

Stonex[®] GQuickPosition

User Manual

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Project Input Process Utilities (T) View	w Help
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	Track Display Observation data Base station Result
N60.000 E0.000	Software Ver 20090310[Apr 3 2009] Read Data 20090422[Apr 29 2009] Coordinate 20090323[Mar 23 2009] Single 20001226[Dec 26 2008] Duai 20001900[Nov 12 2006]



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Introduction

STONEX® GQuickPosition is a simple to use software, which allows you to process your kinematic data collected during your survey obtaining the maximum accuracy. Together with STONEX® GPS Processor it represents an effective post-processing tool.

It can process different kind of data: STONEX[®] data format (.STH) and the standard RINEX format from various GPS receivers.

You can choose the proper processing parameters (minimum epoch number for ambiguity solution, satellite elevation cut-off, etc.) in order to adapt the software to different conditions. For gaining the maximum accuracy you can also import IGS precise orbits (.sp3 files).

With this software user can conveniently choose different coordinate system or self-defines ellipsoid projection parameters in order to use every national or regional reference system.

The computation time is low, the accuracy and repeatability are comparable with most of commercial software.

The software graphic interface is outstanding, so that you can immediately verify the outcome of the results. They are saved in the professional format file of STONEX[®] with the postfix of .GQP.

STONEX® GQuickPosition is based on VC++ language.

If you are not familiar with GPS processing features, we suggest to read a general GPS book in order to better understand the contents of this manual. Anyway you can ask for any technical support to our address <u>support@stonexeurope.com</u> or contact your local dealer.

This is the February 2010 release of the STONEX® GQuickPosition user guide.





Chapter I: Software installation

I.1 Hardware and software requirements

- Operative System: WINDOWS 98, WINDOWS ME, WINDOWS 2000, WINDOWS XP, WINDOWS VISTA, WINDOWS 7
- Hardware environment: CPU exceeding PII MMX 200 MHz, RAM memory exceeding 32 MB, HD space exceeding 4 GB, at least 100 MB storage space, Screen: at least 256 colours, 800*600 resolving power.

I.2 Installing steps

Double click on the installation file, it is showed as follows (fig. 1.1):

InstallShield Wizzard for GPS Processor	
This product is licensed under the terms of the License Agreement to legal End User Copyright (C) 2003-2006 Surveying & Mapping Corporation	
	istallShield Wizard
Adattatore Foxit PDF scanfilezip amagguKML Editor	QuickPosition Track Setup is preparing the InstallShield® Wizard, which will guide you through the rest of the setup process. Please wait.
AppuntiXB googleupd specchietto Google Earth	

Fig. 1.1 – Software unpacking

The software unpacks itself automatically. After finished, it is showed a window of installation as follows (fig. 1.2):

Chapter I: Software installation





Fig. 1.2 First window of installation

Click "Next" to start the installation. Then it is showed the user's agreement (fig. 1.3):

talishield wizard			
License Agreement			
Please read the following license agreement	carefully.		
Press the PAGE DOWN key to see the rest	of the agreement.		
This End-User License Agreement ((*EULA) Stonex Surveying & Mapping Corporation fo TO BE BOUND BY THE TERMS OF THIS OTHERWISE USING THE PRODUCT. IF Y USE THE PRODUCT; YOU MAY RETURN FULL REFUND.	±) is a legal agreem r the Stonex softwa EULA BY INSTALL /OU DO NOT AGR I TO YOUR PLACE	ent between yo re product. YOI ING, COPYING EE, DO NOT IN OF PURCHAS	u and AGREE JAGREE i, OR ISTALL OR E FOR A
1.SOFTWARE PRODUCT LICENSE: 1.1 General License Grant. Stonex Surveyi personal, nonexclusive license to make and	ng & Mapping gran luse copies of the j	s you as an ind product.	ividual, a
Do you accept all the terms of the preceding setup will close. To install QuickPosition Tra	License Agreemer ck, you must accep	it? If you choo: ot this agreemen	se No, the ht.
		V	

Fig. 1.3 – User's agreement

If you agree, click on "Yes" and the installation continues. Software asks you the installation path (fig. 1.4):

Chapter I: Software installation



InstallShield Wizard			×
Choose Destination Location Select folder where Setup will install files.			
Setup will install QuickPosition Track in the follo	owing folder.		
To install to this folder, click Next. To install to a another folder.	a different folder	, click Browse	and select
Destination Folder C:\\Stonex Limited\QuickPosition Track			Browse
	< Back	Next >	Cancel
		7	

Fig. 1.4 – Choosing the installation path

Clicking "browse" in fig 1.4 you can select the proper path in which installing the software, otherwise the default path "C:\Program Files\Stonex Limited\QuickPosition Track" is used. After the selection, click "next'. Then you can see the course of installation (fig. 1.5).



