HOLUX

Bluetooth **GPS Receiver**

User's Guide

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1. Overview

(Fig.1)

The *HOLUX* GPSlim236 **Wireless Bluetooth GPS Receiver** (Fig. 1) is a total solution GPS receiver with Bluetooth, UART interface and built-in rechargeable battery for high sensitivity to tracking signal. GPSlim236 design is based on SiRF Star Ⅲ low power Architecture.

GPSlim236 is a dual-function GPS receiver. Not only transmit satellite information through the PDA or Notebook with Bluetooth interfaces but also is a G-Mouse GPS receiver through a data cable to deliver satellite signal to the device without Bluetooth interface.

This positioning application meets strict needs such as car navigation, mapping, surveying, security, agriculture and so on. Only clear view of sky and certain power supply are necessary to the unit. GPSlim236 contacts to other device through Bluetooth device, compatible interface of RS-232 or USB, and built-in recharge battery to save satellite information such as the status of satellite signal, the last location, date and time of last use.

With low power consumption, the GPSlim236 tracks up to 20 satellites at a time, re-acquires satellite signals in 100 ms and updates position data every second. Trickle-Power allows the unit operates a fraction of the time and Push-to-Fix permits user to have a quick position fix even though the receiver usually stays off.

2. Packing List

Congratulations on your purchase of the GPSlim236 GPS Receiver. We hope it will be useful to you for a long time. Before you begin, make sure that your package includes the following items. If any of these items are missing, please contact your local HOLUX dealer or distributor.

- HOLUX GPSlim236 Wireless Bluetooth GPS receiver 1 Set
- Travel power supply / Cigarette adapter 1 Set
- Manual and Driver CD 1 Piece
- GPSlim236 Quick guide 1 Piece
- Warranty card 1 Piece

3. Main functions

GPSlim236 provides a series of functions. It is well suited to system integration and users who use PDA, Notebook PC with Bluetooth device.

- Built in SiRF Star III Low power consumption chipset.
- 20 parallel satellite-tracking channels for fast acquisition and reacquisition.
- High speed signal acquisition using 200,000 time/frequency search channels.
- Built-in WAAS/EGNOS Demodulator without additional any hardware. Or use the high-sensitive software to get the fast acquisition and reacquisition in the urban, canyon and foliage environments.
- Compatible with Bluetooth Serial Port Profile (SPP) completely.
- Low power consumption. Built-in rechargeable and changeable Lithium-ion battery without external power supply, and the working time lasts at least 10 hours.
- Provide Continue mode and Power saving mode for user's requirement.
- Provide expand terminal contact to other system without Bluetooth device.
- Built-in rechargeable battery for memory and RTC backup and for fast Time To First Fix (TTFF).
- Support NMEA0183 v2.2 data protocol and SiRF binary code.
- 4 colors LED to show the status of device.
- Active antenna connector for getting better satellites signal.
- FLASH based program memory. New software revisions upgradeable through serial interface.

- Small, sleek, and lightweight design easily fits in your hand.
- Over-Temperature protection
- Enhanced algorithms -SnapLock and SnapStart provide superior navigation, performance in urban, canyon and foliage environments.
- For Car navigation, Marine navigation, Fleet management, AVL, Personal navigation, Tracking System, and Mapping device application.

4. Technical Specification

4.1. Basic Specification

- Chipset：SiRF Star III chipset.
- Channels： 20 parallel satellite-tracking channels.
- Frequency： 1575.42 MHZ.
- Receiver： L1, C/A code.

4.2. Acquisition Time (averaged)

- Reacquisition： 0.1sec.
- Cold start： < 42 seconds.
- Warm start：< 38 seconds .
- Hot start： < 1 seconds

4.3. Receiver Accuracy

- Normal： 5-25 meters CEP without SA.
- Enable EGNOS or WAAS：

  Position: < 2.2 meters, horizontal 95% of time

  < 5 meters, Vertical 95% of time
- Velocity： within 0.1 meters / second
- Time： 1 microsecond synchronized GPS time

4.4. Use Limitation

- Altitude： < 18,000 meters (60,000 feet)
- Velocity: ：< 736 meters/ second (1000Knots)
- Acceleration： 4 G.
- Jerk： 20 meters / second, max

4.5. Power Supply

- External Voltage: 5VDC +/- 10%
- Batteries：

  Main Power: Built-in rechargeable Lithium-ion for system power.

