DG-100 Data Logger
User Manual

Version 1.0



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1 Introduction and Features

Introduction

GlobalSat **DG-100** is a GPS data logger that records track data from the received GPS signal. With a GPS logger and antenna built in a miniature construction, **DG-100** features an all-in-one, cost-effective GPS logger solution. The DG-100 records time, date, speed, altitude and GPS location at preset intervals. Based on the SiRF star III chipset, **DG-100** offers accurate position tracking capabilities.

All recorded GPS information can be downloaded to the computer. It is a convenient, economical way for later review of your recorded histories. Simply connect the **DG-100** to your PC or Notebook, and then download the track-log to your PC for use with Windows based software utility. User can easily export the recorded points to Google Earth and Google Maps.

It is ideal application in fleet management, marine navigational aids, traveling and consumer personal use. You also can use the **DG-100** as an USB GPS mouse. It is another good feature for **DG-100**.

Features

The main features of **DG-100** GPS data logger

1. SiRF StarIII chipset 20 channels.
2. Allowing user to store up to 60000 points.
3. Two NiMh batteries for more than 20 hours continuous operation.
4. USB interface.
5. Power On/Off button for easy use.
6. Three preset saving intervals (Time/Distance) can be selected by slide switch.
7. Three LEDs to show the status of GPS, battery and memory.
8. MMCX port for external GPS antenna.
9. USB G-mouse function.
10. Configuration Wizard helps you to quickly make the configuration.
11. User friendly Windows based software utility. User may use the software utility to do the following functions:
    - Upload recorded data
    - Change Recording Interval
    - Configuration setting
    - Delete recorded data
    - Exporting and mapping your recorded data:
      (1) Exploring to KML (Interface with Google Earth)
      (2) Show recorded data on Google Maps
      (3) Text format
      (4) Excel file format
      (5) NMEA183

2 Specifications

System specification

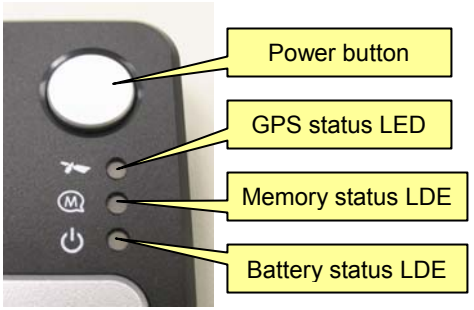
Electrical Characteristics	
GPS standard	SiRF StarⅢ
GPS Antenna	Built-in patch antenna
Operation time	Up to 24 hrs
Charge time	7 hrs
Battery Charging	USB connector @ 350mah
POWER BUTTON	
Power On/Off	Press and hold for 3 second to On/Off the device.
Instant Save	Press button once to save a waypoint manually when device is active.
STATUS LED'S	
GPS status	Flashing Green – GPS position is fixed. Steady Green – GPS position is not fixed.
Power status	Solid Red – Device is power on. Flashing Red – Device is in low battery power. Solid Amber – Battery is being charged.
Memory status	Flashing Blue – Memory is 2/3 full. Solid Blue – Memory is full.
TEMPERATURE	
Operating	-20°C ~ 50°C (-4°F ~ 122°F)
Storage	-20°C ~ 35°C (-4°F ~ 95°F)
Humidity	Operational up to 95% non-condensing
SLIDE SWITCH	
One Slide Switch	There are three customized setting of intervals. A (interval 1 Time or Distance selectable) B (interval 2 Time or Distance selectable) C (interval 3 Time or Distance selectable)
BATTERY	
Battery Type	Two NiMh Rechargeable Battery
MECHANICAL	
Dimension	3.15"X 2.75''X 0.7''