Fig. 1.5 - The progress of installation





When the software is completely installed, it is showed a window like fig. 1.6.

Fig. 1.6 – The last window of installation

Click "Finish" to complete the installation. Software creates a shortcut icon called "Quick Position Track" on desktop.





Chapter II : First actions

Click on "QuickTrack Position" icon, the first screen you see is like fig. 2.1:



Fig. 2.1 – Main interface

The main interface consists of (from top to bottom) a menu bar, a tools bar, two windows and a status bar: the window on the left shows a summary of the situation, the window on the right can show the details of four different pages.

You must create a new empty project before using the software. In the menu bar click on "Project", then click on "New", a window like fig. 2.2 is open:

Chapter II: First actions	STOR
ace	×
Project ppk_bruzzano1	Time Created 1980:01:06
Builder	Time Ended 1980:01:06
Supervisor	
Coordinate WGS-1984	Central Meridian
OK Canc	el Coordinate Setun

Fig. 2.2 – Project settings

Into "Project" box you must insert the project name, you can also insert builder's name and supervisor name. In "Coordinate" box you can choose the coordinates system: there is a list containing world most used coordinate systems, however, if you don't find your system, click on "Coordinate Setup" box and define a new item. The coordinate system settings window is opened (fig. 2.3):





VGS-1984	Name Roma40
WGS-1984 BeiJing1954-3 BeiJing1954-6 China_Xian1980-3 China_Xian1980-6 China_Geo_Coordinate_2000 StereoGraphic_70 Nigeria1880 SAD69-IBGE_Zone22 SAD69-IBGE_Zone21 Correqo_Aleqre-Zone21 SAD69_NOVO MAROC1 MAROC1	Ellipsoid Method of projection Transformattion Geoid Model
MAROC4 Regarding_Invoices_861and_870 Jnited_Arab_Emirates .ambert_Grid_1 GPS-Sri_Lanka EGSA'87 Brussel_1972 Brussel_2005 Brussel_2008	CM Projection Percentage 0.9996 Origin Latitude(Deg.MinSec) 0 Projection Height(m) 0 False Northing(m) 0 False Easting(m) 1500000
PRS92 HEPOS Roma40 Return New De	lete

Fig. 2.3 – Coordinate system settings

In this window you can set all parameters necessary to correctly define a coordinate system (ellipsoid parameters, method of projection, geoid model, etc.). Moreover you can modify one of the default systems. When you have finished click on "Return" to come back to project settings window.

In the "Central meridian" box, you can see what is the central meridian of the selected coordinate system.



III.1 Moving through the pages

After the selection of a new project, the main interface appears like fig. 3.1:



Fig. 3.1 – Main interface after starting a new project

You can see in the window on the left a list of item which can be considered as the components of the project. You can expand them for viewing the elements which compose them, or with a double click you can open the corresponding pages on the left window and display all the detail. **Track Display:** It shows on a map the positions of collected point and the tracks joining the points. In the following pictures you can see an example map (fig. 3.2).



Fig. 3.2 – Example map of a baseline

Base station: It shows the coordinates of base stations of the project. By default WGS-84 ellipsoidal coordinate are showed, but user can define Cartesian WGS-84 or local projection coordinates (see as example fig. 3.3).



Track Display	Observation data	Base station	Result								
Name	WGS-84 B	WGS-84 L	WGS-84 H	known X	known Y	known H	altitude	WGS84-X	WGS84-Y	WGS84-Z	
MILA	45.47998902N	9.22934563E	187.270					4421849.8931	718507.4057	4525043.3271	
					Trac	eLine 1(1) 0002	-0001				

Fig. 3.3 – Example of Base station page

Observation data: It shows detailed information of every raw data file, including the path, name of raw data, name of the site, height of antenna, date, starting and ending time of collecting. In this page you can delete data file and edit antenna height (see as example fig. 3.4). See chapter IV for a complete description of antenna height set.



