Mini-Bluetooth GPS Receiver
User Manual

Mini-Bluetooth GPS Receiver

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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 interference, 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 OT TV INTERFERENCE CAUSED BY UNAUTHORIZED MODIFICATIONS TO THIS EQUIPMENT. SUCH MODIFICATIONS CAOULD VOID THE USER’S AUTHORITY TO OPERATE THE EQUIPMENT.

Table of Contents

1. Introduction

- Introduction
- Packing List

2. Features

- Key features

3. Technical Specification

3.1 Basic Specifications
3.2 TTFF
3.3 Positioning accuracy
3.4 Sensitivity
3.5 Measurement data update time
3.6 Power
3.7 Limitations
3.8 Output & Interface
3.9 Physical Specification
3.10 Others

4. Operation of ABG10868

4.1 Device Description
4.2 Mechanical Drawing
4.3 LED Status
4.4 Usage
4.4.1 Turn On AGB10868
4.4.2 Connection
4.4.2-1 Connect to PDA
4.4.2-2 Verify the connection
4.4.2-3 Connect to Laptop with Bluetooth device
4.4.3 Power Jack
4.4.4 GPS Reset Button
4.4.5 Smart Power Saving Feature

1. Introduction

The ABG10868 is a compact-size, high performance Bluetooth GPS receiver with elegant mechanical design. The core of this elegant device is the SONY CXD 2951 GPS receiver IC and the ST Micro 2415/2150 Bluetooth chipset.

The ABG10868 sports a high sensitivity of –152 dBm during tracking and –139 dBm during acquisition. The average TTFF (time to first fix) is 2 ~ 3 sec. in hot start mode, 30 sec. in warm start mode and 40 sec. in cold start mode. It also is capable of support WAAS/EGNOS. This excellent performance really makes the ABG10868 stand out.

The ABG10868 is a class 2 Bluetooth device, with range of 10 meters. It supports v1.1 Bluetooth Serial Port Profile, which ensures compatibility with all devices such as PDAs and smart phones which also support the SPP Bluetooth Profile.

There are three LED indicators on the ABG10868 – a green (GPS) LED, a blue (Bluetooth) LED, and a red (power status) LED. The green LED will be lit when the GPS receiver is in acquisition mode, and will start blinking every 2 seconds when the GPS position is fixed (i.e., tracking mode). The blue LED will be blinking every 2 seconds when the Bluetooth is in connection and be blinking every 8 seconds if the Bluetooth connection between the host and ABG10868 is lost. The red LED will be blinking to indicate the battery power level is low, on when charging the battery and off if the battery is fully charged.

The ABG10868 comes with a 1200 mAh rechargeable battery to ensure over 12 hours of operating time between charges. It also incorporates an intelligent power management scheme so that the GPS is turned off if before the Bluetooth connection is established, or when the Bluetooth connection is lost. Together with the large capacity 1200 mAh rechargeable battery, the operating time of the ABG10868 is much longer than most of the Bluetooth GPS receivers currently on the market.

Packing List

The package includes the following items.

- ABG10868 Bluetooth GPS receiver
- Car charger
- A/C Power Adapter (Optional)

Mini Bluetooth GPS Receiver

DC Car Charge

A/C Power Adapter (Optional)

2. Features

The ABG10868, based on AMOD AGP1030 Bluetooth GPS receiver module with built-in rechargeable, removable lithium-ion battery has many smart and useful features. Without any wiring requirement, ABG10868 adds GPS positioning capability to any Bluetooth (SPP profile) enabled device.