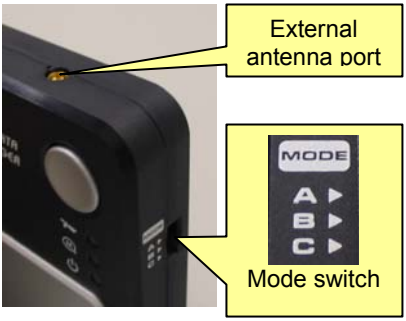
GPS specification

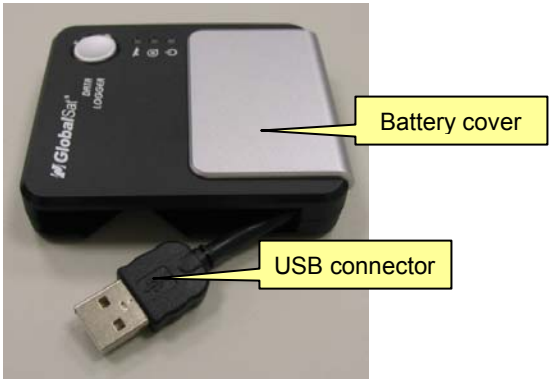
Electrical Characteristics	
GPS Chipset	SiRF Star III
Frequency	L1, 1575.42 MHz
C/A Code	1.023 MHz chip rate
Channels	20 channel all-in-view tracking
ACCURACY	
Position Horizontal	10 meters, 2D RMS 1-5 meters 2D RMS, WAAS corrected
Velocity	0.1m/sec
Time	1 micro-second synchronized to GPS time
DATUM	
Datum	Default: WGS-84
ACQUISITION RATE	
Hot start	1 sec., average
Warm start	38 sec., average
Cold start	42 sec., average
Reacquisition	0.1 sec. average
PROTOCOL	
GPS Protocol	Default: NMEA 0183 (Secondary: SiRF binary)
GPS Output format	GGA(1sec), GSA(1sec), GSV(5sec), RMC(1sec), GLL, VTG is optional
DYNAMIC CONDITION	
Acceleration Limit	Less than 4g
Altitude Limit	18,000 meters (60,000 feet) max.
Velocity Limit	515 meters/sec. (1,000 knots) max.
Jerk Limit	20 m/sec**3

3 Hardware overview

Hardware introduction







Detailed Hardware Functions

Power button	Press and hold the power button for 3 seconds to turn on/off the device. Press power button once to save a waypoint manually when device is active.
Mode Switch	You can set up to 3 different interval modes for your requirement by the software utility.
GPS status LED	Flashing Green – GPS position is fixed. Steady Green – GPS position is not fixed.
Memory status LED	Flashing Blue – Memory is 2/3 full. Solid Blue – Memory is full.
Battery status LED	Solid Red – Device is power on. Flashing Red – Device is in low battery power. Solid Amber – Battery is being charged.
External antenna Port	For you to connect an external antenna.
USB connector	Connect with the USB cable for data transfer or battery charging purpose.
Belt clip	You can use the belt clip to clip DG-100 on your belt or backpack.
DC charger (optional)	For you to charge the DG-100 in car or use it in car.

Package contents

Check the contents of your DG-100 package. If you find any accessories are missing or appear damaged, please contact your dealer immediately.



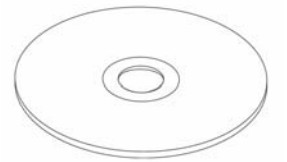
DG-100



Two rechargeable NiMh batteries



Belt clip



CD (user manual, software utility)



DC charger (optional)

4 Software Utility

Software Utility features

Upload recorded data:	User can upload recorded data and save it to PC.
Information Stored:	1. Only Position 2. Position, Time, Date, Speed. 3. Position, Time, Date, Speed, Altitude. User programmable via software utility.
Speed Filter: Speed Filter Threshold:	Disables data save if speed falls below a threshold value.
Distance Filter	Disable data save if data logger hasn't moved greater than the selected radius.
Saving intervals:	Saving interval (Time or Distance) can be selectable. User programmable via utility. Mode Switch to select saving interval.
Converting Output format	(1) Exploring to KML (Interface with Google Earth) (2) Show recorded data on Google Maps (3) Text format (4) Excel file format (5) NMEA183 file format
Configuration Wizard	Using Configuration Wizard to help you quick adjust the settings, including Mode A, B, C.

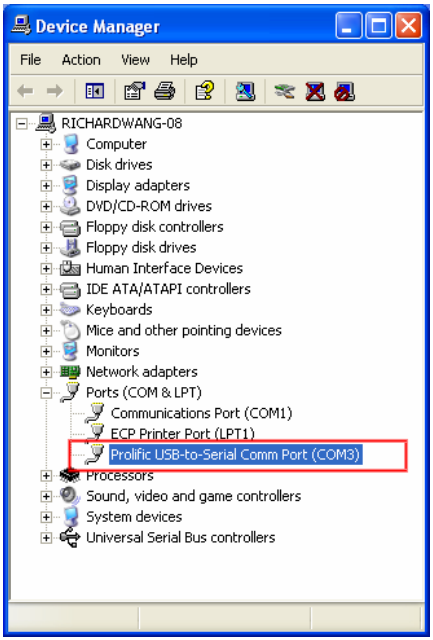
Install the software Utility



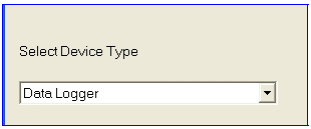
1. Insert the software utility CD into your CD-ROM drive, the installation program will start automatically.
2. Click on "**Install USB Driver**" button to install the USB driver which is needed when you connect DG-100 to your PC.
3. Click on "**DG-100 PC Software**" button and follow the instruction to install the DG-100 software utility.
4. You can click "**User Manual**" button to open the user manual folder. The user manual is in PDF format. You have to install the Acrobat PDF Reader to view the PDF file.