Track Display (Observa	tion data Ba	ase station	Result										
File Name	Path	date	Start Ti	End time	Site ID	Ant	Mea	Ant Mode	Ant Type	Ver	Ty	No.	ID	
80270215.STH	C:\	2010:01:21	16:33	17:15	8027	0.538	0.500	Slant Height	SA7224SZ	99.90	ROV	K0809108027	0001	
MILA021Q.100	C:\	2010:01:21	17:00	17:59	MILA	0.054	0.054	Measure Sheet	Ant to Bot	3.30		8PHHHFBLAM8	0002	
								TraceLine 1(1) 000	2-0001					

Fig. 3.4 – Example of observation data page

Moreover double clicking on a single raw file you can see a report of the tracked satellites in that file (see as example fig. 3.5).





¥ 💽 🖑 ⊕ 🕀 💠	Total Epoches 3599 Interval 1.00 Sec	Ok
GPS 2 L2		
GPS 4 L2		
GPS 7 L2		
GPS 8 L2		
GPS 10 L1		
GPS 11 L2		
GPS 13 L2		
GPS 16 L2		
GPS 17 L2		
GPS 20 L2		
GPS 23 L1		
GPS 31 L1		
GPS 32		

Fig. 3.5 – Example of tracking satellite report

Vector: You can see which vectors were created. <u>Here as "vector" we don't mean a vector</u> between two points, but the ensemble of the vectors created between the base station and the points of a kinematic survey. Double clicking opens the **Result** page: you can get some information about the kinematic solution, showing for every points: observation time, satellite number, antenna height, XYH coordinates, predicted rms (root mean square) and kind of observation used (see as example fig. 3.6).





Track Display	y Observation data Base st	tation Result							
ASE Statio ove :{ oordinate enter Merio atitude: 45	n:MILA0210.100 80270215.STH :WGS-1984 0 dian: 9.000000000E .284794806N Longitude: 9.13	34562709E Altitude	::187.267						
lame	OBS.Time	Num	Ant.He	x	Y	н	Rms	TYPE	
		10.1 10. IL				611			1
2255	2010-01-21 17:10:47	8	0.000	45.315200191N	9.100417228E	192.098	9.409	Position	
				45.315214003N	9.100415654E	186.232	0.329	Pseduorange	
				45.315212680N	9.100416183E	187.208	0.477	Pseduorange	
				45.315212385N	9.100416737E	186.368	0.020	L1-FLOAT	
				45.315213714N	9.100416739E	187.413	0.016	LW	
2256	2010-01-21 17:10:48	8	0.000	45.315200223N	9.100417234E	192.100	9.417	Position	
				45.315213500N	9.100415152E	186,692	0.432	Pseduorange	
				45.315212673N	9.100416173E	187.214	0.479	Pseduorange	
				45.315212404N	9.100416722E	186.363	0.019	L1-FLOAT	
				45.315213749N	9.100416776E	187.398	0.024	LW	
2257	2010-01-21 17:10:49	8	0.000	45.315200304N	9.100417260E	192.092	9.415	Position	
				45.315213804N	9.100415519E	186.808	0.572	Pseduorange	
				45.315212668N	9.100416172E	187.219	0.483	Pseduorange	
				45.315212421N	9.100416711E	186.361	0.017	L1-FLOAT	
				45.315213729N	9.100416791E	187.402	0.030	LW	
2258	2010-01-21 17:10:50	8	0.000	45.315200389N	9.100417286E	192.067	9.417	Position	
				45.315215028N	9.100416303E	186.357	0.485	Pseduorange	
				45.315212695N	9.100416187E	187.210	0.482	Pseduorange	
				45.315212412N	9.100416722E	186.363	0.019	L1-FLOAT	
				45.315213663N	9.100416769E	187.422	0.023	LW	
-					Teres 1 (1) 000	12 0001			 _

Fig. 3.6 – Example of result page

III.2 Menu bar

In this section the functions of each menu are introduced.

Project menu:



Fig. 3.7 File menu

New: you can create a new project.