Key features:

- Built-in Sony CXD2951 low power consumption chip
- 12 parallel satellite tracking channels, for fast acquisition and reacquisition
- Built-in WASS/EGNOS support (need optional software)
- Integrated patch antenna
- Rechargeable and removable lithium-ion battery lasts for 12 hours of continual use
- Support NMEA0183 V.3.01
- Fully compatible with Bluetooth Serial Port Profile (SPP)
- Bluetooth 1.1 certified with a Class 2 Bluetooth radio
- Low power consumption
- Smart power saving feature
- 3-color LED status indicator
- Small, lightweight and elegant design
- On/ Off switch
- Suitable for car navigation, marine navigation, fleet management, AVL, personal navigation, tracking and mapping

3. Technical Specification

3.1 Basic Specification:

- GPS chipset: Sony CXD2951GA-4 Single chip
- Channel: 12-channel GPS receiver capable of simultaneously receiving 12 satellites
- Reception frequency: 1575.42MHz (L1 band, CA code)
- Dimension: 73.4 x 39.0 x 18.9 mm (L x W x H)
- 3-color LED status indicators:
  - GPS status: The green LED will be lit when the GPS receiver is in acquisition mode, and will start blinking every 2 seconds when the GPS position is fixed (i.e., during tracking mode)
  - Bluetooth status: The blue LED will be lit once per two seconds when the Bluetooth is in connection and be lit 0.1 second every 8 seconds if the Bluetooth connection between the host and ABG10868 is lost or in standby mode
  - Battery status: The red LED will be blinking to indicate the battery power level is low, on when charging the battery and off if the battery is fully charged.
- Switch and connectors:
  - Power switch: Turn on/ off the ABG10868
  - Reset button: To initialize the GPS receiver
  - Power jack: Connect to external power or car charger

3.2 TTFF (Time to First Fix)

Time until initial position measurement after power-on with the following conditions:

- Cold Start (without both ephemeris and almanac time): 45s (average) / 60s (95% possibility)
- Warm Start (without ephemeris but with almanac time): 30s (average) / 35s (95% possibility)
- Hot Start (with both ephemeris and almanac time): 2s (average) / 3s (95% possibility)

* Reference data with elevation angle of 5° or more and no interception environment with satellite powers ≧ -130dBm

* “95% possibility” means “position time with 95% possibility”

3.3 Positioning accuracy:

2DRMS: approx. 2m

* Reference data with elevation angle of 5° or more and no interception environment with satellite powers ≧ -130dBm

3.4 Sensitivity:

- Tracking sensitivity: -152dBm (average) or less

- Acquisition sensitivity: -139dBm (average) or less in Normal mode

3.5 Measurement data update time:

- Measurement data update time: 1s

3.6 Power:

- Power source: Removable rechargeable lithium ion battery with 5V DC input charging circuit
- Operation time: 12 hours typical after full charge, continuous mode at 25℃

3.7 Limitations:

- Altitude: < 18,000m
- Velocity: < 500m/s
- Acceleration: < 4g

3.8 Output & Interface

Output:

- GPS transfer rate:
  - Baud rate: 9600 bps
  - Data bit: 8
  - Parity: No
  - Stop bit: 1
- GPS output format: NMEA0183 V3.01
  - GPGGA (1 time per second)
  - GPGSA (1 time per second)
  - GPGSV (1 time per 5 second)
  - GPRMC (1 time per second)
  - GPVTG (1 time per second)
- Datum: WGS84

Interface:

- Compatible Bluetooth Serial Port Profile (SPP): V1.1 and class 2 (Bluetooth range 10m)

3.9 Physical Specification:

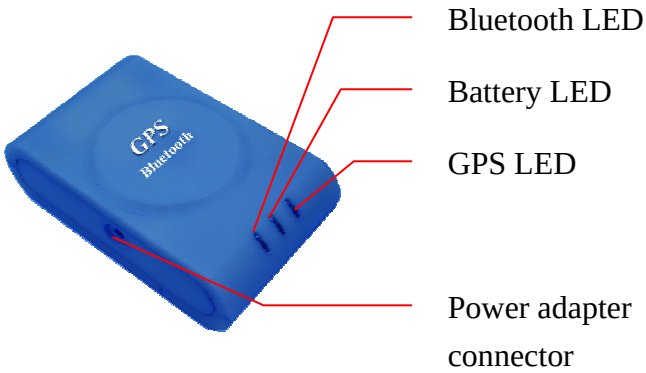
- Operating Temperature: -20℃～+60℃
- Storage temperature: -20℃～+85℃
- Operating humidity: 5% to 95%; No condensing

