Antenna type	Defa
7 Baseline		SN	
- A G001007Q-G002007Q		Geodetic	
- 5 G001007Q-G005007Q		Latitude	33.29
- X G001007Q-G007007Q - X G001007Q-JZ25007Q	391162DN	Longitude	113.5
- 3 G002007Q-G005007Q	391.020N	Ellipsoidal height	148.3
- X G002007Q-G007007Q	N I	Spatial coordinates	
- 24 G002007Q-JZ25007Q		ECEF_X	-213
- 2 G005007Q-G007007Q - 2 G005007Q-JZ25007Q		ECEF_Y	4892
G007007Q-JZ25007Q	6002	ECEF_Z	3481
T Rover	0.002	1.1	
- N Dynamic route			
- X Closure loop	₩ ₩ ₩		
	105 105 105 105 105 105 105 105 105 105	3.80Meter	
	3911209N	xoonvieter,	-

2.1.3 Baselines processing

At the beginning of baseline process, we need to set processing parameters matching with our preplanned specifications for static project. Select **Survey** \rightarrow **Processing setting.**

Cal.paremeters: Toset process parameters for static observation data.

860 BaseLine Process Setting		×
Cal.parameters	Parameters	
Cal.guality	Least epch in section	30
Satellite	Cycle slip detection method	Kalman
Dynamic Baseline	Mask angle	13
	Sampling inverval	30
	Fixed rate	3.000
	Enable GPS	True
	Enable GLONASS	True
	Enable BDS	False
	Solution type	L1/B1
	Estimate troposphere or not	False
	Estimate troposphere or no	t
		OK Cancel

Cal.quality: To set tolerance for static processing. Setting listed errors smaller value means higher process accuracy requested for current project.



Cal.parameters	calculation quality		
Cal.quality	Single frequency fixed error	0.030000	
Satellite	Single frequency ratio error(ppm)	1.000000	
Dynamic Baseline	Dual frequency fixed error	0.020000	
	Dual frequency ratio error(ppm)	1.000000	

Satellite: To specify data from which satellites available for static processing, supported satellites constellations are GPS, GLONASS and Compass.

800 BaseLine Process Setting				×
Cal.parameters	GPS	GLONASS	BDS	^
Cal.quality Satellite	🗹 G01	✓ R01	✓ C01	
Dynamic Baseline	G02 G02	✓ R02	✓ C02	
	✓ G03	✓ R03	☑ C03	
	<mark>⊠ G04</mark>	✓ R04	✓ C04	
	<mark>⊠ G05</mark>	✓ R05	✓ C05	
	<mark>⊠ G06</mark>	☑ R06	☑ C06	
	<mark>⊠ G07</mark>	☑ R07	✓ C07	
	<mark>⊠ G08</mark>	✓ R08	☑ C08	
	<mark>⊠ G0</mark> 9	☑ R09	☑ C09	
	🗹 G10	R10	⊠ C10	•
				OK Cancel

Dynamic Baseline: The settings for kinematic processing.



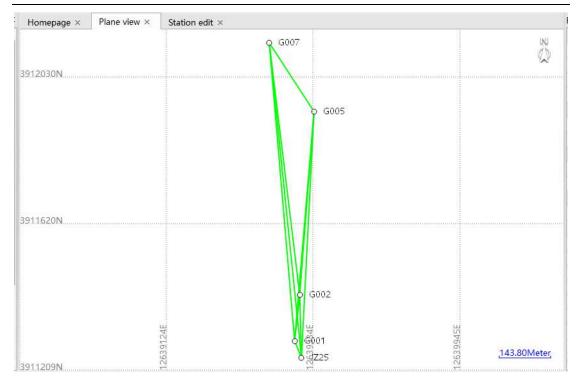
SG	BaseLine Process Setting				×
	Cal.parameters	Dynamic baseline			
	Cal.quality	Mask angle	13.000000		
	Satellite Dynamic Baseline	AutoNumber	AuPt		
	Dynamic baseline				
				ОК	Cancel

Click **OK** to finish processing settings. Then click **Survey** \rightarrow **Process baseline**, click **Process**, SGO will start to process all baselines in this project.

		Baseline	Synchronization time	Solution type	Fixed rate	RMS(m)	HRMS(m)	VRMS(m)	Baseline length(m)
		G001007Q-G002007Q	0 hour(s)59 min(s)59.0 sec(s)	Fixed	99.900	0.006	0.003	0.006	108.407
		G001007Q-G005007Q	0 hour(s)59 min(s)59.0 sec(s)	Fixed	71.535	0.006	0.003	0.005	537 . 971
		G001007Q-G007007Q	0 hour(s)59 min(s)58.0 sec(s)	Fixed	99.900	0.006	0.003	0.006	699.319
		G001007Q-JZ25007Q	0 hour(s)59 min(s)59.0 sec(s)	Fixed	65.745	0.008	0.004	0.007	42.461
		G002007Q-G005007Q	1 hour(s)0 min(s)0.0 sec(s)	Fixed	99.900	0.006	0.003	0.005	429.617
		G002007Q-G007007Q	0 hour(s)59 min(s)59.0 sec(s)	Fixed	99.900	0.006	0.003	0.005	593.414
•		G002007Q-JZ25007Q	1 hour(s)0 min(s)0.0 sec(s)	Fixed	99.900	0.008	0.004	0.007	147.226
		G005007Q-G007007Q	0 hour(s)59 min(s)59.0 sec(s)	Fixed	99.900	0.006	0.003	0.005	191.998
	\checkmark	G005007Q-JZ25007Q	1 hour(s)0 min(s)0.0 sec(s)	Fixed	99.900	0.007	0.003	0.006	576.283
0		G007007Q-JZ25007Q	0 hour(s)59 min(s)59.0 sec(s)	Fixed	99.900	0.007	0.004	0.007	740.076

If **Solution type** of each baseline turns to be **fixed** after processing, it means that all baselines are qualified and we can continue with network adjustment. Fixed baselines will be displayed on survey graph in green color.





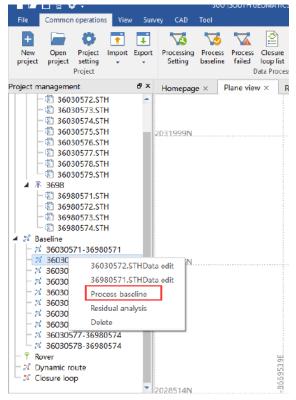
Otherwise if some baselines did not turn fixed, we have to select unfixed baseline listed in the left display frame, and try different groups of **Cutoff angle** and **Interval** to process this baseline again and get fixed solution.

		Baseline	Synchronization time	Solution type	Fixed rate	RMS(m)	HRMS(m)	VRMS(m)	Baseline length(m)
1	\checkmark	36030571-36980571	0 hour(s)26 min(s)40.0 sec(s)	Float	2.013	0.027	0.012	0.025	429.817
2	\checkmark	36030572-36980571	0 hour(s)43 min(s)5.0 sec(s)	Float	1.000	0.045	0.022	0.039	344.263
3	\checkmark	36030572-36980572	0 hour(s)18 min(s)30.0 sec(s)	Float	1.000	1.000	999.000	999.000	488.924
4	\checkmark	36030573-36980572	0 hour(s)37 min(s)30.0 sec(s)	Float	2.426	0.052	0.022	0.047	402.072
5	\checkmark	36030574-36980574	0 hour(s)59 min(s)5.0 sec(s)	Float	1.179	0.024	0.012	0.021	2747.968
6	\checkmark	36030576-36980574	0 hour(s)21 min(s)10.0 sec(s)	Float	1.986	0.029	0.015	0.025	2755.863
7	\checkmark	36030577-36980574	0 hour(s)18 min(s)0.0 sec(s)	Float	2.211	0.050	0.022	0.045	3340.321
8	\checkmark	36030578 36080574	0 hour(s)42 min(s)10.0 sec(s)	Float	1.197	0.027	0.015	0.022	3687.941



Cal.parameters	Parameters	
Cal.quality	Least epch in section	30
Satellite	Cycle slip detection method	Kalman
Dynamic Basel	Mask angle	13
	Sampling inverval	30
	Fixed rate	3.000
	Enable GPS	True
	Enable GLONASS	True
	Enable BDS	False
	Solution type	L1/B1
	Estimate troposphere or not	False

After you change the calculation parameters, you can process each baseline by right click the baseline in the left display frame.



.

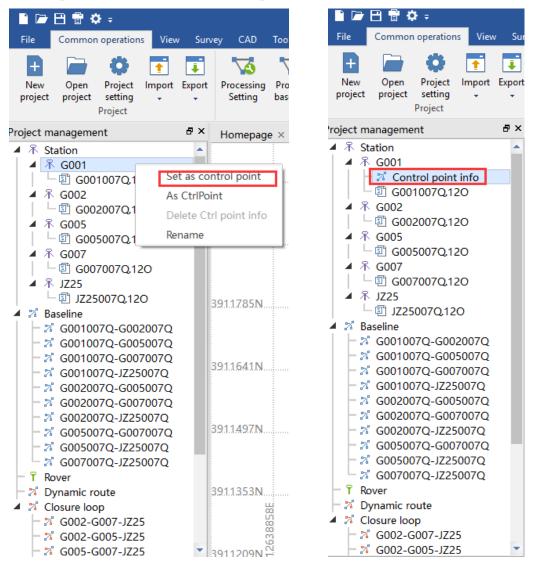
You can also process all failed baseline by tap on the Process failed button.

2.1.4 Network adjustment

Prior to network adjustment, we need to specify two or more points in static network as control

points, and input coordinates (BLH, XYZ or xyh) of them into SGO

In our demo project, we will specify G001 as control points. Right click each point in **Station** item in left display frame and set them **as control point**.



Then in the right display frame select Manual input mode, then input the N,E,Elevation.



Properties management 🛛 🗗		
Selected station		
Selected station	G001	
Spatial rectangular c	oordinates	
х	0.000000	
Y	0.000000	
Z	0.000000	
Geodetic coordinate	s	
Latitude	0d00m0.00000sN	
Longitude	0d00m0.00000sE	
Ellipsoidal H	0.000	
Plane		
Mode	Manual Input	
Northing	4435927.025	
Easting	4187856.875	
Elevation		
Elevation	150.165 ‡	

If the control point only has B,L and Ellipsoidal H or XYZ, but you need the software to calculate the plane coordinate Northing, Easting and Elevation, you can select Projection BLH after you input the Geodetic coordinates, then the software will give the projection plane coordinate automatically.

Properties manageme	ent
Selected station	
Selected station	G001
Spatial rectangular c	oordinates
Х	0.000000
Υ	0.000000
Z	0.000000
Geodetic coordinate	s
Latitude	33d17m47.96819sN
Longitude	113d32m32.64785sE
Ellipsoidal H	150.165
Plane	
Mode	Projection BLH
Northing	4435927.504
Easting	4187856.947
Elevation	
Elevation	150.165

You can also select the As CtrlPoint option to create the control point, the different is the SGO software will give an approximate plane coordinate as control point, so if you do not have any known point, you can use this option.

■ ➡ ➡ ➡ ♥ = File Common operations Vi	ew Survey C.
Coordinate Coordinate Antenr system conversion managen Coordinate axis	
roject management	₽× Home
▲ 示 G002 「回 G0(ntrol point int L rl point info
▲ 矛 G007	
느 회 G007007Q,12O	G08 L
▲ 矛 JZ25 └ 創 JZ25007Q.120	G09 L
 % Baseline % G001007Q-G002007(% G001007Q-G005007(% G001007Q-G005007(% G001007Q-G007007(% G002007Q-G005007(% G002007Q-G007007(% G005007Q-JZ25007Q % G005007Q-JZ25007Q % G005007Q-JZ25007Q % G005007Q-JZ25007Q % G007007Q-JZ25007Q % G007007Q-JZ25007Q % G007007Q-JZ25007Q % G00r007Q-JZ25007Q % G00r007Q-JZ25007Q % Closure loop 	Q G18 L Q G21 L Q G22 L Q G26 L Q G27 L
- 🛪 G002-G007-JZ25 - 🛪 G002-G005-JZ25	
- 🛪 G005-G007-JZ25	-

elected station			
Selected station	G001		
Spatial rectangular coordinates			
Х	0.000000		
Υ	0.000000		
Z	0.000000		
Geodetic coordinates			
Latitude	0d00m0.00000sN		
Longitude	0d00m0.00000sE		
Ellipsoidal H	0.000		
Plane			
Mode	Projection BLH		
Northing	4435927.504		
Easting	4187856.947		
Elevation			
Elevation	148.308		

Click **Net adjustment** button adjustment, and SGO will adjust the whole network with known coordinates of control points.

Net

2.2 Kinematic data processing

SGO program is also integrated with the ability of kinematic data processing, in this section you will understand well how to use SGO to perform the stop&go data processing.

This kinematic processing method is divided into two cases, one is to process data files which recorded by single frequency receiver, the other one is to process the data files recorded by dual frequency receiver.



2.2.1 Single frequency data processing

The single frequency data files recorded by south H68 receiver or S750, S760 (dual frequencies actually) handheld which owns the ability of collecting kinematic data file, after finishing field data collection, download the correct raw data files from base and rover to your computer.

Create a new project

Run SGO program on computer and create a new project as same as static data processing.

Load raw data



Click import button **Import** located in toolbar to find the folder where your data files are stored. Select the two kinematic files from base and rover then click ok button to go on, and modify the station name and antenna height in next pop-up dialog.

	60 File list X						
	ID	Starting time	Ending time	Data type	Manufacturer	Antenna type	Antenna heig
1	2111	2013-05-15 08:36:47	2013-05-15 17:34:10	Static -	SOUTH -	ZYGPS-C-3 🔹	1.270
2	2225	2013-05-15 15:10:50	2013-05-15 17:08:13	Dynamic 🔹	SOUTH -	ZYGPS-C-3 🔹	0.000
4							•

Input control point coordinates

After loading raw data, set the base station as control point. Right click on the base station file and choose "Set as control point" option, then the option of "Control point info" appears under base data file, tap on this option to input coordinates for base station in property window located at the right side.



▲ 示 Station		Project management	₽×	Properties manageme	ent 🗗 🛪
▲ 〒 2111 ▲ 示 Station ▲ 〒 211 Set as control point ▲ 〒 Rover ▲ ② 22251 ▲ ② Dynamic Rename ▲ ② 2111135T-2225T355 ☞ Rover ▲ ③ 2111135T-2225T355 ☞ 2111135T-2225T355 ☞ Closure loop ④ ⑦ Dynamic rout	 ▲ 示 Station ▲ 示 2111 ▲ ☆ Control point info ① 21111351.sth → ☎ Baseline 	ol point info 351.sth	Selected station Selected station Spatial rectangular c X Y	2111	
		·	Pla	Z Geodetic coordinate Latitude Longitude Ellipsoidal H	0.000000 s 0.0000000dN 0.0000000dE 0.000
	2.1.666.			Plane Mode Northing Easting Elevation Elevation	Manual Input

Data processing



Tap on Survey—Process kinematic button start kinematic data processing.

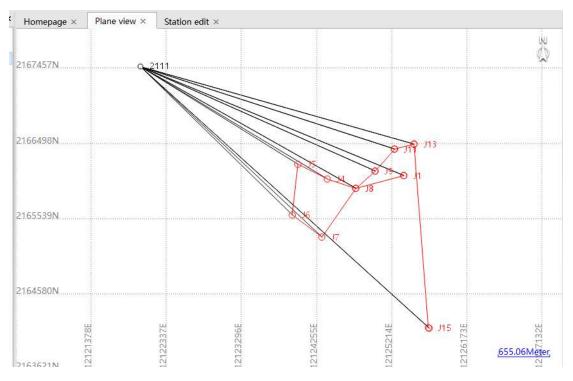
860 Process dynamic rou	e	×
	route	Kinematic Point number
1 🗹	21111351-22251353	0
Р	ocess kinematic - 21111351-22	251353
	92%	
✓ Select all		Process Close

Then tap on Close button after it finish the processing.



👀 Process dynamic route				×
	route	Kiner	natic Point r	umber
1	21111351-22251353		16	
Select all		Proc	cess C	Close

In the Plane view all points are displayed with baselines connect to base station, if the baselines displays in red, that means the quality of processing is RTD, in the Station list (View \rightarrow Station list) view you will see the details result.





