Bluetooth GPS Receiver

A10FN

Users Manual

Contents

Caution

Read before you start to use:

? Global Position System (GPS) is obtained by American Ministry of National Defense, and they have got the full responsibility about the preciseness and the maintenance. Any changes may cause the capacity and preciseness of GPS to differ.

? If you use this device inside buildings, tunnels, or with any huge objects beside you, the GPS signals might be cut-off or disturbed. **This is not a malfunction of the product**.

? The receiver operating temperature is located between -10℃~70℃. For the safety and lifetime of the Li-ion battery usage, do not put this device in an overheated environment.

Quick Start

0.1 Inside the Package

Thank you for purchasing our GPS product, we wish you have the best experience when using the product. Please open the package and check if everything in the list exists.

A. Basic package

1. Mini Solar Bluetooth GPS Receiver A10FN x 1
2. High capacity rechargeable lithium-ion battery x 1
3. Manual/software CD-Rom x 1
4. Car charger x1
5. AC adaptor x1

0.2 Connect to your PC/PDA

A. Push the power button for 2 seconds to power on the Bluetooth GPS receiver.

B. Put the Mini Solar Bluetooth GPS Receiver in a place (open to the sky) to receive the GPS signal.

C. Turn on the power of your PC/PDA.

D. Search for Bluetooth devices by your Bluetooth Manager on your PC/PDA. The GPS device requires no passkey for connection, but some Bluetooth systems are forced to enter a passkey, please use [0000] in such a case.

E. Connect to the Mini Solar Bluetooth GPS Receiver and then make sure baud rate set at 9600 bps (standard) in your application program.

F. In first use of this Mini Solar Bluetooth GPS Receiver, we strongly recommend to bring the Bluetooth GPS receiver **outdoors to get an open sky view at least 15~20 minutes.**

1. Introduction

The Mini Solar Bluetooth GPS Receiver is a total solution for a GPS receiver. The high capacity rechargeable lithium-ion battery, GPS antenna, Bluetooth transmit/receive system are all included. It is designed with the most up to date SiRF starIII chip solution. You can use this Mini

Solar Bluetooth GPS Receiver as a vehicle's navigator, security system, geographic measurement, investigations or agricultural purposes. The Mini Solar Bluetooth GPS Receiver operation requirements are a power supply and an open sky-view. This Bluetooth GPS Receiver can communicate with other electronic devices by Bluetooth interface. Built-in Flash Memory can save satellite information and do almanac refresh periodically. This will shorten Time To First Fix (TTFF).

This is much longer than competitors'. Lithium-ion battery can be re-charged reasonably under nature or artificial sunlight no matter if the A10FN receiver is turned on or off. Most of the time, you don't need a charger!

The Mini Solar Bluetooth GPS Receiver is designed the have high position accuracy. It will update the satellite position every second. The Mini Solar Bluetooth GPS Receiver auto-locating feature is capable of automatically determining a navigation solution without intervention. However, acquisition performance could be interfered and do cold start if the receiver was involved with and of the following events:

1) First use

2) The GPS receiver is not in use for more than 3 months or transportation over distances further than 500 kilometers.

3) Failure of the internal memory battery without system standby power.

4) Change Li-ion battery

Features and Functions

1) **Total solution in power management.**
   Unique Solar Cell re-charging design (patent protected).
2) Green solution in wireless GPS receiver application
   Always charge your lithium-ion battery under nature or artificial sunlight. However, if you need to, use your car charger or AC adaptor
3) Considerate LED/switch button design
   Easy look, easy touch! one-touch button design keep your hand free
4) Act as WARM/HOT start with built-in battery
   Shorten TTFF effectively.
5) Automatically almanac/ephemeris update in flash memory
   Programmable flash utility to do refresh on satellite orbit data information every 10 minutes.
6) Smart power management solution.
   GPS Device will automatically shutdown when Bluetooth is un-detected over default time.
7) Compatible with Bluetooth Serial Port Profile (SPP).
8) Easy to combine with the vehicle, voyage navigation, vehicle management, AVL, personal navigation, tracking system and map applications.

Technical Specification

3.1. General

Core Module: Built-in high performance SiRF starIII chipset.

Satellite channel number: all-in-view 20 parallel satellites;

GPS frequency: 1575.42 MHz

Receiver: L1, C/A code.

Antenna type: Built in passive patch antenna

External connector: MMCX (standard)

3.2. Acquisition Time

Refresh: 0.1 sec

Cold start: 41 sec (average, normally occurred in first use of GPS receiver life)

Warm start: 37 sec (average)

Hot start: 1 sec (average)

Position information update period: 1 sec (average)

3.3. Precision/ Accuracy

Position accuracy: <10M (2D RMS) or <7M(WAAS enabled)
Velocity: 0.1 m/sec, without SA
Time: 1ms synchronized to GPS time

3.4. Power management

A) Applied External Voltage: 5V DC +/- 5% (via charge cable)

B) Power system:

Main battery: Rechargeable Lithium-ion 3.7V battery, as main power.