Open: you can open a saved project.
Save: you can save the current project to another path.
Min Size Save: you can save the current project with the minimum size.
Close: you can close the current project.
Project setting: you can change the parameters of the project.
Print: you can print the current page.
Print preview: you can show how the current page would be printed.
Print Setup: you can set the printer.
Recent file: at the first start it is disabled, after you have saved a project, you can see the projects recently saved and open them.

Exit: you can exit the program.

Input menu:





Add GPS observed data file: You can add new observed data to the current project. STONEX® format "*.STH" file and standard RINEX 2.0 file (*.**O) can be selected from different paths. Also IGS precise orbit file (*.sp3) can be selected (see as example fig. 3.9).

Chapter III: Main functions STONEX Add file Select Path File List File Type 🗄 🛅 Windows CE Tools Q0072041.STH ~ ~ *.STH 00072052.STH • 🗄 🛅 Windows Live Q0072053.STH 🗄 🛅 South Surveying Mappir Q0092041.STH Select All 🗄 🛅 South Gps Processor Q0092052.STH 🗄 🛅 QuickPosition Track Q0362041.STH **Clear Selection** 🗄 🫅 Stonex Gps Processo Q0362042.STH 🗉 🚞 Example Q0362051.STH Search ... 🗉 🗀 星历预报 Q0412041.STH 0 Selected Q0412042.STH C Static Q0482048.STH 🗄 🛅 TRACK Q0492048.STH 0K Cancel 🍋 tamr > Q0492052.STH Location C:\Program Files\South Surveying Mapping Instrument\Stonex Gps Browse

Fig. 3.9 Adding new observed data

Input station coordinates: you can input the coordinate of a reference station (see as example fig. 3.10).

Name	habitus	X	Y	altitude	ellipse altit.
👗 Q007	×уН				
👗 Select					

Fig. 3.10 Inserting known coordinates

Clicking under the column "habitus" (fig. 3.11) you can modify the kind of coordinates to insert: tridimensional ("N,E,H"), plane ("N,E"), only altitude ("H"), "nullity" means ?, "delete" erases the inserted coordinates.



	Name	Δ	habitus	X	Y	altitude	ellipse altit
入	Q007		хуН 🔻]			
入	Select		Detele 🔺	1			
			nullity	1			
			XYH				
			H T				
•							

Fig 3.11 Select the status of control points

Utilities (T)	View	Help
ve Settings		
o <mark>rt S</mark> ettings		
cess All		
cess New		
cess Selection	i	
cess cancel		
up Coordinate	e Systen	n
ex		
ck Report		
	Utilities (T) ve Settings oort Settings cess All cess New cess Selection cess cancel up Coordinate ex ck Report	Utilities (T) View ve Settings oort Settings cess All cess New cess Selection cess cancel up Coordinate Systen ex ck Report

Process menu:

Fig 3.12 Select the status of control points

Solve Settings: you can set the parameters for the kinematic data processing. We dealt with these parameters in more details in chapter IV.

Report Settings: you can decide what data must be contained in the results report and which information are plotted on the map.

Process All: you can start the automatic processing of all vectors.

Process New: you can start the automatic processing of all new vectors.

Process Selection: you can start the processing of the vectors selected on the map.

Process cancel: you can stop a processing in progress.

Setup Coordinate System: opens the Coordinate System Setting window (like fig. 2.3)

Rinex: you can convert .STH file into RINEX 2.0 format



Track Report: you can export the processing results according to Report Settings properties.

Utilities (T):

Uti	lities (T) View Help	
	Chinese	
	Download raw data	
	Satellite almanac	
	GPS TOOL	
-		_

Fig. 3.13 Utilities menu

Chinese: you can choose the Chinese interface.

Download raw data: not used.

Satellite almanac: this command open a small independent program included into STONEX[®] GQuickPosition and called "Star Report". It has the function of showing the satellite configuration depending on time and position selected by the user. chapter V is dedicated to its description.

GPS TOOL: not used.

View menu:



Fig. 3.14 View menu

From this menu you can activate o deactivate the tool bar and the status bar.

Help menu:

le	lp
	About Gquickpostion(A)
	Register
	Updata

Fig. 3.15 Help menu



About: you can see some information about the software version (see as example fig. 3.16).



Fig. 3.16 Version number of the software

Register: not used Updata: not used.