3.10 Others:

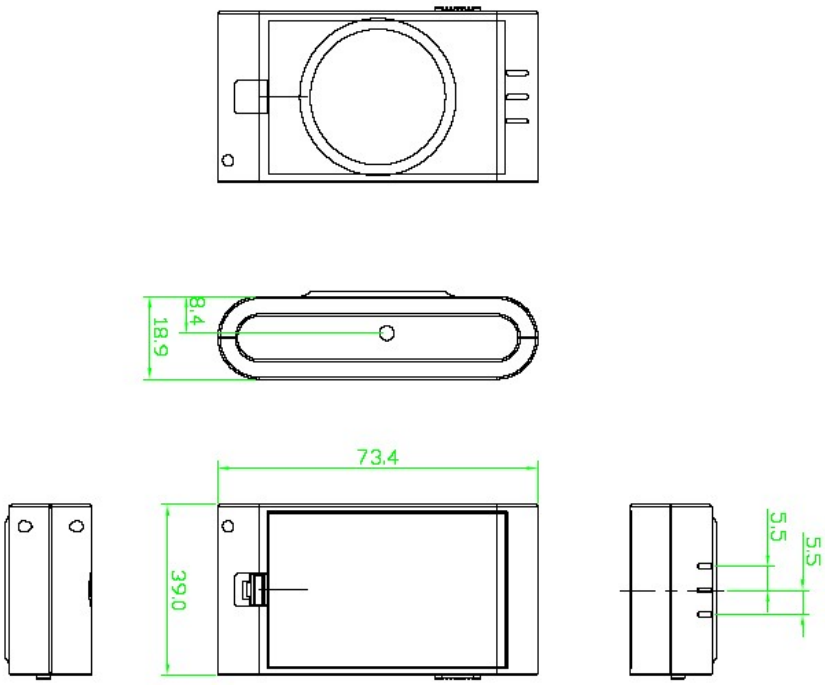
- Smart power saving feature (***SPS***): If the Bluetooth connection between the host and ABG10868 is lost, ABG10868 will turn off GPS automatically to save the energy.
- Bluetooth:
  - Bluetooth chipset:
    - RF: ST STLC2150
    - Baseband: ST STLC2415
  - Bluetooth frequency: 2.4 – 2.48GHz
  - Bluetooth specification: V1.1 specification compliant
  - Bluetooth Profile: Serial Port Profile (SPP)
  - Bluetooth Power Class: Class 2 (maximum 10 meter range)

4. Operations of ABG10868

4.1 Device Description:



4.2 Mechanical Drawing:



4.3 LED Status:

Symbol	LED	Status	Description
Bluetooth	Blue	1. Stand-by mode	Light 0.1 second every 8 seconds (0.1 sec On→ 7.9 sec OFF)
		2. Connected	Blinking one time every two seconds (0.5 sec ON→ 1.5 sec OFF)
GPS	Green	1. Acquisition	Steady light
		2. Tracking	Blinking every 8 seconds (7.9 sec On→ 0.1 sec OFF)
		3. GPS position fix	Blinking every 2 seconds (0.5 sec ON→ 1.5 sec OFF)
Battery	Red	1. In normal	OFF
		2. In low battery	Blinking (0.5 sec ON→ 1.5 sec OFF)
		3. In charging	Steady light

4.4 Usage:

4.4.1 To turn on the ABG10868:

When turn on the power of ABG10868, all the LED lights will blink one time. When there is a host Bluetooth device enables the connection between the Bluetooth and ABG10868, the blue LED will blink once every two seconds. When switch the power of the ABG10868 Bluetooth GPS receiver on, the GPS receiver will start to acquire the satellites. No matter the ABG10868 get the position fix or not, if there is no connection between the Bluetooth device and the ABG10868, the ABG10868 will turn off the GPS in five minutes.