3.5. Protocol &Interface

A) Output format

NMEA 0183 V3.01, ASCII (default：GGA，GSV，GSA，RMC，VTG)

Baud rate: 9600 bps (standard)

Data bit: 8

Parity: None

Stop bit: 1

B) NMEA code support:
GGA (1/sec)
GSV (5/sec)
GSA (1/sec)
RMC (1/sec)
VTG (1/sec)

C) Compatible with Bluetooth devices with Serial Port Profile (SPP)

- Bluetooth version 1.1 compliant
- Bluetooth **Class 2** operation (up to 10 meter range)
- Frequency : 2.400 to 2.480 GHz
- Modulation: FHSS / GFSK
- RF channels: 79
- Input Sensitivity: -80dBm
- Output Level: 4dBm

3.6. Dimension/Environment Specification:

Dimension size: 52(W) ×82(L) × 21(H) mm

Weight: < 70g(battery excluded)

Operation temperature: -10°C to + 70°C

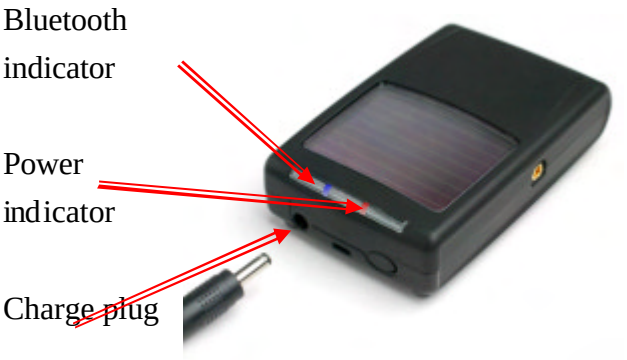
Storage temperature: -40°C to + 85°C

Operation humidity: 5%R.H. to 95%R.H. no compressed

Start to Use

Step 1: Charge the battery

Please fully-charge the battery with at least 4 hours before you use the GPS receiver first.



Connect the charge cable to the power plug at the bottom and start charging

Power Indicator:

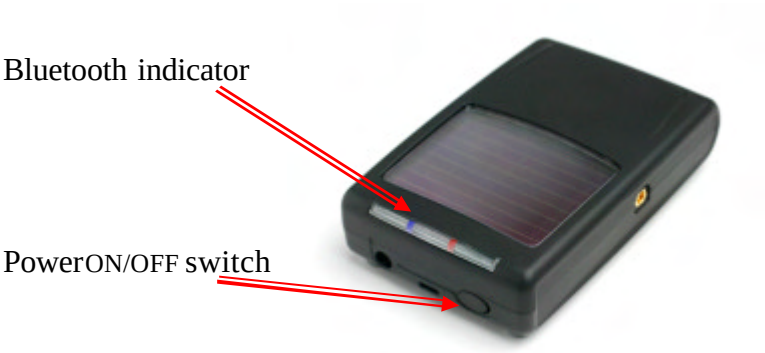
(1)**Green** LED blinking

→Power low/charging (see below detail described)

(2) **Green** LED stop blinking & lights up

→Charge completed (LED will vanish when cable away)

Step 2: Power on, connect with Bluetooth



Push the power switch 1~2 seconds to Power on

Bluetooth indicator:

(1) Bluetooth host searching:

→3 pulses per second

(2) Bluetooth host connected:

→1 pulse per second

Note: Some PDAs need to restart the Bluetooth function if you need to re-connect.

Step 3: GPS function test

In the first use of this Receiver, we strongly recommend to bring your Bluetooth GPS Receiver outdoors to view an open sky at least 15~20 minutes for almanac update.

Power on the A10FN Bluetooth GPS Receiver

GPS Acquisition Fix Indicator

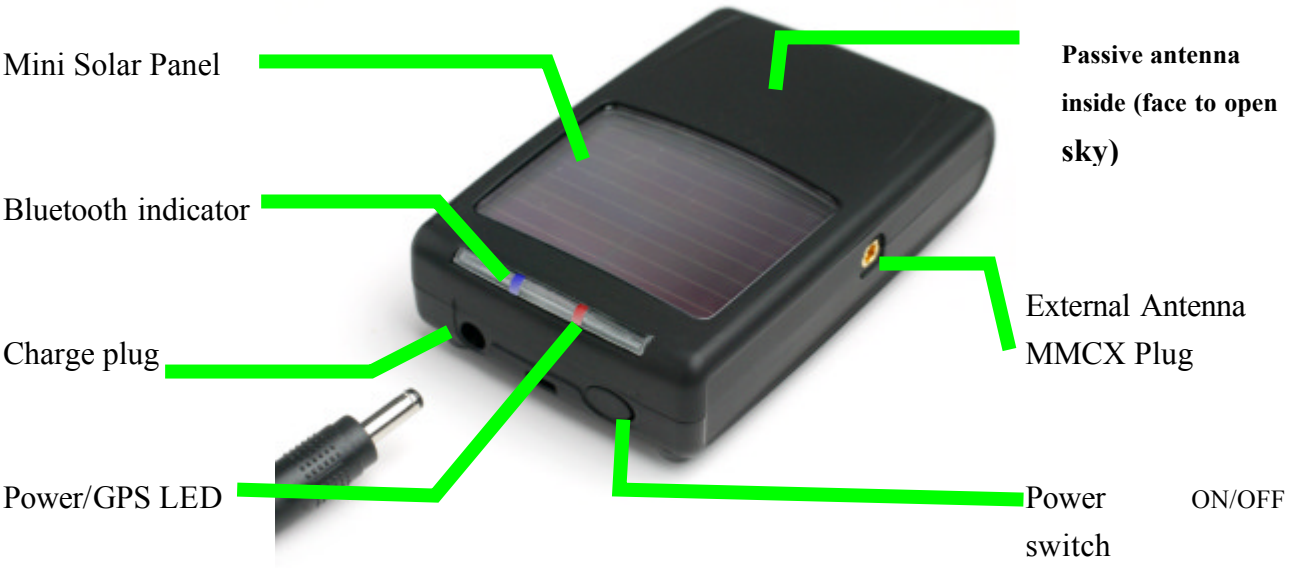
(1) Red LED lights up continuously: Inquiring