III.3 Tool bar

The tool bar is composed by many icons (see fig. 3.17):



Fig. 3.17 The tool ba

Some of them have the same function of some menu commands, other icons are commands which modify the map layout. A description of every icon moving from left to the right follows:

- 🗋 : You can open a new project.
- 🖄 : You can close the open project.
- 🖆 : You can open an existing project.
- 📕 : You can save a project.
 - 🖻 : You can add GPS observation data.



- You can start to process all vectors.
- You can start to process new vectors.
- i You can start to process selected vectors.
 - You can stop processing in progress.
- I : Open "Input known stations coordinates" window.
- 🔪 : You can select a vector on the map.
- 🖑 : You can move the map.
- You can zoom in the map.
- $\overline{\mathbf{Q}}$: You can zoom out the map.
- 🛨 : You can zoom out the map in order to view all features.
- You can measure the approximate distance between two points.
- i : You can select a point on map and find out its position and accuracy.
 - I: You can start the printing procedure of the results.

III.4 Layer Control

If you click with mouse right button on the map a window like fig. 3.18 is opened:



Fig. 3.18 Available commands on map

Beside of selecting again "Solve Settings" and "Report Settings", the command "Layer Control" allows user to modify the properties of the map. A window like fig. 3.19 is opened:



Layer Name	Disp	Select	Label	E
Station	V			I
Position	V		V	
Pseduorange	V			
Pseduorange Smooth				1
L1-FLOAT	Y			1
LW	Y			1
Select Solve	M			
< [Þ
• · · · · · · · · · · · · · · · ·				

Fig. 3.19 Layer control window

From this window user can enable or disable different data layers on map, make them selectable or draw the labels. Sometimes indeed the map results too confused because of lines, points, labels, so become necessary to disable some layers for a more comprehensive plot.



Chapter IV : The processing

This chapter is dedicated to a detailed explanation of kinematic processing settings. As we said also in the introduction if you need some theoretical explanations on processing techniques we recommend to read general GPS books.

IV.1 Raw data editing

Before starting to process, there are two important matters to be discussed. The first is the problem of correctly set the antenna height. After you have loaded an observation .STH file from a survey, in the "Observation Data" page, you can see that the column "Ant High" and "Mea. Ant High" are set to 0 by default (see fig. 4.1).

Ant High	Mea. Ant High	Ant Mode	Ant Type	V
0.000	0.000	Line of Edge of antenna	SA7224SZ	9

Fig. 4.1 Detail of Observation Data page

You have to write into "Mea. Ant High" the height measured during the survey and select in "Ant Mode" the correct method of measure. There are five possible method: "Bottom of antenna phase", "Line of Edge of antenna", "Bottom of antenna mount", "Line of edge of Toll" and "Bottom of antenna". All methods cannot be applied to every receiver, each one usually allows two or three methods according to its shape. For example STONEX® S9 GNSS or the previous model STONEX® S82+ allow to take the measure of "Line of Edge of antenna", "Bottom of antenna mount" or "Bottom of antenna". You can find a description of the methods on the receiver user guide. Once you have chosen the correct method, software will automatically calculate the "Ant High", that is the real vertical antenna phase center height. Please note that a selection of a wrong measuring method could introduce a bias of several cms in your results. If you import RINEX file, the antenna height is just defined.

The second matter deals with the opportunity to edit the raw data. In the "Observation Data" page double click on an item: a window like fig. 4.2 is opened.

Chapter IV : The processing



Stor	04.	Sat sha	ro Trocki	ng Ronord	7-103281	Total	Frecher	582 Tr	tormal 5 S		
Jean		Sat pha	Se II acki	ng nepor .	. 1 105201	Total	Lpocnes	502 IN		ec	
3 L1 12											
8 L1 L2											_
11 ^{L1} 12											
13 L1 L2											
15 ^{L1} 12											
16 L1 L2					,			· ·		,	
19 ^{L1} 12											
23 L1 L2											
27 L1 L2											_
11/23	13:41	13:46	13:51	13:56	14:01	14:05	14:10	14:15	14:20	14:25	14



Every red line corresponds to one satellite signals. The break of red lines means signal interruption. You can delete these epochs with one or more signal interruptions using the tool , while using vou can resume the deleted epoch. After you have completed the editing, exit the data editing box. This editing could improve your processing results.