DG-100 Setup

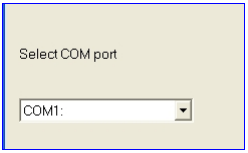
1. Turn on the power of DG-100, and then connect it to the USB port on PC.
2. Check the COM port of DG-100 first. Click [**Start**] > [**Control Panel**] > [**Performance and Maintenance**] > [**System**], you will see the System Properties dialog box; click on [**Hardware**] tab and then the [**Device Manager**] button. Expand the [**Ports (COM & LPT)**] item, and the "Prolific USB-to-Serial Comm Port" is the COM port of you DG-100.
3. Click from [**Start**] > [**All Programs**] > [**GlobalSat Data Logger**] > [**DG-100 Utility**] to start the GlobalSat DG-100 utility.



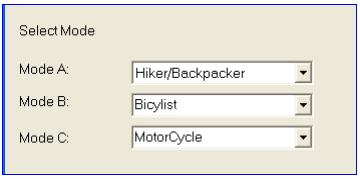
The Configuration Wizard appears when the first time you start the program. It helps you to quickly setup the configuration with easy step by step.



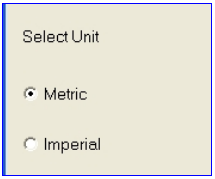
- Step 1: Select Device Type. Please select "Data Logger".
- Step 2: Select COM port.



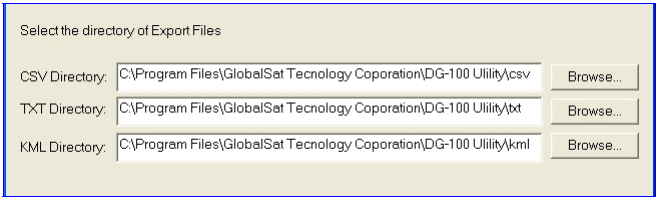
- Step 3: Select the Mode switch. There are 3 predefined modes, including "Hiker/Backpacker", "Bicyclist", and "Motorcyclist".



- Step 4: Select the Metric or Imperial unit.



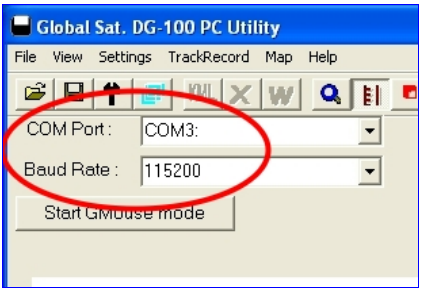
- Step 5: Select the directory for exporting files.



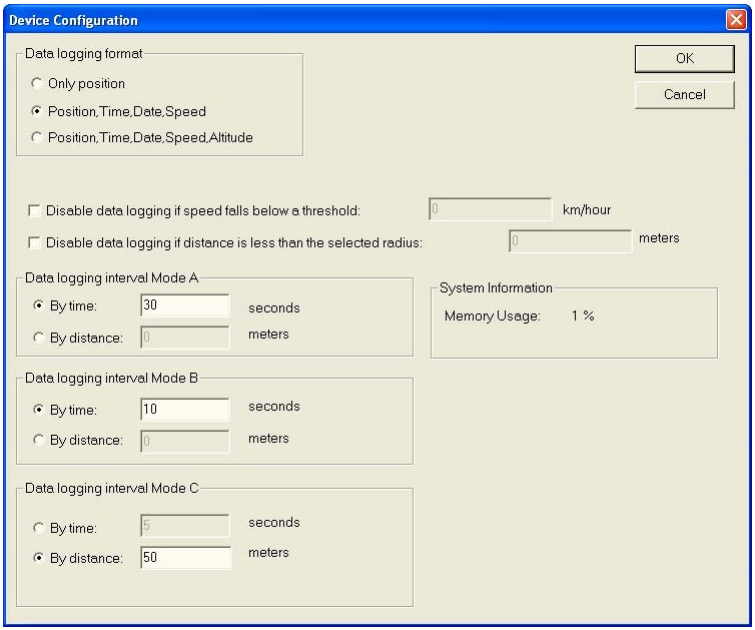
- When you finished the setup, a successful message appears and all settings are saved in system.