(2) Red LED blinks (1 pulse/3 sec): Position fixed

Software/Hardware Usage

5.1. Hardware description

1). Mini Solar Bluetooth GPS Receiver device function description is shown as below:



2). LED display description

Symbol	Color	Behavior	Description
Blue tooth Indicator	Blue	Blinking in 3 pulses/sec	Searching for Bluetooth host
		Blinking in 1 pulse/sec	Connected with host& communicating
Power/GPS Acquisition LED (Red/Green combined)	Green	Blinking with 3 sec interval	Battery low
	Green	Blinking with 2 sec interval	Charging
	Green	Light up	Charge completed (LED off when cable away)
	Red	Light up continuously	Positioning
	Red	Blink in 1pulse/ 3secs	Position fixed

3).Power ON/OFF：

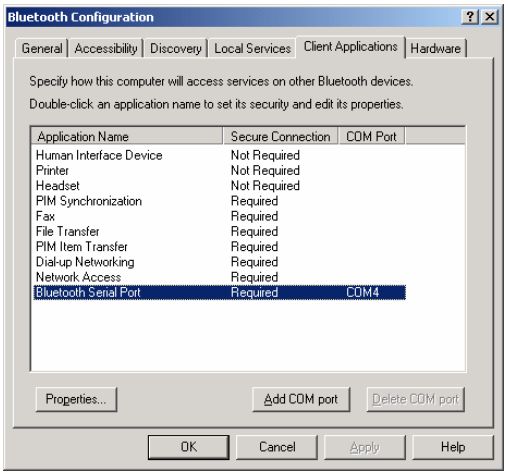
Push power switch 1~2 seconds to switch on/off the power.

5.2. Configuration setup with PC connection

Here is a sample to show you how to connect the Bluetooth GPS Receiver with your PC, how to install the software and basic functionality test.

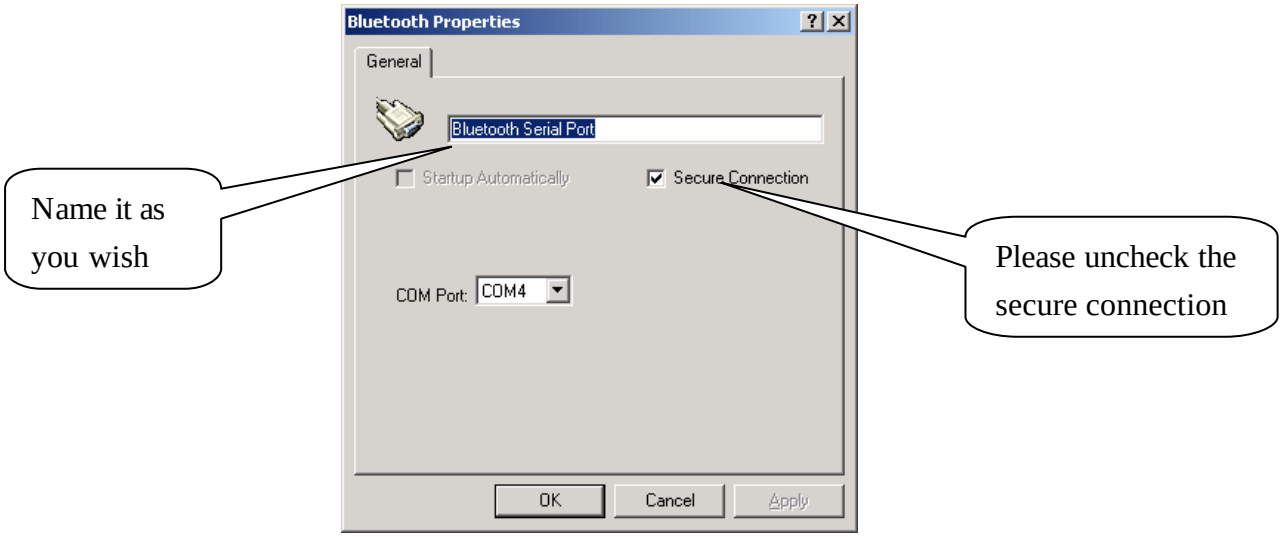
1) First, select a PC with a Bluetooth interface. Or you can purchase Bluetooth adapter for your PC. (A39FH, A40FH A70FF)

2) Check your Bluetooth manager if there is any configuration of Bluetooth Serial Port Profile like this:



Note: this sample is for your reference only. The screen may vary between different models of Bluetooth Manager software.

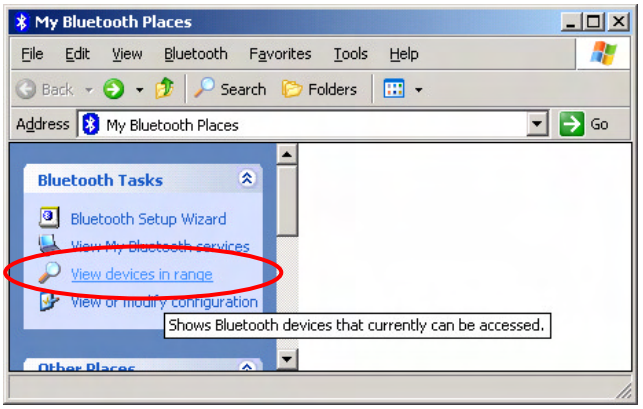
3) If not found, please create a Bluetooth serial port yourself. The configuration should be like this:



