

SynScan™ GPS Instruction

Rev. E

Accessories:

In this SynScan™ GPS package, you will find 5 items as follows,

1. A SynScan™ GPS mouse (GT-320FW(2.0)) with a MINI-DIN connector at one end of 1.5-meter cable.
2. A 50-cm adapter cable, which is used for connecting between SynScan™ GPS mouse and SynScan™ hand control. One end of the cable is a MINI-DIN(F) connector, and the other is a RJ-12, 6-pin connector.
3. A USB to MINI-DIN(F) cable, which allows SynScan™ GPS mouse to be connected to a personal computer via the USB port.
4. A 80-cm adapter cable, which is used for connecting between the USB to MINI-DIN(F) and SynScan™ hand control. With these cables, the hand control can communicate with pc via USB port, which is configured as a COM port. One end of the cable is a MINI-DIN(M) connector, and the other is a RJ-12, 6-pin connector as shown in fig.1.
5. A 3.5-inch CD-ROM, which contains the SynScan™ GPS Instruction, GPS configuration program.



Fig. 1

Notes:

1. Only the firmware of SynScan™ EQ Ver.03.10 or later, or the firmware of SynScan™ EQ Ver.03.01 or later is able to connect to the GPS module. Regarding the SynScan™ firmware update procedure, please read the

SynScan™ Instruction Manual.

2. **Do not connect SynScan™ GPS mouse to directly to a PC!** It will damage your equipment. You should use the USB to MINI-DIN(F) cable to connect SynScan™ GPS mouse to a PC.

Instructions for use:

1. If the firmware version of your SynScan™ EQ hand controller is earlier than version 3.10, you should update the firmware to version 3.10 or later. All the firmware versions of SynScan™ AZ hand controllers are all ready for connecting to SynScan™ GPS. Regarding the SynScan™ firmware update procedure, please read the SynScan™ Instruction Manual.
2. If your hand controller is ready to be connected to SynScan™ GPS mouse as described above, you can connect the adapter cable to SynScan™ GPS mouse as shown in Fig 2.



Fig. 2

3. Plug the RJ-12 connector on the end of the adapter cable into the RJ-12 socket of the SynScan™ hand controller as shown in Fig3.



Fig. 3

4. Connect DC power (12V):

- a) If the hand controller is connected to the mount (Fig. 5), plug the 12V DC power source into the mount and press the mount's power switch on (shown in Fig. 6); or,



