

HOLUX

GPSlim240

Wireless Bluetooth GPS Receiver

User Guide

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1. Overview



(Figure 1)

The **HOLUX** Wireless Bluetooth GPS Receiver (also known as **GPSlim240**) has a built-in rechargeable Lithium-ion battery. Powered by the SiRF Star III, **GPSlim240** is a dual- purpose GPS receiver that communicates with other systems via Bluetooth technology. The SiRF Star III architecture packs the GPS receiver with a comprehensive range of functions, to satisfy the rigorous requirements and professional demands of the location technology field and the needs of personal consumers. **GPSlim240** is totally complementary with Bluetooth-enabled PDA and Notebooks etc. in the transmission of satellite signals.

The device can be used in car navigation, security systems, cartography, and other applications such as surveying and agriculture etc. The basic requirement for its use is to “have a clear view of the sky”. It relies on Bluetooth transmission technology, USB, or other compatible interface to communicate with other electronic devices. The built-in rechargeable battery saves satellite information such as the status of the satellite signal, the last location, and the date and time last used.

Apart from being a very power efficient device, **GPSlim240** tracks up to 20 satellite signals at a time *①, re-acquires satellite signals in 100 ms and updates position data every second. Trickle-Power power saving capability allows the unit to operate only a fraction of the time. Push-to-Fix permits users to have a quick position fix even when the receiver was only just switched on prior to the positioning.

2. Unpacking

Congratulations on your purchase of the 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 **GPSlim240** Wireless Bluetooth GPS Receiver 1 piece
- 2-piece Car Charger 1 set
- CD containing the User Guide 1 piece
- HOLUX **GPSlim240** Pocket User Guide 1 set
- Warranty Card 1 set

* Accessories

- USB Data Cable (for data transmission between GPS receiver and computer)
- Travel Charger
- Travel Adaptor

3. Main Features

In addition to providing a set of user-friendly functions, **GPSlim240** WELL suits integration with other systems.

- Comes with SiRF Star III for low power consumption.
- Extremely fast Time To First Fix (TTFF) and re-acquisition supports 20 Channels. *①
- 200,000 effective correlations for rapid acquisition and reacquisition of satellite signals. *①
- Comes with built-in WAAS/ EGNOS demodulator to enable position fixes under low signal level conditions, removing the need for any additional hardware. *①
- Completely compatible with the Bluetooth Serial Port Profile (SPP).
- Low power consumption. Comes with built-in interchangeable Lithium-ion battery for up to 8 hours of use without having to use additional power sources.
- Comes with either Continuous Mode or Power Saving Mode selectable as required.
- Comes with a multi-purpose expansion terminal to connect to non-Bluetooth-enabled devices.
- Backed-up by a built-in rechargeable Lithium-ion battery to store positions and RTC data to enhance TTFF.
- Supports NMEA0183 v2.2 data protocol.
- 3-color LED to show device status.
- Light, slim, and compact.
- Automatically protects the battery from overheating due to overcharging.
- Improved calculation algorithm enables fast position fixes even under conditions of low signal level.
- Flexible design. Easily integratable with car navigation, marine navigation, fleet management, AVL, personal navigation, tracking systems, and other cartographic services.

4. Technical Specifications

4.1. General Specifications

- GPS Chip: low power consumption SiRF Star III Chip.
- Channels: Tracks up to 20 satellites. *①
- Satellite broadband: 1 Hz.
- Receiver signal: L1, C/A Code.

4.2. Acquisition Time (Average) *①

- Reacquisition: 0.1 second.
- Cold start: 42 seconds.
- Warm start: 38 seconds.
- Hot start: 1 seconds.
- Automatically refreshes position every second.

4.3. Accuracy *①

- Typical positioning: 5 – 25 m CEP (without SA).
- Differential positioning:
 - With synchronous satellite EGNOS/ WAAS:
 - Position error:
 - < 2.2 m, horizontal 95% of the time.
 - < 5 m, vertical 95% of the time.
- Velocity: 0.1 m/ sec.
- Time: 1 μ sec sync GPS time.

