Solar Bluetooth GPS Receiver

User's Manual

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8029504001A

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Notes and Warnings

- Please rotate top cover clockwise. Once the top cover is in 270° position, you'll find it hard to rotate. Don't try to rotate further, 270° position is the limit.
- As solar cell uses for years, its charging performance will decline. But for 2 years using your iBT-GPS, the charging performance is still better than 90% of its original.
- For your safety, please keep this device and all its accessories out of children's reach.
- Please turn off this device while in a hospital or medical facility. Otherwise the device's built-in Bluetooth transceiver may cause malfunction/interference to other medical equipment.
- This iBT-GPS device uses a re-chargeable Lithium battery. Please do not expose this iBT-GPS device in ambient temperature higher than 140℉/60℃, otherwise the battery inside may accumulate heat, burn itself or explode, leading to serious damage. The Lithium battery inside this device should be recycled.
- If this iBT-GPS device is not used for a long period of time, please take out the battery and store it in a dry and cool place in advance.
- The manufacturer assumes no responsibility for any damages and losses resulting from a dead battery, or misuse of the product in any way.
- Use only the supplied and approved accessories. Unauthorized accessories, antennas, modifications or attachments could damage this iBT-GPS device, and may violate government's radio device regulations.
- Do not attempt to open the iBT-GPS device yourself. Unauthorized hacking may damage the unit, and void your warranty.

Chapter 1 Before you begin

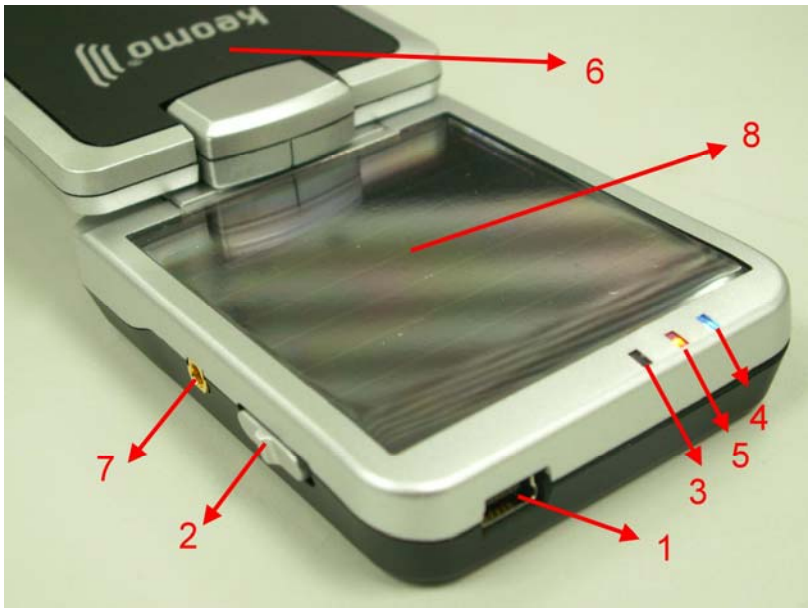
Thank you for purchasing the iBT-GPS's Bluetooth GPS Receiver with built-in **solar charger**. This iBT-GPS device can satisfy a wide variety of applications such as PDA and smart phone navigation, automotive vehicle tracking, personal positioning etc.. With the dimension of 80.86(L) x 61.17(W) x 25.20(H) mm and weight only 105g (w/ battery), iBT-GPS is an ideal solution to carry along everywhere.

This iBT-GPS device's rechargeable battery and low-power design can extend its operation time up to **100hrs** (with solar charger on,) bringing you the most convenient and longest usage of its kind. With a lead-free production process, iBT-GPS is the most environmentally friendly wireless GPS receiver in the market.

iBT-GPS has distinguished features others don't have. With our patent pending **Smart Power Save Mechanism** and **Fuzzy Auto On/Off** features, our iBT-GPS consumes 65% less power than other wireless GPS receivers, and the unique **Solar Cell design can extend the operating time for more than 100 hours**.

Patent Number:
94143224
94143221

1.1 Appearance



1. DC jack (mini USB type)
2. Power switch
3. Battery status LED (red/green)
4. Bluetooth status LED (blue)
5. GPS status LED (orange)
6. Internal GPS antenna
7. External GPS antenna port (MMCX)
8. **Solar Cell: Auxiliary power source**

1.2 Checking the package content

Congratulations on your purchase of the iBT-GPS with built-in Lithium rechargeable battery. Before you start using iBT-GPS, please make sure if your package includes the following items. If any item is damaged or missing, please contact your dealer at once.