4. The DG-100 utility will import the setting you just made from Configuration Wizard.
   If you did not use Configuration Wizard to do the settings, please manually select the correct COM port and set the Baud Rate to "115200".
   If later on you want to enable Configuration Wizard again, please click from menu bar, **[File]** > **[Quick Configuration]**.



5. From menu bar, click on [**Settings**] > [**Configuration**] to open the **Device Configuration** dialog box.



► **Data logging format:**
There are three options for you to choose those data items to be recorded.

► **Disable data logging if speed falls below a threshold:**
If your speed is below this specified value, DG-100 will not save the data of current position.

► **Disable data logging if distance is less than the selected radius:**
If the distance between your last point and current point is less than this specified value, DG-100 will not save the data of current position.

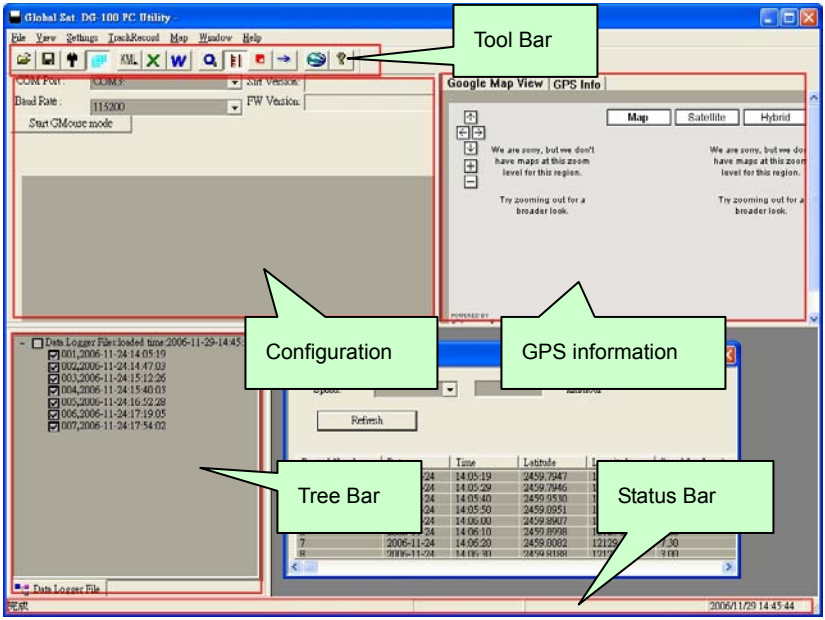
► **Data logging interval Mode A, B, C**
Setup the Mode Switch for the interval (time or distance) for recording the data.

► **System information**
It shows the current memory usage status.

6. When you have done the configuration setup, press **OK** button to save the settings to DG-100.

7. These setting will take effect when next time you restart the device.

5 Getting Started





1	Open a training file.	8	The Configuration for GPS device.
2	Save training information to a file.	9	Metric system.
3	Preference	10	Delete records.
4	Select all files.	11	Load Track Points.
5	Export training information to the KML format.	12	Export to Google Earth.
6	Export to CSV file.	13	Display program information, version number and copyright.
7	Export to the text file.		

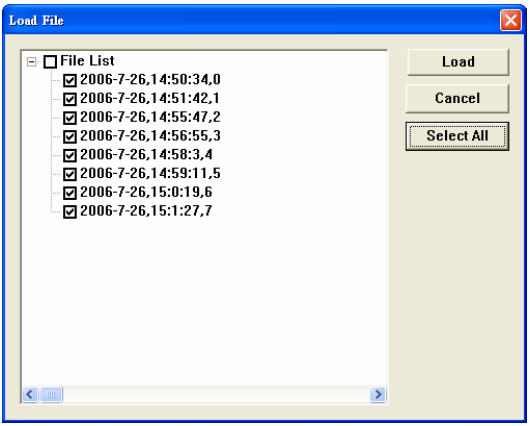
DG-100 Usage

1. When you press the power button to turn on the DG-100, it starts to search the GPS signal. After the GPS position is fixed, it will begin to record and save the position data.
2. You can select the Mode Switch for the different recording interval as you need.
3. If you want to stop recording, just press the power button to turn it off.
4. When the battery power is exhausted, it will shut down automatically.

Note: When you connect DG-100 to your PC, DG-100 will enter the "data transfer mode", it can not record the data in this mode. After you disconnect it from PC, please remember to power off and restart DG-100 to make it return to Data Logger mode.