4.4. Usage *①

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

4.5. Power Supply

- External power source: 5V DC +/- 5%
- Battery:
 - Main battery: Rechargeable Lithium-ion-ion battery.
 - Backup battery: Rechargeable 3V Lithium-ion-ion battery for RTC and satellite data storage.
- Working current: 75-85 mA (under Continuous mode)
- Battery life: Up to 8 hours under full battery and Continuous mode.

4.6. Output Protocol and Interface

- **Output Protocol:**
 - I. NMEA 0183 v2.2 protocol
 - Baud rate: 38400 bps
 - Data bit: 8
 - Parity: None
 - Stop bit: 1
 - II. Output Format:
 - ✓ GPGGA (once per second).
 - ✓ GPGSA (once per 5 seconds).
 - ✓ GPGSV (once per 5 seconds).
 - ✓ GPRMC (once per second).
 - ✓ GPVTG (once per second).
 - ✓ Choice of GLL or SiRF binary format.
 - III. Datum: WGS84.
- **Input/ Output Interface:**
 - I. Compatible Bluetooth Serial Port Profile (SPP): up to 3 meters (without obstacles).
 - II. Output port: Mini USB Type B connector.
 - III. Choice of compatible accessories
 - ✓ 1.5 meter USB cable

4.7. Dimensions and Weight

- Dimensions: 64 (W) × 22(L) × 15(H) millimeters
- Weight: < 35 grams
- Operating temperature: from -10°C to + 60°C (when not battery charging); from 0°C to 45°C (when battery charging).
- Storage temperature: from -20°C to +70°C
- Operating humidity: 5% to 95% (without condensation)

4.8. Other Functions

- Minimum signal strength: -159 dBm. *①
- Antenna Type: Built-in patch antenna.
- LED display: Built-in 3 LED display to indicate battery status, Bluetooth data transfer, and GPS status

5. Getting Started

Step 1. Battery Charging

Before using the GPS receiver for the first time charge the battery until the battery LED indicator goes out. This indicates that the battery is fully charged.

Connect Power Supply

Connect the power cable to the power socket of the Mini USB

Charge Battery

Note: This power cable is strictly for battery charging. It cannot be used for data transfer.

Battery indicators:

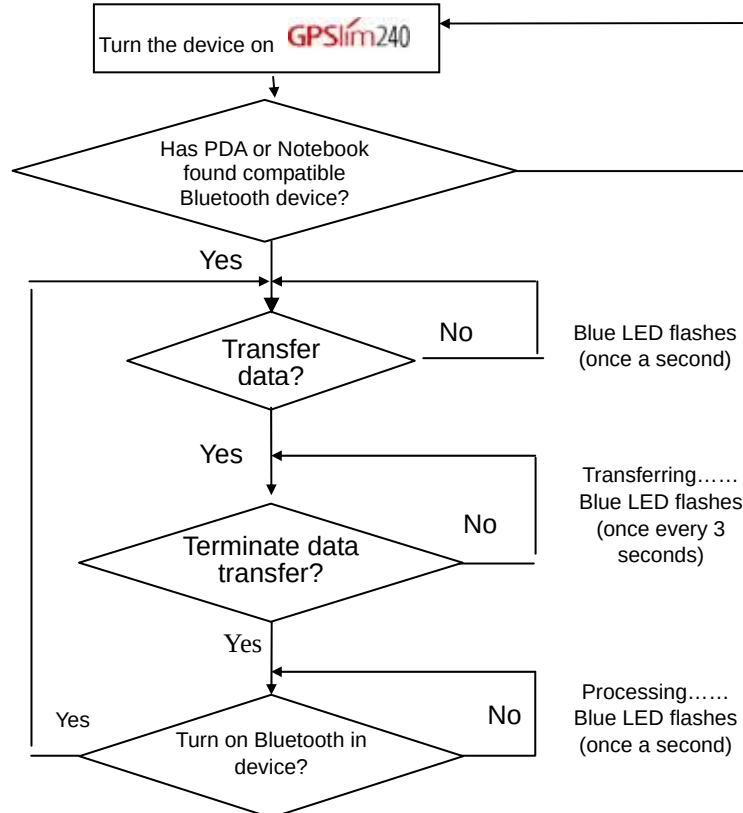
Low Battery	-----	Red LED
Charging	-----	Green LED
Charging Complete/ Battery Full	-----	LED unlit