- Bluetooth GPS Receiver - iBT-GPS x 1
- Retractable USB Cable x 1
- DC cigarette lighter adapter x 1
- Lithium rechargeable battery x 1
- User's manual with Warranty Card x 1

*Package contents may vary depending on countries without prior notice.

Chapter 2 Getting started

Please follow the procedure step by step.

Step 1 Charging Your Battery

For the first time you use the iBT-GPS, please charge battery until it is full (the green LED blinks). Take the power cable and connect it to the power jack (mini USB type). This will begin to charge the battery. The LED that represents the battery is the left-most battery icon (shown in below).

- If the LED is red, that means battery power is critically low. Charge immediately.
- If the LED is green, that means battery is charging now.
- If the green LED blinks, that means battery is fully charged.

Step 2 Turning on the power switch

Before

After

Step 3 Connecting your handheld device with iBT-GPS

Please refer to the user manual of PDA to enable the Bluetooth connectivity. If the connection between your device and iBT-GPS is successful, the blue LED of iBT-GPS will be blinking.

Below, we provide a common procedure of software installation to set up your PDA. (For other PDA, the steps may be a little bit different. Bluetooth Manager is one of popular program used for Bluetooth device.)

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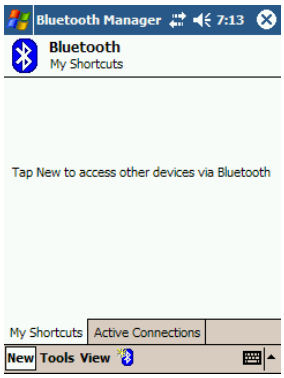
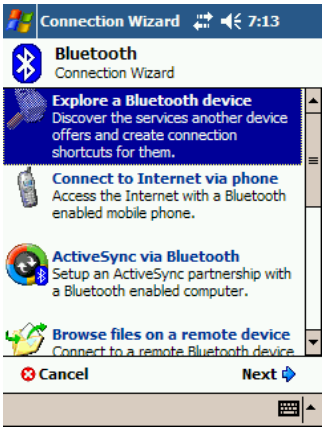


Start -> Bluetooth Manager New

1. Open “Bluetooth Manager” on pocket pc, and establish new connection.



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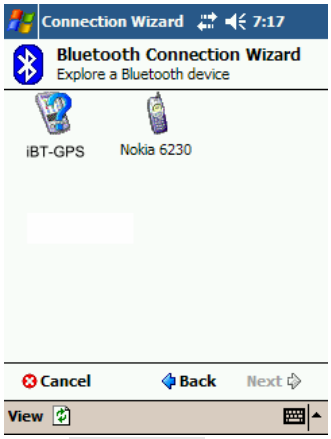

Explore A Bluetooth device ->Next

Tap iBT-GPS

2. Explore a Bluetooth device, and find the “iBT-GPS”

Passkey 0000 (if your PDA ask for the passkey)

3. (Optional)

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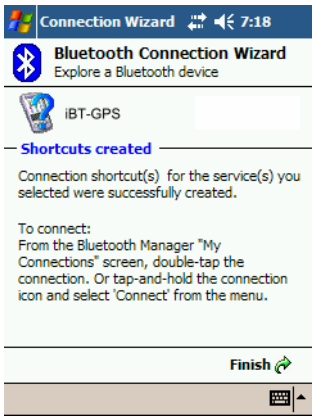
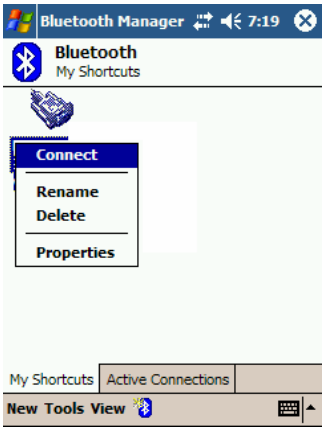