Fig. 4



Fig. 5

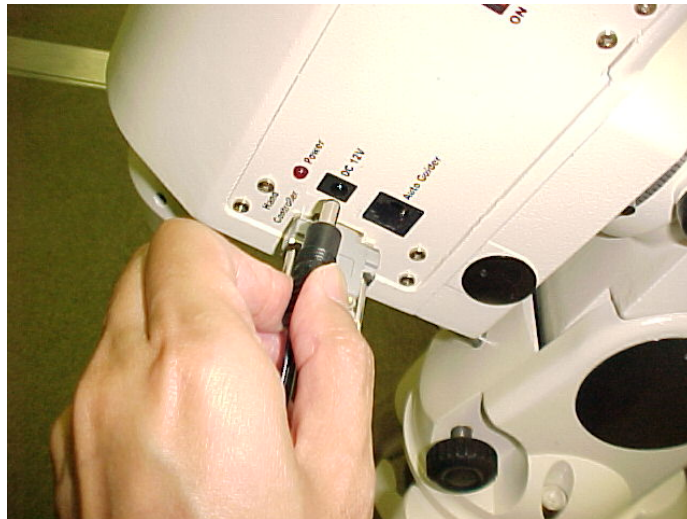


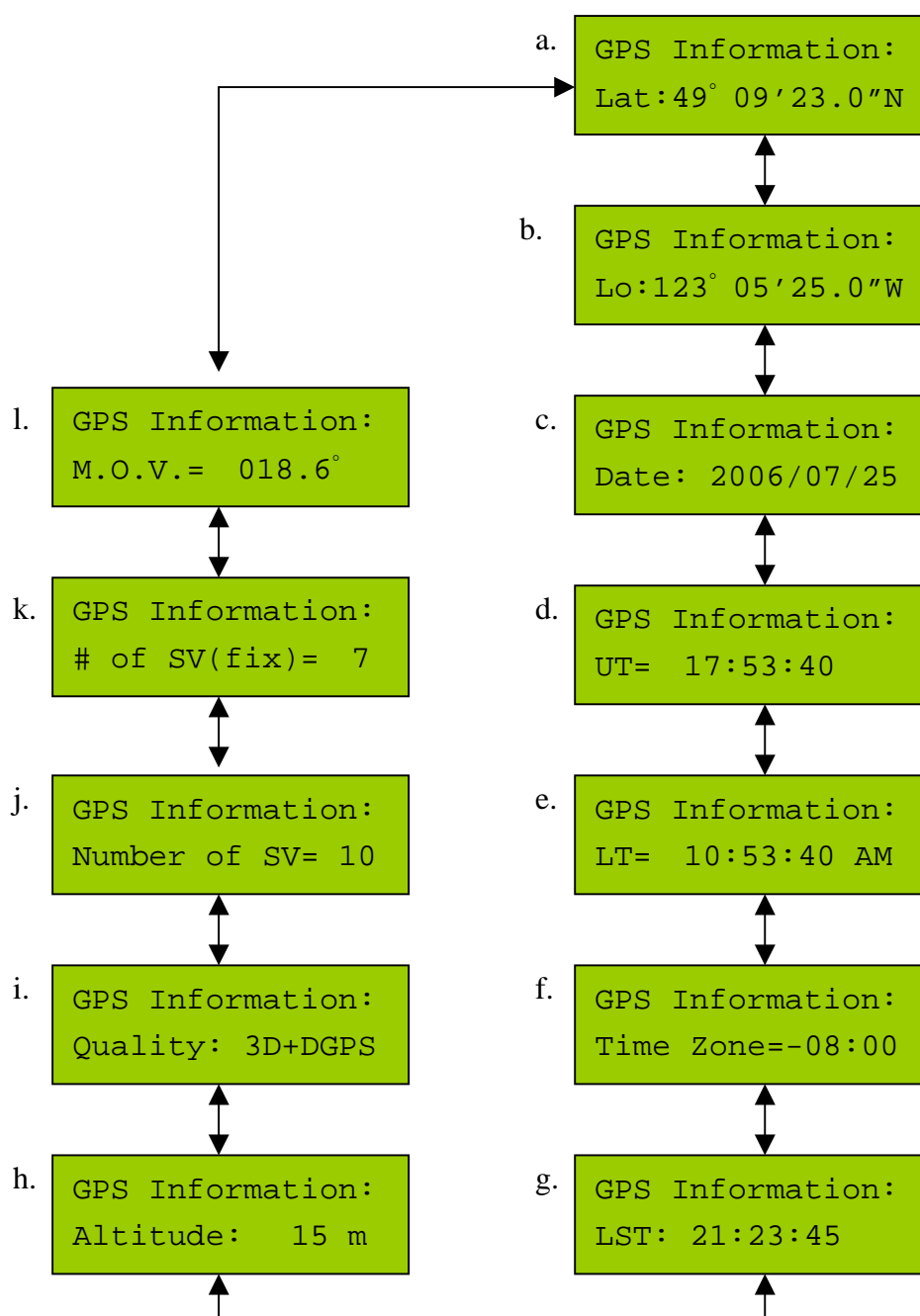
Fig. 6

b) If the hand controller is not connected to the mount, plug the 12V DC power source directly into the hand controller as shown in Fig. 7.