For better satellite acquisition, make sure that the GPS receiver is in clear view of the sky without any obstruction for better satellite acquiring.

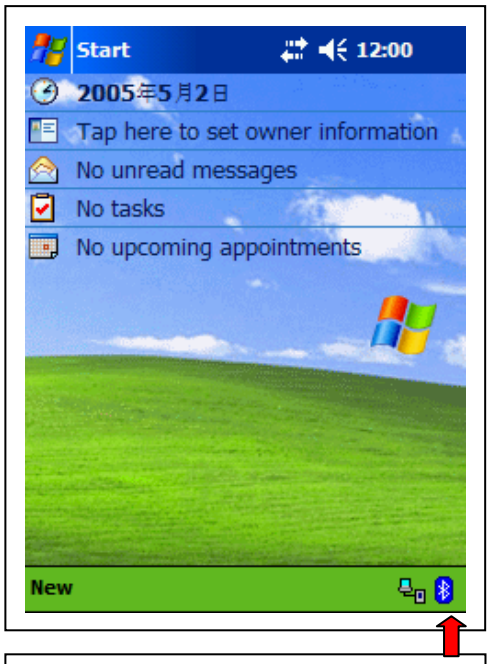
When the connection between the Bluetooth device and ABG10868 is established, the GPS tools or navigation software can be run and the Bluetooth GPS receiver will start to transfer the NMEA data to Bluetooth device.

4.4.2 Connection:

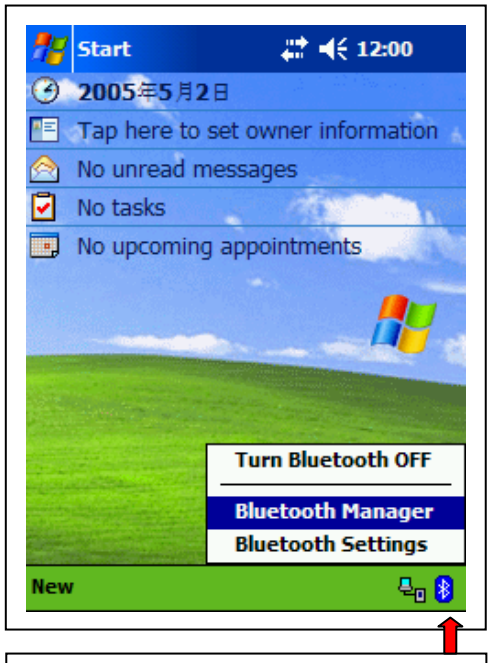
4.4.2-1 Connect to PDA:

ABG10868 supports Bluetooth Serial Port Profile V1.1, works with any Bluetooth enabled device with Serial Port Profile.

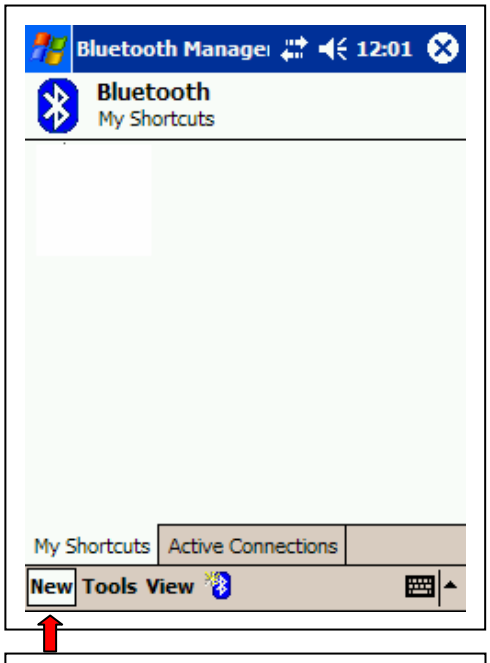
1. Click the Bluetooth icon at the right bottom of task bar
2. Turn Bluetooth On



