Bluetooth GPS Receiver

i-Blue

User's Manual

Published on 26-Oct-2005

# Table of Contents

1. Before you begin

Thank you for purchasing the Bluetooth GPS Receiver, i-Blue, a global positioning system receiver with Bluetooth wireless technology. i-Blue is well suited to system integrations including PDA, smart phone, Tablet PC and Notebook PC with Bluetooth devices. It can satisfy a wide variety of applications such as PDA and smart phone navigation, automotive vehicle tracking, personal positioning and sporting. With the dimension of 69.6(L) x 47.3(W) x 19.2(H) mm and weight only 72g (w/ battery), i-Blue is an ideal solution to carry along everywhere.

i-Blue's rechargeable battery can save satellite information such as the status of the satellite signal, most recent location and the data and time of its last use. The low-power design has extended the operation time up to 30 hours and brought you the most convenient and longest usage of its kind. With the lead-free production process (starting Jan. 1, 2006), i-Blue is the most environmentally friendly wireless GPS receiver in the market.

1.1 Appearance
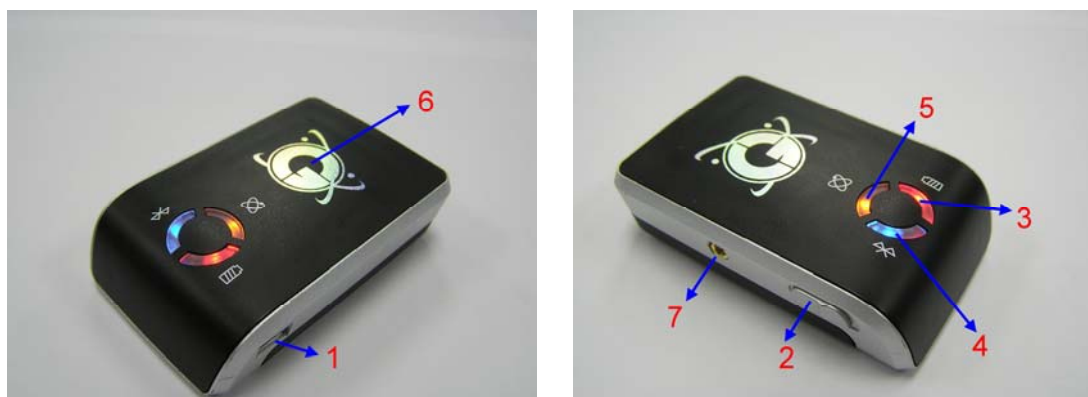
1. Power jack (mini USB type)
2. Power switch
3. Battery status LED (red/green)
4. Bluetooth status LED (blue)
5. GPS status LED (orange)
6. Internal antenna
7. External antenna port (MMCX)

1.2 Checking the package content

Congratulations on your purchase of the i-Blue with built-in Lithium rechargeable battery. Before you start using i-Blue, 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 - i-Blue x 1
- CD disc with the User's Manual and the Testing Program x 1
- Retractable USB Cable x 1
- Traveler Power Adapter x 1
- DC cigarette lighter adapter x 1
- Lithium rechargeable battery x 1
- User's manual x 1
- Warranty card x 1

*Unit package contents may vary depending on countries without prior notice.

2. Getting started

Please follow the procedure step by step.

Step 1 Charging Your Battery

For the 1st time you use the i-Blue, please charge battery until it is full (the LED turns off). 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 right-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 LED is off, that means battery is fully charged.

Step 2 Turn on the power switch


Before   After

Step 3 Connecting your handheld device with i-Blue

Please refer to the user manual of PDA to enable the Bluetooth connectivity. If the connection between your device and i-Blue is successful, the blue LED of i-Blue will be blinking.
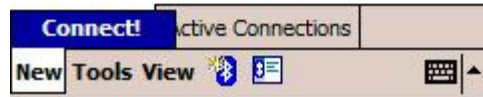
Below, we provide a common procedure of software installation to set up your PDA. (For other PDA, the steps may be a little bit different. Bluetooth Manager is one of popular program used for Bluetooth device.)
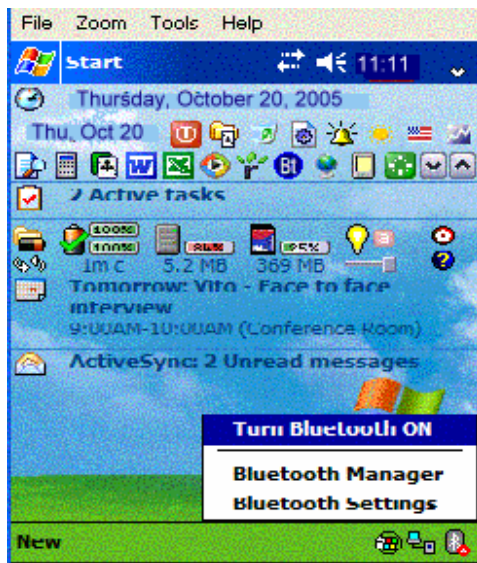
Start -> Bluetooth Manager   New -> Connect!