Fig. 7

5. After you power on the hand controller, you will see “Initializing...” displayed on the LCD for 2 seconds, then the hand control will find the GPS receiver module is connected and prompt to enter the time zone and daylight saving.
6. After setting time zone and daylight saving, the LCD of the hand control will display blinking text “GPS Fixing...” The first time you connect the SynScan™ GPS mouse to the hand controller, it will take at least 50 seconds to fix on the GPS signal. It may take longer, depending on the weather and environment. If it is the first time to use the GPS mouse or it has been more than a week since last time connecting the GPS mouse, the time to fix current coordinates will take more than 3 minutes.
7. After SynScan™ GPS mouse has fixed on the GPS signal, the hand controller will display the version number if the hand controller is connected to the mount, or the LCD will display “No link to M.C.” and “Stand-alone mode”, if the hand controller is not connected to the mount.
8. Press **ESC**, and the hand controller will function as normal. If the GPS signal is fixed successfully, the hand controller will skip the location, date, and time entry. The date, time, and location will be automatically updated from the SynScan™ GPS mouse.
9. In the SynScan™ hand controller menu, there is a submenu “GPS” under **utility** menu. In this GPS menu, you can read the GPS information. To reach this menu, press the **UTILITY** key, then press the scroll keys until “GPS” appears on the LCD screen. Press **ENTER**, and the hand control will acquire GPS information within 2 seconds, assuming the SynScan™ GPS mouse successfully fixes on the GPS signal.
When the SynScan™ GPS mouse fixes, “GPS information:” will display on the first line of the LCD. You can press the scroll keys to check the GPS information as it follows in sequence,



Figures a to m show the display sequence of the GPS Information when you press the scroll keys.

Fig. a: Shows the latitude of the current site.

Fig. b: Shows the longitude of the current site.

Fig. c: Shows the current date.

Fig. d: Shows the current universal time (UT)

Fig. e: Shows the current local time (LT)

Fig. f: Shows the time zone, which is retrieved from the user-entered data.

Fig. g: Shows the current local sidereal time (**LST**).

Fig. h: Shows the altitude of the current site in meters.

Fig. i: Shows the received GPS signal quality. There are 4 levels of GPS signal quality, which are “**No fix**”, “**2D**”, “**3D**” and “**3D+DGPS**”. The most accurate signal quality is “**3D+DGPS**”, “**3D**” is the second best signal quality, and “**2D**” is the lowest useable signal quality. “**No fix**” means the GPS is currently attempting to fix on a signal, or cannot acquire the signal.

Fig. j: Shows the number of GPS satellites, which are in the visible sight of the SynScan™ GPS, mouse.

Fig. k: Shows the number of GPS satellites which are currently fixed upon by the SynScan™ GPS mouse.

Fig. l: Shows the magnetic variation (in degrees) of the current observing site.

8. To leave the “**GPS Information**” submenu press **ESC**. The other functions and operations of the hand controller are unchanged, and are the same as described in the SynScan™ Instruction Manual.

Instructions for PC connection:

SynScan™ GPS mouse's default setting is for connection with the SynScan™ hand controller, but you can configure the SynScan™ GPS mouse's output to communicate with a GPS signal viewer program, such as LSViewer or PGViewer, running on a PC. The SynScan™ GPS mouse connects to a PC's USB port.

If you want to use your SynScan™ GPS mouse to connect with a PC and work as a general GPS receiver, please follow these instructions:

Instruction for PGViewer GPS viewer program:

1. Insert the CD-ROM into your computer.
2. Double click and run the installation file “**PL-2303 Driver Installer**” to install the USB driver. After installation, restart your computer, and you will find a “USB to Serial Port” driver in the Device Manager list, as shown in Fig. 8.

IMPORTANT: The newest PL-2303 USB to Serial driver for Windows Vista/Windows 7 (32-bit or 64-bit), please visit to the web site as follows to download the driver: <http://www.prolific.com.tw/eng/downloads.asp?ID=31>

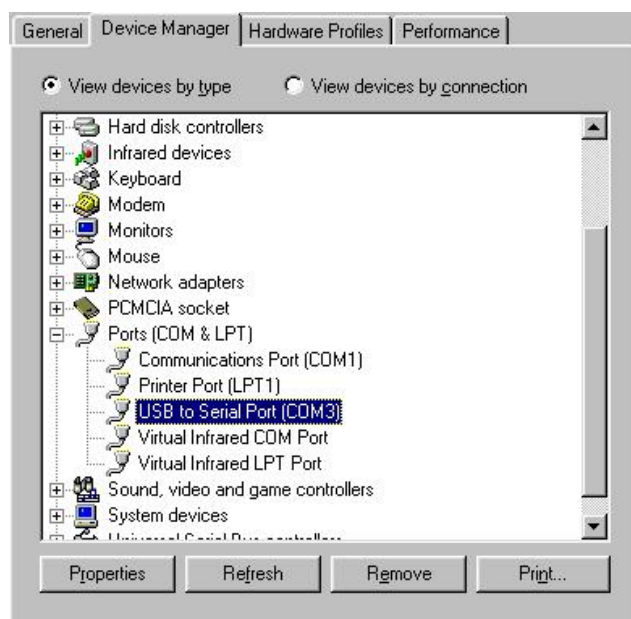


Fig. 8

3. Copy all the files in “PGViewer” folder from the CD-ROM to a folder on your computer, “c:\SynScan GPS\”, for example.
4. Connect the SynScan™ GPS mouse to the USB to MINI-DIN(F) cable and insert the USB connector into a USB port on your PC.