Н	omepage × Plane view	× Station edit ×	Station list ×		
	Station name	Coordinate quality	North(m)	East(m)	h(m)
1	2111	Control Point Control P	1000.000	1000.000	12.000
2	J1-21111351-22251353	DGNSS	-408.925	4151.631	4.588
3	J2-21111351-22251353	DGNSS	-409.856	4148.421	8.162
4	J3-21111351-22251353	DGNSS	-546.708	3565.704	16.016
5	J4-21111351-22251353	DGNSS	-424.027	3223.482	7.947
6	J5-21111351-22251353	DGNSS	-236.420	2873.561	12.452
7	J6-21111351-22251353	DGNSS	-846.930	2787.116	12.138
8	J7-21111351-22251353	DGNSS	-1124.476	3137.132	19.890
9	J8-21111351-22251353	DGNSS	-546.994	3565.354	16.482
10	J9-21111351-22251353	DGNSS	-345.148	3805.925	4.113
11	J10-21111351-22251	DGNSS	-344.896	3805.305	1.994
12	J11-21111351-22251	DGNSS	-85.618	4049.789	1.605
13	J12-21111351-22251	DGNSS	-86.343	4044.637	1.025
14	J13-21111351-22251	DGNSS	-33.398	4285.190	4.392
15	J14-21111351-22251	DGNSS	-33.203	4285.745	5.518
16	J15-21111351-22251	DGNSS	-2257.777	4394.390	62.842
17	J16-21111351-22251	DGNSS	-2263.378	4405.121	64.916

2.2.2 Dual frequency data processing

The difference between Single frequency and dual frequency data processing is to mark point ID into dual frequency data file with RW5 file from SurvCE or ppk file from EGStar. We will use ppk files from EGStar as an example.

At the first, all the procedures are same as to single frequency data processing, create new project, load raw data files.

PPK file loading

After raw observation data files are loaded, go to "Import—Import SOUTH project" and find where ppk file under directory of your EGStar job folder (you should copy the whole folder of your job onto your computer first).



Import SOUTH project file	×
PPK file:	
	Browse
RTK file:	
	Browse
CP file:	
	Browse
	OK Cancel
100 选择文件	×
← → → ↑ 📴 « Sample Data → Kinematic → rtk check	Search rtk check ₽
Organize New folder	III - 🔟 🕐
This PC	Date modified Type
3D Objects EGPPK_xiao.ppk	9/9/2014 7:01 AM PPK File
E Desktop	
Documents	
👆 Downloads	
Music	
E Pictures	
Videos	
Lindows8_OS ((
Local Disk (D:)	
Local Disk (D:)	
Local Disk (D:)	
Local Disk (D:) Local Disk (E:) Local Disk (F:) Lenovo_Recover	
Local Disk (D:) Local Disk (E:) Local Disk (F:)	← EGStar file(*.ppk) ← Cancel

Then you need load the CP file from the EGStar project.



🖑 👀 Import SOUTH proje	ct file			×	
PPK file:					
ng and Mapping Inst	rument/Sample Data/K	inematic/rtk check/E	GPPK_xiao.ppk	Browse	
RTK file:					
				Browse	
				browse	
CP file:					
				Browse	
			OK	Cancel	
		:		:	
		-	-		
🎟 选择文件				×	
← → × ↑ 📙 « Sa	mple Data > Kinematic > i	tk check 🗸 🗸	Search rtk check	م	
Organize 🔻 New fold	er			- 🔳 🕐	
This PC	Name	Dat	te modified T	уре	
3D Objects	🗋 xiao.cp	9/9	/2014 6:57 AM	CP File	
Desktop					
🖆 Documents					
🖊 Downloads					
b Music					
Pictures					
Videos					
🏪 Windows8_OS ((
Local Disk (D:)					
Local Disk (E:)					
Local Disk (F:)					
🕳 Lenovo_Recover 🗸	4				>
			F.C.C. (1. (2.))		-
File n	ame:	~	EGStar file(*.cp)	~	
			Open	Cancel	.:

Click OK to confirm. Then you need to select the matched rover STH file. Click OK.



0 Select the rover	?	×
文件路径	移动站名称	
C:/Program Files (x86)/South Surveying and Mapping Instrument/Sample	05452528B.STH	*
	OK Ca	ancel

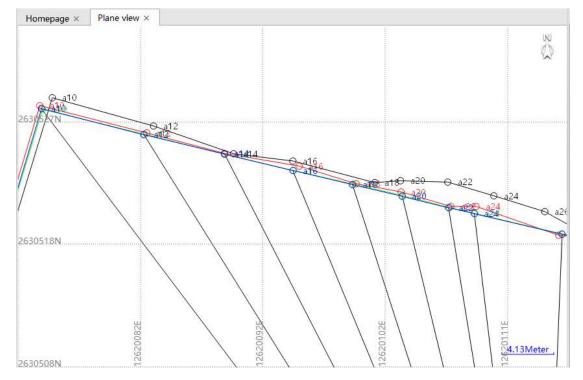
Data processing

Input the coordinates for control point then process all kinematic points (detail steps please refer to single frequency data processing). Then you will see some solutions different from single frequency data processing.

If the baselines display in RED, that means the processing quality is RTD;

If the baselines display in GREEN, that means the processing quality is FLOAT;

If the baselines display in BLUE, that means the processing quality is FIXED.





Н	omepage × Plane view	× Station list ×			
	Station name	Coordinate quality	North(m)	East(m)	h(m)
1	0552	Control Point Control P	10000.000	10000.000	12.000
2	a2-05522528B-05452	Fixed	9998.846	10004.574	11.778
3	a4-05522528B-05452	Fixed	10001.939	9992.967	11.763
4	a6-05522528B-05452	Fixed	10006.096	9977.382	11.794
5	a8-05522528B-05452	Fixed	10012.832	9952.698	11.760
6	a10-05522528B-0545	Fixed	10049.397	9964.640	11.548
7	a12-05522528B-0545	Fixed	10047.286	9972.084	11.370
8	a14-05522528B-0545	Fixed	10045.712	9977.965	11.708
9	a16-05522528B-0545	Fixed	10044.385	9982.954	11.371
10	a18-05522528B-0545	Fixed	10043.245	9987.280	11.377
11	a20-05522528B-0545	Fixed	10042.294	9990.913	11.380
12	a22-05522528B-0545	Fixed	10041.374	9994.290	11.381
13	a24-05522528B-0545	Fixed	10040.898	9996.161	11.388
14	a26-05522528B-0545	Fixed	10039.227	10002.561	11.370
15	a28-05522528B-0545	Fixed	10038.633	10004.977	11.533
16	a30-05522528B-0545	Fixed	10034.737	10007.060	11.374

Processing result report

After finishing data processing, go to "Survey—Report—dynamic route report" to display the processing result. Double click the report it can be opened by your Browser.

Dynamic route calculation report

										2018-10-11 10:45:2
	Report head									
	Project name:	C:\	Users\a\Doc	Users/a/Documents/SGO (SOUTH GEOMATICS OFFICE)/ppk egstar						
	The company of proj	ect : De	fault							
	Project start time:	20	18-10-11 10:	32:11						
	Dynamic route name	05	522528B-05	452528B						
	Coordinate system									
	Central meridian	117	7.000000dE	8						
	Projection method	Ga	uss-Kruger(1	Fransverse I	Mercator)					
1	Base information									
	T	oint name			North	h(m)		East(m)		h(m)
	P	0552			10000			10000.000 12.000		
1	Dynamic point nan	ne								
	Point name	North(m)	Eas	t(m)	h(m)	RMS(m)	HRMS(m)	VRMS(m)	PDOP(m)	Solution type
		9999.418	1000	4.894	27.388	1.161	0.617	0.984	1.340	Autonomous
	a2	9998.795	1000	4.974	11.443	0.042	0.022	0.036	1.340	DGNSS
		9998.838	1000	4.610	12.600	0.001	0.001	0.001	1.340	Float
		9998.846	1000	4.574	11.778	0.001	0.001	0.001	1.340	Fixed
		10002.485	9993	3.341	27.273	1.171	0.623	0.991	1.340	Autonomous

You can also export other format go to 'Export-Export dynamic map'.



SEO Export basemap			Х
\leftarrow \rightarrow \checkmark \bigstar SGO (SOUTH GEOMATICS \Rightarrow Export \Rightarrow \checkmark	ප Search Export		p
Organize 👻 New folder		=== -	?
This PC	Date modified	Туре	
3D Objects 111_line.csv	10/9/2018 11:49 AM	File folder	
Desktop 111_point.csv	10/9/2018 11:49 AM	File folder	
Documents test_point.csv	10/9/2018 1:31 PM	File folder	
United States St			
h Music			
E Pictures			
📕 Videos			
Lindows8_OS (C			
Local Disk (D:)			
Local Disk (E:)			
- · · · · ·			>
File name:			~
Save as type: Dxf File(*.dxf)			~
► Hide Folders ► Hide Folders Dxf File(*.dxf) Shp File(*.shp) Kml File(*.kml) Csv File(*.csv)			

Chapter 3 Main Interface

Run SGO Software from the Start menu, or directly double click on 💹 Icon, then it enters the

main program. As shown in following picture.

1 w B 2 0 -	560 (SOUTH GEOMATICS OFFICE)	- б×
File Common operations View Survey CAD Tool		💄 Login-common account + 💡 🔺
project project setting . Setting baseline failed loop list	LdHControlPoint adjustment a Processing	
Homepage ×		
Welcome toSGO (SOUTH GEOMATICS OFFICE Recent projects IESIsgo EGStar PPK sgo PR. DEMOsgo PR. DEMOSPO	E) About If Version Software registration Check for updates	
 Argentinasge Open project New project 	Help	
Ready! (Unread Information:1)		Capture

Create a new project or open an existing project, you will get the toolbar activated and the entire menu bar, and the other corresponding windows. Please see the following picture, menu bar and toolbar are located at the top of main interface, and the project explorer window is located at left side, on the contrary, there is the property window.

File Common operations View 1	Menu bar	H GEOMATICS OFFICE	C\Users\a\Documents\S	GO (SOUTH GEOMATICS OFFICE)	Toolba	ır	Login-cc	- 5 × mmas account - 19
New Doen Project Import Exp project project Setting Project management	ort Processing Process Process Setting baseline failed	loop Est Data Processing	t Net LocalGrid adjustment	Report ·	Propert	0	anagemen	t e
	ect managem	ent	0 6007			Ωe	Selected sta Selected sta	G001
	3911934N			Display w	indow		X Y 7	0.000000
上町 G005007Q.12O			Ŷ		-	=	Geodetic coordina	
▲ 〒 G007							Latitude	0d00m0.00000
上町 G007007Q.12O				V			Longitude	0d00m0.00000
▲ 示 JZ25 □団 JZ250070.120	3911789N						Ellipsoidal H	0.000
A Baseline							Plane	0.000
- # G001007Q-G002007Q							Mode	Manual Input
- X G001007Q-G005007Q	3911644N						Northing	4435927.504
- 🛪 G001007Q-G007007Q								4435927.304
- X G001007Q-JZ25007Q - X G002007Q-G005007Q							Easting	418/855.94/
- # G002007Q-G007007Q							Elevation	148,308
- 3 G002007Q-J225007Q - 3 G005007Q-G007007Q - 3 G005007Q-J225007Q - 3 G005007Q-J225007Q - 3 G007007Q-J225007Q	3911354N		\$ G00	2			Elevation	140.300
가 Dynamic route 가 Closure loop - 것 G001007Q-G002007Q	126586333 12658688333 126586863	126391426. 12639247E	225965921 0 122	Message o	utput win	dow		

Menu bar: The list menu is an important part of any type window. It supplies many command to



create engineering files, resolve data, and manage data.

Tool bar: It provides majority common shortcuts for fast operation. And the corresponding command can be found in menu.

Display window: It is the user's main working field, generally includes every type views

related to project.

Project Explorer: Users can browse all the observation data and baseline information here. **Message Output window:** Output message of processing.

3.1 Menu

The main menu of the program consists of File, Common operations, View, Survey, CAD, Tool, Every menu item has a window shortcut key located in toolbar. The menu items provide the operation to complete most of the data processing work and cover the main processing steps.



3.2 Toolbar

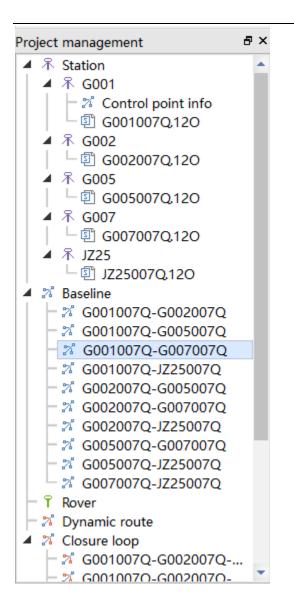
You can achieve the main operations through the Toolbars in the main program. It includes create new project, open project, project setting, import data, export data, adjust the work field, process the baseline, check report.



3.3 Project Management

The Project Management window is placed at the left of main interface. It is used to manage all context of the project, including points list, baselines list, and observation files list. Click on " \triangleright " symbol to open the corresponding contents, for example, click on " \triangleright " symbol before the station to view relative data file to the point. Tap on the file, you will have the relative information displayed at property window such as Point info, Geographical latitude and Cartesian coordinate.

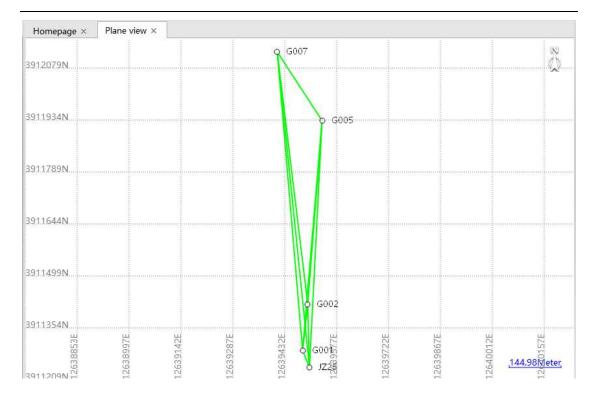




3.4 Display window (Plan View)

This is the important working window of main interface which mainly displays the added information such as site list, baseline, scale, and grid etc.





3.5 Property window

The property window will display the different properties according to the selected node in project management, if a point is selected, the corresponding information is displayed in property window, as shown the left in following pictures.

Rover info	
Rover info	G001
File location	C:\Users\a\Documents
Starting time	2012-01-07 16:00:00
Duration	0 hour(s)59 min(s)59.0
Antenna height	0.000000
Antenna measuring method	Phase center
Manufacturer	Default
Antenna type	Default
SN	
Geodetic	
Latitude	33d17m47.96819sN
Longitude	113d32m32.64785sE
Ellipsoidal height	148.308
Spatial coordinates	
ECEF_X	-2131588.713
ECEF_Y	4892413.947
ECEF_Z	3481587.031

General	
Process Status	True
Starting time	1/7/2012 4:00:00 PM
Ending time	1/7/2012 4:59:59 PM
Duration	0 hour(s)59 min(s)59
Starting point info	
Starting point ID	G001
Start point File location	C:\Users\a\Document
Ending point info	
Ending point ID	G002
File location	C:\Users\a\Document
Parameters	
Least epch in section	30
Cycle slip detection method	Kalman
Mask angle	13
Sampling inverval	30
Fixed rate	3.000
Enable GPS	True
Enable GLONASS	False
Enable BDS	False
Solution type	L1/B1
Estimate troposphere or not	True

Station properties

Baseline properties



3.6 Output window

This window is mainly used to display the message of your operation, for example, if the kinematic data is processed, it will display as "All kinematic points processed". If the operation is on static data processing, it will display as "All baselines processed".

Project management	8	×	Homepage \times
▲ 示 Station		•	
▲ 矛 G001			
- 🕺 Control point info			
- 🛪 Adjusted coordinates			
L [G001007Q.12O			2012005N
▲ 禾 G002			3912085N
- 🛪 Control point info			
- 🎢 Adjusted coordinates			
▲ 矛 G005			
- 🎢 Adjusted coordinates			3911940N
🗍 🖾 G005007Q.12O			
▲ 矛 G007			
- 🛪 Adjusted coordinates			
└─ 🖾 G007007Q.12O			
▲ 矛 JZ25			
– 🛪 Adjusted coordinates			3911795N
- 卽 JZ25007Q.12O			
🔺 🏁 Baseline			
- 🕺 G001007Q-G002007Q			
- 🛪 G001007Q-G005007Q			
- 🕫 G001007Q-G007007Q			3911650N
- 🛪 G001007Q-JZ25007Q			
- 🛪 G002007Q-G005007Q			
- 🛪 G002007Q-G007007Q			3.6.6
- 🛪 G002007Q-JZ25007Q			06
– 🛪 G005007Q-G007007Q			263.
- 🗏 G005007O-1725007O	_	•	3911505N
Net adjustment is finished (Unread I	nfo	orn	nation:5)



Chapter 4 File

This chapter provides information on using main commands from File menu, including New project, Open project, Project setting.