IV.2 Kinematic processing settings

If you click on the item "Solve Settings" in the "Process" menu, a window like fig. 4.3 is opened:

13	(Degree)
3	
50	(Num)
4	
Cancel	
	13 3 50 4 Cancel

Fig. 4.3 Solve Settings window

You can modify four parameters, which take part in the processing.

Chapter IV : The processing



Mask Angle: it is the minimum accepted satellite elevation, if an observation has a lower elevation it is rejected in the computation.

Ratio Range: it is the maximum variance ratio of ambiguity resolution accepted.

Min epoch num of amb solution in kinematic: It is the minimum epoch number accepted for processing a kinematic track.

Min Sync Time: It is the minimum synchronized time (in minutes) accepted for processing a kinematic track.



This special function of Processor opens a small separate software, which can be very useful to the surveyors. It gives to users the opportunity of see the satellite positions and configuration above a specific site at a chosen time. This allows the surveyor two possibilities: to better schedule a survey in the near future, avoiding bad satellite configurations, and to select the suited data to be processed.

V.1 Satellite maps

When you click on "Satellite Almanac" function, it is showed a window like fig. 5.1:



Fig. 5.1 Main interface of Star Report

For the users there are many different maps or graphs to consult. In fig. 5.1 you can already observe two interesting graphs. The graph on the top of the page shows the number of satellites which the receiver will observe or has observed in good visibility conditions



depending on the time. The less favorable conditions are showed with a different colour. In the lower graph user can observe the position dilution of precision (PDOP) values depending on time. The PDOP parameter is one of most used indexes of good quality of satellite configuration: a PDOP lower than 2 points out a very good configuration while a PDOP above 4 or 5 means a bad configuration. Combining the outputs of these two graph is just possible to determine the best time for a survey.

If user needs more precise information about single satellites, he can click on the icon above "Satellite Orbit Map" (placed on the left menu). A new map is opened like fig. 5.2.



Fig. 5.2 Satellite orbit map

In this map it is possible to see the path of every satellites on the Earth surface e its position at chosen time.

If user click on the icon above "Satellite Distribution Map", a window like fig. 5.3 is opened.





Fig. 5.3 Satellite distribution map

This map shows the satellite path and position from the point of view of the receiver and allows user to observe the elevation and azimuth of every satellites. In case of an obstacle which affects the sky visibility, user can also verify, using this map, how this obstacle compromises the survey.

If user click on the icon above "Satellite Map", a new window like fig. 5.4 is opened.







Fig. 5.4 Satellite map

In this map user can see the time intervals in which each satellite is visible.

Finally if user click on the icon above "Text output", he can see the elevation of satellites and PDOP values summarized in a text format (see as example fig. 5.5).



🚺 StarReport - [20	10-02-03.drp]	
FILE(S) Print(P)	Edit(E) View HELP(H)	
0. 🕘 X 🖻		
PDOP value changing chart PECOP value changing chart Control Satelite Distributing Map Satelite Orbit Map Satelite Orbit Map	SVs[11]: PDOP 04 08 11 16 17 19 20 24 27 28 31 08:00 : 1.7 71.286 17.181 30.039 75.104 36.232 23.296 47.093 52.244 30.272 57.331 40.051 08:05 : 1.7 71.284 15.180 28.040 74.113 37.234 24.298 47.089 54.248 29.256 62.331 39.057 08:10 : 1.6 71.310 12.178 25.042 70.126 41.239 26.303 47.085 55.252 29.256 62.330 38.057 08:20 : 1.6 71.310 12.178 25.042 70.126 41.239 26.303 47.078 56.260 28.261 67.326 37.052 SVs[10]: PDOP 04 11 16 17 19 20 24 27 28 31 08:25 : 2.6 53.324 22.045 62.327 36.065 0633 10.302 1070 08:45 : 1.9 65.341	Observing Session Status Name Data Ovserving 2010-02-03 Time Zone GMT +08:00 Longitude E 113:19:00 Latitude N 023:00:08 Date 2010-02-03 Time Limit 08:00 - 18:00 Attitude An 10 Channel nu 12 Hits in a mi 5 Ephemeris Yuma.bxt Satellite nu 5 PDOP value 4.0 Observing 60 Caculation Calculated Time: 11:30 08:00 18:00 Last Today Next Custom
	U3:40 : 1,9 46,018 10,139 31,159 56,299 45,341 25,041 57,338 12,224 67,190 21,101	
	U3:45 : 1.9 44,U2U 11,137 29,159 56,304 46,343 23,041 56,342 11,222 64,188 20,103	
	u9:50 : 1.9 43,023 12,135 27,159 56,308 48,346 21,040 55,346 10,221 62,187 19,105	
	SVs(09): PDOP 04 13 16 17 19 20 24 28 31	
	09:55 : 4.3 41,025 13,133 25,160 56,312 49,348 20,039 54,350 59,186 18,107	
	10:00 : 4.4 40.027 14.131 22.160 56.316 50.351 18.039 53.353 57.185 17.109	
Ready		