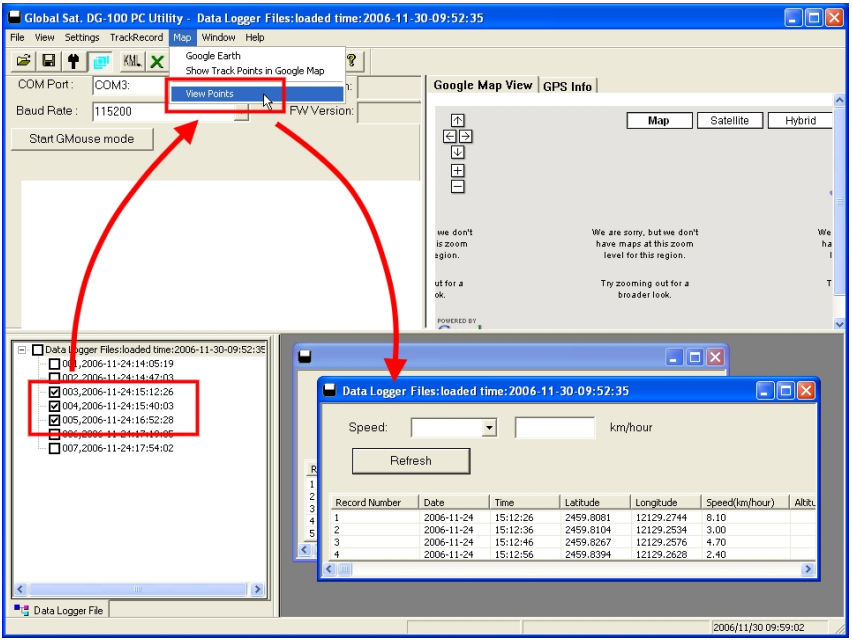
Transfer data to your PC

1. Turn on the power of DG-100, and then connect it to the USB port on PC. Start the software utility. Select the correct COM port and set the Baud Rate to "115200". From menu bar, click on [**TrackRecord**] > [**Load Track Points**]. Select the data item which you want to load and click on "**Load**" button.



2. The data is loaded in the Tree Bar area, and the entire track points will be sorted by time order displaying on the right bottom window.

3. Select the data you want from Tree Bar area. From menu bar click **[Map]** > **[View Points]**; the data you select will be combined and displayed in details in a new window or the right side.
   (You can click on **[File]** > **[Select All Files]** to automatically select all data record in Tree Bar, or click on **[File]** > **[Select All Files]** again to deselect all.)



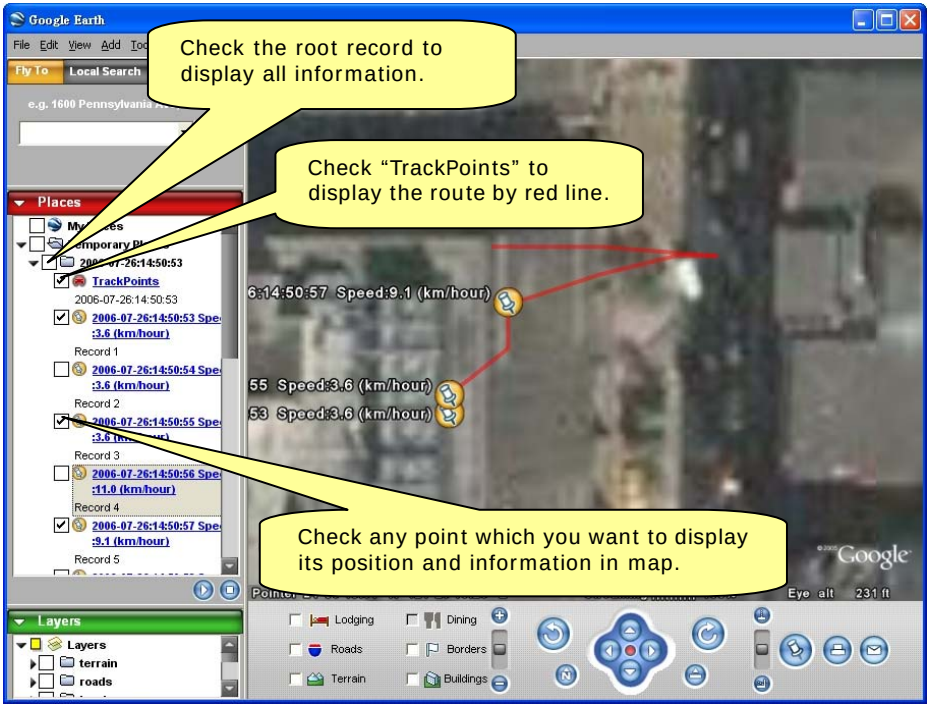
Save data

From menu bar click on [**File**] > [**Save**] to save the data to a DataLogger (*.gsd) format. This will save all data items in Tree Bar no matter they are selected or not. You can open the saved **gsd** file by [**File**] > [**Open**].