E	SGO (SOUTH GEOMATICS OFFICE)C:\Users\a\Documents\SGO
New project Project Project Recent project	
	ocuments\SGO (SOUTH GEOMATICS OFFICE)\TEST\TEST.sgo
	ocuments\SGO (SOUTH GEOMATICS OFFICE)\EGStar PPK\EGStar PPK.sgo
	ocuments\SGO (SOUTH GEOMATICS OFFICE)\ppk egstar\ppk egstar.sgo
	ocuments\SGO (SOUTH GEOMATICS OFFICE)\PPK DEMO\PPK DEMO.sgo
C:\Users\a\De	esktop\ss_win_temp\New project1\New project1.sgo
Recent file C:\Users\a\Do	ocuments\SGO (SOUTH GEOMATICS OFFICE)\Argentina\Argentina.sgo
Print C:\Users\a\Do	ocuments\SGO (SOUTH GEOMATICS OFFICE)\New project1\New project1.sgo
Options C:\Users\a\Do	ocuments\SGO (SOUTH GEOMATICS OFFICE)\New project3\New project3.sgo
Help C:\Users\a\Do	ocuments\SGO (SOUTH GEOMATICS OFFICE)\New project2\New project2.sgo
About C:\Users\a\Do	ocuments\SGO (SOUTH GEOMATICS OFFICE)\New project5\New project5.sgo
Exit C:\Users\a\Do	ocuments\SGO (SOUTH GEOMATICS OFFICE)\New project4\New project4.sgo
C:\Users\PC8	739\Documents\SGO\New project1\New project1.sgo
C:\Users\PC8	739\Documents\SGO\New project2\New project2.sgo
C:\Users\PC8	739\Documents\SGO\Argentina\Argentina.sgo
C:\Users\a\De	esktop\New project1\New project1.sgo
C:\Users\a\Do	ocuments\SGO\New Project3\New Project3.sgo
C:\Users\a\Do	ocuments\SGO\New Project5\New Project5.sgo

4.1 New project

This command is used to create a new project for data processing at the beginning of starting job. To create a new project, click on this command then the new project window will be pop-up, then requires you to choose the unit, input a project name and set up the project saving path.



SEO New proj	ect	×
Meter:	Create a project in metre	
Feet:		
Name Location	New project1 C:\Users\a\Documents\SGO (SOUTH GEOMATICS OFFICE) Bro	owse
	OK	Cancel

Click "Browse" button to control where the project is saved by browsing to the desired folder where the job is to be created, then select OK button to continue.

Then set up the parameters for the project in such a following window, input general information including company information and operators.

800 Project setting		×
General info	General info	
Coordinate system	Project location	C:\Users\a\Documents\SGO (SOUTH GEOMATICS OF
Unit options	Time	10/17/2018 10:04:41 AM
	Project unit	
Closure loop tolerance	Unit name	Default
Export setting	Address	
Dynamic view	Telephone	
	Operator	
	Field person	
	Indoor person	
		OK Cancel Apply



Go to "Coordinate system" tab to set up your local coordinate system and check if the parameters are correct. Click on the Predefined button to choose the country or region from predefined list, then choose the correct coordinate system at the next field at the right side of coordinate system. If your local coordinate system is not listed under predefined list, you are able to click on "Coordinate system manager" button to self-define your local coordinate system at coordinate system manager (please take a reference to Coordinate system manager for more detail information about how to create a coordinate system)

General info	Basic	Expand		
Coordinate system	Ellipsoid			
Unit options	Ellipsoid name		CGCS2000(China)	
Closure loop tolerance	Semi-major Axis		6378137.000000	
	Inverse Flattening		298.257222	
Export setting	Projection			
Dynamic view	Method of projection		Gauss-Kruger(Transverse Mercator)	
	Coordinate		North-East	
	Central Meridian(dd.mmss)		117.00000000000	
	Origin Latitude(dd.mmss) False Easting		0.0000000000	
			50000.000	
	False Northing		0.000	
	Factor		1.00000000000	
	Projection Height		0.000	
	Bursa-Wc Factor			
	Transform		No Transformattion	

The "Unit options" tab allows you to configure the unit and the precision for general items such as coordinate, distance and angle, as well as the format of coordinate, you can set the coordinate to display as spatial coordinate, geodetic coordinate or plane coordinate.



SI	Project setting		×
	General info	Common use	
	Coordinate system	Coordinate unit	Meter
	Unit options	Precision	3
l	-	Distance unit	Meter
	Closure loop tolerance	Distance precision	3
	Export setting	Angle unit	Degree
	Dynamic view	Angle format	dd.dddd
		Angle precision	3
		BLH format	DDD.dddddddd
		Coordinate format	XYZ
		Time system	UTC
		UTC offset	8.0
			OK Cancel Apply

Move to "Closure loop tolerance" tab, this is allowed to control the quality of processing result, choose the predefined standard from the list of specification name, or choose user defined option to re-configure the parameters according to your requirement.

Project setting										
General info	Specification of surveys									
Coordinate system	Levels	Class E-2009								
Unit options	Parameters									
-	FIXED_ERROR(mm)	3.000000								
Closure loop tolerance	SCALE_ERROR(ppm)	1.000000								
Export setting	WEAKEST_SIDE_RELATIVE_ERROR 1/	0.000000								
Dynamic view	AVERAGE DISTANCE(km)	3.000000								
	BASELINE_COMPONENT_ERROR_HORIZONTAL(mm)	20.000000								
	BASELINE_COMPONENT_ERROR_VERTICAL(mm)	40.000000								
	ОКС	ancel Appl								

The "Export setting" tab is used to configure what kind of solution result and what kind of fields



Project setting					×
General info	Export options				
Coordinate system	Export autonomous point	True			
Unit options	Export DGNSS point	True			
-	Export float point	True			
Closure loop tolerance	Export fixed point	True			
Export setting	Export File name	True			
Dynamic view	Export point	True			
	Export all points	False			
	Merge lines	False			
			ОК	Cancel	Apply

of points to output in reports.

At the last tab of "Dynamic View", this is allowed to enable or disable what kind of dynamic data solution to view, or if enable to view the baselines between points, and whether to display the PPK base station.

General info	Dynamic view options	
Coordinate system	Display Autonomous	False
Unit options	Display DGNSS	False
	Display Float	False
Closure loop tolerance	Display Fixed	False
Export setting	Display optimal solution	True
Dynamic view	Display point name	True
	Display point with name	True
	Display all points	False
	Draw line	True
	Line to base and named point	True
	Point size (pixel)	10.000000



After all the parameters for the project are configured, click OK button to finish creating a new project, then you will enter the main interface of SGO. As shown in following figure.

〕 = ⊟ = = 0 + .	SG	O (SOUTH GEOMATICS OFF	ICEC\Users\a\Docume	ItelSGO (SOUTH GEOMA	TICS OFFICE/\New pro	oject I\New project	Lsga -	
File Common operations	View Survey CAD Tool						💄 Login-common acc	ount + 💡
Common use	e Station Station Station Residua	list boseline list i	Clesure eop list					
lject management	& × Homepage ×	Plane view ×				р	roperties management	ć
	2000;55N			anni ann a' georrana		Ş.		
	2000075N							
	1889995N							
	1999915N	au				um som di stat	No Attribute	
	1999835N							
	1999755N					-		
	1999675N	4995.0E. 500040E	500120E. 500230E	SOD280E	5003.60E	3025 DOMeterse		

4.2 Open project

This command is used to open an existing project which is saved for previous job. Click on this command to browse to the folder where the project file is located, then choose the project file with the .sgo file extension and then click "Open" button to load the data. (If a project is saved, the .sgo file extension will automatically be appended to the file name)



600 Open project			×
← → · · ↑ 📙 « SGO (SOUTH GEOMAT > Ne	ew project1 🗸 さ	Search New pro	ject1 🔎
Organize 🔻 New folder			
This PC Name	È E	Date modified	Туре
3D Objects New project1.sgo	1	10/17/2018 10:16	SGO File
Desktop			
Documents			
🖶 Downloads			
👌 Music			
E Pictures			
📑 Videos			
🛀 Windows8_OS ((
👝 Local Disk (D:)			
Local Disk (E:)			
👝 Local Disk (F:)			
Lenovo_Recover 🗸 <			>
File name:		SGO (SOUTH G	SEOMATICS OFFI
		Open	Cancel
E Common operations View Survey CAD Tool	Users/a/Documents/SGO (SOUTH GEOMATICS OFFICI	E)/TEST/TEST.sgo	- 영 × 오너리 - Common account + ? ^
0 C C C C C C C C C C C C C C C C C C C			
View+ list edit time analysis list baseline list loop list Common use			
Project management	007	Properties manage	iment 6 >
A Control point info		Q	
	- Goos		
- デ Ádjusted coordinates - 町 G0020070,120 - 承 条 G005			
27 Adjusted coordinates 3911789N			
▲ 茶 6007 ー 光 希 400teted coordinates - 型 600700700120 3911644N			No Attributa
▲ 7 Baseline - 3 6001007Q-G002007Q 3911499N			
- # 6001007Q-6005007Q - # 6001007Q-6007007Q - # 6001007Q-J225007Q	0 6002		
- 5 G002007Q-G005007Q 3911354N		별	
- * G002007Q-G007007Q - * G002007Q-1225007Q - * G005007Q-G25007Q - * G005007Q-G25007Q - * G005007Q-1225007Q - * G005007Q-1225007Q	0 001 0000 000000000000000000000000000	144.98Meters	
Net adjustment is finished (Unread Information:10)	and an	Capture	• N=3911234,527 E=12639196.843

4.3 Project setting

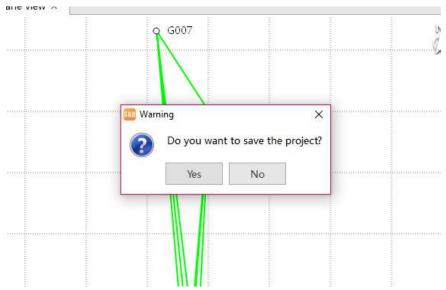
This "Project setting" allows you to set up the parameters or re-configure parameters for your current project.

At the beginning of starting your project, SGO asks you to set up parameters for project first when you create a new project. After that you can check and modify the parameters from project setup.



General info	General info									
Coordinate system	Project location	C:\Users\a\Documents\SGO (SOUTH GEOMATICS O								
Unit options Closure loop tolerance	Time	10/17/2018 10:04:41 AM								
	Project unit									
	Unit name	Default								
Export setting	Address									
Dynamic view	Telephone									
	Operator									
	Field person									
	Indoor person									

4.4 Close



To close the current project, tap on Yes to confirm, No to cancel it.

4.5 Save

Save the current project to default path.

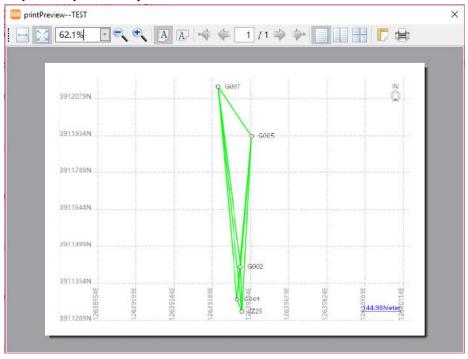


4.6 Save as

SGO Save as			×
$\leftarrow \rightarrow \land \uparrow$ - sgo	(SOUTH GEOMATICS O > TEST >	✓ O Search TEST	م
Organize 🔻 New folder			
🗸 🛄 This PC 🔷	Name	Date modified	Туре
> 🧊 3D Objects	🔄 Image	9/21/2018 3:55 PM	File folder
> 🔜 Desktop	Report	10/17/2018 9:39 AM	File folder
> 🖆 Documents			
> 🕹 Downloads			
> 🁌 Music			
> 💽 Pictures			
> 📑 Videos			
> 🏪 Windows8_OS ((
> 👝 Local Disk (D:)			
> 👝 Local Disk (E:)			
> 👝 Local Disk (F:)			
> 👝 Lenovo_Recover 🗸 ,	c		>
Folder:	[
		Select Folder	Cancel

Save the current project to user defined Path.

4.7 Print



To print the plane view picture.



4.8 Options

This button is for changing the project default settings.

4.8.1 Show

E.

Here you can change the software interface color and if shows the display mark and grid.

600 Options	×									
Show	Flat view options									
Save	✓ Display mark									
Port	☑ Display/hide grid									
	Background color:									
	Grid color:									
	Resotre default setting Apply Sure Cancel									

4.8.2 Save

Here you can edit the project default save path. You can tap on the Restore default setting to restore the software default save path, it is under Documents folder in you PC.



SEO Options		×
Show Save Port	Project folder: Documents\SGO (SOUTH GEOMATICS OFFICE) Browse Export folder: ents\SGO (SOUTH GEOMATICS OFFICE)\Export Browse Download folder: i\SGO (SOUTH GEOMATICS OFFICE)\Download Browse	
	Resotre default setting Apply Sure Canc	el

4.8.3 Port

This port is for the Cloud service settings.

Show	Network device port Cloud server IP:								
Save	Cloud server IP:								
Port	120.76.223.87								
	HTTP port:								
	81								
	TCP port:								
	16660								

Chapter 5 Common operations

Common operations provide the common used button for Project, Data processing, PPK and view.

File	Commo	operation	s Viev	r Surve	y CAD											💄 Logina
New project		and the second	Import	and the second second		 Process	Closure	EditControlPoint	Net adjustment	۲ <u>م</u> LocalGrid	Report	Process	Clear kinematic	Rebuild	Report	
		Project					Da	ita Processing					PPK			View

All this function will be shown in other related chapter.

5.1 Toolbar edit

Right click the toolbar, it will appear a window.

operatior	ns View	Survey	CAD	Tool					
D wnload	Project	setting 🝷	Process	ing Process	Search	Process	Clear	Rebuild	Qualit
IGS a Process	ing		Customiz	e Quick Access ck Access Tool	Toolbar		seline	baseline tatic	check
nt			Minimize	e the Ribbon the Ribbon			elist ×		
		2011	14	lalcomo	toste	n/sn	TTU /	CEON	ATI

Tap on Customize Quick Access Toolbar.., in this interface you can add or remove the button inside Quick Access Toolbar.

60 Options				×
Quick Access Toolbar Customize Ribbon	Customize the Quick Access 1	Foolbar		
	Choose commands from: All commands Commands: <pre> </pre> <pre> <pre> Commands: </pre> </pre> <pre> Commands: Commands: Copen project Save Print Project setting Project setting Project setting</pre>	Add > > < < Remove	New project Open project Save Print Project setting	•
			ОК	Cancel

Click Show Quick Access Toolbar Below the Ribbon button, the new toolbar will appear, if you want to close it, just click this option button again.

						SGO (S	DUTH GEO	MATICS OFF	FICE C:\Users\a\	Documents\S(KO (SOUTH	GEOMATI	CS OFFICE/\TE	ST\TEST.sgo					- 6 ?
file	Common	operation	Viev	/ Surv	ey CAD	Tool												🚨 Logir	n-common account + 🥐
New project		Project setting	Import	Eport	Processing Setting	Process baseline		loop list	EditControlPoint	Net adjustment	र् ्र ्	Report	Process kinematic	Clear kinematic PPK	Rebuild kinematic	Report	0	0 Q Q Q M 0 C A' 10 10 View	
D F	980	-																	
oject m	nanagemen	nt		ъ×	Homepag	e ×	Plane view	w× Ba	seline list ×							Properti	es mana	agement	,
	tation			-											-	General	E.		
4 7	G001		1.12		M	lelcor	ne to	SGO IS	OUTH GE	OMATIC	S OFF	ICE)				Proc	ess Stat	tus	True
 A Control point info Adjusted coordinates 					creon	110 100	100 10	0011102	o minin		(CL)				Star	ting tim	e	1/7/2012 4:00:00 P	
	- Adlus																		
	- N Adjus			8												Endi	ing time		1/7/2012 4:59:59 P

Click Customize the Ribbon...option, in this window, you can edit the options in menu bar and toolbar.

SED Options				×
Quick Access Toolbar Customize Ribbon	Customize the Ribbon Choose commands from: All commands Copen project Save Print Project setting New project Open project Project setting New project Project setting Project setting Process failed Closure loop list EditControlPoint	Add > > < < Remove	Customize the Ribbon: Project Data Processing PPK View View Survey CAD Tool	
	Net adjustment		Customizations: Reset	Cancel

For example, I create a new group under Common operations and named Export, then I add the Export function into this group, Click OK to confirm. Then I can see a new export button under Common operations.