Select SPP slave->Next Finish

4. Connect to Serial Port Profile (SPP) Slave



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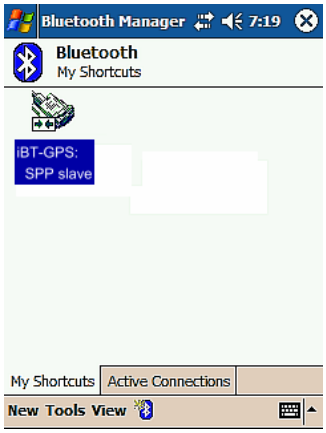


Tap and Hold iBT-GPS: SPP slave, Connect

Done

5. Finish Bluetooth Manager Setup

Step 4 Loading your GPS mapping or routing software

, along with the corresponding maps of the areas that you plan to travel to.

Step 5 Start the application

and select the correct COM port & baud rate.

Note: The Bluetooth device in most of the applications has an "auto-detect" feature so that you do not need to select the Baud Rate.

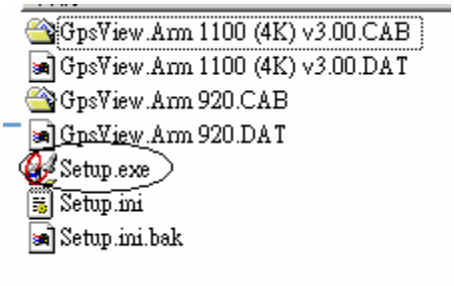
Chapter 3 How to test your Bluetooth GPS Receiver ?

The testing program only supports the Microsoft Windows CE & Pocket PC based PDA platform.

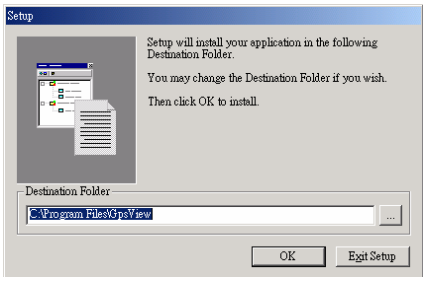
3.1 Software Installation

You have to first synchronize the PDA and your PC, and run the "Setup.exe" to execute the installation procedure of GpsView testing program (via PC and ActiveSync). To get this program, you can download it at your agent's website.

1. Synchronize the PDA and your PC.



2. Run the "Setup.exe".



3. Execute the installation.

3.2 GPS Test

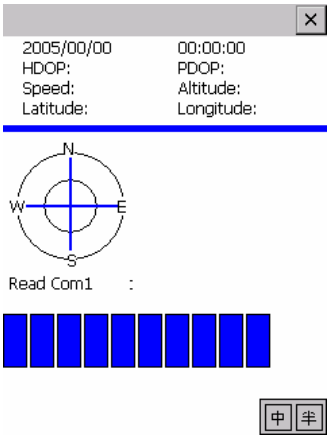
Once you have completed the setup of your Bluetooth device, you may check to see if your GpsView software is attempting to fix your position. You can do this by opening your GPS software. If it fails, you should select the correct COM port and Baud Rate (4800~115200) to start receiving GPS data. Shortly, you will see the GPS code running as in the picture below. This signifies that your Bluetooth device is functioning properly.

Note: The Bluetooth device in most of the applications has an "auto-detect" feature so that you do not need to select the Baud Rate.

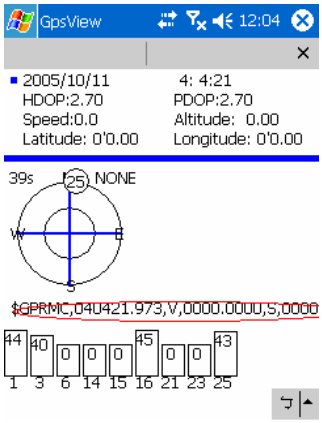
3.2.1 Executing GPS Demo Program

Execute the "GpsView" by double clicking GPS Demo icon in programs menu.