Mini USB power socket

Step 2. Power Up

Bluetooth Indicators -



Note:

1) To make the connection, some PDAs require turning the Bluetooth feature OFF and then ON.

2) For use on Notebooks with Bluetooth feature.

Fixing A Position -

For strong signal strength, activate the device in an unobstructed space.

GPSlim240

Turn the device on **GPSlim240**

Turn the device off **GPSlim240**

Positioning ---

Orange LED is on

Power on/ off ---

Orange LED will go out

Positioning Completed ---

Orange LED will flash



5.1. Nomenclature

1). The features of **GPSlim240** are as shown in Figure 2.



(Figure 2)

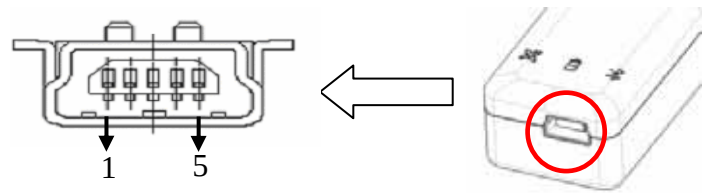
2). LED indicator status

Symbol	Color	Status		Description
 Bluetooth	Blue	Flashing	Once a second	Searching for Bluetooth device
			Once a second	Hibernation mode
			Once every 3 seconds	Transferring data
 Battery	Red	Lit up		Low battery
	Green	Lit up		Charging
	None	Not lit up		Normal
 GPS	Orange	Lit up		Positioning
		Flashing		Position set

3). Power switch:

- a: Power on – Orange light comes on.
- b: Power off – Orange light goes out.

- 4). Power socket and data port as shown in Figure 3
Connector Type: 5-pin mini USB Type B female connector
Position: See Table 1