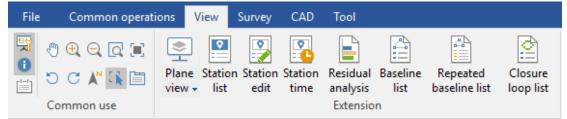
Quick Access Toolbar							
Customize Ribbon	Customize the Ribbon Choose commands from: All commands New project Open project	•	¥ [2		oerations tom)		
	Save Print Project setting New project Open project Project setting Import Export Processing Setting Process baseline Process failed Closure loop list EditControlPoint Net adjustment	Add > < < Rer	> > 2 > 2 nove > 2 Nev	PPK View View Survey CAD Tool	Group	Rename	•
						01/	
						OK	Cancel
🗋 🗁 🗄 🛱 🌣	Ŧ			SGO (SC	DUTH GE	OMATICS	OFFICE)-
File Commor	operations View	Survey	CAD	Tool			
I	📄 🔅 📑	Ţ	4	5		¢	
Export New	Open Project Import project setting - Project	Export •	Processing Setting	Process baseline	Process failed	Closure loop list D	EditCo ata Proce
roject managemen	t ₽×	Homepa	ie ×	Plane view	×	Baseline I	ist ×

Tap on the Minimize the Ribbon option, the whole toolbar will be hidden.

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File Common operations View	Survey CAD	Tool					
Project management 🛛 🗗 🗙	Homepage \times	Plane view \times	Baseline list \times				
▲ 示 Station ▲ ▲ 示 G001 - ☆ Control point info - ☆ Adjusted coordinates	Welco	me toSGO	(SOUTH GEOMATIC	S OFFICE,)		
- ⓓ G001007Q,12O ▲ 示 G002 - ⅔ Control point info	Recent p	rojects			About		
- Adjusted coordinates - 创 G002007Q,12O 4 矛 G005	ज्ञ <u>TEST.sc</u> ज्ञ <u>New p</u>	<u>go</u> roject1.sgo			Version Software registration		

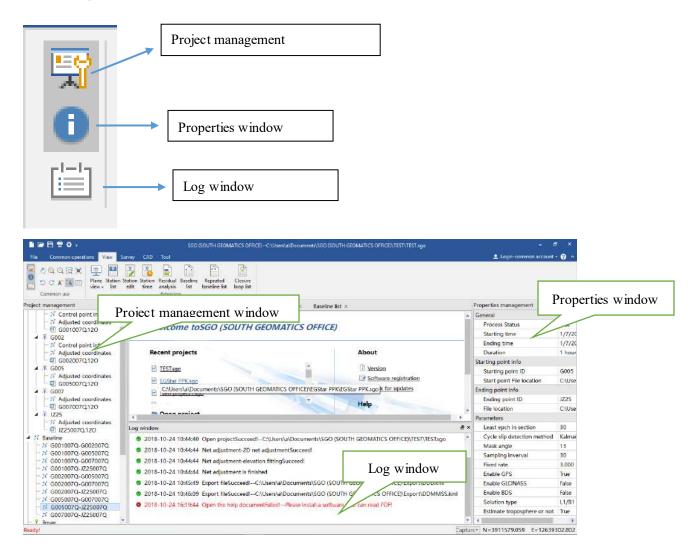
Chapter 6 View

This chapter provides more information on using commands under View menu, in this chapter we emphasis on some important commands including toolbar, station list, station edit, station occupation, residual analysis, baselines list, repeated baselines list, closure loops list.



6.1 Window settings

The left three buttons control the project management window, properties window and log window display or not.





6.2 Plane view tools

This tools is for adjusting the plane view window display method.

The detail instruction of each shortcut is described in following table:

Items	Function	Description
٩	Move	Move the map
()	Zoom in	Zoom in the view
Θ_{\bullet}	Zoom out	Zoom out the view
Q	Partial enlarge	Zoom in the specific area according to the selection
	Zoom all	Zoom all the view
C	Anticlockwise rotate	Rotate the map anticlockwise
С	Clockwise rotate	Rotate the map clockwise
AN	Reset	Restore the default map direction
C 🔥	Properties	Switch the move function to selection function
	Homepage	Open the homepage window

6.3 Plane view

Here you can enable or disable the online map display or not.



File Common operations View Su	aver CAD Tool			💄 Login-common account	- 0
	Retion Station Residual Baseline Repeated edit time analysis list baseline list Extension	Closure lacp list			
sject management 🛛 🕫 ×	Homepage × Plane view × Rep	ort view × Station list × Baseline list	× Station edit ×	Properties management	đ
- 🚿 Control point info 🗧	AH+SORD A		N	Rover info	
Adjusted coordinates	Set T 2 CAM		2N	Point ID	G002
- @ G001007Q,12O ▲ ¥ G002		Bura		File location	CAUs
- X Control point info	AND MA MANA	=NE	· # 15 10 / 11 / 12 / 13 / 13 / 13 / 13 / 13 / 13	Starting time	2012
- Adjusted coordinates	3912722N ^{新造} 建钢肉 ^{用止水油}			Duration	1 ho
@ G002007Q.12O	国学会院長の			Antenna height	0.000
▲ 禾 G005	ADA BREFO	Q G007		Antenna measuring method	Phas
Adjusted coordinates	-12:02 0	SHIT GOOS ATAMO	233.9	Manufacturer	Defa
▲ 杀 G007	中国委行 6 ● ※相較学問	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	# # N	Antenna type	Defa
Adjusted coordinates	金属市区 O	8 999		SN	
- @ G007007Q.12O	3910995N	###G	81111	Geodetic	
▲ ¥ JZ25	中国朝鮮建築物政の	2.10	Emple	Latitude	33d1
 Adjusted coordinates JZ250070.120 	NHAN 推正約載次道西·G			Longitude	113d
→ 1225007(2120 ST Baseline				Ellipsoidal height	148.3
- 3 60010070-60020070	050	UPE AURSEO	eta)	Spatial coordinates	
- X 6001007Q-6005007Q	oran Misean 😡	Cost.	9(1) (M.R. N.L.	ECEF X	-213
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- 5 G001007Q-JZ25007Q	日期和权务部 0		N	ECEF Z	3481
- 5 G002007Q-G005007Q - 5 G002007Q-G007007Q	ISO W-SONO OWNERS (**		411	LCU_L	3401
- 5 G002007Q-JZ25007Q			586		
- 5 G005007Q-G007007Q	8	2 H	3 1.142 W	4	
- 5 G005007Q-JZ25007Q	THE MEAN	263502	275.38Meters		
- X G007007Q-JZ25007Q	SAUTE SAN		975.38Meter,		

6.4 Station list

This means the station list, after finishing data processing, click on this option, all the stations will be listed in this window accompany with processing quality and coordinates.

Click on each tab to sort stations or values. If you want to change the coordinates display format, please go to "Common operations—Project setting—unit options—Coordinate format", select the format to display as you want.

Н	omepage × Plane view	× Station list ×			
	Station name	Coordinate quality	North(m)	East(m)	h(m)
1	0552	Control Point Control P	10000.000	10000.000	12.000
2	a2-05522528B-05452	Fixed	9998.846	10004.574	11.778
3	a4-05522528B-05452	Fixed	10001.939	9992.967	11.763
4	a6-05522528B-05452	Fixed	10006.096	9977.382	11.794
5	a8-05522528B-05452	Fixed	10012.832	9952.698	11.760
6	a10-05522528B-0545	Fixed	10049.397	9964.640	11.548
7	a12-05522528B-0545	Fixed	10047.286	9972.084	11.370
8	a14-05522528B-0545	Fixed	10045.712	9977.965	11.708
9	a16-05522528B-0545	Fixed	10044.385	9982.954	11.371
10	a18-05522528B-0545	Fixed	10043.245	9987.280	11.377
11	a20-05522528B-0545	Fixed	10042.294	9990.913	11.380
12	a22-05522528B-0545	Fixed	10041.374	9994.290	11.381
13	a24-05522528B-0545	Fixed	10040.898	9996.161	11.388
14	a26-05522528B-0545	Fixed	10039.227	10002.561	11.370
15	a28-05522528B-0545	Fixed	10038.633	10004.977	11.533
16	a30-05522528B-0545	Fixed	10034.737	10007.060	11.374



Hor	$\begin{array}{llllllllllllllllllllllllllllllllllll$							
	Station name	Coordinate quality	Lat	Lon	H(m)			
1	G001	Adjusted	33d17m47.96819sN	113d32m32.64785sE	148.308			
2	G002	Adjusted	33d17m51.46448sN	113d32m33.11986sE	148.320			
3	G005	Adjusted	33d18m5.36698sN	113d32m34.40833sE	147.991			
4	G007	Adjusted	33d18m10.58457sN	113d32m30.35006sE	147.914			
5	JZ25	Adjusted	33d17m46.68717sN	113d32m33.25265sE	148.978			

6.5 Station edit

This is the station session that allows you to check quality of satellites' signals. Before processing, you can check the satellites' signals first and edit to erase some bad signals to make sure the quality of data processing.

Draw a frame on bad signal section and choose forbid option in the pop-up dialog to erase this part signal.

Image: Common operation: View Survey CAD Tool Image: Common operation: View Survey CAD Survey CAD Image: Control point info	Signal.		
Image: Common use Common use Image: Common use Image: Common use Image: Common use Common us	🗎 🖻 🗄 🤁 🕈	SGO (SOUTH GEOMATICS OFFICE)C:\Users\a\Documents\SGO (SOUTH GEOMATICS OFFICE)\TEST\TE	ST.sgo
Common use Extension roject management # X Homepage × Plane view × Station edit × # % Station # % 6001 2012-01-07 G001007Q Sampling inverval 1.0, SampleNumber 3600 2012-01-07 # % 6001 # % 6002 G001007Q Sampling inverval 1.0, SampleNumber 3600 16:59:59 # % 6002 # % 6002 G002007Q 120 # % 6002 G002007Q 120 # % 6001 # % 6005 # % 6007 G001007Q 120 # % 6007 G00111215 # G005 # Forbid # % 6007 # % G007007Q 120 # % G001007Q-6005007Q # % G000107Q-6005007Q # % G00007Q-6007007Q # % G0	File Common operations View	Survey CAD Tool	
* Station 2012-01-07 * % G001 \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$		n Station Station Residual Baseline Repeated Closure edit time analysis list baseline list loop list	
# Station 2012-01-07 # % 6001 2012-01-07 # % 6001 SAT/Fre # % 6001 6001007Q120 # % 6002 G01007Q120 # % 6003 G01007Q120 # % 6005 G05 # % G007 G05007Q120 G06 t1225 G01007Q-1620007 To 2012-01-07-162003 G05 t1225 G06 t1225 G06 t1225 G06 t1225 G07 Forbid F X Adjusted coordinates G09 t1225 G08 t1225 G08 t1225 G08 t1225 G08 t1225 G08 t1225 G08 t1225 G09 t1225 G09 t1225 F X Adjusted coordinates G15 t1225 G15 t1225 G18 t1225 F X Adjusted coordinates G21 t1225 G18 t1225 G21 t1225 F X G001007Q-G002007Q G26 t1225 F X G002007Q-G002007Q <th>Project management 🗗 🗗</th> <th>5 × Homepage × Plane view × Station edit ×</th> <th></th>	Project management 🗗 🗗	5 × Homepage × Plane view × Station edit ×	
Image: Control point info 2012-01-07 16:20:07 To 2012-01-07 16:30:03 Image: Control point info 2012-01-07 16:20:07 To 2012-01-07 16:30:03 Image: Control point info 2012-01-07 16:20:07 To 2012-01-07 16:30:03 Image: Control point info 2012-01-07 16:20:07 To 2012-01-07 16:30:03 Image: Control point info 2012-01-07 16:20:07 To 2012-01-07 16:30:03 Image: Control point info 2012-01-07 16:20:07 To 2012-01-07 16:30:03 Image: Control point info 2012-01-07 16:20:07 To 2012-01-07 16:30:03 Image: Control point info 2012-01-07 16:20:07 To 2012-01-07 16:30:03 Image: Control point info 2012-01-07 16:20:07 To 2012-01-07 16:30:03 Image: Control point info 2012-01-07 16:20:07 To 2012-01-07 16:30:03 Image: Control point info 2012-01-07 16:20:07 To 2012-01-07 16:20:07 Image: Control point info 2012-01-07 16:20:07 To 2012-01-07 16:20:07 Image: Control point info 2010-01-01-01-01-01-01-01-01-01-01-01-01-	▲ 禾 G001 │	2012-01-07	
* 6002 600 11215 2012-01-07 16:20:07 To-2012-01-07 16:30:03 * 7 Control point info 605 11215 606 11215 * 7 G005 606 11215 606 11215 * 7 Adjusted coordinates 606 11215 606 11215 * 7 Adjusted coordinates 606 11215 608 11215 * 7 Adjusted coordinates 605 11215 608 11215 * 7 Adjusted coordinates 615 11215 611 11215 * 7 Adjusted coordinates 615 11215 618 11215 * 7 Adjusted coordinates 621 11215 621 11215 * 7 S001007Q-5002007Q 622 11215 621 11215 * 7 G001007Q-6002007Q 622 11215 621 11215 * 7 G001007Q-6002007Q 622 11215 621 11215 * 7 G001007Q-6002007Q 622 11215 621 11215 * 7 G001007Q-1225007Q 622 11215 621 11215 * 7 G002007Q-1225007Q 629 11215 629 11215 * 7 G002007Q-1225007Q 629 11215 629 11215 * 7 G005007Q-1225007Q 7 G005007Q 629 11215 * 7 G005007Q-1225007Q 7 G005007Q 629 11215 * 7 G005007Q-1225007Q 7 G005007Q 629 11215		G02 L1 L2 L5	
		2012.01.07 16:20:07 To 2012.01.07 16:30:03	
Image: Construction of the construc		GOS LEZES	
7. Adjusted coordinates 1.215 Forbid Porbid		G06 L1L2L5	
Adjusted coordinates G09 t1215 Recover G15 t1215 A Adjusted coordinates G15 t1215 G15 t1215 G18 t1215 G17 Adjusted coordinates G18 t1215 G18 t1215 G21 t1215 G21 t1215 G22 t11215 G21 t1215 G21 t1215 G31 t1215 G31 t1215 G31 t1215 G31 t1215		G08 L1L2L5 Earbid	
Image: First Adjusted coordinates G15 U1215 Image: First Adjusted coordinates G18 U1215 Image: First Adjusted coordinates G21 U1215 Image: First Adjusted coordinates G26 U1215 Image: First Adjusted coordinates G27 U1215 Image: First Adjusted coordinates G28 U1215 <th>- 회 G005007Q.12O</th> <td></td> <td></td>	- 회 G005007Q.12O		
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- 7 6002007Q-JZ25007Q - 7 6002007Q-6005007Q - 7 6002007Q-6005007Q - 7 6005007Q-JZ25007Q - 7 6005007Q-JZ25007Q - 7 6005007Q-JZ25007Q - 7 600707Q-JZ25007Q - 7 600707Q-JZ25007Q - 7 600707Q-JZ25007Q - 7 600707Q-JZ25007Q - 7 600707Q-JZ25007Q		G26 L1 L2 L5	
- 7 6002007Q-6007007Q - 7 6002007Q-007007Q - 7 6005007Q-6007007Q - 7 6005007Q-007007Q - 7 6005007Q-1225007Q - 7 6005007Q-1225007Q - 7 6007007Q-1225007Q - 7 600er		G27 L1L2.L5	
- ☆ 6002007Q-JZ25007Q - ☆ 6005007Q-JZ25007Q - ☆ 6005007Q-JZ25007Q - ☆ 6007007Q-JZ25007Q - ☆ 6007007Q-JZ25007Q		G29 L1L2L5	
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- 7 Rover			
- Ť Rover			
- 🎢 Dynamic route 🔹	— 🍸 Rover		
	├─ 🎢 Dynamic route		

6.6 Station time

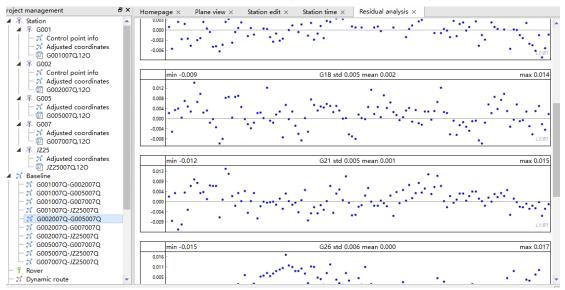
Click on this command to check the common observation time of stations.