  Backup Power: Rechargeable Lithium-ion battery for memory & RTC backup.
- Working voltage: 75-85mA (Normal mode).

  30mA (Power Saving).

- Working period (In Battery full power status):
  > 10 hours on Continue mode.
  > 16 hours on Power Saving mode.
- Protection circuit on GPSlim236 should stop charging the cell when over-temperature condition --50℃ occurs.

4.6. Output and Interface

- **Output**

I. Output protocol
Baud Rate： 38400 bps
Data bit： 8
Parity： No
Stop bit： 1

II. Format. NMEA0183 V2.2： GPGGA (1time/1 sec), GPGSA (1 time/5 sec.), GPGSV (1time /5 sec.), GPRMC (1time /1 sec.), GPVTG (1 time/1 sec), (GLL, or SiRF binary format for optional).

III. Datum： WGS84.

- **Input/ Output Interface:**

I. Compatible Bluetooth Serial Port Profile (SPP), Version1.1 and class 2(up to 10 meter range).

II. In/Out Port. GPS signal (Out)/Command(In) with CMOS/TTL Level。 Mini USB Type B Connector and Cable option：
(a) GR230-A1(RS232 data cable)
(b) GR230-A2 (USB data cable)
(c) GR230-A3 (Mini USB port to PS2 port).

- **External Antenna interface:**

3.0V input MMCX type active antenna connector

4.7. Physical

- Size： 46.3 ×67 ×19 mm
- Weight： < 56 g
- Operating Temperature： -10℃ to + 60℃(under the un-charging condition); Charging Temperature 0℃to + 45℃
- Storage Temperature： -20℃ to + 85℃
- Operating humidity： 5% to 95% No condensing

4.8. Other Functions

- Bluetooth frequency: 2.4 ~2.48GHZ
- Bluetooth Input Sensitivity: -80dbm

- Low sensitivity of receiving satellite signal ： -189 dBW
- External antenna interface: MMCX
- LED Functions： Indicate Bluetooth status, GPS status, Battery Status and Battery charging status

5. Getting Started

STEP 1. Charge Battery

Please charge battery till LED off for the first time.

Power cable plug in Power cable connect to power socket

↓

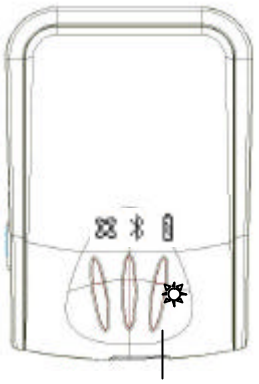
Charge Battery

Battery indicator light:

Power too low -------- red LED

Charging ---------- green LED

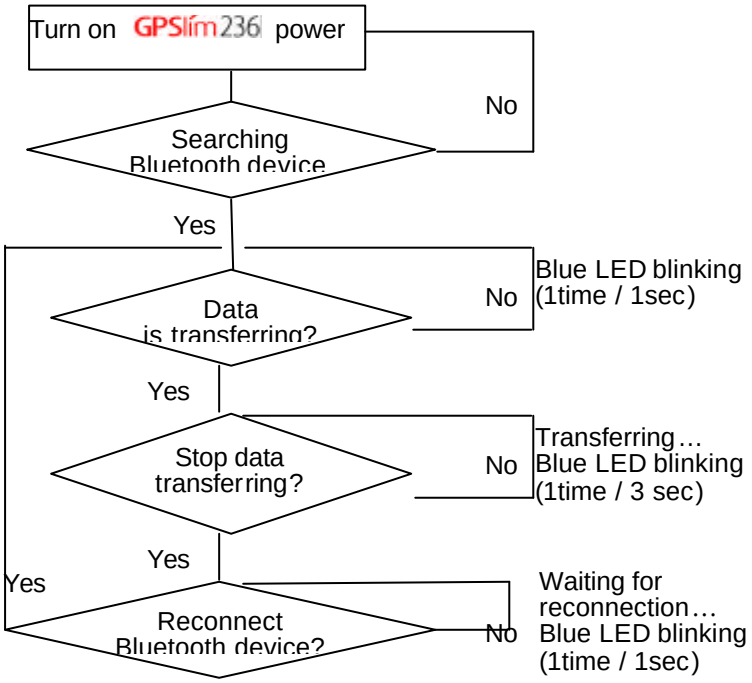
Full or Not in charging -- LED off

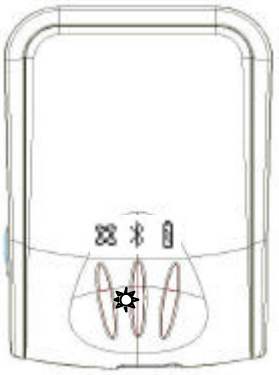


Mini USB power socket

STEP 2. Turn on Power

Bluetooth Status –





Note:
Some PDAs have to re-open Bluetooth manager for Bluetooth device re-connection.

GPS Status ---

Put GPSlim236 in clear view of the sky without any obstruction for better satellite acquiring.

Turn on GPSlim236 power

↓

Search GPS -- Steady orange LED on

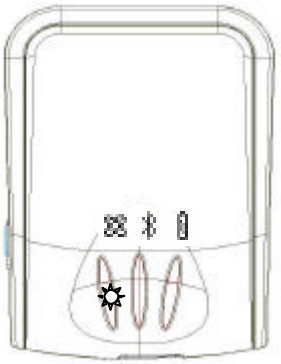
↓

Position Fixed -- Orange LED blinking

Turn off GPSlim236 power

↓

Power Off -- Orange LED off



5.1. Hardware Description

1). GPSlim236 Body description see Fig. 2:

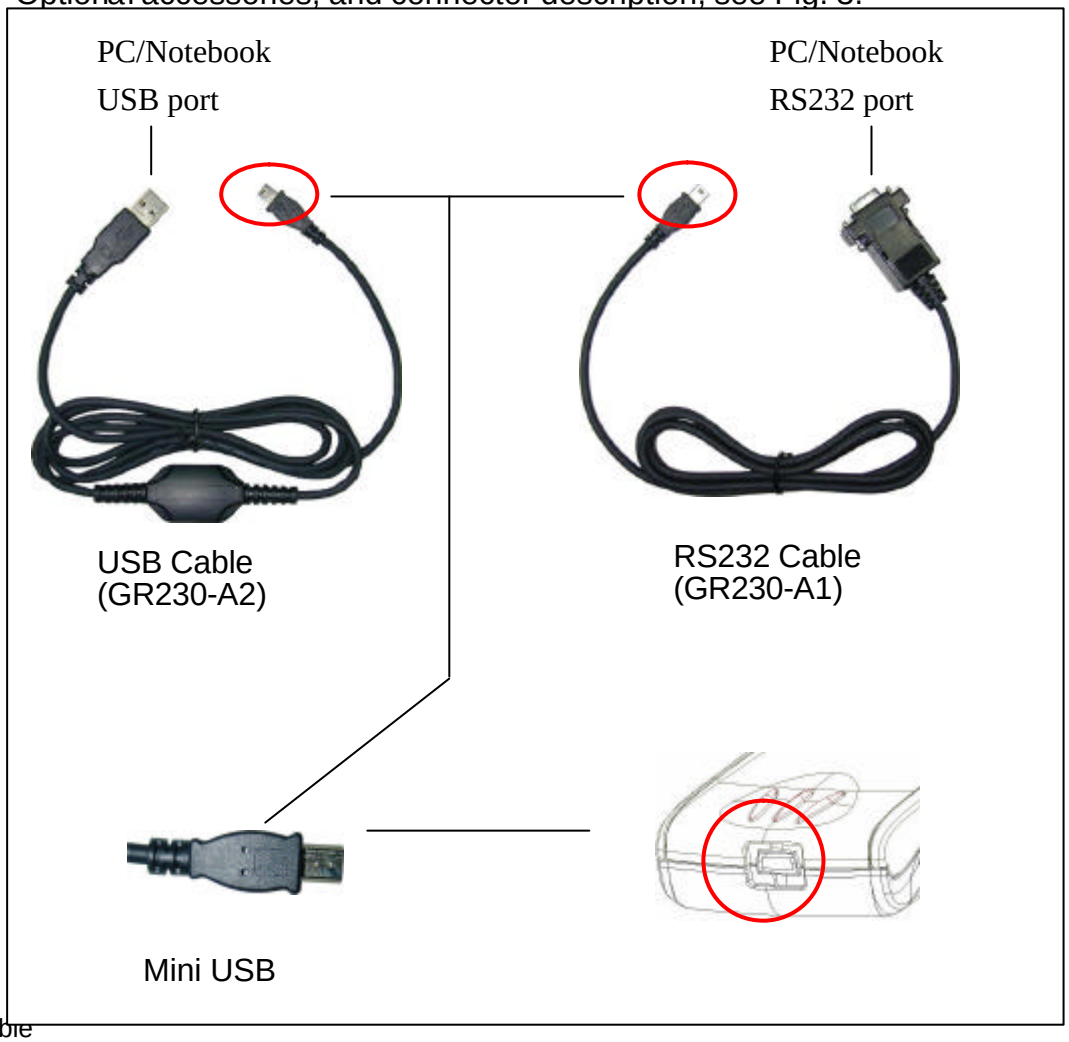
(Fig.2)