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

-->

Explore A Bluetooth device
->Next
2. Explore A Bluetooth device.

Device->Next

Tap i-Blue
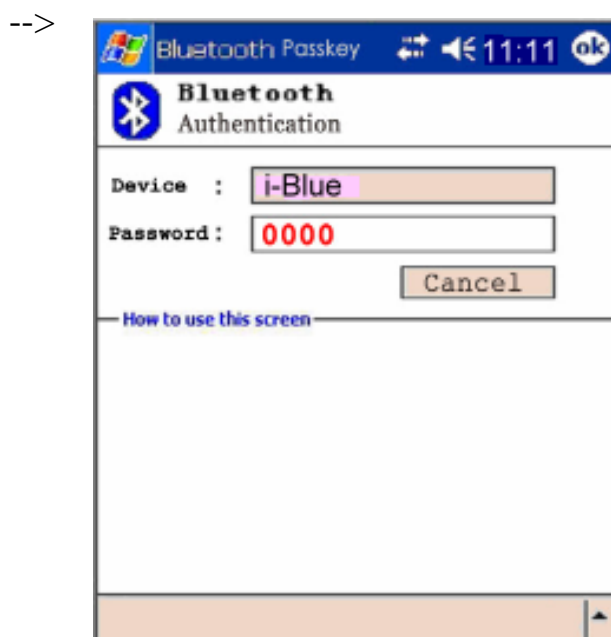
Passkey 0000 (if your PDA ask for the passkey)

3. Find the Bluetooth device "i-Blue", click it, and then enter passkey.

-->

Select SPP slave->Next   Finish

4. Connect to Serial Port Profile (SPP) Slave

Tap and Hold i-Blue: SPP   Done
slave, Connect

5. Finish Bluetooth Manager Setup

Step 4 Load 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.

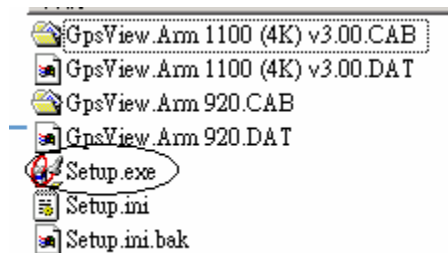# 3. How to test your Bluetooth GPS Receiver ?

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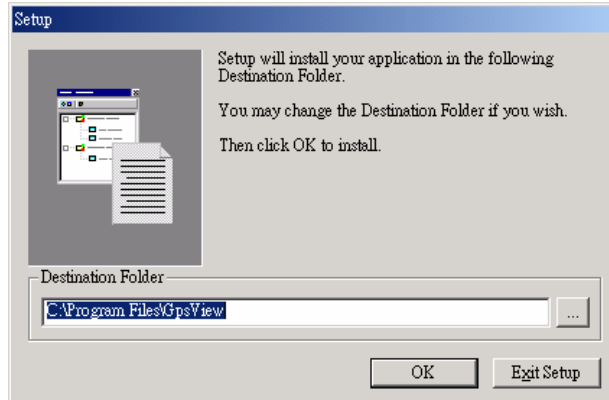
3.1 Software Installation

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).

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 (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
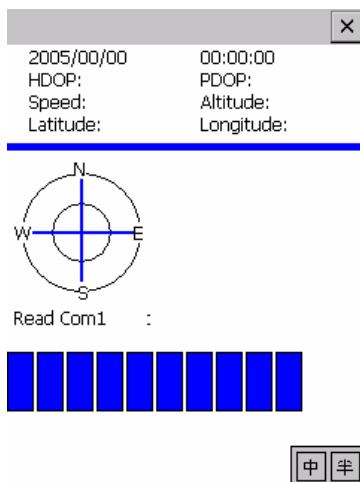
1. Initial
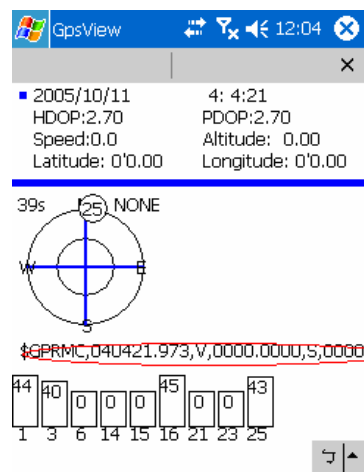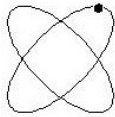
2. Doing auto scan