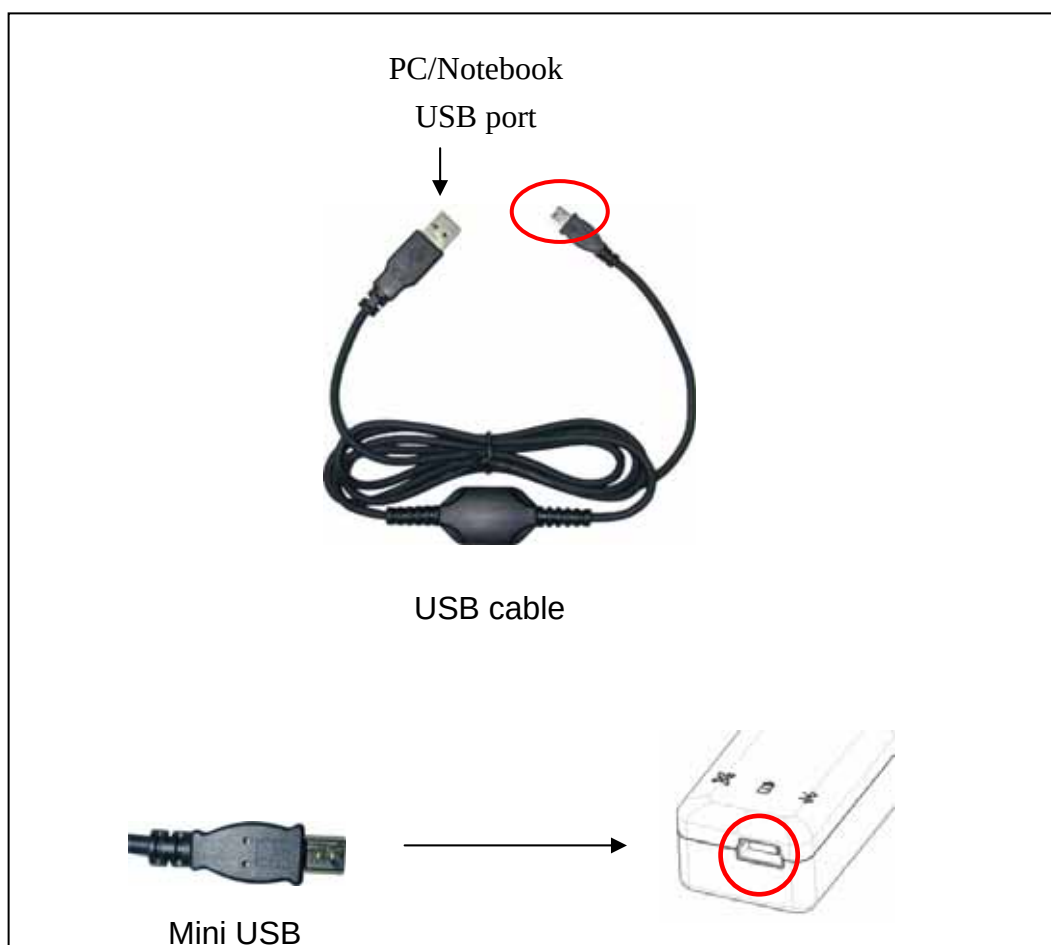


(Figure 3)

Table 1

Position	Name	Signal and Description
1	GND	Power and signal ground.
2	VOOUT	Unregulated voltage output. 3.7 to 3.3V / < 100mA.
3	TXD	Data transmission. GPSlim240 To transmit data to peripheral devices. (CMOS 3.0V Level)
4	RXD	Data receipt. From peripheral devices to GPSlim240 . (CMOS 3.0V Level)
5	VCHARG	Positive terminal of the DC adaptor that powers the internal charging circuit of Lithium-ion battery. Input power supply - 5.0V +/- 5%@1A.

- 5). **GPSlim240** optional accessories and connector description are as shown in Figure 4



(Figure 4)

5.2. Bluetooth Installation

Follow the instructions below to link your **GPSlim240** Bluetooth GPS Receiver to a PDA (Personal Digital Assistant).

1. Activate “**Bluetooth Manager**” on your pocket PC. Tap **New**, **Connect**, to access other devices via Bluetooth.



2. Search Bluetooth device “**Holux GPSlim240**”. Select **Explore a Bluetooth device**, and tap **Next**.



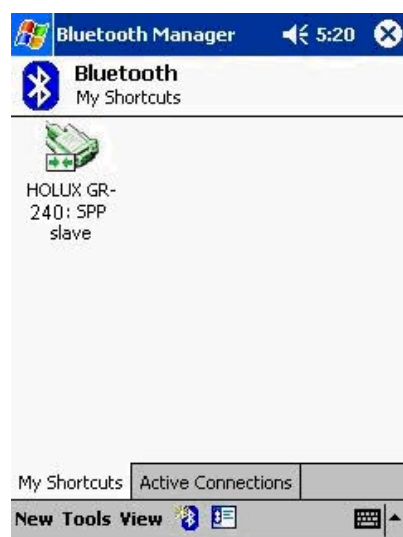
3. Search for the Bluetooth device. Tap **Next**, and then select **Holux GPSlim240**.