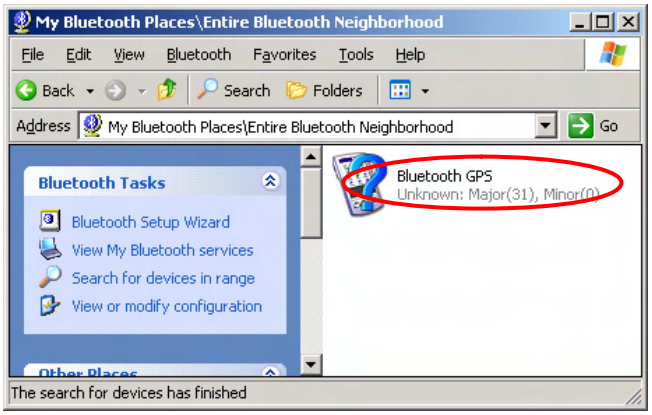
4) If there is already one, please check the content. Some Bluetooth device will enable the secure connection. Please refer to the configuration as above to uncheck it.

5) Power on your GPS Receiver. If the battery is ready, you should see 2 LEDs light up: the blue LED blink 3 times/sec means Bluetooth is activated and waiting for connection. Another static red LED shows the GPS module is started and is inquiring position information.

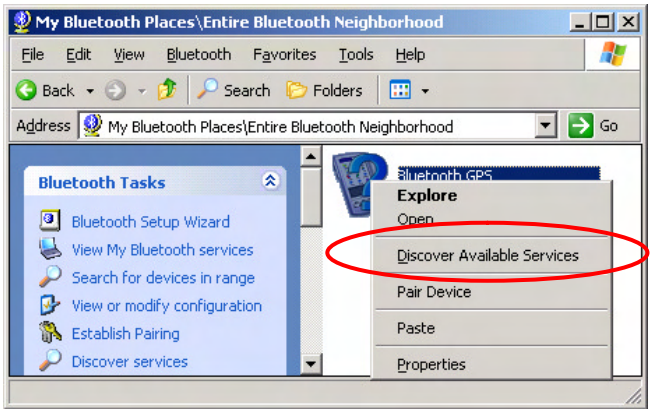
6) Open your Bluetooth places; you should see nothing while using firstly.



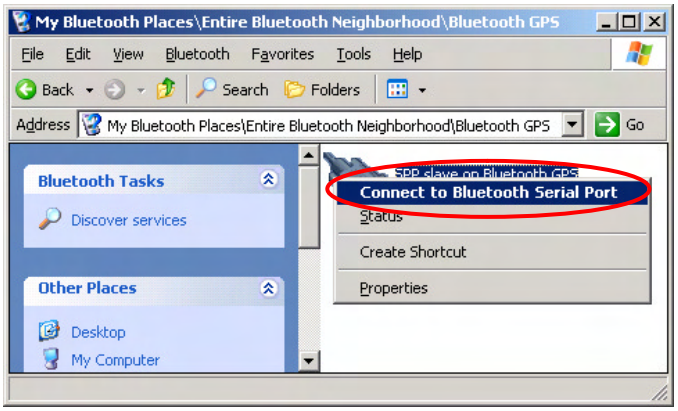
7) Click the [View devices in range] and you should find a [Bluetooth GPS] show as below:



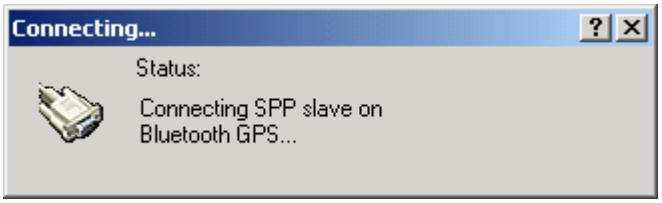
8) Right click on the icon, select the [Discover Available Services]:



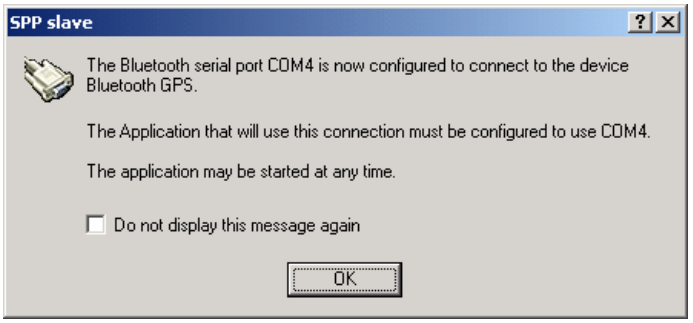
9) You should find the service SPP slave, right click and select [Connect to Bluetooth Serial Port]:



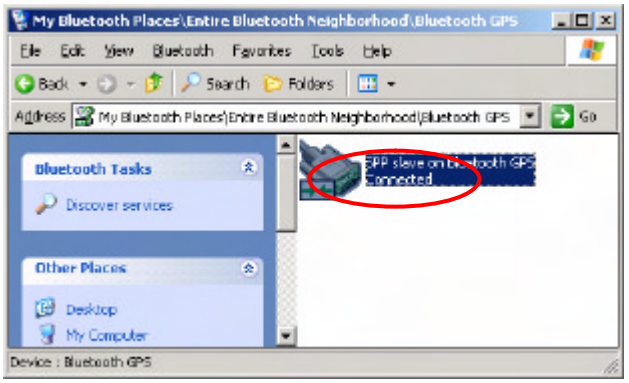
10) The follow message will show:



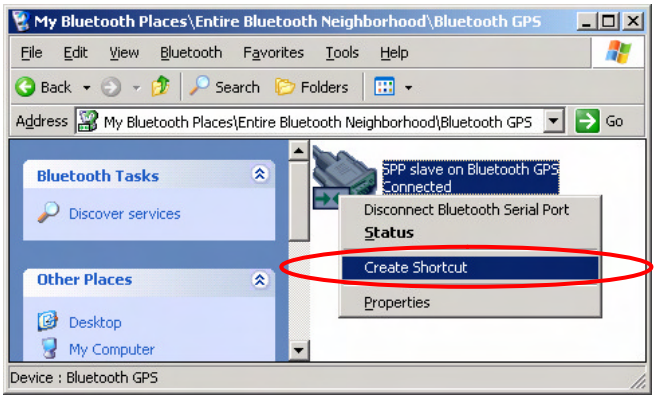
11) And the connection successful message:

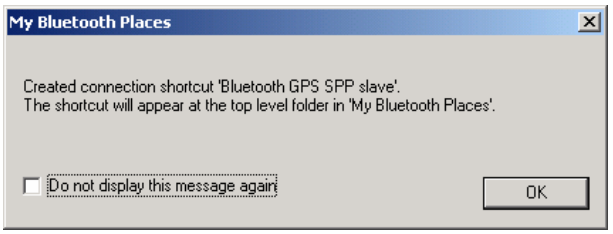


12) Back to the Bluetooth service view, you should see the icon changed to [Connected]:

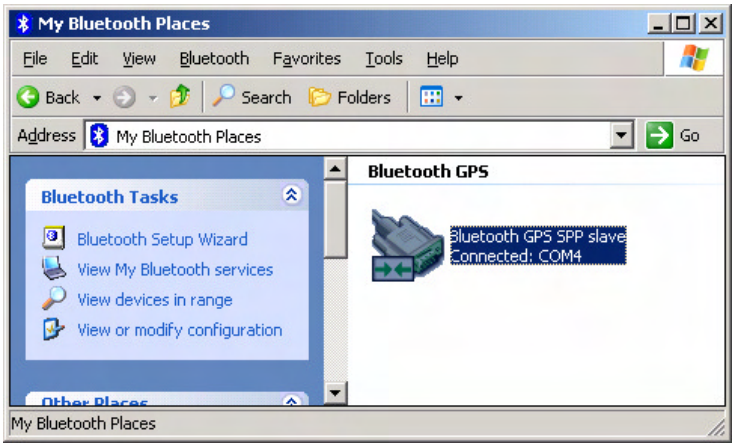


13) If you wish to use the connection more easily next time, you can create a shortcut for this:





14) You will see the shortcut you just created:

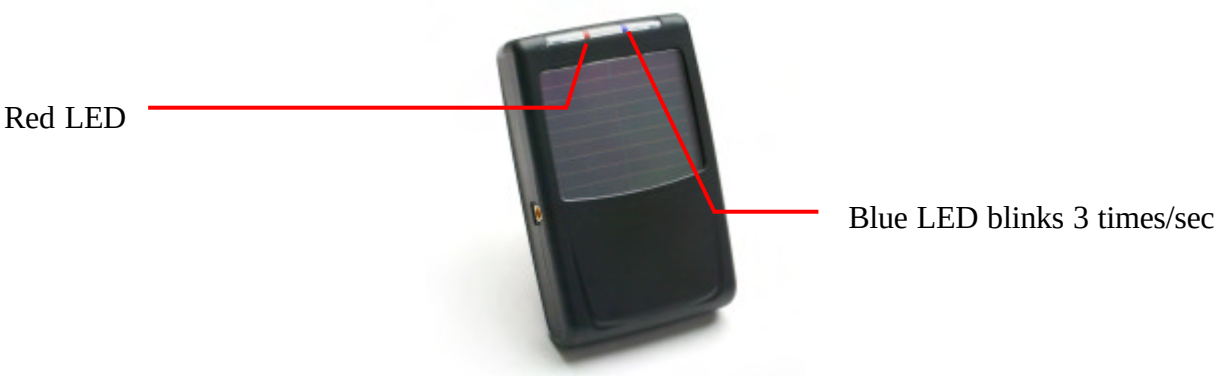


5.3. Configuration setup with PDA connection

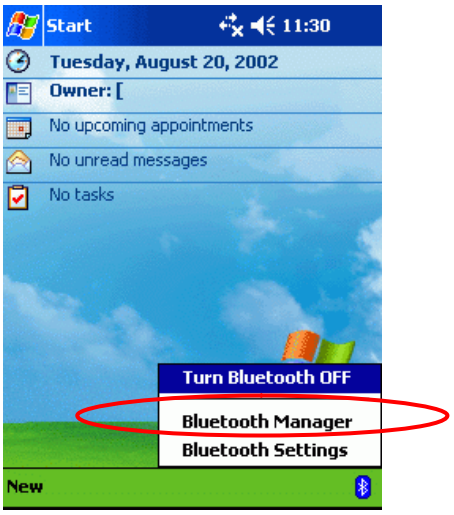
Following will show how to configure the Bluetooth connection on PDA. It may be different from other PDA models.

1) Power on your PDA and the Bluetooth host.