Homepage ×	Plane view \times	Station edit \times	Station time \times		
G001007Q.120					
G002007Q.12O					
G005007Q,120					
G007007Q,12O					
JZ25007Q,120					
	2-01-07 00:00				2012-01-07 17:00:00

6.7 Residual analysis

The Residual analysis command allows you to check the residual error of each baseline, there you will get the information of residual error of each satellite including the maximum and minimum error, and the value of standard error and the average error.



6.8 Baselines list

This baselines list is used to display the information of all baselines after finishing baselines processing.

Click on this command, you will then get into the baselines list window and obtain all corresponding information including component for each baseline, fixed ratio, RMS and baseline length.



	Baseline name	Baseline status	Fixed rate	Standard error of unit weight(mm)	RMS(m)	HRMS(m)
1	G001007Q-G002007Q	Fixed	99.9	1.887	0.006	0.003
2	G001007Q-G005007Q	Fixed	71.535	1.854	0.006	0.003
3	G001007Q-G007007Q	Fixed	99.9	1.811	0.006	0.003
4	G001007Q-JZ25007Q	Fixed	65.745	2.093	0.008	0.004
5	G002007Q-G005007Q	Fixed	99.9	1.869	0.006	0.003
6	G002007Q-G007007Q	Fixed	99.9	1.656	0.006	0.003
7	G002007Q-JZ25007Q	Fixed	99.9	2.064	0.008	0.004
8	G005007Q-G007007Q	Fixed	99.9	1.76	0.006	0.003
9	G005007Q-JZ25007Q	Fixed	99.9	2.012	0.007	0.003
10	G007007Q-JZ25007Q	Fixed	99.9	1.848	0.007	0.004

6.9 Closure loops list

After baseline processing, click on closure loops list option to view all closure loops. In loops page, all the closure loops are listed accompany with their corresponding information, such as loop type, the quality of processing result, closure error of each variable (XYZ and side length), length and relative error.

Tap on the " \triangleright " symbol before the closure loop, you will understand this closure loop is composed by which 3 baselines including the result of processing.

Type: this field is to show you what type this closure loop belongs to, generally, the synchronous loop is the most common loop.

Quality: this field will display the processing result for this closure loop and the baselines which form this loop. If the baselines turn out to be fixed, the result of quality of closure loop is shown as pass, that means the closure loop is qualified.

Closure error (DeltaX/ DeltaY/ DeltaZ/ DeltaS): this is the difference value between the observations and due value.

Length: it is the perimeter of closure loop.

Relative error: this error is the ratio between absolute error caused by measurement and the true value of measurement (agreed), in general, the relative error can reflect more the credibility of measurement.

×	Station edit × Station time	× Residual ana	lysis × I	Baseline list × Repeated	baseline list \times	Closure loop list 🗙 🚺
	ID 🔻	Туре	Quality	X closure error(mm)	Y closure error	(mm) Z closure erro
4	G005007Q-G007007Q-JZ25007Q	Synchronous loop	Qualified	0.052	-0.126	-0.008
	- G007007Q-JZ25007Q		Fixed	-230.654	341.393	-614.786
	- G005007Q-JZ25007Q		Fixed	-99.122	302.357	-480.476
	G005007Q-G007007Q		Fixed	131.532	-39.036	134.309
Þ	G002007Q-G007007Q-JZ25007Q	Synchronous loop	Qualified	-0.01	0.122	-0.042
Þ	G002007Q-G005007Q-JZ25007Q	Synchronous loop	Qualified	0.009	-0.011	-0.013
Þ	G002007Q-G005007Q-G007007Q	Synchronous loop	Qualified	0.033	0.007	-0.037
Þ	G001007Q-G007007Q-JZ25007Q	Synchronous loop	Qualified	0.038	-0.112	-0.077
Þ	G001007Q-G005007Q-JZ25007Q	Synchronous loop	Qualified	0.186	-0.136	-0.16
Þ	G001007Q-G005007Q-G007007Q	Synchronous loop	Qualified	0.199	-0.15	-0.091
Þ	G001007Q-G002007Q-JZ25007Q	Synchronous loop	Qualified	0.058	-0.019	-0.097
Þ	G001007Q-G002007Q-G007007Q	Synchronous loop	Qualified	0.03	-0.029	0.022
Þ	G001007Q-G002007Q-G005007Q	Synchronous loop	Qualified	-0.137	0.128	0.077



Chapter 7 Survey

In this chapter we emphasis on some important commands including baseline process settings, baseline processing, kinematic processing, net adjustment and some hiding commands..

This chapter provides more information on using commands under Report menu, in this chapter you will well know how to make a report for your data processing result.

1	Ţ		Project setting +	1	5				\`@		\bigotimes				<u>:</u>	
Import	Export	Download		Processing	Process	Search	Process	Clear	Rebuild	Quality	Net	Clear	Adjustment	Process	Clear	Report
÷	÷.	IGS		Setting	baseline	baseline	failed	baseline	baseline	check 🗸	adjustment	net		kinematic	kinematic	÷
		Data Proces	sing					S	tatic					PI	РК	Report

7.1 Import and export

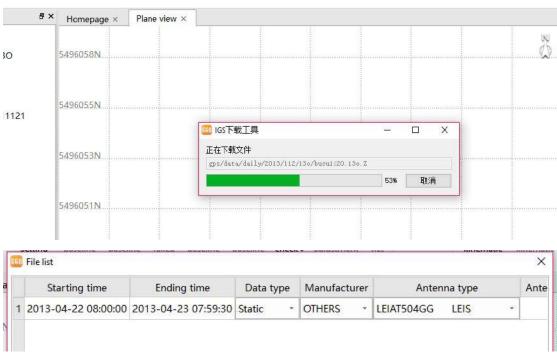
This two buttons are used to load observation raw data for your current project such as Static or Kinematic. Static raw data loading and kinematic data loading are similar to each other, but there is still a little bit difference between each other. Detailed information please refer to Chapter2.

7.2 Download IGS

The Download IGS function only can be used with Kinematic data, after the users import the kinematic data collected, the Download IGS button will be activated, click this button, the SGO will download the nearest IGS station static data for users to process the kinematic data together.

■ → ● ■ ■ ↓ = File Common operations View S	urvey CAD	Tool	SGO (S	OUTH GEO	MATICS ()FFICE)C:	\Users\a\D	ocuments	\SGO (SOUTH	I GEOM/	ATICS OF
Import Export IGS Data Processing	ing + itrol Point +	Processing Setting	Process baseline	Search baseline	Process failed	Clear baseline	Rebuild baseline tatic	Quality check -	Net adjustment	Clear net	Adjustr
Project management 🛛 🗗 🗙	Homepa	ge × P	lane view	×							
▲ 不 Station ▲ 永 9652 □ 団 96521121.130 □ 彩 Baseline	5496058N										
	5496055N										
	54960531	1									





Note: If you already have the base station data for post processing, you do not need to load the IGS data anymore.

7.3 Processing setting

There are four pages in this dialog, including Cal.parameters, Cal.quality, Satellite, Dynamic baseline.

7.3.1 Cal.parameters

Cal.parameters	Parameters	
Cal.quality	Least epch in section	30
Satellite	Cycle slip detection method	Kalman
	Mask angle	13
Dynamic Baseline	Sampling inverval	30
	Fixed rate	3.000
	Enable GPS	True
	Enable GLONASS	True
	Enable BDS	False
	Solution type	L1/B1
	Estimate troposphere or not	False

Least epoch in section: For static survey, if the observation epoch is less than 30, the observation data can't form baseline.

Circle slip detection method: There are two options for detecting circle slip, TD and Kalman. **Mask angle**: Cutoff angle is used to limit the satellite data with relatively lower elevation angle, these data won't be processed when you processed baseline.

Usually the signal quality of satellite with low elevation angle is very bad, so when we process the baseline, we can adjust this parameter to forbid this kind of data.

Sampling Interval: it means epoch interval which is involved to baseline processing, that is to say, if you set sample interval to 5s, the receiver will collect 12 epochs in 1min, but when you set interval to 10s in baseline setup, it means only 6 epochs will be taken to baseline processing in 1min. but notice that, the interval must be bigger than sampling interval, otherwise, the setting will be invalid.

Fixed rate: this parameter refers to baseline qualified condition, usually, the default value is 3.0, after processing, if the result is bigger than 3.0, the baseline is qualified, otherwise, it's failed. **Enable GPS**: True means using GPS data, False means not.

Enable GLONASS: True means using Glonass data, False means not.

Enable BDS: True means using Beidou data, False means not. This function is only available in registration version.

Solution type: there are 4 options,L1/B1,L2/B2,Ionosphere-free combination,L5/B3. For short distance, L1/B1 method is recommended.



Estimate troposphere or not: True means using troposphere error, False means not.

7.3.2 Cal.quality

Cal.parameters	calculation quality	
Cal.quality	Single frequency fixed error	0.030000
Satellite	Single frequency ratio error(ppm)	1.000000
	Dual frequency fixed error	0.020000
Dynamic Baseline	Dual frequency ratio error(ppm)	1.000000

Single frequency fixed error: the default value is 0.03, if the result is less than 0.03, the baseline is qualified, otherwise it's failed. This is suitable for single frequency observation data.

Single frequency ratio error(ppm): the parameter is used to estimate repeated baseline error and closure loop error, the default value is recommended.

Dual-frequency fixed error: the default value is 0.02, if the result is less than 0.02, the baseline is qualified, otherwise it's failed, this is suitable for dual-frequency observation data.

Dual-frequency ratio error(ppm): the parameter is used to estimate repeated baseline error and closure loop error, the default value is recommended.



7.3.3 Satellite

Cal.parameters	GPS	GLONASS	BDS	
Cal.quality	✓ G01	✓ R01	C01	
Satellite	G02	✓ R02	C02	
Dynamic Baseline	☑ G03	✓ R03	✓ C03	
	☑ G04	🗹 R04	✓ C04	
	🗹 G05	🗹 R05	C05	
	<mark>⊡ G0</mark> 6	🗹 R06	C06	
	☑ G07	🗹 R07	C07	
	G08 ⊡	🗹 R08	✓ C08	
	☑ G09	🗹 R09	C09	
	☑ G10	🗹 R10	✓ C10	
	☑ G11	☑ R11	✓ C11	
			G. 610	

This page is used to control the satellite which can involve to baseline processing or cant, user can check or uncheck satellite number to control it. GPS, GLONASS, BDS are available.

7.3.4 Dynamic Baseline

This is configured some settings for kinematic processing.



S	BaseLine Process Setting				×
[Cal.parameters	Dynamic baseline			
	Cal.quality	Mask angle	13.000000		
	Satellite	AutoNumber	AuPt		
	Dynamic Baseline				
				OK Can	cel

7.4 Process baseline

Before baseline processing, we can check observation point data quality. From the project management, click observation file you will see the station edit interface.



- E = E = = + + + + + + + + + + + + + + +	SGO (SOUTH GEOMATICS OFFICE)C:\Users\a\Documents\SGO (SOUTH GEOMATICS OFFICE)\cosola1120\cosola1120\cosola1120.sgo	
File Common operations View Surv		
Import Export Download GS Data Processing	Visit Visit	Report Report
Project management 🗗 🗙	Homepage × Plane view × Station edit ×	
▲ 示 Station ▲ 示 0132 ↓ ↓ 1 01323116Q.STH ▲ 示 0160	2018-11-07 20 SAT./Fre 14:52:50 01323116Q Sampling inverval 5.0, SampleNumber 5437	22:25:50
- 🗐 01603117RSTH	501 L1 L2 L5	
▲ 禾 1535 □ □ 153531193.STH	602 L1 L2 L5	
▲ 示 AM04 - ☆ Control point info	503 L1L2L5	
AM043110.18o	305 L1 L2 L5	
- 🕺 01323116Q-AM043110	GO6 L1L2L5 E E	
- % 01323116Q-01603117P - % 01603117P-AM043110	307 L1 L2 L5	
- 2 01323116Q-153531193 2 01603117P-153531193	609 L1 L2 L5	
- 153531193-AM043110	311 L1 L2 L5	
- 🕺 Dynamic route	512 L1 L2 L5	
🗆 🚀 Closure loop	513 L1 L2 L5	
	315 L1L2L5	
	317 L1L2L5	
	318 L1 L2 L5	
	319 L1L2L5	
	322 L1L2L5	
	323 L1L2L5	

Right click observation file, select quality check, it will pop-up a new dialog, **quality check result**.

Quality Check Result		
unlity check result View		
File I	Hetails:	
Observation File:	00010090, 120	
Quality Testing:	Pass	
Statio	m Details:	
Station Position (NYZ):	-2131588.440401 4892411.208924 3481585.327411	
Station Position (HLH):	33° 17′ 47. 268866″ 113° 32′ 32. 680473″ 145. 184013	
	m Summary:	
Time of first obs;	2012-01-07 08:00:0.00	
Time of last obs:	2012-01-07 06:59:59.00	
Obs interval:	1.00 seconds	
Session length:	1.00 hours	
GPS week:	1669	
Num SVs with obs;	12	
Num 57s with max:	12	
SVs with obs:	C2 C5 C8 C8 C8 C15 C18 C21 C22 C26 C27 C29	
SVs without obs:	61 63 64 67 610 611 612 613 614 616 617 619 620 623 624 625 628 630 631 652	
SVs with nav:	02 05 08 09 015 01B 021 022 026 027 029	
SVs without naw:	G1 G3 G4 G7 G10 G11 G12 G13 G14 G18 G17 G19 G20 G23 G24 G25 G28 G30 G31 G32	
	y Indicators:	
Num epochs w/ data:	3500	
Num epochs w/o data:	0	
Num obs :	40057	
Num possible obs > 0" :	36124	
Num abz > 15° :	27469 (100.0 % complete)	
Num possible obs $> 15^{\circ}$:	27469	
Num complete obs $\geq 15^{*}$:	27459 (100.0 % complete)	
Max XX clock offset :	-0.0000394 ns (at 2012-01-07 08:40:27.000)	
	ty Terting:	
Data Completeness (GPS):	Pass (Value 100, 0 %, Threshold 90 %)	
Epochs With Data :	Pass (Value 100.0 %, Threshold 99 %)	
RX Clock ;	Pase	
Exten	led Quality Information:	

There are two pages in the dialog, quality check result, view.

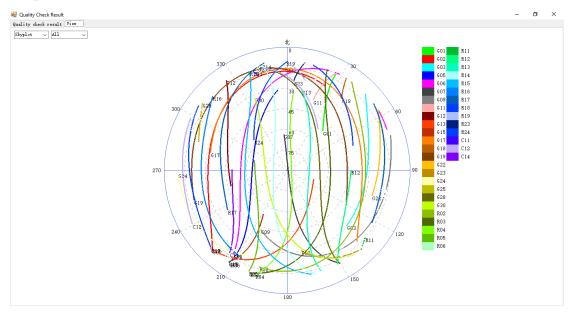
7.4.1 Quality check result

This is a detailed report about observation data quality. If the data quality is too bad, the result will show Failed, if it's qualified, the result is Pass. The report also includes observation satellite number, observation epoch, data completeness and so on. According these information, we can basically judge the data quality condition.



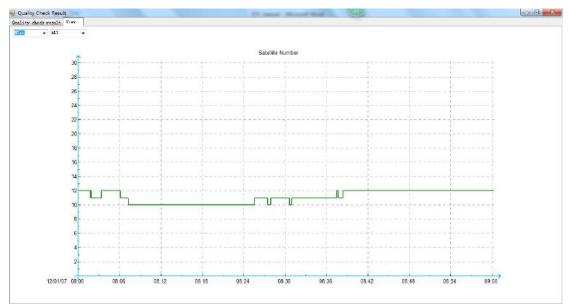
7.4.2 View

There are five options in this page, skyplot, Nsat, multipath, elevation, azimuth, SNR. **Skyplot**



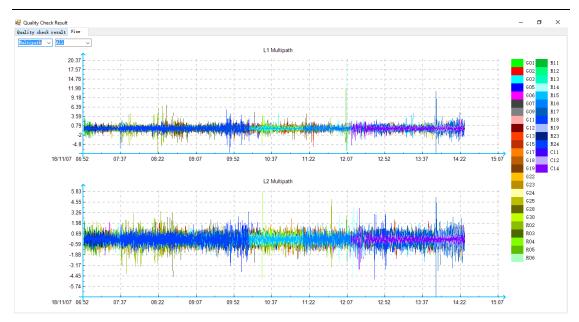
It shows every captured satellite running orbit during observation time.