4. To establish Bluetooth link, select **Connect to SPP Slave**, tap **Next** and then **Finish**.



5. Tap **Holux GPSlim240: SPP slave**, and select **Connect** from the dropdown menu. The installation has been completed.



5.3. Installing the Testing Program

You can install the GPS viewer program from the supplied CD to check current positioning and satellite signal reception.

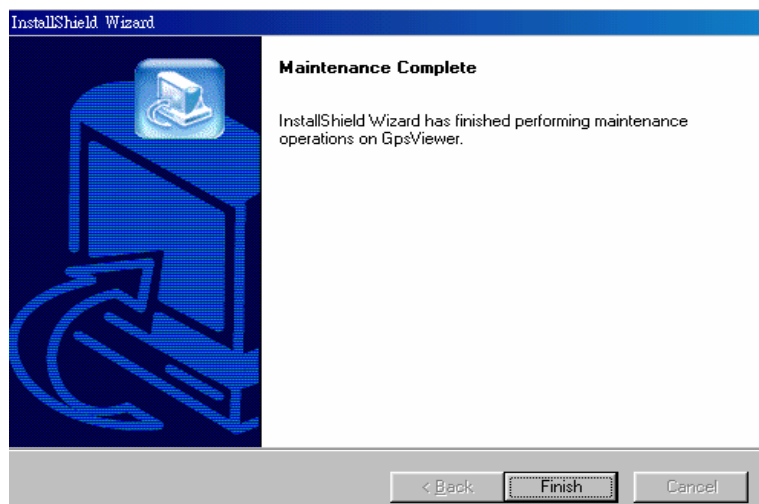
To install Microsoft Active Sync to your PC, refer to your Pocket PC manual for installation procedures.

1. Connect your Pocket PC cradle to the UART port on your PC. The Microsoft ActiveSync will detect your Pocket PC automatically.

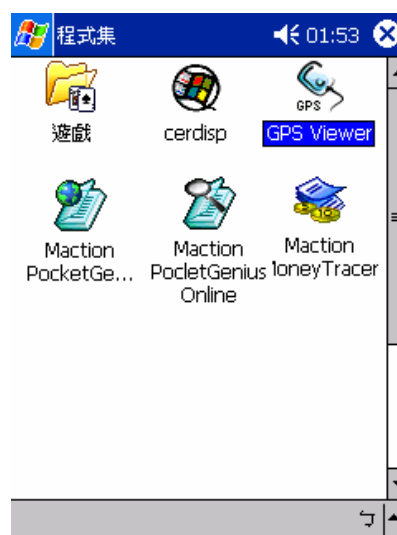
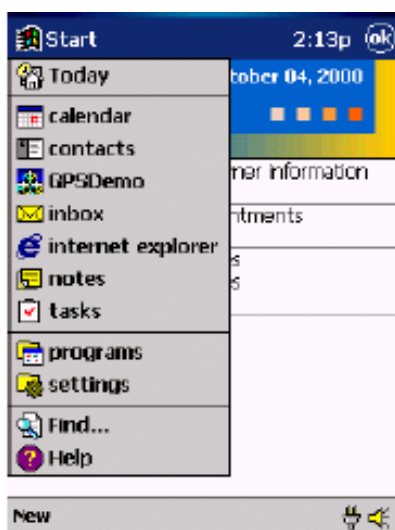


2. Double-click the **GPSViewer.exe** on your PC. The Holux GPSViewer.exe program will install automatically.





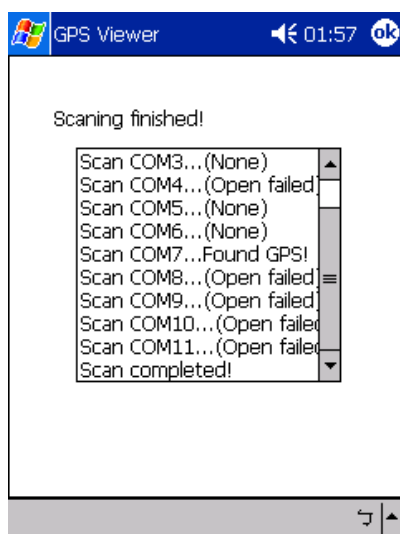
3. Click **Start, Programs, GPSViewer** on your PDA.