Fig. 5.5 Text output page

V.2 Site and time settings

In this section it is explained how to set all parameters of Star Report. If you click on the icon above "Parameter Setup" a window like fig. 5.6 is opened:



Coordinate Time Zone	Instrument Setup
Collection Condition	Ephemeris Doc
Start: 08:00	End: 24:00
Coordinate Setup	C
Self-difinited Coordinat	e
C Ehpemeris Doc Coordi	nate
phemeris file:	
:\i-\Stonex Gps Processor\Yun	na.txt Browse

Fig. 5.6 Parameter Setup window

This window is composed of four sub-windows. The default sub-window is "Ephemeris Doc" and allows to define the interval of time considered for creating the maps and graphs. Moreover you can update the ephemeris file: this is a text file containing the orbital parameters of all GPS satellites. The satellite configurations showed in this software are based on the ephemeris file. It is necessary sometimes to update this file in order to have a more precise maps. We recommend to use the ephemeris file from website:

<u>http://celestrak.com/GPS/almanac/Yuma/</u>, you can find there a week update.

Clicking on "Coordinate Time Zone" you can enter into another sub-window (see fig. 5.7).



Collection Co Coordinate Tir	ndition me Zone	Ephemer Instrumer	is Doc nt Setup
Longitude:	С Е С W 11311	9.00.000	
Latitude:	C N 023:0	0:08.000	
Time Different From GTM:	C + 08:00		
	Γ	ок	Annulla

Fig. 5.7 Coordinate Time Zone sub-window

From this sub-window you can define the reference coordinates for the maps: the positioning has a precision of one thousandth of second, that is about 30 cm. It is not possible to define the altitude, so every point is considered at the sea level.

In "Instrument Setup" sub-window you can define the minimum satellite elevation below which a satellite is not considered in the maps, the sampling time interval of the maps and the number of channels, that is the maximum number of satellites collected by receiver (see fig. 5.8).



Collection Condition	Ephemeris Doc
Coordinate Time Zone	Instrument Setup
Altitude Angle(Deg):	10
Sampling Batio(Minutes);	5
oumphing fideo(rimiteroo).	<u>1</u>
Channel Number:	12
	OK Annul

Fig. 5.8 Instrument Setup sub-window

In the "Collection Condition" sub-window user can define the minimum number of satellite and the minimum PDOP which define a limit condition which split up the considered timespan into a good and a bad situation (see fig. 5.9). This limit is showed into the PDOP graph by a line and with different colours in the graph of the number of satellites.

Fig. 5.9 Collection Condition sub-window



In the mainframe of Star Report on the right there is a window called "Observing Session Status" (see fig. 5.10). In this window it is possible to select an hour using the scroll bar and select a day using the commands "Last", "Today", "Next" and "Custom".

Name		Data		
Ovserving		2010-02-03		
Time Zo	ne	GMT +08:00		
Longitu	de	E 113:19:00		
Latitude		N 023:00:08		
Date		2010-02-03		
Time Li	me Limit 🛛 08)8:00 - 18:00	
Altitude	An	10		
Channe	l nu	12		
Hits in a	a mi	5		
Epheme	ris	Yuma.txt		
Satellite	: nu	11		
PDOP v	alue	1.7		
Observi	ng	08:00	10	
Caculati	on	Calculate	d	
Time:	08:00			
1			10.00	
08:00		6	18:00	
Last	Today	/ Next	Custom	

Fig. 5.10 Observing Session Status window

Finally you can print every map you want clicking on the print menu in the menu bar.