5. Double click to open “PGViewer.exe”, and set the communication port to match the port where the “USB to Serial Port” driver is installed in the Device Manager list. In the example shown in Fig. 8, this would be COM5.

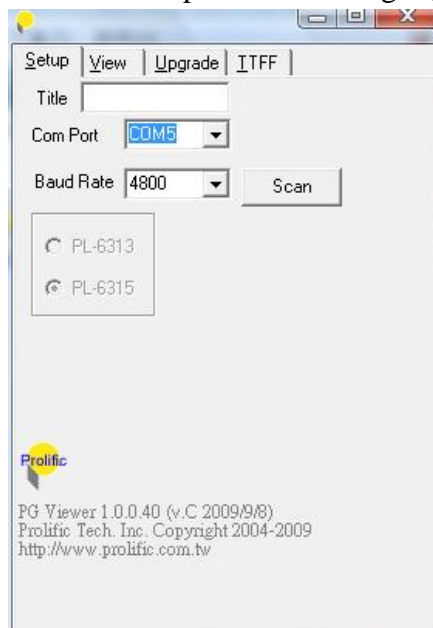


Fig. 9

6. Set the Baud Rate to 4800.

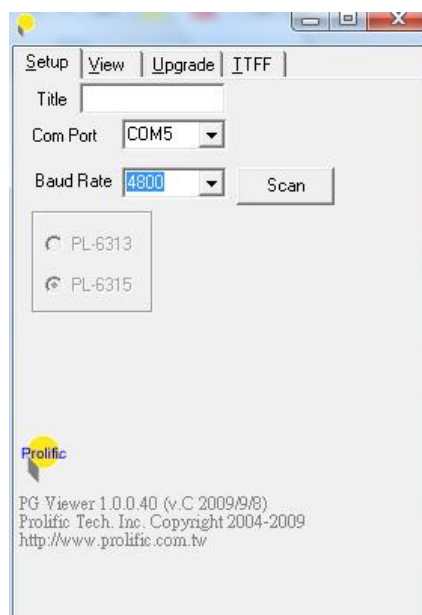


Fig. 10

7. Click on the View tab.

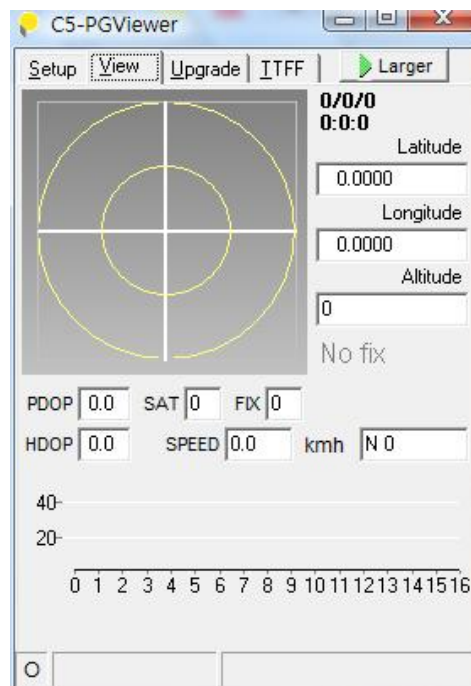


Fig. 11

8. Click on the mark “Larger” to the right of the Trace tab. The GPViewer window will expand to a full function window as shown in Fig. 12.