2). LED status :

SYMBOL	COLOR	STATUS		DESCRIPTION
Bluetooth	Blue	Blinking	1 times / 1 sec	Search Bluetooth Device
			1 time / 1 sec	Standby Mode
			1 time / 3 sec	Transferring Data
Battery	Red	Light on		Power too low
	Green	Light on		In charging
	N/A	Light off		Battery full or Not in charging
GPS	Orange	Light on		Acquiring Satellites
		Blinking		Position Fixed

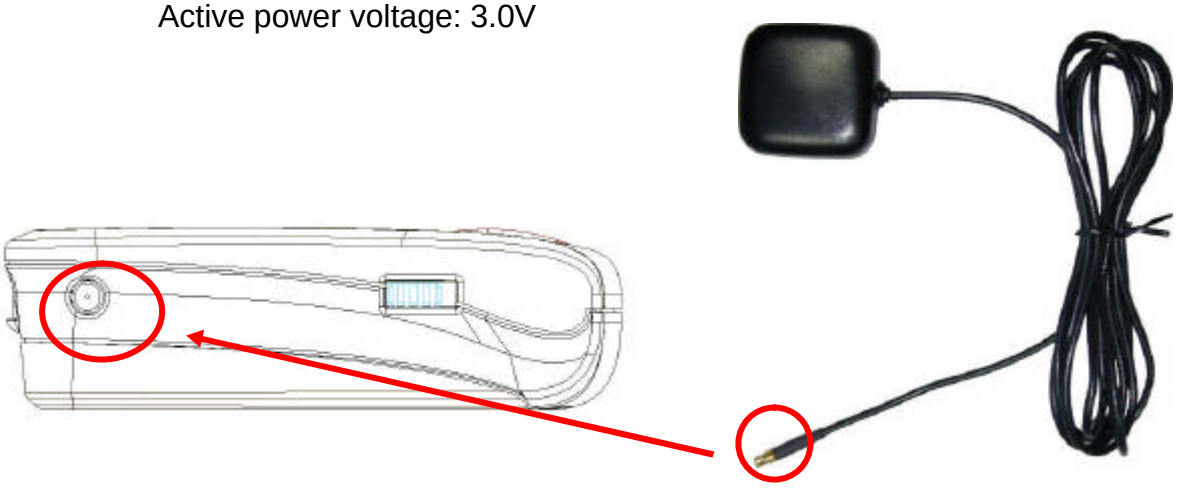
3). Power Switch :
Slide Switch.