3. Bluetooth is enabled



5. Click Bluetooth icon
6. Select Bluetooth Manager

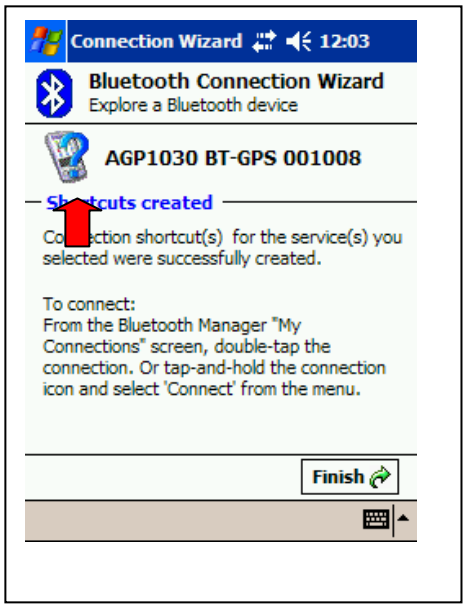


4. Click New button to active Bluetooth Connection Wizard

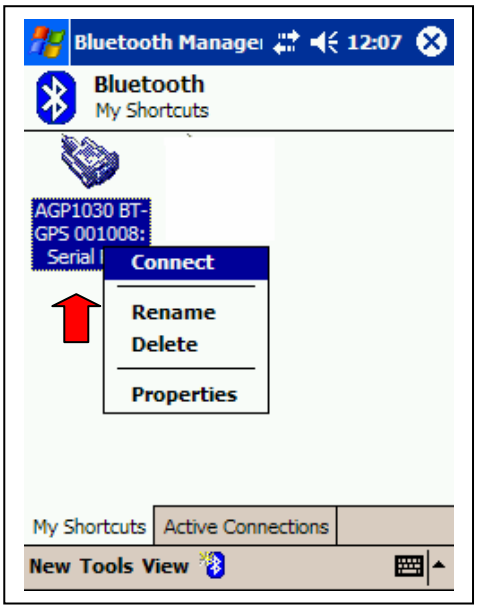
7. Click Explore a Bluetooth device to detect Bluetooth device
8. Click the Next button

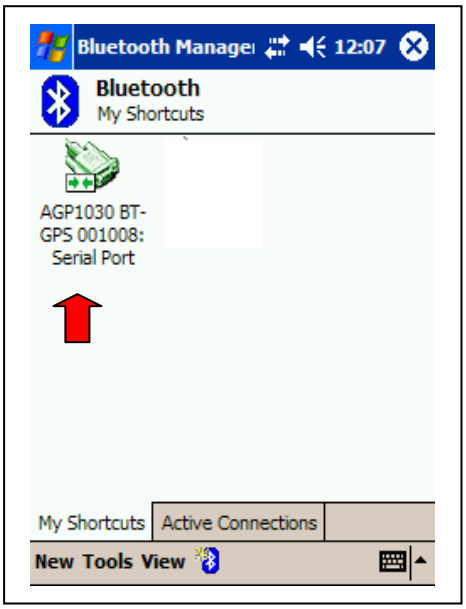
9. Once the PDA detect the Bluetooth GPS receiver. It will show this new device in the Wizard. Please select AGP1030BT-xxxxx