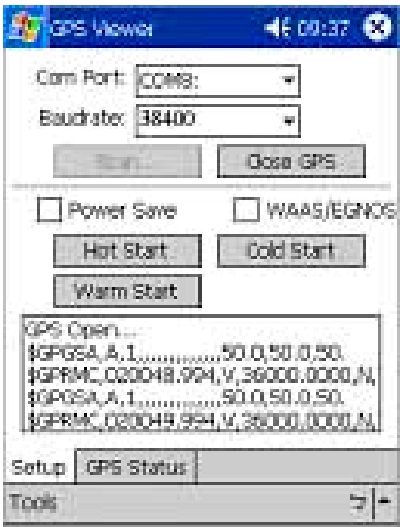


4. The following screen appears after GPSViewer is opened.

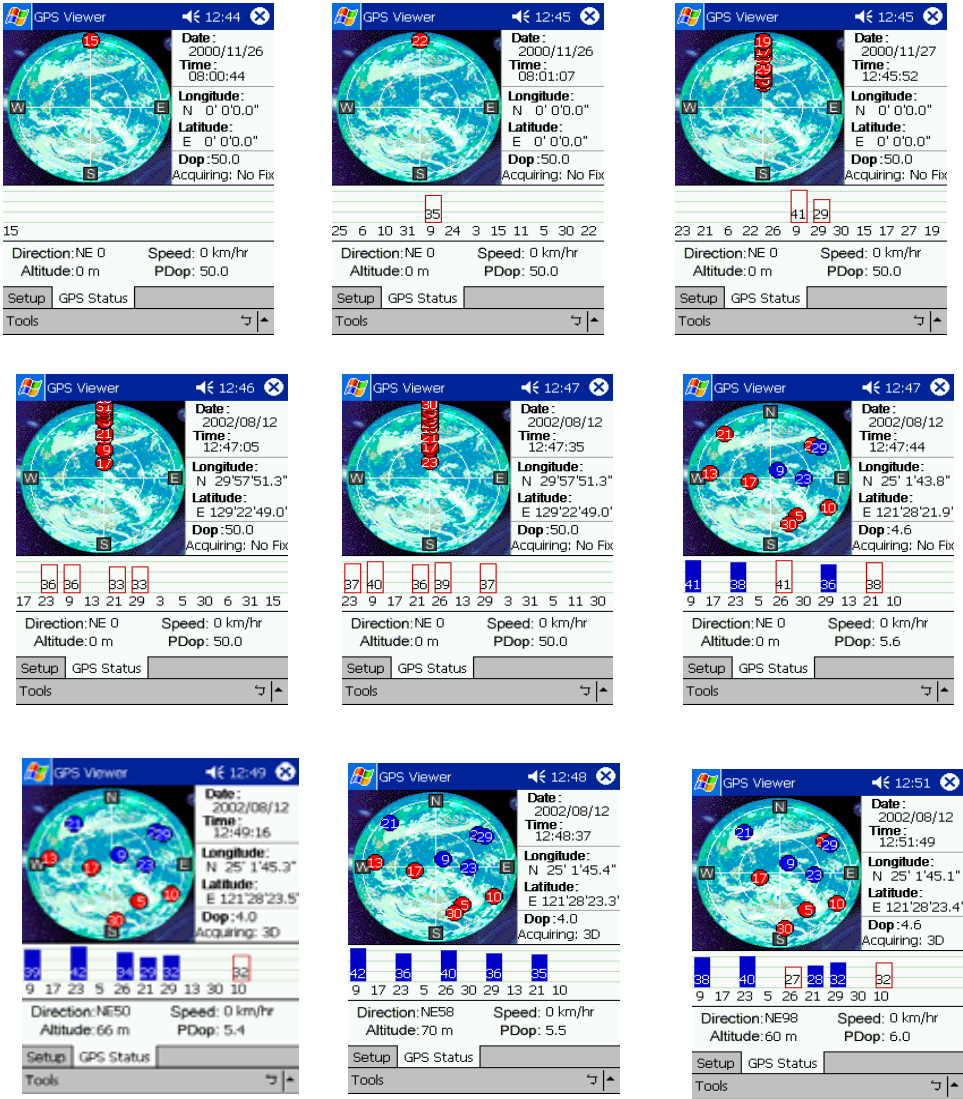


5. Set Baud rate to 38400. Click the **Scan** button to scan for COM Port. Select your COM Port (COM1~COM10), and click **Open GPS**.





6. Select **GPS Status** to view the satellite diagrams as shown below.



6. Accessories

To cater to customers different uses and needs, **GPSlim240** comes with a range of accessories. When using these accessories, your device will not only have the capability to transfer via Bluetooth, but **GPSlim240** will also connect and transmit signals to PDAs, Notebooks and other devices.

* Accessories

- USB Data Cable (for data transmission between the GPS receiver and the computer)
- Travel Charger
- Travel Adaptor

7. USB Cable Driver Installation

The selected USB cable, which complements the **GPSlim240** GPS receiver requires the driver to be installed.

The following steps detail the installation of the USB cable.

7.1. System Requirements

CPU: IBM, Pentium and higher, or other compatible systems

Memory: At least 16 MB

Operating System: Windows 98/ Me/ 2000/XP

7.2. Installation

- 1) Copy **GPSlim240**->English->USB Driver->Win98_2k_XP USB-V2.1.0.exe from the CD to the hard disk.
- 2) Execute USB-V2.1.0.exe
- 3) Connect the **GPSlim240** USB cable to the computer. The system will automatically search for the plug-and-play device and then automatically start the installation. This step completes the entire USB Driver installation.

7.3. Important Notes

- 1) After the driver installation has been completed, verify the COM port at which the **GPSlim240** USB was installed.

- a. Click **<Start>** menu, select **<Setting>**, then enter **<Control Panel>**
- b. In **<Control Panel>** select **<System>**, then **< System Properties>**
- c. Select **< Device Manager >**