Nsat



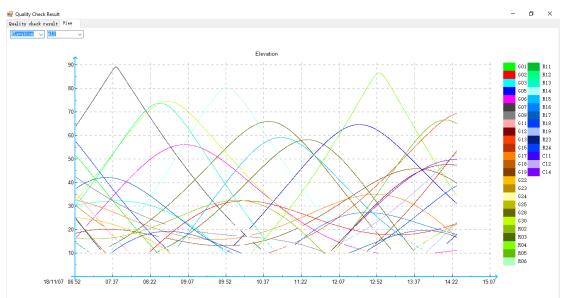
It shows captured satellite number during every time span. **Multipath**





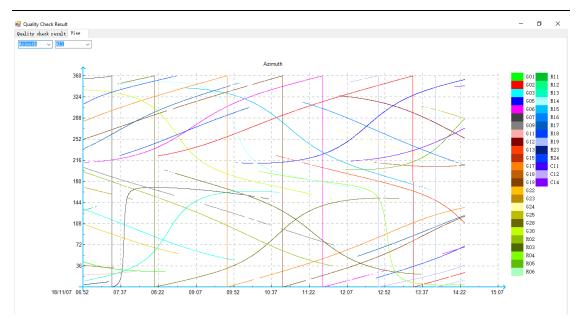
This page shows multipath effect, includes L1 and L2 multipath.

Elevation



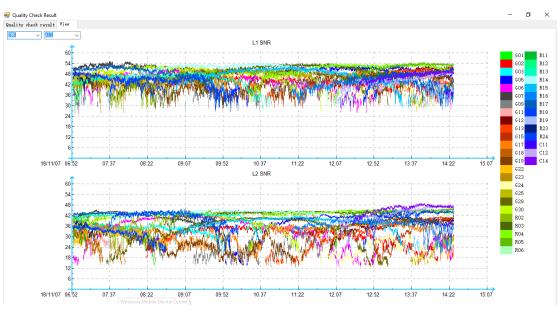
This page shows all captured satellites' elevation orbit. Azimuth





This page shows all captured satellites' azimuth of orbit.

SNR



SNR means signal to noise ratio, it's an index to estimate satellite quality. This page shows all captured satellites SNR condition change as time goes on.

After making above checking and setting, we can click button on the toolbar. Then you will see the following figure,



		Synchronization time	Solution type	Fixed rate	RMS(m)	HRMS(m)	VRMS(m)	Baseline length(m)
	01323116Q-AM043110	7 hour(s)33 min(s)0.0 sec(s)						
2 🗸	01323116Q-01603117P	6 hour(s)34 min(s)45.0 sec(s)						
8 🗸	01603117P-AM043110	7 hour(s)24 min(s)5.0 sec(s)						
• 🗸	01323116Q-153531193	5 hour(s)19 min(s)15.0 sec(s)						
5 🗸	01603117P-153531193	6 hour(s)8 min(s)35.0 sec(s)						
5 🗸	153531193-AM043110	7 hour(s)15 min(s)55.0 sec(s)						

If you want to process specified baseline, you can just select the baseline you want to process. Or you can directly press **Process** button to process all baseline.

After processing procedure finished, if the baseline is qualified, the solution type will be fixed, ratio will be bigger than 3.0, and RMS will be smaller than 0.02.

Ratio

The RATIO is the rate of the less least RMS and the Least RMS after the integer ambiguity analysis, that is:

$$RATIO = \frac{RMS_{sec}}{RMS_{min}}$$

It reflects the reliability of the integer ambiguity parameter, which is determined by a few factors. It has the relation to the observation quality and the observation term. The RATIO is the key to reflect the quality of the baseline, generally, the RATIO is required to bigger than 3.

RMS

RMS is the Root Mean Square, that is:

$$RMS = \sqrt{\frac{V^T P V}{n - f}}$$

V is the residual of the observations.

P is the weight of the observations.

n-f is that the total numbers of observations subtracts to the number of known number. RMS means the quality of the observations. The smaller the value of RMS is, the better the quality will be. Otherwise the worse the quality will be. The RMS is not effected by the observation terms. According to the theory of Symbolic Statistics Mathematical Statistics, the rate of the observation error within the 1.96 times of RMS is 95%.



2 01323116Q-01603117P 6 hour(s)34 min(s)45.0 sec(s) Fixed 4.046 0.0257 0.0101 0.0237 1533	519.8639 335.8873 776.2022
3 🗋 01603117P-AM043110 7 hour(s)24 min(s)5.0 sec(s) Fixed 6.239 0.0252 0.0124 0.0220 2477	76 2022
	10.2022
4 🗌 01323116Q-153531193 5 hour(s)19 min(s)15.0 sec(s) Fixed 3.907 0.0218 0.0091 0.0198 2961	513.2262
5 🗋 01603117P-153531193 6 hour(s)8 min(s)35.0 sec(s) Fixed 4.107 0.0254 0.0118 0.0224 1552	527.0031
6 153531193-AM043110 7 hour(s)15 min(s)55.0 sec(s) Fixed 17.426 0.0244 0.0115 0.0216 4019	195.0694

If all the baselines get fixed solution, you can press **Close** button to Save the processing result and exit.

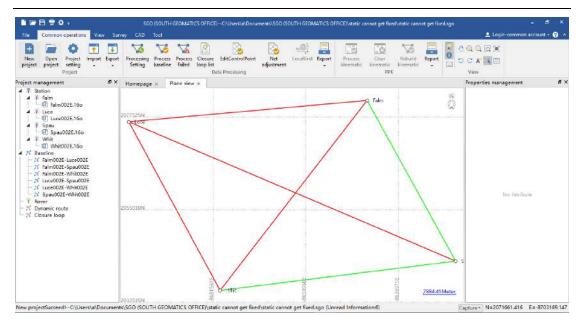
7.5 Adjust failed baseline

But in reality, it's impossible to make all baselines to get fixed solution at the first time, some baselines may get float, dgps or none result. In that case, we should adjust parameters to reprocess the baseline again, sometimes, the operation will repeat again and again. See the below example,

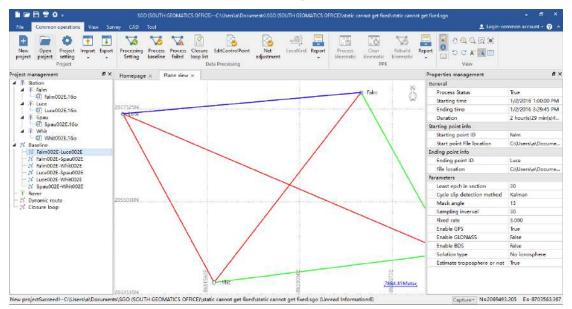
Image: Space	Baseline	Synchronization time	Solution type	Fixed rate	RMS(m)	HRMS(m)	VRMS(m)	Baseline length(m)
Image: Space of the state	Falm002E-Luce002E	2 hour(s)29 min(s)45.0 sec(s)	Float	1.444	0.022	0.012	0.019	55173.156
Luce002E-Spau002E 2 hour(s)29 min(s)45.0 sec(s) Float 1.053 0.023 0.012 0.020 81999.631	Falm002E-Spau002E	2 hour(s)29 min(s)45.0 sec(s)	Fixed	3.415	0.016	0.008	0.013	42294.892
	Falm002E-Whit002E	2 hour(s)29 min(s)45.0 sec(s)	Float	2.384	0.014	0.007	0.012	55399.383
Luce002E-Whit002E 2 hour(s)29 min(s)45.0 sec(s) Float 1.009 0.023 0.012 0.020 44235.85	Luce002E-Spau002E	2 hour(s)29 min(s)45.0 sec(s)	Float	1.053	0.023	0.012	0.020	81999.631
	Luce002E-Whit002E	2 hour(s)29 min(s)45.0 sec(s)	Float	1.009	0.023	0.012	0.020	44235.585
Spau002E-Whit002E 2 hour(s)29 min(s)45.0 sec(s) Fixed 7.781 0.015 0.008 0.013 54842.905	Spau002E-Whit002E	2 hour(s)29 min(s)45.0 sec(s)	Fixed	7.781	0.015	0.008	0.013	54842.905

Firstly, we should save the result, then the baselines with fixed solution will be saved, we just need to reprocess unqualified baseline.





The qualified baseline will become green, unqualified baseline will become red. Then we can select unqualified baseline one by one by clicking the red baselines in plane view workspace, the selected baseline will become blue. The right workspace will show baseline information.



The right bottom corner shows current process parameters, we can adjust the following parameters to reprocess it.

1. After checking the observation data, we can see the sampling interval is 5s, but the default processing interval is 30s, so we can adjust processing interval to 5s, so the involved epoch will become more. After change to 5s, we can click the Process failed button to reprocess the failed baseline,



	Baseline	Synchronization time	Solution type	Fixed rate	RMS(m)	HRMS(m)	VRMS(m)	Baseline length(m)
\checkmark	Falm002E-Luce002E	2 hour(s)29 min(s)45.0 sec(s)	Float	1.444	0.022	0.012	0.019	55173.156
\checkmark	Falm002E-Whit002E	2 hour(s)29 min(s)45.0 sec(s)	Float	2.384	0.014	0.007	0.012	55399.383
\checkmark	Luce002E-Spau002E	2 hour(s)29 min(s)45.0 sec(s)	Float	1.053	0.023	0.012	0.020	81999.631
\checkmark	Luce002E-Whit002E	2 hour(s)29 min(s)45.0 sec(s)	Float	1.009	0.023	0.012	0.020	44235.585

Before reprocessing

Baseline	Synchronization time	Solution type	Fixed rate	RMS(m)	HRMS(m)	VRMS(m)	Baseline length(m)	

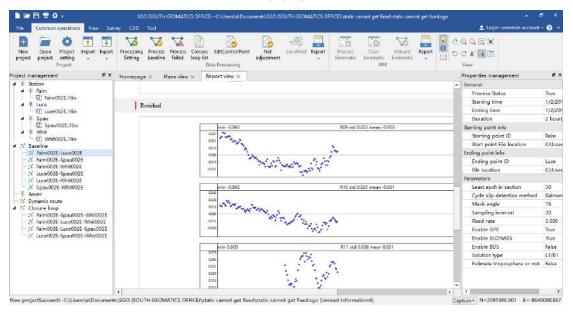
After reprocessing

- 2. Also you can adjust cutoff angle, using GLONASS, and select different solution type to try to reprocess the unqualified baselines.
- 3. If above methods still can't get satisfied result, we can check the baseline residual condition, For example, after above processing, there is only left one baseline which is unqualified.



File Common operations View Surv	SGO (SOUTH GEOMATICS OFFICE)C\/Users\a\Documents\SGO (SOUTH GEO ey CAD Toul	AATICS OFFICE/Attale cannot get the	enverance cannot ge		= 🗗 X mmon account - 💡	
New project Project Import Export Project	Frecessing Process Process Ocoure EditControlPoint Setting baseline failed bog list Data Processing	Report Process binematic Baseline report				
roject management の文	Homepage × Plane view × Report view ×	Baseline list report		Properties management		
A A Station		Closure loop report		▲ General		
▲ 承 Falm □ □ □ Falm0025.160 ▲ 承 Luce	Baseline calculation result repo			Process Status Starting time Ending time	True 1/2/2016 1:00:00 PN 1/2/2016 3:29:45 PN	
- ∰ Luce002E.16o ▲ 〒 Spau - ∰ Spau002E.16o	Report head	Advanced •		Duration	2 hour(s)29 min(s)4.	
A R Whit			Starting point info			
- 10 Whit002E.16o	Project name C'Users'a Documents'SGO (SO	c cannot g e t f	Starting point ID	Falm		
I N Baseline → N Falm002E-Luce002E	The company of project : Default	Start point File location Ending point info	C:\Users\a\Docume			
- 7 Falm002E-Spau002E		Ending point ID	Luce			
- 2 Falm002E-Whit002E - 2 Luce002E-Speu002E	Project start time: 2018-11-27 11:51:24	File location	Ca\Users\a\Docume			
- X Lice002E-Whit002E			Parameters			
Spau002E-Whit002E	Practical parameters setting	Least epch in section	30			
T Rover			Cycle slip detection method	Kalman		
- 5 Dynamic route	Min epoch in subsection : 30 Cycle slip detecti	on method: Kalman	Mask an	Mask angle	16	
Closure loop	Min epoch in subsection: 30 Cycle silp detect	n method. Kaman	Midsa dh	Sampling inverval	30	
- 21 Falm002E-Luce002E-Whit002E			used Sat	Fixed rate	3.000	
- X Faim002E-Luce002E-Spau002E				Enable GPS	True	
ー パ Luce002E-Spau002E-Whit002E	Calculation method: L1/B1			Enable GLONASS	True	
				Enable BDS	False	
	Calculation result		Solution type	L1/81		
				Estimate troposphere or not	False	
	Baseline name: Falm002E-Luce002E					
-	4		*			

We can check the baseline report by clicking report \rightarrow Baseline report button, select baseline in the left Project management window. Then it will pop up a new dialog,



From the chart, we can check the residual, usually the normal residual error is only 20-40mm grade. If any satellites qulity is not good, we can try to forbid the satellite observation.

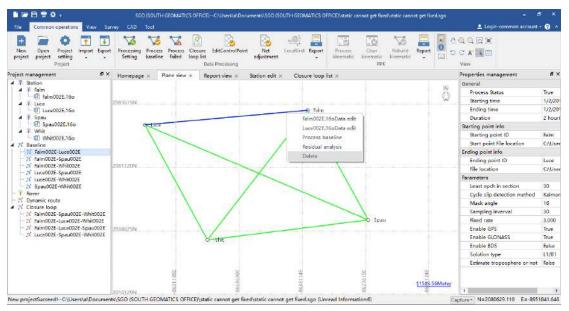


∎ ⊯ ⊟ ≇ ¢.	SGD (SOUTH GEOMATICS OFFICE) C:\Users\a\Documents\SGD (SOUTH GEOMATICS OFFICE)\static cannot get fixed\static sannat get fixed.	99 =	
File Common operations View Sur	ey CAD Tool	💄 Legin-common accoun	t - 😢 -
New Open Project Import Export project Project setting Project	Processing Process Cloure EditControlPoint Setting Easeline Falled Soop Est Duts Processing Duts Processing Process Process Cloure Falled Soop Est Duts Processing Process Pr	D G H BUT	
roject management d ^e ×	Homepage × Plane view × Report view × Station edit ×	Properties management	e :
Station	2016-01-02 2016-01		
▲ T falm	SAT/Fre 13:00:00 Spau002E Sampling inverval 15:0, SampleNumber 600 15:29	Point io	5peu
A T Luce			C:\Use
는 [1] Luce002E.16o	601 (1)213	Starting time	2016-0
▲ 〒 Spau	603 11215	Duration	2 hour
▲ ∓ Whit	G06 111215	Antenna height	0.0000
山町 Whit002E.16o	300 C 20	Antenna measuring method Manufacturer	OTHER
A Baseline A Falm002E-Luce002E	907 LTUD		
- 3 Falm002E-Luce002E	G08 LTL212 2016-01-02 14:44:15 To 2016-01-02	Antenna type 15 SN	TRM53 4831K
- X Falm002E-Whit002E	G09 ULUO	Geodetic	4631K
- 1 Luce002E-Spau002E - 2 Luce002E-Whit002E	309 000	Latitude	18.156
Spau002E-Whit002E	G11 (122) Forbid	Langitude	77,458
T Rover	G17 112(5 Recover	Ellipsoidal height	809.80
- X Dynamic route		Spatial coordinates	
パ Closure loop ーズ Faim002E-Spau002E-Whit002E	G19 L1Q15	ECEF X	131662
A Falm002E-Spa0002E-Whit002E	G23 11 D26	ECEF Y	-59196
- # Falm002E-Luce002E-Spau002E # Luce002E-Spau002E-Whit002E	G27 L11215	ECEF_Z	197506
11 consister approver attractioner	G28 (1)215		
	630 (11/15)		
	632 (112)5		
	R06 R1R2		
	807 8192		

Finally, if you still cannot get the qualified solution, you should prevent this baseline from the network adjustment or delete this baseline. If the baseline is necessary in the control network, you should resurvey this baseline.

7.6 Delete baseline and rebuild baseline

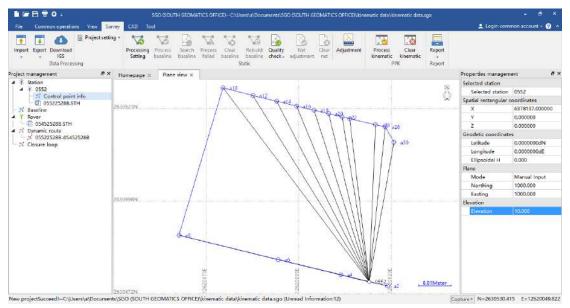
If you want to delete specified baseline, you can tap it in the plan view workspace, then right-click mouse, and select the **Delete** item.