3.2.2 GPS Demo Screen



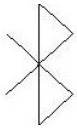
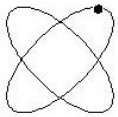
1. Initial



2. Doing auto scan

Appendix A. LED Display

The Bluetooth GPS Receiver has three LED lights, from right to left is Bluetooth Status LED, the 2nd one is GPS Status LED, the 3rd one is Battery Status LED. The status table of LED shows as follows:

Category	SYMBOL	COLOR	STATUS	Function
Bluetooth Status LED		Blue	Always on:	Not connected to any Bluetooth devices yet
			Slowly blinking:	Sleeping mode (1 time / 5 seconds)
			Quickly blinking:	Bluetooth is connected and ready for data transmission (1 time / 2 second)
GPS Status LED		Orange	Always on:	Acquiring satellites, GPS position not fix
			Blinking:	GPS position is fixed, Navigation
Battery Status LED		Red	Blinking:	The battery is too low
		Green	Light On:	The battery is charging
		Green	Blinking:	The battery is fully charged

Appendix B. Fuzzy Auto On/Off Feature

iBT-GPS supports fuzzy auto on/off. It can automatically enter the sleeping mode after your turning off the Bluetooth connectivity, thus you can always power it on with very low power consumption.
With fuzzy auto on/off, if the connection between your device and iBT-GPS is successful, iBT-GPS will wake up itself and the blue LED of iBT-GPS will be quickly blinking again (every 2 sec) and the orange LED of iBT-GPS will also be on.

Appendix C. Specifications

General	
GPS technology	NEMERIX (low power)
Frequency	L1, 1575.42 MHz
C/A Code	1.023 MHz chip rate
Channels	16 channels all in view tracking
Sensitivity	Better than -152dBm
Receiver Accuracy	
Position	1.2 meters Static CEP 50, 3.0 meters Static CEP 95; 1.3 meters Static Altitude 50, 3.8 meters Static Altitude 95
Velocity	0.1 m/sec, without SA
Time	±100ns synchronized to GPS time
Datum	

Datum	WGS-84
Time to First Fix	
Hot start	5 sec, average
Warm start	34 sec, average
Cold start	46 sec, average
Reacquisition	<3sec
Protocol	
GPS Output Data	NMEA 0183 (V3.01) - GGA, GSA, GSV, RMC(default); VTG, GLL (optional), Data bit: 8, Stop bit: 1 (Default)
Limitations	
Acceleration Limit	<2G
Altitude Limit	<18,000 meters
Velocity Limit	<515 meters/sec.
Jerk Limit	20 m/sec.
Power	
Battery	Built-in rechargeable 1000mAh Lithium battery
Power Consumption	38mA without Solar panel; (Solar charge 30mA in direct sun)
Work Hours	26hrs without Solar panel; **100hrs** in direct sun
Standby Time	330hrs without Solar panel; Permanent in direct sun
Charger Protection	Built-in Over Temperature / Over Voltage

	protection
DC Input Range	4.5 ~ 5.5V
Physical Characteristics	
Dimension	80.86mm x 61.17mm x25.20mm
Temperature	
Operating	-5℃ ~ 60℃
Storage	-20℃ ~ 60℃
Charging	0℃ ~ 45℃
Humidity	5% to 95% non-condensing

Bluetooth Specifications	
Standard	Fully compliant with Bluetooth V1.2
Output Power	0dBm (Typical), Class II
Range	Up to 15 meters
Bluetooth Profile	Serial Port Profile (SPP)
Frequency	2.4GHz~2.4835GHz ISM Band
Security	Yes

Solar Cell Specifications	
Minimum operating voltage, Vop (with 150Ω load)	4.5V
Minimum operating current, Iop (with 150Ω load)	30.0mA
*Open-circuit voltage, Voc	5.3V
*Short-circuit current, Isc	40.0mA

Appendix D. Frequently Asked Questions

Q: The GPS Demo software GpsView doesn't seem to be making any connections with my Bluetooth GPS receiver. How do I make it work?

A: You will need to make sure your PDA is paired with Bluetooth device. Follow the section "Chapter 2. Getting started > Step 3 Connecting your handheld device with the iBT-GPS" to make sure that your PDA is recognizing the Bluetooth GPS receiver properly. If so, you will need to connect with the device by going to the Bluetooth Manager and double-tapping on the iBT-GPS icon.

Q: My Bluetooth GPS Receiver seems to be receiving the satellite signals, but I am unable to establish a connection between the receiver and my PDA. How can I make a connection?