- d. Select **<Ports (COM & LPT)>** and check if the **<USB to Serial Port (COM#)>** is found. If installation is completed, the product can now be used.

"##" represents the Virtual COM Port that was created by the computer. Before using the navigation software, please ensure that the port settings on both the navigation software (usually COM 1) and the computer are identical, so as to correctly receive the data.

- 2) Users are strongly discouraged from attempting to operate the system while driving.
- 3) Should this system be used in vehicles, the GPS position needs to be established while the vehicle is stationary.
- 4) GPS signals are incapable of penetrating solid objects that are non-transparent. The signals will be also be affected by surface cover such as tall buildings, tunnels, elevated expressways, forests etc., or weather conditions such as overcast and rain. If the vehicle is poorly insulated against heat and contains metal parts, GPS signals will not be able to penetrate.
- 5) All wireless communication devices such as cell phones, or traffic police speed detectors etc. can interfere with the reception of GPS signals, resulting in unstable signals.

8. Warranty

This warranty applies to **GPSlim240** components manufactured or sold, and to technological services rendered by HOLUX Technology Inc., (also known as HOLUX). The warranty covers a period of one year from the date of purchase (as stated on the receipt). If there is any failure of this product within this period resulting from normal usage, the device will be replaced at no charge to the customer.

- As **GPSlim240** has a built-in Lithium-ion battery, please avoid leaving the device in high temperatures under direct sunlight for an extended period of time.
- The built-in Lithium-ion-ion battery can only be replaced by HOLUX. Customers will bear full responsibility for the use of other unapproved products and the warranty does not cover such acts.