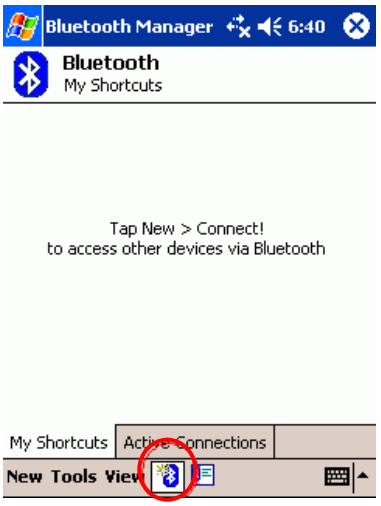
2) Power on the GPS Receiver. If the battery is ready, you should see 2 LEDs indication: the blue for Bluetooth blinks 3 times/sec. It means the Bluetooth module is activated and waiting for connection. The red LED for GPS, means the GPS module is activated and is inquiring GPS signal.



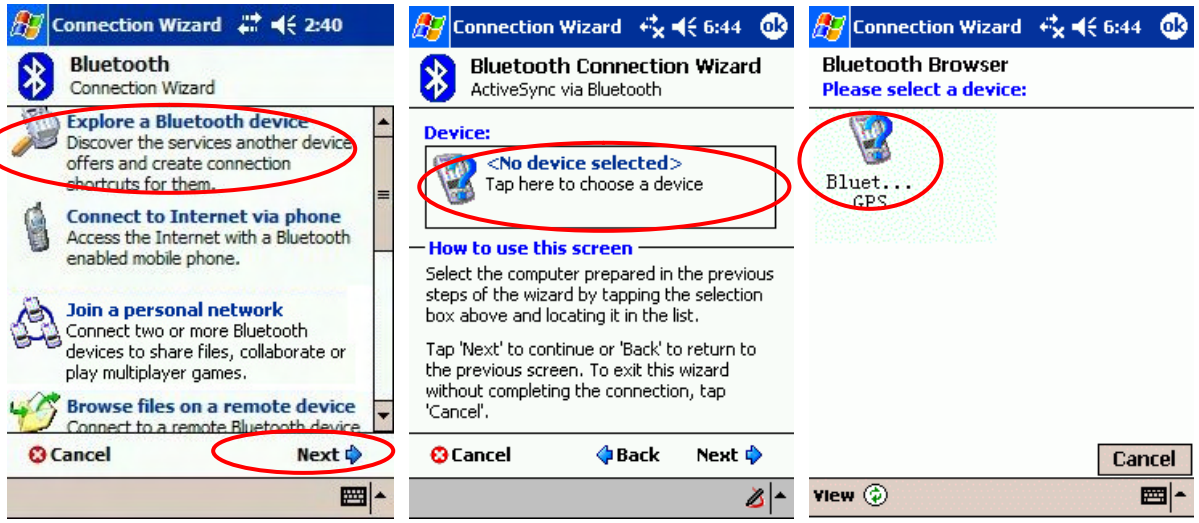
3) See the screen, click Bluetooth mark at bottom, and [Bluetooth Manager] as below:



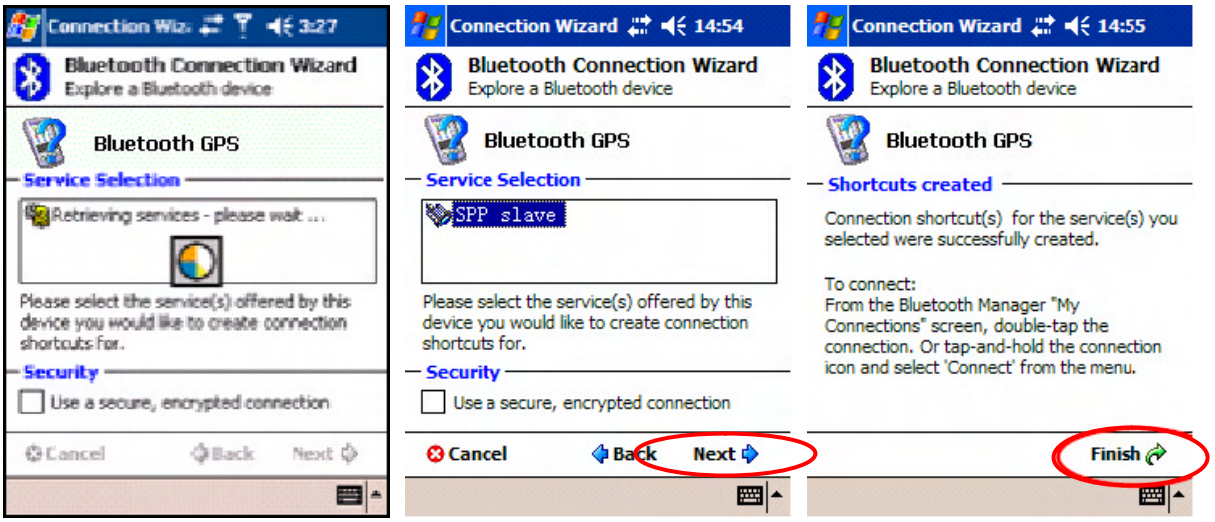
4) If this is your first time to use Bluetooth GPS, click the Bluetooth mark at the bottom as below:



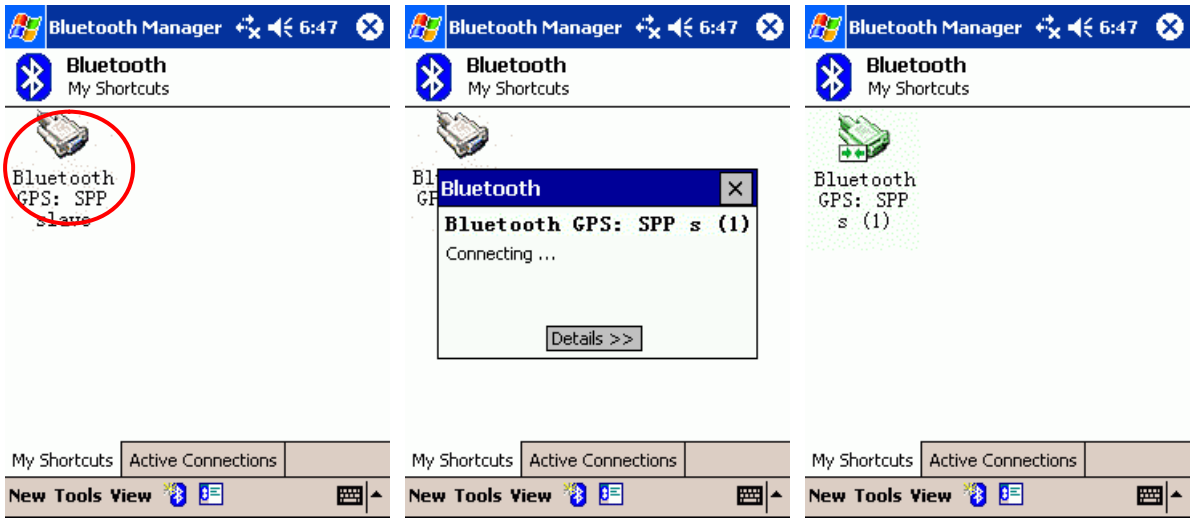
5) Then the Bluetooth connection wizard will show up, select [Explore a Bluetooth device] and click [Next]. In the next page, click the box to search for Bluetooth devices. Your PDA will find the Bluetooth GPS and show it in the window. Click the icon to search for service.



6) Back to the [Explore a Bluetooth device] as below. Click [Next] to list service on Bluetooth GPS. [SPP slave] should appear in the service list box, click it and click [Next] to finish shortcut creation. Don't forget to uncheck the secure connection box.



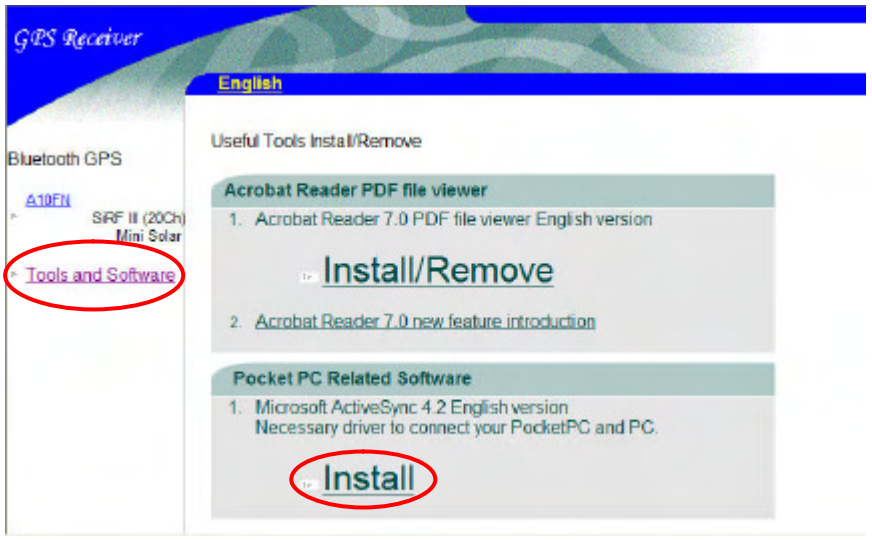
7) Back to the main screen of [Bluetooth manager] as below. Please double-click the icon to connect the Bluetooth GPS Receiver . If connection successful, a green arrow will show as below at right.



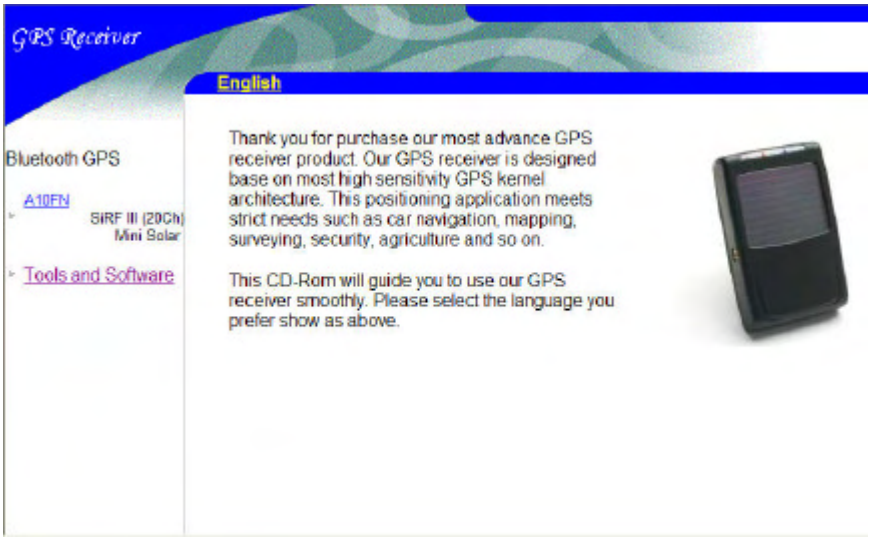
8) You may start to use any map/navigation software and use the GPS function now.