Appendices

Appendix A. LED Display

The Bluetooth GPS Receiver has three LED lights, one is Bluetooth Status LED, the 2nd one is Battery Status LED, the 3rd one is GPS Status LED. The status table of LED shows as follows:
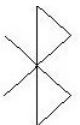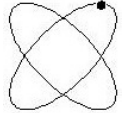
Category	SYMBOL	COLOR	STATUS	Function
Bluetooth Status LED		Blue	Always on:	Not connected to any Bluetooth devices yet
			Slowly blinking:	Power save mode (1 time / 3 seconds)
			Quickly blinking:	Bluetooth is connected and ready for data transmission (1 time / second)
Battery Status LED		Red	Blinking:	The battery is too low
		Green	Light On:	The battery is charging
		None	Light Off:	The battery is fully charged
GPS Status LED		Orange	Always on:	Detecting satellites, GPS position not fix
			Blinking:	GPS position is fixed, Navigation

Appendix B. Power Save Mode

i-Blue supports power save mode. 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.

In power save mode, if the connection between your device and i-Blue is successful, i-Blue will wake up itself and the blue LED of i-Blue will be quickly blinking again (every 1 sec) and the orange LED of i-Blue will also be on.

Category	SYMBOL	COLOR	Description
Bluetooth Status LED		Blue	1. If Bluetooth connectivity is lost, the blue LED turns off after 3 minutes and then i-Blue will enter the power save mode. The blue LED will blink every 3 seconds. 2. If re-connect with a Bluetooth device, the blue LED will blink every seconds. i-Blue wakes up.
GPS Status LED		Orange	1. When power on, the orange LED is on for 3 minutes. 2. Every time when the device is disconnected for 30 sec, the orange LED light will be off and then enter the sleeping mode.

LED STATUS:

BT LED (BLUE):
BT ON: Blinking per second
BT STANDBY: Steady ON
BT SLEEP: Blinking per 3 seconds

GPS LED (ORANGE):
GPS UNFIX: Steady ON
GPS FIX: Blinking per second

LOW POWER LED (RED):
LOW POWER: Blinking per second

CHARGER LED (GREEN):
CHARGER: Steady ON in charging
and OFF when charge completely

POWER ON

↓

BT STANDBY
GPS ON

↓

BT connected or not in 3 mins? — NO → BT SLEEP GPS OFF (POWER SAVE MODE)

YES ↓

BT ON
GPS ON
(ACTIVE MODE) ← YES — BT connected or not? — NO

↓

BT connected or not? — YES (→ ACTIVE MODE)

NO ↓

BT STANDBY
GPS ON

↓

BT connected or not in 30 seconds? — YES (→ ACTIVE MODE)

NO ↓

BT STANDBY
GPS OFF

↓

BT connected or not in 150 seconds? — YES (→ ACTIVE MODE) — NO (→ POWER SAVE MODE)
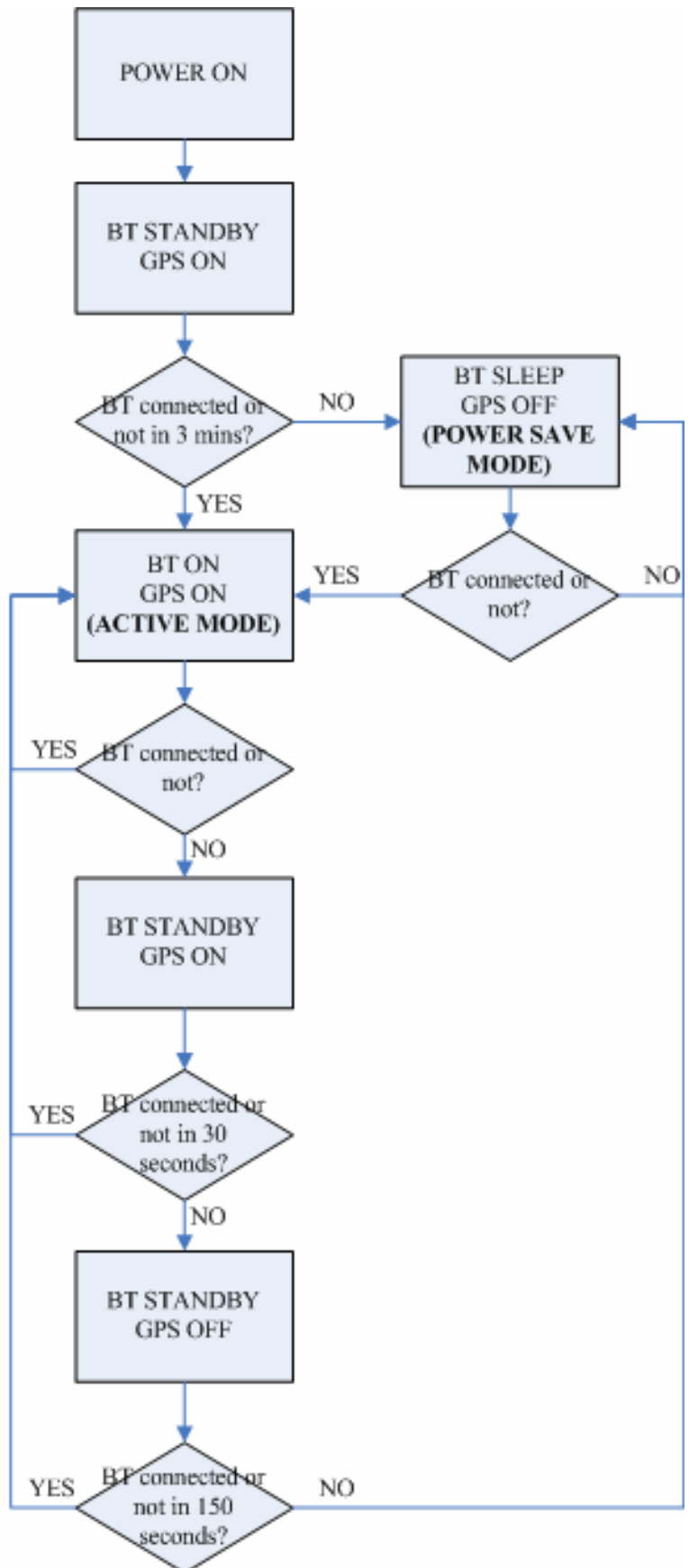
Appendix C. Specification