Displaying the data on map

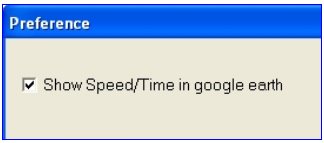
1. **Display the track points on Google Earth:**

   You can display all the data from “active window” on Google Earth. Just click [**Map**] > [**Google Earth**] from the menu bar.



1.1 By default, it only shows the track points on the map.

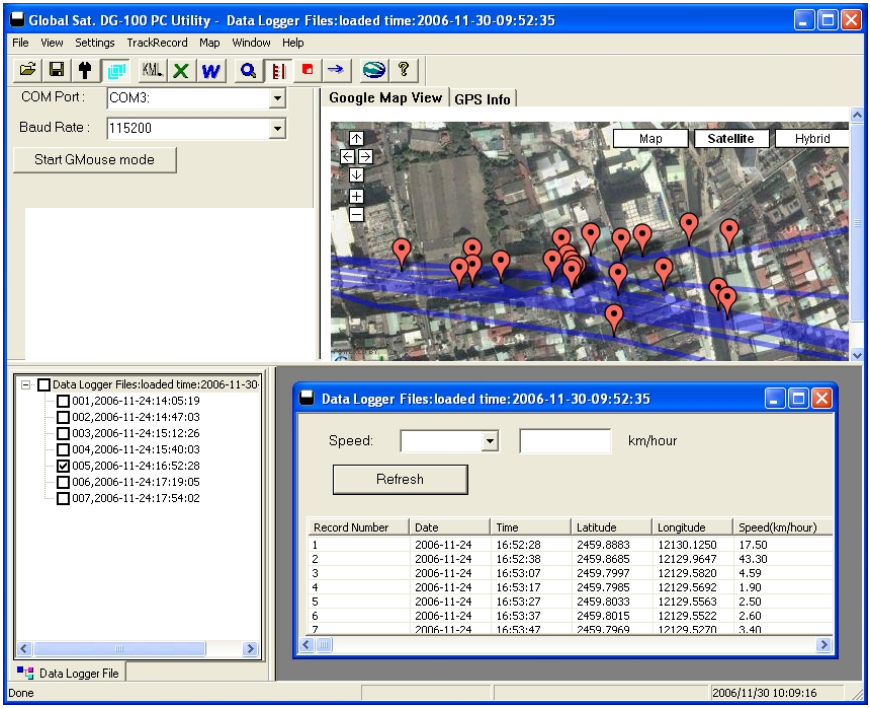
1.2 You can select from **[File]** > **[Preference]**, and check the “Show Speed/Time in Google Earth” to have the Speed and Time info of the points shown on the map.



1.3 To display the route on Google Earth, you must install Google Earth and the internet connection is also needed. For more information, please visit http://earth.google.com/.