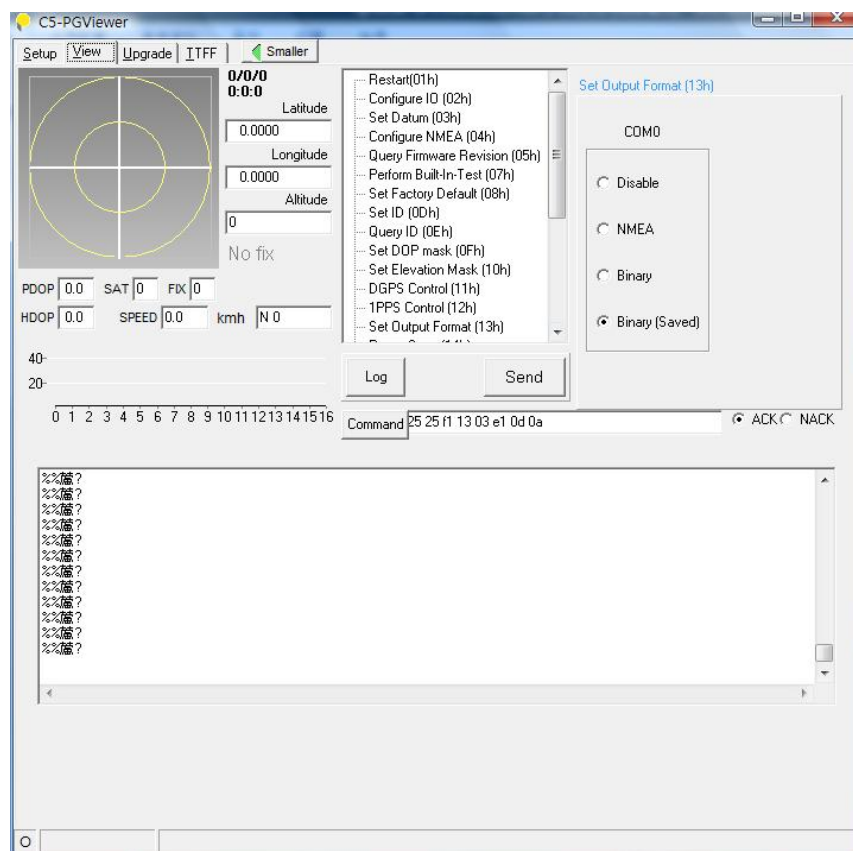


Fig. 12

9. Select the command “[Set Output Format \(13h\)](#)”, and check “NMEA” on the window.

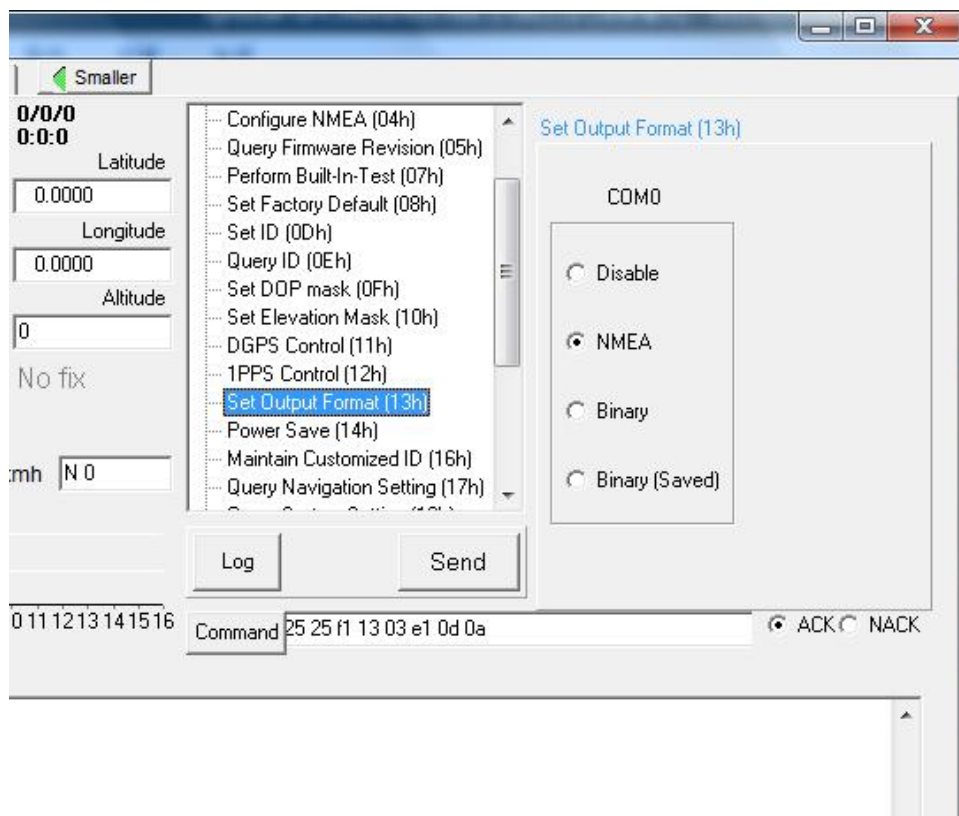


Fig. 13

10. Click on the Send button to set the SynScan™ GPS mouse output format as NMEA sentences.

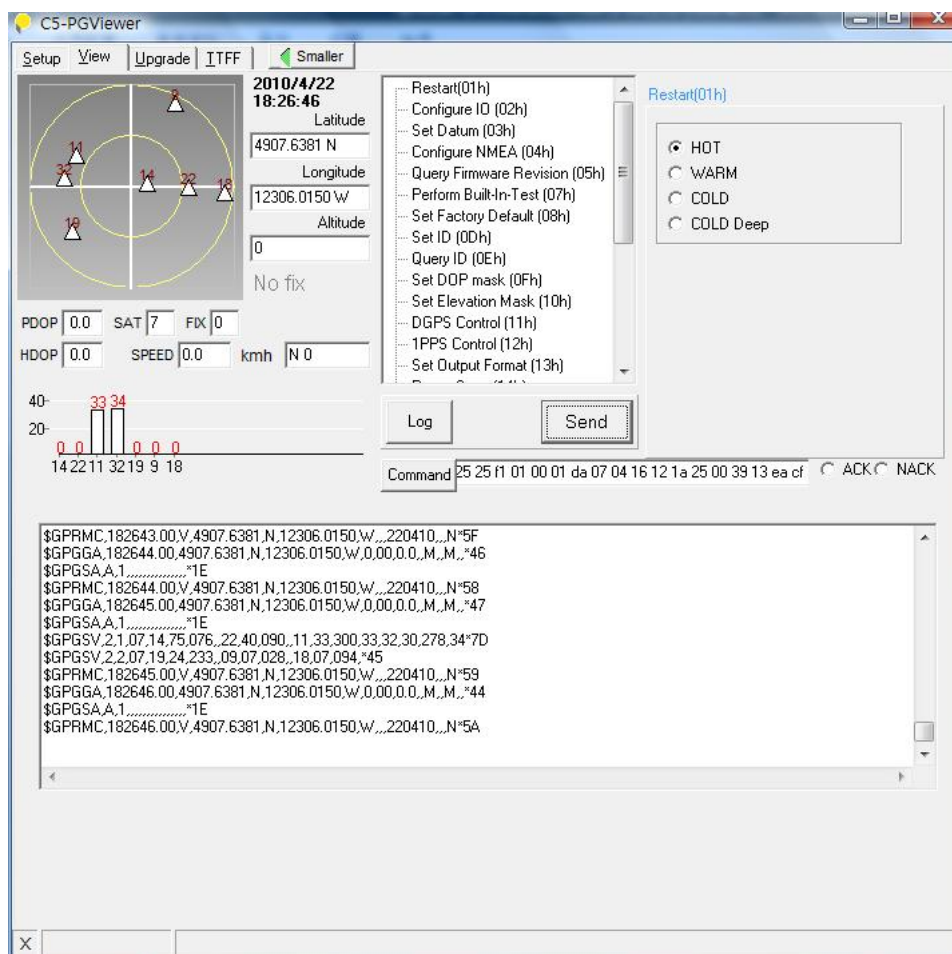


Fig. 14

As shown in Fig. 14, you will see some small triangles with red numbers, which indicate the GPS satellites on the radar chart, and the NMEA sentence output at the bottom of the window.

11. After the SynScan™ GPS mouse is fixed on the GPS satellites, you will see green circles with numbers which represent the GPS satellites currently fixed on, and their signal strength is displayed with green bars. The readouts of Latitude, Longitude, and Altitude are displayed beside the radar chart as shown in Fig. 15.