10. Select the Serial Port then click Next button



11. Click the Finish button



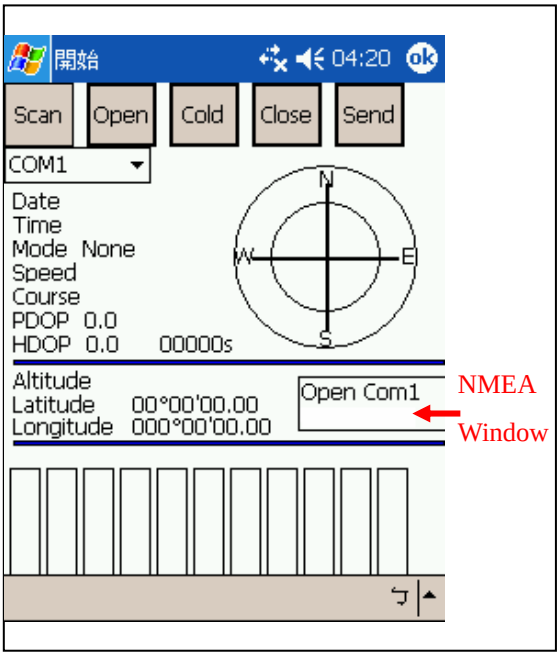


12. Press the AGP1030BT-xxx icon for 2 – 3 seconds, it will pop-up a menu
13. Select the Connect from the menu to build the connection

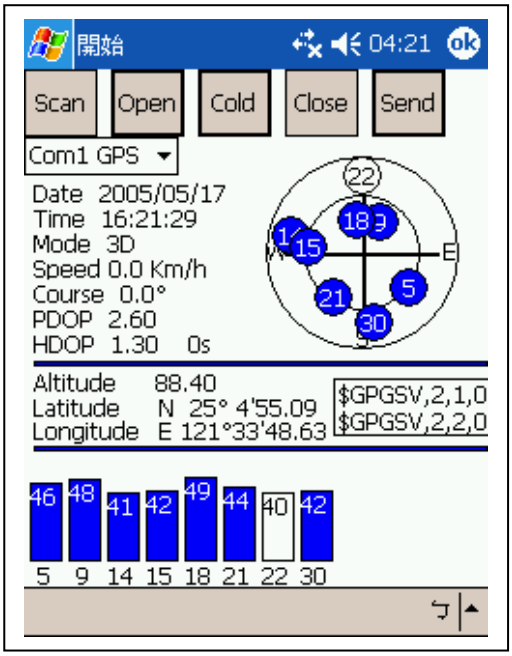
14. Once the connection is built, the AGP1030BT-xxx icon will become green color

4.4.2.-2 Verify the connection

Once you install the GPS View from the Installation CD, you can run the GPS View by click "GPS View" from the Program Files. After you run the GPS View, you will see a window below.



1. Scan: To detect GPS receiver connected COM port (You may select the COM port from the pull-down menu
2. Once the COM port has selected, press the Open button to open the COM port.
3. The NMEA will be rolling on the NMEA window



4. Once the GPS receiver got the position fix, the Satellite Constellation map will display the position of Satellites. And the white C/N bar will become to blue

4.4.2-3 Connect to Laptop with Bluetooth device

1. Switch on the power of ABG10868
2. Please refer to the User Manual of Bluetooth device to enable it connects to the ABG10868
3. Some Bluetooth devices may need the Bluetooth password, the password is “0000”
4. Check the number of COM port used by Bluetooth (Example COM5)
5. Open the GPS software and configure the correct COM port and baud rate: 9600bps

4.4.3 Power Jack

The power jack lets you connect either a DC car cigarette charger or AC power charger to recharge the internal Lithium-ion battery.

Please note that the adapter rating is 5V, 1.0A, positive pole center

4.4.4 GPS Reset Button

Press this button for 3 seconds will force GPS receiver do the Cold Start.

4.4.5 Smart Power Saving Feature

The GPS circuitry of ABG10868 is turned off when the Bluetooth connection is lost. This intelligent power saving function could help ABG10868 conserve battery power.

ABG10868

Mini Bluetooth GPS Receiver