4). Optional accessories, and connector description, see Fig. 3.



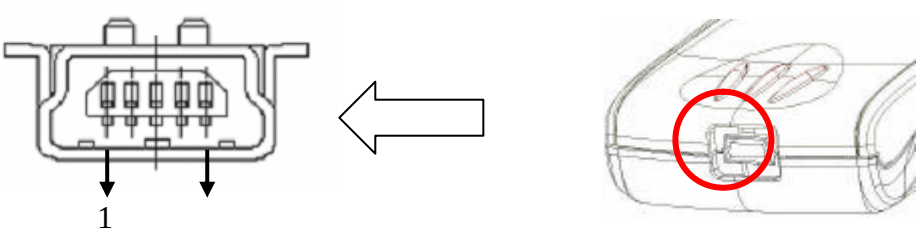
(Fig.3)

3) External active antenna connector, see Fig. 5。
Connector type: MMCX.
Active power voltage: 3.0V



(Fig.5)

4) Power Jack & Data Port, see Fig. 6。
Jack type: Mating face of 5 pin Mini USB Type B female。
Pin definition see table 1。



(Fig.6)

Table 1

Pin	Pin Name	Signal and description
1	GND	Signal ground, Battery charging ground.
2	VOUT	Unregulated voltage out: 3.6 V max 100mA.
3	TXD	Transmit Data. From organizer to peripheral.(Voltage Level is 3.3V ~ 5.0V).
4	RXD	Receive Data. Form peripheral to organizer.(Voltage level is 3.3V ~ 5.0V).
5	VCHARG	Positive terminal of DC adaptor that powers the internal charging circuit of Li-Ion battery. The approved power supply is 5.0V +/- 5%@1A.

5.2. Software Installation

The following is the steps of software installation to setup on PDA, DELL AXIM with Bluetooth Manager. For other PDA, the steps may be a little different.
(Bluetooth Manger is one of popular program used for Bluetooth device)

1. Open "Bluetooth Manager" on pocket pc.

New
↓
Connect

2. Search Bluetooth device "HOLUX GPSlim236"

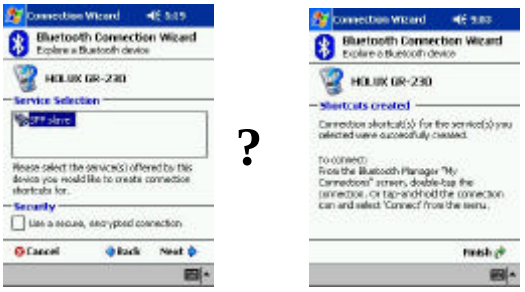
Select Explore a Bluetooth device
↓
Next

3. Find the Bluetooth device

Next
↓
Tap HOLUX GPSlim236

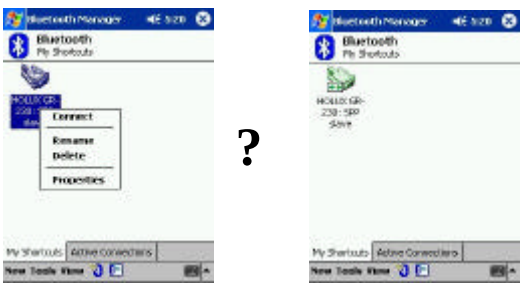
4. Connect to SPP Slave

Select SPP slave
↓
Next
↓
Finish



6. 5. Finish Bluetooth Manager Setup

Tap and Hold HOLUX GPSlim236: SPP slave
↓
Connect
↓
Finish Bluetooth setup (opposite arrow is displayed)