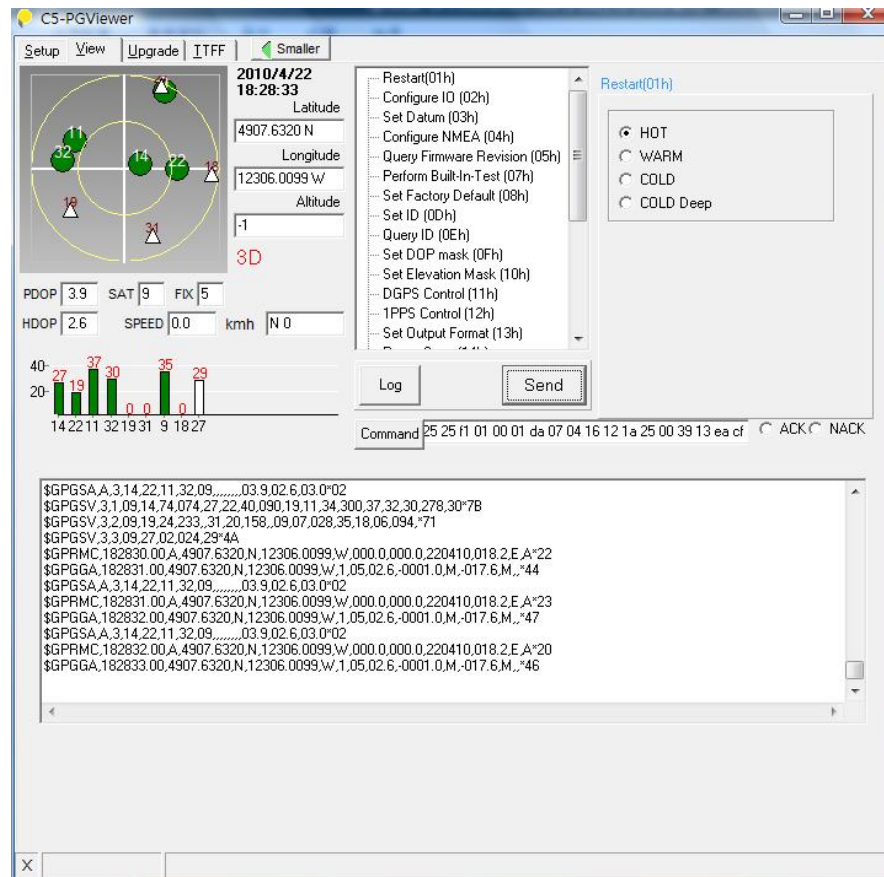


Fig. 15

12. You can configure the NMEA sentence output by selecting the “Configure NMEA (04h)” command.

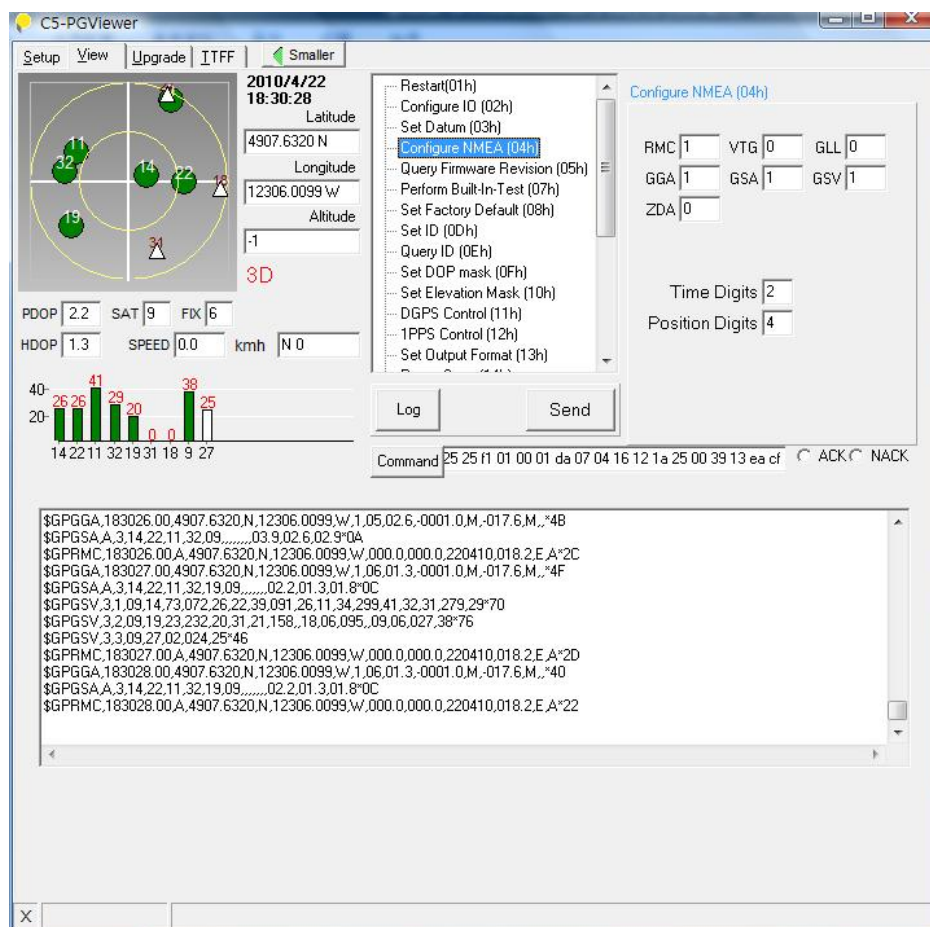


Fig. 16

13. If you want to change the SynScan™ GPS mouse’s output format back to its default binary output (which is used for communication with the SynScan™ hand controller), select “Set Output Format (13h)” and check “Binary (Saved)”. Then click the **Send** button. After the SynScan™ GPS mouse feedback ACK, the symbols on the radar chart will disappear and no signal will be indicated on the signal bar chart. You can also set the SynScan™ GPS mouse to Binary output by selecting “Set Factory Default (08h)”, then click the **Send** button.

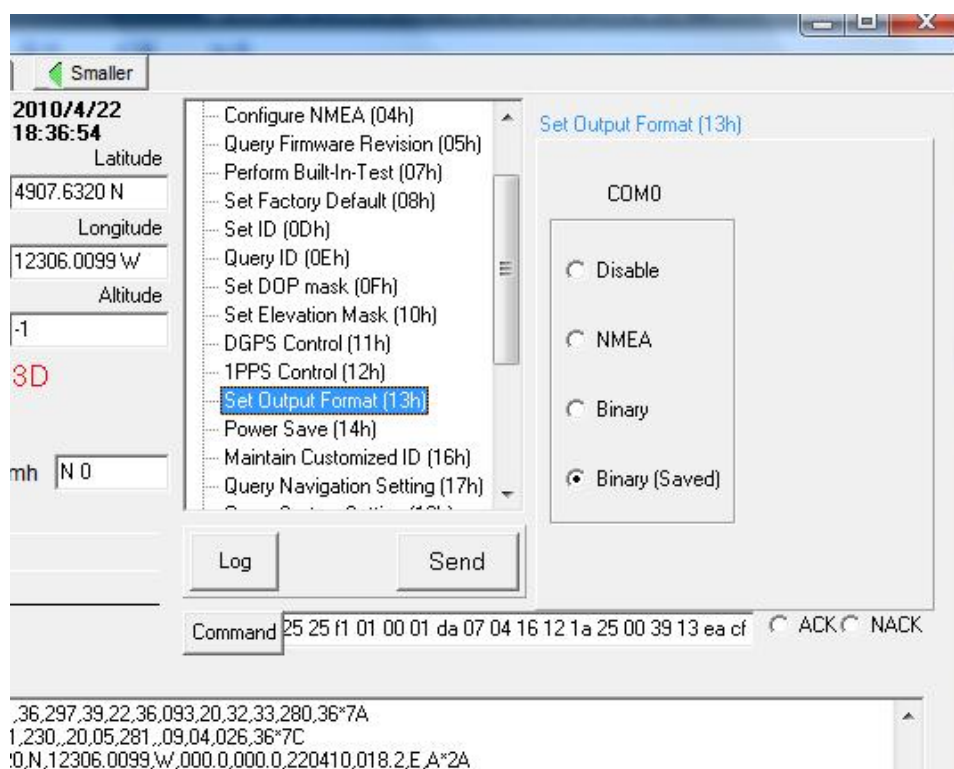


Fig. 17