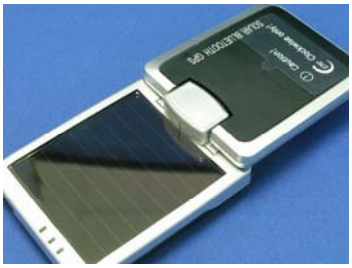
A: Go to the Bluetooth Manager on your PDA. Locate the "iBT-GPS: SPP Slave" icon and tap and hold. A pop-up menu will appear, select Delete.
Next, perform a soft reset on your PDA.
Once your PDA has finished resetting itself, go back to the Bluetooth Manager screen and perform the typical setup and connection procedures for your Bluetooth receiver (for help with connection please review the section "Chapter 2 Getting started > Step 3 Connecting your handheld device with the iBT-GPS").

Appendix E. How to use the Solar Cell

Step 1 Initial state is shown

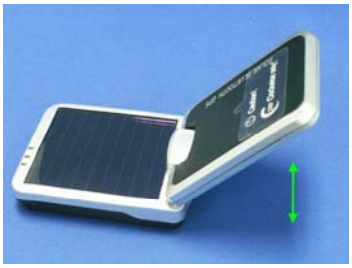
Step 4 270 degree is the limit

Step 2 Top cover rotates clockwise



Step 5 This is the general usage

Step 3 180 degree



Step 6 Change the angle of the elevation

Appendix F. Helpful Tips

Your iBT-GPS should be treated with care and properly maintained to ensure the best performance. Keep in mind these helpful tips when using your receiver:

- Some vehicles having heavy metallic sun protecting coating on windshields, which may affect signal receptions
- Driving in and around high buildings may affect signal receptions.
- Driving under tunnels or in buildings may affect signal receptions.
- Low battery of a PDA or of an iBT-GPS may affect signal receptions.
- Please check the correct “COM” and “Baudrate” of your PDA.
- In general, any GPS receiver performs best in open space where it can see clean sky. Also weather will affect GPS reception – rain & snow contribute to worse sensitivity.
- iBT-GPS output data updates every second, thus the actual position and the position in your map may have time delay. This may happen when you drive at higher speed or make a turn around a corner.
- Note that iBT-GPS may not work indoors where it can not see the sky.
- For the 1st time you use the iBT-GPS, it will take 1 to 3 minutes to get the satellite constellation and fix your position, this is called “Cold Start”. If you replace the battery, iBT-GPS will do Cold Start again.
- If your iBT-GPS can’t fix your position for more than 20 minutes, we suggest you change to another open space and then try again.

Appendix G. Certifications

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 interface, 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 UNAUTHOURIZED MODIFICATION TO THIS EQUIPMENT. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

Industry Canada Caution

The installer of this radio equipment must ensure that the antenna is located or pointed such that it does not emit RF field in excess of Health

Canada limits for the general population; consult Safety Code 6, obtainable from Health Canada's website.

"www.hc-sc.gc.ca/rab"

CE Notices

Is herewith confirmed to comply with the requirements set out in the Council Directive on the Approximation of the Laws of the Member States relating to Electromagnetic Compatibility (89/336/EEC), Low-voltage Directive (73/23/EEC) and the Amendment Directive (93/68/EEC), the procedures given in European Council Directive 99/5/EC and 89/3360EEC.

The equipment was passed. The test was performed according to the following European standards:

- EN 300 328-2 V.1.2.1 (2001-08)
- EN 301 489-1 V.1.4.1 (2002-04) / EN 301 489-17 V.1.2.1 (2002-04)
- EN 50371: 2002
- EN 60950: 2000

Appendix H. Warranty Information

Thank you for your purchase of GPS product from iBT-GPS.

iBT-GPS warrants this product to be free from defects in materials and workmanship for one year from the date of purchase. The warranty for accessories is six months. The stamp of distributor or a copy of the original sales receipt is required as the proof of purchase for warranty repairs. iBT-GPS will, as its sole option, repair or replace any components, which fail in normal use. Such repair or replacement will be made at no charge to the customer for parts or labor. The customer is, however, responsible for any transportation costs.

This warranty does not cover failures due to abuse, misuse, accident or unauthorized alteration of repairs. iBT-GPS assumes no responsibility for special, incidental punitive or consequential damages, or loss of use.

Warranty

Model number: _____

Series number: _____

Data of purchase: _____

Name: _____

Address: _____

City, Zip code: _____

State, Country: _____

E-mail address: _____

Distributor Stamp Here