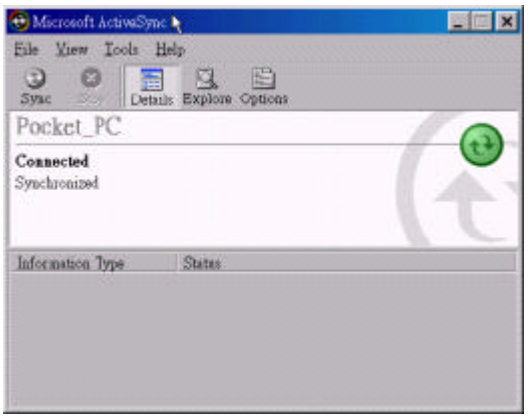
5.3. Installation of testing program

(GPSViewer.exe is compatible with Microsoft Pocket PC or other operation system alike.)

1). Install Microsoft ActiveSync to your PC, refer to your Pocket PC manual for installation procedure, as Fig. 5.

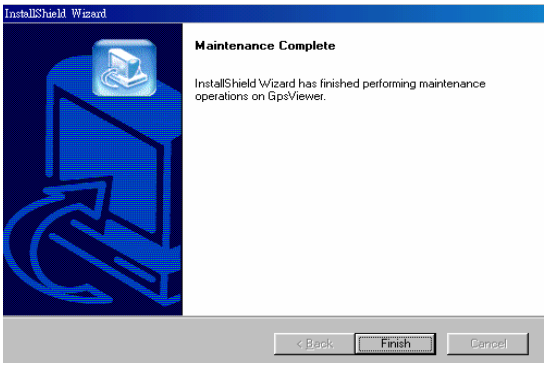
2). Setup your Pocket PC cradle to Desktop PC UART port. The Microsoft ActiveSync will detect your Pocket PC automatically.

Setup your Pocket PC cradle to Desktop PC UART port. The Microsoft ActiveSync will detect your Pocket PC automatically, as Fig. 7.



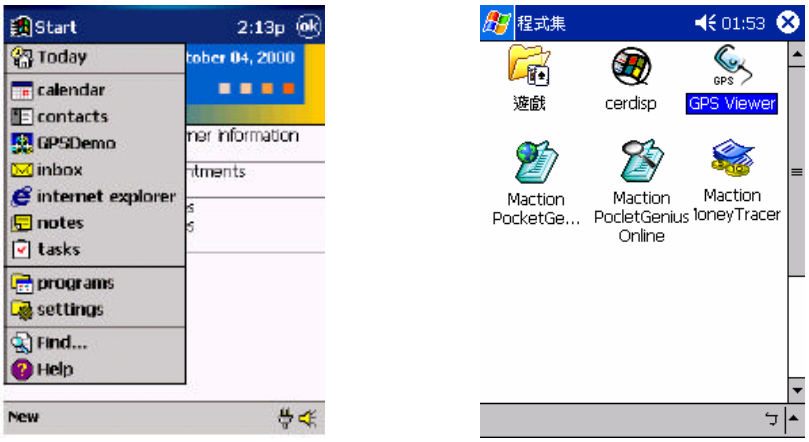
(Fig. 7)

3). Double click the GPSViewer.exe on your PC, then Holux GPSViewer.exe program will install automatically, as Fig. 8.



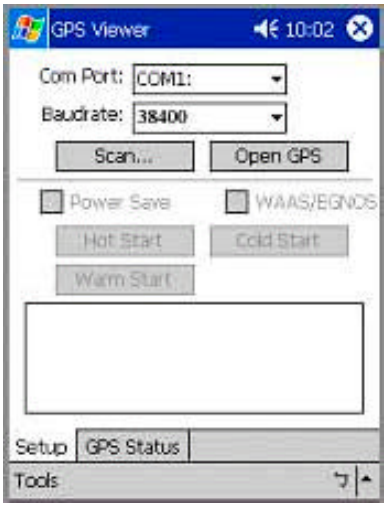
(Fig. 8)

4) Push “Start”→ “Programs”→ “GPSViewer” on PDA, as Fig. 9.