If you delete by mistake, you can click **Rebuild baseline** button to regenerate it again, this function is for regenerating all delete baseline, then you need to process the rebuild baseline again.

7.7 Kinematic processing

Kinematic processing is used for kinematic survey, stop& go survey. The progress is very simple, we can view previous quick guide.



The baseline color means different result, blue means fixed, green means float, red means dgps, grey means single.

After processed, you can click View->Station list to check kinematic points result.

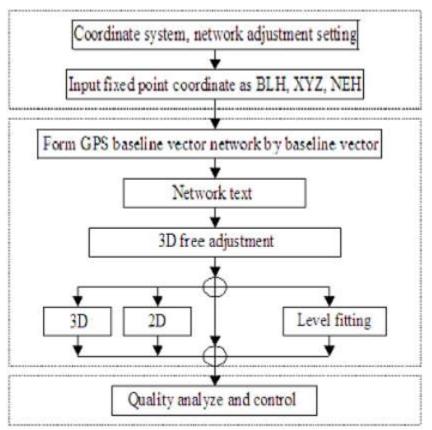
File Common operations View Image: Common operations Image: Common use Image: Common use	2	Station Residual Baseline Rep	R Clasure Rine list loop list				Login-con	nman account + 💡
roject management 6	×	Iomepage × Plane view ×	Station list ×				Properties manager	ment đ
 承 Station ▲ 承 0552 		Station name	Coordinate quality	X(m)	V(m)	Z(m)	Selected station	
A T 0552	1	0552	Control Point	6378137.000	0.000	0.000	Selected station	
05522528B.STH	2	a2-055225288-054525288	Fixed	6378134.170	-2.543	-1.465	Spatial rectangular X	6378137.000000
- 51 Baceline 1 1 Rover	2	82-033223288-034323288		05/0154/1/0		-1,403	÷	0.000000
05452528B.STH	3	a4-055225288-054525288	Fixed	6378145.316	1,061	1.103	z	0.000000
I In Dynamic route	4	a6-055225288-054525288	Fixed	6378160.263	5.940	4.574	Geodetic coordinat	tes
- X Closure loop	5	a8-055225288-054525288	Fixed	6378183.995	13.547	10.178	Latitude	0.0000000dN
	6	a10-055225288-054525288	Fixed	6378179.698	-4.202	43,927	Longitude	0.0000000dlE
	70						Ellipsoidal H Plane	0.000
	7.	a12-055225288-054525288	Fixed	6378172.595	-6.687	42.090	Mode	Manual Input
	8	a14-055225288-054525288	Fixed	6378166.827	-8.231	40,913	Northing	1000.000
	9	a16-055225288-054525288	Fixed	6378162.162	-10.071	39.677	Easting	1000.000
	10	a18-055225288-054525288	Fixed	6378158.010	-11,418	38,731	Elevation	10.000
	11	a20-055225288-054525288	Fixed	6378154.525	-12.554	37.943		
	12	a22-055225288-054525288	Fixed	6378151,280	-13.598	37,176		
	13	a24-055225288-054525288	Fixed	6378149.485	-14.183	36.785		
	14	a26-055225288-054525288	Fixed	6378143.356	-16.204	35.391		
	35	a28-055225288-054525288	Fixed	6378140.987	-16.837	34,964		
	16	a30-055225288-054525288	Fixed	6378138.450	-16.451	31,375		



7.8 Network adjustment

7.8.1 Network adjustment type

There are 4 kinds of network adjustment, 3D free network adjustment, 3D restricted network adjustment, 2D network adjustment, and level fitting.

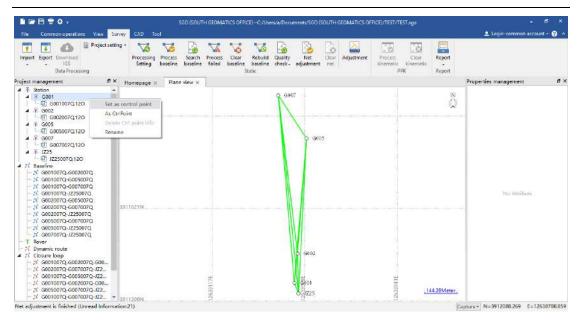


In SGO software, if you don't input known BLH coordinate as control point's coordinate, the software will automatically select the first point as control point, if you want to make whole network adjustment, you should input one NEH coordinate at least.

7.8.2 Step of network adjustment

In SGO software, network adjustment step is very simple,

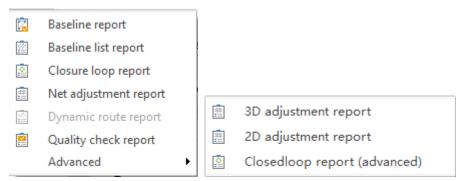




- 1. Just select the control points in project explorer workspace, right-click the point name, select **Set as control point** option.
- Click Control point info item. The right workspace will pop up coordinate information field. If your known point coordinate format is space coordinate, you can input it to XYZ field, if you known point coordinate format is BLH, you can input to BLH field. The last filed is suitable for NEH coordinate.
- 3. Then click Net adjustment to make network adjustment.

7.9 Report

Report button contains Baseline report, Baseline list report, Closure loop report, Net adjustment report, Dynamic route report, Quality check report, 3D adjustment report, 2D adjustment report and closedloop report.



7.9.1 Baseline report

It show single baseline quality report, includes common satellites condition and residual error



information, before press the menu, you should select specified baseline in project management workspace.

Baseline o	alculation r	result report			2018-11-27 16:54:45
Report head					
Project name:	C:/Users/a/Docu	ments/SGO (SOUTH GEOMATICS OFFI	CE)/TEST/TEST.sgo		
The company of project :	Default				
Project start time:	2018-09-07 17:2	7:08			
Practical parameters setting					
Min epoch in subsection :	30	Cycle slip detection method:	Kalman	Mask angle :	134
Sample interval :	30	Fixed rate:	3	used Satellite constellation :	GPS
Calculation method :	L1/B1				
Calculation result					
Baseline name:	G001007Q-G00	5007Q			
Standard error of unit weight:	1.854mm				
Baseline X component:	75.899m	Baseline Y component:	-288.231m	Baseline Z component :	447.856m

7.9.2 Baseline list report

It shows all baselines solution type, RMS conditions.

			ine list rep									2018-11-2	7 16:55:55
Report hea	d												
Project nar	ne:		C:Us	ers a Doo	uments/SG	O (SOUTH	I GEOMATIC:	S OFFICE)/TE	ST/TEST.sgo				
The compa	ny of pe	oject :	Defau	h									
Project sta	t time:		2018-0	09-07 1 7	27:08								
Calculation	ı result												
Baseline	Fixed	Fixed	Standard array of										
name	Status	rate	Standard error of unit weight(mm)	RMS(m)	HRMS(m)	VRMS(m)	Baseline X component(m)	Baseline Y component(m)	Baseline Z component(m	RMSE of Baseline) X component(mm)	RMSE of Baseline Y component(mm)	RMSE of Baseline Z component(mm)	Length(m
			0.1.1	RMS(m) 0.006	0.003	VRMS(m) 0.006	Baseline X component(m) 12.421		Baseline Z component(m 90.040	RMSE of Baseline) X component(mm) 0.384	RMSE of Baseline Y component(mm) 0.657	RMSE of Baseline Z component(mm) 0.484	Length(m 108.407
G001007Q- G002007Q	Fixed	99.900	1.887				1	component(m)	compensation) A component(tim)	r componentium,	2 component(mitt)	
G001007Q- G002007Q G001007Q- G005007Q	Fixed Fixed	99.900 71.535	1.887	0.006	0.003	0.006	12.421	component(m) -59.081	90.040	0.384	0.657	0.484	108.407
G001007Q- G002007Q	Fixed Fixed Fixed	99.900 71.535 99.900	1.887 1.854 1.811	0.006	0.003	0.006	12.421 75.899	component(m) -59.081 -288.231	90.040 447.856	0.384 0.383	0.657 0.649	0.484 0.477	108.407 537.971
G001007Q- G002007Q G001007Q- G005007Q G001007Q- G001007Q- G007007Q	Fixed Fixed Fixed Fixed	99.900 71.535 99.900 65.745	1.887 1.854 1.811 2.093	0.006	0.003 0.003 0.003	0.006 0.005 0.006	12.421 75.899 207.431	component(m) -59.081 -288.231 -327.267	90.040 447.856 582.165	0.384 0.383 0.370	0.657 0.649 0.634	0.484 0.477 0.468	108.407 537.971 699.319

7.9.2 Closure loop report

It shows the closure loop X, Y, Z component closure error and side closure error.



Closu	re loop	report						2018-11-27 16:56:
Report head								
Project name:	c	:/Users/a/Document	SGO (SOUTH G	EOMATICS OFFICE)/TEST/	TEST.sgo			
The company of project :	I	Default						
Project start time.	2	018-09-07 17:27:08						
Repeated baseline								
Repeated baseline name	Baseline 1	Baselin	ie 2	X component discrepancy(n	nm) Y component disc	repancy(mm)	Z componen	t discrepancy(mm)
		Repeated baseline	total quantity	0				
Closure loop						1 (m + + + + + + + + + + + + + + + + + +	ent closure	Side closure
Closure loop Closure loop name	All po	ints of closure loop	Closure loop type	X component closure error(mm)	Y component closure error(mm)		(mm)	error(mm)
÷	G001	ints of closure loop 1007Q G002007Q G005007Q				error		
G001007Q-G002007Q-	G001	007Q G002007Q	type Synchronous	error(mm)	error(mm)	error 0.	(mm)	error(mm)

7.9.3 Net adjust report

It's used to show network adjustment result.

Report head				
Project name:	C:/Users/a/Documents/SGO	(SOUTH GEOMATICS OFFICE)/TEST	TEST.sgo	
The company of project :	Default			
Project start time:	2018-09-07 17:27:08			
Coordinate system				
Central meridian	114d00m0.00000sE			
Projection method	Gauss-Kruger(Transverse Me	ercator)		
3D known point information	n			
Point name	Point type	X(m)	Y(m)	Z(m)
G001	XYZ	-2131588.713	4892413.947	3481587.031

7.9.4 Dynamic route report

This report is used to show kinematic point result, includes point coordinate and solution type.



Report head Project name: C:'Users' al Documents' SGO (SOUTH GEOMATICS OFFICE) ppk egstar The company of project : Default Project start time: Default Project start time: Default Optiget start time: Default Central meridian 117.000000dE Central meridian Of S22528B Default report to method Gause-Kruger(Transverse Mercator) Base information Point name North(m) East(m) N(m) Pass(m) Default start Point name North(m) East(m) h(m) RMS(m) HRMS(m) VRMS(m) PDOP(m) Solution type Point name North(m) East(m) h(m) RMS(m) MRMS(m) Op804 1.340 Autonomous		namic rout			-					2018-10-11 10:45					
The company of project : Peise is in the second se	Report head	.eport head													
Norther 10:32:11 Project start time: 0522528B-05452528B Coordinate system Coordinate system Coordinate system Coordinate system Coordinate system Coordinate system Projection method Gsus=Kruger(Tansverse Mercator) Base information Search (Mrm) Search (Mrm) Search (Mrm) North(m) Search (Mrm) Ner(Mrm) Point name North(m) Search (Mrm) N(m) Point name North(m) Search (Mrm) N(m) Point name North(m) Search (Mrm) N(m) Point name North(m) N(m) N(m) Search (Mrm) Search (Mrm) Search (Mrm) Search (Mrm) Search (Mrm) Point name North(m) <th <="" colspan="5" td=""><td>Project name:</td><td>с</td><td>:\Users\a\Doci</td><td>uments\SC</td><td>50 (SOUTH C</td><td>EOMATICS OF</td><td>FICE)\ppk egstar</td><td></td><td></td><td></td></th>	<td>Project name:</td> <td>с</td> <td>:\Users\a\Doci</td> <td>uments\SC</td> <td>50 (SOUTH C</td> <td>EOMATICS OF</td> <td>FICE)\ppk egstar</td> <td></td> <td></td> <td></td>					Project name:	с	:\Users\a\Doci	uments\SC	50 (SOUTH C	EOMATICS OF	FICE)\ppk egstar			
Dynamic route name 052228B Coordinate system Coordinate system Coordinate system 117.00000000000000000000000000000000000	The company of pro	ject : D	efault												
North(m) North(m) <th< td=""><td>Project start time:</td><td>20</td><td>18-10-11 10:</td><td>32:11</td><td></td><td></td><td></td><td></td><td></td><td></td></th<>	Project start time:	20	18-10-11 10:	32:11											
Central meridian 117.000000dE Projection method Gauss-Kruger(Tinnsverse Mercator) Base information Set information $000000000000000000000000000000000000$	Dynamic route name	e 0:	522528B-054	452528B											
Projection method Gauss-Kruger(Transverse Mercator) Base information Point name North(m) East(m) h(m) 0552 0 10000.000 10000.000 12.000 Dynamic point name North(m) East(m) h(m) East(m) Solution type Point name North(m) East(m) h(m) RMS(m) HRMS(m) VRMS(m) PDOP(m) Solution type Point name North(m) East(m) h(m) RMS(m) HRMS(m) VRMS(m) PDOP(m) Solution type gegggs.38 10004.974 11.43 0.042 0.022 0.036 1.340 DCNSS gegggs.38 10004.610 12.600 0.001 0.001 0.001 1.340 Float	Coordinate system														
Base information Base information North(m) Esst(m) h(m) Dynamic point name Point name North(m) Esst(m) h(m) Point name Point name North(m) East(m) h(m) RMS(m) HRMS(m) VRMS(m) PDOP(m) Solution type Point name North(m) East(m) h(m) RMS(m) OPP PDOP(m) Solution type Point name North(m) East(m) 11.443 0.042 0.022 0.036 1.340 DQNSS app88.88 10004.610 0.001 0.001 0.001 1.340 Float	Central meridian	11	7.000000dE	1											
North name Vertheometry in the set of t	Projection method	G	auss-Kruger(T	ransverse i	Mercator)										
North(m) East(m) h(m) RMS(m) HRMS(m) VRMS(m) PDOP(m) Solution type a2 9998.838 10004.610 12.600 0.001 0.001 0.001 1.340 Float	Base information														
Point name North(m) East(m) h(m) RMS(m) HRMS(m) VRMS(m) PDOP(m) Solution type a2 9998.838 10004.610 1.443 0.042 0.022 0.036 1.340 DCNSS	I	Point name	North(m)				East(m)		h(m)						
Point name North(m) East(m) h(m) RMS(m) HRMS(m) VRMS(m) PDOP(m) Solution type 9999.418 10004.994 27.388 1.161 0.617 0.984 1.340 Autonomous 9999.795 10004.974 11.443 0.042 0.022 0.036 1.340 DGNSS 9998.838 10004.610 12.600 0.001 0.001 1.340 Float		0552			10000	0.000		10000.000		12.000					
s2 9999.838 10004.610 12.600 0.001 0.001 0.001 1.340 Autonomous	Dynamic point nar	ne													
a2 9998.795 10004.974 11.443 0.042 0.022 0.036 1.340 DGNSS 9998.838 10004.610 12.600 0.001 0.001 1.340 Float	Point name	North(m)	East	t(m)	h(m)	RMS(m)	HRMS(m)	VRMS(m)	PDOP(m)	Solution type					
a2 9998.838 10004.610 12.600 0.001 0.001 1.340 Float		9999.418	1000	4.894	27.388	1.161	0.617	0.984	1.340	Autonomous					
9998.838 10004.610 12.600 0.001 0.001 0.001 1.340 Float	~	9998.795	1000-	4.974	11.443	0.042	0.022	0.036	1.340	DGNSS					
9998.846 10004.574 11.778 0.001 0.001 0.001 1.340 Fixed	8.2	9998.838	1000-	4.610	12.600	0.001	0.001	0.001	1.340	Float					
		9998.846	1000-	4.574	11.778	0.001	0.001	0.001	1.340	Fixed					
		10002.485	9993	.341	27.273	1.171	0.623	0.991	1.340	Autonomous					

7.9.5 Quality check report

It is used to show all repeated baseline and closure loop condition.

ty check result View		
File D	etails:	
Observation File:	G001007Q.120	
Quality Testing:	Pass	
Statio	n Details:	
Marker Name/Number:	6001	
Receiver/Agency/Version:	0.0	
Antenna/Type: Station Position (XYZ):	5 -2131588.440402 4892411.208925 3481585.327411	
Station Position (BLH):	33° 17′ 47.968656″ 113° 32′ 32.680473″ 145.184013	
Sessio	n Summary:	
Time of first obs:	2012-01-07 08:00:0.00	
Time of last obs:	2012-01-07 08:59:59.00	
Obs interval: Session length:	1.00 seconds 1.00 hours	
GPS week:	1.00 nours 1669	
Num SVs with obs:	14	
Num SVs with nav:	12	
SVs with obs:	62 65 66 68 69 615 618 621 622 626 627 629	
SVs without obs:	G1 G3 G4 G7 G10 G11 G12 G13 G14 G16 G17 G19 G20 G23 G24 G25 G28 G30 G31 G32	
SVs with nav:	62 65 66 68 69 615 618 621 622 626 627 629	
SVs without nav:	G1 G3 G4 G7 G10 G11 G12 G13 G14 G16 G17 G19 G20 G23 G24 G25 G28 G30 G31 G32	
Qualit	y Indicators:	
Num epochs w/ data:	3600	
Num epochs w/o data:	0	



7.9.6 3D adjustment report

It shows the 3D adjustment result.