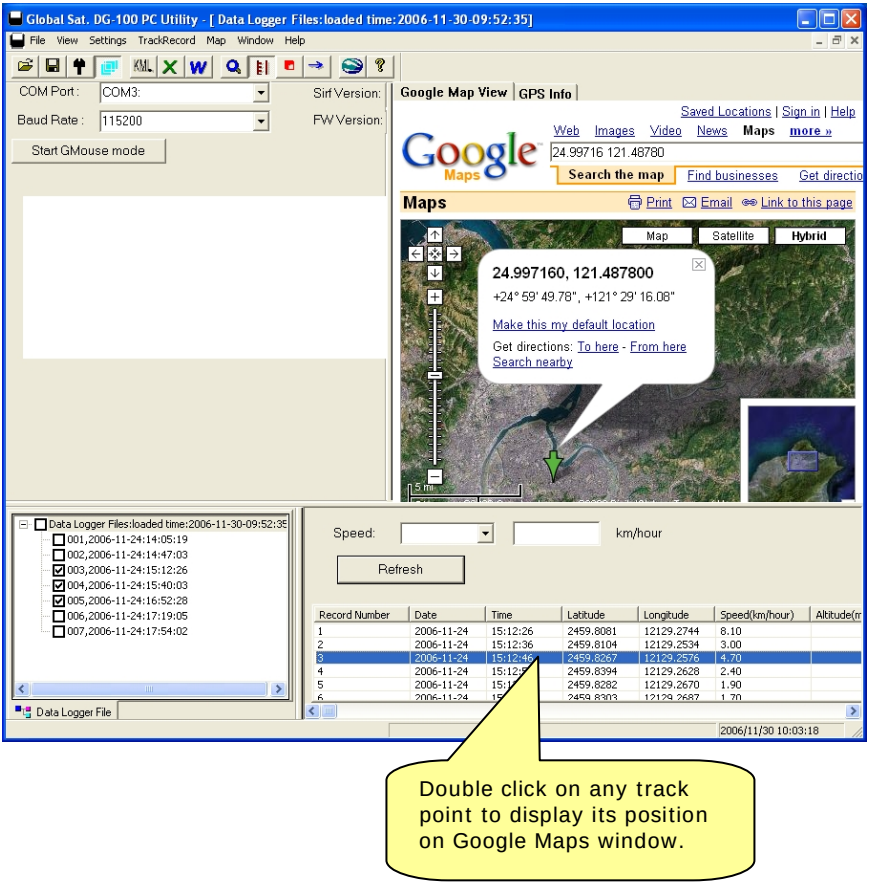
2. **Display the track points on Google Maps:**

You can display all the data from “active window” on Google Maps. Just click **[Map]** > **[Show Track Points in Google Maps]** from the menu bar. To display the track points on Google Maps, your PC must have the internet connection enabled.

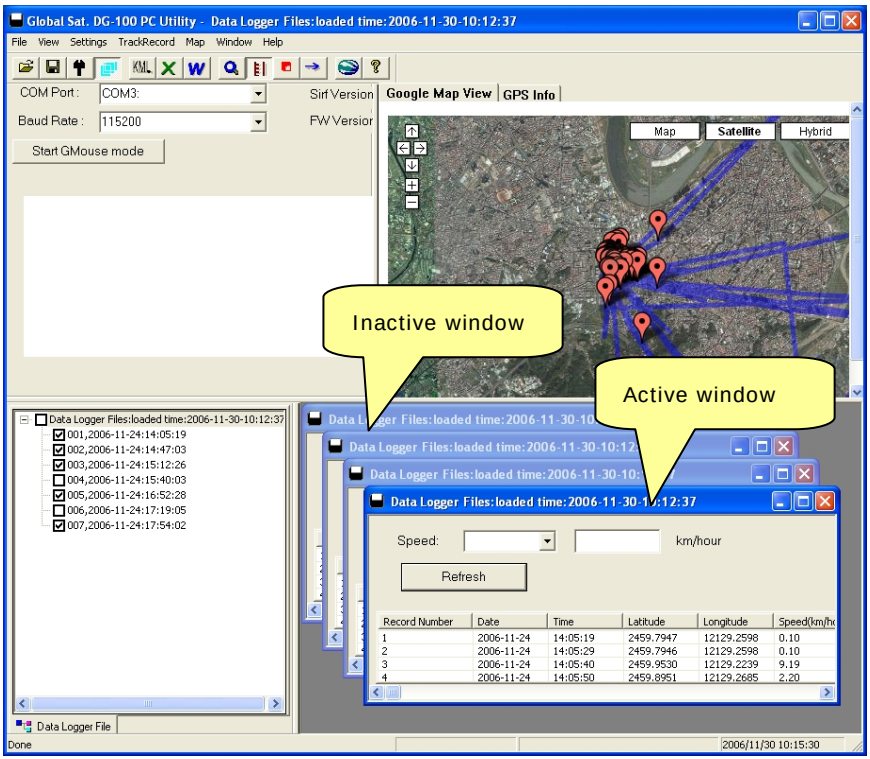


3. **Display one track point on Google Maps:**

You can double click on any track point to display its position on Google Maps.