5.4. Software Install/Usage Guide

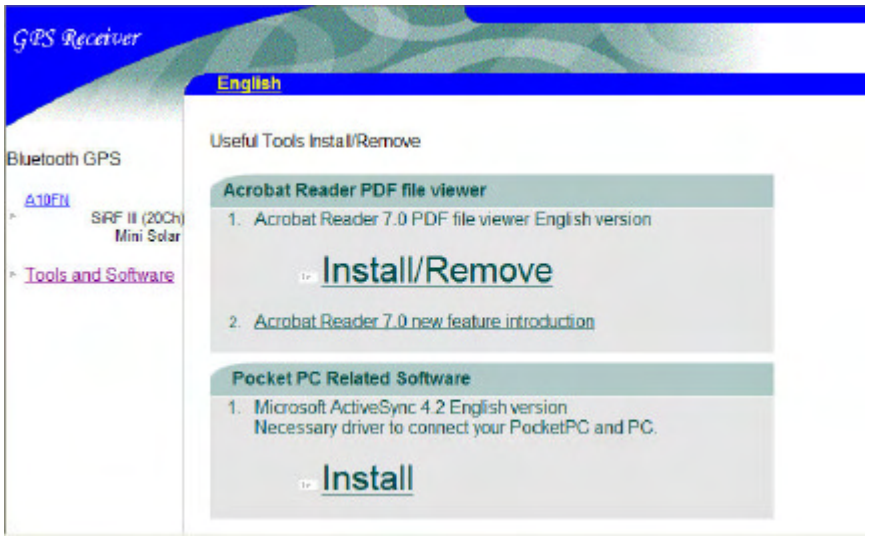
1) Please make sure your PDA is connected properly with your PC using Microsoft ActiveSync. If you have not installed ActiveSync yet, you can install the copy from the bounded CD-Rom, version 4.2. Please connect your PDA with your PC by the cable/cradle for your PDA, it should be found in your PDA accessory pack.



2) Insert the CD-Rom into your CD drive. If your auto-run function works, you will see the welcome screen as below:



3) Click the [Tools and Software] at the left:



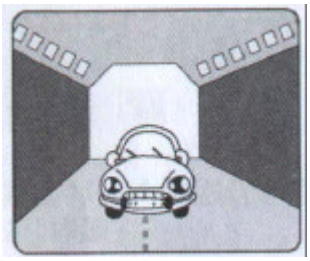
Trouble Shooting

7.1 Problem of Setup

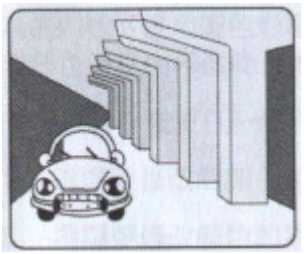
Error/Problem	Cause	Trouble shooting
Can not find the GPS device through Bluetooth interface	Not installed correct or battery low	Check if Solar Bluetooth GPS Receiver is installed properly, and confirm the battery level is suitable (green LED blinks or no LED)
Unable to connect through Bluetooth	Configuration incorrect	Please refer section 5.2 to re-install. Or refer to your PDA's user manual for configuration.
Fail to open COM Port	Bluetooth Manager is not configured properly, or the COM port is adopted by another software.	Please check your Bluetooth Manager settings, close the software may use COM ports and try again. Or check if there is any password protection.
No NMEA code (GPS data flow)	(1) Some PC/PDA will enter the power saving mode if you stop input for a few minutes. Bluetooth interface will be reset in such case. **(2) Wrong baud rate or com port setting**	(1) Disable the power saving mode, try to connect GPS receiver again. **(2) Correct with right baud rate & com port**
Unstable GPS signal	**(1) degrade by anti-sunlight film with receiver placed inside car** **(2) some cases described in sec7.2**	**Plug External antenna and place on car roof**
Poor GPS signal	**(1) 2.5SR Storm effect** **(2) Atmosphere turbulences** **(3) SA ON by USA military.**	**NA**

7.2 Concerning of Poor GPS Signal

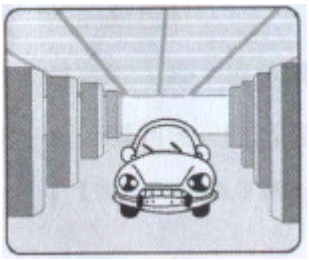
It is possible unable to receive GPS signal or signal low in these places:



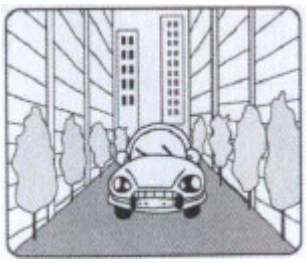
- Inside the tunnel, GPS signal is blocked.



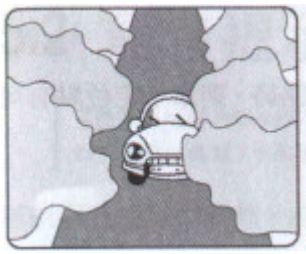
➢ Covers above, GPS signal is blocked.



➢ Inside buildings, GPS signal is blocked.



➢ Beside some buildings, GPS signal is disturbed.



➢ Inside forests, or too many covers, GPS signal is disturbed.

- If you use the Bluetooth GPS Receiver inside the car, some anti-sunlight windscreen film will make the GPS signal degraded or signal blank.
- GPS satellite is owned by America military, sometimes they will tune-down the accuracy by some reason. In such cases, the GPS position may not fixed exactly.