) 3D ødjustmer ile Edit Forr									
	Pos	Spare obse Known Baseline v Ce	ervation n points Total rector qu sntral me (ajor sen 1/Flat	number = number = points = antity = ridian = i axis = tening = riance =	18 1 5 10 114,000000 6378137,000 298,2572229) (m) 333	GROWATICS OF	PICE)/TEST/TEST	T. sgo
	Name G001	Xr X (n) -2131588, 7130		Y (n)	Z) 3481587.03				
¥	From	I To		vector X(m)	7 (m)	Z (m)	S (m)		
1 2 3 4 5 6 7 8 9	G001 G001 G001 G002 G002 G002 G005 G005 G005 G007	6002 6005 6007 1225 6005 6005 1225 6007 1225 1225 1225	12 75 207 -23 63 195 -35 131 -99 -230	. 421 . 899 . 431 . 223 . 479 . 010 . 643 . 531 . 122 . 654	-59.081 -289.231 -327.267 14.126 -229.149 -268.186 73.207 -39.036 302.357 341.398	90.040 447.856 582.165 -32.620 357.816 492.125 -122.661 134.309 -420.476 -614.786	108,407 537,971 699,319 42,461 429,617 593,414 147,225 191,988 576,283 740,076		
	3D bas From	seline correct To	tion para Vx(cm)	meters Vy(cm)	Vz (cm) 1	[olerance(cm)			
1 2 3 4 5 6 7	G001 G001 G001 G002 G002 G002 G002 G005 G005	6002 6005 1225 6007 1225 6007 1225 6007 1225	0.00 -0.01 0.00 0.01 0.00 -0.00 -0.00 -0.01 -0.01	-0.00 0.01 -0.00 -0.01 -0.00 0.00 -0.00 -0.00 0.01 -0.00	-0.00 0.01 -0.00 -0.01 -0.00 -0.00 -0.00 0.00	0.62 Qualified 0.71 Qualified 0.74 Qualified 0.61 Qualified 0.69 Qualified 0.72 Qualified 0.63 Qualified 0.64 Qualified 0.64 Qualified 0.72 Qualified			

7.9.7 2D adjustment report

It shows the 2D adjustment result.

_	- C.	tment rep Format							
			Poste	Spare obse Known Baseline v Ce	ustment p rvation p points p Total p ector qua ntral men ajor semi 1/Flat	result C number = points = antity = ridian = i axis = tening = riance =	:/Users/a/Document: 18 1 5	s/SGO (SC	DUTH GEOMATICS OFFICE)/TEST/TEST.sgc
# 0		Naπ GOO		X(m) 10000.0000		point Y(m) 20.0000			
#		Fro	m	B To	aseline :	vector x(m)	y(m)	S (m)	
0 1 2 3 4 5 6 7 8 9		G00 G00 G00 G00 G00 G00 G00 G00 G00 G00	1 1 1 2 2 2 5 5	G002 G005 G007 JZ25 G005 G007 JZ25 G007 JZ25 JZ25 JZ25	697. -39. 428. 589. -147. 161. -575.	834 042 535 171 379 197 208 369	12.684 47.895 -56.390 15.474 35.211 -69.074 2.790 -104.285 -32.421 71.864	$\begin{array}{c} 108.\ 407\\ 537.\ 970\\ 699.\ 319\\ 42.\ 456\\ 429.\ 617\\ 593.\ 413\\ 147.\ 224\\ 191.\ 998\\ 576.\ 282\\ 740.\ 074 \end{array}$	
#		Corre Fro		of 2D base To)Tolerance(cm)		
0 1 2 3 4 5 6 7 8		G00 G00 G00 G00 G00 G00 G00 G00 G00	1 1 2 2 2 5	JZ25 G005 G007 JZ25 G007	$\begin{array}{c} 0.\ 00\\ -0.\ 00\\ 0.\ 00\\ -0.\ 00\\ 0.\ 00\\ -0.\ 00\\ 0.\ 00\\ -0.\ 00\\ 0.\ 00\\ 0.\ 00\\ 0.\ 00\\ 0.\ 00\\ \end{array}$	$\begin{array}{c} -0.\ 00\\ 0.\ 01\\ -0.\ 00\\ -0.\ 00\\ -0.\ 00\\ -0.\ 00\\ 0.\ 00\\ 0.\ 00\\ 0.\ 00\\ 0.\ 00\\ \end{array}$	0.62 Qualified 0.71 Qualified 0.61 Qualified 0.69 Qualified 0.63 Qualified 0.63 Qualified 0.64 Qualified 0.72 Qualified		



7.9.8 closedloop report

It shows the closure loop result in txt file.

Closure loop report.txt - Notepad File Edit Format View Help - 0

Closure loop						
# Closure loop name Closure loop type Quality X com Perimeter(m) Component tolerance(mm)	ponent closure error(m	m) Y component	closure error(mm)	Z component o	:losure error(mm)	Side closure error(mm
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Chapter 8 CAD

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This chapter will introduce the CAD function in SGO, it is a useful function to help draw simple map base on the collected points. It also provide other function like angle and distance measurement, are and volume measurement.

8.1 CAD tools

8.1.1 Draw point

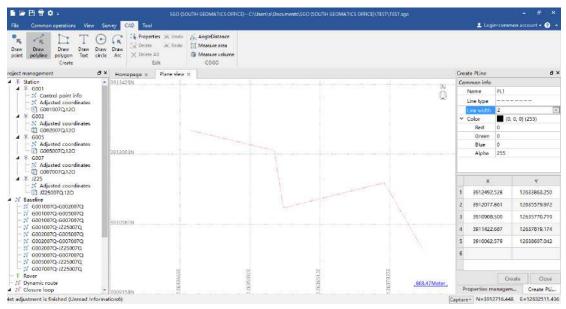
With this tool, users can draw a point on the map, click the position you want to draw it, in the right work space you can input the point name and point color, after check the point coordinates in the bottom, click Create button to confirm drawing or Close button to cancel it.

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8.1.2 Draw polyline

With this tool, you can draw polyline on the map, left click the mouse to select the trace of the polyline, right click the mouse to finish the drawing. Then you can input the polyline name and set

the line style, width and color in the right work space, after check the point coordinates of the polyline, click Create button to confirm drawing or Close button to cancel it.



8.1.3 Draw polygon

With this tool, you can draw a polygon, left click the mouse to select the trace of the polygon, right click the mouse to finish the drawing. Then you can input the polygon name and set the line style, width and color in the right work space, after check the point coordinates of the polygon, click Create button to confirm drawing or Close button to cancel it.

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8.1.4 Draw text

With this tool, you can input text on the map, left click the mouse to select the position of the text. Then you can input the text name and set the text color and font in the right work space, after check the point coordinates of the text, click Create button to confirm drawing or Close button to cancel it.

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8.1.5 Draw circle

With this tool, you can draw a circle, left click the mouse to select the center of the circle, move the mouse to set the radius, click the mouse to finish the drawing. Then you can input the circle name and set the line style, width and color in the right work space, after check the point coordinates of the circle, click Create button to confirm drawing or Close button to cancel it.



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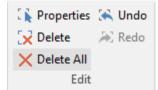
8.1.6 Draw arc

With this tool, you can draw a arc, left click the mouse to select the center of the arc, move the mouse to set the radius, click the mouse to set the start point of the arc. Then click the mouser again to set the end point of the arc. Then you can input the arc name and set the line style, width and color in the right work space, after check the point coordinates of the arc, click Create button to confirm drawing or Close button to cancel it.

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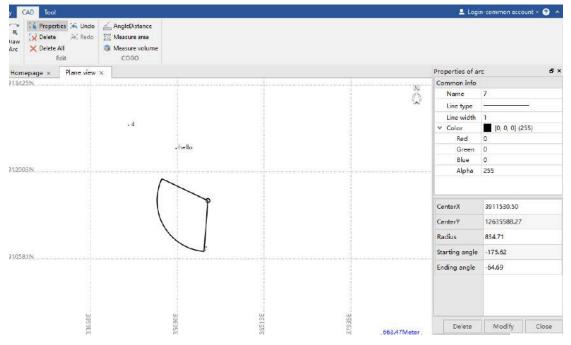


8.1.7 CAD edit



The SGO also provide CAD edit function like properties check, delete, delete all, undo and redo function.

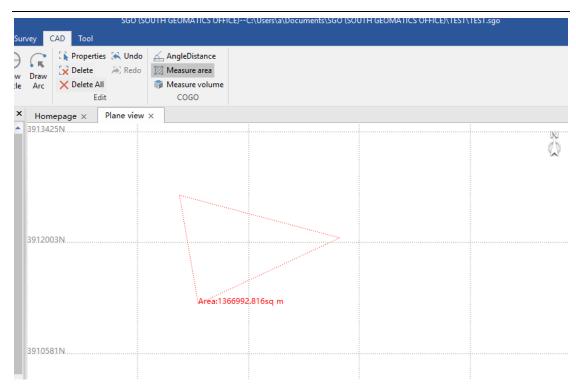
After click Properties button, you can select the CAD shape in the map. Then you can edit it with other edit tools.



8.1.8 COGO

COGO provide tools to measure the Angle, Distance, Area and Volume.







Chapter 9 Tool

9.1 Coordinate system

Coordinate system management contains the majority of countries' and area's common used coordinate system, you can click on this command to check, edit, create new coordinate system.

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Faja 7		Coordinate	North-East	
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> Bermuda 2000 (BDA2000)		False Northing	0.000	
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> Hong Kong Map Grid				
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9.2 Coordinate conversion

With Coordinate conversion tool, you can convert original coordinates no matter geodetic coordinates, Cartesian coordinates or plane coordinates to destination coordinates under same or different coordinates system.



ource coord system			Target coord syst	em		
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9.3 Antenna management

Antenna management is designed for updating and editing the receiver parameter file. When you used an unknown receiver type but you have the geometric parameter of the receiver and the phase center height parameters, you can use this tool to add the receiver you as need.

Click Antenna management button, there will be pop-up the antenna manager window, you can set up some commonly used parameters here, such as the radius, the phase center height



N=2000193.000 E=500183.000

Qu	ery Reset Import	New Modify Dele	te Save			
	Manufacturer	Instrument Type	Ant Type	Ant Radius(mm)	H L1(mm)	H L2(mm)
1	KELIDA	K5plus	HX-CSX019A	64.5	113	104
2	KELIDA	K9mini	HX-CSX019A	64.5	113	104
3	KELIDA	К500	HX-CSX019A	64.5	113	104
4	KELIDA	K5plus	DY-GNSSR044P00A	64.5	113	104
5	KELIDA	K9mini	DY-GNSSR044P00A	64.5	113	104
6	KELIDA	K500	DY-GNSSR044P00A	64.5	113	104
7	KELIDA	K5plus	HX-CSX035A	64.5	113	104
8	KELIDA	K9mini	HX-CSX035A	64.5	113	104
9	KELIDA	K500	HX-CSX035A	64.5	113	104
10	KELIDA	K5plus	HX-CSX021A	64.5	113	104
11	KELIDA	K9mini	HX-CSX021A	64.5	113	104
12	KELIDA	K500	HX-CSX021A	64.5	113	104
13	KELIDA	K58plus	SG6X-T970A	0	127.1	115.6
14	KELIDA	K98mini	SG6X-T970A	0	127.1	115.6
15	KELIDA	K5plus+	HX-CSX027A	64.5	113	104
16	KELIDA	K9mini+	HX-CSX027A	64.5	113	104
17	KELIDA	K5plus+	HX-CSX041A	64.5	113	104

In the list window, double click the name of the antenna, you can change the corresponding parameters directly.

You can create a new antenna parameters by tapping on **New** button, you can also import the .atx antenna file from NGS website directly by **Import** button.

9.4 Road design

Road design tool is used to design a road file for field road stakeout.

			Road Design					
lomePage								
Kew Open Save SaveAs Experi File								
	Road Design View	Road design result						
	Add Insert Modif							
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No Attribute								
	L							

9.5 Instar

InStar is a multi-functional setting tool, which can perform data transfer, firmware upgrades, parameter settings, radio settings, network settings, mainframe register. This tool is simple and easy. Install InStar to the computer

- Derform "Data Output" and "Parameter settings" via USB port;
- Us serial port, the function options are "Radio Settings, Network Settings, Receiver Register. Both can do firmware upgrades;



9.6 GPSdecoder

GPSDecoder software is used to debug the receiver module, you need to connect the receiver to PC by RS232 port. Select the correct port and baud rate, then you can receive the output message from the receiver and you can also send command to the receiver module.



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Auto Send	nand: ↓ ↓ ▼ Display → Auto Clear 25 Line
, ☐ Gps Parsin <u>c</u> ☐ Display Error ☐ Data Pars ☐ Enter/Newline	00004BA0H:2C 31 37 2C 31 39 2C 32 38 2C 2C 2C 2C 2C 2C 2C 2C 00004BA0H:2C 31 37 2C 31 39 2C 32 38 2C
✓ Text ✓ Hex Simulate Senc Senc Stop Simulate	1534: \$GFGGA, 090706: 00, 2307. 56646095, N, 11322: 08709165, E, 1, 08, 1. 1, 26. 667, M, -6. 1535: \$GRGST, 090706: 00, 38. 662, 1. 941, 1. 433, 152. 1, 1. 841, 1. 559, 4. 496*7C 1536: \$GFZDA, 090706: 00, 27. 06, 2016, 00, 00+68 1537: \$GRGSA, A. 3, 3, 61, 71, 19, 28, 2,, 2, 3, 1. 1, 2. 0*1C 1538: \$GRGSA, A. 3, 101, 108,, 2. 3, 1. 1, 2. 0*26 1530: \$GRGSA, A. 3, 101, 108,, 2. 3, 1. 1, 2. 0*26
Double COM Mor	×

9.7 Quality check

This tool is used to check the single static data quality, we often use this tool to analyze the collected data from where should be a reasonable position for CORS station.

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		Static	m Details:	
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9.8 Data template

This is a tool to create GIS collection data dictionary which can be imported to SOUTH GIS data collector software GIStar. More information please refer to the GIStar manual.



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Ready			

9.9 Export Rinex

With this tool, you can convert the different format static data into different version Rinex data.

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9.10 RTK check

This function is allowed to compare the result between your RTK points and the kinematic points. At the meantime of your RTK job, you can save the kinematic raw data and process it in office, then check the difference of RTK points and kinematic points.

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9143013.sth		— РРК	Fixe	ed	-2327491.630	5387361.366	2489624.187	2.727
8 Baseline		RTK	Fixe	ed	-2327491.810	5387361.773	2489624.387	2.985
Rover	Ď	PN2			182.572	-421.208	-192.428	497.772
- 🗊 58983013.sth	\triangleright	PN3			178.029	-418.701	-195.656	495.264
Dynamic route	\triangleright	PN4			174.088	-406.585	-192.070	482.191
- 🛪 49143013-58983013 7 Closure loop								

9.11 Software registration

Click software registration button, it will appear a new window then click Upgrade Account button appear another window which shows the serial number of the SGO in the local PC. Users need to send back the serial number to the provider and ask for a registration code. The advanced functions are just supported in registered version SGO.

Account Upgrade X					
SGOcommon a	account	SGOadvanced	account		
Static Data Processing	N	Static Data Processing	1		
	Â.	Dynamic Line Calculation	1		
CAD Tool	N.	CAD Tool	√		
	A	Road Design	1		
Parameters Of The Encryption 📢		Parameters Of The Encryption √			
	7	Quality Analysis	1	Upgrade Account	
GNSS Tool	N.	GNSS Tool	v	Your serial number:	
Cinida dinama samananan		Single Beidou Computation	1	A9028308000001715217	
(Transferate Concentrationer		Long Base Line Solution	V	Please Enter The Registration Code:	
		Upgrade Accou Expired Date:Unregis			
				ОК	