General	
GPS technology	NEMERIX GPS Module
Frequency	L1, 1575.42 MHz
C/A Code	1.023 MHz chip rate
Channels	16 channels all in view tracking
Sensitivity	-155 dBm

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

Acquisition Time	
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)
	Baud rate 115200 bps, 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 1050mAh Lithium battery
Operation Current	25mA@3.7V(w/o Bluetooth)
	35mA@3.7V(w/ Bluetooth)
Operation Time	Up to 30 hrs, after fully charged.

Charging Time	3hrs. (Typical)
Physical Characteristics	
Dimension	69.6mm x 47.3mm x 19.2mm
Weight	72g
Temperature	
Operating	-10℃ ~ 60℃
Storage	-20℃ ~ 85℃
Humidity	5% to 95% non-condensing

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 i-Blue" 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 i-Blue 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 "i-Blue: 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 i-Blue").

Appendix E. How to change battery

Figure 1 Press the button

Figure 2 Open the cover of battery

Figure 3 Take out the battery

Figure 4 Fit new battery into i-Blue

Figure 5 Slide the cover of battery to close

Figure 6 Done

Appendix F. Helpful tips

Your i-Blue 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 i-Blue 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.
- i-Blue 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 i-Blue may not work indoors where it can not see the sky.
- For the 1st time you use the i-Blue, it will take 5 to 10 minutes to get the satellite constellation and fix your position, this is called "Cold Start". If you replace the battery, i-Blue will do Cold Start again.
- If your i-Blue can't fix your position for more than 20 minutes, we suggest you change to another open space and then try again.

Appendix G. Disclaimer and limitation of liability

- For safety, keep the i-Blue and all accessories out of small children's reach.
- We assume no responsibility for any damages and loss resulting from the use of this manual and also by deletion of data as a result of malfunction, dead battery, or misuse of the product in any way.
- Use only the supplied and approved accessories. Unauthorized accessories, antenna, modifications or attachments could damage the i-Blue, and may violate regulations governing radio devices.
- Use a dry, clean soft cloth to clean the unit. Do not use harsh cleaning solvents, chemicals, or strong detergents.
- Do not drop, shake, or knock the i-Blue. Rough handling can break the connector, jack, and internal electronic circuit board. This will cause

non-recoverable damage to the product.
- Please do not leave alone the i-Blue in hot area. High temperature can shorten the life of electronic devices, and melt or drape certain plastics.
- Please do not expose your i-Blue to temperature higher than 185℉ (85℃)to prevent any accidents which might damage the rechargeable battery at high temperature. Also, do not leave your i-Blue in your car under direct sunlight while not in use.
- Do not store the i-Blue in cold environment. Otherwise when the unit warms up to its normal operational temperature, moisture can severely damaging the mini circuit boards inside.
- Do not attempt to open the i-Blue yourself. Unauthorized hacking may damage the unit, and void your warranty.

Appendix H. 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.

Appendix I. IC 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"

Appendix J. CE Notices

CE0984①

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