9. Troubleshooting

Problem	Reasons	Method
No signal output	Either no GPS signals or weak signals. Signals blocked by tall buildings, vehicle roof, or anti-heat film on the vehicle windows.	Place GPSlim240 outdoors.
Unable to find GPS module	Improper installation or battery is flat.	Check GPSlim240 's installation or ensure that the battery is not flat. The battery LED should not be lit. (orange LED should light)
Unable to connect to Bluetooth	Improper installation	Refer to Section 5.2 to re-install.
Unable to open COM port	GPSlim240 is not properly installed, or COM port is currently being used.	Ensure proper installation GPSlim240 , or terminate the use of the COM port, or check if other installations require password.
No signal	The PDA may go into power saving mode after a few minutes of inactivity. This will in turn close the COM port.	Disable the power saving mode, re-execute the PDA to reopen the COM port.
	Weak or no GPS signal.	Use GPSlim240 outdoors.

*① : Cit. SiRF's original chipset spec.

FEDERAL COMMUNICATIONS 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 or more 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.

CAUTION:

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the 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.

RF exposure warning

The equipment complies with FCC RF exposure limits set forth for an uncontrolled environment.

The equipment must not be co-located or operating in conjunction with any other antenna or transmitter.

English: This equipment is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

GPSlim240 Bluetooth GPS Receiver

- 20 parallel satellite-tracking channels for fast acquisition and reacquisition.
- Build-in 600mAh rechargeable Lithium-ion battery for at least 8 hours operation.
- Compatible with Bluetooth Serial Port Profile (SPP) completely.



Specifications

- | | |
|---|---|
| <ul style="list-style-type: none">● Tracks up to 20 satellites.● Receiver: L1, C/A code.● Update rate: 1 HZ.● Acquisition time:<ul style="list-style-type: none">Reacquisition 0.1sec. averaged.Hot start 8 sec. averaged.Warm start 38 sec. averaged.Cold start 42 sec. averaged.● Position accuracy:<ul style="list-style-type: none">✧ Non DGPS(Differential GPS)<ul style="list-style-type: none">Position 5-25 m CEP without SA.Velocity 0.1 m/sec.Time 1 μ sec sync. GPS Time.✧ EGNOS/WAAS:<ul style="list-style-type: none"><2.2 meters. Horizontal 95% of time<5 meters, vertical 95% of time.● Dynamic Conditions:<ul style="list-style-type: none">Altitude 18,000 meters (60,000 feet) max.Velocity 736 meters / sec. (1000 knots) max.Acceleration ± 4 G, maxJerk 20 meters/sec., max.● Antenna type: Patch antenna● Minimum signal tracked: -159dBm● Dimension: 64 × 22 × 16mm.● Weight : 40 g.● On/Off switch : Slide Switcher | <ul style="list-style-type: none">● LED function: Bluetooth, Navigation Update and Battery / changer status Indication● Operating temperature: 0 °C to + 40 °C.● Storage temperature: -20 °C to + 70 °C.● Operating humidity: 5% to 95% No condensing● Protocol and interface:<ul style="list-style-type: none">✧ NMEA output protocol: V.2.2 Standard:<ul style="list-style-type: none">Baud rate: 38400 bpsData bit: 8Parity: NStop bit: 1Format: GGA,GSA,GSV,RMC,VTGOptional:<ul style="list-style-type: none">Format: GGL, SiRF binary✧ Interface:<ul style="list-style-type: none">Compatible with Bluetooth devices with Serial Port Profile (SPP)<ul style="list-style-type: none">• Bluetooth™ version 1.2 compliant• Bluetooth™ Class 2 operation (up to 10 meter range)• Frequency : 2.400 to 2.480 GHz• Modulation: FHSS / GFSK• RF channels: 79 |
|---|---|



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