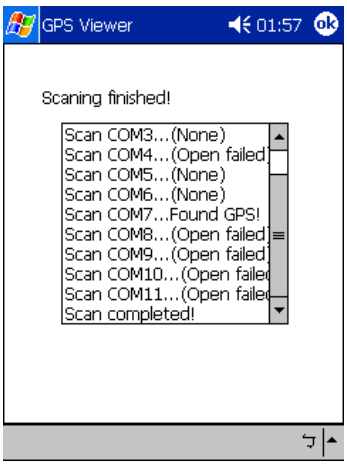
(Fig. 9)

5) The following window is show after executing GPSViewer, as Fig. 10.



(Fig. 10)

6) Setup Baud rate: 38400, then push "Scan" bottom to scan your COM Port (Example theIPAQ 3970 is the output port COM8). Select your COM Port (COM1 ~ COM10), then push "Open GPN" bottom, as Fig. 11, Fig. 12, and Fig. 13.

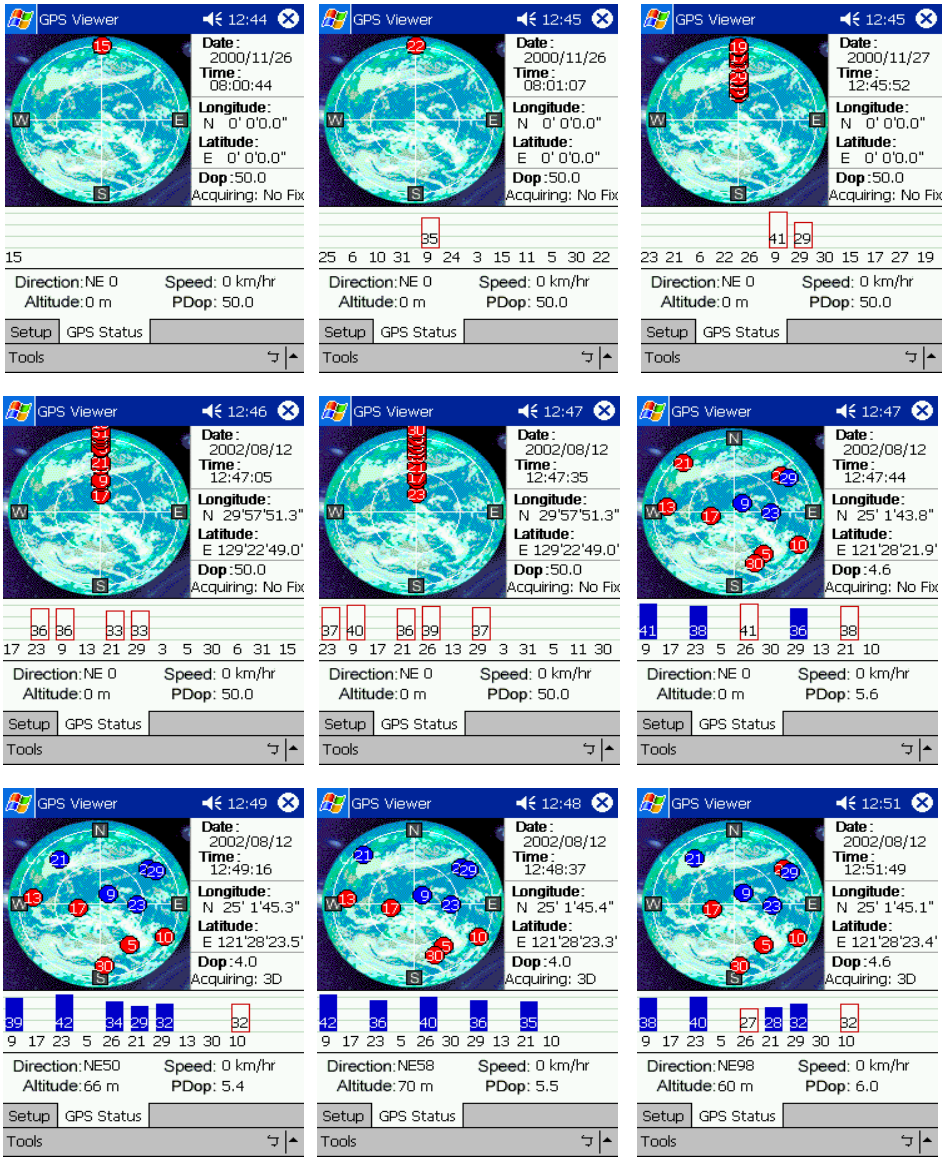


(Fig. 11)