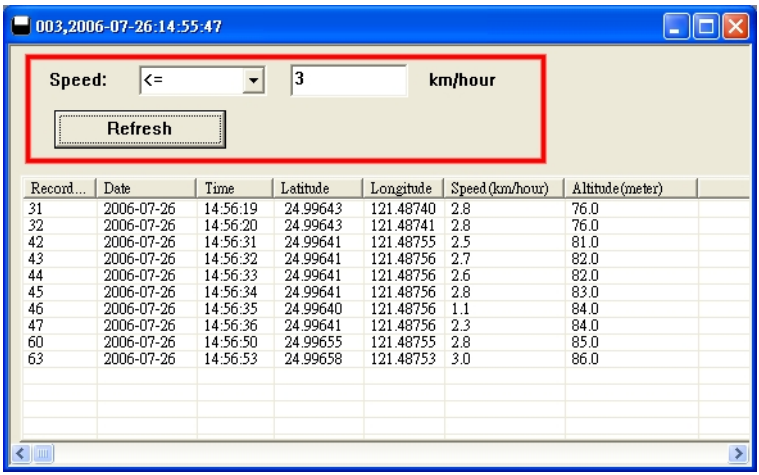


Export data



1. With the export function, you can export the data in “active window” to the following three kinds of data format.
2. Click [**File**] > [**Export**] > [**KML File**] to export the data to the Google Earth KML file format.
3. Click [**File**] > [**Export**] > [**CSV File**] to export the data to the Excel file format.
4. Click [**File**] > [**Export**] > [**TXT File**] to export the data to the TXT file format.
5. Click [**File**] > [**Export**] > [**NMEA183 Format**] to export the data to the NMEA183 text file format.

Speed filter



Record...	Date	Time	Latitude	Longitude	Speed(km/hour)	Altitude(meter)
31	2006-07-26	14:56:19	24.99643	121.48740	2.8	76.0
32	2006-07-26	14:56:20	24.99643	121.48741	2.8	76.0
42	2006-07-26	14:56:31	24.99641	121.48755	2.5	81.0
43	2006-07-26	14:56:32	24.99641	121.48756	2.7	82.0
44	2006-07-26	14:56:33	24.99641	121.48756	2.6	82.0
45	2006-07-26	14:56:34	24.99641	121.48756	2.8	83.0
46	2006-07-26	14:56:35	24.99640	121.48756	1.1	84.0
47	2006-07-26	14:56:36	24.99641	121.48756	2.3	84.0
60	2006-07-26	14:56:50	24.99655	121.48755	2.8	85.0
63	2006-07-26	14:56:53	24.99658	121.48753	3.0	86.0

The Speed filter function allows you to display the data which match the criteria. Select the range criteria and input speed value (integer), then click “**Refresh**” button.

Delete the data from memory

If you have already saved your data to PC, then you can click on [**TrackRecord**] > [**Delete All**] to delete all data from the DG-100 memory.

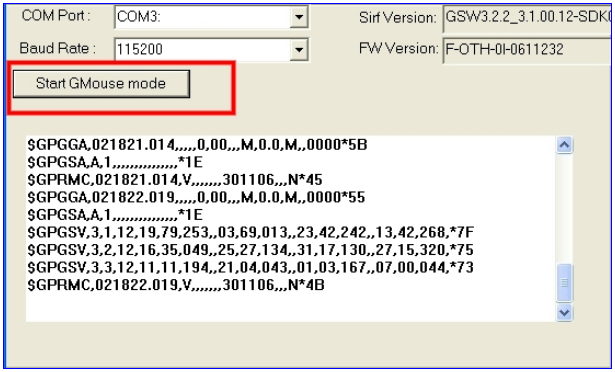
Metric system or imperial system

You can click on [**Settings**] > [**Metric System**] to check this item for displaying the distance by “meters” and speed by “km/hour”, or uncheck it for displaying the distance by “feet” and speed by “mile/hour”.

Using the G-mouse function

You can connect the DG-100 to your Notebook and use it as a GPS mouse.

1. Connect DG-100 to your Notebook.
2. Turn on the DG-100.
3. Start the DG-100 software utility.
4. Select the correct COM port and set Baud Rate to 115200.
5. Click the "**Start GMouse mode**" button. This would start DG-100 G-mouse function. Now you can close the DG-100 software utility.
6. Start your Navigation software and set the COM port and Baud Rate if necessary. The G-mouse is ready for your use.
7. If you want to end the G-mouse mode, and return to the data logger mode, you must turn off the DG-100 and turn on it again.



6 Troubleshooting

► Change the battery





1. Press downward to open the battery cover.
2. **If there are rechargeable batteries in the DG-100,** then you can connect the device to PC's USB port for battery charging or for data downloading.
3. The USB port of computer will provide power to DG-100 via the USB cable when you make the connection. If you use the **non-rechargeable** battery, please remove it to avoid any hazard.

FCC Notices

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation.

FCC RF Exposure requirements:

This device and its antenna(s) must not be co-located or operation in conjunction with any other antenna or transmitter.

NOTE: THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY RADIO OR TV INTERFERENCE CAUSED BY UNAUTHORIZED MODIFICATIONS TO THIS EQUIPMENT. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.