(Fig. 12)

(Fig. 13)

7) Select “GPS Status” to show the satellite diagram like below, as Fig. 14.



(Fig. 14)

6. Optional accessories

GPSlim236 has many accessories to satisfy customers’ requirement see table 2. After using GPSlim236 with the following accessories, it can transmit message with PDA, Note Book easily.

Table 2

Item	Description	Note
GR230-A1	1.5M RS232 data cable	
GR230-A2	1.5M USB data cable	
GR230-A3	Output convert to GM-210’s PDA Car charger adaptor	
GR230-B1	2M 28db MMCX connector active antenna	

7. Driver Installation

You can use any GPSlim236 accessories data cable without installing driver except GR230-A2 USB cable. The following is the steps of installation GR230-A2 USB cable.

7.1 System Requirement

CPU: IBM, Pentium, or other compatible PC.
Memory: above 16 MB
System: Windows 98/Me/2000/XP

7.2 Installation

I. Copy entire GPSlim236 USB folder from CD to hard disk.
II. Connect GR-230-A2 USB connector to computer without GPSlim236 GPS receiver. While the computer automatically starts the installation program, please direct the driver to the GPSlim236 USB folder.

7.3 Important

Verify the COM port to start using your own navigation software.

I. Click **<Start>** menu, select → **<Setting>**, then enter→ **<Controller>**
II. After entering **<Controller>**, and select **<System>**.
III. Select **<Device Manager>**.
IV. Find the **< Connector**(COM & LPT)**>** and check the Virtual COM Port, which was created by the USB driver.

Please note that the virtual COM port number might be different from every computer. Before using navigation software, please confirm the COM Port numbers created by your computer and provided by your navigation software. Otherwise, the navigating software won't receive the satellite signal, because of the un-match COM Port setting.

8. Warranty

The GPSlim236 is warranted to be free from defects in material and functions for a period of one year from the date of purchase. Any failure of this product within this period under normal conditions will be replaced at no charge to the customers.

- **GPSlim236 has built Li-battery inside, please avoid closing high temperature environment or sun shine directly for a long time.**

? **User has to return GPSlim236 to HOLUX if the inner Li battery has to be replaced.**

9. Trouble Shooting

Problems	Reasons	Methods
No position output but timer is counting	Weak or no GPS signal can be received at the place of GPSlim236	Connect an external antenna, which locate as a open space to your GPSlim236 and then run GPSViewer Cold start function.
	At outdoor space but GPS signal is blocked by building or car roof.	Go outdoor and run GPSViewer Cold start function to try again, or connect an external antenna to improve the poor GPS signal.
Execute fail	Bluetooth function unstable	Power On/Off GPSlim236. Re-Start PDA or PC and reference sec 5.2 re-install software
Can not turn on the COM port	Install GPSlim236 incompletely or operate the device is being used with same COM port	Install GPSlim236 completely or stop other device that is being used.
Can not find out GPSlim236	Poor connection	Re-Start PDA or PC and reference sec. 5.2 re-install software.
No Signal	No action for few minutes may cause Pocket PC entry power save mode. It will close the COM port at the same time.	Close the application and execute it again to reopen the COM port.
	Weak or no GPS signal when using GPSlim236 indoor	Connect an external antenna to your GPSlim236.

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

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.

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. To maintain compliance with FCC RF exposure compliance requirements, please avoid direct contact to the transmitting antenna during transmitting.